

MARKETS

GERMANY

2/17

Join the party! Young entrepreneurs, corporate executives and investors network at the Pirate Summit, Germany's craziest start-up conference.

START-UP GERMANY

Digital entrepreneurs from all over the world are flocking to German cities like Berlin, Hamburg and Munich, attracted by the availability of talent, affordability and the ever-expanding start-up ecosystem.

World-Class Data Hub:

Why cloud-computing giant OVH has opened a data center in Germany

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FOCUS

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Digital entrepreneurs are flocking to German cities, attracted by the availability of talent and affordability.

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The Fourth State

Plasma technology is the reason foreign investors are attracted to the German city of Greifswald.

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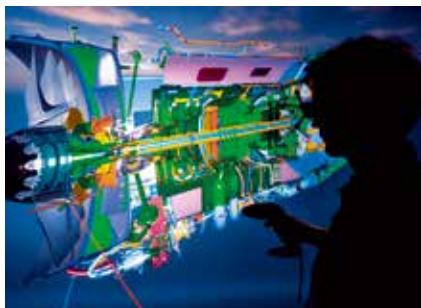
TECHNOLOGY

World-Class Data Hub

French cloud-computing giant OVH has opened a new data center in the German city of Limburg.

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MANUFACTURING



F1 in the Sky

British jet engine manufacturer Rolls-Royce is committed to its eastern German plant in Dahlewitz for the long haul.

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Stronger Together

In Germany the co-determination rule ensures employees have their say.

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»Berlin can offer the whole package. Little wonder the city is perceived throughout the world as Europe's most exciting start-up capital.«

Dear Reader,

Affordable rents, access to a well-educated and highly-skilled workforce with realistic salary expectations, a science-oriented environment and an ecosystem to support innovation: these are the ideal conditions for any start-up to thrive in. And Berlin can offer the whole package. Little wonder Germany's capital city is now perceived throughout the world as Europe's most exciting start-up capital.

Entrepreneurs looking for proximity to Germany's more traditional industries may also consider setting up shop in Munich. Siemens and BMW are both headquartered there, and IBM is investing heavily in Bavaria's capital, choosing to base its global research headquarters for the 'Internet of Things' there. The rents are not as cheap as in Berlin, but the universities are world-class.

Hamburg's start-up scene offers a similar mix of technological expertise, networking and incubation opportunities. Start-ups can benefit from the Airbus Factory, the modern mega-harbor and a well-established local media industry.

And that's just three examples. The list of international start-up hubs in Germany just continues to grow – so it's no coincidence that the focus of this edition is 'Start-up Germany'. Brexit looms large and financial instability stalks the global economy, but foreign entrepreneurs can be assured of a stable and friendly foundation in Germany.

Dr. Benno Bunse, Chairman/CEO

Email: invest@gtai.com

ONE TO WATCH

Photo: Hans-Christian Plambeck/HCP-Foto



Bartosz Kosmecki, founder and CEO of Scopis

Back in 2009, Bartosz Kosmecki, then a research assistant at the Charité University Clinic (CUC) in Berlin, noticed that surgeons lacked critical information while performing operations with endoscopes. Observing the areas being operated on with only an endoscopic image on a monitor presented limitations that needed to be overcome – and could be by means of using state-of-the-art technology. This insight led him to found Scopis along with mechatronics expert Andreas Reutter, the Fraunhofer research organization and the CUC in July 2010. The company has never looked back and is now a prized member of Berlin's burgeoning start-up scene.

Kosmecki describes Scopis as “an innovative, globally active company that uses augmented reality to enhance the endo-

scopic view with additional information that supports surgeons on their way to a good outcome for the patient.” Scopis develops and innovates medical navigation and measurement systems for minimally invasive surgery. The aim is to allow doctors to shorten the duration of operations, reduce clinical complications and hence lower costs. With Scopis systems, operations can be planned preoperatively by marking important anatomical features and defining the right path to the surgeon's target. During surgery these marked objects are overlaid in real time onto the endoscopic image, helping the surgeon find his way.

Initial research was sponsored by the EXIST program of the Federal Ministry for Economic Affairs and Energy (BMWi), before the High-Tech Gründerfonds invest-

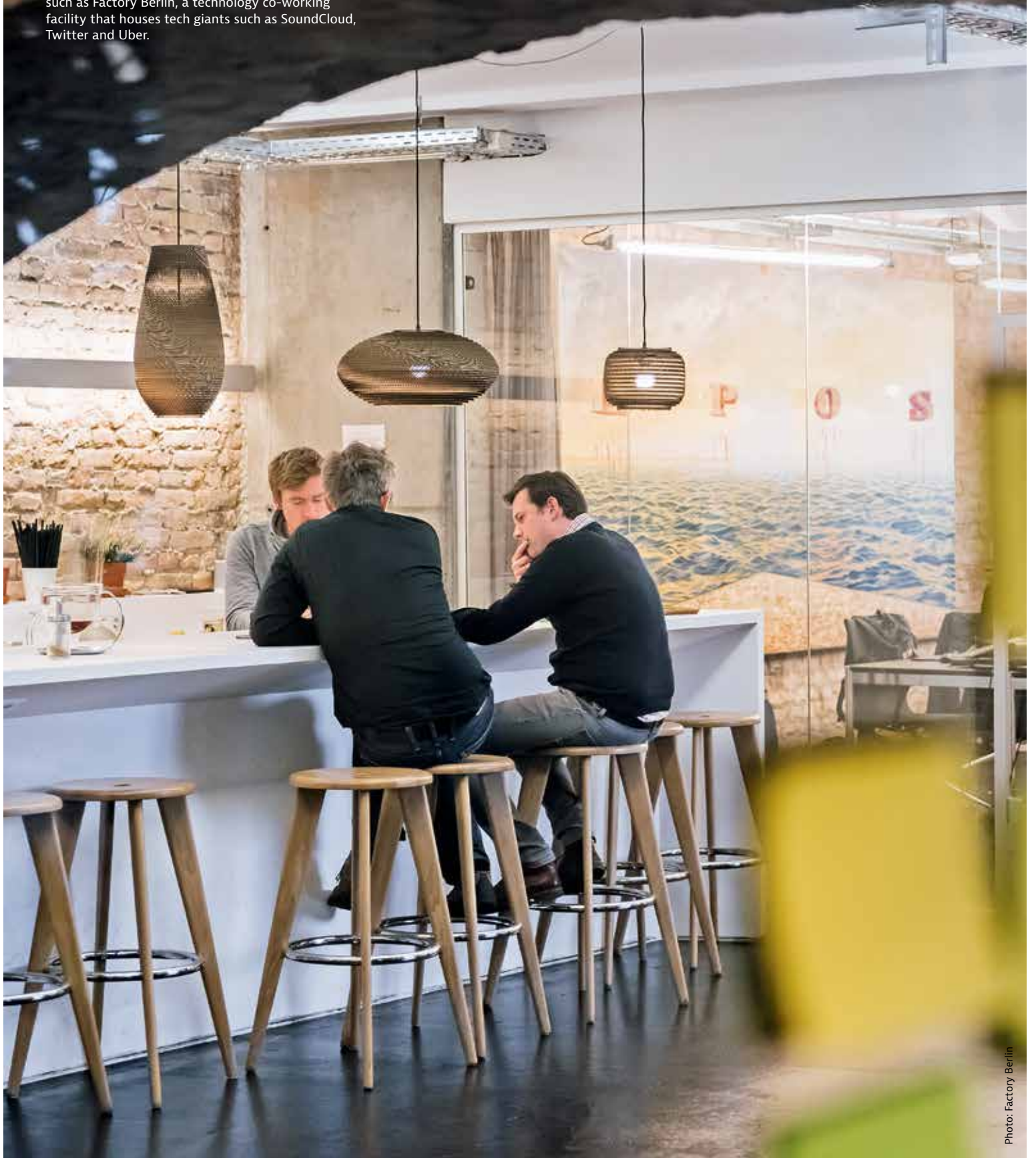
ment fund provided financial backing in October 2010. Just six months later, Scopis launched the first medically-accredited navigation system and set about distributing it worldwide, supplying its core technology to bigger medical companies. Scopis now sells its products in more than 50 countries and has sold some 200 systems to date.

A further round of financing followed in November 2013, when Berlin-based IBB Beteiligungsgesellschaft and Extorel GmbH of Munich invested a seven-figure sum, which has enabled Scopis to extend its international reach. “The U.S. and China are our focus in 2017,” says Kosmecki, who this year opened an office in Boston to strengthen his company's position in North America.



www.scopis.com/en

Germany is an increasingly attractive location for digital start-ups due to affordable rents, a thriving tech ecosystem, incentive schemes and access to the single market. Now crowned the start-up capital of Europe, Berlin has reputation as a cool city for young and aspirational creatives and entrepreneurs, which helps it to attract global investment into businesses such as Factory Berlin, a technology co-working facility that houses tech giants such as SoundCloud, Twitter and Uber.



Start-Up Germany

Digital entrepreneurs are flocking to Germany's cities, attracted by the availability of talent, affordability and the ever-expanding ecosystems. *Markets Germany* takes the pulse of the start-up scene, with a focus on Berlin, Hamburg and Munich.

Move over, London! Germany is positioning itself to become Europe's nerve center for digital start-ups, with Berlin, Hamburg and Munich competing to entice foreign entrepreneurs and investors to their riverbanks – along with other cities like Frankfurt and Dortmund.

When Germany took over the G20 presidency in December, Sigmar Gabriel, then head of the Federal Ministry for Economic Affairs and Energy (BMWi), signaled that it would be taking a global lead on digitaliza-

tion. A month before, BMWi unveiled its Digital Hub Initiative (de:hub), an agency tasked with facilitating co-operation between start-ups, academia, SMEs and industry, to promote digital transformation.

There has never been a better climate for tech start-ups to come to Germany. Affordable rents, a thriving tech business ecosystem – from coding through to 360° drones – the availability of incentive schemes and access to the single market have all contributed to the shift towards mainland Europe.

Berlin versus London

In 2015, Berlin earned itself the title of “start-up capital of Europe” in the Ernst & Young (EY) “Start-Up Barometer” survey, as for the first time investment capital in the city (totaling €2.2bn) overtook that in London. This rapid growth was largely driven by the über-productive incubator Rocket Internet. But last year Berlin slipped back into fourth place with total investments of just €1.1bn. Start-up financing across Germany as a whole dropped by 30 per cent (–11 per cent

FACTS & FIGURES

Geographic spread
of start-ups in Germany

Berlin 17 %	Rhine-Ruhr region 14.1 %
Stuttgart region 8.9 %	Munich 7 %
Hannover region 6.9 %	Hamburg 6.4 %

Source: Deutscher Startup Monitor

across Europe), due to the absence of deals in excess of €100m; whereas in 2015 there had been eight such deals.

The EY report's author, Peter Lennartz, notes that annual fluctuations in financing are not a reliable indicator of the health of Germany's start-up scene. "The number of medium-sized deals is more indicative of the strength of Germany as a start-up location," he says. And the number of companies that received between €5m and €50m rose from 81 (year 2015) to 116 (year 2016). "The more start-ups and the more funding is made in the field of seed, the greater the chance that a higher number of start-ups will be able to develop into successful medium-sized companies or even unicorns in the future."

For venture capitalist Michael Brehm, CEO of Redstone Capital, which focuses on seed and first-stage funding, Berlin is still the best place to launch and scale a business. He explains: "You have access to the largest market in Europe. In Silicon Valley the costs

are so much higher, and new companies can't compete for the skills. Also people are insecure about Britain now." Global tech investor Klaus Hommels recently put €1m into Factory Berlin, a technology club that houses SoundCloud, Twitter and Uber among others.

When it comes to diversity and idea innovation, Berlin appears to have the edge over Germany's traditional commercial hubs: 90 per cent of its start-ups are working on new products and services. It has the added cachet of being a cool city for young creatives and entrepreneurs to live in, with a local target market of aspirational thirty-somethings. Of Berlin's founders, 94 per cent consider their city to be the best location in Germany. For B2C start-up stars like SoundCloud,

Go Euro and Delivery Hero, which all have foreign founders, this made Berlin the ideal location. Delivery Hero, the food ordering service founded by Swedish entrepreneur Niklas Östberg, which has 1,000 employees at its headquarters, cites the "progressive" attitude of Berliners, the cost of living and the "execute quickly mind-set" as the ideal conditions for a successful working environment.

"Berlin has a very vibrant start-up ecosystem," says Stefan Franzke of Berlin Partner for Business and Technology, Berlin's business development organization. "There are 6,000 tech companies here with innovative and scalable business models. They are here typically because they want to address the German and European market, but we also have a program called Start Alliance Berlin which helps them find routes into the U.S. and Asian markets."

For Franzke, the advantages of his city are clear: "Firstly, you can use English everywhere. Then we have an ecosystem which is focused on start-ups – there are simply more service providers here. It is also easy to raise money: last year more than €1bn in venture capital was raised by Berlin start-ups."

Berlin leads in B2C

The bulk of this funding went to e-commerce, financial technology (FinTech) and big data companies, mainly at second or third round, but the growth in seed capital is coming from new sectors like augmented and virtual reality solutions, InsurTech, property tech and the Internet of Things (IoT), according to Brehm. The new funding trends across Germany, by way of comparison, are energy, transport and health, according to EY.

"Tech start-ups come to Berlin because they want to get in with the likes of Siemens, Microsoft and Zalando," says Franzke. "But

94.6 per cent of start-ups in Germany allow staff to wear hoodies.

Source: Deutscher Startup Monitor

the attraction also works the other way – established industry needs to digitalize and evolve. Many major businesses are now setting up their innovation centers here – for example, Würth or Cisco.” Berlin’s talent base is the lifeblood of its commercial renaissance. Every year 200,000 people come to Berlin, 70 per cent with advanced degrees. “We attract talent from 180 different countries; in fact nearly 50 per cent of the start-up workforce comes from abroad,” says Franzke. The challenge is finding enough of the right skills: “We really need more software engineers.”

Workforce incentives

To this end, the government and private sector are working together to feed more talent

through Berlin’s universities. In the next year, new positions for 50 professors will be funded, focused on IT, data analytics and Industry 4.0. Unsurprisingly, many start-ups have clustered around the universities in the Berlin-Brandenburg area.

Central government has also streamlined business immigration to help companies which import IT expertise from Eastern Europe. It is now relatively easy to obtain a blue card and not just for those with incomes in excess of €50,000. The availability of programmers is a key issue for digital companies. Here’s where Berlin has directly benefited from Brexit. “London start-ups that use employees from Europe now have a big problem because they don’t know how the situation

will play out,” says Franzke. “Also investors won’t want to invest in a start-up if they know they might not be able to do business with Europe in two years.” The digital refugees from Britain have already started arriving: last year Brickvest, a property investment app, opened an office in Berlin to limit their exposure in the event of a hard Brexit. If Britain loses access to the single market, the firm’s London headquarters would be downgraded to a regional office. More companies may follow.

Munich: The hidden champion

When it comes to digital start-ups, Berlin might be pre-eminent but Munich has a longer and perhaps more impressive CV. In 2014 the Bavarian capital was designated →

FACTS & FIGURES

Venture capital investment in Germany

€1,072m

Venture capital investments in 2016 in **Berlin**¹

€527m

Venture capital investments in 2016 in **Bavaria**¹

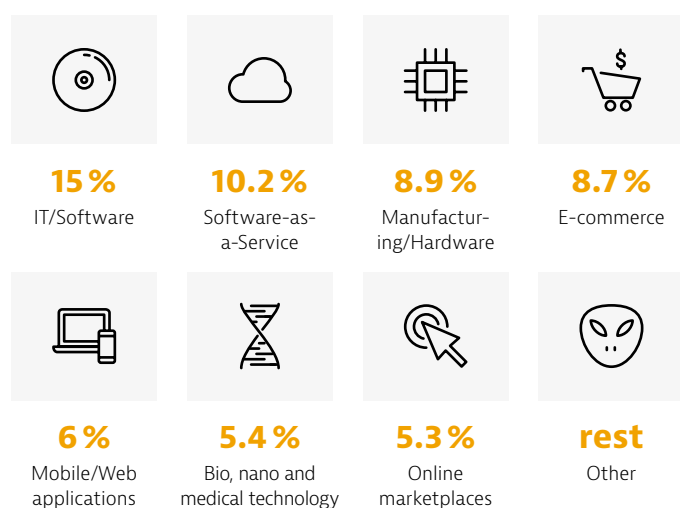
€141m

Venture capital investments in 2016 in **North Rhine-Westphalia**¹

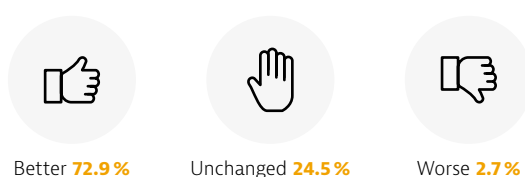
€127m

Venture capital investments in 2016 in **Hamburg**¹

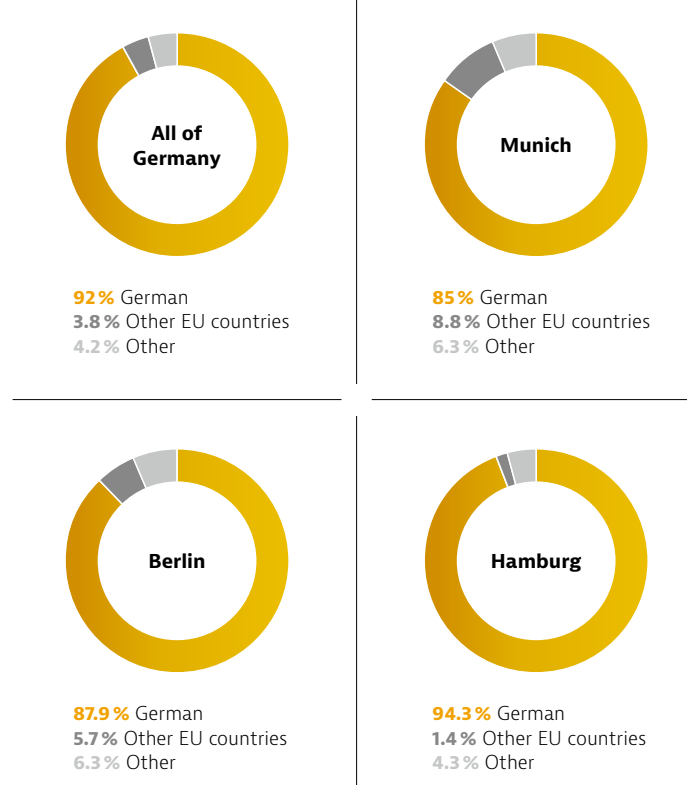
Industries in which German start-ups operate²



German start-ups' future business prospects (2016)²



Entrepreneurs' nationality²



*Naren Shaam,
founder and CEO of Go Euro*

»Berlin was a rational choice«

Bangalore-born Naren Shaam was backpacking across Europe in 2010 when he had the idea of creating a centralized booking platform for bus, trains and flights. He quit his job in financial services in New York and moved to Berlin to set up Go Euro, now Europe's largest transport platform with 10m users per month.

Why did you choose Berlin as your base in Europe?

The European start-up hubs that were the most famous at the time were London, Stockholm and Berlin. Berlin is the most central and has a better cost of labor than London. It was a rational choice. I needed a large engineering base, the ability to attract talent at affordable prices from Eastern Europe and to be able to scale fast. We are 60 per cent engineers now.

What are the main strengths and weaknesses of Berlin as a start-up hub?

For small start-ups who have no real idea of how to build a large company, the ecosystem in Berlin is great, but two things have to happen to grow it. First: access to more senior talent who can scale businesses. I want Berlin to produce the million- or even billion-dollar companies that come out of London or Stockholm. Second: more small exits in the second and third years to allow capital back into the system.

Did you have any preconceptions about Germany before coming here?

The general image of Germany is one of a very organized country with an efficient and productive population. Berlin is a melting pot, known for diversity and freedom, for the music and the art scene and recently for the strong tech environment.

Since moving here, have your views about Germany changed?

I was expecting some obstacles, especially for a non-German speaker, like opening a bank account. Instead, Germany and Berlin welcomed me very well. It is my home now.

How does the working culture differ from New York or London?

I have lived in New York and it is more competitive, fast-paced and with crazier working hours. Both cities are extremely diverse, multi-cultural and offer access to anything you are looking for. The extra advantage of Berlin compared to London and New York is that there is a higher quality of life here.

What do you like about living and working in Germany?

I very much appreciate the alternative and international vibe of its capital, standing on the backbone of a strong German economy. Given the political wildness that is happening in the world, I also find security in the leader of the country I live in today.

What do you take pride in?

We are extremely diverse, reflecting that the decision-makers in families are women. We have over 200 employees from 40 countries, and 46 per cent are women.

What are your plans for 2017?

I hope we will have most of Europe covered in the next couple of years. Longer term, I hope I can bring to this industry the simplicity of some of the products that Amazon and Google have provided.



24.1 per cent of start-ups have a football table.

Source: Deutscher Startup Monitor

→ Europe's number one internet communications technology hub by the European Commission, and it has a global reputation as a leading cluster for IoT.

Attracted by the high level of specialist talent produced by the Technical University of Munich (TUM), U.S. giants Microsoft, Intel and IBM are investing heavily in their Munich outposts (IBM is setting up a global development center for IoT there). "We have a very elaborate ecosystem which combines academic centers for technical innovation, big business, SMEs, start-ups and incubators," explains Rita Roeder at the city's department of labor and economic development.

The wide range of entrepreneurship schemes at the TUM, the University of Munich and Ludwig-Maximilians University are driving some of Germany's most successful start-ups, such as Navvis, an interior digital mapping company. Konux, another TUM spin-off, received a \$7.5m (€7m) investment from Silicon Valley for its technology which monitors the condition of machines.

Munich for B2B

Munich's natural advantage is its industrial landscape, especially the automobile, aerospace, medical technology and plant construction sectors. If your target customers are Siemens, BMW, Audi or Bosch, then Bavaria is a logical location. Several corporations have their own incubators here, including Siemens Next 47, BMW Startup Garage and the broadcaster Pro7 (for innovative digital media). There are also 25 incubators and accelerators in the area.

Munich cannot compete with Berlin on the number of funded start-ups (last year 56 from Munich received risk capital, compared to 220 from Berlin, according to EY), but it can boast the highest percentage of foreign entrepreneurs (15.1 per cent) of any German

city and the highest average number of employees per start-up (31.1 compared to Berlin's 28.1). "Because we have global players, we have a very international workforce and lots of foreign students," says Roeder.

The Hamburg scene

With an enterprise birth rate of 2.36 per cent, Hamburg competes with Munich to be Germany's second-biggest digital hub. Former graduates from the scene include Xing, the social network for professional contacts with 10.1m users, Jimdo (website construction kit), Mytaxi and ground-breaking gaming studios Bigpoint, Goodgame and Innogames. "Numerous digital businesses have become

Hamburg is home to the main European operations centers of Google, Facebook, Twitter and Yelp.

large and profitable here," says the First Mayor of Hamburg Olaf Scholz. He cites the city's proximity to a modern port and to several influential media companies as well as a developed public funding structure as just some of the reasons why start-ups can thrive. It is no idle boast. There are 23,000 media and IT businesses in Hamburg, including the main operations centers of Google, Facebook, Twitter, Hootsuite and Yelp, which makes it one of Europe's leading content locations.

"Our start-up scene is changing," says Sina Gritzuhn, managing director of Hamburg Start-ups. "Five years ago gaming and media companies were leading innovations

here, but now FinTech is the biggest growth area. Last year 70-80 per cent of the capital raised by start-ups was invested in FinTech companies. Stand-out examples are Kreditech, which raised €82.5m in 2015, and Finanzcheck, which raised €33m in 2016.

Despite grossing the highest rounds of funding, FinTech still only accounted for 4 per cent of the start-up scene in 2016, according to Hamburg Start-up Monitor, a platform which provides market analysis about the regional scene and which has 600 start-ups on its database. Commerce is still by far the largest sector, accounting for 25 per cent of businesses in 2016, followed by the service sector at 19 per cent, media at 15 per cent and IT at 12 per cent.

Gritzuhn is mindful that Hamburg needs to be "more open for venture capital" in order to compete with Berlin, but believes the city's strongest advantage is its well-established and stable industry. "Aircraft manufacturer Airbus is based here, as are large digital companies such as Facebook, Dropbox and Twitter, and therefore start-ups that would like to provide services to these companies have a better chance of networking with them," she asserts.

Conclusion: Favorable environment

Germany offers a very favorable environment to grow in. For tech companies that need a base in the heart of the EU, Germany is now the obvious choice. The founders' main dilemma will be which city to choose. The local ecosystem and workforce, proximity to strategic partners, access to research facilities, availability of capital and incentive schemes, transport links, and the outstanding quality of living are all key factors to consider.



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The eBook Revolution: A Page-Turning Success

eBooks in Motion is a Software-as-a-Service (SaaS) platform, which publishes multimedia-enhanced educational content on mobile devices. Founder and CEO Michael J. Fisher talks to *Markets Germany* from their development center in Hamburg.

In the early 1990s, Michael J. Fisher worked at the US Air Force Strategic Air Command, where he served in the intelligence community, analyzing aerial reconnaissance. After leaving the service, he was recruited to establish the Oracle Spatial Division in 1995, which led to co-founding GlobeXplorer in 1999, the world's first open online collection of geospatial data (digital mapping and satellite imagery) in partnership with Oracle and Sun Microsystems and with funding from Mohamed Al-Fayed, the former owner of Harrods, London.

His journey as a serial technology entrepreneur continued when he joined Gate5 AG, a location-based services (LBS) solution provider based in Berlin, which was sold to Nokia and is now known as "HERE." → *The Future of Driving Is HERE (page 18)* He was subsequently recruited by Navman



»It was clear the publishing industry was fighting to stay alive.«

Michael J. Fisher,
CEO eBooks in Motion

International to build a new division, Navman Mobile in Germany, which was sold two years later to Taiwanese company Mi-TAC. From there, he spent a couple of years consulting with the mobile LBS company ZOS Communications as managing director of the MENA region.

But it wasn't long before Fisher got the entrepreneurial itch again. After publishing some of his own books online, he decided that most e-books offered a poor user experience. Intent on revolutionizing e-publications, he founded eBooks in Motion Inc. with a GmbH in Hamburg to manage development out of Europe. The management team bootstrapped the start-up with just \$450,000 (€419,000), and in 2015 it was valued in excess of \$4m (€3.7m) in New York, in the wake of the hype about publishing platforms Inkling, Vook and Atavist.

Hamburg's wealth of expertise in publishing made it CEO Michael J. Fisher's first choice for eBooks in Motion's base of operations. The firm now enjoys success in America, Asia and the Middle East.



What kind of problems did you face as a start-up?

FISHER: We set out to empower publishers and authors by creating the simplest way to produce flawless e-books and media-enhanced communications and launched in Q1 2015. By Q3, however, it was clear the publishing industry was fighting to stay alive, so we regrouped to redirect our automated production technology to the education market.

eBooks was established in Delaware, so why did you set up the development center in Germany?

FISHER: I've worked with German companies and developers, and admired their 360-view about how to solve challenging development projects to produce stellar solutions. The decision was based on the wealth of experienced back-end programming, which from a price perspective was extraordinarily favorable compared to the United States.

Why Hamburg?

FISHER: Berlin may be the next Silicon Valley, but as is the case in California, both regions are challenged to retain talent. I've been very fortunate setting up in Hamburg because they have a wealth of expertise across a broad spectrum of publishing. Our back- and front-end development team cre-

ated an innovative solution. And I'm proud to say that the entire team is still on-board.

Who are your key customers?

FISHER: We're focused on international corporations, higher education institutions and vocational training professionals. Sales leads are facilitated via partnership with EdTech organizations, such as the United States Distance Learning Association (USDLA), the Corporate Learning Consortium, Global Vocational Skills and UAE Learning Network.

What are some of the differences between seeking funding in Europe and the United States?

FISHER: Most investors in Germany are risk averse and rarely provide early stage capital. Furthermore, U.S. valuations are traditionally three times higher than valuations set in Germany.

What are your biggest growth markets right now?

FISHER: America and countries in the Asia-Pacific region and the Middle East are most actively applying mobile learning.

What is your business model?

FISHER: Because we have a high profit margin per transaction produced on our online

platform, we have room to share that with partners. Our global "go to market" strategy is facilitated via securing partners, resellers and affiliates that use our platform in return for a share in net revenue ranging from 15 per cent to 40 per cent.

What's next for eBooks?

FISHER: We're streamlining the registration process, which was previously developed for B2C customers but now will be focused on B2B transactions.

Do you have an exit strategy?

FISHER: We have been approached by several international publishers who offered to buy the company. However, we chose not to, due to the percentage offered. We're now considering a few potential exit opportunities.

What are your strengths as an entrepreneur?

FISHER: Identifying trends and filling the gaps in markets struggling to embrace digital innovation.

What motivates you?

FISHER: I was raised with the mind-set of "see a problem – fix a problem."



The founders of Berlin-based start-up Parlamind: Núria Bertomeu Castelló, Christian Wolf, Tina Klüwer, Tobias Lehmann.

Artificial Intelligence

AI to the Rescue

Conquering email mountains

German entrepreneurs are developing artificial intelligence (AI) solutions to help companies save cash and reduce routine work. Take customer emails: companies receive thousands every day and many of them are the same. Enter the Berlin-based start-up Parlamind, which is designing an AI analytics tool to read, group and categorize emails to speed up their human handling. Soon the system will be able to answer them too.

Focus on innovation

Then there's the problem of IT-system management. In most IT divisions, an estimated 80 per cent of workers handle routine tasks – "keep the lights on" work, as it's called, or KLO – while only 20 per cent get to focus on innovation. But with its new software, the Frankfurt-based developer Arago aims to flip this ratio on its head.

www.parlamind.com, www.arago.co/hiro

Big Data

Enhancing Wind Farm Efficiency

Big data driving turbines

Big data is a hot topic in the wind energy sector, as companies around the world are racing to develop solutions to maximize yields and minimize expenses. The wind energy division of Siemens, for example, operates a remote diagnostics center in Denmark that collects data from 10,000 turbines globally to create more precise maintenance plans and reduce downtime. What's more, it is developing software to optimize the energy yield from wind farms, for example by precisely adjusting the rotor blades in the second row in order to minimize the impact of turbulence and wake effects.

In another unique project, the Center for Wind Energy Research (ForWind) and the German Aerospace Center (DLR) are setting up turbines near the coastline in a deliberately suboptimal manner in order to research how they can negatively influence each other. Packed with multiple sensors, the turbines will generate data that will be collected and analyzed to help enhance the efficiency and durability of turbines as well as the performance of wind farms.

Virtual Reality

Hard Hat Not Required

360° tours of construction sites

Visiting construction sites and potential properties can be time-consuming – but it doesn't have to be. In 2012, two Aachen-based entrepreneurs launched a virtual reality (VR) showcase platform that is now called HoloBuilder. Using the system is easy: first, capture images of the site with a 360° camera of your choice; second, upload and edit your project, adding objects, text, animations or weblinks; and finally, invite others to take a VR tour of the project (and even peek into hard-to-reach places) using a computer, mobile device (via the JobWalk app) or smart glasses from anywhere. The program has been a huge hit with construction and real estate professionals, especially in the United States, where the company now has its headquarters.



www.holobuilder.com

Technology Network

Holding Back the Tide

Dike construction made easy

German company Topocare recently unveiled a highly-automated flood protection machine that can rapidly build temporary dikes to stave off rising waters. The start-up was launched in 2012 by Simon Jegelka and Roland Draier in the city of Gütersloh. It grew out of a project funded by the Central Innovation Programme of the Federal Ministry for Economic Affairs and Energy (BMWi), an SME initiative that aimed to develop an innovative dike construction machine to rapidly make sand-filled tubes.

Connecting companies and universities

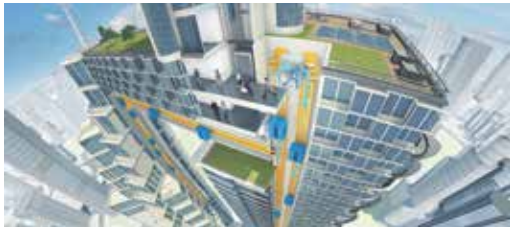
Topocare is a partner in "It's OWL", a technology network which connects companies, research institutes and universities in the Ostwestfalen-Lippe region. Through the network, Topocare was able to find a key solution at another company, the leading agricultural machine manufacturer Claas. Topocare adapted Claas' smart technology for its innovative flood barrier-building equipment. "It's OWL is all about sharing smart, intelligent technology," says Jegelka.

Maglev Technology

Tourist Magnet

Groundbreaking elevator technology

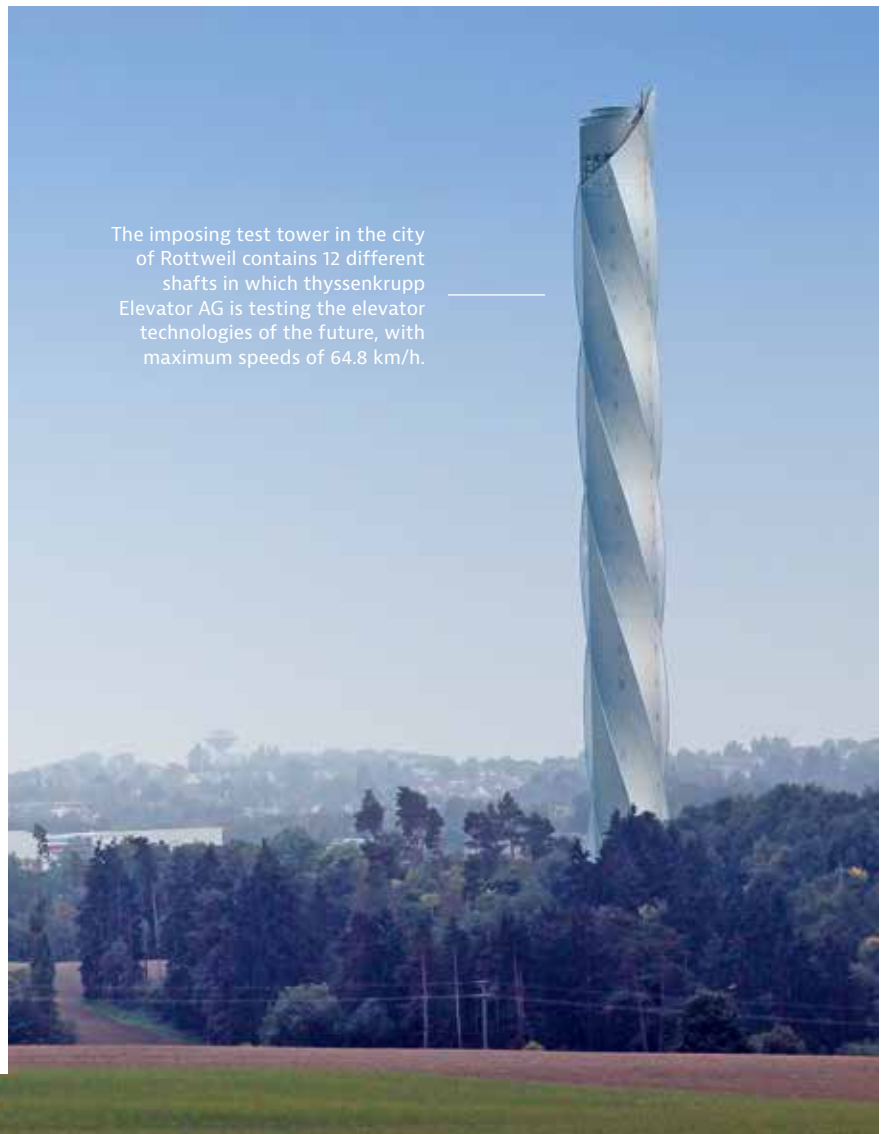
There's a major new tourist attraction near the southern German city of Rottweil. Visitors can take a panorama elevator to a platform 232 meters up to get an unbeatable view of the surrounding hills and forests. Hidden inside the 256-meter concrete colossus are 12 shafts that thyssenkrupp Elevator AG is using to demonstrate the future of elevator technology. The gravity-defying lift, which has been developed by a 30-person team as part of the "Multi" project, uses the same magnetic levitation (maglev) technology found in some high-speed mono-rail trains like the one in Shanghai, China. Having been "freed" from cables, these next-generation elevators will be able to move horizontally, and a single shaft will be able to hold multiple cars.



Magnetic levitation

multi.thyssenkrupp-elevator.com

The imposing test tower in the city of Rottweil contains 12 different shafts in which thyssenkrupp Elevator AG is testing the elevator technologies of the future, with maximum speeds of 64.8 km/h.



Photos: © thyssenkrupp Steel Europe

Advertising



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World-Class Data Hub

French cloud-computing giant OVH has opened a new data center in the city of Limburg in order to meet increasing demand for greater digital infrastructure in Germany. The complex will be one of three new OVH data centers in Germany.

The third-biggest internet hosting company in the world has opened its first data center in Germany. The new facility is of major strategic importance to the French cloud-computing giant OVH and will enable their German clients to develop their businesses, while providing access to internet users across the country and in Austria and Switzerland.

The move forms part of a global expansion drive over the next five years that will include the construction of 12 data centers in Europe, North America and Asia. Founded in 1999 in Roubaix, France, by Polish entrepreneur Octave Klaba with the help of three family members, OVH has grown rapidly to become the leading provider of dedicated cloud infrastructure in Europe, serving a million customers worldwide, with 20 data centers and 260,000 physical servers in operation, hosting 18m web applications across 17 countries.

Pressure grows on digital infrastructure

The demand for greater digital infrastructure in Germany is rapidly growing, and it is a trend that can only increase as it moves towards the next phase of industrial development, or Industry 4.0. Cloud computing, smart data and the Internet of Things are transforming manufacturing and produc-

OVH FACTS & FIGURES

€320m

reported turnover 2016

€1bn

company valuation
reported October 2016

€1.5bn

anticipated investment
in expansion over next 5 yrs

1m

customers worldwide

Source: OVH

tion. Fast-changing industrial processes are increasingly characterized by ever-smarter machinery and factories, linked through the internet and managed by complex operating systems. Béla Waldhauser, data center expert at the Cologne-based Association of the Internet Industry, ECO, is confident that in 2017 “demand for digital infrastructures will exceed the current supply.”

Peter Höhn, director of OVH’s German subsidiary, points out that demand from their customers for a data center located in Germany has been on the rise. “There are many reasons for this,” he says: “Germany’s economic situation is good. Furthermore, the country has strict rules on confidentiality and a highly reliable electricity grid. Thus, the opening of this first data center is a major step in the expansion strategy of OVH, the only global cloud provider that is not American, and therefore not subject to the Patriot Act.”

The U.S. Patriot Act is an anti-terrorism law which allows the U.S. government to access personal information from customers of internet service providers in the United States; there have been calls for a European equivalent.

OVH’s cloud-computing clients in Germany include large international companies such as the ceramics manufacturer Villeroy & Boch and multiple SMEs. OVH is



Led by Octave Klabá, internet service provider OVH has rapidly become the leading provider of dedicated cloud infrastructure in Europe.

Photo: picture alliance/AP Photo

also betting on an increasingly vibrant start-up ecosystem across Germany and already supports several German start-ups through its Digital Launch Pad, a support program for new innovative companies. Founder and group chairman Octave Klabá has expressly stated his support for innovation: “I love start-ups, I love the speed, having an idea in the morning and having it up and running by the end of the day,” he says.

Location of data center is strategic

Julien di Fiore, OVH’s international development manager, points out that determining the location of a data center is a highly strategic decision: “This choice needs a careful process to assess all the critical factors. Among them are competitive and growing markets, political stability, security, international laws and compliance, and many other key benefits such as cost, engineering capabilities, availability and quality of power, fiber connectivity, tax incentives and climate.”

Limburg an der Lahn met the key criteria. In terms of location, the city is located between Rhine-Main and Rhine-Ruhr, two of the most densely populated areas of Germa-

ny, and is close to both Frankfurt and Cologne. The region’s advanced infrastructure – which critically includes proximity to the largest internet hub (PoP: Point of Presence) in the world, the Frankfurt-based Deutscher Commercial Internet Exchange (DE-CIX), two 630 kVA transformers, a nearby 120mw substation and excellent transport connections – also made the area an ideal site.

OVH received “great support” from the state of Hessen and regional partners, including Germany Trade & Invest (GTAI), di Fiore adds. “It was excellent, we felt welcomed by the local community and the region. GTAI, the state and the regional partners found the right building with the right specifications in the right location.”

Instead of moving into existing data centers, OVH chose to rehabilitate old industrial buildings – a strategy it has followed at different locations around the world and which provides complete control over the hosting supply chain, from server assembly to the design of its facilities.

The new facility will accommodate 50 staff members and will also increase the company’s activity in Germany, leading to an

increase in the number of sales and technical employees. The data center will eventually be able to house up to 45,000 servers in an area measuring 4,000 square meters. Operations for the whole region will continue to be run from the company’s site in Saarbrücken, which opened in 2006.

The Limburg site, which is OVH’s 21st data center, follows the opening of three new centers in Australia, Singapore and Poland last year. OVH has plans to build two additional data centers this year in Germany and further centers in Italy, Spain, the United Kingdom, the Netherlands and the United States. The group will finance its global expansion through a €1.5bn investment over the next five years. In October, the group raised €250m by selling a minority stake to U.S. private equity firms Kohlberg Kravis Roberts and TowerBrook. If OVH continues to scale and to innovate at the superfast speeds it has been setting in recent years, Germany and the rest of Europe can only stand to gain.



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The Fourth State

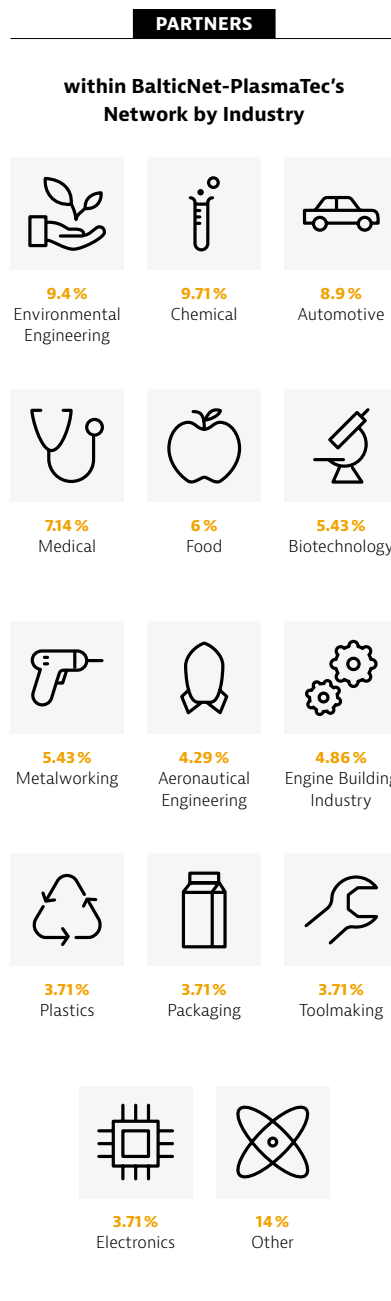
Plasma technology is all around us, although we may not know it. From food hygiene to engine manufacturing, this hidden science has multiple industrial uses, and is the reason why investors are flocking to the German city of Greifswald.

Plasma is said to be the state of around 99 per cent of visible matter in the universe. Its most celebrated form is probably the northern lights. It is created simply by adding energy to a solid (the first state), causing it to change to liquid (second state) and then to gas (third state). Once the gas is created, feeding extra energy into the gas creates the fourth state: plasma – matter with a high energy level. When this matter comes into contact with certain materials like plastics and metals, it can change important properties, making it a significant tool for selective modification of material characteristics, such as changing the adhesiveness or wettability of surfaces.

Plasma technology is a pan-industrial application, with industries as diverse as glass and engineering using it. Physical plasmas have been proven to disable tumor cells, causing them to stop dividing and spreading. Plasma filters reduce the emissions of hydrocarbons, nitrous oxides and sulfur oxides, helping the fight against environmental pollution. In the life science field, plasma technology has helped to create such things as antibacterial surfaces or functionalized implants, and plasma sterilization techniques are currently being developed.

Awesome plasma cluster

In the Mecklenburg-Vorpommern town of Greifswald, BalticNet-PlasmaTec is becoming one of the best-known industry clusters within the field of plasma technology. Greifswald itself has a long tradition in plasma technology; these days the University of Greifswald, the Leibniz Institute for Plasma Science and Technology, the Max Planck Institute for Plasma Physics and several SMEs are all active in this field. BalticNet-PlasmaTec serves as a central partner to these players, enabling



Source: BNPT

networking and joint projects across the industry and research.

The BalticNet-PlasmaTec cluster started in 2006 with eight members from Germany and Poland, built up on an inter-regional EU funding source, while Germany's Federal Ministry of Education and Research (BMBF) funded a host of internationalization projects within the network. Eleven years later, BalticNet-PlasmaTec consists of 71 partners from 16 different countries, particularly from the countries bordering the Baltic Sea but also from Italy, France, India, Belgium, Brazil and the Netherlands. It manages all the essential business services on site, including new business development, marketing, education, R&D, funding and project management. Greifswald was chosen as the location on the basis of the extensive subject knowledge capital and human resources located there.

An ever-expanding net

This year will see the groundbreaking foundation stone ceremony for a new technology center in Greifswald, co-initiated by the cluster. The Centre for Life Science and Plasma Technology Greifswald, as it will be called, will enhance the collaboration in and economic use of bio-technology and plasma technology, including cross-sectoral co-operation. Such a collection of high-level facilities has enabled Greifswald to become a well-known European reservoir of plasma technology knowledge, with the Ministry of Economics, Employment and Health of the State of Mecklenburg-Vorpommern and the city itself putting in the investment for the new center.

"The crucial point was a cross-sectoral approach on bio-economy and plasma technology, which are two relevant technology areas in Greifswald," says Wolfgang Blank, chief executive of WITENO, one of the found-

ing firms in the cluster. “The close collaboration between different partners – from science, industry and administration – was critical in getting the support of the federal state of Mecklenburg-Vorpommern. We want to attract and build up high-tech industry in the region.” Any company which is interested in plasma technology or the bio-economy should keep an eye on opportunities at the center. “Cross-sectoral collaboration, tailor-made and modular infrastructure, professional services in business development, start-up culture and innovation management are the key advantages to be gained by joining our community,” says Blank.

The new center will serve as a hub of creativity for the future, enabling large and small companies alike to continue developing new innovations and enhancing Greifswald’s reputation as a center of cutting-edge knowledge. “The Centre for Life Science and Plasma Tech-

nology’s long-term efforts will expand the competences in the field of plasma technology and will create the prerequisites for the initiation of further projects, the formation of clusters and marketing possibilities,” says Klaus-Dieter Weltmann, chairman of the board at BalticNet-PlasmaTec. “A major advantage is that spin-offs of the University of Greifswald, the Max Planck Institute for Plasma Physics and the Leibniz Institute for Plasma Science and Technology could stay in Greifswald and strengthen their co-operation with other companies in Mecklenburg-Vorpommern; this means the other companies can also improve their chances of development.”

The BalticNet-PlasmaTec cluster implements its own innovations as well. The challenge of orchestrating scientists and research from such a wide variety of countries is considerable, but through the implementation of a bespoke communication platform known

as Clou5, the flow of information is secured. Clou5 brings together networking tools such as document exchange, management tasks, video conferencing and expert search. All interactions within the network take place in an environment of trust. Users can decide who can see their information: for example, a specialist group.

Like the sun – the largest plasma formation in our solar system – if Greifswald continues expanding, it will draw many other technologies into its magnetic field. Plasma technology has found its physical home.

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A newly-forged ring induction lamp glows pink at the Leibniz Institute for Plasma Science and Technology in Greifswald, in the German state of Mecklenburg-Vorpommern. The city is home to **BalticNet-PlasmaTec**, one of the most important clusters in the plasma field in Europe.

Key Industrial Applications of Plasma Tech

- Atmospheric pressure and vacuum coating at low and high temperatures
- Activation and modification of surfaces
- Etching
- Cleaning through to sterilization
- Plasma cutting and welding
- Pollutant degradation in gases and liquids (e.g. purification of water)
- Production of light and radiation
- Plasma-chemical processes, e.g. for synthesizing new materials
- Optimization of high-voltage switches

The Future of Driving is HERE

The data-driven mapping company's Open Location Platform offers almost unlimited potential for innovation – both on- and off-road.

In 100 meters, take the right turn to merge onto the A2," suggests the familiar voice of your GPS. You follow the command, only to find that the way is blocked due to construction work which the system had not computed. The result: a long detour, a missed appointment and a bad mood. This common scenario presents a real problem for the manufacturers of navigation systems, and an opportunity to provide the edge in a highly-competitive market.

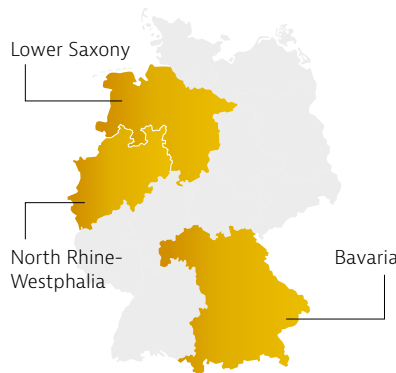
In the growing location ecosystem, one company is quickly pulling ahead of the pack. HERE locates its origins back to 2007, when the Finnish mobile phone giant Nokia acquired Chicago-based mapping industry insider Navteq and later amalgamated it into Nokia Maps. In 2012, Nokia rebranded the service as HERE, bundling mapping, location businesses, satellite navigation and other services. But HERE's biggest boost came in 2015, when it was bought by a consortium of Germany's three leading car manufacturers, BMW, Audi and Daimler, for €2.8bn. Then this year Intel acquired a 15 per cent stake.

Ways of the world

With 7,500 employees covering 150 cities worldwide, HERE aims to make its Open Location Platform (OLP) the global leader in location services, supporting everything from smartphone apps to autonomous vehicles, smart cities and intelligent transportation systems. "We have already created new services that bring the Open Location Platform into action with our next-generation automotive services – Road Hazard Warning, Real-Time Traffic, Road Sign Recognition and On-Street Parking," says Sebastian Kurme, head of media relations at HERE. "These services gather the data from sensors in vehicles belonging to third parties – automotive companies – analyze and publish it back to everyone using the systems. Other

DRIVERLESS TRANSPORT TRIALS

Up to 2018 Germany will be running a number of autonomous transport trials: transmitters, sensors and cameras will be installed on important motorways, highways and other traffic links.



Lower Saxony: due for completion 2018

Motorway A2

between Hannover and Braunschweig

Motorway A7

between Hannover and the Salzgitter Junction

Motorway A39

between the Salzgitter Junction and Wolfsburg

Partners

The State of Lower Saxony, Continental, Volkswagen, German Aerospace Center (DLR)

Bavaria: due for completion 2017

Motorway A9

between Nuremberg and Munich

Partners

The State of Bavaria, Audi, BMW, Siemens

North Rhine-Westphalia: operational

L418 Trunk Road near Wuppertal

Partners

The State of North Rhine-Westphalia, Delphi Automotive

car manufacturers will be free to add their own data to the pool, making the system ever stronger for everyone who subscribes to it."

Self-driving vehicles are also on HERE's radar. The company's HD Live Map service provides reliable, constantly-updated maps that plot every coming lane, obstacle and speed limit, and enables autonomous vehicles to move safely in ever-changing environments and make informed decisions on behalf of the driver.

The keyword is "open"

Although HERE recently announced that the number of OLP cars sold worldwide has passed the 100m mark, the platform is not solely auto-focused. The firm also provides services to Amazon, Facebook, FedEx, Microsoft, Samsung and SAP, among others. The platform, says Kurme, "is open to anybody and will allow data owners, developers and others to add, mix and manipulate data for themselves, or for other people tapping into the platform, like never before."

"Imagine, for example, a city authority might wish to make public the locations of their newly-installed EV charging points," he continues. "A developer might then use the OLP to create an app that leads motorists to their nearest charging station using HERE routing services. And that's just a taste; what if that information was parcel delivery ETAs, 4G/WiFi coverage, bus timetables, popular ice cream flavors or anything else you might imagine?" HERE's innovative platform puts it in the driver's seat not only for autonomous transport but for the coming era of the Internet of Things and Big Data. As its CEO Edzard Overbeek said when the OLP was launched, "These new services are just the beginning."



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High Concept

U.S. conglomerate General Electric has found a successful formula in Concept Laser, one of the world's leading equipment manufacturers and technology providers for the 3D printing of metal components. The acquisition expands GE's operations in Germany.

When GE announced the purchase of a 75 per cent stake in Concept Laser – a Bavarian manufacturer of 3D printing machinery and technology – for €549m last year, it had the future of GE Aviation in mind. The high-tech division uses additive manufacturing (AM) for a number of aircraft engine components, including fuel nozzles for the new LEAP jet engine and a significant portion of the Advanced Turboprop Engine (ATP) for its new Cessna aircraft.

The deal, which allows the U.S. group to take full ownership in a number of years, reflects the sea change currently sweeping through the manufacturing sector. 3D printing offers a number of advantages over traditional production methods: parts can be made with less work and less scrap material, while the technology opens up infinite new design possibilities.

Founded in 2000 by Frank Herzog in the picturesque Bavarian town of Lichtenfels, Concept Laser develops and manufactures AM equipment and plant technology for indus-

»Herzog and his team are true pioneers in metal laser melting technology.«

David Joyce CEO of GE Aviation

tries as diverse as aerospace, automotive, tool-making, and medical and dental equipment. The privately-held company has won multiple awards for innovation in recent years. Its patented LaserCUSING process, which is used “to create high-precision mechanically- and thermally-resilient metallic components,” is in high demand, for example. It has enjoyed muscular sales growth since 2014, reporting a 54 per cent boost in sales from 2014 to 2015 and posting record figures in the first half of 2016, as sales soared to 88 per cent compared to the same period in 2015.

GE describes itself as a leading end-user and innovator in the 3D printing field. It has invested some \$1.5bn (€1.4bn) in additive technologies and has developed AM applications across six GE businesses. The U.S. group has committed to investing significantly in the Lichtenfels site, which will remain Concept Laser's headquarters while also becoming a new German center for GE.

David Joyce, GE vice-chairman and CEO of GE Aviation, describes Herzog and his team as “true pioneers in metal laser melting technology,” and has stressed GE's commitment to “enhancing Concept Laser's technologies and product offerings.”

Demand for 3D printing is spiraling

Herzog will stay on as Concept Laser's CEO while also assuming a senior leadership position at GE. “GE shares our vision regarding the potential for AM. Together, the companies will be able to accelerate development of the technology.” He is confident that reliance upon AM – which is predicted to see a five-year compound annual growth rate of 22.3 per cent* – will only accelerate: “We are hitting an inflection point in demand as customers increasingly understand the possibilities that additive manufacturing presents and as the technology advances to be able to turn these possibilities into reality.”

FACTS & FIGURES

\$13.2bn

Global spending on 3D printers in 2016.¹

\$28.9bn

Est. revenues from 3D printers by 2020.¹

20%

of all automotive, aerospace, and mechanical and plant engineering companies using additive manufacturing (AM) apply it to make tools.²

2/3

of all US manufacturers use 3D printing in some way – mainly for prototyping.³

1/3

of all plastics, automotive and aerospace, pharmaceutical and medical companies using AM apply it for printing their own end products and components.²

¹ Source: International Data Corporation (IDC).

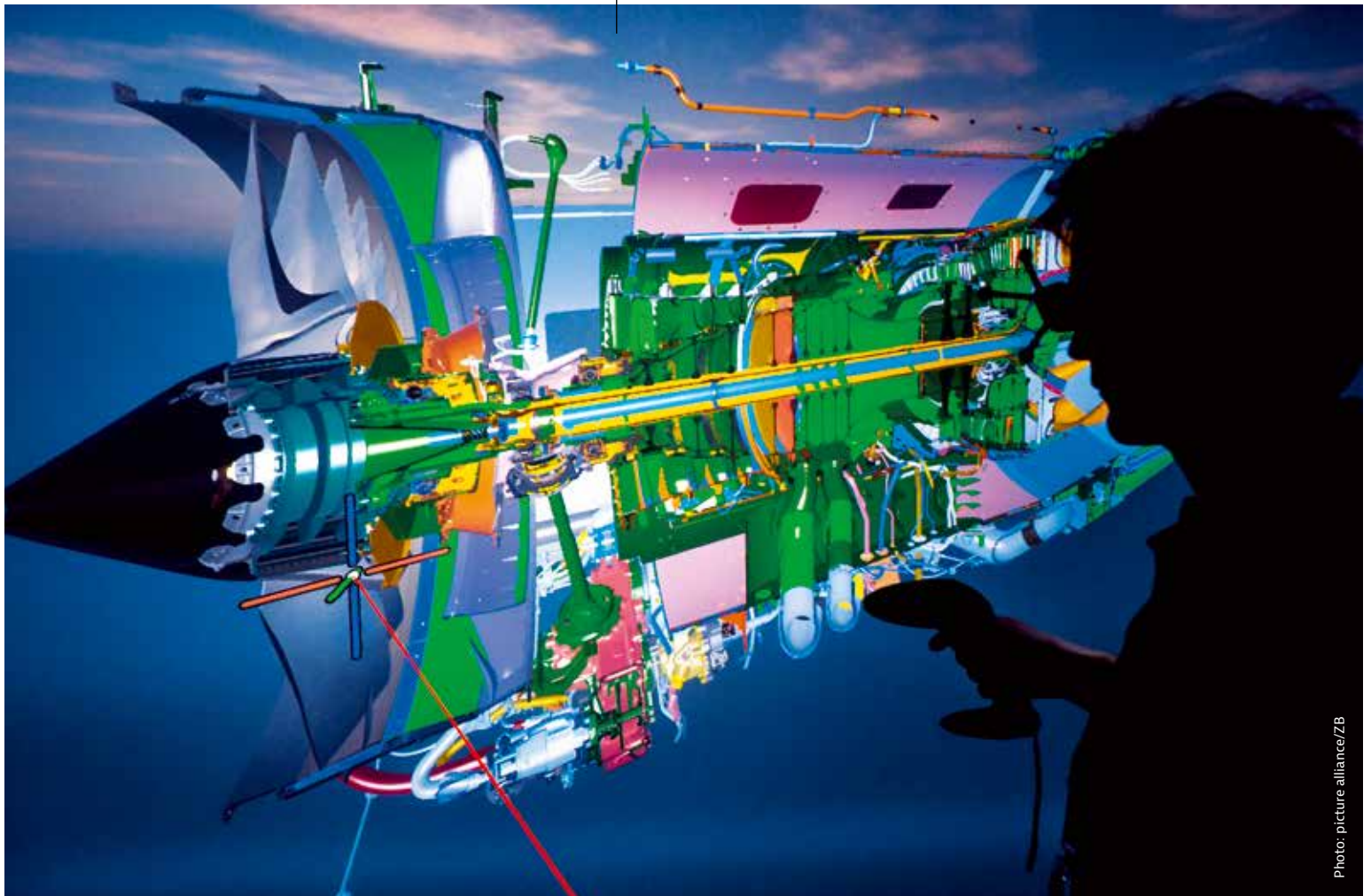
² EY's “Global 3D Printing Report,” 2016.

³ Source: PWC's 2016 report: “3D Printing Comes of Age in US Industrial Manufacturing.”

F1 in the Sky

Last year the much-anticipated Rolls-Royce Power Gearbox was given its first test-run just outside Berlin. *Markets Germany* finds out how the British jet engine giant is committed to its eastern German plant in Dahlewitz for the long haul.

Rolls-Royce's Dahlewitz plant has an impressive heritage of aerodynamic innovation. In addition to the BR700 family – a standard-setter in long-distance jet engines – the Tay, Spey and Dart engine series were developed and manufactured here. Last year the facility celebrated the delivery of its 7,000th engine.



FACTS & FIGURES

Dahlewitz Milestones

- 1993** Official opening ceremony
- 1994** BR700 family of iconic engines launched
- 1998** Headquarters of Rolls-Royce Germany moves from Oberursel to Dahlewitz
- 2002** Tay, Spey and Dart engine production moved to Dahlewitz
- 2010** Launch of Mechanical Test Operations Centre (MTOC)
- 2012** New logistics facility opened
- 2016** The Rolls-Royce Power Gearbox (PGB) has its test-run
- 2017** Manufacture of Trent XWB engines begins

goals remain a priority for the group, as emphasized by CEO Warren East in the financial report. This year net R&D expenditure is expected to be in the region of £950m (€1.1bn).

Innovation is the key to success

"We cannot be specific on the development costs for a single new engine," continues O'Neil. "A large jet engine consists of more than 20,000 parts. While most of those will be newly-designed, any design builds on the development of former engine generations and the practical experience gained with those. Our new Advance engine builds on the Trent XWB, and the UltraFan engine will be a derivative of the Advance. A totally new design from scratch, including all tests to perfection, would amount to several billion euros in costs and take several years."

He stresses that innovation is key to Rolls-Royce's success. "In addition to the in-house development we support a global network of 31 university technology centers, which positions Rolls-Royce engineers at the forefront of scientific research. Four of the centers are based in Germany – in Cottbus, Darmstadt, Dresden and Karlsruhe," he says, pointing out that as a result of R&D efforts, the company has managed "dramatic reductions in engine fuel consumption and emissions in recent decades, and this will continue, as with the Advance and UltraFan engines."

Even considering more potential economic shocks due to Brexit, the engine-maker's commitment to Dahlewitz remains exceptionally strong. With space for expansion, proximity to the international hub of Berlin and, most important, a foundation of technological excellence, the future of aerospace looks safe in Dahlewitz.



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In December, the prestigious engine manufacturer Rolls-Royce celebrated the delivery of the 7,000th engine mounted at its Dahlewitz plant. The engine, a BR710, is destined to power a Gulfstream G550 owned by the Gulfstream Aerospace Corporation and is just one example of the dynamic output from this suburban village just a stone's throw from Berlin's Schönefeld airport.

Last October, the Dahlewitz facility hosted a milestone aerospace test when Rolls-Royce's Power Gearbox (PGB) was given a proper turn for the first time. The test was one of a series which will culminate in 100,000 horsepower of load – the equivalent of more than a hundred Formula One race cars – being put on a single gearbox. When it is finished, it will be the most powerful aeronautical transmission component in the world.

The entire project forms a part of Rolls-Royce's next-generation engines strategy, which was announced in 2014. Each gearbox is an integral part of the long-awaited UltraFan engine (expected to achieve a 25 per cent improvement in fuel efficiency when it enters the market in 2025), which is currently being developed by Rolls-Royce Germany. The capacity to manufacture the core components at Dahlewitz was created through a joint venture between Rolls-Royce Germany and Liebherr Aerospace in 2015, and represents an investment of more than €80m.

Long-term commitment

"This joint venture was established to develop manufacturing capability and capacity for the power gearbox. It provides outstanding production engineering for the power gear drive train components," explains the managing director of the Dahlewitz site, Paul O'Neil.

The latest developments at Dahlewitz form part of a long-term strategic commitment to manufacturing in Germany. It began

in 1990 when the Rolls-Royce Group founded a German company to develop civil jet engines in partnership with BMW. Rolls-Royce Germany, a 100 per cent subsidiary, is Germany's only fully certified engine manufacturer with complete systems capability for the design, production and after-sales support of civil and military turbine engines. In all, more than €3.2bn has been invested in the production facilities and engine programs at Dahlewitz and the company's other site near Frankfurt. Across the two sites there are more than 3,600 employees.

As far back as 2008, Dahlewitz was developed as a test center for the entire Rolls-Royce Group with an investment of €65m, primarily for the mechanical and structural behavior of gas turbine components. Up to 40 different types of tests have since been carried out, including acceleration, operating stability and vibration tests.

"Over more than two decades Dahlewitz has established itself within the company as being highly innovative, reliable and focused to deliver products meeting the highest standards," says O'Neil proudly. And there's more excitement in store: "Later this year, we will also start assembling Trent XWB engines."

The financial results for the Rolls-Royce Group in 2016 showed the R&D expenditure was £97m (€91m) up on 2015, with civil aerospace accounting for £53m (€61m) of that increase. The costs of developing a new engine are staggering because of the sheer complexity of the tasks required, but long-term

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Economic Overview Germany

To keep investors up-to-date, we've revised our essential reading "big picture" booklet on Germany's dynamic economy. Using helpful graphics and illustrations, we pack this 15-page guide full of all the key facts and figures as well as concise chapters on the market, FDI trends, productivity, the workforce and the innovation landscape. By the time you've finished it, you'll know where the German economy is, where it's headed and, most important, where the opportunities are.

Order number: 20860



Medical Technology Clusters in Germany

Germany is famous worldwide for its cutting-edge medical technology. One major driver of excellence has been its more than 30 specialized clusters facilitating collaboration between private-sector companies, hospitals, contract research institutions and academia. This fact sheet provides a countrywide overview of selected clusters and networks, listing their activity areas and membership make-up, as well as details on available incentives and support.

Order number: 20856



Microelectronics Industry Clusters in Eastern Germany

As a companion volume to our booklet "INVEST. INNOVATE. INTERNATIONALIZE. Industry Clusters in Eastern Germany," this fact sheet focuses on the high-tech powerhouse of Saxony and its Silicon Saxony cluster. In addition to key details, it provides brief interviews with four executives about the many benefits of membership in the biggest network for the micro- and nanoelectronics, smart systems, photovoltaic, software and application sectors in Europe.

Order number: 20864



Business Services in Germany

Germany is one of Europe's biggest growth markets for the contact center, shared service center and business process outsourcing industries. This brochure explains why more and more companies are opting for the unique combination of benefits offered here, such as unbeatable infrastructure, a highly-skilled workforce and competitive labor costs. Several best-practice examples reveal how companies have successfully identified and exploited a host of opportunities.

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on the basis of a decision
by the German Bundestag

Seoul Mates

South Korea and Germany are a good match: two highly innovative economies working closely together to take on the challenges of the future.

INTERVIEW

“Balli Balli”



In Korea's capital, business is driven by a culture of “Balli balli” (meaning “Quick, quick!”). *Markets Germany* talks to Alexander Hirschle, the director of Germany Trade & Invest's Seoul office, about business opportunities between the two countries.

Mr. Hirschle, like Germany, South Korea is a modern industrial state with a successful economy. What image do Koreans have of Germany?

HIRSCHLE: Across many sectors, especially when it comes to innovation in medium-sized businesses, Germany is considered “the benchmark” of quality. Products that are “Made in Germany” – both consumer and capital goods – enjoy the highest appreciation in Korea. Also, from a cultural perspective, Germany's successful reunification is greatly admired in a country that remains divided, just as our composers of classical music are also held in high regard.

You regularly speak with Korean business managers both in Korea and in Germany.

Where do they see the business opportunities at the moment?

HIRSCHLE: The creation of research and development facilities in order to drive innovation is seen as a priority, which is why Germany is a popular location. Korean firms are keen on having headquarters or European sales centers in “Dogil” (the Korean word for Germany), due to the size of the market and its central location within the continent. This trend cuts across all sectors of industry.

Which sectors are specifically investing in Germany at the moment?

HIRSCHLE: Most queries and participants at our events come from the electronics and auto industries. Both sectors are subject to strong pressure with regard to innovation and cost efficiency, which goes hand in hand with growing internationalization. Germany is considered a “spearhead” in technologies of the future, such as environmentally-friendly vehicles or renewable energy. Industry 4.0 is also a topic of great interest here in Korea. Furthermore, Korean start-up businesses are increasingly turning their antennae towards Germany.

What services can you offer to such businesses?

HIRSCHLE: We are the first point of contact for local businesses in Korea that are interested in getting involved with Germany. Our office in Seoul is located in the building of the German Chamber of Commerce Abroad (AHK). The queries to Germany Trade & Invest (GTAI) are recorded there, channeled and then passed on to our branch experts in

Berlin. In Korea, the culture is defined by the expression “Balli balli” (meaning “Quick, quick!”). This means that an initial response has to come immediately. The Embassy, the AHK and GTAI work very closely on investor services such as offering support for events, or identifying companies which are interested in the German market. The co-operation is excellent, which has a positive impact on the overall perception of Germany in Korea.

What has been your biggest professional success in the past year?

HIRSCHLE: 2016 was the year I started working for the Investment Promotion and Investor Services of GTAI in Korea, so the last year has been dominated by network building. As a general

rule, Koreans do business on the basis of trust, which takes a long time to gain. I have been building contacts with key influencers, associations and businesses, and my efforts have already begun to bear fruit. Besides this, we have organized a lot of successful events, which attracted an above-average number of visitors. As a result, GTAI and the German Embassy in Seoul will be jointly hosting an event to commemorate the “Day of German Unity” on October 3rd (a national holiday in Germany, which celebrates the anniversary of reunification in 1990: www.gtai.com/german-unity) in Seoul, to inform even more Korean businesses of the advantages of investing in Germany.

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Co-determination: Stronger Together

In many countries, key company decisions can be quickly made by the CEO and executive board without consultation. Not so in Germany, where the co-determination rule ensures employees have their say, thereby promoting sustainable business.

At face value, the hierarchy within any company is clear: directors make the decisions and their employees have to implement them. In Germany, however, it is not so straightforward. In many companies, employees have a right in law to decide on important topics. From the perspective of a foreign investor, this system, known as “co-determination,” may seem a little strange, but it has been working well for decades, to the extent that even employers praise it.

“Employee participation has proved successful in difficult situations,” says Ingo Kramer, president of the employers’ association BDA, adding, “sometimes it also acts as a brake pad.” From checking the excesses of big business when decisions are made purely in the interests of shareholders and directors, to steering the company in the right direction from an employee perspective, co-determination promotes sustainable business.

Moreover, anyone who is thinking about investing in Germany should be familiar with the rules of employee participation, to avoid nasty surprises. Co-determination also applies to German subsidiaries of foreign companies, provided they reach a certain size. In total, employees of around 26,000 German companies are empowered to participate in important decisions.

Works councils: The voice of the worker

In all German companies with at least five employees, the workers are entitled to elect a “works council.” The employer must not hinder these elections and management must involve the employee representatives in important decisions. For example, if there’s a round of new recruitment, if redundancies

nally. Members of the works council must be allowed to devote time to their duties as the employees’ representative during working hours, be it hours or days, depending on the size of the company.

The supervisory board: Monitoring the managers

In large corporations co-determination is taken a step further. If a company has between 500 and 2,000 employees, the workforce should appoint a third of the members of the supervisory board. Within this supreme control body, the workers’ representatives sit together with the representatives of the shareholders and are involved in all decisions. In corporations with more than 2,000 employees, employees can even appoint 50 per cent of the supervisory board. However, in a stalemate situation, where there is no clear majority vote, the vote of the chairman of the supervisory board (the shareholders’ representative) will swing the motion. More than 600 companies in Germany are large enough that employees occupy half of the supervisory board.

Co-determination: Promoting company success

Unsurprisingly, the unions are the first to praise the positive consequences of employee

Employee participation has proved successful in difficult situations.

are pending or if the organization of the company is to be changed, the employees must have their say. The powers of the works council vary from case to case, ranging from the right to information to the right of veto. For example, works councils in companies with more than 20 employees can prevent a new employee from being hired without the management first posting the vacancy inter-

Staff meeting at the Volkswagen factory in the German city of Wolfsburg: Anyone who is thinking about investing in Germany should be familiar with the rules of employee participation, which also apply to German subsidiaries of foreign companies.



Photo: Kristoffer Finn/laif

CASE STUDY

Co-determination in a Financial Crisis

The benefits of co-determination have never been clearer than in 2008, when the global financial crisis caused a dramatic slump across many countries. In Germany, too, customer demand fell sharply, and many companies were forced to cut costs.

But unlike in its European neighbors, redundancies in Germany were not on a large scale. The reason being that employers and works councils on the supervisory boards of big companies were quickly able to agree to adopt a government work subsidy called *Kurzarbeit*,

whereby employees' working hours are reduced by half, but they are still able to receive 80 per cent of their salary.

Many German companies were therefore able to steer through the crisis without needing to make mass redundancies. The program was commended in a 2009 report from the Organization for Economic Co-operation and Development (OECD), which estimated that 500,000 jobs had been saved during the recession and the lost income of over 1.4m workers had been compensated.

participation. Reiner Hoffmann, chairman of the trade union umbrella DGB, describes co-determination as "a living democracy in the company," although it is not always convenient for employers. It also has a positive effect on the company's success and longevity because it makes for sustainable policy-making and reduces the impact of short-term return targets for shareholders.

Many economists have come to the same conclusion. Researchers at the think tank *Wissenschaftszentrum Berlin* have proven that in co-determined companies more money is invested back into the business than would have been if the shareholder representatives were free to decide for themselves. Sustainability issues from directors' bonuses to waste reduction are also particularly high on the agenda in these companies.

The German system of co-determination may even provide a model for other countries. Last July, British Prime Minister Theresa May proposed introducing co-workers to the controlling bodies of the largest companies in Great Britain, in a bid to curb the excesses of company executives.

FACTS & FIGURES

180,000

Number of works council members in Germany

7,500

Number of employee representatives in supervisory boards in Germany

Source: PwC

“Essential resource”

When foreign investors adopt the German model of stable employer-worker relations, the whole of Germany benefits, says Jörg Hofmann, chairman of IG Metall, Germany's biggest trade union with over 2.2m members.

Mr. Hofmann, GTAI is tasked with bringing foreign direct investment to Germany, thereby creating and securing employment – so our goals are not dissimilar. How would you showcase Germany to foreign investors?

HOFMANN: Firstly, I would point to our innovative and high-performance industries such as automobile production, machine building and chemical engineering, and emphasize how well qualified German industrial employees are. They are an essential resource when it comes to the implementation of digital transformation. Secondly, there's the value added by social partnership – the benefits of participative management and co-determination. Participative companies are more innovative – a tangible advantage which is often overlooked.

Every time an overseas company sets up shop in Germany, the economy becomes a little more international. From the perspective of a trade union, why is internationalization so important?

HOFMANN: When foreign investors adopt the German model, the whole of Germany benefits. Our model combines the development and production of the most innovative products with skilled craftsmen and stable employer-worker relations. Clearly defined rules and standards lead to reliable and structured work and pay conditions. On this basis, German companies and subsidiaries evolve to fulfill their potential and take on leading roles in the international workplace.

The synergistic relationship between employer and employee in Germany is regarded from outside with equal parts admiration and skepticism. How would you explain the merits of the German system to a British or American manager?

HOFMANN: The merits are clear and economically tangible. Yes, we have an innovation culture, but there's also a completely different approach to conflict. The term *Konfliktpartnerschaft* – a culture where

INTERVIEW

Man of Metal



Germany Trade & Invest interviews Jörg Hofmann, chairman of IG Metall, Germany's biggest union with over 2.2m members from the metal industries and also from electricals, clothing and textiles, wood, plastics, crafts and ICT. He praises the close partnership between employers and employees – which has a long history in Germany.

neither employee nor employer gives ground to another within clearly-defined rules – encapsulates this well. We have scope for design within our tariff-based contracts. Our philosophy is to solve corporate and pay grade problems directly with the employers or their unions, without always invoking policy first.

The world is talking about Industry 4.0. Many view it as a critical step along the path of modernization, which would strengthen Germany's position as a leading industrial location. But increasing automation is likely to have an impact on employment. So where do employers stand on this issue, and how would you like to influence the course of modernization?

HOFMANN: I don't think factories can ever operate without people. But we must also be aware that some jobs will not exist in the future. If we want people to have a place in the work environment of the digitalized future, they must be given the right qualifications. We need an increase in further education that is accessible to all, including lower-skilled and older workers. We

want to make the workplace a place of learning – and this is an area where digital media can help.

If you were in our position – i.e. negotiating with a foreign company about an incoming investment opportunity – what questions would you ask the investor?

HOFMANN: I would ask, “How will you cope with worker participation in your company?” and “How will you cope with the tariff commitments?” We are clearly tasked with ensuring that company owners are integrated into the participation and tariff-commitment systems when it comes to takeovers or new investments. This is also ultimately in their own interests.



Further Information:
www.en.dgb.de

Climate Protection Pays Off

A new report has confounded the skeptics of Germany's 2020 Climate Action Programme by demonstrating that low-carbon investments will provide an overwhelmingly positive boost to the economy, as well as protect the environment.

Germany's 2020 Climate Action Programme will produce substantial economic gains. And no, that's not a statement from the German government or the Green Party; it's the conclusion drawn by a PricewaterhouseCoopers (PwC) report published last November. Skeptics of the program have often said that Germany's 2007 commitment to reduce greenhouse gases by 40 per cent by 2020 compared with 1990 levels might leave the air better to breathe but would choke off economic growth.

Not so, says PwC's cost-benefit analysis report, which forecasts that the program will add €30bn to German GDP by 2020 and create more than 400,000 jobs. At the time of publication, PwC partner and co-author Christian Liebaug said, "Our analysis shows clearly that the Climate Action Programme promises significant benefits not only in terms of environmental policy, but also for the economy as well."

The report also indicates that spending money on slowing climate change will pay off economically as well as environmentally. It estimates that implementation of the program will require investments totaling €12bn, mainly from the private sector, but in the long term the savings from energy cost reductions will be more than double that sum.

Energy efficiency creates new markets

According to Robert Compton, manager for energy efficiency and smart cities at Germany Trade & Invest, measures to reduce Germany's CO₂ emissions can also benefit companies from abroad. "Environmental policy has created a market for energy-efficient solutions. Here international cleantech companies can find world-leading R&D partners and a thriving domestic market supported by progressive policy and a wide range

BIG GAINS

According to PwC's cost-benefit analysis, published last year, Germany's climate protection policy will benefit the economy overwhelmingly.

430,000

new jobs

€274bn

in total savings

€30bn

increase in GDP in 2020

€82bn

savings for private households

€74bn

savings for industry and business

Source: PwC

of incentives. Once a foreign firm sets up a company here, it is on an equal legal footing with German companies," says Compton.

Even when distributed across economic sectors, the benefits of implementing the program exceed the costs, found PwC. The industrial sector would have to invest to earn, but then the pay-offs are big, with estimated net savings of €74bn. This figure even included sectors where the direct costs were slightly higher than the gains, such as the energy sector. Here PwC determined that energy providers as a group would come up about €10bn short, yet transfer payments, including network charges and cogeneration levies, could be used to offset this. The picture for the domestic sector was similar: households would have to find €56bn to comply, but would reap €82bn in savings and come out €26bn ahead.

Climate-friendly innovation thrives

The Climate Action Programme, which was drawn up by the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), contains 107 measures – including energy-saving building renovations, climate-friendly freight logistics, energy audits for industry, and wetlands conservation programs – all of which offer plenty of scope for climate-friendly innovation. Compton points out that backing for improved, efficient products goes beyond what is available from BMUB. Among other sources of support are the initiatives of the economic and research ministries aimed at promoting firms producing energy-saving technologies.



Further information:
www.bit.ly/2mzCrNS



Henry Kissinger | Former U. S. Secretary of State

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