Giesecke+Devrient

Creating Confidence

Annual Report 2018

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We make the lives of billions of people more secure

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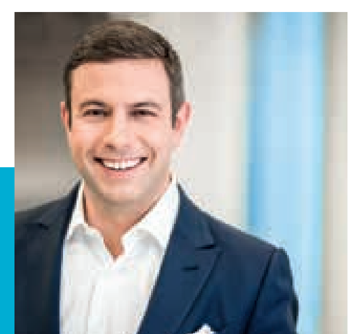

Secure banknotes for Egypt – and a lesson in patience for Marc-Julian

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Photos with this symbol were taken by our employees.

Creating Confidence

Economy 4.0, digitalization, the Internet of Things, automation, cyber security – rapid change typifies today's world. Innovation is enriching our lives and technology continues to drive improvements. Giesecke+Devrient is actively involved in shaping all of these trends – and continuously reinventing itself in the process. Founded more than 165 years ago in Germany as a specialist printer for banknotes and securities, the family-owned company has evolved into an international technology group. Around 11,400 employees across 32 countries are constantly working to make the lives of billions of people more secure. We partner with our customers to guarantee reliable cash and digital payments. We safeguard the digital connectivity of people and machines over the Internet. We protect personal identities and cross-border traffic. And we defend national governments, public authorities, and critical infrastructures against data misuse. Our Group CEO, Ralf Wintergerst, outlines our strategic overview and plans for the future from page 2.

Faced with an accelerating pace of innovation in our markets, we are responding in two ways. Firstly, we supply our customers and end users with pioneering technological solutions. Secondly, we are continuously optimizing our own organization to ensure we remain a trusted partner to our customers and an attractive employer for our staff. This 2018 annual report focuses on four employees who are representative of their colleagues. Riwaj Sapkota from G+D Mobile Security is leveraging eSIM management to enable millions of devices and machines to communicate with each other securely via the Internet of Things. Leonie Bruckert from our listed subsidiary secunet AG is a cryptography specialist, who is working to ensure our IT security remains effective even in the approaching era of quantum computers. Fabiola Bellersheim from Veridos, our joint venture with Bundesdruckerei, is providing Bangladesh with one of the most sophisticated and secure e-passport and border control systems anywhere in the world. Finally, Marc-Julian Siewert from G+D Currency Technology is building one of the world's most advanced, highly automated security printing facilities in Egypt.

Together with the entire G+D team, these four individuals are really making a difference in the world. You can read about what motivates them personally and what they value in G+D as an employer on pages 10, 14, 18, and 22. This year, we are expanding the scope of the information we provide as G+D becomes more digital in line with market and customer trends. This means our annual report is becoming more digital too. Our corporate website at www.gi-de.com contains the entire annual report, plus additional content relating to the four employees mentioned above – including interviews, video reports, and selfies. We hope you enjoy reading this report and viewing our website. Thank you for your interest.

Some sections of this annual report are available with additional content in the online version. In particular, this includes the stories and videos from our business sectors, in which four members of staff recount their exciting experiences for the first time.

Discover the digital annual report at:
www.gi-de-report.com

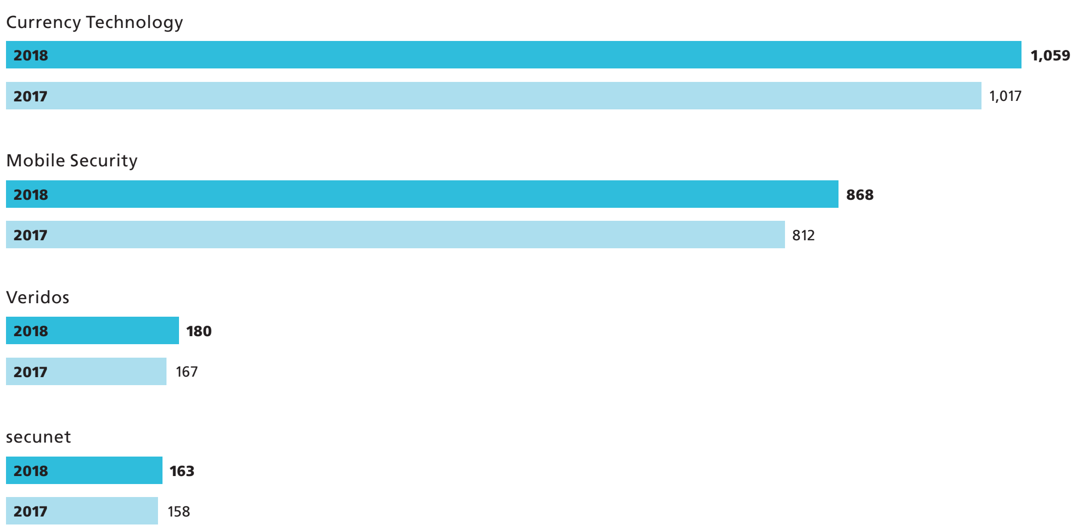
Giesecke+Devrient at a Glance

Giesecke+Devrient Group

EUR million	2018	2017	Change
Sales	2,246.0	2,136.4	5.1 %
Capital expenditure	108.0	94.9	13.8 %
Research and development	113.3	125.7	−9.9 %
EBITDA (adjusted)	222.1	234.4	−5.2 %
EBIT (adjusted)	119.5	129.8	−7.9 %
Net income	50.2	67.0	−25.1 %
Employees as of December 31	11,389	11,600	−1.8 %

Sales by Subgroup

EUR million



Company Structure

Giesecke+Devrient

Munich
Head office

11,389
Number of employees

2,246
Sales in EUR million

G+D Currency Technology

Head office
Munich

Core expertise
Solutions for the entire banknote lifecycle

G+D Mobile Security

Head office
Munich

Core expertise
Solutions for secure and convenient digital mobility

Veridos

60 %

Head office
Berlin

Core expertise
Solutions for identity management and verification

secunet

79.43 %

Head office
Essen

Core expertise
Solutions for reliable, high-quality IT security

Ralf Wintergerst
Group CEO, Giesecke+Devrient

We make the lives of billions of people more secure

Ralf Wintergerst is Group CEO of Giesecke+Devrient (G+D). With sales of EUR 2.3 billion and around 11,400 employees across 32 countries, G+D is an international leader in the fields of payment, connectivity, identity, and digital security. In the following interview, Wintergerst talks about innovation, what G+D's business sectors all have in common, and why he sometimes asks his employees for money.

Mr. Wintergerst, in our agile and fast-paced world, nothing is more exciting than the future, but let's first take a look back at the past 12 months. Are you satisfied with how things went at Giesecke+Devrient in the last fiscal year?
Yes, I am. G+D performed well against a backdrop of volatile markets and political uncertainty worldwide and had a successful year overall. Planning such an outcome is a challenge because in today's world the unexpected – and sometimes even the irrational – is increasingly becoming the norm. For companies, success therefore depends on setting the right priorities and responding quickly to changing circumstances. We were pretty good at doing that in 2018.

Do the figures reflect that?
G+D remains on a growth trajectory, as our results show. We achieved sales of around EUR 2.3 billion in fiscal 2018; 5 percent more than in the previous year. Encouragingly, all our business sectors once again contributed towards this growth and are earning a profit. But there's another key figure that is even more relevant for our future. Our books show an order backlog of some EUR 1.7 billion – 50 percent more than this time last year. That's also an all-time record in the company's history. High order growth across our portfolio in the fields of payment, connectivity, identity, and digital security underscores customer confidence in G+D's ability to deliver.

What's the reason for that?
It has a lot to do with the commitment of our employees and how they leverage their experience, motivation, and skills for the benefit of our customers. Optimism, agility, and curiosity about the future are not restricted to startups and tech companies. That spirit is also alive and well across many areas of G+D. In addition, our customers trust our security technologies and solutions. That only happens if you really know and understand your customers and their needs.

Watch the full video interview here: www.gi-de-report.com/RW

»Optimism and curiosity about the future are not restricted to startups. That spirit is also alive and well across many areas of G+D.«

What were G+D's specific achievements in 2018?
Several of our business sectors received the largest single contracts in their history. Currency Technology, for example, is building a security complex for the production, storage, inspection, and circulation of cash in Egypt. Mobile Security signed a major order with French bank Crédit Agricole to develop, produce, and distribute personalized payment cards. Meanwhile, our Veridos joint venture won a contract to provide Bangladesh with highly secure electronic passports and border control systems. secunet Security Networks also continues to rack up successes and made important progress on a major project by launching its e-connector, which gives medical practices swift and secure access to a telematics infrastructure.

2.3 billion euros
sales 2018

From solutions to product business; from technologies for identification and the cash cycle to safeguarding digital connections – G+D's sphere of activity is huge. What holds it all together?
All of these areas are driven by technology, with security being the common denominator. That's a key theme of our time, but by no means just a recent invention. Our technologies and solutions make the lives of billions of people more secure on a daily basis, even if most of them don't realize it as they go about their everyday business. We're a global leader in cash and electronic payments; we enable secure connection of smartphones, tablets, and cars in mobile networks; we protect personal identities, cross-border traffic, countries, public authorities, and critical infrastructures against misuse of data.

What does a company need to do to stay ahead in these technology-driven markets?
For us, it comes down to three things. Firstly, the focus on our four core areas of secure payment, secure connections, identity, and protecting digital infrastructures. Secondly, combining technologies, products, and services is extremely important for our customers. Nowadays, success is more about being able to offer the right combination or package rather than individual products or services. We need to identify and develop this kind of winning formula. Thirdly, it's important for us to focus on how we work together, both within the company and with our customers. In everything we do, we strive to be reliable, collaborative, and innovative.

There are few fields in which the pressure to be at the cutting edge is as high as in the sensitive arena of security. How exactly do you go about creating innovation?
First of all, we rely on traditional research and development, which is undertaken at a highly specialized level within the individual business sectors. That's a central pillar of our innovation activities and will remain so in the future. Secondly, we are always looking for strategic acquisitions around our core business that complement or expand our portfolio. The third pillar of our innovation process is new: As a company, we are now actively engaged in the venture market and have begun investing in startups with promising technologies that align well with our business. We started last year by acquiring minority stakes in identity platform Verimi and in IDNow, a provider of online identification solutions. And, for the first time in G+D's history, we are now able to support corporate spin-offs via our newly formed investment company, G+D Ventures.

How do these spin-offs come about?
When promising ideas emerge from within our own organization that aren't a perfect fit with any of our four core areas. Employees can become part-owners of the newly formed spin-off company and put their own money into it. We did this successfully for the first time at the end of 2018 with Build38, a company specializing in software and app security.

What can we expect from G+D in the year ahead?
Our order backlog for 2019 is very promising and will continue to have an impact in the coming years due to the long-term nature of the orders. We are also keeping an eye on two other things. Firstly, the performance of the global economy, where the outlook is rather uncertain at present. And secondly, qualitative development of the portfolio for our markets and customers. I believe it's much more important to make progress on that front than to focus solely on sales figures. This approach proved very successful last year and we will continue to pursue it in 2019. Our strategic orientation towards more solution-focused and digital business models plays a vital role here. This also means that the culture at G+D is evolving: We now employ more IT people than ever before, and we have specialists in nanotechnology, cyber security, biometrics, automation, and digital transformation on our team. Artificial intelligence and post-quantum cryptography are also significant fields for G+D. We can and will use this expertise to drive the business forward.

Management

Dr. Rainer Baumgart
CEO, secunet Security Networks

Dr. Rainer Baumgart has been Chairman of the Management Board of secunet Security Networks AG since 2001. With its powerful products and advanced IT security solutions, secunet is a leading German provider of high-end IT security.

Dr. Wolfram Seidemann
CEO, G+D Currency Technology

Dr. Wolfram Seidemann has been CEO of Giesecke+Devrient Currency Technology since 2016. G+D Currency Technology is the market leader for solutions and services relating to banknotes and banknote processing systems. As a partner to central banks and the currency industry, G+D Currency Technology delivers comprehensive expertise and innovative technologies that increase the efficiency of the cash cycle.

Dr. Peter Zattler
Group CFO, Giesecke+Devrient

Dr. Peter Zattler has been a member of the Giesecke+Devrient Management Board since 2001. As Chief Financial Officer, he oversees Controlling, Treasury, Accounting, and Tax. He is also responsible for Data Protection and Human Resources.

Ralf Wintergerst
Group CEO, Giesecke+Devrient

Ralf Wintergerst has been Chairman of the Management Board of Giesecke+Devrient since 2016. He is responsible for overseeing various central services, comprising Information Systems, Corporate Security, Compliance Management and Auditing, Mergers & Acquisitions, Corporate Communications, Corporate Strategy and Development, Legal, and Corporate Governance. In addition to his role at G+D, Ralf Wintergerst is Chairman of the Supervisory Board of secunet.

Carsten Ahrens
CEO, G+D Mobile Security

Carsten Ahrens has been CEO of Giesecke+Devrient Mobile Security since 2017. G+D Mobile Security is a leading global provider of solutions for electronic and mobile payment and for connectivity, both of mobile applications and within the Internet of Things. It delivers products, solutions, and services that help its customers implement their digital transformation strategies reliably and securely.

Hans Wolfgang Kunz
CEO, Veridos

Hans Wolfgang Kunz heads up Veridos GmbH, a joint venture between G+D and Bundesdruckerei. Veridos provides governments with customized end-to-end solutions for international ID, passport, and border control systems.

Supervisory Board Report

Prof. Klaus Josef Lutz
Chairman of the Supervisory Board

Ladies and Gentlemen:

During the 2018 fiscal year, the Supervisory Board of Giesecke+Devrient GmbH performed all its duties as stipulated by legal provisions and the Articles of Incorporation. The Supervisory Board duly monitored the Management Board and discussed issues of note with its members.

At meetings of the Supervisory Board, the Management Board provided regular, comprehensive information about the situation of the company and the Group as a whole. The Supervisory Board additionally received updates on G+D's performance and finances in the form of quarterly reports. Outside the scheduled meetings, the Chairman of the Supervisory Board was also in regular contact with the Management Board and was kept informed of current issues.

Based on detailed reports from the Management Board, the Supervisory Board held three scheduled meetings to review the company's economic situation, including major investment decisions and technology projects. The Supervisory Board also considered the risk report and the Group's risk management system at all of the meetings.

At the April meeting, the Supervisory Board considered the changes to corporate governance required by the new Group structure. This included the risk management system, compliance management system, internal control system, and internal auditing. The mission and establishment of the new Giesecke+Devrient Ventures GmbH were also discussed and the signing of a profit and loss transfer agreement between the new company and Giesecke+Devrient GmbH was approved.

At the July meeting, the Supervisory Board dealt with restructuring measures at the Currency Technology subgroup, various major projects at Veridos, and the promissory note loan taken out by Giesecke+Devrient GmbH. At this meeting, the Supervisory Board also approved the establishment of Giesecke+Devrient Immobilien Management GmbH and the profit and loss transfer agreement between this new company and Giesecke+Devrient GmbH.

At the December meeting, the Supervisory Board reviewed the operational plans for 2019.

The Supervisory Board duly received the annual financial statements and management report of Giesecke+Devrient GmbH for the period ending December 31, 2018, prepared in accordance with the German Commercial Code (HGB), and the consolidated financial statements and Group management report for the period ending December 31, 2018, prepared in accordance with IFRS, along with the auditor's report.

The annual and consolidated financial statements were examined by the auditor, KPMG AG, which issued an unqualified audit opinion.

The auditor attended the meeting of the Supervisory Board on April 9, 2019, at which the financial statements were discussed. In the course of this meeting, the auditor reported on the main findings of the audit, on the compliance management system for the Mobile Security and Veridos sectors, and on the internal control system in relation to the financial reporting process, as well as answering questions from the Supervisory Board. The Supervisory Board accepted KPMG AG's audit opinion on both sets of financial statements.

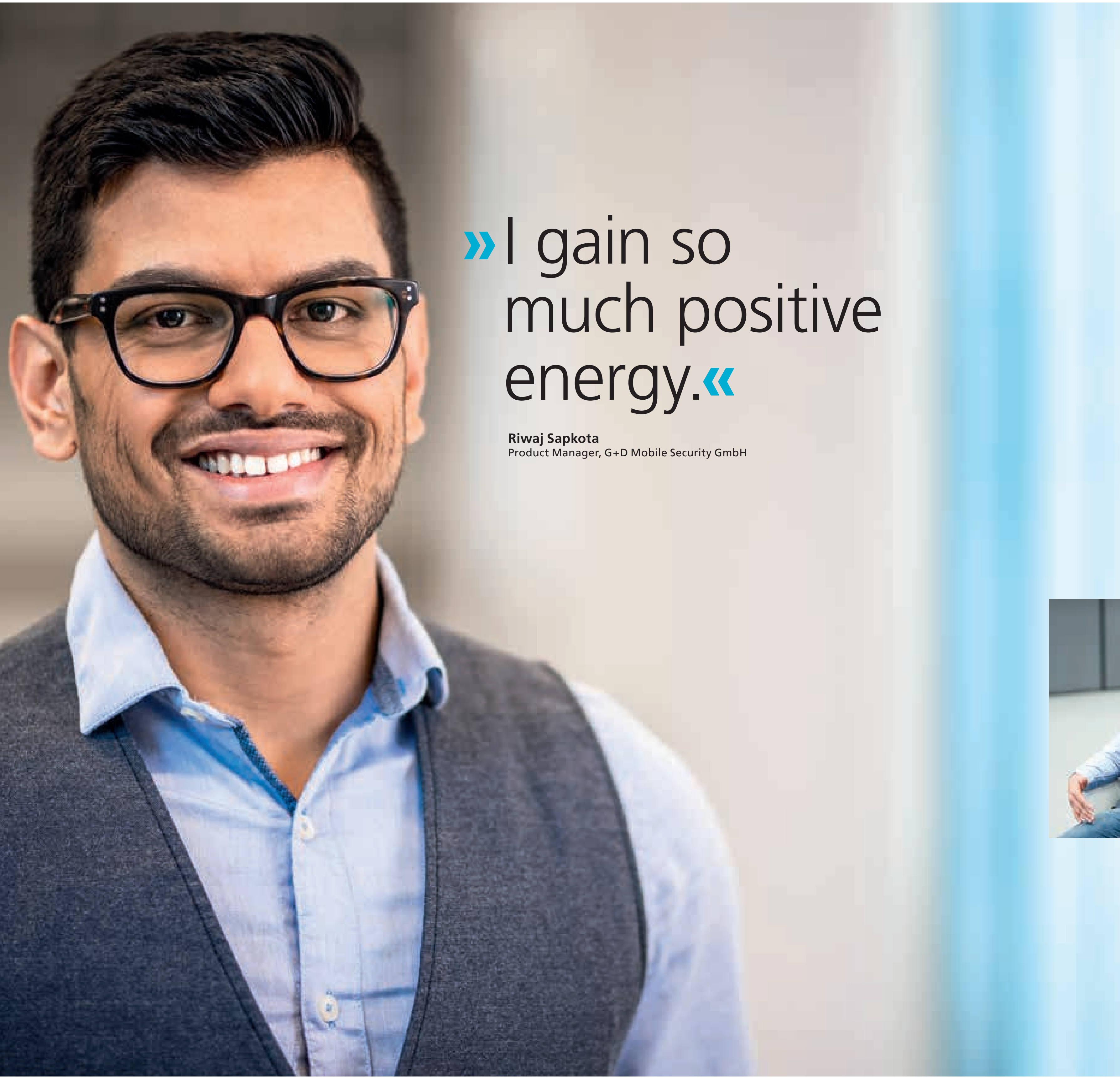
The Supervisory Board concluded its review with no objections raised. It approved the annual and consolidated financial statements, including the corresponding management reports, at its meeting on April 9, 2019.

Supervisory Board member Monika Wächter stepped down as of December 31, 2018, for health reasons. Ms. Wächter was replaced on the Supervisory Board by Petra Ammann.

The Supervisory Board would like to thank Ms. Wächter for her dedicated work as a Supervisory Board member over the years. The Supervisory Board also wishes to thank the Management Board, all employees, and the Works Councils of the G+D Group for their efforts and high degree of personal commitment during fiscal 2018.

Prof. Klaus Josef Lutz
Chairman of the Supervisory Board

Munich, April 2019



» I gain so much positive energy. «

Riwaj Sapkota
Product Manager, G+D Mobile Security GmbH

Securing the Internet of Things – all in a day's work for Riwaj

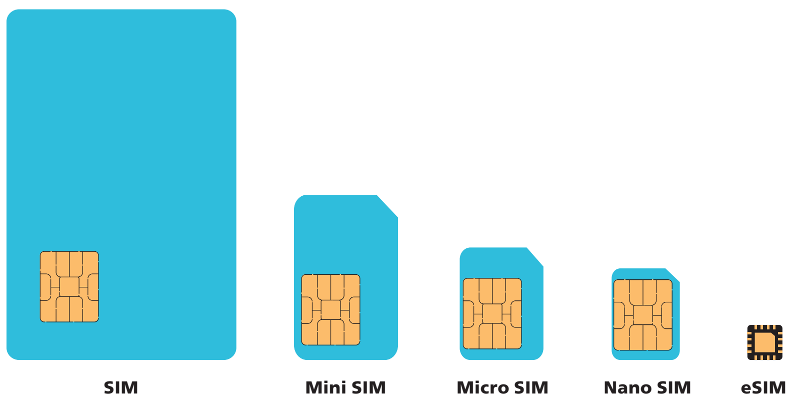
It's unlikely that Riwaj Sapkota has ever had time to be bored. Having studied in Nepal, Munich, and Berkeley (California), he is currently completing an MBA. He has worked for a number of years in Germany, where he has been with Giesecke+Devrient since 2014. After undergoing a trainee program with the company, he's now participating in a management training group in addition to his regular job. And he has accomplished all of this before the age of 35. The market in which Riwaj works is just as dynamic as the man himself. "We make the Internet of Things – which involves millions of devices and machines connecting to each other online – a little bit safer every day."

Watch the full video interview here: www.gi-de-report.com/RS

It looks harmless enough, up on the wall – a camera in a hotel lobby or the entrance to an apartment block somewhere in the world. It's there to protect visitors and residents and to give the building manager an overview of people entering and leaving the premises. You might think this sort of camera is not particularly significant in terms of technology. "Quite the opposite," counters Sapkota. The product manager at G+D Mobile Security connects the camera to the Internet and protects it against unauthorized viewers throughout its entire lifecycle. "That camera isn't just sitting there recording images on a hard drive in a back room. During the ten years or so of its service life, it regularly communicates via the Internet in order to download software updates, for example, or to save data in the cloud. Each time it does so, hackers could gain access and compromise the privacy of people in the building or its security arrangements."

28 billion devices online

This many devices, machines, cars, planes, and entire factories are expected to connect to each other in the near future via the Internet of Things. The benefits will become tangible for end users when cars automatically make emergency calls in the event of an accident, washing machines order replacement parts and arrange for a technician to visit, and fitness trackers can be used to pay for a snack after a run.



G+D launched the first commercial SIM card around 30 years ago. Today, our range comprises insertable and built-in SIMs in various sizes that work in different ways – and also includes SIM card management.

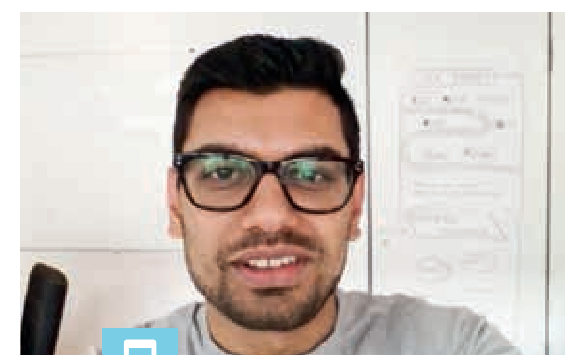
Sapkota is firmly committed to tackling this issue: "With our knowledge of connectivity and security, we can protect this camera and everything else in the Internet of Things throughout the entire lifecycle." And he certainly won't be short of work, as more and more devices and machines are connected over the Internet – from fitness trackers on our wrists through car-share vehicles at the roadside to major power stations on the outskirts of cities. How can all this technology be made digitally secure? "The key component here is the SIM card. It can be inserted in exactly the same way as the one inside your smartphone. Many devices, especially larger ones, now have a SIM card already built in, which is called an eSIM – where the 'e' stands for embedded." These eSIMs have become a kind of control hub for our modern, interconnected lives.

"We estimate that there will be the equivalent of 3.5 networked devices per person by 2021," reveals Sapkota, highlighting the scale of online connectivity in the future. This huge number of devices not only needs to be interconnected but also continuously identified, managed, and maintained – which requires eSIM management from the moment a device first logs on to the Internet through to its eventual decommissioning. "Anyone who is as fascinated by these things as I am should work at G+D. Some 30 years ago, when I was still a child in Nepal, G+D produced the first commercial SIM card. Today, we supply the global market with 700 million new SIM cards every year. In addition, we manage nearly three billion SIM cards across more than 80 countries." G+D has been involved in all major commercial eSIM projects to date and is the overall global market leader.

Riwaj prepares for a meeting.

And as if all that weren't enough, Sapkota is also making the most of every opportunity that comes his way. "As a trainee here, I had an unbelievably busy and highly educational 18 months. I worked in four roles within the company, one of which was in Mexico, and during that time, I made many contacts that are still active today," he recalls. Since then, he has also been involved in the "CEO meets Millennials" project, in which Group CEO Ralf Wintergerst meets with junior staff to discuss how to make G+D more attractive to young professionals from generations Y and Z. For his part, Sapkota has already set his sights on his next goal: He is participating in the G+D talent program for aspiring managers, which runs until 2020. "I gain so much positive energy here. I get back much more than the time and effort I put in." And where does he hope to be in five to ten years' time? "I want to be a manager and open up new areas of business for G+D." That's something he's already started on: Recently, Sapkota and his colleagues from Mobile Security's research department began working on a project that cannot be made public just yet. "We want to expand our existing range of SIMs and eSIMs so that we can safely connect the myriad of devices that have yet to join the Internet of Things." It looks like Riwaj Sapkota is unlikely to get bored anytime soon.

»Working at G+D means using cutting-edge technologies to help shape tomorrow's world.«



The participants of the Group-wide talent program visit G+D advance52, the incubator for digital business models.

Protection in the quantum age – and a secure future for Leonie

Some people go to work for the money; others because they like their colleagues, or because their company has a great reputation. Leonie Bruckert does it for all those reasons – and also to save tomorrow's world. Or rather, she and her colleagues are working on technologies to ensure the world won't need saving. G+D subsidiary secunet Security Networks AG is conducting research into post-quantum cryptography and Leonie plays a key role. "We want to make it impossible for a future quantum computer to crack all our firewalls and passwords." No small task.

"I really enjoyed math and computer science at school," recalls Bruckert. But she feels there's something missing in her working life at the moment: The 27-year-old would welcome a few more female colleagues. "My world is a man's world. I see very few women at conferences, for example." Bruckert's dream: "All these exciting math and science skills should be taught much earlier and more intensively at school to get girls interested in them. Many people still believe math and science are for boys, although that attitude is now starting to change – but slowly." In 2016, however, secunet quickly realized that Leonie was exactly the woman they were looking for. The mathematician from Leipzig University of Applied Sciences was completing her master's at the company. With experts in IT security and computer science in short supply, secunet is eager to attract them at all stages of their careers.

Watch the full video interview here:
www.gi-de-report.com/LB

» This is definitely the right place for me.«

Leonie Bruckert
Advisor, secunet Security Networks AG

Training tomorrow's experts today: Leonie Bruckert teaches computer science at Dresden University of Applied Sciences.

»I enjoy a high degree of freedom and appreciate the relaxed and collaborative relationship with my managers. I can work from home, but I'm also out and about a lot, which I enjoy.«

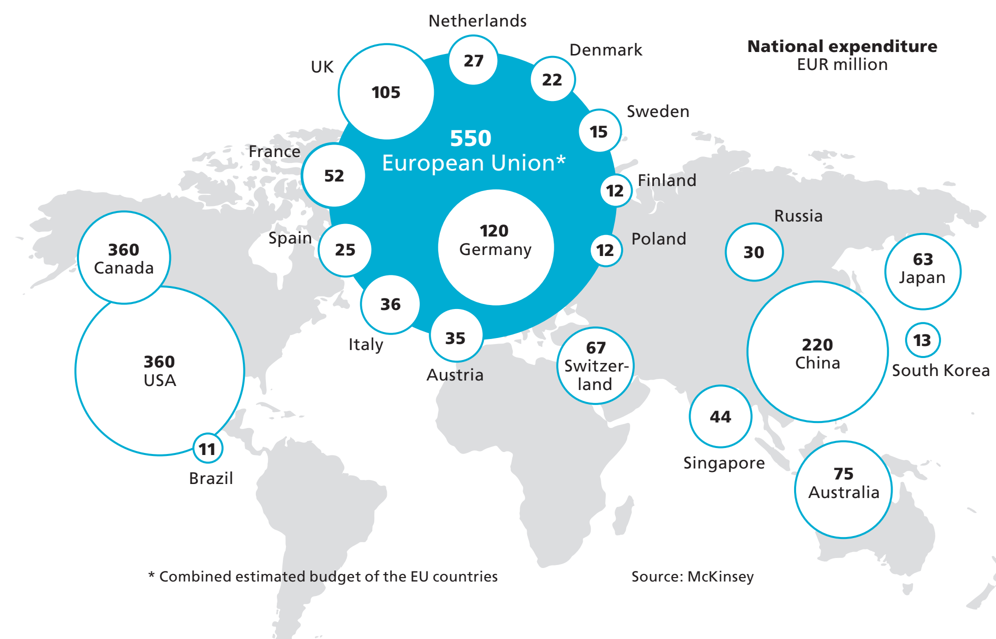
As for Leonie – she must have had her pick of employers? "Yes, thanks to my qualifications, I have some pretty good opportunities on the job market. But not many employers can rival secunet, since secunet is one of the leading players in the IT security field. So this is definitely the right place for me." She works in a field that some think is "cool," others think is "spooky," and most people simply find far too complicated, namely post-quantum cryptography. Breaking that down a bit, cryptography is the science of encrypting information. If something is hidden, secret, or ambiguous, we say it is "cryptic." This requirement applies, for instance, to online banking, sending emails, cloud storage, data transfer in the healthcare sector, controlling a smart home while on the move, and driving a connected car – all of these processes are protected by cryptographic algorithms nowadays. And the quantum? "That's the future," declares Bruckert, with visible pride. Universities and businesses are carrying out intensive research into the development of quantum computers. Bruckert explains: "Quantum computers will be so powerful that our existing cryptography is unable to protect our data and infrastructure adequately."

Which means now is the time to start getting really serious about the future. All the typical security processes currently used on the Internet are based on the assumption that existing computers would need years to break the encryption. However, quantum computers will eventually be able to crack it almost instantly. "Then we'll have real problems," Bruckert foresees. That's why she is so focused on her research into quantum-secure alternatives – that is, solutions that are virtually impossible to decrypt even using quantum computers. Is that a bit like protecting your house against an intruder who has not yet been born? "It's more like protecting against an intruder who has been born but is still a toddler. But if companies and governments stand idly by and watch until he's bigger and stronger, it'll be too late. We need to take care of the future today," emphasizes Bruckert.

It sounds like a huge responsibility. But that is precisely what motivates Bruckert: "I find it really cool to be making the world a safer place. secunet primarily works on high-security solutions that are crucially important when government agencies or other state institutions communicate with each other, for example." The company will continue to play its part in providing security in the quantum computer age. "For a mathematician, there's nothing more exciting than this." It helps that Bruckert is able to carry out all her research in a working environment that knows exactly what smart people need. "I enjoy a high degree of freedom and appreciate the relaxed and collaborative relationship with my managers. I always have someone to discuss things with and to listen to me when I need it. I can work from home, but I'm also out and about a lot, which I enjoy." And the next time Bruckert is at an international conference in Florida or gives a paper at the Fraunhofer SIT Institute in Darmstadt, all the men in the audience are sure to be impressed.

15 billion US dollars

That is the size of the global digital security market today, with the figure increasing by more than 10 percent each year. Cyber risks, such as hacker attacks and industrial espionage, are on the rise. G+D makes an important contribution to securing transactions and values in many areas – from payment through communication to protecting identities. secunet specializes in helping countries, public authorities, and armed forces to uphold the very highest security standards.



Around the world, large sums of money are being invested in quantum technology research. In terms of expenditure not subject to state-secrecy restrictions, the EU is in the lead, followed by the US and China.

» That's what motivates me and makes it all worthwhile.«

Fabiola Bellersheim
Head of Sales Asia Pacific,
Veridos GmbH

E-passports for Bangladesh – and goosebumps for Fabiola

When do you know you have really become immersed in another culture? "When you're in your quiet bedroom in Germany and you miss the honking of car horns that is a feature of most Asian cities," finds Fabiola Bellersheim. And she ought to know. As Head of Sales Asia Pacific at Veridos, the joint venture between G+D and Bundesdruckerei, she has been living in two different worlds for many years. Last year, with strong support from her colleagues, she successfully secured the largest contract in the company's history: delivering electronic passports and border security for Bangladesh.

Watch the full video interview here: www.gi-de-report.com/FB

In her 20-year career with G+D and Veridos, Bellersheim has worked in many areas of the business, flown around the world multiple times, managed teams, taken part in internal development programs, and also had two children. So after all that, is there anything she can't just take in stride? "You bet!" reveals Bellersheim. "On July 19, 2018, after an intensive acquisition and negotiation process lasting two and a half years, a ceremony to mark the signing of the contracts was held in the Bangladeshi capital, Dhaka. When I saw it – more than 800 attendees, national flags everywhere, high-ranking guests, and upbeat music – it really gave me the goosebumps." For Veridos, the record contract is worth EUR 340 million and covers the entire value chain from electronic passports to border management systems. For Bangladesh, it's much more: a further step towards modernization, an increase in security, and a reason to be proud.

Veridos will provide Bangladesh's 165 million citizens with one of the most advanced and secure passports in the world, which is machine-readable, biometric, and counterfeit-proof. "This is an extremely important contribution to the fight against document forgery and terrorism," emphasizes Bellersheim. Veridos will also install 50 e-gates – fully automated self-service gates for airports and border crossing points. The project is undoubtedly impressive in many ways, but for Bellersheim the real highlight is the people involved. Veridos is training 100 Bangladeshi employees in Germany and a further 1,000 people on site, who will then take on demanding technology roles. As part of the project, a new, state-of-the-art factory is being built to produce the passports, which will provide an alternative source of employment to the country's textile industry. "We're making a real contribution to technological progress in Bangladesh. And we can really sense how important it is to our customers," confirms Bellersheim. "That's what motivates me and makes it all worthwhile."

25 percent

This is the rate at which the market for e-passports is expected to grow each year. These advanced ID documents with biometric data (e.g. fingerprints) are already compulsory in the EU, US, and most other industrialized countries and emerging markets. They are making a significant contribution to safe travel and crime prevention.

So is "Made in Germany" still a hallmark of quality around the world? "In a word, yes! One of the main reasons the project in Bangladesh came about is because Germany – and German technology in particular – has such a good reputation there," underscores Bellersheim. But here, again, it's the human element that is most remarkable. The Prime Minister of Bangladesh, Hasina Wajed, has a particularly strong bond with Germany. She was in West Germany at the time of the military coup against her father in 1975 and found protection there. Is it common for Veridos to be so close to major political developments? "Yes, indeed. We're a specialist in identity solutions, so most of our customers are from the government and state sectors. Our projects, such as system solutions for ID documents, driver's licenses, and border control, deal with fundamental issues relating to sovereignty and security. That means we're often in contact with notable individuals from other countries." Meanwhile, back home, the Bellersheim family gets to enjoy not only the typical South Asian spices and fruits that Fabiola brings back from her trips abroad, but also her enhanced culinary repertoire.

And the downsides? What's the work-life balance like in such a demanding international management position? "Well, I can't deny it's hard work," acknowledges Bellersheim. "But I've always found G+D to be extremely supportive and flexible. They let me try different ways of working; both full-time and part-time. I've also worked from home and sometimes even took my baby with me to the office when I was nursing." At family-owned G+D, Bellersheim is part of a culture that provides staff with maximum freedom as long as they achieve the required results. "When I work and where I work – at home, on the road, or in my office – is my decision. If you make a logical and convincing case, you get all the support and recognition you could possibly desire." Not to mention a new professional challenge if the nights in Germany prove to be too quiet.

The almost completed factory building in which the new electronic passports will be produced for Bangladesh.

One year earlier: the undeveloped factory site. From left to right: John Farley, Andreas Wirthmüller, Fabiola Bellersheim, and Andreas Kuba of Veridos.

»Simply the fact that I have met so many interesting new people during my career at G+D and Veridos – and am sure to meet plenty more – is enormously rewarding.«

The contract signing ceremony on July 19, 2018, in Dhaka.

Secure banknotes for Egypt – and a lesson in patience for Marc-Julian

When the run-up to Christmas finds you on tenterhooks in a Cairo hotel room, facing the risk of not being home in time for the big day, there must be a lot at stake. Happily for Marc-Julian Siewert, his commitment paid off. He and his team secured a record contract for G+D: "In Egypt, we're building one of the world's most advanced high-security plants for banknotes."

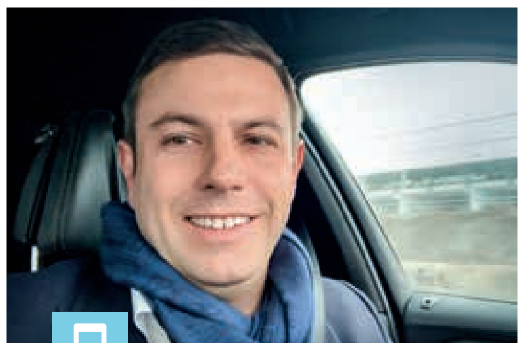
"On December 22, 2017, I was on standby in my hotel waiting for the final signature on the contracts. I'd promised my family I would be home in time for Christmas – but conditional on getting the go-ahead in Egypt." That was the culmination of a three-year acquisition process and over eight months of negotiations. But one of the lawyers said: "Unfortunately, it's going to take until at least December 24th." Siewert didn't realize at first that the lawyer was joking – the contracts had in fact already been signed. "When I figured that out, it was the best Christmas present ever, and I made it home in time for the festivities." Meanwhile, the project, worth EUR 260 million, is now in full swing. The plant in Egypt's new government district south of Cairo is scheduled to start operations in 2020 and is regarded as critically essential infrastructure. Egypt will print and process the bulk of its banknotes at the new facility. This marks a huge leap forward for the country: "The banknote cycle will be largely automated and even more secure. Supporting a transition from manual processing to full automation in one step is something not even banknote specialists like us do every day," reveals Siewert, who clearly relishes the task.

Watch the full video interview here: www.gi-de-report.com/MJS

»I have grown as a person during this project.«

Marc-Julian Siewert
Head of Value Added Solutions and Services, G+D Currency Technology GmbH

»Trust and personal contact are always central to our business. And that’s especially true in Egypt.«



Marc-Julian Siewert travels home after a two-day trip to Egypt to visit the customer.

The contract is the largest that G+D Currency Technology has ever handled. “We are covering the entire value chain, from software and IT security through printing, automation, and processing equipment to service provision. What ultimately convinced the client was the fact that we were even able to put project financing in place. None of our competitors has the same breadth of strengths,” Siewert reports. He is also particularly proud of his own contribution when it comes to a very different aspect of the project: “We’re supporting the Central Bank of Egypt in training around 1,500 employees at the plant. When this topic came up during the negotiations, I realized that it was a real motivation booster for me and my team because it’s such a key element.”

At the start of the project in 2014, Siewert was still sales manager for the Middle East and Africa. There were inevitably some things that got under his skin as work progressed. “Everyone in the project knew that I got red in the face when I reached my pain threshold in negotiations.” And that was not unusual during his 50 or so trips to Egypt. “Generally, though, I have grown as a person during this project in terms of my patience, self-confidence, and perseverance. That will all serve me well in the future,” shares the 34-year-old. Despite his long association with Egypt, he has not learned Arabic. “Maybe a few phrases. But I’ve come to understand a lot about the country and its people. Trust and personal contact are always central to our business. And that’s especially true in Egypt – trust is the greatest asset.” Cultural experiences like these are an added perk of the job, in Siewert’s view, enabling him to see things from different perspectives and broaden his own horizons.

So what’s on the cards for the future, following this headline achievement? “G+D stands a very good chance of securing and delivering other major projects of this kind,” concludes Siewert, who is now in charge of major solutions contracts at Currency Technology. His team has grown significantly and now numbers 100 – a mixture of young people and seasoned experts with years of experience. “The way we operate – with incredible agility and in highly innovative markets like automation – means we can make our own small contribution to shaping the future.” And, as we now know, still manage to spend Christmas at home with the family.

Driving through Cairo at night – the city was Siewert’s second home for several months.

After a construction period of around 11 months, the shell of the building is complete. People will soon be working here in a high-security banknote facility.

145 central banks

That is the number of monetary authorities that work with G+D. Many countries in Africa place their trust in G+D’s security solutions. We provide an exceptionally wide range of services covering the entire cash cycle – from design to production with counterfeit-resistant materials and authentication features through to high-performance processing machines and entire cash centers. IT security and big data analysis are also part of our portfolio for a growing market: Cash remains the most popular payment method worldwide.

Corporate Responsibility at G+D

The world faces an ever-increasing number of complex and interrelated challenges, including pressing environmental issues due to ongoing climate change; radical technological advances driven by digitalization, which is impacting all areas of life; and uncertainty caused by an unstable global political and economic order. These all require a coming together of the international community to develop joint solutions and commit to responsible conduct. As a global leader in security-based technologies and services, we are acutely aware of our corporate responsibility. We are committed to ensuring that technological change is implemented in a responsible manner and are taking proactive, long-term measures to tackle the urgent challenges of our time – for the benefit of our approximately 11,400 employees, our customers and suppliers, the environment, and the community at large.

The following table lists our main focus areas and outlines the measures we are taking in each one. You can find more information about our activities surrounding responsible corporate governance in our progress report for the United Nations Global Compact (www.gi-de-report.com/CSR).

Focus/Activity	Progress/Outlook	Status/Goal
Corporate Responsibility (CR) strategy		
Materiality	Focus on CR action areas employees, climate and environmental protection, and a sustainable supply chain, based on internal survey and alignment with customer requirements (2017). Develop a corresponding CR strategy as a guiding framework for the entire Group	Design strategic CR framework, 2018: add detail and define specific targets. Goal in 2019: finalize and implement sustainability objectives in the individual action areas
Reporting		
UN Global Compact progress report	Eighth report as per UN Global Compact requirements, covering progress in 2018	Ongoing
MS[1]: Participation in EcoVadis CSR assessment platform	Annual evaluation of G+D Mobile Security's activities and supporting documentation relating to the environment, working conditions, human rights, fair business practices, and a sustainable supply chain	MS in top 20 % of suppliers evaluated, annual rating
Action Area: Employees		
Learning & development		
Talent management at both the global and business sector level	Internal programs for systematic identification and development of high-potential employees (talent programs). Design and implement three programs in line with the requirements of the individual business sectors and target groups (CT[2], MS, and Groupwide talent programs)	2018: conduct standardized analysis of potential across all business sectors, identify/define developmental measures for all participants. Start of the three new talent programs, continuation in 2019.
Executive development	Communication of management principles based on G+D values; leadership training for an increasingly digitized workplace	Ongoing, gradual expansion of program in 2019
	CT: global campaign "Lead.Together" to establish a modern leadership culture and uniform management philosophy (workshops, development meetings, talks by management, etc.)	Ongoing
	CT Munich: implementation of a new feedback-based performance culture that respects and values the individual	Ongoing
Diversity		
Gender/equal opportunities for women	Female quota for G+D GmbH: 10 % of managers in top tier below Management Board; 20 % in second management tier	Target achieved in 2018 for top management tier at 14 %, 20 % in second management tier
	Gender-sensitive approach to assessing potential in talent management and recruiting	Ongoing

[1] MS = Giesecke+Devrient Mobile Security GmbH
[2] CT = Giesecke+Devrient Currency Technology GmbH

Focus/Activity	Progress/Outlook	Status/Goal
Age/demographic change	Measures aimed at recruiting and retaining young talent, specialist staff, and managers, such as talent programs/reviews	Ongoing
	Initiatives to recruit and retain young talent, including Girls' Day 2018, Deutschlandstipendium scholarship program	Ongoing
	Dual master's study program	Ongoing
Cultural diversity	Signatory of Diversity Charter (German business initiative to promote diversity in companies and institutions), integration of Charter content into training	Ongoing
	Hackathon internal digital initiative with international mixed teams	Established 2017; held once or twice a year; May 2018 in Stockholm with 50 participants from 11 countries
G+D America: Measures in accordance with US law on equal employment opportunities (EEO) for women, minorities, veterans, and individuals with disabilities	Action plan as strategic tool for identification, development of measures, and implementation of measures relating to equal employment opportunities/anti-discrimination. Implemented policies and recruitment programs that focus on equal opportunities for women, minorities, veterans, and individuals with disabilities.	Ongoing
Health/work-life balance		
Health management and promotion	Certification of all major sites to OHSAS 18001; provision of medical check-ups (screening) and health measures at various subsidiaries, e.g. Spain, India, USA. G+D location Munich: expansion of workplace medical services and occupational health scheme; pilot project on risk assessment of psychological stress. Ergonomics advisers, training program around health and prevention	Since 2018, independently certified management systems in business sectors and the Corporate Center. Q1/2019 MS certification in accordance with new standard. Implementation of measures from pilot project on risk assessment of psychological stress, including adapting the work environment. Risk assessment with external partner since Q1/2019
Encouraging a healthy work/life/caregiving balance	"berufundfamilie" certification in accordance with follow-up procedure (highest audit level), with inclusion of the Leipzig printing site in the 10/2016 audit; confirmation that the operational measures adopted or updated are embedded in HR policy and are being rolled out in Leipzig	Measures ongoing until 10/2109, including review and adaptation of shift system at Leipzig printing site, 2018 expansion of option to work from flexible locations, approx. 20 % of jobs at G+D GmbH are part-time; integration of the priority topic of health into the action program for re-auditing 10/2019
Activities at subsidiaries	Flexible working hours and telecommuting option, e.g. USA (CT) and Spain	Ongoing
Good working conditions		
Occupational health and safety	Certified health and safety management system in accordance with OHSAS 18001 at all relevant production sites worldwide (total: 20)	MS: 15 certified production facilities, i.e. approx. 80 % of employees work at certified locations Q1/2 2019 audit; 2020: switch to new ISO 45001 standard CT: 5 certified production facilities, i.e. 55 % of employees work at certified locations
Employee information and awareness	Location Munich: Sustainability Action Days with a focus on healthy eating, health, and conserving resources/mobility; e-learning on occupational health and safety/fire safety; Louisenthal: Health Day	2019: organization of Sustainability Action Days planned
Workplace 2020	Location Munich: modernization of office/working environment. Further increase workplace flexibility, expand team structures, and embed this approach more strongly in corporate culture. Taking account of psychological stress when planning office space. Consider other ways of boosting employer attractiveness as part of Workplace 2020.	Ongoing since 2016; review of solutions for improving mobility, such as introduction of JobRad and a car-sharing app, implementation in 2019. Extending flexible working
Employee retention	CT Munich: realignment of onboarding process towards long-term retention of new employees. MS Munich: planning and introduction of a new pre- and onboarding process for systematic integration and long-term retention of new employees	Implemented
Activities at subsidiaries	Additional measures that go beyond certification, e.g. G+D India: financial assistance for elderly parents of employees (co-insurance)	Ongoing
Action Area: Environment		
Management system for planning and implementing sustainability measures	Central standards combined with decentralized responsibility: practical implementation of activities, objectives, and measures is the responsibility of the individual business sectors as of 2018. Centrally defined sustainability indicators in line with GRI standard (energy, CO_2 emissions, water, effluents, waste, workplace accidents, work days lost, etc.); information gathered across Group using SoFi software tool.	Centralized management of standards; implementation became the responsibility of the individual business sectors in 2018

Focus/Activity	Progress/Outlook	Status/Goal
Environmental management: certification to ISO 14001	Certified environmental management system for each business sector covering all relevant production sites	2018 certification in accordance with the revised ISO 14001:2015 standard in MS, CT, and Corporate Center
Energy management: certification to ISO 50001	Certified energy management system for paper mills in Louisenthal and Königstein and at the Leipzig printing site	Strategic energy target for Louisenthal 2017–2021: reduce energy requirements and CO_2 consumption by 17% compared with base year 2010. 2018: 19% achieved.
Group-wide climate objective (scope 1 and scope 2)	Adoption of a Group-wide relative CO_2 reduction target of 25% by 2022. Base year: 2016, KPI: tCO_2 relative to sales. Qualitative targets for Veridos and secunet: management of energy consumption data and import of all climate data	Target for 2022: two-degree compatibility by means of various measures at selected sites, including pro rata purchase of green electricity
Corporate carbon footprint (CCF)	Generate CCF 2018 for relevant production locations (for entire Group, with ability to break down by business sector). Greenhouse gas emissions reported in line with Greenhouse Gas Protocol. Product carbon footprint (MS): product-related CO_2 footprint for cards manufactured at three different European sites	Annually, 2018 definition of new CO_2 reduction goal as a framework for business sectors, partial collection of scope 3 (3.1, 3.3., 6), 2019: collect data for Veridos and secunet
Conserving resources in production and site operation (selected examples)	*Louisenthal (Germany) paper mill* (production of banknote paper + foils): ongoing development of heat recycling network, using waste heat from the production process for climate control of buildings, own hydroelectric system, own CHP power generation via steam condensing turbine; G+D MS China: conversion to LED lighting at production sites; *Spain:* expansion of waste disposal, 100% green electricity; *USA (CT):* save water by replacing sanitary facilities, save energy by using motion sensors and regulating air conditioning systems, recycle cardboard waste via recycling company; *G+D India (CT):* use of digital documentation, e.g. for contracts and service reports for customers, installation of solar energy collectors on office buildings	Ongoing
EU Energy Efficiency Directive	Implementation at all European locations and performance of energy audits at sites without ISO 50001 certification	Completed at Veridos 12/17; completed at G+D GmbH Q1/2018
Environmentally friendly products	Development/supply of environmentally friendly products, e.g. card bodies made of renewable PLA (polylactic acid); SIM cards in various form factors that use less material or embedded SIM without card body; banknote paper made using organically grown cotton comber noil on customer request	Ongoing
Dialog with stakeholders on environment and climate protection initiatives	MS: participant in Mastercard's Greener Payments Partnership to reduce first-use plastic and promote sustainable materials in payment card manufacturing (launch: October 2018). Participation in various climate protection schemes, such as Carbon Disclosure Project (CDP), and other initiatives, e.g. member of the German Global Compact Network's Peer Learning Group in conjunction with WWF/CDP; climate reporting partner of Deutsche Telekom; continued membership of Munich climate pact	Ongoing
Other activities	Munich: keeping beehives to support biodiversity Mexico: employee reforestation project near Mexico City	
Action area: Sustainable supply chain		
Sustainability goals in procurement	Analysis and set-up of a systematic process for selecting suppliers within the Group. Definition of sustainability goals and corresponding measures for procurement.	2018: definition of a Group-wide approach to auditing suppliers according to sustainability criteria in line with the increasing demands on G+D and its supply chain, 2019: detailed definition of goals and implementation of measures
Corporate procurement handbook	Embedding of social and environmental criteria in supplier selection process.	Since Q1/2018: general sustainability standards, 2018: development of a process to address sustainability in the supply chain, 2019: inclusion of detailed, Group-wide specifications in procurement manual, operational implementation in subsequent months.
MS: Supplier Code of Conduct	Code of Conduct for suppliers	Implemented Q2/2018
Supplier self-disclosure (CT and MS)	Extension of supplier self-disclosure (supplier questionnaire) to include environmental and social aspects	Since Q1/2018
Sustainability issues included in supplier audits (CT and MS)	MS: audit of 20–30% of active A and B suppliers. CT: audit of approx. 5–10% of active A and B suppliers. Expansion of audit plan and corresponding checklist to include sustainability issues.	Since 2018, annual

Focus/Activity	Progress/Outlook	Status/Goal
CR audit process and standard	Development of a systematic audit process for suppliers in accordance with social and environmental criteria, based on an industry standard (initially at MS)	2018: risk assessment of A, B, and sub-suppliers at MS in accordance with social and environmental aspects, clustering, sustainability evidence requested (e.g. certificates), 2019: selection of a CR audit standard, step-by-step development of an audit process
MS: Bill of material (BOM) check for suppliers	Continuous expansion of product environmental management system BOMcheck (online database) to record and check contents of materials supplied, including conflict minerals in accordance with Dodd-Frank Act.	Ongoing
Statement on the UK Modern Slavery Act	Statement on how G+D addresses human trafficking and forced labor in the supply chain in accordance with the requirements of the UK Modern Slavery Act	Update 2018 onwards, development of a systematic audit process in accordance with CR criteria (see above)
Compliance/anti-corruption		
Group-wide Code of Conduct	Code of Conduct for all employees and business partners; incorporates UN Global Compact, ILO core employment standards, UN Declaration of Human Rights, OHSAS 18001; compliance monitored by Corporate Auditing	Update 2019 in line with stricter legislation and customer requirements
Compliance management system (CMS)	Group-wide CMS to prevent corruption and violations of competition law, with the individual business sectors taking responsibility. Quarterly Compliance Committee meetings in the business sectors for mutual exchange of information, coordination. Enhanced compliance monitoring at local level. Introduction of a spot-check concept to verify compliance with processes at business sector level. CMS adapted locally to new legal requirements (e.g. France, Brazil).	Ongoing
Auditing of compliance management system	Auditing of CMS by external third party	CT 2017, MS 2018, Veridos 2018
Group-wide risk analysis	Systematic risk analysis of potential compliance breaches in relation to corruption and competition law (compliance assessment). Regular identification and assessment of compliance risks.	2018: introduction of a new tool for risk analysis and assessment, ongoing further development of analysis system. MS: compliance checks of top suppliers, of business with officials/authorities, and of association activities. 2019: carry out Group-wide risk assessment. Establish suitable measures for minimizing risk
Employee awareness/ preventive measures	Training sessions via e-learning on the basics of compliance/Code of Conduct, anti-corruption, and antitrust law Special face-to-face training for managers and staff in risk-relevant areas (MS: 4, CT: 10 training sessions) Re-rollout of anti-corruption training in Munich with 100% completion rate	2019: introduction of new Group-wide e-learning training sessions on the basics of compliance, anti-corruption, competition law (antitrust law) to further raise awareness and inform employees in relevant roles (e.g. sales)
Whistleblowing	Internet-based reporting system for internal and external persons for anonymous reporting of potential compliance violations and unlawful conduct	Implemented since 10/2017, 2018: introduction at Veridos
Banknote Ethics Initiative (BnEI)	G+D is a co-founder of the initiative. Following a successful 2017 audit, confirmation of membership of G+D CT after letter of confirmation in November 2018	Ongoing
Review and monitoring of business partners	Ensure proper and reliable cooperation with business partners by means of risk-based checks, monitored using appropriate monitoring systems	Ongoing
Corporate Citizenship		
Giesecke+Devrient Foundation	Brings together G+D's Corporate Citizenship activities; particular focuses include Museum of the Printing Arts in Leipzig, an international development program for young people from different countries worldwide in partnership with the Goethe Institute, alumni program	Ongoing
Corporate volunteering program	G+D volunteering program involving social projects (selected by G+D Foundation), such as construction work and meeting events, as well as participation in a project designed to teach schoolchildren how to manage money responsibly	Ongoing
Activities at subsidiaries (selection)	Mexico: financial assistance for earthquake victims and employee support for reconstruction work; India: blood donation campaign, donation of items for people in need; UK: local charitable activities in conjunction with customers; USA: donations and various social activities in local area (Community Support Committee); G+D Indonesia: support for a children's educational project	

Group Management Report

as of December 31, 2018

Please note: Figures shown may differ from the mathematically exact values (monetary units, percentages, etc.) due to rounding.

1. Group Profile

Billions of people rely on technology developed by Giesecke+Devrient (G+D) in their personal, professional, and digital lives. Around the world, demand is rising for easy-to-use physical and digital solutions that make interactions more secure. G+D has aligned its portfolio accordingly. All parts of the company are committed to providing protection and support for people, companies, and organizations in four core areas:

Payment
G+D is a global leader in physical and digital payment solutions. The company's technologies and services make cash, electronic, and mobile payment processes more secure, thus creating confidence in the reliability of payment transactions.

Connectivity
In a 24/7 digital world, connectivity for mobile applications presents huge challenges. G+D delivers key technologies for connectivity – including in the Internet of Things – and ensures that connections are fast, always available, and above all secure.

Identity
In modern societies, the identities of citizens, users, and things require special protection. G+D safeguards and manages these throughout their entire lifecycle, with key examples including ID documents and driver's licenses. The same applies to machines and to digital identities online.

Digital security
The increasing complexity of the digital world calls for innovative IT and data security solutions, which G+D provides to its customers both in the state sector and in industry. G+D's digital security solutions are tailored to meet the highest requirements.

These four fields of activity, which together make up the Giesecke+Devrient portfolio, are delivered by the individual business sectors. G+D operates as a holding company comprising the four legally independent subgroups G+D Currency Technology, G+D Mobile Security, Veridos, and secunet. G+D employs 11,389 people across 32 countries.

G+D Currency Technology provides products and solutions for secure payment to central and commercial banks, banknote printers, security paper manufacturers, security transport companies, and casinos around the world. The portfolio includes banknote paper, banknotes, security features, banknote processing machines and complete cash center solutions. G+D is an international leader in the currency industry.

Banks, mobile network operators, car manufacturers, and other companies rely on industry solutions supplied by **G+D Mobile Security**. These solutions safeguard data, identities, and a wide range of digital transactions. The portfolio includes solutions for eSIM management, secure HCE, and cloud payment. Data and project management are also part of the offering, as are SIM, bank, ID, and healthcare cards and tokens.

Veridos is a joint venture between G+D and Bundesdruckerei, offering customers secure and pioneering identification and identity solutions. The product range covers traditional printed documents as well as electronic variants, such as e-passports and electronic ID cards. Highly secure travel documents, ID systems, and healthcare cards can be used for conventional identification purposes as well as for authentication and protection in digital business processes.

secunet Security Networks AG is a leading German provider of high-quality cyber security solutions and an IT security partner to the Federal Republic of Germany. It offers an extensive portfolio of products and consulting services around the protection of data and infrastructures and for the transmission, storage, and processing of information. This includes encryption technology up to the highest security level. secunet ensures public authorities, organizations, and companies enjoy maximum protection against cyber attacks, espionage, and sabotage.

The **Corporate Center** is responsible for the overall direction of the G+D Group and actively supports strategic development of the subgroups. It handles all issues of strategic importance, such as the legally independent innovation accelerator G+D advance52 and newly established investment company G+D Ventures. G+D Ventures is tasked with turning internal innovations into independent companies. It achieves this by giving startups access to G+D's network of specialists and their expertise, and also assists with funding. G+D Grundstücksgesellschaft holds and operates the building at the Munich site and leases it to the Group companies.

Information on key aspects of our research and development activity can be found in section 2.1.2.

Management Structure

	Operational business			
Business sector	**Currency Technology**	**Mobile Security**	**Veridos**	**secunet**
Division	– Banknote Solutions – Currency Management Solutions	– Financial Solutions – Connectivity & Devices – Digital Enterprise Security		– Public – Business
	Corporate Center			

2. Business Performance

Globally, economic growth slowed slightly in 2018 compared with the previous year. Across all regions, increasing protectionism in the form of customs barriers and punitive tariffs hit international trade and curbed the growth of national economies. Performance in individual regions varied widely. In the advanced economies, particularly the US, economic activity was robust, delivering solid growth. The eurozone economy likewise grew. Among the emerging and developing countries, exporters of oil and gas benefited from higher oil prices. Tougher financial conditions and higher interest rates in the US had a negative impact on global economic growth. The national economies of Brazil, Turkey, and Iran failed to achieve growth in 2018 due to country-specific risks. Despite protectionist US trade policy, Asia (particularly China and India) was the economic region that saw the strongest momentum and highest growth rates.

Solutions developed by G+D in the core areas of payment, connectivity, identity, and digital security continued to enjoy strong customer demand in 2018. G+D again achieved solid sales growth of 5.1 %, setting another record high in the company's history.

2.1. Group Business Performance

The key financial performance indicators used to manage the Group remained unchanged in fiscal 2018. The Group is managed on the basis of net sales, earnings before interest and taxes (EBIT), earnings before interest, taxes, depreciation, and amortization (EBITDA), capital expenditure, average working capital intensity[1], free cash flow, and return on capital employed (ROCE)[2].

Excellent order intake in 2018 enabled G+D to increase its order books to EUR 1.7 billion (+50 %), thereby demonstrating its organic growth potential. The focus was on steady expansion of the solutions and services business as well as commercialization of new business models around digitalization.

In addition to organic growth, G+D again took strategic action in 2018 to leverage current market and technology trends. The establishment of G+D Ventures GmbH opens up new investment opportunities and activities for G+D in the ventures market. In its first year, the company acquired a 6.1 % stake in Verimi GmbH. This identity and data platform is backed by a number of well-known German and international companies, including Allianz, Deutsche Telekom, and Samsung. The existing partnership and cooperation agreement with IDnow GmbH was bolstered by the acquisition of a 12 % stake. IDnow provides global solutions for secure digital identification based on AI-supported biometrics and security technology. G+D also spun out a new startup for the first time in its history – Build38 GmbH, in which a number of G+D employees have invested. G+D holds 70 % of the shares in this startup. The company has developed the Trusted Application Kit (TAK), which provides customers with a secure environment for mobile applications. Regardless of operating system, the solution offers comprehensive protection for mobile devices and ensures that data processing is secure and compliant with data protection law. The technology is already being deployed in the transport, banking, security, and government sectors.

[1] Ratio of 12-month average of working capital in reporting year to annual sales; working capital = customer receivables + inventories
[2] Ratio of EBIT to average capital employed (year-end value in each case); capital employed = intangible assets + property, plant and equipment + financial investments accounted for under the equity method + inventories + accounts receivable trade – accounts payable trade

Veridos acquired a 75 % stake in E-Seek Holding Inc., an American company specializing in advanced hardware for ID document verification. This acquisition complements Veridos' software expertise and strengthens its presence on the North American market.

2.1.1. Results of Operations

Despite challenging conditions that included volatile exchange rates, G+D increased its sales by 5.1 % to EUR 2,246 million, thereby once again exceeding its own targets. Adjusted for negative currency effects, growth would have been even higher, at EUR 151.6 million or 7 % above the prior year.

A key driver of growth for G+D was its innovative solutions and services business, which grew at a rate of around 13 % across all business sectors in a successful continuation of the Group's long-term strategy. Sales performance in the individual subgroups was broadly consistent, with all business sectors contributing to growth.

Sales by Subgroup

Sales (EUR million)	2018	2017	Change (absolute)	Change
Currency Technology	1,058.9	1,016.5	42.3	4.2 %
Mobile Security	867.6	812.3	55.4	6.8 %
Veridos	180.2	167.3	12.8	7.7 %
secunet	163.3	158.3	5.0	3.1 %
Consolidation	– 23.9	– 18.0	– 5.9	– 33.0 %
Total	**2,246.0**	**2,136.4**	109.6	5.1 %

Currency Technology was able to build on the previous year's high level of sales. Increased demand for banknotes led to high utilization of printing capacity and significantly higher sales than in the previous year. In solutions and services, some initial revenue from longer-term major projects was realized in 2018, which meant that the business grew significantly compared with the previous year. Growth was also driven by higher sales of banknote processing machines.

The market environment for Mobile Security continued to be defined by strong competition and price pressure on cards and modules in 2018. Exchange rate effects resulting from the appreciation of the euro also had a negative impact. Despite these challenges, Mobile Security was able to achieve solid sales growth. In the product business, there was a further volume increase of 8 %, which compensated for the falling average sale price of SIM cards and payment cards. Sales growth in services and solutions was particularly gratifying, most notably with regard to eSIM management, mobile payment, and payment card issuance services.

Veridos won several comprehensive major projects in 2018, thereby creating the conditions to achieve the strongest growth. Finalizing these extensive contracts, some of which also have a financing component, takes time, meaning that the start of the project and corresponding revenue recognition was delayed in some instances. Veridos also achieved sales growth compared with 2017.

The high-quality, reliable cyber security solutions produced by secunet continued to meet customer needs in 2018. Burgeoning product business, especially with the SINA® portfolio, and a sustained high level of consultancy business ensured that the unit again achieved record sales and record results. Following successful certification of its health connector, secunet expanded its security offering to include a telematics infrastructure, as used by medical practices, for example. The connector is ready for immediate market launch and will pave the way for further sales growth.

First-time application of IFRS 15 resulted in additional sales of EUR 44.2 million being posted in 2018.

To improve comparability of expenditure and earnings, the consolidated income statement has been adjusted to take account of special effects. The table has been standardized as follows: The 2017 figures have been adjusted to exclude closure costs for Giesecke+Devrient Mobile Security Slovakia (GDSK). Profit from the sale of real estate has also been eliminated. The 2018 figures have been adjusted to take account of the cost of restructuring measures at CI Tech Components AG. After Diebold Nixdorf's change in strategy and associated exit from joint venture CI Tech Components AG, G+D decided to realign the subsidiary. When the research and development activities relating to the existing product family have been completed, the company will focus on sales. The Dornach site will close at the beginning of 2019. This decision involved costs of EUR 17.0 million. The bulk of the cost was attributable to impairments on capitalized R&D expenditure and property, plant and equipment. These adjustments have an impact on various expenditure items in the income statement, including EBIT.

Consolidated Income Statement (IFRS)

EUR million	2018	2017	Change (absolute)	Change
Net sales	**2,246.0**	**2,136.4**	109.6	5.1 %
Gross profit[1]	**612.9**	**618.8**	– 5.9	– 1.0 %
Gross margin[1] (% of sales)	27.3 %	29.0 %	– 1.7 pp	– 5.9 %
Selling, R&D, and general administrative expenses[1]	(492.8)	(495.6)	2.8	0.6%
Other operating income and expenses[1]	12.8	14.7	– 1.9	– 12.7%
Operating profit[1]	**133.0**	**137.9**	– 4.9	– 3.6 %
Financial income/(expenses)	(13.5)	(8.1)	-5.4	– 66.3 %
EBIT (adjusted)	**119.5**	**129.8**	– 10.3	– 7.9 %
EBIT margin (adjusted) (% of sales)	5.3 %	6.1 %	– 0.8 pp	– 13.1 %
Adjustments	(17.0)	0.4	– 17.4	>100 %
EBIT	**102.5**	**130.2**	– 27.7	– 21.3 %
Interest income	2.0	2.2	– 0.2	– 8.6 %
Interest expense	(19.0)	(19.6)	0.6	2.9 %
Earnings before income taxes (EBT)	**85.5**	**112.8**	– 27.4	– 24.2 %
Income taxes	(35.3)	(45.8)	10.5	23.0 %
Net income	**50.2**	**67.0**	– 16.8	– 25.1 %
Reconciliation to EBITDA				
EBIT (adjusted)	119.5	129.8	– 10.3	– 7.9%
plus depreciation and amortization (adjusted)[2]	102.6	104.6	2.0	1.9%
EBITDA (adjusted)	**222.1**	**234.4**	– 12.2	– 5.2%

[1] To improve comparability, closure costs for GDSK and profit minus consulting costs from real estate sale eliminated from 2017 figures. Restructuring costs for CI Tech eliminated from 2018 figures
[2] Depreciation and amortization = depreciation and amortization of property, plant and equipment and intangible assets + write-downs on investments in associated companies

Gross profit remained just below the level of the previous year (– 1.0 %). The rise in sales volumes and increase in project work and services were not sufficient to fully offset negative impacts in highly competitive markets. Structural costs, i.e. for selling, research and development, and general administrative expenses, were below the prior-year level despite higher sales. Research and development costs of EUR 113.3 million (– 9.9%) were a key factor here. Mobile Security sharpened the focus of its development activities in 2018 and reduced costs accordingly. secunet also had to capitalize some development costs in connection with the development of the health connector. At EUR 224.1 million (+1.9 %), selling expenses remained around the previous year's level, rising at a lower rate than sales. General administrative expenses were EUR 155.4 million (+2.6 %). This increase was lower than sales growth despite higher consultancy costs relating to strategic alignment of G+D's portfolio.

Other operating income and expenses were slightly down compared with the previous year. This item includes rental income, licensing revenues, and expenses and income from legal disputes. In the previous year, G+D received a substantial amount from a one-time antitrust compensation payment.

In 2018, financial income was impacted by the greater volatility of exchange rates, which particularly affected markets in North America, Brazil, India, and China. Costs totaling EUR –7.5 million (previous year: EUR –18.5 million) resulted from foreign currency transactions and currency hedging. In addition, falling stock market prices, especially in the last quarter of the year, had a negative impact of EUR –6.2 million on results. This contrasted with gains of EUR 5.5 million in the prior year. Investments in consolidated companies carried at equity contributed EUR 1.2 million (previous year: EUR 3.5 million) to results.

EBIT (adjusted) came in on target at EUR 119.5 million. All operational business sectors made a positive contribution to Group EBIT. The difference compared with the previous year is due in equal part to lower financial income and a smaller operating profit.

Issuing a promissory note loan in July 2018 allowed G+D to secure funding to finance additional major projects and also to enable strategic expansion of its portfolio. Despite the extra debt capital, interest expenses for financial and other liabilities were lower than the previous year at EUR 7.2 million (2017: EUR 8.0 million). G+D has been steadily replacing contractual repayment of higher interest rate loans with new debt that has significantly better interest conditions. At EUR 12.1 million, interest on pension obligations remained largely unchanged (previous year: EUR 11.9 million).

Income tax expenditure amounted to EUR 35.3 million in the reporting year and was thus lower than in the previous year. The tax rate increased slightly from 40.6 % to 41.3 %.

In the year under review, G+D again achieved significantly positive net income, which was 25.1 % below the prior-year level.

The effect of first-time application of IFRS 15 boosted net income by EUR 10.2 million.

At EUR 222.1 million, EBITDA (adjusted) exceeded the planned target. A large proportion of the costs for realignment of CI Tech Components AG related to unscheduled impairments on capitalized R&D expenditure and property, plant and equipment. Accordingly, EBITDA adjustment only involved EUR 1.4 million of these costs.

2.1.2. Research and Development

All of G+D's innovations are designed to make the lives of billions of people more secure. G+D strives to achieve this aim in both the digital and the physical world in the core areas of payment, connectivity, identity, and digital security. Through think tanks, hackathons, G+D advance52, and GD Ventures, G+D has created a wide range of opportunities to maximize internal and external innovation potential in these areas.

At EUR 154.8 million, total spending on research and development was only slightly below the previous year's figure. This spending covers customer-specific development costs (EUR 25.0 million), capitalized research and development costs (EUR 16.5 million), and pure R&D expenditure (EUR 113.3 million). Higher capitalization is directly related to development of the health connector at secunet.

Research and Development

		2018	2017	Change (absolute)	Change
Number of R&D employees	(FTE)	1,146	1,155	–9	–0.7 %
Percentage of total employees	(%)	10.1 %	10.0 %	–0.1 pp	1.1 %
Spending on R&D	(EUR million)	154.8	159.0	–4.2	–2.6 %
thereof pure R&D expenditure	(EUR million)	113.3	125.7	–12.4	–9.9 %
R&D ratio	(% of sales)	5.0 %	5.9 %	–0.9 pp	–14.3 %
thereof cost of goods sold	(EUR million)	25.0	22.4	2.6	11.6 %
thereof capitalizable costs	(EUR million)	16.5	10.9	5.6	51.8 %
Capitalization ratio	(%)	14.6 %	8.7 %	5.9 pp	68.4 %
Amortization of capitalized development costs	(EUR million)	8.4	6.8	1.6	23.5 %
Number of active patents		7,899	7,558	341	4.5 %
New patent applications		172	147	25	17.0 %

As a market leader for end-to-end cash management, **Currency Technology** aims to further expand its market presence. Ongoing innovation allows it to offer customers attractive solutions that improve their value chains. The portfolio extends beyond the provision of substrates, banknotes, security features, and banknote processing machines and is continually being adapted through research and development to meet emerging market needs. G+D provides comprehensive software and automation solutions as part of its digital agenda. These solutions add value for our customers by boosting cash center productivity while continuing to meet the highest security requirements. A further area of innovation is the use of big data technologies. Solutions developed by G+D gather data at every stage of the cash cycle, thus enabling precise forecasting by central banks and other cash cycle providers. Other core aims of our research and development activities are the integration of existing products already in use in the market (Industry 4.0) and the development of new, modular products in response to changes in the banknote verification and sorting market. We are also continuously improving our banknote security features with regard to threads, foils, and pigments. In particular, the use of micro- and nanotechnology enables highly innovative visual security features. The design awards received over the previous years are clear proof of G+D's ability to deliver projects that combine advanced functionality, cutting-edge industrial design, and attractive product costs.

The global R&D activities undertaken in the **Mobile Security** sector are focused on three main areas. Firstly, the sector provides products and solutions for the Financial Solutions, Connectivity & Devices, and Digital Enterprise Security divisions. Secondly, in the field of eSIM management, G+D has developed a high performance, scalable platform for efficient management of identities and is continuously refining this solution in line with customer and market requirements. Major mobile network operators, leading technology companies, and car manufacturers all rely on these solutions. Thirdly, the emphasis in the mobile payment business is on developing dual-interface cards, which combine the latest chip hardware with an optimized operating system.

Veridos is driving forward the development of ID documents and complex system solutions for analog and digital verification of documents and identities through to secure authentication and electronic signatures. In the future, people will be able to use these solutions to equip their cell phones with a secure ID function or to provide a legally binding electronic signature. In the software and operating systems field, we enhanced the connectivity of the Java platform through integration of the applet suite with the relevant certifications. In addition to platforms, Veridos also advanced its development of highly secure ID documents, such as mobile driver's licenses. With its solutions for highly secure digital identities, the IMAGO ID platform, and the VeriGO® border control platform, Veridos now offers a wide range of solutions that extend all the way from applying for an ID document through to having it checked at border control points.

The research and development activities of **secunet** focus on improvements and innovations in processes, products, and solutions. In this regard, secunet is responding to its customers' growing need for higher security in existing infrastructures and for solutions to threats in new technical environments. Innovative efforts at secunet are focused on three strategic areas: promoting a culture of innovation; cooperating and partnering with customers, universities, and industry associations; and concentrating expertise via product managers who support development projects from the innovation management stage through to the creation of market-ready products. During the development of the health connector, secunet capitalized significant R&D expenses for the first time.

G+D advance52 – our catalyst for digital technologies and business models – validated new business ideas and again developed advanced solutions for G+D's business sectors in 2018. This included creating an app for Veridos called VeriGO® TrueID, which provides citizens with easy access to e-government services in their particular country. Two digital business models were implemented for Currency Technology that boost the efficiency of cash centers in commercial banks and central banks.

The change in the number of active patents and new patent applications was greater in 2018 than in the prior year. Overall, the changes are within the industry's normal range of fluctuation.

2.1.3. Capital Expenditure

Investment[1] totaled EUR 108.0 million in 2018. As planned, G+D invested more than in the previous year and reached an investment ratio as a percentage of fixed assets[2] amounting to 19 %. Both Currency Technology and Mobile Security refurbished or improved a number of buildings, mainly production facilities. For Mobile Security, the expansion and modernization of its site in Spain was a particular priority. In the year under review, the Veridos subsidiary in Greece completed its investment in facilities for the production and personalization of ID cards and polycarbonate data pages, which began in 2017. Comprehensive modernization of the Munich site continued in 2018. G+D also acquired minority stakes in Verimi and IDnow. Investment in property, plant and equipment (including advance payments) stood at EUR 78.8 million overall. Investment in intangible assets (EUR 29.2 million) primarily relates to capitalized R&D expenses and capitalized software solutions (e.g. ID service platform).

Capital Expenditure and Depreciation/Amortization

EUR million	2018	2017	Change (absolute)	Change
Group sales	2,246.0	2,136.4	109.6	5.1 %
Capital expenditure	108.0	94.9	13.1	13.8 %
Depreciation/amortization	102.7	102.6	0.1	0.1 %
Investment ratio (% of fixed assets[2])	17.6%	15.1 %	+2.5 pp	16.7 %

There are investment commitments of EUR 24.9 million with regard to 2019.

2.1.4. Assets and Liabilities

Current assets increased by EUR 371.4 million, mainly due to an increase in cash as a result of taking out a promissory note loan (EUR 200 million). A detailed analysis of the change in cash and cash equivalents is provided in section 2.1.5. Semi-finished and finished products are shown as contract assets in some instances due to first-time application of IFRS 15. Current receivables increased on balance by around EUR 68.4 million due to sales growth and higher advance payments to suppliers for orders relating to major projects.

As of December 31, 2018, non-current assets were below the previous year's level. Investment in property, plant and equipment and intangible assets was slightly higher than depreciation/amortization. Following the realignment of CI Tech, impairments of EUR 15.6 million were recognized for tools.

Current financial liabilities were down compared with the previous year due to scheduled repayment of loans and the reduction of short-term bank credit.

Changes in provisions are primarily attributable to utilization of the restructuring provision created in the previous year for the closure of GDSK. Warranty provisions increased slightly due to the higher volume of business.

The issuing of a EUR 200 million promissory note loan led to an increase in non-current liabilities.

Application of IFRS 15 resulted in significant reclassifications within current liabilities. Customer prepayments (2018 balance: approx. EUR 160 million) are no longer shown as part of accounts payable trade, but accounted for as current contract liabilities. Adjusted for this reclassification, accounts payable trade rose by around EUR 80 million. In addition, customer prepayments from major projects (approx. EUR 70 million) increased, financing the higher level of purchase commitments.

[1] Investment in intangible assets and property, plant and equipment, plus associated advance payments
[2] Fixed assets = property, plant and equipment + intangible assets

Provisions for pensions were down by EUR 8.7 million, primarily due to the adjustment of actuarial interest.

The equity ratio fell to 19.7 % (previous year: 20.6 %) and reflects the balance sheet extension resulting from taking out the promissory note loan in July 2018. Application of IFRS 15 had a positive effect on equity of EUR 28.4 million.

Average working capital intensity improved to 20.1% in 2018, primarily because there was less build-up in the course of the year.

At 10.9 %, ROCE based on (adjusted) EBIT was on target and remained 1.2 percentage points below the level of the previous year.

Balance Sheet Summary (IFRS)

EUR million	2018	2017	Change (absolute)	2018 % of total assets
Assets	**2,492.4**	**2,142.1**	350.3	
Current assets	**1,654.4**	**1,283.0**	371.4	66.4 %
thereof inventories	367.8	426.2	−58.4	14.8 %
thereof current receivables	556.5	488.1	68.4	22.3 %
thereof contract assets	134.6	0.0	134.6	5.4 %
thereof cash and cash equivalents	429.3	210.7	218.5	17.2 %
Non-current assets	**838.0**	**859.1**	−21.1	33.6 %
thereof property, plant and equipment	463.1	471.2	−8.1	18.6 %
thereof intangible assets	149.9	155.7	−5.8	6.0 %
thereof other non-current assets	224.9	232.1	−7.2	9.0 %
Liabilities and equity	**2,492.4**	**2,142.1**	350.3	
Current liabilities	**928.6**	**803.4**	125.1	37.3 %
thereof current financial liabilities	63.2	75.5	−12.3	2.5 %
thereof current lease liabilities	0.5	3.2	−2.7	0.0 %
thereof provisions	88.2	97.0	−8.8	3.5 %
thereof trade payables	373.5	456.8	−83.3	15.0 %
thereof contract liabilities	236.6	0.0	236.6	9.5 %
Non-current liabilities	**1,073.9**	**896.8**	177.1	43.1 %
thereof non-current financial liabilities	444.0	250.6	193.4	17.8 %
thereof non-current lease liabilities	2.4	0.1	2.3	0.1 %
thereof pensions and similar liabilities	586.3	594.0	−7.7	23.5 %
Equity	**489.9**	**441.9**	47.9	19.7 %

No significant effects are expected from off-balance-sheet liabilities. Please see note 31 of the consolidated financial statements in this regard.

2.1.5. Financial Position

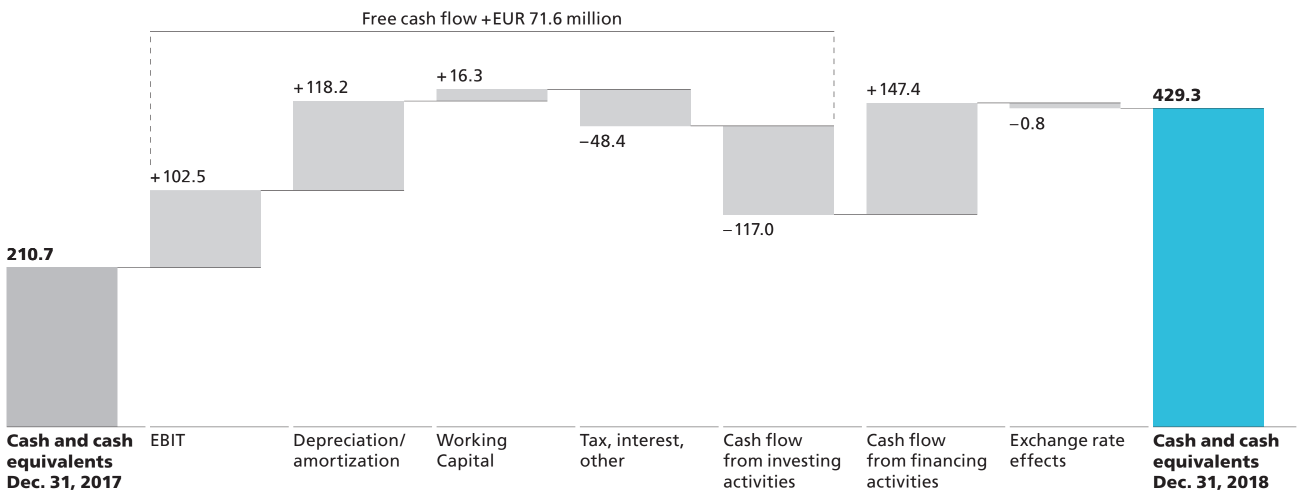
In 2018, cash and cash equivalents nearly doubled, rising by EUR 218.5 million to EUR 429.3 million.

Cash flow from operating activities was EUR 188.6 million (prior year: EUR 77.7 million). Customer prepayments had a strongly positive impact as of the balance sheet date and will be used to finance orders from suppliers in fiscal 2019. The high proportion of customer prepayments meant that working capital remained at the prior-year level, despite sales growth. After cautious investment activity in the previous year, G+D made a conscious decision to purchase property, plant and equipment and intangible assets equal in value to the depreciation/amortization recorded. Free cash flow was strongly positive in 2018 at EUR 71.6 million, which represented a significant improvement compared with the previous year and the planned target.

In July 2018, G+D successfully placed a promissory note loan of EUR 200.0 million, meeting with strong demand from investors. The loan has a term of between five and ten years and features attractive conditions, thus providing the Group with funds for financing operational growth. G+D also made scheduled repayments on existing long-term bank loans (EUR 32.5 million) and reduced its short-term debt and borrowings by EUR 10.0 million. Please refer to note 13 of the consolidated financial statements for information on approved but unused credit lines and on the capital structure. A dividend payment of EUR 24.1 million was made to shareholders in the reporting year.

Change in Cash and Cash Equivalents

EUR million



2.1.6. Employees

The total number of employees was down slightly as of the reporting date of December 31, 2018, despite rising sales. The number of people working in production roles fell as a result of adjustments to the production landscape in Mobile Security, in particular the closure of the production site in Slovakia. The secunet and Veridos business sectors made targeted increases to the number of production staff in line with higher sales volumes. Compared with the previous year, fewer people were employed in sales, particularly in Mobile Security. The number of administrative employees increased, especially in IT and finance roles.

Number of Employees

FTE at reporting date	2018	2017	Change (absolute)	Change
Production	7,306	7,523	− 217	−2.9 %
Sales	1,405	1,430	− 26	−1.8 %
Research and development	1,146	1,155	− 8	−0.7 %
Administration	1,533	1,492	40	2.7 %
Total	**11,389**	**11,600**	− 211	−1.8 %

Relocation of production in Mobile Security and the restructuring at CI Tech only began to take full effect towards the end of the year, meaning that the average number of employees rose by 96 (+1.0 %) and personnel expenses increased to EUR 686.5 million (+4.3 %).

2.1.7. Declaration on Management and Governance

In accordance with the German law on equal participation of women and men in leadership positions in the private and public sectors (FüPoG), the Supervisory Board set itself the target in 2017 of ensuring that 30 % of members of the Supervisory Board and 0 % of members of the Management Board should be women. The aim with regard to the top tier of management below Board level is to achieve a proportion of 17 %, and 30 % for the second management tier. Giesecke+Devrient GmbH aims to meet these quotas by March 31, 2022. As of December 31, 2018, women made up 41.7 % of the Supervisory Board, with Astrid Meier, Verena von Mitschke-Collande, Prof. Gabi Dreo Rodosek, Claudia Scheck, and Monika Wächter all serving as members. In the top tier of management, the proportion of women was 14.4 %, while the proportion in the second tier was 20 %.

2.2. Overall Assessment of Economic Situation

The 2018 fiscal year was highly successful for G+D. The order backlog reached EUR 1.7 billion – the highest-ever level in the company's history. Currency Technology and Veridos, in particular, had very strong order books, demonstrating how attractive our solutions are to customers. All sectors achieved sales growth in 2018 compared with the previous year, despite negative effects from the appreciation of the euro against other currencies in core foreign markets. The portfolio's strategic shift towards solution-oriented and digital business models continued to gain significant momentum. Actual sales growth exceeded planned targets.

EBIT and EBITDA performance fell below the strong results achieved in the previous year, but both earnings figures came in on target when excluding the adverse impact of realigning CI Tech.

With its major project in Egypt, Currency Technology confirmed its leading role as a system integrator for the entire cash cycle, offering its customers end-to-end solutions. The Banknote Solutions division further expanded its excellent market position. Production facilities were well utilized, with sales volumes increasing again compared with the previous year. The Currency Management Solutions division saw a significant improvement in sales and benefited from growth of both its solutions business and its product business.

Sales at Mobile Security grew as planned compared with the previous year. This is especially gratifying because this particular business sector operates in highly challenging and dynamic markets. Mobile Security responded to the appreciation of the euro and the commoditization impacting the core connectivity market for plug-in SIM cards, in particular, by achieving higher sales volumes in physical cards and expanding the growth areas of Internet of Things and automotive. The sector also confirmed its position as a world leader in the growing embedded SIM (eSIM) market. The core payment business thus grew significantly in 2018.

Veridos was likewise successful in winning several major projects, enabling it to make substantial progress in 2018 by leveraging the available growth opportunities. The very healthy order book provides a solid basis for the desired long-term sales growth. While sales growth was modest in 2018, this business sector offers some of the best future opportunities for growth in the entire G+D Group.

secunet continued its exceptional success story in 2018. Following the approval of its secure health connector, secunet expanded its security offering to include a telematics infrastructure, as used by medical practices, for example. The business sector upgraded its sales and earnings forecasts in December. Its cyber security solutions will continue to be developed and refined in the future, laying the foundation for further growth.

3. Opportunities and Risk Report

Including Risk Reporting on the Use of Financial Instruments

As a global enterprise, G+D has to find the right balance between opportunity and risk when carrying out its diverse business activities. Failure to identify and manage risk satisfactorily could jeopardize individual business sectors or even threaten the Group's existence. Effective risk management forms part of responsible and sustainable corporate governance. At G+D, the objective of risk management is to recognize risk as early as possible, properly assess it, and then counter it by taking appropriate action. This is intended to minimize any potential impact on the Group's net assets, financial position, and profitability, to safeguard the ongoing existence of G+D as an independent business, to strengthen its market position, and to achieve real increases in enterprise value.

3.1. Risk Management System

The risk management system incorporates all the process and organizational guidelines needed to identify, analyze, assess, and manage the Group's overall risk situation. This system is embedded into strategy, planning, and controlling mechanisms across the entire Group. While operating and financial risks are dealt with on an ongoing basis whenever necessary in the course of day-to-day business management and assessed during the quarterly performance reviews, strategic risks are subject to an annual review as part of the strategy process and therefore to separate reporting. Compliance risks are likewise managed via our own compliance organization and are also subject to separate reporting, including notification of Corporate Controlling in the event of financial implications.

Corporate Controlling compiles a Group risk report on a quarterly basis, which provides information on the current status of risks. The risk report is provided to members of the Supervisory Board and Advisory Board as part of quarterly reporting. The Group accounting department incorporates all accounting practices and valuation methods into the Group's standard accounting policy and updates this policy when new IFRS standards are published or existing ones amended. Employees in finance are regularly informed of the latest issues relating to financial reporting and of the relevant dates in the accounting and planning process. In order to evaluate all risks in connection with accounting (e.g. inventory valuation, credit default risks with regard to receivables, valuation of provisions), the Group accounting department has defined standard requirements for the Group. External experts are consulted to help assess special areas, such as pension obligations. Variance analysis is included in the monthly reports to the Management Board. Significant changes and the breakdown of individual items are analyzed at the Group, subgroup, and subsidiary level.

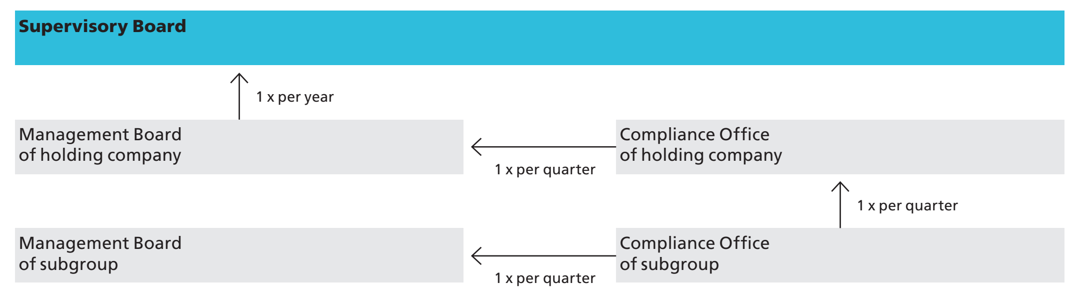
3.2. Compliance Management

The purpose of the compliance management system (CMS) is to maintain customer confidence in G+D. At the same time, it safeguards the Group's ongoing existence. The CMS is continually updated to satisfy new legal requirements and also to reflect G+D's current risk profile. To achieve this objective, the CMS is subject to continuous monitoring and adjustment with regard to suitability, implementation, and effectiveness. G+D Currency Technology was audited by an external auditor in 2017 in accordance with Assurance Standard 980 of the German Institute of Public Auditors (IDW). G+D Mobile Security was audited in line with the same standard in 2018 and the first quarter of 2019. As part of a compliance assessment, risks relating to corruption and antitrust law violations are regularly reviewed and assessed across all group entities.

The Group-wide compliance organization ensures that every employee and all Management Board, Supervisory Board, and Advisory Board members within the G+D Group are familiar with compliance requirements and act accordingly.

The Compliance Offices regularly report on activities in the core compliance areas of prevention, detection, and response. Management is informed of (potential) compliance violations and the countermeasures taken, thereby enabling it to counter any undesirable developments.

Compliance Management



Individual events are reported separately and directly to the Chairman of the relevant Management Board, who takes appropriate measures in conjunction with the other Board members. External consultants are used as necessary to examine and advise on compliance matters.

On behalf of the Management Board, the Group's auditing department (Corporate Auditing) conducts regular checks to assess the implementation and effectiveness of Group management and monitoring processes. The main aspects looked at are risk management, the internal control system, legal regulations, and internal corporate guidelines. The Group's auditing department was certified by Ernst and Young in accordance with the requirements of the Deutsches Institut für Interne Revision e.V. / The Institute of Internal Auditors in 2018. In fiscal 2018, Corporate Auditing carried out a total of 19 audits. Findings are reported to the Management Board and managers of the audited entity. Corporate Auditing checks that measures arising from these investigations are implemented appropriately.

3.3. Strategic Risks

The maintenance of our competitiveness requires the development of new products, services and solutions. This also entails establishing complete ecosystems and implementing the associated business models, which may affect the liability exposure. Developing the right technology at the right time and having the necessary organizational structures in place is crucial. We seek to shape market developments through carefully targeted investment in research and development. If activities are started too soon, this can give rise to idle costs, while starting too late can lead to loss of market share. Changes in strategy can result in substantial restructuring costs. We counter this risk by reviewing strategy in each subgroup and at the wider Group level on an annual basis.

Targeted acquisitions, which tie up capital, are sometimes necessary to support corporate strategy and expand our portfolio of products and services. Implementing the associated business plan and necessary measures to integrate the acquired organization into the Group entails considerable risk. Failure to meet objectives may cause the value of assets to fall and thus impact results.

3.4. Operating Risks and Opportunities

All identified operating risks are regularly assessed by the risk owners in the subsidiaries. This involves an analysis of the probability of occurrence, the potential damage, and the effectiveness of the measures employed to mitigate the risk.

3.4.1. Risk Analysis

G+D carries out comprehensive risk analysis, extending from contract initiation right through to the expiry of any warranty period. Where the relevant undertaking comes under the operational responsibility of a Group company and this company receives technical, logistical, or other specialist support or supplies from a different Group company, joint risk analysis must be performed for all Group companies involved.

G+D distinguishes the following main categories of operating risks: production risks, supplier risks, IP risks, security risks, political risks, financial risks, and tax risks. A number of individual risks may be associated with any project or venture, which are subject to different correlations.

3.4.2. Operating Risks and their Assessment

Operating risks are risks that may occur anywhere along the value chain and can jeopardize the achievement of near-term corporate objectives. The individual risks must be assessed separately and also aggregated for the project or venture in question to provide a useful indicator of overall risk. The risks identified (individual risks and overall risk) are evaluated using the gross and net methods. Gross risk is defined as the potential damage that might result if no measures or controls were in place to mitigate the risk. Net risk is the risk remaining when mitigating actions are taken into account. The probability of occurrence is multiplied by the net risk to obtain the risk value.

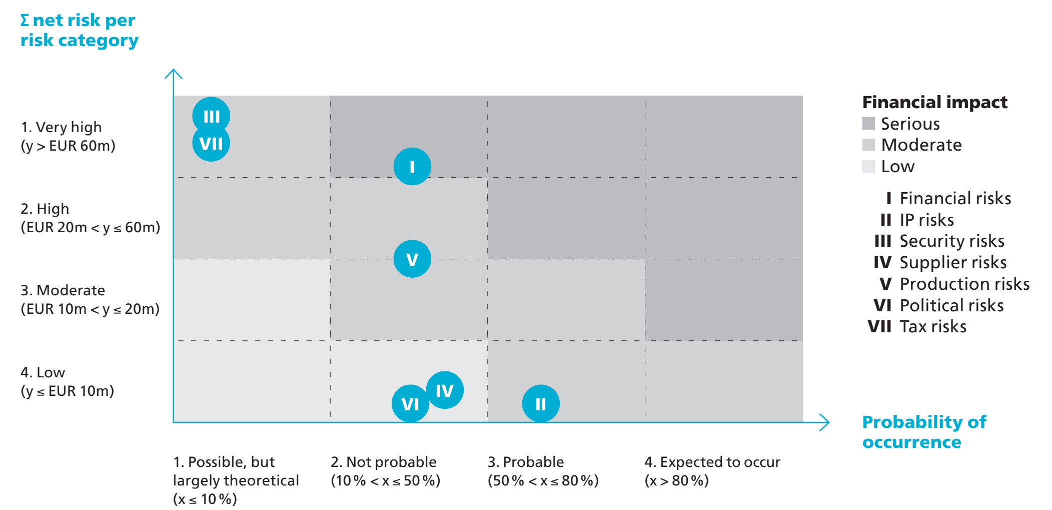
The probability of occurrence indicates the estimated likelihood of the identified risk occurring, which is classified as follows:

Description	Probability of occurrence
Expected to occur	x > 80 %
Probable	50 % < x ≤ 80 %
Not probable	10 % < x ≤ 50 %
Possible, but largely theoretical	x ≤ 10 %

Overall Risk Situation
As of December 31, 2018, 40 operating risks had been reported to the Management Board and Supervisory Board via the risk report.

After combining the individual risks as per the categories defined above, the following picture emerges:

Risk Categories

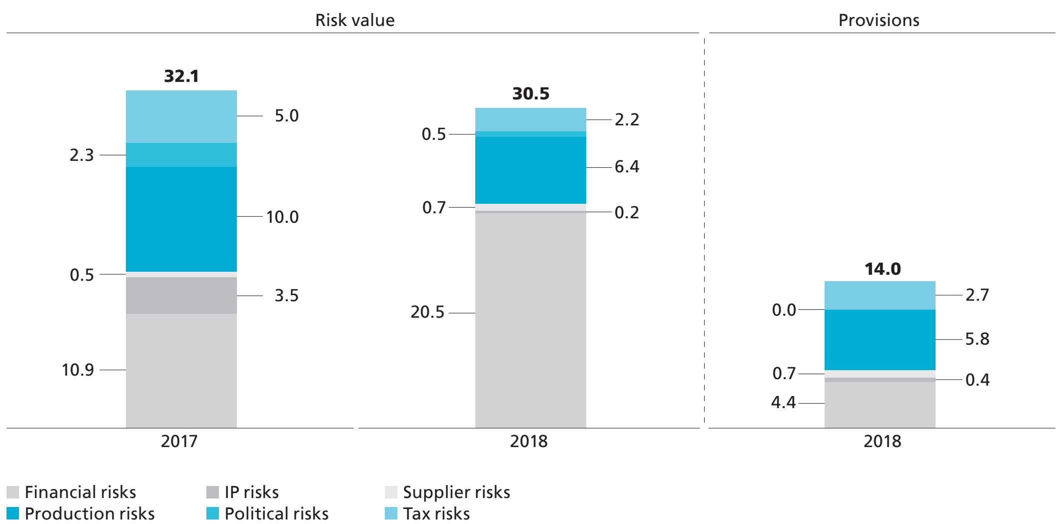


Financial risks represent a potentially serious risk to the Group. Annual impairment testing of goodwill may reveal the need for an adjustment, based on operational performance and anticipated future development derived from this. G+D is also exposed to general credit default risk with regard to receivables, which exists for customers in South America in particular as a result of possible defaults. Security and tax risks are characterized by a high potential net risk, but this is accompanied by an extremely low probability of occurrence of almost 0 %. Production risks have a slightly higher probability of occurrence, combined with comparatively low net losses. All other risk categories are of lesser importance.

Multiplying the net risk values by the relevant probabilities of occurrence gives a cumulative risk value of EUR 30.5 million for the current reporting year. The individual risks were simply added up for the purposes of this calculation. Simultaneous occurrence of all individual risks can be virtually ruled out due to the different correlations.

Risk Value and Provisions

EUR million



Compared with the previous year, there was a notable reduction in production risks due to a quality initiative and in IP risks, based on an updated assessment.

If the probability of an individual risk occurring is greater than 50 %, the provisions or impairments correspond to 100 % of the net risk value. The cumulative risk value is EUR 30.5 million, with corresponding provisions of EUR 14.0 million. For finance risks in particular, no provisions at the same level were necessary in view of the probability assessment.

These risks have been taken into consideration in these financial statements and in the forecast, in accordance with the Group's accounting policy. If the risks for which no provisions have been made due to the low probability of occurrence do occur, this would have a negative impact on our net assets, financial position, and results of operations. If the risks covered by provisions occur, there would be a cash outflow.

After careful analysis, the Group-wide risks are not deemed existential in nature, either individually or overall. Thanks to G+D's strong market positioning, capacity for technological innovation, globally standardized processes, and committed employees, the Management Board is confident that the Group is again well equipped to meet the challenges posed by these risks in 2019 and to leverage the opportunities that arise.

Financial Risks

G+D is subject to typical liquidity risk, counterparty credit risk, and market risks stemming from changes to exchange rates, interest rates, and share prices. The current uncertain political situation in South America could affect the fulfillment of contracts by each side.

Risk associated with an impairment of goodwill at the Group level is subsumed into financial risks.

Financial risks are primarily managed as part of the Group's ongoing business and financing activities. Additionally, financial risks affecting the G+D Group and its operating subsidiaries are identified centrally on the basis of written guidelines and their management is also handled by G+D GmbH. Financial risk forms part of the monthly risk reports submitted to the Management Board and is also included in regular reporting to the Supervisory and Advisory Boards.

If necessary, derivative financial instruments are deployed in relation to foreign currency and interest rates to hedge underlying transactions. In accordance with risk management standards applying to international banks, all trading activity is subject to financial monitoring that is independent of the Group's treasury department.

In accordance with IAS 19, G+D is required to recognize actuarial gains and losses arising from pension obligations fully and immediately in equity. This leads to high volatility of equity in response to changes in capital market interest rates.

For further details on financial risk, please see note 22 of the consolidated financial statements.

IP Risks

It is crucial to protect, license, and acquire intellectual property (IP) rights as part of R&D activities. G+D could be accused by third parties of breaching their intellectual property rights. This could result in compensation payments for damages and a ban on using certain technologies. The Group's patent department works with external law firms to register and monitor patents.

Security Risks
G+D is not completely immune to cyber security risks, whether in the form of economic or industrial espionage, or of cyber attacks by specific countries or competitors. These risks could lead to unintentional sharing of confidential information or intellectual property, product damage, supply difficulties, loss of production, or compromised (personal) data. G+D may also be faced with threats from individuals who gain unauthorized access to buildings or systems and misuse, steal, or damage information or assets. G+D has taken a range of technical and organizational precautions to minimize this risk. These include IT security measures, identity management, multi-level access control and entry systems, camera surveillance, deployment of a Group security service, and raising employee awareness through regular training sessions on compliance and security issues. G+D has implemented a security and control system that makes it possible to identify and respond promptly to risk.

Supplier Risks
At G+D, supply chain management is organized individually in each of the business sectors, but in accordance with uniform guidelines contained in the procurement manual. Any disruptions, such as delivery delays on the supplier side or an increase in prices for raw materials (particularly semiconductors and cotton), may have adverse effects on the availability, quality, and cost of G+D products and therefore impact sales and earnings.

When selecting external partners, care must be taken to ensure that they abide by internal rules and applicable laws and regulations, as well as supplying G+D's customers with high-quality products. When contractual relationships end, legal disputes may arise, in which claims could be brought against G+D.

Production Risks
G+D offers its customers high-quality products and services. Its employees are crucial to the success of the company. Due to demographic trends, there is a risk that it may not be possible to fill vacant positions with appropriately skilled employees. Through initiatives such as global hackathons and think tanks, G+D highlights its attractiveness as an employer, in particular to young professionals. These activities are accompanied by an integrated program to nurture talent, which is designed to foster staff loyalty. In addition to employees, proper utilization of production capacity is essential to success. Additional capacity must be maintained to safeguard continuous production. G+D aims to ensure optimum machine utilization and back-up capacity by means of production planning and management. Ineffective staff management or the stoppage of machinery would have serious consequences for net assets, the financial position, and results of operations.

Machines that are outdated or no longer meet the latest technical standards could lead to a loss of production capacity, resulting in partial or complete failure to produce the planned quantities. Problems of this kind can result in project delays or late delivery of products to end customers. If G+D is late in delivering products, it could face contractual penalties for failing to comply with delivery deadlines, for example. Prompt investment in replacement machinery is intended to prevent these issues. Capital expenditure is managed by the business sectors at G+D and closely monitored by the project controlling team.

Statutory requirements can also impact production, for instance if emissions limits are regulated more tightly. Environmental issues are becoming increasingly important for businesses. G+D seeks to counter risks in this area by means of an environmental management system and embracing corporate responsibility (CR). Details of the measures taken can be found on pages 26–29 of the annual report.

Unrecognized defects and quality problems or the delayed introduction of new products could result in higher costs for G+D and have an adverse impact both on demand for the company's products and on its reputation. To counter this, ongoing and efficient development of the quality management system is essential, with a corresponding focus on customer needs. In relation to product development, timely implementation of preventive measures is especially important in order to achieve the warranted product quality and avoid substantial additional costs during the subsequent commercialization phase. Our underlying approach is that "quality is everybody's business." Making this attitude a reality requires processes, organizational interfaces, tasks, and responsibilities to be clearly defined and communicated. Each employee therefore needs to be fully aware of the contribution they can make within their role.

The replacement of existing products in a region may mean that spare parts inventories can no longer be used. G+D counters this risk by periodically revising its phase-out and sales planning. In addition, inventories are regularly subjected to impairment testing during the preparation of financial statements.

Political Risks
The Middle East is currently affected by political uncertainty. Contracts with customers from this region could be impacted by extreme developments that make it impossible for the parties to fulfill the contract due to force majeure or shortages.

G+D counters this risk by continually monitoring economic and political developments in key markets, aided by the strong regional focus of G+D's sales organization. Production and capital expenditure are managed centrally, enabling a rapid response in the event of any economic slowdown.

Tax Risks
G+D's business activities are subject to the usual risks associated with international operations. These include the incompatibility of different tax regimes, possible tax obstacles that make business more difficult, and import/export regulations. Intercompany netting may be challenged by the tax authorities, which can entail lengthy negotiations and the need to produce extensive documentation.

G+D seeks to counter these risks by continually adapting its internal processes to changing requirements. The company also takes advice from auditors, lawyers, and tax consultants in the countries concerned.

The introduction of a holding structure and the associated carve-out and establishment of legally independent local companies has increased the potential risks. Where possible, the risk position was mitigated by obtaining binding information from the relevant local tax authorities.

3.4.3. Operating Opportunities

Dynamic market conditions mean new business opportunities are opening up all the time. Maintaining an extensive vertical and horizontal portfolio of products and solutions allows the Group to diversify risk and take advantage of these market opportunities.

In G+D's dynamic market environment, it may occasionally be the case that customers are no longer able to meet their payment obligations. If a customer has filed for bankruptcy, impairment adjustments need to be made to these receivables in the accounts. The 2018 financial statements include impaired customer receivables totaling EUR 9.0 million. If, contrary to expectations, it becomes possible for the customer to settle the outstanding receivables, the derecognition would be reversed. This would positively impact net assets, the financial position, and results of operations by the corresponding amount.

G+D sees hard-to-quantify opportunities in the following areas:

G+D is a technology leader in the fields of payment, connectivity, identity, and digital security, all of which have huge market potential. If these trends gain in importance over the short term in industry, the public sector, or the private sphere and the corresponding change processes take place more quickly, opportunities for solutions provided by G+D could emerge, leading to additional sales and earnings growth.

In a dynamic market environment, G+D strikes a balance between effectively meeting the current needs of customers and investing in promising new products and solutions. If the vertical and horizontal expansion of value-adding activities proves more rapid and extensive than currently anticipated and awareness of security issues in the digital world results in an even greater need for security technology than expected, G+D could see a faster rise in demand for new and improved products. This could have a positive impact on net assets, the financial position, and results of operations, allowing an upward revision of existing forecasts.

Finally, legal requirements could also lead to an increase in sales and earnings. Internal forecasts could be revised upward if the use of a technology that G+D is involved in developing or that is contained in its products were to be made mandatory, for instance.

Overall, opportunities and risks are well balanced.

3.4.4. Major Projects

G+D is currently responsible for a number of major projects with high sales potential and lengthy implementation periods stretching over several years. These projects have an elevated risk structure, which is taken into account in the business cases with corresponding premiums.

Tight project management and a dedicated project controlling team have been put in place to support and oversee these major projects. The risks posed by major projects can be successfully addressed through continuous risk management.

4. Forecast

In 2018, G+D gained significant major projects in Egypt, Bangladesh, and Uganda, with implementation periods spanning multiple years. As a result, order backlog increased to a record EUR 1.7 billion.

Sales growth in 2018 was positively impacted on a one-time basis by initial application of IFRS 15. G+D therefore plans to generate sales at the previous year's level in 2019, provided there are no significant exchange rate fluctuations or politically motivated restrictions on market access.

Currency Technology is expected to further increase its high level of sales. There continues to be growth potential in its project business, in plant engineering, and in the market for banknote processing machines. The need for digitalization solutions in the cash cycle will gain further momentum and provide an additional boost to sales growth. Due to sustained competitive pressure and the modified product mix, the business sector expects EBIT to fall slightly.

Mobile Security will focus more strongly on attractive markets and is prepared to accept lower sales of physical SIM cards. By contrast, this sector expects sales in its solutions and service business to rise in 2019. Overall, sales will decline, however. Earnings are expected to increase slightly compared with the previous year due to increased profitability as well as the elimination of production relocation costs.

Veridos has created a solid foundation for further sales growth thanks to its healthy order backlog. The business sector expects to see a significant increase in 2019. Earnings will also improve slightly as sales grow.

After a record year in 2018, moderate sales growth is expected at secunet in 2019. Earnings are predicted to remain at the previous year's level. In addition to providing IT security solutions for customers in the public sector and safeguarding critical infrastructures, secunet can now also guarantee the secure exchange of data in the healthcare sector by way of its BSI-certified health connector.

Higher EBIT and EBITDA are expected for G+D overall than in 2018.

In 2019, working capital intensity is expected to be at the 2018 level.

After cautious investment activity in recent years, investment already increased in 2018. This trend is set to continue in 2019. Furthermore, investment is expected to significantly exceed depreciation/amortization.

The high level of prepayments received at the reporting date of December 31, 2018, is directly related to G+D's major projects and had a very positive impact on free cash flow. A proportion of these funds will be passed on to suppliers in 2019. Free cash flow is expected to remain positive in 2019 but will be below the previous year's level due to the special effect described.

In 2019, G+D aims to expand its employee headcount in growth markets, resulting in an expected increase of the overall workforce.

ROCE is expected to be similar to that achieved in 2018.

Actual results may, of course, vary from expected performance. The impact of applying IFRS 16 will affect financial metrics in 2019. These effects have not yet been included in our planning.

Consolidated Financial Statements

as of December 31, 2018

Independent Auditor’s Report

To the Giesecke+Devrient Gesellschaft mit beschränkter Haftung, München

Opinions

We have audited the consolidated financial statements of Giesecke+Devrient Gesellschaft mit beschränkter Haftung, München and its subsidiaries (the Group), which comprise the consolidated statement of financial position as at December 31, 2018, the consolidated statement of profit and loss, consolidated statement of changes in equity and consolidated statement of cash flows for the financial year from January 1, 2018 to December 31, 2018, and notes to the consolidated financial statements, including the recognition and measurement policies presented therein. In addition, we have audited the group management report of Giesecke+Devrient Gesellschaft mit beschränkter Haftung for the financial year from January 1, 2018 to December 31, 2018. In accordance with the German legal requirements we have not audited the content of those parts of the group management report listed in the appendix.

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 requirements of German commercial law and give a true and fair view of the assets, liabilities, and financial position of the Group as at December 31, 2018, and of its financial performance for the financial year from January 1, 2018 to December 31, 2018 in compliance with German Legally Required Accounting Principles, 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. Our opinion on the group management report does not cover the content of “2.1.7 Declaration of Management and Governance” of the group management report.

Pursuant to Section 322 (3) sentence 1 HGB [Handelsgesetzbuch: German Commercial Code], 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 Opinions

We conducted our audit of the consolidated financial statements and of the group management report in accordance with Section 317 HGB 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 German commercial and professional law, and we have fulfilled our other German professional responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinions on the consolidated financial statements and on the group management report.

Other Information

Management is responsible for the other information. The other information comprises the unaudited content of “2.1.7 Declaration of Management and Governance” of the group management report.

Our 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 opinion or any other form of assurance conclusion thereon.

In connection with our audit, our responsibility is to read the other information and, in so doing, to consider whether the other information

- is materially inconsistent with the consolidated financial statements, with the group management report or our knowledge obtained in the audit, or
- otherwise appears to be materially misstated.

Responsibilities of Management and the Supervisory Board for the Consolidated Financial Statements and the Group Management Report

Management is responsible for the preparation of the consolidated financial statements that comply, in all material respects, with the requirements of German commercial law and that the consolidated financial statements, in compliance with German Legally Required Accounting Principles, give a true and fair view of the assets, liabilities, financial position, and financial performance of the Group. In addition, management is responsible for such internal control as they, in accordance with German Legally Required Accounting Principles, 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, management is 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 provided no actual or legal circumstances conflict therewith.

Furthermore, management is 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, management is 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 supervising the process of financial reporting for preparation of the consolidated financial statements and the group management report.

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 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 Section 317 HGB 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 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 controls.
- 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 opinion on the effectiveness of these systems.
- Evaluate the appropriateness of accounting policies used by management and the reasonableness of estimates made by management and related disclosures.
- Conclude on the appropriateness of management's 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 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 German Legally Required Accounting Principles.
- 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 management in the group management report. On the basis of sufficient appropriate audit evidence we evaluate, in particular, the significant assumptions used by management 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 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.

Munich, 26 March 2019

KPMG AG
Wirtschaftsprüfungsgesellschaft

[Original German version signed by:]

Huber	**Pfaff**
Wirtschaftsprüfer	Wirtschaftsprüfer
[German Public Auditor]	[German Public Auditor]

Consolidated Income Statement

for the Years Ended December 31, 2018 and 2017

EUR million	Note	2018	2017
Net sales	15	2,246.0	2,136.4
Cost of goods sold		(1,648.7)	(1,531.1)
Gross profit		**597.3**	**605.3**
Selling expenses		(224.0)	(220.0)
Research and development expenses		(113.3)	(125.7)
General and administrative expenses		(155.4)	(151.4)
Other operating income/(expenses), net		11.4	30.1
Operating profit		**116.0**	**138.3**
Share in earnings from equity investments	6	1.2	3.5
Other financial income/(expenses), net	17	(14.7)	(11.6)
Earnings before interest and income taxes		**102.5**	**130.2**
Interest income	18	2.0	2.2
Interest expense	18	(19.0)	(19.6)
Earnings before income taxes		**85.5**	**112.8**
Income taxes	19	(35.3)	(45.8)
Net income		**50.2**	**67.0**
thereof apportioned to non-controlling interests		7.1	6.6
thereof apportioned to the shareholders of Giesecke+Devrient GmbH		43.1	60.4
		50.2	**67.0**

The accompanying notes to the financial statements are an integral part of these statements.

Consolidated Statement of Comprehensive Income

for the Years Ended December 31, 2018 and 2017

EUR million	2018	2017
Net income	**50.2**	**67.0**
Other comprehensive income		
Items that will never be reclassified to the income statement		
Actuarial gains and losses	14.5	5.8
Deferred taxes on actuarial gains and losses	(4.6)	(1.2)
	9.9	**4.6**
Items that are or may be reclassified to the income statement		
Currency effects from the translation of foreign operations	(3.7)	(21.1)
Effective part of fair value changes in cash flow hedges	0.1	0.2
Share of income and expenses recognized directly in equity resulting from the use of the equity method of accounting	–	(0.8)
	(3.6)	**(21.7)**
Other comprehensive income, net of tax	**6.3**	**(17.1)**
Total comprehensive income	**56.5**	**49.9**
thereof apportioned to non-controlling interests	7.6	6.0
thereof apportioned to the shareholders of Giesecke+Devrient GmbH	48.9	43.9
	56.5	**49.9**

The accompanying notes to the financial statements are an integral part of these statements.

Consolidated Balance Sheet

as of December 31, 2018 and 2017

EUR million	Note	Dec. 31, 2018	Dec. 31, 2017
ASSETS			
Current assets			
Cash and cash equivalents		429.3	210.7
Financial assets	2	78.4	87.4
Accounts receivable trade and other receivables, net	3	556.5	488.1
Inventories, net	4	367.8	426.2
Income taxes receivable		30.5	30.4
Non-current assets held for sale	7, 8	7.4	0.2
Other current assets	5	49.9	40.0
Contract assets	23	134.6	–
Total current assets		**1,654.4**	**1,283.0**
Non-current assets			
Investments accounted for under the equity method	6	12.6	18.8
Investments in other related parties	6	9.0	-
Financial assets	2	23.2	24.1
Accounts receivable trade and other receivables, net	3	7.6	16.5
Intangible assets	7	149.9	155.7
Property, plant and equipment	8	463.1	471.2
Deferred tax assets	19	152.2	163.6
Income taxes receivable		1.7	3.0
Other non-current assets		6.3	6.2
Contract assets	23	12.4	–
Total non-current assets		**838.0**	**859.1**
Total assets		**2,492.4**	**2,142.1**

The accompanying notes to the financial statements are an integral part of these statements.

EUR million	Note	Dec. 31, 2018	Dec. 31, 2017
LIABILITIES AND EQUITY			
Current liabilities			
Accounts payable trade and other accounts payable	10	373.5	456.8
Provisions	11	88.2	97.0
Financial liabilities	13	63.2	75.5
Finance lease obligations	9	0.5	3.2
Accrual for income taxes and income taxes payable		37.4	38.0
Other current liabilities	12	129.2	132.9
Contract liabilities	23	236.6	–
Total current liabilities		**928.6**	**803.4**
Non-current liabilities			
Accounts payable trade and other accounts payable	10	–	25.5
Provisions	11	11.4	10.3
Financial liabilities	13	444.0	250.6
Finance lease obligations	9	2.4	0.1
Pensions and related liabilities	14	586.3	594.0
Deferred tax liabilities	19	11.9	9.3
Other non-current liabilities		8.3	7.0
Contract liabilities	23	9.6	–
Total non-current liabilities		**1,073.9**	**896.8**
Equity			
Capital stock	20	25.8	25.8
Additional paid-in capital	20	29.5	29.5
Retained earnings	20	448.3	399.9
Accumulated income and expenses recognized directly in equity		7.1	11.0
Treasury stock	20	(60.1)	(60.1)
Non-controlling interests		39.3	35.8
Total equity		**489.9**	**441.9**
Total liabilities and equity		**2,492.4**	**2,142.1**

The accompanying notes to the financial statements are an integral part of these statements.

Consolidated Statement of Changes in Equity

for the Years Ended December 31, 2018 and 2017

EUR million	Capital stock	Additional paid-in capital	Retained earnings	Accumulated income and expenses recognized directly in equity resulting from currency translations	Accumulated income and expenses resulting from cash flow hedges	Treasury stock	**Subtotal**	Non-controlling interests	**Total**
Balance as of January 1, 2017	**25.8**	**29.5**	**349.6**	**32.4**	**(0.3)**	**(60.1)**	**376.9**	**31.4**	**408.3**
Net income	–	–	60.4	–	–	–	60.4	6.6	67.0
Other comprehensive income	–	–	4.6	(21.3)	0.2	–	(16.5)	(0.6)	(17.1)
Total comprehensive income	**–**	**–**	**65.0**	**(21.3)**	**0.2**	**–**	**43.9**	**6.0**	**49.9**
Payments apportioned to non-controlling interests	–	–	(0.5)	–	–	–	(0.5)	0.6	0.1
Dividends paid	–	–	(14.2)	–	–	–	(14.2)	(2.2)	(16.4)
Balance as of December 31, 2017	**25.8**	**29.5**	**399.9**	**11.1**	**(0.1)**	**(60.1)**	**406.1**	**35.8**	**441.9**
Impact of first time adoption of new standards (IFRS 9/15)[1]	–	–	19.7	–	–	–	19.7	0.3	20.0
Adjusted balance as of January 1, 2018	**25.8**	**29.5**	**419.6**	**11.1**	**(0.1)**	**(60.1)**	**425.8**	**36.1**	**461.9**
Net income	–	–	43.1	–	–	–	43.1	7.1	50.2
Other comprehensive income	–	–	9.7	(4.0)	0.1	–	5.8	0.5	6.3
Total comprehensive income	**–**	**–**	**52.8**	**(4.0)**	**0.1**	**–**	**48.9**	**7.6**	**56.5**
Additions due to changes in consolidation structure	–	–	–	–	–	–	–	1.8	1.8
Payments apportioned to non-controlling interests	–	–	–	–	–	–	–	0.5	0.5
Dividends paid	–	–	(24.1)	–	–	–	(24.1)	(6.7)	(30.8)
Balance as of December 31, 2018	**25.8**	**29.5**	**448.3**	**7.1**	**0.0**	**(60.1)**	**450.6**	**39.3**	**489.9**

[1] Refer to the explanations in Note 1 (s) "Change in Accounting and Valuation Policies"

The accompanying notes to the financial statements are an integral part of these statements.

Consolidated Statement of Cash Flows

for the Years Ended December 31, 2018 and 2017

EUR million	2018	2017
Cash flows from operating activities		
Earnings before interest and income taxes	102.5	130.2
Adjustments to reconcile earnings before interest and income taxes to cash provided by operations		
Depreciation, amortization and impairment/recoveries	118.2	110.6
(Gain)/loss on sale and disposal of intangible assets and property, plant and equipment	(0.7)	(15.8)
(Gain)/loss on the purchase of shares in associated companies and joint ventures	(0.7)	–
Undistributed earnings in associated companies and joint ventures excluding dividend payments	0.3	(3.5)
Dividends received from associated companies and joint ventures	2.5	2.2
Change in operating assets and liabilities		
(Increase)/decrease in investments in trading securities	12.4	(10.0)
(Increase)/decrease in accounts receivable trade and other accounts receivable, net	(59.2)	(30.8)
(Increase)/decrease in prepaid expenses and other assets	(11.5)	(11.0)
(Increase)/decrease in contract assets	(44.0)	–
(Increase)/decrease in non-current assets held for sale	0.2	–
(Increase)/decrease in inventories, net	(36.3)	(41.8)
Increase/(decrease) in accounts payable trade and other accounts payable	79.5	18.6
Increase/(decrease) in provisions	(9.0)	(29.6)
Increase/(decrease) in pensions and related liabilities	(5.3)	(4.1)
Increase/(decrease) in other liabilities	1.9	10.2
Increase/(decrease) in contract liabilities	76.7	–
Income taxes paid, net	(34.2)	(42.2)
Interest received	2.0	2.2
Interest paid	(6.7)	(7.5)
Net cash provided by operating activities	**188.6**	**77.7**
Cash flows from investing activities		
(Increase)/decrease in short-term investments	(0.1)	0.3
Additions to and prepayments on intangible assets	(29.2)	(25.3)
Additions to and prepayments on property, plant and equipment	(79.2)	(71.7)
Capital increase in and founding of associated companies and joint ventures	–	(7,3)
Capital increase in investments in related companies	(9.0)	–
Acquisitions, net of cash acquired	(7.3)	4.4
Proceeds from the sale/purchase of investment securities	(0.9)	–
Loans to associated companies	–	(0.7)
Payments received on loans to associated companies	–	0.4
Proceeds from sale of intangible assets	0.1	–
Proceeds from sale of property, plant and equipment	6.1	22.6
Proceeds from sale of equity investments	2.5	–
Net cash used in investing activities	**(117.0)**	**(77.3)**
Free Cashflow[1]	**71.6**	**0.4**

[1] Free cash flow consists of net cash provided by operating activities less net cash used in investing activities.

EUR million	2018	2017
Cash flows from financing activities		
Proceeds from issuance of long-term debt	210.3	82.4
Proceeds from issuance of long-term debt from the Giesecke+Devrient Foundation	0.3	0.8
Proceeds from issuance of short-term debt from MC Familiengesellschaft mbH	15.5	15.4
Repayment of long-term debt	(29.3)	(50.5)
Repayment of long-term debt from the Giesecke+Devrient Foundation	–	(0.8)
Repayment of short-term debt from MC Familiengesellschaft mbH	(5.4)	(17.7)
Payments on finance lease obligations	(3.4)	(2.6)
Net (decrease)/increase in short-term debt and borrowings	(10.0)	(33.8)
Dividends paid to shareholders	(24.1)	(14.2)
Cash received from non-controlling interests	0.5	0.3
Dividends paid to non-controlling interests	(6.7)	(2.2)
Net cash from/used in financing activities	**147.7**	**(22.9)**
Effect of exchange rates on cash and cash equivalents	(0.8)	(10.4)
Net increase/(decrease) in cash and cash equivalents	218.5	(32.9)
Cash and cash equivalents at beginning of the year	210.7	243.6
Cash and cash equivalents at end of the year	**429.3**	**210.7**

The accompanying notes to the financial statements are an integral part of these statements.

Notes to Consolidated Financial Statements

for the Years Ended December 31, 2018 and 2017

1 Summary of Significant Accounting Policies and Practices

A Description of Business

Giesecke+Devrient Gesellschaft mit beschränkter Haftung and subsidiaries ("G+D" or "Giesecke+Devrient") is in the business of printing banknotes and securities, as well as the development and production of security paper and currency automation equipment. Giesecke+Devrient also develops and manufactures magnetic stripe cards and smartcards mainly for the telecommunications, banking and health services industries. A further field of business includes security-related solutions for governments and public authorities, ranging from ID cards and travel documents to e-government solutions. New technologies comprise network solutions and secure mobile transaction solutions as well as a software system for mobile devices.

Giesecke+Devrient, headquartered in Prinzregentenstraße 159, 81677 Munich, Germany, is entered in the Commercial Register of the Munich District Court Dept. B under the number 4619. G+D has a strong international orientation with Germany being one of its major markets. Other key markets include the United States, Canada and China. As of December 31, 2018, G+D had subsidiaries in 32 countries and 11,389 employees worldwide, including 7,247 outside Germany.

The consolidated financial statements were approved by the Management Board on March 26, 2019.

B Basis of Presentation

The consolidated financial statements as of December 31, 2018 have been prepared in accordance with International Financial Reporting Standards (IFRS) as adopted by the EU.

MC Familiengesellschaft mbH was founded in 2012. MC Familiengesellschaft mbH became the Group parent company and prepared statutory consolidated financial statements in accordance with IFRS as of December 31, 2018.

Some figures may not precisely add up in total due to rounding differences.

C Consolidated Group and Principles of Consolidation

Consolidated Group
All material G+D subsidiaries, joint ventures and associated companies are included in the consolidated financial statements.

Affiliated companies are companies that are controlled by the Group. The Group controls a company if it is exposed to or has rights to variable returns from its involvement in the company and has the ability to affect the amount of these returns by using its power. Financial statements of subsidiaries are included from the time the Group obtains control and ceases when the Group loses control. Non-controlling interests are valued at the respective share of the net assets of the company acquired that can be identified at the date of acquisition. Changes in the ownership interest in a subsidiary that do not result in loss of control are accounted for as equity transactions.

Group interests that are accounted for in accordance with the equity method comprise shares in associated companies and joint ventures. Associated companies are companies in which the Group has significant influence but does not control or jointly control with respect to financial and business policies. A joint venture is an arrangement whereby the Group has joint control of the arrangement and has rights to the net assets instead of rights to the assets and obligations for the liabilities of the arrangement.

The consolidated Group comprises 21 domestic and 55 foreign subsidiaries which are fully consolidated. Giesecke+Devrient has had a holding structure since January 2017, in which the divisions are fully consolidated as legally independent subgroups. Although Giesecke+Devrient has less than half of the voting rights in Veridos Matsoukis S.A. Security Printing, Athens (36 %) and in E-SEEK Inc., San Diego (45 %), management has determined that G+D controls these companies. This assessment is on the basis that G+D owns the majority of the voting rights in Veridos GmbH, Berlin, which in turn holds the majority of the voting rights in Veridos Matsoukis S.A. Security Printing, Athens and in E-SEEK Inc., San Diego. Additionally, six joint ventures and/or associated companies are accounted for under the equity method. Giesecke+Devrient holds 16.29 % of the equity shares and voting rights in Hansol Secure Co., Ltd., Seoul. The Group has classified its influence in Hansol Secure Co., Ltd., Seoul as significant since Giesecke+Devrient has rights of co-determination in excess of its ownership percentage in material resolutions. The consolidated financial statements include all material companies which are presented in the schedule of shareholdings (see Note 37 "Shareholdings").

Principles of consolidation
The financial statements of the companies included in the consolidated financial statements are prepared using uniform accounting policies in accordance with IFRS.

Income and expenses, receivables, payables and provisions, as well as intragroup profits between companies included in the consolidated financial statements are eliminated.

A subsidiary is deconsolidated from the date it is no longer controlled by G+D.

Investments in joint ventures and associated companies accounted for using the equity method are initially recognized at cost and adjusted accordingly in subsequent periods. Intragroup profits from transactions with these companies are eliminated in proportion to the acquirer's interest.

Under IFRS, all business combinations are accounted for using the acquisition method. The acquirer allocates the cost of a business combination by recognizing the acquiree's identifiable assets, liabilities, and contingent liabilities that satisfy the recognition criteria at their fair value on the date control over the entity is obtained (acquisition date). The full amounts of identifiable assets and liabilities and contingent liabilities irrespective of the company's ownership interest are recognized at their fair values. Any excess of the purchase price over the fair value of the identifiable assets, liabilities, and contingent liabilities less any minority interests is recognized as goodwill. Where the fair value exceeds the purchase price, the resulting amount is recorded in the income statement.

Non-controlling interests are measured at the fair value of the proportionate identifiable net assets. In a business combination achieved in stages, interests held at the time of transfer of control are revalued and the resulting gain or loss is recognized in profit or loss. An adjustment of conditional purchase price components that were reported as a liability at the acquisition date is recognized in profit or loss for business combinations. Transaction costs are recognized as expenses at the time they are incurred.

After having gained control of a subsidiary, the difference between the purchase price and the proportionate share of equity for additional shares acquired is charged against retained earnings. Transactions which do not result in loss of control have no impact on the income statement and are recorded as equity transactions.

Remaining interests are measured at fair value at the time of loss of control. In the case of non-controlling interests, reporting negative balances are permitted, i.e. future losses are allocated in proportion to the participation without restriction.

D Use of Estimates

Preparation of the accompanying financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent amounts and liabilities as of the date of the financial statements and reported amounts of revenues and expenses during the reporting period.

Information about estimation uncertainties and where critical judgment in applying accounting policies that have the most significant effect on the amounts recognized in the consolidated financial statements and those through which a considerable risk can arise or a material adjustment will be required within the fiscal year ending on December 31, 2018 is included in the following notes:
– Note 1 (j) "Goodwill and Other Intangible Assets"
– Note 1 (n) "Provisions"
– Note 19 "Income Taxes"
– Note 24 "Business Combinations"

E Foreign Currency Translation

Transactions in foreign currency are translated into euros using the exchange rate on the date of the transaction. At the balance sheet date, monetary assets and liabilities are remeasured using the period-end exchange rate. Non-monetary assets and liabilities denominated in foreign currency are translated using the historical exchange rates as of the date of the transaction.

The individual functional currency for each of the Group companies is the currency in the primary economic environment in which the entity operates. The assets and liabilities of foreign subsidiaries with functional currencies other than the euro are translated using period-end exchange rates, while the revenues and expenses are translated using average exchange rates during the period. Differences arising from the translation of assets and liabilities in comparison with the translation of the prior periods are included in cumulative translation adjustment and reported as a separate component of equity.

The average and closing rates for significant currencies for the fiscal years ended December 31 are as follows:

1 euro equals X units of foreign currency	Rates – December 31, 2018		Rates – December 31, 2017	
	Average	Closing	Average	Closing
US dollar – USD	1.1815	1.1454	1.1293	1.1993
Australian dollar – AUD	1.5799	1.6215	1.4729	1.5346
British pound – GBP	0.8847	0.9027	0.8761	0.8872
Canadian dollar – CAD	1.5302	1.5602	1.4644	1.5039
Chinese renminbi – RMB	7.8074	7.8778	7.6264	7.8044
Swedish krona – SEK	10.2567	10.2773	9.6369	9.8438

F Financial Instruments

A financial instrument is a contract that gives rise to a financial asset in one entity and a financial liability or equity instrument in another entity.

Financial assets include, in particular cash and cash equivalents, accounts receivable trade, loans, other receivables, marketable securities, and derivative financial instruments.

For regular-way purchases and sales of all categories of financial assets, with the exception of derivative financial instruments, the date of initial recognition in the balance sheet or of derecognition is the settlement date, i.e. the date on which an asset is delivered to or by an entity. The trade date is determinant for derivative financial instruments.

Financial liabilities include accounts payable trade, liabilities to financial institutions, finance lease obligations, and derivative financial liabilities.

Financial assets and liabilities are generally measured at fair value at initial recognition. Accounts receivable trade that do not have a significant financing component are initially recognized at their transaction price. The fair value is the estimate of the price at which an orderly transaction to sell an asset or to transfer a liability would take place between market participants at the measurement date under current market conditions (i.e. to estimate an exit price).

After initial recognition, financial assets are classified at either amortized cost, at fair value through other comprehensive income (FVOCI) or at fair value through profit or loss (FVTPL) under IFRS 9. A financial asset is derecognized when the contractual rights to the cash flows relating to the financial asset expire, that is, when the asset is realized, forfeited or is no longer under the control of the company. G+D did not record interest income on impaired financial assets.

Cash and cash equivalents/Short-term investments
Giesecke+Devrient considers all highly liquid investments with an original maturity of three months or less to be cash equivalents. These are valued at amortized cost.

Highly liquid commercial paper with an original maturity up to three months is also classified as cash and cash equivalents and is measured at fair value.

Short-term investments with a duration between three months and one year are classified as current financial assets.

Accounts receivable trade and other receivables, net
Accounts receivable trade and other receivables, net are allocated to the category "at amortized cost". They are measured at their transaction price at the time of initial recognition. The valuation at subsequent balance sheet dates is at amortized cost. The valuation is based on the business model in which accounts receivable are managed and their contractual cash flow characteristics.

For doubtful accounts, credit risk impairments in the form of specific allowances are carried out. Specific defaults lead to derecognition of the receivables affected. In addition, with the implementation of IFRS 9, lifetime expected credit losses are calculated on a collective basis on the remaining balance on accounts receivable trade third party balances not subject to specific allowances. G+D first records impairments on an individual basis and then on a collective basis on the remaining balance of estimated credit losses in accordance with IFRS 9. Allowances on accounts receivable trade and other receivables are recorded in separate allowance accounts.

The Group uses the simplified approach to calculate expected credit losses on accounts receivable trade using a provision matrix that includes an analysis of historical data over the past five years and current observable data. Based upon the analysis of historical data as well as reasonable and supportable information regarding accounts receivable more than one year past-due, G+D has assumed rebuttable rates equal to 90 % for all subgroup HUBs. The analysis therefore assumes a non-rebuttable rate of 10 % – being those receivables not expected to be recovered. The non-rebuttable rate is then reduced by a recovery rate of 25 % which represents the write-off portion expected to be collected in the event of insolvency proceedings. The calculation of collective allowances for the individual G+D companies incorporates the customer payment patterns which have been derived from the average ageing of accounts receivable trade third parties over the last five years as of December 31.

Income and expenses in connection with the recognition and reversal of specific allowances and allowances on a collective basis, as well as direct derecognitions of receivables are recorded in selling expenses and, if significant, in a separate line item in the income statement as a result of the introduction of IFRS 9. Non- and low-interest-bearing non-current receivables are recorded at the present value of the expected future cash flows when the interest impact is material. For such amounts, the subsequent valuation is made applying the effective interest method. Assets are classified as non-current when the remaining duration at the balance sheet date exceeds 12 months.

Marketable securities and investments
G+D's marketable securities are classified as trading securities or as held-to-collect and sell securities. The classification under IFRS 9 is based on the business model in which a financial asset is managed and its contractual cash flow characteristics. G+D has made use of the option of designating financial assets as measured at fair value through profit or loss at initial recognition. Investment funds classified as held-to-collect and sell are designated as measured at fair value through profit or loss because they are managed on a fair value basis. Held-to-collect and sell securities comprise shares in investment funds which serve as insolvency insurance to cover the provision for pre-retirement part-time working arrangements and preferred stocks in Nxt-ID, Inc. Trading securities include shares in a closed and fully consolidated special fund which invests in publicly traded equity and debt securities and common stocks in Nxt-ID, Inc. These trading securities are measured at fair value through profit or loss as determined by the most recently traded price of each security at the balance sheet date. Highly liquid commercial paper with an original maturity of up to three months is classified as cash and cash equivalents and is measured at amortized cost.

Unrealized gains and losses on trading securities and held-to-collect and sell securities (investment securities) are included in net income on a current basis.

If, in a subsequent period, the fair value increases and the increase can be objectively related to an event occurring after the impairment loss was recognized, the impairment loss shall be reversed in the income statement.

Other financial assets
With the exception of derivative financial instruments, other financial assets recognized as assets are allocated to the measurement category "at amortized cost". The valuation is in accordance with the explanation provided for accounts receivable trade and other receivables, net. Impairments on financial assets are recognized using the impairment model for expected credit losses. An impairment is reversed when the reasons for the impairment recorded no longer prevail.

Financial liabilities
With the exception of derivative financial instruments, financial liabilities recorded as liabilities are allocated to the measurement category "financial liabilities measured at amortized cost". The initial valuation of these financial liabilities is at fair value and in subsequent periods at amortized cost using the effective interest method. Transaction costs are deducted from the acquisition costs to the extent to which they are directly attributable. Liabilities are classified as non-current when the remaining maturity as of the balance sheet date exceeds 12 months.

The valuation of accounts payable trade is in accordance with the procedures noted previously for financial liabilities.

A financial liability is derecognized when the underlying obligation relating to the liability is fulfilled, terminated or extinguished.

Giesecke+Devrient has not made use of the option to designate financial liabilities as financial liabilities measured at fair value through profit or loss at the time of initial recognition in the balance sheet.

Derivative financial instruments
Derivative financial instruments are used to manage the foreign currency exposure incurred in the normal course of business in the form of forward exchange contracts.

G+D has made use of the option to continue applying hedge accounting requirements of IAS 39.

Currency risks from contracts with a nominal volume exceeding USD 10.0 million are generally secured via forward exchange contracts within the scope of a micro hedge and presented as fair value hedges in the balance sheet. If the conditions for hedge accounting in accordance with IAS 39 are fulfilled, Giesecke+Devrient classifies and documents the hedge as a fair value hedge during the period. A fair value hedge is a hedge of the exposure to changes in fair value of a recognized asset or liability or an unrecognized firm commitment. Documentation of the hedging relationship includes the objectives and strategy of the company's risk management, the nature of the hedging activity, the risk covered by the hedge, a description of the hedge instrument and the hedged item, as well as a description of the method used in measuring its effectiveness. The hedge is expected to be highly effective in offsetting changes in fair value attributable to the hedged risk and is assessed on an ongoing basis throughout the financial period for which the hedge was designated. Changes in fair value of the derivatives, as well as changes in the market values of their corresponding hedged items, are recognized in net financial income. The fair values of the hedged items are recognized as current financial assets and current financial liabilities. If derivative financial instruments no longer meet the criteria for hedge accounting, they are classified as held for trading.

G+D does not otherwise apply hedge accounting in managing foreign currency exposure. These derivative financial instruments therefore qualify as held-for-trading and are recorded at fair value at the balance sheet date as either an asset or a liability. Changes in fair value are recognized in the income statement as financial income or expense. The fair market values of forward exchange contracts are calculated on the basis of the applicable spot market rates as well as the forward contract premium or discount compared to the contracted forward contract rate.

Giesecke+Devrient identifies derivative instruments embedded in host contracts and accounts for them separately in accordance with the provisions of IFRS 9 Financial Instruments: Recognition and Measurement. These derivatives consist solely of foreign currency derivatives embedded in certain firm sales and purchase contracts denominated in a currency that is neither the functional currency of G+D nor of the contractual counterparty and which is also not a currency in which transactions are commonly denominated in the jurisdiction in which the transaction is to occur.

The fair values of the external and embedded foreign currency derivatives are recorded as current financial assets and liabilities in the balance sheet.

In fiscal year 2011, derivative financial instruments were used for the purpose of hedging interest rate risks the first time. Effective January 1, 2012, G+D applies hedge accounting for derivative financial instruments for the purpose of hedging interest rate risks. Giesecke+Devrient applies hedge accounting in the form of a cash flow hedge for an interest rate swap and a cross currency swap to secure interest and currency exchange rate risks. A cash flow hedge secures expected future cash flows. Documentation of the hedging relationship includes the objectives and strategy of the company's risk management, the nature of the hedging activity, the risk covered by the hedge, a description of the hedge instrument and the hedged item, as well as a description of the method used in measuring its effectiveness. With regard to the hedged risk, the hedging relationships are expected to be highly effective in offsetting risks arising from changes in the fair value and are regularly assessed to determine whether they have been highly effective throughout the financial reporting periods for which they were designated. Changes in the fair value of these derivatives that qualify as an effective hedge are recognized in other comprehensive income with no effect in the profit and loss. The ineffective portion is recognized as financial or interest income (net) in the profit and loss. The fair values of the underlying transactions are recognized as current and non-current financial assets and as current and non-current other liabilities as well as financial liabilities in the balance sheet. The amounts which were recognized in other comprehensive income are reclassified from equity to the profit and loss in the period in which the expected hedged cash flows affect the profit and loss. If derivative financial instruments no longer meet the criteria for hedge accounting, they are classified as held-for-trading. The market value of the hedge is calculated based on PAR FX-Forward rates at the balance sheet date within an effective interest rate model.

The relevant classes of financial instruments used by G+D include the measurement categories in accordance with IFRS 9, cash and cash equivalents, short-term investments, as well as finance lease obligations, financial guarantees and derivative financial instruments that are eligible for hedge accounting.

G Risk Management and Foreign Currency Exposure Policies

Risk management for the entire Group is coordinated centrally. Policies for risk management, foreign currency exposure, and documentation requirements are set forth in guidelines and procedures issued by the corporate treasury department. These guidelines are examined and updated on a regular basis. The approval of the guidelines is the responsibility of management.

Derivative financial instruments are used by G+D solely to reduce the risks inherent within its global business. As such, Giesecke+Devrient does not hold or issue derivative financial instruments for speculative purposes.

Refer to Note 22 "Financial Risk" for additional related disclosures.

H Inventories

Inventories are carried at cost. Cost is determined using the weighted average, FIFO (first-in first-out) or standard cost method. Finished goods and work-in-progress inventories include direct material, labor, and manufacturing overhead costs which are based on the normal capacity of the production facilities. Items in inventory are written down at the balance sheet date if their net realizable value is lower than their carrying amount.

I Non-current Assets Held for Sale

Non-current assets are classified as held for sale if they are available for immediate sale in their present condition, subject only to terms that are usual and customary for sales of such assets and their sale is highly probable. They are measured at the lower of their carrying amount and fair value less costs to sell.

J Goodwill and Other Intangible Assets

Intangible assets consist of purchased intangible assets, such as standard software, licenses, patents, water rights, know-how, goodwill, and internally developed intangible assets.

Intangible assets with definite useful lives are valued at cost and are amortized on a straight-line basis over their estimated economic useful lives.

Development costs are capitalized when the requirements of IAS 38 "Intangible Assets" are fulfilled. Capitalized development costs recognized include production costs less accumulated depreciation and impairments. Production costs comprise direct material and personnel costs as well as directly attributable material and manufacturing overhead costs and production-related depreciation. Borrowing costs that are directly attributable to a qualifying asset are capitalized. Such costs are amortized on a straight-line basis over the estimated economic useful lives. Research costs are expensed in the period in which they are incurred.

The useful lives of intangible assets with definite useful lives are generally as follows:

	Years
Capitalized development costs/Technology	3–10
Software, rights, customer base etc.	2–15

Goodwill is not amortized but rather tested at least annually for impairment. Reversals of impairments on goodwill are not permitted.

At least once a year, Giesecke+Devrient evaluates the recoverability of goodwill at the cash-generating unit (CGU) level or group of CGUs applying a one-step impairment test. Where the recoverable amount (value in use equal to the present value of future cash flows) of the CGU or group of CGUs, to which the goodwill was allocated, is less than the carrying amount, an impairment loss is recognized. If the impairment loss exceeds the goodwill of the CGU, the excess is allocated to the other assets (generally property, plant and equipment and intangible assets) of the CGU or group of CGUs pro rata on the basis of the carrying amount of each asset.

The most critical assumptions in the calculation of the fair value less costs to sell and the calculation of the value in use are based upon include estimated growth rates, weighted average capital costs and tax rates. Such assumptions, as well as the underlying methodology, can materially influence the respective values and therefore impact the determination of a potential impairment of the goodwill. Where property, plant and equipment and intangible assets are included in the goodwill impairment tests, the determination of the recoverable amount is based on management estimates.

K Property, Plant and Equipment

Property, plant and equipment are valued at cost less accumulated depreciation. Depreciation of property, plant and equipment is calculated on a straight-line basis over the estimated economic useful lives of the assets. Depreciation of an asset commences once it has been placed in service.

The cost of self-constructed property, plant and equipment comprises the direct cost of materials and direct manufacturing expenses plus appropriate allocations of material and manufacturing overheads as well as production and output-related general and administrative costs. Borrowing costs that are directly attributable to a qualifying asset are capitalized.

Acquisition or manufacturing costs also include estimated dismantling and removal costs as well as costs relating to the restoration of the location to its original state.

Any investment allowances or grants received reduce the acquisition or manufacturing costs of the assets for which they were granted.

If an item of property, plant and equipment is comprised of several components with differing useful lives, the separate components are depreciated over their individual useful lives. Expenses for the day-to-day repair and maintenance of property, plant and equipment are normally charged against income.

Estimated economic useful lives of G+D's property, plant and equipment are as follows:

	Years
Buildings	up to 50
Technical equipment and machinery	2–23
Other plant and office equipment	2–23

L Impairment of Intangible Assets and Property, Plant and Equipment

Impairment of other intangible assets and items of property, plant and equipment is identified by comparing the carrying amount with the recoverable amount (the higher of fair value less costs to sell and value in use). If no future cash flows generated independently of other assets can be allocated to the individual assets, recoverability is tested on the basis of the cash-generating unit to which the assets can be allocated. With the exception of goodwill, impairment losses are reversed if the reasons for recognizing the original impairment loss no longer apply.

M Leasing

When concluding an agreement, the Group determines whether such an agreement is or contains a lease.

Beneficial ownership of leased assets is attributed to the contracting party in the lease to which substantially all risks and rewards incidental to ownership of the asset are transferred.

If substantially all the risks and rewards are attributable to the lessor (operating lease), the leased asset is recognized by the lessor. Measurement of the leased asset is then governed by the accounting policies applicable to that asset. During the term of the lease, the operating lease payments are recognized in the income statement by the lessor and the lessee.

If substantially all the risks and rewards incidental to ownership of the leased asset are transferred to the lessee (finance lease), the lessee must recognize the leased asset. At the commencement of the lease term, the leased asset is measured at the lower of its fair value or the present value of the future lease payments and depreciated over the shorter of the estimated economic useful life and the lease term. The lessee recognizes a lease liability at the commencement of the lease term. In subsequent periods, the lease liability is reduced using the effective interest method and the carrying amount is adjusted accordingly.

N Provisions

Pension provisions and similar obligations
Obligations for pensions and other postretirement benefits and related expenses and income are determined in accordance with actuarial measurements. These measurements are based on key assumptions, including discount rates, salary trends, pension trends, biometric probabilities and assumptions about the trend of health insurance benefits. The discount factors applied reflect the interest rates achieved at the balance sheet date for senior, fixed-interest bonds with commensurate maturities. As a result of a fluctuating market and economic situation, the underlying assumptions may deviate from the actual development, which can have a significant impact on the obligations for pensions and other postretirement benefits upon termination of employment.

Pension provisions under defined benefit plans are measured in accordance with the projected unit credit method. Thereby, not only the pensions and acquired expectancies known at the reporting date but also increase in compensation and pensions expected in the future are taken into account. Actuarial gains or losses and other remeasurements of the net obligation are determined at the reporting date and recorded through other comprehensive income (changes in equity not affecting profit or loss for the period).

In order to determine the discount rate for the measurement of the pension provisions and similar obligations, Giesecke+Devrient uses the Mercer Pension Discount Yield Curve Method. This is a method for determining the interest rate that conforms with IAS 19. The new method is based on a selection of AA-rated corporate bonds in accordance with Bloomberg analyses. Net interest expense, i.e. the interest portion of the allocation to the provision less the expected return on plan assets, is reported in interest expense. The amount payable in conjunction with defined contribution plans is reported as an expense.

When the benefits of a plan change or a plan is curtailed the resulting change in the relevant past service performance or the gain or loss from the curtailment is immediately recognized in the income statement. The Group recognizes gains and losses from the settlement of a defined benefit pension plan at the time of settlement.

Pre-retirement part-time work agreements
An obligation for pre-retirement part-time working arrangements is recognized from the point in time at which the employee is entitled under an individual agreement to the premature termination of employment. For pre-retirement part-time working arrangements in connection with the block model, the outstanding obligation for work performed by the employee during the work phase and the obligation to pay top-up amounts are measured separately. Both obligations are recorded in installments applying actuarial principles from the start of the active phase until the end of the employment phase. In the passive phase, the present value of the future payments is provided. The net interest portion included in the pre-retirement part-time working arrangement expenses is reported as interest expense.

Product warranties
A provision for the expected warranty-related costs is established when the product is sold. Estimates of accrued warranty costs are primarily based on historical experience.

Provision for restructuring costs
A provision for restructuring costs is recorded where a legal or constructive obligation exists. A constructive obligation for restructuring costs arises only when there is a detailed formal plan identifying key features of the plan and its implementation and a valid expectation on the part of those affected, either by starting to implement the plan or announcing its main features to those affected by it. A restructuring provision should include only the direct expenditures arising from the restructuring, which are those that are both necessarily entailed by the restructuring and not associated with the ongoing activities of G+D.

Provision for onerous contracts
The calculation of provisions for onerous contracts is to a great extent based on estimates. Such estimates are mainly related to the status of the projects, the fulfillment of the services requested, changes regarding the volume of the projects, the update of budgeted costs as well as applied customized and runtime-specific discount rates.

Giesecke+Devrient records provisions for onerous contracts for contracts in which the unavoidable costs of meeting the obligations exceed the expected benefits. The unavoidable costs under a contract reflect the minimum net costs of exiting from the contract, which is the lower of the cost of fulfilling it and any compensation or penalties arising from failure to fulfill it. Before a separate provision for an onerous contract is established, any impairment loss that has occurred on assets dedicated to that contract is recognized.

Other provisions
Other provisions are recognized where there are legal or constructive obligations to third parties on the basis of past transactions or events that will probably require an outflow of resources to settle, and this outflow can be reliably measured. They are recorded at their expected settlement amount, taking into account all identifiable risks, and may not be offset against potential reimbursements, for example, via insurance claims. The settlement amount is calculated on the basis of the best estimate. Non-current provisions are discounted where the effect of the time value of money is material.

Changes in the interest rate or the amount and timing of payments applied in measuring provisions for decommissioning, restoration, and similar obligations are recognized in the same amount as the related assets to be considered. Where the decrease in the amount of a provision is greater than the carrying amount of the related asset, the excess is recognized immediately in profit or loss.

O Recognition of Revenue, Interest and Dividends

IFRS 15 is to be applied for the first time for fiscal years beginning on or after January 1, 2018. The Group applies IFRS 15 for the first time for the fiscal year beginning on January 1, 2018 (year of transition to IFRS 15). In the previous year, revenue was recognized in accordance with IAS 11 Construction Contracts and IAS 18 Revenue. The Group adopted the modified retrospective method for the transition to IFRS 15 with the cumulative effect recognized on January 1, 2018. Consequently, the Group will not apply the requirements of IFRS 15 for each comparative period. In doing so, the Group will make use of the practical simplifications relating to IFRS 15. In this context, such contracts that began and were fulfilled within the same fiscal year or which were fully performed on January 1, 2018 were not restated on January 1, 2018.

In accordance with IFRS 15, revenue is recognized when the customer gains control of the asset. In several contracts for the sale of customer specific products, especially in the cards, passports and ID business, the Group transfers control during the production phase. Revenues relating to such contracts are realized based upon the percentage of completion of the products and therefore before the delivery of the assets to the customer.

In certain instances, G+D is the general contractor concerning the construction of paper mills, special facilities (e.g. production of security products), and personalization centers. The fulfillment of these types of contracts usually extends over a long period and can last up to several years until final completion. For construction contracts, the revenue is recorded over time provided that the revenue and expenses can be estimated reliably. The percentage of completion is generally determined using the output method (e.g. agreed milestones) or the cost-to-cost method. Profit recognized in the period is calculated by multiplying the contract revenues and costs by the percentage of completion less the results recognized in prior periods.

For long-term customer contracts in which the major components consist of the production, modification, or customizing of software, revenue is generally recognized upon customer acceptance as the percentage of completion cannot be reliably determined.

Giesecke+Devrient has contractual arrangements in which it performs multiple revenue-generating activities, for example, the delivery of card bodies and personalization services. Revenue allocation is based upon the relative stand-alone selling prices of the individual components of the total arrangement.

Across all business sectors, the increased scope of estimations referring to variable consideration affects the amount and the timing of revenue recognition.

Interest is recognized using the effective interest method. Dividends are recognized when the shareholder's right to receive payment is established.

P Grants

Where grants are received for certain assets, they are offset against the acquisition or manufacturing costs of the related assets and therefore reduce the acquisition costs. The grants/allowances are released to the income statement in installments in the form of a reduction of depreciation expense.

Other types of grants are recorded in the income statement in the period in which the entitlement arises.

Q Deferred Taxes

Deferred tax assets and liabilities are recognized on temporary differences between the carrying amounts in the consolidated balance sheet and the tax base, as well as for tax loss carryforwards that are expected to reduce tax expense in future periods in accordance with the liability method.

R Statement of Cash Flows

The statement of cash flows is prepared in accordance with IAS 7 and indicates the cash inflows and outflows during the fiscal year classified by cash flows from operating activities, investing activities and financing activities. Cash flows from operating activities are presented using the indirect method, in which earnings are adjusted for non-cash transactions. Moreover, items attributable to cash flows from investing activities and financing activities are eliminated. Cash flows from interest received and interest paid, as well as dividends received, are allocated to cash flows from operating activities. Cash outflows for the acquisition of additional shares in affiliated companies under common control are classified as cash flows from financing activities.

The cash flow funds comprise the balance sheet line item "cash and cash equivalents". Cash and cash equivalents include cash on hand and cash at banks, as well as cash from funds and investments with an original maturity of up to three months.

5 Change in Accounting and Valuation Policies

IFRS 15 Revenue from Contracts with Customers

In the context of the adoption of IFRS 15 on January 1, 2018, Revenue from Contracts with Customers, G+D changed its accounting methods relating to revenue recognition. For the new accounting policies, refer to the related notes under 1 (o) "Recognition of Revenue, Interest and Dividends".

The following tables summarize the effects of the introduction of IFRS 15 for the year ending December 31, 2018:

Consolidated Balance Sheet

EUR million			Dec. 31, 2018
	As reported	Adjustments	Balances without adoption of IFRS 15
Current assets			
Inventories, net	367.8	126.7	494.5
Other current assets	49.9	8.2	58.1
Contract assets	134.6	(134.6)	–
Other	1,102.1	–	1,102.1
Total current assets	**1,654.4**	**0.3**	**1,654.7**
Non-current assets			
Investments	21.6	–	21.6
Deferred tax assets	152.2	11.2	163.4
Other non-current assets	6.3	12.8	19.1
Contract assets	12.4	(12.4)	–
Other	645.5	–	645.5
Total non-current assets	**838.0**	**11.6**	**849.6**
Total assets	**2,492.4**	**11.9**	**2,504.3**
Current liabilities			
Accounts payable trade and other accounts payable	373.5	280.5	654.0
Contract liabilities	236.6	(236.6)	–
Other	318.5	–	318.5
Total current liabilities	**928.6**	**43.9**	**972.5**
Non-current liablities			
Deferred tax liabilities	11.9	(0.7)	11.2
Accounts payable trade and other accounts payable	–	9.6	9.6
Contract liabilities	9.6	(9.6)	–
Other	1,052.4	–	1,052.4
Total non-current liabilities	**1,073.9**	**(0.7)**	**1,073.2**
Equity			
Retained earnings	448.3	(30.5)	417.8
Non-controlling interests	39.3	(0.8)	38.5
Other	2.3	–	2.3
Total equity	**489.9**	**(31.3)**	**458.6**
Total liabilities and equity	**2,492.4**	**11.9**	**2,504.3**

Consolidated Income Statement

EUR million			2018
	As reported	Adjustments	Balances without adoption of IFRS 15
Net sales	2,246.0	(44.2)	2,201.8
Cost of goods sold	(1,648.7)	31.0	(1,617.7)
Income taxes	(35.3)	3.0	(32.3)
Other	(511.8)	–	(511.8)
Net income	**50.2**	**(10.2)**	**40.0**

Due to the change of recognizing revenue at point in time to over time relating to contracts for customer specific assets, a pre-tax effect of 26.7 million EUR was recorded. This applies in particular to products in the subgroup Mobile Security and the division Banknote Solutions as these products are already equipped with customer specific security features during one of the first steps in the production process. After deducting the deferred tax effect in the amount of 6.4 million EUR, the effect on retained earnings as of January 1, 2018 amounts to 20.3 million EUR. As a result, an effect in the amount of 0.4 million EUR was realized in equity apportioned to non-controlling interests.

In the following table, the order backlog as of December 31 is allocated to the G+D relevant time bands:

EUR million	2019	2020	>2020
Order backlog	1,004.8	383.3	275.0

The transaction prices mentioned in the table comprise all consideration agreed in the customer contracts.

IFRS 9 Financial Instruments

The Group has adopted IFRS 9 for the first time as of January 1, 2018.

Due to the transition method adopted by G+D in applying this standard, the comparative information has not been restated to reflect the requirements of the new standard in the present financial statements, except certain hedges and impairment losses on accounts receivable trade and contract assets recognized separately.

The effects of the initial application of the standard mainly result from the increase in impairment losses on financial assets.

IFRS 9 sets out requirements for recognizing and measuring financial assets, financial liabilities and some contracts to buy or sell non-financial items. This standard replaces IAS 39 Financial Instruments: Recognition and Measurement.

As a result of the adoption of IFRS 9, G+D has applied subsequent amendments to IAS 1 Presentation of Financial Statements, which require impairment of financial assets to be presented in a separate line item in the income statement. Due to immateriality, G+D did not present the impairments on accounts receivable in a separate line item in the income statement in fiscal year 2018, but reported these amounts directly in selling expenses. Impairments losses on other financial assets are recorded in the financial result, similar to the presentation under IAS 39 and not presented separately in the income statement due to materiality considerations.

Additionally, the Group has adopted consequential amendments to IFRS 7 Financial Instruments: Disclosures that are applied to disclosures in 2018 but generally have not been applied to comparative information.

Classification and measurement of financial assets and financial liabilities
IFRS 9 contains three general classification categories for financial assets: measured at amortized cost, at fair value through other comprehensive income (FVOCI) and at fair value through profit or loss (FVTPL). The classification of financial assets under IFRS 9 is generally based on the business model in which a financial asset is managed and its contractual cash flow characteristics. IFRS 9 eliminates the previous IAS 39 categories of held to maturity, loans and receivables and available for sale. Under IFRS 9, derivatives embedded in contracts where the host is a financial asset in the scope of the standard are never separated. Instead, the hybrid financial instrument as a whole is assessed for classification.

IFRS 9 largely retains the existing requirements in IAS 39 for the classification and measurement of financial liabilities.

The adoption of IFRS 9 has not had a significant effect on the G+D's accounting policies related to financial liabilities and derivative financial instruments.

For the new accounting policies, refer to the related notes under 1 (f) "Financial Instruments". For an explanation of the original measurement categories under IAS 39 and the new measurement categories under IFRS 9, as well as the transition of the carrying amounts of financial assets under IAS 39 to the carrying amounts under IFRS 9 at the transaction date, refer to Note 21 "Financial Instruments".

Impairment of financial assets
IFRS 9 replaces the "incurred loss" model in IAS 39 with an "expected credit loss" (ECL) model. The new impairment model applies to financial assets measured at amortized cost, contract assets and debt investments at FVOCI, but not to investments in equity instruments. Under IFRS 9, credit losses are recognized earlier than under IAS 39.

The Group has determined that the application of IFRS 9's impairment requirements as of January 1, 2018 results in an additional allowance for impairment as follows:

EUR million	
Loss allowance as of December 31, 2017 under IAS 39	**14.3**
Additional impairment recognized as of Janaury 1, 2018 on: Accounts receivable trade third parties	1.3
Loss allowance as of January 1, 2018 under IFRS 9	**15.6**

For additional information on the Group's determination of impairments, refer to Note 3 "Accounts Receivable Trade and Other Accounts Receivable, net".

Transition
G+D has made use of the exemption to refrain from adjusting comparative information for previous periods concerning changes in classification and measurement (including impairment). Therefore, the comparative periods were only adjusted for the retrospective application of the approach for hedging costs for forward points. Differences between the carrying amounts of financial assets and financial liabilities due to the application of IFRS 9 are generally recognized in retained earnings and other reserves as of January 1, 2018. In this respect, the information presented for 2017 generally does not meet the requirements of IFRS 9, but rather those of IAS 39.

The following assessments were made on the basis of facts and circumstances existing at the time of initial application:
- Determination of the business model in which a financial asset is held.
- Determination relating to certain financial assets and financial liabilities designated at fair value through profit or loss.

As of January 1, 2018, all hedging relationships designated in accordance with IAS 39 as of December 31, 2017 fulfilled the criteria for hedge accounting under IFRS 9 and are therefore considered continuing hedging relationships.

Further changes in Accounting and Valuation Policies

Within the scope of the "Annual Improvement" project (2014-2016), three IFRS standards were amended, of which only the amendments to IFRS 1 and IAS 28 was applicable in 2018:

IAS 28 clarifies that the option of measuring an investment in an associated company or joint venture that is held by a venture capital company or a another qualifying entity can be exercised differently depending on the respective investment. Applying these changes did not have a material impact on the consolidated financial statements of G+D.

The IASB has published a number of further announcements. The recently implemented standards, as well as those yet to be implemented, have had no major impact on the consolidated financial statements of G+D.

T New and Changed Accounting Pronouncements

In addition to the new standard listed below which may have a significant influence on the consolidated financial statements, a series of further standards and interpretations were passed which are not expected to have a significant effect on the consolidated financial statements:

IFRS 16 introduces a uniform accounting model whereby leases are to be recorded in the balance sheet of the lessee. A lessee records a right-of-use asset which represents the right to use the underlying asset as well as a lease liability for lease payments obligations. There are exceptions for short-term leases and leases relating to low-value assets. The accounting by the lessor is comparable to the current standard – that is to say that the lessor still continues to classify lease arrangements as finance or operating leases.

IFRS 16 replaces the existing guidance on leases including IAS 17 Leases, IFRIC 4 Determining Whether an Arrangement Contains a Lease, SIC-15 Operating Leases – Incentives and SIC-27 Evaluating the Substance of Transactions in the Legal Form of a Lease.

The standard is to be applied for the first time in the first reporting period of a fiscal year beginning on or after January 1, 2019. Early adoption is permitted for companies that apply IFRS 15 Revenues From Contracts with Customers at the time of initial application of IFRS 16 or before.

The first time application of the standard will be mandatory in the reporting period of the fiscal year beginning on January 1, 2019. The project of implementing the new standard has not yet been finalized. The recognition of right-of-use assets and lease liabilities described above is expected to result in a significant increase in non-current assets and liabilities in the period of initial recognition.

2 Financial Assets

Financial assets are comprised of the following as of December 31, 2018 and 2017:

EUR million	Dec. 31, 2018	Dec. 31, 2017
Current		
Short-term investments (> 3 months and < 1 year)	0.9	0.9
Trading securities	61.9	72.6
Investment securities	10.2	9.3
Derivative financial instruments	5.4	4.6
	78.4	**87.4**
Non-current		
Cash surrender value of reinsurance	21.4	21.1
Loans receivable from associated companies	–	1.3
Investment securities	1.8	1.7
	23.2	**24.1**

Investment securities have been recorded at fair value in the amount of EUR 12.0 million as of December 31, 2018 and EUR 11.0 million as of December 31, 2017. The fair value represents the fair market value.

3 Accounts Receivable Trade and Other Accounts Receivable, net

Accounts receivable trade and other accounts receivable, net comprise the following as of December 31, 2018 and 2017:

EUR million	Dec. 31, 2018	Dec. 31, 2017
Current		
Accounts receivable trade	467.8	445.3
Accounts receivable from joint ventures and associated companies	7.8	7.3
Accounts receivable from related parties	0.5	0.1
Other	17.9	15.5
Prepayments	71.5	34.2
	565.5	**502.4**
Allowance for doubtful accounts	(9.0)	(14.3)
	556.5	**488.1**
Non-current		
Accounts receivable trade	4.2	13.2
Prepayments on property, plant and equipment	3.4	3.3
	7.6	**16.5**

Aging structure of accounts receivable trade and other accounts receivable (excluding prepayments) as of December 31, 2018:

EUR million	Not past due	past due 1–30 days	past due 31–90 days	past due 91–180 days	past due 181–360 days	past due more than 360 days	Total
Accounts receivable	351.8	56.3	40.9	16.3	19.9	13.0	498.2
Less allowance for doubtful accounts	(0.2)	(0.1)	(0.2)	(0.1)	(0.2)	(8.2)	(9.0)
Average credit losses in %	−0.1	−0.2	−0.5	−0.6	−1.0	−63.1	−1.8
Accounts receivable, net	**351.6**	**56.2**	**40.7**	**16.2**	**19.7**	**4.8**	**489.2**

Aging structure of accounts receivable trade and other accounts receivable (excluding prepayments) as of December 31, 2017:

EUR million	Not past due	past due 1–30 days	past due 31–90 days	past due 91–180 days	past due 181–360 days	past due more than 360 days	Total
Accounts receivable	346.3	51.7	21.5	20.9	23.9	17.1	481.4
Less allowance for doubtful accounts	–	–	(0.3)	–	(1.7)	(12.3)	(14.3)
Accounts receivable, net	**346.3**	**51.7**	**21.2**	**20.9**	**22.2**	**4.8**	**467.1**

The development of the specific allowances and allowances for expected credit losses for accounts receivable trade and other receivables is as follows:

EUR million	2018			2017
	Specific allowance	General allowance	Total	Specific allowance
January 1	**13.0**	**1.3**	**14.3**	**11.6**
Changes in consolidation structure	1.3	–	1.3	0.2
Additions (through profit or loss)	1.4	1.4	2.8	6.2
Recoveries (through profit or loss)	(7.9)	(0.6)	(8.5)	(2.7)
Utilization	(0.9)	–	(0.9)	(1.3)
Transfers	–	–	–	0.7
Currency effects	–	–	–	(0.4)
December 31	**6.9**	**2.1**	**9.0**	**14.3**

Specific allowances for doubtful accounts relate to several customers that disclosed that they would not be able to settle the outstanding balances due to their economic circumstances.

Additional impairment losses for general allowances are the result of the application of the impairment requirements of IFRS 9 as of January 1, 2018. For additional information relating to the measurement of expected credit losses on a collective basis – see Note 1 (f) "Financial Instruments", Accounts receivable trade and other receivables, net.

Accounts receivable trade and other receivables which have neither been provided for nor are past due as of the balance sheet date amounted to EUR 351.6 million and EUR 346.3 million as of December 31, 2018 and 2017. G+D anticipates that the full amount of accounts receivable which have neither been provided for nor are past due are collectible. There is no indication that the debtors will not be able to meet their payment obligations. This estimate is based on the payment history as well as extensive analysis relating to the customer default risk.

Allowances for doubtful accounts on accounts receivable from joint ventures, associated companies, as well as related parties were not recorded.

In 2015, the Group entered into a service concession arrangement with a foreign authority for the construction and operation of a common factory for the production of identification cards and passports (BOT model = Build-Operate-Transfer). In addition to the one year construction phase, it also provides for a ten year operational phase.

A common investment budget was established for the construction of the factory. The Group bears 60 % of the budget and the contract partner 40 %. The major tasks of the Group are the initial planning of the factory, the procurement of the machinery required, the construction of the production plant, as well as the cash funding (construction phase). The Group is responsible for the business operations for a period of 10 years (with a possibility of extension for another five years), whereas the contractual partners are entitled to the EBITDA of the factory in proportion to their investment shares (60/40) to be distributed on a yearly basis. The contract partner has guaranteed a minimum order quantity of identification cards and passports for each year of the operational phase.

The Group is responsible for maintaining the operational readiness of the factory during the operational phase. The ownership of the factory is transferred to the grantor after the termination of the operational period.

The service concession arrangement is categorized as a "financial asset model".

In 2015, a cash payment of EUR 2.7 million was made within the scope of the construction phase which was recorded as deferred charges in accounts receivable trade and other accounts receivable. As this cash payment has not been utilized yet, these remain unchanged within deferred charges as of December 31, 2018.

The selection process for suitable land was completed and decided at the end of 2017. In 2018, G+D continuously rendered services for the construction of the card factory. Accounts receivable in the amount of EUR 12.4 million were recorded as non-current contract assets, since the revenues cannot be realized until the operational phase.

In fiscal year 2018, G+D did not record any net income or expense as the revenues were equal to the corresponding expenses.

4 Inventories, net

Inventories are comprised of the following as of December 31, 2018 and 2017:

EUR million	Dec. 31, 2018	Dec. 31, 2017
Raw materials	141.9	139.4
Work in process	135.7	163.5
Finished goods	5.0	52.6
Merchandise	28.8	21.0
Spare parts, modules, sensors – Currency Management Solutions	56.4	49.7
	367.8	**426.2**

In fiscal years 2018 and 2017, write-downs on inventory amounted to EUR 24.1 million and EUR 26.8 million, respectively.

The carrying value of inventory which serves as collateral for financial liabilities (see Note 13 "Financial Liabilities") amounted to EUR 0.0 million as of December 31, 2018 and 2017, respectively.

5 Other Current Assets

EUR million	Dec. 31, 2018	Dec. 31, 2017
Taxes receivable (other than income taxes)	35.5	25.1
Restricted cash	8.9	6.9
Gross amount due from customers for contract work	–	0.6
Other	5.5	7.4
	49.9	**40.0**

6 Investments

Investments include the following:

EUR million	Dec. 31, 2018	Dec. 31, 2017
Investments accounted for under the equity method	12.6	18.8
Investments in other related parties	9.0	–
	21.6	**18.8**

In fiscal year 2016, investments included a 49% share in EPC Electronic Payment Cards Gesellschaft für Kartenmanagement mbH (EPC). In accordance with the contract from February 20, 2017, the remainder of the shares were purchased. Thus, EPC is fully consolidated in the consolidated financial statements of G+D (see Note 24 "Business Combinations").

The following investments (see Note 1 c “Consolidated Group and Principles of Consolidation”) are accounted for using the equity method of accounting:

	Interest in the company
Name of the joint venture	
Shenzen Giesecke & Devrient Currency Automation Systems Co. Ltd., China	50.00 %
E-Kart Elektronik Kart Sistemleri Sanayi ve Ticaret Anonim Sirketi, Turkey	50.00 %
Uganda Security Printing Company Ltd., Uganda	29.40 %
Name of the associated company	
Emirates German Security Printing L.L.C., United Arab Emirates	29.40 %
Netset Global Solutions d.o.o., Serbia	24.00 %
Hansol Secure Co., Ltd., Korea	16.29 %

Shenzen Giesecke & Devrient Currency Automation Systems Co. Ltd. sells and installs banknote processing systems.

E-Kart Elektronik Kart Sistemleri Sanayi ve Ticaret Anonim Sirketi manufactures and sells cards, card systems, and card-based solutions.

Emirates German Security Printing L.L.C. merchandises and sells security devices in the United Arab Emirates and other states of the Arabian Peninsula.

Netset Global Solutions d.o.o. develops specialized information systems with integrated information protection for electronic identification, for large national registers, for smart card applications and cryptographic solutions.

Hansol Secure Co., Ltd. is a smartcard manufacturer in the NFC/LTE USIM and Security Platform solution industry.

In the context of a share exchange effective May 23, 2017, G+D received shares in Nxt-ID, Inc. with a fair value of EUR 2.8 million in exchange for its 19.93 % share in Fit Pay, Inc. which had the same fair value (book value EUR 2.2 million). The resulting net gain in the amount of EUR 0.6 million was shown under investments accounted for under the equity method. The traded shares in Nxt-ID, Inc. are classified as trading securities and the preferred shares as available-for-sale securities. Accordingly, the shares are measured at fair value.

Effective September 30, 2018, G+D sold the investment in CI Tech Sensors AG, Burgdorf, Switzerland, at a selling price in the amount of EUR 2.5 million. The net gain from the sale is 0.7 million EUR and is included within share in earnings from equity investments in the income statement.

Effective January 15, 2018, G+D acquired 10 % of the shares in Verimi GmbH, Frankfurt at a purchase price of EUR 0.2 million. As G+D classifies its influence on Verimi GmbH as not significant, this investment is classified as an investment in other related parties. As of December 31, 2018, G+D owned 6.06 % of the shares in Verimi GmbH.

Effective May 4, 2018, G+D acquired 12 % of the shares in IDnow GmbH, Munich at a purchase price of EUR 4.0 million. As G+D classifies its influence on IDnow GmbH as not significant this investment is classified as an investment in other related parties.

Effective October 23, 2018, G+D along with Uganda Security Printing and Publishing Corporation as well the ministry of finance planning & economic development in Uganda founded the joint venture Uganda Security Printing Company Ltd. Uganda Security Printing Company Ltd. which produces passports and ID documents for the local market.

Effective October 1, 2018, G+D acquired additional shares in finally safe GmbH. As a result, G+D assumed control (see Note 24 “Business Combinations”).

Joint Ventures and associated companies

The following table summarizes the financial information for material joint ventures and associated companies based on their financial statements prepared in accordance with IFRS, adjusted for fair value adjustments at acquisition and differences in the Group accounting policies:

EUR million				Joint Venture		Associated company
	Shenzen Giesecke & Devrient Currency Automation Systems Co. Ltd.		CI Tech Sensors AG		Hansol Secure Co., Ltd.	
	2018	**2017**	**2018**[1]	**2017**	**2018**	**2017**
Revenues	21.6	24.3	30.7	30.1	10.3	10.1
Profit from continuing operations	3.7	5.0	(1.5)	1.5	(3.8)	4.7
thereof depreciation and amortization	(0.5)	(0.3)	–	(1.5)	(0.2)	(0.2)
thereof income taxes	(1.4)	(1.5)	(0.2)	(0.2)	(1.6)	(0.1)
Other comprehensive income	(0.1)	(0.7)	0.3	–	(0.4)	(0.7)
Total comprehensive income	**3.6**	**4.3**	**(1.2)**	**1.5**	**(4.2)**	**4.0**
Group’s share of total comprehensive income	1.8	2.2	(0.3)	0.4	(0.7)	0.7
Continuation of purchase price allocation (incl. CTA)	–	–	(0.8)	(0.9)	(0.2)	(0.2)
Elimination of intercompany profits	0.5	(0.4)	–	–	–	–
Group’s share of total comprehensive income	**2.3**	**1.8**	**(1.1)**	**(0.5)**	**(0.9)**	**0.5**
Dividends received during the year	**(2.1)**	**(1.8)**	**(0.4)**	**(0.5)**	**–**	**–**
Current assets	16.3	18.2	–	15.3	16.4	20.6
thereof cash and cash equivalents	6.5	10.5	–	1.2	1.2	2.0
Non-current assets	4.0	4.3	–	1.3	2.6	2.9
Current liabilities	(8.9)	(10.5)	–	(4.5)	(1.8)	(2.1)
Non-current liabilities	–	–	–	(3.8)	–	(0.1)
Net assets	**11.4**	**12.0**	**–**	**8.3**	**17.2**	**21.3**
Group’s share of net assets	5.7	6.0	–	2.1	2.8	3.5
Elimination of intercompany profits	(0.6)	(0.1)	–	–	–	–
Assets from purchase price allocation (incl. CTA)	–	–	–	2.1	3.1	3.2
Carrying amount of interest in joint venture at year end	**5.1**	**5.9**	**–**	**4.2**	**5.9**	**6.7**

[1] Total comprehensive income 2018 comprises nine months (until September 30, 2018) of CI Tech Sensors AG

Non-material joint ventures

The following table summarizes the financial information for the Group's share in non-material joint ventures based on the amounts as reported in the Group's financial statements:

EUR million	Dec. 31, 2018	Dec. 31, 2017
Carrying amount of interest in non-material associated companies	**0.2**	**0.4**
Share of		
Gain/(Loss) from continuing operations[1]	(0.2)	0.4
Total comprehensive income	**(0.2)**	**0.4**

Non-material associated companies

The following table summarizes the financial information for the Group's share in non-material associated companies based on the amounts as reported in the Group's financial statements:

EUR million	Dec. 31, 2018	Dec. 31, 2017
Carrying amount of interest in non-material associated companies	**1.4**	**1.6**
Share of		
Gain/(Loss) from continuing operations[1]	(0.2)	–
Total comprehensive income	**(0.2)**	**–**

[1] The loss from continuing operations results completely from fully consolidated finally safe GmbH as of December 31, 2018

7 Intangible Assets

A summary of the activity for goodwill and other intangible assets is as follows:

EUR million	Customer base/ Rights	Development costs/ Technology	Software	Goodwill	Total
Costs					
January 1, 2017	**42.0**	**88.9**	**150.6**	**56.6**	**338.1**
Additions	1.4	10.9	12.4	–	24.7
Transfers	0.1	(1.2)	1.1	–	–
Additions due to business combinations	1.0	–	0.1	1.1	2.2
Disposals	–	–	(2.6)	–	(2.6)
Foreign currency effects	(1.7)	(2.3)	(1.0)	(1.0)	(6.0)
December 31, 2017	**42.8**	**96.3**	**160.6**	**56.7**	**356.4**
January 1, 2018	**42.8**	**96.3**	**160.6**	**56.7**	**356.4**
Additions	0.3	16.5	12.4	–	29.2
Transfers	0.5	(4.2)	2.0	–	(1.7)
Additions due to business combinations	2.3	1.3	–	4.1	7.7
Disposals	(15.6)	(2.5)	(4.5)	–	(22.6)
Foreign currency effects	(0.1)	0.1	(0.5)	(1.6)	(2.1)
December 31, 2018	**30.2**	**107.5**	**170.0**	**59.2**	**366.9**

The additions in 2018 and 2017 comprise self-constructed intangible assets in the amount of EUR 22.5 million and EUR 16.7 million, respectively.

EUR million	Customer base/ Rights	Development costs/ Technology	Software	Goodwill	Total
Accumulated amortization					
January 1, 2017	**37.2**	**44.5**	**98.4**	**–**	**180.1**
Additions	1.6	6.8	15.5	–	23.9
Impairment losses	–	–	0.2	2.0	2.2
Disposals	–	–	(2.6)	–	(2.6)
Foreign currency effects	(1.5)	(0.7)	(0.7)	–	(2.9)
December 31, 2017	**37.3**	**50.6**	**110.8**	**2.0**	**200.7**
January 1, 2018	**37.3**	**50.6**	**110.8**	**2.0**	**200.7**
Additions	1.6	8.4	12.8	–	22.8
Transfers	0.5	–	(0.5)	–	–
Additions due to changes in consolidation structure	0.4	–	–	–	0.4
Impairment losses	–	16.6	–	–	16.6
Disposals	(15.6)	(2.5)	(4.4)	–	(22.5)
Foreign currency effects	(0.1)	(0.1)	(0.8)	–	(1.0)
December 31, 2018	**24.1**	**73.0**	**117.9**	**2.0**	**217.0**
Carrying value					
January 1, 2017	**4.8**	**44.4**	**52.2**	**56.6**	**158.0**
December 31, 2017	**5.5**	**45.7**	**49.8**	**54.7**	**155.7**
December 31, 2018	**6.1**	**34.5**	**52.1**	**57.2**	**149.9**

The amounts of amortization of intangible assets recorded in the functional areas of the income statement are as follows:

EUR million	2018	2017
Cost of goods sold	11.6	8.7
Selling expenses	0.9	0.8
Research and development expenses	0.2	0.4
General and administrative expenses	10.1	14.0
	22.8	**23.9**

In fiscal years 2018 and 2017, impairment losses in the amount of EUR 16.6 million and EUR 0.2 million were recorded on capitalized development costs and software. Impairment losses in fiscal year 2018 amounting to EUR 16.6 million were recorded in cost of goods sold and resulted primarily from restructuring measures. In fiscal year 2017, impairment losses in the amount of EUR 0.2 million were recorded in general and administrative expenses. The impairment was based on the assumption that there was no further value in use as the software was replaced.

In fiscal year 2018, development costs with a book value of EUR 0.9 million were reclassified from intangible assets to non-current assets held for sale. The reclassification is based on a management decision to sell these development activities. An active program to locate a buyer was initiated by the end of the fiscal year 2018.

In connection with the planned closure of a Canadian subsidiary, the full amount of the goodwill (EUR 2.0 million) was impaired in 2017.

The goodwill from CI Tech Components AG in the amount of EUR 14.0 million (prior year EUR 14.0 million) was allocated to the CGU "Currency Management Solutions". As the CGU "Currency Management Solutions" business is mainly conducted in Euro, this goodwill is recorded in Euro. The goodwill from secunet AG in the amount of EUR 5.2 million (prior year EUR 4.0 million) was assigned to the "secunet" CGU. In fiscal year 2018, there was an increase in goodwill in the amount of EUR 1.2 million. This increase results from additional shares acquired in connection with a share deal in the former associated company finally safe GmbH. Sensitivity analyses are not required since the recoverability of these goodwills is not deemed to be critical.

The goodwill from Veridos Matsoukis S.A. Security Printing in the amount of EUR 2.1 million (prior year EUR 2.1 million) and the goodwill from Veridos GmbH in the amount of EUR 4.4 million (prior year EUR 4.4 million) as well as the goodwill from E-SEEK Inc. in the amount of EUR 2.6 million recognized within the acquisition of the companies were allocated to the "Veridos" CGU. Due to strengthened convergence of the previously separated hardware- and solutions businesses to highly integrated customer solutions and uniform goods and services, the respective 3S businesses were reallocated to the MS-divisions. The goodwill from Giesecke+Devrient Mobile Security Sweden AB in the amount of EUR 28.5 million (prior year EUR 29.7 million) is in the business sector "Mobile Security" and assigned to the divisions and thereby CGUs "Financial Solutions", "Connectivity & Devices" and "Cyber Security". Management steers the goodwill on the level of the new CGUs. The allocation of the goodwill was based on the present value of the planned revenues in the amount of EUR 6.9 million (prior year EUR 7.2 million) in the CGU "Financial Solutions", EUR 19.7 million (prior year EUR 20.5 million) in the CGU "Connectivity & Devices" and EUR 1.9 million (prior year EUR 2.0 million) in the CGU "Cyber Security". The goodwill acquired in the connection with the purchase of C.P.S. Technologies S.A.S. in the amount of EUR 0.5 million (prior year EUR 0.5 million) was allocated to the CGU "Financial Solutions".

In performing the impairment tests for goodwill, the recoverable amount of the CGU is based on the value in use. The value in use is the present value of the future cash flows expected to be derived from the CGU. Since 2014, the cash flow projections are based upon G+D's five-year plans. The cash flows for the CGU "Veridos" were determined using the planning assumptions of an average EBITDA margin of 8.4 % during the planning period. The cash flows for the CGUs "Financial Solutions", "Connectivity & Devices" and "Cyber Security" were determined using the planning premises of average EBITDA margins of 6.6 %, 6.9 % and 7.9 % during the planning period and perpetual growth rates of 2.4 %, respectively. The cash flows for the CGU "Currency Management Solutions" were determined using the planning premises of average EBITDA margin of 9.8 % during the planning period and perpetual growth rate of 0.0 %.

In discounting the cash flows of the "secunet" CGU, pre-tax interest rate of 10.5 % was used in 2018 and 2017. For the CGU "Currency Management Solutions", a pre-tax interest rate of 10.7 % was applied in 2018 and 2017. In discounting the cash flows of the "Veridos" CGU, a pre-tax interest rate of 10.3 % was applied in 2018 and 2017. In discounting the cash flows of the "Financial Solutions", "Connectivity & Devices" and "Cyber Security" CGUs, a pre-tax interest rate of 11.4 % was used in 2018 and 2017. Impairments on goodwill were not recorded in fiscal years 2018 and 2017.

A sensitivity analysis was carried out for the goodwill in the CGU "Veridos". An increase in the interest rate from 10.3 % to 13.7 % ceteris paribus as of December 31, 2018 would result in a first time impairment loss. A reduction in the cash flows for the terminal value ceteris paribus from EUR 21.7 million to EUR 13.5 million as of December 31, 2018 would result in an impairment loss.

A sensitivity analysis was carried out for the goodwill in the CGUs "Financial Solutions", "Connectivity & Devices" and "Cyber Security". An increase in the interest rate ceteris paribus from 11.4 % to 11.9 % as of December 31, 2018 for "Financial Solutions", from 11.4 % to 11.8 % for "Connectivity & Devices" and from 11.4 % to 12.3 % for "Cyber Security" would result in a first-time impairment losses, respectively. A reduction in the cash flows for the terminal value ceteris paribus from EUR 23.3 million to EUR 21.5 million as of December 31, 2018 for "Financial Solutions", from EUR 18.5 million to EUR 17.4 million for "Connectivity & Devices" and from EUR 8.2 million to EUR 7.2 million for "Cyber Security" would result in an impairment loss, respectively.

No intangible assets serve as collateral for financial liabilities (see Note 13 "Financial Liabilities") as of December 31, 2018 and 2017, respectively.

8 Property, Plant and Equipment

A summary of the activity for property, plant and equipment is as follows:

EUR million	Land and buildings[1]	Technical equipment and machinery[1]	Other plant and office equipment[1]	Construction in process	**Total**
Costs					
January 1, 2017	**451.7**	**725.9**	**233.0**	**12.8**	**1,423.4**
Additions	8.4	28.2	22.1	7.8	66.5
Transfers	2.8	39.7	(27.9)	(11.2)	3.4
Additions due to changes in consolidation structure	3.6	3.6	0.8	–	8.0
Disposals	(7.3)	(14.3)	(11.7)	–	(33.3)
Foreign currency effects	(4.5)	(15.3)	(5.8)	(0.1)	(25.7)
December 31, 2017	**454.7**	**767.8**	**210.5**	**9.3**	**1,442.3**
January 1, 2018	**454.7**	**767.8**	**210.5**	**9.3**	**1,442.3**
Additions	4.8	32.0	18.7	15.6	71.1
Transfers	(23.0)	10.6	(0.4)	(4.6)	(17.4)
Additions due to changes in consolidation structure	–	–	0.1	–	0.1
Disposals	(0.9)	(53.5)	(21.3)	–	(75.7)
Foreign currency effects	0.2	(2.8)	0.1	–	(2.5)
December 31, 2018	**435.8**	**754.1**	**207.7**	**20.3**	**1,417.9**

[1] Including assets under finance leases (see Note 9 "Leasing")

EUR million	Land and buildings[1]	Technical equipment and machinery[1]	Other plant and office equipment[1]	Construction in process	**Total**
Accumulated depreciation					
January 1, 2017	**225.7**	**530.1**	**171.7**	**–**	**927.5**
Additions	11.7	48.4	18.8	–	78.9
Transfers	0.6	22.8	(23.4)	–	–
Additions due to changes in consolidation structure	1.5	1.6	0.6	–	3.7
Impairment losses	4.2	1.2	0.5	–	5.9
Disposals	(2.5)	(13.8)	(11.4)	–	(27.7)
Foreign currency effects	(2.4)	(10.6)	(4.2)	–	(17.2)
December 31, 2017	**238.8**	**579.7**	**152.6**	**–**	**971.1**
January 1, 2018	**238.8**	**579.7**	**152.6**	**–**	**971.1**
Additions	11.6	48.8	19.3	–	79.7
Transfers	(17.3)	(0.3)	(0.7)	–	(18.3)
Additions due to changes in consolidation structure	–	–	0.1	–	0.1
Disposals	(0.8)	(54.0)	(21.1)	–	(75.9)
Foreign currency effects	–	(2.0)	0.1	–	(1.9)
December 31, 2018	**232.3**	**572.2**	**150.3**	**–**	**954.8**
Carrying value					
January 1, 2017	226.0	195.8	61.3	12.8	495.9
December 31, 2017	215.9	188.1	57.9	9.3	471.2
December 31, 2018	**203.5**	**181.9**	**57.4**	**20.3**	**463.1**

[1] Including assets under finance leases (see Note 9 "Leasing")

In fiscal years 2018 and 2017, Giesecke+Devrient recorded impairments amounting to EUR 0.0 million and EUR 1.9 million on property, plant and equipment in cost of goods. In 2018, impairments amounting to EUR 0.0 million were recorded in general and administrative expenses (previous year EUR 4.1 million). The impairments recorded by Giesecke+Devrient in 2017 mainly comprise a planned site closure which resulted in an extraordinary depreciation expense. The impairments on land, buildings and machinery reflect the fair values. The fair value of the buildings was determined by external, independent real estate appraisers. In the chosen scenario, income was not received by G+D and it was assumed that the property would have to be rented on the market in the future. The cash value method was therefore applied and the valuation technique was classified as fair value at level three. The discount rate is 7.0 %.

In fiscal year 2018, land and buildings with a book value of EUR 6.5 million were reclassified from property, plant and equipment to non-current assets held for sale. The reclassification is based on a management decision to sell these assets. An active program to locate a buyer was initiated by the end of the fiscal year 2018.

The carrying value of property, plant and equipment which serves as collateral for financial liabilities (see Note 13 “Financial Liabilities”) amounted to EUR 9.0 million and EUR 8.4 million as of December 31, 2018 and 2017, respectively.

Commitments for the purchase of property, plant and equipment amounted to EUR 24.9 million and EUR 7.6 million as of December 31, 2018 and 2017, respectively.

9 Leasing

Giesecke+Devrient has obligations under finance leases covering buildings and certain machinery and equipment that expire at various dates over the next five years.

As of December 31, 2018 and 2017, the carrying values of buildings, machinery and equipment recorded under finance leases were as follows:

EUR million	Dec. 31, 2018	Dec. 31, 2017
Buildings	–	6.5
Machinery and equipment	2.7	0.1
	2.7	**6.6**

Depreciation on assets held under finance leases is included in depreciation expense.

Furthermore, Giesecke+Devrient has several non-cancelable operating leases for buildings, manufacturing facilities, electronic data processing equipment, motor vehicles and other office equipment which expire over the next 14 years. Rental expenses for operating leases amounted to EUR 29.0 million and EUR 29.6 million in 2018 and 2017, respectively.

Future minimum lease payments on non-cancelable operating leases and future minimum finance lease payments amount to:

EUR million	Finance leases	Operating leases
Less than one year	0.6	22.8
Between one and five years	2.7	46.7
More than five years	–	14.2
Total minimum lease payments	**3.3**	**83.7**
Less amount representing interest (at rates up to 10.3 %)	(0.4)	
Present value of net minimum finance lease payments	**2.9**	

The present value of net minimum finance lease liabilities is as follows:

EUR million	Finance leases
Less than one year	0.5
Between one and five years	2.4
Present value of net minimum finance lease payments	**2.9**

Future minimum lease payments on non-cancelable operating leases include lease agreements with related parties in the amount of EUR 1.1 million.

As part of a sale and leaseback transaction in 2017, G+D sold part of its land and buildings to a related party at a sales price of EUR 20.7 million. This sale was carried out at fair value. The land and buildings are being leased by G+D at various lease terms, including short-term, until December 31, 2019 and accounted for as operating leases. In return, the reimbursement of part of the relocation costs of G+D as a variable lease payment was agreed. Relating to the sale of the building, refer to Note 8 “Property, Plant and Equipment” and Note 26 “Related Party Disclosures”.

Regarding the summary of the activity for lease liabilities, refer to Note 13 “Financial Liabilities”.

10 Accounts Payable Trade and Other Accounts Payable

EUR million	Dec. 31, 2018	Dec. 31, 2017
Current		
Accounts payable trade due to third parties	371.0	291.2
Accounts payable due to associated companies and joint ventures	1.0	0.9
Accounts payable to shareholders	0.2	0.2
Other similar liabilities	1.3	1.4
Deposits received/deferred income	–	163.1
	373.5	**456.8**
Non-current		
Deposits received/deferred income	–	25.5
	–	**25.5**

11 Provisions

EUR million	Warranties	Personnel-related costs	Licenses and patent infringements	Onerous contracts	Restructuring	Other	Total
January 1, 2018	**47.5**	**14.9**	**3.7**	**5.6**	**9.8**	**25.8**	**107.3**
Additions	18.9	4.7	0.5	6.5	4.7	8.8	44.1
Transfers	–	0.1	–	–	–	–	0.1
Additions due to changes in consolidation structure	–	–	–	1.3	–	1.3	2.6
Interest component	–	0.1	–	–	–	–	0.1
Utilization	(4.6)	(4.9)	(0.2)	(4.8)	(7.3)	(7.6)	(29.4)
Release	(11.0)	–	(2.9)	(0.9)	(1.3)	(9.0)	(25.1)
Foreign currency effects	–	–	–	–	–	(0.1)	(0.1)
December 31, 2018	**50.8**	**14.9**	**1.1**	**7.7**	**5.9**	**19.2**	**99.6**
thereof current	50.8	9.4	1.1	7.7	5.9	13.3	88.2
thereof non-current	–	5.5	–	–	–	5.9	11.4

Personnel-related provisions include obligations for pre-retirement part-time working arrangements and long-service awards. The interest component on pre-retirement part time working arrangements and long-service awards is included in interest expense.

Provisions for restructuring mainly consist of provisions relating to site closures abroad.

Other provisions include, in particular, provisions for penalties, withholding tax obligations, asset retirement obligations and litigation.

12 Other Current Liabilities

EUR million	Dec. 31, 2018	Dec. 31, 2017
Payroll and social security taxes	94.9	97.2
Sales and other taxes	22.2	21.5
Gross amount due on construction contracts	–	3.2
Other liabilities	12.1	11.0
	129.2	**132.9**

13 Financial Liabilities

Financial liabilities consist of the following as of December 31, 2018 and 2017:

EUR million	Dec. 31, 2018	Dec. 31, 2017
Current		
Short-term borrowings due to financial institutions	8.1	18.2
Short-term debt to MC Familiengesellschaft mbH	15.5	5.4
Short-term debt due to other third parties	11.2	11.2
Current portion of debt due to other third parties	0.3	–
Current portion of debt due to financial institutions	19.8	28.5
Current portion of debt due to Giesecke+Devrient Foundation	–	3.5
Accrued interest on debt to financial institutions	1.9	1.4
Other financial liabilities	–	2.5
Derivative financial instruments	6.4	4.8
Total current portion of financial liabilities	**63.2**	**75.5**
Non-current		
Unsecured notes payable to financial institutions, interest rates 0.81 % to 3.42 %, due through November 30, 2028	429.9	248.5
Unsecured notes payable to Giesecke+Devrient Foundation, interest rate 2.52 % due through December 1, 2022	21.0	20.7
Unsecured notes payable to other third parties, interest rate 2.65 %, indefinite maturity date	–	2.6
Unsecured notes payable to other third parties, interest rates 0.18 % to 1.85 %, due through March 31, 2023	4.2	2.4
Mortgage notes payable to financial institutions, interest rate 1.55 %, due through March 31, 2023	9.0	8.4
Total	**464.1**	**282.6**
Less current portion of non-current financial liabilities	(20.1)	(32.0)
Total non-current portion of financial liabilities	**444.0**	**250.6**
Total financial liabilities	**507.2**	**326.1**

The aggregate maturities of financial liabilities for each of the following years are as follows:

EUR million	
2019	63.2
2020	37.5
2021	13.1
2022	138.8
2023	80.1
thereafter	174.5
	507.2

A summary of the activity for financial liabilities is as follows:

EUR million	Non-current borrowings (incl. short-term portion)	Current borrowings	Derivative financial instruments	Other financial liabilities	Sum of financial liabilities	Finance lease[1] obligations	Total
Carrying value January 1, 2017	**250.3**	**73.4**	**6.4**	**–**	**330.1**	**5.9**	**336.0**
Payments during the period	(51.3)	(97.2)	–	–	(148.5)	(2.6)	(151.1)
New borrowings	83.2	61.1	–	–	144.3	–	144.3
Total change in cash flow from financing activities	31.9	(36.1)	–	–	(4.2)	(2.6)	(6.8)
Acquisitions	0.6	–	–	–	0.6	–	0.6
Other changes	–	0.6	–	2.5	3.1	–	3.1
Fair value changes	–	–	(1.3)	–	(1.3)	–	(1.3)
Currency effects	(0.2)	(1.7)	(0.3)	–	(2.2)	–	(2.2)
Carrying value December 31, 2017	**282.6**	**36.2**	**4.8**	**2.5**	**326.1**	**3.3**	**329.4**
Fair value December 31, 2017	**281.5**	**36.2**	**4.8**	**2.5**	**325.0**	**3.3**	**328.3**
Carrying value January 1, 2018	**282.6**	**36.2**	**4.8**	**2.5**	**326.1**	**3.3**	**329.4**
Repayments of the period	(29.3)	(18.1)	–	–	(47.4)	(3.4)	(50.8)
New borrowings	210.6	18.3	–	–	228.9	–	228.9
New leases	–	–	–	–	–	3.0	3.0
Total change in cash flow from financing activities	181.3	0.2	–	–	181.5	(0.4)	181.1
Other changes	–	0.5	–	(2.5)	(2.0)	–	(2.0)
Fair value changes	–	–	1.6	–	1.6	–	1.6
Currency effects	0.2	(0.2)	–	–	–	–	–
Carrying value December 31, 2018	**464.1**	**36.7**	**6.4**	**–**	**507.2**	**2.9**	**510.1**
Fair value December 31, 2018	**475.8**	**36.7**	**6.4**	**–**	**518.9**	**2.9**	**521.8**

[1] For additional information regarding finance lease obligations refer to Note 9 „Leasing“

Lines of credit

Giesecke+Devrient maintains global credit facilities in the amount of EUR 830.8 million (prior year EUR 773.3 million). As of December 31, 2018, G+D used EUR 449.0 million (prior year EUR 278.4 million) of these facilities for bank guarantees, EUR 8.0 million (prior year EUR 22.2 million) for credit orders and EUR 11.2 million (prior year EUR 11.2 million) due to other third parties. Thus, EUR 362.6 million (prior year EUR 461.5 million) in credit lines were not used as of the reporting date.

14 Pensions and Related Liabilities

Description of the plans

Giesecke+Devrient maintains defined benefit pension plans for a considerable number of employees in Germany and at a few subsidiaries abroad. This defined benefit pension plans charge the Group with actuarial risks such as longevity risks, currency exchange risks and interest rate risks.

In addition to the number of years of service, the defined benefit pension plans are based on the current salary received or are dependent on the final salary. For most of the employees who had employment contracts from January 1, 2002 onwards with a German Group company, the pension plan is based on pension components whose benefits are adjusted each year by 1 %. Furthermore, employees in German Group companies are granted the right to use particular salary components for future pension payments.

The measurement date for the calculation of the DBO for the principal pension plans and the other key postretirement benefits is December 31.

Payment obligations exist for defined contribution state pension plans in Germany and abroad.

For new employees joining G+D after January 1, 2014, the existing defined contribution plan was terminated. For employees joining the company from January 1, 2014 on, an externally financed pension obligation was introduced.

Total provisions for pensions and related liabilities

Obligations under the Giesecke+Devrient pension plans and other postretirement benefit plans are comprised of the following:

EUR million	Dec. 31, 2018	Dec. 31, 2017
Pension benefits	583.6	592.3
Other postretirement benefits	2.1	1.2
Other	0.6	0.5
Total accrual for pension and related liabilities	**586.3**	**594.0**

Pensions and other postretirement benefits

Details of the changes in the defined benefit obligation, the current value of plan assets and the other postretirement benefits are summarized in the following tables:

EUR million	Pension benefit plans		Other postretirement benefit plans	
	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Change in defined benefit obligation				
Defined benefit obligation at beginning of year	**615.2**	**607.7**	**1.2**	**1.5**
Foreign currency exchange rate differences	0.2	(1.8)	–	(0.2)
Service cost	8.6	9.6	0.5	0.2
Interest cost	12.1	11.9	0.1	0.1
Past service cost	0.2	(1.1)	0.1	(0.5)
Curtailments	(0.1)	(1.1)	–	(0.2)
Plan amendments	0.3	–	0.1	(0.3)
Plan participants' contributions	0.1	0.5	0.3	–
Additions/(disposals) due to changes in consolidation structure	(0.3)	6.1	–	–
Actuarial (gains)/losses	(14.5)	(5.3)	–	0.1
due to demographic parameter changes	7.5	–	–	0.2
due to financial parameter changes	(20.2)	(3.2)	–	(0.1)
due to experience adjustments	(1.8)	(2.1)	–	(0.1)
Benefits paid	(14.0)	(12.4)	(0.1)	–
Defined benefit obligation at end of year	**607.6**	**615.2**	**2.1**	**1.2**
Change in plan assets				
Fair value of plan assets at beginning of year	**22.9**	**22.9**	**–**	**–**
Foreign currency exchange rate differences	–	(1.1)	–	–
Actual return on plan assets (excluding expected interest income)	(0.1)	0.1	–	–
Expected interest income	0.3	0.5	–	–
Additions/(disposals) due to changes in consolidation structure	–	(0.1)	–	–
Employer contributions	1.6	1.4	–	–
Plan participants' contributions	0.1	0.2	–	–
Benefits paid	(0.8)	(1.0)	–	–
Fair value of plan assets at end of year	**24.0**	**22.9**	**–**	**–**
Net amount recognized at end of year	**583.6**	**592.3**	**2.1**	**1.2**

Net liability recorded

The development of the net liability recorded in fiscal years ended December 31, 2018 and 2017 is as follows:

EUR million	Pension benefit plans		Other postretirement benefit plans	
	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Net liability at beginning of year	**592.3**	**584.8**	**1.2**	**1.5**
Service cost	8.6	9.6	0.5	0.2
Past service cost	0.2	(1.1)	0.1	(0.5)
Curtailments	(0.1)	(1.1)	–	(0.2)
Plan amendments	0.3	–	0.1	(0.3)
Interest expense/(income)	11.8	11.4	0.1	0.1
Additions/(disposals) due to changes in consolidation structure	(0.3)	6.2	–	–
Actuarial (gains)/losses	(14.5)	(5.3)	–	0.1
due to demographic parameter changes	7.5	–	–	0.2
due to financial parameter changes	(20.2)	(3.2)	–	(0.1)
due to experience adjustments	(1.8)	(2.1)	–	(0.1)
Actual return on plan assets (excluding expected interest income)	0.1	(0.1)	–	–
Benefits paid (excluding plan settlements)	(13.2)	(11.4)	(0.1)	–
Employer contributions	(1.6)	(1.4)	–	–
Plan participants' contributions	–	0.3	0.3	–
Foreign currency exchange rate differences	0.2	(0.7)	–	(0.2)
Net liability at end of year	**583.6**	**592.3**	**2.1**	**1.2**

Plan assets

The plan assets were invested in the following classes of assets:

Information as % of plan assets	Dec. 31, 2018	Dec. 31, 2017
Cash surrender value of reinsurance	30.6	30.4
Equity securities	10.4	9.4
Debt instruments	13.7	15.3
Real estate funds	7.7	7.7
Money market funds	34.4	33.5
Other	3.2	3.7
	100.0	**100.0**

The majority of the plan assets are invested in money market funds and debt instruments and in the form of cash surrender value of reinsurance policies and shares in mutual funds for German companies. Furthermore, plan assets are invested in equity securities and real estate funds. The management and reinvestment are controlled by defined investment policies which foresee investment in high quality and diversified investment classes.

There are no additions to plan assets planned for fiscal year 2019 (prior year EUR 0.6 million). There are no minimum funding requirements.

Actuarial assumptions

The discount rates and percentages for salary and pension increases assumed in the determination of the future pension obligations fluctuate in accordance with the economic situation in the countries in which the pension plans exist. The weighted average assumptions for the calculation of the actuarial amounts are as follows:

%	Pension benefit plans		Other postretirement benefit plans	
	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Discount rate/expected return on plan assets	2.2	2.0	6.3	2.5
Rate of compensation increase	2.5	2.5	5.3	2.3
Rate of pension progression	1.5	1.4	–	–
Mortality tables:				
Germany	RT Heubeck 2018 G	RT Heubeck 2005 G		
Canada	2014 CPM table with mortality improvement scale CPM-B	2014 CPM table with mortality improvement scale CPM-B		
Switzerland	BVG2015.GT	BVG2015.GT		

The rate of the expected long-term return on plan assets corresponds with the discount rate. The weighted average term for pension obligations amounts to 18.3 years (prior year 18.9 years) and 4.2 years for other benefit obligations (prior year 6.3 years).

Sensitivity analysis

The results of the sensitivity analyses for the significant actuarial assumptions for pension obligations as of December 31, 2018 and December 31, 2017 are as follows:

Change of Defined Benefit Obligation

EUR million	Dec. 31, 2018	Dec. 31, 2017
Discount rate +50 basis points	(46.1)	(51.3)
Discount rate –50 basis points	57.0	60.4
Rate of pension progression +25 basis points	14.1	14.1
Rate of pension progression –25 basis points	(12.5)	(13.8)
Increase of 2 years in life expectancy	40.3	41.8

The assumptions for all sensitivity calculations were not performed jointly, but rather individually for each calculation assumption examined.

Contributions to pension plans

Contributions to state pension plans in the amount of EUR 28.3 million and EUR 27.0 million were recorded in 2018 and 2017, respectively. Payments amounting to EUR 1.3 million and EUR 0.7 million were made for the newly established company pension plans in 2018 and 2017, respectively.

15 Revenue

Revenue is comprised of the following categories:

EUR million	2018	2017
Sales of goods	1,857.6	1,825.8
Rendering of services	360.6	285.6
Royalties	27.8	25.0
	2,246.0	**2,136.4**

The following table contains the revenue separated in subgroups, divisions and the time of revenue recognition:

EUR million	2018	2017
Currency Technology	1,058.9	1,016.5
Banknote Solutions	576.5	569.0
Currency Management Solutions	482.4	447.5
Mobile Security	867.6	812.3
Veridos	180.2	167.3
secunet	163.3	158.3
Group internal	(24.0)	(18.0)
	2,246.0	**2,136.4**

In the division Banknote Solutions and in the subgroups Mobile Security, Veridos and secunet, revenue is mainly recognized over time, whereas in the division Currency Management Solutions revenue is largely recognized at a point in time.

16 Income and Expenses Relating to Other Periods

EUR million	2018	2017
Income relating to other periods	30.5	60.7
Expenses relating to other periods	(3.6)	(1.9)
	26.9	**58.8**

Income relating to other periods consists primarily of releases of warranty provisions included in cost of goods sold, releases of other provisions included in other operating income as well as reversals of impairments (see Note 3) recorded in selling expenses. For the most part, expenses relating to other periods comprises tax expense for prior periods.

17 Other Financial Income, net

EUR million	2018	2017
Gains/(losses) from trading securities, net	(6.2)	5.6
Foreign currency exchange gains/(losses), net	(2.3)	(14.8)
Gains/(losses) from derivative financial instruments, net	(6.2)	(2.4)
	(14.7)	**(11.6)**

The changes in net unrealized gains and losses on trading securities included in earnings during the fiscal years ending December 31, 2018 and 2017 were EUR – 10.4 million and EUR 2.4 million, respectively.

18 Interest Income and Interest Expense

EUR million	2018	2017
Interest income		
Loans and receivables	–	0.1
Cash and cash equivalents/short-term investments	0.9	0.9
Trading securities	0.7	0.7
Interest derivatives	–	0.1
Receivables from associated companies and joint ventures	–	0.1
Other	0.4	0.3
	2.0	**2.2**
Interest expense		
Loans and receivables	0.7	0.7
Financial liabilities and finance lease obligations	5.7	5.0
Other provisions	0.1	0.1
Provisions for pensions	11.8	11.5
Taxes payable	0.3	0.1
Other	0.4	2.2
	19.0	**19.6**

Interest income and expense relating to financial assets and financial liabilities that are not valued at fair value are as follows:

EUR million	2018	2017
Interest income		
Loans and receivables	–	0.2
Cash and cash equivalents/short-term investments	0.9	0.9
	0.9	**1.1**
Interest expense		
Loans and receivables	0.7	0.7
Financial liabilities measured at amortized cost	5.7	5.0
	6.4	**5.7**

19 Income Taxes

Income tax expense

Income tax expense for fiscal years 2018 and 2017 is comprised of:

EUR million	2018	2017
Current income tax		
Current year income tax expense	(32.2)	(43.1)
Income tax expense for prior periods	(2.0)	(0.6)
	(34.2)	**(43.7)**
Deferred income tax		
Gross expenditure from origination and reversal of temporary differences and tax loss carryforwards	(1.0)	(4.4)
Income tax expense from changes in tax rates and introduction of new taxes	(1.1)	(0.1)
Change in usability of tax loss carryforwards	1.0	2.4
	(1.1)	**(2.1)**
Income tax expense, net	**(35.3)**	**(45.8)**

In fiscal year 2018, G+D was subject to German federal corporate tax at a base rate of 15 % for the parent company plus a solidarity surcharge of 5.5 % on federal corporate taxes payable. Hence, the statutory rate consisted of a federal corporate tax rate of 15.83 % and trade tax of 15.63 %, resulting in a combined tax rate of 31.46 %.

Reconciliation between the expected and actual income tax expense

Following is a reconciliation of the expected income tax expense to the actual income tax expense which was recorded. The calculation of the expected income tax expense is based on the multiplication of income before income tax at the German corporate combined statutory rate of 31.46 % and 31.71 % in 2018 and 2017, respectively.

EUR million	2018	2017
Expected income tax expense	(26.9)	(35.8)
Foreign taxation differential	3.1	1.4
Non-deductible expenses	(4.7)	(2.3)
Changes in tax rates	(1.1)	(0.1)
Tax-free income	2.5	(0.8)
Additions due to tax risks and tax payments (refunds) for prior years	(2.8)	(0.7)
Changes in tax loss carryforwards	1.0	2.4
Withholding taxes	(6.1)	(8.0)
Other	(0.3)	(1.9)
Actual income tax expense	**(35.3)**	**(45.8)**

Deferred tax assets and liabilities

The gross values of deferred tax assets and liabilities as of December 31, 2018 and 2017 are attributable to the following balance sheet line items:

EUR million	Assets		Liabilities		Net	
	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Financial assets	(8.5)	0.5	(5.8)	(7.1)	(14.3)	(6.6)
Accounts receivable trade and other receivables, net	9.6	5.5	–	(0.1)	9.6	5.4
Contract assets	0.1	–	(8.3)	–	(8.2)	–
Inventories, net	63.2	21.9	–	(0.1)	63.2	21.8
Other assets	1.2	0.5	(20.8)	(0.5)	(19.6)	–
Intangible assets	13.6	8.7	(19.2)	(15.1)	(5.6)	(6.4)
Property, plant and equipment	2.4	1.8	(13.5)	(11.9)	(11.1)	(10.1)
Accounts payable trade and other accounts payable	0.6	0.9	(34.5)	(12.6)	(33.9)	(11.7)
Contract liabilities	–	–	(0.8)	–	(0.8)	–
Provisions	22.6	20.5	(2.9)	(3.4)	19.7	17.1
Financial liabilities	3.8	2.3	–	–	3.8	2.3
Finance lease obligations	0.8	0.1	–	–	0.8	0.1
Deposits received/deferred income	0.2	0.2	(1.3)	–	(1.1)	0.2
Pensions and related liabilities	96.0	102.5	–	–	96.0	102.5
Other liabilities	0.8	4.0	(1.5)	(1.4)	(0.7)	2.6
Tax loss carryforwards	42.5	37.1	–	–	42.5	37.1
Deferred tax assets/(liabilities), gross	248.9	206.5	(108.6)	(52.2)	140.3	154.3
Set-off of tax	(96.7)	(42.9)	96.7	42.9	–	–
Deferred tax assets/(liabilities), net	**152.2**	**163.6**	**(11.9)**	**(9.3)**	**140.3**	**154.3**

The changes in deferred tax assets, net included in net income or other comprehensive income for fiscal years 2018 and 2017 are included in the following summary:

EUR million	2018	2017
Deferred tax assets, net as of January 1	**154.3**	**158.9**
Changes affecting net income	(1.1)	(2.1)
Changes not affecting net income		
Additions due to changes in consolidation structure	(0.6)	(0.2)
Changes in net deferred tax assets recognized in other comprehensive income resulting from the introduction of new accouniting standards	(7.5)	–
Changes in net deferred tax assets recognized in other comprehensive income resulting from deferred tax assets on actuarial gains and losses	(4.6)	(1.2)
Changes in net deferred tax assets recognized in other comprehensive income resulting from deferred tax assets on foreign currency translations	(0.2)	(1.1)
Deferred tax assets, net as of December 31	**140.3**	**154.3**

Deferred tax assets not recorded in the balance sheet

The amount of deductible timing differences and tax loss carryforwards for which deferred tax assets were not recorded are as follows:

EUR million	2018		2017	
	Gross amount	Tax effect	Gross amount	Tax effect
Deductible temporary differences	6.2	1.8	16.5	4.0
Unused tax losses	168.3	43.7	197.9	52.8
	174.5	**45.5**	**214.4**	**56.8**

The unused tax losses expire as follows:

EUR million	2018		2017	
	Gross amount	Expiration date	Gross amount	Expiration date
Limited	13.4	2019–2037	3.1	2018–2023
Unlimited	154.9	–	194.8	–

Furthermore, deferred tax assets in the amount of EUR 42.5 million and EUR 37.1 million on tax loss carryforwards in the amount of EUR 147.0 million and EUR 121.4 million were recorded as of December 31, 2018 and 2017, respectively.

The determining factor in recognizing deferred tax assets is the probability of the reversal of the temporary differences which resulted in the recognition of the deferred tax assets and future taxable profit against which the unused tax losses can be offset. This is dependent on future taxable profits arising in those periods in which taxable temporary differences reverse and tax losses carryforwards may be utilized. As of December 31, 2018, significant deferred tax assets were recorded on tax loss carryforwards by the following companies: Giesecke+Devrient GmbH, Munich, EUR 37.5 million, Giesecke+Devrient Mobile Security Sweden AB, Stockholm, EUR 2.7 million and Giesecke+Devrient Mobile Security Iberia S.A., Barcelona, EUR 1.1 million. Expected taxable profits based on the forecasts for the next five years are recognized by the respective companies. Based upon the level of historical taxable income and projections of future taxable income, G+D believes that it is not probable that the benefits of deductible timing differences and carryforward tax losses in the amount of EUR 174.5 million and EUR 214.4 million will be realized and therefore has not recognized deferred tax assets for these amounts in 2018 and 2017.

Income tax on dividends

As of December 31, 2018 and 2017, G+D recorded deferred tax liabilities on cumulative earnings in subsidiaries and investments that are intended for distribution. Furthermore, deferred taxes were recorded on the taxable temporary differences relating to investments in associated companies and joint ventures. As of December 31, 2018 and 2017, the amount of these obligations was EUR 0.2 million and EUR 0.0 million, respectively.

Temporary differences relating to investments in subsidiaries for which deferred tax liabilities were not recorded amounted to EUR 3.7 million and EUR 0.0 million as of December 31, 2018 and 2017, respectively.

20 Equity

As of December 31, 2018 and 2017, the nominal value of the treasury stock amounted to EUR 4.3 million, respectively.

Unappropriated reserves amounted to EUR 410.7 million and EUR 363.1 million as of December 31, 2018 and 2017, respectively.

With respect to capital management, the main objective of Giesecke+Devrient is to secure its continuation as well as generate shareholder value, i.e. in the form of dividend payments. As of December 31, 2018 and 2017, the equity ratio amounted to 19.7 % and 20.6 %, respectively. G+D is not subject to external minimum capital requirements.

21 Financial Instruments

IFRS 9 Financial Instruments become effective for the first time in fiscal years which begin on or after January 1, 2018. G+D adopted IFRS 9 for the first time for the fiscal year beginning on January 1, 2018.

The following table and the accompanying notes below show the original measurement categories under IAS 39 and the new measurement categories under IFRS 9 for each class of the Group's financial assets and financial liabilities as of January 1, 2018. The following table also incorporates the carrying amounts and fair values of G+D's financial instruments. The pure exit price is thereby understood as the fair value of a financial instrument. This is the price at which a transaction to sell an asset or to transfer a liability would take place under current market conditions.

The effects of adopting IFRS 9 on the carrying amounts of financial assets as of January 1, 2018 relate solely to the new impairment requirements.

The table does not contain information relating to fair values of financial assets or liabilities that are not valued at fair value if the carrying amount represents a reasonable approximation of the fair value.

EUR million		IAS 39	IFRS 9		IAS 39	Retained earnings				IFRS 9
	Note	Original classification	New classification	Original carrying amount Dec. 31, 2017	Original fair value Dec. 31, 2017	Remea-sure-ment	Deffered taxes	**New carrying amount Jan. 1, 2018**	**Carrying amount Dec. 31, 2018**	**Fair value Dec. 31, 2018**
Financial assets										
Loans and receivables[1]	(a)	Loans and receivables	Amortized cost	468.4	–	(1.3)	(0.5)	467.1	489.2	–
Financial assets held for trading[2]										
Derivative financial assets		Held for trading	Manda-torily at FVTPL	4.6	4.6			4.6	5.4	5.4
Trading securities	(b)	Held for trading	Manda-torily at FVTPL	72.6	72.6			72.6	61.9	61.9
Total				**77.2**				**77.2**	**67.3**	
Investment securities	(c)	Available for sale	designated FVTPL	11.0	11.0			11.0	12.0	12.0
Special classes										
Cash and cash equivalents[3]	(a)	Loans and receivables	Amortized cost	210.7	–			210.7	429.3	–
Short-term investments	(a)	Loans and receivables	Amortized cost	0.8	–			0.8	0.9	–
Contract assets[4]		N/A	N/A	0.6	–			113.2	147.0	–
Non-current assets held for sale		Held for trading	Manda-torily at FVTPL	0.2	0.2			0.2	7.4	7.4
Total financial assets				**768.9**		**(1.3)**	**(0.5)**	**880.2**	**1,153.1**	

[1] Amount does not include prepayments in the amount of EUR 74.9 million and EUR 37.5 million as of December 31, 2018 and 2017, respectively, as these are not included in the scope of IFRS 7.
[2] Amount does not include cash surrender value of reinsurance in the amount of EUR 21.4 million and EUR 21.1 million as of December 31, 2018 and 2017, respectively, as this is not included in the scope of IFRS 7.
[3] Cash and cash equivalents include cash in the amount of EUR 0.1 million and EUR 0.1 million, cash in banks in the amount of EUR 307.1 million and EUR 197.4 million as well as short-term investments in the amount of EUR 122.1 million and EUR 13.2 million as of December 31, 2018 and 2017, respectively.
[4] Amount consists solely of cantract assets due to IFRS 15. Other current and non-crrent assets in the amount of EUR 56.2 million and EUR 39.4 million as of December 31, 2018 and 2017, respectively, are not included in the scope of IFRS 7. The increase in the carrying value as of January 1, 2018 is due to the implementation of IFRS 15.

a. Accounts receivable trade and other receivables, cash and cash equivalents and short-term investments that were classified as loans and receivables under IAS 39 are now classified at amortized cost. An increase of EUR 1.3 million in the allowance for impairment on accounts receivable trade was recognized in opening retained earnings as of January 1, 2018 on the transition to IFRS 9.

b. Under IAS 39, these equity securities were designated as at FVTPL since they were managed on a fair value basis and their performance was monitored on this basis. These assets have been classified as mandatorily measured at FVTPL under IFRS 9.

c. Marketable securities categorized as available-for-sale under IAS 39 are held by the Group's treasury unit in a separate portfolio to provide interest income but may be sold to meet liquidity requirements arising in the normal course of business. Under IAS 39, these investment securities were designated as at FVTPL because they were managed on a fair value basis and their performance was monitored on this basis. These assets are therefore also classified as measured at FVTPL under IFRS 9.

EUR million	IAS 39	IFRS 9		IAS 39			IFRS 9
	Original classification	New classification	Original carrying amount Dec. 31, 2017	Original fair value Dec. 31, 2017	**New carrying amount Jan. 1, 2018**	**Carrying amount Dec. 31, 2018**	**Fair value Dec. 31, 2018**
Financial liabilities							
Financial liabilities measured at amortized cost							
Financial liabilities	Other financial liabilities	Other financial liabilities	318.8	320.2	318.8	500.8	502.2
Contract liabilities[1]	N/A	N/A	3.1	–	125.4	246.2	–
Accounts payable	Other financial liabilities	Other financial liabilities	293.7	–	293.7	373.5	–
Total			**615.6**		**737.9**	**1,120.5**	
Derivative financial liabilities	Fair value – hedging instrument	Fair value – hedging instrument	4.8	4.8	4.8	6.4	6.4
Other financial liabilities	Other financial liabilities	Other financial liabilities	2.5	2.5	2.5	–	–
Special class							
Lease obligations	Other financial liabilities	Other financial liabilities	3.4	3.4	3.4	2.9	–
Total financial liabilities			**626.3**		**748.6**	**1,129.8**	

[1] Amount includes contract liabilities due to IFRS 15. The increase in the carrying value as of January 1, 2018 is due to the implementation of IFRS 15.

The fair value of foreign currency forward contracts is based on mark-to-market since similar contracts are being traded on active markets. In fiscal year 2017, there was a net change in the fair value in the amount of EUR –1.2 million. The fair value in the amount of EUR –1.8 million was recorded under current financial liabilities as of December 31, 2017. As of December 31, 2018 and 2017, these derivative financial instruments are stated at fair value and recorded on the balance sheet under current financial assets in the amount of EUR 5.4 million and EUR 4.6 million and under current financial liabilities in the amount of EUR 6.4 million and EUR 4.8 million, respectively.

The nominal volume of foreign currency forward contracts entered into by Giesecke+Devrient as of December 31, 2018 amounted to:

million foreign currency units	Purchase contracts	Sales contracts
US dollar	41.6	119.5
Australian dollar	2.2	–
British pound	4.2	2.4
Japanese yen	–	108.3
Hong Kong dollar	–	55.6
Swedish krona	–	91.4

Financial instruments not valued at fair value:

Cash and cash equivalents, short-term investments, as well as the current portion of accounts receivable, other assets, loans, trade accounts payable and other accounts payable, and other liabilities
The carrying amounts of these financial instruments are considered to approximate fair value because of the relatively short period of time between origination and their expected realization.

Financial instruments valued at fair value:

The fair values of non-derivative financial instruments for the individual classes are as follows:

Marketable securities
Debt and equity securities are carried at fair value, which is based on quoted market prices at the balance sheet date.

Investments
If the fair value cannot be readily determined, investments are recorded at acquisition cost ("other related parties"). Investments in other related parties are generally recognized using the "fair value option".

Non-current financial assets and financial liabilities as well as finance lease obligations
The fair value is determined based on the amortized cost using the effective interest method. Under this method, the expected future cash flows are discounted using the prevailing market rate as of the balance sheet date for similar maturities and contracts.

As of December 31, 2018 and 2017, there were no significant differences between the fair values and the carrying values of non-current financial assets.

Impairment losses and reversals of impairment losses during fiscal years 2018 and 2017 related solely to financial assets in the class "loans and receivables".

EUR million	2018	2017
Impairment losses	(4.0)	(6.5)
Reversals of impairment losses	9.4	2.3
	5.4	**(4.2)**

Net gains and losses from financial assets and liabilities by measurement category amounted to:

EUR million	2018	2017
Financial assets measured at amortized cost	6.8	(10.4)
Financial assets and financial liabilities held for trading	(8.9)	1.9
Financial liabilities measured at amortized cost	(0.7)	3.9
	(2.8)	**(4.6)**

Net gains and losses on loans and receivables consist of results from impairments, reversals of impairments and foreign currency exchange effects.

Net gains and losses on financial assets and liabilities measured at fair value contain results from changes in fair market values and adjustments on settlement of these financial instruments.

Net gains and losses from financial liabilities measured at amortized cost comprise foreign currency exchange effects.

Calculation of the fair values of financial instruments

In the following table, financial instruments measured at fair value are allocated to levels in accordance with IFRS 7, "Financial Instruments: Disclosures". Thereby, the fair value measurement of a financial instrument is allocated in its entirety to the level for which inputs are material to determine its fair value. At level 1, fair values are mainly determined by using quoted prices from active markets for identical financial assets or liabilities. The fair values at level 2 are determined via market comparison procedures based on observable quoted prices for similar financial assets or liabilities. Fair value measurements at level 3 are mainly based on unobservable market data. In 2018, Giesecke+Devrient determined fair values of financial instruments based at level 1, level 2 and level 3. The fair value measurement of level 3 was only used for the valuation of the call and put option relating to the shares in CI Tech Sensors AG in 2017. In 2018 and 2017, no material reclassifications between the levels were recorded.

Allocation of the fair value measurement of classes of financial assets and liabilities to levels in accordance with IFRS 13 as of December 31, 2018:

Classes of financial instruments

EUR million		thereof fair value measurement at the end of the reporting period using		
	Dec. 31, 2018	Level 1	Level 2	Level 3
Financial assets				
Financial assets held for trading				
Derivative financial instruments	5.4	–	5.4	–
Trading securities	61.9	61.9	–	–
Investment securities	12.0	12.0	–	–
Financial liabilities				
Financial liabilities held for trading				
Derivative financial instruments	6.4	–	6.4	–
Financial liabilities measured at amortized cost				
Financial liabilities	502.2	–	502.2	–
Special class				
Finance lease obligations	2.9	–	2.9	–

Allocation of the fair value measurement classes of financial assets and liabilities to levels in accordance with IFRS 13 as of December 31, 2017:

Classes of financial instruments

EUR million		thereof fair value measurement at the end of the reporting period using		
	Dec. 31, 2017	Level 1	Level 2	Level 3
Financial assets				
Financial assets held for trading				
Derivative financial instruments	4.6	–	4.6	–
Trading securities	72.6	72.6	–	–
Investment securities	11.0	11.0	–	–
Financial liabilities				
Financial liabilities held for trading				
Derivative financial instruments	4.8	–	3.0	1.8
Other financial liabilities	2.5	–	2.5	–
Financial liabilities measured at amortized cost				
Financial liabilities	320.2	–	320.2	–
Special class				
Finance lease obligations	3.4	–	3.4	–

22 Financial Risk

Giesecke+Devrient is subject to typical liquidity risk, counterparty credit risk and market risks stemming from changes to exchange rates, interest rates, and share prices. On the procurement side, these risks are associated with price rises in raw materials (particularly semiconductors and cotton). These risks can adversely impact our net assets, financial position, and results of operations and are managed as part of the Group's ongoing business and financing activities. Additionally, financial risks affecting the Giesecke+Devrient Group and its operating subsidiaries are identified centrally on the basis of written guidelines and their management is also largely handled by Giesecke+Devrient GmbH. Financial risk forms part of the monthly risk reports submitted to the Management Board and is also included in regular reporting to the Supervisory and Advisory Boards.

If necessary, derivative financial instruments are used in relation to foreign currency and interest rates to hedge underlying transactions. In accordance with risk management standards applying to international banks, all trading activity is subject to financial monitoring that is independent of the Group's treasury department.

Risk Measurement Methods

Risk positions (relating to foreign currency, interest rates, financial investment, and procurement) are monitored regularly using sensitivity analysis. The modified duration risk measure is used for interest rate risks associated with bond investments. This measure indicates the percentage by which the price of the bond changes if market interest rates move by one percentage point. The Value-at-Risk (VaR) measure is used for equity investments. This measure indicates the maximum loss not exceeded for a specific equity position with a given probability of 95 %, a 10-day holding period and a past observation period of 52 weeks. To calculate volatility and correlations, expected figures are used. These are dynamically derived from the relevant equity/bond structure (interest rate structure).

Liquidity Risk

Minimizing liquidity risks has highest priority and is managed by holding a disposable liquidity reserve suitable to the size of the company. This means holding sufficient cash and unused credit lines with banks. Additionally, financial instruments like an annual planning for all Group companies and short-term liquidity planning for the main Group companies are installed. These planning instruments are complemented by a centralized cash management based on a contractual agreement, which sees the main German and foreign Group companies participating in a cash pooling system.

In addition to the provision of sufficient cash, the Group holds cash credit lines of EUR 223.2 million (prior year EUR 225.7 million) on the balance sheet date of December 31, 2018 to cover fluctuations in operating activities. These cash credit lines are granted by blue chip banks and have been utilized with EUR 8.0 million (prior year 18.3 million) on the balance sheet date of December 31, 2018. The principal part here is a syndicated long term credit line of EUR 180.0 million from consortium banks given to parent company Giesecke+Devrient GmbH running until May 2022, which was not used on December 31, 2018 as well as in previous year. In addition, there are credit-lines with other third parties of EUR 11.2 million (prior year EUR 11.2 million). This line was fully utilized by G+D with EUR 11.2 million.

In addition, securities with a carrying value and market value of EUR 72.1 million (prior year EUR 81.9 million) were held within the G+D Group. Thereof EUR 10.2 million result from a reinsurance of claims for partial retirement. Besides this part most of them are realizable within three months. Financial investments with a maturity of longer than three months totaled EUR 0.9 million (prior year EUR 0.8 million). The following tables show the G+D Group's contractually agreed (undiscounted) interest payments and repayments on the original financial liabilities, as well as derivative financial instruments with a negative fair value.

Information on Liquidity Risk at December 31, 2018

EUR million

			Up to 1 year		1–2 years		2–3 years		3–4 years		4–5 years		over 5 years	
	Carrying value	**Gross outflows**	Repayment	Interest	Repayment	Interest	Repayment	Interest	Repayment	Interest	Repayment	Interest	Repayment	Interest
Original financial liabilities														
Accounts payable trade, financial liabilities, and financial lease obligations	877.0	912.0	428.7	8.4	37.9	5.9	13.5	7.1	139.2	5.8	81.2	3.1	174.5	6.7
Derivative financial liabilities														
Derivative financial instruments	6.4	6.4	6.4	–	–	–	–	–	–	–	–	–	–	–
Total	**883.4**	**918.4**	**435.1**	**8.4**	**37.9**	**5.9**	**13.5**	**7.1**	**139.2**	**5.8**	**81.2**	**3.1**	**174.5**	**6.7**

Information on Liquidity Risk at December 31, 2017

EUR million

			Up to 1 year		1–2 years		2–3 years		3–4 years		4–5 years		over 5 years	
	Carrying value	**Gross outflows**	Repayment	Interest	Repayment	Interest	Repayment	Interest	Repayment	Interest	Repayment	Interest	Repayment	Interest
Original financial liabilities														
Accounts payable trade, financial liabilities, and financial lease obligations	615.8	641.6	363.8	14.0	25.6	3.7	35.3	3.1	11.3	2.4	133.4	2.3	45.0	1.8
Derivative financial liabilities														
Derivative financial instruments	4.8	4.8	4.8	–	–	–	–	–	–	–	–	–	–	–
Total	**620.6**	**646.4**	**368.6**	**14.0**	**25.6**	**3.7**	**35.3**	**3.1**	**11.3**	**2.4**	**133.4**	**2.3**	**45.0**	**1.8**

All financial instruments held as of December 31, 2018 and December 31, 2017 for which payments were already contractually agreed have been included. Target figures for future new liabilities are not included. Amounts in foreign currencies were translated at the closing rate applicable on the reporting date. Variable interest payments from financial instruments were determined by applying the last fixed interest rates before December 31, 2018 or December 31, 2017, respectively. Financial liabilities that are repayable at any time are always assigned to the earliest time period.

Default Risk

Giesecke+Devrient protects itself against the risk of bad debts through an internal system of assessing customers with regard to their payment ability. Based on a rating process, customers are assigned the category A, B, or C. Doubtful positions are strictly limited and agreed payment terms are closely monitored. Where customer creditworthiness is an issue, measures to secure payment, such as confirmed and unconfirmed letters of credit, are requested where possible to minimize credit risk. To fulfill reporting requirements in accordance with IFRS 9, the maximum credit risk with regard to loans and receivables to customers corresponds to the carrying value of these financial assets.

Market Risk

A Currency Risk

Due to its international focus, Giesecke+Devrient has supply streams and cash flows in various currencies related to both import and export activities. Maintaining production locations worldwide is one response to foreign currency risk, as is netting imports and exports in the appropriate currency at Group level. The relevant currency risks and obligations (fixed contracts, orders) for the Group as a whole are identified centrally, aggregated and netted as far as possible. The balance remaining from operations and financing activities within the Group as of the balance sheet date is fully covered on an ongoing basis using appropriate financial instruments, exclusively forward exchange contracts, swap transactions and collar options. In the main foreign currency, the US dollar, exports and imports virtually balance out over the year. Since fiscal year 2011, therefore, the US dollar risk has been identified based on rolling 12-months cash flow planning. Hedging would only take place if defined net threshold amounts were exceeded. Deviations between the import and export side during the year are offset by currency swaps. Contracts with a value greater than USD 10 million will still be hedged separately using forward exchange contracts and accounted for as fair value hedges.

The net assets associated with Group companies located outside the Eurozone and translation risks relating to the sales and earnings of these companies are not hedged against exchange rate fluctuations.

At the balance sheet date of December 31, 2018, G+D was exposed to the following material net risks in foreign currencies (net exposure/value of financial derivatives greater than EUR 5.0 million):

Net Currency Exposure at December 31, 2018

Foreign currency risk in EUR million	AUD		CAD		GBP		HKD		INR		RMB		SEK		USD	
	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017
Net exposure	5.6	(3.9)	(11.6)	(19.1)	(1.1)	(4.3)	6.2	–	8.5	3.3	15.8	18.4	3.3	3.8	(34.0)	(0.6)
Firm Comittment	–	–	–	–	–	–	–	–	–	–	–	–	–	–	(41.7)	(19.0)
Financial derivatives	(1.4)	–	–	(15.8)	(2.0)	(5.2)	6.2	–	–	–	–	–	8.9	3.7	68.0	15.9

AUD = Australian dollar, CAD = Canadian dollar, GBP =British pound, HKD = Hong Kong dollar, INR = Indian rupee,
RMB = Chinese renminbi, SEK = Swedish krona, USD = US dollar

Intercompany receivables and payables in foreign currencies are included in the net risks. The effects of valuation as of the balance sheet date influence the consolidated income statement and are not eliminated.

Sensitivity analyses are used to determine the impact of hypothetical changes of the respective risk variables on income and total equity as of the balance sheet date. Only the main foreign currencies are considered.

Assuming that the Euro had risen or fallen by 10 % against the specified foreign currencies as of December 31, 2018 and December 31, 2017, respectively, the effects on total equity and the income statement (without consideration of tax effects) are shown below. Differences arising from translating the financial statements into the reporting currency are not considered.

In the case of original financial instruments, effects exceeding EUR 2.0 million on total equity and the income statement only arise with two currencies.

Original Financial Instruments at December 31, 2018 (Impact > EUR 2 million)

Impact in EUR million	Equity				Profit/Loss			
	2018		2017		2018		2017	
	–10 %	+10 %	–10 %	+10 %	–10 %	+10 %	–10 %	+10 %
USD	3.4	(3.4)	0.1	(0.1)	3.4	(3.4)	0.1	(0.1)

In the case of derivative financial instruments, effects exceeding EUR 2.0 million on total equity and the income statement likewise arise with the following currencies.

Derivative Financial Instruments at December 31, 2018 (Impact > EUR 2 million)

Impact in EUR million	Equity				Profit/Loss			
	2018		2017		2018		2017	
	–10 %	+10 %	–10 %	+10 %	–10 %	+10%	–10 %	+10 %
USD	6.2	(7.6)	1.4	(1.8)	6.2	(7.6)	1.4	(1.8)

"Hedge Accounting" is used for certain significant pending transactions in foreign currencies, of the operative units of the company. The company uses in particular forward exchange contracts to limit the risk of fluctuations of future cash flows of these pending transactions. This approach relates to contracts in foreign currency with a value of more than USD 10 million.

Since fiscal year 2009 pending transactions are hedged with forward exchange contracts, which are classified as "Foreign Currency Fair Value Hedges" of future sales. The changes of the market values of these transactions are shown in the financial result. The changes of the derivative instruments are also shown in the financial result. This results in valuation effects of the hedge instruments of EUR –4.8 million and EUR 4.7 million and of the underlying transactions ("Firm Commitment") of EUR 4.8 million and EUR –4.7 million for the fiscal years 2018 and 2017, respectively. The market value of the hedge instruments as of December 31, 2018 amounts to EUR -4.8 million.

Fair value hedges are used for larger single contracts, which at G+D usually are based on USD. The threshold of the underlying transaction is set at greater than USD 10 million. These single contracts are basically hedged with a forward exchange contract for the total volume relating to the different payment dates with an external certified counterparty (micro-hedge). The risk for G+D is that the amount of the contract in foreign currency can negatively develop against the Euro from the moment of signing of the contract until the payment date. This transaction risk is basically eliminated by this hedging strategy. To avoid substantial effects in the income statement through the valuation of these single transactions, hedge-accounting in the form of fair value hedges is applied in these cases, as well as the drafting of the respective documentation.

The effectiveness of this fair value hedge is reviewed by monthly monitoring of the contract and alignment of the underlying transaction with the principal of the hedge (hedging instrument's effectiveness). The dollar-offset-method is used for the measurement of effectiveness. In doing so the changes of the values of hedge and firm commitment at valuing with the rates as of date of effectiveness are put into relation with the rates as of the acquisition of firm commitment or the rate of hedging, respectively. This relation remains in a range of 80 % to 125 %.

In the case of deviations by e.g. cancellations/increases or time delays the foreign exchange contract is adjusted to the current conditions on a timely basis.

The underlying transactions as well as the hedging instruments based on the balance sheet as of December 31, 2018 are as follows:

Maturity and average forward contract rate (USD)

		Maturity
Foreign currency risk	< 1 year	> 1 year
Forward exchange contracts		
Net exposure (in EUR million)	13.1	23.5
average EUR:USD forward contract rate	1.41	1.32

Carrying amount of the hedged item

EUR million

						2018
	Carrying amount		Accumulated amount of fair value hedge adjustments included in the carrying amount of the hedged item recognized in the statement of financial position		Line item in the statement of financial position that includes the hedged item	Change in value of the hedged item used as the basis for recognizing hedge ineffectiveness for the period
	Assets	Liabilities	Assets	Liabilities		
Firm commitments	59.8	24.5	4.6	0.2	Other financial assets	4.8

Carrying amount of the hedging instrument

EUR million

							2018
	Nominal amount	Carrying amount		Line item in the statement of financial position that includes the hedging instrument	Change in fair value of the hedging instrument used as basis for recognizing hedge ineffectiveness for the period	Hedge ineffectiveness recognized in profit or loss	Line item in the statement of comprehensive income that includes recognized hedge ineffectiveness
		Assets	Liabilities				
Forward exchange contracts	36.8	0.0	4.8	Other financial assets	–4.8	0.0	N/A

B Interest Rate Risk

The Group is primarily funded by way of bank loans with interest rates that are fixed or variable until the end of the respective term. In contrast, most interest-rate-sensitive financial assets are subject to a variable interest rate. Cash and cash equivalents are excluded. Market interest rate changes therefore have an effect on Group earnings and equity. At the balance sheet date of December 31, 2018, the values were as follows:

Interest Rate Risk: Financial Instruments at December 31, 2018

EUR million

	Effective interest rate		Total amount		Up to 1 year		1–2 years		2–5 years		Over 5 years	
	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017
Fixed-interest financial instruments												
Financial liabilities (current and non-current) and financial lease obligations	1.4	2.0	493.7	269.8	47.3	66.4	37.9	161.6	234.0	38.8	174.5	3.0
Variable-interest financial instruments												
Financial liabilities	5.7	3.0	8.1	59.0	8.1	59.0	–	–	–	–	–	–

Risks from interest rate changes are identified on a regular basis and included in the risk reporting. Derivative financial instruments in the form of an interest rate swap have been used to manage interest rate risks for a variable interest loan. This loan and associated interest rate swap were contributed to Giesecke+Devrient GmbH by MC Vermögensverwaltung GmbH & Co. KG in 2012. Within this contribution a loan of EUR 46.6 million with a variable interest rate and the corresponding interest swap was taken over. The loan was repaid quarterly linearly. The last repayment was made on December 31, 2018. The variable interest rate was swapped into a fixed interest rate of 3.15 %. At the time of contribution, a hedging relationship was designated between the loan and interest rate swap, which has since then been accounted for as a "cash flow hedge". The cash flow hedge was effective during its term. The fair value was calculated on the basis of the market comparison method. The last repayment was done on December 31, 2018, so the interest swap expired at the end of 2018.

The effect of a 100-basis-point change in market interest rates on net income and total equity as of December 31, 2018 is at EUR 1.1 million (prior year EUR 0.1 million) for financial assets and the other financial liabilities, with the exception of bonds. For bonds, the following sensitivity analysis applies:

Modified Duration: Bonds at December 31, 2018

		2018	2017
Bond holdings	EUR million	28.2	32.3
Return	%	2.1	1.3
Duration	years	3.8	4.6
Modified Duration	%	3.8	4.6
Potential loss/gain	EUR million	(1.1)	(1.5)

The effect of a one-percentage-point rise in the market interest rate on net income (without consideration of tax effects) and total equity as of December 31, 2018 is EUR –1.1 million (prior year EUR –1.5 million). A corresponding one-percentage-point decline in the market interest rate would have an equal but opposite impact on pre-tax earnings and total equity, assuming all other variables remained constant.

C Financial Investment Risk

Liquid cash of Giesecke+Devrient GmbH in EUR is exclusively held on current accounts due to the lack of positive interests for deposits. Sporadically excess cash in foreign currencies is used for time deposits with first class banks. For all forms of investment, focus is on ensuring that the counterparty is robust and that the price risk is as low as possible.

Besides bank deposits, as of December 31, 2018 an amount of EUR 61.5 million is invested in a special fund with an established German investment management company. This investment is in a portfolio of blue chip bonds (government and corporate bonds) and equities (blue chip companies). Equities comprise a maximum of 40% of the total portfolio, which minimizes the related risk. The risk associated with this financial investment is stated monthly for equities using the Value-at-Risk (VaR) method as provided by the investment management company. As of December 31, 2018, the values were as follows:

Value-at-Risk: Equities at December 31, 2018

		2018	2017
Equity holdings	EUR million	27.7	33.1
VAR	%	2.7	2.2
Potential loss/gain	EUR million	(0.7)	(0.7)

In addition to the special fund, G+D holds securities, which are classified as available-for-sale securities. The carrying value as of December 31, 2018 was EUR 10.2 million (prior year EUR 11.0 million). The majority of these securities are holdings in investment funds, which serve as insolvency insurance to cover the provision for pensions and pre-retirement part-time working arrangements. No sensitivity analysis was performed on these holdings due to the very minor fluctuations in their value. G+D has not identified any concentration of risk as defined in IFRS 7.34.

The information in this section is disclosed in accordance with IFRS 7, Financial Instruments: Disclosures.

23 Contract balances

Descriptions of significant changes in contract assets and contract liabilities:

EUR million	Dec. 31, 2018	Dec. 31, 2017
Contract assets at the beginning of the period	**113.2**	**–**
Currency differences	(0.3)	–
Transfers from contract assets recognized at the beginning of the period to receivables	(79.3)	–
Changes in the measure of progress	113.4	–
Contract assets at the end of the period	**147.0**	**–**
Contract liabilities at the beginning of period	**125.4**	**–**
Currency differences	1.2	–
Revenue recognized that was included in the contract liability balance at the beginning of the period	(112.8)	–
Prepayments received excluding revenue during the period	232.3	–
Increase/(decrease) due to changes in consolidation structure	0.1	–
Contract liabilities at the end of the period	**246.2**	**–**

The Group does not make use of the exemption option of IFRS 15.121. The transaction prices reported in accordance with IFRS 15.120 were not reduced by components that represent consideration from customer contracts.

24 Business Combinations

G+D recognizes the results of operations of the acquired business starting from the date of acquisition for business combinations. The net assets acquired are recorded at fair value at the date of acquisition. The excess of the purchase price over the fair value of tangible and identifiable intangible net assets acquired is recorded as goodwill in the accompanying consolidated balance sheet.

Until the end of fiscal year 2016, G+D owned 49% of the shares in EPC Electronic Payment Cards GmbH & Co. KG (formerly EPC Electronic Payment Cards Gesellschaft für Kartenmanagement mbH), Gmund am Tegernsee. The strategic management of the joint venture was in the hands of Deutsche Sparkassen Verlag GmbH (DSV) which owned 51% of the shares. Being virtually the only customer in January 2017, DSV decided on a multi-customer strategy and canceled the existing contracts with EPC. Thus, the basis of the business for EPC was omitted. In order to avoid insolvency, G+D assumed the shares of DSV and commenced the termination of operations. As of December 31, 2016, G+D recorded a provision for the expenses relating to the closure of the business in the amount of EUR 6.0 million. Thereof, EUR 0.6 million was released in the first quarter in 2017 based on new information.

In a contract dated February 20, 2017, G+D and the joint venture partner agreed to sell the remaining shares (51 %) in EPC to G+D. As a result, the G+D Group owns 100 % of the shares. The G+D Group assumed control over EPC as of April 1, 2017 and fully consolidates the company. A negative purchase price in the amount of EUR 3.3 million was agreed which G+D received in cash. Since the provision and negative purchase price are equal to the acquired net assets at acquisition date there is no remaining difference.

The identifiable assets acquired and liabilities assumed consist of:

EUR million	
Cash and cash equivalents	6.0
Accounts receivable trade and other current assets, net	0.6
Inventories, net	0.2
Property, plant and equipment	0.8
Other non-current assets	0.2
Accounts payable trade and other accounts payable	0.2
Provisions	10.6
Pensions and related liabilities	5.7

In the period between the acquisition on April 1, 2017 and December 31, 2017, EPC contributed EUR 0.8 million in net sales and net income in the amount of EUR 0.6 million to the Group result. If the acquisition had occurred on January 1, 2017, the Group net income in fiscal year 2017 would have amounted to EUR 67.7 million and the Group net sales would have amounted to EUR 2,138.8 million.

Effective June 26, 2017 (time of acquisition) Giesecke+Devrient acquired 100 % of the shares in Procoin GmbH, a German provider for coin sorting, counting and coin packaging machines as well as banknote counting devices. With the takeover, Giesecke+Devrient Technology GmbH is expanding its portfolio in the coin business and strengthening its position as the global market leader in cash cycle automation. Thereby, the company benefits from the wide range of products from Procoin as well as the strong distribution network in Europe. The consideration transferred for the shares in Procoin GmbH amounted to EUR 2.1 million and was paid in cash. In addition to the business combination, contingent consideration was agreed with the selling shareholder in the amount of EUR 0.3 million for the fulfillment of a management service agreement for the next three years. This consideration will be realized as expense pro rata and disclosed as other provisions. At the time of acquisition, the purchase price of the shares equals the fair value of the identifiable net assets of Procoin GmbH in the amount of EUR 2.1 million.

The identifiable assets acquired and liabilities assumed consist of:

EUR million	
Accounts receivable trade and other receivables, net	1.7
Inventories, net	1.1
Other current liabilities	0.3
Intangible assets	0.4
Accounts payable trade and other accounts payable	0.6
Provisions	0.2
Financial liabilities	0.6

In the period between the acquisition on June 26, 2017 and December 31, 2017, Procoin GmbH contributed EUR 2.3 million in net sales and a net loss in the amount of EUR 0.4 million to the Group result. If the acquisition had occurred on January 1, 2017, the Group net income in fiscal year 2017 would have amounted to EUR 67.1 million and the Group net sales would have amounted to EUR 2,139.4 million.

Effective July 31, 2017, Giesecke+Devrient acquired the card personalization company C.P.S. Technologies S.A.S. and assumed control. The purchase price in the amount of EUR 3.8 million was paid in cash. Thereby, G+D rounds out its wide range of services for the French market. Giesecke+Devrient expects specific synergies for the French market from C.P.S. Technology's technically high developed bank cards, personalization, and service management center. The company offers services in the fields of card personalization, customer mailing, high-quality packaging services, identity management, transportation and loyalty services.

The difference between the fair value of the consideration in the amount of EUR 3.8 million and the fair value of the identifiable net assets of C.P.S. Technologies amounting to EUR 3.3 million at the time of acquisition was recorded as goodwill and amounted to EUR 0.5 million. The goodwill is essentially attributable to the skills of the C.P.S. workforce and the expected synergies. The goodwill recorded is not expected to be deductible for tax purposes.

The identifiable assets acquired and liabilities assumed consist of:

EUR million	
Cash and cash equivalents	1.0
Accounts receivable trade and other receivables, net	6.1
Inventories, net	1.6
Other current assets	0.6
Intangible assets	0.8
Property, plant and equipment	3.3
Deferred tax assets	0.2
Accounts payable trade and other accounts payable	6.7
Provisions	0.1
Financial liabilities	0.6
Other current liabilities	2.3
Pensions and related liabilities	0.3
Deferred tax liabilities	0.4

In the period between August 1, 2017 and December 31, 2017, C.P.S. Technologies contributed EUR 11.6 million in net sales and net income in the amount of EUR 1.1 million to the Group result. If the acquisition had occurred on January 1, 2017, the Group net income in fiscal year 2017 would have amounted to EUR 66.9 million and the Group net sales would have amounted to EUR 2,148.9 million.

Costs in the amount of EUR 0.5 million for legal consulting fees and for due diligence services were incurred in connection with the business combination. These costs were recorded as general and administrative expenses.

In March 2018, Veridos acquired shares in the company E-SEEK Inc., San Diego/USA. The acquisition date was March 27, 2018. Initially, Veridos acquired 75 % of the shares at a purchase price of EUR 6.4 million. In addition, the parties agreed on conditional consideration for a maximum amount of USD 1.5 million for a period of two years. The conditional consideration is dependent on the achievement of certain key figures (net sales, gross profit). Veridos received a call option and the non-controlling shareholders received a put option for the remaining 25 % of the shares. As G+D holds 60 % in the shares of Veridos, G+D in turn holds 45 % in the shares of E-SEEK Inc. Thus, G+D assumed control over E-SEEK Inc. and consolidate the company in full in 2018.

E-SEEK Inc. develops and markets high definition verification devices for ID cards and driver's licenses. The portfolio of products of E-SEEK Inc. represents an excellent enrichment for the business sector Veridos in the field of verification solutions. Veridos thereby offers customers complete solutions which allows for an efficient identification of citizens. These are in place for instance for border control systems and at airports. Reading devices developed and marketed by E-SEEK Inc. are a significant component of the solution in connection with the documents and background systems developed by Veridos. Moreover, the business combination broadens the presence of Veridos in the North American market directly which is considered to be of strategic importance due to the high market volume.

The difference between the fair value of the consideration in the amount of EUR 6.4 million and the fair value of the identifiable net assets of E-SEEK Inc. amounting to EUR 3.4 million at the time of acquisition was recorded as goodwill in the amount of EUR 3.0 million. The goodwill is essentially attributable to the skills of the E-SEEK workforce and the expected synergies. The goodwill recorded is not expected to be deductible for tax purposes.

The identifiable assets acquired and liabilities assumed consist of:

EUR million	
Cash and cash equivalents	0.1
Accounts receivable trade and other receivables, net	0.6
Inventories, net	1.7
Other current financial liabilities	1.7
Intangible assets	1.9
Deferred tax assets	0.4
Other current liabilities	0.2
Deferred tax liabilities	0.6

In the period between March 27, 2018 and December 31, 2018, E-SEEK Inc. contributed EUR 2.5 million in net sales and net income in the amount of EUR –0.3 million to the Group result. If the acquisition had occurred on January 1, 2018, the Group net income in fiscal year 2018 would have amounted to EUR 50.2 million and the Group net sales would have amounted to EUR 2,246.9 million.

Up until September 30, 2018, secunet held 36.68 % of the shares in finally safe GmbH, Essen. This investment was recorded as an investment in associated companies. Effective October 1, 2018, secunet acquired an additional 21.8 % of the shares in finally safe. As a consequence, secunet assumed control. The acquisition occurred in a two-step process. First, a loan from secunet to finally safe in the amount of EUR 0.7 million was converted into an investment. Furthermore, secunet made a cash contribution amounting to EUR 0.3 million. On November 27, 2018, secunet purchased an additional 4.8 % of the shares via a cash contribution in the amount of EUR 0.3 million. Thus, secunet owns 63.28 % of the shares in finally safe. As G+D holds 79.43 % in the shares of secunet, G+D in turn holds 50.26 % in the shares of finally safe. Thus, G+D assumed control over finally safe and fully consolidated the company in 2018.

Finally safe GmbH is responsible for the development of technology, products and services in the field of internet early warning and air picture systems in connection with downstream systems as well as their successful market positioning.

The difference between the fair value of the consideration in the amount of EUR 1.8 million and the fair value of the identifiable net assets of finally safe GmbH amounting to EUR 0.6 million at the time of acquisition was recorded as goodwill in the amount of EUR 1.2 million. The goodwill is essentially attributable to the skills of the finally safe workforce and the expected synergies. The goodwill recorded is not expected to be deductible for tax purposes.

The identifiable assets acquired and liabilities assumed consist of:

EUR million	
Cash and cash equivalents	0.3
Other current financial liabilities	0.3
Intangible assets	1.3
Accounts payable trade and other accounts payable	0.1
Provisions	0.1
Contract liabilities	0.1
Deferred tax liabilities	0.4

Finally safe GmbH has an immaterial effect on Group net sales and Group net income.

On January 31, 2019, Giesecke+Devrient Currency Technology GmbH acquired all of the shares in the Dutch company Transtrack International B.V., Amsterdam at a purchase price of EUR 10.5 million. The date of the acquisition was January 1, 2019.

Transtrack is the market leader in the development of standard software solutions relating to the management, monitoring and efficiency of end-to-end cash supply chains. However, Transtrack specializes in customer-oriented and scalable software solutions for banks, cash transport providers and cash processing companies. This know-how constitutes an enrichment in the cash center automation sector for Giesecke+Devrient Currency Technology GmbH. Therefore, precise solutions in regard to the different modules of the cash circle can be provided. As an example, these modules can be applied in the route management of cash transports as well as in order management. In regards to the central and commercial bank business, the software solution has versatile applications and provides Giesecke+Devrient Currency Technology GmbH the opportunity to extend the customer portfolio and strengthen its position in the cash center solutions market.

25 Disclosures on Material Non-controlling Interests

The disclosures on material non-controlling interests (NCI) are as follows:

EUR million	Giesecke & Devrient Malaysia SDN BHD, Kuala Lumpur		Giesecke & Devrient Kabushiki Kaisha, Tokyo		Veridos Matsoukis S.A. Security Printing, Athens	
	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Capital shares NCI	20.0 %	20.0 %	49.0 %	49.0 %	64.0 %	64.0 %
Voting rights NCI	20.0 %	20.0 %	49.0 %	49.0 %	64.0 %	64.0 %
Profit/(loss) attributable to NCI	0.7	0.4	2.4	2.0	0.3	0.2
Dividend paid to NCI	(2.8)	(0.4)	(2.0)	(0.7)	–	–
Share of equity relating to NCI	7.2	9.3	6.3	5.3	4.2	3.5
Assets[1]	59.7	57.9	15.2	13.9	32.8	17.6
thereof cash and cash equivalents[1]	5.0	1.2	10.0	9.0	0.6	1.0
Liabilities[1]	21.5	9.3	4.4	5.1	25.9	12.1
Revenues[1]	37.3	34.8	28.6	27.1	23.8	17.6
Other comprehensive income[1]	–	–	0.6	(0.7)	–	–
Comprehensive income[1]	3.6	1.9	5.5	3.5	0.4	0.3

[1] Before elimination of group transactions; aggregated (not proportional)

EUR million	Veridos GmbH, Berlin[2]		secunet Security Networks AG, Essen including subsidiaries	
	Dec. 31, 2018	Dec. 31, 2017	Dec. 31, 2018	Dec. 31, 2017
Capital shares NCI	40.0 %	40.0 %	20.6 %	20.6 %
Voting rights NCI	40.0 %	40.0 %	20.6 %	20.6 %
Profit/(loss) attributable to NCI	(0.3)	0.4	3.6	3.3
Dividend paid to NCI	–	–	(1.6)	(0.8)
Share of equity relating to NCI	9.1	9.3	14.7	12.1
Assets[1]	174.3	137.2	143.7	133.3
thereof cash and cash equivalents[1]	2.8	0.5	56.1	62.9
Liabilities[1]	141.1	106.0	74.2	74.3
Revenues[1]	140.8	128.3	163.3	158.3
Other comprehensive income[1]	0.2	–	(0.1)	–
Comprehensive income[1]	1.9	0.8	17.7	15.9

[1] Before elimination of group transactions; aggregated (not proportional)
[2] The non-controlling shareholders also hold shares in Veridos Canada Ltd., Veridos Brasil Comércio de Smart Cards e Soluções para Identificação Segura e Autenticação Ltda., Veridos México S.A. de C.V., Veridos America Inc., Veridos FZE, Firdaus Al Aman for general Trading and E-SEEK Inc. via Veridos GmbH.

26 Related Party Disclosures

Transactions with MC Familiengesellschaft mbH

Since 2012, MC Familiengesellschaft mbH is the Group parent company of Giesecke+Devrient GmbH.

In 2017, G+D received a loan from MC Familiengesellschaft mbH in the amount of EUR 15.4 million. The duration of the loan was until January 2018 and was due at maturity. The interest rate was 1.2 %. In December 2017, a partial amount of EUR 10.0 million was repaid early by G+D. The remaining balance amounted to EUR 5.4 million and was repaid in January 2018. In fiscal year 2018, G+D received a new loan in the amount of EUR 15.5 million with a duration until January 2019. Interest expense amounted to EUR 0.1 million in 2018 and 2017, respectively. As of December 31, 2018 and December 31, 2017, MC Familiengesellschaft mbH invested EUR 0.2 million at G+D by means of the intercompany cash pool account. As of December 31, 2018 and December 31, 2017, no further material transactions involving receivables and payables or income and expenses with MC Familiengesellschaft mbH existed.

Giesecke+Devrient GmbH entered into a service contract with MC Familiengesellschaft mbH. G+D renders accounting/taxes, finance and IT-system services. The allocated fee is immaterial.

Transactions with MC Grundstücksgesellschaft mbH & Co. KG

In 2017, G+D sold part of its land and buildings to a parent-controlled company for EUR 20.7 million and realized a gain on sale in the amount of EUR 16.1 million. Regarding the sale of the property and buildings, refer to Note 8 “Property, Plant and Equipment”. In connection with this transaction, lease agreements were concluded with MC Grundstücksgesellschaft mbH & Co. KG. In fiscal year 2018, rental expenses from these leases amounted to EUR 1.7 million.

Transactions with Giesecke+Devrient Foundation

In fiscal year 2010, G+D established the Giesecke+Devrient Foundation. The company maintained a loan from the Giesecke+Devrient Foundation in the amount of EUR 21.0 million and EUR 20.7 million as of December 31, 2018 and 2017, respectively. The loan is due at maturity on December 1, 2022. Interest expense amounted to EUR 0.5 million and EUR 0.6 million in 2018 and 2017, respectively (see Note 13 “Financial Liabilities”). The grants amounted to EUR 0.3 million in fiscal years 2018 and 2017, respectively.

Transactions between affiliated companies and joint ventures and associated companies

Transactions were carried out between affiliated companies and joint ventures as well as associated companies. The following summary presents these transactions from the viewpoint of the affiliated companies:

EUR million	Services rendered		Services received	
	2018	2017	2018	2017
Joint ventures				
Goods and services	26.5	9.6	8.4	8.9
Other financial transactions	2.2	2.2	0.1	0.1
	28.7	**11.8**	**8.5**	**9.0**
Associated companies				
Goods and services	4.3	2.8	1.7	0.5
Other financial transactions	–	0.1	–	–
	4.3	**2.9**	**1.7**	**0.5**
	33.0	**14.7**	**10.2**	**9.5**

Accounts receivable and accounts payable from joint ventures and associated companies are comprised of the following:

EUR million	Dec. 31, 2018	Dec. 31, 2017
Joint ventures		
Accounts receivable from joint ventures	3.5	4.6
Accounts payable to joint ventures	1.0	0.9
Associated companies		
Loans receivable from associated companies	–	1.3
Accounts receivable from associated companies	4.3	2.7

None of the balances from joint ventures and associated companies are secured.

Refer to Note 31 “Commitments and Contingent Liabilities” for commitments and contingent liabilities from joint ventures.

Transactions with members of key management personnel

The members of key management personnel include the members of the management board of Giesecke+Devrient GmbH, the parent company MC Familiengesellschaft mbH, the chairmen of the management boards of Giesecke+Devrient Currency Technology GmbH, Giesecke+Devrient Mobile Security GmbH and Veridos GmbH, the chairman of the board of directors of secunet Security Networks AG (equals to Group Executive Committee – GEC) as well as the members of the supervisory board and the advisory board of Giesecke+Devrient GmbH since these bodies are responsible for planning, managing and monitoring the Group activities.

Compensation of key management personnel
The total compensation for active members of key management personnel amounted to EUR 7.0 million and EUR 7.7 million in 2018 and 2017, respectively.

In 2018 and 2017, the short-term benefits amounted to EUR 5.7 million and EUR 5.5 million, respectively. Thereof, EUR 4.8 million (prior year EUR 4.5 million) are attributable to the GEC, EUR 0.4 million (prior year EUR 0.4 million) to the supervisory board, and EUR 0.5 million (prior year EUR 0.6 million) to the advisory board.

The past service cost for pensions for the GEC (benefits after termination of employment contract) amounted to EUR 0.5 million and EUR 0.4 million in 2018 and 2017, respectively.

Furthermore, long term benefits for active members of the GEC amounted to EUR 0.8 million (prior year EUR 1.1 million).

The compensation of the GEC also includes benefits from termination of an employment contract in the amount of EUR 0.0 million (prior year EUR 0.7 million).

In the current reporting year, members of the GEC, with exception of the chairman of the board of directors of secunet Security Networks AG, are entitled to receive 40 % of their variable salary at the end of two additional years (deferral) in so far as they already held their positions and obtained consent in the prior year. The payment is based on the achievement of target average ROCE (return on capital employed) for fiscal years 2018 and 2017 and each of the two following years. The right to deferral only exists if employment continues or is terminated because of specific predetermined reasons. The related expense is included in other long-term payments.

The consolidated financial statements include provisions for pensions for the GEC amounting to EUR 4.1 million and EUR 4.0 million as of December 31, 2018 and 2017, respectively, as well as provisions or payables relating to compensation for members of key management personnel in the amount of EUR 5.2 million and EUR 4.9 million, respectively.

Total remuneration of the supervisory board and the advisory board in accordance with commercial law equals the stated short-term benefits. Total remuneration of the active members of the management body of the parent company in accordance with commercial law are not disclosed according to Section 315e (1) in conjunction with Sections 314 (3) no. 2, 286 (4) no. 2 HGB.

Business transactions with members of key management personnel or other related parties
In the course of ordinary business activities, Giesecke+Devrient receives advisory and consultancy services from companies and personnel with connections to the members of the supervisory board and advisory board or to the shareholder as well as to the members of the supervisory board and the advisory board itself. Expenses to other related parties for consultancy services amounted to EUR 0.2 million and EUR 0.3 million in 2018 and 2017, respectively. The outstanding balances as of December 31, 2018 and December 31, 2017 amounted to less than EUR 0.1 million. No prepayments or loans to members of key management personnel were granted in fiscal years 2018 and 2017.

Former key management personnel of Giesecke+Devrient GmbH
Compensation to former members of the management board of the parent company and their survivors amounted to EUR 2.9 million and EUR 4.0 million in 2018 and 2017, respectively. In 2018, this includes EUR 1.0 million for long-term variable compensation from a 2016 commitment.

Pension obligations to former members of the management board of the parent company and their survivors amounted to EUR 19.0 million and EUR 20.6 million as of December 31, 2018 and 2017, respectively.

27 Number of Employees

The average number of full-time equivalent employees (excluding trainees and employees on maternity leave):

	2018	2017
Production	7,358	7,381
Sales	1,416	1,381
Research and development	1,161	1,145
Administration	1,533	1,466
	11,469	**11,373**

28 Personnel Expenses

EUR million	2018	2017
Wages and salaries	579.6	556.5
Social security contributions	95.1	90.5
Other personnel expenses	11.9	11.0
	686.6	**658.0**

29 Disclosure in accordance with Section 161 AktG

The consolidated financial statements include secunet AG, a publicly traded company. In accordance with Section 161 AktG (German Stock Corporation Act), the management of secunet AG has filed the required declaration and made it permanently available to the public on their website (http://www.secunet.com).

30 Exemption from the disclosure of the annual financial statements and management report in accordance with Section 264/Section 264b HGB

The following companies will exercise their right not to prepare annual financial statements as well as not to prepare management reports in accordance with the regulations for corporate entities and certain registered partnerships as corporate entities (Section 264 (3) HGB) or partnerships that do not have an individual person either directly or indirectly as a general partner ("Kapitalgesellschaft und Co.") (Section 264b HGB). They also exercise their right not to have them audited or to disclose them:

- Giesecke+Devrient Mobile Security GmbH, Munich
- Giesecke+Devrient Currency Technology GmbH, Munich
- Papierfabrik Louisenthal GmbH, Gmund am Tegernsee
- Giesecke+Devrient Professional Services GmbH, Munich
- Giesecke+Devrient Secure Data Management GmbH, Neustadt b. Coburg
- MC Holding GmbH & Co. KG, Tutzing
- Giesecke & Devrient Grundstücksgesellschaft mbH & Co. KG, Grünwald
- Giesecke+Devrient advance52 GmbH, Munich
- EPC Electronic Payment Cards GmbH & Co. KG, Gmund am Tegernsee
- Giesecke+Devrient Ventures GmbH, Munich

31 Commitments and Contingent Liabilities

Legal proceedings/contingent liabilities
Giesecke+Devrient is involved in pending claims and legal proceedings arising in the ordinary course of business. Provisions have been made for estimated liabilities for certain items. G+D believes the resolution of all such matters will not have a material impact on G+D's net assets, results of operations and financial position.

Contingent liabilities in the amount of EUR 2.6 million as of December 31, 2018 (as of December 31, 2017: EUR 4.4 million) relating to tax risks outside Germany exist. As of December 31, 2018, additional contingent liabilities relating to legal disputes amounting to EUR 2.7 million (December 31, 2017: EUR 2.4 million) exist. G+D believes claims relating to these tax risks and legal disputes are improbable.

With regard to financial guarantees, the maximum credit risk is the maximum amount that the Group would have to pay.

Guarantees
Giesecke+Devrient does not hold material amounts of financial assets which serve as collateral for liabilities or contingent liabilities. Moreover, G+D does not hold collateral which it would be permitted to sell or repledge in the event of default by the owner of the collateral.

G+D has issued guarantees for deposits received in the amount of EUR 211.6 million as of December 31, 2018 and EUR 105.2 million as of December 31, 2017.

Giesecke+Devrient guarantees indebtedness of a joint venture concerning contractual performance to third parties. These arrangements cover credit lines of the joint venture in the amount of up to EUR 10.0 million in 2018 and 2017, respectively. Amounts relating to interest charges are also guaranteed. In the event of default of the joint venture, G+D is required to repay the borrowings covered by these guarantees. The maximum exposure relating to these guarantees amounted to EUR 10.0 million as of December 31, 2018 and December 31, 2017, respectively.

Commitments
As of December 31, 2018, Giesecke+Devrient has material purchase commitments which mainly consist of short-term agreements that were entered into during the 2018 fiscal year for the purchase of supplies, inventories, property, plant and equipment, land and services.

The aggregate amount of required payments for commitments as of December 31, 2018 is allocated to the respective years as follows:

EUR million	
2019	326.2
2020	124.6
2021	15.6
2022	1.4
2023	0.1
thereafter	0.4
	468.3

32 Grants

In fiscal years 2018 and 2017, G+D received other miscellaneous grants for operational investments in the amount of EUR 1.2 million and EUR 0.8 million which were recognized in income. At present, there is reasonable assurance that the attached conditions will be fulfilled.

33 Risks

Refer to section 3 of the Group management report, “Risk and Compliance Management”, for the related disclosures.

34 Audit fees in accordance with Section 314 (1) no. 9 HGB

The audit fees for KPMG AG for the fiscal year ended 2018 amounted to EUR 2.5 million. The breakdown into categories is as follows: a) fees for audit services EUR 1.4 million, b) fees for audit-related services EUR 0.5 million, c) fees for tax-related services EUR 0.2 million and d) fees for all other services EUR 0.4 million.

35 Group to which the Company belongs

MC Familiengesellschaft mbH is the parent company of the Giesecke+Devrient Group (see Note 26 “Related Party Disclosures”). As of December 31, 2018, consolidated financial statements and a group management report will be prepared in accordance with International Financial Reporting Standards (IFRS) as adopted by the EU. The consolidated financial statements of MC Familiengesellschaft mbH will be published electronically in the German Federal Gazette.

36 Events after the Balance Sheet Date

Refer to the disclosures in Note 24 “Business combinations”, regarding the purchase of the company Transtrack International in January 2019. There have been no further significant events after the balance sheet date which are expected to have a material impact on the net assets, financial position, and results of operations of the Group.

37 Shareholdings

Direct and indirect investments held by Giesecke+Devrient GmbH in affiliated companies

	Shareholding in %
Giesecke+Devrient Mobile Security GmbH, Munich	100.00
Giesecke+Devrient Currency Technology GmbH, Munich	100.00
MC Holding GmbH & Co. KG, Tutzing	100.00
Giesecke & Devrient Grundstücksgesellschaft mbH & Co. KG, Grünwald[1]	100.00
Giesecke & Devrient Immobilien Verwaltungsgesellschaft mbH, Grünwald	100.00
Papierfabrik Louisenthal GmbH, Gmund am Tegernsee	100.00
Giesecke+Devrient Professional Services GmbH, Munich	100.00
Giesecke+Devrient Secure Data Management GmbH, Neustadt b. Coburg	100.00
Giesecke+Devrient advance52 GmbH, Munich	100.00
Giesecke+Devrient Ventures GmbH, Munich	100.00
Giesecke+Devrient Immobilien Management GmbH, Munich	100.00
EPC Electronic Payment Cards GmbH & Co. KG, Gmund am Tegernsee	100.00
Procoin GmbH, Langen	100.00
Giesecke + Devrient Mobile Security Iberia S.A., Barcelona	100.00
Giesecke + Devrient Currency Technology Iberia S.L., Madrid	100.00
Giesecke+Devrient Mobile Security GB Ltd, Wembley/Middlesex	100.00
Giesecke+Devrient Currency Technology GB Ltd, Milton Keynes	100.00
Giesecke+Devrient Currency Technology Switzerland AG, Burgdorf	100.00
CI Tech Components AG, Burgdorf	100.00
Giesecke+Devrient Mobile Security Slovakia, s.r.o., Nitra	100.00
Giesecke+Devrient Mobile Security Italia S.R.L., Milan	100.00
Giesecke+Devrient Currency Technology Italia S.R.L., Rome	100.00
Giesecke+Devrient Mobile Security France S.A.S., Craponne	100.00
Giesecke+Devrient Mobile Security Sweden AB, Stockholm	100.00
Giesecke+Devrient Mobile Security Finland Oy, Helsinki	100.00
Giesecke+Devrient Currency Technology Istanbul Ticaret ve Servis Limited Sirketi, Istanbul	100.00
Giesecke+Devrient Mobile Security Russia, OOO, Moscow	100.00
Giesecke+Devrient Currency Technology FZE, Dubai	100.00
Giesecke+Devrient Mobile Security FZCO, Dubai	100.00
Giesecke+Devrient Holding FZE, Dubai	100.00
Giesecke & Devrient Egypt Ltd. i.L., Cairo	100.00
Giesecke+Devrient Currency Technology Saudi Arabia, Riyadh	100.00
Giesecke and Devrient Currency Technology South Africa (Pty) Ltd, Johannesburg	100.00
Giesecke and Devrient Mobile Security Southern Africa (Pty) Ltd, Johannesburg	100.00
Giesecke+Devrient Currency Technology Africa Limited, Lagos	100.00
Giesecke+Devrient Currency Technology America, Inc., Dulles/Virginia	100.00

[1] The general partner is Giesecke & Devrient Immobilien Verwaltungsgesellschaft mbH, Grünwald

Direct and indirect investments held by Giesecke+Devrient GmbH in affiliated companies

	Shareholding in %
Giesecke+Devrient Mobile Security America, Inc., Dulles/Virginia	100.00
BA International, Inc., Ottawa/Ontario	100.00
Giesecke+Devrient Mobile Security Canada, Inc., Toronto/Ontario	100.00
Giesecke y Devrient de México S.A. de C.V., Mexico City	100.00
Giesecke y Devrient Currency Technology de México, S.A. de C.V., Mexico City	100.00
Giesecke+Devrient Mobile Security Brasil Indústria e Comércio de Smart Cards S/A, São Paulo	100.00
Giesecke+Devrient Currency Technology Brasil Serviços e Comércio de Soluções Tecnológicas Ltda., São Paulo	100.00
GyD Latinoamericana S.A., Buenos Aires	100.00
Giesecke and Devrient Mobile Security Australia Pty Ltd, Knoxfield/Victoria	100.00
Giesecke+Devrient Mobile Security Asia Pte. Ltd., Singapore	100.00
Giesecke & Devrient Asia Pacific Banking Systems (Shanghai) Co. Ltd., Shanghai	100.00
Giesecke & Devrient (China) Information Technologies Co., Ltd., Nanchang/Jiangxi	100.00
Giesecke & Devrient Asia Pacific Ltd., Hong Kong	100.00
Giesecke & Devrient India Private Limited, New Delhi	100.00
Giesecke & Devrient MS India Private Limited, New Delhi	100.00
Giesecke and Devrient Currency Technology Korea Co., Ltd., Seoul	100.00
PT Giesecke & Devrient Indonesia, Jakarta	100.00
PT Giesecke und Devrient Mobile Security Indonesia, Jakarta	100.00
Giesecke & Devrient Egypt Services LLC i.L., Cairo	99.00
Giesecke & Devrient LOMO, ZAO, St. Petersburg	84.69
Giesecke & Devrient Malaysia SDN BHD, Kuala Lumpur	80.00
secunet Security Networks AG, Essen	79.43
secunet SwissIT AG, Solothurn	100.00[3]
secunet s.r.o., Prague	100.00[3]
Secunet Inc., Austin (shell company)[2]	100.00[3]
secunet Service GmbH, Essen	100.00[3]
secunet International GmbH & Co.KG, Essen	100.00[3]
secunet International Management GmbH, Essen	100.00[3]
Build38 GmbH, Munich	70.00
Veridos GmbH, Berlin	60.00
Veridos Canada Ltd., Toronto/Ontario	100.00[3]
Veridos America Inc., Wilmington/Delaware	100.00[3]
Veridos FZE, Dubai	100.00[3]
Firdaus Al Aman for general Trading, Baghdad	100.00[3]
Veridos Brasil Comércio de Smart Cards e Soluções para Identificação Segura e Autenticação Ltda., São Paulo	100.00[3]
Veridos México S.A. de C.V., Mexico City	100.00[3]
Giesecke & Devrient Kabushiki Kaisha, Tokyo	51.00
finally safe GmbH, Essen	63.28[3]
E-SEEK Inc., San Diego/California	75.00[3]
Veridos Matsoukis S.A. Security Printing, Athens	60.00[3]

[2] Not consolidated due to immateriality
[3] These are indirect investments

Investments held by Giesecke+Devrient GmbH in associated companies and joint ventures

	Shareholding in %
E-Kart Elektronik Kart Sistemleri Sanayi ve Ticaret Anonim Sirketi, Gebze	50.00
Shenzhen Giesecke & Devrient Currency Automation Systems Co. Ltd., Shenzhen	50.00
Emirates German Security Printing L.L.C., Abu Dhabi	49.00[3]
Uganda Security Printing Company Ltd., Entebbe	49.00[3]
Netset Global Solutions d.o.o., Belgrade	40.00[3]
Hansol Secure Co., Ltd., Seoul	16.29

Investments held by Giesecke+Devrient GmbH in other related parties

	Shareholding in %
IDnow GmbH, Munich	12.00
Verimi GmbH, Frankfurt am Main	6.06

[3] These are indirect investments

Munich, March 26, 2019

Giesecke+Devrient GmbH
The Management Board

[original German version signed by:]

Ralf Wintergerst
Group CEO

Dr. Peter Zattler
Group CFO

Corporate Bodies

Supervisory Board

Prof. Klaus Josef Lutz
(Chairman) Munich

Walter Bogner[1]
(Deputy Chairman) Dachau

Achim Berg
Hennef-Rott

Prof. Dr. Gabi Dreo Rodosek
Haar

Georg Fahrenschon
(until April 1, 2018) Neuried

Ralf Gerlach[1]
Gilching

Peter Hanke[1]
Pirna

Astrid Meier[1]
Munich

Claudia Scheck[1]
Königsmoos

Dr. Walter Schlebusch
(since April 1, 2018) Munich

Verena von Mitschke-Collande
Tutzing

Monika Wächter[1]
(until December 31, 2018) Gmund

Stefan Winners
Munich

Advisory Board

Prof. Klaus Josef Lutz
(Chairman) Munich

Verena von Mitschke-Collande
(Deputy Chairman) Tutzing

Achim Berg
Hennef-Rott

Georg Fahrenschon
(until April 1, 2018) Neuried

Prof. Dr. Gabi Dreo Rodosek
Haar

Dr. Walter Schlebusch
Munich

Stefan Winners
Munich

Management Board

Ralf Wintergerst
(Group CEO, Giesecke+Devrient)

Dr. Peter Zattler
(Group CFO, Giesecke+Devrient)

[1] Employee representatives

Legal Notice

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Both versions can be found on the G+D website: www.gi-de.com

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