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Adel Al-Saleh, Board Member of T-Systems Deutsche Telekom AG and CEO of T-Systems 20218-2023

Trusted performance means higher performance

Digitization topics on the agenda at every company include 5G, the Cloud, AI and Blockchain. Organizations are under pressure to drive the impact of these technologies to remain competitive, and even to become disruptive forces in their industry.

Our brand promise "Let's power higher performance" underlines how we bring together the system to deliver digitization value. Technologies are not addressed independently but collectively and interdependently to achieve optimal impact. The Deutsche Telekom family combines partners such as SAP, Salesforce, AWS, VMWare, Cisco and Microsoft, plus start-ups and a broad digital partner ecosystem. We bring together future and existing environments and best-in-class technologies. And we push the boundaries to lay the foundation for simple processes and trusted relationships, paving the way for efficient growth management. We ensure reliable connectivity, flexible cloud and infrastructure solutions, and security by design that protects data and processes across enterprises. When these building blocks connect, organizations can achieve sustainable digital transformation, across the entire value chain.

Our Best Practice cover was not complete – right. But at least it's been nimble-fingered. Try it out!

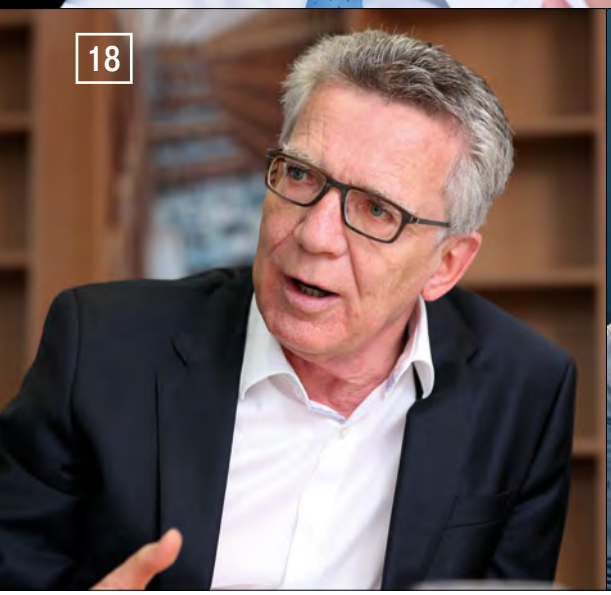
The case studies in this issue of Best Practice illustrate the immediate, visible business impact of our philosophy. These examples were made possible with this systemic and integrated approach, designed to protect and nurture the most important business assets.

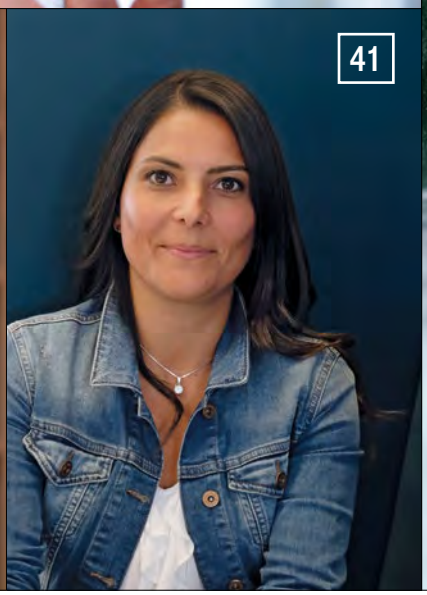
In other words, only with the "T" can connectivity, digitization, the cloud, infrastructure and security work seamlessly. Only those who can close this gap with the right partnerships can become experts in all the key pillars of digitization. This is another reason why we see it as our role to sharpen our clients' and our industry's holistic view of information technology and telecommunications. We don't just look at individual parts, but we consider all systems and processes as a whole. Because higher performance is based on "TrusTed" performance.

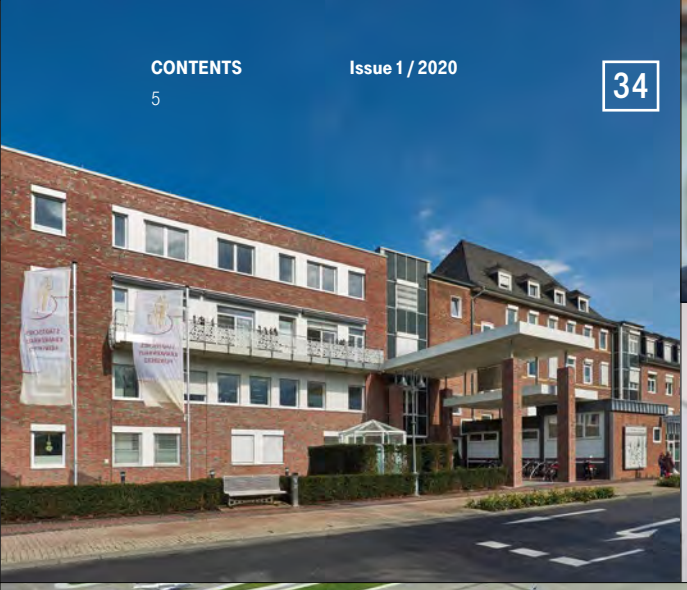
Best regards

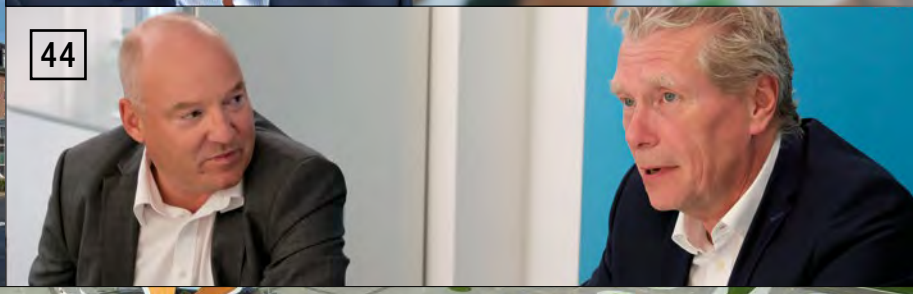
Adel Al-Saleh

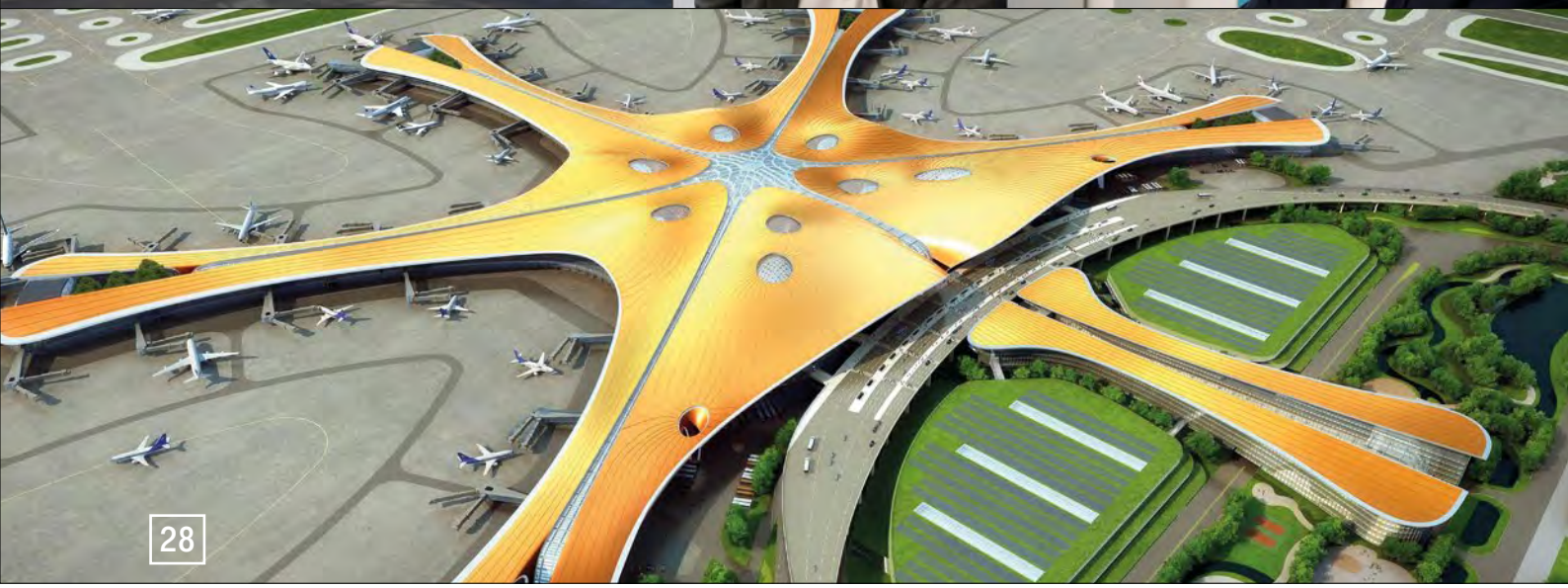
Photo: Deutsche Telekom AG











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Data and the true value of values

Data exists in every corner of the business world, and in huge quantities. This information can be captured, prepared for analysis, merged and leveraged for a plethora of purposes – on a regional, national or even global scale. However, this is only possible if all stakeholders fully trust each other to handle the data in the right way. This raises an important question: how can trust be quantified?

COPY —— Heinz-Jürgen Köhler

WHERE IS DATA GENERATED IN ENTERPRISES?

Manufacturing industry players produce everything from cars to shirts and ready-made pizzas – not to mention vast volumes of data. To be precise, the world's manufacturers generated 3.5 zettabytes of data in 2018, with the entire global economy producing 17 zettabytes – a figure with 21 zeros – during the same year. One thing is certain: as digitization continues to gather pace, our planet's enormous and nebulous pool of data will only grow further. Ever-growing quantities of data are being unearthed from billions of sources, and ever-increasing numbers of business players are benefiting from new ways of accessing this information.

But where and how is data created? In what circumstances can it be used, and for what purposes? What benefits could arise from leveraging this information? These questions can be asked from a broader economic point of view, but also at the level of each and every enterprise. As Dr. Sebastian von Enzberg of the Fraunhofer Institute for Mechatronics System Design (IEM) observes, "Some companies know alarmingly little about where they generate data and what that data is – not to mention what you can do with it."

Global consultancy firm Roland Berger estimates that 30 billion intelligent sensors will be sold in 2020. These will be used across the manufacturing industry and will generate process data such as workpiece quantities, throughput times and machine status information. However, data will not just be captured from manufacturing equipment; the spectrum will encompass everything from the route recorded by the navigation app of a logistics vehicle, to the documentation of repair and maintenance work, to orders, customer information and development data.

> **"The world is one big data problem."**
>
> **ANDREW MCAFEE,**
> co-director of the MIT Initiative

"The first step for any business is to take a data inventory in order to gain an overview and create a data map," explains Dr. von Enzberg. However, this must be preceded by a shift towards appreciating the true value of data – something that Dr. von Enzberg firmly believes is still lacking in many areas of business. In 2016, according to a McKinsey study, only 15 percent of industrial manufacturing players considered data as part of value creation. And in 50 percent of these companies, data remained completely unused in decision-making.

HOW CAN DATA BE DEPLOYED?

Once a company has decided to work with its data, the first task is to link together this information from all areas of the business. No matter which aspect of digitization you consider – from networks, to infrastructures such as the cloud, to security – modern technologies such as IoT sensors, networked cyber-physical systems, artificial intelligence and machine learning generate and process vast amounts of data. This diversity of data sources and quality underlines how the sheer volume of data is not the only challenge that companies must face. Data generated by sensors must be pieced together with handwritten repair protocols, for example. As Dr. von Enzberg notes, "More data does not mean more value; the quality of the data and knowledge of its context is crucial." And its continuous availability is equally important, too.

It is worth remembering that analyzing data can only have an effect on a company's business processes if this analysis can be performed seamlessly and without interruptions. After all, connectivity, digitization, infrastructure and security will be of little use if a crucial capability is always missing at a certain point. According to T-Systems CEO Abdel Al-Saleh, "This applies to practically every service or technology we look at and which currently concerns our customers – from cryptography to integration, analytics, multi-cloud, adaptive technology, and data sovereignty." And that's without forgetting the overarching need to orchestrate it all. As Al-Saleh adds, "This is another reason why we believe that one of our tasks is to sharpen our customers' holistic view of information technology and telecommunications. This is because the 'higher performance' which we want to offer enterprises is based first and foremost on 'trusted performance'."

"We are drowning in information but starving for knowledge."

JOHN NAISBITT,
author and trend researcher

The IT systems operated by larger businesses only offer limited benefits in this regard. These are typically:

- **ERP** (enterprise resource planning) systems as a central storage and processing entity
- **MES** (manufacturing execution systems) for controlling and monitoring individual manufacturing processes

- **CRM** (customer relationship management) systems for managing customer data
- **PLM** (product lifecycle management) systems for managing product data
- **BIS** (business intelligence systems) for evaluating business data

All of these systems fulfil partial functions in business processes but are rarely networked with each other. As Dr. von Enzberg explains, "They represent unconnected data silos and are not designed for big data analysis."

WHAT BENEFITS CAN BE DERIVED FROM DATA?

"Before I begin collecting data, I should ask myself why I want to evaluate it," Dr. von Enzberg comments. "This is a complex question – and anything but banal."

In manufacturing companies, data can yield significant benefits in the following areas in particular:

- Process transparency
- Process optimization
- Product optimization
- Smart quality
- Smart maintenance
- Development optimization

The benefits of data-driven production process transparency can even extend to determining capacities. Are there really companies out there that do not know their production capacity? "Yes," laughs Dr. von Enzberg. "In the food industry, for example, where customers are supplied 'just in time', sufficient reserves must be kept available to ensure deliveries are always of the right quantity. Sometimes, businesses in that industry do not know the actual capacity utilization of a production facility."

It might seem obvious that data can be leveraged to harmonize a networked production plant. The field of smart maintenance, however, requires rather more thought. As part of the European Union's Boost 4.0 project, Fraunhofer IEM is collaborating with automotive supplier Benteler and Atlantis Engineering to develop a predictive maintenance system. The system uses data-driven modeling methods – machine learning, in other words – which can detect potential functional defects before they occur. This information would help businesses to prevent machine downtime and interruptions to operations. Ten pilot factories will be built by 2020 within the scope of this project.

> **"Some companies know frighteningly little about where they generate data, and of what kind they are."**
>
> **DR. SEBASTIAN VON ENZBERG,**
> Fraunhofer Institute (IEM)

The three-year Boost 4.0 project involves the participation of 50 partners from 16 countries, with a focus on the topic of 'big data for factories'. The project volume includes a subsidy of around 20 million euros from the European Commission, plus 100 million euros of investments made by the participating companies.

Schwering & Hasse, a company which manufactures more than 50,000 metric tons of enameled wire for the electrical industry every year, can point to the real-world benefits of 'smart quality'. On the one hand, the company needs to perform physical quality checks in order to test the mechanical and electrical properties of its production materials. At the same time, though, production processes need to be interrupted as rarely as possible, as the wire is continuously processed from coils which are several miles long. To solve this dilemma, Schwering & Hasse collected two years of manufacturing data and used this to simulate various test cycles. The company then analyzed these simulations to calculate an optimum test frequency – resulting in a reduction in rejects of up to 14 percent.

Consultancy experts Frost & Sullivan expect big data analytics to increase production efficiency by 10 percent, cut operating costs by almost 20 percent and lower maintenance costs by 50 percent. Roland Berger's specialists, meanwhile, predict that over the next five years, digitization in manufacturing could generate up to 1.25 trillion euros in additional value in Europe alone.

WHAT CAN CONSUMERS ACHIEVE WITH THEIR DATA?

Businesses may be in a far better position than individuals to leverage data, but consumers still have interesting possibilities of their own. Walter Palmetshofer, an expert from the Open Knowledge Foundation, differentiates between three ways that consumers can use their data: in exchange for service, for a fee, or as a data donation. The Open Knowledge Foundation is a non-profit organization committed to freedom of information and the ethical use of technology. In 2017, it conducted a study on the value of personal data on behalf of the German Federal Ministry of Justice and Consumer Protection.

'Data for service' describes a typically unconscious transfer of data; for example, when you book a train ticket online to avoid having to wait in line at the ticket counter, but submit your personal and travel details in the process.

In 2018, billions of sources
fed a global data pool
with 17 Zettabyte, the equivalent of
17,000,000,000,000,000,000,000 kB.

> **“Consumer data will be the biggest differentiator in the next two to three years.”**
>
> **ANGELA AHRENDTS,**
> Angela Ahrendts, Former SVP Retail, Apple

As Dr. von Enzberg observes, “Consumers are often unaware of the data aspect. During these booking processes or when using software, many people click ‘OK’ without having read through the small print.”

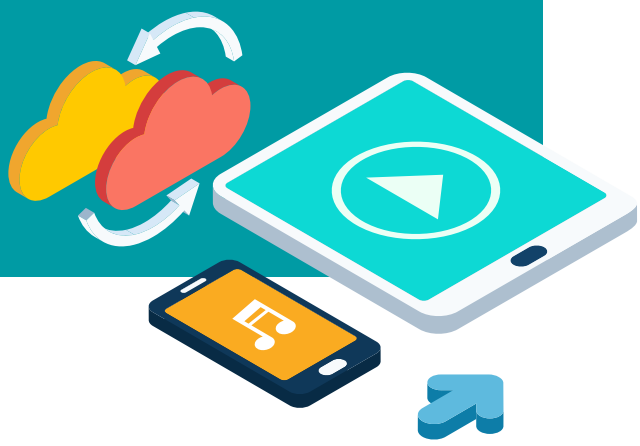
A well-known example of ‘data for a fee’ is the use of telematics by auto insurers. Consumers are offered lower insurance rates if they share data on how they drive, thereby demonstrating that they drive in accordance with traffic laws. In all of these cases of data exchange, Palmetshofer believes transparency is crucial: “I don’t just need to know who collects my data; I would also like to be able to download this information from the company in machine-readable form.” For example, consumers could use data from the train company to prepare their claims for travel expenses at the end of the year. And for offerings such as telematics-driven auto insurance, Palmetshofer calls for transparency in the rules and regulations used to determine the higher insurance rate which drivers are assigned to if they commit a traffic offense.

Finally, ‘data donations’ can have a particularly significant impact at a society-wide level. For example, consumers can donate their mobility data to support the optimization of traffic management, or offer their health data to organizations conducting medical research. The question of data anonymization is particularly important for these types of donation. As Palmetshofer explains, “The more data I have about an individual, the easier it becomes to identify them. This means that data anonymization must be planned into the process design, right from the start.”

WHICH RULES CAN HELP TO BUILD AND ENSURE TRUST?

T-Systems develops its cloud-based enterprise solutions in full accordance with this principle, with data privacy built in from the outset. Dr. Claus-Dieter Ulmer, Global Data Privacy Officer at Deutsche Telekom, refers to this approach as ‘security by design’. “We have integrated data protection as a mandatory element of the core process. This means that we can only proceed with a project once its data security has been assured.” A team of ‘privacy champions’ accompanies and oversees all developments, while T-Systems has also set up an external data privacy advisory board which includes members of the Chaos Computer Club and German digital association Bitkom.

> **“From a mathematical point of view, however, trust is hard to quantify.”**
>
> **CATHY O’NEIL,**
> mathematician



When manufacturers utilize their data, there is often a three-way relationship between, for example, the plant manufacturer, the plant operator and the infrastructure service provider. In terms of data security, the latter has a particularly important role within this relationship, as Dr. Ulmer underlines: “We offer encryption via provider shielding, and we are the only ones who have the key.” It is important that customers know this, stresses Dr. Ulmer: “By handling the data in a transparent way, you earn the trust of your customers.”

In addition, the service provider must possess knowledge of the plant operator's business processes. As Dr. Ulmer explains, "This is the only way we have of knowing which specific security arrangements are necessary, or of being able to develop new ideas for improved, tailor-made security architectures." T-Systems offers this support in the form of scalable services, with packages to suit customers from mid-sized enterprises to major corporations.

The service provider's security standards apply uniformly worldwide. "We have an international governance model," explains Dr. Ulmer. "For example, there is a data privacy officer in every country, even if the respective national laws do not stipulate this."

WHAT ABOUT THE LEGAL FRAMEWORK?

And how do the data protection regulations vary from country to country? In the European Union, the General Data Protection Regulation (GDPR) ensures consistent rules apply across all EU member states. However, as Prof. Thomas Riehm, Chair of German and European Private Law, Civil Procedure and Legal Theory at the University of Passau, warns, Brexit could cause issues in this regard. If the United Kingdom withdraws from the EU, it would be regarded as a 'third country' to which personal data cannot easily be transferred. For example, the EU-US Privacy Shield applies to the exchange of personal data with the United States. However, the large number of different regulations in force hinders data flows. As Prof. Riehm stresses, "The data market is a global one that works best with consistent, uniform rules."

"Since more and more personal data is being collected, it is also important to give people back control of their data."

STEFAN PFISTER,
Stefan Pfister, CEO, KPMG Switzerland

And who owns the data that is generated by companies or consumers? "Nobody," Prof. Riehm explains. "There are no ownership rights for data within the German legal system – unlike in the case of material property, for instance." For example, when considering the data generated by a 'connected car', there is a need to differentiate between levels of information. All data that can be assigned to the driver as an individual – such as GPS coordinates, recorded vehicle speeds and the driver's identity – is deemed to be 'personal data' and is therefore subject to data protection within the scope of GDPR. As Prof. Riehm observes, "Only the person concerned may determine who may process this data for any particular purpose. This is done via a declaration of consent under data protection law, which a driver may issue to an insurance provider, for example." In practice, this could mean giving consent for the use of telematics-driven auto insurance rates.

Purely technical information, such as wear data for individual components of the vehicle, is not considered personal and is therefore not governed by GDPR legislation. As Prof. Riehm notes, "In the first instance, the practical principle is that whoever actually has access to the data can also process it." However, as it is often virtually impossible to separate this technical data from the personal data, the driver's consent is required for any further processing.

According to Prof. Riehm, the legal regulations are entirely sufficient for secure data exchange between business partners. "All parties must contractually agree who will be granted which access rights to the data and for what purposes," he explains. Prof. Riehm notes that it would also make sense for such a contract to contain provisions for the event that a party exceeds its powers, such as penalties for breach of contract, or rights of termination. If a third party obtains unauthorized access to data that is protected from a technical and/or organizational perspective, new German legislation governing the protection of trade secrets (Geschäftsgeheimnisgesetz) would apply, and data espionage would constitute a criminal offence.

As Prof. Riehm emphasizes, "The portability of data – in other words, the ability to transfer the data between systems – is the most important foundation for productive data exchange." This requires open data formats and interfaces. Non-open proprietary file formats prevent users from migrating data to another provider. "The EU's new regulation on the free flow of data points in this direction and compels the industry to develop codes of conduct by means of self-regulation, and to implement these codes effectively by May 2020," Prof. Riehm adds.

IT security is also a vital consideration in this regard, as Prof. Riehm highlights: "As data becomes increasingly integral to value creation processes, businesses will become increasingly sensitive to cybercrime. At this stage, awareness of the enormous risks does not seem to have reached every industry to an equal extent."

Unknown risks, unknown opportunities. To ensure that data is handled in a secure, profitable way, enterprises will need to take a 360-degree view of all key factors. As Dr. Sebastian von Enzberg concludes, "Achieving this comprehensive overview is often a challenge, particularly for small and medium-sized businesses with limited budgets and staff. But it's worth it!"

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Source: KPMG CEO Outlook 2019

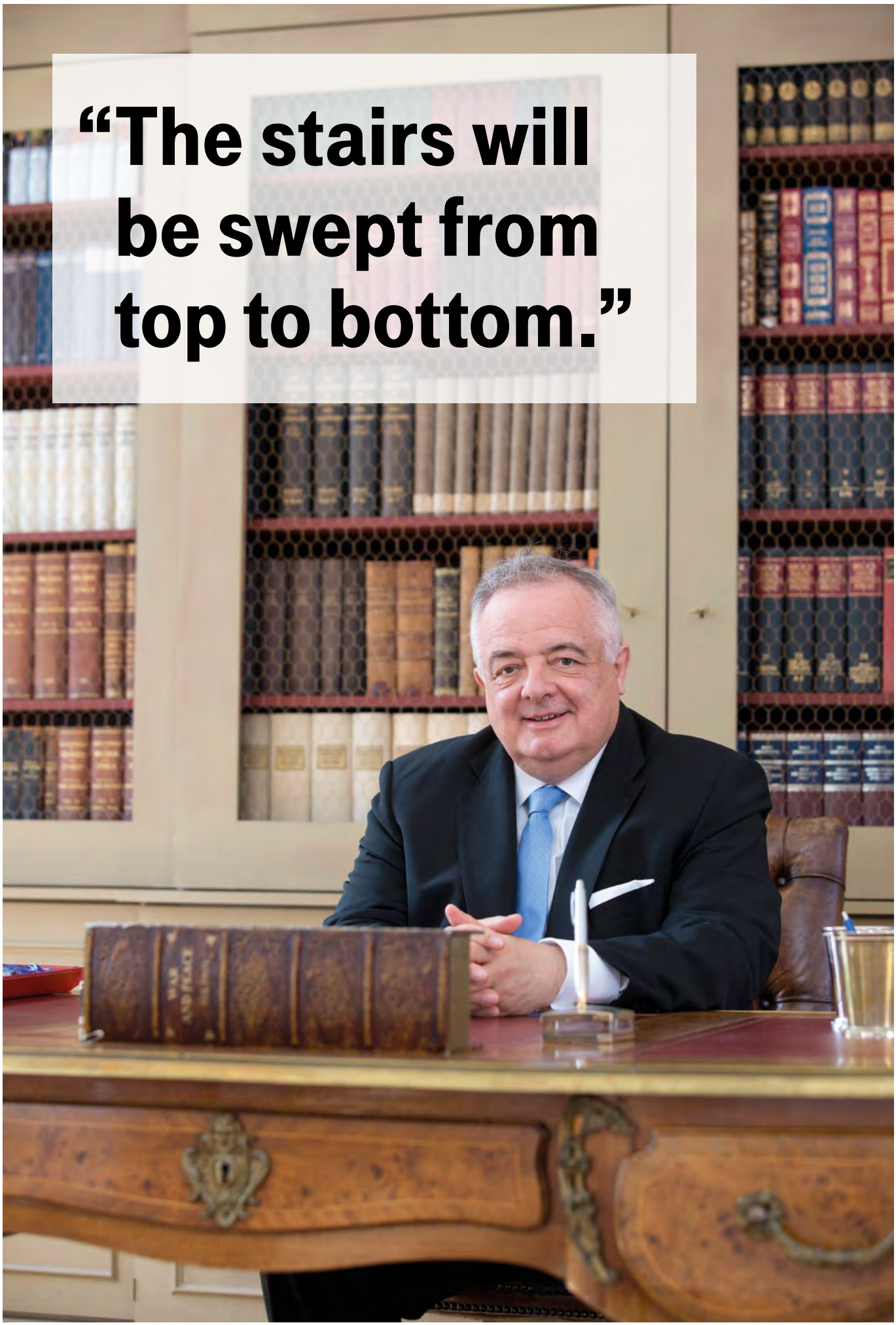

Photo: Oliver Krato

Business ethicist, Dr. Michael Spangenberger, in conversation with Udo Lingen, T-Systems Head of Health Insurance Sales Germany, about business ethics, demands on executives and the transformation of soft values into hard factors.

COPY —— Thomas van Zütphen

Dr. Spangenberger, what role does "value-oriented corporate management" play today?

We have experienced decades of technological development in which products, the new patent, and price were important. Today, however, leadership and orientation are in demand because we live in a time of profound, fundamental change at breathtaking speed. It is therefore a question of the socio-political responsibility of managers to ensure that their employees have a promising future despite the incredibly rapid pace of technological development.

But in terms of increasing competition and the hardness of the business, is there not a danger that soft factors, behind which multiple values are hiding, will fall by the wayside?

It is a misunderstanding that only those in the business world who act tough are successful. Rather, it is a matter of creating a balance between material and immaterial values. For this you need a living organization that is always centered on people. Without these people as individuals, the common goal of an economic success of one's "own" organization cannot be achieved.

Is modern leadership in this respect a much more difficult task today than it was years ago?

Absolutely. What is important for this, apart from integrity, is the authenticity of the leader, who is characterized by the fact that they really mean what they say and support it internally. Only by living a set of values directly can they function as a role model. You don't learn to be a role model at a business administration school.

Does the combination of integrity and authenticity lead to natural authority?

In order to complete what is generally understood as business ethics and is being sued for in many places, there is a lack of seriousness alongside integrity and authenticity – and these qualities are all equally important. Behind this is that what you as an executive outwardly represent for the company must be reliable, credible and verifiable to the reality of life.

The growing interdependence of national economies, the Internet and industry 4.0 with increasingly intelligent machines are opening up entirely new opportunities for companies – both for growth and for destruction. How narrow is this line and how can it be made more viable for managers?

I believe that business leaders must first find their own private, individual orientation – also in order to draw security from it. In this sense, the path to business ethics is always also a path to the inside.

How far down from top management levels you address does this mentality have to prevail in order to be lived? And whose task is it to ensure this?

Such a view must be part of the corporate philosophy and culture. And then to develop it successfully, deep into the company, can take years, sometimes decades. But only on the condition that this attitude starts at the top. It also holds true for business ethics that the stairs are to be swept from top to bottom. It does not mean that corporate leaders place high demands on subordinate levels. Anyone who acts in this way fails to recognize that an executive has much more power and many more instruments than a normal clerk to turn business ethics into living reality.

Apart from that, how would you describe a modern qualification profile for executives?

It's no longer just about technical skills and maximizing profits. These are still the tasks of a company, but these are no longer enough. We need a new, also spiritual project in which the economy of the future is more than what we are currently experiencing. And what are we experiencing now? That we in the so-called industrial nations have achieved the highest possible wealth that has ever existed in the history of mankind; that at the end of all these assets, there is simultaneously a lack of contentment, of finding happiness, of finding meaning. The Greek philosophers have said that man strives for eudemonia, that is, for a fulfilled life. Currently, however, we see a society outside that can afford any form of mobility and experiences many forms of material well-being. At the same time, we see a society that suffers from senselessness and loneliness and registers a marked increase in suicides worldwide – all signs of an unfulfilled human life.

This has to do above all with the protection of the individual and the dignity of the human being. If we alone want to uphold these values, one sees a great need for action in Europe. How do you personally see this?

First, there is the fact that Europe is centered on issues of prosperity and material wealth. One could call this hedonism, or at least unlimited consumerism. And as meaningful as it may often seem, no one is against wealth, but they are not creating a meaningful life by being against it. At this point, I consider it a central task of managers in companies to actually make meaningful adjustments. Not because the company is a family, but because people spend most of their waking hours in companies with their superiors and colleagues.

Do you exclude the possibility that many companies are nevertheless seen by their employees as a family?

I exclude the possibility that companies are like families.

Let's assume it would be characterized by a kind of "family spirit." Would you see this as a disadvantage?

The company should not be shaped by a family spirit, but by a spirit of solidarity. We all know enough examples of German companies in which it is not the spirit of togetherness but the spirit of antagonism, mobbing, hostility, cheating and lying that prevails. And that is poison for the meaningfulness of human life.

Do you assume that people with a tendency to preserve their vested rights will face a corresponding change in values with the necessary open-mindedness?

Undoubtedly, flexibility and capacity for change vary gradually from individual to individual. But it is also quite certain that changes in the conditions of survival – of their companies and of their own workplace – will force people to adapt to this process. It is the task of a manager to support them in this process. Not regulations, not strategic management, but giving people support and solidarity in order to achieve common goals.

Would you say that traditionally soft factors are currently turning into very hard ones?

Definitely. We have to work on the side of the immaterial in a very existential way. An individual has a desire to preserve peace, freedom and prosperity, but also with an economic, social and political dimension. I can only refer to the Norwegian Anders Indset and his recently published book "Quantenwirtschaft – was kommt nach der Digitalisierung?" A kind of memorandum that seeks a new understanding of economy and society. An understanding that urgently needs to be discussed, thought through and reflected upon in companies as well. In this respect, ethics is the scientific reflection of norms, values and laws in which our actions should take place.

Anders Indset depicts, among other things, the scenario of a post-humanist society in which algorithms and machines will deprive us of power because, despite a series of "disappointments" – in the sense of wake-up calls – we have still not understood which path technological development is taking. How realistic is that?

In my opinion, the value of this book in the sharpness of its analysis cannot be overestimated at all. Whether one judges this differently at one point or another is completely irrelevant. The main thing is that the discourse that emerges from such a book takes place. In it, Indset also says: "We had an old economy, now only folklore remains. It was followed by a new economy, which is almost history. Our new economic system will be the quantum economy, and it will increase people's demand for immaterial values as a necessary complement to everything that is materially important to us so immensely that this development will turn our entire economic system upside down." I think this is very much worth considering.

How do you encourage companies to communicate such messages?

My company CHORVS endeavors at the executive level to create platforms for management boards, supervisory boards and shareholders on which they can reflect intensively on the values they aspire to uphold. Additionally, we pave the way for employees to participate in this attitude. Of course, the respective curriculum must differ for the different hierarchical levels, but it is only through participation that everyone's idea will ultimately be heard with regards to corporate identification. We want to represent a morally shaped company.

But this leads again to the question: who actually stays at the wheel? Who remains the creative force?

Correct. And the creative force is to be found where someone has voluntarily stepped up to the top ranks of a company. This is not a privilege, but a category of responsibility with maximum magnitude. I have the greatest respect for the CEOs of our companies when they take on this role of assuming responsibility. There is something else you can learn from Indset: it is precisely these disappointments that you spoke of. We understand disappointments to mean that it hurts to realize that something is not what it looked like. In the truest sense of the word, disappointment describes the abolition of deception. The abolition of misinformation, fake news, seduction, ideological disorientation, radicalism, xenophobia and human rejection. These are the things that we must prevent from coming to life in our companies.

"What you as a leader outwardly represent for the company must be reliable, credible and verifiable."

DR. MICHAEL SPANGENBERGER
Business Ethicist

How concretely?

We are currently designing an in-house university that will offer employees from all hierarchical levels the opportunity to participate in a discourse that is absolutely essential. The aim is to impart competence and knowledge in order to implement this new ethic into everyday life. The term "applied philosophy" describes this even better than "ethics." Applied, because it enables managers to use the right language, instruments and platforms to reach even large groups in their organization and ultimately shape the entire corporate culture for all employees. This requires steep learning curves. And I'm already predicting one lesson: in the future, business success will only be truly sustainable in an ethically oriented, moral environment. Everything else is intermezzo for the quarterly report. And of course, it has a short lifespan.

Lifetime is a good keyword. In the case of diseases, for example, in the role of the patient, which each of us sometimes experiences ourselves, we seem somewhat uncertain with regard to how our health economy – but also our personal care – could benefit from AI, IoT, cryptography and IT security. Is this a typical German state of mind?

Health economy or health service is a singular area of life that affects everyone from premature babies to palliative care. The prospect of becoming a patient increases with our ever-increasing life expectancy.

Dr. Michael Spangenberger, Business Ethicist (left) and Udo Lingen, Head of Health Insurance, Sales Germany, T-Systems International GmbH

At the same time, much of what belongs to life is subject to social ostracism. Phases of being handicapped, for example, and everything that means feeling pain, suffering and dying. We have a big problem with that and more or less secretly strive for immortality. Today we know that being able to die and being allowed to die is also a blessing. But this can only be combined with human dignity if one asks oneself the question: What comes after death? What about eternal life? What happens to our soul? Questions that are of fundamental importance in every world religion, but which are increasingly taboo in Germany.

So, behind your advice on moral issues with ethical dimensions that companies face today, is your claim to each individual that participation and self-introduction must balance each other out?

Yes, that seems to me to be getting a little lost, even on companies. To have a sense of responsibility for res publica, i.e. for this society from which one has ultimately received a great deal, and for the fact that one must also give something back to this society for reasons of decency and fairness.

Photo: Oliver Krato

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Things have been good so far, right?

Will artificial intelligence continue to obey humans in the future? Or will we become slaves to the algorithms we have written ourselves? Scientists and experts disagree: an overview.

COPY —— Heinz-Jürgen Köhler

The question of computer control is as old as the smart machines themselves. As early as 1949, the American mathematician and philosopher Norbert Wiener, called for a control system. With the development of artificial intelligence and self-learning systems, this discussion has become increasingly heated and polarized.

Researchers agree that rules are needed. Over 4,800 scientists – from Stephen Hawking to cosmologist, Max Tegmark – have signed the so-called "AI Guidelines of Asilomar." The guidelines are named after the Californian conference centre where the "Conference on Beneficial AI" took place in 2017. It regulates the use and research of artificial intelligence with 23 stipulations. Whether or not AI poses a threat to humanity, however, differs widely as we have seen in various expert opinions.

INSULT OR SOLUTION?

The Norwegian economic philosopher Anders Indset warns that artificial super intelligences threaten to dominate and disempower us. If people make themselves dependent on AI, they become zombies. Humanity is threatened with "a last narcissistic offence," says this pop star among the philosophers. Only a system of rules and structures can remedy the situation in order to protect man from manipulation by others and preserve his uniqueness.

On the other side of the aisle is Prof. Dr. Jürgen Schmidhuber who is convinced that artificial intelligence has no interest in enslaving people. The Scientific Director of the Swiss Research Institute for AI IDSIA is regarded as the father of modern artificial intelligence. He welcomes the development with open arms: "I want an AI that learns to solve all problems that I cannot solve myself."

DUMB MACHINES OR DUMB PEOPLE?

Trend researcher and futurologist, Matthias Horx, denies not only the threat potential, but also the benefits of AI. The head of the Zukunftsinstitut in Frankfurt considers the topic of artificial intelligence to be overestimated. It has become a kind of fetish, with hype that creates dangerous illusions. Most real problems are far too complex to be solved by data systems, explains the sociologist.

Psychology professor, Alison Gopnik, does however, acknowledge the threat – after all, AI is also used to operate weapons. But, "natural stupidity can do far more harm than

Photo: iStockphoto

artificial intelligence," she writes in the Süddeutsche Newspaper. People need to become more skilled at regulating new technologies.

ETHICS OR DIVERSITY?

Brad Smith's thoughts also go in the same direction. The President and Chief Legal Officer of Microsoft Corporation emphasizes that it is important for people to decide what computers can do. Therefore, ethical principles should be established. "AI systems must be fair and there must be some kind of accountability for those who develop AIs. Before we adopt new laws to deal with AIs, we need to be aware of the universal values that should be protected by the AI principles," says the trained attorney in his book, The Future Computed.

Are occupations with a certain pretense also worth protecting according to these principles? In any case, according to Mary Gray, artificial intelligence generates many jobs that are rather tedious. For pattern recognition, AI needs huge amounts of input. The anthropologist, author and researcher at Microsoft Research fears that this input must be recorded by countless so-called click workers. "The greatest paradox of artificial intelligence is that it has a reputation for taking work off our hands. In doing that however, it generates an unlimited amount of new work – repetitive work that isn't particularly multifaceted," Gray writes in the Neuen Zürcher Newspaper.

An AI is as helpful or as threatening as the algorithm behind it, stresses Carla Hustedt. The Bertelsmann Stiftung political scientist sees a great danger in a kind of monoculture in algorithmic systems. If, for example, every Human Resources department were to use the same system, the same people would always be discriminated against. "We need a diversity of algorithms," she writes in an article for the Austrian Standard, "and that also means that it's not just young white men who design technology."

https://t1p.de/t-systems-ai-based-automation

“It’s about the art of the address, discussion and having a say.”

Photo: Oliver Krato

The Chairman of the Deutsche Telekom Foundation, Dr. Thomas de Maizière, on moral courage, decency on the Internet and a digital education mission that needs not only schools, business and science, but above all parents.

COPY —— Thomas van Zütphen

Dr. de Maizière, the Deutsche Telekom Foundation has carried out more than 100 projects since its foundation and spent 120 million euros on foundation purposes. Which project is particularly close to your heart?

There are two! One is the "Junior Engineering Academy," in which high school students in grades 8 and 9 work closely with universities and companies to develop things such as an artificial arm prosthesis or a solar-powered car. That's great fun for them and the great thing is that they learn math and physics as a result. The second project, "GestaltBar," focuses on grades 7 and 8 at secondary schools and awakens the desire to work with computers, smartphones, technology and engineering services.

With what success?

The overarching goal is to change schools from the outside in by creating networks between schools, universities and companies that "carry" young people into the future and actually make an impact. The two-year Junior Engineering Academy, for example, runs at more than 100 grammar schools throughout Germany. There are already GestaltBars at more than 30 locations, and in the future, we want to create more of these networks.

How do such projects emerge?

As an operational foundation, we develop projects that we believe support the educational system in a meaningful way. A call for proposals then ensures that all interested institutions such as schools or youth institutions can apply. If 100 schools participate in a project such as the Junior Engineering Academy, it will be easier for us to make general statements, for example, about technology didactics, than if we were to carry out a larger project with just one school. A foundation that spends around 10 million euros a year can only achieve something by generalising, by giving examples and by delivering results that are reliable in terms of quality.

In this way we can collect information such as: do eighth graders learn and react differently in the North than in the South? Does this have anything to do with the school system or the educational environment? With whether the teacher is a woman or a man? Or with the size of the school? If you want to discuss such questions, you are able to make the necessary comparisons only if you hold the projects in your own hands. That is personnel-intensive, and as a small foundation we have just 23 employees. But we find this way more promising than waiting until others have ideas that we then support financially.

How do you invest intelligently in digital education?

By increasing the reach of your investments and their results as quickly as possible, for example through cooperation with other foundations. The Education Digitalization Forum we initiated works like this. Another very successful cooperation project is the "House of Little Researchers," which introduces three- to-six-year-olds to the topics of science and technology in kindergartens. The project is funded on a large scale by the Federal Ministry of Education and Research, foundations and other partnerships, and has thus gained an enormous reach. Wherever we do something specific, we do it alone, in our own name. In this respect, we always have to weigh things; do we want to be recognizable by our name or do we want to reach more people, more schools, more educational institutions – including extracurricular ones – together with others? We are trying to find a good mix between the two.

Tim Höttges recently warned that the German digital economy lacks 300,000 skilled workers. How does the Deutsche Telekom Foundation deal with this?

When it comes to "specialists," everyone thinks of engineers who develop apps worthy of the Nobel prize. But we also need what we call "skilled workers" in the analogue world at all levels of qualification in the IT world. For example, to lay cables for appropriate connections and repair work. That's why we shouldn't just focus on academic functions and universities. We also need corresponding offers in the area of vocational training. As a foundation, we cannot reach or satisfy the entire field of education, but we can show others that this is how it could be done.

In the future you will concentrate your work on the age group from 10 to 16 years. Why?

We focus on this age group because educational biographies are decided at this age, but also because many young people lose the desire to learn during this phase. This often has something to do with didactics, in other words with forms of teaching or with how the pupils are addressed. How do I teach a rule of three, for example, so that a pupil does not lose the desire to learn a solution? In the future, we will try even harder to act as a model in schools so that the pupils' desire

Vita

Thomas de Maizière has been Chairman of the Deutsche Telekom non-profit Foundation since November 2018. From 1994 to 1998, he headed the State Chancellery in Schwerin and from 1999, served as State Minister in the Free State of Saxony. In 2001, he moved to the Ministry of Finance as Saxon Minister of State, in 2002, to the Ministry of Justice and in 2004, to the Ministry of the Interior. In 2005, Thomas de Maizière became head of the Federal Chancellery, four years later Federal Minister of the Interior. From 2011 to 2013, he was appointed Federal Minister of Defence and from December 2013, to March 2018, he served as Federal Minister of the Interior again. He has been a member of the German Bundestag since 2009, humbly serving as a directly elected member of parliament.

and joy in learning, but also in constructing, doing handicrafts and in realising themselves, is simply strengthened. This also creates a tendency to make such a thing a profession.

What do you mean by "addressing the students?"

If you ask students directly, "Would you like to become an IT specialist?" then many probably say "No." But if you instead ask, "Do you want to not just use a smartphone, but to build computers and understand what happens inside your smartphone? Do you enjoy developing something together with others and not just on your own? If you want to do that, the MINT section could be of interest to you." Maybe we have to separate ourselves from narrow technical terms like mathematics, physics and chemistry. For many, this already creates a hurdle. If instead you talk about developing something, being creative, experiencing new things, being able to concentrate, then I think it makes you enjoy IT and mathematics much more quickly.

How can you influence school operations in this sense?

Through meaningful support that does not burden, because a lot is already expected from schools. They should promote democracy, teach arithmetic, reading, writing, as well as swimming and cycling. They should promote health behaviour, good nutrition, be against racism, teach how to file a tax return and write a cover letter for a job application. Schools should do all of this, but they are totally overloaded with these tasks. That's why we as a foundation are increasingly trying to link schools and extracurricular activities. This also has an effect on schools, for example in that children are not only left to their mobile phones for hours during the afternoons at all-day schools.

The latter describes what digital early education should not look like?

Yes! and perhaps the example of our early musical education is a good one. There are many ways to learn to play the violin, but the use of an instrument must always be explained, evaluated, improved, corrected and, in case of doubt, simply discontinued. When instructing children how to handle instruments, this all too often neglected in communication today. Perhaps this is because smartphones, children's computers and their operation are so self-explanatory. This is neither good for the use itself nor for the development of young people.

What could a parental adjustment look like in concrete terms?

Questions from parents like, "What are you doing there? Could you explain that to me?" would be the first step in turning the child from the user to the creative designer of the device. This is a key qualification for school and for education, especially in the MINT subjects. By the way, saying something like that first and foremost at home also has a lot to do with safety: protecting children and adolescents from fraudsters, traps, viruses, basically cybercrime. When we don't make young people aware of the importance of using the Internet responsibly, external rules, state intervention and counselling services are of little help.

As Federal Minister of the Interior, you once had reason to say: "Part of this answer would unsettle the population." In the context of our digital security, are you concerned that one of your successors in the office of the Federal Minister of the Interior might have to repeat this sentence?

At the press conference following the cancellation of the international football match in Hanover, my concern was to conceal the possibility of another attack. As a minister responsible for security, to achieve this goal you must talk intelligently around the issue – just as politicians often have to do. But comparable situations such as cyber-attacks on public infrastructures and the security operations of our country can occur. Look at so-called critical infrastructure, which can also be privately owned, for example, transfer centres of savings banks or network transmission centres for electricity or telecommunications supply. The state must do something about this. It is already doing something about it, and it must continue to do so, but the private companies themselves must also do something about this: the railways, the postal service, Deutsche Telekom and its competitors, large hospitals, banks and energy providers. This is a major and ongoing task.

When it comes to security and credibility, half-truths or whole-truths, the Internet is neutral per se. Is the problem "fake news," to name just one, due to the different credibility of the sources to which the Internet gives access?

Even Wikipedia will not be the only blessed Brockhaus of the future. But the fact that the platform today enjoys a relatively high degree of seriousness has to do with internal quality criteria and their linkage with a systemic corrective. We find that more or less reliably in the print sector as well. For example, I can't do without my own judgement at the newspaper kiosk. Which magazine do I take? And when I buy one that everyone knows is full of talk, rumours and gossip, I have to ask myself first, "Do I want to be amused by the gossip or do I really want to believe it?" In other words, it does not work without people's ability to judge – neither a democracy, nor reasonable buying or environmental behaviour, nor the use of the Internet.

KNOWING WHAT COUNTS IN THE FUTURE

The Deutsche Telekom Foundation is one of the largest educational foundations in Germany. For more than 15 years, it has supported projects dealing with topics from the mathematical, scientific and technical fields. The foundation supports children and young people between the ages of 10 and 16 in actively shaping their own learning inside and outside school and thus developing important competencies for their education and life. From the donors' point of view, these competencies include solid specialist and interdisciplinary knowledge in mathematics, computer science, natural sciences and technology as part of general education. In addition, they consider critical thinking and judgement, creativity, communication skills and the ability to work in a team to be decisive for living and working successfully in the future.

Photo: Oliver Krato

"Even unwritten rules are very important for the stability of a society," says Dr. Thomas de Maizière, Chairman of the Deutsche Telekom Stiftung.

The diversity of channels, the intensity with which we discuss them, the variants of those who romp about on the Internet – is there still a constant in our communication?

Above all, the topics are changing, but the intentions are not. This is precisely the point at which I am being scolded too quickly on the Internet. It has been the case since Gutenberg and Luther that intentions are associated with communication. To worriedly say now that an internet service provider connects targeted benefits with their offer would be naïve, because that is their business model after all. It is not unusual to earn money with recognisable or hidden advertising. This has long been accepted in the cinema, on television or in magazines. On the Internet, much is just new, the ranges are different, the internationalization is greater. But a few standards that we had in the analogue world, a few mechanisms to make us immune to advertising or to question them, you need as an internet user too. We should show more composure and not consider everything new on the Internet to be ground-breaking. That already helps.

Would it be conceivable for the Internet to have a comparable authority, such as the German Press Council for the newspaper landscape?

There are already corresponding discussions. Although the Press Council has no sanctioning power, its code has a warning, inhibiting effect. This is certainly not transferable one-to-one, but in a similar form for the Internet such a thing would be helpful.

Because it is like accountability for upholding values and rules?

Correct. Even unwritten rules are very important for the stability of a society. As a lawyer, I value such rules as much as formal rules. It would be a wonderfully important task to think about how to establish unwritten rules of decency, the behaviour of providers, users and how to deal with each other on the net. This would certainly increase the credibility of certain providers on the Internet.

Who needs to be particularly held accountable?

Everyone. It does not help if everyone points fingers. The state has a role, the providers have a role, but so do the users. The golden rule helps: "Do unto others as you would have others do unto you." I am convinced that if we all stick to it, it would have a great effect. And each one of us can remind another of that from time to time. For example, if someone is foul-mouthed in a blog, just reply, "I don't want us to deal with each other like this on the Internet."

So, you need a minimum of courage?

Civil courage, yes. Civil comes from citizens. In this sense, displaying civilian courage instead of dawdling and turning a blind eye is always a contribution.

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Digital Education: More than Technology

The competent, self-determined and safe use of digital technology is becoming an increasingly important part of teaching. But technology alone is of little use. Aloisius College in Bonn's Bad Godesberg district shows by example that digitalization based on schoolbooks should also follow an educational approach.

COPY —— Roger Homrich

Basically everyone agrees that digitalization must not be allowed to pass schools by. On the contrary: it is high time to invest more money in financing the technical infrastructure and pedagogical concepts. The main objective is to use the expenditure to create the necessary technical infrastructure so that pupils can also use their own laptops, tablets and the like in their schools. In Germany, this also includes equipping the country's almost 40,000 schools with WIFI.

After a tough struggle, the Federal Government and the States agreed on the Digital Pact for Schools in March 2019 and even amended the Basic Law. Article 104c now states: "The Federal Government may grant the states financial assistance for investments of significance for the state as a whole and for special, directly related, limited expenditures of the states and local authorities (associations of local authorities) to increase the efficiency of the municipal education infrastructure." To finance the Digital School Pact, funds from the 5G auction are to flow from the "Digital Infrastructure Special Fund."

DIGITAL PACT FOR SCHOOLS

Over a period of five years, the federal states will receive five billion euros from the federal government for debt digitization. In return, they undertake to put another ten percent of this sum on top. Meanwhile, some federal states have set up their own financing programmes in which more money is to flow into the development of digital infrastructures. Take North Rhine-Westphalia (NRW), for example. The previous state government under Prime Minister Hannelore Kraft launched the "Good School 2020" funding programme in 2016. By 2020, schools in NRW will be able to draw money from a special fund worth two billion euros for school infrastructure projects.

Even if digital schools cannot be imagined without modern technology, technology alone will not get schools ahead. The Digital Pact for Schools therefore includes additional components such as "No equipment without a concept" and "No funding without support." Schools must therefore set educational goals, for example in the form of a media concept, on which the development of the technical infrastructure can be aligned. On the other hand, the school authorities have a duty to ensure that the operation of this infrastructure is secured.

EQUIPMENT BETTER THAN ITS REPUTATION

At the beginning of 2019, the Deutsche Telekom Foundation and the Institute for School Development Research at the Technical University of Dortmund asked more than 600 teachers at lower secondary level how they assessed the digital equipment and support at their schools. There are still major differences; however, the results show that something is happening at German schools. More than two thirds of the institutions now have media concepts. In addition, a majority of teachers state that an IT coordinator or a teacher is responsible for the practical implementation of the respective media concept on site. And a good 80 percent of teachers say that the school administration has created the necessary framework conditions for the use of digital media.

Photos: iStockphoto, Alice Backes

André Hoffbauer, Head of Administration at the Aloisiuskolleg, focuses on personality development for the digital future.

Take Bonn, for example: around 30 million euros from the NRW "Good School 2020" pot are flowing into the city's school landscape, around a quarter of which is reserved for the expansion of WIFI and broadband networks. The Aloisius College in the Bad Godesberg district has also put its IT infrastructure on a new footing with money from the programme in time for the start of the new school year 2019/20. The digital change at the Aloisius College is being driven forward by André Hoffbauer, head of administration, and Patrick Gies, head of IT, together with the school administration.

"We have renewed our servers in our own server rooms and now use Office 365 A1 licenses, which allow us to use Outlook, Word, Excel or PowerPoint as a school free of charge. If we replace the Exchange server later, that won't cost us anything either," reports Gies. "We also had to replace the firewalls because they were too slow and slowed down data traffic. And we have a fiber optic connection."

Many classrooms in the Aloisius College are already equipped with projectors and whiteboards, including digital timetables. Now the school administration is considering providing rooms that have not yet been converted with interactive boards. "And we are continuing to wire our school to cope with the increasing data traffic. Although the current network is sufficient for lessons, the students still don't have access to a WIFI connection," Gies regrets.

"DIGITAL LEADERSHIP EDUCATION"

So far, pure infrastructure. The Aloisius College has been dealing with the sensible use of media in teaching and a digital learning concept for years and developed a concept for media education in mid-2016. The Digital Leadership Education (DLE) project, which was developed jointly with other Jesuit colleges in Berlin and St. Blasien and is based on Ignatian pedagogy, aims to introduce pupils to technology. The motto: "Anyone who still hopes that education and digitality will coexist unaffected by each other in peaceful neighbourhood should be productively worried by the digital technological change."

The aim of DLE is to take up the challenges of digitalization and to strengthen the personality of the students of Ignatius von Loyola, the co-founder of the Jesuit Order, at the same time. They should not only learn how the technology works and how it is operated. In addition, they should question and reflect on the innovations and thereby be enabled to think and shape – and not just to consume digitalization. "We want young people to play an active role in social discussions about the significance of digitalization in our lives. In other words, it's about personal development for the digital future," explains Hoffbauer.

For the college it is crucial that, despite all the importance of equipment issues, the pedagogical and anthropological questions take centre stage. The mid-term goal is to develop an age-appropriate media concept and to learn school content through the targeted use of digital media. So far, the College Moodle has used a free object-oriented course management system and at the same time a learning platform that supports cooperative teaching and learning methods. Hoffbauer comments, "As part of our Digital Leadership Education concept, we are now examining further teaching software, for example for mathematics lessons."

And what will the digital classroom of the future look like according to the survey? Framed by the classic analogue blackboard, a large screen is emblazoned on the wall. The teacher uses a computer with a document camera, uses audio and video files and is connected to the school network. The pupils have smartphones, tablets or laptops and are networked via WIFI. Even learning itself does not relieve the pupils of the digital world.

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“Do it honestly.”

With 9.1 million insured persons, Barmer is one of the largest health insurance companies in Europe. Though this is not the only reason why the company has committed itself to a special responsibility in the context of its digitalization.

BARMER-CIO Jürgen Rothmaier

Jürgen Rothmaier
BARMER-CIO

COPY —— Jürgen Rothmaier

Photo: Oliver Krato

What is the very mission of every player in the healthcare industry? Not to lose sight of the core business. And that is: to provide us people and the extremely complex system on which our health is based with the best possible care. This is a major task, even for health insurance companies, because in hardly any other industry is the "best possible" based on as many standards as in the health care sector. Ethical and economic, moral and technical, social, political and so on. What works and what doesn't? Are the innovations really substantial, or are they just showmanship? It is, therefore, important for all those involved in healthcare that they "do things honestly" again and again.

DIGITAL POWER CENTRE

Example: digitalization. It will dramatically change healthcare worldwide in the coming years. However, in this country more than others, with direct effects on the work of health insurers. People in many countries envy our health insurance landscape and the care system it provides for patients. But when it comes to costs and efficiency, or our competitiveness – in other words, maintaining the health of this health insurance landscape at its core – the path to an increasingly digital health insurance system and increasingly digital service, care and billing processes is the only one to take. The only annoying thing is that we in Germany have stood in place for far too long on precisely this point. We have stood still on the introduction of a secure health data network for example. As of January 2019, the legislator decided to allocate 51 percent of the shares and thus control over the gematik-Gesellschaft to the federal government, finally getting things moving.

Also, internally, when it comes to our own processes and communication flows, we have to keep up with health insurance companies if we want to play a major role in digitalization. For example, we ourselves founded the "BARMER.i" organizational unit, which is our digital power centre and the heartbeat of our comprehensive digitalization strategy. It enables us to develop innovations that help us focus even more strongly on our customers and their expectations. Everyone can understand the calculation behind it: when processing routines are increasingly supported by intelligent digital systems, our employees have more room for the care of the insured. And their healthcare is moving even closer to where it belongs – to the centre of our actions.

OUTSTANDING RESPONSIBILITY

However, the undisputed focus of every health insurance company is also on being aware of its outstanding social and health policy responsibility when it comes to dealing with data. From my point of view, there are two sides to this: of course, many companies in the healthcare industry have difficulties consolidating the wealth of data that they collect and translating it into realisable results. Most data is stored in separate silos. This is due to the need to comply with strict privacy policies and laws, which in turn means that different clinical, financial and operational data is stored separately. And in case of any doubt, almost every data access or exchange must be secured, encrypted and controlled as much as possible.

As if that were not enough complexity, the increasing variation of unstructured data types generated from formats such as transcribed notes, images and videos is added. The intelligent use of technologies such as machine learning and artificial intelligence, I am firmly convinced, will bring us closer to the interoperability of these silos.

The second side of the coin concerns the use of data for the benefit of the people from whom we have mostly received this data in the first place. For me, this is a requirement of every health insurance company. Without them, we would not have the opportunity to exploit the power of highly developed data technologies to process data into information in immense quantities, at high speeds and across a multitude of networks and to use the resulting quantitative findings as a basis for decision-making and action.

PREVENTION AND OPTIMISATION

In my view, there are two areas that would benefit most. On the one hand, data helps doctors to create better patient profiles and predictive models in order to anticipate, diagnose and treat diseases more effectively. This leads to new insights and opportunities that would normally take generations to uncover. Such a breakthrough would lead to proactive and preventive communication with the patient from the predominantly reactive practice of daily medical routines.

On the other hand, and this must be discussed completely openly, data should also be the focus of a well-founded business decision. Since, as the saying goes, it is "about business," which inevitably results from the fact that all of us, without exception, oscillate more or less between health and illness in the course of our lives. That's the way it is and that's the way it stays. This is not changed by the fact that we as human beings, like every health insurance company, only benefit if a customer does not become a patient in the first place.

IDENTIFY TRENDS WITH DATA ANALYSIS

With forecasting methods, health professionals can anticipate future developments much more reliably and make better business decisions that are supported by numbers rather than expectations. Using data analysis to identify trends, demand and treatment patterns also eliminates inefficiencies and reduces unnecessary expenses. This is equally important for all benefit recipients, contributors and us as statutory payers in view of the rising costs of healthcare worldwide.

That brings me back to my original claim. I call the people who shape the expectations of many of our customers today, "G.A.F.A.s," for example. Google, Amazon, Facebook and Apple are the ones that lead anyone who orders goods on the Internet today to expect "delivery tomorrow." Customers also transfer this claim to the services of a health insurance company. This is one of the reasons why we have to keep thinking ahead in the context of information and communication technology. So that innovations in this sense help to make processes sleeker and more efficient and ultimately improve service quality for our customers.

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Photo: Oliver Krato

OUR GUEST AUTHOR

Jürgen Rothmaier's professional career began at BARMER in 1978. After holding positions as Managing Director in Essen and Wuppertal, he was appointed State Managing Director of the company in Rhineland-Palatinate in 1998. In 2001, Rothmaier moved to the Wuppertal head office, where he headed the Organisation Department. In 2006, Rothmaier was elected a member of the Board. In 2015, he was appointed Deputy Chairman of the Management Board. In this function, he is responsible for Information Technology as well as Marketing and Sales.

There are currently too few charging points for e-cars and anyone who does fill up with electricity needs to know their way to the nearest station. The construction and operation of a charging station is just as complex and expensive as locating them.

Programmed E-Hubbub

www.grindundco.de (German)

COPY —— Roger Homrich

The number of charging points for electric vehicles has risen to almost 21,000 as of mid-2019. This is half of what is necessary for the few electric cars that are currently on the road in Germany. For the one million electric vehicles forecast to be on the road in 2020, the number would be far from sufficient. The Chancellor promises to remedy the situation by 2030, stating there will not only be an influx of ten million electric cars, but the construction of one million charging stations along with them. The small number of charging stations is not the only problem from the driver's point of view. Even today there is a proliferation of charging infrastructure. Operation is anything but simple; tariff systems and prices are a mess; some charging stations can only be operated with apps, others only with customer cards; paying by SMS, cash or credit card is often a mistake. There must be a simpler way.

INTELLIGENT E-CHARGING STATIONS

Consider that the operation of the charging stations themselves is complicated. Every charging station is a computer including hardware and software, which not only has to provide electricity, but also has to bill for it. In addition, the charging stations themselves should be serviced remotely and report errors. Since the costs for setting up and operating the charging infrastructure are high, many providers like to charge significantly more per kilowatt hour than household electricity.

With Gridware, the Berlin-based company Grid & Co., has developed an open and manufacturer-independent all-in-one system in the Open Telekom Cloud, including a usage and billing platform, with which operators of all sizes can centrally manage their charging stations. From small providers with only a few charging points to electricity providers that set up charging stations throughout Germany, everything can be managed with Gridware. The software forms the interface between electric car drivers, billing providers, electricity grid operators and charging lot operators. Configuration, control and monitoring of the charging lot are carried out via browser. New charging points are simply added without reconfiguring the entire charging fleet. "It was important to us to make the registration of a charging station as easy as possible," says Georg Schmitt, Founder and Managing Director of Grid & Co. "Therefore,the efficient and economical use of our software is even seen in the operation of just one charging lot with a single charging point."

CASHLESS BILLING

Grid & Co. equips each charging station with a SIM card which is used to transfer data on the operating status of the station and billing information to the Open Telekom Cloud. Individual dashboards are available to customers. Statistics provide information on loading processes and capacity utilization. Users of a charging station pay for the charging process via credit card, PayPal or EC card. Gridware also enables operators to set the prices for each charging station flexibly and individually. If the charging infrastructure is integrated into the system, the charging points can be maintained remotely and updated to the latest system status.

Innovations Ready for Take-Off

The world's largest airport "flies" on software from T-Systems. An investment in the future of this industry.

More than 3,000 displays provide passengers and check-in staff with all relevant information in real time.

COPY —— Sven Hansel

Aviation is booming. The airline umbrella organisation IATA estimates that the number of passengers worldwide will double to at least 7 billion a year between 2017 and 2037. This corresponds to a growth rate of 3.5 percent per year, while other estimates are already based on 5 percent. But that is only one side of the coin.

On the other side, issues such as climate change, at the ecological level, and the rising price of kerosene, at the economic level, are putting the entire industry under massive pressure to innovate. Continuing as before is certainly not the best option, but the airliners have long recognised that. Norway, for example, is planning emission-free aviation by 2040. A study concludes that it is quite possible from this point in time to operate domestic flights exclusively with electricity. An excellent development.

NEW IATA STANDARDS

The innovations required to increase efficiency in the industry are also generated on the ground. The central Airport Operational Database (AODB), for example, is the technical backbone of an airport's IT control system. This is where all flight-relevant data converges. Starting with the management of check-in counters and the allocation of parking positions for jets, gates and boarding gates, through to information for passengers, the number of baggage items and physical aircraft data. All components of this integrated system access AODB. IATA now even expects an AODB minimum standard at an airport.

The brand-new Beijing New International Airport can now call on its own particularly sophisticated IT. Over the past two years, T-Systems has developed its own airport software for the operational management of Beijing Airport's air traffic. The software systems developed for traffic control form the basis for getting the airport's up to 130 million passengers a year to their destination quickly and efficiently. By way of comparison, the three largest German airports, Frankfurt, Munich and Düsseldorf, only together achieve such a volume of passengers.

STEEP CLIMB IN INNOVATION

T-Systems' traffic control system, the Airport Management System (AMS), is already in use at more than 40 airports worldwide. AMS analyses, processes and visualises all flight-relevant data at an airport in real time, from air traffic control to airlines and ground services. The platform, which combines numerous other core solutions in addition to the AODB, thus ensures smooth flight movements and ground handling processes – and is now also in use at the world's largest airport. Beijing New International Airport is located

Photo: iStockphoto

in the Beijing suburb of Daxing and has four runways that can handle up to 620,000 flights a year – an average of almost 1,700 flights a day. Once all runways have been put into operation and all extensions have been completed, Beijing-Daxing will become the undisputed leader in global air traffic.

The airport uses the AMS solution in a highly reliable on-premise server environment. "Efficiency played a major role in the planning of our new airport. The proven industry software and T-Systems' expertise have convinced us," confirms Yuan Xue Gong, Chief Engineer at Beijing-Daxing Airport. "Thanks to the digitalization strategies and technologies of the Deutsche Telekom subsidiary, we are optimally equipped to guarantee the operation, security and maintenance of the airport infrastructure at a high level at all times".

"We are optimally equipped to guarantee the operation, security and maintenance of the airport infrastructure at a high level."

YUAN XUE GONG
Chief Engineer, Beijing-Daxing Airport

A HIGHLY COMPLEX ECOSYSTEM

More than 40 interfaces ensure simple integration of third-party systems that are used in a wide variety of areas of airport operations. An airport is a highly complex ecosystem that needs fully integrated and precise solutions. And in addition to the AODB, AMS offers many other solutions: for passengers, flight times, jet wingspans and much more. Accordingly, the AMS consists of several individual technical components, all of which were developed by T-Systems in such a way that they account for the complexity of everyday airport life. The individual components of the airport software operate within a fully integrated network system. The flexible implementation options enable the Chinese management to adapt the software to the individual needs of the airport. This ranges from the number of external service providers to be included all the way to the maximum capacity utilization.

In Beijing, for example, a Resource Management System (RMS) is integrated into the T-Systems solution in addition to the AODB. The RMS module uses the Airport Control Centre to automatically assign aircraft parking spaces for each flight based on data from the AODB. It also controls the gate, check-in and baggage claim, thus ensuring smooth passenger, baggage and aircraft handling. The system includes a Flight Information Display System (FIDS) as well. It also accesses the AODB database and prepares the relevant information for display. More than 3,000 displays are used in Beijing-Daxing and provide passengers and check-in staff with all relevant information in real time.

LONG-SIGHTED CONFLICT PREVENTION

The A-CDM collaboration tool forms the communication platform for all persons and institutions involved in airport operations: air traffic control, airlines, ground handling, traffic managers and service personnel. In this way, the successful exchange between those involved in air traffic is ensured in daily operations with the aim of achieving better coordinated handling and take-off order. The AMS also includes the Ground Handling Management System (GHAMS), which provides access to all real-time flight data required for ground handling. It also controls the communication between ground handlers.

Last but not least, is the Airport Control Center (ACC). Whether control, monitoring, problem solving or storm warnings, the threads of the AMS converge at the heart of the entire integrated solution, the Control Centre. In shift work, employees control and monitor the entire data-based operation of the airport around the clock. From this centre, the highly specialised technical staff continuously monitor and optimise all connections, every movement and all processes that take place on the airport premises or have an influence on operations. They evaluate the data from the control system and incorporate it into the optimisation and conflict prevention of airport operations.

If in the future, aircraft will be handled more efficiently at China's highspeed airports thus saving downtimes and using less kerosene, and if thousands of e-jets take off and land there per say, then a piece of software made in Germany will be largely responsible.

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Lost in Transformation?

The fact is that 100 percent of the existing SAP user base will migrate to the cloud in some way by 2025. Perhaps it is not for everyone, but it's going to happen, nevertheless. That raises a lot of questions: How? When? Which cloud? And it follows that the following questions also arises: With which service provider?

COPY —— Axel Oppermann

User companies have eight requirements for the operation of their SAP infrastructure: "security," "availability" (also in the sense of system stabilty), "resilience" (also in the context of system stability and elasticity), "migration and ecosystem," a "powerful and integrated platform," "innovation capability," "experience" and "sustainability." This is the basis for the cloud. The cloud should simplify and standardize everything, but the more cloud systems that interact with each other, the more complex it can become. It will, therefore, become important to combine hyperscale-esque agility in data centers and public-private clouds with the edge, however the edge is defined.

This also means making individual SAP applications available in the correct cloud as needed, and managing and orchestrating the resulting infrastructure as a whole. At the same time, it needs to be ensured that all SAP and non-SAP applications are appropriately integrated (i.e. that reliable data exchange takes place). This ensures that the data is processed securely and protected across the various applications and that even the most diverse solutions can "communicate" with each other. Very few user companies are currently in a position to solve such a task.

ALL SPECIFICATIONS COMBINED

Among service providers as well, the number of those who combine cloud know-how with the numerous infrastructure options are rare. Those who additionally have SAP expertise and project experience and are just as familiar with operations as they are with transformation even more so. Those who offer a broad modular portfolio, either as managed or unmanaged service in the core areas of SAP and Cloud, as well as the adjoining areas of competence are extremely rare.

Differentiated and hybrid or multi-cloud environments that take advantage of the various Cloud worlds unite, well become the standard, says Axel Oppermann, analyst at Avispador.

With “SAP on any Cloud”, for example, T-Systems brings SAP solutions to “all” clouds, i.e. to private, public, hybrid and multi-cloud environments. In other words, the company’s own Dynamic Cloud platform, the Open Telekom Cloud, AWS and Microsoft Azure. This enables the ideal strategy for each user company to emancipate itself from the technological platform.

This approach is not new in principle. Differentiated and hybrid, or multi-cloud, environments that combine the advantages of different cloud worlds are becoming the standard. What is new, however, is the way T-Systems transforms its own knowledge into a technological advantage. A powerful technological platform, combined with a broad ecosystem, resources and process know-how, leads to resilient, available, flexible and secure infrastructures – one entity for customer success essentially.

HOW? WHEN? WHICH CLOUD?

Cloud services have now established themselves as an integral part of IT portfolio management. This statement also applies to SAP systems especially. The days when companies viewed cloud services primarily as a means of expanding infrastructure are long gone. The cloud is currently a key resource for the modernization of business. The challenge is therefore to select solutions for problems and requirements that meet the current and future needs of the company.

However, since requirements are constantly changing at an increasing speed, sourcing that creates meaning and added value in the long term no longer seems to be effective. Rather, the infrastructures must be masterfully adaptable. What is needed is intelligent development of SAP operations. For the majority of user companies, it is not possible to achieve this without the services of specialized service providers. This would clarify the “how,” and “which cloud” questions at the same time. Service concepts such as “SAP on any Cloud” would be one answer. That just leaves “when.” The truth is, it depends on the individual agenda. For existing SAP customers, it should take place within the next 60 months – sooner rather than later. A “leapfrogging” if you will, as with previous cloud innovations won’t be worth it.

SAP AND USER COMPANIES

Technological change is bringing about massive changes in companies. However, the fact that SAP is taking this development into account does not automatically make it easier for SAP users. 2025 floats like the sword of Damocles over existing customers’ heads. SAP postulates “Cloud only” and “Cloud first.” It would therefore be ideal to implement a dual path of on-premise and cloud solutions. In addition, there is no obvious solution to finding a suitable service provider to accompany a complex project. Good consultants who master strategic development are rare. Even if the number of service providers suggests otherwise.

WHY IS THE CLOUD SCENARIO SO IMPORTANT FOR SAP?

The cloud offers SAP the opportunity to implement innovations more quickly and to distribute new releases faster. While in the past it was primarily a question of ensuring the quality of the software provided, other requirements of user companies are now being added: stability, security and scalability, to name just a few. The cloud allows SAP to differentiate itself from direct and indirect competition, retain customers and market new services.

USER COMPANIES AND SAP

Many customers are unaware of the value of S/4/HANA®. Fully integrated business processes, from customer contact to the supply chain and back, for example, are difficult to map or implement. Increasing productivity is important as SAP demonstrates. However, other topics have higher priority. Many SAP customers do not see an ERP project as a fundamentally new opportunity for digitalization or for changing business processes, but rather as an infrastructure project. This assessment leads to considerable disadvantages.

WHAT MAKES THE CLOUD SCENARIO SO IMPORTANT FOR SAP CUSTOMERS?

The cloud enables user companies to use SAP solutions as an initiative for digitalizing or building new business models in the context of modernization. They can break out of the “plan-build-run” corset and approach topics such as DevOps and agile work. The aim here is to find the right mix of cloud ecosystems for your own company, always taking the timeline into account.

Photo: Avispador

www.avispador.de
www.t-systems.com/de/de/digital/sap-solutions

Bait in the form of IT Solutions

Personnel is becoming scarce in Germany's clinics – especially in rural areas. State-of-the-art IT equipment will make working at Heinsberg Municipal Hospital more attractive for specialists and physicians.

COPY —— Silke Kilz

Cost pressures, lack of personnel and compounding documentation requirements are part of everyday life in German hospitals. This is no different in the Heinsberg Municipal Hospital, an academic teaching hospital of RWTH Aachen University. For this reason, the institution has been relying on the consistent digitalization of its processes for several years now. And it is way ahead of the rest, because the degree of IT implementation in German hospitals still leaves much to be desired in an international comparison. According to the 2019 Hospital Report from the Scientific Institute of the AOK (WIdO), Germany is about 40 percent below the European average. Countries such as the Netherlands or Denmark are much better positioned.

What could be the cause of this? In addition to the lack of a culture of innovation in numerous institutions, many decision makers fail to recognize the benefits of investing in modern hospital information systems (HIS). In Heinsberg, on the other hand, the HIS iMedOne is at the center of digitalization: instead of paper and pen, physicians and nurses in Heinsberg have their iPad Mini in their coat pockets and thus have mobile access to laboratory results, diagnostics and other patient data throughout the entire hospital. Doctors discuss examination reports or X-ray images directly at the patient's bedside. In addition, they prescribe medication or dictate the progress of wound healing on-site into the system, where it automatically reaches the electronic documentation service.

DON'T MAKE FALSE ECONOMIES

For Jörg Neidig, IT manager of the Heinsberg Municipal Hospital, the hesitant use of a HIS is incomprehensible: "Anyone who does without a modern HIS today is making false economies." And this, despite the fact that his facility with 187 beds and around 500 employees is not exactly one of the largest hospitals in Germany. "The documentation duties of physicians and nursing staff continue to grow," adds Heinz-Gerd Schröders, Managing Director of the hospital. Without electronic support, this effort would no longer be manageable. If there is to be enough time for the patient, there is no alternative other than a good HIS, even for a small clinic. "Otherwise we would need significantly more doctors, nurses and office staff. From a financial standpoint, this would not be possible."

Heinsberger's experience shows that technical equipment also plays an important role in recruiting. "Young physicians in particular expect modern technology to support their daily work processes," says Schröders. In times of a worsening shortage of skilled workers, this is an essential focus: according to a recent study by management consultants Roland Berger, hospital managers in Germany wish to expand with around 30,000 nursing jobs by the end of the year. According to the hospital study, however, in 2018, only around 11,000 specialists were looking for a job. "It goes without saying, therefore, that our job postings should also advertise our modern IT system. For many specialists, this is a reason to apply for a job at Heinsberg Hospital despite the rural location."

THE APP IS A SURE-FIRE SUCCESS

When the Heinsberg hospital decided on a fitting HIS, the stability of the solution was the most important factor. "For a hospital of our size, the system must also be manageable with a small IT team," says Jörg Neidig. At least as important is the modular structure of the system. "We didn't have to make a large investment all at once but were able to successively introduce the care unit workstation, outpatient

Photos: Heinsberg Municipal Hospital

workstation, OR planning and service facility management modules." In addition, the individual modules allowed precise scaling to the respective needs of the hospital. The HIS can thus be expanded at any time.

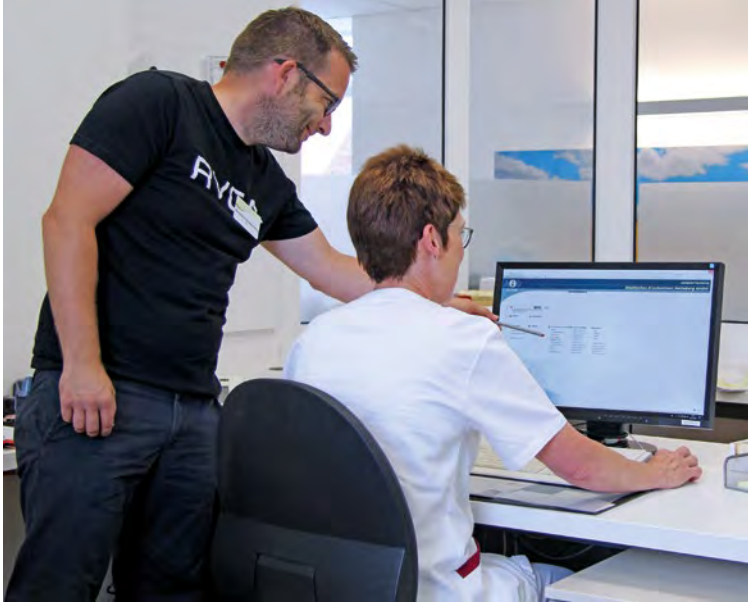
For some time now, the team from Heinsberg has been working with the mobile version of the HIS – much to the delight of the hospital staff. "The mobile version was a success right from the start," recalls Jörg Neidig. It can be intuitively operated, and the training effort is low which saves the hospital a lot of time and money. "Previously, for example, we had used digital cameras for wound documentation," reports the IT expert. Afterwards, the photos had to be uploaded to a computer and deleted from the camera. Today, the nursing staff take the pictures directly from the patient's bedside with the iPad, so that they are automatically saved under wound documentation. "Once you've tried this, you won't want to do without mobile support anymore."

CODING EXPERTS ON ROUNDS

In the meantime, other professional groups in the hospital as well as doctors and nurses are benefiting from digitalization. Physiotherapists are now documenting their services with the mobile HIS. The hospital's coding specialists also use the app. Instead of recording the services of the doctors and nurses at their desks as before then preparing them for billing with the health insurance companies by means of flat rates per case, the specialists are simply hard on the doctors' heels. The advantage: you can record all services directly via iPad during the rounds. "We work faster and better today," emphasizes Gerda-Marie Neumann, Senior Physician Assistant and Coding Specialist at the hospital. "Media disruptions are a thing of the past, fewer errors occur and questions can be answered immediately at the bedside."

"The connectivity of the coding specialists contributes significantly to the liquidity of our company," explains Managing Director, Heinz-Gerd Schröders. "In order to be able to issue an invoice for hospital treatment promptly, we are dependent on the complete documentation of the treatment case." The quality of the data is therefore decisive in the quality of the coding and billing. "Compared to the past, we no longer run the risk of incomplete or delayed billing for services provided."

The Heinsberg Municipal Hospital has by no means completed the digitalization of its processes. At the end of 2019, a portal is to be introduced there through which patients can make appointments from home. "We always keep our HIS up to date with the latest developments and are always open to useful enhancements," explains Jörg Neidig. In terms of digitalization, we are right at the forefront.



The hospital information system iMedOne at the Heinsberg Clinic is used in the Center of digitization.

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iPad in Good Hands

In the Protestant hospitals of Oberhausen and Mülheim, patients are in the good hands of a digital champion.

COPY —— Melanie Engelen

The door to the sickroom opens, the head physician, senior physician, assistant physicians and nursing staff enter. It's time for the morning round. When doctors and nursing staff in the Protestant hospitals of Oberhausen (EKO) and Mülheim (EKM) sit down at a patient's bedside, they do not have a thick paper file in their hands, but an iPad Mini. With the compact tablet, all information about the patient, their diagnosis and the prescribed therapies is within reach.

The attending physician documents the progress of wound healing after the caesarean section via voice message for the external documentation service and shows the new mother the healing process by means of photos. Just one click further, the physician can see what medication the patient is taking and adjusts the prescription for painkillers. The physician also sees the mother's morning vitals and laboratory values on their tablet, because they are automatically transferred to the patient file. If the physician prescribes additional physiotherapy, the system directly notifies the hospital's service department. The system can also inform the maternity unit and administration that the patient and her baby are leaving the hospital today and the case can be sent to billing.

LESS PAPER, MORE TIME FOR PATIENTS

When IT Manager Dr. Martin Kuhrau, walks through the maternity ward of the Oberhausen hospital and observes the doctors and nurses working with the iPads, he sees the fruits of a decade of his work. He pushed ahead with the digitalization of the two hospitals in the Ruhr area and created the technical framework conditions for the computer centre. In addition to the two clinics, he also looks after eleven other facilities, including three senior citizens' homes, a hospice and outpatient palliative care. The ATEGRIS Group has around 3,000 employees. The decision to implement iMedOne, a modern hospital infor-

“It is essential to make the benefits of a good HIS very visible in the daily work with patients.”

MARTIN KUHRAU
IT Manager, Ategris Group

Photo: Ategris

mation system (HIS) as the central core for clinical care, was made long before Dr. Kuhrau’s time. The changeover took place successively. “Establishing a system the size of ATEGRIS takes a long time. The modular structure of the Telekom solution is a great advantage here. We were able to introduce iMedOne department by department and always got support from Telekom when needed,” says IT manager Kuhrau.

Digital medical records, easy communication between specialists and data as well as information are now available anytime and anywhere. With its modern HIS, ATEGRIS is one of the digital pioneers in the industry and has just been named Germany’s Digital Champion by Focus Money. DEUTSCHLAND TEST, a brand of the business magazine, conducted the survey, scientifically accompanied by the Hamburg Institute of International Economics (HWWI). The organization parsed approximately 10,000 of Germany’s largest companies from more than 70 industries in order to determine Digital Champions. “This title confirms that we are on the right track. And our strategy will continue in the long term,” attests ATEGRIS CEO Martin Große-Kracht. “Digitalization has been firmly anchored in our company for the past 15 years.”

A CENTRAL SYSTEM FOR ALL

In order to take all real requirements and expectations into account during the redesign, ATEGRIS proved itself by forming a project team during phase one. Doctors, therapists and nursing staff were also involved depending on the application. The next step was to restructure the processes in the hospital in such a way that they can best be mapped into the system. Only once department after department had started pilot operation could the final rollout for the entire facility take place. ATEGRIS accompanied the change in a communicative manner throughout. Accordingly, the IT department, the organisational development department and selected employees in each department investigated how best to train all colleagues. The idea was to involve opinion leaders in a targeted manner and thus take into account both the expectations and the needs of the employees. “We are aware of the fact that colleagues in the medical field do not wish to work with computers but want to care for and heal patients. Therefore, it is essential to make the benefits of a good HIS very visible in the daily work with patients,” Dr. Kuhrau affirms. “Our goal was to introduce the HIS right down to the last department. With iMedOne Mobile, medical staff now have direct access to the system and the associated subsystems at the patient’s bedside.”

CONVINCING ARGUMENT IN RECRUITING

The IT department is constantly reviewing how its 2,000 or so colleagues are using and evaluating iMedOne, as well as reviewing what could be improved. The modern application also serves as a good argument for recruiting new employees. The competition from hospitals in the Ruhr area is fierce. This makes a modern HIS an indispensable basis for competent, contemporary patient care and economic stability. “Young colleagues are generally very open to IT support. Older colleagues tend to be critical. But everyone agrees that the administrative load has increased in recent years, leaving too little time for patients. Here, we want to be a constant contributor, and the title of Digital Champion is a nice confirmation that we are on the right track,” Dr. Martin Kuhrau is pleased to report.

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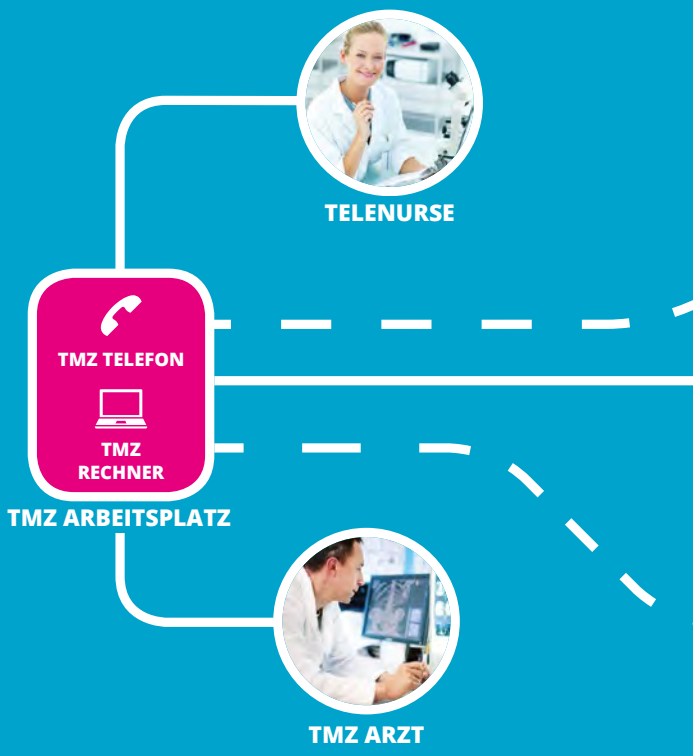
Where Telemedicine Literally Becomes Existential



Five years ago, Europe's first trans-regional, open telemedicine platform, Telehealth 360, was launched. Currently, numerous health applications are running on it, including the St. Georg Hospital in Leipzig. At present, they are working on the eTumorkonsil, which is intended to support physicians in the treatment of cancer patients.

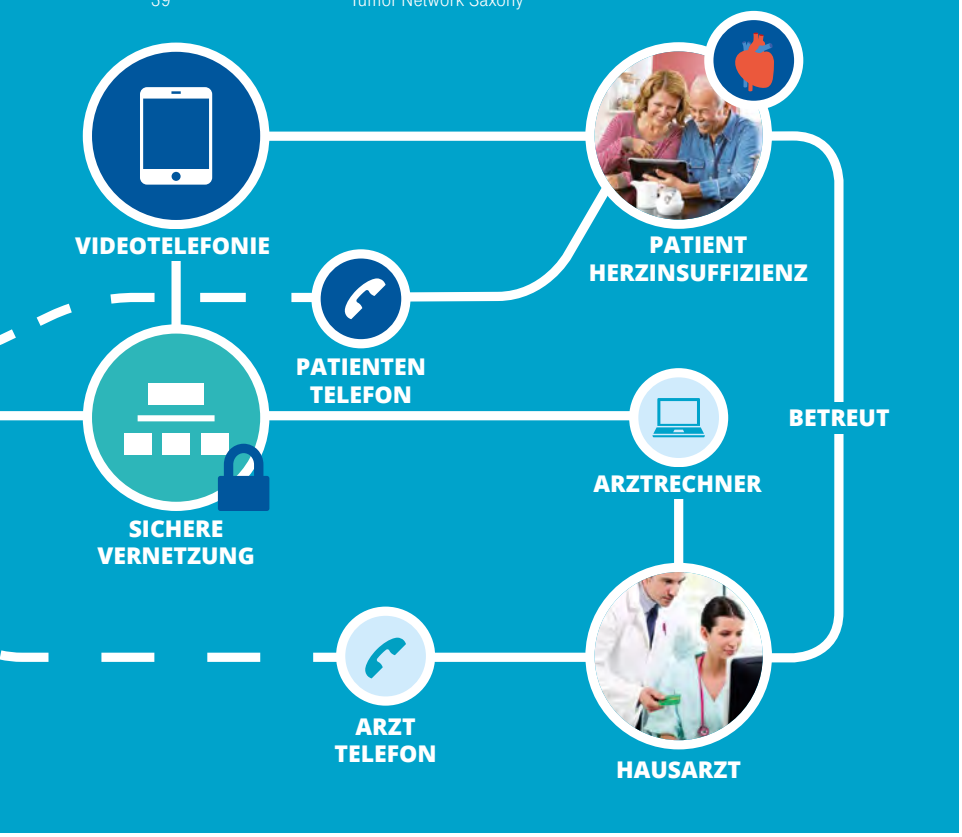
COPY —— Silke Kilz

When the doctors at St. Georg Hospital dial into the weekly tumour conference, no one talks about sales figures or profitability: it's about human lives. Leadership includes oncologists, surgeons, pathologists and other physicians from various disciplines. Together they discuss the cancer findings of patients, obtain second opinions or discuss suitable therapy steps. "This professional exchange can often save lives," explains Dr. Nicole Lakowa from the St. Georg Hospital, Project Manager of the Tumour Network. "The earlier and more targeted a tumour-patient is treated, the better his chances of being cured." According to the Robert Koch Institute, this is good news for the 480,000 people who contract cancer every year in Germany. Malignant tumours are still the second most frequent cause of death in Germany after cardiovascular diseases.

VIRTUAL EXCHANGE

In the future, this form of interdisciplinary cooperation will also be possible for specialists from other clinics and practices throughout Bavaria. With the establishment of the "Saxony Tumour Network," the clinic in Leipzig will give hospital doctors from other institutions, as well as medical practitioners, the opportunity to transfer their patient and treatment data in a standardised way and to participate virtually in the tumour conferences. Using the "eTumorkonsil," physicians can also obtain specialist advice and document it comprehensively. For the development of the network, the hospital will receive around 1.7 million euros from the European Regional Development Fund (ERDF).

The application is simple. If you want to participate, you dial into the conference via a terminal server solution and



Graphic: www.telehealth-ostsachsen.de

multilateral voice or video telephony. The physicians enter the patient data either manually or directly from their own hospital information system via interfaces. The application also provides special forms for case consultations and makes it easier for participants to document the results in a central electronic case conference file.

TELEMEDICINE PLATFORM SERVES AS FOUNDATION

The eTumorkonsil application is based on the telemedical platform Telehealth 360, which has been in operation since 2015, and was implemented by Carus Consilium Sachsen GmbH in cooperation with Telekom. The telemedicine platform enables patients, doctors, nursing staff, pharmacies and health insurance companies to exchange health values, findings, medication or other information via a specially encrypted data network. The servers on which the patient information is stored comply with the highest German data privacy standards.

The St. Georg Hospital already has experience with Telehealth 360. Since June 2019, the facility has been operating an antibiotic council (ABx-eKonsil). Doctors in the outpatient and inpatient departments can "introduce" patients with infectious diseases and obtain advice from the infectiologists at the clinic on the treatment with antimicrobial substances. The experts collect specific knowledge about infectious diseases, antibiotic therapies and multidrug resistance. They collect and analyse patient, prescription and resistance data from health insurance companies, laboratories and clinics and derive specialist recommendations from them.

PROVEN TO BE BETTER PROVIDED FOR

However, the digital platform offers even more application possibilities. Among other things, it is used to treat patients on an outpatient basis after a stroke. People suffering from heart failure can also be cared for and medically monitored at home via telemedicine. A service that can also save lives, as Berlin's Charité 2018 demonstrated in its Fontane study: "The study results show for the first time that telemedicine leads to an extension of life and fewer hospital stays for high-risk patients with cardiac insufficiency," explains Prof. Dr. Friedrich Köhler, head of the Fontane study at the Charité.

People with Parkinson's disease, multiple sclerosis, dementia or epilepsy can also be better treated via "teleneurology." This due to the fact that the attending physician always has the entire medical file electronically at hand. If there is a serious suspicion, the physician immediately consults the neurologist at the next networked clinic via a video consultation before the patient is admitted there.

TELEMEDICINE IS THE FUTURE

Particularly against the background of the increasing shortage of doctors in rural and structurally weak regions, initiatives such as the Saxony Tumour Network are an important building block for providing medical care to the population in the cities as well as in the countryside. This is the result of a recent study commissioned by the digital association Bitkom. "Telemedicine opens up new possibilities for doctors and patients," emphasizes Association President Achim Berg. In many places medical practices are overcrowded. Older people are only mobile to a limited extent – but depend on adequate medical care, even in remote regions. Telemedicine services could significantly improve healthcare processes in addition to standard care.

Communication platforms such as Telehealth 360 make a significant contribution to establishing telemedical applications in Germany and Europe. "The possibilities of this open IT platform are immense," explains Peter Weber, Senior Sector Manager Telemedicine Telekom Healthcare Solutions. "It provides all central components for the electronic networking of medical facilities and can thus be easily expanded to include solutions for different pathologies without the participants needing their own new network."

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Target: Nationwide Digitalization

COPY —— Sven Hansel

Germans are increasingly using buses and trains which is a journey in the right direction. The supply of such travel is also increasing. The Federal Statistical Office reports that the number of trips on scheduled transport services in 2018 increased by 0.6 percent compared to the previous year for a record level of around 11.6 billion. That is an average of almost 32 million trips per day in Germany in local and long-distance traffic. That is the good news.

And now the bad news: the federal structure of Germany does not exactly make it easy for consumers. Finely spun like honeycombs, the local and regional transport networks for short-distance transit extend far and wide across the country, all with their own tariffs and ticket systems. In times of almost limitless mobility, this is not an optimal service. A new project of VDV eTicket Service (VDV-ETS) and T-Systems has now tackled this challenge. Through this cooperation, the electronic ticket will reach the next service level.

TRANSPARENT OFFERS

The VDV-ETS unites approximately 440 public transport companies under the "(((eTicket Deutschland" umbrella. On behalf of these companies, it publishes the German standard for electronic tickets and supports the industry in the digitalization of sales. Since 2003, VDV-ETS has been offering an e-ticket service for the various transport companies, which is being continually expanded, for example to include contactless payment. The aim is to introduce a nationwide electronic fare management system (EFM) for users of local and long-distance public transport throughout Germany.

However, in order for citizens to be able to use the digital ticket throughout the country, the last stumbling blocks had to be cleared from the path, such as the lack of uniform nationwide fare information with central tariff determination. This means that the user could not find out how much a ticket would cost if the journey crossed several networks. Without the exact price overview, the passenger could not book the entire trip and had to put the route together himself. In other words, there was a lack of a nationwide fares overview with which the customer could have informed himself universally and then booked and paid.

T-Systems and VDV-ETS have now closed this gap for the associated partner companies. In a joint project, the two companies have provided a so-called product clearing service on the Open Telekom Cloud that meets precisely this requirement for nationwide fares information. However, such a ticket brings a further challenge: how can the payments received from travellers be correctly distributed among the transport providers involved (called "receivables clearing" in specialist jargon)?

ETICKETS NATIONWIDE

"We've now also digitalized this complex process," says Raphael Becker, Senior Consultant at T-Systems. On the one hand, the consumer is informed about the price of a cross-network ticket and, on the other hand, the connected networks are also informed about who can make which demands and to whom. To this end, the T-Systems experts provided a comprehensive cloud service for receivables clearing between eTicket participants, operating it on the Open Telekom Cloud. This means that the transport associations can now conveniently settle service, commission and license receivables among themselves.

"We are using T-Systems' cloud service as a complete service and are thus saving ourselves the trouble of setting up our own resources for providing and operating our clearing service," reports Nils Zeino-Mahmalat, Managing Director of VDV eTicket Service. "In this way, we remain flexible and our own efforts are geared toward the actual operation and utilization of the system. The regular further development of security, data protection and services keeps our hands free and allows us to concentrate on our core business."

As a result, the eTicket can now be used nationwide – an important step for digital local transport.

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Photos: iStockphoto, Alice Backes

Win, Win, Win

If you read the trade media, you might get the impression that Software-Defined Wide Area Network, SD-WAN for short, has long been state-of-the-art in companies. Gülay Stelzmüllner, responsible for the worldwide corporate network of Siemens AG, knows that this is far from being the case. But SD-WAN technology offers enormous advantages.

COPY —— Roger Homrich

Ms. Stelzmüllner, Siemens is currently using an MPLS network. What prompted you to question this network infrastructure?

There were several reasons for this. Perhaps the most important was the major change in our entire IT landscape over the past five years. Today, many companies, including Siemens AG, have a cloud first strategy. This means that we are gradually migrating a large part of our application and server landscape into a private cloud. At the same time, we have launched further major IT and infrastructure initiatives. In addition to a lack of flexibility, the main driver for many of these initiatives was increasing cost pressure.

Which initiatives were those?

Today, for example, we use Workday from the cloud for our human resources. We have also implemented Office 365 throughout the Group. Siemens locations in over 190 countries with around 380,000 employees access these applications. We have also implemented ServiceNow for digital workflows or Real-Time Collaboration (RTC) "Circuit" introduced by Unify as a communication and collaboration tool.

And what does this mean for the network?

We have seen that the underlying network infrastructure no longer manages this cloud traffic. The traffic pattern, i.e. everything that takes place today in the classic, protected MPLS network, has completely changed. Increasing data traffic is going more and more into the cloud. As a result, applications have not consistently run with high performance. The time has come to question and completely change our entire network infrastructure. The answer can no longer be to connect even more bandwidth, even more MPLS lines. We need a new infrastructure with which we can get our performance problems and the issue of Secure Internet Access under control and which can offer us maximum flexibility.

Did the changed working environment also play a role in your decision?

Absolutely, because these days fewer and fewer employees are permanently sitting at their desk in permanently assigned workstations,

"With SD-WAN we can implement a new policy or a new feature within a few minutes worldwide," says Gülay Stelzmüllner, who is responsible for the worldwide Siemens corporate network.

Gülay Stelzmüllner, Global Head of Connectivity Services, Siemens AG

equipped with LAN cables, computers and docking stations. They use several mobile end devices, are frequently on the move and are not always at the same workstation. We have to offer these employees a network infrastructure with which mobile work can really perform. Previous WIFI solutions have not been designed to serve such a large number of end devices. This is another reason why we believe we need to fundamentally rebuild our infrastructure.

What about the data volume?

The volume of data is enormous. There are about 4 petabytes of data on our file shares. This corresponds to about 4 million CDs. Large downloads and uploads can bring a network to its knees for a certain amount of time and affect the performance for the rest of a site. It is no longer possible, however, to determine why and where such amounts of data are transported through our network. This can happen anywhere at one of our worldwide locations. For example, a business unit provides a new service and pumps data through the network for a certain period of time. Such a process can completely shut down the network for several hours.

IoT data is also increasingly being transported through wide area networks. How does an SD-WAN cope with this?

This applies first to WIFI networks, which were previously configured for a few laptops and smartphones, but are not designed for IoT connectivity. The data then goes into the WAN and we can't meet this growing demand with an MPLS network. We always had to introduce special solutions for IoT connectivity. Here, the SD-WAN will give us more flexibility and better bandwidth coverage. We would then have a standard solution for all locations instead of expensive and difficult to operate special solutions.

Is the management of an MPLS network more complex than an SD-WAN?

We hope that the SD-WAN implementation will make management simpler and more flexible. Starting with flexible bandwidth management, which will be possible worldwide in the future via a central management platform. Today, we must register a change via the respective location, test it beforehand and then implement it over several days. Or if you want to roll out a new security policy globally, you have to do this for each location individually. This takes a certain amount of time, which does not necessarily make sense from a security point of view. In the SD-WAN we can implement a new policy or feature worldwide within a few minutes.

Does software-defined also mean that the network gains certain intelligence?

The configurations we want are defined centrally and taught to the system. The system then controls this configuration itself. This allows us to allocate more bandwidth to critical applications at certain times without negatively affecting other functions. All this happens centrally via the platform and no longer manually on site. The configurations are virtually imported into the appliances, such as the routers. We opted for Cisco Viptela on the hardware side. Outside a defined time corridor, the network controls itself. It can detect bottlenecks and then react automatically to changes. Thus, we breathe artificial intelligence into the entire system via configurations. In addition to the standard features, there will also be AI features in the future. Predictive maintenance features will then lead to more stability and fewer failures in the network, at least according to current expectations. We do not yet know which these will be.

Are there market-ready SD-WAN solutions?

When we started the project, the solutions for such a complex project at Siemens were not yet completely ready for the market. At that time, however, as a medium-sized company you were able to set up a standard SD-WAN without increased requirements. It was an advantage for us to be able to influence the product cycle. We very often sat together with the Cisco product engineers from the US to prioritize the feature set and were therefore heavily involved in the further development.

What about the costs? Will the SD-WAN not make the operation of the network infrastructure more expensive?

On the contrary. Of course, there are initial investments. But when we started the project, we had a clear vision to increase the cost savings potential. Our goal was to double bandwidth and halve costs. As far as we can assess this at this stage, we have achieved cost savings of 35 to 40 percent so far and will continue to move closer to our goal. However, the wheel is turning very quickly, and bandwidth requirements are developing even faster than we assumed in the selection process two years ago. Therefore, the requirements in the current project are changing and with them the savings potentials. Nevertheless, the savings will still be huge.

Does Cyber Security have an impact on infrastructure?

That was another important aspect for us. With the increase in cloud traffic, the number of cyber-attacks on our network has increased. Until now, it has been difficult to detect every attack promptly. This could sometimes take days or weeks. The SD-WAN has an intelligence that

"Our goal for the SD-WAN project is to double bandwidth and halve costs."

GÜLAY STELZMÜLLNER
Global Head of IT Connectivity Services, Siemens AG

Photo: Alice Backes

GÜLAY STELZMÜLLNER

studied computer engineering in Ulm and Munich and is now Global Head of IT Connectivity Services. The mother of two children has been with the Siemens Group for more than 15 years, where she started as an intern and developed her career through positions as a Junior Developer in the central IT department and Team Lead HR Applications. Today she is responsible for Siemens' global network infrastructure with a team of around 50 internal employees and a large number of external service providers.

detects unplanned and unusual processes in the network and reports on them, for example, if a very high request is made to a certain Siemens application at a certain location. This could indicate a cyber-attack. We are then able to more quickly identify whether it is actually an attack or not, can immediately react accordingly and avert or minimise damage if the worst comes to the worst.

Are you, as Siemens AG, SD-WAN First Mover?

That's what we are and that makes us very proud. I maintain that we are indeed the leading edge on this issue. Even in a project like this, things don't always run smoothly. But I am convinced that we started the transformation at the right time. This gave us the opportunity to influence the development of SD-WAN and adapt it to our requirements. That was clearly a strategically correct decision. I am responsible for our global network. If we hadn't acted, I would have to deal with completely different problems today and would no longer have the capacity to drive innovation with a manageably large team. Even if we still have a lot to do with incident management through the old part of the network, we recognize that where we have already transformed to SD-WAN, network management has become much simpler.

So the very early transformation has advantages for everyone involved?

It's a partnership that brings us all forward. One could also say it is a win-win-win constellation. Cisco can further develop its solutions based on our requirements. Deutsche Telekom is also gathering experience from such a large project. And we benefit from cost savings and a significantly improved, future-proof network infrastructure. That's why we are extremely transparent with each other in the project. We all want to learn, and we all know that not everything can run smoothly.

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Annex B Replaces Wire Shortage

The IP changeover in affected companies has reached the home stretch. One of the largest projects in the transition from ISDN to IP: Siemens Smart Infrastructure had to migrate around 60,000 fire alarm systems without interruption.

COPY —— Roger Hormich

A normal "fire week" in Germany: Tuesday morning there is a moment of shock at the Vinzenz of Paul Hospital in Rottweil. A fire in the cellar causes the fire brigade to be deployed on a large scale. 70 residents of the Luisenheim are evacuated. Nobody is injured. Cause of the fire is an electrically operated service vehicle. On Wednesday a fire brigade of the fire and rescue station Altona moves out to the children's hospital Altona. Fire in the basement of the clinic. Friday morning large fire brigade operation at Marien Hospital in Bergisch Gladbach. Nobody is harmed.

Around 180,000 times a year, a fire brigade of around 23,700 professional, factory and voluntary firefighters is deployed. It usually only takes a few minutes for one of the more than 50,000 fire trucks in Germany to arrive at the scene of the fire. Nowhere else is the helper network in the field of fire protection as closely meshed as in Germany and Austria. When the fire brigade races to a mission, the preceding emergency call was not always made via the emergency number of the fire brigade, 112. In many cases, a fire alarm system triggers the alarm.

FIRE ALARM AT EMERGENCY CALL CENTRE

"The professional fire alarm systems consist of several components. The detectors on the ceilings are networked with a fire alarm centre in the building. Fire alarms are triggered here and transmitted from there to one of our two service and emergency call control centres," explains Heiko Behler, who is responsible for fire alarm systems at Siemens Smart Infrastructure. The systems are intelligent lifesavers that have to function reliably around the clock, because each alarm lands in parallel at a fire department control centre. Within seconds, it knows where the fire is, what is burning and how many people can be in a building.

The fire alarm control panel is the most important component of the entire system. It is, so to speak, the brain of a nervous system at the ends of which the detectors hang. This is where all the messages from the installed sensors converge and trigger the previously programmed actions. In addition to making an emergency call, this can be a computer call or an announcement. The fire alarm centre is usually the first important point of contact for the fire brigade when it enters a burning building with the key stored in the fire brigade key depot.

CONVERTING EVERYTHING FROM ISDN TO IP

When telecommunications providers announced that all ISDN lines would be switched to IP, most companies were unaware of what this meant. In addition to the telephone connections, they had to migrate everything to IP that had previously sent data and voice via ISDN lines, including lifts, home emergency call systems and fire alarm systems. Previously, these alerted the Siemens and fire brigade control centres via a permanent ISDN connection. "The automatic fire alarm takes place in two independent ways – via a landline and via mobile networks. This increases reliability. Should the landline line fail, the mobile connection will jump in," says Behler.

From a purely technical point of view, the Siemens experts were aware of the changeover. But neither the Siemens

Photo: Alice Backes

nor the T-Systems project team had any idea what dimensions this project would take on. "We installed around 60,000 transmission devices throughout Germany between Flensburg and Berchtesgaden and ensured that they function reliably," explains Ralf Dürholz, who oversaw the mammoth project. "When the project was launched in April 2015, the first challenge was to take stock. For each individual system, we had to check what had to be done, whether it was already transmitting via IP or when the optimum time for the changeover would be."

Not easy, because a fire alarm system should always work. If parts of a fire alarm or extinguishing system are temporarily taken out of operation or a system failure occurs, replacement measures must be planned beforehand. This can be, for example, a fire security guard or a security post, which the operator must organise on his own accord. And planned shutdowns must be notified at least 72 hours in advance to the building supervisory authority as the responsible approval authority. Behler commented, "Almost 15 months passed before we were able to change over the first device." That was summer 2016, and there were only two and a half years left for around 60,000 systems, with an average of 700 working days and more than 85 conversions per day.

NO INTERRUPTIONS ALLOWED

"Despite the immense number, we were relatively relaxed at first. We thought we'd go to the locations and exchange things quickly," says Dürholz, describing the good feeling.

"There was no unplanned failure during the IP conversion of the approximately 60,000 fire alarm systems."

HEIKO BEHLER
Siemens Smart Infrastructure

"The worry came later when we realised that it wasn't that easy after all. Nobody had any experience with how to manage such a mass of IP conversions. We weren't allowed to interrupt a fire alarm system, but we knew that switching over at Telekom would take at least six to 36 hours. During this time, the mobile phone line was not allowed to fail." Which can't always be guaranteed, because if for some reason, for example because of a demonstration or an event, a lot of people are registered in a radio cell at the same time, the mobile service could collapse.

Just putting together a team that could carry out the necessary work on the fire alarm systems was not easy. In the hot phase of the project, more than 300 Siemens service technicians worked simultaneously on the systems in six different zones in Germany. T-Systems employees were also involved. At peak times, they converted several hundred systems to IP on good days. "And if there was a problem somewhere, the colleague from the north called the colleague from the south and was given tips. That was real teamwork clear across the country," says Behler with pleasure.

His colleague contingency also benefited from the project. For the duration of the rebuild, the technicians initially used an "interim solution, as there was a lack of cores at some locations," reports Dürholz. "We then turned the emergency solution, called Annex B, into a permanent solution because it allowed us to modify and prepare our transmission equipment in peace before the new IP line was connected."

A good six months after the punctual conversion of the last plant, the two Siemens project managers look back with a little pride on the project of the century. Customer for customer, the team migrated the fire alarm systems to IP over a period of almost three years. Behler reflects, "Although we had to put up with interrupting the main line, there was no unplanned failure. Only a few times were technicians too fast. At the end of each changeover, the technicians actually had to trigger an alarm for testing purposes to check that the system was working. They had to inform the fire department beforehand. A few times they have forgotten this. In such cases, the fire brigade is called out accordingly. Which actually happened."

Germany-wide Heiko Behler and Ralf Dürholz from Siemens Smart Infrastructure had to move some 60,000 fire alarm systems on IP.

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Facility Services Reign Supreme

Danish ISS A/S, one of the world's leading providers of facility management services, is relying on Deutsche Telekom's IoT platform to strengthen its core competence for the digital business models of the future.

COPY —— Sven Hansel

Frank Becker is back at the office, and early at that. Not least because his app assigned him a free parking space right next to the entrance closest to his office upon his arrival. He can also do his daily business more quickly. In contrast to other shared offices, where employees first have to search for minutes, his smartphone also knows where a free workstation is guaranteed to be; when a notebook is docked in the docking station on the desk, the app is informed in real time and only then does it register the relevant place as assigned.

But that's not all! Sensors permanently inform him about the carbon dioxide content in the office rooms, which may trigger the recommendation "Please let some fresh air in" via app. The search for a free meeting room is just as relaxed in Becker's office: if the motion detector integrated in all rooms detects no activity ten minutes after the start of a meeting, the room is released again. In summary, Becker is able to avoid unnecessary stress and optimise internal company processes – the manager no longer wants to do without his app, which has since developed into an assistant of sorts. And this is just the beginning; even more useful expansion packs will follow in the coming months.

IOT PLATFORM SERVES AS CENTRAL CONTROL

Becker's employer benefits from a strategic partnership between the Danish facility management group ISS A/S and Deutsche Telekom. For example, ISS Germany is already using T-Systems' Connected Things Hub. The IoT platform thus becomes the central control element for all buildings managed by ISS worldwide. Data from 20,000 sensors is already flowing into the platform. These sensors collect measurement data such as room temperature and carbon dioxide levels. Special software analyses and visualises this data almost in real time and can trigger countermeasures if limit values are exceeded. The system processes a wide variety of sensor data for this purpose and thus creates transparency, for example regarding the over- and under-occupancy of rooms.

"We see ourselves as a driving force in the real estate industry that wants to develop further together with its customers. Our self-image thus goes far beyond the mere provision of FM services," says Tom Dreiner, Commercial Director at ISS Germany, explaining the plans for the joint platform project, in which he sees a wealth of new opportunities.

Why this is the case can best be understood from the philosophy of the company: The ISS – with over 480,000 employees worldwide and an annual turnover of almost 10 billion euros – is defined by maximum service quality. This includes, among other things, that the company aims to achieve its own contribution rate of 80 percent and invests heavily in the further training of its employees. The aim is to increase added value for customers through services, to which the IoT platform is expected to make a decisive contribution in the coming years.

Photo: Alice Backes

INTERNATIONAL SERVICE SYSTEM

ISS A/S, founded in Denmark in 1901, is the leading group of companies for facility services. ISS is active in over 70 countries, employs more than 485,000 people and is one of the largest private employers in Europe. ISS A/S digitalizes and networks services with modern Internet technologies, equips buildings with sensors that provide status and usage information for service processes, and modern robotics supports employees in the provision of services. Efficient integrated facility services solutions, innovative methods, motivated and well-trained employees, financial stability, a high level of entrepreneurial commitment and careful handling of health, safety and the environment are the core factors for the sustainable success of the company.

“The fact that we use the IoT platform to collect information from many companies with different buildings at different locations makes our dashboards increasingly meaningful.”

TOM DREINER
Commercial Director, ISS Germany



ANONYMOUS BENCHMARKS FOR CUSTOMERS

This starts with adapting services to the actual use of the building. Highly frequented rooms are cleaned more intensively than rooms that were previously hardly used or not used at all. Another example: service staff receive a message via smartphone app when paper towels need to be added to the towel dispenser. In addition, the database allows analyses of building usage that provide insight into the complex process depths of large-scale building and property management. According to Tom Dreiner, the plan is "to make anonymous benchmarks available to our customers with the data collected on the platform." ISS customers benefit from the fact that they do not have to provide their own infrastructure when it comes to sensor technology, but that the service provider always connects their own installed sensors via radio. If the customer still wants to use his own CAFM system, "then we can connect to it via interfaces," reports the ISS Manager.

In the first step, the objective of the benchmark is to gather experience: how many sensors and measurements are necessary for an optimal quality of stay in offices? With the help of artificial intelligence (AI), the number of sensors can be significantly reduced. Of course, these measurements also lead to obvious results and ensure, among other things, that companies can reduce their energy costs, for example. This gives them a very detailed, transparent picture of the actual use of their space. The dominating feature, however, will be what Tom Dreiner describes as "predictive facility management." Based on the IoT projects in the manufacturing industry, ISS wants to be able to make precise, AI-based predictions about the use of buildings in the future.

COMPREHENSIVE DASHBOARDS

The idea behind this is that the measured data optimise the customer's real estate strategy. What about maintaining the value of the building? How can buildings be used most effectively? Does it make sense to rent parts of buildings or combine other buildings? What does the square metre area in a similar location in another city cost me? What costs do I incur for the management there? The data aggregated on the IoT platform provides the company's customers with a reliable answer to all these questions. "The fact that we collect information from many companies with different buildings at different locations makes our dashboards more and more meaningful," says Tom Dreiner with pride.

ISS has been providing facility services for all of Deutsche Telekom's 9,000 locations nationwide since July 2019, and is therefore in a position to rely on a huge pool of data. This will enable the service provider to expand its offerings beyond optimal office use in the future. After all, what applies to office locations undoubtedly also applies to production facilities and factory halls. It is precisely here that the measurement of processes and flows of goods in intralogistics, for example, offers a greater benefit, and the sensors installed can do much more with their data. The aim of ISS is to optimize the alignment of production plants under the influence of digitalization. "When companies make location decisions in the future and rethink their real estate strategy, our Predictive Facility Management offering can make a valuable contribution to this in practice," emphasizes Dreiner.

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Photos: Alice Backes, ISS A/S

Coaster Communication

Networked beer coasters become a useful spirit – for guests, innkeepers and the industry.

COPY —— Roger Homrich

Germany's beer industry is stuck with a hangover and thirsts for good news. The beer sales of the first half of 2019 did not bring that good news unfortunately. Not once in the last three decades have the breweries between Flensburg and Berchtesgaden sold so few cold ones. The bottom line: the drop in sales amounts to 13.4 million fewer crates of beer sold. The competition is tough, and the price war is fierce. "Basically, breweries hardly know anything about their customers' consumer behaviour. When do they prefer to drink which variety? How do special campaigns and advertising really work?" Ralf Krippner, Managing Director of Hoffmann + Krippner GmbH shares.

BEER COASTER WITH SIM CARD

As part of the HK Group, Hoffmann + Krippner builds highly specialized touch systems and sensors for machine builders and medical technology companies. The medium-sized company came up with the idea of bringing a smart beer coaster onto the market due to the strong increase in demand for IoT solutions and the glass manufacturer Rastal, which has developed an intelligent countertop and smart glasses. "Somehow the matching beer coaster was still missing," thought Krippner and began to breathe intelligence into the beer coaster, or BGU as they call it.

The "Smart Coaster" is equipped with a fixed SIM card and a film sensor. The smart beer coaster records the weight of a glass and thus determines the current fill level. The data on how fast the pilsner, ale or stout is running low is sent to the IoT cloud via mobile radio and made available to the users in processed form. Thanks to the Narrowband IoT radio standard, this works right down to the last corner of a dining room. Customers no longer have to install anything on site. The devices register themselves – even abroad – and are immediately ready for use without configuration. A real plug & play solution.

IOT PROMOTES SALES INCREASE

The idea was well received by the brewers. First tests show that sales can be increased by 10 to 20 percent with IoT. "In addition, the brewery and restaurateur can better adjust to the drinking habits of their customers," explains Krippner. "They now know which type of beer is being had and in what quantities and when. And given more information such as weather data, manufacturers and restaurateurs can tailor special promotions to the current situation." For example, if temperatures rise above 30 degrees, lighter beers may be more popular. Then price reductions could further fuel consumption or allow restauranteurs to use the data from beer coasters to provide better service.

Krippner now uses the Microsoft Azure IoT hub as a backend system for communication between IoT applications and networked devices as well as the development of new IoT cloud solutions. Hopefully, the smart beer coaster will hopefully help brewers out of the slump in beer sales. Especially because "they secure jobs in rural areas, are an important economic factor and trading partner for farmers and other suppliers and stand for a worldwide unique variety of beers," as Beer Ambassador of the Year and former Federal Foreign Minister, Sigmar Gabriel, points out.

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By
50
percent
Siemens AG wants to reduce the costs of its global corporate network with an SD-WAN.

20,000
sensors collect data in the buildings managed by ISS A/S worldwide and send it to an IoT platform.

Up to
130
million
passengers per year will depart from the new, world's largest airport in Beijing.

1010

17
Zettabyte
of data generated the entire world economy in 2018. A number with 21 zeros.

40
percent
below the European average is the degree of IT usage in German hospitals.

Around
60,000
fire alarm systems Siemens Smart Infrastructure had to convert from ISDN to IP without interruption.

Around **10**
million Euros
annually the Deutsche Telekom Stiftung spends on educational projects.

Source: Siemens AG, Flughafen Beijing, ISS A/S, Wissenschaftlichen Instituts der AOK, Siemens Smart Infrastructure, Deutsche Telekom Stiftung

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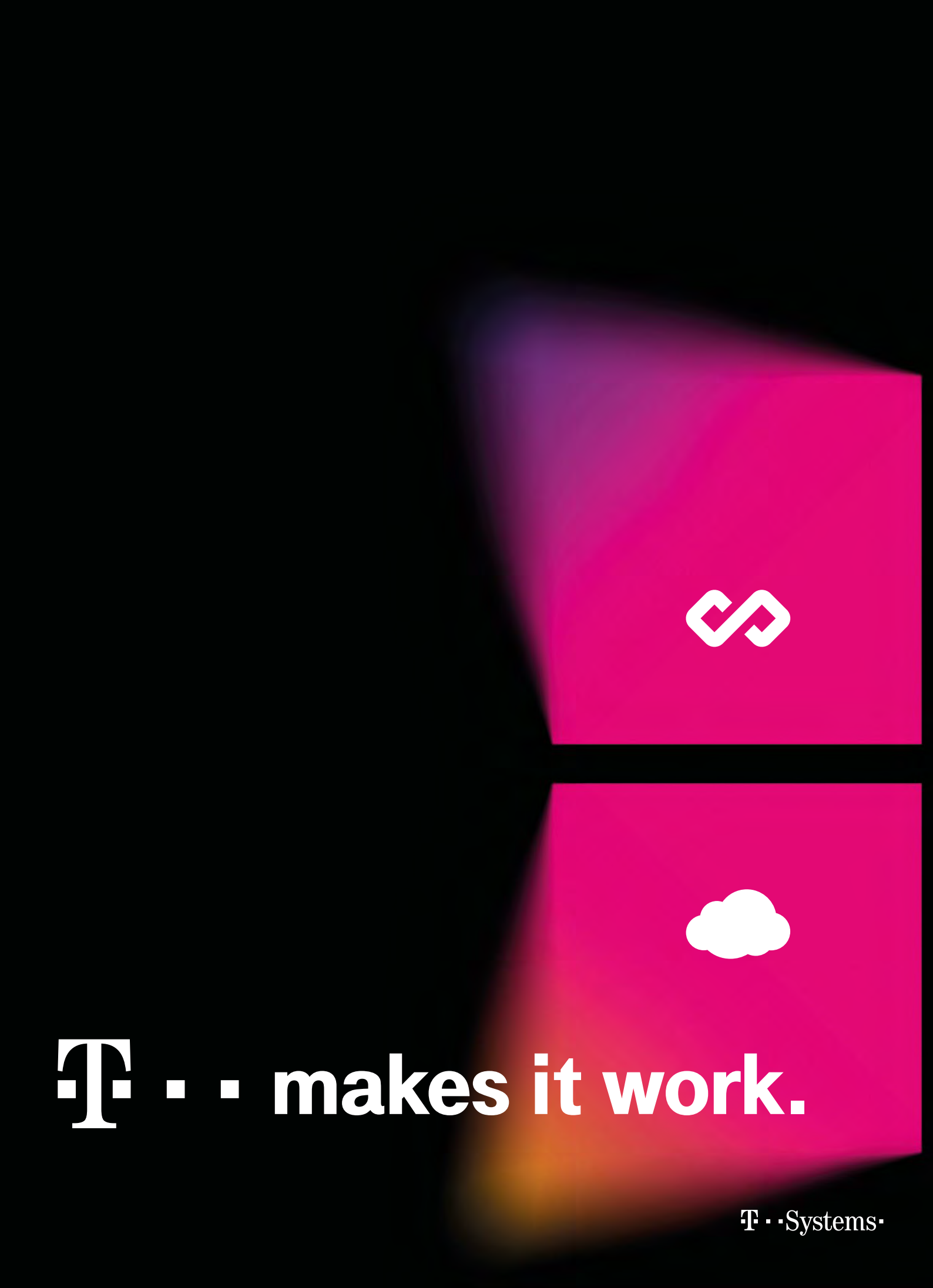
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