Annual report 2021

Open edge networking


ADVA

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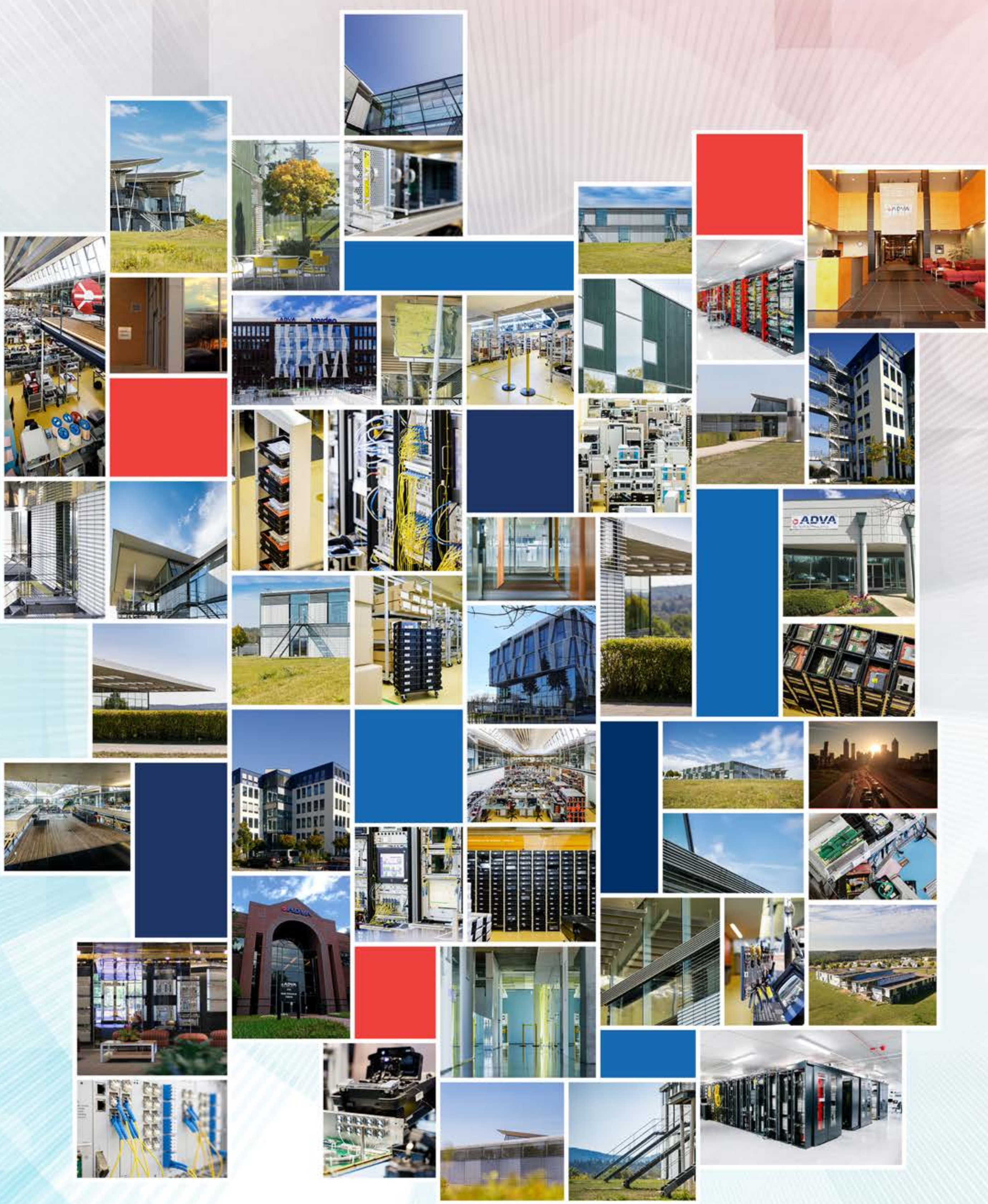
ADVA

ADVA Overview

Welcome

Profile

ADVA is a company founded on innovation and driven to help our customers succeed.

Our technology is the foundation of a shared digital future and empowers networks across the globe. We're continually developing breakthrough hardware and software that leads the networking industry and creates new business opportunities.

It's these open connectivity solutions that enable our customers to deliver the cloud and mobile services that are vital to today's society and for imagining new tomorrows.

Together, we're building a truly connected and sustainable future.

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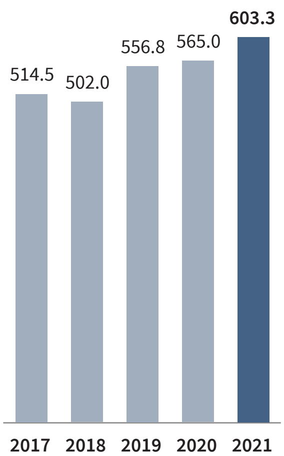
Mission

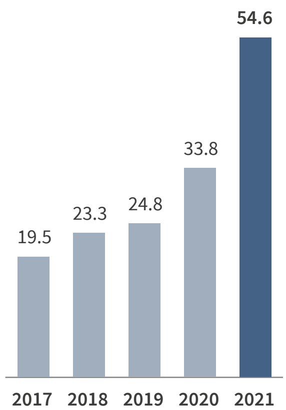
ADVA enables open next-generation networks. The group's mission is to be an innovation leader focused on its customers' experience by building better networking solutions.

2021 key performance indicators

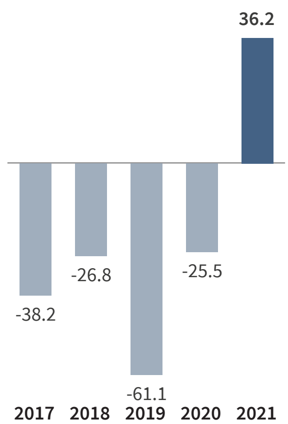
(in millions of EUR, except net promoter score)



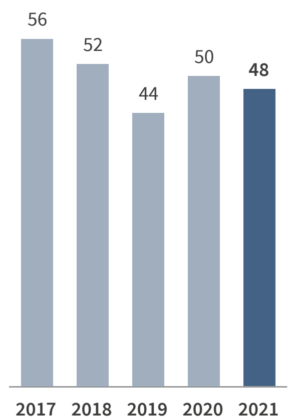
Revenues



Pro forma EBIT



Net cash/(debt)
(as of December 31)



Net promoter score (%)

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ADVAntages

Innovation leadership in growth markets

- ADVA focuses on growth markets in the telecom space that have one thing in common: a strong and sustainable demand for innovative connectivity solutions. These markets are being driven by the digitalization of society and its ecosystems.
- The market for telecommunications equipment is in a state of upheaval. The tension between high development expenditure and fierce competition has put pressure on network equipment suppliers, and only a few providers have been able to hold their own. Market players with insufficient innovative strength or unprofitable business models have largely disappeared.
- ADVA's combination of innovative strength and customer focus, as well as its sustainably profitable business model, make it unique in the industry. The company is emerging from many years of market consolidation as a clear winner and is extremely well-positioned technologically in numerous promising markets.

Focus on data security and mission critical infrastructure

- The Covid-19 pandemic has greatly changed the way we look at the importance of network infrastructure. Politicians and business leaders now recognize that high-performance communications infrastructure is vital for the survival of national economies and companies in this age of home offices, video conferencing and virtual collaboration.
- In this context, the criteria for selecting network equipment providers have changed, and security and trust have become tremendously important. This, together with increased security concerns, has led to numerous manufacturers being pushed back from Western networks – particularly manufacturers from the Far East. In Europe, the old "Made in Germany" seal of quality is experiencing a renaissance.
- ADVA is the leading specialist for optical transmission technology in Europe with excellent solutions in the field of secure data transmission. The company is the only manufacturer worldwide to offer technology with data rates of 100Gbit/s➲ that has been approved by the German Federal Ministry for Information Security (BSI) for the transmission of highly confidential information. Both ADVA's technology and the company profile itself have a very strong global reputation in security-relevant application scenarios.

Technology alignment with future trends

- The global megatrends of cloud and mobility, home office and mobile working, industrial applications and the expansion of 5G are accelerating the demand for more bandwidth, requiring more flexible provisioning of telecommunications services and more precise network synchronization.
- ADVA's solutions are well-aligned with the current transformation of networks and have high strategic relevance for enabling the path to a digital future. The addressable market for ADVA is expanding and was approximately USD 10.7 billion in 2021. According to estimates by industry analysts*, it will grow to USD 12 billion by 2025. What's more, this does not take into account the additional opportunities that may arise due to a less favorable environment for Asian manufacturers (especially Huawei) in Europe.
- ADVA's focus on innovation has led to market success and made it the global leader in optical transmission technology for data center interconnect networks for large enterprises, with a market share** of over 30 %. This market has always been considered security-sensitive. The market share in EMEA is now over 50 %. Furthermore, ADVA is the market leader in Europe for Carrier➲ Ethernet➲ access solutions*** (cloud access➲) with a 45 % share, and number two worldwide in this segment (21 %). In network synchronization technology, the company is a technology leader and is currently rapidly gaining market share with growth rates of more than 20 % (2018-2021: CAGR 24 %).

Open corporate culture with a solid business model

- ADVA's corporate culture is open, transparent and designed for honest collaboration. A unique combination of innovative strength, customer focus and speed in delivering technological value has enabled ADVA to build close and trusting customer relationships.
- The company has growing financial room to maneuver and an extremely solid balance sheet. The viability, reliability and longevity of ADVA's business model is highly valued by customers and investors, especially in times of macroeconomic uncertainty.
- For more than two decades, ADVA has been a reliable partner, providing solutions with high quality, lowest possible total cost of ownership and highest possible ease of use. The company's innovative solutions are used by several hundred network operators and thousands of companies worldwide.

* Global market (excl. China) for optical networking hardware for metro WDM, backbone WDM and access switching and Ethernet demarcation; Source: Omdia, "Optical networks forecast", published May 2021 and "Service provider switching and routing", January 2022

** Omdia, "Market share data center interconnect 3Q21", published December 2021

*** Omdia, "Service provider access switching and Ethernet demarcation, 3Q21", published in January 2022

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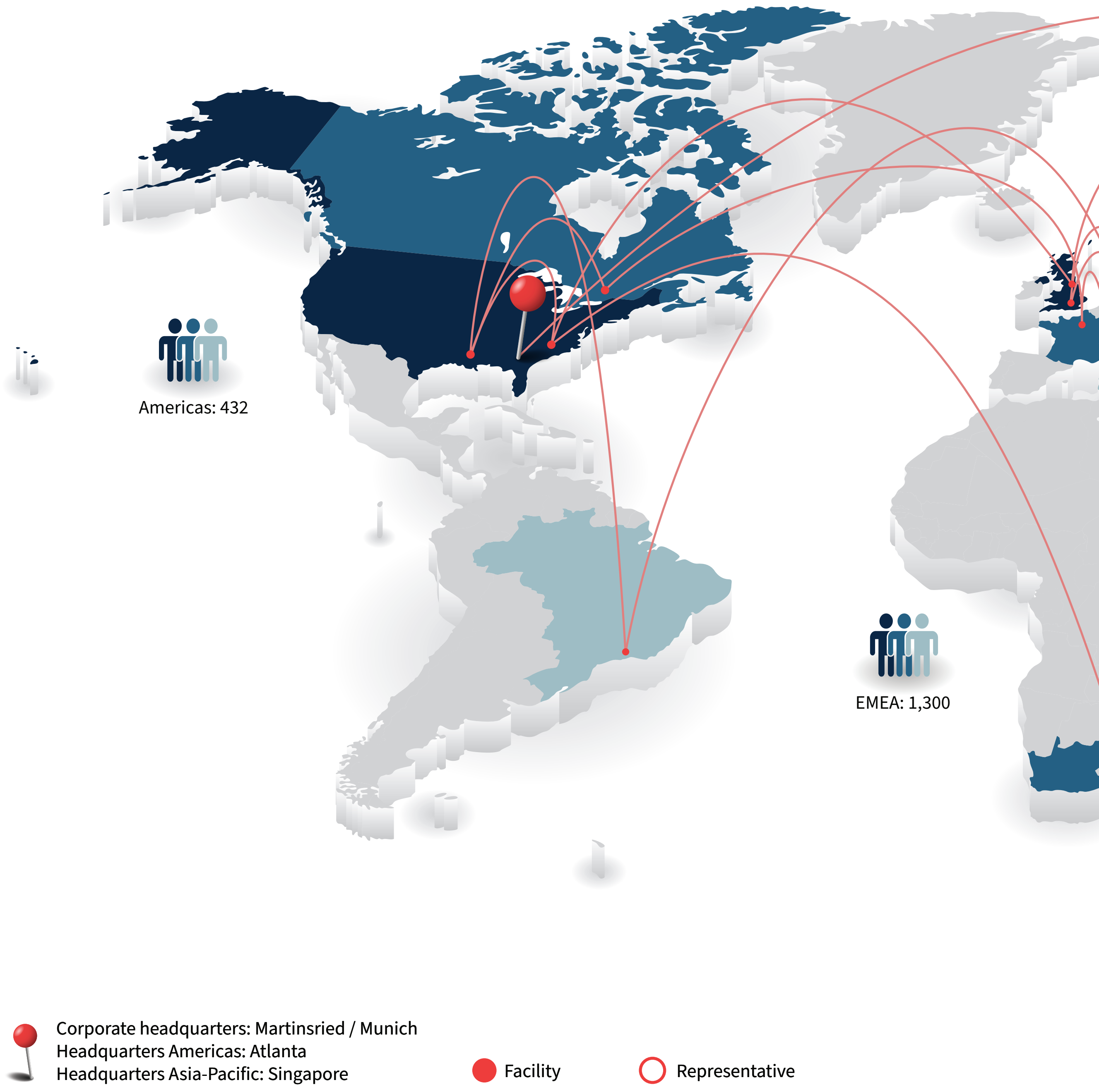
Worldwide presence

ADVA is an innovation leader in several key technologies with strong focus on customer experience. The proximity to customers is ensured by numerous sites around the world.




Asia-Pacific: 241

2021 business highlights

2021 saw ADVA deal with further challenges and uncertainties due to the Covid-19 pandemic and global supply chain constraints. Yet the company continued its upward trajectory, achieving numerous customer successes, forging new partnerships and launching innovative new solutions. The following section provides an overview of ADVA's press announcements for 2021.

Customer achievements and awards

In 2021, ADVA collected major awards, including for innovation in sustainability practices. The company also continued to record significant customer success. Many CSPs harnessed ADVA FSP 3000 open optical transport technology to address booming data demand. Others maximized the value of their deployed networks with the TeraFlex™ terminal. Enterprises around the globe were able to leverage flexible services built on ADVA's edge solutions, and its timing technology brought new levels of precision and resilience to 5G infrastructure and critical networks. Here are some of 2021's highlights:

January 28
STC calls on ADVA's NFV suite for uCPE services

February 2
ADVA wins TIA QuEST Forum Global Sustainability Award

February 16
Colt harnesses ADVA FSP 3000 for quantum-secured transport in live network trial

March 4
VicTrack transforms rail and government infrastructure with ADVA FSP 3000

March 10
ADVA wins two MEF 3.0 Proof of Concept Awards

March 23
Proximus harnesses ADVA synchronization solution for 5G network timing

March 24
Vodafone Romania uses ADVA NOS in trial of DCSG

May 4
POST Luxembourg leverages ADVA TeraFlex™ for 5G backhaul network

July 13
Cyta deploys ADVA Oscilloquartz solution for network timing

August 18
PGE selects ADVA's assured PNT solution for critical smart grid infrastructure

September 8
King County connects government and education facilities with ADVA FSP 150

September 21
RedIRIS taps ADVA and SIA to upgrade national research network

October 14
i3D.net responds to global online gaming boom with ADVA's TeraFlex™

November 17
ADVA wins Intel Network Builders Winners' Circle status for third year in a row

November 18
County of Kings boosts Canada's rural connectivity with ADVA

November 23
KCOM meets soaring data demand with ADVA's open optical transport solution

November 30
VicTrack wins Aussie Broadband wholesale deal with ADVA FSP3000

December 2
BMC TV delivers Paralympic coverage to UK with ADVA FSP 150

December 7
BAI Communications selects key ADVA technology to bring mobile connectivity to London Underground

December 14
ADVA wins major German innovation award with its quantum-safe encryption technology

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Innovation and corporate events

In 2021, ADVA launched its TeraFlex™ CoreChannel™, enabling customers to transmit 800Gbit/s over greater distances than ever before. The company also unveiled its open line system technology for the 400ZR era, gave the industry its first 25G demarcation device and launched its unique optical transport solution with post-quantum cryptography. The release of ADVA's embedded timing solution brought precise synchronization to new markets. These were some of the year's supporting announcements:

February 4
ADVA expands industry's smallest aggregation solution for the edge and the core

March 11
ADVA launches industry's most compact timing solution for digital power substations

March 30
ADVA unveils new DCI OLS for the 400ZR era

April 27
ADVA launches market's first compact grandmaster clock with multi-band GNSS receiver

May 11
ADVA adds encryption to flagship 10G edge device

May 20
ADVA provides simple, cost-efficient route to 10G services with new edge solution

June 8
ADVA launches TeraFlex™ CoreChannel™ for industry's longest 800G reach

June 24
ADVA makes virtual routing simple and affordable with Ensemble SmartWAN

July 8
ADVA launches world's first optical transport solution with post-quantum cryptography

August 12
ADVA launches market's first 25G demarcation solution

October 5
ADVA protects critical network infrastructure with new end-to-end assured PNT solution

November 2
ADVA launches embedded timing solution for third-party hardware

November 9
ADVA timing card brings precise synchronization to open compute servers

November 11
ADVA launches new traffic grooming solution to reduce metro costs

December 9
ADVA boosts PNT resilience with new software release

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Interoperability and alliance partnerships

ADVA continued its focus on openness and disaggregation with interoperable solutions that enable customers to embrace the latest innovation. In 2021, the company formed new partnerships, expanding its Ensemble Harmony Ecosystem and leading groundbreaking projects to improve cost, capacity and efficiency in transport networks. At the end of the summer, ADVA announced its business combination agreement with ADTRAN and ADVA, creating a global, scaled end-to-end fiber networking solutions leader. These were the headlines:

January 12
ADVA expands Ensemble Harmony Ecosystem to include disaggregated packet networking

March 1
ADVA teams with IBM to help enterprises manage hybrid cloud workloads

April 13
ADVA showcases 400ZR DCI solution with Acacia and Inphi

May 6
METRO-HAUL demo uses ADVA's FSP 3000 OLS in public safety showcase

June 7
TIP harnesses ADVA for successful trial of end-to-end open optical network

July 27
UrsaNav trials eLoran as vital GNSS backup using ADVA's grandmaster clock solution

August 19
ADVA and Lanner deliver turnkey offering for Intel Select Solutions for uCPE

August 30
ADTRAN and ADVA announce combination to create global, scaled end-to-end fiber networking solutions leader

September 7
ADVA leads AI-NET-PROTECT project to build resilient and secure private networks

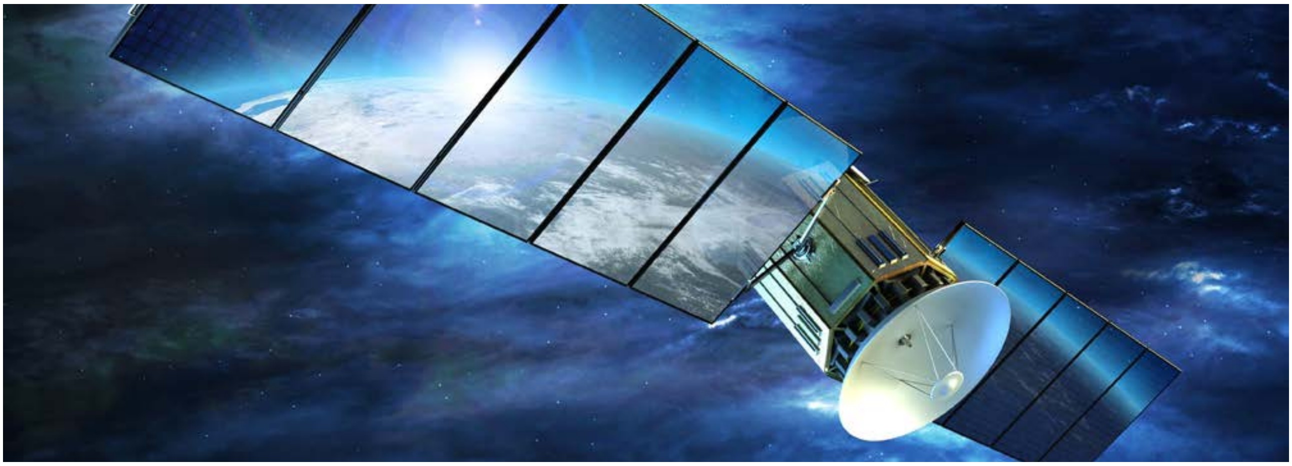
October 7
ADVA presents 2021 partner awards recognizing value-added resellers

November 4
FUNET and ADVA score industry first in 800G long-haul demo

November 16
ADVA leads new research projects to increase network capacity and reduce cost of optical transport

November 19
ADVA launches sustainable supplier program to tackle CO_2 emissions

December 9
UK government awards Future RAN Competition funding to ADVA-led consortium



Management board

Members and their backgrounds

ADVA is led by an international and highly motivated board of directors. The members of the management board have many years of experience in leading positions and extensive operational expertise in their respective areas of responsibility. With their complementary skills they steer ADVA in a highly competitive environment to ensure profitable growth.

The management team shares a common vision:

“We love to work with highly innovative people to connect the world and drive change, success and value.

In an increasingly digital environment, our networking technologies enable those who are solving the world’s most critical challenges.”

Brian Protiva

Chief executive officer (CEO)

Born in 1964
Bachelor of Science in electrical engineering,
Stanford University, USA

Brian Protiva co-founded ADVA in 1994. As the CEO, he is responsible for overall strategy, human resources and quality management. Under Brian's leadership, ADVA advanced to become a global market leader in Ethernet access devices and one of the top players in metro wavelength division multiplexing (WDM) worldwide. To date, ADVA's innovative networking solutions have been deployed in thousands of enterprises and hundreds of carrier networks around the world. Prior to leading ADVA, Brian was managing director at AMS Technologies (now the EGORA group), which he joined in 1987 and where he focused on co-managing its subsidiaries.

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Christoph Glingener

Chief technology officer (CTO), chief operating officer (COO)

Born in 1968
Ph.D. in electrical engineering, University of Dortmund,
Germany

Dr. Christoph Glingener joined ADVA in April 2006, assuming responsibility for all global research and development activities and was appointed CTO in 2007. Since that time, he has also led ADVA's product management and advanced technology teams. Christoph has focused on streamlining ADVA's product portfolio, defining the product strategy and building the group's standing as a global innovator in optical networking. Strategic partnerships and mergers & acquisitions are an integral part of this strategy. Additionally, in January 2015, Christoph took on responsibility for global operations, enabling ADVA to integrate research and development, new product introduction and global operations into a unified development operations team. Christoph's activities at ADVA build on a long and successful industry career with experience gained in both academic and corporate roles. These include leading positions at Marconi Communications (now Ericsson) and Siemens Communications (now Infinera).

Ulrich Dopfer

Chief financial officer (CFO)

Born in 1973
Graduate in business administration, Verwaltungs- und Wirtschaftsakademie Munich, Germany

Ulrich Dopfer joined ADVA in March 2004 and led the group through some key financial initiatives taking on increasing responsibility over time. In 2006 Ulrich moved to Norcross, Georgia, where he is still based today. Prior to his appointment as CFO in January 2015, Ulrich served as vice president of financial planning & analysis and corporate services where he strategically optimized major processes, systems and support infrastructure, enabling ADVA to maintain the right balance between vision and execution. In addition to his CFO role, Ulrich was appointed president of the company's North American subsidiary in January 2015, assuming full legal responsibilities for the region. Ulrich's activities at ADVA build on more than 20 years' experience of designing and implementing financial reporting, performance measurements, policies and standards to maintain strong internal controls in corporate roles including positions at ESCADA AG and FJH AG.

Scott St. John

Chief marketing and sales officer (CMSO)

Born in 1969
Bachelor of Arts, economics,
Syracuse University, USA

Scott St. John has spent over 30 years in the network technology industry. He has a proven track record of building high-performance teams in sales, marketing and customer service, as well as driving strategy to meet overall corporate goals. Scott joined ADVA in 2017, as part of the acquisition of MRV Communications, and was appointed CMSO and a member of the management board in October of 2017. Prior to his role at ADVA, Scott had been SVP of global sales and service at MRV Communications since 2014, restructuring the sales and service teams and driving adoption of new packet and optical platforms by over 175 customers globally. From 2004 to 2013, he served Overture Networks in senior sales and service leadership roles, delivering nine consecutive years of sales growth. Scott has also held sales leadership positions at Saisei, Larscom and VINA Technologies, as well as sales, marketing and finance roles at Lucent Technologies and AT&T.

Letter to shareholders

Dear shareholders and friends,

It is with pride that we look back on a successful fiscal year 2021. Despite ongoing challenges due to the Covid-19 pandemic, the semiconductor crisis and supply chain bottlenecks, we delivered excellent results in 2021. We met all our targets and even exceeded them in many areas. Thanks to continued strong customer demand and great efforts in purchasing, manufacturing and logistics, we were able to further increase our revenues and achieve the most profitable fiscal year in our 27-year history. We've further expanded our liquidity cushion and are starting the 2022 fiscal year with a record order backlog.

Business transformation strategy successfully implemented

For several quarters, the macroeconomic environment has brought us encouraging growth in customer demand while at the same time presenting us with major supply chain challenges. This tension will continue in 2022. Against this background, we've continued to work diligently to execute our business transformation strategy. At the beginning of the fiscal year 2021, we presented our strategy for sustainably increasing the margins of our business model to the financial community at a digital Capital Markets Day. The plan is essentially based on three pillars: First, disproportionate growth in private and security-relevant networks outside the traditional network operator infrastructure. Second, an increase in revenue contributions from software and services. And third, the development of new markets and cost optimization through verticalization activities. The results we've achieved in the past year clearly demonstrate the strength of these strategic cornerstones and show the success we've had in implementing them.

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A unique investment cycle for communications networks

Covid-19 has touched almost every aspect of our lives. Home offices, e-learning and video conferencing have replaced offices, classrooms and meeting rooms. Face-to-face meetings are being replaced or at least supplemented by virtual meetings. The number of business trips remains relatively low and will probably not reach pre-crisis levels even in the medium term. Digital solutions have ensured that business can continue in many industries and have provided a backbone for national economies. As a result, digitization continues to move center stage in politics and business. High-performance network infrastructure is now regarded as the backbone of an increasingly digitized society and has greatly increased in importance and value. The resulting high demand for communications technology is currently being further reinforced by numerous government stimulus and funding programs in many countries around the world. In the USA, many billions of US dollars will be made available over the next few years for network expansion, especially in underserved and rural areas, as part of the "Infrastructure Bill," "Rural Digital Opportunity Fund (RDOF)" and "American Rescue Plan Act (ARPA)" programs. The UK has announced more than GBP 25 billion of private and government funding for accelerated network expansion, and across the EU, government support programs totaling EUR 30 million have been launched. Many programs in Western countries will predominantly benefit Western suppliers, and the focus of investment will be in the network access sector through to metro networks. ADVA is well positioned in the network edge space, and we will further strengthen our market position through the merger with ADTRAN.

Merger with ADTRAN opens up new opportunities

In addition to further developing our own business model, we've taken a strategic step that will permanently change the competitive landscape in our industry. On August 30, we jointly announced with ADTRAN that we intend to create a global leader in scalable communications technology through a business combination. ADTRAN is a well-respected network equipment supplier, with headquarters in the US and a strong presence in Europe. The merger combines ADTRAN's global leadership in fiber-to-the-home and local loop solutions with our global leadership in data center interconnect solutions for large enterprises, business Ethernet and fiber-to-the-building, metro WDM, and network synchronization. Together, we're in an excellent position to address new requirements, especially with regard to the convergence of network solutions in the area of the network edge. As such, the transaction should create significant long-term value for all stakeholders of both companies by further enhancing our ability to serve as a trusted supplier to customers worldwide with a broader product offering. The combined company will offer a comprehensive product portfolio to provide homes, businesses and 5G infrastructure with scalable, secure and guaranteed fiber connectivity paired with cloud-managed Wi-Fi connectivity.

More than 60 % of the existing voting shares for ADVA have agreed to the exchange offer and we look forward to a common future with much optimism and enthusiasm. Currently we are still working with the government authorities on open questions regarding the foreign direct investment approvals and are confident of receiving the necessary support.

Positive outlook

Despite the semiconductor crisis and bottlenecks in supply chains, we continue to grow and operate very profitably. We start the new fiscal year with an order backlog that is at record levels. On the demand side, we see a positive macro environment, which is expected to continue for many quarters. The realization that communications infrastructure is a valuable asset has prompted a rethink in politics and business. A few years ago, network technology primarily had to provide cost-effective bandwidth. Today, the focus is increasingly on security aspects. The expansion of 5G and its associated industrial applications has led to technology with supposedly insecure origins being viewed very critically. In many industrialized nations of the Western world, dependence on large Chinese network equipment suppliers, particularly Huawei, is perceived as a serious threat. After the USA, the affected network operators in Europe are now also working on concepts for freeing themselves from this dependency.

For ADVA, the new dynamics create additional opportunities. After years of consolidation in the market, our profile as a Western network equipment supplier with a European-American corporate culture, strong innovation power and a sustainable business model is being perceived extremely positively. In a network operator environment that increasingly favors local value creation and secure technologies, we can open new doors and gain market share in Europe, the USA and other parts of the world. The merger with ADTRAN will open up new, additional opportunities and further strengthen our market position.

Our business transformation strategy will remain our focus in 2022. Profitability, liquidity and expanding our sales in new industries are top priorities. Technologically, our solutions are extremely well aligned to the transformation of networks with cloud, mobility, 5G, automation and security aspects. In addition to the high-value performance features of our optical data transmission, precise network synchronization technology and programmable cloud access solutions, our service portfolio also delivers increasing value. Together with ADTRAN, we can offer a comprehensive portfolio of solutions from the access part of the networks, through the network edge, to the metro core, which goes well beyond the offerings of most other Western manufacturers. In addition, we have technologically superior solutions for critical infrastructure in the areas of scientific and research networks, government, utilities and finance.

Our global and loyal customer base consisting of hundreds of network operators, thousands of large enterprises and many government agencies values our innovative solutions. The creativity and dedication of our employees make ADVA the innovation leader in numerous network applications and a trusted partner for customers worldwide. I thank our dedicated employees for their consistent and valuable contributions, especially in these challenging times. The interplay of their diverse knowledge and skills has made ADVA a unique company with bright prospects for the future.

In 2022, we will continue to invest all our energy and creativity in innovative solutions for the benefit of our customers, shareholders and employees.

Stay healthy!

February 22, 2022

Brian Protiva
Chief executive officer

Supervisory board

Members

ADVA's supervisory board consists of a diverse and international group of seasoned experts in their respective fields:

Nikos Theodosopoulos – chairman

- Chairman since January 9, 2015
- Member since 2014
- Independent member
- Chairman of the compensation and nomination committee
- Member of the audit committee
- Founder and managing member of NT Advisors LLC, Manhasset, New York, USA

Johanna Hey – vice chairwoman

- Vice chairwoman since June 4, 2013
- Member since 2011
- Independent member
- Chairwoman of the audit committee
- Professor for tax law, University of Cologne, Cologne, Germany

Michael Aquino – member

- Member since 2018
- Independent member
- Member of the compensation and nomination committee
- Technology strategy consultant, Peachtree City, Georgia, USA

Report of the supervisory board

In 2021, the supervisory board once again performed its duties under the law and the company's articles. It carefully and continuously monitored the management board and supported it in all strategic matters. The supervisory board has been directly involved in the early stages of all important strategic decisions of the company. During a total of five ordinary meetings, in which all members of the supervisory board and the members of the management board regularly participated, the management board consistently, promptly and extensively informed the supervisory board about the business situation of the company and the group. In addition, the supervisory board occasionally consults before or after the regular meetings without the management board being present. In particular, the supervisory board was informed on matters regarding strategic orientation, market development and prospects for growth, as well as on the development of net assets, financial position and profitability, including budgeting, investments, personnel, compliance, internal audit and risk management. The supervisory board extensively discussed all important business issues on the basis of the management board's reports. Any deviations of the actual business development from the group's plans and objectives were thoroughly explained by the management board and reviewed by the supervisory board. The supervisory board gave its approvals to all important decisions, after thorough examination and consultation, where required by law or the company's articles and acting in the best interest of the company and the group. Furthermore, on urgent matters resolutions were passed outside of meetings during the year. Moreover, especially the chairman and the vice chairwoman of the supervisory board maintained regular contact with individual members of the management board outside of scheduled meetings and were kept up-to-date with respect to current business developments, important transactions and forthcoming decisions. In 2021 the supervisory board held 5 extraordinary meetings.

Main management board activities covered and examined by the supervisory board

In 2021, as in the prior year, the supervisory board focused mainly on the business development and strategic direction of the company and the group, particularly its revenue, earnings and headcount development, and ADVA's financial situation. In this context, new opportunities for revenue growth and the development of margins were discussed.

The supervisory board closely monitored and supported the activities of the management board, including discussions on corporate governance. It discussed the group's organization and key business processes with the management board and assured itself of the efficiency of this organization and these processes. The management board submitted to the supervisory board all transactions and decisions requiring approval according to the company's articles. The supervisory board approved all such transactions and decisions.

Public tender offer by ADTRAN, Inc.

In addition, the supervisory board closely monitored the ongoing takeover process in the past financial year. In several meetings and telephone conferences, it dealt intensively with the decision published in the reporting year to submit a voluntary public takeover bid by Acorn HoldCo, Inc., the bidder company of ADTRAN, Inc., Huntsville, Alabama, United States, dated August 30, 2021 and the offer document published on November 12, 2021 and in particular with questions of the valuation of the company to assess the adequacy of the offer price, the business combination agreement (Business Combination Agreement) and the reasoned opinion to the offer. This was supported by external legal and financial advisors.

Committees

In order to perform its tasks efficiently, the supervisory board continued to maintain two committees during 2021, the audit committee and the compensation and nomination committee. Members of the audit committee were Johanna Hey (chairwoman) and Nikos Theodosopoulos, members of the compensation and nomination committee were Nikos Theodosopoulos (chairman) and Michael Aquino.

The audit committee held five meetings during the reporting period, in which all members always participated. In addition to reviewing the consolidated annual and three quarterly financial statements and group management reports as well as the company's annual financial statements and management report, the audit committee discussed the financial position and performance of the group, the appointment of the external auditor, the audit scope for 2021, the development of tax positions and risks, internal audit activities, as well as the effectiveness of the internal controls related to financial reporting and of the risk management system.

The compensation and nomination committee sat three times during the past year. The committee's discussions focused in particular on the remuneration and the contract extensions of the chief officers. All members of the audit committee always attended these meetings.

Reports on the work of the supervisory board committees were regularly presented and discussed during the subsequent supervisory board plenary meeting.

Education and training measures

The supervisory board members take responsibility for the training and further education measures required for their tasks and receive appropriate support from the company if necessary.

Corporate Governance Code

The supervisory board welcomes the German Corporate Governance Code and supports its objectives. The supervisory board has agreed to comply with most of the recommendations and proposals of the Corporate Governance Code within the ADVA Optical Networking organization. In its meeting on November 9, 2021, the supervisory board discussed the deviations from the Code and jointly issued the regularly scheduled update on the declaration of compliance in accordance with section 161 of the German Stock Corporation Law (Aktiengesetz, AktG). The declaration is made permanently available to shareholders on the company's website.

Annual financial statements and management reports

ADVA Optical Networking's consolidated annual financial statements for the year ended December 31, 2021, and ADVA Optical Networking SE's annual financial statements for the year ended December 31, 2021, as well as the combined management report of the ADVA group and ADVA Optical Networking SE for the fiscal year 2021 were audited by the company's appointed auditor for 2021, PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft, Munich, who issued unqualified audit opinions. Pursuant to section 315e of the German Commercial Code (Handelsgesetzbuch, HGB), the consolidated annual financial statements have been prepared according to International Financial Reporting Standards (IFRS) as enacted in the EU. All management letter points issued by the auditor were taken up, discussed with the management board, and their consideration was ensured.

All relevant accounting documents, financial reports and audit reports were submitted to the supervisory board members prior to the meeting of the supervisory board dealing with the company's and group's 2021 financial statements. On February 16 and February 21, 2022, these documents were discussed and examined in detail jointly by the audit committee and the auditor and in consideration of the auditor's long-form report. The audit committee reported its findings to the entire supervisory board in its meeting on February 22, 2022. Furthermore, the auditor, who was present in both meetings, reported on the material results of the audit, explained net assets, the financial position and the results of operations of the company and the group, and was available to answer additional questions from the members of the supervisory board.

In view and consideration of these audit reports and on the basis of the additional information provided by the auditor, the supervisory board discussed and examined in detail the financial statements and management reports in its meeting on February 22, 2022. It unanimously approved ADVA Optical Networking SE's annual financial statements and management report, as well as ADVA's consolidated annual financial statements and group management report. The annual financial statements of ADVA Optical Networking SE for the fiscal year 2021 are thereby adopted.

Separate non-financial report

The company's auditor, PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft, Munich, was also engaged to perform a voluntary limited assurance engagement in accordance with ISAE 3000 (Revised) on the combined non-financial (group) report. PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft issued an unqualified audit opinion. The combined non-financial (group) report and the audit opinion of PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft were forwarded to the members of the supervisory board in good time. In its meeting on February 22, 2022, the supervisory board intensively discussed, examined and approved the combined non-financial (Group) report. There were no indications for objections to the combined non-financial (Group) report or the assessment by PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft.

Changes within the management and supervisory boards

Within the fiscal year 2021, no personnel changes occurred in either the management or supervisory board.

The supervisory board would like to express its appreciation for the personal dedication, performance and the ongoing commitment of the management board and all employees of the company and the group during 2021.

February 22, 2022

On behalf of the supervisory board:

Nikos Theodosopoulos
Chairman of the supervisory board

ADVA stock

Capital markets and ADVA stock defy pandemic in 2021

It was another turbulent start to the year in 2021 with drastic price slumps on the capital markets. Nevertheless, the stock market year developed extremely successfully, and despite the rising number of infections and global logistics problems due to the shortage of semiconductors, numerous indices at times reached new highs. Many companies from different industries came through the pandemic very well and even benefited from the new situation. These include vaccine manufacturers such as the Mainz-based company BioNTech, laboratory equipment suppliers such as Sartorius and logistics groups such as Deutsche Post. Even automakers, badly hit by supply shortages, reported record numbers. In mid-November, however, the Omicron Covid variant led to more course corrections. Nevertheless, on January 30, 2021 the DAX closed at 15,884 points and +15.79 %.

ADVA stock also developed very well within the financial year 2021. The stock started trading with an opening price of EUR 7.05. On January 7, 2021, ADVA published an ad hoc announcement as Q4 2020 was one of the most successful quarters in the company's history, and both the quarterly figures and financial figures for the full year deviated substantially from the previous year's figures and available analyst estimates. In this context, the outlook for the full year was published. The share thus developed very positively with double-digit growth rates, briefly reaching a price of over EUR 10.00 after the publication of the final numbers for the 2020 financial year.

On March 23, 2021, the management board held a capital markets day for investors and financial analysts to present the mid-term strategy for significantly higher margin levels by 2023. The strategy was received extremely positively by analysts and investors. As a result, the share price rose again to a level of around EUR 10.0.

On April 22, 2021, the strongest Q1 result in the company's history was published. Revenues increased by 8.9 % compared to the year-ago quarter and pro forma EBIT increased significantly to 8.9 % of revenues. However, the stock only reacted with slight price increases.

On July 16, 2021, the management board decided to announce the preliminary financial results for the second quarter ahead of time in an ad hoc announcement. In this context, the management board specified the proforma EBIT outlook from 6 % - 10 % of revenues to 7 % - 10 % of revenues. Based on the very good first half of the year and the good outlook for the remainder of the financial year, the management board considered a pro forma EBIT of less than 7 % of revenues to be unlikely and wanted to inform the capital market about this. As a result, the ADVA share price rose to an interim high of EUR 13.36.

On August 30, 2021, ADVA and ADTRAN announced in an ad hoc announcement that they intend to create a global leader in scalable communications technology through a business combination. The combined company will initially be called Acorn HoldCo, Inc. and will be renamed to ADTRAN Holdings, Inc. at a later date. This announcement resulted in a drastic price increase, and that day the stock climbed to its high for the year of EUR 14.22.

ADVA published its financial results for the third quarter of 2021 on October 21, 2021 and was able to grow again despite the worsening semiconductor crisis. At this point, the stock initially moved sideways. Various transaction documents were published over time in connection with the planned transaction, some of which led to further positive price movements. These include the management board's reasoned statement on November 23, 2021. In addition, the majority of financial analysts from ADTRAN and ADVA commented positively on the planned merger. During this phase, the development of the ADVA share price correlated strongly with the development of the ADTRAN share. The share closed the trading year at a price of EUR 14.08. This corresponded to a price gain of +97.75 %.

ADVA stock performs substantially above benchmark indices

ADVA stock performed pleasingly higher than comparable benchmark indices SDAX (+10.53 %) and NASDAQ Composite (+28.56 %) with a gain of 97.75 %. ADVA was also convincing compared with relevant peers listed on NASDAQ (+47.5 %). The average XETRA trading volume of ADVA stock was around 179,834 shares and increased significantly compared to 2020 (148,364 shares). The market capitalization at the end of 2021 was EUR 724.4 million. Investor interest in the network equipment industry continues to be very high in light of the digitization of society and the dynamics of the internet economy (cloud). In the pandemic, ADVA's business model once again demonstrated its robustness during an economic crisis. Government stimulus and subsidy programs designed to accelerate network expansion and digitization, especially in rural and underserved regions, provide additional opportunities. The proportion of free float increased due to the reduced position of the investment company Teleios Capital Partners to values of around 85 %.

Start to the new financial year driven by merger process

In the first few weeks of the new financial year 2022, the ADVA stock moved with the transaction activity. In addition, statements by the Federal Reserve (FED) about future interest rate hikes led to price distortions on the capital markets. On January 10, Acorn HoldCo, Inc. announced that it had lowered the minimum acceptance threshold for its takeover bid from 70 % to 60 %. ADVA then published an updated reasoned statement on January 11, 2022. On January 28, 2022, ADTRAN and ADVA announced that the acceptance threshold of 60 % had been reached. The capital market took this news very positively and the ADVA stock thus increased and reached its high on February 11, 2022 with EUR 15.00.

On December 31, 2021, the company's nominal share capital totaled EUR 51,445,892, an increase of EUR 949,200 compared to December 31, 2020. The higher share capital is fully attributable to the issuance of ordinary shares from conditional capital following the exercise of employee options throughout 2021. ADVA's shareholder structure at the end of 2021 looked as follows: free float equaled 85.29 %, including 0.8 % of outstanding ADVA stock held directly by members of the management and supervisory board. The largest single shareholder was the EGORA Group, which held 14.71 % of the shares as of December 31, 2021. The previous second-largest individual shareholder, Teleios Capital Partners, successively reduced its shareholding from 19.38 % on December 31, 2020 to less than 3 % in the course of the first six months of 2021. Compared to the end of 2020, the free float has thus increased from 65.85 % to 85.29 %*. During the year, the company did not utilize the share buyback authorized at the annual shareholders' meetings in June 2010, May 2012 and May 2019.

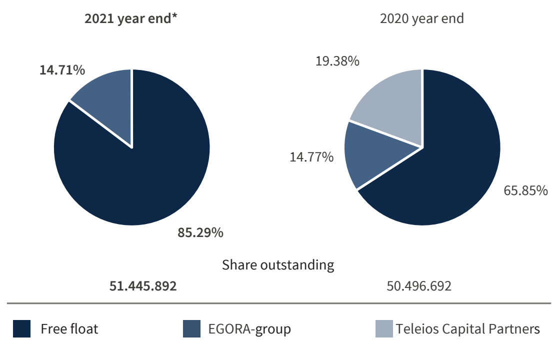
* Capital shares refer to the total number of voting rights at the respective notification date. A change in the total number of voting rights after the notification date was not taken into account.

Stock information*

Trade name	ISIN DE0005103006/WKN 510300
Symbol	ADV
Exchange	Prime Standard Segment Frankfurt Stock Exchange
Sector	Technology
Industry	Communications Technology
Number of shares outstanding at year-end 2021	51445892
2021 high/low price	EUR 14.22 / EUR 6.99
2021 year-end price	EUR 14.08
2021 year-end market capitalization	EUR 724.4 million
2020 year-end price	EUR 7.06
2021 share price performance	+97.75 %

* Price information is based on Xetra closing prices.

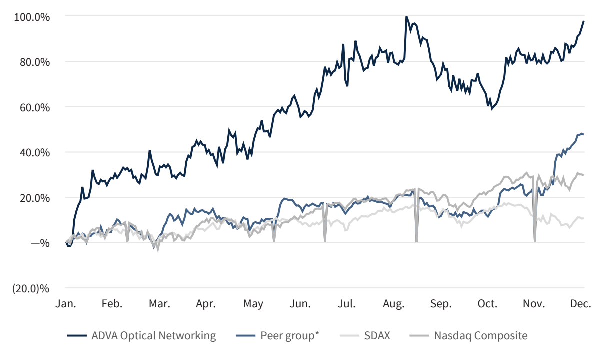
Shareholder structure



* Capital shares refer to the total number of voting rights at the respective notification date. A change in the total number of voting rights after the notification date was not taken into account.

Price development 2021 comparison

(in %, indexed)



* Peer group data are calculated with the arithmetic average of Ciena, Cisco, and Infinera stock prices.

Jim Zou
Vincent Sleiffer
Jos van Eycken

“The talent and spirit in our team inspires us every day. Individually, we have some of the most able and experienced innovators in the industry. Together, we have a foundation based on trust and a mutual passion for building success.”

Investor relations review

Investor relations work in 2021 was dominated by two major topics:

The first was the preparation and implementation of a capital market day in March. This well-attended, virtual event served as a platform to communicate the company's broad-based business transformation strategy to the capital market. The strategy aims to sustainably improve the margin profile of the ADVA business model and is essentially based on the following three pillars:

- Increase revenues outside of the traditional communication service provider space to 40 % by the end of 2023.
- Increase revenue contribution from the areas of software and services to 30 % by the end of 2023.
- Access new markets and revenue contribution, as well as cost reduction from increased verticalization activities, from the development and production of optoelectronic components.

As already described in the comments on the ADVA stock, this transformation strategy was very well received on the financial markets and its successful implementation was underpinned by good quarterly results for the remainder of the financial year.

The second key topic was the announcement of the takeover bid by ADTRAN at the end of August, which had far-reaching effects on IR work. The IR team explained in numerous forums and one-on-one meetings the benefits of this merger as well as the mechanics of the proposed transaction. In this context, the number of discussions with investors increased significantly. In addition, various transaction documents had to be prepared and published.

In order to meet investors' demand for information on current market developments and their impact on ADVA, the company has transformed its investor relations work to new virtual concepts. A total of five (virtual) roadshows (2020: three) were held, as well as over 250 one-on-one meetings (2020: 150). ADVA presented itself to institutional investors at a total of 19 investor conferences (2020: ten), including cross-industry conferences and technology-focused events. These conferences were organized by Berenberg/Goldman Sachs, Cowen, Commerzbank/Oddo, Deutsche Boerse, Jefferies, Kepler Cheuvreux, Montega AG, Warburg, Baader Bank, GBC AG and Needham.

In addition, with a total of 57 press releases, four ad hoc publications, two quarterly reports, an interim report and regular conference calls, the financial community was kept informed about any significant developments within ADVA. Furthermore, throughout the year, the company continued to provide comprehensive and up-to-date information relevant to the financial community on the investor relations pages of its website at www.adva.com, including full transcripts of archived conference calls.

At the end of 2021, seven financial analysts (end of 2020: six) provided research coverage of ADVA's stock. The annual shareholders' meeting took place virtually on May 19, 2021. All items on the agenda were approved by a majority. Furthermore, the annual shareholders' meeting appointed PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft as the auditor for the 2021 financial results.

Financial analyst coverage

(as of December 31, 2021)

Institution	Financial analyst name	Location
Commerzbank	Michael Junghans	London, England
First Berlin	Simon Scholes	Berlin, Germany
FMR Frankfurt Main Research	Felix Lutz	Frankfurt am Main, Germany
Kepler Cheuvreux	Hugo Paternoster	Paris, France
LBBW	Mirko Maier	Stuttgart, Germany
Northland Capital Markets	Tim Savageaux	Minneapolis, USA
Warburg	Robert van der Horst	Hamburg, Germany

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Business overview

ADVA develops open networking technology that is the foundation of a shared digital future and empowers networks across the globe.

Technology

ADVA develops, manufactures and sells networking solutions for a digital future. Its products are based on three core areas of expertise: fiber-optic transmission technology (cloud interconnect), cloud access technology for rapid creation of innovative services around the network edge, and solutions for precise timing and synchronization of networks. All three technology areas are unified by intelligent software for network management.

Optical networking

Fiber is the optimum physical medium to transmit large amounts of data over long distances. The bandwidth-over-distance capabilities of fiber by far exceed those of any other physical medium such as copper or wireless technologies. Therefore, fiber-optic transport is the unchallenged foundation for all high-speed networks. ADVA's optical transmission solutions are based on wavelength division multiplexing (WDM) technology. With WDM, multiple data streams are transmitted simultaneously over a single optical fiber by assigning each stream to a different wavelength (i.e., color) of laser light. Every wavelength (more than 100 in total) can carry a different application such as voice, video, data or storage traffic. Combining (i.e., multiplexing) these wavelengths at one end of the fiber, transmitting them over distance and then separating (i.e., de-multiplexing) them at the far end multiplies the fiber capacity and makes transmission more efficient. WDM supports all data protocols and transmission speeds and is a natural foundation for all high-capacity networks.

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Cloud access

Ethernet is the dominant data-link protocol for today's networks supporting a multitude of communication applications. ADVA provides Ethernet-optimized transmission solutions for fiber-based networks. Carrier Ethernet (CE) is often used at the network edge to support several important applications. Network operators use the technology to backhaul traffic from mobile base stations and to connect their enterprise customers. Over the years, Ethernet has evolved to be the key protocol used to carry applications in high-speed optical networks for data backhaul and the interconnection of routers.

Glossary: *page 174*

The importance of software in networking technology is increasing rapidly. On the one hand, network operation is automated by means of intelligent software, which increases user friendliness and simplifies network control and maintenance. On the other hand, more and more network functions are virtualized (network function virtualization, NFV). With NFV, the tight coupling between hardware and software in network elements is dissolved, and individual network functions can be developed and provided independently of the underlying hardware.

Packet-based data transmission technology and innovative network operating systems to run on open compute and switching platforms are the foundation for ADVA's cloud access solutions. The Ensemble software products of the company are leading the way in NFV infrastructure applications.

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Network synchronization

Reference sources that deliver stable frequency and time-of-day information are crucial to the effective transmission of digital signals. Especially in mobile networks, the availability of highly accurate synchronization and timing information is crucial for best end-user experience. With a complete end-to-end solution portfolio sold under the Oscilloquartz brand, ADVA can offer a smooth evolution across multiple generations of synchronization technologies.

Technologies for a digital future

ADVA's three technology pillars are fundamental to the rapidly advancing digitalization of ecosystems around the world. Optical networking technology with WDM provides the scalable transmission capacity needed to handle bandwidth growth. Cloud access solutions allow the flexible and fast deployment of new communication services including state-of-the-art edge compute solutions, and the synchronization technology ensures maximum performance in the network.

ADVA creates innovative networking solutions from inception through manufacturing and into service. The following paragraphs describe important market dynamics that drive growth for the group's business.

Market, target customers and growth drivers

The rapid digitalization of society and ecosystems is putting a lot of pressure on communication networks worldwide. It is generating an ever-growing demand for more universally available bandwidth, faster provisioning of specialized communication services and high-precision time and frequency synchronization in distributed systems.

ADVA's technologies are strategically important to the necessary network transformation, and there is an ever-growing number of applications for open optical transmission technology, programmable cloud access solutions and high-performance synchronization technologies.

The following briefly describes the key applications, target groups and growth drivers in ADVA's addressable market.

Data center interconnect for large enterprises

In a digitally networked world, enterprises depend more than ever on the integrity of their data and the availability of digital resources. There is a growing need to develop more reliable and efficient IT infrastructures, which not only protect against data loss, but also ensure that all processes run smoothly and at all locations. The loss of mission-critical information is a big threat to enterprises. System failures can result in idle staff, damage to reputation and, ultimately, lower revenues.

Due to the criticality of data and application availability, many large enterprises, research and educational institutions as well as health care providers have gone down the path of operating their own data centers connected via private fiber optic networks. Such private enterprise networks purely serve the business processes of an individual company or organization and offer a high degree of security and control. The network operation is either in the hands of the in-house IT department, or a specialized IT or communication service provider. The private IT infrastructure (private cloud) is often complemented by a partial outsourcing of less critical functions and data in external data centers, operated by a third party (public cloud). The combined use of private and public cloud solutions is called hybrid cloud, and the simultaneous use of multiple clouds is known as "multi-cloud". Cloud-based solutions have been gaining a lot of traction and will continue to spread rapidly in the corporate world.

ADVA has over 25 years of experience in the development and deployment of innovative transmission technology for data center interconnect. Many major companies from the so-called Fortune 500 league rely on ADVA's transmission technology for their business continuity and disaster recovery applications. ADVA offers a highly innovative product feature set in this market segment. The ADVA FSP 3000 supports native transmission for all data center protocols, guarantees low latency and provides additional security through the company's ConnectGuard™ encryption technology. Furthermore, ADVA has built a strong partner landscape supporting the go-to-market process.

Glossary: *page 174*

Data center interconnect for internet content providers

Internet content providers (ICP) are companies whose principal business is the creation and dissemination of digital content. The ICP community includes, for example, large internet companies such as Apple, Amazon, Facebook, Google, HP, IBM and Microsoft. These companies operate data centers of enormous proportions and are often referred to as a "hyper-scale" or "cloud-scale" operators. ICP data centers contain huge server farms. The main asset of an ICP is its digital content and the associated services.

Glossary: *page 174*

The ICP community is focused on innovation, has much experience in developing software and a pronounced do-it-yourself mentality. ICPs' main objective is optimizing costs and strengthening the performance of their portfolios. For wide-area connections between their data center sites, they often still resort to leased lines from CSPs. However, there is a trend toward more and more scenarios where ICPs rent dark fiber and equip it with their own transmission technology. Because of their size and purchasing power, ICPs are an interesting target group in the market for optical transmission equipment, promising high growth potential.

ADVA, thanks to its extensive experience in the field of data center interconnect for enterprise networks, offers many compelling product features and solutions for DCI applications (see previous section). Furthermore, the company developed a new generation of the FSP 3000 platform specialized for the ICP community. The latest version of the product is optimized for the direct interworking between data center switching and routing technology and the optical transmission link. The use of optical plugs with data rates of 400Gbit/s in combination with the FSP 3000 open line system enables lean and innovative network architecture for data center interconnect. For network applications with terminal,s ADVA offers the FSP 3000 TeraFlex™. This terminal further enhances fiber utilization and takes key performance parameters such as space and power efficiency to a new level. Thus, the FSP 3000 open line system with its choice of terminals delivers a highly compelling feature set for interconnecting hyperscale data centers for ICPs. ADVA's highly agile and innovative corporate culture makes the company an attractive partner for the ICP target group.

Transforming carrier infrastructure

Carriers are companies that are in the business of building and operating large-scale networks that they use to offer communication services to end-users or other CSPs. Besides the demand from businesses and ICPs for data center interconnect capacity, it is primarily the increasing bandwidth demand of private households which is challenging carriers, increasing the pressure to expand their network infrastructure. Drivers of bandwidth growth are mainly mobile devices, the trend to work from home and online schooling, which accelerated through the pandemic, as well as the increasing number of networked devices through the internet of things (IoT). This growth will drive a new set of requirements around network availability, latency and accessibility of computing resources. Carriers have a key role to play in building a suitable network infrastructure and digitizing ecosystems.

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In addition to industrial use cases, it is the rapid growth of video-on-demand offerings from so-called "over-the-top" providers like Netflix or Amazon Prime that is creating huge traffic loads in carrier networks. In order to guarantee good signal quality, carriers need to deliver several Mbit/s of bandwidth per household. Building and operating a network that delivers such capacity is no trivial task. Moreover, due to the adoption of higher resolution video standards and 3D technology, bandwidth demand will continue to grow relentlessly for the foreseeable future. It is to be expected that the available bandwidth per household will reach data rates of 1Gbit/s in the near future. This is more than a factor of 20 higher than the bandwidth required for a traditional broadband service today.

Glossary: *page 174*

There are several ways for service providers to deliver broadband connectivity to their customers. Traditional telecommunications companies still leverage digital subscriber line (DSL) technology to increase the capacity of their access lines (i.e., twisted pairs of copper wires), which are typically available to every household. Coaxial cables are a good alternative, typically owned by cable TV companies that are expanding their offerings to become multiple service operators (MSOs). New initiatives for fiber-to-the-home (FTTH) or fiber-to-the-building (FTTB) are rolling out, providing the ultimate bandwidth pipe. Finally, there are wireless technologies in the mix that are gaining momentum. The roll-out of the new 5G standard is progressing around the globe and being promoted aggressively. A complete, nationwide 5G build-out, however, will take several years. All these innovative new access technologies deliver significantly higher bandwidth per end user than legacy technology.

Glossary: *page 174*

For carriers, the challenge is to provide market competitive connectivity to as many customers as possible at the lowest possible cost. That means making good use of existing infrastructure, especially in the access part of the network, and intelligent investment in new technology to support growth and emerging applications.

ADVA helps carriers to simplify and automate their networks and build a scalable network infrastructure that is future-proof. By deploying the group's networking solutions, carriers can combine various traffic streams from different access technologies onto a single transport platform. In addition, ADVA offers with the FSP 3000 one of the most scalable platforms on the market, allowing seamless data transport from the customer premises to the core of the network. Thus, carriers can bypass some of the small access nodes, eliminating the expense of operating these locations.

The ability to deliver more bandwidth to more customers from fewer sites located farther back in the network enables operators to streamline their networks while simultaneously improving the end-user experience. Energy-hungry devices, which are needed for data processing, can be concentrated in fewer network locations. This is important for so-called edge computing solutions and leads to a network architecture that is more energy-efficient and easier to operate.

Transforming the network edge

Serving residential customers is, in most regions around the world, a highly competitive business with low margins for service providers. However, the pandemic-driven use of residential broadband connections to work from home and e-learning is increasing the pressure on the performance of these connections, and service providers have to upgrade their access networks. The return on investment for residential access has historically been challenging. For this reason, new state subsidy programs have been launched in many countries and regions around the world, to accelerate broadband expansion, especially in rural and underserved regions, and improve the business case for operators.

In addition, service providers are seeking to offer telecommunications services to enterprise customers and provide industrial multi-cloud solutions. Serving enterprise customers is typically more lucrative as this clientele has more stringent requirements for quality of service, network performance, network availability and security. The CSP can charge a premium for these quality attributes but needs to back the service offerings with service level agreements.

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In a digital framework, what companies need above all is high data security and speed. It is secondary whether it is a transfer of data between two company locations, an application for the company's customers or an application in the cloud. As a result, companies will pay more attention to the location of their data and connections in the future.

Also, for the internet of things (IoT), it is important how and where the three critical functions of data processing, storage and transmission work together. The resulting edge computing solutions generate their added value as much as possible by optimizing two parameters: the amount of data to be processed, and the proximity to the place where the data is collected and needed.

CSPs are in a perfect position to capitalize on the trend towards more localized functions and use their geographic footprint to their competitive advantage by creating tailor-made solutions with low signal latency and high security. Thus, the investment focus for carriers is moving to the network edge.

At the network edge, many operators deploy packet-based Carrier Ethernet technology as a unified, data-optimized transmission solution in their infrastructure. Business customers appreciate the simplicity and efficiency of the CE technology, and already know the Ethernet protocol from their local area networks. For services that address functions in higher network layers, however, network operators often rely on so-called routers and switches.

Recently, the adoption of NFV has changed the market at the network edge, and the separation between the two technology segments is disappearing. Through the virtualization of network functions, the creation of new services becomes a software-centric process, and new value-added services in higher network layers can easily be deployed over CE connections. This allows network operators to reduce the complexity of application-specific hardware in their portfolio and to offer new business models through a universal, programmable infrastructure, thus generating additional revenues. Innovative edge cloud solutions are being defined and brought to market.

In addition to connecting business customers, CSPs also use fiber-based CE solutions to backhaul traffic from mobile base stations. The success of smart phones and the associated high-speed mobile services created a bandwidth explosion. Mobile operators are now challenged to provide significantly higher bandwidth via their mobile networks without compromise on geographic coverage. Operators consequently upgrade their mobile networks and the commercial introduction of the new fifth generation (5G) mobile standard is progressing nicely. While the new mobile technologies allow the delivery of more bandwidth over the air interface to the mobile devices, operators also need to solve the backhaul challenge from base stations and radio heads to their core networks. Higher-speed backhaul today is generally implemented via fiber and optimized for data transmission supporting all the different applications. In order to make the expansion financially viable, close collaboration between wireline operators and mobile network operators with shared infrastructure will be necessary in most markets.

In the context of newer 5G technologies, not only the bandwidth in the networks increases, but also the number of antennas multiplies. This densification of radio heads requires a significant investment in the fiber optic network and 5G antenna technology as well as much more precise time and frequency synchronization throughout the network. The build-out of mobile broadband networks drives the demand for a new generation of fiber-based cloud access solutions that deliver and assure high data throughput and accurate timing information.

In summary, the investment in residential broadband access (fiber-to-the-home), the trend towards enterprise multi-cloud solutions, IoT and corresponding edge computing solutions, as well as the increase in antenna density in 5G mobile networks, are creating new market dynamics and opportunities at the network edge.

ADVA offers a highly competitive solution set in this space. The company's FSP 150 cloud access portfolio empowers service providers to provide their customers with intelligent solutions quickly and efficiently in all relevant application scenarios. The portfolio allows the creation of programmable edge cloud solutions, provisioning of virtual network functions and the definition of a universal network termination. In combination with ADVA's Ensemble software solutions, network functions can be reliably hosted and orchestrated. In mobile backhaul applications, the ADVA FSP 150 excels by delivering and assuring precise synchronization information in addition to powerful data plane performance. The network operating system Ensemble Activator on the other hand enables the use of standard low-cost hardware as so-called cell site gateways in mobile network infrastructure.

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Products

ADVA's portfolio strategy is built on a tripod of technologies:

- Open optical transmission technology
- Programmable cloud access solutions
- Precise network synchronization

Open optical transport

The ADVA FSP 3000 is a WDM-based optical networking system designed to maximize the bandwidth and service flexibility of access, metro and core networks. The modular design is highly scalable and enables high levels of network automation.

The platform impresses on the one hand with its high-performance terminals, which bundle data streams and generate transmission rates of up to 600Gbit/s per wavelength. On the other hand, through its open optical line system (OLS), which can be optimized for access, metro and long-haul applications. The combination of the platform's latest generation terminal and OLS supports transmission capacities of more than 50Tbit/s per fiber. Thanks to the FSP 3000, network operators can reduce the cost of data transmission and optimize their numerous network scenarios.

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The ADVA FSP 3000 – The open optical transport solution

Programmable cloud access solutions

The ADVA FSP 150 product family is a programmable, universal networking solution based on Carrier Ethernet technology for the so-called network edge. At the network edge, carriers worry less about the total amount of data to be transferred, but rather about a radical simplification of the logistical processes. Network operators strive to make delivery and protection of communications services faster and more flexible while implementing scalable and cost-efficient solutions to aggregate data streams.

With the introduction of NFV, more and more network functions will be realized as software applications, independent of application-centric hardware. These software applications can then be deployed centrally in a data center, or alternatively can be installed on a network termination device with integrated server functionality. With the Ensemble software framework, ADVA provides an NFV-optimized infrastructure (NFVi) that enables network operators and IT solution providers to quickly and efficiently generate, deploy and administer value-added services, regardless of the underlying hardware. For the first time, functions from higher network levels can now also be mapped onto the ADVA portfolio. As a result, the addressable application space for the company is once again significantly expanded.

Besides Ensemble Connector, a network operating system (NOS) that converts generic servers into high-performance network demarcation devices, ADVA also introduced Ensemble Activator. This NOS runs on so-called bare metal switches – again, generic hardware – which then can be turned into feature-rich network elements and used for example as cell site gateways in mobile network infrastructure.

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The ADVA FSP 150 – The programmable cloud access solution

Network synchronization

Under the Oscilloquartz brand, ADVA develops, manufactures and distributes a broad product portfolio for the synchronization of distributed systems and network elements. This portfolio covers all necessary functions and includes:

- Highly accurate, self-contained frequency sources (e.g., cesium clocks)
- Synchronization supply units (SSU)
- End-to-end solutions to synchronize 3G, 4G (LTE and LTE-Advanced) and 5G networks via a packet-based infrastructure
- Global navigation satellite system (GNSS) receivers
- Network timing protocol (NTP) solutions (standalone or integrated in SSUs)
- Network management solutions

In addition to the constantly increasing demands on the precision of time and frequency, there is also a trend towards miniaturization. Also in this area, Oscilloquartz has an industry-leading portfolio, including a unique plug-in reference device in the so-called SFP form factor.

The most important use cases for the Oscilloquartz technology include the provision of high-precision frequency and time information for 5G mobile networks, timing for power utilities to synchronize their decentralized power generation and so-called smart grid solutions, and the synchronization of globally dispersed server farms in the internet economy. The Oscilloquartz portfolio also offers protection against failures or attacks on the global navigation satellite systems (GNSS). Due to the terrestrial delivery of synchronization signals, critical infrastructure is less vulnerable to GNSS outages.

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Oscilloquartz – Precise network synchronization

Professional services

In addition to open and programmable networking technology, ADVA offers a variety of services that help the company's customers plan, operate and maintain their networks. This service portfolio includes a network operation center (NOC) from which experts handle network operations for customers.

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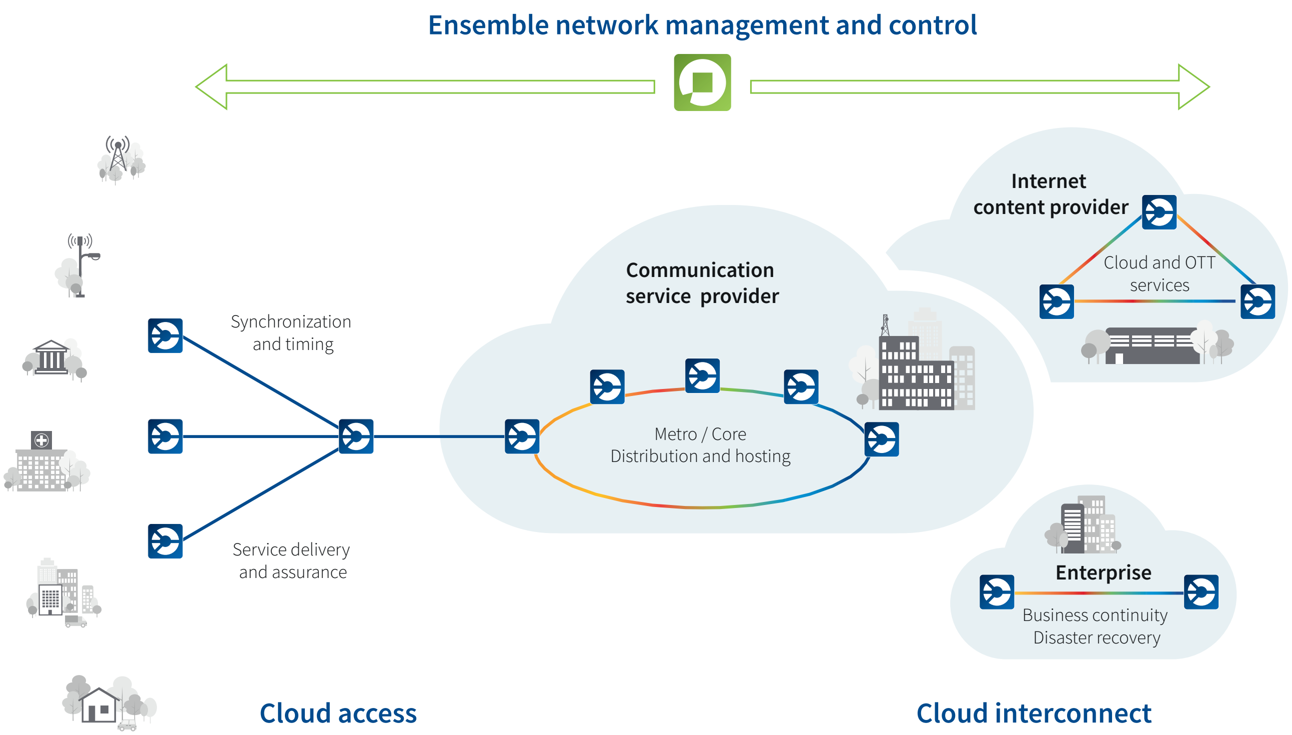

Regions, sales and marketing

ADVA sells its products to a broad customer base worldwide, either through distribution partners or its own direct sales force. In 2021, the company successfully developed its worldwide customer base and won new customers in all regions.

Regions

The EMEA region covers Europe, the Middle East and Africa. In this region, ADVA has a very balanced mix of customers of various sizes and can rely on a powerful network of value-added reseller partners to support the sales of the area. In 2021, EMEA was again the strongest region for the company. Year-over-year EMEA revenues increased significantly and contributed 63.2 % to the group's total revenues.

The Americas region covers North America and Latin America. In 2021, the Americas were the second strongest revenue-generating region behind EMEA, delivering 27.5 % of total revenues. As the world's largest economy with enormous geographical expansion and home of the world's largest internet content providers, the USA is a demanding market for networking technology with great revenue potential. ADVA is well positioned in this region.

The Asia-Pacific region followed in third place. APAC includes Australia, New Zealand, China, India, Japan and Southeast Asia. ADVA is focused on select countries and applications in this region and only has a few larger accounts that guarantee sustainable and recurring revenues. The revenue contribution from the APAC region is therefore volatile and accounted for 9.3 % of total sales in 2021.

Employees: **1,973** (1,870)*

Revenue: **EUR 603.3** (565.0) million

Americas	EMEA	Asia-Pacific
432 (410)	1,300 (1,255)	241 (235)
EUR 166.0 (201.6) million	EUR 381.3 (308.8) million	EUR 56.0 (54.6) million

* Total number at year-end 2021 (2020 in brackets)

Sales

ADVA continues to employ a well-balanced sales strategy to maximize customer reach around the world:

Direct sales

The group continues to develop on its direct-touch initiative as well as its direct sales force to win new customers. Establishing direct contact with enterprises and carriers enables ADVA to work more closely and better understand customers' specific requirements, which in turn helps to develop the right products and solutions. A direct sales approach is required in particular to address ICPs and strategically important communication service providers.

Partner sales

Sales partners of ADVA include global system integrators such as IBM, Kyndryl, Dell and NEC, OEM partners such as Fujitsu Network Communications (FNC) and so-called value-added resellers (VARs). Especially in the case of large enterprise networks and carriers, the company works closely with the sales partners during the planning and consulting phase and is intensively involved in the development of an optimal solution for the customer. Technical support after commissioning is generally performed by the partners. ADVA's Partner Ecosphere Program (PEP) ensures that sales partners have intensive training courses for their staff, quick and easy access to equipment engineering and high-quality support for projects.

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Marketing

Direct-touch efforts are proactively supported by the marketing team to build the ADVA brand and to expand visibility of the entire product portfolio. Specific marketing activities include regular participation in tradeshows and conferences, tactical online advertising, news coverage and bylined articles in trade publications.

The Covid-19-related travel and contact restrictions continued to significantly disrupt ADVA's trade show and conference plans. The company, however, developed innovative digital marketing concepts and virtual event formats, to continue a regular and creative engagement with customers and partners. ADVA supports co-marketing efforts with its partners and delivers regular e-newsletters to customers and partners. The group also maintains a dynamic and active online presence, including an influential, popular blog and social media outreach on multiple platforms.

In addition, ADVA has continued to engage in marketing alliances with various global network solution providers. Of particular importance are the numerous interoperability tests, especially in the field of NFV, which ADVA is conducting with its technology partners in order to demonstrate the seamless interaction of the different systems. In the area of NFV, the company has established a global network of technology partners around its Harmony program to ensure the seamless operation of virtualized network functions.

ADVA's brand promise can be summarized by three headlines: "Innovation," "Speed for customers" and "Trusted partner." The combination of these three elements makes ADVA a unique and differentiated player in the industry.

DevOps

Organizational setup

ADVA takes an advanced approach to development and operations. In order to further optimize product quality, manufacturability and time to market, these traditionally separate areas are tightly integrated with cross-functional teams working closely across the entire system. DevOps and the business lifecycle (BLC) organization form the two main units in the organizational setup.

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The DevOps team covers products from the cradle to the grave. Its goal is to ensure consistently high quality and to routinely deliver the right product to the customer in the shortest possible time.

The BLC organization is ADVA's move into next-generation, automated manufacturing, supply chain management, sales and operations planning (S&OP), logistics and reverse logistics.

Another unit, the Advanced Technology Team, continues to identify new areas of long-term innovation. It drives research projects and explores potential avenues for feasibility analysis and proofs of concept.

DevOps

As the term suggests, DevOps refers to a combined approach to development and operations. DevOps is a model that has successfully been used in software development firms. ADVA has translated this model into a combined hardware plus software R&D environment. By adopting this model, ADVA is encouraging communication, collaboration and shared goals across cross-functional teams in all business areas. With a set of modern processes and systems being adopted by the whole team, the aim is to improve quality at all stages of the development lifecycle by enabling fast feedback loops and rapidly changing systems.

ADVA implemented a fully integrated, value-stream oriented DevOps model of organization involving product management, R&D and new product introduction – lifecycle engineering and quality management. It also developed a merged approach to system verification testing, network engineering and customer application testing. This setup allows a smooth and efficient integration of new products to existing portfolios.

ADVA is also developing its own differentiated optical sub-modules which will enable it to tailor solutions more closely to individual customer needs for a more vertically integrated value chain. The commercially successful MicroMux™ modules, for example, are a tangible result of these activities. These modules significantly expand the capabilities of the FSP 3000 and can also be used in third-party devices.

In addition, ADVA expanded its activities in the photonic integration area and launched development projects for highly integrated optical components/modules with the objective of reducing product cost and increasing product differentiation.

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The company's differentiated product offering is the result of its DevOps set up. Innovation ensures ADVA's position as a global technology leader in important growth markets. The company continues to evolve its leading intellectual property rights portfolio, which currently (status December 31, 2021) includes more than 450 granted individual patents in 197 patent families.

As a member of all key industry standardization groups, ADVA also makes significant contributions to the development of standards. The company demonstrates technology leadership through multiple publications and presentations. Through new technology trials and the development of early prototypes, ADVA plays a significant role in validating innovative ideas and concepts. Strategies are developed in close cooperation with partners, including suppliers and colleagues in research centers and universities. Many collaborative projects are conducted in conjunction with partner organizations.

The DevOps teams innovate in the areas of optics, Ethernet, data encryption, network management software, fiber assurance as well as network virtualization and network synchronization (under the Oscilloquartz brand).

The company holistically evolves its organization further by embracing DevOps strategies for both hardware and software, always with the customer as the central focus.

BLC organization

As technology and the demands of customers change over time, business approaches need to constantly evolve and adapt. ADVA's business lifecycle planning involves identifying the wishes and needs of actual and future customers. Requirements for product features, as well as delivery and service activities, are then determined. Challenges are reviewed prior to giving a final commitment to supply products and/or services. This approach ensures that requirements are clearly defined and understood, potential issues are resolved and ADVA is able to meet and exceed customer expectations. The BLC organization is clearly centered on the customer.

"Speed for customers" is a key promise of the ADVA brand. This promise is directly reflected in the way the company aligns its supply chain management and sales & operations teams. Intelligent IT tooling creates full transparency along the entire value chain, leading to better forecasting, material planning, shorter delivery times and higher inventory turnover.

In the areas of manufacturing, logistics and reverse logistics, ADVA has developed over the years a tightly integrated approach with two best-in-class, global Tier 1 EMS partners. The production system and degree of automation have been continuously optimized. The global EMS providers are now taking over the entire value chain from material purchasing, PCB assembly and final assembly, software loading and functional testing to storage and distribution logistics. Colocated ADVA experts monitor the results of the individual production and testing steps using remote shop floor control systems and ensure efficient communication between ADVA's development centers and the manufacturing partners. The fast and immediate feedback on manufacturability (design for manufacturing, DfM) leads to short time to market (TtM) and ensures a very high product quality at a competitive cost. Today ADVA can transfer the production of selected products between manufacturing partners' sister locations within eight weeks. The manufacturing system can thus react dynamically to intensifying global trade conflicts and minimize tariffs and penalties in the interest of customers. As early as 2019, ADVA started to transfer manufacturing lines for products sold in the US from China to other countries to minimize the negative impact of the US government-imposed import duties and respond to the increasingly skeptical view of the world on China's geopolitical agenda.

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ADVA keeps increasing transactional efficiency through automation and robotics wherever possible, both in house and at the EMS sites.

ADVA's in-house experts focus on creating customer value in the areas of network staging, quality and the expansion of the award-winning portfolio of logistics services.

This portfolio is founded on a groundbreaking supply chain model with the following key components:

- Dispatch of materials directly to installation sites precisely when needed
- Refurbishment and recycling of materials returned by customers
- ADVA's radical approach to collaborating with customers on planning to maximize flexibility

The company's strategic procurement team has established rigorous processes for supplier onboarding, supplier performance and stringent component cost management. Procurement is closely integrated with the R&D teams to negotiate volume pricing in the product design phase and assure lowest product cost later in the product lifecycle.

Due to the global supply shortages of semiconductors and other important parts and components, 2021 was extremely demanding and challenging in the areas of planning, purchasing, logistics and warehousing. Nevertheless, our teams were able to largely maintain ADVA's ability to deliver products and find good solutions in close cooperation with customers.

It is important to note that requirement planning, supply chain management, forward and reverse logistics and ADVA's broad range of service offerings are all fully supported by one common and highly integrated business application infrastructure. Its main constituents are enterprise resource planning (ERP), product data management (PDM) and customer relationship management (CRM). This integrated transactional platform is the key to organizational efficiency and is constantly being enhanced by a team of application analysts using agile project management methods. ADVA's operating principle is to move any acquisition fully onto the company's process and organizational setup in less than six months. Fast and decisive integration are key to unleashing operational synergies and scale.

Tracy Bond

"By motivating and empowering one another, we continue to push the boundaries of possibility for open networking. Together we're driving digitization and adding new value for our customers and our communities."

Quality management

ADVA strives to deliver world-class quality in all areas. From research and development, through production and supply chain management, all the way to post-sales technical support, quality management is crucial to maintaining the company's reputation as a trusted partner and its position as a quality leader in the marketplace. ADVA's quality management system is based on carefully controlled business processes and dynamic, continuous improvement. To ensure high-quality products, customer satisfaction and sustainability, it takes a top-down approach and its quality management team reports directly to the executive management. To eliminate weaknesses in all areas, ADVA's quality management team also deals with cross-functional quality planning and monitoring.

In 2021, ADVA undertook its surveillance audit according to the international telecommunications quality management standards TL 9000:R6.3/R5.7 and ISO 9001:2015 as well as ISO 22301:2019 business continuity management, ISO 14001:2015 for environmental management and ISO 50001:2018 for energy management. Once again, ADVA passed with outstanding results.

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ADVA takes a holistic approach to quality assurance. This begins with a clear focus on optimizing product development, continues into excellence in operations through close collaboration with our suppliers and manufacturing partners, and continues into the shipping of products to customers and the provision of technical support. Regarding operation activities, supplier quality is a vitally important component of quality management. Compliance with stringent quality standards and continued improvement are ensured through thorough selection of suppliers, periodic evaluation through audits and systematic inspection of incoming goods. This is also supported by cross-functional commodity teams and the ever-increasing involvement of ADVA's suppliers in the development process.

Compliance with ADVA's quality management process is driven by the quality management team, which takes a proactive approach to problem solving as well as to advanced quality planning for new products in development and optimization of business processes across the entire value chain. ADVA's quality management process is underpinned by strong customer orientation and a clear focus on customer experience. This results in greater efficiency and high customer satisfaction ratings. ADVA's Net Promoter Score in 2021 showed a very good 48 %, close to the 2020 value of 50 %. Given the material shortage of 2021, this assessment appears all the more positive and is additionally based on the improvement program that has been ongoing since 2019.

To identify weaknesses and opportunities in order to optimize cross-functional business processes, ADVA reviews outcomes based on Lean Six Sigma methodologies. This ensures all aspects of the business can be measured and analyzed so that waste can be eliminated from every process.

In 2021, we continued to see strong product quality performance against both external TL9000 metrics as well as strict internal company targets. Year-over-year hardware failure trends were lower across all product areas and consistently below industry averages when measuring all relevant metrics such as Early Return Indicator (ERI), Yearly Return Rate (YRR), Long Term Rate (LTR). A new TL 9000 software metric, Early Software Problem Reports (eSPR), was introduced in 2021 and we are performing in-line with industry averages across all represented product areas. Software quality is a primary focus for 2022 and Customer Satisfaction survey results are being evaluated to identify performance opportunities.

TIA (formerly the QuEST Forum), the global organization dedicated to quality and sustainability in the ICT community, has praised ADVA for having "developed a culture of continuous improvement in many areas." Members of ADVA's quality management team continue to share best practices at TIA events around the world.

Arie Attali

"Team spirit is one of our key strengths. It enables us to support and develop one another as we work together to expand the edge of possibility."

IT strategy

Global crises such as the Covid-19 pandemic highlight how much business continuity depends on a modern IT infrastructure. ADVA's continuous investments in recent years in digitization and the targeted use of new IT services and innovative technologies have therefore paid off. Thanks in particular to targeted investments in the digital workplace, the company was already well prepared before the crisis with a team accostumed to use collaboration tools for communication and working both internally and externally.

Today, important business processes and major changes, such as those resulting from acquisitions, or crises must be quickly merged into the company's existing IT infrastructure and application framework, enabling the transition from an infrastructure-oriented, purely cost-driven organization to a business-service-oriented organization.

In the digital age, IT services are becoming a differentiator and an enabler of new business models. The growing need for agility to stay competitive and to be more efficient across organizational borders demands a paradigm shift and the adoption of new practices.

ADVA's IT team is well aware of the disruptive market changes caused by digitalization. Through its business-process and applications teams, ADVA has been taking targeted action since 2017 to successfully manage its digital transformation and move towards its goal of harnessing automation and becoming a digital leader in the industry.

The data center has evolved a great deal in recent years due to the growth in cloud technology. The move to software-defined networking and storage architecture has enabled ADVA to quickly provision new IT services. The company is also changing its internal service structure to benchmark service costs with cloud services. This allows it to quickly decide where to move services in a hybrid cloud environment.

In addition to the excellent unified IT infrastructure, ADVA benefits from its highly integrated and standardized applications landscape, which enables it to integrate acquisitions within just a few months.

ADVA's vision of IT in the future is characterized by the following points:

- **Data analytics center of excellence (CoE)**
  Establishing this CoE enables the company to build up and bundle analytics capabilities under one common platform
- **Robotic process automation (RPA)**
  This involves the automation of routine business practices with "software robots" that perform recurring tasks automatically
- **IoT platform**
  Allows ADVA to connect with customer network management systems for the purpose of identifying, coordinating, prototyping, and implementing digital business models and services related to IoT topics as well as using artificial intelligence and machine learning technology to support customers and internal business units with predictive maintenance and advanced data visualization
- **Collaboration platforms (Enterprise 2.0)**
  Collaboration between different departments as well as external partners, suppliers and customers is a key requirement. ADVA's IT team continues to evolve the company's collaboration platform, combining the newest on-premises and cloud solutions into one core platform
- **Unified communication**
  A state-of-the-art communication platform allows ADVA employees to quickly communicate and exchange information on any device, helping the company to drive team innovation across sites
- **Advanced security**
  Extended rights management and encryption protects critical business information and personal data. ADVA uses cloud-based machine learning and AI to identify threats to its environment; extended multifactor authentication simplifies access to ADVA data for employees
- **Hybrid cloud**
  ADVA extends its hybrid cloud to support all R&D software development processes with a cost-optimized solution

Going forward, ADVA's IT team will continue to analyze and rapidly incorporate any new technology trends that can benefit the company's service offerings. Emerging trends like microservices and robotic process automation have already been implemented in several pilot projects and will allow ADVA to become even more agile. This will also help the company to control and adjust service cost.

Compliance and sustainability

Corporate ethics and compliance

Integrity and ethical decision making are central requirements for the sustainable success of ADVA. The group recognizes its responsibility to comply with national and international laws and regulations, internal policies and ethical standards – otherwise known as compliance. Its commitment to compliance is continuously communicated and reinforced not only by the management board but also by the group's (line) managers. It is based on ADVA's core values, which translate into a holistic code of conduct and a range of group-wide policies that govern the group's business operations and are mandatory for all employees to follow.

ADVA's code of conduct and group-wide policies are embedded into a robust compliance management system, which is structured according to the legal requirements and best practices of the group's key countries of operation, as well as common international standards. The following elements are covered:

- Strong "tone from the top"
- Periodic risk assessments
- Proportionate risk-mitigating processes and controls
- Periodic compliance training and regular communication
- Means for in-person as well as anonymous reporting
- Proportionate responses to compliance violations
- Continuous improvement of all compliance procedures

The group's compliance management system is supported by a central compliance department and currently six regional compliance officers. Activities are coordinated by ADVA's chief compliance officer who reports to the chief executive officer and the supervisory board. Whenever employees have questions or suggestions related to compliance or suspect incidents of non-compliance, they are encouraged to speak up. In addition to clearly defined and actively communicated internal points of contact, an external ombudsman (this role is currently covered by Frank Fischer, tax lawyer and former member of ADVA's supervisory board) and an externally operated ethics and compliance helpline enable confidential and anonymous reporting.

Sustainability

ADVA's commitment to ethical decision making extends to the group's operations and products. Related activities are typically referred to as sustainability. The importance of sustainability for ADVA is best illustrated by the group's successful track record in the related areas. To continuously strengthen the group's sustainability record, a dedicated sustainability department with a direct reporting line to the group's chief technology officer is in place.

ADVA's sustainability program is based on a holistic model covering the range of all related aspects. It is shown in the following diagram:

The outlined model has been jointly developed by British Telecom and the QuEST Forum, the body which defines the TL 9000 as the telecommunication industry's version of the international quality standard ISO 9001. It is meanwhile further maintained by the Telecommunications Industry Association. Therefore, it is used by several large network operators and system vendors worldwide for assessments or self-assessments of performance across the different sustainability segments. In 2021, ADVA achieved its fifth consecutive "Gold" ranking according to this model.

Furthermore, the group is regularly assessed regarding its sustainability performance by independent bodies like EcoVadis and the Carbon Disclosure Project (CDP). In 2021, the group achieved its second consecutive "Platinum" ranking in the EcoVadis assessment, following three "Gold" ratings from 2017 to 2019, putting ADVA in the top 1 % of companies ranked by that platform.

In order to further strengthen the group's sustainability strategy and efforts, ADVA joined the Science-Based Targets Initiative (SBTi) in 2016 as one of the first 200 companies worldwide and one of the first 10 German companies. SBTi is a joint initiative by CDP, UN Global Compact, the World Resources Institute and the WWF. In 2020, we tightened our targets even more, going beyond the original commitment aligned with 2°C maximum global warming, and setting targets aimed at a limit of 1.5°C. The new targets have been officially adopted.

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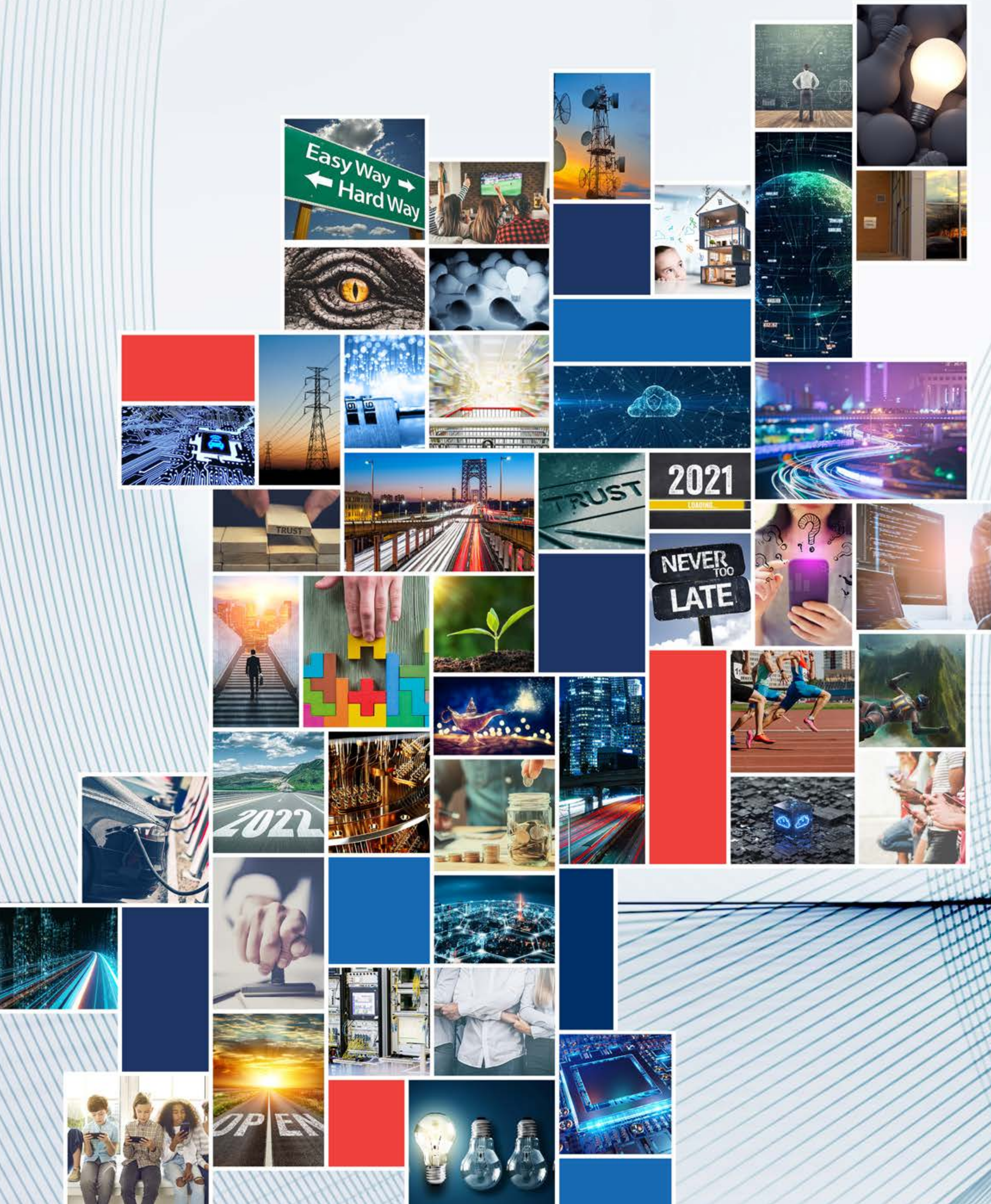
Finally, details regarding the group's sustainability program, performance and indicators are also summarized in ADVA's annual sustainability report, which is based on the non-financial reporting requirements of the German Commercial Code (HGB) and the German CSR Directive Implementation Act. The sustainability report is publicly available in German and English on the group's website www.adva.com.

Katie Marshall
Danijela Ljubić

"Our ADVA events are a great example of what we can achieve together. Drawing on the expertise and energy of so many of the ADVA team, we were able to guide our partners through the opportunities and challenges of digitalization in a fun and engaging way."


Easy Way
Hard Way
TRUST
TRUST
2021
NEVER TOO LATE
2022
OPEN

Combined management report

Disclaimer:
Potential inconsistencies in the table values are based on rounding differences.

Basis of preparation

This report combines the group management report of ADVA Optical Networking group ("the group", "ADVA Optical Networking" or "ADVA"), comprising ADVA Optical Networking SE (hereafter also referred to as "the company", "ADVA Optical Networking SE" or "ADVA SE") and its consolidated subsidiaries, and the management report of ADVA Optical Networking SE.

The combined management report of ADVA Optical Networking SE was prepared in accordance with sections 289, 315 and 315e of the German Commercial Code (Handelsgesetzbuch, HGB) and German Accounting Standards (Deutsche Rechnungslegungsstandards) No. 17 and 20 (DRS 17 and 20).

All information contained in this report relates to the status on December 31, 2021, or the financial year ending on that date, unless stated otherwise.

Forward-looking statements

The combined management report of ADVA Optical Networking SE contains forward-looking statements using words such as "believes", "anticipates" and "expects" to describe expected revenues, costs and earnings, anticipated demand for optical networking solutions and anticipated liquidity from which internal estimates may be inferred. These forward-looking statements are based on the beliefs of the management board and respective assumptions made, and involve a number of unknown risks, uncertainties and other factors, many of which are beyond ADVA Optical Networking's control. If one or more of these uncertainties or risks materializes, or if the underlying assumptions of the management board prove incorrect, actual results can differ materially from those described in or inferred from forward-looking statements and information. Unknown risks and uncertainties are discussed in the "risk and opportunity report" section further below.

Strategy and control design

ADVA's strategic goals are focused on growth and profitability, innovation, operational excellence, customer experience and people. The strategic goals are reviewed by both the management board and the supervisory board on a yearly basis and amended where appropriate. Each of these goals are defined in detail and then broken down into specific departmental and individual targets. The strategic goals are traced to each individual employee so that each employee can focus and be evaluated on his/her individual performance and contribution to ADVA Optical Networking's overall performance.

ADVA measures the accomplishment of its strategic goals against revenues, pro forma EBIT➲, net cash➲ and as a non-financial criterion customer experience measured by the net promoter score➲. These metrics represent the group's key performance indicators. The management board sets target values for all four metrics for the coming year and measures actual values against the target values on a monthly basis for revenues and pro forma EBIT, on a quarterly basis for net cash and on a yearly basis for the net promoter score. In case of deviations from plan, corrective action can be taken quickly. This information is summarized and communicated to the management board in monthly, quarterly and yearly reports. There are no separate key performance indicators and corresponding forecast values for ADVA SE.

ADVA presented its business transformation strategy for the first time in the first quarter of 2021. This strategy aims to sustainably improve the margin profile of ADVA's business model and is essentially based on the following three pillars:

- Increase revenues outside of the traditional communication service provider space to 40 % by the end of 2023.
- Increase revenue contribution from the areas of software and services to 30 % by the end of 2023.
- Access new markets and revenue contribution, as well as cost reduction from increased verticalization➲ activities, from the development and production of optoelectronic➲ components.

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General economic and market conditions

The global economy at the beginning of 2022

In its most recent World Economic Outlook (WEO), the International Monetary Fund (IMF) updated its forecasts for changes in the economic output of nations and regions and mostly lowered them compared to the last forecast from October 2021. The October 2021 edition of the WEO, provided the following view on the state of the global economy:

The IMF expects the global economy to grow by 4.4 %, 1.5 percentage points down compared to 2021. Compared to its October 2021 edition, the IMF has reduced its forecasts for the USA particularly significantly. There, the IMF estimates a reduction in economic growth of 1.6 percentage points to 4.0 %. For the euro zone, the IMF expects growth of 3.9 %, which is 1.3 percentage points down compared to 2021. According to the IMF, China will grow at 4.8 %, down by 3.3 percentage points compared to 2021. According to the IMF, the global economy continues to suffer from numerous restrictions, including disrupted supply chains in many places. In addition, rising energy prices and supply disruptions have led to higher and broader than expected inflation, particularly in the USA and many emerging and developing countries. According to the IMF, the ongoing downsizing of the Chinese real estate sector and the slower than expected recovery in private consumption also result in limited growth prospects.

Most economists and central banks confirm this view and expect inflation to fall substantially in the course of 2022, following the sharp rise in inflation last year. This outlook is based on the assumption that energy costs will increase far less than in 2021 and that the semiconductor crisis will lessen over the course of the year. However, if the price pressure does not improve significantly, central banks around the world could feel compelled to slow down the economic recovery by significantly raising interest rates.

In addition, economic experts from various banks are predicting that the global Covid-19 pandemic could gradually become less severe in 2022, despite the current increase in the number of infections. If the indications are confirmed that the Omicron variant is milder than the Delta variant, experts expect the pandemic to slow down, particularly from Q2 2022.

With a view to Germany and the euro zone, leading economic experts assume that inflation will normalize over the course of the year above the pre-crisis level and will therefore fall more slowly than initially assumed. This is partly due to the higher underlying pace of inflation. The most recently published inflation data turned out to be significantly higher than expected. The inflation rate for the euro area in November and December was up 0.4 and 0.2 percentage points compared to the earlier expectations of the economists surveyed. In addition, the euro zone is likely to be affected by the increase in material prices for months to come.

According to economic experts, the picture for the USA looks much more drastic. Commerzbank raises US core inflation forecast to 4.9 % from 4.0 %. According to Commerzbank, the economy is overheated due to Covid-19 aid and a loose monetary policy. In addition, the labor cost index ECI has risen significantly. Furthermore, it is no longer just the prices of individual goods related to Covid-19 that are rising. Rather, consumer prices are increasing across the board.

The pandemic, which has been going on for two years now, has once again illustrated the importance of an efficient telecommunications infrastructure. Despite all the challenges to the stability of the supply chain, ADVA has proven its strong market position in one of its most successful business years. The main challenges for the new fiscal year are the global shortage of semiconductors and sharply rising prices. Europe and EMEA are major sales markets for ADVA - so the global development of the pandemic and the impact on the global economy are relevant. However, the network equipment industry has proven to be less susceptible to recessionary trends. In 2021, ADVA tackled Covid-19-related challenges and the global shortage of semiconductors very well and the company is confident that it will be able to supply its customers with innovative high-quality solutions in a timely manner in 2022.

Market environment for ADVA

The addressable market for ADVA is determined by the digitization of ecosystems and the resulting increasing demand for cloud-based solutions and underlying communication networks. The rapid adoption of digital processes in all industrial sectors, the creation and use of artificial intelligence and the ubiquitous consumption of high-resolution videos via mobile and fixed networks are important and sustainable growth drivers for the market. Recent developments such as the increased use of home office, home schooling and video conferencing are currently accelerating investments in network expansion. State stimulus and support programs create an additional positive dynamic.

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For many years, the communications network supplier industry was characterized by a tension between high development costs and tough competition. This has led to strong selection among manufacturers, and only a few suppliers have been able to hold their own. Market participants with insufficient innovation power or loss-making business models have now largely disappeared from the scene. This has led to market upheaval. In addition, the Covid-19 pandemic has changed perspectives on the importance of network infrastructure. Politics and business have recognized the importance to companies and economies of an efficient communication infrastructure for digital cooperation and virtual collaboration. We are also experiencing security and trust becoming increasingly important in the market environment. As a result of increased security concerns, numerous manufacturers from the Far East are currently being pushed back from the western networks.

In recent years, ADVA has consistently invested in the development of innovative solutions and has brought excellent solutions in the field of secure data transmission to the market. ADVA's network technology enables the construction of a high-performance communication infrastructure that serves as the basis for the digital economy, the industrial internet of things (industrial IoT) – often referred to as Industry 4.0 in Germany – and the digitization of ecosystems. The company addresses important applications in this growth market. Fiber optic transmission technology delivers scalable bandwidth for network operators' infrastructure and the data center interconnect (DCI) networks of large enterprises and internet content providers. In the access area of the networks (network edge), the new technology with virtualization enables fast and flexible provision of cloud services and new possibilities for creating edge computing solutions. In addition, the company's synchronization technology provides timing information that is of the utmost importance when building broadband 5G mobile networks, globally distributed data centers and for energy suppliers.

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ADVA is well positioned in several areas of the WDM market, the core segment of the overall optical networking hardware market. The adjacent market for Ethernet-based network access solutions is gaining new momentum with the introduction of virtualized network features. Here, the company's solutions can address more and more new growth applications and open up additional opportunities. Finally, ADVA provides differentiated network synchronization solutions for mobile networks and expands the feature set of its portfolio to address timing requirements for other industries. The total addressable market for ADVA is estimated to be USD 10,7 billion* in 2021, growing to USD 12 billion by 2025 while the possible additional opportunities resulting from the shift from Asian suppliers (especially Huawei) to European suppliers are not quantified (see also the chapter "market, target customers and growth drivers").

* World market excluding China for Metro and Backbone WDM (Omdia, "Optical Networks Forecast", published May 2021), Access Switching and Ethernet Demarcation, (Omdia: "Service Provider Switching and Routing Forecast", January 2022) and network synchronization (ADVA own estimates)

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Business development and operational performance of the group

Revenues

Revenues represent one of the four key performance indicators for ADVA. In 2021, the group generated revenues of EUR 603.3 million, an increase of 6.8 % on revenues of EUR 565.0 million in 2020. ADVA was able to grow in the mid single-digit percentage range despite the ongoing challenges caused by the pandemic as well as global supply bottlenecks and material shortages in the semiconductor industry. Demand rose sharply, particularly in the market areas of telecommunications service providers and enterprise customers, with the focus being on optical transport solutions. The group reported revenues of EUR 157.7 million in Q4 2021. This corresponds to an increase of 3.9 % compared to Q3 2021 and of 12.2 % compared to Q4 2020 and results in particular from the above-mentioned high demand from telecommunications service providers, particularly in the area of cloud access solutions.

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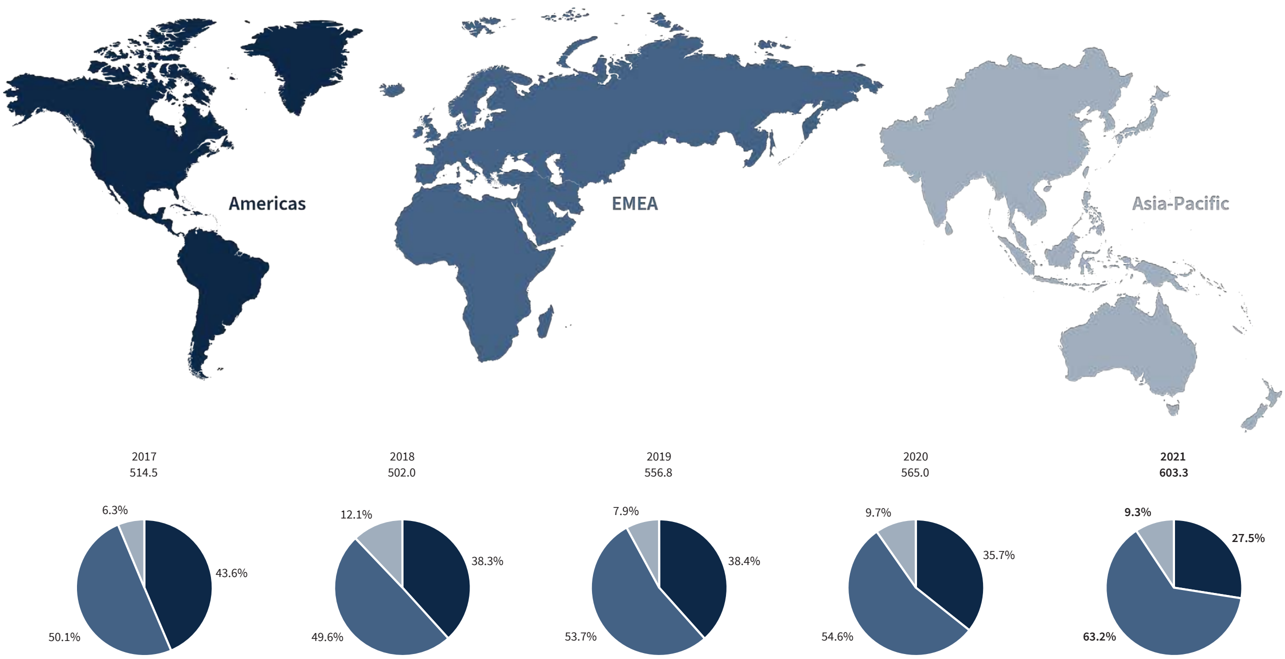
Revenues by region

(in millions of EUR and relative to total revenues)



In 2021, EMEA (Europe, Middle East and Africa) was again the most significant sales region, followed by the Americas and Asia-Pacific.

Year-over-year, EMEA revenues of EUR 381.3 million in 2021 were up from EUR 308.8 million in 2020. ADVA is strong in this region, using its mature partner strategy and achieving very good results thanks to a broad and loyal customer base. The substantial growth of 23.5 % compared to the previous year is due, among other things, to government related business. This is an essential contribution to the implementation of the business transformation strategy.

In the Americas region, revenues decreased from EUR 201.6 million in 2020 to EUR 166.0 million in 2021. This is particularly due to the temporary softness of some major customers. In addition, US dollar denominated revenues were significantly lower due to the weaker US dollar.

In Asia-Pacific, revenues increased from EUR 54.6 million in 2020 to EUR 56.0 million in 2021. The region is predominated by project-based business, leading to greater fluctuations in individual periods.

Results of operations

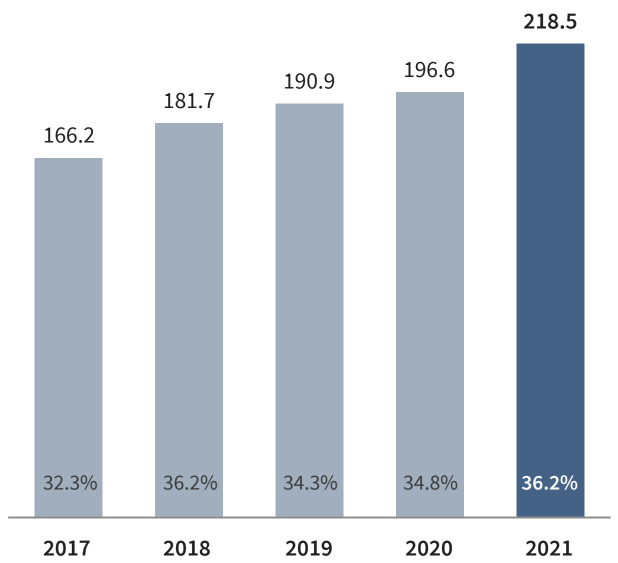
(in millions of EUR, except earnings per share)	2021	Portion of revenues	2020	Portion of revenues
Revenues	**603.3**	**100.0 %**	**565.0**	**100.0 %**
Cost of goods sold	(384.8)	63.8 %	(368.4)	65.2 %
Gross profit	**218.5**	**36.2 %**	**196.6**	**34.8 %**
Selling and marketing expenses	(62.9)	10.4 %	(60.8)	10.8 %
General and administrative expenses	(38.8)	6.4 %	(35.9)	6.4 %
Research and development expenses	(76.7)	12.7 %	(75.0)	13.3 %
Other operating income and expenses, net	5.2	0.9 %	2.6	0.5 %
Operating income	**45.3**	**7.5 %**	**27.5**	**4.9 %**
Interest income and expenses, net	(1.7)	0.3 %	(2.6)	0.5 %
Other financial gains and losses, net	2.6	0.4 %	(0.1)	— %
Income before tax	**46.2**	**7.7 %**	**24.8**	**4.4 %**
Income tax expense (benefit), net	13.0	2.2 %	(4.5)	0.8 %
Net income	**59.2**	**9.8 %**	**20.3**	**3.6 %**
Earnings per share (in EUR)				
basic	1.17		0.40	
diluted	1.15		0.40	

Cost of goods sold and gross profit

Cost of goods sold increased from EUR 368.4 million in 2020 to EUR 384.8 million in 2021, primarily due to the higher revenues. Cost of goods sold includes amortization charges for capitalized development projects of EUR 43.3 million in 2021 after EUR 37.3 million in 2020.

Gross profit

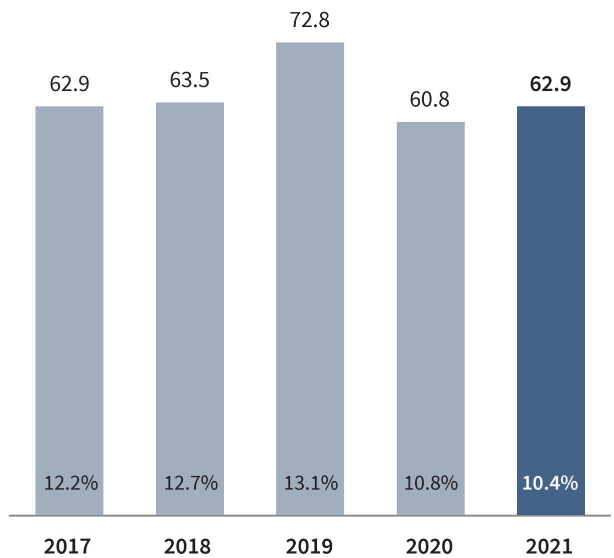
(in millions of EUR and relative to total revenues)



Gross profit improved to EUR 218.5 million in 2021 after EUR 196.6 million in 2020, comprising 36.2 % and 34.8 % of revenues, respectively. The group's gross margin in 2021 benefited from increased high-margin sales under the business transformation strategy. In addition, the USD devaluation against the euro had an increasing effect on the gross margin, as a significant portion of the cost of goods sold is incurred in this currency. In general, the development of the group's gross margin is impacted by variations in regional revenue distribution and in product and customer mix.

Selling and marketing expenses

(in millions of EUR and relative to total revenues)

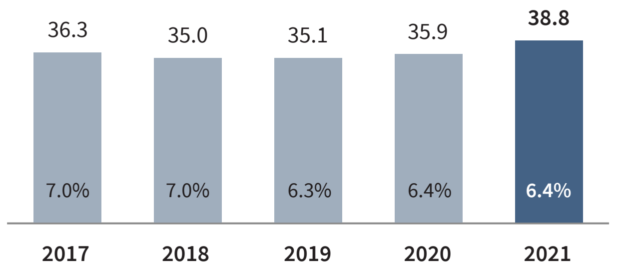


Selling and marketing expenses of EUR 62.9 million in 2021 were up from EUR 60.8 million in 2020 and comprised 10.4 % and 10.8 % of revenues, respectively. This increase is mainly attributable to higher personnel expenses relating to the increased revenues and order entries in 2021.

ADVA continues to focus on after-sales customer service and direct-touch activities with those key customers served via indirect distribution channels. Establishing direct contact enables the group to work more closely with its end customers and better understand their specific requirements, which in turn helps in developing market-relevant products.

General and administrative expenses

(in millions of EUR and relative to total revenues)

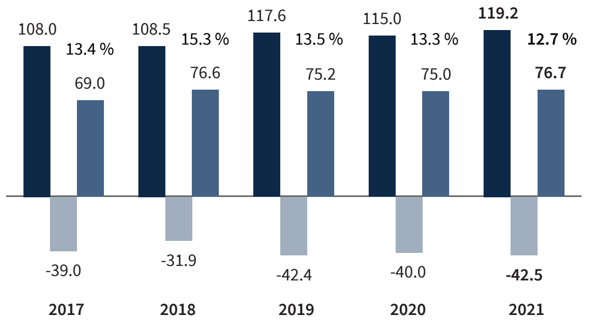


General and administrative expenses were at EUR 38.8 million in 2021 and up from EUR 35.9 million recorded in 2020. The share of total revenues was at 6.4 % in both periods. The absolute increase in general and administrative expenses results in particular from higher expenses for legal and consulting services in connection with the planned business combination with ADTRAN Inc., Huntsville, ALA, USA.

"It's the people in our team that set us apart. Their motivation, accountability and imagination inspire me every day."

Research and development expenses

(in millions of EUR and relative to total revenues)



Net research and development expenses of EUR 76.7 million were up from EUR 75.0 million reported in 2020, thereby constituting 12.7 % of revenues in 2021 after 13.3 % in the prior year. Capitalization of development expenses of EUR 42.5 million in 2021 were above the EUR 40.0 million seen in 2020. The capitalization rate in 2021 amounted to 35.6 % (prior year: 34.8 %).

ADVA's research and development activities are driven by the distinct emphasis on differentiating its innovative connectivity solutions for cloud and mobile services and working with customers and partners to identify and meet their current and future needs. The resulting key technologies and products simplify complicated existing network structures and supplement existing solutions.

During 2021, research and development activities were focused on the following three technology areas:

- Enhancements to the open optical transport solution including the development of the new TeraFlex™ terminal and a new generation of open line system (OLS)
- A new generation of 100G products including network functions virtualization (NFV) software for the company's cloud access portfolio
- Ultra-precise synchronization technologies for 5G mobile networks and other industry verticals.

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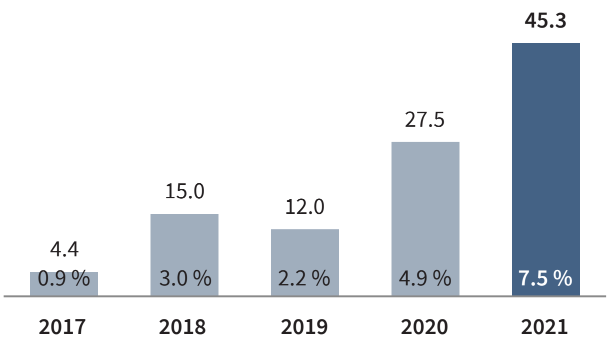
Operating income

(in millions of EUR and relative to total revenues)



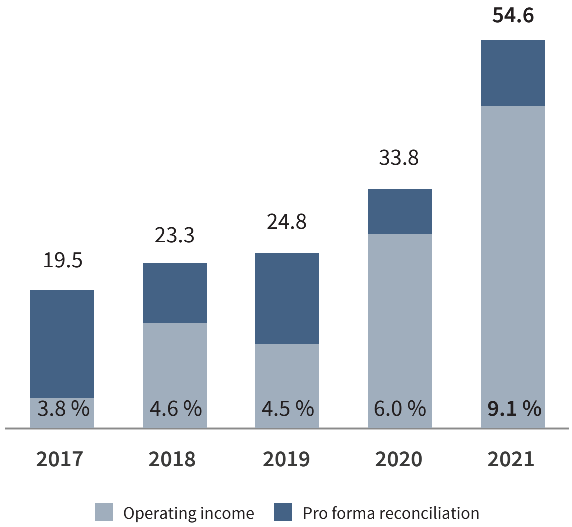
Net other operating income and expenses amounted to positive EUR 5.2 million in 2021, significantly up from positive EUR 2.6 million in the prior year. In 2021, this item is mainly impacted by subsidies received for specific research activities, refund of duty and logistic costs and release of provisions recorded in earlier periods.

Total operating expenses increased from EUR 169.1 million in 2020 to EUR 173.3 million in 2021, representing 28.7 % of revenues in 2021 after 29.9 % in the prior year.

Overall, ADVA reported a significantly increased operating income of EUR 45.3 million in 2021 after an operating income of EUR 27.5 million in the prior year. The improvement in operating result is largely due to an increase in gross margin combined with a proportional lower increase in operating cost.

Pro forma EBIT

(in millions of EUR and relative to total revenues)



Pro forma EBIT represents one of the four key performance indicators for the group. As pro forma EBIT excludes non-cash charges related to stock compensation and business combinations as well as non-recurring expenses related to M&A and restructuring measures, ADVA's management board believes that pro forma EBIT is a more appropriate measure than operating income when benchmarking the group's operational performance against other telecommunications equipment providers.

Corresponding to the operating result, the pro forma EBIT increased significantly from EUR 33.8 million in 2020 to EUR 54.6 million in 2021.

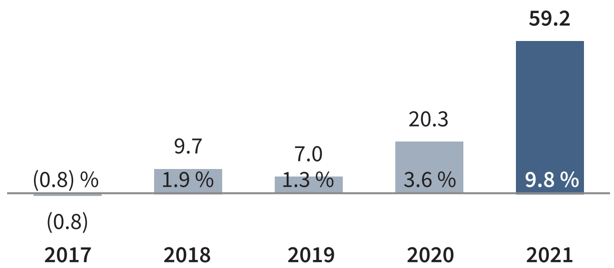
The reconciliation of operating profit to pro forma operating profit is as follows:

(in millions of EUR)	2021	2020
Operating income	**45.3**	**27.5**
Expenses related to share-based compensation	1.6	1.2
Amortization of intangible assets from business combinations	4.0	4.4
Expenses related to M&A transactions and restructuring expenses	3.7	0.7
Pro forma EBIT	**54.6**	**33.8**

In contrast to the previous year, the reconciliation items did not include any restructuring measures. In 2021, however, expenses related to M&A measures of EUR 3.7 million were not taken into account in the calculation of pro foma EBIT.

Net income (loss)

(in millions of EUR and relative to total revenues)



Given the strongly increased operating income, compared to 2020, ADVA reported a significantly improved net income of EUR 59.2 million for 2021, after a net income of EUR 20.3 million in 2020. Beyond operating income, the net result in 2021 included net interest expenses of EUR 1.7 million (prior year: EUR 2.6 million) and net other financial gains of EUR 2.6 million (prior year: net other financial loss of EUR 0.1 million). Other financial losses mainly relate to the translation of foreign currency assets and liabilities and to gains and losses on hedging instruments.

In 2021, the group reported an income tax benefit of EUR 13.0 million after an income tax expense of EUR 4.5 million in 2020, representing a negative tax rate of (28.14) % (previous year: 18.15 %). In 2021, the income tax benefit results mainly from increase of deferred tax asset on ADVA SE's tax loss carry forwards.

Earnings per share

Basic and diluted earnings per share were EUR 1.17 and EUR 1.15, respectively, in 2021 after EUR 0.40 each, in the prior year. Basic average shares outstanding increased by 0.5 million to 50.8 million in 2021, due to capital increases from the exercise of stock options. Diluted weighted average shares outstanding were at 51.7 million in 2021.

Summary: Business development and operational performance

Operating income as well as net income increased significantly in 2021 compared to the previous year due to the improved gross margin and the the relatively lower increase in operating expenses. The consolidated net profit for the year was also significantly influenced by the recognition of tax income in 2021.

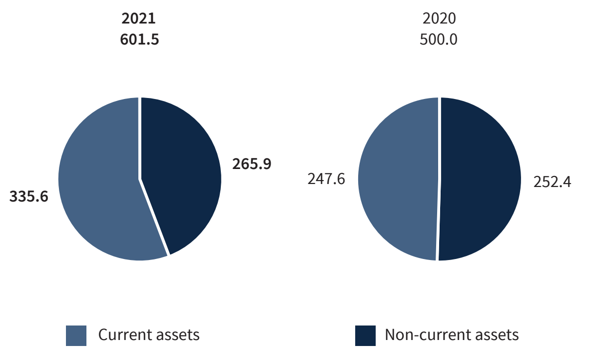
Net assets and financial position of the group

Balance sheet structure

ADVA's total assets increased by EUR 101.5 million or 20.3 %, from EUR 500.0 million at year-end 2020 to EUR 601.5 million at the end of 2021.

Assets

(on December 31, in millions of EUR)



Current assets increased by EUR 88.0 million or 35.6 % from EUR 247.6 million on December 31, 2020, to EUR 335.6 million on December 31, 2021, and comprised 55.8 % of the balance sheet total after 49.5 % at the end of the prior year. The increase in current assets was mainly driven by a significant increase in cash and cash equivalents by EUR 44.1 million to EUR 109.0 million at year-end 2021, mainly due to the positive development of the result. At the same time, inventories were up by EUR 39.1 million to EUR 129.2 million. The increase in inventories reflects advance procurement of materials due to expected delivery difficulties for semiconductors. Inventory turns slightly decreased from 3.9x in 2020 to 3.8x in 2021. Other current assets increased in particular due to increased receivables from funded research projects and higher VAT refund claims by EUR 6.1 million to EUR 14.0 million at year-end 2021. Trade accounts receivable slightly decreased from EUR 83.9 million to EUR 83.0 million at the end of December 2021. DSOs further improved from 58 days reported in 2020 to 53 days in 2021.

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Non-current assets increased by EUR 13.5 million from EUR 252.4 million at year-end 2020 to EUR 265.9 million on December 31, 2021. This increase results in particular from higher goodwill, that rose by EUR 4.6 million to EUR 71.6 million at the end of 2021 due to exchange rate effects. Deferred tax assets increased by EUR 8.1 million to EUR 15.3 million at the end of 2021 mainly due to the increase of deferred tax asset on tax loss carry forwards of ADVA SE. At reporting date ADVA SE does not show a cumulative loss for the last 3 years anymore. Due to the discontinuation of the history of losses deferred tax asset on ADVA SE's tax loss carry forwards was recognized in 2021 in excess of the amount of taxable temporary differences, to the extent it can be utilized against future taxable income. Deferred tax assets and liabilities are presented net in accordance with relevant netting requirements. Other intangible assets increased by EUR 3.2 million to EUR 8.5 million, in particular due to the recognition of a new development agreement. At the same time, intangible assets from business combinations decreased from EUR 15.0 million in 2020 to EUR 12.0 million at the end of 2021, in particular due to scheduled amortization. Capitalized development projects slightly decreased from EUR 98.6 million to EUR 97.8 million at the end of 2021.

Meaningful additional assets belonging to ADVA are the broad and global customer base of several hundred service providers and thousands of enterprises, the ADVA, Oscilloquartz and Ensemble brands, the vendor and partner relationships and a highly motivated and skilled global team. These assets are not recognized in the balance sheet. Customer satisfaction as measured by the net promoter score represents one of the group's four key performance indicators.

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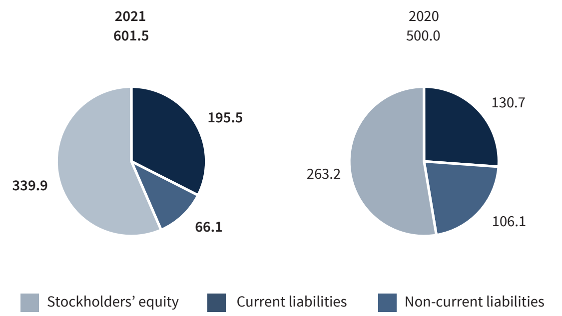
Liabilities

(on December 31, in millions of EUR)



With respect to equity and liabilities, current liabilities increased by EUR 64.9 million from EUR 130.7 million at year-end 2020 to EUR 195.5 million at the end of 2021. The increase is mainly due to significantly higher trade accounts payables, that were up by EUR 39.1 million to EUR 83.2 million at the end of 2021. DPO improved to 58 days in 2021 compared to 55 days in the previous year. The increase in trade accounts payable corresponds with the higher number of inventories and resulted in particular from advance procurement in order to avoid supply chain shortages. Other current liabilities at the end of 2021 include in particular liabilities to employees and obligations from subsidized research projects and increased by EUR 8.1 million compared to December 31, 2020.

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Non-current liabilities at EUR 66.1 million at year-end 2021 were significantly down from EUR 106.1 million reported at prior year-end. Non-current liabilities to banks decreased by EUR 24.6 million to EUR 22.5 million at the end of 2021 due to scheduled repayments and the reclassification of a loan maturing in 2022 to current liabilities to banks. Financial liabilities are explained in more detail in a separate section below. Deferred tax liabilities decreased by EUR 11.4 million to EUR 2.2 million as of December 31, 2021 due to the netting of deferred tax assets. In addition, non-current liabilities from leases were EUR 3.0 million lower at EUR 19.0 million.

Stockholders' equity significantly increased by EUR 76.7 million from EUR 263.2 million at year-end 2020 to EUR 339.9 million at the end of 2021, mainly due to improved net income and positive effects from currency translation in other comprehensive income. In 2021, capital increases totaling EUR 6.6 million from the exercise of stock options, and stock compensation expenses totaling EUR 1.4 million were reported.

Balance sheet ratios

The equity ratio clearly improved to 56.5 % at the end of 2021, after 52.6 % at year-end 2020. The non-current assets ratio amounted to 127.8 % on December 31, 2021, with stockholders' equity fully covering the non-current assets.

(on December 31, in %)		2021	2020
Equity ratio	Stockholders' equity / Total assets	56.5	52.6
Non-current asset ratio	Stockholders' equity / Non-current assets	127.8	104.3
Liability structure	Current liabilities / Total liabilities	74.7	55.2

Capital expenditures

Capital expenditures for additions to property, plant and equipment in 2021 amounted to EUR 15.9 million, up from EUR 13.6 million in 2020, largely reflecting higher investments in connection with the expansion of the Meiningen production site.

Capital expenditures for intangible assets of EUR 48.4 million in 2021 were up from EUR 44.7 million in the prior year. This total consists of capitalized development projects of EUR 42.5 million in 2021 after EUR 39.9 million in 2020, and investments in concessions, software licenses and other intangible assets of EUR 5.9 million in 2021 after EUR 4.8 million in 2020. Investments in capitalized development projects are mainly driven by development activities for open optical transmission technology including the new TeraFlex™ CoreChannel™ terminal as well as the new generation of 100G cloud access products and network synchronization solutions.

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Zenn Yong

"Tackling the climate crisis is at the heart of everything we do. Together we're leading the industry to a more sustainable future."

Cash flow

(in millions of EUR)	2021	Portion of cash	2020	Portion of cash
Operating cash flow	123.3	113.1 %	97.1	149.7 %
Investing cash flow	(64.3)	59.0 %	(58.4)	89.9 %
Financing cash flow	(14.8)	13.6 %	(26.7)	41.3 %
Net effect of foreign currency translation on cash and cash equivalents	(0.1)	0.1 %	(1.4)	2.2 %
Net change in cash and cash equivalents	**44.1**	**40.5 %**	**10.6**	**16.4 %**
Cash and cash equivalents at the beginning of the period	64.9	59.5 %	54.3	83.6 %
Cash and cash equivalents at the end of the period	**109.0**	**100.0 %**	**64.9**	**100.0 %**

Cash flow from operating activities of EUR 123.3 million in 2021 was up EUR 26.2 million from EUR 97.1 million in 2020. This improvement was mainly due to the strongly increased income before tax.

Cash flow from investing activities was negative EUR 64.3 million in 2021 after negative EUR 58.4 million in the prior year. In 2021, capital expenditures for property, plant and equipment as well as for capitalized development projects and other intangible assets increased compared to the previous year.

Finally, cash flow from financing activities at negative EUR 14.8 million in 2021 was significantly down compared to the 2020 level of negative EUR 26.7 million. The net outflow in both years mainly results from scheduled repayments and interest payments for existing liabilities to banks. Repayments to banks were lower in 2021 than in 2020 due to the full repayment of some loans in the previous year. In addition, higher inflows from the exercise of stock options were taken into account in 2021.

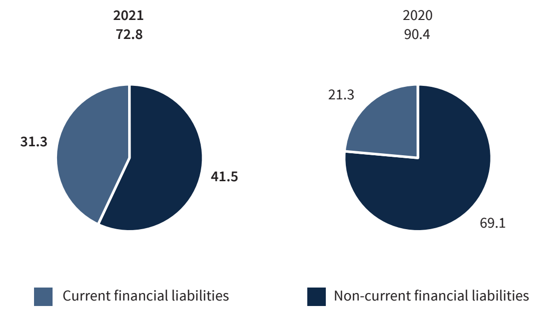
Overall, including the net effect of foreign currency translation on cash and cash equivalents of negative EUR 0.1 million (2020: negative EUR 1.4 million), cash and cash equivalents significantly increased by EUR 44.1 million in 2021, from EUR 64.9 million at year-end 2020 to EUR 109.0 million at the end of 2021, after an increase of EUR 10.6 million in the prior year.

Financing and liquidity

ADVA's financial management is performed centrally by ADVA Optical Networking SE. Its objective is to provide sufficient funds to ensure ongoing operations and to support the group's projected growth. Beyond the strong equity base appropriate for the business, ADVA finances its business by means of liabilities with maturities typically exceeding the useful life of the assets being financed. For any liability taken, ADVA is focused on minimizing related interest cost, as long as access to funds is not at risk. Excess funds are generally used to redeem liabilities.

Financial liabilities

(on December 31, in millions of EUR)



In 2021, financial liabilities decreased clearly by EUR 17.6 million to EUR 72.8 million at the end of 2021. While current liabilities to banks increased to EUR 25.3 million in 2021, from EUR 15.5 million at the end of 2020, as a result of the reclassification of a loan maturing in Q3 2022. Non-current liabilities to banks decreased to EUR 22.5 million at the end of December 2021, down from EUR 47.1 million at the end of the previous year. Current lease liabilities slightly increased by EUR 0.2 million, to EUR 6.0 million at the end of December 2021 while non-current lease liabilities reduced by EUR 3.0 million to EUR 19.0 million.

All financial liabilities were exclusively denominated in euro at the end of 2020 and 2021.

On December 31, 2021, the group had available EUR 10.0 million (on December 31, 2020: EUR 50.0 million) of undrawn committed borrowing facilities. The substantial reduction in borrowing facilities is due to the termination of the KfW credit line in the amount of EUR 40 million. This borrowing facility was concluded as a security measure in connection with the 2020 pandemic and was terminated by ADVA as the management expects future utilization is unlikely.

Further details about the group's financial liabilities can be found in notes (15) and (16) to the consolidated financial statements.

Net cash

Net cash represents one of the four key performance indicators for the group. As a result of the decline in financial debt and a simultaneous increase in cash and cash equivalents, ADVA's net cash improved significantly by EUR 61.7 million from net debt of EUR 25.5 million at year-end 2020 to net cash of EUR 36.2 million at the end of 2021. Cash and cash equivalents of EUR 109.0 million on December 31, 2021, and of EUR 64.9 million on December 31, 2020, were invested mainly in euro, USD and in GBP.

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Net cash/(debt) as of December 31 is calculated as follows:

(in millions of EUR)	2021	2020
Liabilities to banks		
current	(25.3)	(15.5)
non-current	(22.5)	(47.1)
Lease liabilities	–	–
current	(6.0)	(5.8)
non-current	(19.0)	(22.0)
Cash and cash equivalents	109.0	64.9
Net cash/(debt)	**36.2**	**(25.5)**

As of December 31, ADVA reports liquidity ratios as follows:

		2021	2020
Cash ratio	Cash and cash equivalents / Current liabilities	0.56	0.50
Quick ratio	Monetary current assets* / Current liabilities	0.98	1.14
Current ratio	Current assets / Current liabilities	1.72	1.90

* Monetary current assets are defined as the sum of cash and cash equivalents, short-term investments and securities and trade accounts receivable.

Return on capital employed (ROCE)

Return on capital employed in 2021 was at 11.7 %, significantly up from 7.3 % reported in 2020. The improvement is mainly due to the higher operating result in 2021. Capital employed increased by EUR 35.2 million, in particular due to the increase in total assets in 2021.

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(base data in millions of EUR)		2021	2020
Operating income		45.3	27.5
Average total assets*		544.9	519.9
Average current liabilities*		156.3	146.0
ROCE	Operating income / Ø total assets – Ø current liabilities	**11.7 %**	**7.3 %**

* Arithmetic average of five quarterly period-end values (Dec. 31 of the prior year and Mar. 31, Jun. 30, Sep. 30 and Dec. 31 of the year).

Summary: Net assets and financial position

ADVA's net assets and financial position improved in 2021 significantly mainly due to the decline in financial debt with a simultaneous substantial increase in cash and cash equivalents due to the improved cash flow from operating activities.

Transactions with related parties

Transactions with related individuals and legal entities are discussed in notes (40) and (41) to the consolidated financial statements.

Performance of ADVA Optical Networking SE

In addition to reporting on the ADVA Optical Networking group, the following sections provide information on the performance of ADVA Optical Networking SE.

ADVA Optical Networking SE is the parent company of the group and performs the group's management and corporate functions. It undertakes essentially all group-wide responsibilities such as finance and accounting, corporate compliance and risk management, strategic and product-oriented R&D activities as well as corporate and marketing communications worldwide.

ADVA Optical Networking SE's individual financial statements are prepared in accordance with the German Commercial Code. The related individual financial statements are published separately.

Offices and organization

The company maintains its registered office in Meiningen, Germany. This is also the location of the main production and development facility of the company. In Martinsried/ Munich, the company maintains its headquarter with all central functions and the sales and marketing organization. Furthermore, ADVA maintains some small to midsize national and international offices.

Operational performance

In 2021 ADVA Optical Networking SE generated revenues of EUR 443.0 million, an increase of 17.1 % compared to prior year's revenues of EUR 378.3 million. Despite the ongoing challenges due to the pandemic as well as the global supply bottlenecks and material shortages in the semiconductor sector, ADVA Optical Networking SE's revenues grew by a double-digit percentage. Demand rose sharply, particularly in the market areas of telecommunications service providers and enterprise customers, with the focus being on optical transport solutions.

EMEA remained the most important sales region in 2021, followed by the Americas and Asia-Pacific. Sales in EMEA increased by 28.3 % from EUR 256.6 million to EUR 329.1 million. The share of total revenues increased from 67.8 % in 2020 to 74.3 % in2021. ADVA Optical Networking SE is strong in the EMEA region and leveraging its mature partner strategy and achieving very good results thanks to a broad and loyal customer base. In the Americas region, revenue decreased by 13.2 %, from EUR 75.8 million in 2020 to EUR 65.8 million in 2021. The regional share of total annual revenue decreased to 14.9 % in 2021 from 20.1 % in 2020. This is particularly due to the temporary softness of some major customers. In Asia-Pacific, revenue increased by 4.8 % from EUR 45.9 million in 2020 to EUR 48.1 million in 2021. The region is predominated by project-based business, leading to greater fluctuations in individual periods. The Asia-Pacific region contributed 10.9 % to total revenue in 2021, after 12.1 % in 2020.

Cost of goods sold increased from EUR 231.6 million in 2020 to EUR 270.9 million in 2021. The corresponding share in total revenue of 61.1 % reduced slightly compared to 2020 (61.2 %).

Consequently, gross profit increased from EUR 146.7 million or 38.8 % of revenues in 2020 to EUR 172.1 million or 38.9 % of revenues in 2021. The development of the gross margin is impacted by variations in regional revenue distribution and in product and customer mix.

Selling and marketing expenses decreased from EUR 28.8 million in 2020 to EUR 28.4 million in 2021.

General and administrative expenses increased to EUR 21.5 million from EUR 18.4 million in 2020. This is mainly due to higher expenses for legal and consulting services in connection with the planned business combination with ADTRAN Inc., Huntsville, Alabama, USA

Research and development expenses increased from EUR 132.6 million to EUR 147.1 million. Considering the increase in capitalization of development expenses from EUR 40.0 million in 2020 to EUR 42.5 million in 2021, research and development expenses totaled EUR 104.6 million or 23.6 % from revenues compared to EUR 92.7 million or 24.5 % from revenues in the prior year.

The other operating result (other operating income less other operating expenses) increased from EUR 0.2 million in the prior year to EUR 4.3 million in 2021, mainly due to the positive development of the exchange rates as well as an increase in grants for funded projects.

In the financial year 2021, EUR 28.5 million in income from investments from affiliated companies was distributed to the company (prior year: EUR 49.8 million). In both years, these relate to dividend payments from subsidiaries.

The tax benefit in 2021 of EUR 7.8 million (previous year: EUR 1.2 million tax expense) is mainly triggered by the increase in deferred tax assets on tax loss carryforwards.

Consequently profit after tax increased to positive EUR 57.4 million compared to positive EUR 54.7 million in the previous year.

Summary: Operational performance

Mainly due to the improved revenue, operating income developed very positively. This combined with the profit distributions from affiliated companies and the positive effect from income taxes returned a further improved net income when compared to prior year.

Net assets and financial position

The total assets of ADVA Optical Networking SE increased by EUR 63.3 million from EUR 355.9 million at year-end 2020 to EUR 419.2 million at year-end 2021.

Non-current assets decreased from EUR 205.0 million to EUR 189.7 million on December 31, 2021, representing 45.2 % of total assets after 57.6 % at the end of the prior year. The decrease in non-current assets is mainly due to the decrease in financial assets from EUR 76.3 million by EUR 17.9 million to EUR 58.4 million. In the financial assets this was mainly due to ordinary repayments of loans to affiliated companies which reduced by EUR 31.5 million from EUR 45.9 million to EUR 14.4 million. At the same time the shares in affiliated companies increased from EUR 30.4 million to EUR 44.0 million mainly due to an equity increase in the subsidiary ADVA Israel. Current assets increased to EUR 227.4 million from EUR 149.9 million in 2020, representing 54.3 % of total assets after 42.1 % at year-end 2020. The increase in current assets is mainly due to the increase in inventories from EUR 54.2 million in the prior year to EUR 83.9 million in 2021. The increase in inventories reflects advance procurement of materials due to expected delivery difficulties for semiconductors. Furthermore the increase in trade receivables from EUR 50.4 million in the prior year to EUR 54.5 million due to increased revenues.

Equity increased mainly due to the net income from the current financial year from EUR 185.8 million at the end of 2020 to EUR 249.8 million at the end of 2021 and amounted to 59.6 % of total assets compared to 52.2 % at the prior year's reporting date. Operating income as well as income from affiliated companies in the amount of EUR 28.5 million, contributed significantly to the equity of ADVA Optical Networking SE. Income from affiliated companies results from dividend distributions of ADVA North America.

Liabilities decreased from EUR 134.6 million in the prior year to EUR 132.1 million. This change essentially results from the decrease in liabilities to banks by EUR 18.3 million due to scheduled repayments, and a decrease in liabilities to affiliated companies by EUR 2.9 million. This effect was partially offset by the increase in trade accounts payables by EUR 18.1 million. The increase in trade accounts payable corresponds with the increase in inventories and resulted in particular from advance procurement in order to avoid supply chain shortages. Provisions increased from EUR 13.5 million in the prior year to EUR 25.6 million at the end of 2021, mainly due to increased provisions for deliveries. Deferred income increased only slightly in 2021 from EUR 11.0 million in the prior year to EUR 11.7 million.

Capital expenditures

Investments in 2021 reached EUR 73.1 million (prior year: EUR 97.4 million). Thereof EUR 50.0 million (prior year: EUR 44.6 million) was related to investments in intangible assets, EUR 6.4 million (prior year: EUR 3.5 million) to property, plant and equipment, and EUR 16.7 million to financial assets (prior year: EUR 49.3 million). The investments in intangible assets mainly result from the addition of self-created industrial property rights and similar rights and values. The investments in property, plant and equipment mainly include expenditures for measuring and testing equipment. Financial assets mainly relate to shares in and loans to affiliated companies.

Liquidity

The development of cash and cash equivalents analyses as follows:

(in millions of EUR)	**2021**	**2020**
Operating cash flow	95.5	47.2
Investing cash flow	(39.9)	(36.2)
Financing cash flow	(11.7)	(7.5)
Net change in cash and cash equivalents	**43.9**	**3.5**
Cash and cash equivalents at the beginning of the year	18.4	14.9
Cash and cash equivalents at the end of the year	**62.3**	**18.4**

During 2021 and 2020, the company was able to meet all payment obligations.

Cash and cash equivalents of EUR 62.3 million as of 31 December 2021 and EUR 18.4 million as of 31 December 2020 were invested mainly in Euro and USD. The increase of EUR 43.9 million is mainly driven by the strongly improved operating cash flow. Due to the increase in cash and cash equivalents and the decrease in liabilities to banks, ADVA Optical Networking SE's net cash improved from a net debt of EUR 54.3 million at the end of 2020 to a net cash of EUR 8.0 million at the end of 2021.

Financing

Liabilities to banks decreased from EUR 72.7 million at year-end 2020 to EUR 54.4 million at the end of 2021 due to scheduled repayments. All liabilities to banks were exclusively denominated in Euro and USD at the end of 2020 and 2021. Liabilities for factoring relates to a repayment obligation from a factoring agreement whereby the significant credit risks were not transferred.

On December 31, 2021, the company had available EUR 10.0 million (on December 31, 2020: EUR 50.0 million) of undrawn committed borrowing facilities.

The following table provides an overview of the maturity of each liability to banks at year-end 2021:

		Maturity		
(in millions of EUR)		≤ 12 months	13 – 36 months	> 36 months
Loan of Deutsche Bank	10.0	10.0	—	—
Syndicated loan	38.0	15.0	23.0	—
Factoring	6.4	6.4	—	—
Total	**54.4**	**31.4**	**23.0**	**—**

Dividend payments

In 2021 there were no dividend payments for 2020 (prior year: nil for 2019). ADVA Optical Networking SE does not plan to pay out a dividend for 2021.

Summary: Net assets and financial position

Due to the significant increase in accumulated profit, the company's equity could be strengthened massively. In addition, the decrease in financial liabilities and the simultaneous increase in cash led to a significant improvement of ADVA Optical Networking SE's net assets and financial position.

Events after the balance sheet date

On August 30, 2021, ADVA and ADTRAN announced the entry into a business combination agreement to combine the two companies and create a leading global, scaled provider of end-to-end fiber networking solutions for communications service provider, enterprise and government customers. On January 28, 2022, ADTRAN and ADVA announced that the minimum acceptance threshold for the proposed merger with ADTRAN had been reached. Following approval by the foreign trade authorities, the merger will take place. This corporate transaction may have effects on balance sheet items presented in the IFRS consolidated financial statements and the financial statements of ADVA SE.

In order to obtain approval for the merger from the German foreign trade authority, it might be necessary to consolidate all of the company's business relating to government customer and critical infrastructure in a separate structure. At present the company is in discussion with the authorities about the possible future set up. Any effects on the net assets, financial position and results of operations of the group and the company are currently still being examined.

For U.S. loss-making entities where there is a change in ownership as part of a transaction, there may be a restriction on the continued use of tax attributes (for example, net operating losses, capital losses, tax credits, excess interest carryforwards, etc.). With regards to the US-subsidiary, ADVA Optical Networking North America, Inc., an indirect transfer of more than 50 % of the shares in the U.S. company occurring in connection with the ADTRAN merger could reduce its usable tax loss carry-forwards depending on the value ratios at the time of closing.

The existing financing agreements include termination rights in case of a change of control. The management board is currently in discussions with the lending banks. The management board and the supervisory board currently assume that either an agreement can be reached with the lenders of the syndicated loan agreement that they will not exercise their right of termination, or that necessary credit lines can be replaced in some other way.

Possible further effects on the net assets, financial position and results of operations of the group and the company are currently still being examined.

Apart from the possible effects of the corporate transaction, there were no events after the balance sheet date that have an impact on the net assets and financial position as of December 31, 2021, and the results of operations in 2021.

Disclosures under takeover law in accordance with Section § 289a (1) HGB and Section § 315a (1) HGB

Share capital and shareholder structure

On December 31, 2021, ADVA Optical Networking SE had issued 51,445,892 no-par value bearer shares (December 31, 2020: 50,496,692). The common shares entitle the holder to vote at the Annual Shareholders' Meeting and to receive dividends in case of a distribution. No restrictions are attached to the common shares. No other class of shares had been issued during the reporting period.

At year-end 2021, EGORA Holding GmbH with registered office in Fraunhoferstrasse 22, 82152 Martinsried/Munich, Germany held a total of 7,456,749 shares or 14.71 %* of all ADVA Optical Networking SE shares outstanding (at year-end 2020: 7,456,749 shares or 14.77 % of all shares outstanding). The largest individual shareholder at year-end 2020, Teleios Capital Partners, successively reduced its shareholding from 9,760,828 shares or 19.38 % on December 31, 2020 to less than 3 % in the course of the first six months of 2021. No other shareholder has filed with the company to have held more than 10 % of the company's shares outstanding on December 31, 2021. Further details on share capital and shareholder structure are disclosed in note (21) to the consolidated financial statements.

* Capital shares refer to the total number of shares held in relation to the share capital as of December 31, 2021.

Restriction of voting rights and share transfers

At year-end 2021, the management board of ADVA Optical Networking SE had no knowledge of any restrictions related to voting rights or share transfers.

Appointment and dismissal of management board members

The appointment and dismissal of members of the management board of ADVA Optical Networking SE follows the direction of the German Stock Corporation Act (Aktiengesetz, AktG), the German SE Implementation Act (SE-Ausführungsgesetz, SEAG) as well as the provisions in section 6 of the company's current articles of association as of May 19, 2021. According to these articles, in principle the supervisory board appoints the members of the management board and does so for a maximum period of five years. However, it is the company's practice to appoint the members of the management board for two years only. Repeated appointment is possible. According to the company's statutes, the management board of ADVA Optical Networking SE shall regularly consist of two individuals and the supervisory board shall have the right to determine and appoint a higher number of individuals. If the management board consists of more than one individual, the supervisory board may appoint one member of the management board chief executive officer or speaker of the management board and another member his or her deputy. The supervisory board may revoke an already effective appointment for important reasons. In 2021, no appointments or dismissals of management board members were affected. ADVA Optical Networking SE's management board consisted of Brian Protiva (chief executive officer), Christoph Glingener (chief technology officer), Ulrich Dopfer (chief financial officer) and Scott St. John (chief marketing & sales officer) throughout the year.

Changes to articles of association

Following article 9 SE Regulation in conjunction with section 51 SEAG, amendments to the articles of association of ADVA Optical Networking SE are made pursuant to section 179 German Stock Corporation Act (Aktiengesetz, AktG) in conjunction with Section 133 German Stock Corporation Act (Aktiengesetz, AktG) considering a 75 % majority vote, as well as the provisions in section 4 para. 6 and section 13 para. 3 of the current articles of association of the company dated May 19, 2021. Accordingly, in principle any changes to the articles of association other than purely formal amendments need to be resolved by the shareholders' meeting. However, the shareholders' meeting has authorized the supervisory board to change the version of the articles of association in accordance with capital increases from authorized capital and conditional capital.

Issuance and buy-back of shares

The rights of the management board to issue new shares are regulated in section 4 paragraphs 4 and 5k of the articles of association as of May 19, 2021, of ADVA Optical Networking SE. According to ADVA Optical Networking SE's current articles of association, the management board is authorized with approval of the supervisory board to increase the capital stock by up to 24,965,477 new shares from authorized capital, amounting to a total of EUR 24,965,477 against cash or contribution in kind with possible exclusion of subscription rights (authorized capital 2019/I). As of December 31, 2021, the authorized capital amounted to EUR 24,965,477, so that at that time the management board was capable of issuing up to 24,965,477 shares, equating to 49.75 % of total shares outstanding. In addition, as of December 31, 2021, a conditional capital of EUR 5,049,669 was recorded in the commercial register (conditional capital 2011/I). The conditional capital can only be used for granting stock option rights to members of the management board, to employees of the company and to management and employees of affiliated companies. The conditional capital increase is put into effect only if and insofar as the holders of the option rights exercise these rights. 949,200 new shares were already created in 2021 as a result of the exercise of stock options but will only be registered in the trade register after the balance sheet date. Thus, the number of shares that can be issued by the management board from the conditional capital is reduced to 4,100,469.

At year-end 2021, the management board was authorized to buy back up to a total of 10.0 % of the existing share capital at the time of resolution by the Annual Shareholders' Meeting or – if this value is lower – at the time the authorization is exercised. This right was granted to the management board until May 21, 2024, by a resolution of the shareholders' meeting on May 22, 2019. Shares bought back may be used for all legally permitted purposes, in particular as consideration for the acquisition of companies, parts of companies or investments in companies, for issuing stock to employees of the company or affiliated companies, for serving share subscription rights from the company's stock option plans, and for redeeming the shares pursuant to the legal provisions.

Takeover bid-driven change of control provisions

At year-end 2021, a bilateral loan with redemption value of nominally EUR 10,0 million (repayable on the final due date), and a syndicated loan with a redemption value of nominally EUR 38.0 million (repayable from June 2019 in half-yearly installments as well as a final installment on final the due date), respectively, are part of ADVA Optical Networking SE's financial liabilities. In addition, the syndicated loan has one undrawn credit line of EUR 10.0 million at the reporting date. In the event of a potential takeover bid-driven change in control of ADVA Optical Networking SE, the creditors have the right to terminate these loans with immediate effect.

As of December 31, 2021, for the event of a takeover bid-driven change in control there have been no recourse agreements in place with any of the members of the management board or with any of the group's employees.

Definition of aims and terms for the rise of the women portion in the supervisory board, the management board and in both leadership levels below the management board

Following the entry into force of the "Law on Equal Participation of Women and Men in Management Positions in the Private and Public Sector" (FüPoG), the supervisory board of ADVA Optical Networking SE has last set on November 15, 2017, that a women's portion of 33.33 % on the supervisory board shall be maintained until March 31, 2021, and a women's portion of 0 % on the management board until December 31, 2021. As of March 31, and December 31, 2021, these shares have already been achieved. On February 23, 2021, the supervisory board gave itself a new competence profile for the period that followed. This stipulates that the three-members of the supervisory board should consist of at least one woman and at least one man until the end of the Annual General Meeting that decides on the discharge in the 2024 financial year. The status quo of 33.33 % women has thus been updated. With regard to the targets for the proportion of women on the management board, the supervisory board will review the current status at the next opportunity. On this basis, he will again set a target for the proportion of women on the management board.

Following the entry into force of the FüPoG, the management board of ADVA Optical Networking SE had set an 8 % women's share for the first management level and a 30 % women's share for the second management level below the management board; both to be achieved by June 30, 2017. As of June 30, 2017, the women's portion on the first management level has been 7 %, and 32 % on the second management level, exceeding the self-imposed target on the second management level, but slightly missing the self-imposed target of the first management level. This was due to an in-house change of a reporting line that lifted a male executive from the second to the first management level; besides that, the management structure and team remained unchanged at both management levels. For the following period, ADVA Optical Networking SE's management board has set a target of 7 % for the women's share on the first level of management and of 30 % on the second level of management below management board, both to be achieved until June 30, 2022. As of December 31, 2021, the women's portion on the first management level has been 9 % and at the second management level 35 %. This exceeded the self-set target on the first and second management level.

Separate non-financial report

ADVA has chosen to prepare a separate non-financial report, which can be found in Part 2 of the Sustainability Report. This part is prepared in accordance with the requirements of Section315b (3) of the German Commercial Code (HGB) and is hereinafter simplified as the "non-financial report". This non-financial report is prepared in accordance with § 15c in conjunction with 289c to 289e of the German Commercial Code (HGB) and the EU Taxonomy Regulation and has been subjected to a voluntary limited assurance engagement in accordance with ISAE 3000 (Revised) by PricewaterhouseCoopers GmbH Wirtschaftsprüfungs-gesellschaft (PwC) regarding the relevant legal requirements. The non-financial report will be published on the sustainability page in the About Us section of the website www.adva.com at the same time as the annual report on February 24, 2022.

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Remuneration of the management and the supervisory board

This remuneration report, which was prepared by the management board and supervisory board, reports on the remuneration of the management board and supervisory board members of ADVA SE for the financial year 2021 in accordance with the requirements of section 162 German Stock Corporation Act (Aktiengesetz, AktG) and the recommendations and suggestions of the German Corporate Governance Code (DCGK). The remuneration granted and payable as well as the granted benefits are stated individually for the board members.

At its meeting on February 23, 2021, as part of the regular review of the framework for the remuneration of the members of the management board of ADVA SE, the supervisory board of ADVA SE decided to adjust or develop respectively the framework for the remuneration of the management board members approved at the annual general meeting on June 5, 2014 in accordance with the provisions of the law to implement the second shareholder rights directive (ARUG II) and the German Corporate Governance Code (DCGK) in the version of December 16, 2019. The remuneration framework will therefore apply for the first time to remuneration components that have been resolved by the supervisory board or agreed with the members of the management board from February 23, 2021.

The current valid remuneration framework, which was approved at the annual general meeting on May 19, 2021 with an approval rate of 99.39 %, can be accessed on the investors page in the About Us section of the website www.adva.com.

Management board remuneration for the financial year 2021

Remuneration framework basics

The management board remuneration is based not only on the performance of the management board, but also considers the company's economic situation and its size and complexity. A sustainable and long-term development of the company is the focus of the management board compensation framework of ADVA SE. As part of variable remuneration, strategic objectives, responsible actions and sustainable, profitable growth are supported, taking into account the interests of shareholders, customers, employees and other stakeholders. It is characterized by pronounced variability depending on the performance of the management board and the success of the group.

The supervisory board of ADVA SE has decided that the remuneration framework and the related compensation are built on the operational, financial and economic situation and on the successes and future prospects of the company. Within the remuneration framework, the tasks and the performance of the management board are taken into account on an individual as well as on a collective basis. With the help of adequate performance criteria as part of the performance-related variable remuneration of the management board, it is ensured that performance is appropriate and that failure to meet targets is taken into account according to the pay-for-performance principle. Variable remuneration components are therefore indirectly dependent on financial, operational and strategic goals. The stock options are also directly influenced by such targets due to the development of the stock price. Ultimately, strategic company goals and key figures form crucial performance indicators for short-term and long-term variable remuneration.

Compensation review process

It is essential that the remuneration structure and its amount are customary and competitive in the market. This is ensured by regular compensation comparisons with peer groups that are relevant for ADVA SE. In addition, an appropriate relationship between the remuneration of the management board and the remuneration of managers and employees is guaranteed.

Relevant comparable group companies are considered by the supervisory board for a horizontal comparison of the total goal remuneration and the appropriateness. To this end, twelve companies, preferably from the TecDax and the SDax, are used as external references for a future appropriateness test. With the help of a horizontal – external – comparison, it should be ensured that the members of the management board receive a remuneration that is customary in the market and competitive.

In addition, a vertical – internal – comparison of the remuneration of the management board is carried out, whereby the remuneration of the management board members is considered among themselves and in comparison to senior management and the entire workforce in the company. External as well as internal adequacy are checked at regular intervals.

Changes in the remuneration framework

The structure of the remuneration framework was changed for the financial year 2021 compared to the financial year 2020. Significant adjustments relate to short-term variable remuneration, long-term variable remuneration and the management board's stock option program.

The previous short-term variable remuneration component was referred to as a short-term bonus with a short-term annual assessment period and will be renamed to short-term incentive (STI) for the financial year 2021. The STI is designed to achieve four goals of a financial, operational and strategic nature for the respective calendar year and is based on a one-year assessment period. The cap of the four individual targets has been adjusted from 200 % to 250 % in order to increase the possibility of achieving the unchanged maximum STI cap of 200 % of the target annual bonus.

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The previous long-term variable pay (LTVP) with a three-year observation period was granted every three years if the target was achieved. This remuneration concept will be replaced by a new long-term incentive (LTI) plan with a four-year observation period, which can be granted annually, is flexible and is based on the development of the stock price. Since the LTVP has not yet been granted in full, the LTI was not applied in the past financial year.

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The stock options within the stock option program continue to be granted as an additional long-term variable component of the management board remuneration, taking into account specific regulations regarding granting and exercise. In the future, management board members will be obliged to hold a defined number of ADVA shares during the term of their management board mandate in accordance with the share ownership guideline (SOG).

Remuneration structure

The management board remuneration system includes non-performance-related (fixed) and performance-related (variable) remuneration components and consists of a basic remuneration, fringe benefits, STI, a LTVP for a three years term and a long-term stock option program. The STI and the LTVP are paid out in the year in which they fully vest.

The base salary is between 29-57 % and the fringe benefits approximately 1-3 % of the total target compensation.

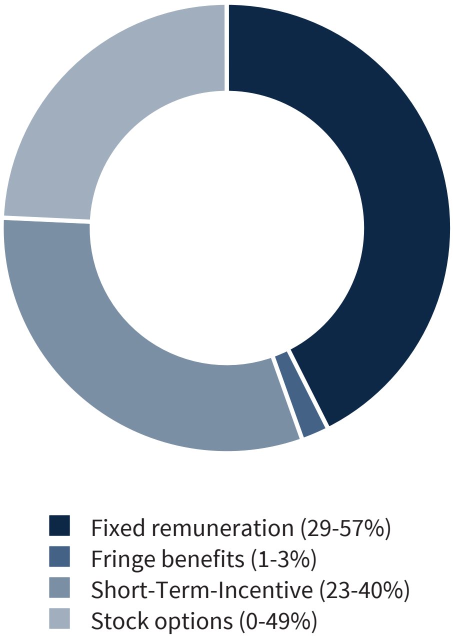
Other components of the remuneration are variable components, such as the STI at 23-40 % and t stock options at 0-49 % of the total target compensation. In 2019, the management board members were granted an LTVP with a term of three years, which would have been fully vested in 2021. However, the pro forma EBIT set for the members of the management board was not achieved in the period under review 2019 - 2021. Thus in 2020 the LTVP 2019 - 2021 was terminated and is no longer part of the target remuneration.

The management board compensation earned if 100% of the targets were achieved would be as follows:

	Brian Protiva		Christoph Glingener		Ulrich Dopfer		Scott St. John	
	Chief executive officer		Chief technology officer and chief operations officer		Chief financial officer		Chief marketing and sales officer	
(in thousands of EUR)	2021	in % of total target remune-ration	2021	in % of total target remune-ration	2021	in % of total target remune-ration	2021	in % of total target remune-ration
Basic remuneration	253	35 %	253	29 %	253	37 %	253	57 %
Fringe benefits	11	1 %	6	1 %	15	2 %	15	3 %
Total fixed remuneration	**264**	**36 %**	**259**	**30 %**	**268**	**39 %**	**268**	**60 %**
STI 2021	268	37 %	190	23 %	170	25 %	180	40 %
Stock option plans tranche 2021 - 2025*	197	27 %	426	49 %	246	36 %	—	— %
Total variable remuneration	**465**	**64 %**	**616**	**70 %**	**416**	**61 %**	**180**	**40 %**
100 % target compensation total	**729**		**875**		**684**		**448**	

* As target remuneration, the stock options granted in the current financial year are valued at the fair value at the time of issue.

Relative shares of remuneration components in %



Total annual remuneration for 2021 in accordance with Section 162 (1) Sentence 2 No. 1 AktG

The following table shows the remuneration granted and payable for the 2021 financial year for the active members of the management board as of December 31, 2021.

Since remuneration granted and payable is not always accompanied by a payment in the respective financial year, the table below shows the amount of funds granted to the members of the management board for the 2021 financial year. In the following, the non-performance-related remuneration components were granted and received in the 2021 financial year. The STI 2021 is shown because the underlying activity was fully performed in 2021. The LTVP 2020 - 2022 is not applicable as the pay-out will be in 2022. The share-based remuneration granted for the 2021 financial year is stated as a calculated value from the number of options issued multiplied by the fair value at the grant date.

For the financial year 2021, the total remuneration for the members of the management board of ADVA SE amounts to EUR 3.3 million.

The management board remuneration according to Section 162 (1) sentence 2 No. 1 AktG comprises as follows:

	Brian Protiva		Christoph Glingener		Ulrich Dopfer		Scott St. John	
	Chief executive officer		Chief technology officer and chief operations officer		Chief financial officer		Chief marketing and sales officer	
(in thousands of EUR)	2021	in % of total remune-ration	2021	in % of total remune-ration	2021	in % of total remune-ration	2021	in % of total remune-ration
Basic remuneration	253		253		253		253	
Fringe benefits	11		6		15		15	
Total fixed remuneration	**265**	**29 %**	**260**	**26 %**	**268**	**33 %**	**268**	**47 %**
STI 2021	448		318		288		303	
Stock option plans tranche 2021 - 2025	197		426		246		—	
Total variable remuneration	**645**	**71 %**	**744**	**74 %**	**534**	**67 %**	**303**	**53 %**
Total remuneration	**910**		**1,004**		**802**		**571**	

The members of the management board receive all remuneration components exclusively from ADVA SE.

Former board members received no payments in 2021.

Annual maximum remuneration

The maximum remuneration set by the supervisory board in accordance with section 87a (1) sentence 2 No. 1 AktG for the financial year 2021 is EUR 2.0 million for the CEO and EUR 1.7 million for an ordinary member of the management board.

The maximum remuneration consists of the basic remuneration and the fringe benefits as well as the variable remuneration components. The STI and LTI/LVP are each capped at 200 %. The stock options are included with 1/7 of the options that can be exercised for a maximum of seven years in the amount of the profit limitation.

In the financial year 2021, both the overall maximum remuneration and the limit for the individual variable remuneration components were fulfilled.

The relevant total remuneration based on the paid remuneration for 2021 compares with the defined maximum remuneration as follows:

(in thousands of EUR)	Brian Protiva Chief executive officer	Christoph Glingener Chief technology officer and chief operations officer	Ulrich Dopfer Chief financial officer	Scott St. John Chief marketing and sales officer
Basic remuneration	253	253	253	253
Fringe benefits	11	6	15	15
STI 2020	335	243	219	232
Stock options	395	384	791	—
Total remuneration	**994**	**886**	**1,278**	**500**
Maximum remuneration	**2,000**	**1,700**	**1,700**	**1,700**

In fiscal year 2021, no compensation was received from the LTVP, as the pro forma EBIT targets were not achieved for LTVP 2018 - 2020, which was fully earned in the previous year. For the stock options, the actual inflow from options exercised in 2021 is taken into account.

Non-performance-related remuneration components and fringe benefits

Non-performance-related base remuneration

The members of the management board receive an agreed, non-performance-related base salary that is paid out in equal installments.

Benefits in kind and other additional remuneration

In addition to cash payments, the members of the management board are granted various fringe benefits, some of which are event-related. Two members of the management board currently have a company car at their disposal for business and private use. The other two management board members receive a corresponding company car allowance.

Furthermore, the members of the management board are covered by a directors' and officers' liability insurance policy, which is taken out by the company, taking into account a deductible. Pursuant to section 93 paragraph 2 clause 3 of the German Stock Corporation Act, a statutory private deductible is provided for the management board.

Company pension plans

The remuneration framework does not include any company pension schemes for former and active members of the management board.

Annual variable remuneration

Short-term-incentive (STI)

As a short-term variable remuneration, the STI incentivizes the operational development of ADVA depending on the business success in the respective financial year. The supervisory board ensures that the goals for the STI are based on demanding financial, operational and strategic success parameters, whereby the amount of actual payment is dependent on the degree of achievement. A STI with an one-year assessment period relating to four targets is therefore granted for each financial year. The four goals of the STI are divided into three joint financial goals , i.e., identical financial goals referring to pro forma EBIT, revenues and net cash of the group for all board members, and several individual goals defined for each management board member. The individual goals are derived from the strategic corporate goals of growth and profitability, innovation, operational excellence, customer experience and people. The strategic goal of growth and profitability is a medium-term strategy to increase revenues and profitability. Innovation takes into account measures for being an innovation leader in the relevant technology segments. Operational excellence includes different targets to increase quality, delivery capability and sustainability. The goal of customer experience is intended to help increase customer satisfaction. People takes into account different concepts for employee development, diversification and employee satisfaction.

Brian Protiva's individual goals include the categories growth and profitability, people and customer experience.

Christoph Glingener's individual goals comprise the categories growth and profitability, innovation, operational excellence, people and customer experience.

Uli Dopfer's individual goals support the categories growth and profitability, operational excellence and customer experience.

Scott St. John's individual goals include the categories growth and profitability, innovation and customer experience.

The extent to which these goals are achieved determines the amount actually paid out which is monitored by the supervisory board. The range of each of the four individual targets for possible target achievement is between 0 % and 250 %.

Payment is made in cash at the end of the performance period. Exceeding or falling below the individual targets is taken into account on a linear basis according to the overall degree of target achievement. The overall target achievement of the STI is limited to a maximum of 200 %.

The targets set for the members of the management board were achieved in the financial year 2021 as follows:

Goal		weighting	Goal achievement	2021 actual value	100 % goal	250 % goal
Pro forma EBIT of the group	in %	40 %	202 %	9.1 %	6.0 %	10.5 %
Consolidated revenues	in millions of EUR	20 %	93 %	603.3	610.0	760.0
Net cash of the group*	in millions of EUR	20 %	250 %	61.2	15.0	37.5
Individual goals	in %	20 %				
Brian Protiva			90 %			
Christoph Glingener			90 %			
Ulrich Dopfer			100 %			
Scott St. John			95 %			

* Net cash as a goal for compensation does not take into account lease liabilities under IFRS 16.

Multi-year variable remuneration

Long-term variable pay (LTVP)

For a bonus payment after the three-year assessment period, it is necessary to achieve a pro forma EBIT defined at the beginning of the assessment period. While failure to achieve the pro forma EBIT in one of the three calendar years of the period under review already leads to the complete loss of the LTVP, exceeding the pro forma EBIT in one or more years does not increase the bonus. The LTVP is thus designed for sustainable group development, but follows the all-or-nothing principle.

In 2019, the members of the management board were granted a long-term variable pay with a term of three years, which would have been fully vested in 2021. However, the pro forma EBIT set for the members of the management board was not achieved in the period under review 2019 - 2021. Therefore, no corresponding LTVP will be paid in the financial year 2022. As the pro forma EBIT target was not achieved, the LTVP 2019 - 2021 was already replaced in 2020 by a new LTVP 2020 - 2022. This will be fully earned in 2022 if the defined targets will be achieved and will be paid out in 2023.

Long-term-incentive (LTI)

Based on the new remuneration framework, the members of the management board can be granted a LTI tranche with a four-year assessment period for each fiscal year. The target remuneration in euros to be defined by the supervisory board is initially converted into a provisional number of virtual shares known as performance share units (PSU). The conversion is made by dividing the target remuneration by the average share price of ADVA SE in the fourth quarter of the previous year before the start of the respective LTI.

In addition, the supervisory board selects up to two financial targets at the beginning of the LTI observation period. This can be, for example, the pro forma EBIT, revenues, free cash flow, return on capital employed (ROCE) and/or the estimated total service revenue (eTSR). In addition, the supervisory board selects up to two non-financial sustainability goals per LTI, such as customer satisfaction according to the customer satisfaction score (CSAT), net promoter score (NPS), the reduction of greenhouse gases according to the goals of the Science Based Targets initiative (SBTi), such as emissions from the company car fleet, electricity purchased and products sold, employee satisfaction, employee development, diversity, succession planning, innovation and compliance. The LTI increases the incentives for a sustainable and long-term increase in company value, taking into account internal and external value development. The ratio of the weighting of financial to non-financial sustainability goals is 80 % to 20 %, regardless of whether one or two goals are selected to be evaluated equally.

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For all LTI targets, the supervisory board defines target values for each calendar year at the beginning of the four-year observation period, which correspond to a target achievement of 100 %, as well as minimum and maximum values, which correspond to a target achievement of 0 % and 200 %, and, if necessary, target achievement curves.

At the end of the four-year observation period, the arithmetic mean of the four annual achievements related to its target is calculated. The average level of target achievement determined for the individual LTI targets is combined according to the defined weighting to form a weighted target achievement. The provisional number of performance share units (PSUs) calculated at the start of the LTI is then multiplied by this weighted target achievement to determine the final number of PSUs. After the end of the LTI in the year following the end of the assessment period, the final number of PSUs determined by means of the weighted target achievement is multiplied by the average share price of ADVA SE shares in Q4 of the previous year. This ensures that the long-term variable remuneration of each management board member is granted based on shares. Finally, the payout of the LTI is limited to 200 % of the target amount of the LTI.

For the calendar year 2021, no LTI will be granted to the acting members of the management board as the former LTVP is still applicable for 2021.

Stock options

ADVA SE grants its management board members stock options in addition to the STI and LTVP or LTI. The stock option plan valid for the 2021 financial year provides for the general conditions described below:

The members of the management board are granted the right to purchase ordinary bearer shares in ADVA SE at a fixed subscription price (option rights). The option rights are granted without additional consideration by the person entitled to the option.

Each subscription right from stock options entitles the members of the management board to purchase one share in the company in accordance with the respective option conditions. The term, the relevant exercise price (subscription price), waiting times and exercise windows as well as the valid exercise periods are regulated in the option conditions.

The exercise periods are regularly linked to significant business events of the company and have a fixed term. Certain other business events establish a blackout period during which the subscription rights may not be exercised. If and to the extent that exercise days fall within such a blocking period, the exercise phase is extended by a corresponding number of days immediately after the end of the blocking period. In principle, options can only be exercised on days when the commercial banks in Frankfurt am Main are open.

The option rights can be exercised no earlier than four years after the option was issued (vesting period). The term of the subscription rights is seven years. Option rights not exercised by the end of the term of seven years from issue expire with immediate effect. A claim by the management board to payment of a cash settlement if the option rights are not exercised despite the existence of the exercise requirements, in particular if the option rights expire, is excluded. The subscription price of the option right corresponds to the volume-weighted average of the closing price of the share on the 10 stock exchange trading days before the respective option right is issued. With regard to each individual trading day, the closing price is the closing price determined in XETRA trading (or a successor system) of the Frankfurt Stock Exchange in the closing auction or, if such a closing price is not determined on the trading day in question, the last in continuous XETRA trading (or a successor system) the price of the company's shares determined by the Frankfurt Stock Exchange. In any case, at least the lowest issue price within the meaning of Section 9 (1) AktG must be paid as the subscription price.

The option rights may only be exercised if the volume-weighted average of the closing price of the company's shares on the 10 stock exchange trading days before the first day of the respective exercise period in which the option is exercised is at least 120 % of the subscription price. The management board is only entitled to exercise the option rights to the extent that the total profit from the exercise of these option rights does not exceed the total amount of options issued multiplied by the maximum profit of EUR 20.00 per option.

On May 15, 2021, three board members received stock options with an exercise price of EUR 10.00.

As of the reporting date, the members of the management board held the stock options from the stock option program shown in the following table:

	Options outstanding on Jan. 1, 2021	Granted options 2021	Fair value at the grant date	Exercised options 2021	Forfeited and expired options 2021	Options outstanding on Dec. 31, 2021
	Number	Number	in thousands of Euro	Number	Number	Number
Brian Protiva	275,000	60,000	196,740	107,140	—	227,860
Christoph Glingener	195,000	130,000	426,270	103,570	—	221,430
Ulrich Dopfer	181,667	75,000	245,925	151,190	—	105,477
Scott St. John	250,000	—	—	—	—	250,000
Total	**901,667**	**265,000**	**868,935**	**361,900**	**—**	**804,767**

The outstanding options of the management board members are divided between the different issue tranches as follows:

	Strike price	Brian Protiva	Christoph Glingener	Ulrich Dopfer	Scott St. John
Tranche	in EUR	Number of options outstanding	Number of options outstanding	Number of options outstanding	Number of options outstanding
May 15, 2016	8.70	42,860	41,430	30,477	—
November 15, 2017	4.98	—	—	—	150,000
May 15, 2018	5.79	75,000	—	—	100,000
May 15, 2020	5.76	50,000	50,000	—	—
May 15, 2021	10.00	60,000	130,000	75,000	—

Share ownership guideline (SOG)

In order to continue to adjust the interests of the management board and the shareholders, share ownership guidelines (so-called share ownership guidelines) have been established. From 2021, a personal investment is mandatory, in which the members of the management board must build up a self-financed investment in ADVA SE shares and hold these shares for the duration of their appointment. After a four-year build-up phase, the amount to be invested for personal investment in ADVA SE shares is 100 % of the gross annual base salary for each individual management board member. For the CEO, the personal investment in shares of ADVA SE comprises 200 % of the base salary (in total) after an extended build-up phase of eight years.

Other remuneration

In the financial year 2021, no other remuneration was granted to the members of the management board. Furthermore, the active members of the supervisory board have not received any loans from ADVA SE. Furthermore, there was no remuneration granted or promised by third parties for work on the management board in the financial year.

Malus & Clawback regulations

In order to ensure sustainable and long-term corporate management and development, the management board remuneration framework contains malus and clawback regulations. Under certain circumstances, these enable the supervisory board to reduce the variable remuneration in part or in full at its discretion, or to reclaim variable remuneration components that have already been paid. Misrepresentations in the financial reports, serious breaches of duty or compliance, serious unethical behavior as well as a grossly negligent or intentional breach of the duty of care by the member of the management board are included in this possibility of reclaim or reduction.

Claims for damages against the board member remain unaffected. The possibility of reclaiming expires three years after payment at the latest.

In the 2021 financial year, the supervisory board did not make use of the malus and clawback regulations described above.

Benefits upon termination of service on the management board

Ordinary termination

In the event of an ordinary termination of the employment relationship, the management board member receives a severance payment in the amount of a STI for the past financial year that has ended but has not yet been paid, as well as a LTI for the financial year that has ended but has not yet been paid, and additional calendar-based shares for LTIs that have not yet ended, which would have been granted upon achievement of the objectives.

Early termination

In the event of premature termination of the employment relationship by the company, which is not due to a violation by the respective member of the management board, the management board member will receive a severance payment in the amount of a pro-rated but not yet paid STI for the past financial year, as well as a pro-rated LTI that has not been paid out and, in addition, for LTIs that have not been completed, calendar-based portions that are to be granted upon achievement of targets, as well as the base salary up to the end of the agreed contract term.

In the event of premature termination of employment before the end of the agreed contract period at the instigation of a management board member, the management board member will receive a severance payment in the amount of a STI that has expired but not yet been paid for the past financial year, as well as a LTI that has been completed but not yet paid.

Each of the aforementioned severance payments is limited with regard to the STI and the LTI, to the extend that any basic remuneration that may still be payable, including fringe benefits and other monetary benefits, the value of two annual salaries and the remuneration for the remaining term of the employment contract are not exceeded under any circumstances (severance payment caps).

The calculation of the severance payment cap is based on the total remuneration for the past financial year and, if applicable, also on the expected total remuneration for the current financial year.

Total remuneration of former members of the management board

In the financial year 2021, no payments were made to former management board members or their surviving dependents. In addition, there are no other pension obligations or any resulting obligations.

Comparative representation

The table below shows the annual change in management board and supervisory board compensation, the earnings development of ADVA SE measured in terms of net income, sales, pro forma EBIT and net cash at group level, as well as the development of average employee compensation and average compensation of senior management on a full-time equivalent basis:

Change in %	2021 vs. 2020
Total remuneration of current members of the management board	
Brian Protiva	37 %
Christoph Glingener	75 %
Ulrich Dopfer	61 %
Scott St. John	38 %
Total remuneration of current members of the supervisory board	
Nikos Theodosopoulos Chairman	— %
Johanna Hey Vice chairwoman	— %
Michael Aquino	— %
Earnings development of the company	
Net income of ADVA SE according to HGB	5 %
Development of the group's key figures	
Consolidated revenues	7 %
Pro forma EBIT of the group	62 %
Net cash of the group*	2,607 %
Average annual compensation of employees	
Average annual compensation of senior management	0 %
Average annual compensation of the total workforce	3 %

* Net cash as a target for remuneration does not take into account lease liabilities under IFRS 16.

The comparison of the relative development of management board remuneration is shown on the basis of the total remuneration granted and payable in accordance with section 162 AktG. When comparing the average employee remuneration, the remuneration of the members of the management board is considered among themselves and in comparison to senior management and the relevant overall workforce in the company. In doing so, the supervisory board takes into account, in addition to the current relationships between the remuneration of the different levels, in particular the development of the remuneration of the groups described over time. The remuneration components include the total annual remuneration.

Remuneration of the supervisory board in the 2021 financial year

The remuneration framework of the supervisory board was approved by the annual general meeting of ADVA SE on May 19, 2021 and is also stipulated in section 12 of the articles of association of ADVA SE. The remuneration framework for the members of the supervisory board (disclosures pursuant to Section 113 (3) Sentence 2 in conjunction with Section 87a (1) Sentence 2 AktG) is based on purely fixed remuneration with no variable components and no share-based remuneration. The management board and the supervisory board are of the opinion that purely fixed remuneration for the members of the supervisory board is best suited to strengthening the independence of the supervisory board and taking into account its advisory and monitoring function, which must be fulfilled independently of the company's success. A purely fixed compensation is also provided for in the suggestion of G.18 Clause 1 of the German Corporate Governance Code. Accordingly, the members of the supervisory board received neither shares nor stock options in 2021.

Due to the larger area of responsibility, the fixed remuneration of the chairman of the supervisory board for the financial year 2021 is EUR 100 thousand. For the other members of the supervisory board, the fixed remuneration is EUR 45 thousand each for 2021. The chairwoman of the audit committee receives an additional EUR 45 thousand annually for her work. This adequately takes into account the greater time required when taking over the chair of the supervisory board and of the audit committee. The remuneration of the supervisory board is paid out proportionately on a quarterly basis and exclusively by ADVA SE.

The following table shows the remuneration components granted and payable to the active members of the supervisory board in the 2021 financial year, including their relative share in accordance with Section 162 AktG. As compensation granted and owed is not always accompanied by a payment in the respective fiscal year, the following table shows the amount of funds granted to the members of the supervisory board for fiscal year 2021.

	Fixed compensation		Comittee compensation		Total compensation
	in thousands of EUR	in %	in thousands of EUR	in %	in thousands of EUR
Nikos Theodosopoulos Chairman	100	100 %	—	— %	100
Johanna Hey Vice chairwoman	45	50 %	45	50 %	90
Michael Aquino	45	100 %	—	— %	45

The members of the supervisory board are included in a pecuniary damage liability insurance policy, the premiums for which are paid by the company.

The active members of the supervisory board did not receive any loans from ADVA in the financial year 2021. In addition, there are no pension commitments for active members of the supervisory board.

Former supervisory board members did not receive any payments in 2021.

Meiningen, February 22, 2022
The management board:

Brian Protiva Christoph Glingener

Ulrich Dopfer Scott St. John

On behalf of the supervisory board:

Nikos Theodosopoulos
Chairman of the supervisory board

Employees

On December 31, 2021, ADVA had 1,973 employees worldwide, including 27 apprentices (prior year: 1,870 including 22 apprentices).

On average, ADVA had 1,918 employees during 2021, down from 1,882 in 2020. Furthermore, there were 41 and 39 temporary employees working for ADVA at year-end 2020 and 2020, respectively.

Personnel expenses in the group increased from EUR 181.9 million in 2020 to EUR 192.0 million in 2021, representing 32.2 % and 31.8 % of revenues, respectively.

On December 31, 2021, ADVA Optical Networking SE had 628 employees, thereof 27 apprentices (prior year: 597 employees, thereof 22 apprentices). This corresponds to an increase of 31 employees or 5.2 % versus the end of the prior year.

The breakdown of employees of ADVA SE by functional area is as follows:

	2021	2020	Change
Purchasing and production	174	169	5
Sales, marketing and service	122	115	7
Management and administration	97	98	(1)
Research and development	208	193	15
Apprentices	27	22	5
Total employees	**628**	**597**	**31**

Personnel expenses in the ADVA SE slightly increased from EUR 50.7 million in 2020 to EUR 55.2 million in 2021, representing 12.5 % of revenues in 2021 compared to 13.4 % in 2020.

The employee compensation packages comprise fixed and variable elements and include stock options. These compensation packages enable employees to participate appropriately in the success of the group, and support employee retention, while at the same time rewarding individual efforts, teamwork, innovation and productivity. Furthermore, they should also enable individual achievements to be recognized as well as promote team spirit, innovation and productivity. In addition, employees are regularly honored for special achievements and extraordinary commitment are recognized through the group's Spot Award program. In addition, the group is committed to offering all employees comprehensive on-the-job training, as well as specific continuing education opportunities in order to advance their personal and professional development.

The group offers different types of continuing education programs through the ADVA university, based on employee development needs. These needs are identified, documented, and reviewed semi-annually, within an electronic performance appraisal and competency management system.

Within ADVA, all relevant local regulations for health and safety in the workplace are complied with, and in some countries are regularly monitored by independent engineering offices for safety in the workplace.

ADVA is committed to the creation of a workplace free of discrimination and harassment. The group recruits, hires, trains and promotes individuals on all job levels without regard to race, religion, ancestry, sexual orientation, marital status, national origin, age, gender and physical or mental disability. ADVA is committed to a fair and equitable workplace where everyone is a respected and valued member of the team. The group's core values (teamwork, excellence, accountability and motivation) and leadership principles (integrity & honesty, decisiveness and respect) guide employees and managers in all business activities.

An efficient employee representation without trade union ties is in place on a global basis, reflecting the international employee base and overall orientation of the group.

At its main production and development facility in Meiningen, Germany, ADVA currently provides 27 apprenticeship positions, whereof 14 lead to professions as electronic technician for devices and systems, office management assistant and as specialist for warehouse logistics. In Meiningen, Germany, the company is among the most recognized apprenticeship providers for industrial electronics professions in its region for a long time. In addition, ADVA offers a dual study program in Germany which combines a university degree with firmly integrated practical on-the-job work experience in the company. This enables the students to put the knowledge they have learned into practice in a direct context. Currently 13 students are trained within this program.

Risk and opportunity report

ADVA's future development offers a broad variety of opportunities. It is however also subject to risks, which in certain cases could endanger the group's continued existence. The management board has implemented a comprehensive risk management and internal control system that enables the detection of risks in a timely manner and allows the group to take corrective action and to benefit from identified opportunities. An integral aspect of the group's strategy is its ability to anticipate developments in the marketplace and future customer needs. Special emphasis is given to product development, the quality of the group's products and the validation, selection and oversight of key business partners.

Risk management system

Since ADVA was founded in 1994, its business has become more diversified. The group markets its products and solutions in part via a variety of distribution partners but has become less dependent on these partners over the years due to continued investment in a direct distribution model in core geographies. Beyond focusing on enhancing revenue and profit predictability, a comprehensive risk management system has been established which is coordinated by the Internal Audit and Risk Management function.

Manoj Srinivasan

"We're opening up the network edge and helping our customers take the next major step in their digital transformation. Our innovation and support is empowering them to harness tomorrow's opportunities."

Being a globally operating company, ADVA implemented its risk management system on the basis of applicable laws and regulations and by considering common international standards and best practices such as the COSO framework and the ISO 31000 standard. Additionally, it integrates supporting management systems such as especially the group's compliance management. The management board nevertheless recognizes that a risk management system cannot in all cases prevent the occurrence of events that may cause material damage to the group.

Glossary: *page 174*

ADVA's strategic goals are the basis for its risk management system. These goals are organized into five areas, growth and profitability, innovation, operational excellence, customer experience and people. The strategic goals are reviewed by the management board and the supervisory board on a yearly basis and amended where appropriate. They also constitute the basis for the group's three year business plan, which is reviewed and updated annually. Each of these goals is defined in detail and then broken down into specific departmental and individual targets. The strategic goals are traced to each employee so that every individual can focus and be evaluated on the own performance and contribution to ADVA's overall success.

ADVA measures the accomplishment of its strategic goals against revenues, pro forma EBIT and net cash as well as the non-financial criterion of customer satisfaction measured by the net promoter score. These metrics represent the group's key performance indicators. The management board sets target values for all four metrics for the year to come and measures actual values against the target values: revenues, pro forma EBIT and net cash on a monthly basis and the net promoter score on an annual basis. Corrective action is taken quickly should a deviation from the plan occur or be reasonably predicted to occur. This information is summarized and communicated to the management board in monthly, quarterly and yearly reports.

Moreover, budgets are reviewed on a monthly basis and adjustments are made if necessary. The group's accounting, controlling and treasury departments provide globally consolidated reports on available cash funds and the development of margins and current assets (e.g., inventories and receivables) on a monthly and quarterly basis. These reports also include budgeted, forecasted and actual revenues and expenditures. The structure and content of these reports is continuously adapted to the most current requirements.

ADVA regularly monitors the creditworthiness of its customers and updates credit limits as needed. Material expenditures and investments must be approved in advance through an electronic purchase order system. In conjunction with continuously updated revenue and cash forecasts, a detailed monthly preview of the anticipated group development within the next three to twelve months is put together and communicated to the management board. Moreover, the group's accounting, controlling and legal departments review potential legal and litigation risks on a quarterly basis in order to obtain a reliable estimate of the potential loss, considering all relevant information and expectations. Finally, ADVA's management board discusses all significant business transactions with the supervisory board and obtains its approval if necessary.

In order to ensure observance of all applicable laws and regulations and to support the group's ongoing growth and internationalization, the management board implemented a compliance management system. Key compliance measures include a code of conduct, a range of group-wide policies, the training of employees and the active encouragement to report suspected incidents of non-compliance and to seek support in case of uncertainties or questions.

All implemented measures and processes of the risk management system as well as of the compliance management system are continuously reviewed and improved.

ADVA differentiates between two main categories of risks and opportunities – those considered major and those considered non-material. A risk or opportunity is considered major if its expected net impact on the group's pro forma EBIT is or exceeds EUR 3 million in terms of ADVA's three-year business plan. If not attributable to the pro forma EBIT, the group's net income is used as reference. The expected net impact is calculated by multiplying the potential net impact of a particular risk or opportunity with its net likelihood of occurrence. As from 2021, a different assessment is applied to long-term non-financial risks and opportunities. Differently to the above, the planning horizon is not limited to three years. However, as probabilities and impacts of risks and opportunities with indefinite periods are difficult to quantify, estimates are made and a qualitative assessment is applied instead. This assessment is performed by a team of assessors consisting of experts from risk management, sustainability management and quality management.

For each major risk, the group assigns a dedicated risk owner who is responsible for defining and implementing an adequate and effective response for risk mitigation. Adherence with this process is monitored by the group's internal audit and risk management function which conducts structured reviews with each risk owner according to a defined schedule and at a minimum once per quarter. Should any such major risk materialize, the assigned risk owner has the responsibility to immediately report this to the management board. Independent of specific risk ownership, all employees of ADVA are compelled to escalate additional material risk items directly and informally to the internal audit and risk management function and the chief financial officer. Risk identification and reporting is supported by monthly reports and regular webinars in which the management board informs the global management team about the current business development, outlook and goals.

Based on the outlined analytical tools and processes, ADVA ranked 16 risks as major risks at the end of 2021 (end of 2020: 14), which are discussed in detail below. The higher number of major risks compared to 2020 mainly results from the new assessment of non-financial risks explained above.

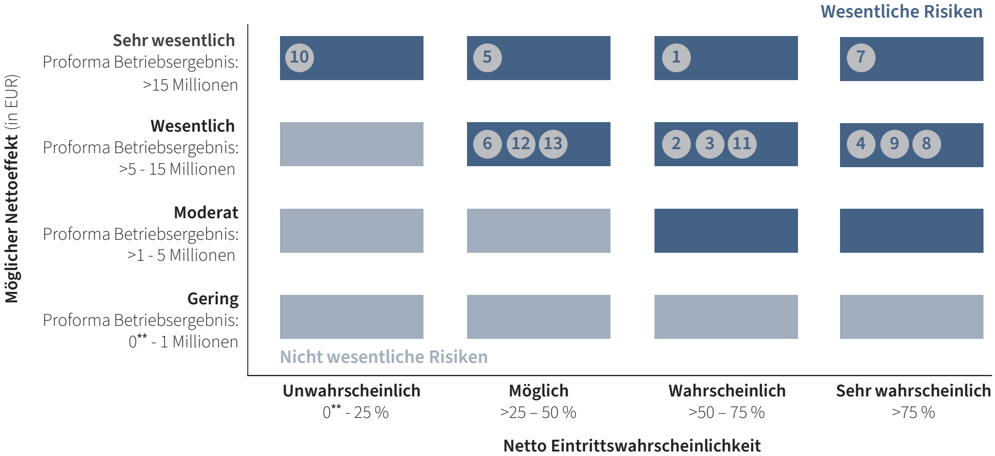
ADVA's risks are aggregated by means of Monte Carlo simulations. The total risk is compared to ADVA's risk bearing capacity to identify potentially existence-threatening cumulations of risks. If the aggregated risk exceeds the risk bearing capacity, the management board is immediately informed to initiate counter measures and to reduce the risk exposure.

The risks and opportunities of ADVA Optical Networking SE essentially correspond to those of the group. In addition to the risks listed here, there is also a risk with regards to the fluctuation of income from investments and the recoverability of shares in affiliated companies. ADVA Optical Networking SE does not consider these risks to be material.

Major risks 2022-2024

1* Verlust von wichtigen Kunden oder Vertriebspartners
2 Unzureichende Unterstützung der Markteinführung neuer Produkte
3 Vermeintlich unzureichende Unternehmensgröße oder Innovationsfähigkeit
4 Preisdruck am Markt
5 Falsche Produktstrategie
6 Nicht wettbewerbsfähige Produktkosten
7 Lieferengpässe
8 Cyber Risiken
9 Währungskursrisiken
10 Unbefriedigende Qualität von Zulieferern und Auftragsfertigern
11 Compliance Verstöße von Vertriebspartnern
12 Verlust an Wissen, Fähigkeiten, Beziehungen und Kapazitäten
13 Verlust von Wettbewerbsfähigkeit durch Verzögerungen in der Produktentwicklung

Nicht-finanzielle Risiken (gehen über 2024 hinaus, daher nicht in Graphik dargestellt):
14 Klimawandel
15 Kreislaufwirtschaft
16 Neue Regularien



* Numbers follow the sequence of risks in the report. Risks are not sorted by value.
** Defined minimum thresholds for risk reporting

Growth and profitability risks

Loss of key customers or channel partners (likely; very material)

The loss of key customers or channel partners would have significant impact on ADVA's business and may arise from changes in customer demands and the group's ability to meet them, or mergers and acquisitions of existing customers that result in the decision to consolidate vendors and technology partners in a way that either reduces or eliminates ADVA's share of the consolidated entity's spend. However, for most key revenue customers, the group has deployed thousands of systems over a multi-year period which are integrated in operational workflows and processes and, as a result, there is a certain dependency on ADVA and its products. For key customers and channel partners, the group furthermore ensures continuous performance and satisfaction through a dedicated team of professionals.

Inadequate go-to-market support (likely; material)

ADVA operates in an industry characterized by rapid technological change. Examples include the ongoing convergence of Layer 2 and 3 at the network edge, the emergence of new disrupting technologies such as NFV and the growing importance of network synchronization. In order to benefit from such developments, ADVA has substantially increased its product portfolio during the last few years and continuously develops new products and features in order to meet customer requirements. Supporting the market introduction of new and enhanced products and technologies requires significant investments in resources, tools and procedures. Inadequate go-to-market support may result in delays in selling newly developed products and solutions, undermining ADVA's growth and profitability targets.

Perceived lack of scale or innovation capability (likely; material)

Industries and consumers increasingly rely on networks for their daily business operations. High-performance network infrastructure is now regarded as the backbone of an increasingly digitized society and has greatly increased in importance and value. Accelerated by the Covid-19 pandemic, digitization activities will intensify in many industries and areas of our daily lives. As a result, the group's customers are more intently seeking out vendors for their network extensions, who offer leading innovation and engagement models, and who have the financial strength and sustainability to deliver on these over the long-term. With ADVA being one of the smaller companies in the network equipment industry, a certain risk arises that customers may have doubts about ADVA's ability to execute on its (product) strategy. Nevertheless, the group's proven track record in meeting this challenge does help to mitigate the risk.

Moreover the planned merger with ADTRAN will create a new innovation leader at the network edge. With annual revenues to exceed EUR 1 billion and an annual R&D budget of close to EUR 250 million, the combined company will have a significant size and innovation power.

Market pricing pressure (very likely; material)

Procurement is a key focus area for customers and their cost-saving initiatives. Purchases, especially for multi-year projects, are often conditioned on gradual price decreases. In our traditional environment, the group has focused on meeting customer needs while maintaining healthy margins through innovation. That is, delivering differentiated capabilities to our customers to successfully defend higher prices or introducing new products with lowers costs that allow us to reduce the market price while maintaining acceptable margins. In the current environment, significant cost increases associate with the global silicon shortage, including component price increases, broker premiums and freight premiums are causing the group to have to contemplate raising prices to our customers. Although most other vendors are already doing this, price increases could be a trigger for considering alternative solutions from our competitors in some cases.

Innovation risks

Wrong product strategy (possible; very material)

The market for innovative connectivity solutions for cloud and mobile services is highly competitive and subject to rapid technological change. Competition in this market is characterized by various factors, such as price, functionality, service, scalability and the ability of systems to meet customers' immediate and future network requirements. Another competitive factor which is gaining importance is sustainability. Should ADVA be unable to quickly adapt to changing market conditions, customer requirements or industry standards, the group's development would be impacted negatively. Since some of the group's competitors operate in a broader market and have considerably more resources available due to their greater size, ADVA must continue to focus its efforts on those technologies and features that are expected to supersede the current ones. The likelihood of wrong development decisions is minimized by a series of preventive actions that include running advanced technology projects, running a team of navigators to decide on strategic direction, industry and competitor analysis, keeping the group's development roadmap up-to-date, testing product visions with customers, monitoring and influencing standardization and staying close to customers in order to identify differentiating technology opportunities. In addition, the group has implemented a highly flexible and adaptive development organization and processes to quickly adjust to changing requirements.

Uncompetitive product cost (possible; material)

ADVA achieves cost advantages through its ability to scale economically and through the optimization of product design. The loss of competitive product cost would drastically reduce the group's success in winning new business and would have a negative effect on gross and operating margins. The significant pricing pressure for innovative connectivity solutions must be met strategically by improving processes, controls and technology while maintaining adequate R&D budgets, as well as operationally by achieving cost leadership in sourcing product components. A dedicated team identifies competitive price and cost targets for new products, monitors product cost changes throughout the development process and negotiates, tracks and forecasts product and related component costs. Achievement of the group's annual cost reduction targets for sourcing components is monitored by monthly and quarterly status reports to the group's management board. The establishment of parallel production lines in different territories to mitigate geopolitical and supply chain risks leads to an increase in capital expenditures and operational cost. ADVA diligently assesses the advantages and disadvantages of second sources and parallel production lines versus the additional cost incurred. The global semi-conductor shortage has led to significant price increases, not only for semi-conductors but also for other components. The competitiveness of ADVA's product portfolio has not been much affected, though, as competitors enface the same cost increases.

Operational excellence risks

Supply shortages (very likely; very material)

ADVA sources product components either based on forecasts or upon receipt of a customer purchase order. Any shortage in the required material can thus have a significant negative impact on the group's performance. This may be caused by natural disasters which are expected to occur in higher frequency and at larger scales due to the climate change, pandemics, political conflicts, or specific problems of a supplier. Some components undergo strongly varying demand cycles. Particularly semiconductor capacities notoriously fluctuate between supply shortages and over-capacities. In 2021, the semiconductor market experienced a significant shortage in capacities due to surging demands across the globe. Starting at the end of 2020 and into 2021 increased demands in consumer goods, electric vehicles and a global economic recovery have triggered an unprecedented supply shortfall across all semiconductor commodities. ADVA has reacted to these shortfalls with a variety of actions such as a closed communication loop on executive level with major semiconductor vendors, improved planning and buffer models, a steering committee to oversee the critical components on a daily basis as well as a prioritized collaboration between Operations and R&D to qualify second source and alternative components. Nonetheless, the crisis has impacted ADVA's financials by increased pricing and supply shortages resulting in delayed revenue generation. The semiconductor crisis is expected to last until late 2022 up to mid 2023. ADVA is monitoring the situation very closely and is taking actions dependent on changing market conditions.

Cyber risks (very likely; material)

The integrity, confidentiality and availability of our information systems and data is key for the functioning of our business processes and consequently for the company's success. Cyber-attacks against organizations are increasing worldwide in both, quantity and quality, and attackers are more frequently targeting midsize companies like ADVA. Cyber-crimes are committed by a wide range of perpetrators ranging from single hackers to professional organizations partially operating on behalf of national governments. The motives for cyber-attacks are similarly wide ranging from ransom extortion to industrial espionage and sabotage. Preventing from, and combating cyber threats is a never-ending challenge which in ADVA is accomplished by a series of measures. These include among others the continuous monitoring of the information security risk landscape, making staff aware for cyber threats through adequate trainings, fast patch management, restrictive access right management, a centralized information technology function which enforces rigid and global security policies, regular review of the information technology disaster recovery plan and incident management as well as network, system and application monitoring. Although information security measures are continuously improved and adapted to combat new threat profiles, there is no guarantee that the measures will prevent ADVA from cyber-crimes.

Exchange rate risks (very likely; material)

ADVA is selling products and services to customers around the world. In doing so, substantial cash flows are denominated in EUR, USD and GBP. In addition, ADVA runs development and operating sites in non-EUR countries which lead to significant cash outflows in local (non-EUR) currencies. Wherever possible, ADVA makes use of natural hedging, i.e. tries to best match in- and outflows of foreign currencies. Nonetheless, ADVA uses forward hedging contracts to partially mitigate risks from unbalanced foreign exchange cash flows. As many economies are currently confronted with high inflation rates, worldwide central banks are likely to intervene in money markets (e.g. by increasing prime rates) if inflation does not ease within the next months. These interventions are likely to result in a high volatility of foreign exchange rates. ADVA considers the exchange rate risks higher than in the last years.

Unsatisfying supplier and manufacturing quality (unlikely; very material)

ADVA's product quality is significantly influenced by its suppliers and contract manufacturers. Failure of a single part may cause the whole system to be dysfunctional. Early detection of component as well as production deficiencies is thus critical for the group's success. Deteriorating quality levels could not only lead to delays in installation, return of products or cancellation of orders, but also to penalties and lawsuits, contract terminations and liability claims. Preventive actions to avoid quality deterioration include close collaboration with key suppliers during the development of critical components, structured and tool-based processes for supplier and manufacturer identification and qualification, robust contracting including adequate indemnifications, and regular audits of key suppliers and all manufacturers.

People risks

Compliance violations by intermediaries (likely; material)

ADVA markets its products and solutions in part via a variety of distribution partners due to required economies of scale, local (legal) requirements and in order to benefit from existing contractual as well as personal relationships and post-sale support organizations and capabilities. While the group's ability to control the partners' activities are limited, compliance violations by intermediaries may, under specific circumstances, be attributed to ADVA. For mitigation, ADVA implemented robust risk-based due diligence procedures including upfront vetting of new intermediaries and periodic reviews and updates. In addition, ADVA's sales agreements contain clauses in which the intermediaries guarantee compliance with the rules. Existing commission-based compensation is tightly controlled and new contracts are avoided where possible.

Loss of knowledge, skills, relationships and overall capacity (possible; material)

The digital transformation continues at a rapid pace and has led to a permanent shortage of skilled workers within the technology industry. While particularly intense in developed countries, competition for talent is fierce all over the globe. As a result, the group is continuously challenged to retain and nurture its employees in order not to lose their knowledge, skills and relationships required to develop, sell and maintain the group's innovative products and solutions. Covid-19 changed the way employees work. Many of them, especially in the software and IT sector can opt for remote jobs which increases the attrition risk.

Customer experience

Uncompetitive products due to delayed release (possible; material)

High competition and rapid technological change are the decisive characteristics of the market for innovative connectivity solutions for cloud and mobile services. Continuous success not only requires the identification of innovative solutions for future network and customer requirements by maintaining cost leadership, but to also release such innovations at the projected time as delays may undermine their competitiveness. As a result, ADVA implemented a joint development and operations organization (DevOps) clustered into technology value streams to maximize effectiveness and break up barriers. All value streams operate according to one common tool-supported development process.

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Ashley White

"Our innovation enables customers to connect more quickly, more securely and more sustainably. By opening up the network edge, we're helping to enhance every aspect of people's lives."

Non-financial risks

Global Warming (HGB classification: environmental matters)

Currently, global warming is rated the most relevant and urging environment-related risk. It has a long-term character, with severe symptoms only developing, possibly, beyond 2030, and which has to be mitigated for many decades to come, most likely open-ended. Symptoms include extreme-weather events like droughts, extended hot periods, heavy-precipitation events, and sea-level rise. Global warming is related to greenhouse-gas emissions, in the first place carbon dioxide. It therefore relates to all significant emissions sources. Counter actions split into climate-change mitigation and climate-change adaptation (as per the EU Taxonomy Regulation). For ADVA, mitigation refers to reducing product emissions in the first place. Furthermore, climate change is mitigated with several long-term, process-oriented actions that are formalized in our SBTi participation, the respective SBTi targets are part of the strategic company goals.

Circular Economy (HGB classification: self-defined)

Circular economy relates to the aspects of raw-material scarcity and waste generation. It has long-term character, with severe symptoms (massive raw-material cost increase) only developing, possibly, beyond 2030, and which has to be mitigated from now on and forever. First examples include the current semiconductor crisis. However, in this crisis circular-economy mechanisms were not yet detected on broad scale and therefore did not substantially help to mitigate it. Circular economy also has a strong compliance aspect which not only relates to compliance with upcoming laws but also with customers' expectations. Shorter term, only limited (financial) risks are identified, but in general, the circular economy risk requires immediate action to prevent worse effects in the future. Counter actions comprise all actions and processes aiming at reducing electronics waste and improving material efficiency. This includes the related aspects of ecodesign➲ that are formalized in our environmental requirements and our reverse-logistics process.

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New Regulations (HGB classification: self-defined)

New regulations fraught with risk primarily relate to various aspects of components that ADVA purchases. In the first place, this refers to the REACh➲ Regulation and Conflict Minerals, Cobalt, Mica, etc. Mitigation actions in this area must involve the supply chain. Risks include excessive efforts for new regulations and the required compliance, partial or temporary non-compliance with the subsequent risk of disruptions in the components supply, loss of customers, and others. The upcoming (German) supply chain act➲ will also require additional effort and related cost. Similarly this applies for the EU Taxonomy Regulation with its reporting requirements. Shorter term, primarily financial risks are seen, but in general, new regulations require immediate action to prevent severe brand damage in the future. In addition to the limited risk in the near future, there are potentially higher risks associated with the potential ban of further materials which are important for optoelectronic components. Counter actions comprise close tracking of all forthcoming regulations, where necessary respective re-design actions (e.g., to replace certain components), and related effective supply-chain management. Counter actions also comprise our efforts to increase the coverage of our portfolio with material declarations to maximum extent.

Minor and financial risks

Beyond the discussed 16 major risks, there is a broad range of minor risks that can also have a negative impact on ADVA. These uncertainties include financial risks such as the inability to secure financing, the risk of early maturity of loans due to the breach of material contractual obligations in connection with loan agreements totaling EUR 47.8 million and committed borrowing facilities totaling EUR 10.0 million as well as the risk of customer defaults, balance sheet risks such as the impairment of intangible assets, changes in interest rate levels and inventory risks. Due to the semi-conductor crisis the volume of inventories has been increased to overcome shortages and to maintain the supply chain. The majority of pre-ordered materials relates to standard components with limited excess and obsolescence risk, though. Uncertainties also exist with regards to the timing of carrier➲ investment cycles and to distribution partnerships, to legal risks pertaining to potential claims under product and warranty liabilities as well as patent rights, to people related risks including bribery, corruption, harassment and discrimination and to secure confidentiality of personal and business sensitive data. Moreover, to general macro-economic risks and risks related to acquisitions. The management board of ADVA does not consider any of these risks or other uncertainties to have a major impact on the group in case of their occurrence.

Changes to the overall risk situation and classified major risks in 2021

During 2021, the number of ADVA's major risks increased by two. This results mainly from the consideration of the three non-financial risks with long-term character (see above). Exchange rate risks which were considered as minor in 2020 are classified as major risk now. The geopolitical and trade risk is no longer reported as a major risk. The expectation is that trade barriers and tariffs will continue to exist. Related costs are reflected in the budget plan, though. Moreover, a program to further reduce the dependency on vendors of certain countries including China is well in progress. The risk of unsatisfying software design quality which was classified as major risk last year is now reported as minor risk. In summary, twelve risks remained largely unchanged, four risks were added, and two were reclassified as minor risks. The semi-conductor crisis marked the most important change in the overall risk situation in 2021 compared to 2020. The risk of interruptions of the supply chain was omnipresent and required close monitoring. The impact of Covid-19 was comparable to the previous year. ADVA staff was protected from the very beginning by extensive hygiene measures and home office use. Similarly to 2020, the direct and indirect impact of Covid-19 on ADVA's business results was marginal, though.

Opportunity identification

The identification of opportunities is largely identical to the processes, tools and concepts as described in the "risk management system" section above. The annual definition of the group's opportunities is supported by the management board, which has regular discussions with key customers and industry thought leaders in order to identify new opportunities and technological trends. Throughout the group, agile processes maximize the group's ability to take advantage of newly identified trends. Current major opportunities are as follows:

Market share gains in Europe (very likely; very material)

The Covid-19 pandemic and global supply chain issues have highlighted the economic importance of digitization and a secure communications infrastructure and has prompted a rethink in politics and business. The use of device technology with questionable origin is now viewed very negatively, and many European countries/companies are actively working to reduce the dependence on large Chinese network equipment suppliers, in particular Huawei, in their networks. Additionally, global supply chain disruptions, as a result of the global silicon shortage, are causing network operators in Europe to re-look at the vendor landscape, which often results in a desire for them to partner with vendors who are "local" on a regional basis. For ADVA, as an established company headquartered in Europe, these new dynamics create additional opportunities.

Acquisition of new key customers and distributors in the U.S. (very likely; very material)

Telecom equipment customers typically enter into long-term relationships with their suppliers. Their installed systems usually have a deep impact on their operating processes and procedures, and a complete switch➲ to a new supplier often involves considerable expenditure of time and money. Nevertheless, customers sometimes switch suppliers, whether for better prices, improved quality, to further develop networks, or because of corporate policy decisions. At present, there are some other less traditional driving network operators to consider switching, or adding, new suppliers: political headwinds facing Chinese vendors, especially Huawei; significant infusion of government stimulus investment for expanding fiber networks, the Rural Digital Opportunity Fund (RDOF) provides close to USD 20 billion to US network operators for rural broadband expansion; and, availability of supply related to the global silicon shortage. Each of these may increase the rate of supplier decisions in the coming quarters and represent a potential opportunity for ADVA, which we will systematically analyze and pursue.

Moreover, the planned merger with ADTRAN will provide new market opportunities, particularly in the US. ADTRAN has got a broad customer base of so-called tier-2 and tier-3 CSPs➲. These are smaller communication service providers and network operators, who play an essential role in the rollout and development of broadband access in rural and underserved regions. A major portion of the US government stimulus programs is specifically earmarked for these operators. While ADTRAN provides solutions for residential broadband access including fiber-to-the-home, ADVA offers middle-mile-transport technology for the backhaul and business customer access solutions. The complementary nature of the offerings will create cross-selling opportunities in the ADTRAN accounts.

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Portfolio cross-selling based on unified network management software (likely; material)

ADVA operates in three distinct technology areas: open optical transmission technology, programmable cloud access solutions and high-precision network synchronization. In addition to a variety of opportunities in each of these technology areas, the group sees a high likelihood of cross-selling between technologies supported by common network management software and cross-product security concepts. In recent years, ADVA has consolidated several previously separate software platforms into a common architecture that supports all technology areas. As this platform is used by several hundred of the group's customers, who typically have requirements for all three technology areas but are existing customers in only one or two areas, there are significant cross-selling opportunities.

Additional demand for packet-based access solutions with increasing software content (likely; material)

With the introduction of 5G and the emergence of edge computing solutions, CSPs are redefining their strategies in the network access space. ADVA has invested heavily in expanding its cloud access portfolio to help CSPs find new revenue streams. As a result, ADVA has the world's most comprehensive portfolio of fiber-based Ethernet access and aggregation solutions that enable industry-leading data transmission. In addition to FSP➲ 150 hardware, ADVA's Ensemble software portfolio provides virtual network solutions that enable CSPs to offer new services to enterprise IT departments. NFV enables CSPs to quickly create and deploy new services anywhere in the world. Driven by close partnerships with some of the world's leading enterprise IT suppliers, the group sees the potential for numerous new customer wins and a higher share of software revenue in this area.

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Additional demand for services through use of machine learning (ML) and artificial intelligence (AI) (likely; material)

In the past fiscal year, ADVA was able to further increase its contribution to revenues through services. More and more customers are using the company's range of services in the planning, construction and commissioning of their networks. In addition, there are contracts for the maintenance and protection of networks already in operation. ADVA is continuously expanding its service catalog, for example using ML and AI to offer new services for improved network resilience. The pandemic has increased demand for all services and further significant revenue increases are possible.

Information technology security (likely; material)

Large enterprises and government agencies are concerned about the security of their data and business processes and are therefore building new data backup and data storage solutions, which in turn require transmission technology to link sites. In addition, the EU's General Data Protection Regulation (GDPR➲), which came into force in 2019, is leading to increased data protection requirements for all companies operating in Europe. A few years ago, network technology primarily had to provide cost-effective bandwidth. Today, the focus is increasingly on security. This inevitably has an impact on the technical realization of the cloud as well as customers' selection of manufacturers. ADVA is the one remaining European specialist in optical transmission technology and a reliable partner for thousands of companies. Its ConnectGuard™➲ security portfolio offers customers comprehensive protection in different network scenarios and brings numerous competitive advantages. ADVA, as a European company with strong visibility and presence with data center and network operators worldwide, anticipates a positive market environment with additional opportunities in security-related infrastructure.

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New markets for synchronization solutions (very likely; material)

In addition to mobile network operators' increasing demands for high-precision synchronization solutions, ADVA's Oscilloquartz technology is gaining traction in other applications. Synchronization of global databases of internet content providers, accuracy of timestamps for financial trading, synchronization of power grids with distributed generation, time distribution in digital infrastructure deployment, and synchronization of media networks all offer additional opportunities for this technology area.

Expansion of addressable market and share gains through decarbonization (possible; material)

According to current knowledge, climate change and the resulting threats to our planet are largely due to high CO_2 emissions worldwide. The transport of goods and people has played a not insignificant role in this. In addition, of course, the energy consumption of communication networks is also increasing as data traffic grows. This creates opportunities for ADVA: on the one hand, the lockdown of the past two years demonstrated that numerous economic processes, as well as processes of daily life, often function with significantly less mobility. Home office and video conferencing have significantly reduced the need for business travel in many industries. The aspect of "green thanks to ICT" – i.e., more resource-efficient processes through the use of communications technology to replace the need for trips and flights – is stimulating network expansions in many countries of the world and having a positive effect on the growth of ADVA's addressable market. On the other hand, ADVA's activities in the area of sustainability are highly advanced. These are described in detail in the separately published sustainability report. The company's efforts to sustainably reduce the energy efficiency of its products as well as its own operational processes have been recognized by numerous organizations and go well beyond the commitment of direct competitors, especially from the US and the Far East. The company's innovation can reduce the energy consumption of communications networks. ADVA's customers, some of whom have set very ambitious climate targets, benefit from these improvements and appreciate the company's efforts. Now that some countries even require CO_2 levies to be paid, this also creates an economic advantage for network operators and, in turn, a competitive advantage for ADVA.

Additional sales opportunities from ongoing market consolidation (possible; material)

Vendor consolidation in optical transmission technology will continue. In 2019, an Israeli competitor of the group was acquired by a US technology company. This acquisition further reduces the number of independent companies focusing on optical network solutions. ADVA is the remaining European specialist in this technology and has built a positive reputation among its customer base. Through the acquisition of Overture in 2016 and the acquisition of MRV in 2017, the group itself has contributed to the ongoing industry consolidation and gained strength and relevance. A consolidated competitive landscape can lead to slower market price erosion and new opportunities for ADVA to win additional customers as a primary or secondary supplier.

Vertical integration for cost reductions in product components and new markets (likely; moderate)

ADVA is increasingly investing in the development of optoelectronic components. These investments enable greater vertical integration and greater independence from suppliers. On the one hand, this leads to an improved cost structure for certain functions in ADVA's systems. On the other hand, ADVA benefits from an expansion of the total addressable market (TAM). The newly launched MicroMux family of pluggable transceivers will make an increasing contribution to consolidated revenues and margins in 2022 and beyond, with strong growth potential.

Exchange rate opportunities (very likely, material)

As explained above in "exchange rate risks", at present, major uncertainties exist about the future development of foreign currency exchange rates relevant for ADVA. These can have a negative as well as a positive impact on ADVA's revenues and results. As ADVA plans the foreign exchange rates at the budgeting time at expected balanced rates, there are equal risks and opportunities resulting from foreign exchange.

Changes to the overall opportunity situation and the classified major opportunities in 2021

Compared to the previous year, and excluding the extended opportunities by the planned merger with ADTRAN, the company believes that its opportunities are about the same as last year. The efforts of the western developed countries to remove Huawei and ZTE equipment from their networks continue to provide new market opportunities in a consolidating market. Coupled with increasing demands driven by information security requirements, high-precision synchronization required by new customer groups as well as its new range of software and service offerings, ADVA has a strong foundation for great performance.

Overall opportunity and risk assessment

Based on careful inspection of the group's opportunity and risk profile at the time of the preparation of the combined management report, and excluding any opportunities of the planned merger with ADTRAN, the management board of ADVA believes that the group's opportunities fully offset the risks. Apart from uncertainties regarding the supply chain caused by the semiconductor crisis, ADVA's overall balance between opportunity and risk appears about the same as at the time of the publication of the 2020 combined management report. The management board has not identified any risk which would endanger the going concern of the ADVA group.

Internal controls related to financial reporting

The management board of ADVA is responsible for establishing and maintaining an adequate system of internal controls. It has implemented an internal control system that enables the management board to ensure completeness, accuracy and reliability of financial reporting at group and legal entity level. When designing its internal control system, ADVA used the COSO framework as a key reference and source of guidance. The internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting. No system of internal control over financial reporting, including one determined to be effective, may prevent or detect all misstatements.

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Control environment

The control environment is the foundation of the internal control system in every organization. ADVA fosters an environment of openness and integrity with a clear commitment to excellence, competence and the development of its employees. The group's leadership principles of integrity/honesty, decisiveness and respect are based on this philosophy, and the culture is reflected in the overall tone set by the management board. ADVA has a clear organizational structure with well-defined authorities and responsibilities. The bodies charged with the governance and control of the group actively participate in the running and steering of the business. The business is managed on a global basis and run via functional areas. Financial steering of the group and financial stewardship for individual legal entities is handled by the chief financial officer, under the audit committee's control.

Risk assessment

As part of the internal controls related to financial reporting, the risk assessment follows the process described in the "risk management system" section.

Control activities

At an individual entity level, ADVA's larger and more complex business units use an integrated enterprise resource planning solution, which also serves as general ledger system. Information technology controls have been implemented to restrict user access, ensure proper authorization of changes to the system and efficient handling of user help desk requests. Specific processes are defined and applied for the following reporting cycles in these business units: cash reporting, revenue recognition, accounts payable, capitalization of development expenses and recognition of subsidies for research, inventory reporting, fixed assets, payroll and provisions. ADVA carries out monthly analytical reviews and quarterly balance sheet reviews based on a four-eye principle between the local accounting and the consolidation functions.

For the consolidated financial statements, the balance sheet and income statement positions requiring a significant degree of judgment and estimation when being valued are determined and analyzed with the involvement of management. This is the case for impairment testing reviews (annual or when a triggering event occurs), capitalization of development projects (when the industrialization stage is reached) and tax reporting, specifically deferred taxes (quarterly). ADVA additionally carries out monthly intercompany reconciliations as part of the consolidation process and analytical reviews of actual vs. expected results based on a four-eye principle between the financial planning and the consolidation functions.

All business units follow a set of global accounting policies and reporting guidelines applying to the whole group. The financial statements preparation process is monitored globally via a calendar that is communicated to all involved parties on a monthly basis. Checklists are completed both in the individual business units and at the consolidation level to ensure completeness of all closing steps. Periodic reviews by group management are conducted to detect errors and omissions.

Information and communication tools

The internal control system at ADVA is supported by tools to store and exchange information, enabling the management board to make informed business decisions about financial reports and disclosures. The following components ensure proper information and communication for financial reporting:

- Accounting systems for individual entities are matched to the degree of complexity of the business unit. For most entities, an integrated enterprise resource planning system, which also serves as general ledger system, is in place. All local accounts are mapped to the group chart of accounts, which is used group-wide.
- The group consolidation is supported by a database tool which is linked to the enterprise resource planning and financial planning systems via interfaces. The global financial planning system is used extensively in analyzing actual vs. expected results and thus monitoring the results of the consolidation.
- Global accounting policies for the more complex financial statement positions of the group and a group chart of accounts for all other positions are available. Accounting policies are updated regularly and are implemented only after a thorough internal review and training.

Internal monitoring

As part of the ongoing monitoring, the chief financial officer is informed about all material misstatements and control breakdowns at group and business unit level on a quarterly basis in the executive summary to the financial statements. The reporting of deficiencies follows the principles of open and transparent communication. Follow-up is ensured through regular meetings where corrective actions are presented.

Internal financial audit

ADVA maintains an internal audit function to regularly assess financial processes and systems.

Based on an annual risk assessment, the internal audit function develops an audit plan proposal for the upcoming year. The proposed plan is presented to, aligned with, and finally ratified by the audit committee. The internal audit function performs internal audit reviews throughout the year according to the audit plan. Audit results are discussed with responsible managers. In case of identified process or system weaknesses, the internal audit function makes recommendations and improvement actions are defined and agreed with the responsible manager(s). The progress of these and their success in removing the identified weaknesses is reviewed by the audit function. The state of internal auditing is reported quarterly to the audit committee and includes feedback about the progress of audits performed versus the audit plan, about the results of terminated audit reviews and about improvements resulting from actions taken.

Outlook

The statements in this chapter apply to the ADVA group as well as to ADVA Optical Networking SE. Further details on the projected market environment, as well as the resulting opportunities, can be found in the “General economic and market conditions” section and in the “Business overview” section.

Despite the challenges in the global supply chains, 2021 was a very successful year. The bottlenecks with the supply of semiconductors once again demanded a great deal of creativity and flexibility from ADVA´s employees in the operations department in order to ensure ADVA's ability to deliver. On the other hand, the order books for ADVA products were at all-time highs. During the year, delivery dates therefore had once again to be postponed from one quarter to another. The execution of the business transformation strategy made good progress. The business with enterprise customers was very successful and the software and service revenue contribution expanded to 24.9 %. These were important cornerstones in 2021 to compensate for the higher purchasing and freight costs resulting from the semiconductor crisis.

In early January 2021, ADVA issued an outlook with revenues of between EUR 580 and 610 million and a pro forma EBIT margin between 6 % and 9 % of revenues. With the publication of the financial figures for the financial year 2020 on February 25, 2021, ADVA's management board indicated that the first quarter of 2021 could be substantially more successful compared to previous Q1 results due to the high order backlog. As a result of the very successful Q1 results and the very promising outlook for the rest of the financial year, the management board increased the profitability outlook from 6 % to 9 % of revenues to 6 % to 10 % of revenues. The Q2 results were also very pleasing and the management board therefore decided again to adjust the outlook and to narrow the profitability outlook to 7 % to 10 % of revenues. The revenue outlook was retained due to the high degree of uncertainty with regard to the delivery bottlenecks. ADVA closed the financial year with revenues of EUR 603.3 million and a pro forma EBIT margin of 9.1 %. Both revenues and profitability were at the upper end of the recently published guidance range.

Kevin Grahnert

“Recently we’ve had to pull together like never before to overcome new challenges. Now our open edge innovation is helping customers recover, adapt and thrive in the digital era.”

Net cash stood at EUR 36.2 million at the end of 2021, a significant improvement of EUR 61.7 million compared to a net debt position in 2020 (EUR 25.5 million). This significantly exceeded the original goal of reducing net debt to a one-digit million number. In addition, the company made scheduled repayments of EUR 15 million. With a leverage of 0.4x ADVA improved its very solid balance sheet position and financial headroom.

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As for customer satisfaction, ADVA uses the net promoter score (NPS) to track progress. With 48 %, the company was able to to substantially exceed the high positive level of at least 40 % aimed at by the management board. Customer.guru (https://customer.guru/net-promoter-score) - a NPS survey and benchmarking tool - provides estimates for ADVA’s peer group. According to this portal, ADVA’s net promoter score is more than 30 percentage points higher than the best score in this peer group.

In view of the global semiconductor crisis, the executive board expects the supply chains to recover within the second half of the year 2022 at the earliest. There is still a high supply risk for the financial year 2022. And with respect to the Covid pandemic, it remains to be seen whether the crisis will lessen over the course of the year, as some economic and health experts assume. Nonetheless the macro environment is expected to stay very positive for ADVA. The realization that communications infrastructure is a valuable asset has prompted a mind change in politics and business. A few years ago, network technology primarily had to provide cost-effective bandwidth. Today, the focus is increasingly on security aspects. The expansion of 5G and its associated industrial applications has led to technology with supposedly insecure origins being viewed very critically. In many industrialized nations of the Western world, dependence on large Chinese network equipment suppliers, particularly Huawei, is perceived as a serious threat. After the USA, the affected network operators in Europe are now also working on concepts for freeing themselves from this dependency. ADVA is viewed extremely positively and therefore sees significant opportunities in this macroeconomic environment.

With the investments made in recent years, ADVA’s technological set-up is well prepared for the transformation of networks with respect to cloud, mobility, 5G, automation and security. In addition to the high-quality performance features of optical data transmission, precise network synchronization technology and programmable cloud access solutions, the service portfolio also provides increasing added value. ADVA develops, manufactures and supplies communication technology for the digital future. According to estimates by industry analysts* the total addressable market for ADVA is estimated to be USD 10.7 billion* in 2021, growing to USD 12 billion by 2025 while the possible additional opportunities resulting from the shift from Asian suppliers (especially Huawei) to European suppliers are not quantified (see also the chapter "market, target customers and growth drivers").

* World market excluding China for Metro and Backbone WDM (Omdia, "Optical Networks Forecast", published May 2021), Access Switching and Ethernet Demarcation, (Omdia: "Service Provider Switching and Routing Forecast", January 2022) and network synchronization (ADVA own estimates)

In Q1 2021, the company established a mid-term strategy aimed at accelerating sales growth and further increasing profitability. The strategy is based on three pillars:

- Increase software and service contribution from 23 % to over 30 %
- Expansion into new markets with differentiated solutions in the areas of network synchronization and Ensemble software solutions. This will result in an increase in revenues with customers outside the group of traditional communication service providers from 30 % to 40 % of total revenues.
- Verticalization➲ in technological value creation with a 15 % revenue contribution from the business with optical submodules.

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This strategy will also be the focus of ADVA's actions in 2022. In combination with continued stringent cost management, the management board expects in the mid-term a stable pro forma EBIT margin in the high single-digit percentage range.

Against this background and taking into account the planning parameters, personnel and exchange rates, the management board expects annual revenues of between EUR 650 and 700 million for 2022. In addition, the management board expects that the pro forma EBIT in 2022 will be impacted by the increasing procurement costs in connection with the global semiconductor crisis. Against this background the management boards expects a margin of between 6 % and 10 % in relation to revenues for 2022. At the end of 2021, net cash after the application of IFRS 16 accounting standards reached EUR 36.2 million. The aim of the company is to ensure rapid debt relief and consistent compliance with the defined objectives of capital management, which are described in Note (35) to the consolidated financial statements. For the financial year 2022, the management board expects a net cash in the double-digit million range .

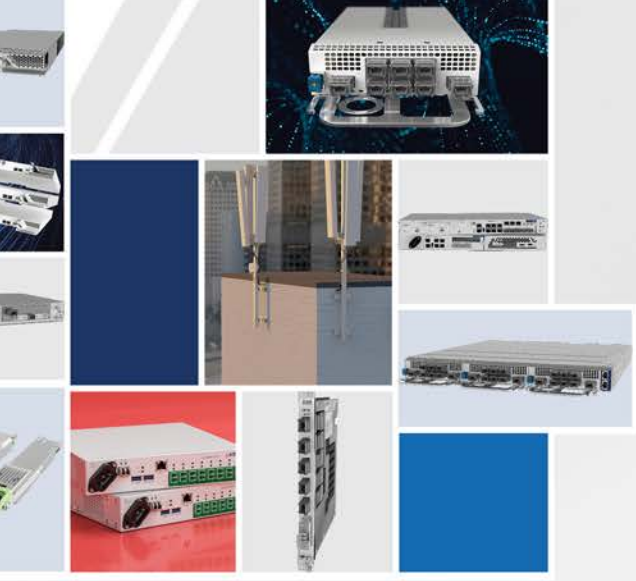
The group will continue to selectively invest in product development, technology and revenue-generating opportunities. In addition, the management board expects, due to the continued focus on innovation, quality and service, that customer satisfaction measured by the net promoter score will once again be at high positive levels of at least 40 %. Actual results may differ materially from expectations if risks materialize or the underlying assumptions prove unrealistic. The major risks facing ADVA are discussed in the "risk and opportunity report" section.

Declaration on corporate governance

Compliance with the rules of proper corporate governance is of great importance to ADVA - it is the foundation for the group's success. According to section 289f and § 315d of the German Commercial Code (Handelsgesetzbuch, HGB) in connection with Principle 22 of the German Corporate Governance Code in the version dated December 16, 2019, ADVA Optical Networking SE is obliged to publish a "declaration on corporate governance". ADVA publishes the "declaration on corporate governance" on the corporate governance page in the About us/Investors section of its website www.adva.com. The remuneration report for the 2021 financial year and the auditor's report in accordance with Section 162 AktG, the applicable remuneration system in accordance with Section 87a (1) and (2) sentence 1 AktG and the most recent remuneration resolution in accordance with Section 113 (3) AktG are also publicly available there.

Meiningen, February 22, 2022

Brian Protiva	Christoph Glingener
Ulrich Dopfer	Scott St. John



IFRS consolidated financial statements

Disclaimer:
Potential inconsistencies in the table values are based on rounding differences.

Consolidated statements of financial position as of December 31, 2021

(in thousands of EUR)	Note	Dec. 31, 2021	Dec. 31, 2020
Current assets			
Cash and cash equivalents	(9)	108,987	64,881
Trade accounts receivable	(10)	82,972	83,880
Contract assets	(12)	180	442
Inventories	(11)	129,205	90,124
Tax assets	(27)	331	390
Other current assets	(13)	13,978	7,858
Total current assets		**335,653**	**247,575**
Non-current assets			
Right-of-use assets	(14)	22,491	25,386
Property, plant and equipment	(14)	33,326	31,235
Goodwill	(14)	71,595	67,036
Capitalized development projects	(14)	97,786	98,607
Intangible assets acquired in business combinations	(14)	11,982	15,004
Other purchased and internally generated intangible assets	(14)	8,540	5,302
Deferred tax asset	(27)	15,339	7,233
Other non-current assets	(13)	4,812	2,594
Total non-current assets		**265,871**	**252,397**
Total assets		**601,524**	**499,972**

(in thousands of EUR)	Note	Dec. 31, 2021	Dec. 31, 2020
Equity and liabilities			
Current liabilities			
Current lease liabilities	(15)	6,001	5,807
Current liabilities to banks	(16)	25,289	15,492
Trade accounts payable	(17)	83,223	44,151
Current provisions	(19)	15,444	14,407
Tax liabilities	(27)	5,769	1,808
Current contract liabilities and advance payments	(20)	18,810	16,377
Refund liabilities	(20)	931	633
Other current liabilities	(17)	40,065	31,963
Total current liabilities		**195,532**	**130,638**
Non-current liabilities			
Non-current lease liabilities	(15)	19,013	21,998
Non-current liabilities to bank	(16)	22,518	47,129
Provisions for pensions and similar employee benefits	(18)	7,401	8,545
Other non-current provisions	(19)	2,440	1,558
Deferred tax liabilities	(27)	2,151	13,522
Non-current contract liabilities	(20)	9,325	10,551
Other non-current liabilities	(17)	3,232	2,813
Total non-current liabilities		**66,080**	**106,116**
Total liabilities		**261,612**	**236,754**
Stockholders' equity entitled to the owners of the parent company	(21)		
Share capital		51,446	50,497
Capital reserve		327,777	320,715
Accumulated deficit		(94,334)	(114,648)
Net income		59,218	20,314
Accumulated other comprehensive income		(4,195)	(13,660)
Total stockholders' equity		**339,912**	**263,218**
Total equity and liabilities		**601,524**	**499,972**

Consolidated income statements for the period January 1 to December 31, 2021

(in thousands of EUR, except earnings per share and number of shares)	Note	2021	2020
Revenues	(22)	**603,317**	**564,958**
Cost of goods sold		(384,759)	(368,416)
Gross profit		**218,558**	**196,542**
Selling and marketing expenses		(62,943)	(60,803)
Thereof net impairment results on financial assets	(10)	*205*	*(1,192)*
General and administrative expenses		(38,811)	(35,897)
Research and development expenses		(76,723)	(74,997)
Other operating income	(24)	5,912	3,800
Other operating expenses	(24)	(698)	(1,172)
Operating income		**45,295**	**27,473**
Interest income	(25)	100	110
Interest expenses	(25)	(1,835)	(2,717)
Foreign currency exchange gains	(26)	12,260	10,779
Foreign currency exchange losses	(26)	(9,584)	(10,826)
Other financial gains	(26)	—	—
Other financial losses	(26)	—	—
Income before tax		**46,236**	**24,819**
Income tax benefit (expense), net	(27)	12,982	(4,505)
Net income entitled to the owners of the parent company		**59,218**	**20,314**
Earnings per share in EUR	(31)		
basic		1.17	0.40
diluted		1.15	0.40
Weighted average number of shares for calculation of earnings per share			
basic		50,819,042	50,278,336
diluted		51,692,779	50,556,185

Consolidated statements of comprehensive income

(in thousands of EUR)	Notes	2021	2020
Net income entitled to the owners of the parent company		**59,218**	**20,314**
Items that may be reclassified to profit or loss in future periods			
Exchange differences on translation of foreign operations		7,918	(14,922)
Items that will not get reclassified to profit or loss in future periods			
Remeasurement of defined benefit plans	(18)	1,547	(428)
Comprehensive income entitled to the owners of the parent company	(21)	**68,683**	**4,964**

Consolidated cash flow statements

(in thousands of EUR)	Notes	2021	2020
Cash flow from operating activities			
Income before tax		46,236	24,819
Adjustments to reconcile income before tax to net cash provided by operating activities			
Non-cash adjustments			
Amortization of non-current assets	(14)	70,407	65,061
Loss from disposal of property, plant and equipment and intangible assets	(14)	304	351
Stock compensation expenses	(39)	1,627	1,189
Other non-cash income and expenses		584	517
Foreign currency exchange differences		(505)	(4,843)
Changes in asset and liabilities			
Decrease (increase) in trade accounts receivable		1,170	12,525
Decrease (increase) in inventories		(39,081)	15,231
Decrease (increase) in other assets		(8,343)	3,851
Increase (decrease) in trade accounts payable		39,072	(29,247)
Increase (decrease) in provisions		1,887	91
Increase (decrease) in other liabilities		11,806	9,697
Income tax paid and refunded		(1,911)	(2,099)
Net cash provided by operating activities		**123,253**	**97,143**

(in thousands of EUR)	Notes	2021	2020
Cash flow from investing activities			
Investments in property plant and equipment	(14)	(15,899)	(13,648)
Investments in intangible assets	(14)	(48,377)	(44,740)
Interest received		5	34
Net cash used in investing activities		**(64,271)**	**(58,354)**
Cash flow from financing activities			
Proceeds from capital increase and exercise of stock options	(21)	6,608	1,273
Repayment of lease liabilities		(4,627)	(6,986)
Proceeds from liabilities to banks	(16)	—	—
Cash repayment of liabilities to bank	(16)	(15,000)	(18,500)
Interest paid		(1,780)	(2,553)
Net cash used in financing activities		**(14,799)**	**(26,766)**
Net effect of foreign currency translation on cash and cash equivalents		(77)	(1,405)
Net change in cash and cash equivalents		**44,106**	**10,618**
Cash and cash equivalents on January 1		64,881	54,263
Cash and cash equivalents on December 31		**108,987**	**64,881**

Details on the preparation of the consolidated cash flow statement are included in note (30).

Consolidated statement of changes in stockholders’ equity

	Share capital		
(in thousands of EUR, except number of shares)	Number of shares	Par value	Capital reserve
Balance on January 1, 2020	**50,181,966**	**50,182**	**318,568**
Capital increase, including exercise of stock options	314,726	315	958
Stock options outstanding	—	—	1,189
Net income	—	—	—
Exchange differences on translation of foreign operations	—	—	—
Remeasurement of defined plans	—	—	—
Comprehensive income	—	—	—
Balance on December 31, 2020	**50,496,692**	**50,497**	**320,715**
Balance on January 1, 2021	**50,496,692**	**50,497**	**320,715**
Capital increase, including exercise of stock options	949,200	949	5,659
Stock options outstanding			1,403
Net income			
Exchange differences on translation of foreign operations			
Remeasurement of defined plans			
Comprehensive income			
Balance on December 31, 2021	**51,445,892**	**51,446**	**327,777**

Details on changes in stockholders’ equity are presented in note (21).

Net income (loss) and accumulated deficit	Accumulated other comprehensive income (loss)	Total stockholders' equity entitled to the owners of the parent company
(114,648)	**1,690**	**255,792**
—	—	1,273
—	—	1,189
20,314	—	20,314
—	(14,922)	(14,922)
—	(428)	(428)
20,314	(15,350)	4,964
(94,334)	**(13,660)**	**263,218**
(94,334)	**(13,660)**	**263,218**
		6,608
		1,403
59,218		59,218
	7,918	7,918
	1,547	1,547
59,218	9,465	68,683
(35,116)	**(4,195)**	**339,912**

Notes to the consolidated financial statements

General information

(1) Information about the company and the group

ADVA Optical Networking SE (hereinafter also referred to as the "company" or "ADVA SE") is a Societas Europaea domiciled in Meiningen, Germany, with its registered office at Märzenquelle 1–3, 98617 Meiningen, and is registered as HRB 508155 at the commercial register in Jena. The management board authorized the consolidated financial statements for the year ended December 31, 2021, for issuance on February 22, 2022.

The ADVA Optical Networking group (hereinafter also referred to as "ADVA Optical Networking", "the group" or "ADVA") develops, manufactures and sells optical and Ethernet-based networking solutions to telecommunications carriers and enterprises to deliver data, storage, voice and video services.

Telecommunications service providers, private companies, universities and government agencies worldwide use the group's systems. ADVA sells its product portfolio both directly and through an international network of distribution partners.

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Significant accounting policies

(2) Basic principles for the preparation of the consolidated annual financial statements

The group's consolidated annual financial statements for the financial years ended December 31, 2021, and December 31, 2020, are prepared in accordance with the International Financial Reporting Standards (IFRS) published by the International Accounting Standards Board (IASB), as applicable in the European Union (EU) in consideration of interpretations of the Financial Reporting Interpretations Committee (IFRIC) and the applicable additional German statutory regulations according to § 315e Abs. 1 HGB. The consolidated financial statements have been prepared on a historical cost basis, except for the fair value measurement through profit or loss of certain financial instruments and share-based payments.

The financial year correlates with the calendar year. The consolidated annual financial statements are presented in euro. Unless otherwise stated, all amounts quoted are in thousands of euros. The balance sheet is separated into current and non-current assets and liabilities. The classification of income and expenses in the income statement is based on their function within the entity. When items on the balance sheet and in the income statement are summarized in the interest of clarity, this is explained in the notes to the consolidated financial statements.

The annual financial statements of the individual subsidiaries of the holding company ADVA Optical Networking SE, as subsumed in the consolidated annual financial statements, are all prepared using the same accounting and valuation policies and the same balance sheet date.

(3) Effects of new standards and interpretations

The accounting policies followed are consistent with these of the prior financial year, except for the adoption of new and amended IFRSs and interpretations (IFRICs) during the year.

Standards, amendments and interpretations applicable for the first time in 2021

In 2021, following standards and interpretations have been adopted for the first time.

Standard	Topic	First-time adoption*	Expected impact on the financial position and performance
Amendments to IFRS 9, IAS 39, IFRS 7 and IFRS 16	Reform of interest rate benchmarks (IBOR reform – phase 2)	Jan. 1, 2021	no material impact
Amendments to IFRS 16	Accounting for rent concessions related to the Covid-19 pandemic.	Apr. 1, 2021	no material impact

* To be applied in the first reporting period of a financial year beginning on or after this date.

The reform of the interest rate benchmarks has an impact on hedge accounting in particular. ADVA does not apply the hedge accounting rules according to IFRS 9 and is therefore not affected by the new regulations. In addition, the amendment affects the determination of contractual cash flows of financial assets and liabilities to the extent they are affected by the replacement of the previous reference interest rate. The relevant changes are accounted for in a simplified manner by updating the effective interest rate without any immediate impact on the income statement.

New accounting requirements not yet applicable for first-time adoption in 2021

The IASB and the IFRIC have issued further Standards and Interpretations in 2021 and previous years that were not applicable for the financial year 2021. In addition, the first-time adoption is partly still subject to endorsement by the EU.

Standard	Topic	First-time adoption*	Expected impact on the financial position and performance
Amendments to IAS 16	Property, plant and equipment - revenue before intended use	Jan. 1, 2022	under review
Amendments to IAS 37	Onerous contracts - costs of contract performance	Jan. 1, 2022	under review
Amendments to IFRS 3	Reference to the IFRS framework	Jan. 1, 2022	under review
Yearly improvements 2018 - 2020	IFRS 1, IFRS 9, IFRS 16 and IAS 41	Jan. 1, 2022	under review
IFRS 17	Insurance contracts	Jan. 1, 2023	none
Amendments to IAS 1	Classification of liabilities as current or non-current	Jan. 1, 2023	under review

* To be applied in the first reporting period of a financial year beginning on or after this date.

(4) Recognition and measurement

Inventories

Inventories are valued at the lower of cost or net realizable value. The cost of purchase is determined by the average method. Production costs include direct unit costs, an appropriate portion of necessary manufacturing overheads and production-related depreciation that can be directly assigned to the production process. Administrative and social insurance charges that can be assigned to production are also considered. Financing charges are not classified as part of the at-cost base. The net realizable value is the estimated selling price that could be realized on the closing date in the context of ordinary business activity, less estimated costs of completion and costs necessary to make the sale.

Inventory depreciation covers risks relating to slow-moving items or technical obsolescence based on applicable net realizable value test. Where the reasons for previous write-downs no longer apply, these write-downs are reversed.

Property, plant and equipment

Property, plant and equipment is stated at historic cost less accumulated depreciation and accumulated impairment losses, if any. The present value of the expected cost for the decommissioning of the asset after its use is included in the cost of the respective asset if the recognition criteria for a provision are met.

Subsequent costs are included in the asset's carrying amount or recognized as separate asset only when it is probable that future economic benefits associated with this item will flow to the group and the cost can be measured reliably. All other repairs and maintenance costs are charged to the income statement during the financial period in which they are incurred.

Depreciation on property, plant and equipment is calculated on a straight-line basis over the estimated useful lives of the assets as follows:

• Buildings	20 to 25 years
• Technical equipment and machinery	3 to 4 years
• Factory and office equipment	3 to 10 years

No regular depreciation applies for land.

Leasehold improvements are capitalized and depreciated over the expected useful life on a straight-line basis.

An item of property, plant and equipment is derecognized upon disposal or when no future economic benefits are expected from its use or disposal. Any gain or loss arising on derecognition of the asset (calculated as the difference between the net disposal proceeds and the carrying amount of the asset) is included in the income statement when the asset is derecognized.

The assets' residual values, useful economic lives and methods of depreciation are reviewed at each financial year-end and adjusted prospectively, if appropriate.

Intangible assets

Intangible assets acquired separately are measured on initial recognition at cost. The cost of intangible assets acquired in a business combination is their fair value on the date of acquisition. Following initial recognition, intangible assets are carried at cost less any accumulated amortization and any accumulated impairment losses. Internally generated intangible assets, excluding capitalized development costs, are not capitalized, and expenditure is reflected in profit or loss in the year in which the expenditure is incurred.

The useful economic lives of intangible assets are assessed to be either finite or indefinite.

Intangible assets with finite lives are amortized on a straight-line basis over the expected useful lives of the assets as follows:

• Capitalized development projects	3 to 5 years
• Intangible assets acquired in business combinations	3 to 9 years
• Other purchased and internally generated intangible assets	3 to 6 years

Intangible assets with finite useful economic lives are assessed for impairment whenever there is an indication that the intangible asset may be impaired. The amortization period and the amortization method for an intangible asset with a finite useful life is reviewed at each financial year-end. The amortization expense on intangible assets with finite lives is recognized in profit or loss in the expense category consistent with the function of the intangible asset.

Intangible assets with an indefinite useful life are not amortized. An impairment loss is recognized for the amount by which the asset's carrying amount exceeds its recoverable amount. The recoverable amount is the higher of an asset's fair value less costs of disposal and value in use. The useful life of an intangible asset with an indefinite life is reviewed at least annually to determine whether the indefinite life assessment continues to be applicable. If not, the change in the useful life assessment from indefinite to finite is made on a prospective basis. Apart from goodwill and development projects in progress all intangible assets are amortized over their useful lives.

Gains or losses arising from derecognition of an intangible asset are measured as the difference between their disposal proceeds and the carrying amount of the asset, and they are recognized in the income statement when the asset is derecognized.

Goodwill

An indefinite useful life is assumed for goodwill acquired in the context of business combinations. Impairment reviews are performed at the cash generating unit level on the balance sheet date or when there is an indication that the goodwill may be impaired in accordance with IAS 36. Impairment losses on goodwill recognized in prior periods are not reversed. See note (14).

Intangible assets acquired in business combinations

Intangible assets acquired in business combinations have a finite useful life. They are recognized at fair value at the acquisition date and amortized on a straight-line basis over estimated useful economic lives of five to nine years. They are tested for impairment if an indication exists that the recoverable amount of the asset may have decreased.

The breakdown of intangible assets into individual items is included in note (14).

Capitalized development projects

Development expenses for new products are capitalized as development projects if

- they can be unambiguously assigned to these products,
- the products under development are technically feasible and can be marketed,
- there is reasonable certainty that the development activity will result in future cash inflows,
- ADVA intends and is able to complete and use the development project and
- there is the availability of adequate technical, financial and other resources to complete the development and to use or sell the intangible asset.

Capitalized development projects include all costs that can be directly assigned to the development process. Financing charges are capitalized if the development project represents a qualifying asset in the sense of IAS 23.

After initial recognition of a development project as an asset, measurement is at historical cost, less accumulated amortization and impairment. The straight-line method of amortization is used from the start of production through the estimated selling periods for the products developed (generally between three and five years). Ongoing development projects are tested for impairment on level of the smallest cash generating unit on the balance sheet date or when there is an indication of potential impairment. Completed development projects are tested for impairment if there is an indication of potential impairment. Impairment losses are recognized if appropriate.

Research costs are expensed as incurred according to IAS 38.

Impairment of non-financial assets

Intangible assets with indefinite useful economic lives are tested for impairment annually and whenever there is an indication for potential impairment, either individually or at the cash generating unit level. Intangible assets with finite and useful economic lives are tested for impairment whenever there is an indication for potential impairment. Intangible assets are tested either individually or at the cash generating unit level.

If there is any indication that an asset may be impaired, the recoverable amount is estimated for the individual asset. If it is not possible to estimate the recoverable amount of the individual asset, the recoverable amount of the cash-generating unit to which the asset belongs is determined.

An impairment loss is only recognized if the carrying amount of the asset or respective cash generating unit exceeds its recoverable amount. The recoverable amount is the higher of the fair value less costs of disposal and value in use of the respective asset or cash generating unit. Prior impairments of non-financial assets (other than goodwill) are reviewed for possible reversal at each reporting date.

Government grants

ADVA recognizes government grants for fixed assets as well as for grants related to research projects.

Government grants are recognized where there is reasonable assurance that the grant will be received, and all attached conditions will be met. When the grant relates to an expense item, it is recognized as income over the period necessary to match the grant on a systematic basis to the costs that it is intended to compensate. Where the grant relates to fixed assets, it is recognized as a reduction of purchase costs and released as a reduction of depreciation expense over the expected useful life of the related asset.

Grants related to research projects are recognized as other assets if the grant is approved and certified but the payment still outstanding. A respective liability is recorded in the amount of the grant which has been approved at initial recognition and is released through the income statement when the defined research tasks have been completed.

Borrowing Costs

Borrowing costs directly attributable to the acquisition, construction or production of an asset that necessarily takes a substantial period to get ready for its intended use or sale (qualifying asset) are capitalized as part of the cost of the respective assets. If borrowing costs cannot be directly attributed to the acquisition, construction or production of an asset, an assessment is made on whether general borrowing costs should be recognized that would have been avoided if the asset was not acquired, constructed or produced. All other borrowing costs are expensed in the period they occur. Borrowing costs consist of interest and other costs that an entity incurs in connection with the borrowing of funds.

Leasing

The group leases various properties and cars. Rental contracts are typically made for fixed periods of 3 to 5 years but may have extension options as described below. Lease terms are negotiated on an individual basis and contain a wide range of different terms and conditions. The lease agreements do not impose any covenants, but leased assets may not be used as security for borrowing purposes.

Leases are recognized as a right-of-use asset and a corresponding liability at the date at which the leased asset is available for use by the group. Each lease payment is allocated between the liability and finance cost. The finance cost is charged to profit or loss over the lease period so as to produce a constant periodic rate of interest on the remaining balance of the liability for each period. The right-of-use asset is depreciated over the shorter of the asset's useful life and the lease term on a straight-line basis. If a purchase option is considered reasonably certain, the amortization period corresponds to the useful life.

Assets and liabilities arising from a lease are initially measured on a present value basis. Lease liabilities include the net present value of the following lease payments:

- fixed payments (including in-substance fixed payments), less any lease incentives receivable
- variable lease payment that are based on an index or a rate
- amounts expected to be payable by the lessee under residual value guarantees
- the exercise price of a purchase option if the lessee is reasonably certain to exercise that option, and
- payments of penalties for early termination of the lease if the exercise of a termination option is considered reasonably certain.

The lease payments are discounted using the interest rate implicit in the lease, if that rate can be determined, or the group's incremental borrowing rate.

Right-of-use assets are measured at cost comprising the following:

- the amount of the initial measurement of lease liability
- any lease payments made at or before the commencement date less any lease incentives received
- any initial direct costs, and
- restoration costs.

Payments associated with short-term leases and leases of low-value assets are recognized on a straight-line basis as an expense in profit or loss. Short-term leases are leases with a lease term of 12 months or less. Low-value assets comprise IT-equipment and small items of office furniture.

Extension and termination options are included in a number of property and equipment leases across the group. These terms are used to maximize operational flexibility in terms of managing contracts. The majority of extension and termination options held are exercisable only by the group and not by the respective lessor.

To optimize lease costs during the contract period, the group sometimes provides residual value guarantees in relation to car leases. The group initially estimates and recognizes amounts expected to be payable under residual value guarantees as part of the lease liability. The amounts are reviewed, and adjusted if appropriate, at the end of each reporting period.

Post-employment benefits

ADVA maintains defined benefit plans in three countries based on the pensionable compensation of its employees and their length of service. Some of these pension plans are financed through external pension funds. Provisions for pensions are actuarial measured using the projected unit credit method for defined benefit pension plans,considering not only the pension obligations and vested pension rights known at the reporting date, but also expected future salary and benefit increases. The interest rate used to determine the present value of the obligations is generally set based on the yields on high-quality corporate bonds or government bonds in the respective currency area. The return on existing plan assets and expenses for interest added to obligations are reported in finance costs. Service cost is classified as operating expenses. Past service cost not recognized due to a change in the pension plan shall immediately be recognized in the period in which the change took effect. Gains and losses arising from adjustments and changes in actuarial assumptions are recognized immediately and in full in the period in which they occur within other comprehensive income. Further details on recognition and measurement of employee benefits are included in note (18).

In addition, ADVA grants defined contribution plans to employees of some group entities in accordance with statutory or contractual requirements. The payments are made to state or private pension insurance funds. Under defined contribution plans, the employer does not assume any other obligations beyond the payment of contributions to an external fund. The amount of the future pension payments will exclusively depend on the contribution made by the employer (and their employees, if applicable) to the external fund, including income from the investment of such contributions. The amounts payable are expensed when the obligation to pay the amounts is established and classified as operating expenses.

Share-based compensation transactions

Employees (including senior executives) of ADVA receive remuneration in the form of share-based compensation transactions, whereby employees render services as consideration for equity instruments (equity-settled transactions) or they are granted stock appreciation rights, which are settled in cash (cash-settled transactions). Share-based compensation transactions are reported and valued in accordance with IFRS 2.

Equity-settled transactions

The cost of equity-settled transactions with employees is measured by reference to the fair value on the grant date. The fair value is determined by an external expert using an appropriate pricing model. See note (39) for further details.

The cost of equity-settled transactions is recognized, together with the corresponding increase in equity, straight-line over the period in which the relevant employees become fully entitled to the award (vesting date). Vesting period ends with the first exercise possibility. From that day, the employee is entitled to benefit. No expense is recognized for awards that do not ultimately vest, except for awards where vesting is conditional upon market condition, which are treated as vesting irrespective of whether or not market condition is satisfied if all other performance conditions are satisfied.

Where the terms of an equity-settled transaction award are modified, the minimum expense recognized is the expense as if the terms had not been modified if the original terms of the award are met. An additional expense is recognized for any modification that increases the total fair value of the share-based compensation transaction or is otherwise beneficial to the employee as measured on the date of modification.

Where an equity-settled award is cancelled, it is treated as if it vested on the date of cancellation, and any expense not yet recognized for the award is recognized immediately. This includes any award where non-vesting conditions within the control of either the entity or the employee are not met. However, if a new award is substituted for the cancelled award and designated as a replacement award on the date that it is granted, the cancelled and new awards are treated as if they were a modification of the original award, as described in the previous paragraph. All cancellations of equity-settled transactions are treated equally.

The dilutive effect of outstanding options is reflected in the computation of earnings per share. See note (31).

Cash-Settled transactions

The cost of cash-settled transactions is measured initially at fair value on the grant date. The fair value is expensed straight-line over the vesting period with recognition of a corresponding provision. The provision is re-measured on each balance sheet date up to and including the settlement date, with changes in the fair value recognized in profit or loss.

Provisions

Provisions are recognized when the group has a present obligation (legal or constructive) as a result of a past event, when it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation. The amount recognized as a provision represents the best estimate of the expenditure required to settle the present obligation.

If the group expects at least a partial reimbursement for an item for which a provision has been recognized, for example under an insurance contract, the reimbursement is recognized as a separate asset but only when the reimbursement is virtually certain. The expense related to any provision is presented in profit or loss, net of any reimbursement. If the effect of the time value of money is material, provisions are discounted using a current pre-tax rate that reflects, where appropriate, the risks specific to the liability. Where discounting is used, the increase in the provision over time is recognized in other financial gains and losses, net.

Share capital

Common stock is disclosed in stockholder's equity.

Incremental costs directly attributable to the issuance of new ordinary shares or options are shown in equity as a deduction, net of tax, from the proceeds.

Where any group company purchases the company's equity share capital (treasury shares), the consideration paid, including any directly attributable incremental costs, is deducted from equity until the shares are cancelled or reissued. Where such shares are subsequently reissued, any consideration received, net of any directly attributable incremental transaction costs, is included in equity.

Financial instruments

Financial instruments are contracts that give rise to a financial asset in one entity and a financial liability or equity instrument in another entity. ADVA recognizes financial assets and financial liabilities in the balance sheet when a company in the group becomes a contractual party to the financial instrument.

All customary purchases and sales of financial assets are recognized on the trading date, i.e. the date on which ADVA enters into the obligation to purchase the asset.

Financial assets and financial liabilities are generally reported at gross value. Netting only applies if the offsetting of the amounts is legally enforceable and it is intended to actually offset them. In general, ADVA does not intend to offset any amounts.

Financial assets

ADVA's financial assets include, in addition to trade receivables, cash and cash equivalents, other receivables, other investments and derivative financial instruments.

Classification

Financial assets are initially allocated to one of the following measurement categories in accordance with IFRS 9:

1. measured at amortized cost
2. measured at fair value through profit or loss
3. measured at fair value through other comprehensive income (debt instruments)
4. measured at fair value through other comprehensive income (equity instruments)

Financial assets that are debt instruments according to IAS 32 are classified based on the business model for managing the financial assets and the contractually agreed cash flows. Debt instruments are classified as amortized cost if the business model "hold to collect" applies and contractual cash flows solely consist of principal and interest on the outstanding redemption. If the business model is based on the collection of contractual cash flows as well as on the sale of the instruments and the cash flows only consist of principal and interest, the financial assets are classified at fair value through other comprehensive income (FVOCI). Financial assets held for sale and derivative financial instruments that are not designated as hedges, and financial assets that do not consist solely of payments of principal and interest are classified as at fair value through profit or loss (FVTPL).

Debt instruments are reclassified if the business model for managing those assets changes.

Financial assets with embedded derivatives are considered at their entirety when determining whether their cash flows are solely repayment of the principal and interest.

For investments in equity instruments that are not held for trading, an irrevocable option to account for the equity investments at fair value through comprehensive income (FVOCI) at the time of initial recognition is available. ADVA has not made use of this option.

ADVA classifies receivables that are not subject to factoring, cash and cash equivalents, and rent deposits as financial assets, which are carried at amortized cost. Trade receivables for which a factoring agreement is in place are classified as financial assets at fair value through profit or loss.

The group has not made use of the option to classify financial assets at fair value through profit or loss upon initial recognition.

Initial measurement

At initial recognition, the group measures a financial asset at its fair value plus, in the case of a financial asset not at fair value through profit or loss, transactions costs that are directly attributable to the acquisition of the financial asset except for trade receivables that are initially measured at its transaction price in accordance to IFRS 15. Transaction costs of financial assets carried at fair value through profit or loss are expensed immediately.

Subsequent measurement

The subsequent measurement of ADVA's financial assets is based on their classification:

1. at amortized cost: Interest income from these financial assets is reported in the financial income using the effective interest method. Gains and losses on derecognition as well as impairment gains and losses are recorded in the income statement and reported under other operating income and expenses,
2. at fair value through profit or loss: Gains or losses on debt instruments, which are subsequently measured at fair value through profit or loss, are included in the income statement as other operating income or expenses in the period in which they arise. Gains and losses on derivatives are recognized in other financial income in the income statement.

The group subsequently measures all equity instruments at fair value. Changes in fair value are recognized in other gains (losses) in the income statement as applicable.

Impairment

The group assesses expected future credit losses associated with its debt instruments measured at amortized cost based on future expectations. A respective risk provision or, in case of an actual loss that already occurred, an impairment loss is recognized.

Financial assets are in default or credit impaired if there is an objective evidence of impairment. This applies in case of bankruptcy, knowledge of impending insolvency proceedings or if financial assets are overdue more than one year.

Financial assets are considered to be impacted by credit worthiness and are written off if there is no reasonable expectation recovering the financial asset. This could be, inter alia, if debtor payments are delayed more than two years or if the debtor fails to commit to a repayment plan.

General approach

Generally, financial assets are considered as having a low default risk at initial recognition resulting in a 12-month expected credit loss provision. In case of a significant increase in credit risk, the lifetime expected credit losses are recognized. Amongst others debtor's payment delays of more than 30 days or the decrease of the rating are considered an indicator for increase in default risk.

ADVA assesses expected credit losses using the general approach for cash and cash equivalents and material other financial assets, except for trade receivables. Further details are described in note (34) on financial risk management.

Simplified approach

For trade receivables and contract assets with no significant financing component the group applies the simplified approach, which requires lifetime expected credit losses to be recognized from initial recognition of the receivables.

In order to measure expected credit losses, trade receivables are summarized on the basis of common credit risk characteristics considering the region of business and overdue days. The expected credit losses are based on customers' historical payment behavior for a period of three years as well as on historical defaults. These are reviewed once a year and adjusted to take current and future information on macroeconomic elements (e.g. geopolitical events, currency fluctuations, inflation, trade wars, state subsidies) into account, that have an influence on customers' ability to meet their financial obligations.

Contract assets relate to work in progress that has not been invoiced and bears essentially the same risk characteristics as trade receivables. The group has therefore concluded that the expected loss rates for trade receivables are a reasonable approximation of the loss ratios for contract assets.

Derecognition

ADVA derecognizes financial assets (or parts of their financial assets where applicable) when the rights to receive cash flows from the financial asset have expired or have been transferred and the group substantially transferred all opportunities and risks associated with the ownership.

In the case of sales of trade receivables the requirements for a receivable transfer according to IFRS 9.3.2.4 (a) are met. Receivables are derecognized if substantially all risks and rewards are transferred. If the receivables are transferred in accordance to IFRS 9.3.2.4 (a) and the review of IFRS 9.3.2.6 shows that neither substantially all risks and rewards have been transferred nor retained, ADVA recognizes the remaining continuing involvement in accordance with IFRS 9.3.2.16. ADVA continues to manage the receivables sold (servicing). ADVA retains control of disposal over the receivables sold.

Financial liabilities

The financial liabilities of ADVA include trade payables and other liabilities, bank overdrafts, loans and derivative financial instruments. The accounting treatment of lease liabilities is dealt with separately as presented in the section “Leasing”.

Classification

Financial liabilities are initially assigned to one of the following valuation categories in accordance with IFRS 9:

1. measured at amortized cost
2. measured at fair value through profit or loss.

The group has not used the option to designate financial liabilities as “at fair value through profit or loss” on initial recognition of financial liabilities.

Initial measurement

At initial recognition, the group measures a financial liability at its fair value less, in the case of a financial liability not at fair value through profit or loss, transactions costs that are directly attributable to the acquisition of the financial liability.

Subsequent measurement

The measurement of financial liabilities of ADVA depends on their classification as follows:

1. Financial liabilities at fair value through profit or loss: This category includes derivative financial instruments that are not designated as hedging instruments in accordance with IFRS 9 hedge accounting rules. Gains and losses are recognized in financial income in the income statement.
2. Financial liabilities measured at amortized cost: This category includes trade payables and interest-bearing loans. After initial recognition, these are measured at amortized cost using the effective interest method. Gains and losses are recognized in profit or loss when the liabilities are derecognized as well as in case of amortization using the effective interest method. Amortization according to the effective interest method is included in interest expenses in the profit and loss account.

Derecognition

A financial liability is derecognized when the obligation under the liability is settled, cancelled or expired. When an existing financial liability is replaced by another from the same lender on substantially different terms, or the terms of an existing liability are substantially modified, this exchange or modification is treated as a derecognition of the original liability and the recognition of a new liability. In case of minor changes in conditions a change in the present value will be considered in profit or loss.

Derivative financial instruments and hedging activities

The group entered into forward rate agreements to hedge foreign currency exposure of expected future cash flows in foreign currency.

Derivatives are initially recognized at fair value on the date a derivative contract is entered into and are subsequently re-measured to their fair value at the end of each reporting period. The accounting for subsequent changes in the fair value depend on whether the derivative is designated as a hedging instrument.

The group did not apply hedge accounting rules according to IFRS 9 during the years ended December 31, 2021 and 2020. Thus, changes in fair value of the derivatives are recognized in profit or loss immediately.

Contracts with customers

Revenue recognition

Revenue is recognized when a performance obligation is satisfied, i.e. when control of the goods or services is transferred to the customer. Control is passed either at a point in time or over time.

When hardware is sold control is transferred at a point in time depending on the delivery terms. Software licenses are either sold together with the hardware or sold separately. Control in case of software is transferred when the customer is able to use the software. In the case of software sold separately, revenue is recognized at the point of time.

In case of service level agreements or maintenance contracts as well as period-related software licenses revenue is recognized over a period of time provided that further services are to be rendered during the term of the contract. The customer receives and uses all services at the same time as they are provided by the company.

Bill-and-hold arrangements or consignment stores are recognized when the performance obligation to transfer a product are met and the customer obtains control.

Transaction price

In general, the transaction price is the price from the order further considering the specific arrangements of the underlying contract. For contracts that contain multiple performance obligations, the transaction price is allocated to the individual performance obligations based on the relative individual selling price. A consideration to be paid to a customer is recorded as a reduction in the transaction price, hence reducing revenues, unless the payment relates to a specific delivery of goods by the customer or service provided by the customer.

The transaction price from a contract may contain fixed and/or variable components.

With regard to financial components, the practical remedy of not considering the effects of a financing component is applied if the maximum duration of the period between transfer of goods or services and payment by the customer does not exceed one year.

The group does not adjust any of the transaction prices for the time value of money.

Contract assets and liabilities

A contract asset is recognized when ADVA has transferred the goods or services. The contract asset is recognized as a receivable if an unconditional payment entitlement of the company exists.

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A contract liability is recognized if the company receives the consideration before it has delivered the goods or services. This applies in particular to advance payments for service level agreements and maintenance contracts.

Contract assets and liabilities related to one contract are netted and shown as either contract assets or contract liability.

In addition, certain customers have the benefit of customer loyalty programs which result in the recognition of a contract liability and reduction of revenues based on the relative individual selling price.

Volume rebates can be identified as incentive programs where the company makes a payment to the customer once a specified sales volume has been achieved with the customer. Volume rebates are not related to separate performance obligations but are considered as a variable component of the transaction price.

Customer rights of return are considered in the transaction price based on experience.

The company has made use of the option to recognize all costs in relation to conclude and extend a contract which would be amortized over a period of maximum one year upon activation, directly in profit and loss. This concerns all such costs.

Warranties

Exclusively all warranties are so-called “assurance type” warranties and therefore do not form separate performance obligations. For these essentially legal warranties, accruals according to IAS 37 are considered.

Cost of goods sold

The cost of goods sold comprises the costs incurred in the production and rendering of services. This item subsumes both the direct cost of materials and production directly assignable to a product and indirect (overhead) costs, including the depreciation of production equipment, amortization of production related intangible assets and write-downs on inventories. The cost of goods sold also includes appropriation to the warranty provision and amortization of purchased technologies. Income from the reversal of write-downs on inventories reduces the cost of goods sold.

Interest income and expenses

For all financial instruments measured at amortized cost, interest income or expenses are recorded using the effective interest rate, which is the rate that exactly discounts the estimated future cash payments or receipts through the expected life of the financial instrument or a shorter period, where appropriate, to the net carrying amount of the financial asset or liability.

Taxes

Current income tax

Current income tax assets and liabilities for the current and prior periods are measured at the amount expected to be recovered from or paid to the taxation authorities. The tax rates and tax laws used to compute the amount are these that are enacted or substantively enacted on the respective balance sheet date.

Deferred income tax

Deferred tax is provided using the liability method on temporary differences at the balance sheet date between the tax bases of assets and liabilities and their carrying amounts for financial reporting purposes.

Deferred tax liabilities are recognized for all taxable temporary differences, except:

- where the deferred income tax liability arises from the initial recognition of goodwill or of an asset or liability in a transaction that is not a business combination and, at the time of the transaction, affects neither the accounting profit nor taxable profit or loss; and
- in respect to taxable temporary differences associated with investments in subsidiaries, where the timing of the reversal of the temporary differences can be controlled and it is probable that the temporary differences will not reverse in the near future.

Deferred tax assets are recognized for all deductible temporary differences, carry forward of unused tax credits and unused tax losses, to the extent that it is probable that taxable profit will be available against which the deductible temporary differences, and the carry forward of unused tax credits and unused tax losses can be utilized, except:

- where the deferred tax asset related to the deductible temporary difference arises from the initial recognition of an asset or liability in a transaction that is not a business combination and, at the time of the transaction, affects neither the accounting profit nor taxable profit or loss; and
- in respect of deductible temporary differences associated with investments in subsidiaries, deferred tax assets are recognized only to the extent that it is probable that the temporary differences will not reverse in the foreseeable future and no taxable profit will be available against which the temporary differences can be utilized.

The carrying amount of deferred tax assets is reviewed on each balance sheet date and reduced to the extent that it is no longer probable that sufficient taxable profit will be available to allow all or part of the deferred tax asset to be utilized. Unrecognized deferred tax assets are reassessed on each balance sheet date and are recognized to the extent that it has become probable that future taxable profit will allow the deferred tax asset to be utilized.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply to the year when the asset is realized or the liability is settled, based on tax rates (and tax laws) that have been enacted or substantively enacted on the balance sheet date. Future changes in tax rates are recognized on the balance sheet date if their impact is materially certain as part of the tax legislation process.

According to IAS 12.74 deferred tax assets and liabilities have been set off in 2021 insofar as offsetting qualifications apply.

The best estimate for any uncertain current and deferred income tax items to be recognized is the expected tax payment.

Earnings per share

The group calculates basic and diluted earnings per share in accordance with IAS 33. Basic earnings per share are calculated based on the weighted average number of no- par value shares outstanding during the reporting period. Diluted earnings per share are calculated based on the weighted average number of no-par value shares outstanding during the reporting period, but also including the number of no-par value shares that could come into existence if all stock options that are in the money were exercised on the balance sheet date.

(5) Significant accounting judgements, estimates and assumptions

The preparation of the group's financial statements requires management to make judgments, estimates and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities and the disclosure of contingent liabilities on the reporting date. However, uncertainty about these assumptions and estimates could result in outcomes that could require a material adjustment to the carrying amount of the asset or liability affected in the future. Assumptions used to make estimates are regularly reviewed. Changes in estimates only affecting one accounting period are only considered in that accounting period. In the case of changes in estimates that affect the current and future accounting periods, these are considered appropriately in the current and subsequent accounting periods.

Discussed below are the key judgments and assumptions concerning the future and other key sources of estimation and uncertainty on the balance sheet date that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year.

Valuation of inventories

Inventories are valued at the lower of cost or net realizable value.The net realizable value is the estimated selling price that could be realized on the closing date in the context of ordinary business activity, less estimated costs of completion and costs necessary to make the sale. Estimates of the net realizable value have to be based on the most reliable information at the time the estimates are made. Inventory depreciation covers risks relating to slow-moving items or technical obsolescence. Application of moving average price or net realizable value as well as consideration of risks in the inventory depreciation is subject to estimates that have a significant effect on the carrying amount of inventories.

In addition, significant estimates are involved in the determination of provisions related to the valuation of excess and obsolete material available at contract manufacturers.The assessment of whether and to what extent available material for which non-cancelable purchase commitments exist can be used in the future is based on past experience.

Development expenses

Development expenses are capitalized in accordance with the accounting policy described in note (4). Initial capitalization of costs is based on management judgment assuming that technological and economic feasibility is confirmed, usually when a product development project has reached a defined milestone according to an established project management model. In determining the amounts to be capitalized, management makes assumptions regarding the expected future cash generation of the assets, discount rates to be applied and the expected period of benefits. See note (14) for the carrying amounts involved.

Impairment of non-financial assets

The group assesses whether there are any indicators of impairment for all non-financial assets on each reporting date. Goodwill and other indefinite life intangibles are tested for impairment annually and at other times when such indicators exist. Other non-financial assets are tested for impairment when there are indicators that the carrying amounts may not be recoverable. When value-in-use calculations are undertaken, management must estimate the expected future cash flows from the asset or cash generating unit and choose a suitable discount rate in order to calculate the present value of these cash flows. See note (14) for the carrying amounts involved.

Pension obligations

Pension and similar post-employment obligations as well as the related expenses are recognized based on actuarial calculations. The actuarial valuation of the present value of pension obligations depends on a number of assumptions regarding the discount rate, the expected salary increase rate, the expected pension trend, and life expectancy. In the event that changes in the assumptions regarding the valuation parameters are required, the future amounts of the pension obligations as well as the pension benefit costs may be affected materially. For further details on the valuation of pension obligations, see note (18).

Share-based compensation transactions

The group measures the cost of equity-settled and cash-settled transactions with employees by reference to the fair value of the equity instruments on the date at which they are granted or on the balance sheet date. Estimating fair value requires determining the most appropriate valuation model for a grant of equity instruments, which is dependent on the terms and conditions of the grant. This also requires determining the expected life of the option, volatility and dividend yield, as well as further assumptions. See note (39) for the carrying amounts involved.

Provisions

Significant estimates are involved in the determination of provisions related to warranty costs and legal proceedings a. The estimate of warranty claims is based on historic data and is extrapolated into the future. Legal proceedings often involve complex legal issues and are subject to substantial uncertainties. Accordingly, management exercises considerable judgment in determining whether there is a present obligation as a result of a past event at the end of the reporting period, whether it is more likely than not that such a proceeding will result in an outflow of resources and whether the amount of the obligation can be reliably estimated. Other provisions are described in note (19).

Accounting for combined supply and service contracts

ADVA provides contracts that have more than one separate performance obligation (multiple element arrangements). The transaction price is allocated to the performance obligations in the contract by reference to their relative standalone selling prices.If a standalone selling price is not directly observable ADVA will need to estimate it. These estimates have a significant impact on the timing of revenue recognition.

Leases

In determining the lease term, management considers all facts and circumstances that create an economic incentive to exercise an extension option, or not exercise a termination option. Extension options (or periods after termination options) are only included in the lease term if the lease is reasonably certain to be extended (or not terminated).

Taxes

Uncertainties exist with respect to the interpretation of complex tax regulations and the amount and timing of future taxable income. Given the wide range of international business relationships and the long-term nature and complexity of existing contractual agreements, differences arising between the actual results and the assumptions made, or future changes to such assumptions, could necessitate future adjustments to tax income and expenses already recorded. The group establishes provisions, based on reasonable estimates, for possible consequences of audits by the tax authorities of the respective countries in which it operates. The amount of such provisions is based on various factors, such as experience of previous tax audits and differing interpretations of tax regulations by the taxable entity and the responsible tax authority. Such differences of interpretation may arise on a wide variety of issues depending on the conditions prevailing in the respective group company’s domicile.

Deferred tax assets are recognized for all unused tax losses to the extent that it is probable that taxable profit will be available to utilize these losses. Significant management judgment is required to determine the amount of deferred tax assets that can be recognized, based upon the likely timing and level of future taxable profits together with future tax planning strategies. See note (27) for the carrying amounts involved.

Non-financial risks

The assessment of the impact of non-financial risks (global warming, circular economy, new regulations) on the recognition and measurement of assets and liabilities is based on significant management judgments and assumptions. Non-financial risks are assessed by management as long-term risks that currently have no significant impact on net realizable values, recoverable amounts, useful lives or the requirement to recognize provisions.

(6) Covid-19 effects

Against the background of the continuing crisis in connection with the global spreading of the Covid-19 virus, ADVA management has dealt again with the resulting risks and the relevant effects on accounting in 2021.

In the opinion of the management, there is still no sign of an increased default risk for trade receivables and contract assets. Therefore, no impact on the expected credit losses pursuant to IFRS 9 has been considered.

There was no triggering event for an impairment test pursuant to IAS 36.9 in the current financial year. In accordance with the usual procedure, an impairment test was carried out at the end of 2021, taking into account the current cost of capital and a current 4-year plan. As of December 31, 2021, no impairment of goodwill or other non-current non-financial assets was required.

The German federal government as well as governments of other countries in which ADVA operates or maintains subsidiaries or branches have introduced economic stimulus measures and other bridging measures to overcome the Covid-19 crisis.

In 2020 a key measure was the raising of a EUR 40 million KfW backup line under the "KfW Entrepreneur Loan" special program 2020. The contract was signed on July 21, 2020, the borrowing facilities however has never been used and was early terminated by the group in January 2021.

In 2021, no other government support measures related to Covid-19, such as the waiver of social security contributions and the deferral of tax payments and the payment of social security contributions, were used by the group.

Deferred tax assets at ADVA Optical Networking SE and its subsidiaries, insofar they exceed the amount of deferred tax liabilities, are recognized based on forecasts of the future taxable income, which can be used for offsetting deductible temporary differences and tax loss carry forwards. Based on the positive tax planning prepared for the relevant forecast period the recognized deferred tax assets were assessed at reporting date as recoverable.

(7) Principles of consolidation, scope of consolidation and shareholdings

Subsidiaries are all entities over which ADVA Optical Networking SE directly or indirectly has control. Subsidiaries are fully consolidated from the date on which control is transferred to the group. They are deconsolidated at the date when the control ends. ADVA Optical Networking SE controls an entity when it is exposed to or has the rights to variable returns from its involvement and has the ability to affect those returns through its power to direct the activities of the entity.

Intercompany revenues, expenses, income, receivables and payables within the group are eliminated.

Intercompany profits that arise from deliveries of products and services provided within the group are eliminated.

Business combinations

Business combinations are accounted for using the acquisition method. The cost of an acquisition is measured as the aggregate of the consideration transferred, measured at acquisition date fair value and the amount of any non-controlling interest in the acquiree. For each business combination, the acquirer measures the non-controlling interest in the acquiree either at fair value or at the proportionate share of the acquiree's identifiable net assets. Acquisition costs incurred are expensed.

When a group company acquires a business, it assesses the financial assets and liabilities acquired for appropriate classification and designation in accordance with the contractual terms, economic circumstances and relevant conditions on the acquisition date. This includes the separation of embedded derivatives in host contracts by the acquiree.

If the business combination is achieved in stages, the acquisition date fair value of the acquirer's previously held equity interest in the acquiree is re-measured to fair value on the acquisition date through profit and loss.

Any contingent consideration to be transferred by the acquirer will be recognized at fair value on the acquisition date. Subsequent changes in the fair value of contingent considerations that represent an asset or liability are recognized in the income statement in accordance with IFRS 9.

Goodwill is initially measured at cost being the excess of the consideration transferred over the group's net identifiable assets acquired and measured at fair value as well as liabilities assumed and measured at fair value. If this consideration is lower than the fair value of the net assets of the company acquired, the difference is recognized in profit or loss after reassessment.

After initial recognition, goodwill is measured at cost less any accumulated impairment losses. For the purpose of impairment testing, goodwill acquired in a business combination is, from the acquisition date, allocated to each of the group's cash generating units that are expected to benefit from the combination, irrespective of whether other assets or liabilities of the acquiree are assigned to those units.

Where goodwill forms part of a cash-generating unit and where part of the operation within that unit is disposed of, the goodwill associated with the operation disposed of is included in the carrying amount of the operation when determining the gain or loss on disposal of the operation. Goodwill disposed of in this circumstance is measured based on the relative values of the operation disposed of and the portion of the cash-generating unit retained.

Investments in associates

The equity method according to IAS 28 (Investments in Associates) is used to account for investments in entities in which ADVA Optical Networking SE holds 20 % to 50 % of the voting rights, either directly or indirectly, and over whose operating and financial policy decisions ADVA Optical Networking SE exercises significant influence (associated companies). The investment is initially recognized at cost, and the carrying amount is increased or decreased to recognize the investor's share of the profit or loss generated. The group share of the profit or loss of investments accounted for by the equity method is recognized in the consolidated income statement, whereas the share of changes in the equity of investments accounted for by the equity method that has not been recognized in profit or loss is shown in the reserves of the consolidated equity. In case the group share of losses exceeds the carrying amount of the investment accounted for by the equity method, no further losses are recognized at group level. Goodwill relating to an investment accounted for by the equity method is included in the carrying amount of the investment. Upon loss of significant influence over an associate, the group measures and recognizes any retaining investment at its fair value. Upon loss of significant influence, any difference between the carrying amount of the associate and the fair value of the retaining investment and proceeds from disposal are recognized in profit or loss.

As of December 31, 2021, ADVA Optical Networking has no interests in associates (prior year: none).

Scope of consolidation

The consolidated financial statements for the year ended December 31, 2021, include the financial statements of ADVA Optical Networking SE plus all of the 19 (prior year: 19) wholly owned subsidiaries listed below (hereafter collectively referred to as "the group companies"):

(in thousands)			IFRS equity	IFRS net income/ (loss)	Share in equity owned directly	Share in equity owned indirectly
ADVA Optical Networking North America, Inc., Norcross/Atlanta (Georgia), USA (ADVA Optical Networking North America)	USD		75,803	8,205	—	100%
ADVA Optical Networking Ltd., York, United Kingdom (ADVA Optical Networking York)	GBP	*	13,977	1,967	100%	—
Oscilloquartz SA, Saint-Blaise, Switzerland (OSA Switzerland)	CHF		5,885	525	100%	—
ADVA Optical Networking sp. z o.o., Gdynia, Poland (ADVA Optical Networking Poland)	PLN	*	53,567	4,013	100%	—
ADVA Optical Networking Israel Ltd., Ra'anana/Tel Aviv, Israel (ADVA Optical networking Israel)	ILS		(5,430)	30,087	100%	—
ADVA Optical Networking (Shenzhen) Ltd., Shenzhen, China (ADVA Optical Networking Shenzhen)	CNY	*	36,672	5,911	100%	—
Oscilloquartz Finland Oy, Espoo, Finland (OSA Finland)	EUR		194	53	100%	—
ADVA IT Solutions Pvt. Ltd., Bangalore, India (ADVA IT Solutions)	INR		66,019	(156)	—	100%
ADVA Optical Networking Trading (Shenzhen) Ltd., Shenzhen, China (ADVA Optical Networking Trading)	USD		1,719	240	—	100%
ADVA Optical Networking Singapore Pte. Ltd., Singapore (ADVA Optical Networking Singapore)	SGD	*	4,313	192	100%	—
ADVA Optical Networking Hong Kong Ltd., Hong Kong, China (ADVA Optical Networking Hong Kong)	USD	*	981	102	—	100%
ADVA Optical Networking (India) Private Ltd., Gurgaon, India (ADVA Optical Networking India)	INR		172,106	22,533	1%	99%
ADVA Optical Networking Serviços Brazil Ltda., São Paulo, Brazil (ADVA Optical Networking São Paulo)	BRL		2,168	43	99%	1%
ADVA Optical Networking Corp., Tokyo, Japan (ADVA Optical Networking Tokyo)	JPY		93,213	4,357	100%	—
ADVA Optical Networking AB, Kista/Stockholm, Sweden (ADVA Optical Networking Stockholm)	SEK	*	2,443	282	100%	—
ADVA NA Holdings Inc., Norcross/Atlanta (Georgia), USA (ADVA NA Holdings)	USD		60,714	(1)	100%	—
ADVA Optical Networking Pty Ltd., Sydney (New South Wales), Australia (ADVA Australia)	AUD		1,653	100	—	100%
ADVA Optical Networking B.V., Hilversum, Netherlands (ADVA Netherlands)	EUR		301	29	100%	—
ADVA Canada Inc., Ottawa, Canada (ADVA Canada)	CAD		3,145	297	100%	—

* For the purpose of better comparability, changed in 2021 to disclosures according to group reporting packages in accordance with IFRS for the financial year ended December 31, 2021. In prior year, figures from the most recent available financial statements in accordance with local accounting principles were included.

Changes in the scope of consolidation

In 2021, there were no changes in the scope of consolidation.

(8) Foreign currency translation

The functional currency of each group company is the currency of the main economic environment in which the company operates. The reporting currency of ADVA Optical Networking's consolidated financial statements is the functional currency of the parent company, ADVA Optical Networking SE (euro).

Currency translation on entity level

Transactions in foreign currencies are initially recorded by the group entities at their respective functional currency rates prevailing on the date of the transaction. Monetary assets and liabilities denominated in foreign currencies are retranslated at the functional currency spot rate of exchange ruling on the reporting date. Non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rates on the dates of the initial transactions. Non-monetary items measured at fair value in a foreign currency are translated using the exchange rates on the date when the fair value is determined. The exchange differences arising from the translation are recognized in profit or loss in financial income/expense.

Currency translation on group level

The assets and liabilities of foreign operations are translated into euro at the rate of exchange prevailing on the reporting date, and their income statements are translated at the average rate for the reporting period. The exchange differences arising from the translation are recognized in accumulated other comprehensive income. On disposal of a foreign operation, the component of accumulated other comprehensive income related to that particular foreign operation is recognized in the income statement.

Any goodwill arising on the acquisition of a foreign operation and any fair value adjustments to the carrying amount of assets and liabilities arising on acquisition are treated as assets and liabilities of the foreign operation and translated at the closing rate.

The relevant exchange rates for translating foreign operations into the reporting currency are as follows:

	Closing rate Dec. 31, 2021	Closing rate Dec. 31, 2020	Average rate Jan. 1 to Dec. 31, 2021	Average rate Jan. 1 to Dec. 31, 2020
AUD	1.5594	1.6025	1.5749	1.6555
BRL	6.3734	6.3574	6.3687	5.8810
CAD	1.4481	1.5701	1.4827	1.5291
CHF	1.0363	1.0857	1.0813	1.0704
CNY	7.2230	8.0134	7.6286	7.8692
GBP	0.8393	0.9031	0.8598	0.8892
HKD	8.8399	9.5210	9.1925	8.8496
ILS	3.5204	3.9429	3.8195	3.9233
INR	84.2575	89.8824	87.4261	84.5604
JPY	130.4400	126.5700	129.8223	121.7478
PLN	4.5960	4.5565	4.5650	4.4431
SEK	10.2438	10.0568	10.1447	10.4902
SGD	1.5330	1.6257	1.5893	1.5731
USD	1.1334	1.2281	1.1826	1.1410

Notes to the consolidated statement of financial position

(9) Cash and cash equivalents

Cash and cash equivalents include current funds as well as current financial assets with a remaining maturity that does not exceed three months and that are readily convertible to a known amount of cash and only subject to an insignificant risk of changes in value.

On December 31, 2021, cash of EUR 2,353 thousand (December 31, 2020: EUR 1,472 thousand) is held in China and is subject to local exchange control regulations. These local exchange control regulations provide for restrictions on exporting capital from the country, other than through normal dividends.

Cash at banks earns interest at floating rates based on daily bank deposit rates.

Cash equivalents are invested for varying periods of between one day and three months, depending on the immediate cash requirements of the group, and earn interest at the respective short-term deposit rates.

(10) Trade accounts receivable

Trade accounts receivable are non-interest-bearing and are due within 30 to 120 days in general. For specific projects, other payment terms may be agreed.

Gross and net trade accounts receivable are as follows:

(in thousands of EUR)	Dec. 31, 2021	Dec. 31, 2020
Gross trade accounts receivable	**85,601**	**86,593**
Allowance for expected credit losses	(2,629)	(2,713)
Net trade accounts receivable	**82,972**	**83,880**

A reconciliation of the risk provision for trade accounts receivable carried at amortized cost is included in the table below:

(in thousands of EUR)	2021	2020
Jan. 1	**2,713**	**1,691**
Increase of risk provision	—	73
Release of risk provision	(240)	—
Addition of specific allowances	35	1,119
Usage	(33)	(7)
Foreign currency translation effects	154	(163)
Dec. 31	**2,629**	**2,713**

Further information on default risk from trade accounts receivable is included in note (34) on financial risk management.

The group has a supplier finance agreement, which entitles the transfer of trade receivables from a specific customer. Credit risks and settlement risks are transferred to the financing institution. The group fully derecognizes sold trade receivables as all risks and rewards are transferred. ADVA paid an annual fee amounting to LIBOR plus 0.75 % on the volume of receivables transferred. In 2020, the group incurred interest expenses of EUR 54 thousand pertaining to this arrangement (prior year: EUR 30 thousand).

In Q2 2020, the group concluded another revolving factoring agreement with a maximum annual volume of EUR 20,000 thousand. The contract entitles to transfer uninsured trade receivables with certain customers. The agreement is for an indefinite period . The risks relevant to the risk assessment in relation to the receivables sold are the default risk and the late payment risk. As of December 31, 2021, receivables amounting to EUR 7,144 thousand (prior year: EUR 10,622 thousand) were sold, of which EUR 718 thousand (prior year: EUR 891 thousand) was not paid out as reserve. These reserves are recognized in other assets.

The group accounts for the sold trade receivables from the revolving factoring agreement in the amount of their continuing involvement. On December 31, 2021, the continuing involvement asset in the amount of EUR 349 thousand (prior year: EUR 391 thousand) was recognized as a liability and includes the maximum loss for the default and late payment risk for ADVA. The fair value of these guarantees or the interest payments to be made were recognized in the profit and loss statement and also recognized as other liabilities in the amount of EUR 50 thousand (prior year: EUR 71 thousand).

On December 31, 2021, trade accounts receivable include receivables of EUR 12,144 thousand related to the existing sale of receivables agreement (December 31, 2020: EUR 24,559 thousand), for which no transfer had taken place as of year-end 2021. The decrease compared to the previous year is in particular due to higher utilization of the existing supplier finance agreement.

(11) Inventories

The table below summarizes the composition of inventories:

(in thousands of EUR)	Dec. 31, 2021	Dec. 31, 2020
Raw materials and supplies	27,683	16,303
Work in progress	2,948	3,428
Finished goods	98,574	70,393
	129,205	**90,124**

In 2021, impairment of inventories amounting to EUR 5,309 thousand (prior year: EUR 5,420 thousand) was recognized as an expense within cost of goods sold. This amount includes reversals of earlier write-downs amounting to EUR 347 thousand (prior year: EUR 332 thousand) due to higher selling and input prices.

In 2021 and 2020, material costs of EUR 269,746 thousand and EUR 259,938 thousand, respectively, have been recognized.

(12) Contract assets

Contract assets amounting to EUR 180 thousand (prior year: EUR 442 thousand) relate to claims from return deliveries. Contract assets are subject to the impairment requirements of IFRS 9, however the identified impairment losses were insignificant.

(13) Other current and non-current assets

Other current assets are as follows:

(in thousands of EUR)	Dec. 31, 2021	Dec. 31, 2020
Non-financial assets		
Prepaid expenses	3,853	2,289
Receivables due from tax authorities	2,639	1,147
Other	857	696
Total current non-financial assets	**7,349**	**4,132**
Financial assets		
Government grant allowances for research projects	3,325	2,178
Positive fair values of derivative financial instruments	89	0
Reserves relating to a revolving factoring agreement	718	891
Volume discounts of suppliers	1,838	—
Other	659	657
Total current financial assets	**6,629**	**3,726**
	13,978	**7,858**

Other current assets are non-interest-bearing and are generally due within 0 to 60 days.

Further disclosures on derivative financial instruments are given in note (33).

Other non-current assets are as follows:

(in thousands of EUR)	Dec. 31, 2021	Dec. 31, 2020
Financial assets		
Investments	0	0
Government grant allowances for research projects	2,982	1,093
Rent deposits	1,622	1,397
Other	208	104
Total non-current assets	**4,812**	**2,594**

The fair value of the investment of 7.1 % (previous year: 7.1 %) of the shares in Saguna Networks Ltd., Nesher, Israel, amounted to zero at year-end 2021. A review of the fair value at year-end did not indicate any write-up.

On December 31, 2021, government grants for 19 research projects are recognized (December 31, 2020: 19 research projects). These public grants relate to programs promoted by the EU and national governments. ADVA does not expect any defaults based on high credit rankings.

The rent deposits are mainly assets held in trust. ADVA does not expect any defaults.

On December 31, 2021 and 2020, no non-financial non-current assets have been reported.

The classification of financial instruments according to IFRS 9 is included in note (33).

(14) Fixed assets

The following changes in fixed assets were recorded in 2021 and 2020:

	Historical cost						
(in thousands of EUR)	Jan. 1, 2021	Additions	Disposals/ retirements	Reclassi-fications	Currency translation adjustments	Change in scope of consoli-dation	Dec. 31, 2021
Finance leases (prior to IFRS 16)	1,683	—	(577)	(1,108)	2	—	—
	1,683	**—**	**(577)**	**(1,108)**	**2**	**—**	**—**
Right-of-use assets							
Leased cars	3,675	627	(740)	—	144	—	3,706
Leased premises	32,605	1,226	—	—	1,931	—	35,762
	36,280	**1,853**	**(740)**	**—**	**2,075**	**—**	**39,468**
Property, plant and equipment							
Land and buildings	18,245	28	—	—	518	—	18,791
Technical equipment and machinery	104,195	12,806	(3,728)	1,140	4,076	—	118,489
Factory and office equipment	16,367	1,248	(1,237)	—	775	—	17,153
Assets under construction	188	1,817	—	(171)	3	—	1,837
	138,995	**15,899**	**(4,965)**	**969**	**5,372**	**—**	**156,270**
Intangible assets							
Goodwill	112,807	—	—	—	6,652	—	119,459
Capitalized development projects	260,757	42,497	—	—	—	—	303,254
Thereof capitalized development projects in progress	*34,326*	*21,851*	—	*(16,986)*	—	—	*39,191*
Intangible assets acquired in business combinations	71,520	—	—	—	4,298	—	75,818
Other purchased and internally generated intangible assets	65,637	5,880	(151)	139	386	—	71,891
Thereof internally generated intangible assets in progress	—	*5,096*	—	—	—	—	*5,096*
	510,721	**48,377**	**(151)**	**139**	**11,335**	**—**	**570,421**
	687,680	**66,129**	**(6,433)**	**—**	**18,784**	**—**	**766,160**

Accumulated depreciation								Net book values	
Jan. 1, 2021	Depreciation of the period	Impairment of the period	Depreciation on disposals/ retirements	Reclassifications	Currency translation adjustments	Change in scope of consolidation	Dec. 31, 2021	Dec. 31, 2021	Dec. 31, 2020
1,683	—	—	(577)	(1,108)	2	—	—	—	—
1,683	**—**	**—**	**(577)**	**(1,108)**	**2**	**—**	**—**	**—**	**—**
1,689	1,155	—	(723)	—	115	—	2,236	1,470	1,986
9,205	4,825	—	—	—	711	—	14,741	21,021	23,400
10,894	**5,980**	**—**	**(723)**	**—**	**826**	**—**	**16,977**	**22,491**	**25,386**
12,034	904	—	—	—	398	—	13,336	5,455	6,211
81,872	11,871	—	(3,465)	1,108	3,430	—	94,816	23,673	22,323
13,854	1,450	—	(1,196)	—	684	—	14,792	2,361	2,513
—	—	—	—	—	—	—	—	1,837	188
107,760	**14,225**	**—**	**(4,661)**	**1,108**	**4,512**	**—**	**122,944**	**33,326**	**31,235**
45,771	—	—	—	—	2,093	—	47,864	71,595	67,036
162,150	43,318	—	—	—	—	—	205,468	97,786	98,607
—	—	—	—	—	—	—	—	*39,191*	*34,326*
56,516	4,058	—	—	—	3,261	—	63,835	11,982	15,004
60,335	2,826	—	(151)	—	341	—	63,351	8,540	5,302
—	—	—	—	—	—	—	—	*5,096*	—
324,772	**50,202**	**—**	**(151)**	**—**	**5,695**	**—**	**380,518**	**189,903**	**185,949**
445,109	**70,407**	**—**	**(6,112)**	**—**	**11,035**	**—**	**520,439**	**245,720**	**242,570**

(in thousands of EUR)	Historical cost Jan. 1, 2020	Additions	Disposals/ retirements	Reclassi-fications	Currency translation adjustments	Change in scope of consoli-dation	Dec. 31, 2020
Finance leases (prior to IFRS 16)	1,683	—	—	—	—	—	1,683
	1,683	**—**	**—**	**—**	**—**	**—**	**1,683**
Right-of-use assets							
Leased cars	2,838	1,286	(424)	—	(25)	—	3,675
Leased premises	35,434	—	(920)	—	(1,909)	—	32,605
	38,272	**1,286**	**(1,344)**	**—**	**(1,934)**	**—**	**36,280**
Property, plant and equipment							
Land and buildings	18,173	219	(21)	307	(433)	—	18,245
Technical equipment and machinery	97,064	12,064	(579)	31	(4,385)	—	104,195
Factory and office equipment	16,369	1,191	(452)	—	(741)	—	16,367
Assets under construction	662	174	(3)	(611)	(34)	—	188
	132,268	**13,648**	**(1,055)**	**(273)**	**(5,593)**	**—**	**138,995**
Intangible assets							
Goodwill	119,522	—	—	—	(6,715)	—	112,807
Capitalized development projects	220,790	39,967	—	—	—	—	260,757
Thereof capitalized development projects under construction	*24,994*	*19,124*	—	*(9,792)*	—	—	*34,326*
Intangible assets acquired in business combinations	76,447	—	—	—	(4,927)	—	71,520
Other purchased and internally generated intangible assets	64,115	4,773	(3,094)	273	(430)	—	65,637
Thereof internally generated intangible assets under construction	—	—	—	—	—	—	—
	480,874	**44,740**	**(3,094)**	**273**	**(12,072)**	**—**	**510,721**
	653,097	**59,674**	**(5,493)**	**—**	**(19,599)**	**—**	**687,679**

Accumulated depreciation								Net book values	
Jan. 1, 2020	Depreciation of the period	Impairment of the period	Depreciation on disposals/ retirements	Reclassifications	Currency translation adjustments	Change in scope of consolidation	Dec. 31, 2020	Dec. 31, 2020	Dec. 31, 2019
1,683	—	—	—	—	—	—	1,683	—	—
1,683	**—**	**—**	**—**	**—**	**—**	**—**	**1,683**	**—**	**—**
964	1,160	—	(424)	—	(11)	—	1,689	1,986	1,874
5,323	4,919	332	(905)	—	(464)	—	9,205	23,400	30,111
6,287	**6,079**	**332**	**(1,329)**	**—**	**(475)**	**—**	**10,894**	**25,386**	**31,985**
11,200	1,179	—	(21)	—	(324)	—	12,034	6,211	6,973
74,960	10,970	—	(376)	—	(3,682)	—	81,872	22,323	22,104
13,486	1,454	—	(443)	—	(643)	—	13,854	2,513	2,883
—	—	—	—	—	—	—	—	188	662
99,646	**13,603**	**—**	**(840)**	**—**	**(4,649)**	**—**	**107,760**	**31,235**	**32,622**
47,499	—	—	—	—	(1,728)	—	45,771	67,036	72,023
124,621	37,341	—	—	—	188	—	162,150	98,607	96,169
—	—	—	—	—	—	—	—	*34,326*	*24,994*
55,583	4,439	—	—	—	(3,506)	—	56,516	15,004	20,864
60,411	3,267	—	(2,985)	—	(358)	—	60,335	5,302	3,704
—	—	—	—	—	—	—	—	—	—
288,114	**45,047**	**—**	**(2,985)**	**—**	**(5,404)**	**—**	**324,772**	**185,949**	**192,760**
395,730	**64,729**	**332**	**(5,154)**	**—**	**(10,528)**	**—**	**445,109**	**242,570**	**257,367**

Right-of-use assets

Lease terms of between 36 and 120 months were applied considering the minimum rental periods and contractual extension options. In 2021, depreciation of EUR 1,155 thousand for vehicles (2020: EUR 1,160 thousand) and EUR 4,825 thousand for office and building rentals (2020: EUR 4,919 thousand) are included in operating profit. Further an impairment of EUR 332 thousand for reduced usage of the office in Bangalore, as well as the related leasehold improvements, was included in operating profit in 2020. No impairment was made in 2021.

In 2021 an amount of EUR 410 thousand, which mainly relates to short-term leases is recognized in profit and loss (2020: EUR 476 thousand). In addition, in 2021 variable lease payments of EUR 2,351 thousand were not included in the measurement of lease liabilities and are also recognized in profit and loss (2020: EUR 2,345 thousand). There are no major lease payments related to low value contracts. In the cash flow statement, the cash outflows resulting from these items are included in the cash flow from operating activities.

Further information on the corresponding lease liabilities is provided in note (15).

Property, plant and equipment

The classification and changes in property, plant and equipment are shown in the analysis of changes in fixed assets.

In 2021 and 2020, there were neither impairments nor write-backs of property, plant and equipment impaired in prior years.

Goodwill

The table below shows the composition of goodwill allocated to cash-generating units:

(in thousands of EUR)	Dec. 31, 2021	Dec. 31, 2020
ADVA Optical Networking SE plus	45,145	42,491
ADVA Optical Networking York	4,715	4,382
ADVA Optical Networking North America	18,447	17,025
OSA Switzerland	3,288	3,138
	71,595	**67,036**

Impairment of goodwill

In 2021 and 2020, no impairment of goodwill was recognized.

Key assumptions used in impairment testing

All entities, which are acting on their own account and are capable to generate revenues independently based on own customer relationships and own distribution channels are considered as separate cash-generating units. All dependent development service providing, logistical service and sales service providing entities are considered together with the ADVA Optical Networking SE in one combined cash-generating unit (ADVA Optical Networking SE plus). This as ADVA Optical Networking SE as owner of all technologies is responsible for future developments and utilization and cost-plus contracts exist between the respective companies and ADVA SE for the remuneration of the services. For impairment test purposes goodwill is generally allocated to the cash-generating unit in which the subsidiary is included, on which acquisition the goodwill has been recognized. Therefore, 61 % of the goodwill recognized in the course of the acquisition of Overture Networks Inc. has been allocated to ADVA Optical Networking SE plus and 39 % has been allocated to ADVA Optical Networking North America based on fair value of technology and customer relationship at the date of the acquisition. 40 % of customer relationships recognized in the purchase price allocation related to the acquisition of MRV group have been allocated to ADVA Optical Networking North America. The technology from the acquisition of the MRV Communications group was allocated 100 % to ADVA Optical Networking SE plus. Accordingly, the allocation of the relevant goodwill amounted to 77 % : 23 % in cash generating units ADVA Optical Networking SE plus and ADVA Optical Networking North America. Unchanged from prior years, the cash-generating units, to which the corporate assets are allocated, are ADVA Optical Networking SE plus, ADVA Optical Networking York, ADVA Optical Networking North America and OSA Switzerland.

On December 31, 2021 and 2020, the value in use of the goodwill was calculated based on future cash flows (discounted-cash-flow-method). The calculation is most sensitive to the following assumptions:

- Gross margins
- Discount rates
- Raw material prices
- Market share expected

Cash flows include the projected cash flows for the four subsequent years as per the approved budget and four-year planning from 2022 - 2025 for gross margins, market share and raw material prices. For further periods, a perpetual income is estimated based on nil growth with inflation offset. The discount rate used for the calculation is a pre-tax rate. It considers the specific risk of each group company and is calculated according to the Capital Asset Pricing Model (CAPM). The cost of equity is composed of a risk-free interest rate and a specific risk mark-up calculated as the difference of the average market rate of return and the risk-free interest rate multiplied with the specific risk related to the company (beta coefficient). The beta coefficient is calculated on a peer group basis. The calculation uses pre-tax discount rates depending on the different cash generating units.

Following pre-tax discount rates have been assumed:

(in %)	2021	2020
ADVA Optical Networking SE plus	11.69	11.60
ADVA Optical Networking York	12.60	12.37
ADVA Optical Networking North America	14.18	14.17
OSA Switzerland	10.06	10.17

The growth rate for the extrapolation of expected cash flows for all cash-generating units is 1.00 %.

Sensitivity analysis

No disclosures on sensitivities are provided, as an impairment is unlikely to occur as of the balance sheet date. Only an increase in the discount rates by 3.63 percentage points and above results in a need for impairment.

Capitalized development projects, intangible assets acquired in business combinations and other purchased and internally generated intangible assets

The table below summarizes the carrying amounts:

(in thousands of EUR)	Dec. 31, 2021	Dec. 31, 2020
Capitalized development projects	97,786	98,607
Intangible assets acquired in business combinations	11,982	15,004
Other intangible assets	8,540	5,302
	118,308	**118,913**

Capitalized development projects include expenses related to the development of technologies and products for connectivity solutions for cloud and mobile services, network functions virtualization and synchronization.

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In 2021, borrowing costs of EUR 416 thousand (2020: EUR 426 thousand) were capitalized related to development projects with an expected duration of more than 12 months. Borrowing costs were capitalized at the weighted average rate of the financial liabilities of 1.7 %.

Other intangibles assets mainly include licenses and software.

Intangible assets acquired in business combinations are as follows:

(in thousands of EUR)	Dec. 31, 2021	Dec. 31, 2020
Purchased software technology Overture	456	1,149
Purchased technology MRV	2,504	3,724
Purchased customer relationships Overture	1,401	1,925
Purchased customer relationship MRV	7,621	8,206
	11,982	**15,004**

Amortization of intangible assets with a finite useful life comprises:

(in thousands of EUR)	Dec. 31, 2021	Dec. 31, 2020
Capitalized development projects	43,318	37,341
Intangible assets acquired in business combinations	4,058	4,439
Other intangible assets	2,826	3,267
	50,202	**45,047**

Amortization of intangible assets acquired in business combinations are as follows:

(in thousands of EUR)	Dec. 31, 2021	Dec. 31, 2020
Purchased technology FiSEC	—	121
Purchased hardware technology Overture	—	88
Purchased software technology Overture	692	692
Purchased technology MRV	1,491	1,552
Brand Ensemble*	—	43
Purchased customer relationships Overture	658	681
Purchased customer relationship MRV	1,217	1,262
	4,058	**4,439**

* Ensemble is a trademark used by ADVA for the company's software solutions.

At initial recognition the useful lives of intangible assets acquired in business combinations were as follows:

Purchased technology FiSEC	4 years, 6 months
Purchased hardware technology Overture	3 years, 7 months
Purchased software technology Overture	5 years, 7 months
Purchased technology MRV	7 years
Brand Ensemble	4 years, 6 months
Purchased customer relationships Overture	8 years
Purchased customer relationship MRV	9 years, 9 months

In 2021 and 2020, no impairment for capitalized development projects as well as purchased technologies was recognized.

In the consolidated income statement, amortization and impairment of capitalized development projects and amortization of purchased technology is included in cost of goods sold. Amortization of purchased customer relationship assets is included in selling and marketing expenses.

(15) Lease liabilities

Variable lease payments of EUR 2,351 thousand have not been included in the measurement of lease liabilities and were recognized in profit and loss (2020: EUR 2,345 thousand). In the cash flow statement, the cash outflows resulting from these items are included in the cash flow from operating activities.

The interest expense of EUR 791 thousand is included in the financial result (2020: EUR 938 thousand).

The maturity of lease liabilities is as follows:

(in thousands of EUR)	Dec. 31, 2021	Dec. 31, 2020
Up to 1 year	6,001	5,807
One to three years	8,880	10,215
More than three years	10,133	11,783
	25,014	**27,805**

(16) Liabilities to banks

The tables below show details on liabilities to banks and their maturity:

		Maturity		
(in thousands of EUR)	Dec. 31, 2021	≤ 12 months	13 to 36 months	> 36 months
Syndicated loan	37,807	15,289	22,518	—
Deutsche Bank bullet loan	10,000	10,000	—	—
Total liabilities to banks	**47,807**	**25,289**	**22,518**	**—**

		Maturity		
(in thousands of EUR)	Dec. 31, 2020	≤ 12 months	13 to 36 months	> 36 months
Syndicated loan	52,621	15,492	37,129	—
Deutsche Bank bullet loan	10,000	—	10,000	—
Total liabilities to banks	**62,621**	**15,492**	**47,129**	**—**

In September 2018, ADVA contracted a syndicated loan amounting to EUR 75,000 thousand with a banking syndicate. The syndicated loan consists of two tranches with a total maturity of five years including a redeemable loan amounting to EUR 38,000 thousand as well as a revolving credit line of EUR 10,000 thousand. The interest rate for the redeemable loan amounts currently to EURIBOR plus 1.4 % p.a., linked to the leverage of the group. Due to an improvement of the leverage the interest was reduced to EURIBOR plus 1.35 % p.a. from 2021. Repayment in bi-annual installments started from June 2019. The redeemable loan has been accounted for applying the effective interest method.

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In October 2019, ADVA entered into a EUR 10,000 thousand bullet loan with Deutsche Bank. The loan is due for repayment in one amount in September 2022 and bears interest at EURIBOR plus 1.1 % p.a.

On December 31, 2021, the group had unused borrowing facilities totaling EUR 10,000 thousand available (December 31, 2020: EUR 50,000 thousand).

In 2021, the interest on liabilities to banks recognized at year-end was 1.1 % and 1.35 % p.a., respectively.

The fair value of the liabilities to banks is stated in note (33).

(17) Trade accounts payable and other current and non-current liabilities

The trade accounts payable are non-interest-bearing and generally due within 30 to 90 days. The increase in trade accounts payable mainly results from demand-oriented purchases of materials.

Other current liabilities are as follows:

(in thousands of EUR)	Dec. 31, 2021	Dec. 31, 2020
Non-financial liabilities		
Liabilities to employees for variable compensation and payroll	24,636	19,209
Liabilities to employees for vacation	2,127	1,570
Liabilities due to withheld wage income tax and social security contribution	3,547	2,980
Liabilities due to tax authorities	2,441	2,689
Obligations from subsidized research projects	3,840	2,548
Total current non-financial liabilities	**36,591**	**28,996**
Financial liabilities		
Negative fair value of derivatives	88	396
Other	3,386	2,571
Total current financial liabilities	**3,474**	**2,967**
	40,065	**31,963**

Other non-current liabilities include:

(in thousands of EUR)	Dec. 31, 2021	Dec. 31, 2020
Non-financial liabilities		
Obligations from subsidized research projects	3,129	1,347
Other	17	17
Total non-current non-financial liabilities	**3,146**	**1,364**
Financial liabilities		
Other	86	1,449
Total non-current financial liabilities	**86**	**1,449**
	3,232	**2,813**

On December 31, 2021, other current financial liabilities mainly include accrued software license contracts.

The classification of financial instruments according to IFRS 9 is included in note (33).

(18) Provisions for pensions and similar employee benefits

Post-employment benefit plans are classified as either defined contribution or defined benefit plans.

Plan assets related to defined contribution plans are managed separately from the assets of the relevant company by a trustee. For such plans, the company pays fixed contributions into a separate entity or a fund and does not assume any other obligations. Payment obligations to defined contribution plans are recognized in profit or loss when they occur. Payment to government managed pension plans with fixed contributions are considered as defined contribution plans. ADVA group maintains defined contribution plans in different group companies. In 2021, total expenses related to defined contribution plans amount to EUR 9,254 thousand (prior year: EUR 8,346 thousand).

Under defined benefit plans the company is required to pay agreed benefits granted to present and past employees. Defined benefit plans may be funded or unfunded. The group maintains defined benefit plans in Switzerland, Italy, India and Israel.

The defined benefit plans in Switzerland are remuneration-dependent commitments for which a guaranteed minimum interest rate is set. Benefits paid in conjunction with these plans comprise old-age retirement pensions as well as invalidity and surviving dependents' benefits. The assets of the pension plans are managed by trustees. The administration is carried out in accordance with local legal requirements. In Switzerland, in addition to the regular case of pension payments at retirement age, the retirement assets can also be paid out in full or in part as a lump sum. Furthermore, in certain cases, for example in the event of the acquisition of residential property, there is the possibility of early withdrawal of the retirement assets. In the event of a change of job, the employee's retirement assets are transferred from the pension fund of the previous employer to the pension fund of the new employer.

The pension plans in Israel, Italy and India are defined benefit plans, which in the case of Italy and India are unfunded. The assets of the pension plan in Israel are managed by trustees in accordance with local legal requirements. In Italy, Israel and India, a single lump-sum payment is usually made upon retirement.

On December 31, 2021, ADVA reports provisions for pensions amounting to EUR 7,401 thousand (December 31, 2020: EUR 8,545 thousand).

The carrying amount are as follows:

(in thousands of EUR)	Dec. 31, 2021	Dec. 31, 2020
Present value of defined benefit obligations	29,146	26,846
Fair value of plan assets	(21,745)	(18,301)
Provisions for pensions and similar employee benefits	**7,401**	**8,545**

The change in the net defined benefit liability for pension plans derives as follows:

(in thousands of EUR)	Defined benefit obligations	Fair value of plan assets	Total
Jan. 1, 2020	**24,448**	**(16,692)**	**7,756**
Expenses and income			
Current service cost	1,018	—	1,018
Interest expense (+)/income (-)	183	(121)	62
Remeasurements			
Gains (-)/losses (+) arising from changes in financial assumptions	309	—	309
Gains (-)/losses (+) arising from experience	877	—	877
Gains (-)/losses (+) on plan assets, excluding amounts included in interest income	—	(689)	(689)
Employee contributions	283	(283)	—
Transfers to funds	—	(641)	(641)
Assets distributed on settlements	—	14	14
Benefits paid through plan assets and payments made to plan assets, net	(10)	10	—
Disbursements of ADVA	(131)	—	(131)
Exchange rate differences and other changes	(131)	101	(30)
Dec. 31, 2020	**26,846**	**(18,301)**	**8,545**
Expenses and income			
Current service cost	1,069	—	1,069
Past service cost	(19)	—	(19)
Interest expense (+)/income (-)	184	(119)	65
Remeasurements			
Gains (-)/losses (+) arising from changes in financial assumptions	(441)	—	(441)
Gains (-)/losses (+) arising from changes in demographic assumptions	(338)	—	(338)
Gains (-)/losses (+) arising from experience	450	—	450
Gains (-)/losses (+) on plan assets, excluding amounts included in interest income	—	(1,401)	(1,401)
Employee contributions	288	(288)	—
Transfers to funds	—	(671)	(671)
Assets distributed on settlements	—	18	18
Benefits paid through plan assets and payments made to plan assets, net	(292)	292	—
Disbursements of ADVA	(328)	—	(328)
Exchange rate differences and other changes	1,727	(1,275)	452
Dec. 31, 2021	**29,146**	**(21,745)**	**7,401**

The payments made to plan assets result in particular from vested benefits brought in by joining the company as well as from other payments and repayments of benefits drawn in advance to top up the pension fund.

The past service cost in 2021 results from the legal adjustment of the retirement age for women in Israel.

On December 31, 2021, EUR 25,449 thousand of the defined benefit obligations relate to active employees and EUR 3,697 thousand relate to pensioners (prior year: EUR 22,974 thousand and EUR 3,871 thousand, respectively).

The average remaining period of service for employees and the weighted average duration of the obligations as of December 31, 2021 are as follows:

(in years)	Switzerland	Italy	India	Israel
Average remaining period of service	9.30	14.90	n/a	n/a
Weighted average duration	16.80	10.20	8.00	10.60

On December 31, 2020 the average remaining period of service and the weighted average duration are as follows:

(in years)	Switzerland	Italy	India	Israel
Average remaining period of service	10.30	14.40	n/a	n/a
Weighted average duration	18.50	10.50	8.00	10.50

In general, the monthly payment of pensions starts if an employee in Switzerland reaches the retirement age, while in Israel, Italy and India a lump sum payment of the relevant accrued amount applies with retirement or resignation of an employee.

Employer contributions in 2022 are expected to amount to EUR 753 thousand (2020 expected for 2021: EUR 886 thousand). The expected pension payments for 2022 amount to EUR 1,109 thousand. In 2020 pension payments of EUR 868 thousand had been expected for 2021.

In 2021, the projected units credit method is used to calculate the defined benefit obligations considering the following material assumptions for valuation parameters:

	Switzerland	Italy	India	Israel
Discount rate	0.32%	0.66%	6.50%	2.40%
Inflation rate	1.00%	1.75%	n/a	2.50%
Salary level trend	1.00%	2.00%	7.00%	2.20%
Pension level trend	0.00%	n/a	n/a	n/a

In 2020, the following valuation parameters have been assumed:

	Switzerland	Italy	India	Israel
Discount rate	0.20%	0.16%	6.00%	2.10%
Inflation rate	1.00%	1.75%	n/a	1.40%
Salary level trend	1.00%	2.00%	7.00%	2.00%
Pension level trend	0.00%	n/a	n/a	n/a

Discount rates have been determined considering the weighted average duration of the obligations. The evaluation for Switzerland, Italy and Israel is based on high-quality corporate bonds with AA-rating. For India, the discount rate is based on government bond rates.

ADVA is exposed to risks arising from defined benefit plans. Changes in actuarial parameters, especially in discount rates, may have significant influence on the pension obligations.

The sensitivity analysis provided below shows the extent to which the defined benefit obligation would have been affected by changes in the relevant assumptions in 2021:

(in thousands of EUR)		Change in defined benefit obligation
Discount rate	Increase by 0.25 %	(931)
	Decrease by 0.25 %	980
Salary level trend	Increase by 0.25 %	171
	Decrease by 0.25 %	(165)
Pension level trend	Increase by 0.10 %	184

The sensitivity analysis in prior year were as follows:

(in thousands of EUR)		Change in defined benefit obligation
Discount rate	Increase by 0.25 %	(981)
	Decrease by 0.25 %	1,041
Salary level trend	Increase by 0.25 %	166
	Decrease by 0.25 %	(164)
Pension level trend	Increase by 0.10 %	196

Sensitivities for discount rate, salary level and pension trend have been considered in turn disregarding any potential dependencies between these assumptions. With exception of pension trend considerations separate actuarial computations have been performed for increase and decrease of the assumptions. Due to the structure of the pension plans, no sensitivity was determined for the case of falling pensions.

ADVA assumes inflation rate to have minor impact on the amount of defined benefit obligations.

On December 31, 2021, plan assets split to major asset categories as follows:

	Quoted market prices	Other than quoted market prices
Equity instruments	23.46%	—
Bonds	19.04%	—
Real estate	21.26%	—
Alternative investments	8.37%	—
Qualified insurance policies	—	15.87%
Cash and cash equivalents	—	8.07%
Other	—	3.94%

On December 31, 2020, plan assets split to major asset categories as follows:

	Quoted market prices	Other than quoted market prices
Equity instruments	20.37%	—
Bonds	24.59%	—
Real estate	19.73%	—
Alternative investments	7.39%	—
Qualified insurance policies	—	16.40%
Cash and cash equivalents	—	3.64%
Other	—	7.88%

Pension fund assets are monitored continuously and managed from a risk-and-yield perspective by the external trustees.

(19) Other provisions

The table below lists changes in the composition of the group's other provisions in the reporting period:

(in thousands of EUR)	Jan. 1, 2021	Usage	Release	Appropriation	Transfer	Currency translation difference	Changes of scope of consolidation	Dec. 31, 2021
Current provisions								
Warranty provision	598	(260)	(50)	45	—	3	—	336
Personnel provisions	1,061	(856)	(205)	1,279	—	30	—	1,309
Consulting fees	3,348	(755)	(414)	351	—	182	—	2,712
Supplier obligations	8,821	(7,925)	(152)	8,813	—	128	—	9,685
Other short-term provisions	579	(546)	—	1,355	—	14	—	1,402
Total current provisions	**14,407**	**(10,342)**	**(821)**	**11,843**	**—**	**357**	**—**	**15,444**
Non-current provisions	—							
Warranty provision	1,261	(234)	—	559	—	6	—	1,592
Non-current personnel provisions	—	—	—	472	288	14	—	774
Other long-term provisions	297	—	—	31	(254)	—	—	74
Total non-current provisions	**1,558**	**(234)**	**—**	**1,062**	**34**	**20**	**—**	**2,440**
Provisions total	**15,965**	**(10,576)**	**(821)**	**12,905**	**34**	**377**	**—**	**17,884**

The estimated expenses related to warranty claims reflect both past experience and current developments and are based on a percentage of sales revenues. Any differences between actual amounts and anticipated amounts are treated as changes in accounting estimates and affect earnings in the period in which the change occurs.

Current personnel provisions mainly include expenses for severance payments as well as employee's accident insurance and other expenses resulting from legal requirements.

Non-current personnel provisions that were included in other non-current provisions at year-end 2020 have been reclassified to non-current personnel provisions in 2021.

Reversals of provisions from previous years are reported under other operating income (see note (24)).

(20) Contract liabilities and refund liabilities

Contract and refund liabilities are as follows:

(in thousands of EUR)	Dec. 31, 2021	Dec. 31, 2020
Current contract liabilities		
Outstanding credit notes	–	–
Advance payments received	450	81
Current contract liabilities related to customer loyalty programs	511	839
Current deferred revenues related to service level agreements	17,849	15,457
Total current contract liabilities	**18,810**	**16,377**
Current refund liabilities	931	633
Total refund liabilities	**931**	**633**
Non-current contract liabilities		
Non-current deferred revenues related to service level agreements	9,325	10,551
Total non-current contract liabilities	**9,325**	**10,551**
	29,066	**27,561**

Current contract liabilities related to customer loyalty programs include mainly expected volume discounts and refunds to customers.

The revenues generated in the reporting period from contract liabilities existing at the beginning of the period amounted to EUR 15,458 thousand (previous year: EUR 11,782 thousand).

Management expects that 67 % of the outstanding or partially outstanding benefit obligations as of December 31, 2021, will be recognized as revenue in the 2022 financial year. The remaining 33 % is expected to be recognized as sales in the financial year 2023. The amount stated does not include variable compensation components which are limited.

(21) Stockholders' equity

Common stock and share capital

On December 31, 2021, ADVA Optical Networking SE had issued 51,445,892 (prior year: 50,496,692) no par value bearer shares (hereinafter “common shares”), each representing a notional amount of share capital of EUR 1.00.

The common shares entitle the holder to vote at the annual general meeting and to receive dividends in case of a distribution. No restrictions are attached to the common shares.

Capital transactions

In connection with the exercise of stock options, 949,200 shares were issued to employees of the company and its affiliates out of conditional capital in 2021 (in 2020 in connection with the exercise of stock options 314,726 shares). The par value of EUR 949 thousand (prior year: EUR 315 thousand) was appropriated to share capital, whereas the premium resulting from the exercise of stock options of EUR 5,659 thousand (prior year: EUR 958 thousand) was recognized within capital reserve.

Other information on the share option programs is included in note (39).

Authorized capital

According to the company’s articles of association, the management board is authorized, subject to the consent of the supervisory board, to increase subscribed capital until May 21, 2024, only once or in successive tranches by a maximum of EUR 24,965,477 by issuing new common shares in return for cash or non-cash contributions (conditional capital 2019/I). Subject to the consent of the supervisory board, the management board is further authorized to decide whether to exclude stockholders’ subscription rights. Stockholders’ subscription rights can be excluded for capital increases for cash contributions as well as contributions in kind if during the term of this authorization and in exclusion of shareholder subscription rights, the shares issued against contributions in cash or in kind do not exceed 20 % of the share capital.

Conditional capital

The annual shareholder´s meeting on May 19, 2021, resolved the increase of conditional capital 2011/I by EUR 346 thousand to EUR 5,050 thousand. The resolution was registered in the commercial register on May 27, 2021.

Considering the above described capital transactions, the total conditional capital on December 31, 2021 amounts to EUR 4,100 thousand.

The changes in share capital, authorized and conditional capital are summarized below:

(in thousands of EUR)	Share capital	Authorized capital 2019/I	Conditional capital 2011/I
Jan. 1, 2021	**50,497**	**24,965**	**4,703**
Changes due to Annual Shareholders' Meeting resolutions	—	—	346
Stock options exercised	949	—	(949)
Dec. 31, 2021	**51,446**	**24,965**	**4,100**

Capital reserve

The capital reserve includes premium payments from the issuance of shares, as well as additional contributions to the company's equity associated with the exercise of stock options. Additionally, the capital reserve contains the correspondent accumulated compensation expenses related to equity-settled stock option rights issued amounting to EUR 24,976 thousand (prior year: EUR 23,573 thousand).

Accumulated other comprehensive income/(loss)

Accumulated other comprehensive income/(loss) is used to record exchange differences arising from the translation of the financial statements of foreign operations. In addition, the result from remeasurement of defined benefit obligations is included in this line item.

The development of accumulated other comprehensive income is as follows:

(in thousands of EUR)	Remeasurement of defined benefit plans	Exchange differences on translation of foreign operations
Jan. 1, 2020	**(3,124)**	**4,814**
Addition/ release from remeasurement	(492)	—
Tax effect	63	—
Currency translation differences	—	(14,921)
Dec. 31, 2020	**(3,553)**	**(10,107)**
Addition/ release from remeasurement	1,824	—
Tax effect	(266)	—
Currency translation differences	—	7,917
Dec. 31, 2021	**(1,995)**	**(2,190)**

In 2021 no items were reclassified (recycled) from comprehensive income to profit or loss (2020: EUR 255 thousand due to deconsolidation).

Changes in stockholders' equity are summarized in the consolidated statement of changes in stockholders' equity.

Voting rights

According to section 33 paragraph 1 and 2, section 38 paragraph 1 and section 40 of the German Securities Trading Law (Wertpapier-Handelsgesetz, WpHG) the company published the following information on the ADVA homepage:

Date of change in investment	Name of investment owner	Threshold limit	Share of voting rights
Feb. 8, 2022	Morgan Stanley, Wilmington, Delaware, USA	below 3 %	2.88%
Feb. 8, 2022	The Goldman Sachs Group, Inc., Wilmington, Delaware, USA	above 5 %	7.04%
Feb. 2, 2022	Dimensional Holdings Inc., Austin, Texas, USA	below 5 %	4.32%
Jan. 31, 2022	Samson Rock Capital LLP, London, UK	above 3 %	3.36%
Jan. 28, 2022	JPMorgan Chase & Co., Wilmington, Delaware, USA	above 5 %	6.82%
Jan. 26, 2022	Bank of America Corporation, Wilmington, Delaware, USA	above 3 %	3.66%
Jan. 21, 2022	DWS Investment GmbH, Frankfurt, Germany	below 3 %	2.80%
Jan. 11, 2022	UBS Group AG, Zürich, Switzerland	above 5 %	5.45%
Nov. 30, 2021	ADTRAN, Inc., Wilmington, Delaware, USA	below 3 %	0.00%
Jul. 19, 2021	Highclere International Investors Smaller Companies Fund, Westport, USA	below 3 %	2.80%
Jun. 18, 2021	Teleios Global Opportunities Master Fund, Ltd. Grand Cayman, Cayman Islands	below 3 %	2.95%
Jan. 20, 2021	Janus Henderson Group Plc, Saint Helier, Jersey, UK	above 3 %	3.29%
Jul. 20, 2020	DNB Asset Management S.A., Luxembourg, Luxembourg	below 3 %	2.99%
Sep. 23, 2019	Duke University, Durham, North Carolina, USA	below 3 %	0.00%
Jul. 30, 2019	DNB Asset Management AS, Oslo, Norway	above 5 %	5.02%
Jan. 17, 2019	Internationale Kapitalanlagegesellschaft mit beschränkter Haftung, Düsseldorf, Germany	below 3 %	2.86%
Nov. 30, 2017	EGORA Holding GmbH, Planegg, Germany	below 15 %	14.99%
May 2, 2017	Finanzministerium im Auftrag des norwegischen Staates, Oslo, Norway	above 3 %	3.19%
Feb. 20, 2017	Deutsche Asset Management Investment GmbH, Frankfurt, Germany	below 3 %	2.95%

Notes to the consolidated income statement

(22) Revenues

In 2021 and 2020, revenues included EUR 84,131 thousand and EUR 81,271 thousand for services, respectively. The remaining revenues relate mainly to product sales.

In 2021, revenues related to customer loyalty programs amounting to EUR 216 thousand have been recognized (prior year: EUR 125 thousand).

In 2021, revenues amounting to EUR 539,590 thousand (prior year: EUR 507,962 thousand) relate to performance obligations that were performed at a specific point in time, and revenues of EUR 63,727 thousand (prior year: EUR 56,996 thousand) relate to performance obligations that were delivered over a period of time.

A segmentation of revenues by geographic region is provided in the section on segment reporting under note (32).

(23) Selling and marketing, general and administration and research and development expenses

Selling and marketing, general and administration and research and development expenses mainly include personnel expenses relating to wages and salaries and social security costs.

In addition, general and administration expenses include expenses for external services provided for legal, accounting and tax purposes as well as expenses regarding rented office space and leased cars.

Research and development expenses additionally include external service expenses mainly for research and development services, calibration and certification and legal fees as well as depreciation expenses for equipment and cost of material used for research and development.

(24) Other operating income and expenses

Other operating income and expenses are as follows:

(in thousands of EUR)	2021	2020
Other operating income		
Government grants received	2,295	1,649
Release of provisions	821	500
Income for the supply of development services	292	91
Income from payments received on receivables written off in previous periods	57	12
Refund of duty and logistic charges	1,056	—
Reversal of customer credit notes	254	—
Income from deconsolidation	—	10
Other	1,137	1,538
Total other operating income	**5,912**	**3,800**
Other operating expenses		
Reduction of outstanding credit notes	—	(781)
Derecognition of trade accounts receivable	(208)	(57)
Write-off of prepayments received for licenses	(226)	—
Other	(264)	(334)
Total other operating expenses	**(698)**	**(1,172)**
Other operating income and expenses, net	**5,214**	**2,628**

(25) Interest income and expenses

Interest income primarily includes interest from daily bank deposits and from other short-term deposits with maturities between one day and three months.

Interest expenses are primarily incurred on financial liabilities and on the sale of receivables. In addition, net interest expenses from valuation of defined benefit plans and interest expenses related to leases according to IFRS 16 are included. For further details, refer to notes (10), (15), (16), (18) and (33).

(26) Other financial gains and losses

Other financial gains and losses, net, comprise the following:

(in thousands of EUR)	2021	2020
Foreign currency exchange gains	12,260	10,779
Thereof: gains from forward rate agreements	*850*	*877*
Foreign currency exchange losses	(9,584)	(10,826)
Thereof: losses from forward rate agreements	*(380)*	*(1,697)*
Total other financial gains and losses, net	**2,676**	**(47)**

Further information on the foreign currency derivatives is contained in note (33).

(27) Income tax

Income taxes in Germany consist of corporate income tax, the solidarity surcharge and trade taxes. The tax calculation in foreign countries is based on the applicable local tax rates. They vary between 13.56 % and 34.00 % (prior year: between 13.56 % and 34.00 %).

The table below shows the components of the group's total income tax expenses:

(in thousands of EUR)	2021	2020
Current taxes		
Current income tax charge	(6,922)	(4,246)
Adjustments in respect of current income tax for prior years	777	(365)
Total current taxes	**(6,145)**	**(4,611)**
Deferred taxes		
Temporary differences and tax loss carry-forwards	19,127	146
Changes in tax rates	—	(40)
Total deferred taxes	**19,127**	**106**
Income tax benefit (expense), net	**12,982**	**(4,505)**

A reconciliation of income taxes based on the accounting profit (loss) and the expected domestic income tax rate for the parent company of 28.88 % (prior year: 28.88 %) to effective income tax benefit (expense), net, is presented below:

(in thousands of EUR)	2021	2020
Accounting income before tax	**46,236**	**24,819**
Expected statutory tax benefit (expense)	**(13,353)**	**(7,168)**
Tax rate adjustments	—	(40)
Tax for prior periods	777	(365)
Foreign tax rate differential	947	532
Non-tax-deductible stock option expenses	(470)	(343)
Differences from foreign branch offices	(117)	(283)
Non-taxable income and other non-tax-deductible expenses	(593)	(715)
Change in valuation allowance on deferred tax assets for tax losses	19,027	—
Deferred taxes based on tax credits	676	—
Permanent differences	(19)	56
Utilization of tax loss carry forwards	6,115	3,821
Not capitalized deferred tax assets for temporary differences and tax losses	—	—
Other differences	(8)	0
Income tax benefit (expense), net	**12,982**	**(4,505)**
Effective tax rate	**28.08%**	**(18.15)%**

The tax income for prior periods in the amount of EUR 777 thousand increased compared to prior year (prior year: tax expense in the amount of EUR 365 thousand) and results mainly from claiming an R&D Tax Credit for ADVA Optical Networking North America Inc. for the year 2020. A further not yet claimed R&D tax credit results in a deferred tax benefit amounting to EUR 676 thousand.

No tax effect resulting from the tax rate changes occurred in 2021 (prior year: EUR 40 thousand).

The effect with the regard to the utilization of tax loss carryforwards relates mainly ADVA Optical Networking SE (EUR 4,915 thousand) as well as ADVA Optical Networking North America Inc. (EUR 891 thousand). Furthermore, the deferred tax asset on tax loss carryforwards of ADVA Optical Networking SE was increased respectively due to the discontinuation of ADVA SE’s history of losses and positive forecast. This results mainly in a tax benefit of EUR 19,027 thousand.

The deferred tax assets and deferred tax liabilities relate to the following:

	Dec. 31, 2021		Dec. 31, 2020	
(in thousands of EUR)	Deferred tax assets	Deferred tax liabilities	Deferred tax assets	Deferred tax liabilities
Current assets				
Cash and cash equivalents	—	—	—	—
Trade accounts receivable	116	(7)	325	—
Inventories	1,276	(2,405)	1,665	(2,142)
Other current assets	—	(285)	—	(333)
Total current assets	**1,392**	**(2,697)**	**1,990**	**(2,475)**
Non-current assets				
Right-of-use assets	—	(4,352)	—	(5,028)
Property, plant and equipment	160	(147)	160	(219)
Goodwill	—	(3,074)	—	(3,057)
Capitalized development projects	—	(28,970)	—	(29,207)
Intangible assets acquired in business combinations	1,659	(3,906)	1,172	(4,261)
Other intangible assets	—	(1,339)	—	(5)
Other non-current assets	436	(410)	812	—
Total non-current assets	**2,255**	**(42,198)**	**2,144**	**(41,777)**

(in thousands of EUR)	Dec. 31, 2021 Deferred tax assets	Dec. 31, 2021 Deferred tax liabilities	Dec. 31, 2020 Deferred tax assets	Dec. 31, 2020 Deferred tax liabilities
Current liabilities				
Lease Liabilities	1,087	—	1,080	—
Trade accounts payable	63	—	5	(102)
Provisions	2,842	—	2,977	—
Deferred revenues	1,098	—	684	—
Other current liabilities	2,098	—	1,091	—
Total current liabilities	**7,188**	**—**	**5,837**	**(102)**
Non-current liabilities				
Lease Liabilities	3,839	—	4,552	—
Other non-current liabilities	1,141	(24)	1,245	(13)
Total non-current liabilities	**4,980**	**(24)**	**5,797**	**(13)**
Tax loss carry-forwards and tax credits				
German tax loss carry-forwards	38,334	—	19,588	—
thereof: current	—	—	—	—
thereof: non-current	*38,334*	—	*19,588*	—
Foreign tax loss carry-forwards	3,252	—	2,722	—
thereof: current	*3,252*	—	*2,722*	—
thereof: non-current	—	—	—	—
Foreign tax credits	706	—	—	—
thereof: current	*706*	—	—	—
thereof: non-current	—	—	—	—
Total tax loss carry-forwards and tax credits	**42,292**	**—**	**22,310**	**—**
Total deferred tax assets and liabilities	**58,107**	**(44,919)**	**38,078**	**(44,367)**
thereof: current	*12,538*	*(2,697)*	*10,549*	*(2,577)*
thereof: non-current	*45,569*	*(42,222)*	*27,529*	*(41,790)*
Netting	(42,768)	42,768	(30,845)	30,845
Deferred tax net	**15,339**	**(2,151)**	**7,233**	**(13,522)**

Temporary differences are differences between the carrying amount of an asset or liability in the balance sheet according to IFRS and its tax base.

Deferred tax liabilities on temporary differences arising out of the initial recognition of goodwill are not accounted for. According to IAS 12.21B deferred tax liability in the amount of EUR 3,074 thousand (previous year: EUR 3,057 thousand) was though recognized on taxable temporary differences in connection with a goodwill which is deductible for tax purposes and which resulted from the a business acquisition (asset deal) performed earlier by ADVA SE.

Deferred tax assets have been recognized for German and foreign tax loss carry-forwards since net deferred tax liabilities arising from temporary differences as well as a positive tax planning, which are relevant for the recognition of tax loss carry-forwards as reported, exist.

The German and foreign tax loss carry-forwards comprise as follows:

(in thousands of EUR)	Dec. 31, 2021	Dec. 31, 2020
ADVA Optical Networking SE	161,527	177,992
ADVA Optical Networking North America	72,403	70,948
OSA Switzerland	95	7,637
ADVA Optical Networking Israel	3,192	18,459
ADVA NA Holdings	63	57
ADVA IT Solutions	—	9
	237,280	**275,102**

As of December 31, 2021, tax loss carry-forwards of OSA Switzerland expired in the amount of EUR 7,369 thousand. Tax loss carry forwards of ADVA Israel were to the major extent utilized against additional taxable income arising out of the assessments of the tax audit for the fiscal years 2016-2020.

Starting with 2021 ADVA Optical Networking SE does not show a history of losses anymore and therefore, deferred tax assets on tax loss carry forwards which exceed the amount of taxable temporary differences were recognized to the extent future taxable profits are expected against which carry forward losses can be utilized. Future taxable profits are calculated based on the business plan of the Group and considering a limited forecast period. Following this, deferred tax assets have been recognized in respect of tax losses in ADVA Optical Networking SE amounting to EUR 132,735 thousand (prior year: EUR 67,827 thousand).

ADVA Optical Networking North America reports further tax income over an aggregated four-year-period and considering the following restrictions there is a reasonable assurance that taxable profits will be recognized in the near future that can be offset against tax loss carry-forwards.

Pursuant to the U.S. Tax Act, federal tax loss carry-forwards in the U.S. expire after twenty years. Furthermore, the utilization of a portion of tax loss carry-forwards is subject to annual limitations. Consequently, deferred tax assets have not been recognized in respect of tax loss carry-forwards in ADVA Optical Networking North America in the amount of EUR 60,616 thousand (prior year: EUR 60,059 thousand).

Furthermore, deferred tax assets for tax loss carry-forwards for state and local purposes expire in between five and twenty years. Deferred tax assets in respect of these tax loss carry-forwards have been recognized in the amount of EUR 164 thousand (prior year: EUR 144 thousand).

The total tax loss carry-forwards of the group, for which no deferred tax assets were recognized at the end of 2021, expire within the following periods:

(in thousands of EUR)	
1 year	—
2 years	1,412
3 years	5,653
4 years	5,000
5 years	4,081
after 5 years	44,566
Carried forward for unlimited period	32,046
Total tax loss carry-forwards	**92,758**

Whether or not deferred tax assets are realized depends on the generation of future taxable income during periods in which these temporary differences are deductible. The group has considered the scheduled reversal of deferred tax liabilities and projected future taxable income in making this assessment.

During 2021 a tax audit for ADVA Israel covering fiscal years 2016-2020 took place. Assessments arising out of the tax audit resulted in the reduction of tax loss carry forwards by EUR 16,441 thousand. Additional tax payments were not triggered. No other tax audits covering corporate income tax take currently place at ADVA. Potential tax risks which could trigger tax payments in the future tax audits are continuously monitored by management and assessed at a most likely value. As of December 31, 2021, no tax risks were assessed as likely and accounted for.

On December 31, 2021 and 2020, no deferred tax liabilities on retained earnings of group companies have been recognized. ADVA committed that at present there will be no distribution of currently undistributed earnings from the company's major subsidiaries. The amount of temporary differences for which no deferred tax liabilities have been recognized totals to EUR 9,845 thousand (prior year: EUR 6,066 thousand).

Deferred tax assets for pensions and similar employee benefits in the amount of EUR 499 thousand are recognized in accumulated other comprehensive loss (prior year: EUR 776 thousand).

(28) Employees and personnel expenses

In 2021 and 2020, respectively, the ADVA group had an average of 1,897 and 1,860 permanent employees and an average of 21 and 22 apprentices on its payroll, respectively in the following departments:

	Dec. 31, 2021	Dec. 31, 2020
Purchasing and Operations	410	402
Sales and Marketing	347	359
General and Administration	177	170
Research and Development	963	929
Apprentices	21	22
	1,918	**1,882**

Furthermore, ADVA employs 41 and 39 people on a temporary basis effective December 31, 2021 and 2020, respectively.

Personnel expenses for 2021 and 2020 totaled EUR 191,959 thousand and EUR 181,877 thousand, respectively:

(in thousands of EUR)	2021	2020
Wages and salaries	160,362	152,228
Social security costs	20,207	19,803
Expenses for post-employment benefits	9,763	8,657
Share-based compensation expenses	1,627	1,189
	191,959	**181,877**

Expenses for retirement benefits include expenses related to defined contribution plans as well as service costs for defined obligation plans.

Further details on expenses for post-employment benefits are included in note (18).

Details regarding share-based compensation expenses are shown in note (39).

(29) Restructuring expenses

In 2021, no restructuring expenses have been recognized (2020: EUR 731 thousand including severance payments as well as related legal costs amounting). The allocation to functional areas in the consolidated income statement is included in note (32).

Other disclosures

(30) Consolidated cash flow statement

The consolidated cash flow statement has been prepared in accordance with IAS 7.

Cash and cash equivalents include short-term cash and short-term financial assets whose remaining maturity does not exceed three months. Bank overdrafts are reported in financial liabilities.

Cash flows from investing and financing activities are determined directly, whereas the cash flow from operating activities is derived indirectly from the consolidated income before tax. When cash flow from operating activities is calculated, the changes in assets and liabilities are adjusted for the effects of currency translation. As a result, it is not possible to reconcile the figures to the differences in the published consolidated statement of financial position.

The movements of liabilities from financing activities are as follows:

(in thousands of EUR)	Lease liabilities	Liabilities to banks	Total liabilities from financing activities
Jan. 1, 2020	**34,430**	**80,979**	**115,409**
Repayments	(6,266)	(18,500)	(24,766)
Non-cash changes	1,299	142	1,441
Foreign currency exchange effects	(1,658)	-	(1,658)
Dec. 31, 2020	**27,805**	**62,621**	**90,426**
Repayments	(6,401)	(15,000)	(21,401)
Non-cash changes	1,836	186	2,022
Foreign currency exchange effects	1,774	—	1,774
Dec. 31, 2021	**25,014**	**47,807**	**72,821**

Actual interest payments for liabilities to banks amounting to EUR 989 thousand (prior year: EUR 1,615 thousand) and interest related to lease liabilities of EUR 791 thousand (prior year: EUR 938 thousand) are included in cash flow from financing activities.

Non-cash changes include effective interest rate changes on liabilities to banks as well as non-cash effective increases or decreases in lease liabilities due to consideration of new lease contracts or disposal of lease contracts.

Cash and cash equivalents to which the group only has restricted access are explained in note (9).

(31) Earnings per share

In accordance with IAS 33, basic earnings per share are calculated by dividing consolidated net income by the weighted average number of shares outstanding.

There were no material dilution effects in the current fiscal year. Diluted earnings per share are calculated by adjusting the weighted average number of shares outstanding by the number of potential shares arising from granted and exercisable stock options on the balance sheet date.

No effects of dilution had to be considered in net income in 2021 and 2020.

The following table reflects the number of shares used in the computation of basic and diluted earnings per share:

	2021	2020
Weighted average number of shares (basic)	**50,819,042**	**50,278,336**
Effect of dilution from stock options	873,737	277,849
Weighted average number of shares (diluted)	**51,692,779**	**50,556,185**

There have been no other material transactions involving ordinary shares or potential shares between the balance sheet date and the date of authorization for issue of these financial statements.

(32) Segment reporting

In accordance with IFRS 8, operating segments are identified based on the way information is reported internally to the chief operating decision maker, i.e. the management board, and regularly reviewed to make decisions about resources to be assigned to the segment and assess its performance. The internal organizational and management structure and the structure of internal financial reporting activities are the key factors in determining what information is reported. For making decisions about resource allocation and performance assessment, management does not monitor the operating results separately on the level of business units. Therefore the reporting on individual business segment does not apply.

Within the ADVA group, management decisions are based on pro forma EBIT. Pro forma financial information excludes non-cash charges related to share-based compensation plans and amortization and impairment of goodwill and acquisition-related intangible assets. Additionally, expenses related to M&A and restructuring measures are not included. Income from capitalization of development expenses is shown as a separate line item and not deducted from research and development expenses.

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Reconciliation of key performance measures to the consolidated financial income on December 31, 2021 presents as follows:

(in thousands of EUR)	Pro forma financial information	Intangible assets from acquisitions	Goodwill	Compensation expenses	Expenses related to M&A and restructuring measures	Disclosure of R&D expenses	Consolidated financial information
Revenues	603,317	–	–	–	–	–	603,317
Cost of goods sold	(382,473)	(2,183)	–	(103)	–	–	(384,759)
Gross profit	**220,844**	**(2,183)**	**–**	**(103)**	**–**	**–**	**218,558**
Gross margin	**36.6%**						**36.2%**
Selling and marketing expenses	(60,453)	(1,875)	–	(615)	–	–	(62,943)
General and administrative expenses	(34,834)	–	–	(307)	(3,669)	–	(38,810)
Research and development expenses	(118,619)	–	–	(602)	–	42,497	(76,723)
Income from capitalization of development expenses	42,497	–	–	–	–	(42,497)	–
Other operating income	5,912	–	–	–	–	–	5,912
Other operating expenses	(698)	–	–	–	–	–	(698)
Operating income	**54,649**	**(4,058)**	**–**	**(1,627)**	**(3,669)**	**–**	**45,295**
Operating margin	**9.1%**						**7.5%**
Segment assets	**517,947**	**11,982**	**71,595**	**–**	**–**	**–**	**601,524**

Reconciliation of key performance measures to the consolidated financial income on December 31, 2020 presents as follows:

(in thousands of EUR)	Pro forma financial information	Intangible assets from acquisitions	Goodwill	Compensation expenses	Expenses related to M&A and restructuring measures	Disclosure of R&D expenses	Consolidated financial - information
Revenues	564,958	—	—	—	—	—	564,958
Cost of goods sold	(365,908)	(2,453)	—	(55)	—	—	(368,416)
Gross profit	**199,050**	**(2,453)**	**—**	**(55)**	**—**	**—**	**196,542**
Gross margin	**35.2%**						**34.8%**
Selling and marketing expenses	(58,130)	(1,986)	—	(519)	(168)	—	(60,803)
General and administrative expenses	(35,611)	—	—	(195)	(91)	—	(35,897)
Research and development expenses	(114,072)	—	—	(420)	(472)	39,967	(74,997)
Income from capitalization of development expenses	39,967	—	—	—	—	(39,967)	—
Other operating income	3,800	—	—	—	—	—	3,800
Other operating expenses	(1,172)	—	—	—	—	—	(1,172)
Operating income	**33,832**	**(4,439)**	**—**	**(1,189)**	**(731)**	**—**	**27,473**
Operating margin	**6.0%**						**4.9%**
Segment assets	**417,932**	**15,004**	**67,036**	**—**	**—**	**—**	**499,972**

Additional information by geographical regions:

(in thousands of EUR)	2021	2020
Revenues		
Germany	154,072	115,249
Rest of Europe, Middle East and Africa	227,257	193,550
Americas	166,016	201,552
Asia-Pacific	55,972	54,607
	603,317	**564,958**

(in thousands of EUR)	Dec. 31, 2021	Dec. 31, 2020
Non-current assets		
Germany	133,634	131,682
Rest of Europe, Middle East and Africa	28,285	28,235
Americas	80,259	78,312
Asia-Pacific	3,542	4,341
	245,720	**242,570**

Revenue information is based on the shipment location of the customers.

In 2021, revenues with two major customers exceeded 10 % of total revenues (2020: two major customers). In 2021, the share of revenues allocated to major customers was EUR 153,372 thousand (prior year: EUR 139,799 thousand); thereof revenue with the biggest customer was EUR 89,057 thousand (prior year: EUR 77,906 thousand) and with the second biggest customer was EUR 64,315 thousand (prior year: EUR 61,893 thousand).

Non-current assets including property, plant and equipment, intangible assets and finance lease equipment are attributed based on the location of the respective group company.

(33) Financial instruments

The following tables analyze carrying amounts and fair values according to measurement categories. Only assets and liabilities, which fall into the categories defined by IFRS 7, are presented, so that the total amounts disclosed do not correspond to the balance sheet totals of each year.

(in thousands of EUR, on Dec. 31, 2021)	Measurement category in accordance with IFRS 9
Assets	
Cash and cash equivalents	AC
Trade accounts receivable without underlying factoring agreement	AC
Trade accounts receivable with underlying factoring agreement	FVTPL
Other current financial assets	AC
Other non-current financial assets	AC
Derivatives	FVTPL
Investments	FVTPL
Total financial assets	
Liabilities	
Current lease liabilities	n/a
Non-current lease liabilities	n/a
Current liabilities to banks	FLAC
Non-current liabilities to banks	FLAC
Trade accounts payable	FLAC
Other current financial liabilities	FLAC
Other non-current financial liabilities	FLAC
Derivatives	FVTPL
Total financial liabilities	

* Due to the short-term nature, it was assumed that the book value as of the reporting date approximates the fair value.

		Categories recognized according to IFRS 9			
	Carrying amount	Amortized cost	Fair value recognized in profit and loss	Fair value	Hierarchy of fair values
	108,987	108,987	—	n/a*	n/a*
	70,828	70,828	—	n/a*	n/a*
	12,144	—	12,144	12,144	Level 2
	6,629	6,629	—	n/a	n/a*
	4,812	4,812	—	4,812	Level 2
	89	—	89	89	Level 2
	0	—	—	0	Level 3
	203,489	**191,256**	**12,233**	**17,045**	
	6,001	6,001	—	n/a	n/a
	19,013	19,013	—	n/a	n/a
	25,289	25,289	—	25,340	Level 2
	22,518	22,518	—	22,697	Level 2
	83,223	83,223	—	n/a*	n/a*
	3,386	3,386	—	n/a*	n/a*
	86	86	—	86	Level 2
	88	—	88	88	Level 2
	159,603	**159,515**	**88**	**48,211**	

(in thousands of EUR, on Dec. 31, 2020)	Measurement category in accordance with IFRS 9
Assets	
Cash and cash equivalents	AC
Trade accounts receivable without underlying factoring agreement	AC
Trade accounts receivable with underlying factoring agreement	FVTPL
Other current financial assets	AC
Other non-current financial assets	AC
Derivatives	FVTPL
Investments	FVTPL
Total financial assets	
Liabilities	
Current lease liabilities	n/a
Non-current lease liabilities	n/a
Current liabilities to banks	FLAC
Non-current liabilities to banks	FLAC
Trade accounts payable	FLAC
Other current financial liabilities	FLAC
Other non-current financial liabilities	FLAC
Derivatives	FVTPL
Total financial liabilities	

* Due to the short-term nature, it was assumed that the book value as of the reporting date approximates the fair value.

	Carrying amount	Amounts recognized according to IFRS 9: Amortized cost	Amounts recognized according to IFRS 9: Fair value recognized in profit and loss	Fair value	Hierarchy of fair values
	64,881	64,881	—	n/a	n/a*
	59,321	59,321	—	n/a	n/a*
	24,559	—	24,559	24,559	Level 2
	3,726	3,726	—	n/a	n/a*
	2,594	2,594	—	2,594	Level 2
	0	—	0	0	Level 2
	0	—	—	0	Level 3
	155,081	**130,522**	**24,559**	**27,153**	
	5,807	5,807	—	n/a	n/a
	21,998	21,998	—	n/a	n/a
	15,492	15,492	—	15,543	Level 2
	47,129	47,129	—	47,531	Level 2
	44,151	44,151	—	n/a	n/a*
	2,571	2,571	—	n/a	n/a*
	1,449	1,449	—	1,449	Level 2
	396	—	396	396	Level 2
	138,993	**138,597**	**396**	**64,919**	

The group uses the following hierarchy for determining the fair value of financial instruments:

Level 1: Quoted prices in active markets for identical assets or liabilities.

Level 2: Techniques for which all inputs that have a significant effect on the recorded fair value are observable, either directly or indirectly.

Level 3: Techniques, which use inputs that are not based on observable market data.

At the end of the reporting period it is analyzed whether transfers between the hierarchy levels need to be considered. In 2021 and 2020, there were no such transfers.

In the case of cash and cash equivalents, trade receivables measured at amortized cost, other current financial assets and liabilities as well as trade accounts payable, the carrying amounts represent reasonable approximations for the fair values.

Forward rate agreements are measured using the discounted cash flow method based on quoted forward rates and yield curves derived from quoted interest rates according to the maturities of the contract.

Moreover, ADVA SE has an investment in equity instruments of Saguna Networks Ltd. with no quoted prices in active markets. Input factors for the valuation are share prices from past investment rounds and current purchase price offers from other investors in Saguna Networks Ltd. Since the end of 2019, the fair value of the investment is zero, as the company is in a persistent loss-making situation. At the end of 2021, the fair value was reviewed and there was no indication that a write-up was necessary.

The fair values of financial liabilities as well as other non-current financial assets and liabilities have been calculated based on future cash flows by using arm's length, risk-adjusted interest rates.

The fair value of the balance sheet items measured at Level 3 on December 31, 2021 totaled nil (December 31, 2020: in total nil).

The following table shows the net results per measurement category according to IFRS 9:

(in thousands of EUR)	Note	2021	2020
Financial assets measured at amortized cost	(13)	305	(1,082)
Financial liabilities measured at amortized cost	(16)	(1,274)	(2,008)
Financial assets and liabilities measured at fair value through profit or loss	(25)	470	(820)
Net result		**(499)**	**(3,910)**

In 2020, the net result from financial assets measured at amortized cost included the impairment loss and interest income recognized in the current period on the relevant assets. The net result of financial instruments at fair value through profit or loss consist of changes in the fair value of derivative financial instruments, trade receivables subject to factoring agreements and equity investments. The net result from financial liabilities at amortized cost includes interest for bank liabilities (drawn and undrawn) and other financial liabilities as well as amortization according to effective interest method.

Total interest income and expenses from financial assets and liabilities are as follows:

(in thousands of EUR)	2021	2020
Financial assets measured at amortized cost		
Total interest income	**100**	**110**
Financial liabilities measured at amortized cost		
Total interest expense	**(1,274)**	**(2,008)**

As the necessary prerequisites have not been fulfilled, no financial assets and liabilities are offset in the balance sheet. Master netting agreements exist with the contractual partners of the derivatives, according to which a set-off can be made in the event of insolvency. As of the balance sheet date, there were only insignificant offsetting potentials from derivative financial instruments.

(34) Financial risk management

The following section describes the group's position with regard to risks arising from financial instruments and their potential future impact on the net assets, financial position and operational results. The classification into material and immaterial financial risks considered in the risk and opportunity report has been disregarded.

ADVA's capital management is described in note (35).

The management board establishes principles for overall risk management and decides on the use of derivative financial instruments and the investment of excess liquidity. The compliance department is responsible for group-wide monitoring of observance of the processes and guidelines of the risk management system defined by the ADVA management board.

Foreign currency risks

Risk exposure

ADVA is exposed to foreign currency risks as investments, financing and operations are carried out in several currencies. This results in foreign currency risks from future transactions as well as from recognized assets and liabilities denominated in a currency other than the functional currency of the respective group company. As part of the reporting date analysis of balance sheet exposures and exchange rate sensitivities, the currency pairs EUR/USD, EUR/AUD, EUR/GBP and EUR/JPY were identified as relevant. The risks from the currency pairs EUR/ILS, EUR/CFH and USD/SGD considered in 2020 are insignificant on the balance sheet date. The relevance of the different currencies can vary depending on the reporting date.

The foreign currency risk of ADVA on the basis of the underlying operating activities at the end of 2021 in the major currencies is as follows:

(in thousands)	USD	JPY	GBP	AUD
Trade accounts receivable	13,960	446,028	77	1,333
Trade accounts payable	26,120	—	12	—

At the end of 2020, the foreign currency risk was mainly related to USD as follows:

(in thousands)	USD
Trade accounts receivable	16,174
Trade accounts payable	19,213

The group's risk with regard to other currency fluctuations was insignificant at the reporting date.

Risk management

ADVA's risk management framework considers operational business risks to the business that affect the income statement. Specific hedging transactions are only concluded if larger non-recurring foreign exchange risks are expected (e.g. due to a planned M&A transaction). Regarding intercompany payments, the treasury department is closely involved in order to optimize the cash flows with regard to currencies and separate hedging considerations. Foreign currency risks from recognized financial assets and liabilities are only considered by ADVA's risk management in specific cases.

In 2020 and 2021, the group recorded significant external net cash inflows in GBP and significant external net cash outflows in USD. In order to mitigate these material risks from operating activities and as a means to offset cash flow fluctuations, ADVA's Treasury Department has been hedging some of its net cash flows in USD versus GBP through the use of forward foreign exchange agreements in GBP already in 2020. These transactions became due in the current year and resulted in a net gain of EUR 468 thousand (2020: net loss of EUR 424 thousand).

To hedge exchange rate risks from future cash flows, the group entered into derivatives that will mature in the first quarter of 2022. The fair value of these foreign exchange agreements is recognized in other current assets or other current liabilities. The related fair values amounted to positive EUR 89 thousand and negative EUR 88 thousand, respectively (December 31, 2020: positive EUR 0 thousand and negative EUR 396 thousand). As of December 31, 2021, the nominal value of these derivatives amounted to EUR 14,361 thousand (December 31, 2020: EUR 13,745 thousand). The nominal value is the accounting value from which payments are derived.

Sensitivity analysis

The foreign exchange rate sensitivity of the most relevant currency pairs with respect to balance sheet risks on earnings after tax at the end of the reporting period is illustrated below. The analysis does not consider effects from the translation of the financial statements of the group's foreign subsidiaries into euro the company's reporting currency.

If, at the balance sheet date, the relevant exchange rates would have appreciated or depreciated by 10 % relative to the base currency in the relevant currency relations (base currency/ spot currency), the following impact on earnings after tax from the currency translation of reported primary financial instruments would have to be considered:

(in thousands of EUR)	Dec. 31, 2021	
	+10 %	-10 %
EUR/USD	(999)	1,222
EUR/AUD	98	(120)
EUR/GBP	327	(400)
EUR/JPY	403	(493)

As described in the section on foreign currency risk positions, the relevant currency pairs have changed in 2021 compared to 2020. In the previous year, the following sensitivities were reported for the currency relations relevant in 2020:

(in thousands of EUR)	Dec. 31, 2020	
	+10 %	-10 %
USD/ILS	2,185	(2,671)
EUR/USD	389	(476)
EUR/CHF	(345)	422
EUR/SGD	(290)	354

In addition, the currency pair USD/GBP is relevant for risk management considerations. The currency pairs USD/GBP and USD/EUR are hedged by using forward contracts. If, at the balance sheet date, the spot currency GBP had appreciated or depreciated by 10 % against the base currency USD, the following effects would have been recognized in profit or loss:

(in thousands of EUR)	Dec. 31, 2021	
	GBP +10 %	GBP -10 %
USD/GBP	1,141	(858)
	EUR +10 %	EUR -10 %
USD/EUR	43	(374)

The following sensitivities have been reported in 2020:

(in thousands of EUR)	Dec. 31, 2020	
	GBP +10 %	GBP -10 %
USD/GBP	1,001	(820)
	EUR +10 %	EUR -10 %
USD/EUR	(122)	(525)

Interest rate risk

Risk exposure

The interest rate risk is the risk that fair values or future interest payments on existing and future interest-bearing financial instruments will fluctuate due to changes in market interest rates. ADVA increased its cash position from EUR 64,881 thousand in 2020 to EUR 108,987 thousand in 2021. With increasing liquidity, the risk of having to pay negative interest on bank balances also increases.

At year-end 2021, ADVA Optical Networking SE has a variable rate loan of nominal EUR 38,000 thousand as well as another variable-interest bullet loan of EUR 10,000 thousand to finance its investments, which fundamentally results in an interest rate risk. Additionally, there is an outstanding credit line of EUR 10,000 thousand which has not been drawn as of December 31, 2021. The interest on a loan drawn under these credit lines is also dependent on EURIBOR. Further information on existing financial liabilities can be found in note (16).

Risk management

The treasury department regularly analyzes the existing interest rate risk and, in the event of a material risk, makes proposals for the use of appropriate hedging instruments. As part of risk management to limit interest rate risks, derivative financial instruments such as interest rate caps and interest rate swaps can be used. Due to the continued expansive interest rate policy of the European Central Bank, the EURIBOR interest rate is negative at the reporting date. Despite increased core inflation, ADVA does not expect any significant interest rate spreads change in the euro area and thus rates the interest rate risk as low as at December 31, 2021.

Sensitivity analysis

As of December 31, 2021, the 3-month EURIBOR was negative. Due to the floor agreed in the loan agreement, a reduction in EURIBOR as of December 31, 2021, would have had no effect on the interest rate. An EURIBOR increase of 0.5 % would also have had no effect on the interest expense. (prior year: no effect).

Default risk

Risk exposure

The default risk arising from financial assets involves the risk of the default of a contractual partner and thus includes at maximum the amount of the related recognized carrying amounts. At ADVA default risks arise from cash at banks, contract assets and contractual cash flows from debt instruments that are measured at amortized cost or at fair value through profit or loss, including outstanding trade receivables.

Risk management

All default risks are managed at group level. The default risk is mitigated by various measures, depending on the class of financial assets. In addition, the credit risk from non-derivative financial assets is considered by means of risk provisioning and bad debt allowances.

ADVA enters into transactions with creditworthy banks and financial institutions. To assess the creditworthiness of banks, financial institutions and other financial assets, ADVA uses current credit ratings from rating agencies (S&P, Moody's or Fitch) as well as current default rates (credit default swaps). Based on the capital market ratings, ADVA divided the banks and other financial assets into three internal rating classes, determining their exposure at default and calculating the expected loss at default as of December 31, 2021 and 2020. Rating class 1 means investment grade assets, rating class means non-investment grade assets and rating class 3 includes assets in default. Due to immateriality, no risk provisions were recognized at the balance sheet date.

The gross carrying amounts (risk positions) by rating class on December 31, 2021 and 2020 are as follows:

(in thousands of EUR)	Rating class 1	Rating class 2	Rating class 3	Total
Cash and cash equivalents	108,922	10	54	**108,987**
Other current financial assets	6,629	—	—	**6,629**
Other non-current financial assets	4,812	—	—	**4,812**

(in thousands of EUR)	Rating class 1	Rating class 2	Rating class 3	Total
Cash and cash equivalents	64,623	258	—	**64,881**
Other current financial assets	3,726	—	—	**3,726**
Other non-current financial assts	2,594	—	—	**2,594**

ADVA has distributed its investments to more than 10 international credit institutions. As of December 31, 2021, one bank was responsible for approximately 92.6 % of all investments (as of December 31, 2020: for approximately 87 %). This results in a risk exposure of EUR 100,870 thousand. (2020: EUR 56,558 thousand).

When concluding contracts with clients, the creditworthiness and credit quality of the client is assessed on the basis of independent ratings (e.g. Duns & Bradstreet), audited financial statements, or historical experience. Depending on the risk assessment, deliveries are made solely only under reasonable payment terms, which may include down payments or advance payments.

ADVA applies the general expected credit loss model for significant financial assets. To measure the expected credit losses on trade receivables carried at amortized cost and contract assets the simplified approach under IFRS 9 is used. Trade receivables are summarized on the basis of common credit risk characteristics and overdue days.

As of December 31, 2021, and 2020, the expected loss ratios are based on historical payment profiles of receivables and the corresponding historical defaults. There are adjusted to reflect up-to-date and forward-looking information on macroeconomic factors (such as geopolitical events, currency fluctuations, inflation, trade conflicts, state subsidies) that may affect clients' solvency. Contract assets relate to work that has not yet been invoiced, and accordingly have the same risk characteristics as trade receivables of the underlying contracts.

In addition, ADVA applies a specified valuation if certain criteria are met.

Regarding major other financial assets ADVA reviews the risk on a case-by-case basis considering the counterparty-specific credit default swaps or assumptions regarding the expected creditworthiness of the contractual partners.

The following table shows the overdue structure of gross carrying amounts of trade accounts receivable and contract assets by as of December 31, 2021:

(in thousands of EUR)	Not yet due	Overdue up to 90 days	90 – 180 days overdue	180 days to 1 year overdue	credit impaired	Total
Trade accounts receivable (simplified approach)	70,571	9,257	2,499	475	2,799	**85,601**
Contract assets	180	—	—	—	—	**180**

As of December 31, 2020, the overdue structure of gross carrying amounts of trade receivables and contract assets were as follows:

(in thousands of EUR)	Not yet due	Overdue up to 90 days	90 – 180 day overdue	180 days to 1 year overdue	credit impaired	Total
Trade accounts receivable (simplified approach)	71,098	10,824	1,231	643	2,797	**86,593**
Contract assets	442	—	—	—	—	**442**

Due to immateriality, no valuation allowances were recognized relating to contract assets as of December 31, 2021, and 2020. The reconciliation of risk provisions for trade receivables is shown in note (10).

For other financial assets carried at amortized cost with a total carrying amount of EUR 11,441 thousand (prior year: EUR 6,320 thousand), the group analyzes the risk on a case-by-case basis. As of December 31, 2021, and 2020, there were no significant default risks. Therefore, no valuation allowances were recognized.

Liquidity risk

Risk exposure

In general, the inability to meet its financial obligations, such as servicing its debts, composes the liquidity risk of ADVA.

Risk management

Management uses rolling forecasts to monitor the group's liquidity reserves, consisting of cash and cash equivalents based on expected cash flows and unused credit lines. To manage liquidity, ADVA considers compliance with internally defined operating liquidity at all times.

The group's liquidity management policies include the forecast of cash flows in the major currencies and the assessment of required cash in these currencies, the monitoring of balance sheet liquidity ratios and the management of debt financing plans. In general, ADVA pursues a conservative and risk-avoiding strategy.

Financing agreements

The loan agreements contain restrictions and covenants that restrict the financial and operating scope of ADVA. A breach of these agreements would result in a compulsory early repayment of the loans. All agreements were met as of the reporting date. The existing financing agreements include termination rights in the event of a change of control.Currently, the management board is having discussions with the lending banks. The management board and supervisory board currently assume that either an agreement with the lenders can be reached according to which they will not make use of their termination rights or that it will be possible to replace necessary credit lines.

At the end of the reporting period, ADVA had financing agreements with various banks. This includes a syndicated loan of a nominal amount of EUR 38,000 thousand with maturity in September 2023 and a bilateral bullet term loan of EUR 10,000 thousand due in September 2022. In addition, the syndicated loan has an undrawn revolving credit facilities over EUR 10,000 thousand. See also note (16) on liabilities to banks.

Maturities of financial liabilities

The table below analyzes the group's undiscounted cash outflows for non-derivative financial liabilities according to their maturity based on the remaining time at the balance sheet date to the contractual maturity date:

(in thousands of EUR, on Dec. 31, 2021)	Note	Carrying value	Future cash flows					
			≤ 12 months		13 – 36 months		> 36 months	
			Redemption	Interest	Redemption	Interest	Redemption	Interest
Lease liabilities	(15)	25,014	6,001	575	8,880	850	10,133	970
Liabilities to banks	(16)	47,807	25,289	552	22,518	207	—	—
Trade accounts payable	(17)	83,223	83,223	—	—	—	—	—
Other financial liabilities	(17)	3,559	3,473	—	86	—	—	—
		159,603	**117,986**	**1,127**	**31,484**	**1,057**	**10,133**	**970**

(in thousands of EUR, on Dec. 31, 2020)	Note	Carrying value	Future cash flows					
			≤ 12 months		13 – 36 months		> 36 months	
			Redemption	Interest	Redemption	Interest	Redemption	Interest
Lease liabilities	(15)	27,805	5,807	794	10,215	1,143	11,783	1,107
Liabilities to banks	(16)	62,621	15,492	785	47,129	759	—	—
Trade accounts payable	(17)	44,151	44,151	—	—	—	—	—
Other financial liabilities	(17)	4,416	2,967	—	1,449	—	—	—
		138,993	**68,417**	**1,579**	**58,793**	**1,902**	**11,783**	**1,107**

(35) Capital management

Risk management

ADVA's capital management aims to ensure the continued existence of the company and optimization of its capital structure to reduce its cost of capital.

The group defines capital as the sum of equity and financial liabilities. On December 31, 2021, financial debt amounted to EUR 72,821 thousand (prior year: EUR 90,426 thousand). Equity on December 31, 2021, amounted to EUR 339,912 thousand or 56.5 % of the balance sheet total (previous year: EUR 263,218 thousand or 52.6 % of the balance sheet total). For liabilities to banks of EUR 47,807 thousand as of December 31, 2021 (previous year: EUR 62,621 thousand), the term usually exceeds the life of the assets financed. ADVA aims for an equity ratio of at least 30 % and a ratio of gross debt to EBITDA of a maximum of 2.5x. Both financial ratios were met in the past financial year.

Financial covenants

The loan agreements include compliance with certain financial covenants that should be guaranteed at all time within the scope of capital management. As of December 31, 2021, ADVA needs to comply with a gross leverage (proportion of gross debt to EBITDA for the last 12 months). A breach of the commitment clauses may lead to early repayment of the borrowed funds. ADVA minimizes risk through ongoing monitoring of financial metrics.

Within the scope of capital management, ADVA seeks to minimize interest expenses, provided that the availability of funds is not jeopardized. Excess funds are usually used to pay off debt. For USD bank accounts, a so-called cash pooling is implemented. Under this agreement, the funds will be transferred daily to a collective account. The interest is calculated on the basis of the combined balances.

(36) Other financial obligations and financial commitments

On December 31, 2021, the group had purchase commitments totaling EUR 170,438 thousand (on December 31, 2020: EUR 57,128 thousand) in respect to suppliers. The increase compared to the previous year is mainly due to higher order requirements as a result of expected supply shortages in the semiconductor industry.

Group entities have issued guarantees in favor of customers. On December 31, 2021, performance bonds with a maximum guaranteed amount of EUR 334 thousand were issued (on December 31, 2020: EUR 414 thousand). Based on experience from prior periods, ADVA does not expect claims from these guarantees at year-end 2021.

With respect to various financing agreements there are certain guarantee obligations from ADVA North America Inc. and ADVA Ltd. to ADVA Optical Networking SE.

(37) Contigent liabilities

In the normal course of business, claims may be asserted, or lawsuits filed against the company and its subsidiaries from time to time. On December 31, 2021, ADVA does not expect potential titles or litigations in detail or in total that will have a material impact on its financial position or operating performance.

(38) Audit fees and other services from auditors

Since June 9, 2010, PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft (PwC), Munich, Member of the German Wirtschaftsprüfungskammer in Berlin, is the auditor of the company and the group. After internal rotation in 2021, Jürgen Schumann is the responsible certified accountant for the company.

In 2021 and 2020, the following fees charged by the legal auditor were recognized as expenses:

(in thousands of EUR)	2021	2020
Year-end audit	586	474
Tax consulting services	4	–
Other consulting services	258	50
	844	**524**

In 2021, other consulting services mainly include support services for the preparation of reports for stock exchange publicity in relation to a corporate transaction as well as the separate non-financial report (prior year: mainly services in relation to the separate non-financial report).

(39) Stock option programs

To date, the company has issued stock options for employees (Plan XIV) and for management board (Plan XIVa and Plan XVIa). Generally, Plan XIV and Plan XIVa are still available for issuance of share-based compensation instruments.

All contracts stipulate a general four-year vesting period and a total contractual life of seven years for the respective rights issue. The rights may only be exercised if the volume weighted average of the company share closing prices on the ten stock exchange trading days before the first day of each exercise period in which the option is exercised is at least 120 % of the purchase price. In addition, options issued to the management board from Plan XIVa and from the new Plan XVIa introduced in 2020 include a profit limitation.

All option rights are non-transferable. They may only be exercised as long as the entitled person is employed on a permanent contract by the company or by a company in which ADVA Optical Networking SE has direct or indirect interest. Option rights issued to apprentices may only be exercised if the apprentices are hired by the company or by an affiliated company on a permanent contract. All option rights expire upon termination of the employment contract. In the event that the person entitled dies, becomes unable to work or retires, special provisions come into force.

The group of people to whom option rights can be issued is defined separately for each stock option program. According to the resolution on May 19, 2021, 35.0 % of option rights - in total 1,767,384 options rights could be issued to members of the management board, 5.0 % - in total 252,483 options rights - to the management of affiliated companies, 22.5 % - in total 1,136,176 options rights - to company employees, and 37.5 % - in total 1,893,626 options rights - to employees of affiliated companies. The management board specifies the exact group of people entitled to exercise rights and the scope of each offer. Options rights awarded to the management board are approved by supervisory board.

Subject to the conditions under which option rights are issued, each option right entitles the individual to purchase one common share in the company. The conditions of issue specify the term, the exercise price (strike price), any qualifying periods and the defined exercise periods.

Exercise periods are regularly linked to key business events in the company's calendar and each have a defined term. Certain other business events can lead to blocking periods, during which option rights cannot be exercised. Insofar as regular exercise periods overlap with such blocking periods, the exercise deadline shall be extended by the corresponding number of exercise days immediately after the end of such a blocking period. Option rights may be exercised only on days on which commercial banks are open in Frankfurt am Main, Germany.

The Plan XVIa for the management board introduced in 2020 considers an automated exercise process. Furthermore, the new Plan XVIa includes an automatic sale of the shares received via the stock exchange ("exersale") immediately after the automated exercise process. Due to the automatic sale under Plan XVIa, it is classified as a cash-settled share-based payment plan. The automated exercise and the immediate sale take place after the expiration of the general vesting period of 4 years in eight regularly equal tranches, distributed over eight consecutive exercise windows on days determined or determinable in advance. The specific waiting period depends on the respective tranche. In the event that stock options cannot be exercised during the exercise window, the exersales are postponed to the respective subsequent exercise window. If they cannot be exercised within the term of the agreement, the options forfeit at the end of the last available exercise window. The purpose of the automated exercise and sale process is to simplify the disposal of exercised options and reduce administrative expenses due to insider trading rules.

With the introduction of the Plan XVIa in 2020, the supervisory board also decided to amend Plan XIVa for options issued prior to 2020 and include the automated exercise process. Independent from the plan amendment of the equity-settled share-based payment plan, the management board gave a revocable ermission to an immediate sale of their exercised options on a voluntary basis. The amendment became effective on July 1, 2020, for all as of December 31, 2020 outstanding options and resulted in modification of the actual vesting period for stock options already issued before 2020. The modification resulted in a revaluation of these expenses. If the newly determined fair values per tranche exceed the fair value at the modification date, the additional fair value is accrued over the remaining vesting period (see IFRS 2.27). Starting from 2021 the option agreements for issuances from Plan XIVa do not include an automated exercise process.

The fair value of stock options was valued using a Monte Carlo simulation. For the calculation of the fair value of options, ADVA assumed that no dividends will be paid to stockholders.

The following computation parameters apply for option rights issued in 2021 from plan XIV and XIVa:

	Plan XIV	Plan XIVa
Weighted average share price (in EUR)	10.62	10.30
Weighted average strike price (in EUR)	10.30	10.00
Weighted expected volatility (in % per year)	44.21	44.20
Term (in years)	7.00	7.00
Weighted risk-free interest rate (in % per year)	(0.57)	(0.59)

The volatility is specified as fluctuation of the share price compared to the average share price of the period. In each case, expected volatility is calculated based on historic share prices (historic volatility). The risk-free interest rate is based on information on risk-free investments with corresponding terms.

The tables below present changes in the number of option rights outstanding.

Stock option program 2011 (Plan XIV)

	Number of options	Weighted average strike price (in EUR)
Options outstanding on Jan. 1, 2020	**2,234,900**	**7.03**
Granted options	107,500	5.91
Exercised options	(49,726)	3.78
Forfeited options	(143,100)	7.49
Expired options	(3,674)	3.90
Options outstanding on Dec. 31, 2020	**2,145,900**	**7.02**
Granted options	628,000	9.75
Exercised options	(587,300)	6.34
Forfeited options	(103,000)	7.98
Expired options	—	—
Options outstanding on Dec. 31, 2021	**2,083,600**	**7.93**
Of which exercisable	631,100	7.27

The weighted average remaining contractual life for option rights outstanding on December 31, 2021, is 4.41 years (December 31, 2020: 4.06 years). The strike price for these options is between EUR 4.98 and EUR 12.58 (2020: between EUR 2.87 and EUR 10.16).

Stock options exercised in 2021 had an average share price of EUR 12.51 on the exercise date.

The average fair value of option rights granted in 2021 is EUR 4.26 (December 31, 2020: EUR 2.37).

Stock option program 2011 for the management board (Plan XIVa)

	Number of options	Weighted average strike price (in EUR)
Options outstanding on Jan. 1, 2020	**1,066,667**	**6.31**
Granted options	—	—
Exercised options	(265,000)	4.09
Forfeited options	—	—
Expired options	—	—
Options outstanding on Dec. 31, 2020	**801,667**	**7.04**
Granted options	265,000	10.00
Exercised options	(361,900)	7.96
Forfeited options	—	—
Expired options	—	—
Options outstanding on Dec. 31, 2021	**704,767**	**7.67**
Of which exercisable	264,767	6.59

The weighted average remaining contractual life for option rights outstanding on December 31, 2021, is 4.17 years (December 31, 2020: 3.10 years). The strike price for these options is between EUR 4.98 and EUR 10.00 (2020: between EUR 4.98 and EUR 8.70).

Stock options exercised in 2021 had an average share price of EUR 12.30 on the exercise date.

The average fair value of option rights granted in 2021 is EUR 3.28 .

The revaluation due to the modification of the plan as of July 1, 2020, resulted in an additional weighted average fair value of the affected stock options of EUR 0.17 (incremental fair value).

Cash-settled stock option program 2020 for the management board (Plan XVIa)

	Number of options	Weighted average strike price (in EUR)
Options outstanding on Jan. 1, 2020	**—**	**—**
Granted options	100,000	5.76
Exercised options	—	—
Forfeited options	—	—
Expired options	—	—
Options outstanding on Dec. 31, 2020	**100,000**	**5.76**
Granted options	—	—
Exercised options	—	
Forfeited options	—	—
Expired options	—	—
Options outstanding on Dec. 31, 2021	**100,000**	**5.76**
Of which exercisable	—	—

The weighted average remaining contractual life for option rights outstanding on December 31, 2021, is 5.47 years (December 31, 2020: 6.47 years). The strike price for these options is EUR 5.76 (2020: EUR 5.76).

The average fair value of option rights granted in 2020 was EUR 2.82. No options were granted from this plan in 2021.

Compensation expenses arising from share-based compensation programs included in operating income were as follows:

(in thousands of EUR)	2021	2020
Plan XIV	1,128	878
Plan XIVa	309	276
thereof expense from modification	*26*	*16*
Plan XVIa	189	35
	1,627	**1,189**

(40) Related party transactions

There are no related parties within the meaning of IAS 24. Key management personnel remuneration is disclosed in note (41).

(41) Governing boards and remuneration

Management board

	Resident in	External mandates
Brian Protiva Chief executive officer	Berg, Germany	Member of the board of directors of AMS Technologies AG, Martinsried, Germany
Christoph Glingener Chief technology officer & chief operating officer	Jade, Germany	Member of the board of trustees of Fraunhofer Heinrich-Hertz-Institute, Berlin, Germany
Ulrich Dopfer Chief financial officer	Alpharetta, Georgia, USA	—
Scott St. John Chief marketing & sales officer	Raleigh, North Carolina, USA	—

Supervisory board

	Resident in	Occupation	External mandates
Nikos Theodosopoulos Chairman	Manhasset, New York, USA	Founder and managing member, NT Advisors LLC, Manhasset, New York, USA	Member of the board of directors of Arista Networks, Inc., Santa Clara, CA, USA Member of the board of directors of Harmonic, Inc., San Jose, CA, USA Board member of Driving Management Systems, Inc., Colorado Springs, CO, USA
Johanna Hey Vice chairwoman	Cologne, Germany	Professor for tax law, University of Cologne, Cologne, Germany	Director of the Institut Finanzen und Steuern e.V., Berlin, Germany Member of the supervisory board of Gothaer Versicherungsbank VVaG, Cologne, Germany Member of the supervisory board of Gothaer Finanzholding AG, Cologne, Germany Chairwoman of the supervisory board of Cologne Executive School GmbH, Cologne, Germany Member of the supervisory board of Flossbach von Storch AG, Cologne, Germany
Michael Aquino	Peachtree City, Georgia, USA	Consultant	—

Remuneration of the management board

The total management board remuneration according to IFRS amounts to EUR 3,217 thousand (prior year: EUR 2,684 thousand) and can be differentiated into following categories as follows:

(in thousands of EUR)	2021	2020
Short-term employee benefits	2,436	2,103
Post-employment benefits	—	—
Other long-term benefits	282	269
Termination benefits	—	—
Share-based payment	499	311
Total compensation	**3,217**	**2,684**

Short-term employee benefits include fixed remuneration, fringe benefits and current variable remuneration.

The long-term variable pay (LTVP) for the period 2020 to 2022 amounting to EUR 808 thousand in total (prior year: EUR 808 thousand) focuses on the sustainable development of the group and will be paid to the members of the management board after three years, provided that a year-by-year increased minimum group pro forma EBIT is met for each of the three years.

In 2021 and 2020, no loans were granted to the members of the management board. As of December 31, 2021, there were no receivables from members of the management board (previous year: EUR 6 thousand to one member of the management board).

On December 31, the members of the management board held the following shares and stock options at the respective year-end:

	Shares		Stock options	
	2021	2020	2021	2020
Brian Protiva Chief executive officer	401,030	401,030	227,860	275,000
Christoph Glingener Chief technology officer & chief operating officer	—	—	221,430	195,000
Ulrich Dopfer Chief financial officer	500	500	105,477	181,667
Scott St. John Chief marketing & sales officer	—	—	250,000	250,000

On December 31, 2021, and 2020, the options to members of the management board were granted out of Plan XIVa and Plan XVIa. The grants to two members of the management board under Plan XVIa in the financial year 2020 are accounted for as cash-settled share-based payments. On December 31, 2021, a provision of EUR 224 thousand was recognized. The option rights authorize the management board to purchase the said number of common shares in the company once the qualifying period has elapsed. Both plans include a profit limit of EUR 20.00 per option.

The management board received cash inflows of EUR 1,570 thousand from the exercise of stock options in 2021 (2020: EUR 687 thousand). Further details on the stock option programs can be found in note (39).

The total management board remuneration according to section 314 paragraph 1 no. 6a HGB was EUR 3,287 thousand in 2021 and EUR 2,224 thousand in 2020.

The fixed remuneration amounting to EUR 1,060 thousand (2020: EUR 1,057 thousand) includes non-performance-based considerations and fringe benefits (company car allowances). The variable remuneration considers components related to short-term performance goals that are reported as current liabilities on December 31, 2021, amounting to EUR 2,227 thousand (2020: EUR 1,029 thousand) as well as components based on long-term performance goals (in 2021: EUR 869 thousand; prior year: EUR 138 thousand).

Remuneration of the supervisory board

The fixed remuneration to be paid to the supervisory board for 2021 and 2020 totaled EUR 235 thousand, respectively.

The remuneration for the supervisory board of ADVA Optical Networking SE is paid out in quarterly installments. The fixed remuneration for Q4 2021 amounting to EUR 59 thousand was paid out in January 2022. In the consolidated financial statements, this amount is recognized in other current liabilities.

On December 31, 2021, no shares or stock options were held by members of the supervisory board (December 31, 2020: none).

(42) Events after the balance sheet date

On August 30, 2021, ADVA and ADTRAN announced the entry into a business combination agreement to combine the two companies and create a leading global, scaled provider of end-to-end fiber networking solutions for communications service provider, enterprise and government customers. On January 28, 2022, ADTRAN and ADVA announced that the minimum acceptance threshold for the proposed merger with ADTRAN has been reached. Following approval by the foreign trade authorities, the merger will take place. This corporate transaction may have effects on balance sheet items presented in the IFRS consolidated financial statements.

In order to obtain approval for the merger from the German foreign trade authority, it might be necessary to consolidate all of the company's business relating to government customer and critical infrastructure in a separate structure. At present the company is in discussion with the authorities about the possible future set up. Any effects on the net assets, financial position and results of operations of the group are currently still being examined.

For U.S. loss-making entities where there is a change in ownership as part of a transaction, there may be a restriction on the continued use of tax attributes (for example, net operating losses, capital losses, tax credits, excess interest carryforwards, etc.). With regards to the US-subsidiary, ADVA Optical Networking North America, Inc., an indirect transfer of more than 50 % of the shares in the U.S. company occurring in connection with the ADTRAN merger could reduce its usable tax loss carry-forwards depending on the value ratios at the time of closing.

The existing financing agreements include termination rights in case of a change of control. The management board is currently in discussions with the lending banks. The board of management and the supervisory board currently assume that either an agreement can be reached with the lenders of the syndicated loan agreement that they will not exercise their right of termination, or that necessary credit lines can be replaced in some other way.

Possible further effects on the net assets, financial position and results of operations of the group are currently still being examined.

Apart from the possible effects of the corporate transaction, there were no events after the balance sheet date that have an impact on the net assets and financial position as of December 31, 2021, and the results of operations in 2021.

Declaration of compliance with the German Corporate Governance Code

Pursuant to section 161 of the German Stock Corporation Law (AktG), the management board and the supervisory board have issued a declaration of compliance with the German Corporate Governance Code. This declaration is published on the group's website www.adva.com.

Meiningen, February 22, 2022

Brian Protiva	Christoph Glingener
Ulrich Dopfer	Scott St. John

Affirmative declaration of the legal representatives

We, the members of the management board of ADVA Optical Networking SE, to the best of our knowledge affirm that, in accordance with the applicable reporting principles, the management report and the consolidated financial statements of the ADVA group represent a true and fair view of the net assets, financial position and performance of the group, together with a description of the principal opportunities and risks associated with the expected development of the group.

Meiningen, February 22, 2022

Brian Protiva	Christoph Glingener
Ulrich Dopfer	Scott St. John

"Independent auditor's report

To ADVA Optical Networking SE, Meiningen

Report on the audit of the consolidated financial statements and of the group management report

Audit Opinions

We have audited the consolidated financial statements of ADVA Optical Networking SE, Meiningen, and its subsidiaries (the Group), which comprise the consolidated statements of financial position as at December 31, 2021, and the consolidated statements of comprehensive income, consolidated income statements, consolidated statement of changes in stockholders' equity and consolidated cash flows statements for the financial year from January 1 to December 31, 2021, and notes to the consolidated financial statements, including a summary of significant accounting policies. In addition, we have audited the group management report of ADVA Optical Networking SE, which is combined with the Company's management report, – which comprise the content includ-ed to comply with the German legal requirements as well as the remuneration report pursuant to § [Article] 162 AktG [Aktiengesetz: German Stock Corporation Act], including the related disclo-sures, included in section "Remuneration of the management and the supervisory board" of the group management report – for the financial year from 1 January to 31 December 2021.

In our opinion, on the basis of the knowledge obtained in the audit,

- the accompanying consolidated financial statements comply, in all material respects, with the IFRSs as adopted by the EU, and the additional requirements of German commercial law pursuant to §315e Abs.1 HGB and, in compliance with these requirements, give a true and fair view of the assets, liabilities, and financial position of the Group as at December 31, 2021, and of its financial performance for the financial year from January 1 to December 31, 2021, and
- the accompanying group management report as a whole provides an appropriate view of the Group's position. In all material respects, this group management report is consistent with the consolidated financial statements, complies with German legal requirements and appropriately presents the opportunities and risks of future development.

Pursuant to § 322 Abs. 3 Satz 1 HGB, we declare that our audit has not led to any reservations relating to the legal compliance of the consolidated financial statements and of the group management report.

Basis for the Audit Opinions

We conducted our audit of the consolidated financial statements and of the group management report in accordance with § 317 HGB and the EU Audit Regulation (No. 537/2014, referred to subsequently as "EU Audit Regulation") and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer [Institute of Public Auditors in Germany] (IDW). Our responsibilities under those requirements and principles are further described in the "Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report" section of our auditor's report. We are independent of the group entities in accordance with the requirements of European law and German commercial and professional law, and we have fulfilled our other German professional responsibilities in accordance with these requirements. In addition, in accordance with Article 10 (2) point (f) of the EU Audit Regulation, we declare that we have not provided non-audit services prohibited under Article 5 (1) of the EU Audit Regulation. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions on the consolidated financial statements and on the group management report.

Key Audit Matters in the Audit of the Consolidated Financial Statements

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements for the financial year from January 1 to December 31, 2021. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our audit opinion thereon; we do not provide a separate audit opinion on these matters.

In our view, the matters of most significance in our audit were as follows:

1) **Recoverability of goodwill**

2) **Accounting treatment of internally generated intangible assets**

3) **Recognition and measurement of deferred taxes**

Our presentation of these key audit matters has been structured in each case as follows:

1. Matter and issue
2. Audit approach and findings
3. Reference to further information

Hereinafter we present the key audit matters:

1) Recoverability of goodwill

1. In the Company's consolidated financial statements goodwill amounting to EUR 71,595 thousand is reported under the balance sheet item "Goodwill". Goodwill is tested for impairment by the Company once a year or when there are indications of impairment to determine any possible need for write-downs. The impairment test is carried out at the level of the groups of cash-generating units to which the relevant goodwill is allocated. The carrying amount of the relevant cash generating units, including goodwill, is compared with the corresponding recoverable amount in the context of the impairment test. The recoverable amount is generally determined using the value in use. The present value of the future cash flows from the respective group of cash-generating units normally serves as the basis of valuation. Present values are calculated using discounted cash flow models. For this purpose, the adopted medium-term business plan of the Group forms the starting point which is extrapolated based on assumptions about long-term rates of growth. Expectations relating to future market developments and assumptions about the development of macroeconomic factors are also taken into account. The discount rate used is the weighted average cost of capital for the relevant group of cash-generating units. The impairment test determined that no write-downs were necessary.

The outcome of this valuation is dependent to a large extent on the estimates made by the executive directors with respect to the future cash inflows from the respective group of cash-generating units, the discount rate used, the rate of growth and other assumptions, and is therefore subject to considerable uncertainty. Against this background and due to the complex nature of the valuation, this matter was of particular significance in the context of our audit.

2. As part of our audit, we assessed the methodology employed for the purposes of performing the impairment test, among other things. After matching the future cash inflows used for the calculation against the adopted medium-term business plan of the Group, we assessed the appropriateness of the calculation, in particular by reconciling it with general and sector-specific market expectations. In addition, we assessed the appropriate consideration of the costs for Group functions. In the knowledge that even relatively small changes in the discount rate applied can have a material impact on the value in use calculated in this way, we focused our testing in particular on the parameters used to determine the discount rate applied and assessed the calculation model. In order to reflect the uncertainty inherent in the projections, we evaluated the sensitivity analyses performed by the Company.

Overall, the valuation parameters and assumptions used by the executive directors are in line with our expectations and are within the ranges considered by us to be reasonable.

3. The Company's disclosures on goodwill are contained in sections (4) Recognition and measurement, (5) Significant accounting judgments, estimates and assumptions and (14) Fixed assets in the notes to the consolidated financial statements.

2) Accounting treatment of internally generated intangible assets

1. In the Company's consolidated financial statements an amount of EUR 97,786 thousand is reported under the balance sheet item "capitalized development projects". This item represents development costs incurred for new products, which have been capitalized in accordance with the provisions of IAS 38 and have already been partially amortized in line with their useful lives. An impairment test is carried out at least once annually for projects still under development in accordance with IAS 36. Own expenses capitalized in accordance with these provisions during the financial year amounted to EUR 42,497 thousand, representing a reduction in the expenses charged to profit or loss. The eligibility of the development expenses for capitalization depends on the criteria established by IAS 38.57 and includes considerable scope for judgment, for example with respect to future cash inflows or the expected useful lives of the products developed. Against this background and due to the underlying complexity of the methodological requirements relating to measurement and eligibility for capitalization, this matter was of particular significance for our audit.

2. As part of our audit, we evaluated the internal processes and controls for recording the development projects, among other things. We also assessed the methodology used to calculate the expenses eligible for capitalization. We assessed the eligibility for capitalization of material projects on the basis of the criteria set out in IAS 38.57. We evaluated the stage of progress of the particular project by means of discussions with members of staff in the R&D controlling department and inspection of the project documentation. We assessed the amount of the development costs capitalized and the recoverability of the development expenditure on the basis of suitable supporting evidence. In our view, the methodology applied by the Company for capitalizing development projects is appropriate, and the stage of completion of the projects and the development costs capitalized have been clearly documented.

3. The Company's disclosures on internally generated intangible assets are contained in sections (4) Recognition and measurement, (5) Significant accounting judgments, estimates and assumptions, (14) Fixed assets, (27) Income taxes and (32) Segment reporting in the notes to the consolidated financial statements.

3) Recognition and measurement of deferred taxes

1. After netting, deferred tax assets amounting to EUR 15,339 thousand and deferred tax liabilities of EUR 2,151 thousand are reported in the Company's consolidated financial statements. Deferred tax assets were recognized to the extent that the executive directors consider it probable that taxable profit will be available in the foreseeable future which will enable the deductible temporary differences and unused tax losses to

be utilized. For this purpose, insofar as sufficient deferred tax liabilities are not available, future taxable profits are projected on the basis of the business plan. No deferred tax assets were recognized in respect of unused tax losses and other deductible temporary differences amounting in total to EUR 92,758 thousand, since it is currently not probable that they will be utilized for tax purposes by means of offsetting against taxable profits. Deferred tax liabilities mainly arise from differences between the carrying amounts of the development projects, rights of use, (acquired) intangible assets, as well as the temporary differences between goodwill recognized in accordance with IFRS and the offsetting goodwill deductible for tax purposes. From our point of view, the accounting treatment of deferred taxes was of particular significance in the context of our audit, as it depends to a large extent on the estimates and assumptions made by the executive directors and is therefore subject to uncertainties.

2. As part of our audit, we assessed, among other things, the internal processes and controls with regard to the recognition of deferred taxes in the context of the consolidated financial statements as well as the methodology used for the determination, recognition and measurement of deferred taxes. We also assessed the recoverability of the deferred tax assets relating to deductible temporary differences and unused tax losses on the basis of the Company's internal forecasts of its future earnings situation, and the appropriateness of the underlying estimates and assumptions.

Based on our audit procedures, we were able to satisfy ourselves that the estimates and assumptions made by the executive directors are substantiated and sufficiently documented.

3. The Company's disclosures on deferred taxes are contained in sections (4) Recognition and measurement, (5) Significant accounting judgments, estimates and assumptions and (27) Income taxes in the notes to the consolidated financial statements.

Other Information

The executive directors are responsible for the other information.

The other information comprises

- the statement on corporate governance pursuant to § 289f HGB and § 315d HGB
- the separate non-financial report pursuant to § 289b Abs. 3 HGB and § 315b Abs. 3 HGB
- all remaining parts of the annual report – excluding cross-references to external information – with the exception of the audited consolidated financial statements, the audited group management report and our auditor's report.

Our audit opinions on the consolidated financial statements and on the group management report do not cover the other information, and consequently we do not express an audit opinion or any other form of assurance conclusion thereon.

In connection with our audit, our responsibility is to read the other information mentioned above and, in so doing, to consider whether the other information

- is materially inconsistent with the consolidated financial statements, with the group management report disclosures audited in terms of content or with our knowledge obtained in the audit, or
- otherwise appears to be materially misstated.

Responsibilities of the Executive Directors and the supervisory board for the Consolidated Financial Statements and the Group Management Report

The executive directors are responsible for the preparation of the consolidated financial statements that comply, in all material respects, with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to § 315e Abs. 1 HGB and that the consolidated financial statements, in compliance with these requirements, give a true and fair view of the assets, liabilities, financial position, and financial performance of the Group. In addition the executive directors are responsible for such internal control as they have determined necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, the executive directors are responsible for assessing the Group's ability to continue as a going concern. They also have the responsibility for disclosing, as applicable, matters related to going concern. In addition, they are responsible for financial reporting based on the going concern basis of accounting unless there is an intention to liquidate the Group or to cease operations, or there is no realistic alternative but to do so.

Furthermore, the executive directors are responsible for the preparation of the group management report that, as a whole, provides an appropriate view of the Group's position and is, in all material respects, consistent with the consolidated financial statements, complies with German legal requirements, and appropriately presents the opportunities and risks of future development. In addition, the executive directors are responsible for such arrangements and measures (systems) as they have considered necessary to enable the preparation of a group management report that is in accordance with the applicable German legal requirements, and to be able to provide sufficient appropriate evidence for the assertions in the group management report.

The supervisory board is responsible for overseeing the Group's financial reporting process for the preparation of the consolidated financial statements and of the group management report.

The executive directors and the supervisory board are further responsible for the preparation of the remuneration report, including the related disclosures, which is included in a separate section of the group management report and complies with the requirements of § 162 AktG. They are also responsible for such internal control as they determine is necessary to enable the preparation of a remuneration report, including the related disclosures, that is free from material misstatement, whether due to fraud or error.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and whether the group management report as a whole provides an appropriate view of the Group's position and, in all material respects, is consistent with the consolidated financial statements and the knowledge obtained in the audit, complies with the German legal requirements and appropriately presents the opportunities and risks of future development, as well as to issue an auditor's report that includes our audit opinions on the consolidated financial statements and on the group management report.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with § 317 HGB and the EU Audit Regulation and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer (IDW) will always detect a material misstatement. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements and this group management report.

We exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements and of the group management report, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our audit opinions. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit of the consolidated financial statements and of arrangements and measures (systems) relevant to the audit of the group management report in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an audit opinion on the effectiveness of these systems.
- Evaluate the appropriateness of accounting policies used by the executive directors and the reasonableness of estimates made by the executive directors and related disclosures.
- Conclude on the appropriateness of the executive directors' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in the auditor's report to the related disclosures in the consolidated financial statements and in the group management report or, if such disclosures are inadequate, to modify our respective audit opinions. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to be able to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements present the underlying transactions and events in a manner that the consolidated financial statements give a true and fair view of the assets, liabilities, financial position and financial performance of the Group in compliance with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to § 315e Abs. 1 HGB.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express audit opinions on the consolidated financial statements and on the group management report. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinions.
- Evaluate the consistency of the group management report with the consolidated financial statements, its conformity with German law, and the view of the Group's position it provides.
- Perform audit procedures on the prospective information presented by the executive directors in the group management report. On the basis of sufficient appropriate audit evidence we evaluate, in particular, the significant assumptions used by the executive directors as a basis for the prospective information, and evaluate the proper derivation of the prospective information from these assumptions. We do not express a separate audit opinion on the prospective information and on the assumptions used as a basis. There is a substantial unavoidable risk that future events will differ materially from the prospective information.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with the relevant independence requirements, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, the related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter.

Other legal and regulatory requirements

Report on the Assurance on the Electronic Rendering of the Consolidated Financial Statements and the Group Management Report Prepared for Publication Purposes in Accordance with § 317 Abs. 3a HGB

Assurance Opinion

We have performed assurance work in accordance with § 317 Abs. 3a HGB to obtain reasonable assurance about whether the rendering of the consolidated financial statements and the group management report (hereinafter the "ESEF documents") contained in the attached electronic file ADVA_SE_KA+LB_ESEF-2022-02-22.zip and prepared for publication purposes complies in all material respects with the requirements of § 328 Abs. 1 HGB for the electronic reporting format ("ESEF format"). In accordance with German legal requirements, this assurance work extends only to the conversion of the information contained in the consolidated financial statements and the group management report into the ESEF format and therefore relates neither to the information contained within this renderings nor to any other information contained in the electronic file identified above.

In our opinion, the rendering of the consolidated financial statements and the group management report contained in the electronic file identified above and prepared for publication purposes complies in all material respects with the requirements of § 328 Abs. 1 HGB for the electronic reporting format. Beyond this assurance opinion and our audit opinion on the accompanying consolidated financial statements and the accompanying group management report for the financial year from January 01 to December 31, 2021 contained in the "Report on the Audit of the Consolidated Financial Statements and on the Group Management Report" above, we do not express any assurance opinion on the information contained within these renderings or on the other information contained in the electronic file identified above.

Basis for the Assurance Opinion

We conducted our assurance work on the rendering of the consolidated financial statements and the group management report contained in the electronic file identified above in accordance with § 317 Abs. 3a HGB and the IDW Assurance Standard: Assurance Work on the Electronic Rendering, of Financial Statements and Management Reports, Prepared for Publication Purposes in Accordance with in Accordance with § 317 Abs. 3a HGB (IDW AsS 410 (10.2021)) and the International Standard on Assurance Engagements 3000 (Revised). Our responsibility in accordance therewith is further described below in the "Group Auditor's Responsibilities for the Assurance Engagement on the ESEF Documents" section. Our audit firm has applied the IDW Standard on Quality Management: Requirements for Quality Management in the Audit Firm (IDW QS 1).

Responsibilities of the Executive Directors and the Supervisory Board for the ESEF Documents

The executive directors of the Company are responsible for the preparation of the ESEF documents including the electronic renderings of the consolidated financial statements and the group management report in accordance with § 328 Abs. 1 Satz 4 Nr. 1 HGB and for the tagging of the consolidated financial statements in accordance with § 328 Abs. 1 Satz 4 Nr. 2 HGB.

In addition, the executive directors of the Company are responsible for such internal control as they have considered necessary to enable the preparation of ESEF documents that are free from material non-compliance with the requirements of § 328 Abs. 1 HGB for the electronic reporting format, whether due to fraud or error.

The supervisory board is responsible for overseeing the process for preparing the ESEF documents as part of the financial reporting process.

Group Auditor's Responsibilities for the Assurance Engagement on the ESEF Documents

Our objective is to obtain reasonable assurance about whether the ESEF documents are free from material non-compliance with the requirements of § 328 Abs. 1 HGB, whether due to fraud or error. We exercise professional judgment and maintain professional skepticism throughout the assurance engagement. We also:

- Identify and assess the risks of material non-compliance with the requirements of § 328 Abs. 1 HGB, whether due to fraud or error, design and perform assurance procedures responsive to those risks, and obtain assurance evidence that is sufficient and appropriate to provide a basis for our assurance opinion.
- Obtain an understanding of internal control relevant to the assurance engagement on the ESEF documents in order to design assurance procedures that are appropriate in the circumstances, but not for the purpose of expressing an assurance opinion on the effectiveness of these controls.

- Evaluate the technical validity of the ESEF documents, i.e., whether the electronic file containing the ESEF documents meets the requirements of the Delegated Regulation (EU) 2019/815 in the version applicable in force at the date of the consolidated financial statements on the technical specification for this electronic file.
- Evaluate whether the ESEF documents enables a XHTML rendering with content equivalent to the audited consolidated financial statements and to the audited group management report.
- Evaluate whether the tagging of the ESEF documents with Inline XBRL technology (iXBRL) in accordance with the requirements of Articles 4 and 6 of the Delegated Regulation (EU) 2019/815, in the version in force at the date of the consolidated financial statements, enables an appropriate and complete machine-readable XBRL copy of the XHTML rendering.

Further Information pursuant to Article 10 of the EU Audit Regulation

We were elected as group auditor by the annual general meeting on May 19, 2021. We were engaged by the supervisory board on December 5, 2021. We have been the group auditor of the ADVA Optical Networking SE, Meiningen, without interruption since the financial year 2010.

We declare that the audit opinions expressed in this auditor's report are consistent with the additional report to the audit committee pursuant to Article 11 of the EU Audit Regulation (long-form audit report).

Reference to an other matter– use of the auditor's report

Our auditor's report must always be read together with the audited annual financial statements and the audited management report as well as the assured ESEF documents. The annual financial statements and the management report converted to the ESEF format – including the versions to be published in the Federal Gazette – are merely electronic renderings of the audited annual finan-cial statements and the audited management report and do not take their place. In particular, the "Report on the Assurance on the Electronic Rendering of the Annual Financial Statements and the Management Report Prepared for Publication Purposes in Accordance with § 317 Abs. 3a HGB" and our assurance opinion contained therein are to be used solely together with the assured ESEF documents made available in electronic form.

German public auditor responsible for the engagement

The German Public Auditor responsible for the engagement is Jürgen Schumann."

München, February 22, 2022

PricewaterhouseCoopers GmbH
Wirtschaftsprüfungsgesellschaft

Jürgen Schumann	**ppa. Sonja Knösch**
Wirtschaftsprüfer	*Wirtschaftsprüferin*
(German Public Auditor)	*(German Public Auditor)*


HOMEPAGE

Additional information

Quarterly overview 2020 – 2021

(IFRS, in thousands of EUR, unless stated otherwise)	2021				2020			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
INCOME STATEMENT								
Revenues	**144,473**	**149,354**	**151,777**	**157,713**	**132,686**	**145,024**	**146,676**	**140,572**
Pro forma cost of goods sold	(89,128)	(92,080)	(99,624)	(101,641)	(90,411)	(94,820)	(94,746)	(85,931)
Pro forma gross profit	**55,345**	**57,274**	**52,153**	**56,072**	**42,275**	**50,204**	**51,930**	**54,641**
Pro forma selling and marketing expenses	(15,071)	(15,240)	(14,290)	(15,852)	(16,597)	(14,124)	(13,991)	(13,418)
Pro forma general and administrative expenses	(8,458)	(9,137)	(7,849)	(9,390)	(8,459)	(8,370)	(9,666)	(9,116)
Pro forma research and development expenses	(29,461)	(29,751)	(29,266)	(30,141)	(29,897)	(28,833)	(28,559)	(26,783)
Income from capitalization of development expenses	9,839	10,439	10,617	11,602	11,019	10,804	10,505	7,639
Other operating income and expenses, net	666	830	1,647	2,071	(12)	426	834	1,380
Pro forma EBIT	**12,860**	**14,415**	**13,012**	**14,362**	**(1,671)**	**10,107**	**11,053**	**14,343**
Amortization of intangible assets and goodwill from acquisitions	(999)	(1,002)	(1,018)	(1,039)	(1,248)	(1,139)	(1,035)	(1,017)
Stock compensation expenses	(288)	(377)	(428)	(534)	(368)	(309)	(262)	(250)
Expenses related to business combinations and restructuring measures	—	—	(2,070)	(1,599)	(751)	(1)	12	9
Operating income (loss)	**11,573**	**13,036**	**9,496**	**11,190**	**(4,038)**	**8,658**	**9,768**	**13,085**
Interest income and expenses, net	(348)	(539)	(465)	(383)	(549)	(581)	(876)	(601)
Other financial gains and losses, net	717	(130)	634	1,455	(1,258)	697	(1,156)	1,670
Income (loss) before tax	**11,942**	**12,367**	**9,665**	**12,262**	**(5,845)**	**8,774**	**7,736**	**14,154**
Income tax benefit (expense), net	(714)	(366)	8,813	5,249	(1,390)	(1,145)	(1,065)	(905)
Net income (loss)	**11,228**	**12,001**	**18,478**	**17,511**	**(7,235)**	**7,629**	**6,671**	**13,249**
Earnings per share in EUR								
basic	0.22	0.24	0.36	0.34	(0.14)	0.15	0.13	0.26
diluted	0.22	0.23	0.36	0.34	(0.14)	0.15	0.13	0.26

(IFRS, in thousands of EUR, unless stated otherwise)	2021				2020			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
BALANCE SHEET (as of period end)								
Cash and cash equivalents	79,060	85,023	100,513	108,987	52,753	67,586	68,293	64,881
Inventories	93,901	97,739	100,813	129,205	91,500	92,684	92,953	90,124
Goodwill	69,454	68,831	69,855	71,595	72,649	71,309	69,404	67,036
Capitalized development projects	98,105	97,541	97,531	97,786	97,629	98,981	100,690	98,607
Other intangible assets	19,271	20,589	19,685	20,522	26,330	24,871	22,632	20,306
Total intangible assets	186,830	186,961	187,071	189,903	196,608	195,161	192,726	185,949
Other assets	164,476	172,672	167,779	173,429	173,911	172,563	166,672	159,018
Total assets	524,267	542,395	556,176	601,524	514,772	527,994	520,644	499,972
Liabilities to banks	62,679	55,237	55,259	47,807	87,912	81,843	73,744	62,621
Lease liabilities	27,007	25,910	24,644	25,014	32,545	30,671	29,558	27,805
Total financial debt	89,686	81,147	79,903	72,821	120,457	112,514	103,302	90,426
Total stockholders' equity	279,643	291,685	315,325	339,912	249,133	253,221	256,935	263,218
Equity ratio in %	53.3	53.8	56.7	56.5	48.4	48.0	49.3	52.6
CASH FLOW STATEMENT								
Cash flow from operating activities	27,444	31,684	28,399	35,726	11,320	37,796	25,065	22,962
Cash flow from investing activities	(12,328)	(17,127)	(15,071)	(19,745)	(17,499)	(14,442)	(13,859)	(12,554)
FINANCIAL RATIOS								
Net cash/(debt)	(10,626)	3,876	20,610	36,166	(67,705)	(44,928)	(35,009)	(25,545)
Leverage*	0.6 x	0.5 x	0.5 x	0.4 x	1.4 x	1.1 x	1.0 x	0.7 x
Net working capital	125,785	132,767	130,794	128,954	134,219	127,917	124,043	129,853
Working capital ratio in %	21.5	22.2	21.7	20.6	25.2	22.0	21.3	23.3
Capital employed	377,420	381,383	384,250	388,598	377,313	375,360	375,093	373,941
ROCE in %	12.4	13.0	11.9	11.7	(4.3)	2.5	5.1	7.3
DSO in days*	55.8	56.3	55.4	53.2	64.1	61.8	60.1	58.2
Inventory turns*	4.0 x	3.9 x	3.9 x	3.8 x	4.0 x	4.0 x	4.0 x	3.9 x
DPO in days*	51.8	55.1	54.8	57.5	58.8	58.5	58	55.2
EMPLOYEES (as of period end)								
	1,879	1,908	1,944	1,973	1,892	1,879	1,878	1,870

* 12-months rolling

Glossary: *page 174*

Multi-year overview 2011 – 2021

(in thousands of EUR unless stated otherwise)	2011 IFRS	2012 IFRS
INCOME STATEMENT		
Revenues	**310,945**	**330,069**
Pro forma cost of goods sold	(191,560)	(196,820)
Pro forma gross profit	**119,385**	**133,249**
Pro forma selling and marketing expenses	(43,411)	(46,259)
Pro forma general administrative	(24,007)	(25,725)
Pro forma research and development expenses	(60,083)	(65,055)
Income from capitalization of development expenses	23,648	23,529
Other operating income and expenses, net	1,751	2,059
Pro forma EBIT	**17,283**	**21,798**
Amortization of intangible assets and goodwill from acquisitions	(2,493)	(1,620)
Stock compensation expenses	(1,583)	(1,344)
Expenses related to business combinations and restructuring measures	—	—
Operating income (loss)	**13,207**	**18,834**
Interest income and expenses, net	(1,531)	(1,163)
Other financial gains and losses, net	2,328	834
Income (loss) before tax	**14,004**	**18,505**
Income tax benefit (expense), net	2,935	(1,783)
Net income (loss)	**16,939**	**16,722**
Earnings per share in EUR		
basic	0.36	0.35
diluted	0.36	0.34

2013 IFRS	2014 IFRS	2015 IFRS	2016 IFRS	2017 IFRS	2018 IFRS	2019 IFRS	2020 IFRS	2021 IFRS	Change 2021 vs. 2020
310,702	**339,168**	**441,938**	**566,686**	**514,471**	**501,981**	**556,821**	**564,958**	**603,317**	**7%**
(188,561)	(220,408)	(284,521)	(398,161)	(340,094)	(316,360)	(361,457)	(365,908)	(382,473)	5%
122,141	**118,760**	**157,417**	**168,525**	**174,377**	**185,621**	**195,364**	**199,050**	**220,844**	**11%**
(46,717)	(48,003)	(55,296)	(58,970)	(60,513)	(61,010)	(68,318)	(58,130)	(60,453)	4%
(26,225)	(27,151)	(30,114)	(31,974)	(3,398)	(34,494)	(33,851)	(35,611)	(34,834)	(2)%
(65,649)	(67,461)	(78,493)	(99,260)	(105,746)	(107,165)	(115,057)	(114,072)	(118,619)	4%
22,490	27,108	32,071	39,282	39,033	31,872	42,443	39,967	42,497	6%
2,531	6,214	4,392	5,812	6,369	8,442	4,230	2,628	5,214	98%
8,571	**9,467**	**29,977**	**23,415**	**19,522**	**23,266**	**24,811**	**33,832**	**54,649**	**62%**
(683)	(733)	(346)	(2,997)	(4,426)	(5,526)	(5,663)	(4,439)	(4,058)	(9)%
(913)	(382)	(2,876)	(1,051)	(1,259)	(1,413)	(1,490)	(1,189)	(1,627)	37%
—	—	—	—	(9,434)	(1,338)	(5,655)	(731)	(3,669)	402%
6,975	**8,352**	**26,755**	**19,367**	**4,403**	**14,989**	**12,003**	**27,473**	**45,295**	**65%**
(1,144)	(1,267)	(838)	(60)	(785)	(1,408)	(2,304)	(2,607)	(1,735)	(33)%
(1,475)	1,142	2,159	(292)	(3,809)	(1,096)	(770)	(47)	2,676	(5794)%
4,356	**8,227**	**28,076**	**19,015**	**(191)**	**12,485**	**8,929**	**24,819**	**46,236**	**86%**
7,279	148	(1,228)	2,517	(4,037)	(2,807)	(1,884)	(4,505)	12,982	(388)%
11,635	**8,375**	**26,848**	**21,532**	**(4,228)**	**9,678**	**7,045**	**20,314**	**59,218**	**192%**
0.24	0.17	0.55	0.44	(0.09)	0.19	0.14	0.40	1.17	193%
0.24	0.17	0.55	0.43	(0.09)	0.19	0.14	0.40	1.15	188%

Multi-year overview 2011 – 2021

(in thousands of EUR unless stated otherwise)	2011 IFRS	2012 IFRS
BALANCE SHEET (as of period end)		
Cash and cash equivalents	59,110	70,625
Inventories	36,536	41,339
Goodwill	19,842	19,876
Capitalized R&D expenses	39,231	47,497
Other intangible assets	5,541	3,586
Total intangible assets	64,614	70,959
Other assets	99,636	101,172
Total assets	259,896	284,095
Liabilities to banks	27,906	28,984
Lease liabilities (according to IFRS 16 from 2019)	n/a	n/a
Total financial debt*	27,906	28,984
Total stockholders' equity	135,986	153,909
Equity ratio in %*	52.3	54.2
CASH FLOW STATEMENT		
Cash flow from operating activities	39,736	45,156
Cash flow from investing activities	(32,843)	(34,793)
FINANCIAL RATIOS (as of period end)		
Net cash/(debt)*	31,204	41,641
Leverage*	0.7 x	0.6 x
Net working capital	58,186	58,725
Working capital ratio in %	18.7	17.8
Capital employed	159,638	188,746
ROCE in %	8.3	10.0
DSO in days	58.2	58.7
Inventory turns	5.4 x	5.2 x
DPO in days	59.9	61.9
EMPLOYEES (as of December 31)		
	1,304	1,378

* The first-time adoption of IFRS 16 in 2019 has an impact on some key figures.

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2013 IFRS	2014 IFRS	2015 IFRS	2016 IFRS	2017 IFRS	2018 IFRS	2019 IFRS	2020 IFRS	2021 IFRS	Change 2021 vs. 2020
80,934	83,877	93,850	84,871	58,376	62,652	54,263	64,881	108,987	68%
40,074	46,982	72,950	92,800	81,694	85,734	105,355	90,124	129,205	43%
19,875	23,581	24,881	41,538	68,036	70,400	72,023	67,036	71,595	7%
52,080	56,438	62,439	76,263	85,175	87,926	96,169	98,607	97,786	(1)%
2,699	2,861	4,238	16,429	36,785	31,524	24,568	20,306	20,522	1%
74,654	82,880	91,558	134,230	189,996	189,850	192,760	185,949	189,903	2%
103,544	111,098	133,177	132,651	133,822	148,302	183,984	159,018	173,430	9%
299,206	324,837	391,535	444,552	463,888	486,538	536,362	499,972	601,524	20%
39,196	34,983	42,669	59,365	96,591	89,484	80,979	62,621	47,807	(24)%
n/a	n/a	n/a	n/a	n/a	n/a	34,430	27,805	25,014	(10)%
39,196	34,983	42,669	59,365	96,591	89,484	115,409	90,426	72,821	(19)%
163,948	177,114	215,921	238,947	227,021	244,641	255,792	263,218	339,912	29%
54.8	54.5	55.1	51.1	48.9	50.3	47.7	52.6	56.5	0,04 pp
31,413	46,186	39,415	61,350	27,134	60,360	66,891	97,143	123,253	27%
(29,931)	(38,742)	(41,311)	(86,373)	(90,538)	(48,061)	(60,303)	(58,354)	(64,271)	10%
41,738	48,894	51,181	25,506	(38,215)	(26,832)	(61,146)	(25,545)	36,165	(242)%
1.1 x	0.8 x	0.7 x	1.0 x	1.9 x	1.4 x	1.2 x	0.7 x	0.4 x	(43)%
66,298	67,984	99,608	97,984	123,828	120,475	128,150	129,853	128,955	(1)%
21.3	20.0	22.5	17.3	24.1	24.0	23.0	23.0	21.4	-1,6 pp
211,066	230,791	257,812	307,679	315,598	309,317	366,462	373,941	388,598	4%
3.3	3.6	10.4	6.3	1.4	4.8	3.3	7.3	11.7	4,4 pp
64	62	58.1	60.2	60.5	67.8	65.8	58.2	53.2	(9)%
4.6 x	5.2 x	4.4 x	5.2 x	4.1 x	4.0 x	4.0 x	3.9 x	3.8 x	(3)%
64.8	55.9	62.4	63.4	58.7	55.5	63.3	55.2	57.5	4%
1,425	1,491	1,524	1,764	1,894	1,886	1,903	1,870	1,973	6%

Glossary

B

Bare metal switch

Bare metal switches allow hardware and software to be separated in the network. This enables the user to operate a uniform software environment without having to be tied to a specific switch manufacturer. Bare metal switches are not only much cheaper than the corresponding, mostly identical, models with pre-installed software, but also offer improved management options, especially in the area of monitoring and scalability. ADVA's Ensemble Activator software was developed as a network operating system for bare metal switches and turns generic switching hardware into a so-called cell site gateway. See also: cellcite gateway.

C

Capital employed

The capital employed is the difference between the average balance sheet total and the average current liabilities of the period, calculated as the arithmetic average of the quarterly balance sheet date values.

Carrier

Carriers, in general, are companies that build and maintain communications networks for commercial use. Beyond incumbent telephony companies, these also include new alternative carriers, which were established during the deregulation of the telecommunications market, and special service providers, which offer outsourced services (e.g., software applications or data storage) for enterprise customers.

CE (Carrier Ethernet)

Ethernet is a protocol of packet-based data transfer that was originally developed and used for local area networks. Carriers require additional features for data transmission in wide area networks that go beyond traditional Ethernet. The CE protocol resulting from these requirements has become the dominant data link protocol in carrier infrastructure.

Cesium clocks

Many network services and applications require the availability of a highly accurate primary frequency reference. This can be achieved using cesium atomic clocks. Unlike off-air receivers, cesium clocks are autonomous, self-contained primary references immune to external influences.

Cloud

Cloud in the context of IT describes a concept where applications no longer run on the user's in-house IT infrastructure (for example, a server) but are outsourced to a service provider whose IT infrastructure is not visible or known in detail – as if it was hidden in a cloud. A typical example is the use of software as a service, where the software is not stored on the user's machine, but on servers of the software service provider.

Cloud access

This marketing term is often used as an umbrella for technologies that play a role in accessing the cloud.

ConnectGuard™

Brand name for ADVA's encryption technology, implemented in many of the company's products.

COSO framework

Five major accounting organizations formed a group known as COSO (Committee of Sponsoring Organizations of the Treadway Commission) to provide guidance on evaluating internal control. They issued this guidance as the COSO Internal Control Framework.

CSG (Cell site gateway)

The mobile network is organized in cells. When connecting a cell site to the fixed network, gateways are used, which manage and control of the data streams. The industry has started to embrace open solutions, so mobile network operators can reduce the dependency on individual suppliers. The disaggregated cell site gateway (DCSG) defined by TIP supports such open architectures. ADVA offers the Ensemble Activator network operating system for this application, which turns a so-called (see also:) bare metal switch into a CSG.

CSP (communication service provider)

CSPs are companies that build and maintain large-scale networks to offer communication services.

D

DCI (data center interconnect)

Network that connects geographically dispersed data centers.

DevOps (development and operations)

The term DevOps has its origins in software development. It describes a methodology that stresses communication, collaboration and cooperation between software developers and other information technology (IT) professionals. In a broader sense DevOps refers to the tight alignment between product development teams and operational teams responsible for product introduction.

DPO (days payable outstanding)

The key figure indicates the average number of days between receipt of invoice and outgoing payment.

DSO (days sales outstanding)

The key figure describes the average number of days between invoicing and receipt of payment.

DSL (digital subscriber line)
DSL is a technology that provides fast digital data transmission over the copper wires of a local telephone network. The advantage of DSL is that broadband services like fast internet access and internet television signals can be delivered over the same twisted pair of copper wires that was originally deployed for phone service only.

E

Ecodesign
Systematic (product) design measures that reduce or minimize the environmental product footprint. These measures are based, amongst others, on lifecycle assessment.

EMS (electronics manufacturing services)
ADVA works with EMS partners that specialize in the volume production of electronic components and sub-assemblies.

Ensemble
Ensemble is a trademark used by ADVA for the company's software solutions.

Ensemble Connector
Ensemble Connector is a family of software packages that enables communication service providers to provide the data path and virtual hosting functionality at a location of their choice. Additional information

Ethernet
Ethernet is a packet-based data transmission protocol with a data rate of 10Mbit/s. Fast Ethernet provides a data rate of 100Mbit/s, Gigabit Ethernet 1Gbit/s and 10 Gigabit Ethernet 10Gbit/s. Today also 40, 100 and 400 Gigabit Ethernet solutions are commercially available with data rates of 40Gbit/s, 100Gbit/s and 400Gbit/s, respectively.

EU Taxonomy Regulation
The EU Taxonomy Regulation (EU) 2020/852 is an EU regulation that defines criteria whether business activities are eligible for being rated as ecologically sustainable. It affects companies that are obliged to publish a non-financial report.

F

FSP (Fiber Service Platform)
The Fiber Service Platform is ADVA's comprehensive product portfolio that provides carriers and enterprises with innovative connectivity solutions for access, metro and long-haul networks.

G

Gbit/s or G (Gigabit per second)
Bits are binary symbols of zero or one and are the standard unit by which data is stored and processed by computers. "Giga" stands for one billion (1,000,000,000). Bit/s is the basic unit of a data rate, which describes how many bits per second are being transmitted. One Gbit/s or G is therefore a data rate that transmits one billion bits of data per second.

GDPR (General Data Protection Regulation)
GDPR is a regulation in EU law on data protection and privacy in the European Union (EU).

GNSS (global navigation satellite system)
GNSS refers to a constellation of satellites transmitting positioning and timing data from space. GNSS receivers determine their location by using that data. By definition, a GNSS provides global coverage.

I

ICP (internet content provider)

Internet content providers are entities whose primary business is the creation, storage and dissemination of digital information. ICPs are also commonly referred to as over-the-top (OTT), web 2.0 and digital media companies.

IoT (internet of things)

Network of devices such as vehicles and home appliances that contain electronics, software, sensors, actuators, and connectivity which allows these things to connect, interact and exchange data.

ISO (international organisation for standardization)

ISO is an organization that defines and publishes internationally valid standards. Several of the ISO standards are relevant to ADVA, including 9001 (quality management), 14001 (environmental management system), 22301 (business continuity management), 31000 (risk management) and 50001 (energy management).

L

Leverage

The leverage shows the liabilities to banks in relation to the EBITDA of the last 12 months. EBITDA is calculated as if the accounting approach had been unchanged, i.e., without taking IFRS 16 into account. The leverage is thus determined explicitly without taking into account the accounting effects in accordance with IFRS 16. This is a new ratio from 2018 onwards due to covenant requirements. Prior period information in the multi-year overview has been calculated accordingly.

LTE (long term evolution)/ LTE-Advanced/ LTE-TDD

LTE is the project name of a high-performance air interface for cellular mobile communication systems. It is often used as the synonym for the 4th generation (4G) of radio technologies designed to increase the capacity and speed of mobile networks. LTE-Advanced provides further enhancements to the LTE technology, enabling operators to deliver even more bandwidth to more mobile users. The TDD (time division duplex) version of the standard uses a single frequency for uploading and downloading data, alternating between the two through time.

LTI (Long term incentive)

The LTI is an annual 4-year long-term variable remuneration component for the members of the management board and will replace the LTVP. It is described in the remuneration framework.

LTVP (Long term variable pay)

The LTVP is an annual 3-year long-term variable remuneration component for the members of the management board and will be replaced by the LTI. It is described in the remuneration framework.

M

Mbit/s (Megabit per second)

Bits "Mega" stands for one million (1,000,000). Bit/s is the basic unit of a data rate, which describes how many bits per second are being transmitted. One Mbit/s is therefore a data rate that transmits one million bits of data per second.are binary symbols of zero or one and are the standard unit by which data is stored and processed by computers.

MSO (multiple service operator)

The term MSO emerged in the 1990s when cable television companies, mainly in the US, started to offer telecom services in addition to their traditional television and video offerings. Technically, most telecom service providers today could be called multiservice operators, but the term MSO still implies the historical roots in the cable television space.

N

Net cash

Net cash is calculated by subtracting financial debt comprising of current and non-current liabilities to banks and current and non-current lease liabilities according to IFRS 16 Leases from cash and cash equivalents. A negative calculation result is referred to as net debt .

Net promoter score (NPS)

The NPS is obtained by asking customers a single question on a 0 to 10 rating scale: "How likely is it that you would recommend our company to a friend or colleague?". Based on their responses, customers are categorized into one of three groups: promoters (9–10 rating), passives (7–8 rating), and detractors (0–6 rating). The percentage of detractors is then subtracted from the percentage of promoters to obtain a net promoter score.

NFV (network functions virtualization)

NFV is an alternative design approach for building complex IT applications, particularly in the telecommunications and service provider industries. NFV virtualizes entire classes of functions into building blocks that may be connected, or chained, together to create services. With the introduction of NFV, the architecture of service provider networks will change. Functions that were previously tied to a particular network element can now be hosted centrally leading to a new distribution of hardware and software functionality across networks.

NFVi (network functions virtualization infrastructure)

NFVi includes both the hardware and software components for the network, which are necessary for the support and operation of virtual network functions (VNF) in carrier networks. NFVi resources include, for example, ADVA's Ensemble Connector, an operating system (software) that converts a generic server (hardware) into a high-performance network termination device. Jointly NFVi elements form platforms to support NFV and host VNFs. NFVi can span multiple locations. In such a case, the networks connecting these locations are also part of the overall NFVi.

NOC (network operation center)

A NOC, also known as a network management center, is one or more locations from which network monitoring and control are exercised over a telecommunication network.

NOS (network operating system)

A network operating system is software that turns generic hardware into a fully functional network element. In essence, the NOS manages the resources made available to network users. ADVA currently offers two commercial NOS solutions: Ensemble Connector runs on generic server hardware and manages the server resources for use as a universal customer premise equipment (see also uCPE). Ensemble Activator runs on generic switching hardware and manages the switching resources y for use cases such as cell site gateway.

NTP (network timing protocol)

NTP is a networking protocol for clock synchronization between computer systems over packet-switched, variable-latency data networks.

O

OEM (original equipment manufacturer)

OEM partners purchase products from other companies to fill gaps in their portfolio and offer an end-to-end solution. They typically re-label and market the products under their own brand name.

OLS (open line system), OT (open terminal)

An optical transmission system basically consists of two main components. The terminal generates and receives the optical signals. The line system bundles wavelengths and amplifies the signal power. In an open system architecture, terminals and line systems can be deployed independently and openly combined with third-party equipment.

Optoelectronics

Umbrella term for technologies that contain both optical (photonic) functions and electronic functions. Prominent examples for optoelectronic components are optical transmit and receive diodes, also called transceivers.

P

Photonic integration

Integrating multiple functions on a single chip (integrated circuit, IC) provides significant advantages in high-speed electronics. Similar concepts apply to photonics, where efforts are made to integrate multiple optical functions on a single chip. This reduces total space and power consumption and improves the performance characteristics of the overall system.

PNT (positioning, navigation, timing)

PNT comprises three different components which, when combined, create a powerful capability: ‘Positioning’ is the ability to determine the geographic location of a person, object or signal. ‘Navigation’ is the ability to calculate a route to a desired position from a current position. ‘Timing’ provides precise time in accordance with time zone standards such as coordinated universal time (UTC). In addition, ‘timing’ ties ‘navigation’ and ‘positioning’ together, enabling the ability to calculate the duration of travel between locations.

Post-quantum cryptography

Cryptography is the application of techniques such as encryption to secure communication in the presence of adversarial behavior. The advent of quantum computers is seen as a big threat to current generation cryptography and the industry - including ADVA - is actively working on communication protection concepts that are post-quantum secure, i.e. cannot be broken even with the help of quantum computers.

Pro forma EBIT

Pro forma EBIT is calculated prior to non-cash charges related to the stock compensation programs and amortization and impairment of goodwill and acquisition-related intangible assets. Additionally, non-recurring expenses related to M&A and restructuring measures are not included.

Protocol

A protocol defines the “language” elements that networks use to communicate with each other.

R

RAN (radio access network)

A radio access network is part of a mobile telecommunication network. Conceptually, it resides between the mobile device such as a smart phone and the core network.

REACh (registration, evaluation, authorization and restriction of chemicals)

A regulation issued by the European Union addressing the production and use of chemical substances and the potential impact of these substances on human health and the environment.

ROCE (return on capital employed)

ROCE is the operating result for the current period divided by the capital employed.

Router

A router is a networking device that forwards data packets between networks. Routers perform the traffic directing functions on the Internet and use for their forwarding functions layer 3 (IP) information.

S

SBTi (science based targets initiative)

The SBTi is a partnership between the Carbon Disclosure Project, UN Global Compact, the World Resources Institute and the World Wide Fund for Nature. It aims at helping companies determining how much they must cut emissions to support the restriction of global warming to within 2°C compared to pre-industrial temperatures. Find out more under sciencebasedtargets.org/.

SFP (small form-factor pluggable)

The SFP is a standardized, compact, pluggable transceiver used for both telecommunication and data communications applications.

SLA (service level agreement)

Commitment between a service provider and a client. Aspects of the service such as quality and availability are agreed between the service provider and the service user.

SSU (synchronization supply unit)

Many services running on digital telecommunication networks require accurate synchronization for correct operation. Telecommunication networks rely on the use of highly accurate primary reference clocks (see also cesium Clocks), which are distributed network wide using synchronization links and synchronization supply units.

STI (Short-term incentive)

The short-term incentive is the annual variable remuneration for the members of the management board as described in the remuneration framework.

Supply chain act

The (German) supply chain act is a German law requiring companies to identify risks to human rights in their supply chain and to take action against identified risks. The companies will have to publish an annual report containing the respective analyses.

Switch/Switching

A switch is a network element that ensures that data packets (so-called frames) arrive at their destination. Most commonly used are Ethernet frames from network layer 2.

T

TeraFlex™

Brand name for ADVA's high-speed terminal, which generates data rates of up to 600Gbit/s per wavelength. TeraFlex™ is a so-called open terminal (OT) and part of the ADVA FSP 3000 platform.

TL 9000: R6.2/R5.7

TL 9000:R6.2/R5.7 is a quality management system standard defined specifically for the telecommunications industry. It standardizes the quality system requirements for the design, development, delivery, installation and maintenance of telecommunication products and services, and it also defines the performance metrics required to measure the situation at the time of the implementation of the standard as well as progress made.

U

uCPE (universal customer premise equipment)

A CPE is a terminal unit located at a subscriber's premises and connected with a carrier's telecommunication network. The CPE provides demarcation functionality between the network domains of the service provider and his client. In the context of NFV, certain functions of the CPE can be virtualized and hosted centrally in the service provider network. This software package defining the CPE function is called virtual CPE (vCPE). In this architecture, CSPs can define a universally usable CPE (hardware) to define different services via software.

V

VAR (value-added reseller)

VAR partners combine products from a number of different vendors together with their own services to offer customers a complete and comprehensive solution.

Verticalization

Verticalization refers to the integration of upstream and downstream stages of the value creation process. This means that the roles and responsibilities of manufacturers and sellers, which were previously clearly separated, are increasingly overlapping and boundaries are becoming more fluid. In the networking equipment industry, verticalization often refers to the usage of optoelectronic components that are developed in-house.

W

WDM (wavelength division multiplexing)

WDM expands the capacity of networks by allowing a greater number of signals to be transmitted over a single fiber. WDM enables numerous channels of data to be multiplexed into unique color bands, and then to be combined and transmitted over a single fiber and de-multiplexed at the other end.

Working capital

Working capital is defined as the total of trade accounts receivable and inventories less trade accounts payable.

Working capital ratio

The working capital ratio shows the net working capital on the balance sheet date in relation to the revenues of the current period.

Maria Teresa Chamorro

"Even in uncertain times, our shared goals have been always clear. With our open technology, we're bringing people together and building a sustainable future."

Corporate information

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ADVA on the web

More information about ADVA, including solutions, technologies and products, can be found on the company's website at www.adva.com.

PDF files of this annual report, as well as quarterly reports, presentations and general investor information, are also located on the company's website and can be downloaded in both English and German. Quarterly conference calls are conducted on the day of earnings announcements. Related PDF, audio and transcript files are available for download in the investor relations section of the group's website, www.adva.com.

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Financial calendar 2022

Publication of quarterly statement Q1 2022	April 28, 2022 Martinsried/Munich, Germany
Annual shareholders' meeting	May 18, 2022 Meiningen, Germany
Publication of six-month report 2022	July 28, 2022 Martinsried/Munich, Germany
Publication of quarterly statement Q3 2022	October 27, 2022 Martinsried/Munich, Germany

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