

MARKETS

GERMANY

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DIGITALIZING DEUTSCHLAND

Germany's digital quantum leap is a priority for the new coalition government – and international companies are invited to help jump-start the future.

GOOD CHEMISTRY

Why Germany's chemical industry needs green H2

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Magdeburg to get a massive new
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FOCUS

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As Germany pledges to "close the digital gap" with a range of investment incentives, multiple opportunities are opening up for international providers of smart digital solutions.

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Manuel Köpp



on the basis of a decision
by the German Bundestag



»Germany's new government is making digitalization a priority.«

Dear Reader,

Regrettably, as I write these words, war is going on in Europe following Russia's brutal attack on Ukraine. Thousands of deaths, millions of refugees and endless sorrow are the tragic consequences. The German government and everyone here at Germany Trade & Invest (GTAI) absolutely condemn this sort of violence. We sincerely hope for a swift end to hostilities and for the restoration of peace in the region – not least because international cooperation is the key to mutual security, prosperity and happiness.

This issue of *Markets Germany* is full of examples of people and businesses working together across national lines. March 15, 2022, for instance, will go down as a great day for the German economy with the announcement of not one but two giant, billion-euro international business investments: Northvolt's selection of Heide as a site for its new gigafactory and Intel's decision to create a "mega fab" facility in Magdeburg to manufacture semiconductor devices. We are delighted to bring you an interview with the managing director, VP and general manager of Intel Germany, Christin Eisenschmid, in which she talks about why Intel picked Germany.

Our lead story concentrates on digitalization. This is often perceived as a German shortcoming, which is why Germany's new government is making it a priority. It's a sector that offers great opportunities for international companies. So we hope this issue of *Markets* gives you some ideas about how you could work with and in Europe's largest economy to help shape a common future.

Dr. Robert Hermann, CEO

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MAJOR PLAYER



MAJOR PLAYER: STEVE "SPEZ" HUFFMAN

Steve Huffman, aka "spez," is one of the most successful web developers and entrepreneurs in the world. In 2005, he cofounded the US-based social news aggregation platform Reddit, which came in at number 18 in the Top Websites Ranking by data provider Similarweb in December 2021.

Steve Huffman, who has been serving as Reddit's CEO since 2015, is very keen on boosting the platform's international reach. And following the launch of overseas branches in the UK, Canada and Australia, Reddit decided to open its first office in a non-English-speaking economy in the central Berlin district of Mitte in October 2021.

"Our launch in Germany is the first step in a long-term commitment to the market and expansion beyond English-speaking countries," Huffman says. "We're excited to build our local workforce, grow more German communities and enable German advertisers to connect with our users."

Reddit primarily generates revenue through the sale of advertising, and thanks to 47 percent annual growth Germany already represents its fifth largest user base. International and German advertisers like Intel, Qualcomm, HP, Amazon, Apple, Aktien.news and Deutsche Telekom are among those already working with the Berlin-based sales team to engage local communities.

Quick facts

NAME	Steve Huffman
JOB TITLE	CEO
NATIONALITY	US
QUALIFICATION	BS in Computer Science
COMPANY NAME	Reddit
LINK	www.reddit.com/r/de/
LOCATION	San Francisco
INDUSTRY	Social media
BERLIN OFFICE	Community, sales, operations, product and engineering

DIGITALIZING DEUTSCHLAND

Germany's digital transformation has lagged behind some of its European neighbors in recent years. The new coalition government has made it a priority to change this, offering innovative digital solutions providers a competitive edge.

Ahmad Sharaf chose a complicated time to set up a business in Germany. As the second wave of the coronavirus pandemic took hold in the fall of 2020, the 38-year-old Egyptian engineer spotted a unique opportunity to start a small software development company offering artificial-intelligence-based language solutions for two separate, geographically distant client bases. And so DeepSource was born – simultaneously serving companies in the Middle East as well as Europe.

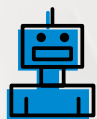
THE BOTTOM LINE

Germany's new coalition government wants to "close the digital gap" with neighboring economies. That will add dynamism to the German market and create lots of opportunities for international companies providing smart digital solutions.

"Germany has long been a hub for advanced tech, including artificial intelligence," says Sharaf, who had previously worked for major companies in Ireland and Saudi Arabia. "On the other hand, the pandemic paved the way for European companies to take advantage of remote talents as never before. Plus, Germany is the biggest economy in Europe, and we wanted to be in Europe. So we decided: Let's go for Germany."

THE FIVE FIELDS OF ACTION IN THE GERMAN GOVERNMENT'S DIGITAL STRATEGY

The "all-encompassing digital revolution" being pursued by the government covers all aspects of the German economy, society and state administration.



DIGITAL EXPERTISE

Investing in people's skills – from kindergarten to retirement



INFRASTRUCTURE AND FACILITIES

Gigabit-capable networks for cities and rural areas



INNOVATION IN INDUSTRY

Broad cross-sector promotion of digital networking of industry



SOCIAL TRANSFORMATION

Higher quality of life thanks to a range of digital tools



MODERN GOVERNMENT

All administrative services to become digital

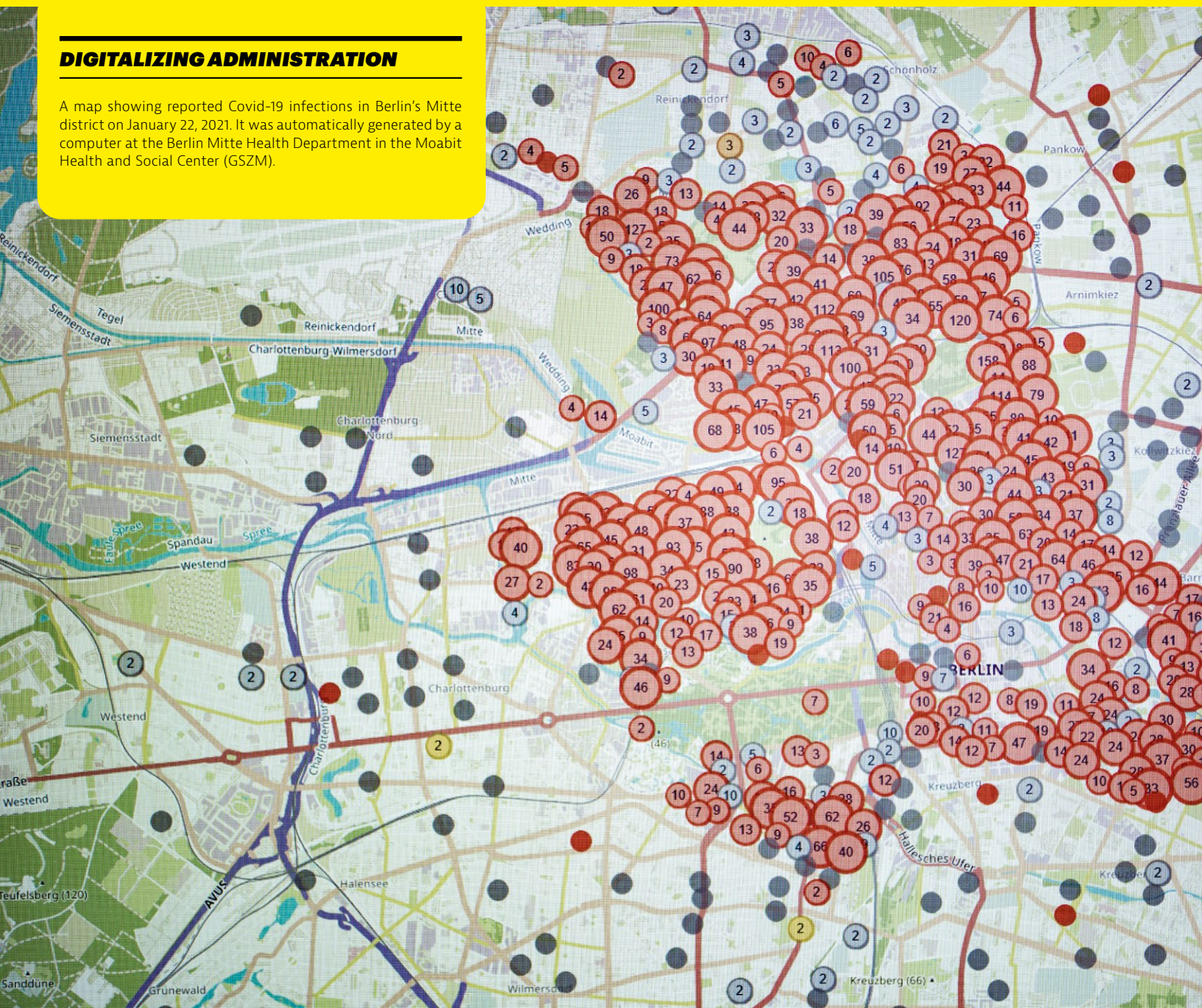


DIGITALIZING HEALTHCARE

At the University Hospital of Essen, eight-year-old Marko undergoes an MRI examination with the help of a VR headset to ease his fears about the procedure.

DIGITALIZING ADMINISTRATION

A map showing reported Covid-19 infections in Berlin's Mitte district on January 22, 2021. It was automatically generated by a computer at the Berlin Mitte Health Department in the Moabit Health and Social Center (GSZM).



Germany is keen to bring about many more stories like Sharaf's. The new government's coalition agreement between Chancellor Olaf Scholz's Social Democrats (SPD), the Greens, and the Free Democratic Party (FDP) includes a comprehensive digitalization drive that will create even better opportunities for entrepreneurs like Sharaf and their investors.

DeepSource is still operating on a small scale, but it has already worked on several successful projects with its international teams, made up of software developers mostly based in the Arab world. One of DeepSource's key projects is an advanced Arabic conversational artificial intelligence (AI) solution with chat

and voice bots. Known as Natural Language Processing (NLP), the technology enables computers to process, analyze and seamlessly interact with human languages.

Digital solutions to bureaucratic problems

Although the opportunities for Sharaf in Germany were very appealing, the founder did encounter a few hurdles along the way – the main one being the high level of bureaucracy needed to start a German limited company (GmbH).

"One of my friends founded a company in the UK, and he told me a company could

be founded in only 30 minutes there, all completed online," he says. "But for me it took two weeks – I had to go to a notary, sign in front of him and find a translator. They need everything on paper."

Sharaf's experience sounds all too familiar to another, much larger company in a similarly dynamic sector of the German digital economy. Qonto is a unicorn – a start-up worth more than a billion dollars. Now valued at EUR 4.4 billion, the French fintech provides business accounts for some 220,000 companies of all sizes in four countries: France, Italy, Spain and Germany.

Around a third of Qonto's new clients are founders of new companies, and it's often a

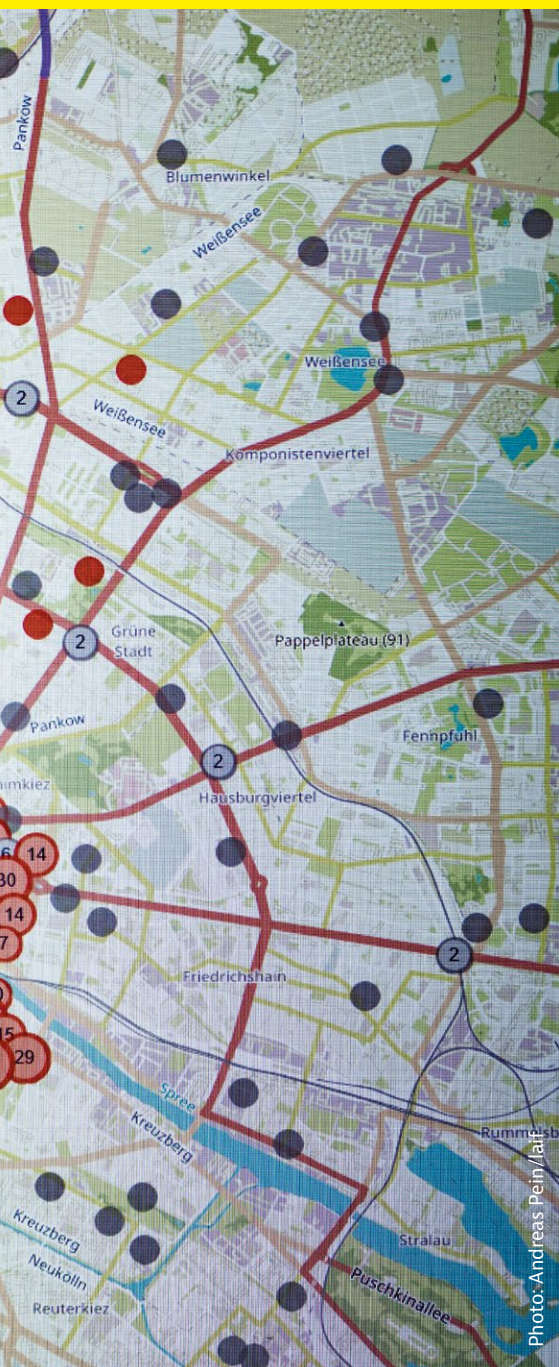


Photo: Andreas Peim/Laif

GERMANY'S NEW COALITION GOVERNMENT

The new German government is a three-way coalition of the Social Democratic Party (SPD), the Green Party and the Free Democratic Party (FDP), led by SPD Chancellor Olaf Scholz. It is broadly center-left in outlook, with a strong focus – thanks partly to the presence of the free-market-friendly FDP – on modernizing the German economy.

Indeed, the man with his hands on the country's purse strings is FDP leader Christian Lindner, who made digitalization one of the key platforms of his election campaign. As the new Finance Minister, Lindner has pledged to remove bureaucratic hurdles for new businesses and support digital solutions and future technologies.

Another central plank of the new government's economic plans has largely been set in place by the Greens, whose former coleader Robert Habeck is now Minister for Economic Affairs and Climate Action. In many ways, the new government's policies and plans can be seen as a marriage of these two goals: protecting the climate and digitalizing the economy.

struggle to complete the paperwork, especially when so much of it has to be filled out in person. "The political conditions need to be improved a little, especially for younger, more innovative companies," says Qonto's Germany manager Torben Rabe.

Fortunately, it's a problem the new German government is focused on fixing. The coalition under Olaf Scholz has promised to streamline the process this year, making it possible to found a company within 24 hours. "We were certainly glad to see the new coalition agreement," says Rabe. "It was a document that showed a constructive approach with some clear digitalization targets. Now

it's time to see them get to work, and we hope the plans will be implemented."

As well as the focus on digitalization, the new government's plans include a liberalization of immigration laws specifically to make it easier for highly skilled entrepreneurs to thrive in Germany.

A dynamic market in a country of digital skeptics

Rabe is convinced that there's room for growth in Germany's fintech sector. "There's still a lot of dynamism in the market, and of course a lot has happened in the last few years," he says. "Many start-ups and companies are currently

forming in areas offering solutions in the business sector, and there's definitely potential to serve that area better."

Such fast-moving developments to lower the barriers for founders belie the stereotype of Germany as a land of digital skeptics who distrust the Internet and where the digital infrastructure has failed to keep pace. Rabe believes the reality is a little more nuanced: "There are certain areas where Germany is actually a bit more advanced than other European countries," he explains.

While some Germans might still be resistant to the pace of digital change, Rabe has encountered plenty of businesses that are "very

4

GROWTH SECTORS OF GERMANY'S DIGITALIZED ECONOMY

1

Quality digital infrastructure is central to the new government's economic strategy

The new coalition is determined to build up Germany's digital infrastructure – that means everything from fiber optic networks to IT security – to facilitate digital-based business models in the economy.

2

Healthcare is already undergoing a digital revolution

Virtually every aspect of the healthcare industry, from diagnosis to prescription and patient monitoring, already has digital components. That process will be accelerated under the new government.

3

Energy and environmental industries are forming the new green economy

With an environmentalist party in government, there will be new incentives for industries that help protect the climate, as well as technology to make the energy grid more efficient.

4

Mechanical and electronic industries will also benefit

Germany's traditional industries stand to be boosted by new investments in digital infrastructure – particularly 5G networks – which will make factories significantly more efficient and able to compete in the brave new world of digitally networked industry.

»Germany needs an all-encompassing digital revolution ... We will support digital innovations, business and social initiatives and will invest in open standards and diversity.«

From the new German government's digital pledge, December 2021

open” to choosing digital ways to streamline their practices. “German companies certainly aren’t lagging behind – if anything, their awareness is already sharpened to the fact that you can’t carry on with analogue processes,” he says.

Rabe also appreciates the digital community in Germany: “I have to say, generally, that the ecosystem of digital companies in Berlin and other German cities is very lively – it’s certainly worth getting active and networking.”

A new government with big plans

The government’s coalition agreement – signed in early December after a surprisingly short negotiation period – contains a panoply of digitalization pledges. “Germany needs an all-encompassing digital revolution,” the agreement states. “Capacities in the national government will be reordered and bundled, an additional central budget will be introduced, and laws will be subjected to a digitalization check ... We will support digital innovations as well as business and social initiatives and will invest in open standards and diversity.”

These are encouraging words, says Marc Rohr, director Digital & Service Industries at Germany Trade & Invest (GTAI) : “I’m really glad that the issue of digitalization was treated so thoroughly in the coalition contract. The last couple of years, with the coronavirus, have shown how important it is to do better on that score. Anyone who has worked from home in Germany found out that the infrastructure, the hardware, needed to be improved.”

The Federation of German Industries (BDI) is also very enthusiastic. “It is very welcome news that all necessary steps to implement acceleration will be taken in the first year of government,” the federation commented in

its analysis of the agreement. “The implementation of a pact for planning, approval and realization between the national and regional governments is an important step.”

From a practical standpoint, the new digital pact entails building up Germany’s glass fiber optic network, and the government has promised to deliver blanket “fiber-to-the-home” (FTTH) coverage across the country. “It’s good that the politicians have recognized that we need to improve in certain areas,” argues Rohr. “There’s also a new awareness that we have to be at the forefront of brand new technologies, and that this has to be accompanied by the appropriate subsidies or legal frameworks.”

The list of sectors the government intends to support covers a broad spectrum of major future technologies: artificial intelligence, quantum technology, cybersecurity and distributed ledger technology (DLT) aka blockchain. There’s also a promise to strengthen the so-called Important Projects of Common European Interest (IPCEIs), to finance more digital start-ups and to strengthen Germany generally as a destination and location for venture capital.

Weaknesses can be opportunities

These are signs that the new government knows where Germany’s strengths and weaknesses lie. One strength has been established for a long while: Germany has a solid reputation for research in the IT industry, boasting several world-class technology institutes such as the Fraunhofer and Max Planck, which have interlocking networks of locations and research areas across the country (see *Outside the Ivory Towers* – Germany’s research landscape, page 22).

The new government wants to build on and expand that competitive advantage. “The coalition partners are clearly in favor of strengthening experimental spaces to test innovative technologies, services and business models under real conditions,” the BDI noted. “This is to be welcomed, as is the will to significantly facilitate and strengthen start-ups and spin-offs.”

“In research and development Germany has been top, but in the application – that means offering solutions that actually help citizens – we’re lagging behind,” says Rohr. “But that’s a gap that can also be seen as an opportunity,” he adds. As the biggest consumer market in the European Union, there is plenty of room for international solutions in Germany.

This is where the drive for expanding the 5G network kicks in. While 5G infrastructure

won’t make a huge difference to the day-to-day lives of the average German citizen (aside from making certain apps easier and quicker to use), the technology will be invaluable for industry. The next generation of superfast wireless connectivity will enable factories to communicate more rapidly and seamlessly, smoothing the use of artificial intelligence and the Internet of Things in production.

“Without 5G, the interplay between intelligent production units, know-how and data capacity is impossible,” says Rohr. Given that the German economy is dependent on the power of industry, and that industrial production in the country is often spread over large areas, the current government drive toward building a blanket 5G network is not just important – it’s essential.

Healthcare – digitalization is ongoing

Almost every sector in the healthcare industry is being transformed by digitalization. Whether it’s the development of pharmaceuticals, biotechnology or medical devices, digital components have found their way into all of them. While X-rays and MRI scans have been digital for decades, diagnosis can now also be aided by AI, providing higher-quality results based on thousands of images.

However, the use and the exchange of health data between medical professionals and their patients still leaves much to be desired, and the new coalition government has pledged to accelerate the various programs that are already in place to drive progress in this sector.

Again, Germany’s tardiness in the drive to digitalize in-patient care compared to other

FDI PERSPECTIVE: DEEPSOURCE

DeepSource is a start-up recently founded in Berlin by the Egyptian engineer Ahmad Sharaf. It was an unusual choice of location in many ways, given the clientele he was aiming for.

“Yes, we’re in Germany, but we’re going to target clients in the Gulf states, where there is a clear gap when it comes to Arabic multi-dialect NLP solutions,” says CEO Ahmad Sharaf. He is referring to their Natural Language Processing (NLP), an AI-based technology that can imitate languages and makes it easier for Middle Eastern companies to connect with European-language companies.

There’s a sound reason why he wants the company to straddle very different markets. “We’re also going to target global and German companies who have Arab clients,” he says. “There are a lot of Arabic speakers in Germany, and especially in Berlin, who have to deal with banks and telecommunication companies.”

Sharaf did his homework before founding his company in Germany: There are lots of opportunities for AI solutions on the German market and demand is high for AI specialists in the local job market. “I found around 400 openings in one day,” he recalls. DeepSource is still a very small company, but Sharaf hopes to expand someday. And the German government’s plans give him cause for optimism. “Definitely yes, it will make it easier for us to do everything online, and this will help people to come to Germany and start their own companies.”

2020

founded in Berlin with just one employee

1

office in Germany, team of developers across the MENA region

SUCCESSFUL PROJECTS:

an autonomous driving system,
medical health platforms,
intelligent meeting platforms

EXPERTISE:

data science, machine learning,
Natural Language Processing
(NLP)

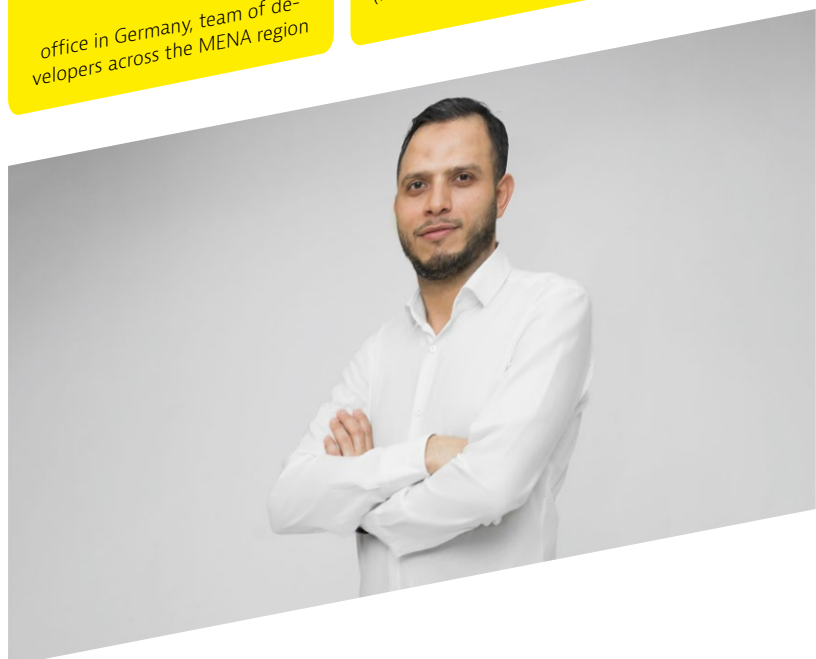


Photo: DeepSource

DIGITALIZING EDUCATION

Prof. Andrés Kecskeméthy from the Department of Mechanics and Robotics at the University of Duisburg-Essen streams a first-year lecture on technical mechanics in the summer semester of 2020. Remote learning proved crucial in Germany at the height of the coronavirus pandemic.



Photo: Dominik Asbach/laif

leading European countries could turn out to be a boon for innovative healthtech providers. “There are so many companies that have developed excellent solutions in their own countries and have experience with them,” says Marcus Schmidt, director of Chemicals & Healthcare at GTAI. “Now that Germany is catching up, there is a great opportunity for them here – because they have already introduced and adapted their products and demonstrated their benefit.” Medical apps are the case in point: Apps

approved as “medical devices” can be used for continuous treatment and allow doctors to monitor vital data between visits. As more of these apps are integrated into the healthcare system, they are fundamentally changing the way people access health services. “Germany was a pioneer in this,” says Schmidt. “These aren’t consumer apps anyone can buy in an app store, but tested and approved software, prescribed by your doctor and paid by your insurance in Germany.”

The previous German government introduced the DiGA (digital health applications) fast-track program to accelerate these apps. “Companies can develop their solution, introduce it and demonstrate its medical benefit. Then there’s a twelve-month evaluation period – if they pass it, they will be reimbursed permanently,” says Schmidt, noting that there are 28 such applications being used right now, eight of which have been fully approved.



SUPPORT FOR FOREIGN DIGITAL COMPANIES

Marc Rohr, director Digital & Service Industries at Germany Trade & Invest, outlines the help that's available for businesses coming to Germany.

How can GTAI help businesses looking to expand to Germany?

GTAI supports foreign companies with our consulting services regarding both greenfield and brownfield business expansions. In addition, our consultants have extensive industry knowledge and connections, for example to digital industry associations such as Bitkom and research institutions in the digital sector like the German Research Center for Artificial Intelligence (DFKI). We are always happy to make these available to international businesspeople. Furthermore, we can activate political support and guidance for innovative companies through our shareholder, the Ministry for Economic Affairs and Climate Action.

Does GTAI offer any financial support?

GTAI itself does not have any funding mechanisms of its own, but we assist companies in applying for national or European funding programs like the Grants for Investments (GRW). In addition, we can establish contact with regional state economic development agencies, which all have their own funding instruments.

How has the new government changed the situation?

The new coalition's digitalization plans have come at a good moment, and the easing of bureaucracy around starting new businesses will make GTAI's work that much easier.

project aggregates environmental and weather data as well as data on damage development and air pollution, then evaluates and correlates it. As a response to climate change, the aim is to develop decision-making tools for forest regeneration in order to preserve natural ecosystems for future generations.

At the forefront of industrial progress

Another big challenge is how to maintain Germany's leading position as an industrial nation while meeting the climate action targets – squaring the circle, so to speak. The coalition government has promised to tackle the issue by digitalizing across the industrial landscape today as well as investing in future technology.

“The new German government has certainly shown it is committed to strengthening high-tech production in the country,” says Oliver Seiler, director of Mechanical & Electronic Technologies at GTAI. “And there are of course going to be opportunities for foreign companies in areas like robotics, automation, micro-electronics, semiconductor production and sustainable, electric and connected mobility.”

And again, there are key areas where Germany is already ahead of the game. “Germany is very strong in the field of production technology like 3D printing, especially metallic 3D printing,” Seiler adds. Additive printing has an abundance of applications from aerospace and automotive production to the production of nanoscale energy and medical technology.

Seiler also picks up on Torben Rabe's point that Germany's reputation as something of a digital dawdler is largely based on standards in wider society rather than a reflection of the reality inside industry. “On the production side, Germany is in a pretty good position, especially when it comes to digitalized automation,” says Seiler. “You don't hear complaints from companies in the industrial space that Germany's digital infrastructure is drastically not up to speed.”



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www.gtai.com/digital-economy

“There has already been a lot of interest in DiGA from app developers around the world. And some European countries have announced that they intend to replicate Germany's system now,” he adds.

Saving the planet with future tech

One of the main features of the coalition contract is the linkage of future technologies and climate protection. It's no secret that the new government was carried to power on a groundswell of young voters who see the climate crisis as the defining issue of their lives. The confluence of environmental protection and digitalization is evident throughout government policy.

Thomas Grigoleit, director of Energy, Building & Environmental Technologies at GTAI, believes the energy sector is the best model for how these two issues can interlace. “Digitalization is a key technology also for the development of the energy sector,” he says. That's because renewable power stations must be networked in real time so that they can redistribute energy when necessary. “This heightens the flexibility of the grid.”

The interdependence of renewables and digitalization is becoming more and more relevant at a local level. For example, the end-consumers of energy (car and home owners) are now becoming active producers or “prosumers” of energy, able to supply power back to the grid. “If a house has solar panels on the roof, or a heat pump, or a battery, or even an electric car that is charged at home, it can play a completely different role in the energy supply,” says Grigoleit. “That makes a huge difference, and it is only possible through digitalization.” In theory, there's nothing to stop consumers from selling electricity to their neighbors in future.

Another sector that is opening right up in Germany is the area of greentech or environmental protection technologies (see *Growth Spurt for Greentech*, page 18). “This is of course a vast field,” explains Grigoleit. “It covers everything from circular economies to water management and adapting to the impacts of climate change in several ecosystems as well as in urban areas.”

The BDI also acknowledges the importance of this field. “The coalition agreement right-

ly emphasizes the potential of digitalization for greater sustainability,” the federation has said. “The task now must be to use innovations ‘Made in Germany’ for this transformation and to closely involve German industry as a solutions provider and user.”

Smart technology will play a pivotal role in climate protection. One example is the Future Forest project (funded by the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection), which involves the simulation of different scenarios of forest regeneration with the support of AI. The



Photo: Intel

“WE’VE FOUND THE PERFECT LOCATION IN GERMANY.”

chips that will play a crucial role in the digital transformation of Europe. With our Intel Foundry Services, we are also opening our fab doors to serve the needs of foundry customers. Intel’s investment plans in Germany are an important step in our pan-European strategy for a cutting-edge semiconductor development and manufacturing ecosystem fully integrated into the current European landscape. Expanding advanced semiconductor capabilities today offers Europe a great chance to reduce its dependency on imports from Asia and can help it achieve its digital sovereignty ambitions.

Why did Intel select Germany? Its highly skilled workforce and central geographical location in Europe were clearly strong influencing factors, but what were some of the other reasons?

CE: These are definitely important factors, but Germany has much more to offer. Germany is the largest national economy in Europe. It is also the fourth largest economy and the third largest exporter of goods worldwide. Its main tech fields include automotive, digitalized industry, cloud computing and security. The country offers an unparalleled ecosystem of SMEs, suppliers and customers, and it houses significant leading companies with global impact. Germany also is home to world-class research centers like the Max Planck Institute and the Fraunhofer organization. The com-

In March, Intel announced it would be building a billion-euro new microchip production facility in the eastern German city of Magdeburg. Intel Germany’s managing director Christin Eisenschmid tells *Markets Germany* how this record foreign direct investment came about.

How much of this expansion is targeted at the sizeable German market? And how much of what Intel will make in Magdeburg will be exported?

CHRISTIN EISENSCHMID: With our expansion and investment plans we are targeting the entire European market and beyond – Germany

is key to our strategy. We plan to invest EUR 17 billion to build two cutting-edge fabs in Magdeburg with ambitious plans for expansion. Our long-term goal is to construct a so-called “mega fab” in Magdeburg, consisting of up to eight connected factories. At our new site in Saxony-Anhalt, we plan to produce cutting-edge

bination of all these critical factors makes Germany the ideal hub for Intel's European investment plans. In Magdeburg, we've found the perfect location in Germany. The city provides the necessary infrastructure and space to build the fab. Moreover, it boasts close proximity to key major cities and seven universities, so it gives us access to highly skilled talent as well as customers from different industries.

In one interview, Intel CEO Pat Gelsinger praised the work of German state authorities, who sometimes have a reputation for being cumbersome. What was positive about your interactions with them?

CE: So far, we have had excellent cooperation with authorities both at the European and the national level. The EU and the member state governments we have worked with have shown themselves to be excellent partners for businesses and to have bold ambitions to push forward European semiconductor production. Input from government partners and established regulations, like those in Germany, provide certainty and a framework for our operations. In alignment with the shared vision of the German government and European plans to achieve greater semiconductor leadership, we took this decisive step together to develop a European answer for the global chip demand.

Can you give us some insight into Intel's decision-making process? How long did it take? And what are the most important factors that can influence such a process?

CE: For the past year, we have been scouting locations in Europe. Our site selection process includes evaluating many different aspects, including talent, infrastructure, financials, supply chains, natural disaster risks, legal, and others. Environmental factors play a key role, too. For example, a fab cannot be built too close to major railroads or airports due to the vibrations they cause. We had productive conversations with leaders from several EU member states and regional officials, but ultimately the site in Magdeburg scored the highest across the evaluation process and offered the best combination of attributes to meet our needs. In addition, the full backing of local, regional state and national officials plus the

positive attitude conveyed by the citizens was a catalyst for selecting Magdeburg.

What are the next steps and milestones in your expansion? What challenges do Intel and the city of Magdeburg face?

CE: The next step following the official announcement is that we will go straight into planning. During the whole process, Intel is committed to engaging in a dialogue with the local communities involved. We are certain that a commitment to openness, transparency and benefits for the local communities will convince the public of our endeavor. In the first half of 2023, we want to begin with the construction phase on an area spanning roughly 450 hectares – a size of 600 soccer fields. Our production start is planned for 2027 and will focus on cutting-edge semiconductors, providing a boost to industrial transformation in Europe. Of course, this timeline is subject to European Commission state aid approval and funding approval by the German authorities.

What role did GTAI play in your decision?

CE: Our cooperation with Germany Trade & Invest has played a decisive role during the entire decision process, and we are very thankful for the productive dialogue. With GTAI as

a strong partner, we were able to identify possible locations and finally select Magdeburg as the location for our expansion. Together, we were able to get this huge project off the ground and lay the foundation for more stable supply chains and a strong European answer to the global chip shortage.

How important was the active support of the German national government and the regional government of Saxony-Anhalt? And why is gaining political support so vital generally?

CE: The support of the regional and the national government is critical to realizing such a huge project. As a US company in Germany, it's important that everyone is behind the project. We were very happy to see that Saxony-Anhalt and State Premier Reiner Haseloff made it a top priority and set a lot in motion in a short time. Everyone – the city of Magdeburg, the state of Saxony-Anhalt, and the German national government – had a common goal and enabled an open and solution-oriented collaboration. The construction of one of Europe's most modern factories will help Europe's supply chains to become resilient and less dependent on Asian imports. We are proud to do our part to advance Europe's position in the semiconductor sector.

A 3D rendering of the high-tech processor factory complex that US computer chip giant Intel is building in Magdeburg in early 2023, at a cost of EUR 17 billion.



Photo: Intel

GERMANY

18

SWITZERLAND

8**GERMANY LEADS EUROPE
IN CHEMICAL PATENT
APPLICATIONS****Share of European
patent applications (as %)**

Source: European Patent Office (EPO)

NETHERLANDS

6

FRANCE

7



Chemical **REACTION**

Germany's chemical industry is large and prosperous but it's also one of the biggest emitters of greenhouse gases. That needs to change if Germany is to meet its 2045 climate goals – and green hydrogen is at the heart of the solution.

For a glimpse at the future of the German chemical industry, look toward the sun-soaked expanses of southern Spain. That's where Viridi RE, a German company specializing in renewable energy installations, is planning to produce hydrogen and methanol using electricity from dozens of hectares of photovoltaic panels and wind turbines. By the end of 2025, it aims to be pumping out over 60,000 tons of green hydrogen each year – all of it to be taken by train to German chemicals factories in Baden-Württemberg, more than 2,000 kilometers to the north.

THE BOTTOM LINE

Germany wants to clean up its greenhouse-gas-intensive chemical industry. Hydrogen will be at the center of that transition, and international companies with ready-to-go solutions will stand to profit.

Viridi's senior manager for policy and innovation, Daniel Argyropoulos, estimates that when they begin operations in 2025 his company will save more than 200,000 tons of CO₂ emissions annually. By buying methanol manufactured using regenerative energy, Viridi's chemicals customers can move closer toward their carbon neutrality goals.

"Right now, the chemical industry relies on natural gas, which is a fossil fuel and will have to be replaced," Argyropoulos says. "As a green methanol provider, we expect a huge demand."

The growing market for green hydrogen (H₂) and methanol (CH₃OH) is part of the German government's new push to use H₂ production to decarbonize large segments of the country's industry, covering everything from automobiles to chemical plants.

"In order to further decarbonization, the hydrogen has to be green," Argyropoulos says. "That means renewable energy targets have been dramatically increased – and at the same time, industry needs a lot more decarbonized gas."

The time is now

Germany's massive chemical industry is one of the four largest in the world and represents over 10 percent of the country's GDP. On the downside, chemical synthesis is responsible for 15 percent of the country's total carbon emissions. Chemical producers are also the largest industrial consumers of gas, oil and electricity globally.

"The whole process is accompanied by the use of energy, mainly from fossil fuels," says Gerold Neumann, head of Vivevo Energy. "To get away from that, the energy needs to come from renewables."

The new climate targets set by the recently elected German government have accelerated change. "There's a lot of pressure on the industry in Germany to be carbon neutral by 2045, and in Europe by 2050," says chemist Jörg Rothermel, head of the energy, climate change and raw materials department at the German Chemical Industry Association (VCI). "That's not that far away, especially when it comes to new chemicals plants being planned today that will still be working in 2045."

But there's another incentive to decarbonize the industry. As the world approaches the peak of its reliance on oil, fossil fuel prices will fluctuate more than in the past, encouraging chemicals companies to turn to more predictable energy and raw materials resources.

CHEMICAL FOOTPRINT

–39.6 %

Decrease in energy-related
CO₂ emissions of the
chemical-pharmaceutical industry
in Germany from 1990 to 2019

€227BN

Turnover in the German
chemical-pharmaceutical
industry in the year 2020

Source: German Chemical
Industry Association (VCI)

Changing the equation

"Hydrogen will be at the heart of this process," explains Germany Trade & Invest's Chemicals expert Raphael Goldstein. His prediction is based on a long-established practice. "The chemical industry is already the biggest user of hydrogen in Germany," Rothermel says.

As one of the country's biggest CO₂ emitters, the responsibility for decarbonization should fall at least proportionally on the industry. At present, the vast majority of hydrogen used to make chemicals is produced by breaking natural gas into H₂ and CO₂. The result is millions of tons of greenhouse gas emissions. The industry knows that this equation will have to change.

"What's going to happen in the next decade is replacing the conventional H₂ production

process with green hydrogen," Rothermel says. In theory, the chemistry is simple: Renewable electricity is used to power electrolyzers, which break water into its component elements O₂ and H₂.

Given enough renewable electricity, there is no limit to the amount of carbon-neutral hydrogen that can be produced. And a vast amount is going to be needed. Germany's Ministry for Economic Affairs and Climate Action (BMWK) says the country will need up to 110 terawatt-hours (TWh) of hydrogen by 2030 – and all of it has to be sourced from renewables like solar, wind and geothermal. For comparison, Germany's total electricity mix presently amounts to ca. 500 TWh. "Under no circumstances will it be possible to produce the amount of green hydrogen needed solely in Germany," Rothermel says.

That means that Germany will have to import lots of green hydrogen. So, in addition to building electrolyzer plants in parts of Germany with easy access to renewable energy sources, Viridi and others are beginning to work with companies outside the country.

Logistical solutions

Because transporting large amounts of hydrogen is logistically complicated, there's a pressing need for expertise and solutions in this field. In the short to medium term, investors have been betting on green methanol (produced by renewables) as an energy carrier. Extensive infrastructure already exists to transport and store liquid methanol, and the production of it binds H₂ and CO₂ – in other words, it captures carbon as well as being a fossil fuel substitute for gas-intensive chemical processes.

Viridi has located enough solar energy in Spain to produce methanol at sites already fitted out with hundreds of hectares of photovoltaic panels. They then plan to ship it north on special train cars to the Karlsruhe area, a

chemical industry hotspot. Once there, “it will form the basis for all sorts of chemical products,” Argyropoulos says.

Another approach is to build electrolyzers and chemicals plants close to renewable energy sources. Vivevo is planning a hydrogen plant at ChemCoast Park Brunsbüttel, an industrial area in Schleswig-Holstein with easy access to wind energy produced on the North Sea and future pipelines that can also be used to transport green hydrogen to customers across Germany.

Big opportunities for investors

Both approaches leave lots of flexibility for foreign investors to get involved. “The technology exists, but it needs to get a lot more efficient,” Rothermel says. “Right now, it requires a lot of power, and the equipment is expensive.”

The transition is likely to be subsidized in the same way renewables were 30 years ago.

The European Union is creating a framework to make subsidies for hydrogen production in the form of Important Projects of Common European Interest (IPCEI) funding.

Some major questions remain unanswered, however: for example, whether it makes more sense to transfer old chemicals plants and build new ones close to renewable energy sources – like on the windy North Sea coastline – or build power lines to move green electricity to existing chemical manufacturing hotspots like southeastern Bavaria’s “chemical triangle” or chemical industry hubs like Baden-Württemberg and Karlsruhe.

Vivevo hopes that its Brunsbüttel park will be a forerunner of the future. The 100-megawatt electrolyzer there will make H₂ and combine it with CO₂ produced by a nearby waste-to-incineration plant to synthesize methanol. It will then be sold to other companies in the Chem-

Coast industrial park as a green alternative to traditional natural gas.

“We have industry consumers right on our doorstep, plus green energy is here,” Neumann says. “And it’s a modular concept that can be replicated in other areas.”

As Germany pivots to the hydrogen economy, companies with ready-to-go solutions for the chemical industry will be in a strong position to profit. “Germany is where you want to go,” Neumann says. “The market is huge – and so is the interest from international businesspeople.”

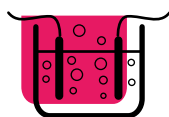


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GOOD CHEMISTRY

Germany’s chemical industry can only be completely decarbonized by using green energy. That requires its four pillars – electrolyzer technology for sufficient domestic supplies, improved efficiency, new infrastructure, and green hydrogen – and circular thinking.



ELECTROLYZERS

Electrolysis is the process of using electricity to break chemicals down into their component parts.

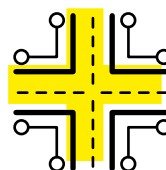
A recent report by the German Chemical Industry Association (VCI) estimated that 600 terawatt hours of renewable electricity will be required each year to sustain the chemical industry’s needs. “Companies that want to move into green H₂ need to invest in their own electrolyzers,” says Jörg Rothermel, the VCI’s energy expert.



EFFICIENCY

Many industries in Europe are having to shift toward a more resource- and energy-efficient, circular business model – and the chemical industry is no exception.

Some of the CO₂ savings can come from recycling and tightening energy efficiency at existing manufacturing plants, predicts GTAI’s Chemicals expert Raphael Goldstein. But the biggest shift will have to come from changes in the energy and feedstock mix.



INFRASTRUCTURE

To help the chemical industry transition to a low-carbon future, experts predict new infrastructure and storage solutions will be needed. Chemicals plants that integrate electrolyzers, pipelines, high-pressure containers to ship green hydrogen and methanol, logistical digital solutions and steel produced with renewable energy will all be in demand in future, as Germany pushes forward its agenda to clean up the chemical industry.



GREEN HYDROGEN

Electrolyzers are just the beginning.

Hydrogen gas is tricky to work with: It can corrode pipelines and tankers and is highly explosive. One workable alternative is to convert it to methanol (CH₃OH) by combining it with CO₂, a process that both makes it easier to work with and captures carbon dioxide. It’s a good substitute for products that industrial consumers traditionally employ, so the infrastructure already exists.

GROWTH SPURT FOR GREENTECH

Germany's efforts to transition to a sustainable economy have provided a major boost to funding for greentech start-ups. International companies are flocking to Germany to benefit from the boom in environmental technology and generous government incentives.

A short visit to Berlin to attend Fruit Logistica – the world's biggest trade show for fresh produce – was enough to convince Nikita Gulin that Germany's vibrant capital was the place to grow his business. The cofounder of the agricultural technology start-up Agranimo relocated from Chile to Berlin in 2021, which helped secure an investment of EUR 2 million from Netherlands-based Nector Holdings.

Agranimo provides real-time data that enables farmers to use water, fertilizers and pesticides far more efficiently than when they employ conventional methods. The data also helps reduce CO2 emissions by enabling food retailers to improve cold chain and inventory management.

"Without digital monitoring of climate, soil and crops, farmers overirrigate a lot, and the same is true for fertilizers and pesticides," Gulin says. "If a supermarket has a heads-up on incoming shipments, it can arrange a promotional campaign rather than dumping produce whenever there is an imbalance between supply and demand."

No longer niche

Greentech has grown into a major segment of the German start-up scene, bolstered by the government's pledge to cut CO2 gas emissions by at least 55 percent of 1990 levels by 2030.

50%

of emission reductions to reach the net-zero benchmark will be due to technology

Source: International Energy Agency (IEA)

\$3.4 BN

is the amount of venture capital invested in German climatetech start-ups in 2020

Source: Speedinvest

According to the German Startups Association's Green Startup Monitor 2021, 30 percent of German start-ups are now greentech enterprises – a 21 percent increase from 2019. Germany has even taken the lead in terms of "climatetech start-ups" in the EU, adds the VC fund Speedinvest's European Climate Tech report, with over 250 companies. That's more than twice as many as France in second place.

It's no surprise then that last October, World Fund – Europe's biggest dedicated climatetech venture capital fund – was launched

in Berlin. It aims to raise EUR 350 million by the end of 2022.

"Sustainability has long ceased to be a niche topic among German founders, who are the pioneers in new-type economic activity," says Christoph J. Stresing, director of the German Startups Association. "The research landscape in Germany is a real treasure, with government programs such as the EXIST Business Start-up Grant lending important support for innovation and commercialization."

Connecting start-ups and SMEs

The Digital Hub Initiative also supports greentech innovation. The 12 hubs throughout the country provide networks, incubators, accelerators and coworking spaces to facilitate projects between start-ups and SMEs.

Agranimo is part of the Dresden/Leipzig hub, whereas Appanion – a provider of data services for the precise evaluation of greenhouse gas emissions from freight transport – is a member of the Hamburg hub. The data Appanion analyzes from digital order management systems in trucks and cargo ships provides "emissions transparency" throughout the entire shipping process.

"If a logistics company invests in an electric truck fleet, the purchasing manager of their contractor, e.g. an automaker, can understand this change through our platform, allowing the



The young agritech firm Agranimo supplies sensor technology for monitoring water, fertilizer and pesticide levels for growers in Africa.

€2M

The capital injection into Agranimo by Nector, the agritech arm of HL Hall & Sons

130

The number of years the fresh produce supplier HL Hall & Sons has been operating

6

The number of years the Berlin agritech start-up Agranimo has been in business

FDI PERSPECTIVE:

Last year Nector Holdings, the agritech arm of the South African food producer HL Hall & Sons, invested EUR 2 million in a Berlin-based company called Agranimo. The start-up enables farmers to use water and chemicals more efficiently on the basis of real-time data. The deal will fund the development of deeper on-farm analytics to support supply chains; it also facilitated a swift exit for Agranimo's accelerator VC after just 20 months. "Over the last 12 months we have developed a strong partnership, one that is based on a shared vision for technology in the food value chain, as well as a common culture and set of principles," says Nector's managing director, Richard Franklin. "The Agranimo leadership team has built a dynamic, forward-thinking business that tackles some of the core challenges in agriculture today."

Photo: Agranimo

electric trucks to become a competitive advantage for transportation providers," says Martin Jacobs, Appanion's business development lead. "The purchasing manager can then shift orders toward this supplier, bundle batches or shift transport modes, for example, from road to rail, and reduce the CO2 footprint."

In the Munich digital hub, the start-up eco.mio aims to reduce emissions caused by business travel with an algorithm that integrates with the client company's booking tool. It benchmarks travel behavior, proposes the most climate-friendly travel mode for business trips and promotes cheaper and eco-friendlier offers.

THE BOTTOM LINE

Germany has more greentech start-ups than anywhere else in the EU. And the German government is offering attractive incentives and support to keep those numbers growing.

"By not only cutting CO2 emissions but also costs, our algorithm has the perfect selling point, which opens the doors wide for a greentech start-up like we are," says Katharina Riederer, eco.mio's CEO.



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TECHNOLOGIES TRANSFORMING LOGISTICS

ROBOTICS AND AUTOMATION

Due to lower costs, new software and improved capabilities, advanced robotics and automation technologies are increasingly entering the German warehouse. Innovations such as autonomous driving technologies and flexible picking systems help increase efficiency and reliability while reducing operational costs.

ARTIFICIAL INTELLIGENCE

German companies are realizing the benefits of machine learning to improve material handling and delivery. AI helps solve complex logistic challenges like dynamic route optimization, demand and capacity forecasting. Areas of application include warehouse automation and smart roads.

INTERNET OF THINGS

The new wave of technology is expected to close connectivity gaps. The 5G data network offers greater speed, more volume and flexibility for linking people and things. Real-time stock level monitoring, advanced analytics for AMRs and IoT-enabled trucks will help reduce downtime and fulfill increased customer demand.

BIG DATA ANALYTICS

Due to the large amount of supply chain data and better machine algorithms, companies can use information to gain predictive insights. Big data can be used to streamline operations, diagnose operational problems and optimize network planning. Predictive logistics can anticipate future operating scenarios.

SMART LOGISTICS

Are on the Move

Digitalization, the Internet of Things and artificial intelligence are rapidly remaking the logistics and supply chain sectors. The German market for international providers of logistics solutions is heating up – stoked by the coronavirus pandemic and growth in e-commerce.

For Swisslog, a Swiss provider of automated intralogistics technologies, 2021 was an important year. In April, about 250 employees of the German subsidiary moved to a larger compound within the city of Dortmund. Swisslog's new site includes facilities for software development and a technology center for robotics. It also intends to expand its local workforce and is currently advertising almost a hundred open positions.

The company is readying itself for new opportunities in the German market, as demand for logistics solutions and services explodes. This will entail new forms of "smart logistics" and not just traditional expansions in terms of space and personnel.

Swisslog CEO Christian Baur characterizes the new site as "a sign of expansion and future orientation as well as a commitment to the Ruhr Valley metropolis and Germany." And he's not alone in thinking Germany is the place to be for the new logistics sector.

A logistics Silicon Valley

US company Dematic, a supplier of intralogistics solutions, warehouse and logistics automation, also sees huge and growing prospects in Europe's largest economy. "Germany is the Silicon Valley of intralogistics," says Dematic's MD Jens Hardenacke. Located in the heart of Europe, it serves as a think tank for intralogistics worldwide. "Germany has many well-trained specialists and they drive innovation forward." Accordingly, the sector is one of the most dynamic markets in Germany.

"In logistics, location is key," says David Chasdi, Senior Manager at Germany Trade & Invest (GTAI). "Germany, however, offers much more than just being the EU's geographic center with easy access to some 500 million plus consumers. With Europe's strongest economy and over 60,000 logistics companies large and small, Germany generates world-class logistics

THE BOTTOM LINE

Micro-fulfillment, fully automated warehouses and item-picking robots – the need for innovative logistics concepts in Germany is huge. International logistics equipment suppliers and IT companies should take note.

expertise and variety and is Europe's number one logistics market generating EUR 280 billion revenue in 2020."

An increasingly important subsector of this market is intralogistics or everything related to the logistical flow of goods, information and material within the walls of fulfillment or distribution centers.

2021 was a strong year for German materials handling and intralogistics suppliers. According to estimates, the production volume rose to EUR 22.6 billion, up 6 percent from 2020. Moreover, German logistics companies' investments into IT and automation make the market very interesting for international providers.

Due to ever-increasing cost and efficiency pressures, many logistics companies in Germany are seeking innovative warehousing and supply chain solutions. The boom in e-commerce is causing retailers to rethink their operations, from inventory and dispatch to handling returns. "E-commerce is growing at double-digit rates and this is happening across almost all industries," says Hardenacke.

Online food retailing in Germany is also developing fast and presents a special challenge for operators: The goods have to be retrieved from the warehouse, assembled to order and packaged in a durable manner before being delivered. One answer to the challenges that arise

around the so-called "last mile" are micro-fulfillment solutions – highly automated storage that fits into the back room of a grocery store.

In the search for potential savings, large warehouse operators are also increasingly turning to robotics and even to fully automated warehouses. "As a result of the high labor costs, the demand for automation technology in Germany is particularly high. German labor safety regulations also play a role in the decision to automate," says Hardenacke. "The dangerous part of warehouse work is increasingly being handed over to machines."

AI and IoT

Artificial intelligence (AI) and the Internet of Things (IoT) are making robotics even more essential to cutting-edge logistics. One popular use for AI is order picking: Self-learning robots scan the goods, select the correct item and place it on the conveyor belt. In addition, Autonomous Mobile Robots (AMRs) cruise around the warehouse: Using cameras, IoT sensors and lasers, the AMRs recognize their surroundings and choose the most efficient route to dispatch.

"Customers in Germany are increasingly looking for flexible and mobile solutions," says Hardenacke. "In some areas, conveyor belts are increasingly being replaced by autonomous mobile robots or driverless forklift trucks." AI is also being used for predictive logistics, as monitoring global supply chains is crucial to limiting pandemic-related and other disruptions.



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OUTSIDE the Ivory Towers

German R&D often takes place outside of the “ivory towers” of universities at independent institutions like the Fraunhofer and Max Planck societies and the Helmholtz and Leibniz associations. They are technology hothouses, partnering with industry to develop cutting-edge solutions.

Perhaps the trend in agriculture at the moment is “smart farming.” As one of the global industry’s heavyweights, equipment manufacturer John Deere is in front of that curve. The US company is employing satellite systems, wireless communication and big data analytics to improve crop yields in sustainable ways. And to create these new technologies, it’s teamed up with Germany’s Fraunhofer Society.

Among their collaborations is the NaLam-KI project, which aims to improve the quality and flow of agricultural processes by means of cloud and artificial intelligence (AI) technologies. The Fraunhofer’s Heinrich Hertz Institute and other partners are helping Deere develop a cloud-based software-as-a-service platform.

This platform will provide AI applications to help farmers to better analyze crop and soil conditions and assist with irrigation, fertilization and pest control in order to increase crop yields, lower costs, reduce emissions, conserve resources, preserve biodiversity and protect the environment.

The project is a prime example of how Germany’s world-renowned, nonuniversity research organizations advance the development

THE BOTTOM LINE

Germany’s scientific research sector boasts world-leading organizations working in specialist fields across a huge variety of sectors. Their excellence coupled with their pragmatic approach makes them a fantastic business resource.

of cutting-edge technologies for industrial and social progress and collaborate with international companies that come to the country.

A quartet of excellence

Germany’s unique nonuniversity research sector complements the country’s leading universities and encompasses some 1,000 publicly financed research facilities. Many of the nonuniversity institutes are part of four large research organizations: the Fraunhofer Society, the Max Planck Society, the Helmholtz Association and the Leibniz Association. All


receive large amounts of national, regional and local funding.

With 75 institutes and research centers across the country, the Fraunhofer Society is Europe’s largest organization for application-oriented R&D. It is owned by national and regional governments but gets 70 percent of its funding from contract work. Its main fields of research include health, environment, transportation, energy and raw materials.

The nongovernmental but government-backed Max Planck Society has 86 institutes and research centers that focus on the natural, life and social sciences and the humanities.

The Helmholtz Association – Germany’s largest scientific body – conducts research in energy, the environment, health, material science, aeronautics, space and transport. Among the Helmholtz Association’s 19 independent institutes is the German Aerospace Center (DLR), which itself boasts more than 50 institutes. Its self-defined mission is “solving the grand challenges of science, society and industry.”

The Leibniz Association, a nonprofit organization, is a union of 96 independent research centers that cover the natural and environmen-

A photograph of Benjamin List, a man with a bald head and a wide-eyed, open-mouthed expression of surprise or joy. He is wearing a light blue button-down shirt under a dark suit jacket. His right arm is raised, with his hand open and palm facing forward. In the background, a crowd of people is visible on a balcony or terrace, some clapping and others taking photos. The setting appears to be an outdoor event at a modern building.

Benjamin List celebrates after receiving the 2021 Nobel Prize for Chemistry (plus a big bouquet of flowers) at the Max Planck Institute for Coal Research in Mülheim, where he is a director.

SAVE THE DATE!

Meet stakeholders and the GTAI experts!

Germany Trade & Invest will hold a district show on the topic of hydrogen for interested international investors. Be part of the conversation as policy makers and industry representatives discuss Germany as a hydrogen location.

Date: July 12, 2022

**Hydrogen – The Gold of the Future
Germany's coalfields as the energy regions of the future**

This is a hybrid event. Please contact sandra.moser@gtai.com for more information and event registration.

THE “BIG FOUR” OF GERMAN RESEARCH

From aeronautics to minerals and climate science to social science, Germany's independent research institutes cover a vast spectrum of R&D areas.



Fraunhofer Society (founded 1949)
FOCUS: applied research
2019 BUDGET: EUR 2.9 billion
STAFF: 29,000



Max Planck Society (founded 1911)
FOCUS: natural, life and social sciences
 and the humanities, cooperation with universities
2018 BUDGET: EUR 2.2 billion
STAFF: 23,767

HELMHOLTZ

Helmholtz Association (founded 1995)
FOCUS: energy, environment, health, matter, aeronautics,
 space and transport
2020 BUDGET: EUR 4.9 billion
STAFF: 42,000



Leibniz Association (founded 1990)
FOCUS: natural and environmental sciences, engineering,
 economics, spatial and social sciences and the humanities
2019 BUDGET: EUR 1.7 billion
STAFF: 20,000

3.1%

Share of spending on R&D
 relative to GDP in Germany

Source: Federal Statistical Office
 (preliminary study, 2020)

€105.9 BN

Total amount invested in R&D in
 Germany in 2020

Source: Federal Statistical Office
 (preliminary study)

4,500

Number of inventions supported
 by the Max Planck Society through
 to market launch since 1979

Source: Facts about Germany

638

Number of patent applications
 filed by Fraunhofer Society
 employees in 2020

Source: Fraunhofer

tal sciences, engineering, economics, spatial
 and social sciences and the humanities.

A pragmatic approach to progress

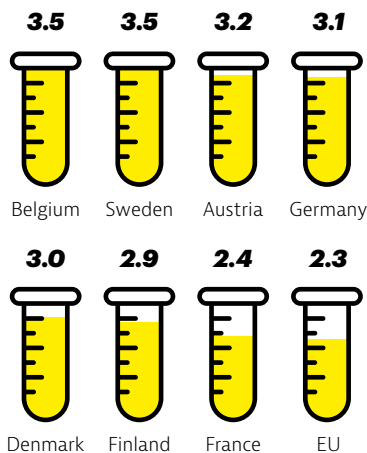
Reflecting their distance from the ivory towers
 of pure academia, these organizations focus on
 the development of key technologies and their
 practical and commercial uses, both today and
 in the future.

The Max Planck Society's most successful
 patent to date, for example, is its Fast Low Angle
 Shot (FLASH) technology. Developed by the
 Max Planck Institute for Biophysical Chemistry
 in 1985, FLASH technology led to the creation
 of magnetic resonance imaging (MRI), which is
 routinely used today by medical professionals
 worldwide to examine patients.

All told, according to preliminary figures
 from the Federal Statistical Office, Germany
 spent nearly EUR 106 billion, or just over three
 percent of its total GDP, on research and devel-

EU'S TOP R&D INVESTORS

R&D expenditure in Germany and other EU
 countries (as % of national GDP)



Source: Eurostat

opment in 2020. Publicly funded institutions
 like the “big four” accounted for three-quarters
 of that sum. Some 115,000 people work for ex-
 tra-university research institutions, more than
 half in R&D. Some EUR 600 million went to
 corona-related research in 2020, highlighting
 the significance of nonuniversity research in
 the German R&D landscape as a whole.

When Germany's new government came to
 power in December, it pledged to prioritize
 strengthening research, promoting innovation
 and accelerating the transition from theory to
 application. The government has also signaled
 its support for more joint funding of university
 and nonuniversity research.

“Science and research contribute substan-
 tially to progress,” the new Minister of Educa-
 tion and Research Bettina Stark-Watzinger has
 said. A former director of the Leibniz Associa-
 tion's Sustainable Architecture for Finance in
 Europe (SAFE) research center, Stark-Watzing-



“Our institute excels in studying the incentives, determinants and implications of innovation.”

Alexander Suyer, Research Coordinator at the Max Planck Institute for Innovation and Competition, provides insight into the German research landscape.

What does your institute do?

The Max Planck Institute for Innovation and Competition is committed to fundamental legal and economic research on processes of innovation, entrepreneurship and competition, and their regulation. Like the other 85 institutes of the Max Planck Society, we focus on understanding and explaining the basic principles in our field of interest. This means we explore, e.g., the strengths and weaknesses of the patent system, ways to foster innovation that mitigates climate change or opportunities of data sharing. Concisely, our institute excels in studying the incentives, determinants and implications of innovation in an interdisciplinary effort from both a legal and an economic perspective.

How are you financed?

As part of the Max Planck Society, our institute is mainly financed by public funds from central government and the regional states. In addition, the Society and its institutes receive third-party project funding from public and private contributions.

What generally distinguishes the German research landscape?

Germany's research infrastructure encompasses university research as well as several large independent research organizations that attract outstanding scientists, are well funded and produce internationally recognized results. Moreover, many leading global companies – both from Germany and abroad – have strong R&D divisions in Germany.

What is your relationship with the German government and the economy?

As an independent institution, we provide evidence-based research results to academia, policymakers, the private sector and the public. We inform and guide the legal and economic discourse on an impartial basis, for example on stimuli for innovation and entrepreneurship, intellectual property rights, or competition rules.

storage. It recently expanded cooperation with the Helmut Schmidt University in Hamburg in researching hydrogen storage and the integration of hydrogen-based energy systems – essential complementary technologies for Germany's energy transition from fossil fuels to renewables.

Another environmentally pertinent and promising area of research is plastic recycling. Researchers at the Fraunhofer Institute for Structural Durability and System Reliability are partnering with Bosch and Bosch-Siemens-Hausgeräte to examine how recycled plastic can be efficiently processed and optimized to match the quality of new plastic.

Profits and social benefits

Coming back to John Deere, the need for greater sustainability in modern agriculture – which must balance ecological concerns with economic incentives – underscores the advantages of collaborations between research organizations and private industry in Germany.

“Customers expect low-cost, high-quality food; society expects ecological, sustainable, diversified agriculture – and, of course, it must be possible to manage a farm profitably,” says August Altherr, the recently retired director of the John Deere European Technology Innovation Center.

Altherr praises the work of Fraunhofer institutes in helping to overcome these challenges, particularly the Agricultural Data Space digital platform developed by the Fraunhofer Institute for Experimental Software Engineering. The platform provides a wide variety of agricultural data, including information on weather, soil conditions, pest infestation and fertilizer requirements. It assists farmers in optimizing the value chain – both ecologically and economically.

er stressed the government wants to do more for Germany's multi-faceted research landscape, for example by increasing government expenditure on R&D to 3.5 percent of GDP.

An international outlook

One of the main bankrollers of scientific research is the German Research Foundation (DFG), which has an annual budget of some EUR 3.3 billion. In 2020, it funded more than 31,100 new and ongoing projects, including international collaborations.

Among the many important international projects the DFG has funded is the Weizmann-Helmholtz Laboratory for Laser Matter Interaction (WHELM) in Israel – a joint project between the Helmholtz-Zentrum Dresden-Rossendorf (HZDR) and Israel's Weizmann Institute of Science. The laboratory develops high-intensity lasers for medical applications.

The Max Planck Institute for Astronomy in Heidelberg recently celebrated another international collaboration: contributing to space exploration by developing and building key technical components for the James Webb Space Telescope.

Thinking green

Germany's ambitious climate and environmental protection goals are reflected in the numerous ongoing research projects in the field and in a number of newly established centers. For example, Fraunhofer added a new independent research institute this year: the Fraunhofer Fab Battery Cells. It aims to accelerate and enable more efficient and cost-effective production of high-performance battery technologies.

The Helmholtz-Zentrum Hereon, meanwhile, is tackling the challenges of hydrogen

GERMANY'S NEW Investment Funding Map

On January 1, 2022, the latest investment incentive funding map from the Joint Task Program for Europe came into effect. Michael Schnabel, Germany Trade & Invest's senior manager for Finance & Incentives, tells us what it means for businesses in Germany.

So what's new in the funding map for Germany?

MICHAEL SCHNABEL: Well, the effects of Brexit have made themselves apparent. The map is designed to fund investments in areas of Europe that are economically weaker, structurally underdeveloped or shrinking in population compared to the more prosperous areas. Because the comparatively wealthy British population has now left the EU, Germany in general has become more prosperous relative to the rest of the EU-27 population, so the funding to some regions has been reduced, along with the actual number of regions covered by the incentive.

That doesn't sound like good news. Or is it?

MICHAEL SCHNABEL: Taken on its own, it's not, but it's certainly not all bad news. Although there are fewer funded regions, the actual funding has increased in some regions. For example, in almost all of the regions close to the Polish border, an investment can now be part-funded with a 25-percent cash grant instead of the previous 20 percent. Many other regions in eastern Germany, as well as some areas where the economy has shifted away from coal, can be funded with a 15-percent cash grant compared to 10 percent. More-



MICHAEL SCHNABEL *Senior manager for Finance & Incentives*

Michael Schnabel has worked at GTAI for a total of eight years, offering support and funding insights to investors. It's fair to say there's no incentive he doesn't know about.

over, small and medium-sized enterprises get additional benefits, with medium-sized companies eligible for an extra 10 percent and small enterprises up to an extra 20 percent. So a small enterprise on the Polish border could be eligible for a cash grant of up to 45 percent of the capital expenditure as an incentive for its investment.

What exactly do these incentives cover?

MICHAEL SCHNABEL: There are two ways of assessing the eligible costs of a business investment: either on the eligible capital expenditure of the investment, or on two years' salary of the jobs created at a cost to compa-

ny. The capital expenditure option is often an interesting opportunity as it reduces the large upfront costs associated with construction or development of a new facility. There are some investment cases where personnel costs are decisive, for example in the services sector, where the investment grant solution of reducing salaries for two years can be more beneficial.

That sounds generous. Is there a catch?

MICHAEL SCHNABEL: No major catches. But it is down to the individual regional German states to govern and distribute their own budgets as efficiently as possible. The pots of money are not endless, and the incentive amount decreases incrementally. For investments over EUR 50 million, the incentive is halved, and over EUR 100 million it is reduced to a third and an EU Council notification is required.

Is there a limit in absolute terms? You hear of investments for which capital expenditure totals millions, even billions.

MICHAEL SCHNABEL: There's no explicit limit, but each state ultimately determines how much they can afford. Nobody has a right to the maximum incentive.



Photo: picturealliance/ASSOCIATED PRESS/Patrick Pleul

German Chancellor Olaf Scholz, Brandenburg State Premier Dietmar Woidke and Tesla CEO Elon Musk attend the opening of Tesla's German gigafactory in March.

And this grant, or incentive, can be used to pay for anything and everything?

MICHAEL SCHNABEL: That would be great, wouldn't it, but sadly, no. The grants are covered by both EU and German legislation, which is quite precise about the kind of investment this program is designed to incentivize. Sales and marketing activities, for example, are excluded, as are activities like agriculture, which has its own incentive programs.

What other conditions are attached? You said, "no major catches," but presumably there are definitions and limits?

MICHAEL SCHNABEL: There is a national coordination framework that sets out the basic conditions. It's our job to help guide a business investor and assess an investment's viability. But perhaps the most important conditions are as follows: Firstly, 25 percent of the cost threshold – be it capital expenditure or the salary option – must be obtained by the company from a nonsubsidized source. So a company wanting to spend EUR 10 million on a new facility must provide EUR 2.5 million from its equity or a loan without any subsidy component. Secondly, the jobs created, and

the subsidized assets, have to be kept at a given location for five years after the investment commences (there are some exemptions for SMEs). Thirdly, incentivized projects should normally not take more than 36 months to complete – although that can be extended in some cases. Fourthly, the maximum capital expenditure that can be incentivized is EUR 750,000 per job created, meaning very capital-intensive investments will have a built-in limit on expenditure. Finally, and perhaps most importantly, nothing can be incentivized retrospectively, so it is important not to proceed before an incentive has been approved.

Ok, so check first before spending. But how does an investor go about applying for the incentive? Do you do that as well?

MICHAEL SCHNABEL: No. The grants are administered by the economic development agencies and state banks of the regions where the grants are applicable. So a prospective business investor would, ultimately, have to apply to these banks for the grant. We can only say what the incentive level in each respective region is and explain the legal framework to help investors make their location decisions,

assuming cash incentives are a major factor. Disbursement of the money and processing of applications are matters for the regional states.

Is there a lot of bureaucracy involved?

MICHAEL SCHNABEL: Not as much as you might think. There is documentation to procure, but the process itself is fairly straightforward. For a clarified investment you could expect to wait about three months from application to approval.

Finally, what happens if an investment changes from what was outlined in the application?

MICHAEL SCHNABEL: If an investment ends up being smaller, the incentive money is simply returned for the part of the investment that was not realized.

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BERLIN: GERMANY'S VENTURE CAPITAL

The German capital is famous for its start-up scene and trumps the rest of the country – and most European capitals – when it comes to investments. That's why international venture capital funds are flocking there.

In April 2021, the early-stage venture capital (VC) fund Antler, originally from Singapore, opened an office in Novalisstrasse in Berlin's Mitte district. When the VC launches a new cohort of fledgling businesses, there is a flutter of activity, with up to 60 founders eagerly awaiting the start of a thrilling ten weeks ahead.

In the first phase of the Antler cohort program, founders meet and team up with other potential cofounders in order to jointly develop their idea and test business models. A few weeks later, they will pitch their idea to an investment committee composed of partners from the local and global Antler team as well as top local VCs.

Antler has run two cohorts so far under its Central Europe Fund which is targeted at EUR 50 million. It plans to invest in 160 companies over the next four years. Among the start-ups Antler Berlin has already supported are cryptocurrency robo-investor Pecalla, marketplace-as-a-service provider randevu and clare&me, a cognitive behavioral therapy-inspired AI application for voice coaching.

"I am personally very excited about the entrepreneurial talent across the region and the opportunities this presents to us as an early-stage investor," says Sarah Finegan, director at Antler Berlin. "Berlin was an excellent choice for Antler, not least given that the city is one of the biggest start-up ecosystems and an emerging tech hub in Europe."

Exponential capital growth

Antler is one of a growing number of VC funds to establish brick-and-mortar offices in Berlin. The German Private Equity and Venture Capital Association (BVK) estimates that there are now around 70 VCs in Berlin in total, with a substantial number incorporated outside of Germany.

Typically start-ups go where the money is, but now the opposite is the case. The BVK and Brussels-based Invest Europe calculate that Berlin's annual total VC investment volume rose from EUR 109 million in 2010 to EUR 987 million in 2020. Approximately 50 percent of VC investment in German companies goes to Berlin, dwarfing the amounts raised by Germany's second and third largest start-up hubs in Bavaria and North Rhine-Westphalia.

THE BOTTOM LINE

Berlin is Germany's most significant start-up hub by a huge margin. Domestic and international entrepreneurs establishing a physical presence in the capital will benefit from proximity to a new crowd of VC investors.

More to the point, the once-modest financing rounds sought by young Berlin-based companies have ballooned – these days often amounting to hundreds of millions. And the main driver of this exponential growth is Brexit.

"London used to be the place to be for international VCs, but this is changing, not least because London-based VCs can no longer benefit from the significant contributions the European Investment Fund [EIF] shoulders in the financing of small and medium-sized enterprises," explains BVK executive board member Ulrike Hinrichs. "VC investors see the EIF's involvement as an official seal of approval for an early-stage target, and the German government's Future Fund shows that state tailwinds are also stiffening for later-stage support."

Established in 2021, the EIF is a European program aimed at supercharging VC investment in promising young businesses and has a total of EUR 10 billion to invest up to 2030.

Anglo-American VC discovers Berlin

One fund that recently established a presence in Berlin is UK-founded DN Capital. In November 2021 it opened an office in the Mitte district, following the fund's successful investments into a slate of German start-ups including used-car platform AUTO1, vacation-home platform HomeToGo, optical company Mister Spex and restaurant reservation platform Quandoo.

Another new arrival is Verdane from northern Europe, which opened its Berlin office in late 2019. In July 2021, Verdane announced that the total number of investments supported by its local team in Berlin had risen to a dozen, underscoring the importance of the German market in its growth strategy.

Finally, US-based Activant Capital and Netherlands-based Peak opened Berlin offices in mid-2021. Peak, which focuses on start-ups in the software-as-a-service (SaaS) marketplace and platform business models, says face-to-face interactions with Berlin's bevy of start-ups is important.

"We invest very early in companies, and for that it is extremely helpful to get close to the founders as opposed to dealing only with them via video calls from Amsterdam," says Johan van Mil, Peak's managing partner. "Berlin is a very dynamic city with a strong creative and techie spirit, which matches perfectly with our own entrepreneurial mindset."

Why did Peak set up an office in Berlin?

Typically, we'll get to know a start-up for three to six months before we talk about investing in them. The early-stage investment process is pretty much a rollercoaster. We rely on both deep data and gut feeling. To manage the latter, it is helpful to talk face to face. We really want to personally meet the founders, feel their energy and get to know the people who drive innovation in Germany.

What can German start-ups expect of Peak?

Peak is fully funded and founded by entrepreneurs. We bring with us our networks and expertise, as well as positive and negative experiences. We actively help start-ups with everything they run into like hiring talent or next-round funding. We leave our phones on overnight, so we're there for them. Another important aspect is internationalization. If you want to create a real unicorn, you'll need to conquer foreign markets, not just Germany. While

the size of the German economy makes it easy to scale up a business, it tempts founders to neglect internationalization. Peak is from the Netherlands, so through their dealings with us, German start-ups inevitably take on an international focus.

Will the investment bonanza be over once the world's major central banks tighten monetary policy?

No, it won't. If benchmark interest rates go up, less money will flow into the stock market. Some of that money will flow into the start-up ecosystem because investors are looking for a healthy return while solving the world's urgent need for new technological solutions. We are now experiencing the emergence of a next-generation start-up scene, as the first and second employees of the likes of Zalando, Rocket Internet and HelloFresh are now launching new start-ups or investing themselves.

**"BERLIN IS
A DYNAMIC
CITY WITH
A STRONG
CREATIVE
SPIRIT."**



Johan van Mil, founder and managing partner of Peak venture capital, is bullish on the investment scene in Berlin.

Launching a business is a sink-or-swim prospect – all the more so in a foreign country with a different language. But international entrepreneurs are increasingly braving the waters in Germany and feeling very comfortable.



»Berlin is not like San Francisco's tech bubble where people can easily become out of touch with real-world problems.«

*Michelle Tian,
Passionfruit*



»Germany has great market potential, which we want to use.«

*Adi Arthanareeswaran,
MeinDoc*



»I knew that whatever difficulties came up, there would be a support system in Germany.«

*Tatyana Eliseeva,
HealthCaters*



»I know that I can rely on what representatives of German institutions say and there is a lot of support. You've just got to ask.«

*Arjeta Culaj,
LinksUp*

Today, Tatyana Eliseeva can laugh about her founding story, but two years ago, things looked rather different. “I was in Berlin with the promise of funding in one hand and the threat of having to leave the country in the other,” remembers the founder of the medtech start-up HealthCaters.

Her now thriving start-up enables health checks from home or the workplace and aims to contribute to the prevention and early detection of diseases. At the time, Eliseeva had been working in Germany for just over two years.

“I had difficulty explaining to the immigration authorities that I was financially secure thanks to a grant from a start-up acceleration program,” she says. So she reached out to the regional economic promotion organization Berlin Partner for help. “They handled the specifications, and I was allowed to stay.”

Born in Russia just nine days before the USSR collapsed, Eliseeva was raised in difficult times. “People looked reluctantly to the future,” she says. “I believe that’s why it is harder for me to take risks.”

But the sense of security Eliseeva felt in Berlin encouraged her to set up shop there. “I knew that whatever difficulties came up, there would be a support system. I wouldn’t want to have started a business at any other place.”

Entrepreneurial diversity

Germany’s entrepreneurial scene is now conspicuously international. An annual study by the German Startups Association and the auditing firm PwC found that 7.8 percent of new entrepreneurs in Germany are not German nationals. According to the study, those founders are well educated and an asset to the business scene.

“More diversity brings more productivity, and a diverse economy creates high-quality jobs,” Germany Trade & Invest’s Trend & Innovation Scouting manager Almut Weigel emphasizes. “Germany has become a much more attractive location for foreign founders in recent years.”

One of the main reasons is government funding, available through innovation programs such as the Digital Hub Initiative of the German Ministry for Economic Affairs and Climate Action. “Twelve Hubs across Germany reflect local industry specialization,” explains Weigel.

THE BOTTOM LINE

Germany has greatly benefited from the global explosion in VC investment and last year produced a record number of unicorns. Entrepreneurs weighing up their location options should take a long look at the heart of Europe.

The focus in the Berlin hub is on fintech and the Internet of Things. The big idea is to give start-ups a leg-up and to locate them where they fit into the economic infrastructure. The hubs offer help with networking, office locations and the opportunity to take part in networking events or trade fairs.

Indian-born Adi Arthanareeswara and his Vietnamese cofounders took part in the accelerator program of the Digital Hub in Leipzig. For the entrepreneurs, this support was just one of many arguments in favor of Germany. Their start-up MeinDoc simulates medical surgeries to make it easier for patients to understand their treatment. “Funding from state-owned bank KfW and competitions like the Innovation Award have helped us a great deal. You don’t find attractive projects like this everywhere,” states Arthanareeswaran. “Moreover, Germany has great market potential, which we would like to use.”

Anything’s possible in Germany

Michelle Tian, cofounder of the start-up Passionfroot, agrees. Her start-up helps digital creators like YouTubers manage their business more efficiently by streamlining their workflows on their “drag ‘n’ drop no-code platform.” “Germany offers great opportunities because the entrepreneurial market is not saturated,” she says. Tian grew up in San Francisco and moved to Berlin in March 2020. “I came here from a privileged environment and a great network but never regretted it once.”

She and her cofounders were attracted to Berlin’s diversity and dynamism. “It’s not like San Francisco’s tech bubble where people can easily become out of touch with real-world problems,” she says.

Passionfroot has already raised EUR 3 million in funding. “I feel like although Germany is such a big economy and there’s heavy bureaucracy, which can seem unattractive, there’s still so much potential to grow,” she says.

Figuring out the paper maze

Before foreign founders can start, they must navigate their way through a “paper maze” that will seem alien to them. The federal system – that divides Germany into many jurisdictions – can seem complicated, but it also enables special advantages. Support can be provided at the point where it’s needed, for example, as Arjeta Culaj from LinksUp discovered. “At the beginning it was hard to know what the first ToDo was, especially without speaking German fluently,” says the Albanian founder, who has lived in Germany for eight years.

Like Passionfroot, LinksUp is a business page builder that enables “solopreneurs” to manage their digital content, but with a unique difference: LinksUp has a sales platform for Non-Fungible Tokens (NFT), which are used to authenticate original versions of digital content such as memes or art.

While dealing with the authorities was tough, Culaj has come to appreciate the thoroughness of Germany’s start-up process. “I know that I can rely on what representatives of German institutions say and there is a lot of support. You’ve just got to ask.” She is the first to admit that founding a business in Germany initially seems daunting. “But once you have walked through the legal process of founding, you’re basically good to go,” she says. She praises the nurturing approach of the start-up scene, where mentoring and networking events are standard practice. She compares founding in Germany to receiving a “bear hug”: “A heavy hug that hurts a bit but means extra well. Anything is possible. You just have to try to be patient!”



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THE FEMALE SIDE OF FINTECH

There's a growing demand in Germany for financial investment solutions targeting women. Start-ups reorienting their financial services and products around female customers are poised to thrive in Europe's largest economy.

The view that women are fundamentally more risk-averse than men when it comes to financial choices is one Karolina Decker, CEO and cofounder of the Berlin-based start-up finmarie, can no longer abide. "Female risk aversion is a cliché," Decker says. "As soon as women understand what's behind stocks or fund investments, they invest similarly to men."

Decker is speaking from experience – having worked in the financial industry for more than a decade. There are, of course, differences between the genders, which she freely acknowledges. She's noticed, for instance, that women have different needs and goals and don't ask the same questions as men about wealth accumulation.

"Women often don't feel understood and addressed by financial advisors," she observes. "They want transparent communication and a more direct approach."

In 2018, Decker recognized that women represented a unique target group and saw an opportunity, which led to her founding finmarie. It offers a combination of classic financial coaching and digitalized asset management specifically for women. In October 2021, the start-up, which she runs with two female partners, Rica Klitzke and Leitha Matz, received fresh capital of EUR 1.4 million from two financial investors.

THE BOTTOM LINE

The market for digital asset management in Germany is growing and one major reason is new female investors. Start-ups designing financial services that focus on women are thriving.

Closing the gap

The example of finmarie is hardly unique. In 2021, fintech and insurtech start-ups in Germany received more than EUR 3.7 billion in venture capital – more than six times as much as the year before.

"In 2021, no other start-up industry received as much fresh capital as the German fintech and insurtech sector," says Josefine Dutschmann, senior manager of Business & Financial Services at Germany Trade & Invest.

And the female niche has become increasingly popular. Start-ups such as finmarie, Financery (see *FDI Perspective*) and others are benefiting from the rise of financially savvy women. Female customers not only make up half of the population, they're also well educated in Germany and have great spending power.

"There is a shift in diversity and equality taking place in Germany, and this shift is triggering female demand for financial products," says Decker. For example, the share of women in university-degree-level professions has increased significantly since the 1990s.

Investing for the future


Women are particularly motivated to invest their money wisely in anticipation of dwindling purchasing power as they get older. "Starting around age 35, financial provision for retirement becomes increasingly important for women in Germany," says Decker. She adds that taking control of their financial destiny and building up their assets help women look to the future with confidence and optimism.

According to a recent study, women accounted for only a third of all company share owners in Germany in 2021. But Decker says that's changing and anticipates great growth potential in the market. That's why she's planning to expand and is currently hiring: finmarie is seeking talent in the areas of technology, product management and digital security.



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Women are a growing customer base for fintech.

FDI PERSPECTIVE

Financery, a Düsseldorf-based start-up, wants to help women invest.

While Germans are generally skeptical about investing in stocks, the number of shareholders in the country leapt upward in the first year of the corona pandemic in 2020 – a trend that stabilized in 2021. One likely reason is the trend for digital investing. Maria Mann, founder of the Düsseldorf-based digital financial services provider Financery, wants to encourage women to invest and help them to build up assets. In cooperation with an asset management company, the start-up develops investment strategies specifically for the segment once termed “the gentler sex.” Financery’s digital platform offers fast, commission-free and flexible investment in exchange-traded funds (ETFs). On the basis of personal details and with the help of an algorithm, Financery proposes a selection of ETF portfolios and saving plans targeted at female customers and tailored to their individual needs. And all this before the customer has even opened an account. “ETFs are a cost-effective way to get into the stock market,” says Mann. The next move for Financery is to roll out a new app feature designed to improve customer experience. The app-integrated budget planner will give female customers a monthly overview of their finances, their budget allowance and possible investment scenarios.

€2.5M
Assets managed

10
Employees



GERMANY'S "EXCELLENT STANDING" IN INDIA

We talk to Germany Trade & Invest's India director Seema Bhardwaj and director general of the Indo-German Chamber of Commerce Stefan Halusa about relations between the two economic powerhouses.

The liveliest sectors for German-Indian cooperation, according to Stefan Halusa and Seema Bhardwaj, include IT, robotics, life sciences, cleantech and e-mobility.

Photo: Germany Trade & Invest

Ms. Bhardwaj, you became GTAI's India representative in the spring of 2021 in the middle of the pandemic. How was that?

SEEMA BHARDWAJ: I began my role in the midst of the second wave. Working from home and the lack of physical interactions in a new city was challenging. On a positive note, it gave me time to register the gradual change in business here. Plus I got to know the peaceful side of Mumbai! Now as most of the restrictions have eased – the city is all set to start full steam.

Mr Halusa, you recently took up your post at the Indo-German Chamber of Commerce. How do you plan to market Germany as a business location to Indian businesses?

STEFAN HALUSA: Germany offers companies looking to expand reliable conditions for making business investments and a secure legal framework. This makes it an attractive location. This is how we are marketing it.

How do Indian companies see Germany?

BHARDWAJ: As a leading high-tech solution provider, Germany enjoys an excellent standing here. Germany's innovative power backed with strong R&D, first-class infrastructure leading to high productivity and high quality

of life at affordable prices are the key drivers for Indian business expansions to Germany.

HALUSA: There are a number of factors behind Germany's fine reputation in India. It offers Indian companies a large, affluent market and access to the entire EU. Additionally, Indian companies respect the great technological know-how of German firms. That makes them attractive partners, customers, suppliers and targets for M&A activities.

How has corona and the disruption to supply chains changed Indo-German business?

HALUSA: Trade and investment have remained stable but are not very dynamic. Germany is always number six or seven among India's trading partners, but the potential is much greater. To exploit it, the two sides need to push for the resumption of the EU-India trade and investment treaty negotiations. This was agreed last May, but no talks have taken place yet.

BHARDWAJ: The pandemic has led Indian businesses to recalibrate their supply chains. Resilience is the critical factor as companies diversify their investments and sourcing requirements. There is a gradual shift here toward integrating Europe into supply chains.

What sorts of Indian companies are most interested in coming to Germany and why?

HALUSA: We see lots of interest in the automotive sector, where access to technology plays a major role. Also in the IT sector, which views Germany as a major market. Companies of various stripes are interested in digitalization. Indian firms have excellent know-how in this area and the necessary resources that are increasingly lacking in Germany.

BHARDWAJ: In addition to digital infrastructure, artificial intelligence and robotics, life sciences, health and pharmaceuticals, energy and environmental technologies, and finally, e-mobility are the emerging areas of interest.

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How Germany Works

DECENTRALIZATION

Germany is a decentralized confederation of regional states like the US and not a centralized political entity like the UK or France. While Berlin serves as the national capital, administrative and economic authority is spread across the

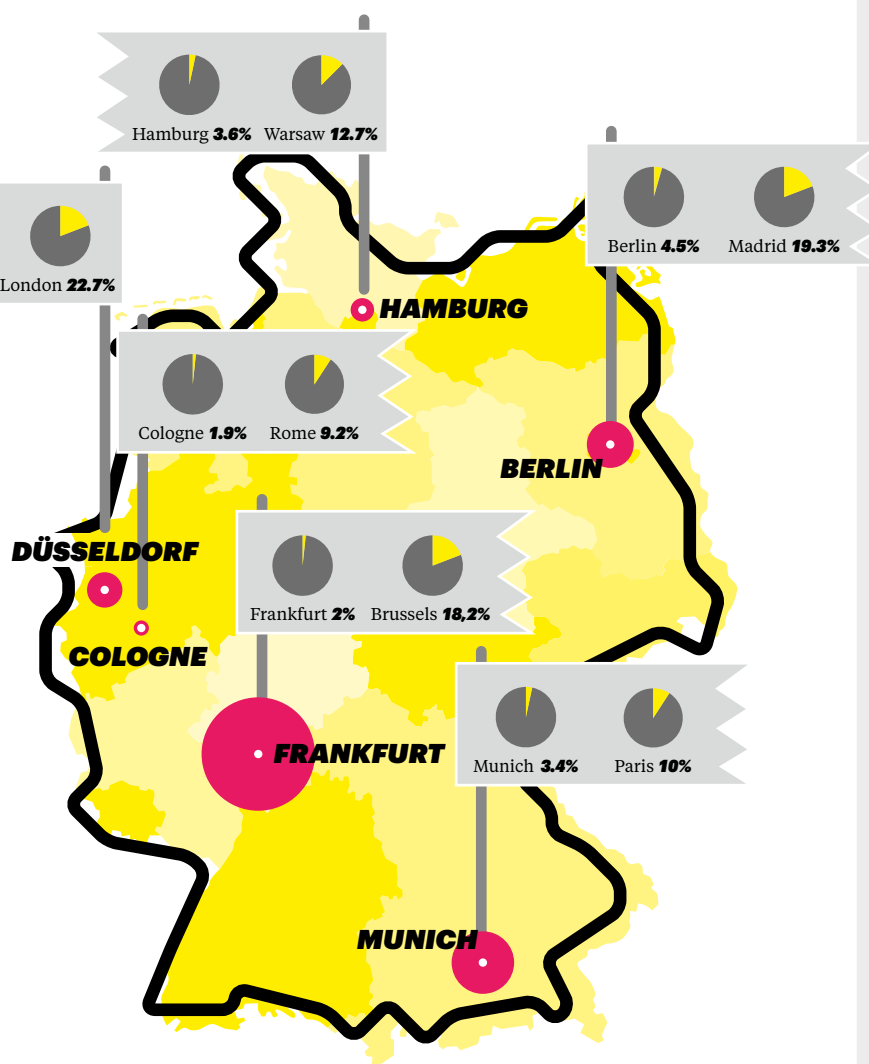
country. This structure has its basis in history: The first modern German nation-state was formed in 1871 from dozens of states, from Prussia and Bavaria right down to some very small duchies. After the Second World War, the new Fed-

eral Republic of Germany made a conscious decision to give power to its regional states, now numbering 16, as well as to districts, towns and villages. They have their own structure and funds for promoting business, and foreign companies

coming to Germany will inevitably deal with them. The result is that economic clout in Germany is spread more evenly throughout the country than in other nations whose capital cities tend to dominate.

SPREADING THE WEALTH

Large German cities and their share of national GDP – compared to capital cities in other European countries



AN AIRPORT IS NEVER FAR AWAY IN GERMANY

German airports ranked by number of passengers (monthly, November 2021)

● Frankfurt 2,897,928	● Berlin 1,216,817	● Hamburg 602,763
● Munich 1,590,549	● Düsseldorf 831,213	● Cologne/Bonn 419,692

CONGLOMERATES IN EVERY CORNER

Five out of the 16 regional states are home to an HQ of one of Germany's 10 largest companies.



Lower Saxony:
Volkswagen (Wolfsburg)



Baden-Württemberg:
Daimler, Bosch (Stuttgart)



Bavaria:
BMW, Siemens (Munich),
Schaeffler (Herzogenaurach)



Berlin:
Deutsche Bahn



North Rhine-Westphalia:
Deutsche Telekom, Deutsche Post (Bonn),
Bayer (Leverkusen)

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- Recommendations concerning financing & funding opportunities
- Project partner identification and contact (location and financial)
- Site identification, site visit support

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