Giesecke+Devrient

CREATING CONFIDENCE

ANNUAL REPORT 2019

CONTENTS

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Trust and security in the digital age

In a time of rapid technological transformation, two things are more important than ever: trust and security. Digitalization, automation, and similar trends are opening up fascinating new opportunities, but also leading to acceleration and greater complexity. The associated questions and concerns need to be properly addressed because public trust is key to making the transition to a global digital age a success for everyone.

At Giesecke+Devrient, keeping pace with the digital world is a given. At the same time, we have both feet firmly on the ground and an almost 170-year history behind us. This unique combination enables us to make the lives of billions of people more secure every day. We call it “Creating Confidence.” That was also our mission back in 1852, when G+D was founded as a security printer for banknotes and security paper.

Today, we are a family-owned global technology provider with our roots in Germany. Our 11,500 employees across 33 countries work in four markets. In the world of payment, we help to ensure that billions of cash, electronic, and digital transactions are reliably completed every day. When people and machines link to each other on the Internet, we guarantee secure digital connectivity. We protect personal identities via highly secure ID documents in e-government scenarios and cross-border traffic. And we reduce the risk of cybercrime for states, institutions, and critical infrastructures. In his interview, Group CEO Ralf Wintergerst explains our close involvement in the major issues of our time and how we aim to help shape the future.

The new decade that began in 2020 will bring even more change than the previous one: new technologies are gaining ground, while others are becoming obsolete. What lies ahead for people, companies, governments, and civil society? What is secure and which solutions can be trusted? In our annual report, we seek to provide answers to many of these questions. Find out more about the latest trends in payment methods – how to pay for your shopping with the watch on your wrist, for example, or how central banks are planning to introduce entirely digital money. Enter the fascinating world of the Internet of Things, where machines communicate with each other and learn how to continuously improve themselves. Look forward to convenient e-government solutions that will make visits to public agencies unnecessary and also speed up arrivals at airports. Finally, discover how digitalization is changing our healthcare systems.

Technology from Giesecke+Devrient is contained in all of these and many other solutions for payment, secure connectivity, the protection of identities, and robust digital infrastructures.

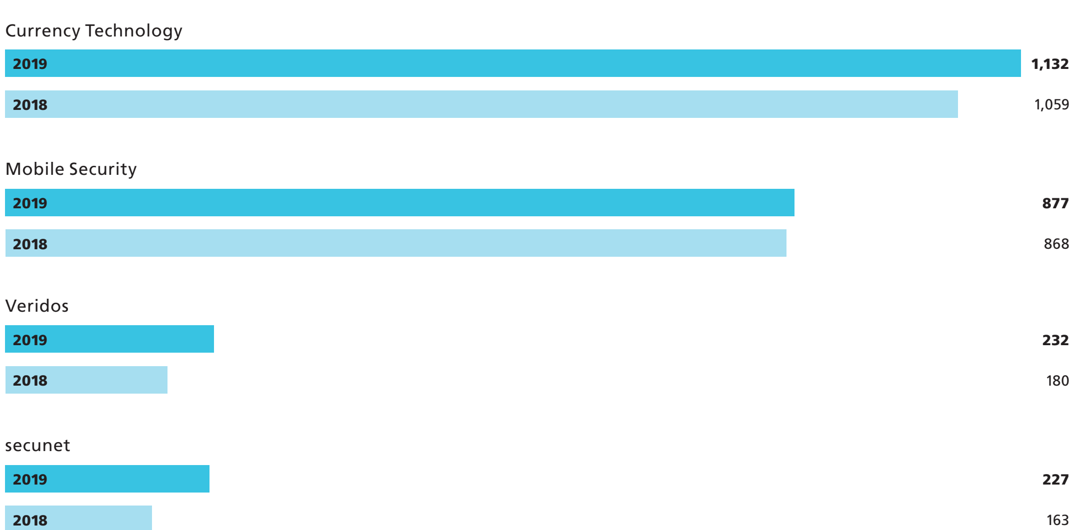
Giesecke+Devrient at a Glance

Giesecke+Devrient Group

EUR million	2019	2018	Change
Sales	2,447.0	2,246.0	8.9 %
Capital expenditure	121.7	108.0	12.7 %
Research and development	111.3	113.3	– 1.7 %
EBITDA (adjusted)	276.0	222.1	24.2 %
EBIT (adjusted)	147.8	119.5	23.7 %
Net income	80.4	50.2	60.3 %
Employees as of December 31	11,510	11,389	1.1 %

Sales by Subgroup

EUR million



Company Structure

Giesecke+Devrient

Munich Head office	**11,510** Number of employees	**2,447** Sales in EUR millions

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 control

secunet
79.43 %

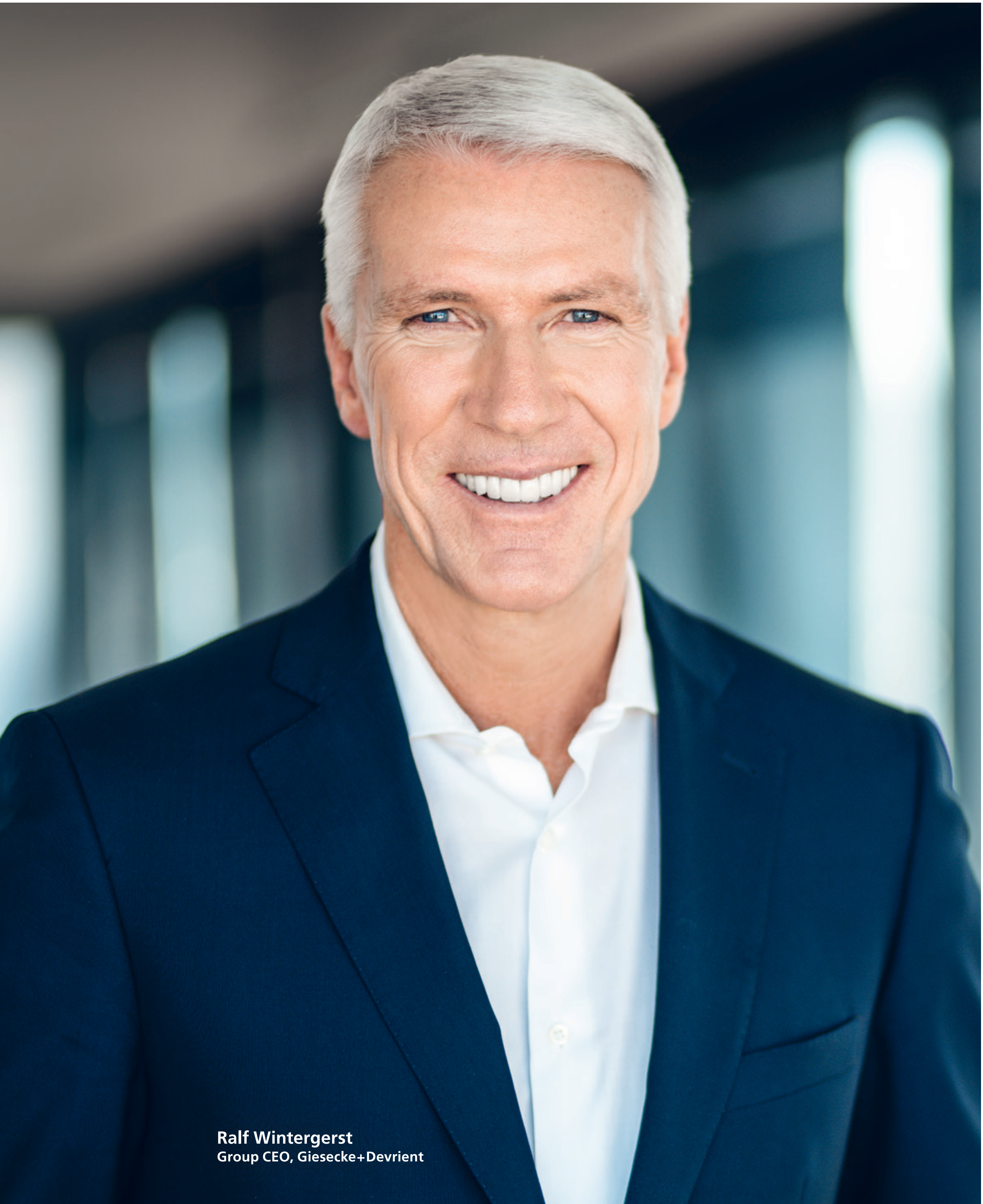
Head office
Essen

Core expertise
Solutions for protecting digital infrastructures

» We’re well placed to help shape the coming decade. «

As Group CEO of Giesecke+Devrient (G+D), Ralf Wintergerst has a clear vision for the company he leads: to make the lives of billions of people more secure. In this interview, Wintergerst talks about the challenges he sees ahead in the next decade, how G+D aims to pursue new digital business models, and what he enjoys most about his job.

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


Ralf Wintergerst
Group CEO, Giesecke+Devrient

Growth through digital business

Mr. Wintergerst, we're at the beginning of a new decade – a good opportunity to take stock. How is G+D positioned for the next ten years?
Very well, we've made huge progress in recent years, concentrating on our four core areas: safeguarding payments, securing the connectivity of communications networks, and protecting both digital identities and digital infrastructures. By focusing on these four core topics, we're closely involved in the important questions of our time and therefore well placed to help shape the coming decade.

Let's take a look at the financials. How is G+D's progress reflected in its business figures?
I'd like to single out four figures in particular, which show how fast our business is growing and developing. The first is sales, of course. In 2019, our company grew by nine percent to EUR 2.45 billion – an impressive increase. I'm even more pleased that this growth is also apparent in the bottom line. Our EBIT rose by almost 24 percent to EUR 148 million, while net profits were up 60 percent at EUR 80 million. Beyond that, we've also made significant qualitative progress, with our service and solutions business expanding by 33 percent. That demonstrates the success of our various measures to develop the G+D portfolio.

So there's a solid foundation in place. But G+D doesn't operate in a vacuum, of course. How will the world around us change in the next decade?
I expect the pace of change to accelerate and new technologies to be brought to market even faster. That trend was already evident in the previous decade but is set to gain momentum. All companies will be affected – G+D included. At the same time, we're actively shaping the future with our own technologies. The coming decade will be full of opportunities and potential – and we aim to take advantage of them.

Many opportunities – but also many challenges. What changes does this backdrop require at G+D?
We see ourselves as an ambidextrous organization, which means we need to do two things at once. One of those is focusing on our existing business activities, where there is still significant scope for improvement and expansion. In addition, G+D will explore new options in digital business fields. We have to adapt our organization to these challenges and launch new strategic initiatives. That's why we've created a Corporate Technology Office to coordinate our technological progress more effectively. We've also further strengthened G+D advance52, our digital incubator. Last but not least, we're stepping up our corporate venturing activities in order to gain access to innovations worldwide. This strategy is already bearing fruit, with our strong growth in 2019 being largely driven by new digital business.

How much of G+D's growth is already digital?
Digital business models accounted for more than half of our growth in 2019. In fact, all parts of the company made significant progress in the digital space. Let me give you three examples. Firstly, we acquired Transtrack International last year, a company that will allow us to further bolster our software and solutions expertise in the cash management sector. Secondly, we are world leaders in the growing market for eSIM ecosystems, i.e. the provision of eSIMs for large tech companies. These ecosystems include secure operating systems and platforms that enable end-to-end security of network connections. And thirdly, we've made a very strong start in the digital health market. Our encryption technology and algorithms deliver the telematics infrastructure required to secure and protect patient data.

» The best thing we can do in this situation is invest in the development of our people and of the organization. That's the best insurance for the future. «

Given this strong position, what are your objectives for 2020 and beyond?
Our top priority is very clear: to further improve and expand the portfolio for our customers. We've launched a number of strategic initiatives aimed at achieving this goal, focused on new ways of handling digital identities, digital payment, and digital currencies. These initiatives are being financed via our new Corporate Development Fund – a special fund dedicated to new technologies. Our second aim is development of our staff and our management teams. The rules of the game are changing, so we also need to change with them. The best thing we can do in this situation is invest in the development of our people and of the organization. That's the best insurance for the future.

We've talked a lot about the challenges of the new decade. What are you excited about personally?
I'm looking forward to all the changes and opportunities being created in this accelerated, technologically-driven world. Importantly, I have the support of a great team of highly motivated and skilled people at G+D. As part of that team, I'm confident we can meet the challenges ahead. When I look at what we're achieving – safeguarding payment transactions, securing connections to communications networks, protecting identities and digital infrastructures – I'm proud that we're also making a contribution to society by delivering cutting-edge technologies that make the lives of billions of people more secure.

Management

Andreas Räschmeier
CEO, Veridos

Andreas Räschmeier has been CEO of Veridos, a joint venture between Giesecke+Devrient and Bundesdruckerei (Berlin), since November 1, 2019. Veridos provides governments and public authorities with customized end-to-end solutions for secure identities.

Axel Deininger
CEO, secunet

Axel Deininger joined the Management Board of secunet Security Networks AG in January 2018 and became Chairman in June 2019. His particular responsibilities include Strategy/Business Development, International Sales, Marketing, and Human Resources.

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 Human Resources and Data Protection.

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 securely and reliably.

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.

Supervisory Board Report

Ladies and Gentlemen:

During the 2019 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.

In addition to the constitutive meeting in April following the election of the new Supervisory Board, the Supervisory Board held three scheduled meetings based on detailed reports from the Management Board 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 status of 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.

At the July meeting, the Supervisory Board was given advance details of strategic planning for 2022, focusing in particular on the areas of cash and payment. The signing of a profit and loss transfer agreement between Giesecke+Devrient Currency Technology GmbH and Procoin GmbH was also approved.

Prof. Klaus Josef Lutz
Chairman of the Supervisory Board

At the December meeting, the Supervisory Board reviewed the operational plans for 2020. In addition, the Supervisory Board approved measures for the strategic development of the Secure Transactions and Services and Trusted Connected Devices units, which form part of Giesecke+Devrient Mobile Security GmbH.

The Supervisory Board duly received the annual financial statements and management report of Giesecke+Devrient GmbH for the period ending December 31, 2019, prepared in accordance with the German Commercial Code (HGB), and the consolidated financial statements and Group management report for the period ending December 31, 2019, 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.

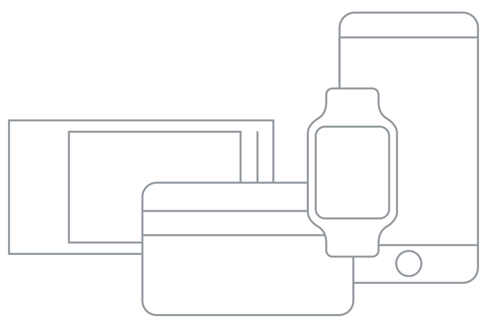
The auditor attended the meeting of the Supervisory Board on March 31, 2020, at which the financial statements were discussed. In the course of this meeting, the auditor reported on the main findings of the audit, on the compliance management system, and on the internal control system in relation to 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 March 31, 2020.

The Supervisory Board would like 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 2019.

Munich, April 2020

Prof. Klaus Josef Lutz
Chairman of the Supervisory Board

PAYMENT



CHOICES AND SECURITY

IN THE WORLD OF PAYMENT

Buying something in today's world involves the choice between an unprecedented number of payment methods. There's cash, of course, which has come to be considered a public good. Also very popular are payment cards, increasingly with a personalized design, that are inserted into a checkout reader or simply waved over it. Online transfers can be made conveniently from home or while out and about, while smartphones and other wearable devices, such as smart watches and keyrings, can serve as an electronic wallet. Looking ahead, digital money is also on the horizon. This choice gives us flexible options that cover every situation.
But which payment methods can be trusted? Which are secure? And why?

Barnabás Ferenczi
Head of Strategy and Marketing,
Secure Transaction and Services division,
G+D Mobile Security GmbH

This story, video, and further information on payment are available at
www.gi-de-report.com/payment

» Freedom of choice is important. Everyone should have the flexibility to use all forms of payment and enjoy the highest possible security. «

The world of payment

One thing is certain: whether cash or electronic – making payments is a fact of life. The market for payment transactions has been growing rapidly for many years and will continue to do so in the future, not least due to the sharply increasing world population. G+D has helped to shape this market like few other companies, becoming a world leader with unique solutions for physical, electronic, and digital payment transactions. From automated cash centers to payment apps on smartphones, we offer billions of people around the world improved security and convenience every day.

A good feeling

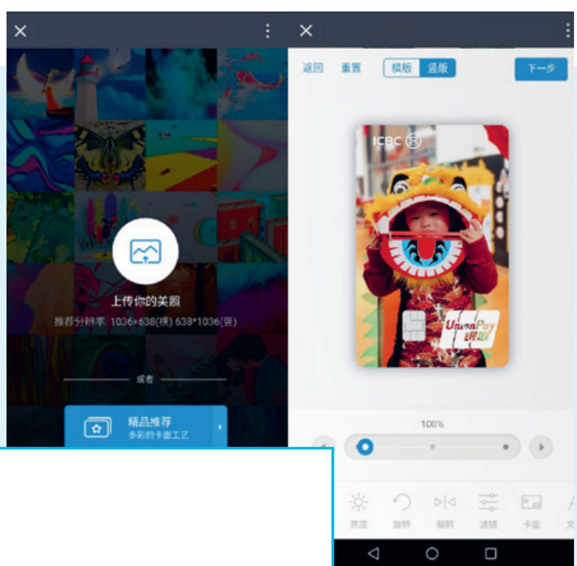
"We speak to customers and users all the time and always hear one thing: freedom of choice is important. Everyone should have the flexibility to use all forms of payment and enjoy the highest possible security," says Barnabás Ferenczi, Head of Strategy and Marketing, Secure Transaction and Services division, G+D Mobile Security GmbH. He adds: "We call this financial inclusion." In some countries, many people still don't have access to modern banking institutions, which means they are entirely reliant on using cash in their day-to-day lives. In other countries, the cell phone network is much more developed than traditional payment systems, so people find it easier to make payments using their smartphones than via bank accounts or credit cards. Prepaid payment cards with biometric features can even be used by people without a bank account at all.

But above all, people should feel comfortable when making payments. "In marketing jargon, it's called the user experience and is defined by aspects, such as security, service, and convenience," says Ferenczi. For example, we help operators of online stores to ensure that as few customers as possible abandon transactions during checkout – thereby preventing loss of revenue.

Nevertheless, despite the boom in digital payment methods, cash continues to be the most commonly used form of payment worldwide. In significantly more than half of all cases – albeit with regional differences – goods are still paid for in cash. Cash volumes in circulation worldwide are increasing by a total of approximately three to five percent a year. Globally, there is currently almost eight trillion dollars of cash in circulation, says Holger Ziegler, Head of Strategy and Market Intelligence at G+D Currency Technology.

G+D in wallets worldwide

No matter how and where banknotes are used in everyday life, it's highly likely they utilize G+D technology. "To date, we have printed 160 billion banknotes for countries all over the world and also supplied many other countries with security paper and security features," explains Ziegler. Anyone who thinks a modern color photocopier is all you need is very much mistaken. Banknotes are a high-tech product. Starting at the design stage, the focus is not just on aesthetics but also on integrating various functions, security elements, and automation capability. Counterfeit-resistant features, such as security threads and microscopic mirrors, represent complex obstacles to counterfeiters and can only be created using special machines and proprietary expertise. "We continually strive for improvement and conduct ongoing research into new security technologies for producing and processing banknotes," says Ziegler. A high level of functionality, combined with sophisticated technology for the cash cycle, safeguards the efficiency of banknotes for the future. We file up to 170 patents a year on average for the products we develop. More than 145 central banks trust our solutions. With 195 recognized countries in the world, that means G+D can be found in the wallets of most of the global population.



DIY service

Your own photo on your payment card

We use cards to make cashless payments many times a day. Wouldn't it be nice to see a selfie of your own smiling face on the card instead of the bank or card issuer's logo? Or a snapshot from a recent vacation, a photo of a beloved pet, or anything else with a positive vibe?

Find out more about personalized payment cards.

Micromirrors

» The value of money depends on trust. Trust that the banknotes in our hands are genuine. We're particularly proud of our micromirror technology … «

Find out more about counterfeit-proof banknotes from G+D.

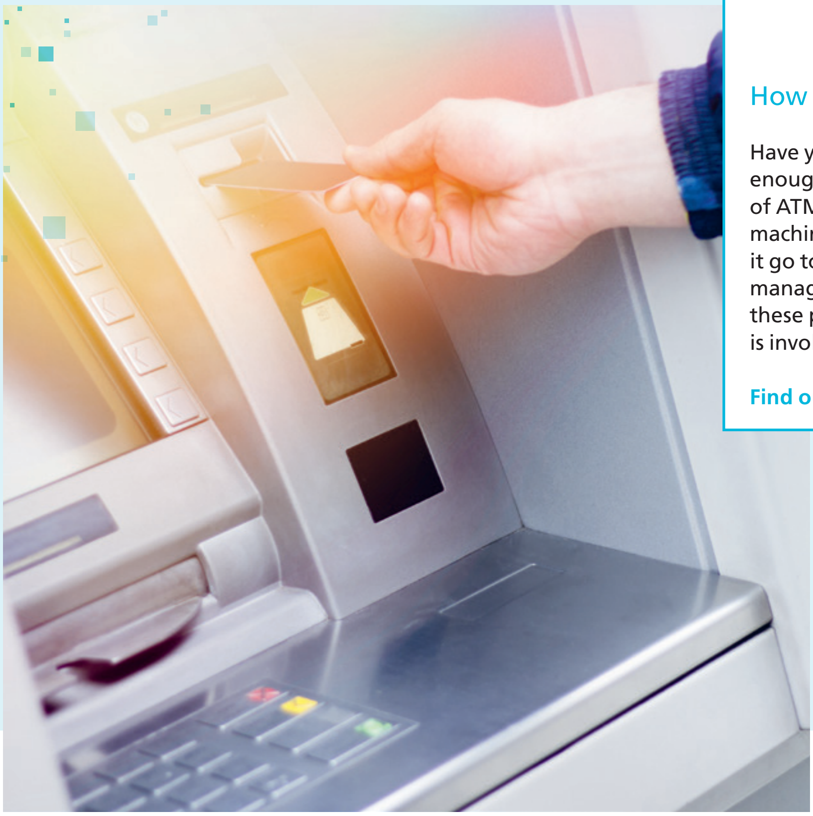
Holger Ziegler
Head of Strategy and Market Intelligence,
G+D Currency Technology GmbH

» More than 145 central banks trust our solutions. «

Money made of plastic or bytes

Another G+D product is likely to be found close by in addition to banknotes – a payment card or a payment function on a smartphone. Alongside cash, electronic payments by card or bank transfer (non-cash) are booming: the value of these payment instruments is expected to grow by more than ten percent a year between 2018 and 2023. "Although the payment cards we affectionately call 'plastic money' have been around for a long time, they're anything but old-fashioned," says Ferenczi. Quite the opposite, in fact, they're a powerful service tool. The most striking example in daily life is that two-thirds of cards are now equipped with contactless technology. "Customers simply wave them over a payment reader," explains payment expert Ferenczi. G+D handles end-to-end lifecycle management of cards on behalf of the issuers, i.e. banks and financial institutions. Of the world's 50 leading financial institutions, 70 percent already use our products and solutions. Not least because G+D provides much more than just cards. Ferenczi says: "We offer customers end-to-end solutions." To take a current example, we're providing a customer card with a payment function including the Convego® Pearl management platform for one of China's largest oil companies, which has a network of 20,000 filling stations and handles more than four million payment transactions a day. The card will enable the company to analyze customer data and nurture customer relationships effectively. The G+D solution will also be leveraged to assist major business clients with fleet management.

Smartphones have now joined cash and cards as a convenient way to pay for purchases. A recent study showed that one in four people in Germany have used their cell phone to pay for goods – and the younger the owner, the more frequently they pay by phone. "But smartphones aren't the only devices we can use to do our shopping," says Bernd Müller, Head of Technology, Solutions and Strategy in the Trusted Connected Devices division at G+D Mobile Security. Appliances, such as Internet-enabled refrigerators, are able to automatically reorder and pay for items, while voice-activated assistants can be used to order the latest novels for an upcoming vacation, for example. In theory, a bank or credit card payment function can be securely installed on any device – as is increasingly the case with wearables, like smart watches and fitness trackers. Similarly, cars can pay for parking or for electricity at a charging station via an inbuilt payment function based on an embedded SIM card.



Cash cycle management

How come ATMs are never empty?

Have you ever asked yourself why there's always enough cash available at thousands and thousands of ATMs, bank counters, cash registers, and ticket machines? How does it get there? And where does it go to? Who orders, supplies, counts, checks, and manages everything? And who keeps an eye on all these processes – after all, a huge amount of money is involved.

Find out more about cash cycle management.

Payment by fingerprint

G+D has already delivered more than 100 mobile payment solutions to banks and financial service providers all over the world. At the heart of each and every one is a secure element. This can be a dedicated chip with a payment function, much like the one on a payment card, or a SIM card in an electronic device with added functionality for mobile payment applications, including the associated operating system. "This creates a kind of digital tunnel between the device and the payment terminal, which hackers and other cyber criminals cannot access," explains Müller. And for people who find paying by card or smartphone too inconvenient, a fob on their keyring might soon be all they need. Since the end of 2019, the Royal Bank of Scotland – supported by G+D – has been testing a fob that is similar in size to a keyring and features a small fingerprint reader. Customers simply hold the fob up to a contactless payment reader, identify themselves with their fingerprint, and walk away with their items.

Digital central bank money

As a further payment option, many countries are currently considering digital central bank money, a state-guaranteed means of payment for the digital world. "Unlike Bitcoin and other virtual currencies, this would guarantee that all citizens have access to a secure and stable method of payment without transaction fees – exactly like cash nowadays, but with the additional option of paying digitally," says Dr. Raoul Herborg, Business Lead Digital Currencies. G+D has been conducting research and development in this field for many years. The result is G+D Filia, a comprehensive and highly secure solution that we are currently discussing with state-owned central banks and trialing in initial pilot projects. Herborg predicts: "Countries could be within a few years of issuing their own digital currencies. Banknotes and the spending limit on a credit card would thus be joined as a means of payment by a series of ones and zeros on a mobile phone, a card, or a smart watch."

» Central banks all over the world are currently investigating whether and how they could issue a digital central bank currency. «

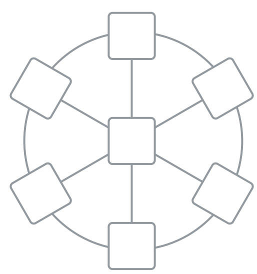
Dr. Raoul Herborg
Business Lead Digital Currencies,
G+D advance52 GmbH

Banknotes, cards, mobile devices, digital currencies: having a variety of payment methods available and freedom of choice will continue to be important in the future. At G+D, we do our best in every market segment to ensure people can rely on secure financial transactions and effective protection of their monetary assets.

Read our online annual report

More fascinating stories, exclusive video content, and further information on payment are available at **www.gi-de-report.com/payment**

CONNECTIVITY



IOT

STEPPING INTO THE DIGITAL FUTURE WITH THE INTERNET OF THINGS

When we hear the word “Internet” in everyday life, we immediately think of the endless opportunities it offers to make that everyday life faster and more convenient – digital media, online banking, virtual chats, Internet shopping, social media, and much more. For most people, the Internet means being able to connect with others and access many different services. Even more important, however, is the potential associated with autonomous connections between machines. In this context, “autonomous” means that humans will no longer have to actively initiate or monitor certain processes. **This phenomenon is often described as the Internet of Things (IoT) and is about to transform our everyday reality as practically all areas of life are affected.**

2023

30,000,000,000

connected machines and devices

This story, video, and further information on connectivity are available at **www.gi-de-report.com/connectivity**

No one really knows exactly how big the Internet of Things is. But all the statistics agree on one thing: the number of connected devices is already huge and rising rapidly. In industry, automotive production, agriculture, healthcare, and many other sectors, the number of connected machines and devices is expected to top 30 billion in 2023. That represents an increase of nearly ten percent a year. So what exactly does the IoT do? It opens up completely new opportunities for device manufacturers, for example, enabling them to boost production efficiency and optimize products via real-time monitoring. For service providers, it means the ability to tailor entirely new services to the situational needs of their customers.

We will all benefit from the IoT in our everyday lives. For example, technicians can carry out remote maintenance on machines in a factory. Special routers in a physician's office can forward a patient's medication plan to the local pharmacy. Cars equipped with the appropriate microchip can automatically make a digital emergency call to rescue services in the event of an accident – this has been mandatory technology in all new cars registered in the EU since March 2018. Traffic lights will use cameras and sensors to analyze vehicle flow and manage it efficiently. Other everyday examples of the IoT include car sharing, parking guidance systems, real-time traffic congestion data, watches with payment functionality, and smart appliances.

Driving a smart car through a smart city

"Many IoT applications still sound very futuristic, but in actual fact they're just around the corner thanks to new 5G wireless network technology," predicts Bernd Müller, Head of Technology, Solutions and Strategy in the Trusted Connected Devices division at G+D Mobile Security. "5G can transmit huge amounts of data in real-time and, depending on configuration, is 10 to 20 times faster than the current state-of-the-art 4G standard," the specialist explains. This enhanced capability can't come too soon. Autonomous vehicles, for example, need to send and receive huge amounts of data in real-time to ensure that traffic moves safely. Just one car generates several dozen gigabytes of data an hour – and half a billion such vehicles are predicted to be on the roads by 2024. We'll use these autonomous vehicles to travel around smart cities where traffic, logistics, public administration, garbage collection, energy supplies, and food production are all digitally coordinated. Smart cities can contribute significantly to climate protection, e.g. by installing street lights that only deliver full brightness when a pedestrian walks past – like those currently in use in Barcelona. The scope is enormous. In a hospital in Germany, a special robot can operate on a patient while the human surgeon is in the US, controlling the operation by means of augmented reality. In industry, where much infrastructure is both outmoded and hugely expensive, 5G will enable great strides in digitalization, making it possible to manage entire factories – including the supply and distribution chains – online. G+D will be a key enabler in all of these scenarios.

Looking at the quantities of data involved, it's easy to see why some experts are already talking about a "Massive Internet of Things." "As Alphabet CEO Eric Schmidt famously said: We create as much information in two days now as we did from the dawn of man through 2003," says IoT expert Müller.

Bernd Müller
Head of Technology, Solutions and Strategy,
Trusted Connected Devices division,
G+D Mobile Security GmbH

» Many IoT applications still sound very futuristic, but in actual fact they're just around the corner thanks to new 5G wireless network technology. «

Three IoT priorities

Rising interconnection and growth in data traffic mean that the potential for misuse and attacks is also increasing. It doesn't take much imagination to visualize what would happen if hackers were able to spy on factories, hijack energy supplies, disconnect air conditioning systems in hospitals, gain control of autonomous vehicles, contact children through smart toys, or watch people in their networked homes. Overall, crime statistics show that the number of cyber attacks is increasing steadily and shifting from private individuals to companies.

"Companies basically need to address three priorities with regard to the IoT," says Müller. Firstly, the number of devices and machines that are connecting to the Internet is increasing at a huge rate. Based on figures from Gartner, up to a million new IoT devices are going online every hour. Secondly, companies want to communicate with IoT devices throughout their entire lifecycle and download data from them securely. Take a connected car, for example: engineers are interested in engine consumption data, while marketers want data on customer behavior. In turn, customers benefit from remote maintenance without having to visit a repair shop and can regularly download new services and updates from the manufacturer. Navigation service providers aggregate data from thousands of cars to generate real-time congestion warnings. And as the age of autonomous driving dawns, all cars on the road will need to exchange data with each other to ensure safety. With all these and many other possible interactions, security is of paramount importance. Integrity and privacy need to be guaranteed from end to end – on the machine itself and when uploading data to the cloud. The third IoT priority concerns the huge quantities of data being captured by companies as a result of the IoT.

AirOn

» Our AirOn digital service platform allows Internet-enabled devices to be managed anywhere in the world throughout their entire lifecycle – with secure encryption over the air. «

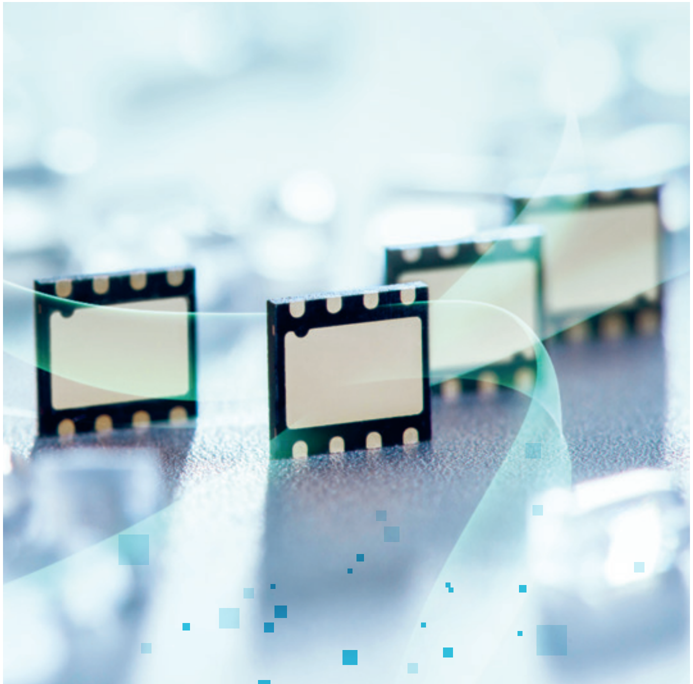
Find out more about AirOn.

Lufthansa Solutions

Trusted data as an income source and opportunity for savings

In an increasingly digitalized world, data is the fuel that keeps companies running. The information obtained from data gives companies the opportunity to boost their efficiency and develop completely new digital business models. But the risks also rise when entire business models – and thus ultimately cash flows – depend on information derived from raw data.

Find out more about our cooperation with Lufthansa Solutions.



Nearly all large IoT machines and an increasing number of smartphones and tablets are now equipped with eSIMs, with “e” standing for “embedded.”

If this data is not evaluated and used as a strategic tool, it is practically worthless. Only through intelligent analysis can companies make their processes smarter and more efficient, optimize their value chains, predict customer needs, and enable themselves to anticipate or even avoid problems. Herein lies the importance of data intelligence and “big data.”

Fighting cyber crime with SIMs

With its extensive expertise and market-leading technology, G+D is both partner and pioneer when it comes to tackling all three of the key challenges around the IoT: connections, secure transmission, and analysis. We already safeguard billions of digital identities throughout their entire lifecycle. “Our products and solutions are used by banks, network operators, mobile device manufacturers, car makers, healthcare industry actors, public transportation providers, and many more,” says Dr. Michael Tagscherer, Corporate Chief Technology Officer. At the heart of these products and solutions are the SIM card and its operating system. G+D was instrumental in developing this technology and produced the world’s first commercial SIM card back in 1991. Today, SIM cards are regarded as the most efficient form of hardware-based security, making them a key technology in the Internet of Things. They can be likened to a secure vault, with data and security-related information benefiting from extremely effective protection in a highly secure environment. Nearly all large IoT machines and an increasing number of smartphones and tablets are now equipped with eSIMs, with “e” standing for “embedded.” These built-in, non-removable, tamper-proof cards save space and money and are resistant to shocks, temperature changes, and dirt. Our solutions are also compatible with new-generation iSIMs (where SIM functionality and the operating system are integrated in a system-on-chip) and nuSIMs (an integrated SIM for cost-sensitive applications).

“Once the eSIM or iSIM is activated, it’s not possible for cyber criminals to access confidential data or attack the device’s ecosystem,” says Tagscherer. On the other hand, manufacturers, operators, and service providers want and need to communicate with the IoT device throughout its entire lifecycle in order to activate, update, or expand its functions. This is essential to ensuring ongoing added value through new digital services for customers. The IoT device thus needs to be assigned a unique digital identity when it is first used and connected to a mobile network. Throughout its life, it will receive new features and security updates, be serviced remotely, and possibly change owners or be used in another country. All of these interactions are handled by eSIM management, a field in which G+D is the technology and market leader with the highest number of commercial projects implemented to date. “Around 90 percent of leading car manufacturers rely on G+D solutions for networking their vehicles, including BMW. IoT devices can be controlled securely via mobile telephony through our award-winning AirOn platform,” says Müller.

Big data fuels artificial intelligence

G+D is also a trusted partner for securing entire digital infrastructures. Attacks using malicious software are becoming increasingly sophisticated, with the casualties including outdated computer systems in corporate environments and public authorities. “One USB stick with a virus is all it takes for malware to penetrate and infect the entire IT system,” warns Tagscherer. Companies can deploy solutions, such as our System Secure Industrial Visibility (SIV) offering, to stay ahead of hackers. Penetration testing is also a good way of guarding against cyber attacks. secunet Security Networks AG, which is part of the G+D Group, carries out automated security testing under the product name redbox. This allows any vulnerabilities to be addressed before they are discovered by hackers. The secunet edge solution, meanwhile, enables machines to be securely and easily connected to both internal and external IT services and IoT platforms. The Stealth Shield developed by G+D Mobile Security works in a similar way, decoupling the long lifecycle of the machine from the short lifecycle of security measures. Machines are given a unique digital ID, regularly checked for vulnerabilities, and can be rendered “invisible” to the rest of the Internet, if required.

So how can the IoT be secured tomorrow and beyond? The quantum computers that are currently the focus of intensive research effort will be so powerful that existing cryptography data and infrastructure will no longer provide adequate protection. Accordingly, secunet is working on post-quantum cryptography, i.e. encryption that can withstand quantum computers. Many people still feel that quantum computers are a long way off, however, with another question being far more pressing: What will actually happen with all the data generated by the IoT? Big data is now widely regarded as a new commodity – the “new oil” of the digital age. But data is actually just ones and zeros. It takes targeted analysis (or “data intelligence”) to turn it into information that allows companies to better understand their customers’ needs, for example, and tailor their products and services accordingly.

Of particular importance here is the trustworthiness of the data, which needs to be ensured from end to end. “If I can’t trust the data, I can’t trust the analysis either,” says Tagscherer. Big data analysis thus contributes to optimization of industrial and logistics processes.

» If I can't trust the data, I can't trust the analysis either. «

Dr. Michael Tagscherer
CTO, Giesecke+Devrient GmbH

More and more IoT devices are learning to improve themselves continuously and make more efficient decisions – potentially paving the way for artificial intelligence.

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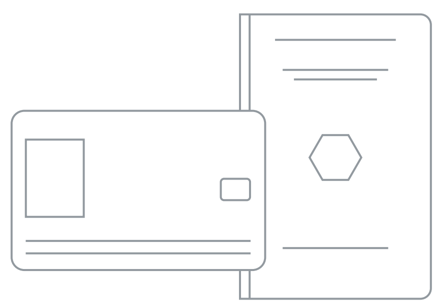
IDENTITIES

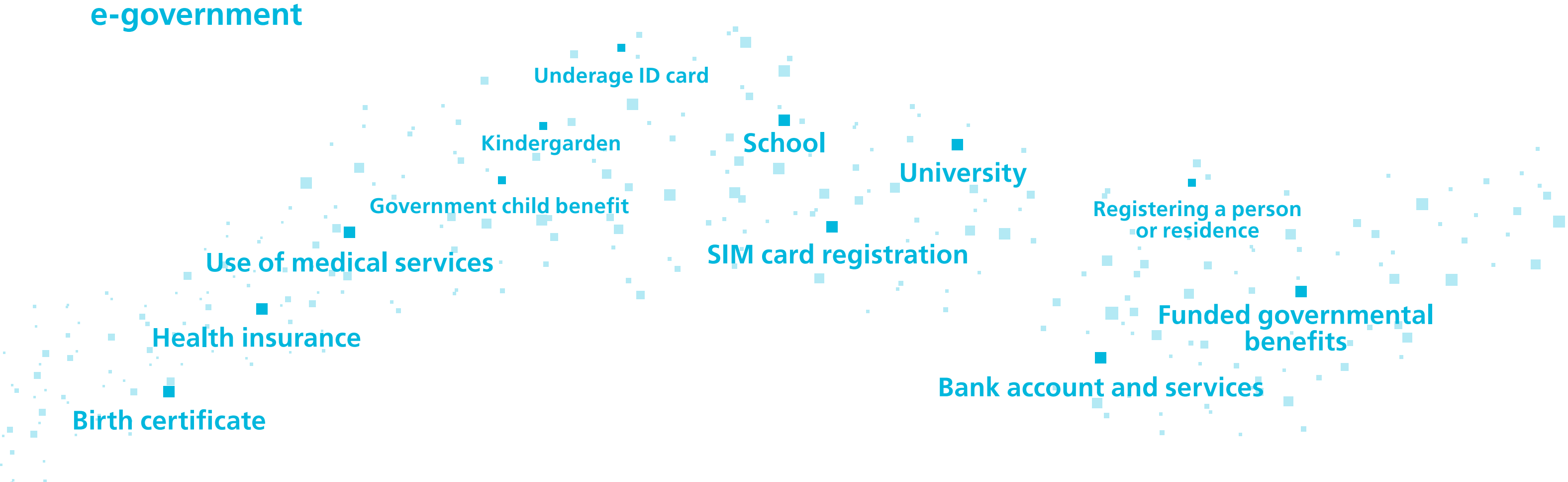


PUBLIC SERVICES ONLINE

E-GOVERNMENT ON THE RISE

Banking, shopping, news, music, TV – all of them are digital in our everyday lives. Alongside using physical goods and services, like banks, stores, newspapers, and cinemas, we have long become accustomed to using digital services on the Internet. But that is less likely to be the case when it comes to dealings between government authorities and citizens. Here, people usually have to speak to officials in person, deal with inconvenient opening times and long waits, and complete paper forms. That could soon be made much faster and more convenient, though. Digitalization has the power to transform interactions between public authorities and citizens. **Following the example already set by banking and retail, government services are now increasingly moving online in the form of e-government.**

A lifetime of e-government



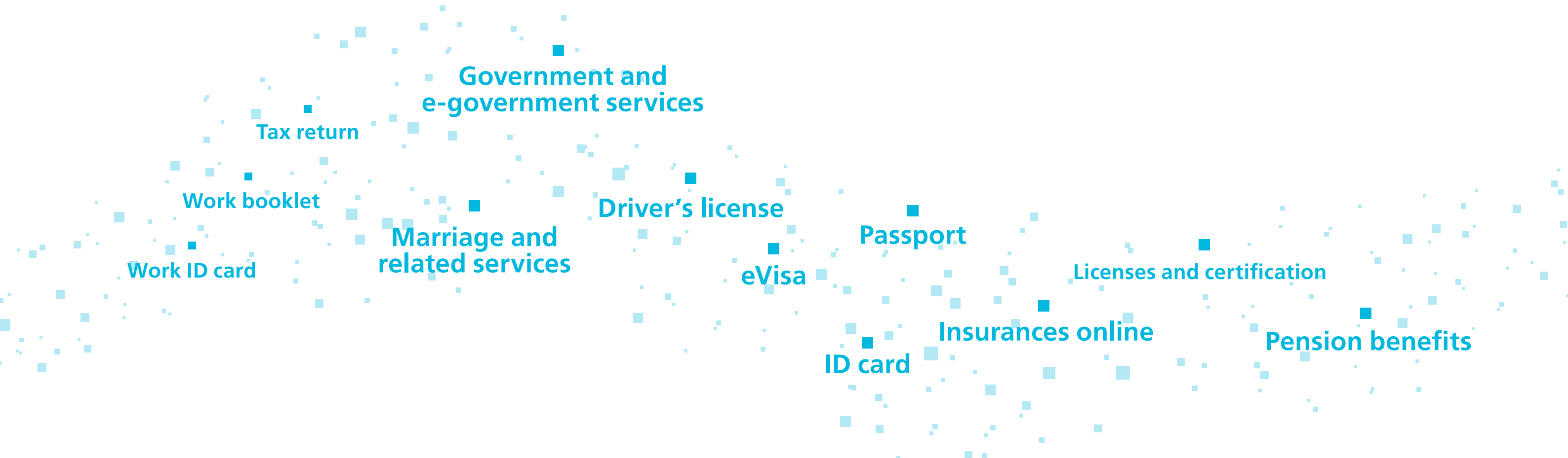
The idea is simple. Using mobile apps, voice portals, and web portals could render trips to government buildings unnecessary in many cases. That's good for citizens because it would make submitting passport applications, renewing driver's licenses, and filing tax returns much faster and more convenient. It's also good for businesses because it would be much easier for them to set up a company, obtain business registration certificates, and deal with customs formalities. "It's particularly good for governments themselves because e-government can make administrative procedures more efficient and also speed up government activities, such as cross-border electronic identification and trust services, or eIDAS," says Dr. Silke Bargstädt-Franke, Head of Product Management at Veridos. Veridos is a joint venture between G+D and Bundesdruckerei that specializes in international identity solutions.

This story, video, and further information on identities are available at
www.gi-de-report.com/identities

Digitalization as revitalization

Is digitalization an opportunity to revitalize public administration? For the citizens of most countries around the world, that sounds too good to be true. In some countries, though, digital government services are already a reality. Singapore, for example, gives its citizens access to e-government services at their fingertips via the SingPass mobile app. Pioneers in Europe include the Scandinavian countries and the Netherlands, where in each case more than 80 percent of citizens have already interacted with the authorities via the Internet. Other countries also have ambitious plans for e-government. In Dubai, for example, the government aims to go completely paper-free by 2021, while Germany is committed to making all public services available online by 2022.

"With its long experience in security technology, secure connectivity, and identity management, G+D already offers a wide range of products and solutions for implementing e-government," says Michael Edwards, Product Manager at Veridos. Examples include VeriGO® TrueID from Veridos, a solution that enables citizens to identify themselves securely by means of a facial scan in order to use online public services. "We successfully completed a European pilot project in 2019 and are planning to roll out the product in 2020," says Bargstädt-Franke.
To further reinforce the technological pillars that support reliable identification, which is particularly crucial in e-government, our investment company G+D Ventures recently took a stake in IDnow, the company behind AutoIdent, an ID verification solution based on machine learning technology. Not only can AutoIdent be used in commercial settings, e.g. when opening a new bank account online, it's also ideal for e-government scenarios. For example, users can request their birth certificate from the authorities in the town of their birth so they can get married in their present place of residence.



Dr. Silke Bargstädt-Franke
Head of Product Management,
Veridos GmbH

» It's particularly good for governments themselves because e-government can make administrative procedures more efficient. «

SwipeUp ID

ID checks by smartphone

Smartphones are hugely versatile, but can they also be used to provide proof of identity? Yes, they can! With the new SwipeUp ID app from Veridos, a joint venture between G+D and Bundesdruckerei, public authorities and government bodies can now verify identities quickly and reliably. “We’re essentially bridging the gap between conventional identity documents and the digital world,” says Michael Ruhland-Bauer, Vice President of Product Management Documents at Veridos.

Find out more about SwipeUp ID.

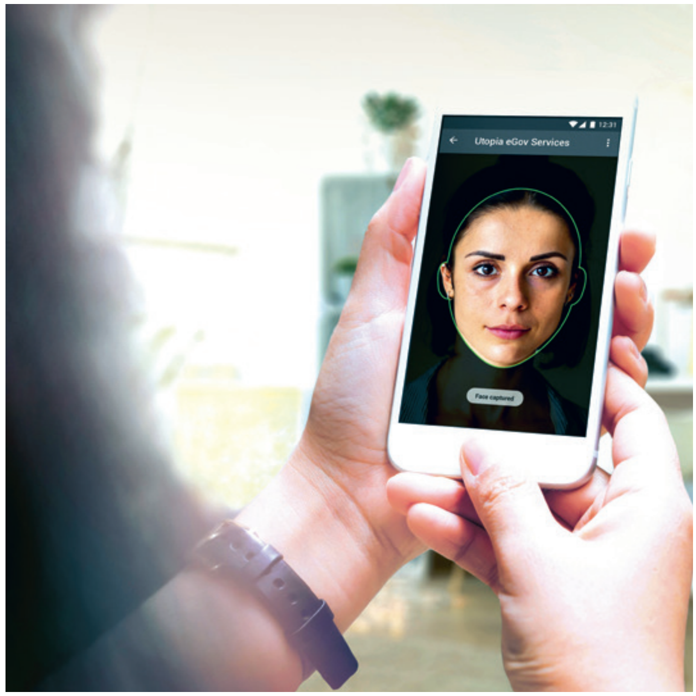
Government services on your smartphone

As so often in the digital world, mobile devices also have a key role to play in e-government. Pioneers in this field include the southeast European Republic of Kosovo, whose government is issuing citizens fully mobile, smartphone-compatible driver’s licenses. This technological first is based on the VeriGO® DriveID platform developed by Veridos. “To enable checking, a 2D bar code is generated by the backend system and displayed on the driver’s smartphone. The police officer scans this code using a special app on his or her own smartphone. The officer can then access the license holder’s details on the server via a digital key,” explains Bargstädt-Franke. The digital driver’s license can also be used to verify the holder’s identity in various situations online in a way that is both reliable and legally compliant, such as when voting or accessing healthcare facilities.

Kosovo is thus leading where many other countries will follow over the next decade: in the digitalization of official documents, i.e. the storage of ID documents, driver’s licenses, visas, etc. on a mobile device, such as a smartphone or tablet. The associated mobile verification solutions are also gaining traction. Veridos worked closely with Chemnitz-based start-up Prismade Lab to develop the SwipeUp ID app, a smartphone security feature that can confirm or reject the validity of a document, e.g. during traffic checks.

Making public authorities more citizen-friendly

E-government services are set to become even more important in the future, as evidenced by the increased number of public invitations to tender. Edwards says: “Governments recognize that they need to become better and faster in their transformation to e-government, be it with regard to their Internet portals for citizens, digitalization of data in the background, process optimization, or ensuring a seamless flow of information – in other words, in addressing the incompatibility between the many different legacy programs, applications, and standards that are often in place.”



G+D is also increasing its focus on this dynamic new market. Led by digital incubator and accelerator G+D advance52, a cross-departmental team is currently exploring and validating further fields of application and developing more products and business models for future e-government solutions.

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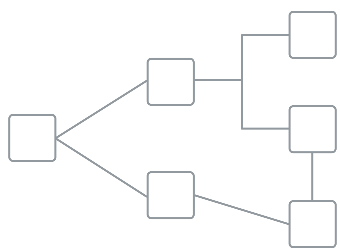
More fascinating stories, exclusive video content, and further information on payment are available at **www.gi-de-report.com/identities**

DIGITAL INFRASTRUCTURES



MEDICINE 4.0

HEALTH SERVICES IN THE DIGITAL AGE

Industry is doing it. The financial markets have been doing it for a long time. And now the healthcare sector is doing it, too. Modern medicine is currently working hard to leverage the opportunities offered by digitalization. Like Industry 4.0, Medicine 4.0 is about connecting all relevant actors via the Internet. **Because highly sensitive, personal patient data and safe functioning of life-supporting systems are involved, the requirements in terms of functionality, security, failure protection, data protection, and encryption are obviously extremely high.**

Markus Linnemann
Head of eHealth division,
secunet Security Networks AG

» Health services are just as vital for society as power networks and the water supply. Facilities therefore need to be very carefully protected against unauthorized access. «

secunet konnektor

This story, video, and further information on digital infrastructures are available at **www.gi-de-report.com/digital-infrastructures**

"Health services are just as vital for society as power networks and the water supply. Facilities therefore need to be very carefully protected against unauthorized access," says Markus Linnemann, head of the eHealth division at secunet Security Networks AG. In Germany, a dedicated network – the telematics infrastructure (TI) – has been created for digitalization of these services. It can be used by physicians, hospitals, pharmacies, health insurers, and other actors, such as non-medical practitioners, to share information about patients in digital patient files with explicit consent. It is overseen by gematik GmbH, which was formed in 2005 by the leading bodies in the German healthcare sector. Initial applications within the TI began running in late 2018 and implementation of electronic patient files is expected to start in early 2021. By the end of 2019, around 140,000 physicians, dentists, and psychotherapists had been hooked up to the TI. Pharmacists and around 2,000 hospitals will follow in 2020.

But how can all these healthcare actors navigate the TI data highway safely and securely? This is where secunet, a G+D Group subsidiary, and IT service provider Arvato Systems come in: secunet and its partner eHealth Experts developed a dedicated connector in accordance with gematik specifications. The secunet connector provides the interface for communication between a physician's practice and the telematics infrastructure, creating a connection to TI central services via Arvato's VPN access service. The VPN access service and the connector are being marketed under the name "Mein Zugangsdienst" (My Access Service). Hartmut Fries, a member of the management team at the Arvato Systems Group, comments: "secunet and Arvato are now among the market leaders, with 45,000 physicians' practices connected – all achieved in just one year from a standing start."

The project partners took an innovative approach to development of the combined solution, employing agile, flexible development sprints and working closely with experts from all areas of Medicine 4.0. “When developing the connector, it was important for us to think beyond the technical specifications and consider whether it would be easy for users to install and operate. After all, physicians’ practices and hospitals are not staffed by IT specialists,” says Linnemann. Installation was completed within a very short timeframe and maintenance of the system can be carried out remotely in the future. Continuous error analysis guarantees smooth operation.

secunet and partners eHealth Experts and Arvato are proud of their pioneering work on digital transformation of healthcare services. They view it as a good platform for further growth. “If you liken it to a TV streaming service, the VPN access service and the connector mean that so far we have only laid the cable and set up the receiver,” says Fries.

2019

140,000

physicians, dentists, and psychotherapists hooked up their offices to the telematics infrastructure.

secunet edge

Wrap-around protection for machines

Businesses are mostly hugely enthusiastic about the trend towards Industry 4.0 and the Internet of Things. As more and more devices, sensors, machines, and systems are connected with each other over the Internet, operators can significantly boost their efficiency and also develop entirely new business models. The downside is that there are more opportunities for cyber criminals to launch attacks, with a heightened risk of production losses, industrial espionage, sabotage, and misuse of data.

Find out more about secunet edge.

SINA

» The crypto solution developed by secunet for the German Federal Office for Information Security (BSI) is now widely used by public authorities in Germany and beyond and is paving the way for digital transformation of public administration. «

Find out more about SINA.

The telematics infrastructure now needs to be filled with content. That content could be applications, such as electronic physicians' letters, e-patient files, appointment booking tools, electronic signatures on treatment plans and cost plans, emergency data management, or digital prescriptions.

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Corporate Responsibility

G+D embraces its responsibility and contributes to sustainable global development

The world is facing an ever-increasing number of complex and interrelated challenges. Businesses can help by developing new solutions to these global challenges, creating new opportunities, and enabling sustainable development. As a leader in security-based technologies and services, we are acutely aware of our corporate responsibility. As we pursue our vision of being the world's leading security technology company, our aim is to realize the potential of emerging opportunities and create lasting value for society and the environment. We seek to have a positive impact on our communities and the world – through our products, services, and operations as a whole – and also apply that standard throughout our value chain.

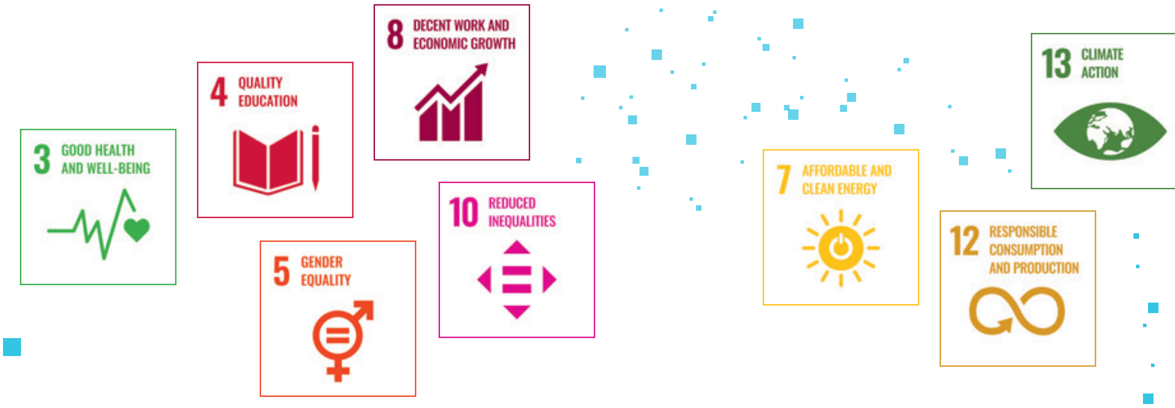
The G+D approach to corporate responsibility (CR)

Our CR strategy is based on the United Nations Global Compact and Sustainable Development Goals (SDGs). The Group CEO is responsible for the general direction of all CR activities across G+D. To refine our approach, we also consult with other stakeholders, e.g. the German Global Compact Network (DGCN).

CR principles

Our commitment to all aspects of sustainability is reflected in our six CR principles. In addition to the core action areas of employees, environmental and climate protection, and supply chain sustainability, our CR principles include business practices, products and solutions, and society.

The principles adopted by G+D are outlined in the following pages. For a more detailed insight into our CR activities and the SDGs that G+D is able to influence, please refer to our Progress Report 2019 at https://www.gi-de.com/en/de/g-d-group/values/.



1 Responsibility to our employees

Our success is driven by the talent, knowledge, and day-to-day commitment of our 11,500 employees.

Our sustainability activities are focused on five key areas:

- **Learning and development:** We use a wide range of resources to promote staff development, including a comprehensive training and education program, individual career guidance, coaching, and global talent management.
- **Diversity and equal opportunities:** G+D regards a diverse workforce in terms of gender, age, and cultural origin as a clear competitive advantage. We promote diversity at G+D in a number of ways, including training, international hackathons, keynotes, and round tables. Diversity is also a key criterion when hiring staff, taking on trainees, and selecting participants for our talent programs.
- **Wellbeing and work-life balance:** G+D helps each employee find their own work/life balance with options, such as flexible working time models and mobile working.
- **Good working conditions and employee engagement:** We use a range of communication and feedback tools to enable ongoing dialog with our employees and create a pleasant working environment.
- **Health and safety:** G+D has introduced a certified occupational health and safety management system (ISO 45001) at all relevant locations worldwide. As well as complying with all local legislation, we promote resilience and a healthier lifestyle for all our employees.

2 Responsibility to our environment

Our responsibility to the environment is one we take extremely seriously. We are working hard to preserve a decent world for future generations.

We measure our activities against centrally defined sustainability indicators, which we record for our largest sites worldwide. We are continuously reducing the impact of our operations through a range of measures that protect the climate and environment.

At the end of 2018, we introduced a Group-wide climate goal. Our aim is to reduce emissions by 2022 to a level compatible with the two-degree limit set out in the Paris Agreement. This means cutting our direct and indirect emissions (tCO_2) by 25 percent. To achieve this goal, we are transitioning to renewables (some produced in-house) and implementing a range of energy-efficiency measures.

Our 20 major production sites already have an ISO 14001 environmental management system in place. In addition, selected energy-intensive locations are certified to ISO 50001. We are also reducing our environmental footprint through various measures in the areas of waste prevention and recycling, mobility, and the use of chemicals.

In our manufacturing operations, we partner with customers to find more sustainable solutions while also investing in R&D. For example, G+D Currency Technology is working with central banks and banknote printers to further increase sustainability throughout the value chain. These measures include a number of eco-friendly processes and materials that were presented using real-world examples at a workshop in 2019.

In our other business sectors, our offerings include credit cards made from renewable materials and embedded SIMs that eliminate the need for card bodies.

3 Responsibility in our supply chain

In our global supply chain, we apply strict environmental and social standards and comply with all national and international regulations. Sustainability is an important criterion whenever we select a new supplier. We also work with our suppliers to improve transparency, identify risks, and avoid negative outcomes.

G+D uses the following tools to strengthen sustainability in the supply chain:

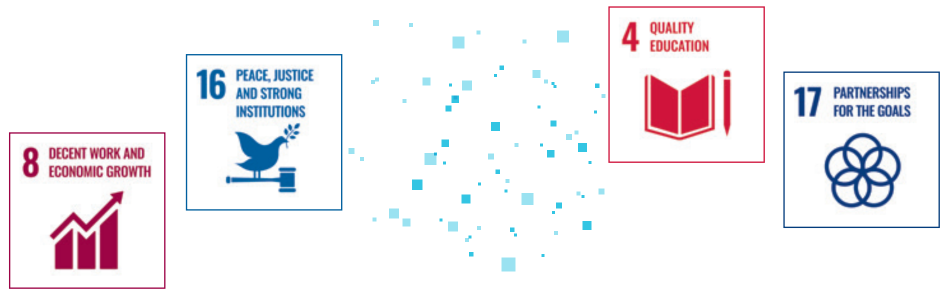
- **Group-wide procurement rules and sustainability criteria:** G+D has created Group-wide framework requirements for supply chain sustainability and defined environmental and social criteria for the selection and auditing of suppliers.
- **Supplier self-disclosure:** Our suppliers inform us of sustainability risks and provide relevant documentation (e.g. certificates).
- **Industry-standard auditing:** G+D Mobile Security has introduced the SMETA 4-pillar audit for assessing environmental and social risks among suppliers.
- **Modern slavery:** Our policy on forced labor, human trafficking, and slavery complies with the UK Modern Slavery Act.
- **Conflict minerals:** G+D Mobile Security uses a systematic reporting system that meets the requirements of the Dodd-Frank Act.
- **Defining measures and goals:** We are currently expanding and consolidating our CR approach by defining additional measures and specific goals in the individual subgroups.
- **Supplier management portal:** This is currently being rolled out across the Group to complement our supplier qualification/selection process – in part to improve transparency.

4 Responsibility for our products and solutions

G+D is committed to the safety, quality, and reliability of all products and services, to global and inclusive economic growth, and to protection of the environment in all manufacturing processes.

Our products and solutions have a positive impact on society and the environment:

- **Inclusive and sustainable economic growth:** By making business activities more secure, we enable new, digital, and scalable business models.
- **Social inclusion:** Secure ID solutions enable more people to access government services, such as health and education. We also promote social inclusion through our wide range of payment options.
- **Security and stability:** Our products provide identity security, protect national borders, and enable secure data transfer around the world.
- **Development and use of digital solutions for more sustainable living:** Our solutions are used in many eco-friendly applications, including sustainable mobility/autonomous driving, remote medical care, and energy-efficient smart homes and smart utilities.



5 Responsibility for our business practices

By adhering to our own values as well as national and international laws, we strengthen our reputation as a company and create the foundation for trusting relationships with our customers and partners.

G+D uses a range of instruments to meet its own values and standards:

- **Central compliance management system (CMS):** Our CMS ensures Group-wide regulatory compliance to avoid issues, such as corruption and antitrust law violations.
- **Code of Conduct:** Our Group-wide Code of Conduct combines the UN Global Compact, the core labor standards of the ILO, the UN Declaration of Human Rights, and certification to ISO 45001 (formerly OHSAS 18001).
- **Group-wide risk analysis:** We identify and assess emerging risks – including potential compliance breaches in relation to corruption and competition law – and introduce preventive measures.
- **Training and information:** Our employees receive awareness training and information through e-learning, classroom training, and intranet resources.
- **Internet-based whistleblower system:** G+D has an anonymous reporting system in place for suspected violations. The system is open to internal and external users.
- **Data protection:** We operate a global data protection management system. Our Binding Corporate Rules (BCR) provide an appropriate level of protection for data communications within the Group.

6 Responsibility for our society

As a longstanding and independent family firm, we believe entrepreneurship and social responsibility go hand in hand. Economic activity is only truly sustainable in a society that is equitable, progressive, open, and secure.

For the past 10 years, we have concentrated our corporate citizenship activities in the Giesecke+Devrient Foundation. This not-for-profit organization is actively involved in culture, the arts and education. Particular focuses include support for the Museum of the Printing Arts in Leipzig and an international program in association with the Goethe Institute that involves inviting young people from all over the world to Germany. For three years now, this initiative has also included an alumni program.

In addition to the Foundation's activities, G+D has a program where employees can volunteer on projects selected by the Foundation.

Our subsidiaries also implement projects around the world that promote social development at the local level.

GROUP MANAGEMENT REPORT

AS OF DECEMBER 31, 2019

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

1. Group Profile

In the business world, the public sector, and wider society, Giesecke+Devrient makes the lives of billions of people more secure with its innovative technologies and solutions. The company specializes in security technology across the four main areas of payment, connectivity, identity, and digital infrastructures. These four core areas are the shared mission of the individual business sectors and together, they comprise the Giesecke+Devrient portfolio.

Payment
G+D offers products and solutions worldwide for secure payment in physical, electronic, and digital form and thus occupies a unique position in the payment ecosystem.

Connectivity
In a 24/7 digital world, connectivity for mobile applications presents huge challenges. G+D supplies key technologies for secure connections between people and machines in the Internet of Things.

Identities
In modern societies, the identities of citizens, users, and things require special protection. G+D provides governments and public authorities all over the world with reliable, integrated ID solutions. With its extensive portfolio, the company covers the entire identity value chain at every scale and level of complexity.

Digital infrastructures
The need for digital protection is growing daily as increased networking of devices and systems opens up new opportunities for cyber attacks. This calls for innovative IT and data security solutions, which G+D provides to customers in both the state sector and in industry. G+D's solutions for securing digital infrastructures are tailored to meet even the most demanding requirements.

G+D operates as a holding company comprising the legally independent subgroups G+D Currency Technology, G+D Mobile Security, Veridos, and secunet. G+D employs more than 11,500 people across 33 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 Banknote Solutions division produces and distributes banknote paper, banknotes, and high-tech security features. The portfolio of the Currency Management Solutions division includes banknote processing machines of different sizes and complete cash center solutions. Here, 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/cloud payment, and cyber security. Data and project management are also part of the portfolio, as are SIM, bank, ID, and healthcare cards and tokens.

Veridos is a joint venture between G+D and Bundesdruckerei that offers customers secure and pioneering identification and identity solutions. The product range covers traditional printed documents as well as electronic ID documents, 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 as well as for the transmission, storage, and processing of information. This includes encryption technology up to the highest security level. secunet ensures that public authorities, organizations, and companies enjoy maximum protection against cyber attacks, espionage, and sabotage.

The **Corporate Center** manages the overall direction of the G+D Group and actively supports strategic development of the subgroups . Its scope of duties also includes innovation activity that is of strategic importance for the whole Group. A Corporate Development Fund was established recently to provide strategic investment aimed at developing new and emerging digital business activities. The fund drives the innovation process in conjunction with innovation accelerator G+D advance52, investment company G+D Ventures, and the Corporate Technology Office (CTO). Within the Corporate Center, Shared Services covers functions, such as IT, accounting, and HR for all business sectors. Dedicated G+D real estate companies hold and operate the building at the Munich site and lease 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

Our world is changing at a phenomenal pace. The international community is facing not only opportunities but also major challenges, from political uncertainty and the trade conflict between the US and China to the effects of climate change and growing social inequality. These factors also impacted the global economy in 2019, with the International Monetary Fund (IMF) assuming modest global growth of 3.0 % overall. At the same time, disruptive technologies and digitalization are creating huge potential for progress and development, while also posing specific challenges in terms of security and the shape of future markets.

Against the backdrop of this rapidly changing environment, G+D performed well in 2019 with its security technologies and solutions in the core areas of payment, connectivity, identity, and digital infrastructures, driven in part by customers' increasing need for security. As a result, the Group recorded sales growth of 8.9 %, marking another record high in the company's history.

2.1. Group Business Performance

The key financial performance indicators used to manage the Group remained the same in fiscal 2019. 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].

G+D again took strategic action to strengthen its market position in 2019 with regard to digitalization and personalization of digital payment solutions. In addition to achieving organic growth in this segment, G+D made a targeted acquisition. By acquiring Dutch company Transtrack International, a market leader in the development of standard software solutions for managing the end-to-end cash supply chain, G+D Currency Technology expanded its software and solutions business and bolstered its position as a global partner for digitalization of the cash cycle.

G+D Mobile Security signed a long-term exclusive agreement with Crédit Agricole, one of France's largest commercial banks. Under the agreement, G+D is now responsible for the bank's entire personalization services and for supplying Crédit Agricole with all the required payment cards (EMV), making G+D Mobile Security the leading supplier of payment cards in France.

In accordance with its venture strategy, G+D sold its majority stake in Build38 GmbH to the Build38 GmbH management team. The software and app security spin-off was launched in 2018. G+D continues to hold 38 % of the shares.

[1] Ratio of 12-month average of working capital in reporting year to annual sales; working capital = customer receivables + inventories + contract assets – liabilities – contract liabilities

[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

2.1.1. Results of Operations

In fiscal year 2019, G+D exceeded the strong performance of the previous year by 8.9 %, generating total sales of EUR 2,447 million.

In line with strategic portfolio development, growth in the solutions and services business accelerated by around 33 % in the reporting year. Product sales remained at the high level of the previous year.

All business sectors contributed to growth.

Sales by Subgroup

EUR million	2019	2018	Change (absolute)	Change in %
Currency Technology	1,132.4	1,058.9	73.5	6.9 %
Mobile Security	876.5	867.6	8.9	1.0 %
Veridos	231.6	180.2	51.4	28.5 %
secunet	226.9	163.3	63.6	39.0 %
Consolidation	−20.4	−23.9	3.5	14.7 %
Total	**2,447.0**	**2,246.0**	**201.0**	**8.9 %**

Currency Technology was able to build on the previous year's high level of sales. A large proportion of this growth is attributable to the high-speed processing sector with its advanced machines for banknote processing. Services and solutions also accounted for an increased share of sales.

Mobile Security systematically expanded its position in the eSIM platform market in 2019. A sharper focus was placed on SIM cards in order to further strengthen this segment. Mobile Security recorded strong gains in the smartcard sector, with applications relating to electronic payment and healthcare cards performing particularly well. Overall, this business sector saw a slight increase in sales compared with the previous year.

Veridos achieved a significant improvement in sales over the previous year through organic growth. This was driven by a number of major projects, particularly the supply of electronic passports and associated border control systems to Bangladesh. Profitability was broadly the same as in the previous year, with the figures improving as work on major project progressed. There was also a clear trend within the business portfolio towards digital solutions, such as digital driver's licenses.

The high-quality, reliable cyber security solutions produced by secunet continued to meet customer needs in 2019. The significant improvement over the previous year, with sales rising by EUR 63.6 million, resulted primarily from sales of the secunet healthcare connector for medical practices. The SINA product range for securing network communications also again achieved record sales.

The consolidated income statement below has been adjusted to take account of special effects in order to improve comparability of expenditure and earnings. The table has been standardized as follows: The 2018 figures have been adjusted by EUR 17.0 million to take account of the cost of restructuring measures at CI Tech Components AG. The bulk of the cost was attributable to impairments on capitalized R&D expenditure and property, plant and equipment. Restructuring costs at Mobile Security have been adjusted by EUR 15.7 million for 2019.

Consolidated Income Statement (IFRS)

EUR million	2019	2018	Change (absolute)	Change in %
Net sales	**2,447.0**	**2,246.0**	201.0	8.9 %
Gross profit[1]	**652.6**	**612.9**	39.7	6.5 %
Gross margin[1] (% of sales)	26.7 %	27.3 %	−0.6 pp	−2.3 %
Selling, R&D, and general administrative expenses[1]	(515.7)	(492.8)	−23.0	4.7 %
Other operating income and expenses[1]	(1.5)	12.8	−14.4	>−100 %
Operating profit[1]	**135.3**	**133.0**	2.4	1.8 %
Financial income/(expenses)	12.5	(13.5)	26.0	>100 %
EBIT (adjusted)	**147.8**	**119.5**	28.3	23.7 %
EBIT margin (adjusted) (% of sales)	6.0 %	5.3 %	−0.7 pp	13.5 %
Adjustments	(15.7)	(17.0)	1.3	>100 %
EBIT	**132.1**	**102.5**	29.6	28.9 %
Interest income	2.1	2.0	0.1	5.4 %
Interest expense	(23.8)	(19.0)	−4.7	24.8 %
Earnings before income taxes (EBT)	**110.4**	**85.5**	24.9	29.0 %
Income taxes	(30.0)	(35.3)	5.2	−14.9 %
Net income	**80.4**	**50.2**	30.3	60.3 %
Reconciliation to EBITDA				
EBIT (adjusted)	147.8	119.5	28.3	23.7 %
plus depreciation and amortization (adjusted)[2]	(128.1)	(102.6)	(25.5)	24.9 %
EBITDA (adjusted)	**276.0**	**222.1**	53.8	24.2 %

[1] To improve comparability, closure costs for GDSK and gain on sale minus consulting costs from real estate are eliminated from 2017 figures. Restructurings 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 improved due to increased sales volumes by 6.5 % compared with the previous year, despite reduced margins in highly competitive markets and major projects still being in the start-up phase, plus the launch of the secunet healthcare connector. As work on the projects progresses, these effects will disappear in the coming years and gross margin will increase due to the additional service revenues.

Structural costs for selling, research and development, and general administrative expenses rose overall by 4.7 % and thus at a lower rate than sales. Selling expenses were EUR 236.8 million in 2019. The increase of 5.7 % compared with the previous year is a reflection of sales growth. In 2018, selling expenses benefited from exceptional reversals of bad debt allowances totaling EUR 5.3 million. By contrast, selling expenses were impacted by around EUR 4 million in 2019 due to specific allowance for bad debts. With regard to research and development costs, Mobile Security tightened the focus of its activities, leading to a reduction of 1.7 % to EUR 111.3 million. Including customer-specific development costs and capitalized research and development costs, total spending on R&D was EUR 155.3 million and thus remained at the same high level as in the prior year. General administrative expenses increased by 7.8% to EUR 167.6 million in the reporting year. The rise was mainly due to higher consultancy costs relating to strategic alignment of G+D's portfolio, one-time costs associated with acquisitions made, and higher costs as a result of sales growth.

Other operating income and expenses fell by EUR 14.4 million, largely due to positive one-time effects in 2018. In the previous year, G+D generated sales proceeds from fixed assets and also reversed provisions for legal disputes.

Financial income showed a significant improvement compared with the previous year, at EUR +26.0 million, due to favorable exchange rates and buoyant stock markets. Income of EUR +1.5 million (previous year: EUR –7.5 million) was achieved from exchange rate effects involving the US dollar, Chinese renminbi, and other currencies. Income from securities was also positive, making a EUR +6.2 million contribution to financial income (previous year: EUR –4.8 million). Investments in consolidated companies carried at equity contributed a further EUR +4.8 million (previous year: EUR +1.2 million).

At EUR 147.8 million, adjusted EBIT was 23.7 % higher than in the previous year. All operational business sectors made a positive contribution to Group EBIT. The increase compared with the previous year is due to higher operating profit and increased financial income.

Net interest result declined by EUR –4.6 million to EUR -21.6 million in 2019. It comprised interest of EUR 12.7 million on pension obligations (previous year: EUR 12.1 million) and interest expenses for financial and other liabilities of EUR 11.0 million (previous year: EUR 7.2 million). Interest income totaled EUR 2.1 million (previous year: EUR 2.0 million). The higher interest expenses in 2019 include interest for a first full fiscal year on a promissory note loan (issued July 2018) as well as non-cash charges resulting from the new IFRS 16 financial reporting standard (EUR – 1.9 million).

The tax rate fell from 41.2 % to 27.2 % in 2019. In both years, the actual tax rate deviated from the expected Group tax rate of 31.5 %. In 2019, the positive business outlook led to higher capitalization of tax loss carryforwards, without the basic calculation system having been changed. Without this effect, the Group tax rate would have been 32.1%. In 2018, the one-time expenses relating to strategic realignment of CI Tech had a negative impact on the Group tax rate. Without this effect, the Group tax rate would have been 31.3 %.

Net income increased significantly by 60.3 % compared with the previous year and stood at EUR 80.4 million in the reporting year.

At EUR 276.0 million, EBITDA (adjusted) was 24.2 % higher than in the previous year.

2.1.2. Research and Development

Our technology expertise is a crucial factor for the success of G+D. Since 2019, cross-cutting technologies and digital solutions have been brought together in a newly established Corporate Technology Office (CTO) with the aim of ensuring that we make the best possible use of our expertise and innovation potential. The CTO acts as the technology link between the R&D teams in the individual business sectors and is tasked with maximizing synergies. Work is currently under way in strategic technology fields, such as data analytics and machine learning as well as secure operating systems. In all cases, new technologies are evaluated and managed in terms of their added value for customers and for G+D. The CTO also works on its own projects. It seeks to identify new technologies in the marketplace, evaluate them, introduce them into the company, and support their integration into the business portfolio across the core areas of payment, connectivity, identity, and digital infrastructures.

G+D also invests in its in-house R&D departments, builds up expertise through partnerships with external companies, and boosts its know-how by acquiring specialized companies.

At EUR 155.3 million, total spending on research and development was broadly unchanged compared with the previous year. This spending covers customer-specific development costs (EUR 31.0 million), capitalized research and development costs (EUR 12.9 million), and pure R&D expenditure (EUR 111.3 million). Restructuring costs of EUR 3.2 million for the Mobile Security business sector are not included in the figures.

Research and Development

	2019	2018	Change in %
Number of R&D employees (FTE)	1,151	1,146	0.4 %
Proportion of total employees (%)	10.0 %	10.1 %	−0.6 %
Spending on R&D (EUR million)	155.3	154.8	0.3 %
thereof pure R&D expenditure (EUR million)	111.3	113.3	−1.7 %
R&D ratio (% of sales)	4.6 %	5.0 %	−9.8 %
thereof cost of goods sold (EUR million)	31.0	25.0	24.2 %
thereof capitalizable costs (EUR million)	12.9	16.5	−21.9 %
Capitalization ratio (%)	11.6 %	14.6 %	−20.5 %
Amortization of capitalized development costs (EUR million)	11.8	8.4	40.6 %
Number of active patents	7,452	7,899	−5.7 %
New patent applications	123	172	28.5 %

As a market leader for end-to-end cash management, **Currency Technology** is further expanding its market presence. G+D leverages innovation to offer customers attractive solutions to optimize 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 current market trends. G+D provides comprehensive software and automation solutions as part of its digital agenda. These solutions optimize cash processing operations and help to reduce costs – while continuing to meet the highest security requirements. G+D is also engaged in developing a digital currency for central banks. In addition, innovative big data technologies are increasingly being used in cash processing operations. 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, e.g. of cash needs during peak periods.

G+D is also continuously improving its banknote security features with regard to threads, foils, and pigments. In particular, the use of micro- and nanotechnology and materials management applications opens up exciting opportunities for innovative optical security features. Development of corresponding application technologies enables potential customers, such as paper mills and printers, to optimize their value chains. In fiscal 2019, we won a number of banknote projects on the strength of our new features and these application technologies. Customers are also supported around communicating new series or banknote features via specially developed mobile apps.

The global R&D activities undertaken in the **Mobile Security** sector were focused on the Financial Solutions, Connectivity & Devices, and Digital Enterprise Security segments in 2019.

R&D activities in Financial Solutions include finalization of the new product platform for Java-based payment cards, which will subsequently be migrated and embedded in customer projects worldwide. Another key area is expansion of the premium card portfolio, especially the development of metal cards, biometric cards with fingerprint technology, and powered cards. Rather than having a printed static security code, powered cards incorporate a small display for dynamic codes that change at certain intervals.

In Connectivity & Devices, one key focus is on functional enhancements of eSIM and subscription management in line with the GSMA standard. The platform has also been further improved to protect it against global failure risks. Specific embedded operating system (eOS) solutions for high-end mobile devices are being developed for several large OEM customers.

In Digital Enterprise Security, the main focus of R&D efforts is on creating a secure digital car key for the automotive sector and on developing dual interface smartcards for use as healthcare cards in the German market.

R&D activity at **Veridos** is focused on developing highly secure ID documents, complex system solutions for analog and digital verification of documents and identities, and convenient and secure e-government services. In the future, people will be able to use their cell phones to interact with public authorities, e.g. when applying for an ID document, thereby avoiding long waits and restricted opening hours. Another key area is connecting physical documents with the digital world. Veridos has driven forward the development and standardization of mobile ID documents (e.g. mobile driver's licenses) and created a security feature for identity documents that can be verified using a cell phone.

With its solutions for highly secure digital identities, Veridos now offers a wide portfolio of solutions designed to meet future needs. These extend all the way from applying for an ID document through to having it checked at border control points.

The research and development efforts undertaken by **secunet** focuses on improvements and innovations in processes, products, and solutions to safeguard critical infrastructures. In this regard, secunet is responding to its customers' growing need for greater security in existing infrastructures and for solutions to threats associated with new technical environments. In 2019, the primary focus of research and development work was on the SINA Communicator H, an innovative solution for highly secure telephony.

2.1.3. Capital Expenditure

Investment[1] totaled EUR 121.7 million in 2019, meaning that G+D invested more than in the previous year. Both Currency Technology and Mobile Security mainly invested in the renewal or optimization of production facilities. Mobile Security invested primarily in preparations for production of dual interface healthcare cards and in the leading technology for digital management of data and profiles in connectivity applications. Currency Technology mainly expanded the metallization capacity of the Louisenthal paper mill. Modernization of G+D headquarters in Munich continued in 2019. Investment in property, plant and equipment (including advance payments) stood at EUR 88.8 million overall. Investment in intangible assets (EUR 32.9 million) primarily relates to capitalized R&D expenses and capitalized software solutions.

Depreciation/amortization increased by EUR 4.6 million compared with the previous year.

Capital Expenditure and Depreciation/Amortization

EUR million	2019	2018	change (absolute)	Change in %
Group sales	2,447.0	2,246.0	201.0	8.9 %
Capital expenditure[2]	121.7	108.0	13.7	12.7 %
Depreciation/amortization[2]	107.3	102.7	4.6	4.5 %

[2] Capital expenditure and depreciation/amortization before IFRS 16 and write-downs in connection with restructuring costs

2.1.4. Changes to Accounting Due to First-Time Application of IFRS 16

The new IFRS 16 financial reporting standard (Leases) has been applied since January 1, 2019 and replaces the previous standard on leasing arrangements. IFRS 16 was introduced at G+D using the modified retrospective method. As such, comparative information has not been adjusted. This information will continue to be shown in accordance with the old accounting rules.

The aim of the new standard is to capture information relating to all financial obligations arising from leases. The most essential change of IFRS 16 compared with IAS 17 concerns accounting by the lessee. In the future, classification by the lessee as an operating or finance lease will no longer take place. Instead, the lessee must recognize a liability and a corresponding right-of-use asset at the time the lessor assigns the asset for use. The right of use must correspond to the present value of the future lease payments plus directly attributable costs. During the term of the lease, the lease liability is carried forward using financial mathematics, while the right-of-use asset is depreciated over time. G+D does not recognize a right-of-use asset and lease liability (option) for short-term and low-value leases.

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

The new standard has a significant impact on key financial indicators, such as EBITDA and free cash flow.

Effects of Applying IFRS 16

EUR million	
Balance sheet	
Assets	77.1
Property, plant and equipment	77.1
Liabilities	77.1
Retained earnings	–1.3
Lease liabilities	78.4
Consolidated income statement	
EBIT	0.6
Net interest income	–1.9
Net income	–1.3
EBITDA	21.4
Cash flow	
Cash flow from operating activities	19.4
Cash flow from financing activities	–19.4

2.1.5. Assets and Liabilities

Balance Sheet Summary (IFRS)

EUR million	2019	2018	Change (absolute)	2019 % of total assets
Assets	**2,756.4**	**2,492.4**	**264.1**	
Current assets	**1,775.3**	**1,654.4**	**120.9**	**64.4%**
thereof inventories	339.6	367.8	–28.2	12.3%
thereof current receivables	644.6	556.5	88.1	23.4%
thereof contract assets	175.9	134.6	41.4	6.4%
thereof cash and cash equivalents	439.3	429.3	10.1	15.9%
Non-current assets	**981.1**	**838.0**	**143.2**	**35.6%**
thereof property, plant and equipment	532.9	463.1	69.7	19.3%
thereof intangible assets	177.4	149.9	27.5	6.4%
thereof other non-current assets	270.8	224.9	45.9	9.8%
Liabilities and equity	**2,756.4**	**2,492.4**	**264.1**	
Current liabilities	**1,048.1**	**928.6**	**119.5**	**38.0%**
thereof current financial liabilities	62.7	63.2	–0.5	2.3%
thereof current lease liabilities	19.1	0.5	18.6	0.7%
thereof provisions	103.6	88.2	15.4	3.8%
thereof trade payables	432.2	373.5	58.7	15.7%
contract liabilities	240.9	236.6	4.3	8.7%
Non-current liabilities	**1,202.1**	**1,073.9**	**128.3**	**43.6%**
thereof non-current financial liabilities	418.6	444.0	–25.4	15.2%
thereof non-current lease liabilities	61.8	2.4	59.4	2.2%
thereof pensions and similar liabilities	668.9	586.3	82.6	24.3%
Equity	**506.2**	**489.9**	**16.3**	**18.4%**

Current assets increased by EUR 120.9 million compared with 2018. Prepayments of EUR 67 million made in the previous year in connection with the major project to build a cash center in Egypt were passed on to suppliers in 2019, as planned, leading to a rise in current receivables (EUR +88.1 million). Despite the higher volume of business, inventories and contract assets remained roughly the same as the previous year, at EUR 339.6 million and EUR 175.9 million, respectively. A detailed analysis of the change in cash and cash equivalents is provided in section 2.1.6.

As of December 31, 2019, non-current assets were above the previous year's level, at EUR 143.2 million. The increase in property, plant and equipment resulted from first-time application of IFRS 16 (EUR +77.1 million). Intangible assets increased in 2019. This was due to increased goodwill in connection with the acquisition of Transtrack International, the takeover of personalization services for Crédit Agricole, and higher expenses incurred for purchased and self-created software.

Other non-current assets rose in particular as a result of an increase in deferred tax assets from pensions. In addition, the non-current portion of customer receivables increased, especially at Currency Technology.

Current financial liabilities were comparable with the previous year. Current lease liabilities increased due to first-time application of IFRS 16.

Changes in provisions were partly attributable to increased provisions for onerous contracts. Warranty provisions increased due to the higher volume of business.

Accounts payable trade were higher at the end of the year due to increased sales, particularly in the last quarter.

G+D reduced current and non-current financial liabilities by EUR 25.9 million, primarily through scheduled repayments. Current and non-current lease liabilities rose by EUR 78.4 million due to first-time application of IFRS 16.

Provisions for pensions increased by EUR 82.6 million, primarily due to adjustment of the actuarial interest rate from 2.2 % to 1.4 %.

The equity ratio fell to 18.4% (previous year: 19.7 %). Application of IFRS 16 and changing the discount rate for pension provisions had a combined effect of –2.4 percentage points.

Average working capital intensity increased from 20.1 % to 22.3 % in 2019, mainly as a result of higher receivables.

ROCE based on (adjusted) EBIT was 1.8 percentage points above the level of the previous year at 12.7 %. The impact of applying IFRS 16 was –0.4 percentage points.

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

2.1.6. Financial Position

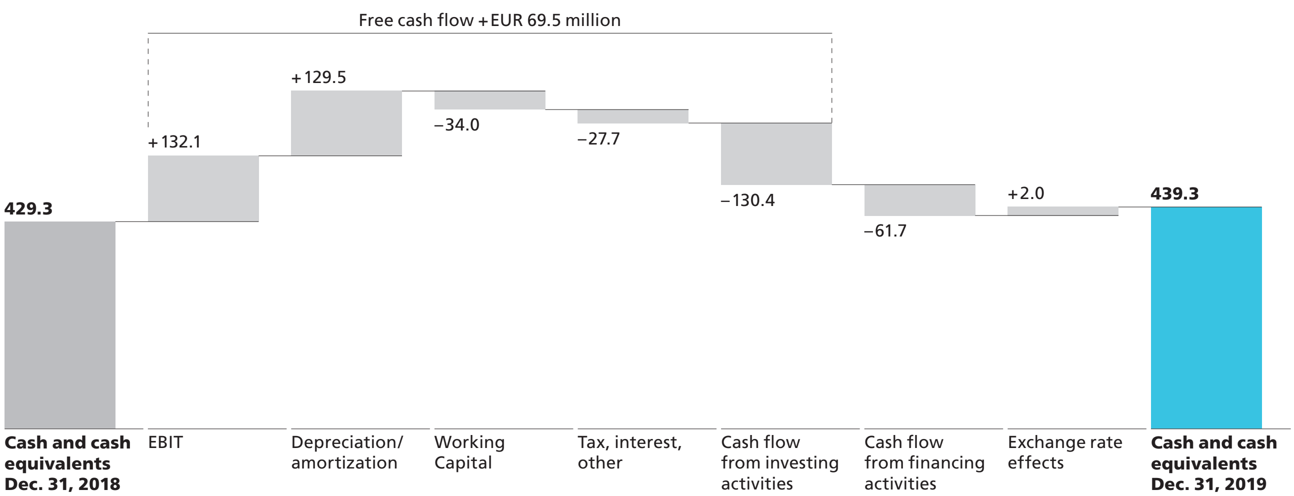
Free cash flow was strongly positive in 2019 at EUR 69.5 million and remained at the same high level as in the previous year, despite early payment receipts in 2018 from the major project in Egypt and delays in payment in 2019 from the South American market. In particular, higher EBIT resulted in a higher cash inflow compared with the previous year. Contrary effects resulted from the change in working capital, which was impacted by higher accounts receivable due to advance payments passed on to suppliers and by higher capital expenditure. The effect of IFRS 16 on free cash flow was EUR +19.4 million.

Cash flow from financing activities amounted to EUR -61.7 million and included scheduled repayments on existing long-term bank loans (EUR 18.3 million) and a dividend payment of EUR 10.6 million to shareholders. Please refer to note 13 of the consolidated financial statements for information on approved but unused credit lines and on the capital structure. IFRS 16 had an impact of EUR –19.4 million on cash flow from financing activities.

Cash and cash equivalents increased by EUR 10.0 million to EUR 439.3 million in 2019.

Change in Cash and Cash Equivalents

EUR million



2.1.7. Employees

The total number of employees increased slightly as of the reporting date of December 31, 2019. Employees were gained in particular through changes in the scope of consolidation (+25 employees), while the existing headcount increased most notably at Veridos and secunet due to business growth. Compared with the previous year, fewer people were employed in production and sales at Mobile Security. The number of administrative employees increased, particularly in Information Technology.

Number of Employees

FTE at reporting date	2019	2018	Change (absolute)	Change in %
Production	7,358	7,306	53	0.7 %
Sales	1,413	1,405	8	0.6 %
Research and development	1,151	1,146	5	0.4 %
Administration	1,588	1,533	55	3.6 %
Total	**11,510**	**11,389**	**120**	**1.1 %**

Personnel expenses increased to EUR 739.6 million (+7.7%) in the reporting year, partly due to restructuring measures at Mobile Security.

2.1.8. 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 at Giesecke+Devrient GmbH 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. With regard to the Supervisory Board, this quota had already been achieved as of December 31, 2019.

3. Opportunities and Risk Report

As a global enterprise, G+D is exposed to significant uncertainty and change. An intelligent integration of all elements of corporate governance allows G+D to

- seize opportunities and develop appropriate forward-looking strategies, including making decisions about its portfolio, and
- actively manage the risk involved and minimize its impact.

Balancing opportunities and risk safeguard the Group's business development , optimize financial performance, and increase the enterprise value sustainably.

Corporate Governance

Statute/Rules of procedure/Guideline

Compliance management ← Internal control system → Risk management

↓

Performance management

Internal audit

Define targets → Evaluate risks → Take measures → Monitor systems

Management of opportunities and risks is an ongoing task. A risk management system is in place to identify, assess, and manage potential risks. Risks associated with business operations are subject to continuous monitoring, including assessing the impact on performance. Active risk management is therefore an integral part of performance management, with its various strategy, planning, and controlling mechanisms.

The purpose of the compliance management system is to maintain customer confidence in G+D. The Group-wide compliance organization ensures that every employee and all members of the Management Board, Supervisory Board, and Advisory Board within the G+D Group are familiar with compliance requirements and act accordingly. As part of compliance assessments, risks relating to corruption and antitrust law violations are reviewed and assessed across all Group entities.

The Compliance Offices report on a quarterly basis on activities in the core compliance areas of prevention, detection, and response. Management is informed of the preventive measures that are in place to ensure compliance within the organization. Any (potential) compliance violations and the countermeasures taken are also reported, thereby enabling management to counter any undesirable developments. The Management Board reports annually to the Supervisory Board.

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.

As part of the internal control system, potential gaps in the control system are identified and closed. Monitoring of compliance with legal requirements and internal corporate guidelines is also ensured. The accounting-related internal control system includes the following key elements:

– the Group accounting policy including details of accounting practices and valuation methods,
– the definition of responsibilities for preparing the annual financial statements, consolidated financial statements, and reporting packages,
– application of the dual-control principle for material matters, and
– plausibility checks.

The internal control system thus operates as a risk-avoiding mechanism.

Notwithstanding the assessment of the effectiveness of the internal control system, there are inherent restrictions on the effectiveness of internal control systems. No control system, regardless of an effective assessment, is capable of preventing or detecting all incorrect information.

On behalf of the Management Board, the Group's auditing department (Corporate Auditing) regularly reviews the implementation and effectiveness of Group management and monitoring processes. The focus is on risk management, the internal control system, legal regulations, and internal corporate guidelines.

All elements of the corporate governance system operate independently and are coordinated centrally by the Group's Management Board. Individual responsibilities are clearly defined.

3.1. Risk Management System

The following points have been defined as key elements of an effective and efficient risk management system:

– The focus is on early detection of risks.
– Risks are systematically identified and assessed.
– Where possible, a conscious decision about the acceptance of risks is taken.
– Risks and actions are assigned to owners.
– Continuous monitoring and reporting of risks and actions is ensured throughout their entire lifecycle.

Operational and financial risks are dealt with on an ongoing basis whenever necessary in the course of day-to-day business management. These risks are assessed during the quarterly performance reviews. In contrast, strategic risks are subject to an annual review as part of the strategy process. Compliance risks are managed by the compliance organization and are subject to separate reporting, including notification of Corporate Controlling in the event of financial implications. The information below primarily relates to operational and financial risks.

G+D's risk management system is based on a comprehensive, interactive, and management-oriented enterprise risk management approach that is integrated into the global organizational structure.
Risk management is organized locally but managed centrally by Corporate Controlling.

Every employee has a duty to examine his or her immediate environment for possible risks and report any risks discovered. With support from the Local Risk Officer in each Group company and drawing on other functions (e.g. Legal, Controlling, Patents), risks are assessed, and risk/measure owners defined. Risks are monitored by the business sectors and Corporate Controlling. The Management Board reports to the Supervisory Board on a quarterly basis.

The key developments in risk management in 2019 were:

- The launch of initiatives for early detection of risk.
- The risk categories were redefined and broken down in more detail. This allows an improved reflection of current market conditions and the increasing number of disruptive business models, while also enabling easier identification of overarching measures.
- Due to their growing importance for the Group, major projects are now treated as a separate risk category within the enterprise risk management system and within reporting. Risk premiums were applied when calculating the project costs to ensure that comprehensive financial provision is in place. Major projects nonetheless remain subject to ongoing monitoring as part of the risk management process.
- For each major project the overall risk is recorded in the risk register by assessing and aggregating the individual risks accordingly.
- Security risks were reported in aggregated form in the past, whereas in this reporting year they are presented as individual risks.

The various initiatives are aiming at improving risk awareness and boosting transparency. Compared with last year, they also have the effect of increasing the number of risks and the overall risk value in mathematical terms without the risk profile resulting from the market and type of business having changed. The number of risks with low probability, for which no provision needs to be made, has also increased. A direct comparison with the previous year is therefore not meaningful.

3.2. General Risk Analysis and Assessment

The risks identified are evaluated using the gross and net methods. The gross impact is defined as the potential damage that might result if no measures were in place to mitigate the risk. The net impact is the risk remaining when mitigating measures are taken into account. Appropriate measures have a positive impact on the possible damage or on the probability of occurrence associated with the risk. The likelihood of occurrence is multiplied by the net impact to obtain the risk value.

Risk assessment	Net impact = [gross impact] – [measure]
	Risk value = [net impact] × [likelihood of occurrence]

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

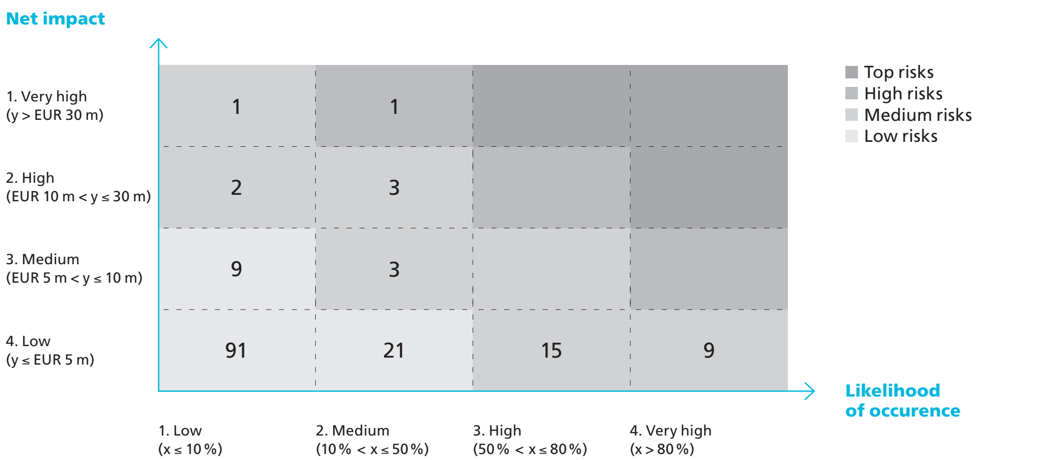
Category	**Description**	**Likelihood of occurrence**
Very high	Expected to occur	$x > 80\,\%$
High	Probable	$50\,\% < x \leq 80\,\%$
Medium	Not probable	$10\,\% < x \leq 50\,\%$
Low	Possible, but largely theoretical	$x \leq 10\,\%$

The individual risks are assigned to predefined risk categories (see 3.3) and the risk values summarized at the level of the business sector and Group. Overall risk is calculated by simple addition of the individual risk values. Due to this approach, the totals for the business sectors and for the Group are largely theoretical since simultaneous occurrence of all individual risks can be virtually ruled out due to the different correlations. Aggregate assessment does offer the advantage that trends are easier to detect, however.

3.3. Summarized Risk Report

As of December 31, 2019, 155 risks had been reported to the Management Board and the Supervisory Board via the risk report. These were evaluated according to net impact and probability of occurrence, as shown in the matrix below:

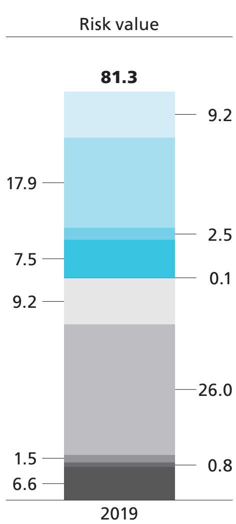
Risk Categories



No risk was assessed as a "Top risk". One risk was allocated to the "High risks" category with a net impact of more than EUR 30 million and an expected likelihood of occurrence of between 10 % and 50 %. This refers to the aggregated net impact as sum of the individual risks associated with a major project. For each major project, risk premiums were taken into account when calculating the project costs, thereby ensuring that comprehensive risk provisioning is in place.

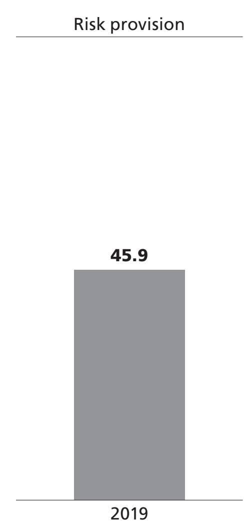
Risk Value and Risk Provision

EUR million



in Mio. EUR

	Risk value	Risk provision
Value creation risks	9.2	7.8
Tax and customs risks	17.9	2.2
Security risks	2.5	0.0
Product development risks	7.5	1.7
Political risks	0.1	0.0
Market risks	9.2	0.0
Major project risks	26.0	26.0
Legal risks	1.5	2.1
IT risks	0.8	0.8
Bad debt risks	6.6	5.2



The overall risk value for the Group is EUR 81 million. Simultaneous occurrence of all individual risks can be virtually ruled out due to the different correlations.

The aggregated risks arising from major projects are assessed as having the highest risk values, followed by global tax risks after organizational changes in the Group in 2017, market risks, and risks arising from value creation activities.

To manage this risk in financial terms, the Group has made provisions and allowances on receivables or applied corresponding calculation surcharges to major projects totaling EUR 46 million.

These risks have been taken into consideration in the 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 likelihood of occurrence do occur, this would have a negative impact on the 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 well equipped to meet the challenges posed by these risks in 2020 and to leverage the opportunities that arise.

Coronavirus has been spreading since the beginning of 2020, presenting both health risks and financial risks. The continuing spread of the virus has caused the temporary shutdown of production and management locations, which could lead to supply shortages that cannot be made good. There is also a risk that operational targets may not be met.

3.4. Risks and Opportunities by Category

G+D divides risks into political risks, product development risks, value creation risks, security risks, IT risks, bad debt risks, market risks, tax and customs risks, legal risks, and major project risks.

Political risks
Political uncertainty in Europe and Latin America and economic realignment in the US are the dominant features of the current landscape. Political decisions may result in the introduction of further trade barriers at the international level. In particular, the Brexit negotiations could have severe economic consequences. Contracts with customers could be impacted if shortages make it impossible for the parties to fulfill their contractual obligations.

G+D counters this risk by continually monitoring economic and political developments in key markets. Production and capital expenditure are managed centrally, enabling a rapid response in the event of any economic slowdown. At the same time, G+D benefits from having a local presence. The strong regional focus of the sales organization allows G+D to recognize and respond to changing customer requirements at an early stage. G+D’s proximity to its customers gives it an advantage over other companies, with fast response times allowing it to seize emerging business opportunities as they arise.

Product development risks
G+D offers its customers high-quality products and solutions. Development of new product features is based on market analysis. Misinterpretation of market analysis or delays in introducing products could result in higher costs and have an adverse effect on demand. In product development, timely implementation of preventive measures is especially important in order to meet the identified customer requirements and avoid substantial additional costs during the subsequent commercialization phase. In addition to these risks, intellectual property rights must be protected, licensed, and acquired as part of R&D activities. G+D could be accused by third parties of breaching their intellectual property rights. This could result in payment of compensation for damages and a ban on using certain technologies. The Group’s patent department works with external law firms to register and monitor patents.

Maintaining an extensive vertical and horizontal portfolio of products and solutions allows the Group to diversify risk and take advantage of corresponding market opportunities. G+D is a leader in the fields of payment, connectivity, identity, and digital infrastructures, all of which have huge market potential. If these trends gain in importance over the short term in the industry, the public sector, or the private sphere and the associated change processes take place more quickly, opportunities for solutions provided by G+D could emerge, leading to additional sales and earnings growth.

Value creation risks
At G+D, supply chain management is handled individually in each of the business sectors. Any disruptions, such as delivery delays on the supplier side or an increase in prices of 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.

Undetected quality problems 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. 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.

Proper utilization of production capacity is essential to success. Additional capacity must be maintained to safeguard continuity of production. G+D seeks to ensure optimum machine utilization and back-up capacity by means of detailed production planning and management. 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 such issues. Capital expenditure is managed by the business sectors at G+D and closely monitored by the project controlling team.

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 heightened 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. Alongside product innovation, process innovation boosts efficiency and can create competitive advantages. Increased vertical and horizontal expansion of value-adding activities offers additional opportunities. In particular, global sourcing contributes to reduced costs. Dependence on certain suppliers is reduced and access to special resources is secured. This could strengthen G+D's competitive position and have a positive impact on net assets, the financial position, and results of operations, allowing an upward revision of existing forecasts.

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. Measures for attracting and developing qualified staff and boosting retention enable G+D to secure the necessary human capital as an important production factor. Any knowledge advantage gained could be a crucial competitive factor. In addition, information is the basis for all business decisions, thereby ensuring the continued existence of G+D.

Security risks
G+D is not completely immune to cyber security risks, whether in the form of economic or industrial espionage, cyber attacks, or common non-specific attacks, such as ransomware. Specific attacks are carried out by certain countries, potential competitors, or a mix of these (countries or criminal organizations acting on behalf of, or in support of, competitors). Non-specific (opportunistic) attacks are mainly carried out by actors associated with organized crime.

These scenarios could lead to unintentional disclosure of confidential information or intellectual property, product damage (e.g. through loss of IT system integrity), supply difficulties as a result of 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, products, materials, or other assets.

G+D has taken a range of preventive measures to address these risks. They include various technical IT security measures, organizational and procedural security measures (e.g. identity management, monitoring of IT processes, staff security measures), physical security measures (e.g. entry and access control systems, camera and alarm systems, site security), and naturally also raising the awareness of all employees through regular training sessions on the various security issues.

G+D has thus implemented a security and control system that makes it possible to identify and respond promptly to risk.

Through stringent security management, G+D has systematically developed a robust culture of security and prevention. This internal competence could enable G+D to set itself apart from other companies with lower security levels and allow it to continue to operate as a trusted business partner.

IT risks
The availability of internal IT systems is essential for G+D's ability to do business. In the age of digitalization, IT infrastructure and IT applications are becoming ever more important because all the company's business activities are based on IT systems. This dependence entails huge potential for damage. G+D counters these risks by continually adapting its IT systems to changing requirements. In addition to availability, legally compliant use of licenses is also a possible risk area. Active license management is designed to counter this risk.

As digitalization progresses, new digital business segments are being created in the IT area. Considerable sales potential could be opened up through the development and provision of digital solutions as well as in the field of connectivity. This could result in new sales opportunities for G+D.

Bad debt risks
Like all market players, G+D is subject to typical liquidity risk and counterparty credit risk. The current uncertain political situation in South America could affect fulfillment of contracts by each side. The Group primarily manages these risks as part of its ongoing business and financing activities. The G+D Group and its operating subsidiaries are subject to written policies issued by G+D GmbH and are managed accordingly. Bad debt risks form part of the risk reports submitted to the Management Board and are also included in regular reporting to the Supervisory and Advisory Boards.

If, contrary to expectations, it becomes possible for a customer to settle the outstanding receivables, any derecognition would be reversed. This would positively impact net assets, the financial position, and results of operations by the corresponding amount.

Market risks
G+D is subject to market risks stemming from changes in exchange rates, interest rates, and share prices. If necessary, derivative financial instruments are used in relation to foreign currency and interest rates to hedge underlying transactions. The aim of these financial instruments is to increase planning security. 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. A positive change in interest rates or exchange rates could result in higher financial income.

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. In a favorable capital market environment, opportunities may arise that have a positive impact on G+D's assets.

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

Risk associated with an impairment of goodwill at the Group level is subsumed under market risks. Goodwill shown in the consolidated balance sheet is tested annually for impairment.

Opportunities may arise in general from changed market circumstances. G+D could achieve higher sales volumes through flexible sales and production processes as well as through a focus on internal skills. The company's own market position could lead to higher pricing.

Tax and customs risks
G+D's business activities are subject to the usual risks associated with international operations. These include country-specific tax regimes, possible tax obstacles that make business more difficult, and import/export regulations. The emergence of trade barriers in the form of customs duties may lead to negative volume and cost effects, especially with regard to the European internal market. 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 in 2017 and the associated carve-out and establishment of legally independent local companies increased the potential risks. Where possible, the risk position was substantially reduced by obtaining binding information from the relevant local tax authorities.

Legal risks
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. Risks arising from business relationships also include possible violation of export control law or can result from warranty periods and warranty conditions.

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

With regard to data protection, the requirements of the GDPR must be met. Breaches of data protection law can lead to claims for damages against G+D. Employees receive regular awareness training on this subject.

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 through measures adopted as part of our corporate responsibility (CR) activities, which include occupational health and safety management. For more details, see our progress report for the UN Global Compact (https://www.gi-de.com/en/de/g-d-group/values/). Opportunities based on a positive reputation in environmental matters could boost the attractiveness of G+D as a business partner and employer. This could have positive effects on the ability to achieve financial indicators and on human capital.

Major project risks
G+D is responsible for a number of major projects with high sales potential and lengthy implementation periods spanning several years. These projects have an elevated risk structure, which is taken into account in the business models 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 and reduced through continuous risk management.

An increase in the number of major projects in the portfolio could create a long-term order backlog and provide access to new markets. A positive impact on brand perception is another potential benefit.

4. Overall Assessment of Economic Situation and Forecast

4.1. Overall Assessment of Economic Situation

In fiscal year 2019, G+D achieved record sales and significantly boosted earnings compared with the previous year. All business sectors contributed to this sales growth. In particular, service and solutions business and the expansion of digital business contributed to growth.

Currency Technology significantly exceeded its predicted sales growth compared with the previous year. The Currency Management Solutions division in particular made good progress in fiscal year 2019. A large portion of this growth was attributable to higher sales in the high-speed processing field, accompanied by a further increase in service and solutions business. The Banknote Solutions division was able to maintain its excellent market position in all business areas.

Mobile Security improved slightly on the previous year's level of sales and significantly exceeded expectations. Strong growth was generated in the financial services sector in particular.

Solutions and products developed by Veridos were very well received by customers. As expected, it once again succeeded in boosting sales in 2019. Veridos' growth trajectory is underpinned by a buoyant order situation.

2019 was another record year for secunet, with expectations being significantly exceeded. In particular, the roll-out of the health connector in medical practices across Germany contributed to its strong business performance. The business sector raised its sales and earnings forecasts again in December.

EBIT and EBITDA were consistently improved, as planned, and profitability of the business sectors was more balanced than in the previous year. The predicted ROCE was exceeded.

G+D also reduced its financial liabilities. The balance sheet structure offers good potential for investment and financing. Good operational performance is also reflected in free cash flow. Despite increased investment and higher than expected working capital intensity, free cash flow was strongly positive and exceeded expectations.

4.2. Forecast

G+D started the current fiscal year with a robust order backlog of EUR 1.5 billion and a forward order book covering a period of 7.4 months.

Assuming there are no significant changes in the expected exchange rates, G+D aims to maintain the high level of sales seen in the reporting year also in 2020.

Currency Technology continues to expect stable business.

Mobile Security will fall slightly short of the sales seen in the previous year. However, a sustained improvement in earnings is anticipated due to above-average growth in the solutions business and a focus on high-quality card products on the hardware side. In order to better manage its highly disparate business activities, the business sector was divided into the Secure Transaction + Services (STS) and Trusted Connected Devices (TCD) divisions at the beginning of 2020. STS covers bank, ID, and healthcare cards as well as tokens and the associated services. TCD includes IoT and digital solutions, comprising eSIM management, eOS software licensing, and digital identities, as well as the traditional SIM market.

Following a year of extremely strong growth in 2019, Veridos expects lower but still significant growth in 2020.

secunet expects sales to be slightly down in 2020 compared with the exceptionally successful previous year. The lack of the one-off sales associated with the market launch of the health connector will be largely made up for by other areas.

G+D expects to see neutral financial income in 2020, as high returns from securities cannot currently be assumed. EBIT and EBITDA are expected to improve slightly overall compared with the previous year.

In 2020, working capital intensity is expected to be slightly above the level of the reporting year.

Investment activity increased in 2019. This trend will continue in 2020.

Free cash flow will be firmly positive.

Across all operational areas, G+D intends to make targeted additions to employee headcount during 2020, meaning that a modest increase is expected at the Group level.

With slightly improved capital employed, ROCE is expected to remain around the same as in the previous year.

This forecast is subject to enhanced uncertainty due to the coronavirus pandemic that broke out at the beginning of 2020. The continuing spread of the virus has caused the temporary shutdown of production and management locations, which could lead to supply shortages that cannot be made good. There is also a risk that operational targets may not be met.

Actual results may, of course, vary from expected performance.

CONSOLIDATED FINANCIAL STATEMENTS

AS OF DECEMBER 31, 2019

Independent Auditor's Report

To Giesecke+Devrient Gesellschaft mit beschränkter Haftung, Munich

Opinions

We have audited the consolidated financial statements of Giesecke+Devrient Gesellschaft mit beschränkter Haftung, Munich, and its subsidiaries (the Group), which comprise the consolidated balance sheet as of December 31, 2019, and the consolidated income statement, the consolidated statement of comprehensive income, consolidated statement of changes in equity and consolidated statement of cash flows for the financial year from January 1 to December 31, 2019, and notes to the consolidated financial statements, including a summary of significant accounting policies. In addition, we have audited the group management report of Giesecke+Devrient Gesellschaft mit beschränkter Haftung for the financial year from January 1 to December 31, 2019. In accordance with German legal requirements, we have not audited the content of those components of the group management report specified in the "Other Information" section of our auditor's report.

In our opinion, on the basis of the knowledge obtained in the audit,
- the accompanying consolidated financial statements comply, in all material respects, with the IFRSs as adopted by the EU, and the additional requirements of German commercial law pursuant to Section 315e (1) HGB [Handelsgesetzbuch: German Commercial Code] and, in compliance with these requirements, give a true and fair view of the assets, liabilities and financial position of the Group as of December 31, 2019, and of its financial performance for the financial year from January 1 to December 31, 2019, 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 those components of the group management report specified in the "Other Information" section of the auditor's report.

Pursuant to Section 322 (3) sentence 1 HGB, we declare that our audit has not led to any reservations relating to the legal compliance of the consolidated financial statements and of the group management report.

Basis for the Opinions

We conducted our audit of the consolidated financial statements and of the group management report in accordance with Section 317 HGB and the German Generally Accepted Standards of 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 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 and/or the Supervisory Board are/is responsible for the other information. The other information comprises the following components of the group management report, whose content was not audited:
- the Group's corporate governance statement included in Section 2.1.8. of the group management report, and
- the progress report for the UN Global Compact referred to in the group management report.

The other information also includes the remaining parts of the annual report.

The other information does not include the consolidated financial statements, the group management report information audited for content and our auditor's report thereon.

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, consider whether the other information

- is materially consistent with the consolidated financial statements, with the group management report information audited for content 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 IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to Section 315e (1) HGB and that the consolidated financial statements, in compliance with these requirements, give a true and fair view of the assets, liabilities, financial position, and financial performance of the Group. In addition, management is responsible for such internal control as they have determined necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, 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 unless there is an intention to liquidate the Group or to cease operations, or there is no realistic alternative but to do so.

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 overseeing the Group's financial reporting process for the preparation of the consolidated financial statements and of 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 the 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 such 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 IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to Section 315e (1) HGB.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express 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 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, March 23, 2020

KPMG AG
Wirtschaftsprüfungsgesellschaft

[Original German version signed by:]

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

Consolidated Income Statement

for the Years Ended December 31, 2019 and 2018

EUR million	Note	2019	2018
Net sales	15	2,447.0	2,246.0
Cost of goods sold		(1,802.4)	(1,648.7)
Gross profit		**644.6**	**597.3**
Selling expenses		(239.7)	(224.0)
Research and development expenses		(114.5)	(113.3)
General and administrative expenses		(169.3)	(155.4)
Other operating income/(expenses), net		(1.5)	11.4
Operating profit		**119.6**	**116.0**
Share in earnings from equity investments	6	4.8	1.2
Other financial income/(expenses), net	17	7.7	(14.7)
Earnings before interest and income taxes		**132.1**	**102.5**
Interest income	18	2.1	2.0
Interest expense	18	(23.8)	(19.0)
Earnings before income taxes		**110.4**	**85.5**
Income taxes	19	(30.0)	(35.3)
Net income		**80.4**	**50.2**
thereof apportioned to non-controlling interests		10.2	7.1
thereof apportioned to the shareholders of Giesecke+Devrient GmbH		70.2	43.1
		80.4	**50.2**

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, 2019 and 2018

EUR million	2019	2018
Net income	**80.4**	**50.2**
Other comprehensive income		
Items that will never be reclassified to the income statement		
Actuarial gains and losses	(75.8)	14.5
Deferred taxes on actuarial gains and losses	22.1	(4.6)
	(53.7)	**9.9**
Items that are or may be reclassified to the income statement		
Currency effects from the translation of foreign operations	5.4	(3.7)
Effective part of fair value changes in cash flow hedges	–	0.1
Share of income and expenses recognized directly in equity resulting from the use of the equity method of accounting	0.2	–
	5.6	**(3.6)**
Other comprehensive income, net of tax	**(48.1)**	**6.3**
Total comprehensive income	**32.3**	**56.5**
thereof apportioned to non-controlling interests	8.7	7.6
thereof apportioned to the shareholders of Giesecke+Devrient GmbH	23.6	48.9
	32.3	**56.5**

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

Consolidated Balance Sheet

as of December 31, 2019 and 2018

EUR million	Note	Dec. 31, 2019	Dec. 31, 2018
ASSETS			
Current assets			
Cash and cash equivalents		439.3	429.3
Financial assets	2	87.7	78.4
Accounts receivable trade and other receivables, net	3	644.6	556.5
Inventories, net	4	339.6	367.8
Income taxes receivable		33.7	30.5
Non-current assets held for sale	7, 8	6.5	7.4
Other current assets	5	48.0	49.9
Contract assets	23	175.9	134.6
Total current assets		**1,775.3**	**1,654.4**
Non-current assets			
Investments accounted for under the equity method	6	16.2	12.6
Investments in other related parties	6	8.9	9.0
Financial assets	2	23.7	23.2
Accounts receivable trade and other receivables, net	3	20.4	7.6
Intangible assets	7	177.4	149.9
Property, plant and equipment	8	532.9	463.1
Deferred tax assets	19	183.0	152.2
Income taxes receivable		1.9	1.7
Other non-current assets		5.6	6.3
Contract assets	23	11.1	12.4
Total non-current assets		**981.1**	**838.0**
Total assets		**2,756.4**	**2,492.4**

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

EUR million	Note	Dec. 31, 2019	Dec. 31, 2018
LIABILITIES AND EQUITY			
Current liabilities			
Accounts payable trade and other accounts payable	10	432.2	373.5
Provisions	11	103.6	88.2
Financial liabilities	13	62.7	63.2
Lease obligations	9	19.1	0.5
Accrual for income taxes and income taxes payable		42.1	37.4
Other current liabilities	12	147.5	129.2
Contract liabilities	23	240.9	236.6
Total current liabilities		**1,048.1**	**928.6**
Non-current liabilities			
Provisions	11	12.6	11.4
Financial liabilities	13	418.6	444.0
Lease obligations	9	61.8	2.4
Pensions and related liabilities	14	668.9	586.3
Deferred tax liabilities	19	10.6	11.9
Other non-current liabilities		10.9	8.3
Contract liabilities	23	18.7	9.6
Total non-current liabilities		**1,202.1**	**1,073.9**
Equity			
Capital stock	20	25.8	25.8
Additional paid-in capital	20	29.5	29.5
Retained earnings	20	455.9	448.3
Accumulated income and expenses recognized directly in equity		12.5	7.1
Treasury stock	20	(60.1)	(60.1)
Non-controlling interests		42.6	39.3
Total equity		**506.2**	**489.9**
Total liabilities and equity		**2,756.4**	**2,492.4**

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, 2019 and 2018

EUR million

	Capital stock	Additional paid-in capital	Retained earnings
Balance as of January 1, 2018	**25.8**	**29.5**	**419.6**
Net income	–	–	43.1
Other comprehensive income	–	–	9.7
Total comprehensive income	**–**	**–**	**52.8**
Additions due to changes in consolidation structure	–	–	–
Payments apportioned to non-controlling interests	–	–	–
Dividends paid	–	–	(24.1)
Balance as of December 31, 2018	**25.8**	**29.5**	**448.3**
Net income	–	–	70,2
Other comprehensive income	–	–	(52.0)
Total comprehensive income	**–**	**–**	**18.2**
Additions due to changes in consolidation structure	–	–	–
Dividends paid	–	–	(10.6)
Balance as of December 31, 2019	**25.8**	**29.5**	**455.9**

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

	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
	11.1	**(0.1)**	**(60.1)**	**425.8**	**36.1**	**461.9**
	–	–	–	43.1	7.1	50.2
	(4.0)	0.1	–	5.8	0.5	6.3
	(4.0)	**0.1**	**–**	**48.9**	**7.6**	**56.5**
	–	–	–	–	1.8	1.8
	–	–	–	–	0.5	0.5
	–	–	–	(24.1)	(6.7)	(30.8)
	7.1	**–**	**(60.1)**	**450.6**	**39.3**	**489.9**
	–	–	–	70,2	10,2	80,4
	5.4	–	–	(46.6)	(1.5)	(48.1)
	5.4	**–**	**–**	**23.6**	**8.7**	**32.3**
	–	–	–	–	0.2	0.2
	–	–	–	(10.6)	(5.6)	(16.2)
	12.5	**–**	**(60.1)**	**463.6**	**42.6**	**506.2**

Consolidated Statement of Cash Flows

for the Years Ended December 31, 2019 and 2018

EUR million	2019	2018
Cash flows from operating activities		
Earnings before interest and income taxes	132.1	102.5
Adjustments to reconcile earnings before interest and income taxes to cash provided by operations		
Depreciation, amortization and impairment/recoveries	129.5	118.2
(Gain)/loss on sale and disposal of intangible assets and property, plant and equipment	2.1	(0.7)
(Gain)/loss on the purchase of shares in associated companies and joint ventures	0.1	(0.7)
Undistributed earnings in associated companies and joint ventures excluding dividend payments	(4.8)	0.3
Dividends received from associated companies and joint ventures	2.1	2.5
Change in operating assets and liabilities		
(Increase)/decrease in investments in trading securities	(7.0)	12.4
(Increase)/decrease in accounts receivable trade and other accounts receivable, net	(95.4)	(59.2)
(Increase)/decrease in prepaid expenses and other assets	2.1	(11.5)
(Increase)/decrease in contract assets	(39.5)	(44.0)
(Increase)/decrease in non-current assets held for sale	0.9	0.2
(Increase)/decrease in inventories, net	31.7	(36.3)
Increase/(decrease) in accounts payable trade and other accounts payable	56.9	79.5
Increase/(decrease) in provisions	15.9	(9.0)
Increase/(decrease) in pensions and related liabilities	(5.8)	(5.3)
Increase/(decrease) in other liabilities	17.9	1.9
Increase/(decrease) in contract liabilities	11.9	76.7
Income taxes paid, net	(41.8)	(34.2)
Interest received	2.1	2.0
Interest paid	(11.1)	(6.7)
Net cash provided by operating activities	**199.9**	**188.6**
Cash flows from investing activities		
(Increase)/decrease in short-term investments	(0.1)	(0.1)
Additions to and prepayments on intangible assets	(32.6)	(29.2)
Additions to and prepayments on property, plant and equipment	(77.7)	(79.2)
Capital increase in and founding of associated companies and joint ventures	(0.7)	–
Capital increase in investments in related companies	(0.7)	(9.0)
Acquisitions, net of cash acquired	(21.5)	(7.3)
Proceeds from the sale/purchase of available-for-sale securities	0.2	(0.9)
Payments received on loans to third parties	0.5	–
Proceeds from sale of investments	0.8	–
Proceeds from sale of intangible assets	0.2	0.1
Proceeds from sale of property, plant and equipment	1.2	6.1
Proceeds from sale of equity investments	–	2.5
Net cash used in investing activities	**(130.4)**	**(117.0)**
Free Cashflow[1]	**69.5**	**71.6**

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

In accordance with the IFRS 16 transition method chosen by G+D, previous periods are not adjusted to the new accounting and valuation policies. Refer to section 2.1.4 of the management report "Changes in accounting policies due to the first-time application of IFRS 16".

EUR million	2019	2018
Cash flows from financing activities		
Investment in subsidiaries under common control	(0.7)	–
Proceeds from issuance of long-term debt	11.4	210.3
Proceeds from issuance of long-term debt from the Giesecke+Devrient Foundation	–	0.3
Proceeds from issuance of short-term debt from MC Familiengesellschaft mbH	–	15.5
Repayment of long-term debt	(19.8)	(29.3)
Repayment of short-term debt from MC Familiengesellschaft mbH	(15.5)	(5.4)
Payments on lease obligations	(19.9)	(3.4)
Net (decrease)/increase in short-term debt and borrowings	(1.0)	(10.0)
Dividends paid to shareholders	(10.6)	(24.1)
Cash received from non-controlling interests	–	0.5
Dividends paid to non-controlling interests	(5.6)	(6.7)
Net cash used in/provided by financing activities	**(61.7)**	**147.7**
Effect of exchange rates on cash and cash equivalents	2.3	(0.8)
Net increase/(decrease) in cash and cash equivalents	10.1	218.5
Cash and cash equivalents at beginning of the year	429.3	210.7
Cash and cash equivalents at end of the year	**439.3**	**429.3**

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, 2019 and 2018

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, 2019, G+D had subsidiaries in 33 countries and 11,510 employees worldwide, including 7,281 outside Germany.

The consolidated financial statements were approved by the Management Board on March 23, 2020.

B Basis of Presentation

The consolidated financial statements as of December 31, 2019 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, 2019.

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 20 domestic and 56 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. As Giesecke+Devrient has more than half of the voting rights in Veridos Matsoukis S.A. Security Printing, Athens and in E-SEEK Inc., San Diego at each level, 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, seven 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, 2020 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"

IFRIC 23 clarifies the application of the recognition and measurement under IAS 12 if there is uncertainty regarding the income tax treatment. Estimates and assumptions must be made for recognition and measurement, e.g. whether an assessment is made independently or together with other uncertainties, whether a probable or expected value is used for the uncertainty and whether changes have occurred compared to the previous period. The risk of detection is irrelevant for the accounting of uncertain balance sheet items. The accounting is based on the assumption that the tax authorities are investigating the matter in question and that they have all the relevant information.

For G+D, this has no material impact on the consolidated financial statements.

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, 2019		Rates – December 31, 2018	
	Average	Closing	Average	Closing
US dollar – USD	1.1196	1.1189	1.1815	1.1454
Australian dollar – AUD	1.6106	1.5992	1.5799	1.6215
British pound – GBP	0.8773	0.8521	0.8847	0.9027
Canadian dollar – CAD	1.4857	1.4621	1.5302	1.5602
Chinese renminbi – RMB	7.7340	7.8175	7.8074	7.8778
Swedish krona – SEK	10.5858	10.4400	10.2567	10.2773

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, according with 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. 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).

G+D has designated the financial assets to the business model “Other” and therefore measures them at fair value through profit or loss. Investment funds classified as held-to-collect and sell do not meet the cash flow criteria and are therefore measured at fair value through profit or loss.

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. In addition, equity instruments also include investments in other related parties. These include the investments in IDnow GmbH with 7.2 % of the shares, Verimi GmbH with 5.92 % of the shares and Brighter AI Technologies GmbH with 4.85 % of the shares. These investments are measured at fair value through other comprehensive income (FVOCI) and are shown in a separate line item in the balance sheet “Investments in other related parties”. 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 EUR 8.0 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 of financial liabilities and accounts for them separately in accordance with the provisions of IFRS 9 Financial Instruments: Recognition and Measurement. Financial derivatives that are embedded in financial contracts of financial assets are recognized at fair value. 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.

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. 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.

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 in accordance with the regulations of IFRS 16.

IFRS 16 defines a lease as a contract that conveys the right to control the use of an identified asset for a period of time in exchange for consideration. The contract conveys the right to control the use of an identified asset if the lessee has the right to obtain substantially all of the economic benefits from the use of the identified asset and has the right to direct the use of that asset.

Applying IFRS 16 for the first time, as a lessee the group records right-of-use assets and lease obligations in the amount of the present value of the payment obligations for all identified leases. According to the new regulations of IFRS 16 the group does not distinct between operating and finance leases anymore. No right-of-use assets or lease obligations are recorded in the balance sheet for short-term leases with a lease term of up to twelve months as well as leases for which the underlying asset is of low value (the original price of the underlying asset is below 5,000 EUR). The lease payments from these contracts are recorded as expenses in the amount of the monthly lease payments. The lease components of a contract are accounted for separately from the non-lease components on the basis of the stand-alone selling price.

Applying IFRS 16 for the first time, the principal portion of lease payments on lease obligations is shown in the cash flows from financing activities. Corresponding interest payments as well as lease payments for short-term leases and leases for which the underlying asset is of low value are still recorded in the cash flows from operating activities.

Lease payments are discounted using the interest rate implicit in the lease. If that rate cannot be readily determined, the group's incremental borrowing rate is used for discounting.

At initial recognition right-of-use assets are measured at cost. The cost of the right-of-use assets comprise the lease liabilities as well as any lease payments made at or before the commencement date, initial direct costs and asset retirement obligations, less lease incentives received.

The subsequent measurement is carried out at amortized cost, deducting accumulated depreciation and accumulated impairment losses, in accordance with the cost model. Right-of-use assets are depreciated on a straight-line basis over the term of the lease.

If the lessee has a favorable extension option so that it is reasonably certain that the lessee will exercise that option the lease payments from the extension period are to be considered in the measurement of the lease obligation.

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

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 reliable 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 units, 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.

S Change in Accounting and Valuation Policies

IFRS 16 Leases

The group adopted IFRS 16 effective January 1, 2019.

The first-time application of IFRS 16 was conducted in accordance with the transitional regulations of IFRS 16 using the modified retrospective approach. In accordance with that approach, the comparative figures for fiscal year 2018 were not adjusted but reported according to IAS 17 and its corresponding interpretations. The details to the changes in accounting policies are as follows.

At first-time application of IFRS 16 G+D made use of the practical expedient to apply IFRS 16 only to contracts that were previously identified as leases applying IAS 17 and IFRIC 4.

Previously, in accordance with IAS 17 the group classified leases as operating or finance leases based on the evaluation to which contractual partner substantially all the risks and rewards from the underlying asset are attributed to. According to IFRS 16 the group records right-of-use assets and lease obligations for most of these leases – i.e. these leases are accounted for on the balance sheet.

At transition to IFRS 16 on January 1, 2019, the payment commitments from contracts previously classified as operating lease are discounted using the corresponding incremental borrowing rate and capitalized as lease obligations. The discount rates are based on the lease term- and currency-specific incremental borrowing rates. Each lease payment is separated into principal and interest expense. The interest expense is recorded in profit and loss over the lifetime of the lease. The right-of-use asset is depreciated from the commencement date to the earlier of the end of the useful life of the right-of-use asset or the end of the lease term.

At transition, the right-of-use asset generally equals the corresponding lease obligation, adjusted by lease payments recorded as other liabilities. At transition, initial direct costs are not considered in the measurement of the right-of-use asset.

G+D exercised the option not to include intangible assets within the scope of IFRS 16. In accordance with the option exercised, for lease agreements with a term of not more than twelve months that begin after December 31, 2018 as well as lease agreements for which the underlying asset is of low value G+D does not record any right-of-use assets or lease obligations. According to the exemption option exercised, leases ending in 2019 are treated as short-term leases. For contracts including both lease and non-lease components each lease component of the contract is generally accounted for separately from the non-lease components based on the stand-alone selling price.

At transition to IFRS 16 as of January 1, 2019 G+D recorded additional right-of-use assets and lease obligations as follows:

EUR million	January 1, 2019
Right-of-use – Land and buildings	78.2
Right-of-use – Technical equipment & machinery	1.1
Right-of-use – Other plant and office equipment	6.3
Lease obligations	85.6

The additional right-of-use assets from IFRS 16 lead to an increase in depreciation expense in the amount of EUR 20.9 million and in interest expense in the amount of EUR 1.9 million due to the addition of accrued interest on lease obligations for leases classified as operating leases until 2018. The foreign currency valuation of the lease obligations capitalized added up to a positive effect of EUR 1.0 million.

The operating lease commitments disclosed as of December 31, 2018 resulted in the following reconciliation to the opening balance of the lease obligations as of January 1, 2019:

EUR million	January 1, 2019
Operating lease commitments as of December 31, 2018	83.7
Short-term leases	(2.4)
Leases of low-value assets	(1.0)
Contracts signed but performance not yet started	(3.8)
Commitments as of December 31, 2018 for reasonably certain extension options not recorded according to IAS 17	14.6
Foreign currency effects	1.0
Other	(0.2)
Lease obligations before discounting with incremental borrowing rate	**92.0**
Discounting using the incremental borrowing rate at the first-time application of IFRS 16	(6.4)
New lease obligations recognized at January 1, 2019 due to IFRS 16	**85.6**
Finance lease liabilities recognized as of December 31, 2018	2.9
Total lease obligations	**88.5**

The lease obligations were discounted using the incremental borrowing rate as of January 1, 2019. The weighted average interest rate amounts to 2.15 %.

Refer to Note 9 “Leasing” for the disclosures regarding right-of-use assets and lease obligations.

Refer to Note 1 (m) “Leasing” for a detailed representation of the accounting and valuation policies changed due to IFRS 16.

Further changes in Accounting and Valuation Policies

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 in section (s) Change in Accounting and Valuation Policies which may have a significant influence on the consolidated financial statements, a series of further standards and interpretations were passed that are valid from January 1, 2020 and 2021 but that are not expected to have a significant effect on the consolidated financial statements.

2 Financial Assets

Financial assets are comprised of the following as of December 31, 2019 and 2018:

EUR million	Dec 31, 2019	Dec 31, 2018
Current		
Short-term investments (> 3 months and < 1 year)	1.0	0.9
Trading securities	68.8	61.9
Investment securities	10.0	10.2
Derivative financial instruments	7.4	5.4
Loans to third parties	0.5	–
	87.7	**78.4**
Non-current		
Cash surrender value of reinsurance	20.3	21.4
Loans receivable from associated companies	1.6	–
Investment securities	1.8	1.8
	23.7	**23.2**

Investment securities have been recorded at fair value in the amount of EUR 11.8 million as of December 31, 2019 and EUR 12.0 million as of December 31, 2018. 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, 2019 and 2018:

EUR million	Dec 31, 2019	Dec 31, 2018
Current		
Accounts receivable trade	489.7	467.8
Accounts receivable from joint ventures and associated companies	1.8	7.8
Accounts receivable from related parties	1.0	0.5
Other	17.1	17.9
Prepayments	150.2	71.5
	659.8	**565.5**
Allowance for doubtful accounts	(15.2)	(9.0)
	644.6	**556.5**
Non-current		
Accounts receivable trade	13.4	4.2
Prepayments on property, plant and equipment	7.0	3.4
	20.4	**7.6**

Aging structure of accounts receivable trade and other accounts receivable (excluding prepayments) as of December 31, 2019:

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	344.3	64.8	26.8	17.7	24.1	45.3	523.0
Less allowance for doubtful accounts	(0.1)	–	–	(0.2)	(1.0)	(13.9)	(15.2)
Accounts receivable, net	**344.2**	**64.8**	**26.8**	**17.5**	**23.1**	**31.4**	**507.8**
Average credit losses in %	–	–	–	1.1	4.1	30.7	2.9

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)
Accounts receivable, net	**351.6**	**56.2**	**40.7**	**16.2**	**19.7**	**4.8**	**489.2**
Average credit losses in %	0.1	0.2	0.5	0.6	1.0	63.1	1.8

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

EUR million			**2019**			**2018**
	Specific allowance	Collective allowance	Total	Specific allowance	Collective allowance	Total
January 1	**6.9**	**2.1**	**9.0**	**13.0**	**1.3**	**14.3**
Changes in consolidation structure	–	–	–	1.3	–	1.3
Additions (through profit or loss)	7.1	1.8	8.9	1.4	1.4	2.8
Recoveries (through profit or loss)	(1.9)	(0.1)	(2.0)	(7.9)	(0.6)	(8.5)
Utilization	(0.7)	–	(0.7)	(0.9)	–	(0.9)
December 31	**11.4**	**3.8**	**15.2**	**6.9**	**2.1**	**9.0**

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.

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 344.2 million and EUR 351.6 million as of December 31, 2019 and 2018. 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 ten 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, 2019.

The selection process for suitable land was completed and decided at the end of 2017. In 2018 and 2019, G+D continuously rendered services for the construction of the passport factory. The construction of the passport factory was completed in 2019, while the construction of the card factory should take place in 2020. Accounts receivable in the amount of EUR 11.1 million and EUR 12.4 million were recorded as non-current contract assets as of December 31, 2019 and 2018, since the revenues cannot be realized until the operational phase.

In fiscal year 2019, 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, 2019 and 2018:

EUR million	**Dec 31, 2019**	**Dec 31, 2018**
Raw materials	96.1	141.9
Work in process	120.3	135.7
Finished goods	20.0	5.0
Merchandise	32.6	28.8
Spare parts, modules, sensors – Currency Management Solutions	70.6	56.4
	339.6	**367.8**

In fiscal years 2019 and 2018, write-downs on inventory amounted to EUR 37.0 million and EUR 24.1 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, 2019 and 2018, respectively.

5 Other Current Assets

EUR million	Dec 31, 2019	Dec 31, 2018
Taxes receivable (other than income taxes)	32.1	35.5
Restricted cash	9.4	8.9
Other	6.5	5.5
	48.0	**49.9**

6 Investments

Investments include the following:

EUR million	Dec 31, 2019	Dec 31, 2018
Investments accounted for under the equity method	16.2	12.6
Investments in other related parties	8.9	9.0
	25.1	**21.6**

The following investments (see Note 1c "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	
Build38 GmbH, Munich	38.00 %
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.

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 EUR 0.7 million 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, 2019, G+D owned 5.915 % of the shares in Verimi GmbH. The investment is classified as held-to-collect and sell and measured at fair value through other comprehensive income.

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. The investment is classified as held-to-collect and sell and measured at fair value through other comprehensive income. Effective October 15, 2019, G+D sold 4.98 % of the shares in IDnow GmbH. As of December 31, 2019, G+D owned 7.02% of the shares in IDnow GmbH. The net gain from the sale of EUR 0.5 million was recognized through other comprehensive income.

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. Entebbe. 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, Essen. As a result, G+D assumed control (see Note 24 “Business Combinations”).

Effective July 22, 2019, G+D acquired 4.85% of the shares in Brighter AI Technologies GmbH, Berlin at a purchase price of EUR 0.3 million. As G+D classifies its influence on Brighter AI Technologies GmbH as not significant, this investment is classified as an investment in other related parties. The investment is classified as held-to-collect and sell and measured at fair value through other comprehensive income.

As of December 31, 2018, G+D owned 70 % of the shares in fully consolidated Build38 GmbH, München. Effective November 19, 2019, G+D sold 32 % of the shares in Build38 GmbH, München and now owns 38 % of the shares. As G+D classifies its influence on Build38 GmbH as significant, this investment is accounted for using the equity method. There was no gain recognized on the sale of the shares.

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. This information is 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.	
	2019	**2018**	**2019**	**2018[1]**	**2019**	**2018**
Revenues	24.7	21.6	–	30.7	10.2	10.3
Profit from continuing operations	4.6	3.7	–	(1.5)	1.0	(3.8)
thereof depreciation and amortization	(1.0)	(0.5)	–	–	–	(0.2)
thereof income taxes	(1.4)	(1.4)	–	(0.2)	–	(1.6)
Other comprehensive income	0.1	(0.1)	–	0.3	(0.1)	(0.4)
Total comprehensive income	**4.7**	**3.6**	**–**	**(1.2)**	**0.9**	**(4.2)**
Group's share of total comprehensive income	2.3	1.8	–	(0.3)	0.2	(0.7)
Continuation of purchase price allocation (incl. CTA)	–	–	–	(0.8)	(0.2)	(0.2)
Elimination of intercompany profits	–	0.5	–	–	–	–
Group's share of total comprehensive income	**2.3**	**2.3**	**–**	**(1.1)**	**–**	**(0.9)**
Dividends received during the year	**(2.1)**	**(2.1)**	**–**	**(0.4)**	**–**	**–**
Current assets	15.5	16.3	–	–	16.6	16.4
thereof cash and cash equivalents	6.8	6.5	–	–	1.4	1.2
Non-current assets	5.8	4.0	–	–	2.9	2.6
Current liabilities	(8.3)	(8.9)	–	–	(1.4)	(1.8)
Non-current liabilities	(1.1)	–	–	–	(0.1)	–
Net assets	**11.9**	**11.4**	**–**	**–**	**18.0**	**17.2**
Group's share of net assets	6.0	5.7	–	–	2.9	2.8
Elimination of intercompany profits	(0.7)	(0.6)	–	–	–	–
Assets from purchase price allocation (incl. CTA)	–	–	–	–	3.0	3.1
Carrying amount of interest in joint venture at year end	**5.3**	**5.1**	**–**	**–**	**5.9**	**5.9**

[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, 2019**	**Dec 31, 2018**
Carrying amount of interest in non-material joint ventures	**2.3**	**0.2**
Share of		
Gain/(Loss) from continuing operations	1.9	(0.2)
Other comprehensive income	0.2	–
Total comprehensive income	**2.1**	**(0.2)**

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:

	Dec 31, 2019	Dec 31, 2018
Carrying amount of interest in non-material associated companies	**2.7**	**1.4**
Share of		
Capital increase	0.7	–
Gain/(Loss) from continuing operations	0.8	(0.2)
Dividends received during the year	(0.2)	–
Total comprehensive income	**0.6**	**(0.2)**

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, 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**
January 1, 2019	**30.2**	**107.5**	**170.0**	**59.2**	**366.9**
Additions	1.2	12.9	18.8	–	32.9
Transfers	–	3.3	(3.6)	–	(0.3)
Additions due to business combinations	7.7	4.3	0.6	9.9	22.5
Disposals	(0.2)	–	(6.2)	–	(6.4)
Foreign currency effects	0.5	0.4	0.4	(0.2)	1.1
December 31, 2019	**39.4**	**128.4**	**180.0**	**68.9**	**416.7**

The additions in 2019 and 2018 comprise self-constructed intangible assets in the amount of EUR 21.2 million and EUR 22.5 million, respectively.

EUR million	Customer base/ Rights	Development costs/ Technology	Software	Goodwill	**Total**
Accumulated amortization					
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**
January 1, 2019	**24.1**	**73.0**	**117.9**	**2.0**	**217.0**
Additions	2.6	11.8	11.9	–	26.3
Additions due to changes in consolidation structure	(0.1)	–	–	–	(0.1)
Impairment losses	0.6	0.9	–	–	1.5
Disposals	(0.2)	–	(6.0)	–	(6.2)
Foreign currency effects	0.5	0.4	0.2	(0.3)	0.8
December 31, 2019	**27.5**	**86.1**	**124.0**	**1.7**	**239.3**
Carrying value					
January 1, 2018	5.5	45.7	49.8	54.7	155.7
December 31, 2018	6.1	34.5	52.1	57.2	149.9
December 31, 2019	**11.9**	**42.3**	**56.0**	**67.2**	**177.4**

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

EUR million	**2019**	**2018**
Cost of goods sold	16.9	11.6
Selling expenses	1.0	0.9
Research and development expenses	0.2	0.2
General and administrative expenses	8.2	10.1
	26.3	**22.8**

In fiscal years 2019 and 2018, impairment losses in the amount of EUR 1.5 million and EUR 16.6 million were recorded on customer base and capitalized development costs. 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. These development cost were impaired in fiscal year 2019. A customer base with a book value of EUR 0.6 million was also completely impaired due to an expired contract.

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.

The goodwill from CI Tech Components AG in the amount of EUR 14.0 million (prior year EUR 14.0 million) as well as the goodwill from Transtrack International B.V. were allocated to the CGU "Currency Management Solutions". As the CGU "Currency Management Solutions" business is mainly conducted in Euro, this goodwills are recorded in Euro. The goodwill from secunet AG in the amount of EUR 5.2 million (prior year EUR 5.2 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 3.9 million recognized within the acquisition of the companies were allocated to the “Veridos” CGU. In fiscal year 2019, there was an increase in goodwill from E-SEEK Inc. in the amount of EUR 1.3 million. This results from the revaluation of the call option through the additional acquisition of the remaining 25 % of the shares. 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 28.0 million (prior year EUR 28.5 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 this CGUs. The allocation of the goodwill was based on the present value of the planned revenues in the amount of EUR 6.7 million (prior year EUR 6.9 million) in the CGU “Financial Solutions”, EUR 19.3 million (prior year EUR 19.7 million) in the CGU “Connectivity & Devices” and EUR 2.0 million (prior year EUR 1.9 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”. The goodwill from the acquisition of the Crédit Agricole's personalization business in the amount of EUR 4.3 million is also 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 9.8 % 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 10.0 %, 9.5 % and 9.2 % 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 11.1 % 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 2019 and 2018. For the CGU “Currency Management Solutions”, a pre-tax interest rate of 10.7 % was applied in 2019 and 2018. In discounting the cash flows of the “Veridos” CGU, a pre-tax interest rate of 10.3 % was applied in 2019 and 2018. 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 2019 and 2018. Impairments on goodwill were not recorded in fiscal years 2019 and 2018.

A sensitivity analysis was carried out for the goodwill in the CGU “Veridos”. An increase in the interest rate from 10.3% to 16.2% ceteris paribus as of December 31, 2019 would result in a first time impairment loss. A reduction in the cash flows for the terminal value ceteris paribus from EUR 25.2 million to EUR 10.9 million as of December 31, 2019 would result in an impairment loss. The headroom was EUR 84.8 million as of December 31, 2019.

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 13.9 % as of December 31, 2019 for “Financial Solutions”, from 11.4 % to 12.8 % for “Connectivity & Devices” and from 11.4 % to 13.1 % 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 32.3 million to EUR 21.6 million as of December 31, 2019 for “Financial Solutions”, from EUR 16.5 million to EUR 13.1 million for “Connectivity & Devices” and from EUR 6.8 million to EUR 5.2 million for “Cyber Security” would result in an impairment loss, respectively. The headroom was EUR 100.8 million as of December 31, 2019.

No intangible assets serve as collateral for financial liabilities (see Note 13 “Financial Liabilities”) as of December 31, 2019 and 2018, 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, 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**
January 1, 2019	**435.8**	**754.1**	**207.7**	**20.3**	**1,417.9**
Impact of first time adoption of IFRS 16	78.2	1.1	6.3	–	85.6
Additions	12.0	19.9	23.3	25.7	80.9
Transfers	0.4	12.5	–	(8.3)	4.6
Additions due to changes in consolidation structure	0.2	1.0	–	–	1.2
Disposals	(2.4)	(16.2)	(13.1)	(0.1)	(31.8)
Foreign currency effects	1.6	4.6	1.7	(0.1)	7.8
December 31, 2019	**525.8**	**777.0**	**225.9**	**37.5**	**1,566.2**

[1] Including assets under 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, 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**
January 1, 2019	**232.3**	**572.2**	**150.3**	**–**	**954.8**
Additions	28.2	48.0	25.3	–	101.5
Transfers	0.1	0.1	(0.2)	–	–
Impairment losses	0.1	0.5	–	–	0.6
Disposals	(1.7)	(14.8)	(12.7)	–	(29.2)
Foreign currency effects	0.7	3.6	1.3	–	5.6
December 31, 2019	**259.7**	**609.6**	**164.0**	**–**	**1,033.3**
Carrying value					
January 1, 2018	215.9	188.1	57.9	9.3	471.2
December 31, 2018	203.5	181.9	57.4	20.3	463.1
December 31, 2019	**266.1**	**167.4**	**61.9**	**37.5**	**532.9**

The increase in property, plant and equipment primarily results from the first-time application of IFRS 16 Leases. For further information on the leases, refer to Note 9 "Leasing".

In fiscal years 2019 and 2018, Giesecke+Devrient recorded impairments amounting to EUR 0.5 million and EUR 0.0 million on property, plant and equipment in cost of goods. In 2019, impairments amounting to EUR 0.1 million were recorded in general and administrative expenses (previous year EUR 0.0 million).

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. In fiscal year 2019, the sale of the property, including the buildings, was actively pursued but not yet completed. G+D has reacted to the changed market situation and expects a sale in 2020.

The carrying value of property, plant and equipment which serves as collateral for financial liabilities (see Note 13 “Financial Liabilities”) amounted to EUR 6.9 million and EUR 9.0 million as of December 31, 2019 and 2018, respectively.

Commitments for the purchase of property, plant and equipment amounted to EUR 30.0 million and EUR 24.9 million as of December 31, 2019 and 2018, respectively.

9 Leasing

As a lessee, Giesecke+Devrient rents various lease objects. This includes land and buildings, manufacturing facilities, electronic data processing equipment, motor vehicles and other office equipment. Lease contracts are negotiated for different terms and may include extension or cancellation options. The conditions are negotiated individually and include various conditions.

The group includes right-of-use assets within property, plant and equipment in the consolidated balance sheet. A summary of the activity for right-of-use assets is as follows:

EUR million	Land and buildings	Technical equipment and machinery	Other plant and office equipment	**Total**
January 1, 2019	**78.2**	**3.8**	**6.3**	**88.3**
Additions	8.8	1.0	2.1	11.9
Disposals	(0.1)	–	–	(0.1)
Additions due to changes in consolidation structure	0.2	–	–	0.2
Depreciation	(16.9)	(1.9)	(3.0)	(21.8)
Foreign currency effects	0.2	0.2	–	0.4
December 31, 2019	**70.4**	**3.1**	**5.4**	**78.9**

[1] The balance as of January 1, 2019 includes balances from finance leases as of December 31, 2018 in the amount of EUR 2.7 million.

The lease obligations are recorded as current lease obligations and non-current lease obligations in the consolidated balance sheet.

The following expenses were recorded in the income statement due to leases:

EUR million	**2019**	**2018**
Depreciation on right-of-use assets	(21.8)	(1.1)
Interest expense from lease obligations	(2.0)	–
Expenses for short-term leases	(4.3)	–
Expenses from leases for low value assets	(0.9)	–
Expenses from leases in accordance with IAS 17	–	(29.0)
	(29.0)	**(30.1)**

The expenses for short-term leases include expenses to other related parties in the amount of EUR 1.4 million.

The total cash outflows for leases in 2019 amounted to EUR 27.1 million.

The future cash outflows from lease payments amount to:

EUR million	
Less than one year	20.7
Between one and five years	49.8
More than five years	16.1
Total minimum lease payments	86.6
Less amount representing interest	(5.7)
Present value of net minimum lease payments	**80.9**

The present value of net minimum lease payments is as follows:

EUR million	
Less than one year	19.1
Between one and five years	46.4
More than five years	15.4
Present value of net minimum lease payments	**80.9**

Potential future cash outflows in the amount of EUR 14.0 million EUR were not included in the lease obligations as it is not reasonably certain that the leases will be extended or not cancelled.

Die future cash outflows for leases that G+D is committed to but that have not started yet add up to EUR 3.3 million.

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

10 Accounts Payable Trade and Other Accounts Payable

EUR million	Dec 31, 2019	Dec 31, 2018
Current		
Accounts payable trade due to third parties	428.9	371.0
Accounts payable due to associated companies and joint ventures	0.5	1.0
Accounts payable to shareholders	–	0.2
Other similar liabilities	2.8	1.3
	432.2	**373.5**

11 Provisions

EUR million	Warranties	Personnel-related costs	Licenses and patent infringements	Onerous contracts	Restructuring	Other	Total
January 1, 2019	**50.8**	**14.9**	**1.1**	**7.7**	**5.9**	**19.2**	**99.6**
Additions	25.2	5.0	2.7	10.4	2.5	11.0	56.8
Transfers	–	–	–	–	–	0.1	0.1
Interest component	–	0.8	–	–	–	–	0.8
Utilization	(5.5)	(5.6)	(0.1)	(3.7)	(3.6)	(3.6)	(22.1)
Release	(12.3)	–	–	(0.7)	(1.7)	(4.5)	(19.2)
Foreign currency effects	0.1	–	–	–	–	0.1	0.2
December 31, 2019	**58.3**	**15.1**	**3.7**	**13.7**	**3.1**	**22.3**	**116.2**
thereof current	58.3	8.8	3.7	13.4	3.1	16.3	103.6
thereof non-current	–	6.3	–	0.3	–	6.0	12.6

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, 2019	Dec 31, 2018
Payroll and social security taxes	109.3	94.9
Sales and other taxes	22.5	22.2
Other liabilities	15.7	12.1
	147.5	**129.2**

13 Financial Liabilities

Financial liabilities consist of the following as of December 31, 2019 and 2018:

EUR million	2019	2018
Current		
Short-term borrowings due to financial institutions	7.1	8.1
Short-term debt to MC Familiengesellschaft mbH	–	15.5
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	20.8	19.8
Current portion of debt due to Giesecke+Devrient Foundation	16.4	–
Accrued interest on debt to financial institutions	1.8	1.9
Derivative financial instruments	5.4	6.4
Total current portion of financial liabilities	**62.7**	**63.2**
Non-current		
Unsecured notes payable to financial institutions, interest rates 0.28 % to 3.95 %, due through June 29, 2029	415.3	429.9
Unsecured notes payable to Giesecke+Devrient Foundation, interest rate 2.46 % due through December 1, 2022	21.0	21.0
Unsecured notes payable to other third parties, interest rates 0.18 % to 3.00 %, due through October 15, 2023	12.6	4.2
Mortgage notes payable to financial institutions, interest rate 1.55 %, due through March 31, 2023	6.9	9.0
Total	**455.8**	**464.1**
Less current portion of non-current financial liabilities	(37.2)	(20.1)
Total non-current portion of financial liabilities	**418.6**	**444.0**
Total financial liabilities	**481.3**	**507.2**

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

EUR million	
2020	62.7
2021	22.1
2022	139.2
2023	80.7
2024	10.0
thereafter	166.6
	481.3

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	Lease obligations[1]	**Total**
Carrying value January 1, 2018	**282.6**	**36.2**	**4.8**	**2.5**	**326.1**	**3.3**	**329.4**
Payments during the period	(29.3)	(18.1)	–	–	(47.4)	(3.4)	(50.8)
New borrowings	210.6	18.3	–	–	228.9	–	228.9
Total change in cash flow from financing activities	181.3	0.2	–	–	181.5	(3.4)	178.1
New lease contracts	–	–	–	–	–	3.0	3.0
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 January 1, 2018	**464.1**	**36.7**	**6.4**	**–**	**507.2**	**2.9**	**510.1**
Fair value December 31, 2018	**465.6**	**36.7**	**6.4**	**–**	**508.7**	**2.9**	**511.6**
Carrying value January 1, 2019	**464.1**	**36.7**	**6.4**	**–**	**507.2**	**88.5**	**595.7**
Repayments of the period	(19.9)	(22.0)	–	–	(41.9)	(19.9)	(61.8)
New borrowings	11.4	5.4	–	–	16.8	–	16.8
Total change in cash flow from financing activities	(8.5)	(16.6)	–	–	(25.1)	(19.9)	(45.0)
New lease contracts	–	–	–	–	–	11.7	11.7
Termination of lease contracts	–	–	–	–	–	(0.1)	(0.1)
Acquisitions	–	–	–	–	–	0.2	0.2
Other changes	–	(0.1)	–	–	(0.1)	–	(0.1)
Fair value changes	–	–	(1.0)	–	(1.0)	–	(1.0)
Currency effects	0.2	0.1	–	–	0.3	0.5	0.8
Carrying value December 31, 2019	**455.8**	**20.1**	**5.4**	**–**	**481.3**	**80.9**	**562.2**
Fair value December 31, 2019	**463.6**	**20.1**	**5.4**	**–**	**489.1**	**80.9**	**570.0**

[1] For additional information regarding lease obligations refer to Note 9 "Leasing". The book value as of January 1, 2019 includes additional lease liabilities in the amount of EUR 85.6 million due to the introduction of IFRS 16.

Lines of credit

Giesecke+Devrient maintains global credit facilities in the amount of EUR 786.9 million (prior year EUR 830.8 million). As of December 31, 2019, G+D used EUR 355.2 million (prior year EUR 449.0 million) of these facilities for bank guarantees, EUR 7.1 million (prior year EUR 8.0 million) for credit orders and EUR 11.2 million (prior year EUR 11.2 million) due to other third parties. Thus, EUR 413.4 million (prior year EUR 362.6 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, 2019	Dec 31, 2018
Pension benefits	665.7	583.6
Other postretirement benefits	2.5	2.1
Other	0.7	0.6
Total accrual for pension and related liabilities	**668.9**	**586.3**

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, 2019	**Dec 31, 2018**	**Dec 31, 2019**	**Dec 31, 2018**
Change in defined benefit obligation				
Defined benefit obligation at beginning of year	**607.6**	**615.2**	**2.1**	**1.2**
Foreign currency exchange rate differences	0.8	0.2	(0.1)	–
Service cost	7.8	8.6	0.3	0.5
Interest cost	13.1	12.1	0.1	0.1
Past service cost	0.2	0.2	(0.1)	0.1
Curtailments	–	(0.1)	–	–
Plan amendments	0.1	0.3	(0.1)	0.1
Plan participants' contributions	0.1	0.1	0.1	0.3
Additions/(disposals) due to changes in consolidation structure	0.7	(0.3)	–	–
Actuarial (gains)/losses	74.7	(14.5)	0.3	–
due to demographic parameter changes	(0.5)	7.5	–	–
due to financial parameter changes	75.8	(20.2)	0.2	–
due to experience adjustments	(0.7)	(1.8)	–	–
Benefits paid	(23.2)	(14.0)	(0.2)	(0.1)
Defined benefit obligation at end of year	**681.7**	**607.6**	**2.5**	**2.1**
Change in plan assets				
Fair value of plan assets at beginning of year	**24.0**	**22.9**	**–**	**–**
Foreign currency exchange rate differences	0.4	–	–	–
Actual return on plan assets (excluding expected interest income)	0.1	(0.1)	–	–
Expected interest income	0.4	0.3	–	–
Employer contributions	1.2	1.6	–	–
Plan participants' contributions	0.1	0.1	–	–
Benefits paid	(10.2)	(0.8)	–	–
Fair value of plan assets at end of year	**16.0**	**24.0**	**–**	**–**
Net amount recognized at end of year	**665.7**	**583.6**	**2.5**	**2.1**

Net liability recorded

The development of the net liability recorded in fiscal years ended December 31, 2019 and 2018 is as follows:

EUR million	Pension benefit plans		Other postretirement benefit plans	
	Dec 31, 2019	Dec 31, 2018	Dec 31, 2019	Dec 31, 2018
Net liability at beginning of year	**583.6**	**592.3**	**2.1**	**1.2**
Service cost	7.8	8.6	0.3	0.5
Past service cost	0.2	0.2	(0.1)	0.1
Curtailments	–	(0.1)	–	–
Plan amendments	0.1	0.3	(0.1)	0.1
Interest expense/(income)	12.7	11.8	0.1	0.1
Additions/(disposals) due to changes in consolidation structure	0.7	(0.3)	–	–
Actuarial (gains)/losses	74.7	(14.5)	0.3	–
due to demographic parameter changes	(0.5)	7.5	–	–
due to financial parameter changes	75.8	(20.2)	0.2	–
due to experience adjustments	(0.7)	(1.8)	–	–
Actual return on plan assets (excluding expected interest income)	(0.1)	0.1	–	–
Benefits paid (excluding plan settlements)	(13.0)	(13.2)	(0.2)	(0.1)
Employer contributions	(1.2)	(1.6)	–	–
Plan participants' contributions	–	–	0.1	0.3
Foreign currency exchange rate differences	0.4	0.2	(0.1)	–
Net liability at end of year	**665.7**	**583.6**	**2.5**	**2.1**

Plan assets

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

Information as % of plan assets	Dec 31, 2019	Dec 31, 2018
Cash surrender value of reinsurance	49.6	30.6
Equity securities	13.5	10.4
Debt instruments	20.6	13.7
Real estate funds	10.3	7.7
Money market funds	0.1	34.4
Other	5.9	3.2
	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 2020 (prior year EUR 0.0 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, 2019	Dec 31, 2018	Dec 31, 2019	Dec 31, 2018
Discount rate/expected return on plan assets	1.4	2.2	2.1	6.3
Rate of compensation increase	1.5	2.5	2.0	5.3
Rate of pension progression	0.9	1.5	–	–
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 18.9 years (prior year 18.3 years) and 4.3 years for other benefit obligations (prior year 4.2 years).

Sensitivity analysis

The results of the sensitivity analyses for the significant actuarial assumptions for pension obligations as of December 31, 2019 and December 31, 2018 are as follows:

EUR million	Dec 31, 2019	Dec 31, 2018
Discount rate + 50 basis points	(50.8)	(46.1)
Discount rate – 50 basis points	84.6	57.0
Rate of pension progression + 25 basis points	33.2	14.1
Rate of pension progression – 25 basis points	(28.0)	(12.5)
Increase of 2 years in life expectancy	76.1	40.3

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 28.8 million and EUR 28.3 million were recorded in 2019 and 2018, respectively. Payments amounting to EUR 1.7 million and EUR 1.3 million were made for the newly established company pension plans in 2019 and 2018, respectively.

15 Revenue

Revenue is comprised of the following categories:

EUR million	2019	2018
Sales of goods	1,995.9	1,857.6
Rendering of services	407.3	360.6
Royalties	43.8	27.8
	2,447.0	**2,246.0**

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

EUR million	2019	2018
Currency Technology	1,132.4	1,058.9
Banknote Solutions	571.9	576.5
Currency Management Solutions	560.5	482.4
Mobile Security	876.5	867.6
Veridos	231.6	180.2
secunet	226.9	163.3
Group internal	(20.4)	(24.0)
	2,447.0	**2,246.0**

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	2019	2018
Income relating to other periods	19.6	30.5
Expenses relating to other periods	(17.0)	(3.6)
	2.6	**26.9**

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 as well as losses on disposal of property, plant and equipment recorded in other operating expenses.

17 Other Financial Income, net

EUR million	2019	2018
Gains/(losses) from trading securities, net	6.3	(6.2)
Foreign currency exchange gains/(losses), net	(2.3)	(2.3)
Gains/(losses) from derivative financial instruments, net	3.7	(6.2)
	7.7	**(14.7)**

The changes in net unrealized gains and losses on trading securities included in earnings during the fiscal years ending December 31, 2019 and 2018 were EUR 10.8 million and EUR -10.4 million, respectively.

18 Interest Income and Interest Expense

EUR million	2019	2018
Interest income		
Loans and receivables	0.1	–
Cash and cash equivalents/short-term investments	0.8	0.9
Trading securities	0.5	0.7
Taxes receivable	0.1	–
Other	0.6	0.4
	2.1	**2.0**
Interest expense		
Loans and receivables	0.5	0.7
Financial liabilities and finance lease obligations	9.4	5.7
Other provisions	0.8	0.1
Provisions for pensions	12.7	11.8
Taxes payable	0.1	0.3
Other	0.2	0.4
	23.7	**19.0**

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

EUR million	2019	2018
Interest income		
Loans and receivables	0.1	–
Cash and cash equivalents/short-term investments	0.8	0.9
	0.9	**0.9**
Interest expense		
Loans and receivables	0.5	0.7
Financial liabilities measured at amortized cost	9.4	5.7
	9.9	**6.4**

19 Income Taxes

Income tax expense

Income tax expense for fiscal years 2019 and 2018 is comprised of:

EUR million	2019	2018
Current income tax		
Current year income tax expense	(30.3)	(32.2)
Income tax expense for prior periods	(13.0)	(2.0)
	(43.3)	**(34.2)**
Deferred income tax		
Gross expenditure from origination and reversal of temporary differences and tax loss carryforwards	13.5	(1.0)
Income tax expense from changes in tax rates and introduction of new taxes	(0.5)	(1.1)
Change in usability of tax loss carryforwards	0.3	1.0
	13.3	**(1.1)**
Income tax expense, net	**(30.0)**	**(35.3)**

In fiscal year 2019, 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 15.8% and trade tax of 15.67%, resulting in a combined tax rate of 31.47%.

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 31.47% and 31.46% in 2019 and 2018, respectively.

EUR million	2019	2018
Expected income tax expense	(34.8)	(26.9)
Foreign taxation differential	14.1	3.1
Non-deductible expenses	(2.0)	(4.7)
Changes in tax rates	(0.5)	(1.1)
Tax-free income	(0.2)	2.5
Additions due to tax risks and tax payments (refunds) for prior years	(2.1)	(2.8)
Changes in tax loss carryforwards	0.3	1.0
Withholding taxes	(5.5)	(6.1)
Other	0.7	(0.3)
Actual income tax expense	**(30.0)**	**(35.3)**

Deferred tax assets and liabilities

The gross values of deferred tax assets and liabilities as of December 31, 2019 and 2018 are attributable to the following balance sheet line items:

EUR million	Assets		Liabilities		Net	
	Dec 31, 2019	Dec 31, 2018	Dec 31, 2019	Dec 31, 2018	Dec 31, 2019	Dec 31, 2018
Financial assets	0.3	(8.5)	(6.1)	(5.8)	(5.8)	(14.3)
Accounts receivable trade and other receivables, net	5.1	9.6	(0.1)	–	5.0	9.6
Contract assets	–	0.1	(8.1)	(8.3)	(8.1)	(8.2)
Inventories, net	100.4	63.2	(0.7)	–	99.7	63.2
Other assets	1.2	1.2	(28.9)	(20.8)	(27.7)	(19.6)
Intangible assets	14.7	13.6	(24.3)	(19.2)	(9.6)	(5.6)
Property, plant and equipment	2.7	2.4	(21.3)	(13.5)	(18.6)	(11.1)
Accounts payable trade and other accounts payable	19.3	0.6	(0.5)	(34.5)	18.8	(33.9)
Contract liabilities	–	–	0.1	(0.8)	0.1	(0.8)
Provisions	29.4	22.6	(2.1)	(2.9)	27.3	19.7
Financial liabilities	0.2	3.8	–	–	0.2	3.8
Lease obligations	10.8	0.8	–	–	10.8	0.8
Deposits received/deferred income	0.6	0.2	–	(1.3)	0.6	(1.1)
Pensions and related liabilities	116.8	96.0	–	–	116.8	96.0
Other liabilities	1.2	0.8	(84.8)	(1.5)	(83.6)	(0.7)
Tax loss carryforwards	46.6	42.5	–	–	46.6	42.5
Deferred tax assets/(liabilities), gross	349.3	248.9	(176.8)	(108.6)	172.5	140.3
Set-off of tax	(166.3)	(96.7)	166.2	96.7	(0.1)	–
Deferred tax assets/(liabilities), net	**183.0**	**152.2**	**(10.6)**	**(11.9)**	**172.4**	**140.3**

The changes in deferred tax assets, net included in net income or other comprehensive income for fiscal years 2019 and 2018 are included in the following summary:

EUR million	2019	2018
Deferred tax assets, net as of January 1	**140.3**	**154.3**
Changes affecting net income	13.2	(1.1)
Changes not affecting net income		
Additions due to changes in consolidation structure	(3.3)	(0.6)
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	22.1	(4.6)
Changes in net deferred tax assets recognized in other comprehensive income resulting from deferred tax assets on foreign currency translations	0.1	(0.2)
Deferred tax assets, net as of December 31	**172.4**	**140.3**

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	2019		2018	
	Gross amount	Tax effect	Gross amount	Tax effect
Deductible temporary differences	20.0	6.4	6.2	1.8
Unused tax losses	145.8	36.8	168.3	43.7
	165.8	**43.2**	**174.5**	**45.5**

The unused tax losses expire as follows:

EUR million	2019		2018	
	Gross amount	Expiration date	Gross amount	Expiration date
Limited	8.0	2020–2029	13.4	2019–2037
Unlimited	137.8	–	154.9	–

Furthermore, deferred tax assets in the amount of EUR 46.6 million and EUR 42.5 million on tax loss carryforwards in the amount of EUR 160.7 million and EUR 147.0 million were recorded as of December 31, 2019 and 2018, 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, 2019, significant deferred tax assets were recorded on tax loss carryforwards by the following companies: Giesecke+Devrient GmbH, Munich, EUR 40.2 million, Giesecke+Devrient Mobile Security Sweden AB, Stockholm, EUR 2.7 million and Giesecke+Devrient Mobile Security Iberia S.A., Barcelona, EUR 2.0 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 165.8 million and EUR 174.5 million will be realized and therefore has not recognized deferred tax assets for these amounts in 2019 and 2018.

Income tax on dividends

As of December 31, 2019 and 2018, 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, 2019 and 2018, the amount of these obligations was EUR 0.1 million and EUR 0.2 million, respectively.

Temporary differences relating to investments in subsidiaries for which deferred tax liabilities were not recorded amounted to EUR 0.0 million and EUR 3.7 million as of December 31, 2019 and 2018, respectively.

20 Equity

As of December 31, 2019 and 2018, the nominal value of the treasury stock amounted to EUR 4.3 million, respectively.

Unappropriated reserves amounted to EUR 424.7 million and EUR 410.7 million as of December 31, 2019 and 2018, 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, 2019 and 2018, the equity ratio amounted to 18.4 % and 19.7 %, respectively. G+D is not subject to external minimum capital requirements.

21 Financial Instruments

The following tables incorporate 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 tables do 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.

Furthermore, the following tables contain an allocation of the fair value measurement of classes of financial assets and liabilities to levels in accordance with IFRS 13 as of December 31, 2019 and 2018:

EUR million		Dec 31, 2019				
	Classification	Carrying amount	Fair value	Level 1	Level 2	Level 3
Financial assets						
Loans and receivables[1]	Amortized cost	509.7	–			
Financial assets held for trading[2]						
Derivative financial assets	FVTPL	7.4	7.4	–	7.4	–
Trading securities	FVTPL	68.8	68.8	68.8	–	–
Total		**76.2**				
Investment securities	FVTPL	11.8	11.8	11.8	–	–
Investments in other related parties	FVOCI	8.9	8.9	–	–	8.9
Special classes						
Cash and cash equivalents[3]	Amortized cost	439.3	–			
Short-term investments	Amortized cost	1.0	–			
Total financial assets		**1,046.9**				

[1] Amount does not include prepayments in the amount of EUR 157.2 million and EUR 74.9 million as of December 31, 2019 and 2018, 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 20.3 million and EUR 21.4 million as of December 31, 2019 and 2018, respectively, as this is not included in the scope of IFRS 7.
[3] Cash and cash equivalents include cash in the amount of EUR 0.2 million and EUR 0.1 million, cash in banks in the amount of EUR 428.5 million and EUR 307.1 million as well as short-term investments in the amount of EUR 10.7 million and EUR 122.1 million as of December 31, 2019 and 2018, respectively.

EUR million		Dec 31, 2019				
	Classification	Carrying amount	Fair value	Level 1	Level 2	Level 3
Financial liabilities						
Financial liabilities measured at amortized cost						
Financial liabilities	Other financial liabilities	476.0	483.7	–	483.7	–
Contract liabilities[1]	N/A	259.6	–			
Accounts payable	Other financial liabilities	432.2	–			
Total		**1,167.8**				
Derivative financial liabilities	Fair value – hedging instrument	5.3	5.3	–	3.4	1.9
Special class						
Lease obligations	N/A	80.9	80.9	–	80.9	–
Total financial liabilities		**1,254.0**				

[1] Amount includes contract liabilities due to IFRS 15.

					Dec 31, 2018
	Carrying amount	**Fair value**	Level 1	Level 2	Level 3
	489.2	–			
	5.4	5.4	–	5.4	–
	61.9	61.9	61.9	–	–
	67.3				
	12.0	12.0	12.0	–	–
	9.0	9.0	–	–	9.0
	429.3	–			
	0.9	–			
	1,007.7				

					Dec 31, 2018
	Carrying amount	**Fair value**	Level 1	Level 2	Level 3
	500.8	502.2	–	502.2	–
	246.2	–			
	373.5	–			
	1,120.5				
	6.4	6.4	–	6.4	–
	2.9	2.9	–	2.9	–
	1,129.8				

In the tables, 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 2019, 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 put option relating to the shares in E-SEEK Inc. in 2019 and is therefore immaterial from the Group's perspective. In 2019 and 2018, no material reclassifications between the levels were recorded.

The fair value of foreign currency forward contracts is based on mark-to-market since similar contracts are being traded on active markets. As of December 31, 2019 and 2018, these derivative financial instruments are stated at fair value and recorded on the balance sheet under current financial assets in the amount of EUR 7.4 million and EUR 5.4 million and under current financial liabilities in the amount of EUR 5.3 million and EUR 6.4 million, respectively.

The nominal volume of foreign currency forward contracts entered into by Giesecke+Devrient as of December 31, 2019 amounted to (in million foreign currency units):

	Purchase contracts	Sales contracts
US dollar	56.3	181.3
Australian dollar	3.0	9.0
British pound	2.5	1.0
Chinese renminbi	–	460.0
Indian rupee	–	690.0
Canadian dollar	4.0	–
Hong Kong dollar	–	58.7
Swedish krona	77.0	–
South African rand	–	97.5
Swiss Franc	–	27.5

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, acquisition cost are used as the best estimate of the fair value.

Non-current financial assets and financial liabilities
The fair value is determined based on the expected future cash flows discounted using the prevailing market rate as of the balance sheet date for similar maturities and contracts.

As of December 31, 2019 and 2018, 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 2019 and 2018 related solely to financial assets in the class “loans and receivables”.

EUR million	**2019**	**2018**
Impairment losses	(10.7)	(4.0)
Reversals of impairment losses	2.2	9.4
	(8.5)	**5.4**

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

EUR million	**2019**	**2018**
Financial assets measured at amortized cost	(7.7)	6.8
Financial assets and financial liabilities held for trading	6.7	(8.9)
Financial liabilities measured at amortized cost	(0.4)	(0.7)
	(1.4)	**(2.8)**

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.

22 Financial Risk

G+D is subject to 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. These risks can adversely impact our net assets, financial position, and results of operations. Giesecke+Devrient GmbH manages these risks primarily as part of its ongoing business and financing activities as well as by establishing the written guidelines.

All the risks mentioned are monitored by means of suitable risk measurement procedures. Financial risks form part of the monthly risk reports submitted to the Management Board and is also included in regular reporting to the Supervisory and Advisory Boards.

Liquidity Risk

Securing liquidity 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, appropriate financial instruments like an annual planning for all Group companies and short-term liquidity planning for all major Group companies are used. 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 205.6 million (prior year EUR 223.2 million) on the balance sheet date of December 31, 2019 to ensure adequate liquidity to cover fluctuations in operating activities. 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. All lenders are investment grade banks. As of December 31, 2019, EUR 7.1 million of the total available credit line have been utilized (previous year EUR 8.0 million).

In addition, credit-lines with other third parties amounting to EUR 11.2 million (prior year EUR 11.2 million) were fully utilized as of December 31, 2019, analogous to the previous year.

In addition, there are loans amounting to EUR 475.9 million. These consist of EUR 120 million syndicated loans, EUR 80 million loans from the European Investment Bank EIB and EUR 200 million promissory note loans. The remaining amount includes loans from other third parties (including Bundesdruckerei, G+D Stiftung, EIB promotional loans) as well as local loans for subsidiaries.

The following tables show the carrying amount of all G+D Group liabilities (from financing, trade payables and leasing) with the contractually agreed (undiscounted) interest and redemption payments, as well as derivative financial instruments with negative fair values:

Information on Liquidity Risk as of December 31, 2019

in 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**	Repay-ment	Interest	Repay-ment	Interest	Repay-ment	Interest	Repay-ment	Interest	Repay-ment	Interest	Repay-ment	Interest
Original financial liabilities														
Accounts payable trade and other liabilities	432.2	432.2	432.2	–	–	–	–	–	–	–	–	–	–	–
Financial liabilities	476.0	503.2	55.6	7.9	22.1	5.4	139.1	4.0	80.7	3.1	10.0	2.5	166.6	6.2
Lease obligations	80.9	86.7	19.1	1.7	14.9	1.3	12.2	1.0	10.9	0.7	8.3	0.4	15.5	0.7
Derivative financial liabilities														
Derivative financial instruments	5.3	129.4	129.4	–	–	–	–	–	–	–	–	–	–	–
Total	**994.4**	**1,151.5**	**636.3**	**9.6**	**37.0**	**6.7**	**151.3**	**5.0**	**91.6**	**3.8**	**18.3**	**2.9**	**182.1**	**6.9**

Information on Liquidity Risk as of December 31, 2018

in 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**	Repay-ment	Interest	Repay-ment	Interest	Repay-ment	Interest	Repay-ment	Interest	Repay-ment	Interest	Repay-ment	Interest
Original financial liabilities														
Accounts payable trade, financial liabilities, and 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**

All financial instruments held as of December 31, 2019 and December 31, 2018 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, 2019 or December 31, 2018, respectively. Financial liabilities that are repayable at any time are always assigned to the earliest time period.

The available cash liquidity is held in bank accounts. The aim is to avoid balance charges. For this reason, only time deposits and deposits at notice were made with the syndicate banks. The decision on the investment period is based on short-term liquidity planning. In addition, cash investments with a term of more than three months in the amount of EUR 1.02 million (previous year EUR 0.9 million) are held at foreign subsidiaries.

Counterparty 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 the rating determined, the receivables are assigned to 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.

With regard to counterparty risks in the financial sector, Giesecke+Devrient ensures that the investment volume is spread widely in order to reduce default risks and excessive dependence on individual financial institutions. The banks with which Giesecke+Devrient conducts financial transactions are selected and regularly reviewed according to various criteria, particularly with regard to creditworthiness.

Market Risk

A Currency Risk

Due to its international focus, Giesicke+Devrient has supply streams and cash flows in various currencies related to both import and export activities. For risk management reasons, these foreign currency risks can be concentrated at Giesecke+Devrient GmbH by concluding internal foreign exchange transactions with the respective subsidiary. The foreign currency risk is countered by netting receivables and payables, trade centrally at the level of Giesecke+Devrient GmbH in the corresponding foreign currency and aggregating them as far as possible. The net balance remaining as of the balance sheet date is continuously hedged with forward exchange and swap transactions. Trade receivables and trade payables not recognized in the balance sheet are hedged against foreign currency risks in coordination with the respective business units.

In accordance with the risk management standards applicable to international banks, all trading activities are subject to financial controls (back office) that are independent of Corporate Finance.

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

At the balance sheet date of December 31, 2019, the following material net foreign currency risks were recognized (net exposure or nominal value of financial derivatives > EUR 5.0 million):

Net Currency Exposure as of December 31, 2019

Foreign currency risk in EUR million	AUD		CAD		GBP		HKD		INR	
	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018
Net exposure	6.0	5.6	(2.9)	(11.6)	(0.6)	(1.1)	6.8	6.2	4.2	8.5
Firm Comittment	–	–	–	–	–	–	–	–	–	–
Financial derivatives	(3.8)	(1.4)	2.7	–	1.8	(2.0)	(6.7)	6.2	(8.6)	–

Foreign currency risk in EUR million	MXN		CNY		SEK		USD		ZAR	
	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018
Net exposure	5.2	–	48.3	15.8	(11.1)	3.3	37.6	(34.0)	8.0	–
Firm Comittment		–		–	–	–	55.0	(41.7)	–	–
Financial derivatives	–	–	(58.8)	–	7.4	8.9	(107.4)	68.0	(6.2)	–

AUD = Australian dollar, CAD = Canadian dollar, GBP = British pound, HKD = Hongkong dollar, INR = Indian rupee, MXN = Mexican peso, CNY = Chinese renminbi, SEK = Swedish krona, USD = US dollar, ZAR = South African rand

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 effects that hypothetical changes in the respective risk variables would have on the profits/losses and on the total equity of the company as of the balance sheet date. Only the major foreign currencies are considered.

The following impacts on primary and derivative financial instruments exceeding EUR 2.0 million of total equity as well as the income statement (without consideration of tax effects), assuming that the EUR had risen or fallen by 10 % against the specified foreign currencies as of December 31, 2019 and December 31, 2018, respectively:

Original Financial Instruments as of December 31, 2019 (Impact > EUR 2 million)

Impact in EUR million	Equity				Profit/Loss			
	2019		2018		2019		2018	
	–10 %	+10 %	–10 %	+10 %	–10 %	+10 %	–10 %	+10 %
CHF	2.5	(2.5)	–	–	2.5	(2.5)	–	–
CNY	4.8	(4.8)	–	–	4.8	(4.8)	–	–
USD	3.8	(3.8)	3.4	(3.4)	3.8	(3.8)	3.4	(3.4)

Derivative Financial Instruments as of December 31, 2019 (Impact > EUR 2 million)

Impact in EUR million	Equity				Profit/Loss			
	2019		2018		2019		2018	
	–10 %	+10 %	–10 %	+10 %	–10 %	+10 %	–10 %	+10 %
CHF	2.3	(2.3)	–	–	2.3	(2.3)	–	–
CNY	5.3	(6.5)	–	–	5.3	(6.5)	–	–
USD	5.2	(6.4)	6.2	(7.6)	5.2	(6.4)	6.2	(7.6)

In addition, contracts with a volume > EUR 8 million are hedged by means of forward exchange transactions and accounted for as a closed valuation unit (hedge accounting). As a result, fluctuations in earnings from these individual transactions are avoided by valuing the asset or the derivative in the income statement. The effectiveness of the fair value hedge generated in this way is ensured by means of regular reviews. The dollar offset method is used to measure effectiveness. This method uses the relationship between changes in the values of the hedge and the underlying transaction (firm commitment), whereby effectiveness within the range of 80 % to 125 % is given.

The underlying transactions as well as the hedging instruments based on the balance sheet as of December 31, 2019 are as follows:

Maturity and average forward contract rate (USD) as of December 31, 2019

		Maturity
Foreign currency risk	< 1 year	> 1 year
Forward exchange contracts		
Net exposure (in EUR million)	55.0	–
average EUR/USD forward contract rate	1.22	–

Maturity and average forward contract rate (USD) as of December 31, 2018

		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 underlying transactions as of December 31, 2019

EUR million						2019
	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		Balance sheet item 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	5.1	0.2	5.1	0.2	financial assets, financial liabilities	7.2

Carrying amount of the underlying transactions as of December 31, 2018

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		Balance sheet item 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	4.6	0.2	4.6	0.2	financial assets, financial liabilities	4.8

Carrying amount of the hedging transactions as of December 31,2019

EUR million

	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
							2019
		Assets	**Liabilities**				
Forward exchange contracts	55.0	0.3	4.0	financial assets, financial liabilities	(7.2)	–	N.A.

Carrying amount of the hedging transactions as of December 31, 2018

EUR million

	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
							2018
		Assets	**Liabilities**				
Forward exchange contracts	36.8	–	4.8	financial assets, financial liabilities	(4.8)	–	N.A.

B Interest Rate Risk

Giesecke+Devrient's interest rate risks mainly arise from bank loans and the promissory note loan with their respective fixed interest rates until maturity.

Financial instruments with variable interest rates are subject to cash flow risks which consist of uncertainty regarding the amount of future interest payments. This risk also exists for fixed-interest financial instruments with fixed interest rates when they are reinvested or refinanced.

At the balance sheet date of December 31, 2019, the values were as follows:

Interest Rate Risk: Financial Instruments as of December 31, 2019

in EUR million

	Average rate of interest		Total amount		Up to 1 year		1–2 years		2–5 years		Over 5 years	
	2019	**2018**	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**
Fixed-interest financial instruments												
Financial liabilities (current and non-current)	1.5	1.5	323.0	346.7	47.1	46.5	20.8	36.2	88.5	89.5	166.6	174.5
Lease obligations	2.4	4.5	80.9	2.8	19.1	0.5	14.9	0.4	31.5	1.9	15.4	–
Variable-interest financial instruments												
Financial liabilities	1.5	1.5	151.1	152.3	8.5	8.4	1.3	1.3	141.3	142.6	–	–

In the past, derivative financial instruments in the form of an interest rate swap were used to hedge the interest rate risk for a long-term loan with a variable interest rate. There were no interest rate derivatives in the portfolio in 2019, nor were any new derivatives concluded.

Interest rate sensitive financial assets are for the most part subject to variable interest rates. The item cash and cash equivalents is not considered here.

C Special Investment Fund

In addition to money invested directly with banks, EUR 76.9 million are managed by a well-known German investment company in a special investment fund as of December 31, 2019. The investment consists of a portfolio of first-class bonds (government bonds, corporate bonds and fixed income bonds) and equities (first-class companies), as well as cash and cash equivalents.

For diversification purposes, the equity allocation was set at a maximum of 50 % of the total portfolio in 2019. The risk of the equity component of this investment is shown monthly using the Value-at-Risk (VAR) indicator. For the bond portion, the risk indicator modified duration is used.

The value-at-risk indicates the loss amount that will not be exceeded in a period of 10 days with a probability of 99 %. The following values result for the equity component as of December 31, 2019:

Value-at-Risk: Equities December 31, 2019

2019	Equities	EUR million	37.5
	VAR	%	2.3
	Potential loss/gain	EUR million	(0.9)
2018	Equities	EUR million	27.7
	VAR	%	2.7
	Potential loss/gain	EUR million	(0.7)

The effects on net income and total equity as of December 31, 2019 in the event of a change in market interest rates of +100 basis points are EUR –1.1 million (previous year EUR –1.1 million).

For bonds, the following sensitivity analysis applies (excluding shares in bond funds):

Modified Duration: Bonds December 31, 2019

2019	Bonds	EUR million	22.7
	Return on investment	%	0.7
	Duration	years	4.8
	Modified duration	%	4.7
	Potential loss/gain	EUR million	(1.1)
2018	Bonds	EUR million	28.2
	Return on investment	%	2.1
	Duration	years	3.8
	Modified duration	%	3.8
	Potential loss/gain	EUR million	(1.1)

In addition to the special investment fund, Giesecke+Devrient holds securities that are classified as available-for-sale securities. The carrying amount as of December 31, 2019 is EUR 10.0 million (previous year: EUR 10.2 million). The majority of these securities are holdings in investment funds that solve as insolvency insurance to cover the provision for pensions and pre-retirement part-time working arrangements. Due to minor fluctuations in the value of these shares, no sensitivity analysis is performed. 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, 2019	Dec 31, 2018
Contract assets at the beginning of the period	**147.0**	**113.2**
Currency differences	0.5	(0.3)
Transfers from contract assets recognized at the beginning of the period to receivables	(124.4)	(79.3)
Impairment losses on contract assets	(0.3)	–
Changes in the measure of progress	164.2	113.4
Contract assets at the end of the period	**187.0**	**147.0**
Contract liabilities at the beginning of period	**246.2**	**125.4**
Currency differences	1.5	1.2
Revenue recognized that was included in the contract liability balance at the beginning of the period	(229.6)	(112.8)
Prepayments received excluding revenue during the period	241.5	232.3
Increase/(decrease) due to changes in consolidation structure	–	0.1
Contract liabilities at the end of the period	**259.6**	**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.

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. The options are exercisable up until December 31, 2022. G+D has a call option and the shareholder has a put option for the remaining 25% shares in E-Seek. In accordance with the anticipated acquisition method, the present value of the exercise price has been recorded as a financial liability and represents part of the consideration. As G+D holds 60% in the shares of Veridos, G+D in turn holds 60% in the shares of E-SEEK Inc. Thus, G+D assumed control over E-SEEK Inc. and consolidate the company in full.

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, for example 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 (in EUR million):

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 10.7 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.

The difference between the fair value of the consideration in the amount of EUR 10.7 million and the fair value of the identifiable net assets of Transtrack International B.V. amounting to EUR 5.9 million at the time of acquisition was recorded as goodwill in the amount of EUR 4.8 million. 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	0.2
Accounts receivable trade and other receivables, net	2.2
Intangible assets	5.3
Accounts payable trade and other accounts payable	0.4
Other current financial liabilities	0.1
Deferred tax liabilities	1.3

Transtrack International B.V. has an immaterial effect on Group net sales and Group net income.

Effective January 1, 2019, Giesecke+Devrient acquired the personalization business of a bank in France at a purchase price amounting to EUR 10.4 million. In connection with the contract, G+D took over the machines as well as the employees and carries out the personalization services of the bank. The transaction therefore qualifies as a business combination in accordance with IFRS 3.

In this context, G+D entered into a long-term exclusive contract with a bank in France and assumed the bank personalization services and supply of 100 % of the EMV cards. The contract positions G+D as the leader for the issuance of payment cards in France. This 10-year supply contract paves the way for a strong partnership to develop innovative products and solutions.

The difference between the fair value of the consideration in the amount of EUR 10.4 million and the fair value of the identifiable net assets of the business amounting to EUR 6.1 million at the time of acquisition was recorded as goodwill in the amount of EUR 4.3 million. The goodwill recorded is expected to be deductible for tax purposes.

The identifiable assets acquired and liabilities assumed consist of:

Accounts receivable trade and other receivables, net	
Inventories, net	0.2
Intangible assets	7.3
Property, plant and equipment	1.0
Other current financial liabilities	0.5
Deferred tax liabilities	1.9

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, 2019	Dec 31, 2018	Dec 31, 2019	Dec 31, 2018	Dec 31, 2019	Dec 31, 2018
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	0.5	0.7	1.7	2.4	1.0	0.3
Dividend paid to NCI	–	(2.8)	(2.6)	(2.0)	–	–
Share of equity relating to NCI	7.7	7.2	5.5	6.3	5.1	4.2
Assets[1]	58.6	59.7	12.1	15.2	40.0	32.8
thereof cash and cash equivalents[1]	6.5	5.0	8.7	10.0	1.9	0.6
Liabilities[1]	17.7	21.5	2.7	4.4	31.6	25.9
Revenues[1]	37.4	37.3	21.5	28.6	38.5	23.8
Other comprehensive income[1]	–	–	0.3	0.6	–	–
Comprehensive income[1]	2.7	3.6	3.8	5.5	1.6	0.4

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

EUR million	Veridos GmbH, Berlin[2]		secunet Security Networks AG, Essen including subsidiaries	
	Dec 31, 2019	Dec 31, 2018	Dec 31, 2019	Dec 31, 2018
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	(0.6)	(0.3)	4.8	3.6
Dividend paid to NCI	–	–	(2.7)	(1.6)
Share of equity relating to NCI	7.9	9.1	16.8	14.7
Assets[1]	207.1	174.3	184.4	143.7
thereof cash and cash equivalents[1]	10.7	2.8	64.5	56.1
Liabilities[1]	180.5	141.1	106.5	74.2
Revenues[1]	178.0	140.8	226.9	163.3
Other comprehensive income[1]	(1.3)	0.2	(0.5)	(0.1)
Comprehensive income[1]	(6.5)	1.9	21.7	17.7

[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 Matsoukis S.A. Security Printing, 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, which was repaid in January 2019. Interest expense amounted to EUR 0.0 million and EUR 0.1 million in 2019 and 2018, respectively. As of December 31, 2019 and December 31, 2018, MC Familiengesellschaft mbH invested EUR 0.0 million and EUR 0.2 million at G+D by means of the intercompany cash pool account. As of December 31, 2019 and December 31, 2018, 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 DER bogen GmbH

In 2017, G+D sold part of its land and buildings to a parent-controlled company. In connection with this transaction, lease agreements were concluded with DER bogen GmbH. In fiscal year 2019 and 2018, rental expenses from these leases amounted to EUR 1.4 million and 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 21.0 million as of December 31, 2019 and 2018, respectively. The loan is due at maturity on December 1, 2022. Interest expense amounted to EUR 0.5 million and EUR 0.5 million in 2019 and 2018, respectively (see Note 13 "Financial Liabilities"). The grants amounted to EUR 0.3 million in fiscal years 2019 and 2018, 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	
	2019	**2018**	**2019**	**2018**
Joint ventures				
Goods and services	8.3	26.5	2.1	8.4
Other financial transactions	–	2.2	–	0.1
	8.3	**28.7**	**2.1**	**8.5**
Associated companies				
Goods and services	0.3	4.3	2.3	1.7
	0.3	**4.3**	**2.3**	**1.7**
	8.6	**33.0**	**4.4**	**10.2**

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

EUR million	Dec 31, 2019	Dec 31, 2018
Joint ventures		
Accounts receivable from joint ventures	1.5	3.5
Accounts payable to joint ventures	0.3	1.0
Associated companies		
Loans receivable from associated companies	1.6	–
Accounts receivable from associated companies	0.3	4.3
Accounts payable to associated companies	0.2	–

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 8.5 million and EUR 7.0 million in 2019 and 2018, respectively.

In 2019 and 2018, the short-term benefits amounted to EUR 6.4 million and EUR 5.7 million, respectively. Thereof, EUR 5.5 million (prior year EUR 4.8 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 0.5 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 0.5 million in 2019 and 2018, respectively.

Furthermore, long term benefits for active members of the GEC amounted to EUR 1.5 million (prior year EUR 0.8 million).

The compensation of the GEC also includes benefits from termination of an employment contract in the amount of EUR 0.1 million (prior year EUR 0.0 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 2019 and 2018 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 4.6 million and EUR 4.1 million as of December 31, 2019 and 2018, respectively, as well as provisions or payables relating to compensation for members of key management personnel in the amount of EUR 6.8 million and EUR 5.2 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 0.2 million in 2019 and 2018, respectively. The outstanding balances as of December 31, 2019 and December 31, 2018 amounted to less than EUR 0.1 million.

No prepayments or loans to members of key management personnel were granted in fiscal years 2019 and 2018.

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 2.2 million and EUR 2.9 million in 2019 and 2018, respectively. In 2019, this includes EUR 0.2 million for long-term variable compensation from a 2017 commitment.

Pension obligations to former members of the management board of the parent company and their survivors amounted to EUR 19.9 million and EUR 19.0 million as of December 31, 2019 and 2018, respectively.

27 Number of Employees

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

	2019	2018
Production	7,346	7,358
Sales	1,413	1,416
Research and development	1,142	1,161
Administration	1,563	1,533
	11,464	**11,468**

28 Personnel Expenses

EUR million	2019	2018
Wages and salaries	626.7	579.6
Social security contributions	101.1	95.1
Other personnel expenses	11.8	11.9
	739.6	**686.6**

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
- DER bogen GmbH & Co.KG, Grünwald
- Giesecke+Devrient advance52 GmbH, Munich
- EPC Electronic Payment Cards GmbH & Co. KG, Gmund am Tegernsee
- Giesecke+Devrient Ventures GmbH, Munich
- G+D Immobilien Management 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 2.5 million as of December 31, 2019 (as of December 31, 2018: EUR 2.6 million) relating to tax risks outside Germany exist. As of December 31, 2019, additional contingent liabilities relating to legal disputes amounting to EUR 0.6 million (December 31, 2018: EUR 2.7 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 143.5 million as of December 31, 2019 and EUR 211.6 million as of December 31, 2018.

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 2019 and 2018, 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, 2019 and December 31, 2018, respectively.

Commitments
As of December 31, 2019, Giesecke+Devrient has material purchase commitments which mainly consist of short-term agreements that were entered into during the 2019 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, 2019 is allocated to the respective years as follows:

EUR million	
2020	356.9
2021	38.6
2022	7.9
2023	0.6
2024	0.3
thereafter	0.3
	404.6

32 Grants

In fiscal years 2019 and 2018, G+D received other miscellaneous grants for operational investments in the amount of EUR 2.8 million and EUR 1.2 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 2019 amounted to EUR 3.1 million. The breakdown into categories is as follows: a) fees for audit services EUR 1.5 million, b) fees for audit-related services EUR 0.6 million, c) fees for tax-related services EUR 0.4 million and d) fees for all other services EUR 0.6 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, 2019, 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

The financial investment in Hansol Secure Co., Ltd., accounted for using the equity method, is expected to be sold at the end of March 2020 at a sales price of EUR 6.7 million. G+D expects a net gain from the sale in the amount of EUR 1.0 million. 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. With regard to the developments regarding the coronavirus pandemic, refer to the details in the forecast section of the management report.

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
Transtrack International B.V., Amsterdam	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

[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 Currency Technology Africa Limited, Lagos	100.00
Giesecke+Devrient Currency Technology America, Inc., Dulles/Virginia	100.00
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) 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 and 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 and Devrient Mobile Security Southern Africa (Pty) Ltd, Johannesburg	84.00
Giesecke & Devrient Malaysia SDN BHD, Kuala Lumpur	80.00
secunet Security Networks AG, Essen	79.43
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]
finally safe GmbH i.L., Essen	100.00[3]
secustack GmbH, Dresden	51.00[3]
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]

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

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

	Shareholding in %
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]
E-SEEK Inc., San Diego/California	75.00[3]
Veridos Matsoukis S.A. Security Printing, Athens	60.00[3]
Giesecke & Devrient Kabushiki Kaisha, Tokyo	51.00

[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]
Build38 GmbH, Munich	38.00
Hansol Secure Co., Ltd., Seoul	16.29

[3] These are indirect investments.

Investments held by Giesecke+Devrient GmbH in other related parties

	Shareholding in %
IDnow GmbH, Munich	7.02
Verimi GmbH, Frankfurt am Main	5.92
Brighter AI Technologies GmbH, Berlin	4.85

Munich, March 23, 2020

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]
(until April 9, 2019) (Deputy Chairman)
Dachau

Eva Schäflein-Bohsewe[1]
(from April 9, 2019) (Deputy Chairman)
Neubiberg

Achim Berg
Munich

Prof. Dr. Gabi Dreo Rodosek
Haar

Ralf Gerlach[1]
Gilching

Peter Hanke[1]
(until April 9, 2019) Pirna

Raimund Litters[1]
(from April 9, 2019) Rosenheim

Astrid Meier-Sikorski[1]
Munich

Horst Müller[1]
(from April 9, 2019) Ernsgaden

Claudia Scheck[1]
Königsmoos

Dr. Walter Schlebusch
Munich

Verena von Mitschke-Collande
Tutzing

Stefan Winners
Munich

Advisory Board

Prof. Klaus Josef Lutz
(Chairman) Munich

Verena von Mitschke-Collande
(Deputy Chairman) Tutzing

Achim Berg
Munich

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

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