



Federal Ministry  
for Economic Affairs  
and Climate Action

# Development of digital technologies

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## **Imprint**

### **Publisher**

Federal Ministry for Economic Affairs and Climate Action  
(BMWK)  
Public Relations  
11019 Berlin  
[www.bmwk.de](http://www.bmwk.de)

### **Current as at**

January 2023

This publication is available for download only.

### **Design**

PRpetuum GmbH, D-80801 Munich

### **Image credit**

Adobe Stock  
monsitj p. 8, Michael Traitov p. 25,  
natali\_mis p. 19, Production Perig p. 22, sdecoret p. 13,  
weerapat1003 p. 27  
BMWK / title

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# 1. Development of digital technologies

The Federal Ministry for Economic Affairs and Climate Action seeks to promote the development of digital technologies within its remit by providing funding for pre-commercial research and development projects. These projects pick up at an early stage on promising technological developments for the digital transformation and help speed up the transfer of cutting-edge technologies to the market.

The digital transformation is of great significance in connection with maintaining the competitiveness of business, and socio-political challenges such as climate protection, the energy supply, demographic change, the shortage of skilled labour and equal opportunities across urban and rural areas. The application of information and communication technologies (ICT) opens up new solution approaches in the diverse domains of business and society, for example to increase companies' productivity and households' energy efficiency. This is associated with important starting points for new business prospects to secure prosperity.

Based on the „Development of digital technologies“ funding programme, the Federal Ministry for Economic Affairs and Climate Action uses funding calls to address thematic priorities, also referred to as technology programmes, which are aligned with current technological trends and requirements in the market. The research programmes that receive funding involve model users who pilot the developments in order to establish their technical and economic viability. The outcomes are then taken as a starting point for the creation of new, marketable products, solutions and business models, particularly for SMEs.

The spectrum of the technology programmes already under way is large and covers various aspects of the digital transformation:

- **Innovation competition on artificial intelligence.** Serves to create a broader basis for innovations in Germany to ensure that unconventional and disruptive ideas have a chance to prove themselves in future. In the context of the Federal Government artificial intelligence (AI) strategy, even greater use should be made of AI methods to drive innovative value-creation networks and create new products and business models for various industries. To date, there have been three funding calls with a total funding volume of approximately €280 million. The spectrum of funded large-volume platform projects ranges from production and logistics, the

healthcare industry, smart living, trade, finance, agriculture, mobility and construction to quantum computing and crisis management. In many funded projects, the topic of GAIA-X is also an important aspect.

- **Secure digital identities showcases.** These aim to strengthen digital sovereignty and facilitate access to trusted German eIDAS solutions that are also user-friendly and economically viable (eIDAS: EU Regulation on electronic identification and trust services for electronic transactions in the internal market). They give rise to innovative solutions for digital authentication in business, public administration, and everyday life. The large-scale showcases are designed to create application-driven ID ecosystems that are open, interoperable, simple to use, intuitive and accessible.
- **Smart data economy.** Focuses on artificial intelligence, semantics, and sovereignty. Drives the development of data-based services and business models in the field of the data economy with diverse fields of application. The exploitation of data is a major economic factor offering the opportunity to increase the competitiveness and digital sovereignty of German companies.
- **5G campus networks** aims at the use of 5G frequencies by private business. High-performance 5G networks, for example in the factories of the future, offer greater flexibility in setting up and operating machines and facilities in comparison with wired solutions. Companies' digital sovereignty can be improved by them operating their own 5G networks, enabling them to maintain control over data and processes. There are opportunities here for smaller network suppliers and start-ups to tap new market segments of campus networks, bringing with them significant perspectives for locations in the German and European supplier market.
- **Quantum computing – applications for business** aims to develop methods, tools and platforms for the exploitation and early integration of quantum computing (QC) applications in business practice, particularly in SMEs. The aim is to provide software and services for quantum computing on the basis of existing quantum hardware. It is likely that these will comprise a major part of the value creation in commercial use from the outset, comparable with the traditional IT sector. Key issues in this connection are software engineering for QC, hybrid quantum software and software/hardware-co-design.

- **Edge data economy** drives the development of data science technologies in the edge-cloud continuum and business models based on this in a variety of areas of application. Local data processing offers the opportunity to strengthen competitiveness and digital sovereignty, in particular of SMEs, while taking into account the potential of digitalisation for the environment and climate protection.
- **Smart Living** addresses the development of future-oriented, sustainable applications and services based on artificial intelligence (AI), data, cloud and edge technologies, modern communications and language technologies as well as service robotics for intelligent living, residential and working environments. Expectations are particularly high in connection with the topics of preventive healthcare, assistance and nursing care as well as tapping the great potential of smart living technologies to reduce the energy requirements of residential buildings and entire residential districts. The topic of smart living has been addressed in various technology programmes of the Federal Ministry for Economic Affairs and Climate Action to demonstrate the feasibility and benefit of smart living applications in different areas, such as energy management, assistance, safety and comfort, and to create starting points for new business models. Notwithstanding the technical feasibility and benefit of particular applications, the market for smart living technologies is fragmented; the systems of different manufacturers and suppliers are often difficult to use in combination. So far, a universal ecosystem has not yet established itself which would enable the fast and efficient realisation of intelligent cross-domain and cross-manufacturer smart living services.
- The **GreenTech innovation competition** promotes the development and use of digital technologies for the ecological transformation of the economy. The technology programme is intended to make a substantial contribution towards sustainable development in terms of the 2030 Agenda, to boost the competitiveness of the German economy, and to strengthen Germany's and Europe's digital sovereignty.
- **ICT for electric mobility.** Focuses on integrating commercial and highly automated vehicles and fleets with energy management systems of private and commercial properties in a way that is beneficial to networks. Further to this, funding is being provided for new charging infrastructure solutions for commercial vehicles and innovative applications for hydrogen-powered commercial vehicles.

Beyond this, the Federal Ministry for Economic Affairs and Climate Action funds research and development in other areas:

- The Federal Ministry for Economic Affairs and Climate Action also provides some funding for bilateral and multilateral **international cooperation projects** conducted together with selected partner countries within Europe and beyond. These are intended firstly to transfer technological developments to foreign areas of application and markets and secondly to use the specific competence of research institutes and companies from the respective partner country in current funding areas for joint activities.

Particular highlights are the long cooperations with France and Austria in the fields of AI, data economy and 5G communications technologies.

- **The envisaged funding of so-called innovation concepts** – i.e. small-scale, short-term projects – aims to tap and fund new, innovative ideas to ascertain their viability and market relevance. Conceptually-based work in this area can provide a basis and impetus for designing new funding projects and technology programmes and for initiating strategic cooperations at national and international level.
- The **Forum digital technologies** serves as a networking platform and showcase for selected research projects and innovations made in Germany. The forum fosters dialogue and the transfer of expertise at both national and international level. Knowledge transfer to the medium-sized enterprise sector has priority here.

All information relating to the field of developing digital technologies can be accessed [here](#).

## 2. Funding programme

Seeking to raise the international competitiveness levels of German businesses with regard to the supply and use of digital technologies, the Federal Government has made it its goal to foster the digital transformation of industry. The funding programme's measures are designed to strengthen companies' digital skills and capacity for innovation. Both elements are key to achieving and maintaining digital sovereignty.

The Federal Ministry for Economic Affairs and Climate Action has developed its **Development of digital technologies** funding programme to ensure that it is in an even better position to swiftly harness the potential of greater efficiency and economic output presented by digital technologies in a more flexible way, and to quickly and nimbly address pressing challenges, taking climate and environmental protection goals into account.

Calls for applications for funding are to be made at short notice and pick up on the latest technological trends, developments and market requirements, take into account the priorities of our digital policy and the budget available, and stipulate time frames that cater to the needs of market-oriented implementation.

The funding concentrates on important key technologies, such as quantum computing, AI, cybersecurity, distributed ledger technologies (blockchain) robotics, 5G/6G communications technologies and trusted identity management solutions. In this way, the use of future-oriented technologies, digital innovations and infrastructures are to be developed and strengthened.

Development risks are particularly high for close-to-market research into digital technologies with rapid innovation cycles. The funding is intended to limit these risks and allows for the positive impact of the R&D projects to be better harnessed. These projects also have an effect on the entire economy, beyond the companies receiving the funding.

The funding programme has been set up around the three focal areas of **technologies, applications, and ecosystems**. They build on one another, together forming the framework for the projects envisaged. Funding is provided for research and development projects that are at a pre-competitive stage, have a flagship character, and bring



together science and industry. These may be application and technology projects, ecosystems, innovative concepts or international cooperation projects. SMEs are explicitly invited to become involved. If possible, young companies should also be included in the consortia.

The funding programme serves as a basis for the publication of specific calls for applications for funding and for detailed information about the process of drafting and submitting project proposals. The funding programme and the current calls for applications for funding are to be found [here](#).



### 3. Technology programmes

#### [Innovation competition on artificial intelligence as a driver for key ecosystems with an impact on the overall economy](#)

The national AI strategy is designed to safeguard Germany's future as an industrial location and to open up new markets to German companies. The innovation competition on artificial intelligence (AI innovation competition) is an important tool for the strategy's swift implementation. The Federal Ministry for Economic Affairs and Climate Action wants to use this competition to support outstanding approaches for the establishment of new forms of AI-based platforms for important economic sectors in Germany. The 26 large-scale platform projects currently receiving funding from a total of three calls for applications for funding serve as flagship projects for the use of AI in important economic sectors in Germany.

Within a first call for applications for funding published in January 2019, which had no thematic restrictions, 16 projects were selected for funding, beginning in the period from January to April 2020. The fields of application covered are construction, healthcare, trade, agriculture, mobility, production and process technology, smart living and quantum computing.

The second call for applications for funding, published in February 2020, put a focus on construction/building information modelling, sustainability/quality manage-

ment, the environment/agriculture, and financial services/data sovereignty, including the basic concepts of **GAIA-X**. Four large-scale collaborative projects were selected for funding and began their work on 1 January 2021. In May 2020, shortly after the outbreak of the COVID-19 pandemic, the third call for applications for funding was published. Its overarching objective was to prevent and manage crisis situations using AI. Six collaborative projects were selected for funding; they started their work in June 2021.

Additional research is being carried out to tackle crucial challenges pertaining to data management, the selection and application of standards, and to ethics, law and justice. The focus here is on the development and implementation of viable business models for AI applications.

#### Technology programme: innovation competition on artificial intelligence (three calls for applications for funding)

Programme duration: 2020 – 2025

Number of projects: 26

Number of project partners: approx. 380

Funding: approx. €280 million

Overall budget: approx. €415 million

#### EXAMPLES OF PROJECTS

##### SPAICER – Scalable, adaptive production systems relying on AI-based resilience optimisation



(first call for applications for funding)

Artificial intelligence used to avoid disruption in production and supply chains

Every day, manufacturing companies have to deal with disruption. Disruption can be caused by external factors, such as delays in logistics, a resource bottleneck, or politically-driven barriers to trade. But there are also internal causes of disruption, such as workers' absence due to ill health, faulty tools, or a halt in production.



Now, artificial intelligence is to be used to help companies adapt to these kinds of internal and external disruption, and to do so in a flexible manner. A company's resilience is directly linked to its success and ability to compete – even more so in a crisis, as we have learned in the COVID-19 pandemic.

The main objective for SPAICER is to establish a new model for AI-based resilience management in manufacturing. In this way, SPAICER wants to address the increased demands on the “adaptable factory” in an Industry 4.0 environment in terms of installations' resilience to disruption, for example, by predicting such disruption (anticipation) and by adapting production plans accordingly so as to keep the impact of the disruption to a minimum (response).

At the heart of SPAICER is an agent-based, modular and open approach for the development of smart resilience services, based on leading AI technologies and Industry 4.0 standards, all embedded in an ecosystem for the exchange of data, software and models.

## EXAMPLES OF PROJECTS

### Knowledge4RETAIL

(first call for applications for funding)



This project's overarching objective is to build the Knowledge4RETAIL platform, which is to serve as the core for complex AI-based planning and robotics applications for individual retail branches.

This open-source platform provides a high-performance database that can form “semantic digital twins” of individual retail branches, which can then be used by AI and robotics applications issued by various suppliers. This reduces preparation and setup times and also cost barriers for retail companies wishing to introduce AI solutions. By the same token, the platform will also bring down entry barriers for SMEs in the IT sector that have specialised in individual AI applications. The open standards used by the platform give these SMEs an easy point of access to retail companies' IT infrastructure.



There are four representative pilot applications developed with a view to demonstrating the platform's potential:

- smart intralogistics within a retail outlet
- strategic trade marketing to personalise outlets in line with customers' wishes
- service robotics to support outlet staff
- internet of things (IoT) connection to a smart refrigerator

## EXAMPLES OF PROJECTS

### Agri-Gaia – An AI ecosystem for agriculture

(second call for applications for funding)



Climate change and changing consumer interests are forcing agriculture to steadily improve efficiency and continually adapt. At the same time, farmers need to fulfil the requirements of numerous ecological directives. In this area of tension, AI technologies are useful tools that can make many working processes significantly more effective or even automate them.

The overarching aim of Agri-Gaia is therefore to create an open cross-manufacturer data infrastructure on the basis of GAIA-X, enabling innovative AI solutions for agriculture and the food industry to be developed and provided. The platform is intended to help SMEs and start-ups to gain easy access to this new, lucrative market segment.

At the heart of the Agri-Gaia project is a B2B platform that provides industry-specific adapted AI building blocks as easy-to-use modules for agricultural processes. Appropriate interfaces and standards are being developed, creating a cross-manufacturer infrastructure for the exchange of data and algorithms. The platform also enables users to organise contractual conditions, such as usage and reproduction rights, simply and clearly along the AI application's entire life cycle.

The Agri-Gaia platform also makes a broad, export-oriented market accessible to start-ups and established SMEs.

**EXAMPLES OF PROJECTS**

**SPELL – semantic platform for intelligent decision and operations support in control and situation centres**  
(third call for applications for funding)



Pandemics or major incidents can have profound effects on many areas of the economy and life. Such crisis situations demand the situation-specific cooperation of public, civilian and industrial control and situation centres to prevent hazards in the best possible way. The cross-linking of the actors involved and their IT systems is currently very limited. However, in the areas of hazard prevention, emergency assistance, protection of critical infrastructure and providing the public with information, information needs to be processed quickly and securely. Significant time savings can be made and a knowledge lead gained by using AI and semantic technologies in such crisis situations.

SPELL's objective is to be able to gain control in crisis situations more quickly in future and to improve the protection of social and business systems. Using the digital, AI-based SPELL platform, control centres with different software systems are automatically cross-linked in compliance with data protection rules using digital interfaces, facilitating the efficient and effective cooperation of all relevant actors. This is done by using AI to make the control and situation centres' heterogeneous and dispersed information evaluable and usable. The SPELL platform provides AI-based services to support decision-making and operations in control and situation centres and tests them in a number of application scenarios.



### Innovation competition: showcases for secure digital identities

In the modern world, digital identities and certificates are a must for a well-functioning economy. All business and administrative processes rely on the identification of persons, companies or things. Digital identities and certificates have thus become the entry point to modern administrative and business processes.

The showcases for secure digital identities were established by the Federal Ministry for Economic Affairs and Climate Action with a view to giving public administration, businesses (especially SMEs) and the general public access to German eIDAS solutions that are user-friendly, trusted, and economically viable. So far, none of the existing eID solutions has reached the critical mass required for a broad-based application. The showcases, in which technology providers work closely together with municipalities, are to change that. Large numbers of real-life use cases will be practically tested and citizens are to be actively involved in the development of new solutions. In each case, several different service providers are to work together and ensure a high level of interoperability.

After a competition phase (June to November 2020) with eleven consortia, four showcase projects – IDunion, ID-Ideal, ONCE and SDIKA – were launched. These are large research and development projects with a duration usually of 36 months. In selected German pilot regions, they are testing the use of digital identities in many different areas of application, including municipal services, mobility, education, tourism and hospitality, wholesale and retail, urban logistics, social and healthcare services, Industry 4.0, emissions trading, banking and insurance.

The results of the showcase projects will be included in the European process for the further development and implementation of the eIDAS Regulation with the objective of creating digital identities that can be used throughout the EU.

**Technology programme: Innovation competition: showcases for secure digital identities****Competition phase and implementation phase**

Overall duration: 2020 – 2024

Number of projects (competition phase): 11

Number of projects (implementation phase): 4

Number of project partners (competition phase): 65

Number of project partners (implementation phase): 58

Funding (competition and implementation phases): approx. €57.2 million

Overall budget (competition and implementation phases): approx. €94.5 million

**EXAMPLES OF PROJECTS****IDunion – Development of a decentral identity ecosystem**

IDunion is developing an open and secure ecosystem for digital credentials for individual users, companies and things. Based on the approach of self-sovereign identity (SSI), the project's aim is to enable users to manage their own credentials in a special app ("wallet") and to decide for themselves when and with whom they wish to share their data. Throughout the project, IDunion will test specific application cases in the pilot regions Berlin and Cologne, integrating SSI technology simply into everyday life. IDunion's solution is intended for use throughout Germany and Europe.

The approach also offers many benefits for companies. The technology facilitates more efficient process design. On the basis of efficient master data management in production and supply chains, for example, digital product passes can be presented clearly and transparently. This requires efficient master data management in production and supply chains. The project is developing special company wallets for this purpose.

Moreover, other credentials, such as certificates of employment, licences or educational certificates, can be presented to a company or institution. A special feature of the system is that individuals always have control over the use and whereabouts of their data.



## EXAMPLES OF PROJECTS

### ONCE – ONline einfaCh anmeldEn



The project ONCE is developing applications for the Hesse region and for partner cities in Bavaria and North-Rhine-Westphalia to enable citizens to verify their digital identities to public authorities in the area of transport or in tourism and the hotel trade.

The focus lies on developing digital identities that are technically secure and that originate from trustworthy institutions and companies. Companies and administrations should be supported in the digitalisation of their services with digital IDs and online credentials for the purpose of accessing the corresponding digital identities.

To this end, ONCE is developing components such as an app that enables ID data to be stored on smartphones and access to it managed. The separate back-end system (“lifecycle management”) includes functions for blocking and updating digital identities, for example when a change of address requires the data on the smartphone to be updated. In the ID Gateway, identity data is transferred to service providers as needed. Integration interfaces are designed for easy use and verification of ID data by online service operators.

These components are used, for example in the project’s application world “Municipality and administration“ to create a municipal ID that can be used to facilitate easier and privileged access to municipal systems. The portfolio also includes a digital visitor and guest card for tourists, allowing them access to reduced admission fees and other services or use of public transport free of charge.

ONCE puts the smartphone at the centre of customer- and citizen-centric identity management. Using a local smartphone ID, ONCE strengthens citizens’ control over their identity data.



## Smarte Datenwirtschaft

### Smart data economy

In this digital age, in which value chains are based on data, data use is a serious driver of economic growth.

The smart data economy technology programme therefore aims at using data for smart business, to process them securely in compliance with existing regulations, and to treat them as an asset in their own right. The Federal Ministry for Economic Affairs and Climate Action provides funding for flagship research and development projects that foster smart data products, within which business systems are developed that use machine learning and AI to make companies more efficient or even allow them to break into new fields of business.

In this context, an integrated view is to be taken of the digital data economy and AI-based systems. The key new underlying technologies for the smart data economy are selected AI processes (for example, for machine learning), data technologies and procedures for the secure use of data in distributed systems (for example, on the basis of distributed ledger technologies). Information systems approaches bring together an economic and business view with selected fields of data engineering.

#### Technology programme: Smart data economy

Programme duration: 2019 – 2023

Number of projects: 20

Number of project partners: 92

Funding: approx. €31 million

Overall budget: approx. €45 million

## EXAMPLES OF PROJECTS

### DaPro – Data-driven, machine-learning-based process optimisation in the beverage industry



With sales of 96 million hectolitres of beer and turnover of approximately €7.8 billion, the German brewery industry is an important pillar of Germany as a business location. As end-consumer prices remain flat, sales are in decline and costs are on the rise, efficiency needs to improve significantly. In the course of process automation and process management, enormous amounts of data have been collected over a number of years. However, the amount of data meant that it was not economically viable to use them for statistical evaluations or to identify patterns and interconnections. Close collaboration between the areas of mechanical engineering and software suppliers would be helpful, due to the complexity of the processes to be monitored and the need for cooperation with non-IT personnel. In this area of tension, jointly developing a solution could lead to innovation, accelerating the digitalisation of the processing industry and making a key contribution towards creating smart factories.

Both mechanical and plant engineers and operators in the beverages industry have recognised the added value of the process data generated in terms of increasing transparency and efficiency, and also as an asset in their own right. The consortium, headed by a large brewery, is therefore seeking to develop a modular reference architecture for collaborative data use in the beverages industry in order to gain a fundamental understanding of the sector's specific demands. To that end, an Internet of Things (IoT) platform with data mining modules is being established. The platform facilitates the use of diverse data that is already available for statistical evaluations and the identification of multivariate patterns and interconnections common in biochemistry. Corresponding structures for uniformly implementing machine learning along with a uniform structure for extracting, transforming and managing data will enable data to be used significantly more economically by plant manufacturers and beverage industry producers in the future.

## EXAMPLES OF PROJECTS

### Future Data Assets – Smart data calculations for assessing corporate data assets

### Future DATA Assets

The aim of the project is to develop and instantiate an assessment of data assets. This assessment of data assets is intended to serve to report corporate capacity for data management, thereby closing a gap in traditional reporting in which data are hardly considered or systematically evaluated. The value of data here depends in particular on the purpose for which they are used. Existing data can be used to develop applications which, in turn, enable savings to be made.

Assessments of corporate data assets as a reporting instrument should have two main components/features: the situation report and the outlook report. In order to instantiate assessments of corporate data assets as a reporting instrument, a corporate data assets platform is being developed through which companies can obtain a data asset toolset. The platform enables companies to analyse and establish the value of their data in different ways by providing semi-automated analyses and forecasts in a local ecosystem together with a selection of the required toolsets. The analyses of the data types should be made in accordance with certain evaluation rules to produce comprehensible results. In a global ecosystem, the focus must be in particular on secure exchange of the analysis findings and data sovereignty must be guaranteed.

Further developing the situation report by extending it to include a separate data report is seen as the most beneficial approach and the easiest to put into practice. The introduction of the data situation report could be based on the example of Corporate Social Responsibility reports. A draft for a new reporting standard for data reporting is being discussed with the Association of German Engineers (VDI) and with national supervisory and standardisation institutions. A pilot report is being finalised in cooperation with a consortium partner. The results aimed for are an expert recommendation by the VDI and a guideline for data evaluation. There are possible business models in the field of external certification bodies and advisory services.



## 5G campus networks

Thanks to 5G technology and the use of dedicated frequencies, campus networks can fulfil the highest service quality requirements with regard to the latency, reliability and availability of communications networks. That makes 5G campus networks attractive, both for applications in the field of commerce and industry and for the public sector, such as in health care. They are thus regarded as important forerunners, for example for factories and clinics of the future as well as for building sites and other mobile uses.

The aim of this funding measure is to develop innovative solutions in campus networks on the basis of an extended Open Radio Access Network (RAN) approach. This will further drive important efforts towards the interoperable expansion of 5G campus networks in Germany as a research and business location. In keeping with the purpose of this funding measure, the Open RAN approach aims to realise open, disaggregated and secure radio access and core networks. To this end, interfaces will be opened up and the interoperability of components from different suppliers guaranteed.

The flagship project CampusOS started work in January 2022. The six selected “satellite projects“ began in April 2022. The projects were selected in a formal evaluation process assisted by external experts. In all, 14 high-level consortia consisting of solution suppliers, users and scientific research partners applied. The winning projects entered by users and suppliers cover a variety of application scenarios. They are regarded as very well suited to making an important contribution to the envisaged technology leadership for Germany as a business location in the field of 5G campus networks.

**Technology programme: 5G campus networks**

Duration: 2022 – 2025

Number of projects: 7

Number of project partners: 56

Funding: approx. €33.7 million

Overall budget: approx. €52.9 million

**EXAMPLES OF PROJECTS****The CampusOS flagship project for suppliers and users**

The CampusOS flagship project aims to create a technologically sovereign modular ecosystem for campus networks in Germany. The focus is on open and secure radio networks based on open radio technologies and interoperable network components. This should bring about manufacturer independence and more competition as well as innovation, strengthening the digital sovereignty of companies in Germany.

CampusOS is being set up as a 5G+ system that can be programmed end-to-end. Thus, the campus network ecosystem encompasses all the major network components, including the Radio Access Network (RAN) and core network (CORE), user equipment (UE), virtualised cloud computing infrastructure and management and orchestration (MANO). The use of artificial intelligence and machine learning (AI/ML) is also being examined. Open solutions such as Open RAN are being analysed and compared with the integrated radio access solutions of established network providers. The open campus networks will then be realised on the basis of a technology kit expanded by a component catalogue and prototypes for different operator models and functioning component combinations.

The flagship project is supplemented by the CampusOS satellite projects. These projects serve on the one hand to validate the components and prototypes already



established in the flagship projects in specific sectors and use scenarios. On the other hand, the technology kit is expanded by developing and testing new technology components and prototypes for needs-based combinations and new operator models. This may also include test tools.

## EXAMPLES OF PROJECTS

### KliNet5G

KliNet5G will evaluate the feasibility of a 5G-based network infrastructure based on Open RAN in hospitals with medical technology, biosensor and hospital logistics applications. Technically, a clinical 5G test field will be set up using the technology toolbox from the lead projects with a two-stage strategy. The use cases were selected to represent a broad spectrum of the performance parameters of 5G: from high bandwidth and low latency to high numbers of subscribers and very low power consumption. Due to the close interlocking of the consortium with the lead project, requirements can be reflected back at an early stage and new developments can be tested. The pilot applications are each developed by an industrial partner and a university partner and evaluated together with the hospital IT and external experts. In addition to the technical applications, the focus is also on risk considerations, licensability and possible operator models.





## Quantum computing – applications for business

Through the targeted exploitation of quantum mechanical phenomena, quantum computers allow calculations to be performed for systems which cannot be carried out even with high-performance computers of classic design due to the problem's complexity. This gives rise to the hope of far-reaching increases in efficiency. Especially in the area of chemical simulation, process optimisation and machine learning, advantages are expected to be gained from the use of quantum computers in just a few years.

Due to the technological challenges, the operation of quantum computers will initially be reserved for specialised companies and institutions. Therefore, access to such systems must be ensured for users under economically viable conditions while preserving sovereignty over applications and data.

The goal of this technology programme is therefore to develop platforms, tools and methods for the economic exploitation of quantum computing. Potential users, especially from small and medium-sized enterprises, should be enabled to use commercially available quantum computers quickly and effectively for their own real applications.

The nine projects receiving funding cover a large part of the German quantum computing ecosystem and demonstrate the potential of quantum computing in specific application cases from the fields of materials research, mobility, logistics, production, waste management, software development and business administration.



**Technology programme: Quantum computing**

Duration: 2022 – 2025

Number of projects: 9

Number of project partners: 48

Funding: approx. €35 million

Overall budget: approx. €58 million

**EXAMPLES OF PROJECTS****QUASIM**

The QUASIM project investigates how quantum computing (QC) can be used to develop medium- and long-term benefits for manufacturing industry applications. The manufacturing industry is one of the central German economic sectors and at the same time requires the fulfilment of the highest quality standards in order to be globally competitive. In order to avoid errors in manufacturing and to derive optimised parameterisations of the machines, simulations are used. These are based on physical and material science models and mathematical equation systems, which place considerable demands on the engineering knowledge in modelling and the resources for simulations. In this context, QUASIM will test different QC approaches that accelerate simulations and embed them in quantum services in a practical way. This should also enable manufacturing companies which only have limited expertise in performing simulations to benefit from quantum computers.

## EXAMPLES OF PROJECTS

### ProvideQ

The complexity of many industry-relevant optimisation problems quickly brings even classic high-performance computers to their limits. Especially for numerous practical problems in logistics, this represents an obstacle to the efficient use of resources. Industrial users face the challenge that while they have detailed knowledge about the optimisation problems in their operations, the highly complex landscape of specialised algorithms and the potential of quantum computers do not fall within their core competence.

The project therefore involves providers of algorithmic services to make them ready for the quantum age. With the help of the ProvideQ Toolbox, they are enabled to offer appropriate quantum algorithms for suitable problem classes. The goal is to benefit larger sectors of the German economy from the advantages of quantum computing through the multiplier effect of the service providers.





### Edge data economy

Edge computing makes it possible to collect and process data, thus creating value close to where the data is generated.

The aim of the technology programme Edge data economy is therefore to develop and test data science technologies for edge computing solutions in different application domains. The funded projects are starting points for the creation of data-based solutions and business models and also provide a cross-sectoral impact due to their flagship character. The methods, procedures and tools developed serve as an essential basis for the German and European economy for sovereign data exchange and use, balancing and combining edge and cloud-based data spaces.

As well as taking the requirements and possibilities of small and medium-sized enterprises into account, a special focus of this technology programme is on developing sustainable edge computing solutions. Edge computing, for example, facilitates the transfer of energy needs for operating a cloud Infrastructure and the requisite data transfer. The challenge here lies in resource-saving concepts for balancing local and central data maintenance and use.

The projects cover a number of different application domains: water/waste water management, food supply chains, industrial production and manufacturing, the energy sector, smart living and in-patient care facilities.

#### Technology programme: Edge data economy

Duration: 2022 – 2026

Number of projects: 10

Number of project partners: 59

Funding: approx. €30 million

Overall budget: approx. €46.4 million



## GreenTech innovation competition

According to current studies, the deployment of digital technologies can cut emissions that damage the climate by up to 20% around the world. The GreenTech Innovation Competition technology programme aims to make a contribution towards the attainment of the German and European climate and environmental targets for the 2030 Agenda. Also, Germany and Europe are to be built up as a high-tech centre for green technologies and green services, and German and European digital sovereignty is to be consolidated.

The projects are to highlight the way digital technologies can combine economic and ecological benefits, and encourage their widespread use, particularly by SMEs. Digital technologies can help to boost energy and resource efficiency across the economy, and thus help the climate and the environment.

The added value of the digital solutions consists in particular in the possibility to integrate different processes – previous to this, it has only been possible to make isolated improvements to each individual process. In principle, the digital technologies must be designed to be resource-efficient in order to minimise the consumption of resources induced by the digitalisation. It is therefore particularly important to avoid rebound and backfiring effects from the use of digital technologies.

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**Technology programme: GreenTech innovation competition**

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Duration: 2023 – 2026

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Funding: approx. €75 million

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## IKT FÜR ELEKTROMOBILITÄT

### ICT for electric mobility: commercial electric utility vehicles – applications and infrastructures

Modern information and communications technologies (ICT) play an important role in electromobility. They control all the important functions in electric vehicles, forming a basis for their integration in future smart energy and traffic systems. ICT are thus the basis for a functioning overall electromobility system. As early as in 2009, the Federal Ministry for Economic Affairs and Climate Action's technology programme "ICT for Electromobility" supported innovative projects that develop smart applications for mobility using information and communications technologies.

In the first four phases of the programme (2009-2025, 73 projects, approx. €290 million in funding), the main objective was the smart integration of electric vehicles into the energy and transport system. In addition to that, research was conducted into new ICT architectures for electric cars. These will help reduce the weight and cost of future generations of electric vehicles and make possible new entertainment, comfort and safety features. New applications for highly-automated vehicles also serve as a building block in the mobility transformation.

Phase 5, which began in 2022 and to which new projects are added each year, focuses on ICT-based concepts of electromobility that will improve the overall cost of commercial electric vehicles and fleets, improve the networking of existing infrastructures and use them more efficiently. A focus is on ICT-based system approaches and applications to link commercial electromobility with advanced energy, logistics and property infrastructures (for example to develop and test network-compatible possibilities for tenants/owners who do not have a parking space of their own at apartment, building or neighbourhood level). The aim is also to couple commercial electric vehicle fleets with industrial and commercial energy management systems or to use electric vehicle batteries as buffer and storage systems. Another focus is on highly-automated and autonomous personal transport and cargo concepts in urban, rural and suburban areas. The development and testing of app-based uses and platform concepts, new charging infrastructure solutions specifically for heavy electric utility vehicles, taking network restrictions into account, and ICT-based hydrogen/fuel cell uses in the utility vehicle sector are also eligible for funding.

**Technology programme: ICT for electric mobility (Phase V)**

Duration: 2022 – 2026

Number of projects: approx. 32

Number of project partners: approx. 120

Funding: approx. €80 million

Overall budget: expected to be approx. €130 million

**EXAMPLES OF PROJECTS****eJIT – Electric just-in-time logistics**

For the most part, the logistics sector still uses conventional heavy goods vehicles. The electrification of just-in-time (JIT) logistics transport will be inevitable if the climate goals in the transport sector are to be reached. This is the starting point for the “eJIT” project with electric semi-trailers.



A positive conclusion was drawn after more than 20,000 km of electric JIT (eJIT) use. Although the reliability of existing electric HGV prototypes was not as good as that of diesel-driven HGVs, use of electric HGVs in eJIT logistics was successful. As well as the benefit of high-level CO<sub>2</sub> savings, residents also benefitted from the electric HGVs’ significantly reduced noise emissions when used 24/7. The drivers also preferred the electric vehicles in JIT transport.

The influence of the electric just-in-time project on vehicle production by a well-known vehicle manufacturer in Saxony was even more far-reaching. The project contributed to the site being modified to become the first CO<sub>2</sub>-neutral automotive production site. First of all, in order to include the entire supply and production chain in the process, transport within the plant was completely converted to electric HGVs. Meanwhile, according to project participants, some 60 electric HGVs are being used for internal operations and delivery transport. The next challenge is to achieve climate-neutral supplies using emission-free HGVs in long-distance transport.



## EXAMPLES OF PROJECTS

### ABSOLUT

More climate protection, less dependence on fossil fuels and new technologies will effect great changes on mobility and its players. The further development of electromobility and artificial intelligence are future-oriented topics for German industry.



In this context, the further development of highly-automated electric vehicles and their exemplary use on a test route in public traffic space are under way in the north of Leipzig within the framework of the ABSOLUT project. A unique feature is that the vehicles have been approved for operation in public traffic space at medium speeds of 50-70 km/h. This innovative transport service is intended to be included in the regional transport operations in the future. This involves a number of different deployment concepts, such as a needs-based 24/7 service or service on demand, a booking and information interface developed with users and development and networking with a control centre.

Further information on current technology programmes is to be found [here](#).

## 4. Projects for innovation concepts

This funding instrument is intended to provide funding for conceptual work in small collaborative projects with a maximum duration of one year. The projects serve to prepare ecosystems or create important bases for strategic cooperation in application and technology projects (also in international cooperation projects).

In particular, requests for proposals for ideas competitions are planned, which also appeal to young and small enterprises with innovative ideas. These competitions give actors the opportunity to further develop their innovative ideas, to develop implementation concepts and to attract partners. Promising implementation concepts may be able to receive follow-up support in the form of further project funding.

## 5. Forward-looking dossiers and innovation policy

The Ministry's technology policy seeks to provide sustained support for the digital transformation of business and to test innovations in real life as soon as possible, thereby demonstrating the opportunities and use cases for digital technologies in key industries and sectors of society. The funding is intended to contribute to showing and exploring the implications of the digital transformation, such as with regard to its acceptance in society and sustainability aspects or likely changes in the world of work, thereby highlighting scope for action for policymakers and business. These may be both at national and at European and international level. Any solutions sought should have a holistic and sustainable character and contribute to environmental and climate protection. Overall, funding should contribute to reducing the development risks of short innovation cycles in market-oriented research and have positive spill-over effects on the entire sector concerned, beyond the specific projects receiving funding and their partners. The early uptake and transfer of technologies should be stimulated, particularly where markets do not respond or are very slow to respond to recent developments in technology ("market failure"), or where there are other reasons why the transfer into business, particularly SMEs, does not happen by itself.

For any decisions made regarding technology policy, it is key to choose the right time to pick up on forward-looking issues and foster innovation. Internationally, Germany has to compete globally with other countries that are also highly technically skilled and where local markets may be much larger and quick to adopt new technologies. It is important to decide when technical innovations are mature enough to be attractive to business and to what extent these developments can generate specific opportunities for suppliers and users in Germany within a foreseeable time frame. The systematic development of such new dossiers also makes a key contribution to maintaining and achieving digital sovereignty in Germany and Europe.

Market studies and expert meetings with researchers and business experts and also monitoring of international developments in technology help guide the specific focus of such forward-looking dossiers. A small number of early-stage innovation concept projects can help demonstrate the viability of forward-looking dossiers and make the case for larger-scale calls for applications for funding. Calls for applications can be launched quickly and flexibly within the framework of the "Development of digital technologies" funding programme.

The forward-looking dossiers currently addressed include the following:

- **Trusted identity management solutions:** With its “secure digital identities showcase” technology programme, the Federal Ministry for Economic Affairs and Climate Action is driving the widespread use of digital identities – primarily for the benefit of citizens and public administration. Increasing digitalisation and networking in all areas of business also leads to an increasing need for identity solutions for things and organisations.

Trusted digital identity solutions are an important building block for the IT security of business and society. They enable devices and users to be automatically identified, legitimised and authenticated. Digital identity solutions also allow secure, trustworthy transactions to take place and make it possible to identify all the links in supply chains and other digitalised processes. In addition, secure digital identities are the basis for possible circular economy processes, and can thereby make a contribution to the sustainable transformation of the economy.

Possible technological approaches are, for example, the use of secure elements in end devices or also distributed ledger technologies designed to save resources (such as blockchain) in different application scenarios. However, the focus lies on developing overarching systems, applications and management tools using existing technologies and in consideration of current structures and legal aspects with the aim of establishing secure identity solutions for people, organisations and devices and making them as easy to use as possible.

- **Sovereign data economy:** The application projects funded by the Federal Ministry for Economic Affairs and Climate Action are intended to contribute to specifying and validating technical and economic concepts for identities, communications and ecosystems to ensure a sovereign data economy. The funded data technologies support the implementation of the goals of European strategies with regard to data and industry and contribute to ensuring a sovereign, European data economy. Technological support for GAIA-X plays a central role in this. Through the **GAIA-X** project, the Federal Ministry for Economic Affairs and Climate Action aims to develop a high-performance, competitive, secure and trusted data infrastructure made in Germany.

- **Distributed ledger technologies (DLT):** There are various DLTs that are already being used in the financial industry, in science, healthcare, and logistics. At the same time, there are still challenges that need to be addressed for the technologies to be used in practice, for instance where DLTs need to interact with conventional systems. Relying on the potential for innovation, the Federal Ministry for Economic Affairs and Climate Action has been supporting the distributed organisation of energy grids under its Smart Service World programme, authentication functionalities that also protect users' identities in the secure digital identities showcase and the secure paperless and legally compliant electronic version of accompanying documents in international logistics in the Smart Data Business technology programme.

#### EXAMPLE OF A PROJECT

##### HAPTIK

Tradability of physical goods using tokens in consortia networks



The HAPTIK project, funded within the smart data economy programme, is developing a platform to secure the electronic exchange of legally-required transport documents for shipping, thus paving the way for paperless trade.

Bills of Lading (B/L) are still paper-based as only a few countries to date allow the use of exclusively electronic trade documents. Instead, it is usual for printed bills of lading (so-called consignment notes) to be examined manually. While international trade rules provide for electronic documents to be used, the possibilities for doing so have only rarely been transposed into national law.

Distributed ledger technology ensures that every link in the chain can be followed, since the Commercial Code requires “authenticity and integrity of the records“ to be assured in order for electronic bills of lading to be regarded as



equivalent to the traditional paper-based documents. The HAPTİK consortium is developing a platform based on distributed ledger technology that ensures that trade using electronic commercial documents is always traceable, trustworthy and legally compliant. Lawyers have assisted with the development of the software at every stage.

This solution offers many advantages for commodity trading because digitalising the bill of lading process not only makes it more efficient and resource-saving, but also more flexible.

- **Smart Living – Intelligent and sustainable living, residential and work environments:** The digitalisation of living, residential and work environments brings with it great opportunities for society and business. It is the basis of mobility in everyday life and at work, as well as for comfort, assistance and safety at home. The great potential of smart living technologies is also evident in the areas of energy-saving, preventive health and nursing care. Since much is already technically possible, the key is to create the necessary conditions for successfully tapping the market and making optimal use of smart living solutions.

This depends in particular on further strengthening citizens' trust in and acceptance of this "new" technology. In addition, data privacy and data security need to be ensured and market transparency and investment security levels improved. Smart living products and applications need to offer clear benefits and be easy to use (usability). Another key requirement for the creation of a German lead market for sustainable smart living applications is interoperability between systems made by different manufacturers.

A major objective of future funding measures is therefore seen as being to create a smart living ecosystem that places the development of intelligent, sustainable smart living applications on a new basis, simplifying them, accelerating them and making them cost-effective. All relevant fields of application should be considered

as far as possible in order to demonstrate the universality of the ecosystem. In order to establish a universal ecosystem of this kind, the focus should lie beyond Germany in the European region.

- In particular, results of the projects already funded by the Federal Ministry for Economic Affairs and Climate Action should serve as a basis for the envisaged measures, and fundamental principles derived from GAIA-X concerning trusted sharing of the data required should be considered.

### EXAMPLE OF A PROJECT

#### ForeSight – Platform for smart and forward-looking smart living services mindful of the relevant context



How can people's everyday lives become more safe and secure, energy-efficient, and comfortable? This is the main question addressed by the ForeSight collaborative project, which is part of the innovation competition on artificial intelligence.

In the ForeSight project, a pre-competitive and open AI-based platform has been developed in a smart living environment:

- to overcome current interoperability issues between different smart living components, so as to make it possible to combine products made by different manufacturers in future;
- to establish machine learning and other AI methods in the smart living context, so that in future, self-learning living environments and devices will ever better adjust to their various users' profiles;
- to create an environment that allows optimal housing management during operations, for example guaranteeing and commissioning maintenance, upkeep and repair services in good time.



ForeSight aims to establish a starting point for a new smart living ecosystem that involves tenants, housing companies, components and systems manufacturers, suppliers of software platforms, investors, and operators from the housing sector, and many more service providers from different industries. At the centre of all this, however, will be human beings.

- **Service robots as primary products of the future:**

In times of demographic change, robotic systems are playing an increasingly important role. We are in a phase of transformation, not only in Germany, but in most other industrialised countries as well. There are many signs to suggest that the global transformation to be seen in nearly all areas of life will continue. It will not only continue in an industrial context, but also to an increasing extent in other areas, such as nursing care, logistics, agriculture and other fields of application, where it will change processes for good. This will require companies, service providers and users to change, both in terms of technology and organisation and by setting aside the separation of technology, organisation and human beings.

Building on the results of robotics projects from the completed PAiCE technology programme, further selected research and development needs have emerged. These are to be found in technical environments with innovative security technologies, in AR/VR-supported and AI-based human-robot interaction (HRI), and also in human-oriented dialogue and workplace organisation using simple learning techniques and ergonomic design. Supplementing the above, legal and ethical questions need to be resolved.

- Growing numbers of projects in the field of **healthcare** draw on specific technology developments and receive funding from the Federal Ministry for Economic Affairs and Climate Action under its various technology programmes. Focal areas here include better medical care (doctor-patient communication, remote monitoring), the secure use of medical data in line with applicable legal requirements (for



example, for clinical research, analytics, compliance with reporting requirements for medical technology and pharmaceutical companies, secure platforms for cooperation in the healthcare sector), and digital medical technology (interoperability, AI-based diagnostics, 3D procedures, 5G communications technologies). The ambition of the project is to create seamless digital processes where possible.

#### EXAMPLE OF A PROJECT

##### 5GMedCamp: Development and testing of continuous vital signs data transmission and processing using local 5G networks



The 5GMedCamp consortium is an example of a project in the healthcare sector.

The aim of 5GMedCamp is to enable the quality of treatment for cardiological risk patients to be improved, both in hospital and also in post-inpatient patient management at home. This is to be achieved by introducing an adaptive and dynamic high-performance network on the basis of fifth-generation (5G) communications technologies, enabling data to be analysed using state-of-the-art AI techniques and an AI-based support system to be provided. This is a pioneering application of a 5G campus network for the remote control of cardiovascular and cerebrovascular risk patients.

## 6. International cooperation projects

In international cooperation projects, companies and research institutions can benefit from the specific competencies of foreign partners and tap additional opportunities for transfer to foreign markets. The Federal Ministry for Economic Affairs and Climate Action currently supports bilateral projects with partners in Austria, Japan, Canada and France. Most projects are based on a bilateral agreement between the Federal Ministry for Economic Affairs and Climate Action and the funding ministry in the partner country. In addition, the Federal Ministry for Economic Affairs and Climate Action also funds German partners in multinational cooperation projects, particularly through the EUREKA research network comprising a total of 46 national ministries and funding agencies in Europe and around the world, including, for example, from Israel, Canada, South Korea and Singapore.

### Cooperation with Austria

Since 2018, there has been a cooperation between the Federal Ministry for Economic Affairs and Climate Action (BMWK) and the Austrian Federal Ministry for Climate Protection, Environment, Energy, Mobility, Innovation and Technology (BMK). There are joint German-Austrian R&D projects in five funding priorities. Austrian and German companies as well as research institutions can complement each other in the projects with their respective profiles and jointly create attractive solutions in the pre-competitive area, also in the direction of the digital European single market. For example, three Austrian partners have been involved in the showcase technology programme “secure digital identities” since 2021, funded by the Austrian BMK, performing specific tasks in the projects. Within the framework of a bilateral call for applications for funding, joint Austro-German projects were initiated in 2022 for the focal area “Edge Data Economy – Data Science Technologies”.

Other successful cooperations with Austria were launched via joint calls for applications for funding by the Federal Ministry for Economic Affairs and Climate Action and the Austrian Research Promotion Agency (FFG) on the subject of “Smart Data Use for Production“. The flagship project EuProGigant funds cooperation in the GAIA-X environment. A second project, champI4.0ns, focuses particularly on the contribution of ICT for sustainable economies and the environment and for reaching the climate goals.

## EXAMPLE OF A PROJECT

### [EuProGigant – German-Austrian flagship project for GAIA-X in manufacturing](#)



The goal of the EuProGigant project is to demonstrate and scale a cross-site digitally-networked production ecosystem with resilient, data-driven and sustainable value creation, strengthening European industry. The project, jointly led by the TU Wien Pilot Factory and TU Darmstadt, together with partners from industry, demonstrates how the speed and flexibility of value creation can be optimised by implementing a data ecosystem based on GAIA-X. A unique feature of this approach is the creation of a European knowledge database as a platform for long-term, secure, sovereign and holistic cloud data management.

## [Cooperation with Japan](#)

The cooperation between the Federal Ministry for Economic Affairs and Climate Action and the Japanese Ministry of Internal Affairs and Communications (MIC) is based on the annual Digital Dialogues and the Joint Declaration of Intent for cooperation in digital policy of 2018. The goal is to increase the productivity of industrial manufacturing in both economic areas.

The Federal Ministry for Economic Affairs and Climate Action is funding the German-Japanese project EmKol4.0 – “Making modern communication technologies accessible for Industry 4.0”.

The aim of the EmKol4.0 project is to provide methods and tools that support the examination and development of convergent communication solutions over the entire life cycle of industrial plants and products. The German consortium, led by the Institute for Automation and Communication, is exploring the deployment of advanced 5G technologies in production networks, taking into account the constantly

developing manufacturing environment. Convergent communication solutions will be developed that enable easy integration into digitalised production systems. The Japanese consortium feeds in its expertise in the fields of wireless communications and adaptivity of the communications technologies in factory environments.

### Cooperation with Canada

Germany and Canada cooperate in five R&D projects on artificial intelligence in the healthcare sector and robotics. The Canadian business partners are funded by the National Research Council (NRC) in coordination with the Federal Ministry for Economic Affairs and Climate Action. The projects and their results were presented at two high-profile public relations events on “50 years of science and technology cooperation between Germany and Canada“. The Canadian partners bring to the project their outstanding expertise in AI, in healthcare data handling and in the field of manufacturing. There is a high level of cultural concurrence between Germany and Canada regarding important cross-cutting issues, such as data security or ethics in the field of artificial intelligence.

### Cooperation with France

France and Germany are strengthening their collaboration in the field of artificial intelligence and 5G communication technologies through joint innovation projects. To this end, the German Federal Ministry for Economic Affairs and Climate Action and the French Ministère de l'Économie, des Finances et de la Souveraineté industrielle et numérique have issued joint calls for applications for funding. The cooperation projects resulting from the joint calls foster the creation of joint Franco-German AI and 5G ecosystems. At present, thirteen cooperation projects are underway in the fields of health, sustainability, robotics, communications and the construction industry.

## EXAMPLE OF A PROJECT

### 5G-OPERA – Franco-German ecosystem for private 5G networks



The foundation for the digital sovereignty of the European mobile ecosystem and the industries involved is to be laid by the 5G-OPERA project. The goal of the project is to ensure that the hardware and software of different manufacturers used in private 5G networks (campus networks) work together smoothly. A platform is being developed on the basis of Open RAN architecture to ensure this interoperability and to support flexible combinations of the core competencies of a 5G campus network (radio unit, distributed unit and centralised unit). The interoperability of the developed Open RAN solutions will be tested and verified by integration in testbeds in the two countries.

## EUREKA Network and cooperation projects

The Federal Ministry for Economic Affairs and Climate Action is not only involved in bilateral cooperation, but also in European and international funding programmes. The EUREKA network includes ministries and funding agencies from 46 countries (full members), the European Commission and three associated countries (Singapore, South Africa and Chile).

Six projects are currently under way within the framework of the European research initiative EUREKA. Three projects are receiving funding in the context of the EUREKA Cluster CELTIC-NEXT call and three more are receiving funding in the context of the EUREKA Cluster Σ! AI call. Through these projects, the Federal Ministry for Economic Affairs and Climate Action has extended its international cooperation to partners from Singapore, the United Kingdom, Sweden, Hungary, Portugal and Turkey.

**EXAMPLE OF A PROJECT****AISSI – Autonomous Integrated Scheduling for Semiconductor Industry**

The German-Singaporean cooperation project “Autonomous Integrated Scheduling for Semiconductor Industry” (AISSI) aims to develop new AI-based approaches that build on European quality thinking in the automotive sector. By applying reinforcement learning in the context of autonomous and continuous improvement of integrated production and maintenance scheduling, European semiconductor manufacturers will gain a competitive edge in terms of cost effectiveness, output quantities and product quality.

The core innovation of this project is a fundamentally new system in semiconductor production and maintenance planning.

An overview of all international cooperation projects has been compiled in a separate booklet available for download [here](#).

