



**Prof. August-Wilhelm Scheer** has systematically aligned Scheer Holding with the demands of digitization. His company specializes in digital consulting, new software architectures, predictive analytics, personalized products, security and AI. However, as the passionate saxophonist says, he still finds it “a pleasure to live in the analog world – in my hobby and beyond.”

# “Coalition of forces.”

GERMANY, AS EUROPE’S ENGINE, NEEDS A NATIONAL DIGITIZATION ECOSYSTEM TO KEEP THE CONTINENTAL ECONOMY VIBRANT AND PREVENT ASIA AND THE US FROM DOMINATING THE SECOND WAVE OF DIGITIZATION, TOO.

<Opinion Piece> Prof. August-Wilhelm Scheer

Photos: Scheer Group, Natalie Bothur, ToKo, Ines Escherich/Fraunhofer, Festo AG; Illustration: Andrew Timmins

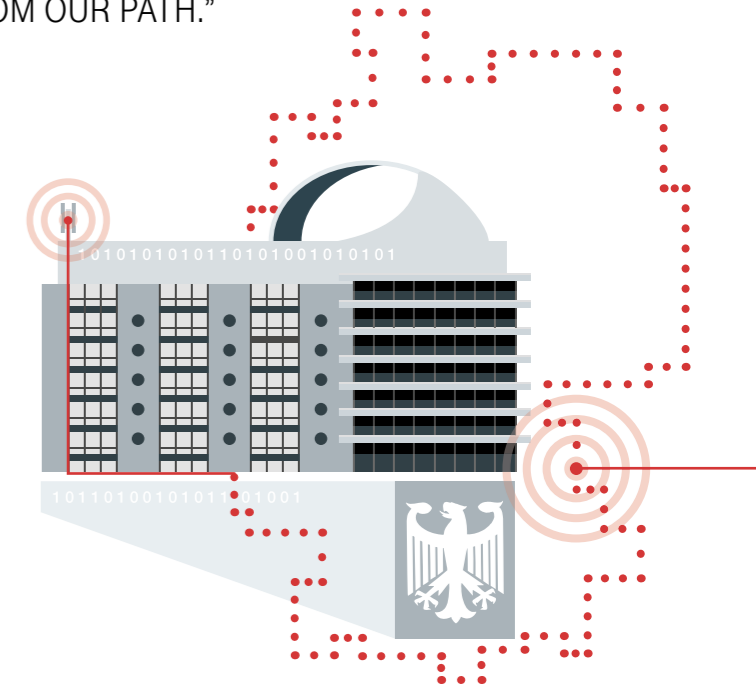
MANY OF US ARE TIRED OF HEARING how breathtakingly quickly the United States and parts of Asia spotted and seized the opportunities presented by digitization. Europe – and Germany in particular – came to the game much too late. The continent’s mightiest economic power was trounced by overnight Goliaths like Apple, Amazon, Airbnb, Intel, Tesla, eBay, Google, Facebook and Yahoo. That’s ancient history, you might say. But if we fail to learn from history, we will be doomed to repeat it. Now that new opportunities are arising, it’s time to act. Germany, being the strong force in Europe, needs a national digitization ecosystem so that the continental economy won’t be left watching the incipient second wave of digitization from the sidelines – and have no one to blame but itself.

So what’s stopping us? Where are we tripping over our own feet in the race to jump on the next wave of digitization? Who should take on what role in assuming responsibility? And responsibility for what? Perhaps for ensuring that everyone and everything connected to digitization in Germany doesn’t just spin in place without touching anything else like one gigantic mobile. That’s the only way to spin everything in a new direction and form a coalition of forces. It’s the only way to develop some collective momentum.

There’s no question Germany is one of the (economic) nations for whom this “second chance race” is, if you will, a kind of invitation. And there’s no question that, in a world dominated by the internet of things, real-time internet and autonomous systems, Germany can build on its traditional strengths in high-end physical products and embedded systems with digitally enhanced products and take a top position in this international competition. For that to happen, though, all of Germany must take the leap toward a national digitization ecosystem. This leap will have to rely on three pillars: heavy investment, deliberate risk-taking and disruptive changes in general market conditions. Germany must not resign itself to being a market of buyers. Not again. Our healthy industry represents a competitive advantage, and we must marshal all our ideas and energy to earn a return on it. It’s not enough to be well informed and lined up in the starting blocks. We have to start running – now!

It’s encouraging to see that politicians and business leaders have moved on from self-reflection to the realization that we must face the digital transformation head-on. The first steps toward concrete action are coming into view. Policymakers are now quite frank about how changes

“WE NEED COURAGE AND THE WILLINGNESS TO CLEAR SELF-IMPOSED OBSTACLES FROM OUR PATH.”



in the way we work and manufacture will require a transformation of the business environment. Industry, for its part, clearly understands the importance of digitization. Witness the recent election of Dieter Kempf to the presidency of the Federation of German Industries (BDI): this former president of Bitkom, Germany’s leading IT industry association, now leads the country’s largest umbrella organization for industrial manufacturers and service providers. Big IT companies are now key players at a sold-out Hannover Messe, the world’s leading industrial trade fair. The signal this sends out is unmistakable: IT has returned to the fold after being split off at CeBIT 1986. The journey started out slow, but has picked up the pace in recent years. At Hannover Messe, digital technologies have regained their rightful place as the drivers and enablers of the fourth industrial revolution. And this year’s CeBIT motto, “d!conomy – no limits”, is no longer just a vision. It’s real life.

But what is it that needs to be done – not just to maintain the currently successful industries’ competitive edge as they digitize, but also to encourage entrepreneurs to start new businesses and make them internationally successful? Both things are absolutely essential for safeguarding our nation’s prosperity.

First, we need to adopt a can-do attitude about digitization. We need to clear self-imposed obstacles from our path and courageously set sail for new digital shores. And we need soft skills of a different kind: skills not only for using new technologies, but also for playing a bigger part in their development and production.

**3.1  
billion euros**

**in venture capital were invested in Germany in 2015; the US attracted 52.9 billion.**

Source: Roland Berger: Going digital: Seven steps to the future



In my opinion, the action that must now be taken to overcome the challenges and seize the opportunities – i.e. the digitization leap – requires the participation of five stakeholder groups: politicians, researchers, industry, associations and society.

**POLITICAL TO-DO LIST IS CLEAR**

Policymakers have an obvious role to play: upgrading and expanding the communications infrastructure, setting clear goals along the way and initiating projects that are not just concrete, but also, and perhaps more importantly, ambitious in their goals. Projects such as making gigabit networks the new standard. Or introducing standardized nationwide systems that eliminate obstacles in e-government caused by the distribution of responsibilities among federal, state and local governments. And then there is a need to assess restrictive data protection rules for their chilling effect on innovation. German Chancellor Angela Merkel first mentioned ‘data sovereignty’ in this context at the 10<sup>th</sup> National IT Summit held in Saarbrücken late last year, demonstrating an open attitude toward new, but no less responsible developments. Cooperation has become a key success factor, too. For example, why can’t federal ministries and state governments better coordinate individual digitization initiatives in order to have a greater impact together? Our federal system can and should tolerate this much transparency and cooperation!

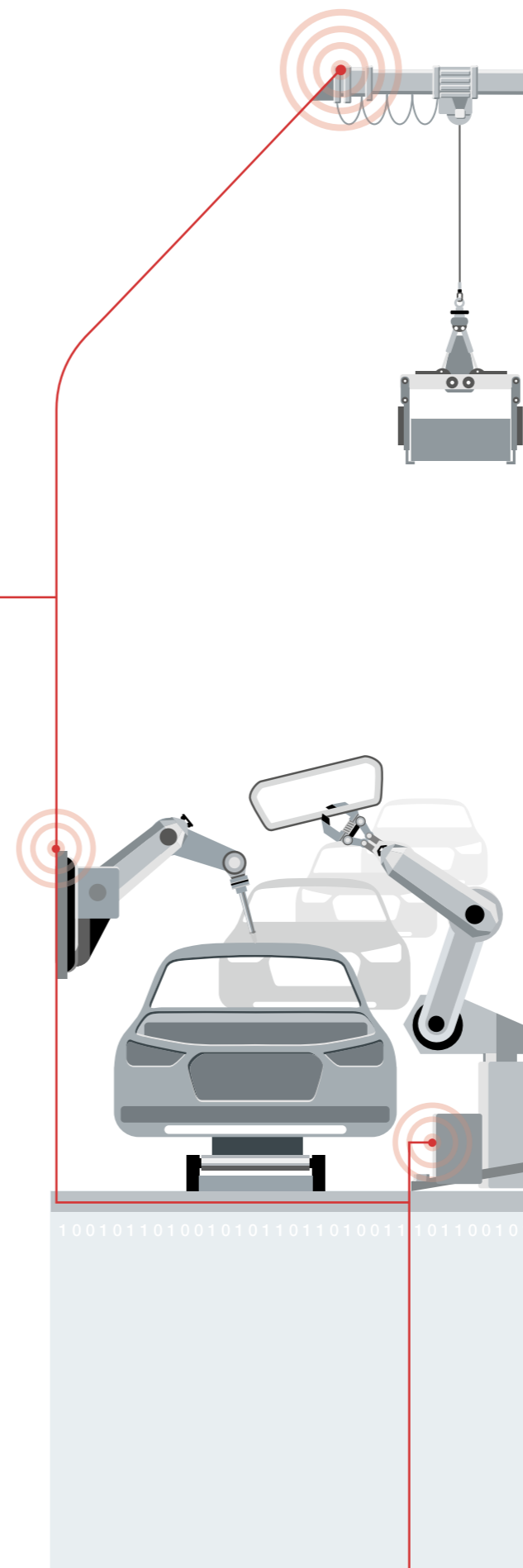
Much like the Chief Digital Officer (CDO) coordinates and directs all activities intended to ensure a company uses the Internet effectively, we need digitization ministers to perform the same tasks at the federal and state level. In a time when companies nationwide are working hard to create synergies, government, of all institutions, must not take too much time or appear to be out of touch. Instead, it must act as the lead investor and drive the development of key competencies, particularly those relating to the security and resilience of infrastructure that is critical to our economy.

These are issues that Berlin urgently needs to address. The public sector can play a big role in bringing about new opportunities, after all, by making Germany more competitive through infrastructure improvements and establishing a framework for accelerating innovation. The creation of new, well-paid jobs would immediately improve our gross national product, tax revenues and global economic ranking.

**HOW CAN RESEARCH CONTRIBUTE?**

State-funded research institutions have to take their cue from the pace of digitization and push for the rapid incorporation of their findings into products, processes and real-world applications. Spin-offs must be encouraged, with incentives for parent institutions of successful ventures. We must roll out new digital communication platforms for researchers, along with new evaluation procedures to make research findings more transparent. The evaluation procedures alone would promote the publication of smaller-scale, more focused research and spur the cultivation of international research networks at the same time. Bright new minds must enter research fields affected by digitization to accelerate generational renewal. Vacant positions should be evaluated for their contribution to digitization and new positions specifically created to ensure generational renewal. This is all the more important given the fact that research has proven to be a particularly rich source of opportunities in Germany. And that is something that we – perhaps more than any other country – can put to our advantage. Our internationally acclaimed universities and non-university research institutions are fertile ground for cultivating digitization leaders in a variety of fields, including Industry 4.0, autonomous systems, artificial intelligence, tactile Internet, 5G, security, bioinformatics and health informatics.

Illustrations: Andrew Timmins



At the same time, recent significant improvements in partnerships between industry and government-funded researchers have set the stage for a much-needed revitalization of Germany’s innovativeness. Establishing national centers of competence for disciplines such as Industry 4.0, big/smart data, IT security, machine learning, autonomous systems or smart services would also incentivize startups and drive sales and service delivery from Germany. This is a point Wolfgang Wahlster and I emphasized in the Saarbrücken Manifesto for a Digitization Leap, which we published in time for the 10th National IT Summit.

**INDUSTRY INCREASINGLY RELIANT ON SHARING**

At least industry seems to have read the writing on the wall. Companies are recognizing the impact of digitization and aggressively pursuing opportunities instead of resorting to unimaginative, but traditionally successful standbys. As they shift gears, they have to come to grips with the fundamental drivers of digital products, processes and business models and leverage them in a way that benefits their business. That includes product personalization, self-service, autonomous objects, resource sharing and the substitution of algorithms for intellectual work (i.e. AI). Spin-offs can nurture potential new business models that may cannibalize yesterday’s business. One prime example: Moia, a recent venture set up by Volkswagen, takes the automotive giant down a new path in mobility services and competes directly with providers like Uber. Another trend whose significance must not be underestimated is the rise of global digital platform operators. They have succeeded in penetrating markets previously dominated by production technology – including carmaking. First, though, companies need to establish what exactly this trend means for their own business. Do they want to operate digital platforms themselves, or be suppliers? And to what extent are they willing to share their knowledge, skills and resources?

The challenges also affect the companies themselves in concrete ways. Developing and implementing new digital business models draws on three knowledge domains: business, IT and operations technology – and thus adds an entirely new field to master. Ten years ago, our most urgent task was just to integrate business and IT; the new third domain increases the complexity exponentially. In a way, companies are extending their competencies and their employees’ responsibilities. Software competence, for example, has already become a critical resource. Digitized companies also need a new leadership culture that focuses more on teams and supports new forms of intergenerational collaboration.

**25%**

**of all German companies with more than 500 employees have created a CDO role in their organization.**

Source: Bitkom Research, November 2016

Europe is forecast to have a shortfall of over

800,000

ICT professionals by 2020.

Source: Roland Berger: Going digital: Seven steps to the future

All these challenges can be overcome, especially since Germany – unlike the US, UK or France – has preserved its industrial base for the production of physical products and thereby maintained its access to the international market. That puts us in a prime position to be more competitive in new technologies such as 3D printing, Industry 4.0 and autonomous systems. Even retail startups are notching up international successes and employing people who one day may start up businesses of their own. It's encouraging to see more and more companies create and fill CDO positions as a way to focus more on the customer experience and new business ideas. Both concepts are paramount in digitization, as is the need to manage internal innovation processes instead of outsourcing innovation to others.

ICT INDUSTRY HAS TO FIND ANSWERS

When it comes to the pace of Germany's digital transformation, the ICT industry has some hard questions of its own to answer. The software sector is a prime example: we need German ICT companies with international heft. Only then can we influence the direction of the global digitization market. However, nationally successful ICT startups cannot grow to an international scale without access to a European single digital market – a market that currently doesn't exist. In fact, I am convinced that we need a European program along the lines of Airbus or CERN to make the leap to international prominence. This approach would also address the need for heavy development investment in innovations such as cloud computing, big data analytics, mobile applications or omnichannel access. And it would provide a European-wide market to balance out the skilled labor shortage. So instead of limiting ourselves to these plans for the future, why don't we pursue existing opportunities right now? Small and mid-sized software vendors could ride the coattails of large platform providers by developing niche solutions for their platform. This is a proven formula – especially since platform providers need as many partners as possible to capitalize on the long tail effect.

It only makes sense to apply these niche solutions directly and primarily to differentiated industries that have strong track records in Germany, such as the machinery, carmaking and domestic appliance sectors. Complex needs in business analytics, security, artificial intelligence and robotics would be particularly promising areas for startups. These young small companies – as well as established firms – stand to benefit heavily from young creatives' extensive training and research experience.

NEW OPPORTUNITIES IN LABOR RELATIONS

So how can associations, labor unions and management representatives participate in the digital transformation and what opportunities might be wasted by clinging to traditional roles? Digitization opens up new areas of activity for forward-looking associations, including new continuing education opportunities for members. It must be remembered that a national digitization ecosystem will only flourish if labor and management actively cooperate to develop flexible work models and establish appropriate ground rules. Adopting an attitude of denial or even outright rejection could diminish Germany's significance on the global stage since new, more flexible structures would immediately emerge elsewhere. Change is coming; it will seek the path of least resistance. That's an unalterable law of physics – and human nature.



Illustrations: Andrew Timmins

“THE DIGITAL WORLD IS NOT GOING TO SPAWN A NEW UNIVERSE, BUT IT WILL CONSTANTLY TEST NEW BOUNDARIES.”

This inevitability is another reason why our entire society has to take this digitization journey together. Now that we've roused ourselves in time, we have to realize that the digital world is not going to spawn a new universe, but instead will constantly test new boundaries and set new rules. If we want to navigate this landscape, we must each take responsibility for ourselves and build bridges to others. We must close the digital divide between young and old and face our fears by being willing to experiment with new technology. Young people must be open to careers in the digital age. Lifelong learning must become a matter of course for everyone. These may be daunting challenges, but we can take heart from the opportunities presented by digitization. They include new, flexible work models that provide greater freedom for self-actualization as well as digital assistance systems in vehicles and households that improve our quality of life, particularly as we grow older. In these areas, the National IT Summit sent out particularly strong signals last November. Primarily because it made two things clear: how digital infrastructure enables independent, personalized learning and how using digital media and learning systems can provide open access to a better understanding of the world. What are we waiting for?

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