



European Future Technology Summit - EFTS

We. Connect. Europe. Young – Technological – Cross-border

3 days

10 workshops on AI and digitalization

40 students and young professionals from Europe

250 guests; full house at the VDE Summer Reception at the Bavarian State Representation



VDE Policy Brief

Edition 3/2023

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Technological sovereignty

Developing trustworthy microchips

Countries around the world are mobilizing billions to set up microchip factories. After all, having their own production sites means technological sovereignty. The relevance of power electronics and highly integrated microsystems will grow massively. This is also because the global energy transition requires modern chips on an enormous scale. The EU now wants to catch up to the global competition. Standardization plays a key role in this.

The EU wants to expand its market share of global microchip production from the current 8 percent to 20 percent by 2030. To this end, it is mobilizing 43 billion euros in public investment through the European Chip Act. The amount will be more than doubled by additional private investment. Europe's chip offensive must be implemented highly efficiently. What is needed are chips for the future, an ecosystem at all levels and skilled workers.

DKE coordinates EU standardization

Certification procedures are the key. Their importance in ensuring quality and safety for critical applications is explicitly emphasized by the EU Commission. In June 2023, the EU Commission tasked the VDE-sponsored standards organization DKE to develop standards for chip certification in terms of security, authenticity and reliability. A corresponding roadmap is now being developed under the umbrella of the EU standards organizations CEN and GENELEC. Key benefits:

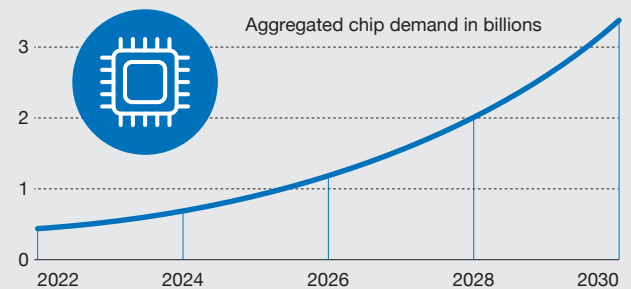
- **Enhance security:** Microchips are used in countless fields. Therefore, one of the key tasks of the standardization project is to establish minimum requirements for the resistance of microchips to cyber attacks. In light of massively increasing cyber attacks, especially against critical infrastructure, this is a political issue of the first order.

Early commitment

VDE put the topic of microchips and technological sovereignty on its agenda at an early stage. It produces comprehensive studies, informs policymakers and brings together politics, industry and science, see the pioneering [stakeholder workshop on chip standardization](#) at the end of 2022 or at consultations at the BMBF on research and innovation in September 2023.

Exponential chip growth

Example: European chips demand around renewable energies



Source: EU Commission, Report 2022

- **Increasing competitiveness:** Standards create a common basis for the development, manufacture and interoperability of microchips. This is a highly relevant aspect, especially for small and medium-sized enterprises (SMEs). In addition, those who set standards determine the markets of the future. Germany and Europe see a need for action here.
- **Improving quality:** Among other things, standards define minimum requirements for the performance and durability of microchips. This benefits companies that install microchips, and ultimately consumers.



DKE website

Press release on the standardization project



Article from the Policy Brief 1/2023

Standardization as a geopolitical instrument



Article from the Policy Brief 3/2022

European chip law



VDE position paper

Hidden Electronics III

EU revolutionizes the rules of the game

The EU is stepping up to redefine cyber security along the entire value and supply chain of digital products. What matters now – and why standardization institutions play a key role.

Developing and producing digital products in line with the latest security technology costs money. Manufacturers of hardware and software components are faced with the challenge that users can rarely grasp the specific added value – and the willingness to pay for it is correspondingly limited. This applies in particular to digital everyday objects related to the smart home.

Cyber security by design

With the Cyber Resilience Act (CRA), the EU Commission wants to realign the rules of the game pertaining to cyber security. The keyword is cyber security by design: manufacturers of products with digital elements are to take cyber security into account as early as the design and development phase for the entire life cycle. In addition, the properties must be communicated in a comprehensible manner. Those who fail to comply face fines of up to 2.5 percent of annual global sales.

Make the standardization mandate more forceful

This tough sanctions regime is right. All the more reason for legislators to clearly delimit the scope and definitions throughout Europe. An important step in this direction: the EU Commission wants the European standardization institutions, such as the DKE, which is supported by

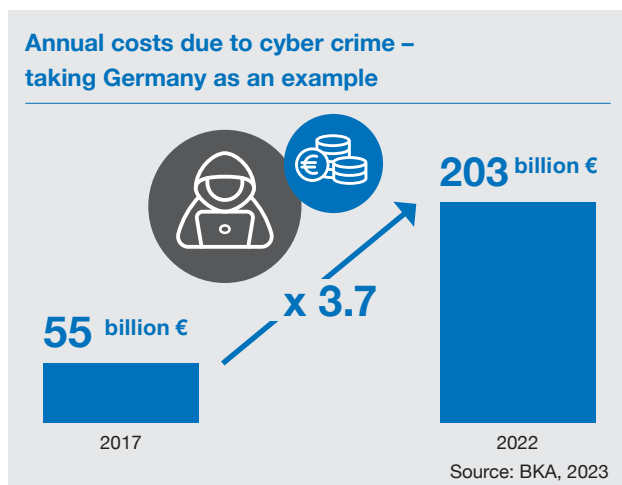
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VDE, to regulate the technical details in a harmonized manner. This is also to give the cyber security industry an advantage on the global markets. Premises for this important mandate:

- **Allow differentiation:** products for commercial and industrial use must be subject to different security levels than those for end users. Standards must reflect this
- **Harmonize existing standards:** In industrial automation, cyber security standards have proven their worth for years. They should be further harmonized – especially since they are de facto also applied in medical devices and railroad technologies.
- **Allow flexibility:** Where a need for standardization has been identified, industry and European standards organizations must be able to define the standards independently – a politically imposed number of standards to be drawn up must be avoided

The Cyber Resilience Act presents an opportunity to truly strengthen security across industries. In doing so, it is important to preserve established structures. See [CERT@VDE](#): VDE's IT security platform for industrial companies offers functioning working structures for vulnerability management – they should be used further.



- > [VDE website](#)
Digital Security
- ↓ [Article from the Policy Brief 2/2023](#)
AI on the test bench
- ↓ [Article from the Policy Brief 1/2022](#)
Strengthening resilience

AI-supported deepfakes

Invisible enemy with destructive potential for democracies

Disinformation has always been part of hybrid warfare. New to this: since 2018, even laypeople can use AI programs to create high-quality forgeries of sound, image, and video recordings – and shake up our community in the process. AI-powered deepfakes are the new weapon of cyber criminals and opponents of democracy.

Photos of the Pope in hip down jacket. A video showing a freak-out by German Economics Minister Robert Habeck on Maischberger. President Volodymyr Zelenskyy speaking into a camera and calling on his countrymen to surrender. Well-made fakes achieve enormous reach in a very short time. They can cause people to take actions they would never have considered based on facts. In this new reality, virtual deceptions twist perceptions of reality and threaten to destroy the foundations of our society.

At the same time, the predation of AI-powered deepfakes fundamentally shakes trust: if everything can be deceptively fake – who can really be trusted? Political opinion-forming is thus torpedoed. If the impression arises that an election has been influenced by AI-supported deepfakes, opinion-manipulating social bots or a cyber attack, trust in the democratic process is massively undermined.

Like democratic societies, businesses are also victims of deepfake attacks. The focus of digital attacks is on corporate employees. In fact, more than 70 percent of all security incidents are due to human behavior. Via so-called deepfake phishing, cyber criminals manipulate

video and audio data in particular, triggering feelings of urgency or fear in their victims. Money transfers or the disclosure of internal data are provoked.

What can measures look like?

- **Raising awareness:** The general public urgently needs to be educated about the dangers of deepfakes and AI manipulation. Appropriate educational initiatives and information campaigns must be initiated.
- **Technology race:** The tech community must develop new tools and algorithms to detect and prevent deepfakes and other AI-based manipulations. This includes policy investment in research and development.
- **Legislation:** strict laws are needed to sanction creation and dissemination – especially when used to manipulate elections or destabilize the economy.
- **International collaboration:** cyber attacks and AI manipulation know no national borders. It is therefore essential that countries work together to develop defenses and share threat intelligence.

Deepfakes are already undermining trust today

Results of a representative survey in Germany

44% have already been fooled by a deepfake

60% see deepfakes as a threat to democracy

70% believe photos and videos can no longer be trusted today



Source: Bitkom

- > **Avatar lecture**
What Deepfakes can do
- > **VDE website**
Digital security
- ↓ **Article from the Policy Brief 2/2023**
ChatGPT & Co.
- ↓ **Article from the Policy Brief 2/2021**
Enabling a trustful dialog

And a future needs the youth

Those under 30 today will play a key role in shaping the future of Europe. That is why VDE and EUREL, as the European umbrella organization for engineers in the fields of electrical engineering, electronics and information technology, are committed to bringing students and young professionals together across borders and opening up options for action for them.

Hardly any other branch of the profession drives forward topics such as artificial intelligence (AI), energy transition and cyber security as concretely as electrical engineering and information technology. This also makes it clear that hardly any other profession is as important in finding answers to key political challenges. VDE and EUREL make this link between technology and politics tangible – with the European Future Technology Summit ([EFTS](#)) in Brussels: In early September 2023, 40 students and young professionals from the EUREL member countries met there to discuss key topics with experts from science, research and politics on the premises of the Konrad Adenauer Foundation.

- **Workshops on EU policy:** How is policy made in Brussels? Irina Orsich, Head of Sector for Artificial Intelligence at the EU Commission (DG CONNECT), provided exclusive insights on AI legislation. Kai Zenner, staff member of Axel Voss MEP and most accomplished AI networker in Brussels, reported on the many AI voting networks and their work on the AI Act in Brussels.
- **Workshops on technological issues:** deepfakes can undermine our community – how can this be countered from a technological perspective? How can the Digital Product Passport (DPP) contribute to

Results of the EFTS in a video



EUREL field trip: Learning from each other!

Europe means diversity – technology knows no borders. To learn from each other, EUREL organizes annual [Young Engineers Field Trips](#). The host country in 2023 was Romania, the field trip was organized by EUREL member [AIEE](#). Students and young professionals from the fields of electrical engineering, electronics and information technology traveled through Romania for ten days and gained exclusive insights into various power plants, refineries and wind farms.

greater sustainability? What is the role of AI in building the smart grid and mobility? How do we make AI verifiable and anchor ethical principles? VDE experts from companies and science provided answers.

- **Grand evening reception:** The traditional VDE Summer Reception Brussels took place embedded in the EFTS. The topic was fitting: AI. Among others, it was possible to convince the following people to give keynote speeches and take part in a panel discussion in the Bavarian Representation in Brussels: Dr. Hans Michael Strepp, Head of Office at the Bavarian State Ministry for Digital Affairs, Prof. Dr. Kristina Sinemus, Hessian Minister for Digital Strategy and Development, Axel Voss, MEP and Digital Policy Spokesman of the EPP Group, Elena Santiago Cid, Director General of CEN CENELEC, and Kilian Gross, Head of Unit AI Policy Development and Coordination at the EU Commission.

- [Website](#)
European Future Technology Summit (EFTS) 2023
- [Website](#)
EUREL
- ⬇️ [Article from the Policy Brief 4/2022](#)
50 years of EUREL

Photovoltaic expansion and balcony solar systems

VDE guarantees safety

Photovoltaics provide almost half of the electricity from renewable energies and are to be massively expanded: While capacities nationwide were expanded by a good 7 GW in 2022, the increase is expected to reach 22 GW in 2026. What to watch out for in the legislative process now.

At the end of June 2023, the German government presented its draft legislation “Solar Package I”. The objective is spot on, and the planned capacity expansion is feasible. However, the power grids must be able to reliably absorb the additional output. This is an issue that relates in particular to the integration of so-called balcony solar systems. In the case of open spaces, VDE has identified equally important aspects to reliably guarantee expansion. Key topics are:

- **Uniformly define plug-in solar devices:** For safe use of balcony solar systems, plug-in solar devices must be uniformly defined and specific requirements must be identified. The power limit must also be defined. It should continue to be at the inverter power of 600 watts in order not to overload house lines – especially since these are often many decades old.
- **Accelerate processes:** The plug-in solar devices are registered with the Federal Network Agency (BNetzA). The latter should then use the available certificates to check whether the minimum technical requirements are met and inform the metering point operators directly about the registration that has taken place – important to avoid unnecessary bureaucratic processes between the players

When it comes to a secure energy transition: listen to VDE

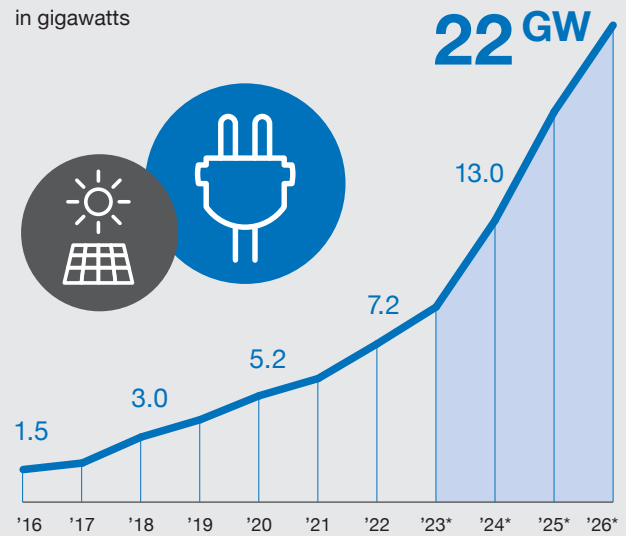
The technical rules of VDE are authoritative for all aspects of energy systems, according to §49 of the Energy Industry Act (EnWG). VDE is thus also the first point of contact for policy-makers on how to implement the energy transition safely.

VDE certifies balcony power plants

Not all balcony power plants offered in Germany are safe. That is why [VDE is now testing and certifying](#) all components and the entire system. This creates security for consumers and dealers. In addition: In over 70 percent of the German building stock, the electrical wiring is over 35 years old. This also needs to be taken into account when integrating balcony solar systems.

Annual photovoltaic capacity increase

in gigawatts



* Target according to EEG 2023; Sources: Federal Government; Fraunhofer ISE

- **Making better use of open space potential:** The German government wants to build 50 percent of the additional photovoltaic capacity on open spaces. The draft law must be improved for this. Particularly important: so-called agri-photovoltaic systems – which enable simultaneous land use by farmers and electricity producers – must be given greater support. The market introduction concept for agri-PV systems announced by the federal government in May 2023 must be developed as quickly as possible. In addition, it is necessary, among other things, to facilitate development plan procedures for specific open-space PV plants and to open up so-called disadvantaged areas – i.e. grassland and arable land with significantly below-average yields – for photovoltaic plants in principle.

↓ **VDE statement**
Solar package I

↓ **Article from the Policy Brief 1/2023**
Future energy picture

↓ **Article from the Policy Brief 4/2022**
Balcony solar systems

Sparking enthusiasm among the next generation

Germany lacks engineers in the fields of electrical engineering and information technology. A political issue: Without the know-how, Europe can forget about technological sovereignty or resilience. They may as well shut down altogether in this case.

Nearly 20,000 positions for electrical engineers are unfilled, as VDE determined in its comprehensive Labor Market Study 2022. Fewer and fewer people are opting to study the subject. The reason: the image is poor, young people associate electrical engineering primarily with manual tasks such as laying cables or connecting up televisions. There is an urgent need to educate people about engineering as a career, which is as important as it is rich in prospects. Schools are the right place for this.

Multi-stage action plan

In its latest position paper, VDE proposes a multi-stage action plan:

- **Support image change:** Germany must broadly promote fields of work and opportunities in electrical engineering and information technology. A focus must be placed on schools.
- **Supplement curricula:** The content of electrical engineering and information technology must finally be included in the curricula. There are plenty of new links to emotionally moving teaching topics such as climate change.
- **Use best-case projects:** Successful projects in which electrical and information technology topics have been integrated into school lessons should be recorded and advertised nationwide.

- > **VDE position paper**
Lack of young talent as a door opener
- > **VDE press release**
Student competition COSIMA
- ↓ **Article from the Policy Brief 1/2022**
Inspiring young people
- > **VDE study series**
Publications on image and career choice

- **Train teachers:** Teachers must be further trained with electrical and information technology topics and supported in the use of innovative learning formats.

VDE will set up an interdisciplinary committee of experts from industry, schools and science to submit coordinated recommendations for action to policymakers at the federal and state levels. Above all, it is important to re-think school teaching in order to embed the fascinating range of topics in electrical engineering and information technology.

Student teams from Germany: Top placements in international competition

Since 2009, VDE has organized the Competition of Students in Microsystems Applications (COSIMA) competition, sponsored by the German Federal Ministry of Education and Research (BMBF). The focus is on new applications for sensors and microsystems that are suitable for everyday use.

COSIMA is a successful project, the best example being that the winning teams also achieved top placements at the international iCAN competition – held in Kyoto, Japan – in mid-July 2023. The result: out of 23 teams, participants from Germany won three out of six top places:



1st place for Team VFeel from the Technical University of Munich, the idea: aids for people with visual impairments



2nd place for Team T-S.H.I.R.T. from the TU Ilmenau, the idea: T-shirt for orthopedic posture correction



2nd place for Team CitySenses from the Fachhochschule Aachen, the idea: safety systems for bicycles

VDE – the technology organization

Your contact

Markus B. Jaeger

Global Head of Political Affairs

VDE Association for Electrical,
Electronic & Information Technologies
Bismarckstraße 33
D-10625 Berlin

Cell +49 171 7631986

markusb.jaeger@vde.com

Contact details as vCard:



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VDE Verband der Elektrotechnik
Elektronik Informationstechnik e.V.
Merianstraße 28
D-63069 Offenbach am Main
Germany

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Köster Kommunikation
GDE | Kommunikation gestalten



Facts and figures

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|-------------------------------------------------------------------------------------|---------------------------------------------------------|--------------------------|
|  | Founded: | 1893 |
|  | Employees: | worldwide 2,000 |
|  | Members: | almost 30,000 |
|  | Volunteer experts: | over 100,000 |
|  | Locations: | worldwide over 60 |
|  | Research and funding projects: | 175 |
|  | Events per year: | over 1,600 |
|  | Product inspections per year: | 25,000 |
|  | Electrical products bearing the VDE certification mark: | billions |
|  | Norms and standards: | over 3,500 |