

MARKETS

GERMANY

1/19

Berlin is home to some of the world's leading blockchain software developers and has been called "the most important city in the blockchain cosmos."

CHAIN OF TRUST

Blockchain – the controversial encryption technology behind bitcoin – comes of age as investors, company executives, and even politicians embrace its potential to transform global industry.

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How Saxony's lithium deposits will power the e-mobility revolution

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Germany's big data industry ramps up to support digitalization

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How immunotherapy will revolutionize cancer treatments

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FOCUS

Chain of Trust

Why investors, fund managers, and corporations are backing blockchain, the decentralized data-sharing technology developed for cryptocurrencies.

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MANUFACTURING



Designing in Success

Renowned industrial designer Dieter Rams offers advice to foreign companies on designing for the German market.

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»Foreign companies that wish to thrive in the German market must adapt their design to suit German tastes.«

Dear Reader,

Decentralized, secure, self-controlling, and revolutionary. Blockchain is all that and much, much more. Apart from enabling so-called cryptocurrencies like bitcoin, it provides the technical infrastructure upon which a new kind of internet can be developed; indeed, the future success of the digital economy as a whole could depend on it. The evolution of blockchain from a controversial to a game-changing technology – and why Berlin is at the epicenter of it – is the cover story of this issue of *Markets Germany*.

For many years, industrial products that carry the “Made in Germany” mark have been widely recognized as being of the highest quality. However, this also means that foreign companies that wish to thrive in the German market must adapt their product and design to suit German tastes. Quality and functionality are the keywords here. The article “Designing in Success” offers a recipe for success.

Germany is admired the world over for its outstanding industry, its prosperous *Mittelstand* (SMEs), and its unique research landscape. It is a little-known fact, however, that Saxony's mines are full of lithium. Known as “white petroleum,” the mineral is a vital component in batteries and will power the e-mobility revolution. Read on to find out how investors can profit from Germany's vast mineral reserves.

Dr. Robert Hermann, CEO

Email: invest@gtai.com

ONE TO WATCH

Photo: laif/Stephan Sahn



Pedro Gómez, co-founder of Orbem AI

There isn't much Pedro Gómez doesn't know about magnetic resonance imaging (MRI). After completing his ground-breaking PhD on Accelerated MR Imaging at the Technical University of Munich (TUM) in 2017, he began putting his findings into practice. Orbem's first product, Genus, can determine the fertility and sex of hen's egg embryos automatically, obviating the unethical practice of culling male chicks. He explains: "MR scanning allows you to see inside objects without destroying them. And we can do this with a batch of eggs extremely quickly now – not in an hour but in a few minutes – while the AI component classifies instantly." The poultry app, which is at an early stage, has been patented by TUM's Bayerische Patentallianz

GmbH (BAYpat) but the technology Orbem is currently prototyping could be widely applied across the food industry. "We could enable 100% quality control sampling without altering the product."

The Mexican-born biotech scholar who won the 2018 BMWi startup award is no newcomer to commerce: this is his third startup. The first two, launched in his hometown of Monterrey, had social purpose at their root. "The driver for me in a venture is, are we going to make a difference?" he says. "Plus there must be a challenge. If people say, 'I'm not sure you can do that,' I just smile." He puts his success down to "grit." "As my dad once said, 'You have to be good, you have to like it, there has to be a market, and it has to transcend.'"

Quick facts

Name Pedro Gómez

Age 29

Nationality Mexican

Company name Orbem AI

Founded September 2017

Based in Munich

Industry Agriculture/Agrifood technology

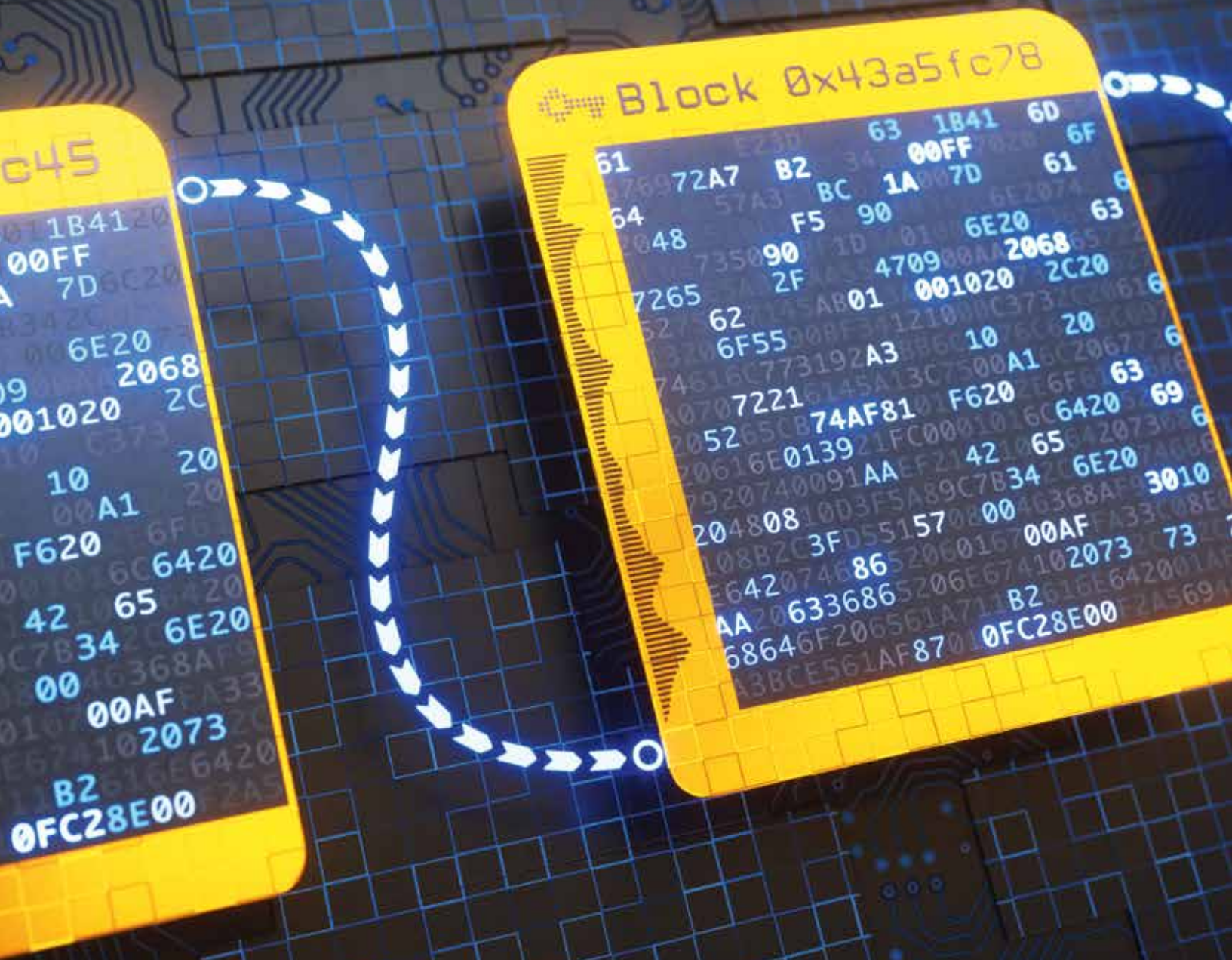
Capital Invested €300,000



www.orbem.ai

What is blockchain?

Blockchain is a decentralized, data-sharing technology that functions as a public ledger for storing and linking transactions or processes. The encrypted data blocks are stored on a large number of computers worldwide, which makes them virtually impossible to manipulate or hack.



Chain of Trust

Germany is one of the most important players on the burgeoning international blockchain scene. German developers, startups, and more established companies are working with international investors and collaborators to find exciting new use cases for the encryption technology.

The hype around blockchain and its association with controversial cryptocurrencies like bitcoin has alarmed financial markets in recent years. But attitudes towards the technology, which enables the authentication of transactions without them needing to be administered or guaranteed by a central authority, are changing. Bankers, company executives, legal counsels, and politicians are now embracing its transformative potential for global industry.

Blockchain was invented in 2008 by a person (or group of people) calling themselves Satoshi Nakamoto to serve as the public transaction ledger of the cryptocurrency bitcoin. But as Stephan Noller, VP of the German Digital Association for the Digital Economy (BVDW), says, “What’s known as blockchain is actually a technology that can do much, much more than create virtual currencies. In fact, it can help solve many of

the challenges of the digital economy.” Quite simply, it could provide the infrastructure for a new kind of internet: a chain of decentralized data networks made up of multiple nodes (participants) within which transactions can be openly shared and updated, and which, critically, is virtually impossible to manipulate or hack.

Noller is not alone in his assessment. For several years now, developers, startups, and tech companies around the world have been experimenting with different ways to apply blockchain technology across different industries, with Germany at the vanguard of this movement. Marc Rohr, head of digital and service industries at Germany Trade & Invest (GTAI), says, “Berlin has become one of the most important meeting points for blockchain thought leaders, startups, and developers. The technology is evolving very quickly and could soon lead to upheavals



»Many German and foreign companies and investors are working together with crypto startups and developers on joint projects.«

Marc Rohr, head of digital and service industries at GTAI

in many industries, enabling new business models and more efficient value chains. Foreign investors and companies that want to be at the forefront of this development will find exciting entry-level opportunities in the German blockchain scene.”

Building blocks in Berlin

Berlin has been described by Joseph Lubin, co-founder of the Ethereum Foundation, which brings together established companies and blockchain developers, as “the most im-

portant city in the blockchain cosmos.” For many years there has been a thriving scene in the city, which is home to many renowned software developers and IT experts who deal with cryptographic encryption technologies. “Blockchain builds on these technologies,” says Rohr. Berlin’s developers recognized the potential of the technology early on and began to design creative applications to develop it further, attracting other developers and entrepreneurs from around the world. More recently, large international corporations

have arrived and hired local blockchain specialists to compete in this growing market.

Some of the best-known international blockchain projects, such as Ethereum and the IOTA Foundation, which works on a faster and more efficient variant of blockchain technologies, have development centers in Germany and now set the pace worldwide in terms of blockchain innovations. “Many German and foreign companies and investors from a wide range of industries have now recognized the potential and are working together with crypto startups and developers on joint projects,” says Rohr.

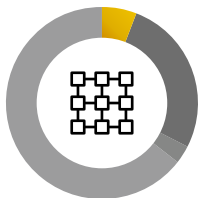
Growing value chain

Companies and investors are primarily interested in three characteristics of the technology. The first is decentralized data storage: blockchains function as “distributed ledger technologies,” where data is packed into linked blocks, encrypted, and stored worldwide on a large number of computers. On the one hand, a widely-distributed infrastructure makes data storage more complex and slower than in traditional, centralized database systems. But on the other, the infrastructure has a decisive advantage: the immutability of the collated data – blockchain’s second key characteristic.

The blockchain acts as a kind of digital notary, which, when exchanging data between different actors, records and authenticates all relevant information and transactions. The encryption technique, which concatenates each individual data block with the next one indissolubly, ensures that this

FACTS & FIGURES

Blockchain: an important trend for 1 in 3 German startups

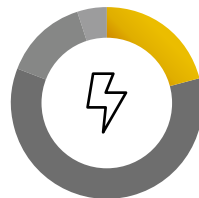


- currently in use **6%**
- discussed or planned **27%**
- don't know **2%**
- no plans at the moment **65%**

What role does blockchain technology play in startups?

Source: Bitkom

Energy sector as an early adopter of blockchain technology



- game-changer for the energy market **21%**
- further spread likely **60%**
- might be used for a niche product/service **14%**
- low to non-existent **5%**

German energy companies see huge potential in blockchain technology.

Source: dena 2018

FACTS & FIGURES

Market trends: new tech on the block

data cannot be manipulated. This counterfeited security leads to the third useful property of blockchain: it enables and generates trust.

Because the data generated and stored in the blockchain can be traced and verified at any time, even anonymous actors who do not know each other can deal directly with each other – automatically and without a central intermediary such as a bank or a notary. “In a globalized and digitized economy, these properties provide crucial benefits,” says GTAI’s digitalization expert Rohr. “They have the potential to radically simplify corporate international collaboration.” Furthermore, he adds, “Blockchain systems can be used for the automation of many processes and transactions and provide companies with new ways to share large amounts of data... It can also make it easier for companies to apply future technologies such as the Internet of Things and artificial intelligence.”

Securing the Internet of Things

Digital business expert Noller, who founded the blockchain startup Ubirch in 2014, shows how this can look in concrete terms. “We have developed a blockchain application that enables the secure and automated collection of IoT data in the industry,” he explains. For example, when a manufacturing facility produces a part, it stores all the manufacturing data for that part in the blockchain. The cryptographic key to this data lies in the sensor of the production machine, so the machine that performs the next production step can automatically access the data and process the component accordingly. This enables the machines to act largely autonomously and to work across the value chain without tedious checking processes.

Noller’s concept attracted the interest of British investor Breed Reply, which funds startups specializing in the Internet of Things (IoT). “The security of data transmission between different machines and actors in the value chain is an important prerequisite for the functioning of IoT applications,” says Matthew Scherba, partner at Breed Reply in London. “Blockchain technology could, in our estimation, be critical to success for many IoT business models,” he says. “That’s why we’ve been looking for blockchain startups around the world for a while, who have a working model for use cases in IoT.”

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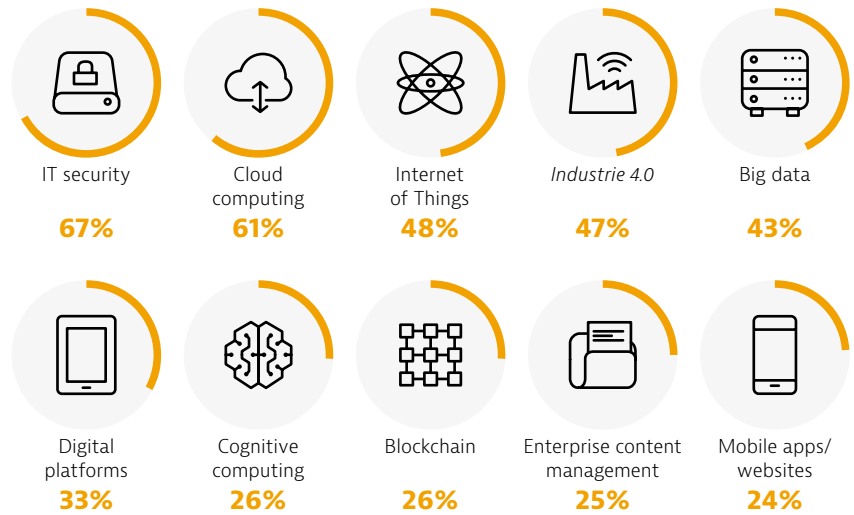
Number of times the word **blockchain** is mentioned in the coalition agreement of the governing parties CDU/CSU and SPD.¹⁾

\$4.2bn

Figure raised by the blockchain company **Block.One** from investors for an Initial Coin Offering (ICO) in June 2018.

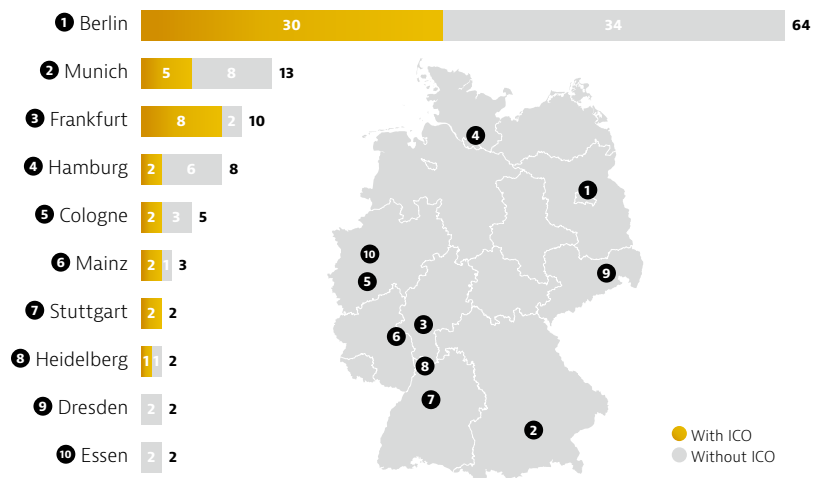
Tech themes of 2018

The most important technological and market trends in the digital industry.²⁾



Chain reaction

Location of German blockchain startups and share of ICO-financed blockchain startups.³⁾



1) Source: Koalitionsvertrag; 2) Source: Bitkom 2018; 3) Source: LSP Digital;

Germany's thriving scene

It was no surprise to Scherba that he found what he was looking for in Germany. "From our IoT perspective, we see that Germany is already well-advanced on the subject of blockchain applications for the real economy," he says. "For blockchain and IoT startups looking to develop applications for industry, Germany is an interesting location: it is known for its engineering and it's relatively easy for startups to find customers and development partners."

Even investors with a broader focus have been watching developments on the German blockchain scene with interest. Take Blue-

120 blockchain startups are pioneering new business models in Germany.

Source: ISP Digital 2018

Yard Capital, an investment fund established in Berlin in 2016, for example. It invests in startups that enable applications of decentralized technology that can fundamentally transform business models in a number of sectors. The fund's founder Ciarán O'Leary raised €120m from international investors and works with major U.S. funds such as Thrive, UPS, and Sequoia and with venture capitalists such as Union Square Ventures.

The blockchain community in Berlin is also attracting investment from Asia: the startup Xain collected €6m in seed financing this summer from Asian Business Angels,

FOUNDER PROFILE



Centrifugal force

Silicon Valley FinTech legend Maex Ament chose Berlin as the base for his first blockchain company, Centrifuge. He tells *Markets Germany* why he is thrilled by the dynamic scene in the German startup capital.

Mathematician and serial entrepreneur Maex Ament founded several successful FinTechs in San Francisco – including Taulia, a digital platform through which companies can handle trade finance – but has chosen to relocate to Berlin for his latest venture. "With Centrifuge, we want to leverage blockchain technology to build a platform for global supplier finance," he explains. "We believe blockchain will enable a new kind of business interaction in complex supply chains."

The German-born tech guru says Berlin was a natural choice. "The talent pool of blockchain developers from all over the world, who come together here in Berlin, is simply incredible," he says. "In no time at all, we recruited a team of 15 people from eight nations, who are working with us to promote our idea." The main investor in the startup is also based in the capital: "We are pleased to announce that we have a Berlin-based investor BlueYard Capital who believe in our idea and have prestigious partners in Silicon Valley."

At the heart of Centrifuge is a high concept: companies can share and share data with partners in their supply chain through an open B2B platform. "At the same time, they retain full sovereignty over their own data," Ament explains. Every supplier can use forgery-proof data from the platform to prove at any time that orders, invoices, or payments have been agreed with a specific partner. "If I'm a medium-sized supplier, for example, I can use this information to go to a factoring provider or a bank and secure a favorable financing solution." Currently, the founders are working on a proof of concept with a large German chemical company: "We want to show that our system brings added value to all players, both globally and in complex supply chains."

among others. Xain are developing a version of blockchain operating system for cars in collaboration with Porsche.

But despite a handful of specialized funds, blockchain remains unfamiliar territory for many investors and companies and they should be aware of certain considerations when investing in startups. For example, many of the companies use so-called Initial Coin Offerings (ICOs) to finance their ideas and business models. In the process, quasi-digital securities are raised: the company generates "digital tokens" (comparable to value coupons) and subsequently sells them. Since ICOs are still largely unregulated, this crypto-crowdfunding is controversial and considered a highly risky investment. Several fraud cases have recently come to light, in which hopeful investors were strung along. Despite the risks, a lot of money continues to flow through ICOs. Last summer, bona fide Hong Kong-based startup Block.One collected more than \$4bn. The company, which is part-owned by the German entrepreneur Christian Angermayer, aims to build the largest global platform for blockchain developers.

Support from the top

Meanwhile, in Germany, the governing coalition is working to create a secure regulatory environment for blockchain investors and projects. "In order for companies to successfully apply blockchain technologies, they need a secure legal framework," says Nina-Luise Siedler, a lawyer advising blockchain startups and corporates on joint projects. "That's not easy, because the topic is still very new for everyone and because the changes that blockchain systems bring to the transaction process are very fundamental." She is not just concerned with the safe handling of ICOs. "It is important for almost all

blockchain projects that politicians and authorities, as well as consumers, understand how this technology works,” says Siedler (who is also a member of the Blockchain Federal Federation, established in 2017 to help facilitate the blockchain agenda). “Even the most exciting blockchain projects bring nothing to companies and investors if they fail in the end because they are not compatible with the legal situation or if the users doubt the security of their data.”

The blockchain scene is rapidly evolving to keep up with the heightened level of interest in the sector, and political support

FACTS & FIGURES

58%

Manufacturing companies planning to invest in blockchain in 2018

Source: Top-IT-Trends 2018, Dimension Data

for the movement is growing. Within a relatively short time, Berlin’s tech community has created good framework conditions for their projects to grow, and is in the process of solving the technical and regulatory challenges of distributed ledger technology. As a result, Germany has become one of the most dynamic blockchain locations in the world, offering a plethora of exciting opportunities for investors willing to take the plunge.



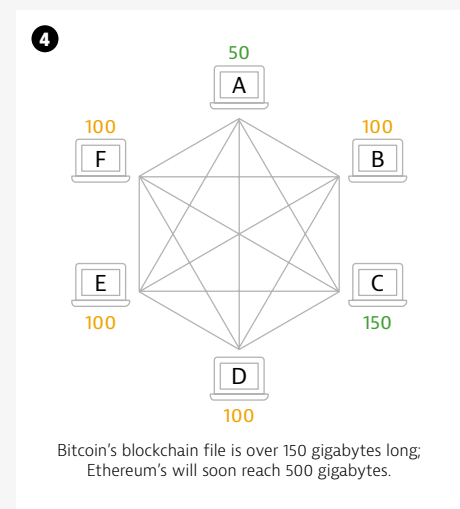
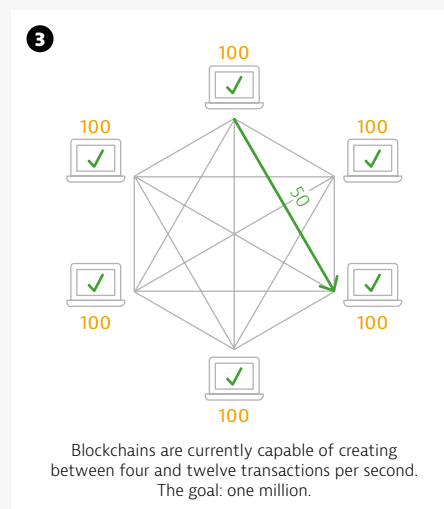
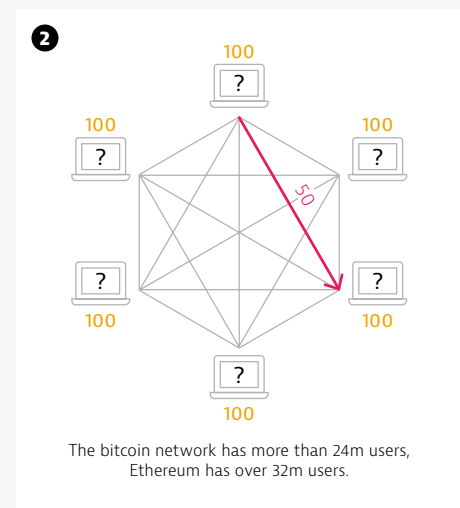
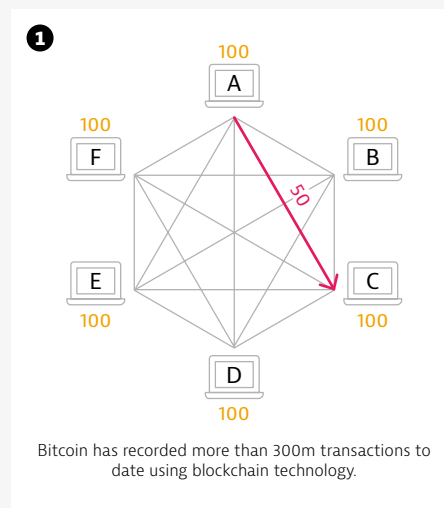
Contact: marc-philipp.althaus@gtai.com
GTAI expert for blockchain

BUILDING BLOCKS

How the blockchain works

The blockchain functions as a decentralized data network in which all participants manage all transactions together in a kind of cash book. Each participant has a current copy of the cash book – this is the actual blockchain – and there is no central administration.

- 1 Actor A and Actor C have agreed on a transaction. A wants to transfer 50 units.
- 2 The participants in the network check if all requirements for the transaction are fulfilled (e.g. does A own 50 units?)
- 3 If everyone agrees, the transaction is approved and written in a data block (record). The data block contains a number of transactions. When the block is full, it is attached to the other blocks and a new block is written. The blocks are linked using cryptography.
- 4 The transaction is documented within the blockchain permanently. Each participant gets a copy of the latest blockchain version instantly; the transaction cannot be manipulated.



Source: in-house research

The Crypto Evangelist

Jens Strüker, head of the Institute of Energy Economics at the Fresenius University of Applied Sciences in Frankfurt, is convinced that blockchain technology will revolutionize his industry and thrilled that Germany is driving the change.

Mr. Strüker, as a consultant for the German Energy Agency and a specialist in energy management, I understand you are currently evaluating about a dozen proposals for blockchain applications in the energy industry. Is blockchain technology ready for practical use?

JENS STRÜKER: In the energy sector, this time is fast approaching. In particular, the ability to automate and handle real-time contracts, processes, and transactions using blockchain technology is literally electrifying companies in the industry.

Why are companies so interested in it?

STRÜKER: For several years, the German energy industry has been undergoing a radical change from a centralized energy supply to a decentralized system. Blockchain technology could be the answer to many of the challenges companies are facing along the way. There are many use cases and many exciting pilot projects. The German energy industry is an ideal test field.

Can you give an example?

STRÜKER: The Energy Web Foundation, founded in 2017 in Berlin, is one exciting project. German energy companies have got together with a large number of international partner companies and institutions from Europe, Asia, and the U.S. and are developing an energy blockchain that is compatible with as many national regulatory systems as possible worldwide. The beta version of this energy blockchain has been in testing since the summer of 2018.

»The German energy industry is an ideal test field for blockchain applications.«

Jens Strüker, head of the Institute of Energy Economics at the Fresenius University of Applied Sciences



What is so special about this project?

STRÜKER: The special thing about these open source blockchain projects is that they are cross-border, and that the participating companies work together on this technology and share experiences, even though many of them are actually competitors. They are jointly developing applications for the trade of certificates of origin, demand management, and peer-to-peer electricity trading, which will then be made publicly available.

Why are energy companies getting involved?

STRÜKER: Because they have recognized that they can use an open blockchain, which

Energy consultant Strüker believes big energy companies can build scalable, new business models on an open blockchain.

serves as a common technical market standard, as the basis for their own, scalable, new business models. It's a tightrope walk: they must protect sensitive corporate data while storing a lot of data open in the blockchain to enable secure and efficient real-time energy transactions. This is extremely exciting – and there is currently no comparable large-scale blockchain project in the energy sector anywhere in the world.

Block by Block

Hansebloc is the brainchild of a handful of logistics and IT companies based in Hamburg. They started out on a mission to see how blockchain technology could improve efficiency in logistics and are now looking for foreign collaborators.

Decentralized, highly responsive, and fully networked: this might be a description of blockchain technology but it could also apply to the logistics industry. In order for goods to travel around the globe quickly, smoothly, and to reach their destinations safely and on time, many companies, freight service providers, sub-contractors, and transport specialists have to work in concert. “Every time a product changes from one logistics service provider to the next, innumerable pieces of information have to be checked and passed on,” says Jan C. Rode of the Logistics Initiative Hamburg, an association of logistics companies and research institutions in the northern German port city. “Each of these companies in turn has its own data processing systems, its own documentation processes, and software solutions.”

Blockchain closes the gap

Unified standards are still the “missing link” in the logistics business. Misalignments between service providers and port authorities – and even bureaucratic differences between nations – can cause unnecessary delays, mistakes, and breaks in the chain. Rode is one of several coordinators within an initiative that hopes to change all that. The Hansebloc blockchain project brings together four logistics companies, four IT companies, and researchers from two Hamburg universities, in a consortium that receives financial support from the Federal Ministry of Education and Research (BMBF). Quite

simply, he explains, “We want to visualize, simplify and, where possible, automate all these data flows using blockchain solutions.” In future, a consignment would be covered by a “smart contract” that could navigate all the obstacles along the way.

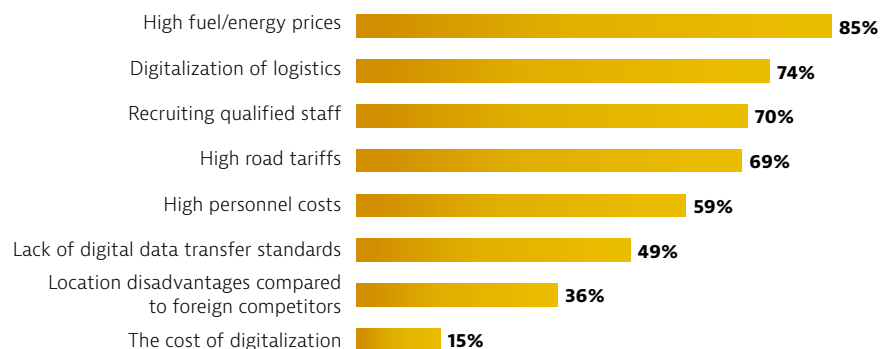
“But Hansebloc should not be just a Hamburg or a German solution, or an isolated pilot project,” he asserts. “Instead, we want to find a scalable solution that can be deployed internationally, on the basis of which logistics companies can develop new digital products and services.” The Hamburg entrepreneurs

are already working closely with similar projects in other European port cities such as Antwerp and Rotterdam, and are actively looking for global partners to form an international exchange on blockchain standards. “Port cities are very good locations to start blockchain projects,” says Rode. “Because the ports are already important hubs, where important players and national regulations meet, and where information from transport management systems and a variety of logistics connections converge cross-border.” Ports provide perfect test cases for the blockchain model.

FACTS & FIGURES

Is blockchain the future of logistics?

Digitalization is a major challenge for logistics companies. What are their greatest challenges?



Source: Bitkom



»Software matters, Swiss quality software even more. Digital at its best for Germany.«

Michael Seifert,
managing director of Netcetera Germany
demonstrates a new software product.



FinTech

From Zurich with Love

Swiss software pioneer Netcetera comes to Berlin

A recent EY study identified Berlin as the hottest location in Germany's flourishing FinTech landscape. The capital city's wealth of talent and opportunity has attracted yet another big name: Netcetera. The Zurich-based software specialist is a leading provider of secure e-commerce and mobile contactless payments. In March, it announced that it will open a new branch in the Spielfeld Digital Hub Berlin, just two years after launching one in Munich. Being on the ground in Berlin will allow the Swiss company to deepen its ties with local credit card companies and bring digital solutions to a range of sectors including banking, insurance, media, healthcare, and transport. "Berlin is a hotbed of talent and a melting pot at the same time," says Michael Seifert, managing director of Netcetera Germany, adding that it is "the ideal starting point to further establish our business areas in Germany."

www.netcetera.com

Netcetera helps its clients explore different customer journeys using augmented reality and virtual reality.

Photos: Netcetera

E-Mobility

Bringing the Power to You

Where and when you need it

The growing number of electric vehicles in cities means it is often hard to find a free local charging station. Berlin-based startup Chargery has designed a power delivery service with perks. Via an app or system connection, customers can book an appointment for a power-up. A technician hauls a mobile charging station by bicycle to the vehicle, and while the compact lithium-ion battery fills the car with green energy, the car also has its tire pressure adjusted, wiper fluid topped up, and its interior cleaned.

www.chargery.de

Printed Electronics

Light-Emitting Packaging

Here comes the smart carton

Blinking boxes? Glowing bottles? Chemnitz-based startup Saralon has developed "super-functional" inks to make packaging interactive, tamper-proof, and more attractive. The inks allow packaging makers to print a range of disposable electronics – circuits, sensors, displays, and batteries – and integrate them into many types of packaging such as cartons, foils, plastic boxes, or glass vials. The technology can also be easily integrated into existing production lines with conventional printing machines.

www.saralon.com

Medical Technology

Weapons to Fight Wounds

Harnessing the power of plasma

The healing effects of plasma have long been known, but hospitals and other care-givers have not had an efficient and easy way to utilize it – until now. The Greifswald-based startup Coldplasmatech has developed a duo of medical devices – the PlasmaCube and PlasmaPatch – that could revolutionize the treatment of slow-healing, chronic, or infected wounds. They harness plasma therapy in a way that is not only safe, easy, painless, and portable, but can also speed up the treatment process by covering a large area of skin. While stimulating the body's self-healing powers through cell regeneration, the active dressing also disinfects wounds by killing even the most resistant bacteria. The spin-off from the Leibniz Institute for Plasma Science and Technology has won multiple prestigious awards, including the 2018 German Innovation Award, and reportedly plans to produce 500,000 patches in 2019.

www.coldplasmatech.de

Renewable Energy

Just Add Sun

Cheap, clean water for far-flung places

The United Nations estimates that nearly one billion people have no access to clean drinking water. Many of them live in harsh conditions in remote parts of the world, but one thing they often *do* have is lots of sunshine. With this in mind, the engineers at Berlin-based Boreal Light developed a robust, affordable, outdoor system that can desalinate and filter seawater, or brackish water, providing up to 650 liters of potable water – free of contaminants, bacteria and viruses – per day, or enough for over 250 people. The “Winture Platen Cube” devices are designed to work in off-grid areas, require minimal maintenance, and be powered by a relatively small solar array or wind turbine rather than a diesel generator. As an added bonus, the device also supplies low-voltage electricity for charging phones or radios, as well as hydrogen gas that can replace firewood or charcoal as a cooking fuel.

boreallight.com

Chemistry

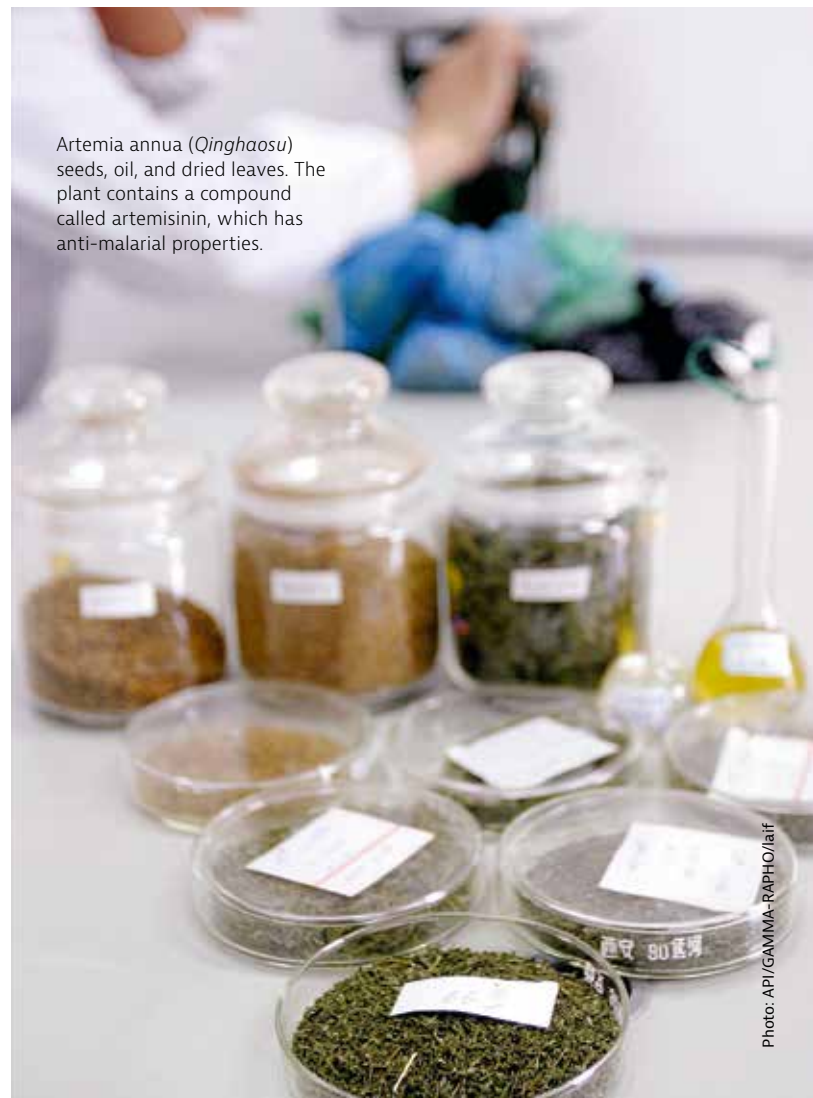
Malaria Beware!

New production process will save lives

The World Health Organization estimates that malaria claimed 445,000 lives in 2016. What is particularly tragic about this statistic is that effective anti-malarial drugs exist but are too expensive for the people who need them most. However, scientists in Eastern Germany have now developed a production process that could save millions of lives. Quite simply, it makes artemisinin – the key component of the most effective anti-malarial drugs – in a more inexpensive, efficient, and eco-friendly way. The new process, jointly developed at the Magdeburg-based Max Planck Institute for Dynamics of Complex Technical Systems and the Potsdam-based Max Planck Institute of Colloids and Interfaces, takes its catalyst directly from the annual wormwood plant and allows artemisinin to be synthesized in less than 15 minutes, rather than the three weeks it takes under natural conditions. ArtemiFlow, a spin-off launched by Max Planck researchers, will now use the process to produce artemisinin on an industrial scale.

www.tinyurl.com/fighting-malaria

Artemia annua (Qinghaosu) seeds, oil, and dried leaves. The plant contains a compound called artemisinin, which has anti-malarial properties.



Designing in Success

Germany is a major market for consumer goods and one that foreign manufacturers are keen to crack. But brands beware! Only products that follow the right design principles will satisfy the discerning German consumer.

Germany is one of the largest consumer markets in Europe. With a population of almost 83m and a spending power which ranks among the highest on the continent, it is an Eldorado for foreign companies looking to sell their products. By the end of 2018, Germans will have spent €1.9 quadrillion on consumption, living, leisure, and savings, says German market research institute GfK – an increase of 2.8 per-cent on 2017 – while approximately a third of all expenditure is attributed to consumer goods.

Unsurprisingly, many foreign companies are queueing up to get a foothold in the German market, but not all of them will be successful. Only those who understand what kind of design works in Germany will have a chance of survival. Due to the size of the population, German consumers are very diverse and have different needs and values. “There is not *one* German customer. Selecting the relevant ones leads to a valuable context for the design,” says Janine Budde, founder and managing partner of the Munich-based design agency Budde Burkandt Design. However, from a meta-perspective, Germans do have certain preferences in product design that uniquely characterize them as a people and these can be summarized in three guiding principles:

1) Functionality

Form follows function: the credo of the Bauhaus era of the 1920s is still just as relevant today. Stripped-down design shapes the products of many German companies; it is also a principle that many famous and successful foreign brands adhere to, because they know that Germans like products that are reduced to the essentials. “The Bauhaus style has influenced products in Germany for decades. The Germans are simply used to it,” Florian Schaake, creative director at the design agency Peter Schmidt Group, says. Straight, unemotional, minimalist, Bauhaus design also resembles the character of German society. “That’s why it works so well here,” Schaake states.

»Design is about more than shape and outer shell. Rather, design is an economic discipline.«

Florian Schaake,
creative director at Peter Schmidt Group

Functionality also includes convenient handling. “This is very important for German consumers,” says Gunnar Spellmeyer, professor of product design at Hannover University of Applied Sciences and Arts. Esthetic details are arguably important, but functionality tops it all. “The product has to work. It does not matter if it’s blue or red ultimately,” he asserts. “Products must also have a meaning. Otherwise they will not work in Germany.”

2) Transparency

Products are made to be used, that much is clear. But one critical question for Germans when making buying decisions is: does it do what it says on the label? “As I see it, Germans mostly focus on the functional benefit they gain from a product,” says Budde. It is therefore all the more important that products deliver on their promise. Product designer Schaake adds a word of caution: “If companies don’t fulfill what they said they would, Germans can be very resentful.”

Transparent products also help consumers to understand and use them easily. User guidance and intuitive handling are of utmost importance for Germans. “They like to know what they can use the product for,” says university professor Spellmeyer. The functionality of the product also supports this

aspect: simple, stripped-down design makes products understandable.

3) Quality

The “Made in Germany” seal of quality is appreciated worldwide. It is therefore hardly surprising that Germans have high standards and attach great importance to high-quality products. The bottom line is that foreign manufacturers must ensure their products and packaging give the appearance of quality, value, and authenticity. For example, the kitchen utensils manufacturers Alessi from Italy and Rösle from Germany are both successful in the German market. Alessi stands for playful and emotional design, whereas Rösle focuses on a pure minimalist approach.

EXPERT ADVICE

The Principles of Good Design

Dieter Rams is considered one of the most successful industrial designers of our times. He sets down his top ten commandments for good design.

Good design is...

- Innovative
- User-friendly
- Aesthetically pleasing
- Easy to comprehend
- Unobtrusive
- Honest
- Durable
- Consistent down to the detail
- Environmentally friendly
- Uses as little “design” as possible

In recent years, German consumers have become more quality conscious, if anything, not less. The VuMA Touchpoint study, which is conducted by the German market research institutes GfK, IFAK, and Ipsos, reports that 42 percent of the sampled population stated that quality was more important to them than price. In contrast, only six percent chose price over quality. In 2014 by contrast, 41 percent said they preferred quality over price. Foreign manufacturers must never assume that what works in their home market will work in Germany.



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The showroom of Vitra Campus, a furniture design company based in Weil am Rhein, Germany, with contemporary domestic designs by Vitra, Moebel, and economy



Big Data, Big Plans

As Germany gears up for digitalization across the industrial landscape, the market for big data is undergoing a period of pronounced growth. The impact of the information explosion on big industry in particular, will be nothing short of electrifying.

A data mining demonstration in the *Industrie 4.0* area at the Bosch research center in Renningen, Germany. The electronics giant is working on new methods for extracting useful information from large amounts of data and evaluating it, for example, to predict machine maintenance requirements.



The big data market just got bigger. The forecast growth for 2018 was ten percent on the previous year for hardware, software, and combined services in Germany, according to the German Association for Information Technology, Telecommunications and New Media (Bitkom). “More and more companies are using intelligent data analysis as a foundation to propel their business forward,” says its president Achim Berg. “Big data applications are creating ever more value across all industries, from diagnosis support in health industries to emergency service management in natural disasters.”

Growth is most pronounced in the hardware sector, with 18 percent year-on-year growth forecast for 2018 (and a turnover of around €671m). But the highest turnover is still in software, where €3.1bn has rolled through the accounts in 2018, a nine percent rise on 2017. The ICT services sector is not far behind, recording a €2.6bn turnover (year-on-year growth of 11 percent).

The information explosion

Big data is defined by Bitkom as the ability to process huge quantities of data from different sources at high speed. New forms of database, speech analysis, or visualization tools are the key components. And the quantity of data is growing almost exponentially. Cloud-based computing experts Domo attempted to quantify the ever-increasing magnitude of bytes flying around the globe in their “Data Never Sleeps” presentation: 2.5 quintillion bytes of data created per day – a 90 percent increase over the previous two years. The report also notes that more than half of the world’s web traffic now comes through devices. It reckoned there were 3.6m Google searches per minute in 2017 and 4.1m YouTube video views.

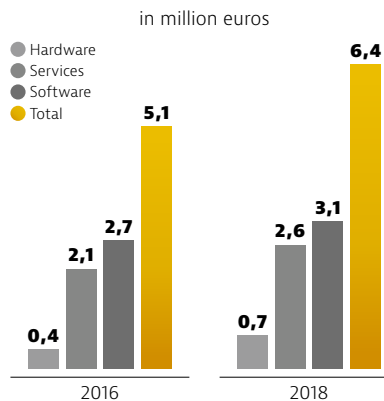
But it is in big industry where big data could have the most impact, revolutionizing the way we work and enabling the Internet of Things, which allows for real-time data exchange between objects, machines, and production plants. To drive uptake, developers are creating IoT platforms that allow companies to design their own applications.

Last year, one in three industrial companies invested between five and ten percent

FACTS & FIGURES

Big data grows in double digits

Turnover from big data in Germany¹⁾



Over 100% growth forecast by 2020

2.5qn

2,500,000,000,000,000,000
(2.5 quintillion) bytes of data are
created every day, says cloud
computing expert Domo.²⁾

Big Data World

Meet GTAI at the world's leading event for big data and AI

In March 2019, Germany Trade & Invest (GTAI) will have a stand at the Big Data World trade show in London. Come and find out more about investment opportunities in big data in Germany. The event is designed to help industry professionals such as CDOs, data analysts, and executives (including key LOB decision-makers and influencers) shape their data strategies. This year, Big Data World is dedicating two conference theaters to the topic of artificial intelligence (AI) – a sector in which Germany excels – with over 60 sessions from leading industry speakers and the latest innovative technologies in the space.

→ **Dates: March 12-13, 2019 at the ExCel Center, London**

→ www.bigdataworld.com

1) Source: Bitkom; 2) Source: Domo

of annual revenue in IoT apps. Worldwide spending on IoT is estimated to reach some €650bn this year; and by 2025, McKinsey say, IoT tech will add as much as €3tn in value to networked factories.

Germany is a global nodal point for research for big data, especially in the critical areas of security and IoT, with facilities such as the Karlsruhe Institute of Technology and the Fraunhofer Big Data and Artificial Intelligence Alliance drawing worldwide acclaim.

Germany's strategic position

Unsurprisingly, many overseas companies are looking to invest in Germany, in order to reap the benefits of its research institutions. The Italian company Fincons is one such example, with plans to set up an office in Germany in 2019. “Germany is perhaps Europe’s most crucial market for big data,” says deputy CEO Francesco Moretti. “Thanks to this and our successful collaborations with tier 1 players in this country, we are planning to set up a more permanent presence here, both in terms of customer volume and proximity to expertise particularly in the field of research and development. The conditions for our expansion are ideal for creating long-term value for our company in an industry on the crest of sharp growth.”

Market statistics portal Statista reckons that the size of the big data market in services will have more than doubled between 2016 and 2020 to €2.267bn, while the size of the overall market is forecast to be around €3.8bn in 2020, more than 100 percent up on the 2016 level. “Big data is one of the most important aspects of *Industrie 4.0*, which is currently central to Germany’s future industrial strategy,” says Henri Troillet, senior manager ICT at Germany Trade & Invest. “Germany’s commitment to the industrial and digital revolution has created a fervent climate for investment in a pioneering field with almost limitless potential. Add in the size of the domestic market and the world-class digital infrastructure, and the future for Germany in this market is going to be extremely globally relevant.”



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Real-Time Communication

5G promises a brave new world of inter-connectivity that will transform our homes, transportation, the workplace, and industrial processes. It also brings with it a wave of exciting new investment opportunities.

Then-German infrastructure minister Alexander Dobrindt made a bold statement last year in which he laid out an eight-year plan that will position Germany as one of the world's leading locations for high-tech ICT infrastructure. "We want Germany to have a high performance 5G network ready to go by 2025," he said, adding that Germany is also set to become a leading market for 5G applications. Following on from 4G, 5G is the fifth generation of mobile communication offering vastly improved speed and bandwidth and, most importantly, low latency (delays in response time).

5G should be commercially available and fairly widespread by 2020, largely as a result of Release 15, a rubber-stamped set of 5G standards agreed by the global meta-standards group, the 3rd Generation Partnership Project (3GPP). "It will be operational in 2020," says Professor Frank Fitzek, head of the Deutsche Telekom Chair of Communication Networks at TU Dresden, who is coordinating the 5G Lab Germany.

Numerous investment opportunities will be unleashed by what is effectively a network-wide upgrade in hardware, software, and related services. "The introduction of computing into networks will make a huge difference, while small cells require more sites and base stations," continues Fitzek.

"The main players – technology manufacturers, network operators, and service providers – will have to redefine their working parameters and that will be an opportunity for new players as well as smaller companies that provide valuable services."

Smart catalyst

5G is also – importantly for Germany – seen as a foundation for smart cities and smart energy grids, reducing inefficiencies across the board. Global research firm Gartner predicts that 20.8bn devices will be connected to the internet by 2020, compared to an esti-

mated 6.4bn connected devices in the world today. This represents a dramatic increase in demand for speedy connections and a huge amount of technology and hardware to be produced.

Most importantly, 5G is a critical component in the Internet of Things (IoT), a commercial concept that envisions a world where not only devices but also machines, cars, robots, and all manner of electronic objects can be linked in real-time communication. Home appliances, door locks, security cameras, wearables, pet chips, and many other inert devices could all be reinvented through real-time communication. "Projects in automobility and the industrial internet have been the most prominent for the potential achievable results," continues Fitzek. "But energy, agriculture, and construction will all be significantly impacted by the improved communication."

While the projected costs of delivering 5G are high – an issue that has attracted criticism worldwide – the value of the telecoms market is bound to leap (an industry that has seen little growth on the tail-end of 4G). "Nobody has the complete picture," says Fitzek. "The pricing of real-time communication is an interesting but unresolved problem."

The impact of true "real-time communication" on other industries will be enormous,

FACTS & FIGURES

€12bn

forecast investment needed
by 2025 to get 5G in Germany
fully up and running.

Source: German Federal Government

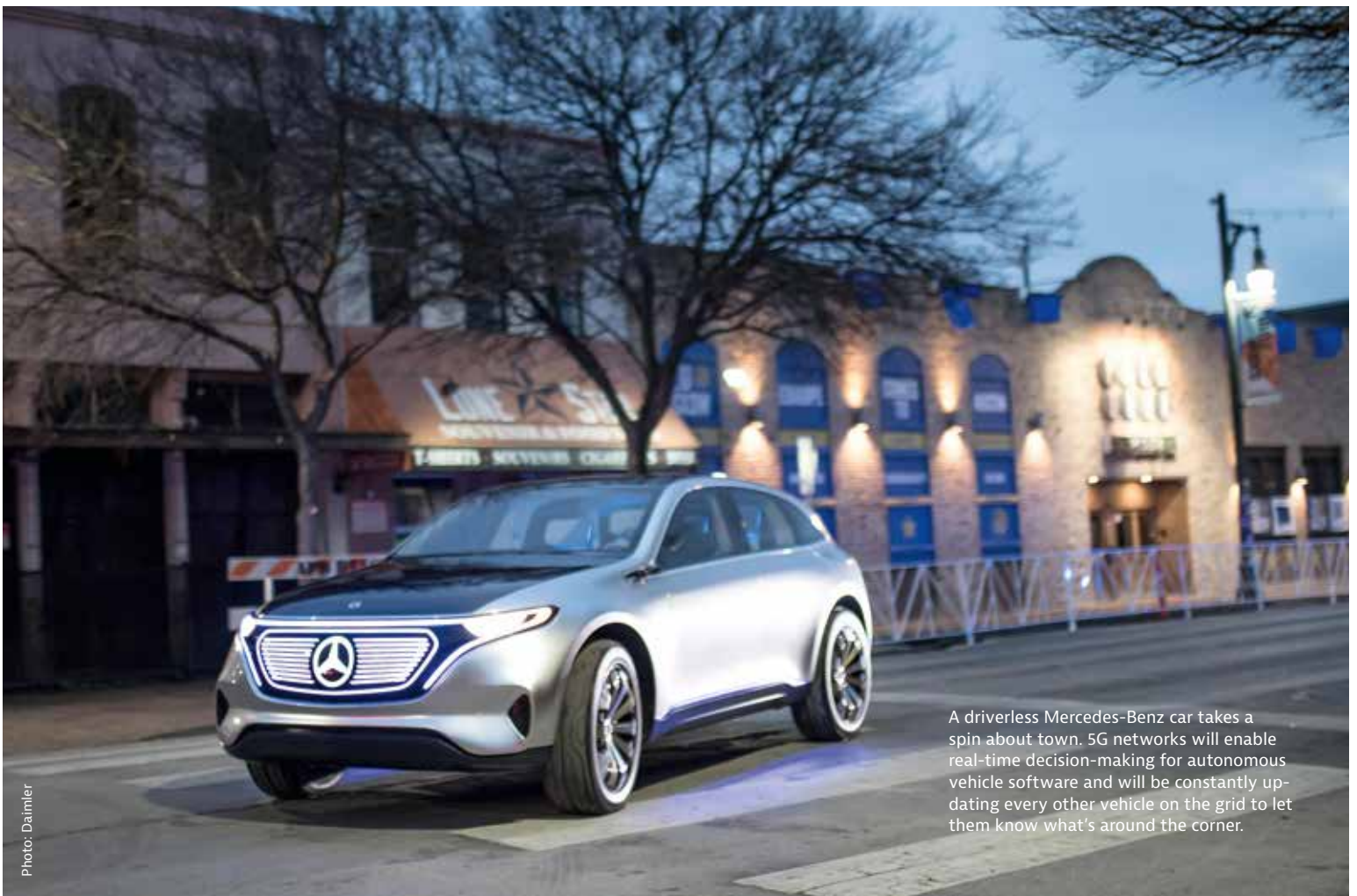


Photo: Daimler

A driverless Mercedes-Benz car takes a spin about town. 5G networks will enable real-time decision-making for autonomous vehicle software and will be constantly updating every other vehicle on the grid to let them know what's around the corner.

if hard to quantify. It matters less for video game players or music streamers, but for applications such as driverless vehicle software, it's the difference between success and failure. At the moment, an autonomous vehicle must be equipped with every type of sensor to avoid it hitting anything else. But ultimately, there is no sensor that can see around the next corner. A network running on 5G – enabling autonomous decision-making in real time – could be constantly updating every vehicle on the grid to let them know what's going on immediately around them, as well as what's coming up elsewhere on the route. 5G will improve all kinds of decision-making processes in this regard – especially those made by robots, who could run amok without the ability to react in real time to an emergency situation.

Delivering on the promise

Existing infrastructure, such as lampposts and traffic lights, are to be used as transmitters to aid the reach of the network, while the increased speeds and bandwidths should further enable networked constructs such as smart homes and intelligent energy grids.

You'll hear about 5G first from the mobile phone providers, who will sell it as a vast improvement on 4G connectivity. But it might be some time before the networks are performing optimally. Behind the scenes, the network gear – switches, routers, and the entire system – will require upgrades. Then mobile devices will need to be built that have 5G chips to take advantage of that new infrastructure.

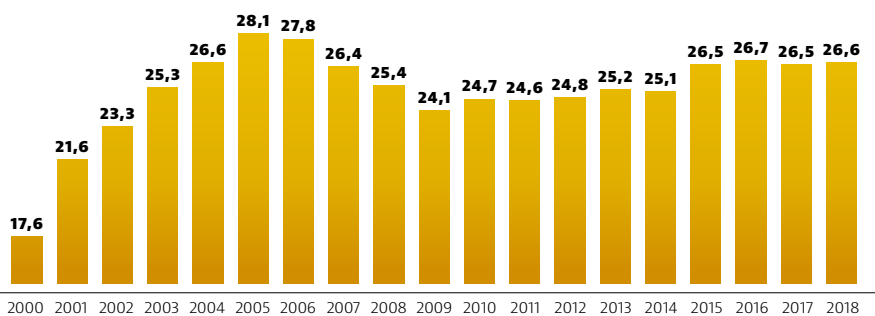
Even after those things appear, we'll be living in a sort of hybrid 4.5G world for a while. We may have to wait until 2022 and the culmination of Release 16 from 3GPP before the promise of real-time communication is delivered.



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MARKET DATA

Revenue from cell phone services in Germany in billion euros



Source: VATM, Dialog Consult, Statista 2018

FinTech's New Home

Foreign investors are lining up to invest in Germany's FinTech hubs in the hope of backing the next game-changing financial technology. Frankfurt and Berlin, as well as Munich and Cologne, are all gaining momentum as digital financial centers.

Germany is cementing its position as a leading location for financial technology startups (FinTechs). The key factors influencing expansion in the sector include robust funding from domestic and international investors, the federal government's active support, and Germany's pole position as a leading financial center in mainland Europe.

Germany is home to some 800 FinTechs: banking platforms like N26 and solarisBank; loan portal Smava; savings and investment marketplace Raisin; robo-advisor Scalable Capital; and Europe's biggest FinTech company builder FinLeap, among others.

"As the most populous country and with an economically and politically stable environment, Germany is the most important market in Europe for FinTech startups," says FinLeap CEO Ramin Niroumand. The country offers direct access to well-trained professionals and serves as an excellent starting point for Europe-wide expansion.

Show me the smart money

German FinTechs raised €778m in the first nine months of 2018, more than the total €713m invested in all of 2017, according to a recent report by German bank Comdirect. Japan's SBI Group, the Netherlands' NIBC Bank, and the U.K.'s Toscafund Asset Management are just some of the global investors that have helped bankroll the sector. "As one of Asia's largest venture capital companies, we specifically invest in the key technologies of the 21st century," SBI Group CEO Yoshita-

FACTS & FIGURES

42

Number of new FinTechs launched in Germany in the first nine months of 2018

€778m

Investment in German FinTechs in the first nine months of 2018 (9% above the €713m invested in 2017)

850

Number of partnerships between German FinTechs and companies such as banks and insurance firms in 2018

ka Kitao said last year, commenting on the company's participation in a €39m funding round for FinLeap.

A recent PwC study details the rapid growth of partnerships between German FinTechs and established banks and insurance companies, which have more than doubled since the beginning of 2017 – in 2018 alone there were over 850 such partnerships. Germany's Federal Ministry for Economic Affairs and Energy is supporting FinTechs through its Digital Hub Initiative, which aims to assist in the digitalization of industry with 12 designated Digital Hubs across the country that focus on specific sectors. They include FinTech Hubs in Berlin and Frankfurt as well as insurance technology (InsurTech) hubs in Cologne and Munich that bring together startups, banks, and insurance companies to collaborate and develop innovative solutions.

The TechQuartier in Frankfurt is seen as an entry point to continental Europe's largest financial center. "Germany is the biggest market in the E.U. and, post Brexit, the go-to place for FinTechs in continental Europe," says TechQuartier's MD Sebastian Schäfer. "The European financial system must create a counterweight to the digital world powers of the U.S. and China," says Niroumand. "We can only do that together."



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Thinking BIG in Biotech

New foreign investors in German biotech star BioNTech are expecting big breakthroughs in cancer therapies through the development of individually-tailored vaccines; rapid growth is anticipated.

Think Big is the motto of Ugur Sahin, founder of the German biotech company BioNTech, and he certainly seems to be practicing what he preaches. BioNTech's revolutionary new cancer treatment that uses individually-tailored vaccines to protect the immune system is attracting a lot of attention and investment. In particular, as the German business daily Handelsblatt noted at the start of 2018, "U.S. investors are betting on the German biotech star."

Mainz-based BioNTech has been bankrolled for the past decade by the former owners of the generic drugs company Hexal, Thomas and Andreas Strüngmann. In January, the Strüngmann brothers made a fresh commitment to the company in its latest "Series A" financing round, where they were joined by American investment houses Redmile, Invus, and Fidelity, and Janus Henderson Investors from the U.K., among others. Raising an impressive \$270m (€225m) in fresh capital, it was the largest Series A round of financing ever offered to a German biotech company and one of the largest in Europe. In total, the company has secured close to \$950m in investment since it was founded in 2008.

Immunotherapy developments

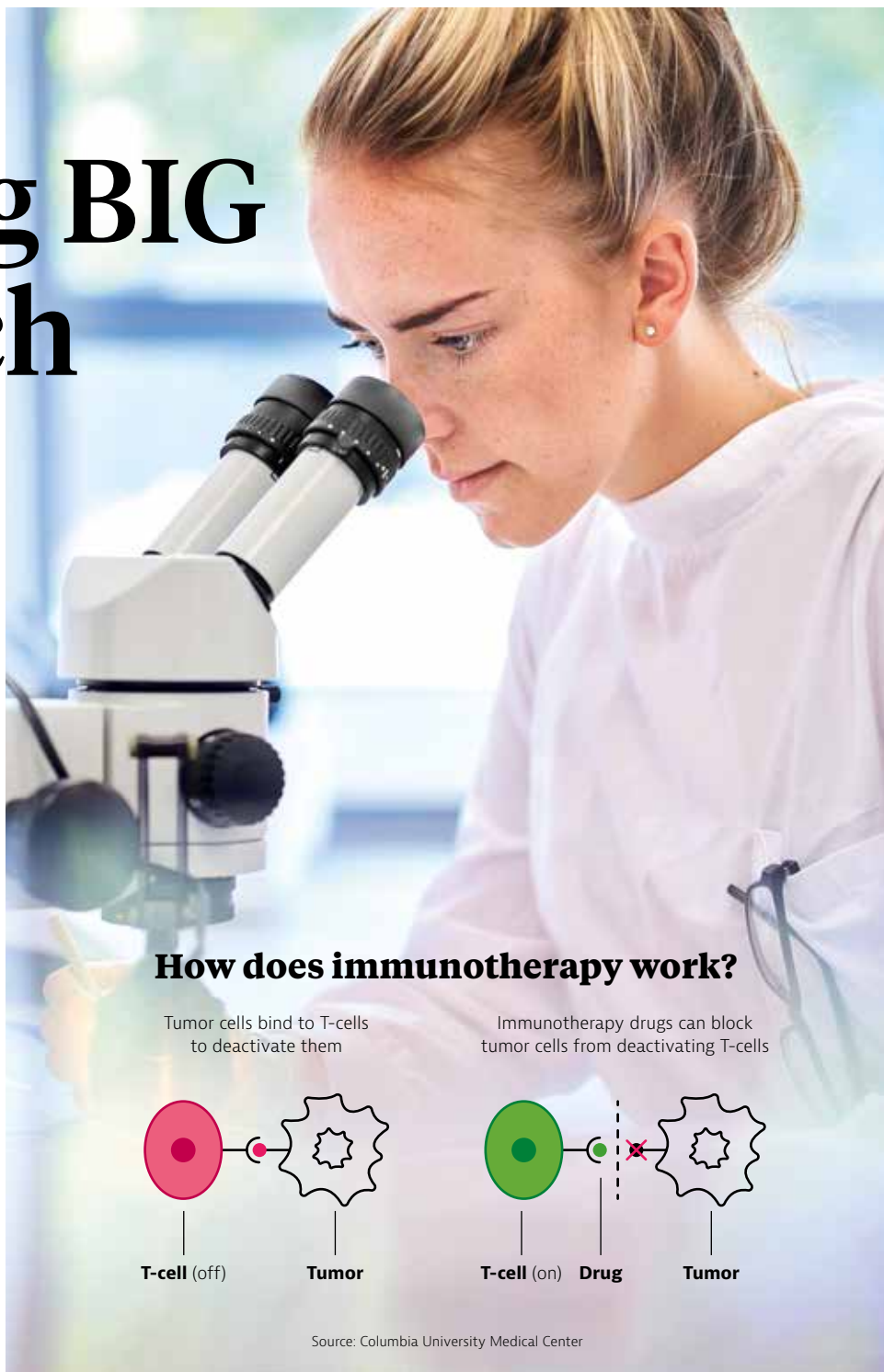
The company's vision is predicated on using the biomolecule RNA (known as the "messenger molecule") to develop individualized cancer therapies. BioNTech is now clinically testing four immunotherapy products and at least two more will be added by the end of 2018. San Francisco's Redmile Group is one of the lead-

ing Series A investors. Its co-founder, Mike Lee, has singled out what he describes as BioNTech's "impressive immunotherapy pipeline based on strong scientific publications" as being of particular value. His insight signals BioNTech's intention to intensify competition with its closest rival Moderna, based in Cambridge, Massachusetts, which is also investing a lot of capital in RNA research. "We see ourselves in a scientific leadership position and want to go at least as fast as the Americans," says BioNTech's COO Sean Maret.

With a valuation estimated between €2bn to €2.5bn, BioNTech is one of Germany's

highest-rated biotech firms. It is also Europe's biggest unlisted biotech company employing close to 700 people. Maret has also hinted that the company plans to go public at some point in the future. "Inevitably," he says, "in the end we will IPO just because of the size and the capital demands required by individualized approaches to treatment. You have to invest enormously in manufacturing."

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Saxony's “White Petroleum”

The discovery of substantial lithium reserves in old mines in Saxony promises lucrative investment opportunities for foreign companies. The mineral is a vital component in the batteries and fuel cells that will power the e-transportation revolution.

Mining in the *Erzgebirge*, southwest of Dresden, has been a mainstay of the Saxon economy for more than 800 years. Silver mining in particular drove the technological innovations that made Saxony one of Germany's leading industrial regions. Now the dense network of old tin, silver, and tungsten shafts is taking on a whole new life with the discovery of Europe's largest deposits of a mineral that is becoming increasingly important in the modern industrial economy: lithium.

As a vital component in batteries and fuel cells, especially for e-transport, lithium has been called “white petroleum.” Significant deposits of the mineral have been found at Zinnwald and Sadisdorf in Saxony, as well as over the Czech border in Cinovec. As the German side alone could account for as much as 10 percent of global lithium resources, the discovery is of great significance to international mining companies and their partners.

Investing in minerals

Two companies in particular are investing heavily in new mining projects in the region. Lithium Australia (LA) recently completed exploratory drilling at Sadisdorf and has since acquired the entire site, along with another exploration project at nearby Hegelshöhe. LA estimates Sadisdorf could yield 25,000 tons of lithium carbonate a year over the next 10 years and is pushing ahead with plans to be fully operational there by 2021. While earlier this year, Deutsche Lithium and its Canadian partner Bacanora Minerals took over another major mining concession

at nearby Falkenhain. “We are talking about 500,000 tons of lithium carbonate, which can only be extracted from this deposit on the German side,” says Deutsche Lithium's MD Armin Müller. “The battery of an electric car needs about 50 kilograms of this material. This means that we can equip around 10 million vehicles with these deposits.”

In its refined form, lithium is shipped to the main power cell producing countries: the U.S., China, Japan, and South Korea in particular. LA's CEO Adrian Griffin notes: “We are in the backyard of the most rapidly expand-

ing consumption of lithium outside China, with most European vehicle manufacturers announcing their plans to go electric. The synergies are obvious.”

If the global automotive industry is to swing away from fossil fuels to electric power, vast quantities of lithium and other raw minerals will be needed: it's an exciting time again for mining in Saxony.

Zinnwaldite is a natural compound that contains up to 1.4% of the valuable mineral lithium.

Lithium is a vital component in batteries and fuel cells used in e-mobility.



German deposits contain an estimated 500k tons of lithium carbonate.



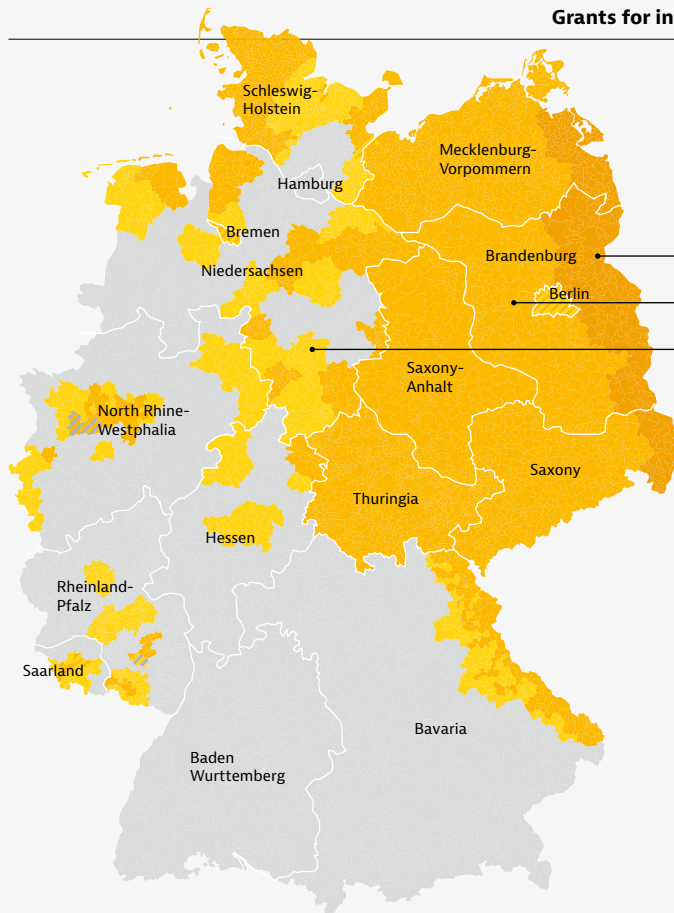
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Let It Grow

Project financing incentives are available to all investors and are provided by the German government, the federal states, and the E.U. to support business growth. Germany Trade & Invest advises large companies (turnover €50m+) and SMEs.

Grants for investment/personnel



Germany offers Investment Grants (GRW program) of up to 20% to support new production or service facilities.

- **Border area to Poland: max. 20%** for large enterprises
- **C Region: max. 10%** for large enterprises
- **D Region: max. €200k** for large enterprises

Eligible costs are either project-related capital expenditures or wage costs over two years.

Eligible projects for large enterprises

New facility	Greenfield project
Acquisition of closed facility	Eligible costs = (market prices of assets) – (acquisition costs of assets that have been funded before)
Diversification	New products (new NACE code)
Process innovation	New or substantially improved production methods
Environmental investment	Surpassing national and E.U. environmental standards

Loans for all funding purposes

Public loans can offer reduced and fixed interest rates, long terms, and repayment-free years.



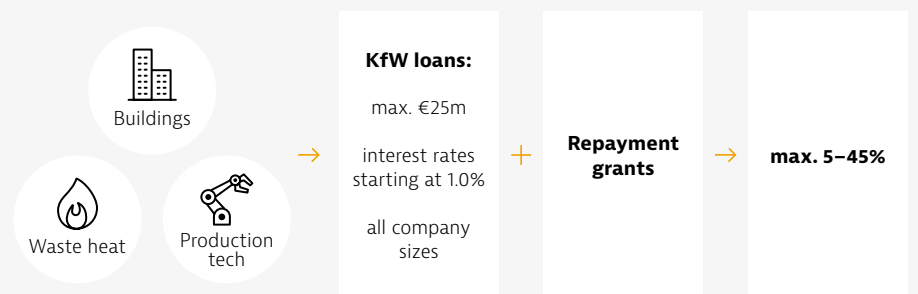
National level (KfW Group)
Special programs available for R&D, energy efficiency, and specific purposes



European level (European Investment Bank)
Loans to individual projects with total investment costs exceeding €50m

Loans/grants for energy efficiency measures

KfW loans in combination with attractive repayment grants.



Want to find out more about project funding? Contact the financing and incentives team of Germany Trade & Invest's Investor Support Services division:
friedrich.henle@gtai.com, michael.schnabel@gtai.com

Germany Works

In September, Germany Trade & Invest launched “Germany Works.,” an integrated global campaign to promote the country as a premier business location for foreign investors. Melanie Wiegand, GTAI’s director of strategic marketing, lifts the lid on the operation.

Germany has been performing well as an international investment location for years. Why launch a campaign now?

MELANIE WIEGAND: Germany is one of the most important industrial nations in the world, but this doesn’t just happen. We are dependent to some extent on free and fair markets and cross-border investment. These are being called into question increasingly throughout the world, while the competition in global markets continues to grow. Germany must continue to establish itself as an attractive investment location.

At a first glance, GTAI isn’t referenced in “Germany Works.” What is the relationship between GTAI and the campaign?

WIEGAND: GTAI initiated the campaign but it is being delivered by “Germany Works.” GTAI is consciously staying in the background as the umbrella service for businesses seeking to locate in Germany. The campaign provides a platform for all stakeholders concerned with marketing Germany as a location, but we will broadcast with a unified voice. To put it simply, we are promoting “business location Germany” rather than GTAI explicitly, but GTAI is there as a contact for subsequent enquiries.

GTAI, the economic development agencies of the federal states, the district eco-

KEYNOTES



- **It is the new umbrella campaign** for “business location Germany” – a platform for all stakeholders involved in the marketing of Germany as a business location.
- **The campaign message** drives home Germany’s biggest strength: reliability. The key attractions as a location are social and political stability, a qualified workforce, top-class infrastructure, a strong domestic market, and high quality of life.
- **“Germany Works.” synthesizes** the many and diverse representations of Germany by different parties within location marketing.
- **Visual metaphor** is at the heart of the campaign: a 3D animated film depicts an engine driven by the perfect synthesis of all Germany’s advantages as a location.
- **The international media roll-out** focuses on Europe.
- **Germanyworks.com** is the digital destination for the campaign.

conomic promoters, and now “Germany Works.” – how are foreign companies expected to keep up?

WIEGAND: “Germany Works.” gives international investors all the guidance they need. Many German partners talk about “business location Germany,” but each paint a different picture. We need a clear and recognizable communicative presence.

You’re promoting Germany as a location for automobility, ICT, and logistics, for example. But to be frank, the auto industry missed out on the electromobility wave, while the improvement of Germany’s internet speed is stuttering and Germany seems unable to build new stations or airports (e.g. Stuttgart and Berlin): is Germany really “working”?

WIEGAND: “Germany Works.” is a confident and assured statement that brings our internationally-renowned reliability into focus. The German economy stands for high quality, competence, and innovation. The auto industry, which is admired all over the world for superb engineering and innovation, is an excellent example. So we feel confident promoting ourselves on the hallmark of quality. No country is perfect, but Germany’s good reputation is justified, despite its many challenges.



A screenshot from the campaign's animated film "Germany Works," which highlights Germany's superb location at the heart of Europe – the world's largest free trade zone – its efficient transport and communications systems, and many other benefits.



Watch the image film here:
www.germanyworks.com

What is the main message you are sending to foreign investors?

WIEGAND: "Germany Works." advertises our greatest strength in the eyes of foreign decision-makers: reliability. In Germany today, foreign companies will experience a unique interplay of location advantages, social and political stability, qualified labor, top-class infrastructure, an attractive domestic market, and a high quality of life.

"Germany Works." promotes "business location Germany" overseas. How does it benefit German companies?

WIEGAND: The success of German companies is visible and dynamic proof of our excellent economic performance and our products. This is precisely what we are promoting.

You have worked for several renowned German and international brands successfully. But can one really "brand" a nation?

WIEGAND: For me, there's no such thing as "national branding." The term has its origins

THE INTERVIEWEE



Melanie Wiegand is director of strategic marketing at Germany Trade & Invest in Berlin. She is responsible for global communications for everything to do with the topic of "business location Germany." She has vast experience within innovative business fields and future markets for Germany. She began working at GTAI in 2013, consulting with international companies and providing advice, support, and contacts to support their market entry into Germany. Prior to that, she spent more than ten years developing several national and international leading brands. She holds an MSc in social psychology and economics.

in the practice of burning letters into an animal's skin in order to identify it by its owner. But the idea of branding has, over time, carried over into consumer goods. Branding is a centrally-steered marketing process, designed to give a product a distinctive presence, or a soul. A nation, by contrast, is neither product nor service. It is an exceptionally complex construct with many facets, defined not only by space and history, but also by its people. Germany is represented by millions of ambassadors and people on a daily basis. This is not a process that any nation can really control in a structured way. But if we need to represent "business location Germany" at international events or trade shows, then we need to broadcast a clear and simple message. "Germany Works." is this message – a sustainable concept for "business location Germany."



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Automotive Industry

The automotive sector is the backbone industry in Germany.

Order number: 20851



Energy Storage

Energy storage systems are an integral part of the *Energiewende*.

Order number: 20754



Robotics & Automation

The R&A industry records an average annual growth of 10 percent.

Order number: 20913



Offshore Wind Manufacturing

Germany is home to Europe's biggest wind energy market.

Order number: 20930



Food & Beverage Industry

Germany's F&B industry is the fourth-largest sector in the country.

Order number: 20881



Incentives in Germany

Germany offers a number of project financing incentives to all investors.

Order number: 20861



Investor's Basics

A tax and legal guide to setting up business in Germany.

Order number: 20993



Eastern Germany

The six new federal states as an investment and innovation location.

Order number: 20857

Publisher:

Germany Trade & Invest Gesellschaft für Außenwirtschaft und Standortmarketing mbH
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Design and Layout: Arne Büdts, Verena Matl

Print: Kern GmbH, 66450 Bexbach, www.kerndruck.de

Circulation: 5,000

Distribution: *Markets Germany* is distributed solely by the publisher all over the world.

Notes: © Germany Trade & Invest, February 2019

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Order number: 21106

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on the basis of a decision
by the German Bundestag

Shanghai Rising

In January, Robert Herzner moved to Shanghai to spearhead Germany Trade & Invest's office. He tells *Markets Germany* the role his team plays to support Chinese companies realizing market opportunities by investing in Germany.

You have been working at GTAI Shanghai for just a few weeks: what are your first impressions?

ROBERT HERZNER: The development of Shanghai reflects China's growing importance worldwide. The most obvious change since my first trip in 2006 is the skyline and the expansion of the subway system to become the world's largest. As a frequent traveler and a sports enthusiast, I also appreciate the reliable high-speed railway network which enables me to go running in the woods.

What is Germany's reputation here as an investment location?

HERZNER: The E.U. is the number one location for Chinese Investors and Germany is the dominant market there. Hence, China has been the leading source of greenfield investment into Germany in recent years. We receive a great number of inquiries relating to machinery, the automotive industry, and electronics. We're seeing a trend towards increased R&D and high-tech manufacturing, for example in e-mobility.

What do the Chinese think about Germany? Does the "Made in Germany" seal mean anything to Chinese companies?

HERZNER: Typically, the Chinese associate Germany with luxury cars, soccer, and quality food products, and their image of Germany is very positive. In supermarkets, the distinctive black, red, and gold "Made in Germany" label can be seen on many products. Chinese people want quality and the cost of German products is no longer prohibitive.

Chinese companies generally are interested in German technology and predominantly in manufacturing and machinery.



»We are a key service partner«

Shanghai is Herzner's fourth posting in east Asia after Kuala Lumpur, Taipei, and Beijing. Prior to joining GTAI, he worked with the German Chamber of Commerce in Taiwan and Malaysia for more than six years. He is a lawyer and holds an MBA.

Gradually, they are including "Designed in" or "Made in Germany" into their own value chain, either by manufacturing or establishing an R&D center there. Profiting from German engineering and establishing products in one of the most mature markets is a pillar for global success.

GTAI works closely with the German Chamber of Commerce (AHK) in Shanghai. How do investors benefit from this?

HERZNER: Together with the Ministry of Foreign Affairs, AHK and GTAI are the main pillars of German overseas economic support. By providing for the operational and strategic demands of companies operating internationally, the AHK and GTAI form a synergy that supports companies on their path to success.

The AHK provides various services to support market entry, such as legal advice,

support in sales and sourcing, office location, and trade fair facilitation. Once in the market, companies can benefit from the large local AHK network and enjoy further support in areas such as recruitment and training or corporate services. If the company then decides to take the engagement to the next level, GTAI provides tailored investment services. As representatives of the German government, GTAI has direct access to the Ministry of Economics and the Federal states, which means we can make the process of investing into Germany easier.

What do you want to achieve in 2019?

HERZNER: To establish GTAI as an intermediary for Chinese public organizations engaging with Germany and increase our visibility with Chinese investors. We would like to be a key service partner, providing expertise on greenfield investments at the very first stage. In short, if there is a Chinese delegation going to Germany, I would like to be able to brief its representatives, so they can understand the market fully and what we have to offer.



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