



# Open edge networking

## Investor presentation

FSE: ADV

February 21<sup>st</sup> 2019



# Disclaimer

## FORWARD-LOOKING STATEMENTS

This presentation contains forward-looking statements with words such as “believes”, “anticipates” and “expects” to describe expected revenues and earnings, anticipated demand for optical networking solutions, internal estimates and liquidity. These forward-looking statements involve a number of unknown risks, uncertainties and other factors that could cause actual results to differ materially. Unknown risks, uncertainties and other factors are discussed in the ‘risk report’ section of ADVA Optical Networking’s annual report 2018.

## CONSOLIDATED PRO FORMA FINANCIAL RESULTS

ADVA Optical Networking provides consolidated pro forma financial results in this presentation solely as supplemental financial information to help investors and the financial community make meaningful comparisons of ADVA Optical Networking’s operating results from one financial period to another. ADVA Optical Networking believes that these pro forma consolidated financial results are helpful because they exclude non-cash charges related to stock compensation programs and amortization and impairment of goodwill and acquisition-related intangible assets, which are not reflective of the Group’s operating results for the period presented. This pro forma information is not prepared in accordance with IFRS and should not be considered a substitute for historical information presented in accordance with IFRS.

# Company Overview

# Stability, continuity and growth opportunities

## Statement from the CEO



2018 revenues: €502.0 million

Proforma EBIT: 4.6%

"Digitization is changing all ecosystems.

"The rapid development and rollout of artificial intelligence, edge computing solutions, IoT and 5G require a robust and scalable telecommunications infrastructure with greater optical transmission capacity, new models for providing communication services, and increasingly precise network synchronization. Our key investments address each of these issues and clearly underline the value of our acquisition strategy.

"At the same time, consolidation in our industry has further reduced the number of competitors, further sharpening our profile as an innovative telecommunications supplier with a unique blend of innovation and customer focus.

"All this creates new growth opportunities, that we will capitalize on."

Digitization is transforming networks, bringing the investment focus to us

# Who we are

Global provider of open networking solutions

## Our technology

### Cloud interconnect

- Open optical networking (WDM)
- 65% of revenue



### Cloud access

- Carrier Ethernet and NFV
- 30% of revenue



### Network synchronization

- Precision timing
- 5% of revenue



## Our customers

### Private enterprises

- 30 of top 50 banks (revenue)
- 25% of revenue

### Internet content providers

- 4 of top 5 global ICPs
- 10% of revenue

### Communication service providers

- 17 of top 25 global CSPs,
- 5 of top 6 global Ethernet service leaders
- 65% of revenue

## Our strengths

### Innovation power

- >900 engineers
- >230 granted patents, >50 pending

### Speed for customers

- Responsive team
- Customer-centric solutions

### Trusted partner

- >50% net promoter score
- Operational excellence

Digital transformation → networking dominated by data centers → ADVA's DNA

# Financial year 2018 at a glance

Revenues

**502m**

Revenues increased sequentially in all four quarters ...

Gross margin contribution  
**+11.2m**

... with overall margin improvements due to product innovation ...

Pro forma EBIT margin expansion  
**4.6%**

... and active cost management.

Net liquidity increase

**+30%**

Net liquidity increased significantly due to higher cash flow from operations.

Consolidation phase completed, improvement of margins and cash flow

# ADVA's 25 years history

Strong breadth and depth of customer base of thousands of enterprise and hundreds of carriers worldwide including many tier 1 carriers. Over 200 customers committed to ADVA's Ensemble network management platform

Agile, flexible, entrepreneurial and multi-national culture with spirit of innovation, hard work ethic and loyalty leading to low attrition and continuity in our strategy

Global leader in enterprise DCI and synchronization – a strong competitor in the ICP markets

Global leader in the Ethernet access device (EAD) market and when combined with Ensemble NFVi solutions the clear technology leader

Today

Going public and first product

Going global

Product expansion and strategic acquisitions

Global specialist for

- Open optical networking
- Edge cloud solutions
- Network synchronization

Network innovator – speed for customers – trusted partner

# ADVA fundamentals



## Background

- Headquartered in Munich, Germany
- More than 1,850 employees
- Over EUR 0.5 billion turnover



## Our vision

Virtualization and software are keys to differentiated solutions, but hardware will remain strategically important



## Our mission

Being your trusted partner for connecting, extending and assuring the cloud

Atlanta Richardson Neuchâtel York Meiningen Munich Gdynia

Haifa Shenzhen Singapore Melbourne

Innovation – speed for customers – trusted partner

# Our broad customer base

Hundreds of carriers, thousands of enterprises

## Industries

### Private enterprises

- Financial services institutions
- Research and education
- Healthcare, media, utilities



BCNET logo text



### Internet and cloud

- Internet content providers
- Carrier neutral providers



### Communication service providers

- Wireline operator
- Wireless operator
- Multiservice operator (cable)



## Business characteristics

- Limited project volume
- + Premium quality
- + Customer loyalty and trust

- Aggressive pricing
- Limited visibility and stickiness
- + Volume and growth potential

- Long sales cycle (RFPs)
- + Volume
- + Longevity (stickiness)

Diverse global customer base drives growth and profitability



# Industry context

Market growth drivers, technologies and products

# Digitization drives investment focus to the edge

## Digitization of all ecosystems

IoT  
Smart workspace  
Connected home  
Smart robots  
Autonomous driving  
Augmented reality  
Artificial intelligence

## Network transformation

5G  
Cloud & Network 3.0  
Disaggregation  
Machine learning  
White box solutions  
Open platform  
Automation  
Edge computing  
Virtualization

## ADVA open edge networking

Scalable bandwidth  
Instant service creation  
Precise synchronization

The market is coming to our sweet spot – the edge is, where ADVA performs best

# Our technology differentiation

## ADVA open edge networking



### Open tera-scale networking

Bandwidth

- Disaggregated optical architecture
- Highest level of security and automation
- Unparalleled data center expertise

### Empowering the network edge

Service creation

- Leader in secure, zero-touch service delivery solutions
- Proven and scalable NFVi architecture
- Seamless transition to virtual service delivery

### Synchronization at scale

Precision

- Most comprehensive network synchronization portfolio
- Best accuracy and assurance
- Key enabler for 5G and many other ecosystems

We innovate from the edge on in – customer focus, profound application know how

# Product portfolio overview

## Cloud access

Carrier Ethernet access and network functions virtualization (NFV) solutions that enable communication service providers to deliver software-defined, differentiated and performance-assured wholesale, mobile backhaul and business services;



TAM (billion USD) 1.3

CAGR (5 year) 18%

Estimated 2018 market size and 5yr CAGR for access switching & routing;  
Source: Ovum, "service provider switching and routing forecast 2018-2023", published August 2018

## Network synchronization

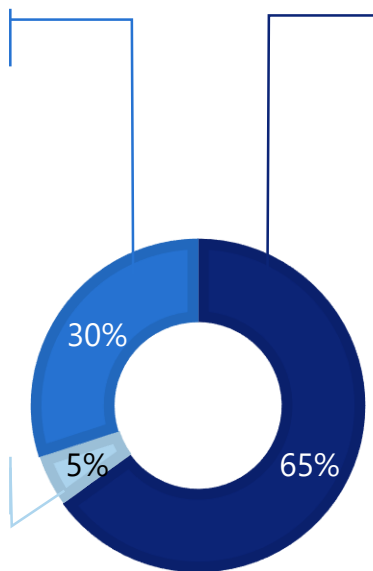
Primary reference sources (atomic clocks) and distribution solutions to deliver accurate and scalable time and frequency synchronization for mobile network infrastructure, utilities, financial services, distributed data bases and meteorology;



TAM (billion USD) 0.3

CAGR (5 year) 5%

Estimated 2018 market size and 5yr CAGR – ADVA internal estimates



Approximate revenue contribution rolling four quarters

## Cloud interconnect

Open optical networking solutions based on wavelength division multiplexing (WDM) technology to deliver scalable bandwidth for access, metro and long-haul networks; high levels of open interworking, programmability and ease-of-use;



	Carrier	ICP	Enterprise
TAM (billion USD)	11.6	1.0	0.3
CAGR (5 year)	4%	17%	4%

Estimated 2018 market size for access, metro and long haul WDM;  
Source: Ovum, "optical networks forecast 2018-2023" published January 2019;  
5yr CAGR for access (15.7%), metro (7.2%) and long haul 3.2%) WDM – and DCI  
Forecast 2017-2022 published Feb 2018



# Portfolio growth opportunities

## Cloud access

- Accelerate revenue contribution from edge cloud solutions and win new designs for NFV-based service delivery



*Packet edge with NFV*

## Network synchronization

- Use technology leadership to expand into other verticals



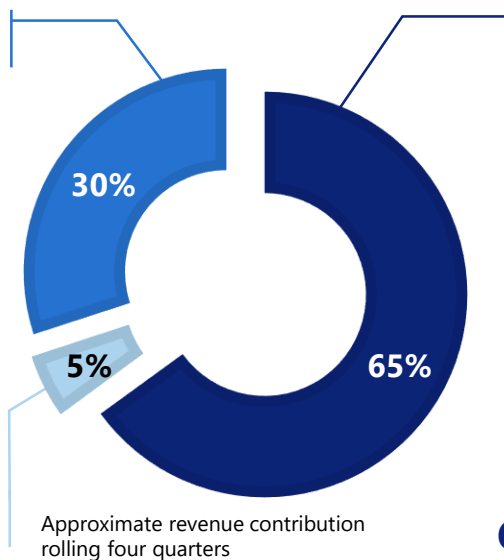
**OSCILLOQUARTZ**  
An ADVA Optical Networking Company

## Cloud interconnect

- Aggressively pursue more DCI opportunities with new Teraflex™ terminal and open line system
- Leverage our 32G FibreChannel first-mover advantage



*Open optical transport*



Approximate revenue contribution rolling four quarters

## Cross portfolio


- Win new footprint for flexible, programmable 5G infrastructure leveraging optical, packet edge and synchronization

Technology tripod matured, enabling us to grow high single digits 2019

# ADVA portfolio drivers summarized



Approximate  
revenue  
contribution

	Private enterprises	Internet content provider	Communication service provider
Cloud interconnect (Open optical transport - WDM)	Business continuity and disaster recovery	(Hyperscale) DCI	Metro and edge upgrade for IoT, 5G and cloud services (capacity, latency, timing, security and automation)
Cloud access (Carrier Ethernet and NFV)	Secure cloud access and SD-WAN	Edge cloud	Zero-touch service delivery and assurance
Network synchronization  	MiFID II financial time stamping	Global database synchronization	Next-gen mobile (LTE-A and 5G)

ADVA technology tripod – increasing number of cross-selling opportunities



# Differentiators

## Competitive landscape

# Networking industry – our ecosystem



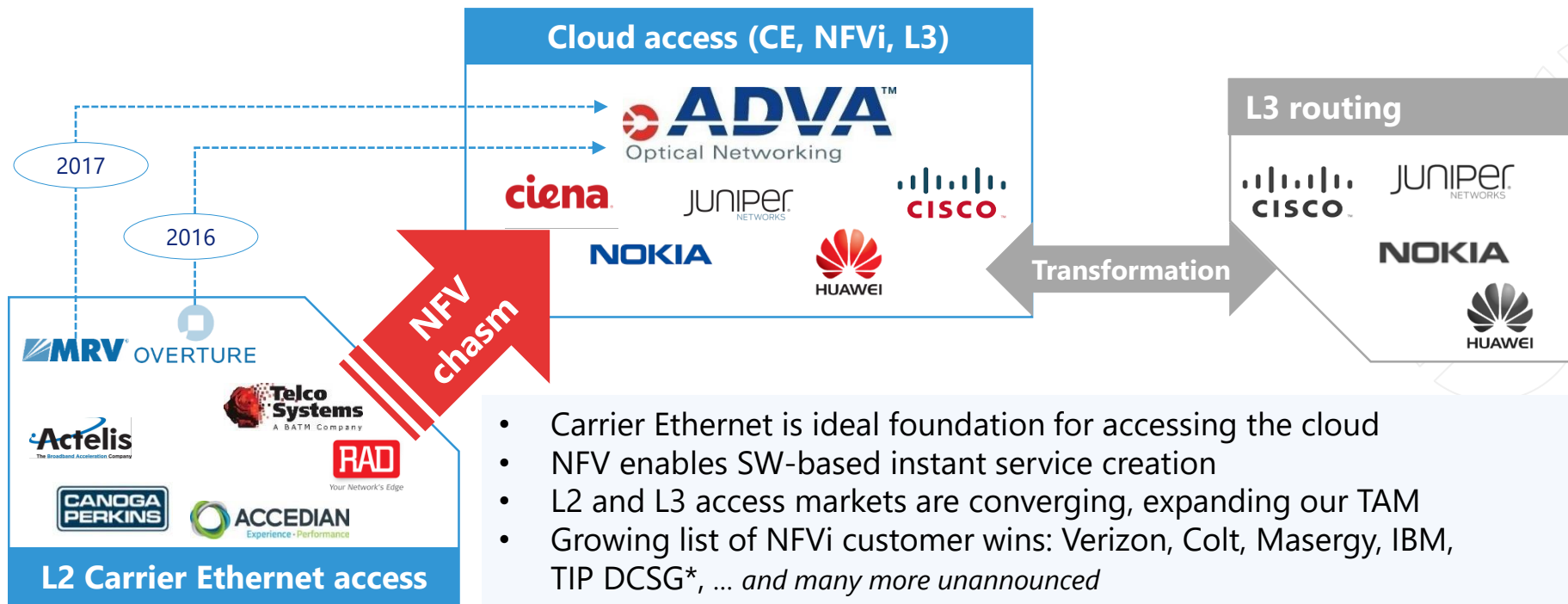
Industry leading on time-to-market, time-to-quality and time-to-cost

# Cloud interconnect: Vendor consolidation



Small players disappear – large corporations lack focus and seek better profitability

# Cloud access: Convergence at the network edge



\*Telecom Infra Project, disaggregated cell site gateway

Layer 2 and Layer 3 access converging – NFV is disrupting the market

# Why we win – the ADVA brand promise

Innovation leadership

Speed for customers

Trusted partner



## Open networking solutions

- Differentiated technology
- Network-level applications
- Market-leading scalability and efficiency

## Operational excellence

- High quality
- Short lead times
- Award-winning sustainability focus

## Ease of doing business

- Technology and VAR ecosystems
- Broad and deep application expertise
- Financial stability, solid balance sheet

*Award-winning factory in Meiningen, Germany*

Enabling our customers to capitalize on cloud and mobility

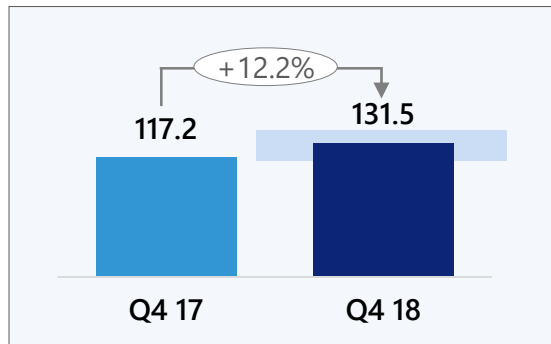


# Financials

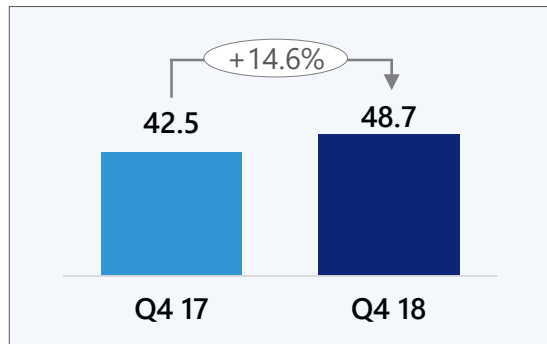
## Overview

# Q4 2018 in review

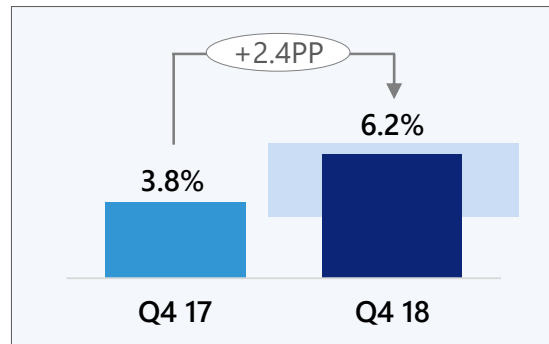
Revenues (m€)



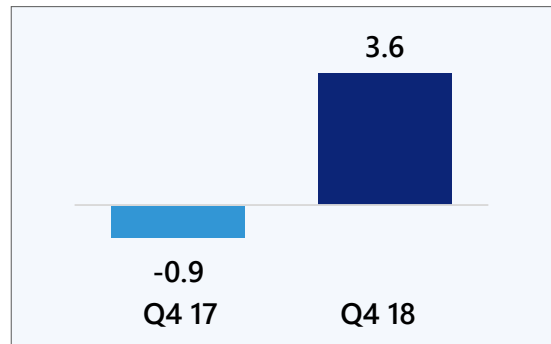
Gross profit (m€)



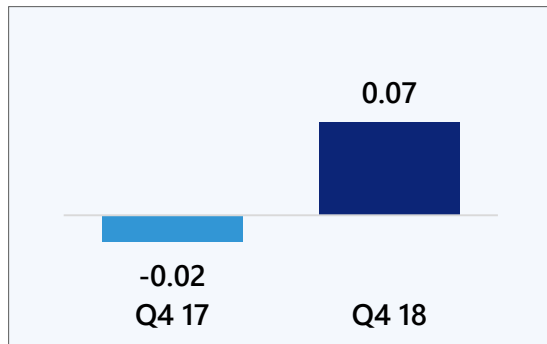
Pro forma operating income (%)



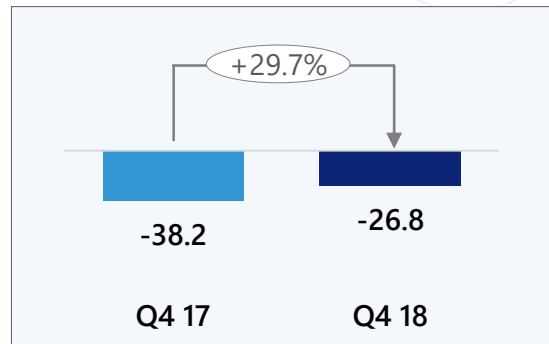
Net income (m€)



Diluted EPS (€)



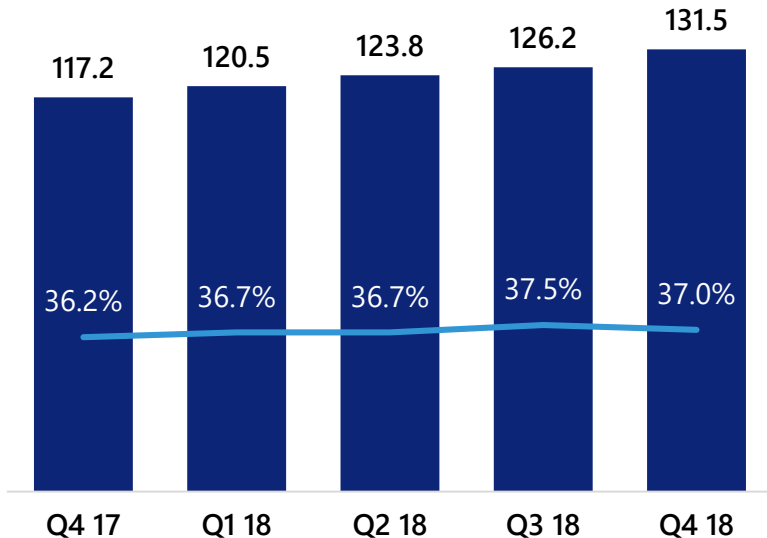
Net debt (-) / Net liquidity (+) (m€)



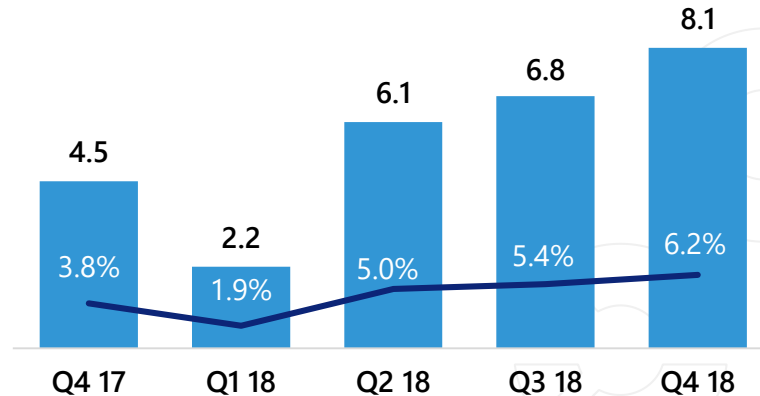
# Quarterly IFRS revenue and pro forma profitability

## Revenue & gross margin

(in millions of EUR, in % of revenues)



## Pro forma operating income & margin

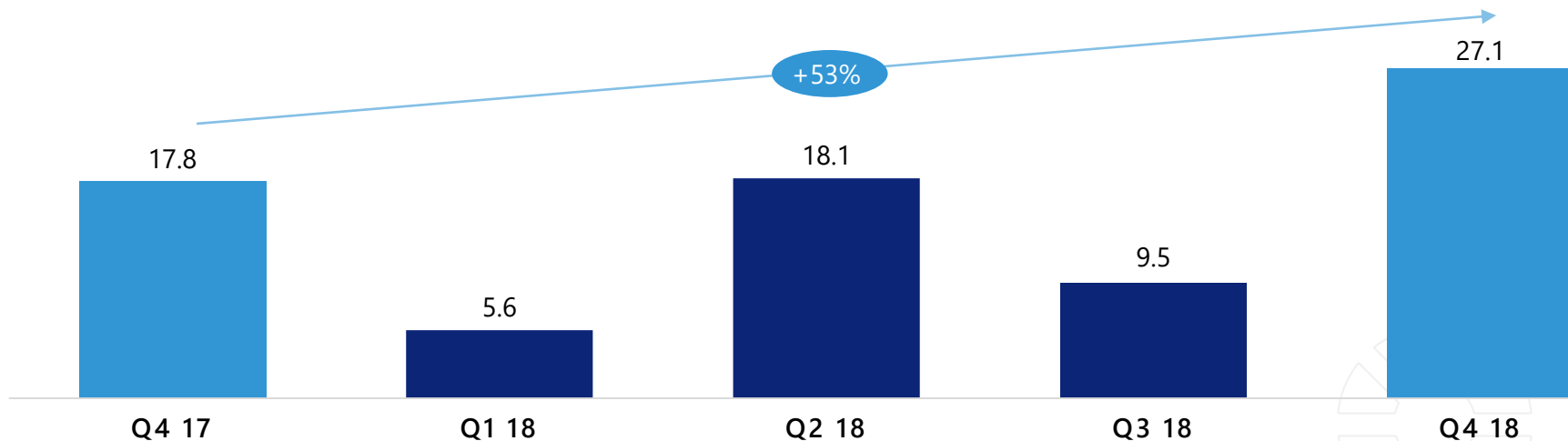


\* Pro forma operating income is calculated prior to non-cash charges related to the stock compensation programs and amortization and impairment of goodwill and acquisition-related intangible assets. Additionally, non-recurring expenses related to restructuring measures are not included.

Five quarters of sequential growth – improving profitability throughout 2018

# Seasonality of operating cash flow

(In millions of EUR)

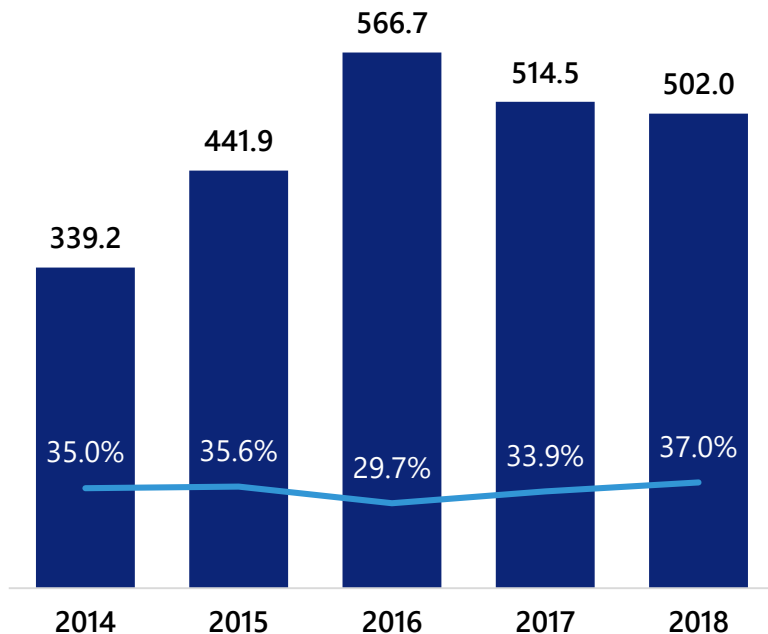


Operating cash flow significantly increased by 53% year-over-year

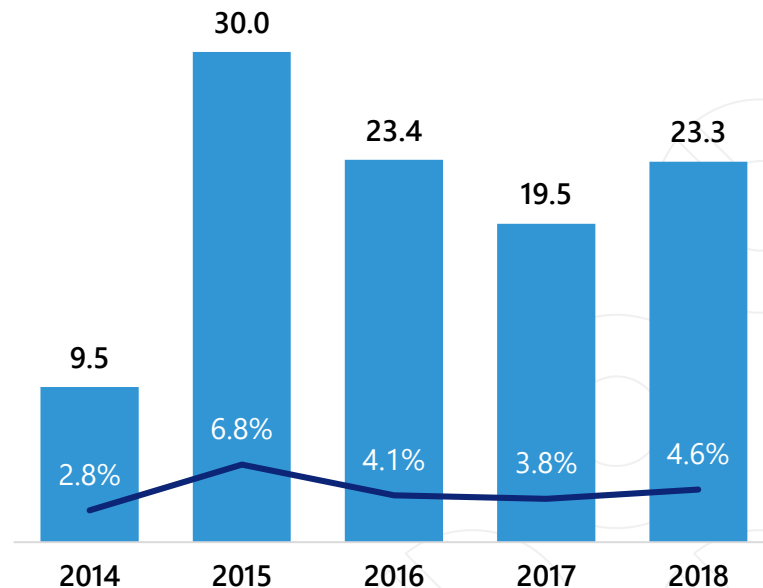
# Annual IFRS revenue and pro forma profitability

(in millions of EUR, in % of revenues)

## Revenue & pro forma gross margin

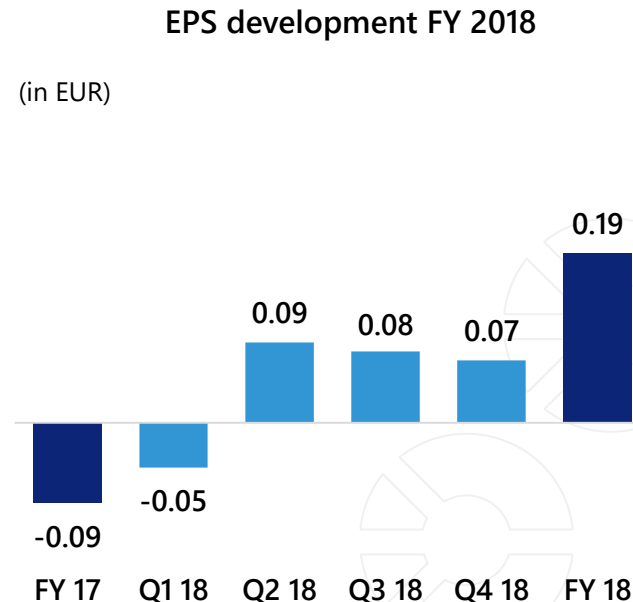
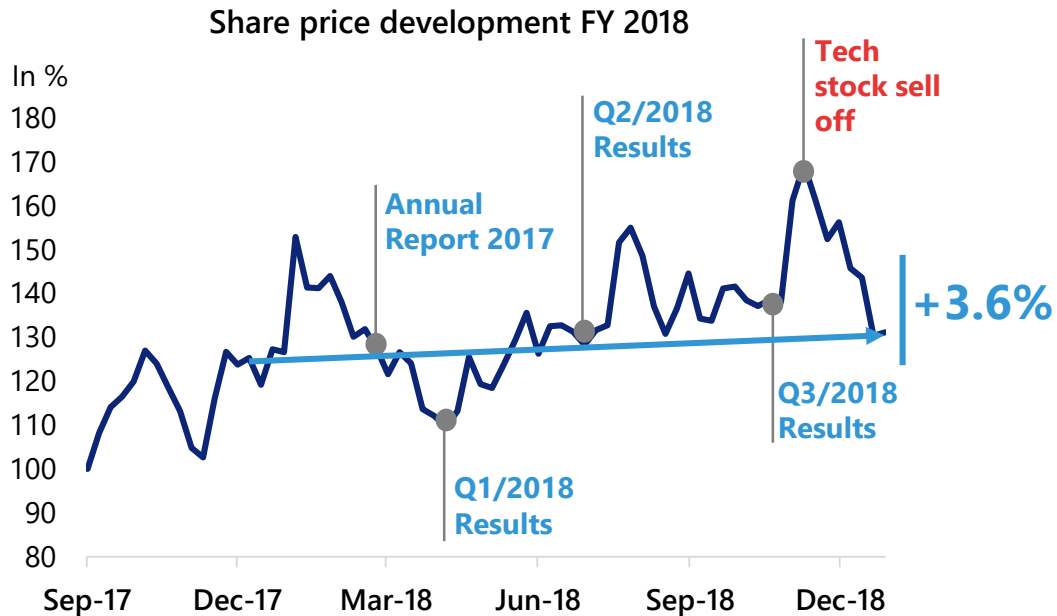


## Pro forma operating income & margin



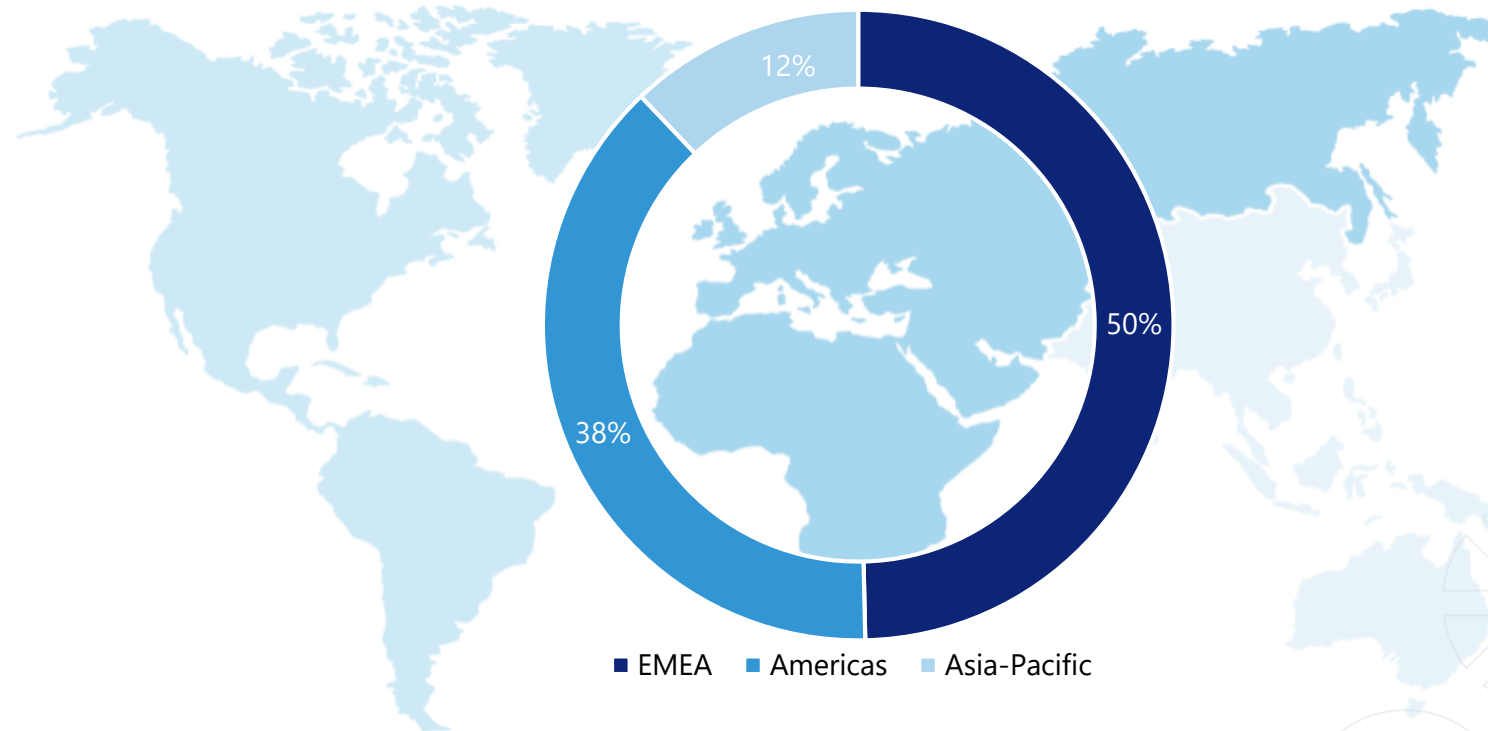
\* Pro forma operating income is calculated prior to non-cash charges related to the stock compensation programs and amortization and impairment of goodwill and acquisition-related intangible assets. Additionally, non-recurring expenses related to restructuring measures are not included.

# Share price and EPS development



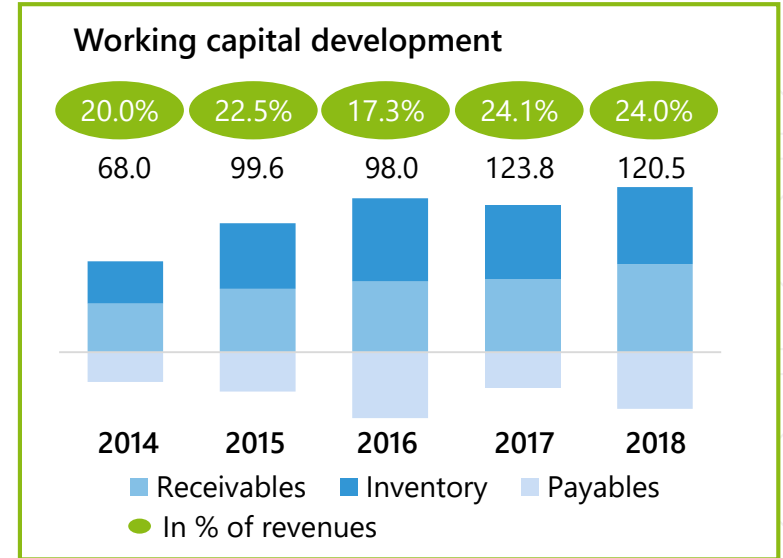
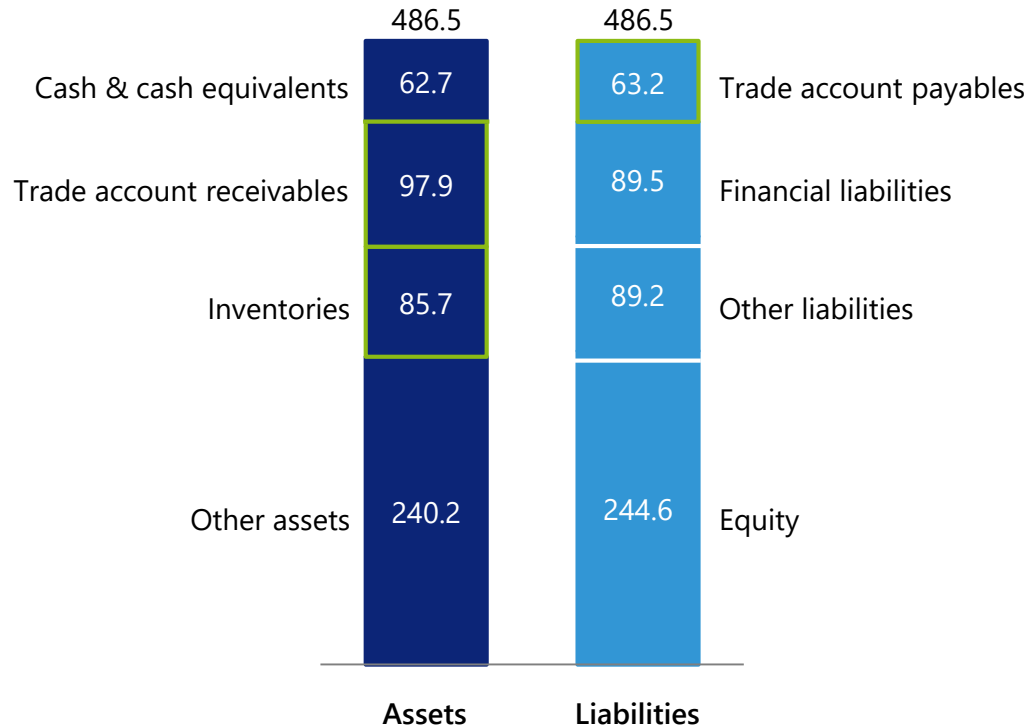
Turning point after Q1 results – ADVA started to deliver shareholder value again

# Annual revenues per region



Customer expansion in APAC – strength in Central Europe

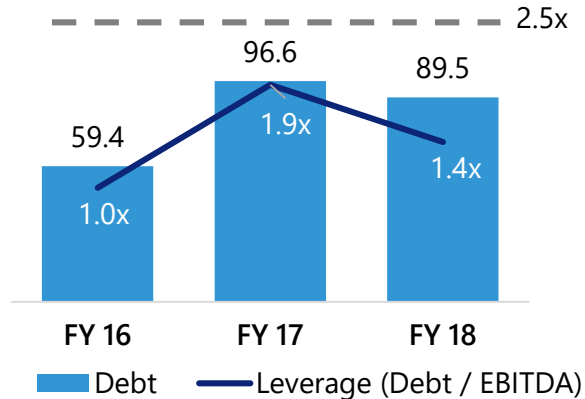
# IFRS balance sheet



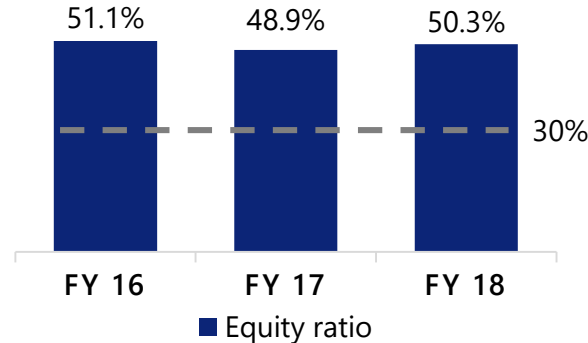
\* Leverage is calculated as total financial liabilities divided by EBITDA. EBITDA is calculated as pro forma operating income plus depreciation and amortization of non-current assets.

# Financial policy – investment grade rating

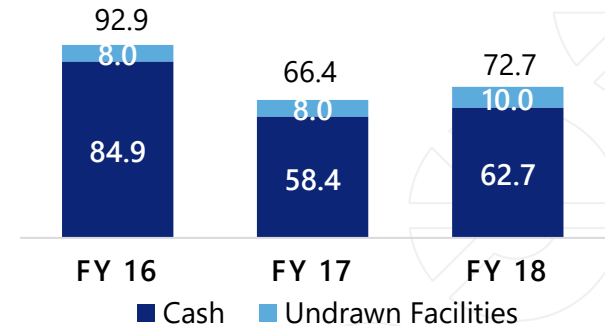
Leverage development (Debt / EBITDA)



Equity ratio



Available liquidity

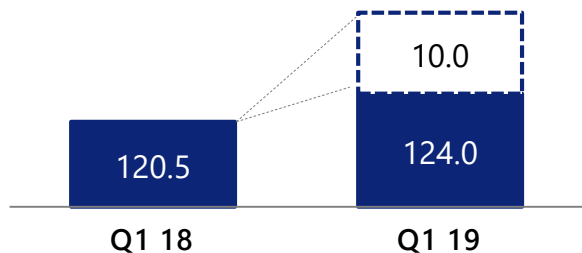


## Comments

- Conservative financial policy targets a Debt / EBITDA leverage ratio of max. 2.5x
- Low current leverage level of 1.4x albeit recent long-term refinancing of MRV acquisition
- Balanced repayment profile and future profit generation will lead to a strengthened balance sheet
- High equity ratio of c. 50% significant above target of 30%

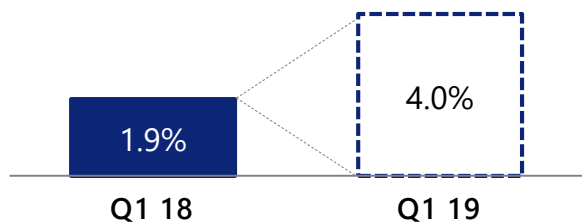
# Guidance Q1 2019 and outlook FY 19

Revenues between EUR 124 million and EUR 134 million



FY 19

Pro forma operating margin between 0% and 4% of revenues



FY 19

## Summary

- Investment focus is moving to the network edge, where ADVA performs best
- Our three core competencies are strategically relevant for the transformation of network gaining momentum in multiple accounts
- Packet edge and synchronization growing nicely, with NFV starting to contribute significant revenues
- FSP 3000 TeraFlex™ terminal has the potential to change DCI market momentum in our favor
- Industry consolidation and regionalization sharpen our profile as innovator and trusted partner

ADVA Optical Networking will continue to perform detailed quarterly reviews of the expected business development in respect of all intangible assets, including capitalized research and development expenses; in case of highly adverse business prospects, these reviews may result in non-cash impairment charges.



# Growth

Catalysts and strategy

# Growth strategy 2018 (recap)

## 2018



**Focus:** Return to quarterly growth and increase profitability

### Tactics:

- Protect MRV customer base and drive cross-selling initiatives; extend customer base for cloud access solutions
- Leverage metro core upgrade cycle to drive additional optical revenue
- Utilize technology leadership in synchronization to further improve overall corporate gross margin

## 2019

On track for  
2019 ++

**Focus:** Leverage expanded solution portfolio to increase market share and reaccelerate growth

### Tactics:

- Aggressively pursue more DCI opportunities with new Teraflex terminal and open line system
- Win new footprint for flexible, programmable 5G infrastructure leveraging optical, packet edge and synchronization
- Accelerate revenue contribution from Ensemble and win new designs for NFV-based service delivery

## 2020 and beyond

**Focus:** Capitalize on the transition to virtualized service delivery and 5G

### Tactics:

- Harness Ensemble software architecture and increase software revenue contribution to >10%
- Dominate market for network synchronization systems
- Continue to pursue tuck-in acquisitions or consolidate with and expand into a larger entity

We accomplished our 2018 goals and continue to execute against our plan

# Growth strategy

## 2019

**Focus:** Leverage expanded solution portfolio to increase market share and reaccelerate growth

---

**Tactics:**

- Aggressively pursue more DCI opportunities with new Teraflex terminal and open line system
- Win new footprint for flexible, programmable 5G infrastructure leveraging optical, packet edge and synchronization
- Accelerate revenue contribution from Ensemble and win new designs for NFV-based service delivery

## 2020

**Focus:** Capitalize on the transition to virtualized service delivery and 5G

---

**Tactics:**

- Harness Ensemble software architecture and increase software revenue contribution to >10%
- Dominate market for network synchronization systems
- Continue to pursue tuck-in acquisitions or consolidate with and expand into a larger entity

## 2021 and beyond

**Focus:** Further balance the ADVA technology tripod

---

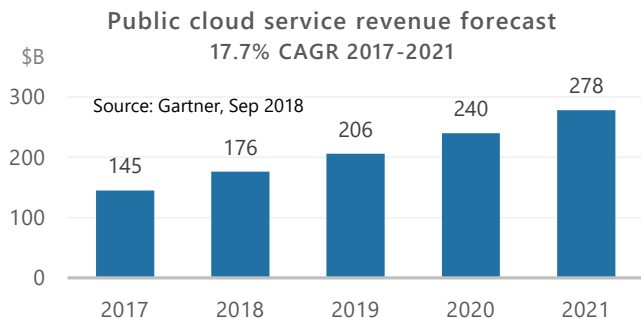
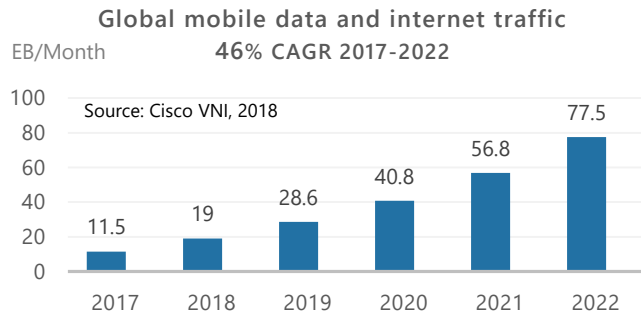
**Tactics:**

- Expand into new verticals with synchronization
- Expand into enterprise IT with edge cloud solutions

ADVA technology tripod: strategic building blocks for network transformation

# Growth catalysts

## Industry mega trends



## ADVA

- Digitization drives network transformation;
- Investment focus moves to the edge, where ADVA is well positioned with multiple ways to win:
  - Interconnect – scalable bandwidth on open platform
  - Access – rapid service delivery on packet edge with NFV
  - Synchronization – precision timing, increasing relevance in ever more applications, success winning Tier 1 footprint
- More customers, better revenue diversification, and broader solutions portfolio
- Industry consolidation and regionalization lead to sharper profile as innovator and trusted partner

Investment focus coming to ADVA's sweet spot – increasingly differentiated profile



# Appendix

# Our partners

## Technology partners



Research alliances    Security and encryption    Data center and storage    Ethernet and IP    NMS and assurance

## Ensemble harmony ecosystem



## Partner ecosphere members

### Featured elite partners



### Featured select partners



and many more Connect and Connect+ partners

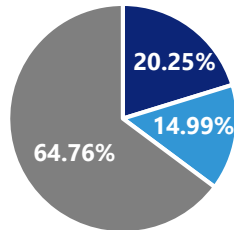
# Investor relations overview

## Recent investor activities

Conferences: Needham Networking & Security Conference New York/ November  
 UBS Global Technology Conference, San Francisco/Nov.  
 Deutsches Eigenkapitalforum 2018 in Frankfurt/November  
 Cowen Network & Cybersecurity Summit in New York/Dec.  
 2019 Needham Growth Conference in New York/January  
 ODDO BHF FORUM 2019 in Lyon/January

## Shareholder structure

Status: December 31, 2018: 49,930,955 shares outstanding



■ Teleios Capital Partners  
 ■ EGORA Group  
 ■ Free float

### Top Investors\*

Int. Kapitalanlagegesellschaft	4.9%
Morgan Stanley	3.3%
Dimensional Fund	3.1%
DNB Asset	3.0%
Blackwell Partners (US)	3.0%
Norges Bank	2.8%
Goldman Sachs Group	2.0%

\*Sources: Insight Nasdaq, Oddo Seydler, ADVA

## Planned investor activities

Conferences: Investor meetings at Mobile Worlds Congress in Barcelona/Feb.  
 Investor meetings at OFC in San Diego, March  
 Roadshow in London/March

## Financial analyst coverage

As of February 20, 2019 Institution	Recommendation/ Price Target	Update	Previous Target
Deutsche Bank	Hold (€6.80)	Feb 04, 19	(€5.20)
Hauck & Aufhäuser	Hold (€8.40)	Jan 31, 19	(€8.20)
LBBW	Buy (€8.00)	Oct 26, 18	(€8.00)
Northland Capital Markets	Outperform (€9.00)	Oct 29, 18	(€9.00)
Oddo Seydler Bank	Neutral (€6.30)	Oct 30, 18	(€6.30)
Ø	€7.70		



# Thank you

[Investor-relations@advaoptical.com](mailto:Investor-relations@advaoptical.com)



#### IMPORTANT NOTICE

The content of this presentation is strictly confidential. ADVA Optical Networking is the exclusive owner or licensee of the content, material, and information in this presentation. Any reproduction, publication or reprint, in whole or in part, is strictly prohibited.

The information in this presentation may not be accurate, complete or up to date, and is provided without warranties or representations of any kind, either express or implied. ADVA Optical Networking shall not be responsible for and disclaims any liability for any loss or damages, including without limitation, direct, indirect, incidental, consequential and special damages, alleged to have been caused by or in connection with using and/or relying on the information contained in this presentation.

Copyright © for the entire content of this presentation: ADVA Optical Networking.

