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Lernende Systeme
GERMANY'S PLATFORM FOR ARTIFICIAL INTELLIGENCE

Creating Value from Data

Potentials of data- and AI-based value networks

Content

1. Executive Summary

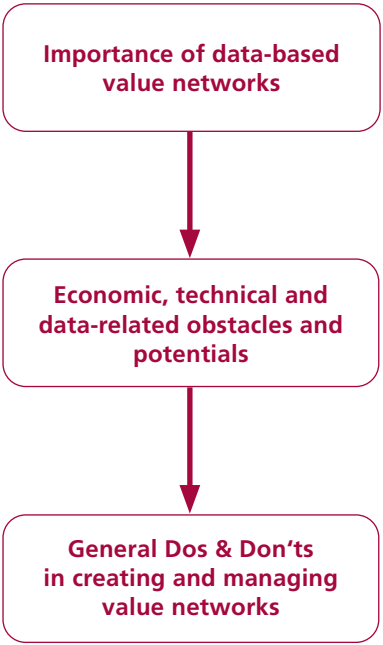
Using digital technologies for collecting and analyzing data allows both the improvement and flexible customization of services and products, offered in a wide variety of sectors and industries. This, however, typically requires an extensive collaboration of different actors to enable access to data and technologies.

This publication examines such data-based value networks within digital ecosystems. Here, the participating actors generate knowledge, create value, and thus achieve measurable benefits based on shared data and the implementation of Artificial Intelligence (AI).

For this purpose, 13 distinctive examples of successful data-based value networks from different industries are presented and visualized in a comprehensible way by following a uniform logic. In addition, after describing the technological background and specific obstacles, the particular benefits and economic, technological and data-related potentials of the involved actors are systematized in tabular form. The publication concludes with a summary that both contains inductively derived „Dos & Don'ts" for creating and managing data-based value networks and provides an outlook on future developments and trends.

By explicitly presenting the advantages in various examples, the aim of this booklet is to give representatives from business, politics and the public the opportunity to reflect on established business models that could benefit from sharing data and using AI.

These examples are taken from relevant sources such as the map on AI of the Plattform Lernende Systeme (https://www.plattform-lernende-systeme.de/map-on-ai.html) or from recommendations of interview partners and members of the Plattform Lernende Systeme.



- **Collaborations** between companies and AI vendors enable **new business models**, especially for SME
- The basis are **shared data** and the use of **AI methods**

- **Major obstacles:** Willingness to share data, data security and lack of data infrastructure
- **Important potentials**: Advantages in efficiency, business model innovation, securing data access and data sovereignty

Important guidelines:

- Clear **value proposition** of all participants
- Handling shared data in a **responsible** way
- **Data quality**, creating a **standard** for data exchange

2. Potentials of data- and AI-based value networks

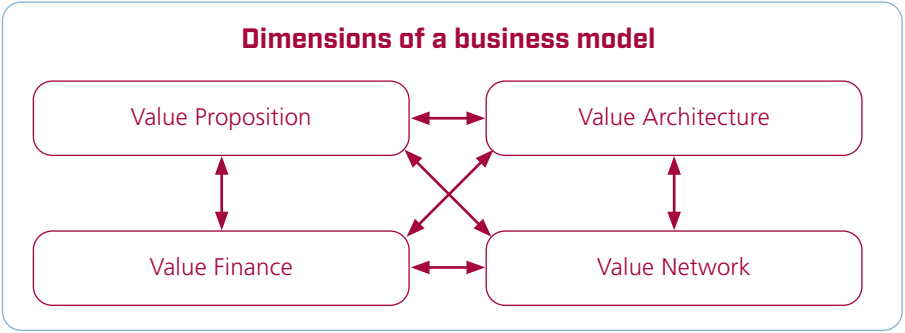
New forms of data-driven business models

Methods of Artificial Intelligence (AI) and (self-)learning systems are essential technological drivers of digital transformation. In this way, far-reaching opportunities for large companies, start-ups and medium-sized businesses are created to increase the efficiency of existing processes and routines and to design and implement innovative data-driven and platform-based business models. This is connected with new types of value proposition, value finance or the generation of revenues, value architecture and the value network itself.

Definition: Value networks

AI-based solutions require various core competencies and system modules. A single company typically cannot possess all necessary elements. In addition to access to data sources, organizations often lack competencies particularly in the areas of data analytics and AI. Cooperation with providers of data, technologies and digital platforms can help to develop the necessary knowledge about value networks or alliances within digital ecosystems.

Value networks are created by breaking up highly structured, sometimes rigid value chains. They enable innovative product and service offerings by implementing platform-based, data-driven business models via flexible, dynamic and automated interaction or collaboration among different actors. This, however, requires secure, largely open data access or exchange from a wide variety of sources across company and industry boundaries.



V⁴-Model according to Al-Debei and Avison (2010)

Collaborative creation of product-service systems

The focus is on the collaborative creation of individualized product-service systems (PSS), which can be customized to the user and offered through platforms. These PSS are usually created by a comprehensive, automated data exchange between different actors. This requires the breakup of traditional value chains and, consequently, a transformation to dynamic value networks. As a result, flexible digital ecosystems are emerging along data and service platforms.

Advantages of shared data and the use of Artificial Intelligence

In the context of the AI-driven, so-called second wave of digitalization (Kagermann & Winter, 2018), the comprehensive access to and exchange of data is essential as the basis and training material for self-learning systems. The implementation of electronics, sensor and actuator technology in objects (e.g. devices, machines, vehicles) up to entire (production) systems and their networking via the Internet is a necessary precondition. Thus, an Internet of Things is created, in which physical objects receive a so-called „digital twin". The real and physical world merge into cyber-physical systems.

The use of AI extends to almost all economic sectors. Among other things, it enables the real-time derivation of valuable information or insights from data, generated by the sensor technology. Such information or insights, in turn, can be translated into new value propositions. Therefore, manufacturers or operators of digitalized objects and systems that provide various types of data (e.g. operating, environmental or usage data) can be regarded as starting point. The combination, processing and AI-based analysis of data is carried out on digital platforms. On this basis, direct and indirect network effects allow the generation of new scalable value propositions that can be individualized according to the customers´ preferences.

Importance of value networks

Using AI methods, such data-driven and platform-based solutions require the combination and integration of a wide range of competencies, which in particular small and medium-sized companies usually do not have on their own. Here, comprehensive value networks are essential in order to compensate for the lack of competencies via different partners in the network and to ensure necessary data access via appropriate cooperation.

To configure and dynamically adapt such value networks or ecosystems, it is important to recognize existing technical, economic and data-related gaps, to define one's own value contribution and to identify suitable cooperation or collaboration partners via their potential contribution (e.g. data, technology and competence provision).

The case studies presented in this booklet are intended to provide a practice-orientated illustration of aspects that need to be considered when implementing data- and AI-based value networks – especially in medium-sized companies. Furthermore, it will be shown which specific challenges have to be considered and why the exchange and cooperation with partners is so important.

Myths and facts about AI

In this section, five popular myths that often occur in the field of Artificial Intelligence are put into a realistic context by five facts.

Myth: *AI is only for large companies*

Fact: An exclusive customer base, a deep understanding of the market and flexible decision-making structures: Medium-sized companies have excellent preconditions for the use of AI. They often operate in "protected" markets and are predestined to offer exclusive products from their data – for example in supply chain management or service. Deep Learning and Transfer Learning makes this possible, even with scarce training data; often the code is even available as open source. A further enabler are so-called "feedback loops": From the interaction with customers, SME continuously gain training data and thus improve the data product. *(Alexander Löser, Plattform Lernende Systeme, Working Group 1)*

Myth: *AI will soon solve the problems of mankind*

Fact: Artificial Intelligence has made amazing progress in recent years. The performance of deep neural networks often seems to have no limits and easily surpasses human capabilities. Tomorrow, AI could already improve the world – whether through care robots or automatic driving. At the same time, however, major challenges have become apparent in recent years: Robustness, hardware requirements and explainability are certainly among the biggest. We have not reached our goal until we have created reliably good, robust and energy-efficient AI. *(Peter Schlicht, Plattform Lernende Systeme, Working Group 5)*

These and other myths and facts about AI can be found on our website.

Myth: *AI does not need hardware*

Fact: Artificial Intelligence seems abstract but has absolutely real needs: It requires electricity. More precisely: High-performance computers with large power requirements. If every household had a small AI computer running permanently to become smarter, electricity consumption would increase by a fifth. AI is far from being intelligent, but it is an extremely powerful technology for processing data. In order to be able to use them reasonably on a broad scale, an energy-efficient implementation is necessary. To achieve this, AI algorithms and hardware must be optimally matched for the specific application. *(Wolfgang Ecker, Plattform Lernende Systeme, Working Group 1)*

Myth: *With enough data, anyone can train AI systems for any task*

Fact: No, because selecting the right data, algorithms and architectures requires a lot of human know-how if the systems are supposed to be efficient and reliable. Application knowledge is also important: AI systems that integrate human knowledge can be trained faster and with less data. Companies should create the right database and invest in the training of their specialists. *(Stefan Wrobel, Plattform Lernende Systeme, Working Group 1)*

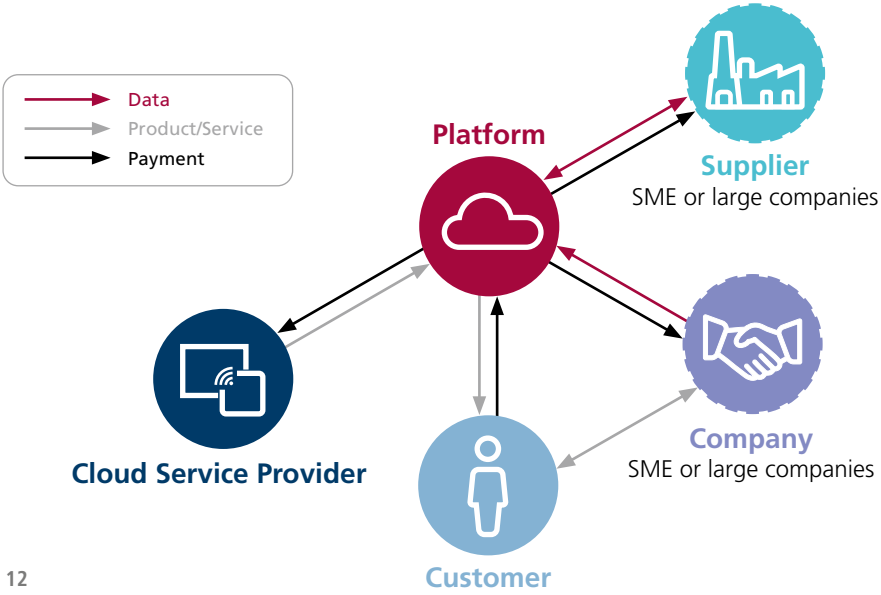
Myth: *AI recognizes things and connections*

Fact: It cannot. Artificial Intelligence can only detect correlations, not causalities. Real knowledge – the ability to comprehend and understand things deeply – is out of reach. False correlations are therefore not "accidents", but an intrinsic element of Artificial Intelligence. In addition: AI is related to the past or present. Based on the existing parameters in the data, it can only recognize what already is. It is blind to what is really new ("Newton's apple"). AI cannot and must not generate hypotheses methodologically. *(Harald Schöning, Plattform Lernende Systeme, Working Group 1)*

3. Learning from digital pioneers: Examples for successful value networks

Modeling a value network

On the following pages, 13 examples of active and successful value networks based on data sharing and application of AI methods are presented. In order to illustrate the links between the individual participants, the examples, which were chosen from a wide range of fields, are illustrated in a uniform visualization. Actors representing small and medium-sized enterprises (SME) are graphically highlighted by a broken contour. On the opposite page, the advantages and benefits of the actors are listed in table form.



The technological features, specific obstacles and the use of AI methods for processing the shared data are described separately. In addition, the solutions for the case-specific requirements are presented, which can be of a technical, economic or institutional nature.

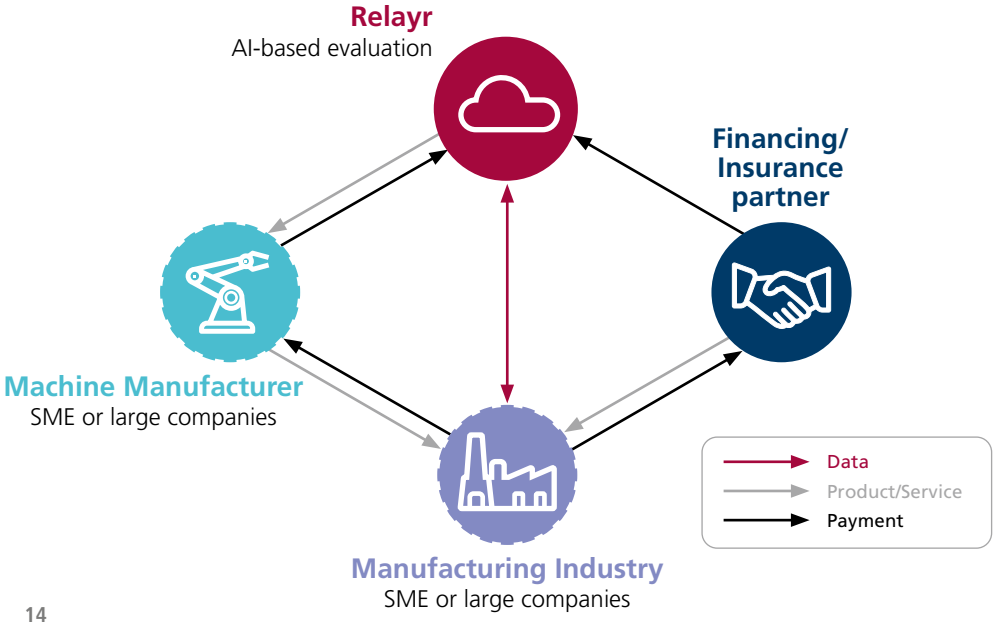
Economic benefits	Technical benefits	Data-related benefits
For example: - Optimization or efficiency advantages - Product differentiation - Quality improvement - New or adapted revenue models	**For example:** - Access to or use of certain technologies, in particular AI - Access to or use of specific infrastructures	**For example:** New possibilities for - Data access - Data exchange - Use of data

How can your business benefit from Artificial Intelligence?

Through a uniform, simplified presentation of various examples and a listing of the advantages in tabular form, we give you the opportunity to reflect on your own established business models. Could your company possibly benefit from sharing data and using methods of Artificial Intelligence? It may be possible to transfer elements and correlations from one or more examples to your business.

Resilient production lines through AI

Starting Point | In the highly automated manufacturing industry, unplanned downtime causes high production losses.
Data-based innovation | Machine function can be monitored by Relayr as an expert in predictive maintenance through machine-integrated sensors and AI-based evaluation. Unusual behavior is reported, the system is checked and, if necessary, serviced before a failure occurs.
Value | Unscheduled plant shutdowns are prevented and the risk of potential damage due to production downtime is minimized. As part of the Munich Re Group, Relayr can draw on several possible financing and insurance models and partners to offer a suitable value creation model.



Obstacles | Data security can be an obstacle for Smart Maintenance. In addition, measuring the relevant parameters can generate very large amounts of data, which poses a challenge for the IT infrastructure.

Technical solution | Through AI-based evaluation on edge, directly at the machine, and classification as typical or atypical machine behavior, the amount of data can be minimized. In addition, the monitoring becomes agnostic using AI methods, so no conclusion can be drawn about the actual production processes.

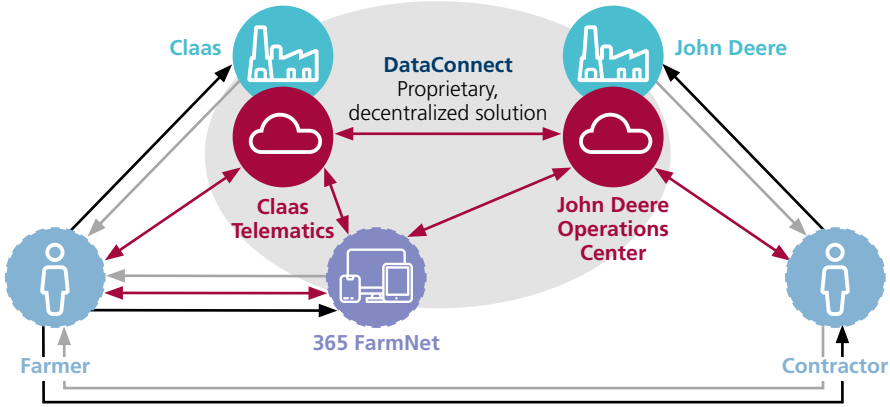
Network	Economic benefits	Technical benefits	Data-related benefits
 Manufacturing Industry	- Prevention of production downtimes - Increase in production efficiency	- AI-based predictive maintenance as retrofit (brownfield)	- Evaluation on Edge ensures data protection - real-time condition monitoring
 Machine Manufacturer	- Expansion to a system provider for OEM's	- Integration of AI solutions to enable agnostic monitoring	- Agnostic AI Technology on Edge for self-learning systems
 Relayr	- Development of a new industry for own Smart-Maintenance offers	- Access to hardware for AI-based predictive maintenance	
 Financing/ Insurance partner	- Development of new business customers - Avoidance of economic damage	- Access to AI-based predictive maintenance technology for own portfolio	

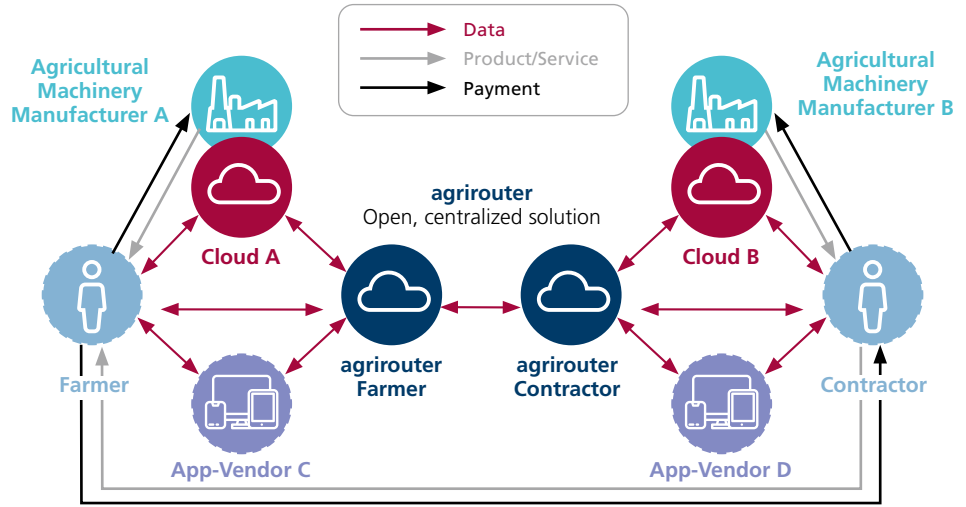
Data exchange in agriculture

Starting Point | For farmers and contractors with mixed machine fleets, the use of machine data in combination with different agricultural software products (apps) is only partially possible. This prevents an efficient digitalization in agriculture.

Current solution approaches | There are different approaches for data exchange between different apps. The web-based agrirouter enables communication with products from currently 27 agricultural engineering companies as a central interface. The farmer can access the data via agrirouter and determine which data is shared with which platform, including other agrirouter instances. DataConnect follows a decentralized approach – here, applications from CLAAS, 365FarmNet and John Deere can communicate directly with each other. The farmer can work in one platform and access the data of the others from there (Kawohl, 2020).

Obstacles | In the short term, trust and a high level of consumer comfort must be created. In the long term, it is important to support the farmer across manufacturers in optimizing the business and, if necessary, to make recommendations, for example based on data-based trend forecasts. The agrirouter has been available since February 2019, DataConnect will be launched in summer 2020.





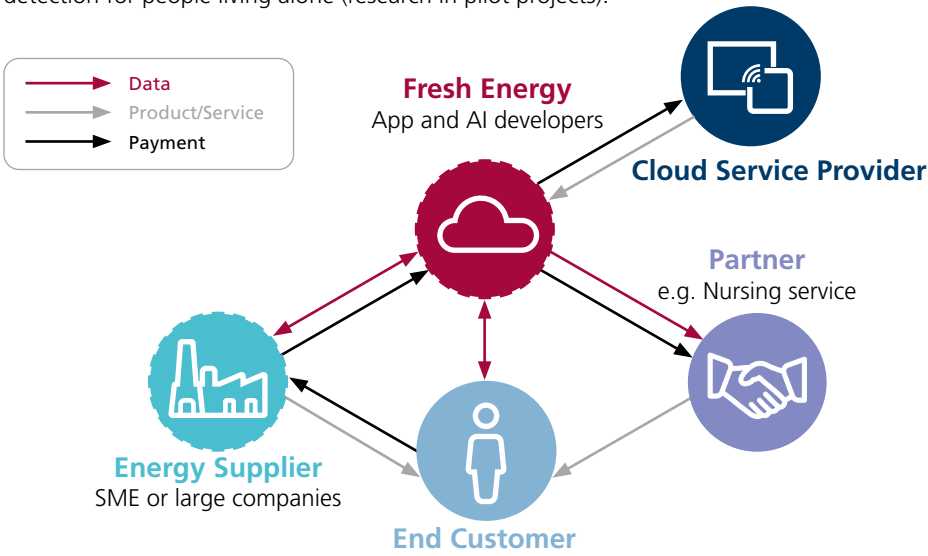
Network	Economic benefits	Technical benefits	Data-related benefits
Agricultural Machinery Manufacturer	- Generation of connectivity for the utilization of machine data in agricultural software products	- Creation of industry standards/multi-brand solutions through uniform interfaces	- Provision of machine data to optimize the overall production process
Farmers	- Increasing efficiency and effectiveness through holistic optimization of agricultural production processes	- Manufacturer-independent data exchange in near real time - Future application of AI methods to optimize the operation	- Cross-system integration of machine data into the documentation and optimization of production processes
Provider of Agriculture Apps	- Reduction of development efforts by using predefined interfaces	- Cross-manufacturer bidirectional data exchange with agricultural machinery and/or other agricultural software apps	- Partially automated documentation and the resulting analysis of weak points - AI process optimization

AI-based services with smart meter data

Starting Point | Private households have little relation to their electricity consumption and only encounter their energy supplier once a year via the invoice. Currently, the companies can only differentiate from their competitors by price or electricity mix.

Data-based innovation | Based on smart meter data, Fresh Energy offers an innovative customer relationship between energy supplier and private household in a B2B2C model. The end customers receive an app in the design of the energy supplier, in which the power consumption is visible in real-time. The total power consumption can be disaggregated by AI methods to identify individual devices.

Value | This information enables the end customer to identify, recognize and exchange inefficient devices. The next step is to use the consumption data as a basis for innovative services, such as automatic reordering of consumables (already implemented in the app) or emergency detection for people living alone (research in pilot projects).



Technical features | Disaggregation describes the recognition of individual typical consumption patterns of e.g. stove or refrigerator by AI methods based on the total consumption. This is possible because each device leaves specific signatures in the overall load curve. To ensure data security, certified servers in Germany are used.

Obstacles | For the analysis either the installation of a smart meter – which is currently not planned for most private households for cost reasons – or an additional readout unit (so-called dongle), is required. In order to make the business case more interesting for energy supply companies on the one hand and to increase the acceptance of smart meter solutions by end customers on the other hand, additional services based on electricity consumption data are required.

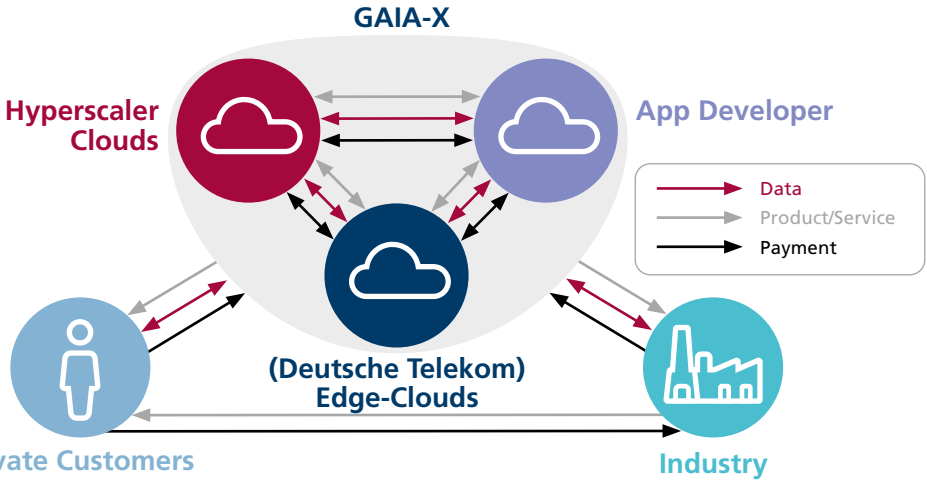
Network	Economic benefits	Technical benefit	Data-related benefits
Fresh Energy	- Implementation of a new business model - Large potential customer base through cooperation with energy supply companies	- Access to smart meter infrastructure without being an electricity provider	- Access to smart meter data without being an electricity provider
Energy Supplier	- Expansion of the own product with digital analysis capabilities for customers	- Access to AI-based services	- Redefinition of the customer relationship - Monthly billing through increased availability of power consumption data
Partner	- Realization of new product without installation of own hardware - Addressing new customer segments	- Access to data-based AI methods	- Access to consumption data
End Customer	- Transparency about own consumption - Emotionalization of the product electricity	- AI-based analysis of power consumption by non-invasive software	- Data-based feedback on consumption behavior

Decentralized, resilient edge cloud

Starting Point | The Hyperscaler clouds (e.g. Google, AWS) are currently designed for redundancy but not for resilience. The systems with central infrastructures are protected against individual physical attacks (single-point-of-failure), but the long transmission paths to the customer increase vulnerability to natural disasters, such as earthquakes.

Data-based innovation | The Edge Cloud concept decentralizes cloud-based applications over a multitude of providers and network nodes and brings them closer to the user. GAIA-X aims to implement a sovereign data infrastructure, especially for AI applications, while ensuring compliance with European data protection standards.

Value | Hyper scalers, niche providers and their users (large corporations, SME) benefit from a distributed cloud infrastructure. The hierarchical and geographical distribution of cloud applications via the Telco Edge creates redundancies that increase the resilience of the overall system. Increased customer proximity reduces latencies towards the customer, but also between ecosystems.



Obstacles | Up to now, there are no standards for cloud-spanning data exchange, and Integration concepts for telco edge infrastructure are still at the starting point. This prevents the development of an application ecosystem. In addition, there is currently a lack of willingness or incentives for hyperscalers to open their ecosystems.

Technical solution | Communication infrastructure providers push the development of an open Data (GAIA-X) and edge cloud architecture within their networks. In a possible target architecture, cloud services can be detached from a central cloud and run dynamically on distributed and interoperable platforms.

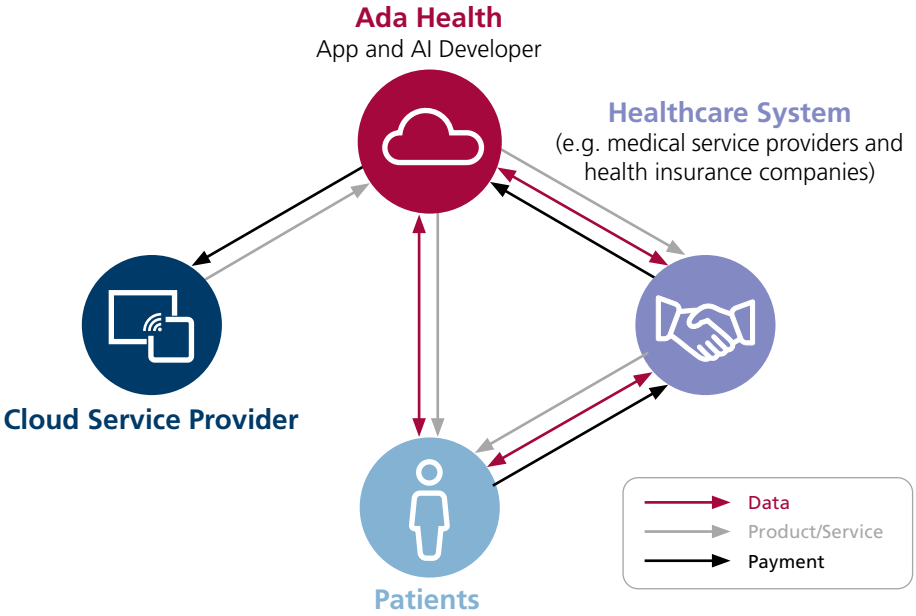
Network	Economic benefits	Technical benefit	Data-related benefits
 Cloud Provider/ App Developer	- New business models with edge technology - Lower porting costs for developers - Reduction of peering traffic through pre-processing/compression in the edge	- Lower latency - Geo-redundancy - System Redundancy	- Access to data is secured by distributed storage - Data merging is simplified
 Deutsche Telekom	- Enabling new B2C, B2B(2C) services & business models - Creation of a sovereign data infrastructure (GAIA-X)	- Use of edge infrastructure also for internal use cases - Relief of core capacities	- Greater control over data streams and usage towards the Hyperscaler - Compliance with European data protection standards (GAIA-X)
 Industrial and Corporate customer	- Facilitated automation - Investment reduction ("pay-as-you-use"-principle) by shifting the infrastructure from "on-premise" to "on edge cloud	- Moving latency-critical applications to the edge	- Compliance with European data protection standards (GAIA-X)
 Private Customer	- Cost reduction by shifting infrastructure (in the sense of "thin clients") towards the edge cloud	- New user experience (faster, lighter, cheaper) for latency-critical applications (e.g. VR/AR)	- Compliance with European data protection standards (GAIA-X)

AI-supported medical record

Starting Point | Compared to the rest of Europe, Germany has an above-average number of doctor-patient contacts. Many visits could be made more efficient or even avoided by prior clarification.

Data-based innovation | Ada Health offers AI-supported anamnesis. An in-house developed software solution, trained on common and rare diseases by 50 permanently employed physicians, provides patients with a pre-diagnosis based on a probabilistic system through simple questions.

Value | In addition to investor funding, ada Health is already part of some healthcare systems, such as Sutter Health in the USA. In the future, the platform is expected to improve the efficiency of numerous other public and private healthcare systems.



Technical features | An AI-supported anamnesis using a probabilistic system co-developed by doctors offers patients clear advantages compared to search engines, since personalization is possible and clear exclusion criteria and the current state of research can be taken into account. By using a white-box model, the AI's decision-making-process can always be retraced and critically evaluated.

Obstacles | Currently, the complexity of existing supply processes represents the greatest hurdle for implementation. In addition, the legal framework in Germany is often inconsistent. For example, the regulations of the General Data Protection Regulation (GDPR) are interpreted differently by different supervisory authorities, or these regulations sometimes conflict with other regulations, such as the Medical Device Regulation.

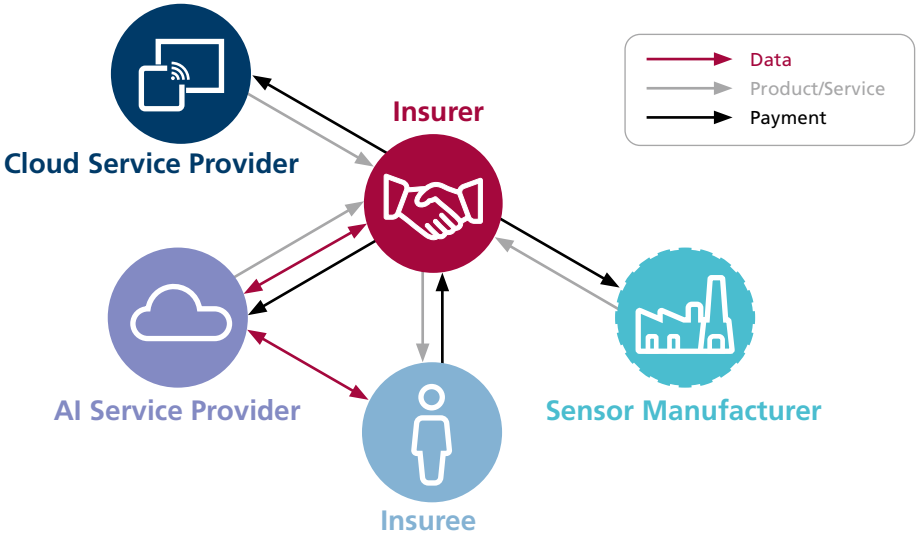
Network	Economic benefits	Technical benefit	Data-related benefits
 Healthcare System	- Optimization and quality advantage through AI-supported anamnesis and avoidance of unnecessary visits	- Access to AI-supported anamnesis with traceable white-box model	- Access to relevant medical data – but with approval from the patient
 Ada Health	- Central element of an AI-based healthcare system	- Feedback on the function of the developed software solution for AI-supported anamnesis	- Access to anonymized case data to optimize the developed software solution for AI-supported anamnesis
 Patients	- Better medical care through AI-supported self-check and more efficient health care system	- Access to AI-supported anamnesis with traceable white-box model	- Data sovereignty over own patient data - Overview of own medical history

Telematics insurance

Starting Point | In motor vehicle insurance, the risk for accidents is only indirectly determined from past accidents, type of vehicle, etc. This may represent a disadvantageous policy design for drivers with a low risk driving style.

Data-based innovation | Numerous insurers in Germany offer different variants of telematics tariffs. By recording telemetry data during the journey and pseudonymized evaluation of the data into a score, this model can reward a low-risk driving style with cheaper policies. The data is either measured and transmitted by the smartphone or by specific sensors, and sent to an AI service provider, where an anonymous evaluation of a score is carried out.

Value | On the basis of this score, the insurer then calculates the policyholder's tariff, which are lower than those of conventional tariffs if the policyholder drives accordingly. The sensors and AI-based evaluation of an accident can automatically be recognized and reported.

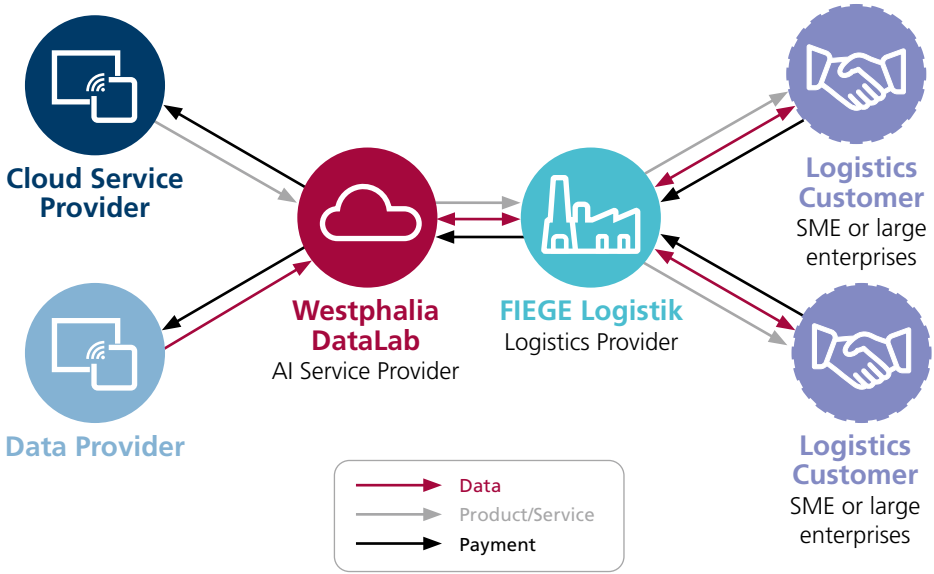


Obstacles | While the collection of position, speed and acceleration data does not present any technical problems, it is difficult to draw a clear correlation between certain telemetry data and damage events and maintain the promise of a lower risk for accidents. For example, it has been shown that a dynamic driving style is not directly associated with a higher risk of accidents. A large part of the insurance claims occurs in regular urban traffic, where telemetry-based forecasting is difficult. In addition, external factors, such as frequent bends in rural areas or untypical driving times of shift workers, must not be detrimental to the respective policyholders. Here, the development of further data sources, such as systems for fatigue detection, can be expected in the future. Another important factor in Germany are data protection requirements, which do not grant the insurer access to the collected data. In other countries, this data is used, for example, to reconstruct accidents. The protection of this personal data has so far been the biggest hurdle of this model in Germany, especially in the public perception.

Network	Economic benefits	Technical benefit	Data-related benefits
 Insurer	- Differentiated service provision and revenue generation through AI-based risk classification - Fewer claims	- Access to AI-based scoring of driving style	- Access to data-based score of driving style
 AI Service Provider	- New customer for existing technology and infrastructure	- Application and context-specific adaptation of our own, scalable AI technology	- Access to telemetry data for training
 Insuree	- Favorable, fair policy design for safety-conscious policyholders	- Functional extension of the own car with AI-based accident reporting on Edge	- Data-based feedback on driving behavior

AI-based forecasting for logistics

Starting Point | In the logistics sector, it is difficult to plan the necessary storage capacities while taking all influencing factors into account.
Data-based innovation | Westphalia DataLab offers AI-based forecasting: Existing data is used as the basis for calculating future sales figures and provide Information on the factors influencing the sales of a company. The system is provided as Software as a Service (SaaS).
Value | FIEGE Logistik serves as an innovation driver and acts within this network not only as an investor, but profits as a customer directly from the forecasting service. Depending on the type, the data is either provided by the customer, crawled from the internet or downloaded from free data providers.



Technical features | The calculation of future sales figures is based on existing company data and the inclusion of other internal and external factors (e.g. weather and calendar events). Once the data has been provided, it is automatically examined and prepared for the analysis process. Several models are calculated using various machine learning methods. In the end, the forecast model with the lowest error and correspondingly the greatest customer benefit is selected. The data is processed according to the highest security standards.

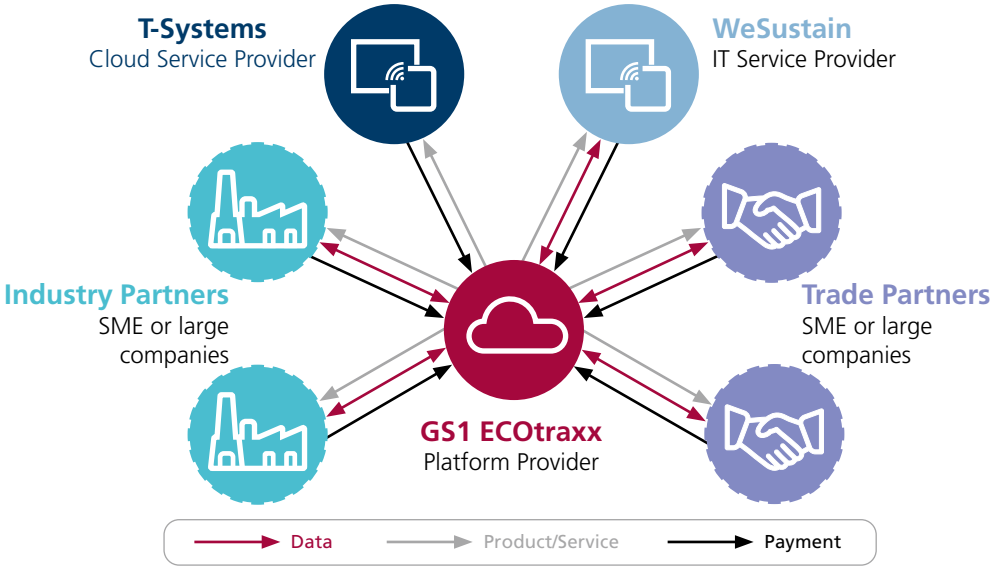
Obstacles | A lack of standards and poor data quality requires extensive data cleansing to achieve reliable forecasts using AI methods. Additionally, the willingness to share data is less pronounced in Germany than in other countries where sales data and, in some cases, forecast data from different retail chains are exchanged under coopetition conditions.

Network	Economic benefits	Technical benefit	Data-related benefits
Westphalia DataLab	- Realization of AI forecasting as a new business model - Client as investor		- Access to data for training the forecasting algorithm
FIEGE Logistik	- Efficiency advantage through AI-based resource planning - Improving quality by reducing logistical bottlenecks	- Access to AI-based forecasting methods for warehouse planning	- Simplified storage and processing of logistics data
Logistics Customer	- Increase of end customer satisfaction through optimal availability of goods	- Access to AI-based forecasting methods for sales planning	- In-depth knowledge of products and sales channels

Data platform for the exchange of sustainability information

Starting Point | The obligation for sustainability reporting places a particular burden on small and medium-sized trading and industrial companies, as suppliers and manufacturers are located in different sectors and provide the necessary information in very different ways. The data must often be prepared individually.

Data-based innovation and value | GS1 Germany, a not-for-profit organization for the development of market-driven, future-oriented solutions based on internationally valid GS1 standards, offers GS1 ECOtraxx, a cloud-based platform for the uniform and EU-compliant exchange of the required sustainability data along the entire supply chain. Each participant can enter his or her information and evidence and make it individually accessible to other users of the platform, thus facilitating the exchange of sustainability information.

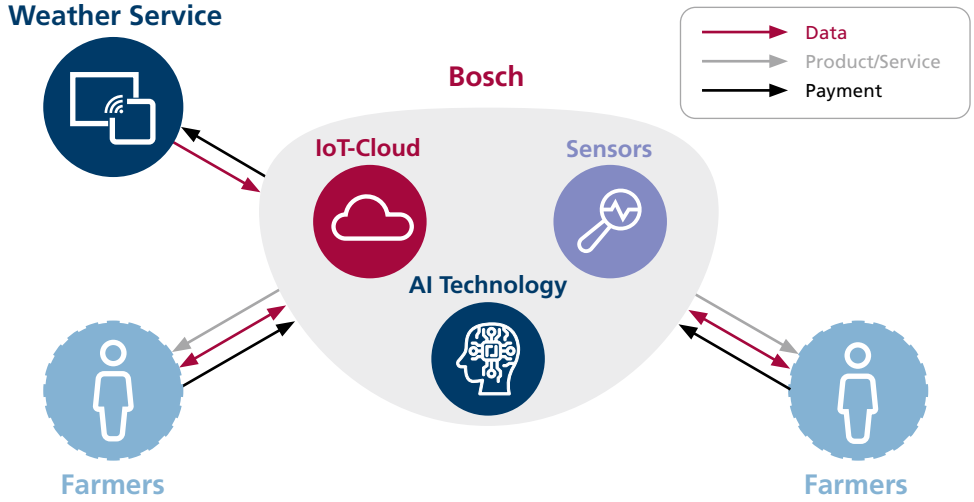


Technical features | The data is collected based on a standardized catalogue of criteria, which GS1 Germany has developed together with representatives from industry and trade. This provides consistent criteria for ecological, economic and social sustainability. The system focuses on transparency and efficiency. This is the great benefit of the platform for the participants, even if the evaluation of the data by AI methods is currently not possible. GS1 ECOtraxx puts great importance to data slimness as well as data sovereignty for users by using a German cloud service provider. Experts from trade and industry are continuously improving the platform.

Network	Economic benefits	Technical benefit	Data-related benefits
GS1 ECOtraxx	- Simple licensing model for small and medium-sized as well as large companies	- Continued development of the questionnaires together with network participants	- All data in one place. Access is possible from anywhere via a web login
Industry Partners	- Efficiency advantages through a standardized communication format of sustainability information	- Platform for the exchange of information in the context of the preparation of sustainability reports	- Simplified documentation through unified communication standard
Trade Partners	- Simplified data access and increased efficiency through consolidated presentation of data provided by supply chain partners	- Platform for the exchange of information in the context of the creation the sustainability reports	- Simplified documentation through unified communication standard

AI-based greenhouse monitoring

Starting Point | In greenhouses, there are often suboptimal environmental conditions that affect the yield and make the use of plant protection products necessary.
Data-based innovation | Through the Greenhouse Guardian from Bosch, an innovation for agriculture consisting of sensors for environmental parameters, gateway, Iot-Cloud and Artificial Intelligence, the actual situation in the greenhouse can be determined. The producer thus has an overview of the condition in the greenhouses. By using specially trained algorithms based on the obtained parameters, enriched with external data from the Bosch IoT Cloud, the farmer gets targeted predictions about the risk of disease and recommendations for action, thus reducing the incidence of disease and the use of pesticides and increasing yields. Users have the option of having their data incorporated into the improvement of the algorithm in an anonymous form.



Value | The greenhouses achieves optimum yield. For certain crops a risk of disease can be predicted with an accuracy of 92 percent. This means that diseases need to be counteracted less frequently, the amount of work is reduced, and the use of plant protection products can be cut by up to 30 percent.

Technical features | The battery-powered sensors measure humidity, temperature, CO_2 level and light intensity, but external parameters such as weather data are also included in the data analysis. The AI was trained with suitable data at the beginning and has since been continuously improved with user data.

Obstacles | In order to enable reliable predictions, a very high sensitivity level is required, which the algorithm must achieve. In this context, the inaccuracies of used weather forecasts must be considered in the model for the calibration of the greenhouse data in relation to the external conditions. The high number of different possible disease infestations and different vegetable and fruit varieties with simultaneously strongly varying occurrence probabilities requires the handling of class imbalances in the model training.

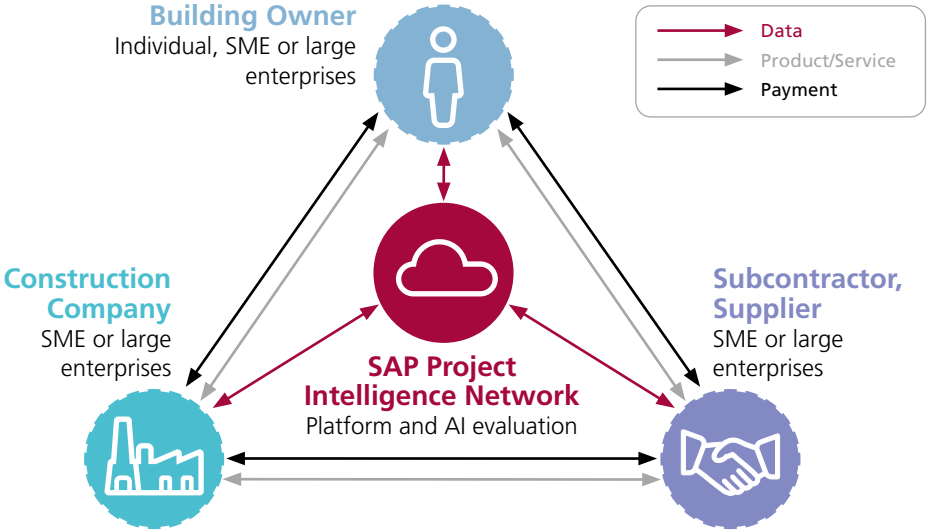
Network	Economic benefits	Technical benefit	Data-related benefits
Farmers	- Increased efficiency and effectiveness through AI-based parameter monitoring and appropriate recommendations for action	- Application of AI methods to optimize the yield - Sensor units can be installed without further infrastructure	- Simplified survey and analysis of environmental parameters in all developed greenhouses
Bosch	- IoT-based business model in the agricultural sector with value contribution for improved agriculture	- Linking of the full IoT and AI value chain from sensor technology via gateway, cloud and algorithms for service delivery to the user	- Derivation of economic and ecological value via secure data chain from acquisition to provision of evaluation

AI-supported platform for collaborative building

Starting Point | Complex construction projects for infrastructure, buildings and facilities require a high degree of coordination between all parties involved, for example regarding the scheduling of tasks and trades, the quality of materials, the acceptance of services rendered and the documentation and structuring of static or dynamic data.

Data-based innovation | The joint SAP Project Intelligence Network provides a platform for coordinating project participants. Besides communication of tasks and problems, their influence on scheduling, costs or necessary changes is analyzed. In the future, knowledge-based algorithms will be used to propose alternative solutions.

Value | The efficient coordination between all project participants enables to increases productivity in construction and reduces the costs of operation and maintenance the facilities, building or infrastructure.



Technical features | In addition to the classic coordination of processes and information on a construction site, AI can, for example, be used to identify which information belongs to which objects, and this information can be automatically assigned. Thus, the digital twin is enriched with the corresponding metadata, prepared in a structured way and made available for use throughout the entire life cycle of the facilities.

Obstacles | The greatest technical challenge is the lack of standards and the comparability of the data collected during construction. The reluctance of those involved in construction to collaborate openly and the high margin and competitive pressure are further hurdles. The increasing trend in modular construction, the prefabrication of components and the associated standardization and new contract models help to overcome these barriers. This way, productivity could be increased in construction similarly to the development in industrial production, including the digitalization of the entire supply chain.

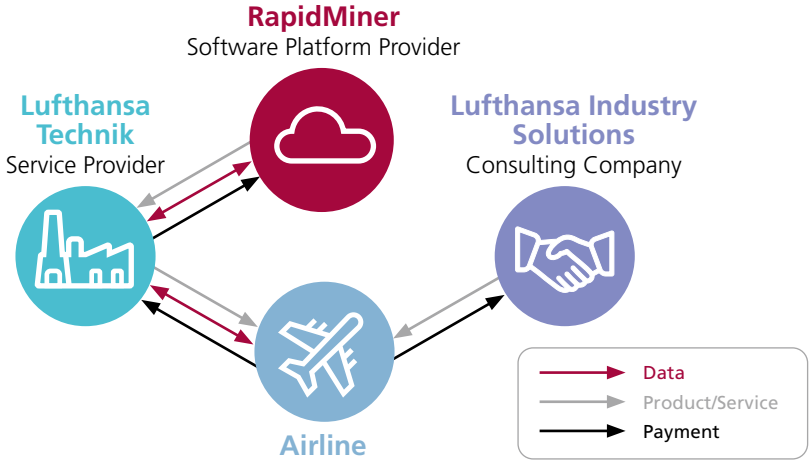
Network	Economic benefits	Technical benefit	Data-related benefits
Building Owner	- Reduction of the production costs of a construction project, or increase of planning reliability for the commissioning		- Access to data to improve the operation of the facilities, building or infrastructure
Construction Company	- Efficiency advantage through AI-based optimization of your own resource planning	- Access to AI-based forecasting methods, lean construction methodology for construction management	- Simplified storage and processing of digital twin metadata
Subcontractor, Supplier	- Improvement of quality by reducing logistic bottlenecks	- Access to AI-based forecasting methods	- Simplified data storage and processing

Intelligent failure prediction in aircraft

Starting Point | Unexpected failures of aircraft components such as turbines, electronics or on-board toilets result not only in risks but also in high costs due to potential consequential damage to the aircraft, waiting times for spare parts and technicians, additional space rented at the airport, delayed or cancelled flights and missed flight connections.

Innovation | Through the integration of heterogeneous data from different sources and the use of Machine Learning (ML), predictive models for machine and component failures that predict problems before they occur are automatically generated. That way failures can be avoided, which enables a more predictive, load-dependent, component-specific maintenance planning.

Value | In addition to the reduction of risks from flight operations failures, considerable cost savings are achieved in aircraft downtimes, material and personnel costs. Instead of standard maintenance intervals, load and wear-dependent, component-specific measures are possible, so that maintenance can be carried out as required. Ideally, spare parts and technicians are already available at the airport when the aircraft lands, and maintenance is carried out in parallel with off- and on-boarding.



Obstacles | The integration of large amounts of heterogeneous data poses a challenge. However, patterns in failure, usage and maintenance data can often only be identified and used by combining the various data sources.

Technical solution | By integrating heterogeneous data from a wide variety of sources (e.g. current and historical sensor readings and load data from the aircraft, operational and weather data from flight plans, textual repair and maintenance reports or audio and image data) and by using Machine Learning methods, prediction models are automatically generated even for complex failure patterns of machines and components. Thus, problems can be predicted even before they occur. The method can also be transferred to other areas of technology such as automotive and rail traffic or production machines.

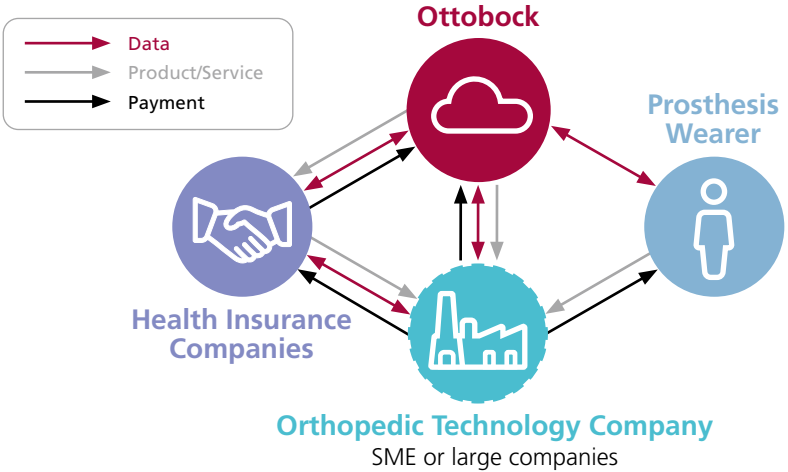
Network	Economic benefits	Technical benefit	Data-related benefits
RapidMiner	- Development of new applications & industries for Machine Learning - OEM Partnerships	- Improved know-how about ML & AI technologies and the application domain of the value network	- No need to handle sensitive data, since algorithms are applied directly by Lufthansa Technik for the airlines
Lufthansa Industry Solutions	- Sale of consultancy services	- Development of an ML platform for the own portfolio	- Increased control over data flows and use - Compliance with European data protection standards (GAIA-X)
Lufthansa Technik	- Sale of predictive maintenance services	- Development of an ML platform for the own portfolio	- More precise forecasts by combining data from several airlines (if desired)
Airline	- Increased safety - Higher customer satisfaction and reduced costs due to fewer delays & failures	- Access to ML platform - Service from a single source	- More accurate forecasting models through a broader data basis - No use of personal customer data

AI-based control of hand prostheses

Starting Point | Mechatronic hand prostheses are controlled by muscle signals which are measured by sensors from the amputation stump. Conventionally, only two movements can be detected due to the limited separability of the signals.

Data-based innovation | By using methods of Artificial Intelligence, implemented on integrated microcontrollers, the prosthesis can learn movement patterns of the prosthesis wearer. Thus, up to eight movements can be controlled intuitively. This learning is based on an individual database of the respective prosthesis wearer, which the user individually records with his prosthesis. In addition, the prosthesis wearer can perform further data recording sessions at home via the app to improve control.

Value | Many users of a prosthetic hand are not fitted a second time after the usage cycle, often only a cosmetic fitting is desired. The user-friendliness of mechatronic hand prostheses is dramatically improved through intuitive control and the use of AI. As a result, compliance is increased accordingly, and the fitting rate increases.



Technical features | The close interaction between human and AI-based prosthesis represents a complex control and regulation task between the two intelligent systems. In comparison to other AI applications, very little data is available for AI training, since each prosthesis wearer must record an individual data set. At the same time, the design of a prosthesis is subject to high energy and space requirements, while absolute real-time capability must be ensured due to the application. These technical hurdles can be overcome by using integrated microcontrollers and highly efficient training and evaluation algorithms.

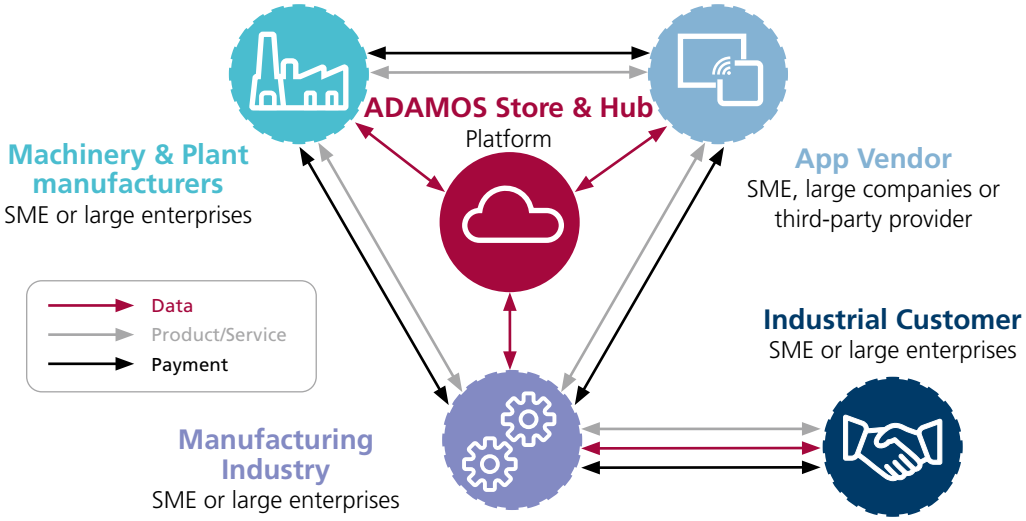
Network	Economic benefits	Technical benefit	Data-related benefits
Ottobock	- Synergy effects between AI control and prosthesis sales - Technology leadership in prostheses	- Technical basis for future products - Preparation for digital services	- Basis for muscle signal database created in the cloud - Better rehabilitation training through data visualization
Orthopedic Technology Company	- High-quality high-end prostheses with high margins - Faster results in supply save time and money	- Automatic control customization for the patient - Digital interface to App improves user experience	- Automated recording of patient signals and configuration of the control - Exportable movement metrics for cost reimbursement approval
Prosthesis Wearer	- Independence in everyday life through improved prosthesis function	- Intuitive control - Individually adaptable - Data visualization and muscle training	- Feedback on movements and signals through App
Health Insurance Companies	- Optimized prosthesis function leads to better integration into working life		- Objective motion quality metrics

AppStore for Smart Factories in the industry

Starting Point | On the shop floor there are typically machines from different manufacturers whose IIoT capabilities are usually provided on different, often proprietary IIoT platforms. This prevents efficient use of these capabilities across the entire value chain.

Data-based innovation | With the ADAMOS STORE and ADAMOS HUB, an industry platform is created that enables both an integrated and manufacturer-independent marketplace for the manufacturing industry and developers of industrial apps as well as horizontal app-to-app communication.

Value | The cross-manufacturer exchange of information as well as the purchase or sale of digital solutions, for example for data aggregation to create a digital twin, is considerably simplified. Machine operators in the manufacturing industry can flexibly evaluate data throughout the entire production process and make it available to their customers.



Technical features | ADAMOS HUB provides integration points and interfaces that enable a technology-open data exchange in production. The access of applications to machine data and future production data is centrally managed by the machine operator. The operator always retains control of his data. The applications can be built and operated on completely different IIoT platforms preferred by the respective providers.

Obstacles | A central factor for the success of the platform is the trust of platform users and their customers to participate in an open and transparent marketplace. To ensure this, ADAMOS is organized as an independent joint venture. The launch of ADAMOS HUB and the ADAMOS STORE is planned for the end of 2020.

Network	Economic benefits	Technical benefit	Data-related benefits
 Machinery & Plant manufacturers	- Securing customer access to monetize data and app offerings - Efficiency advantages through standardized digital sales and provision processes (subscription management, micropayments, etc.)	- Creation of an industry standard through clear interfaces - Use of technical services (e.g. Single Sign On)	- Standardized integration to machine and production data - Findings for the provision of manufacturer and machine data for production optimization and the establishment of smart production
 Manufacturing Industry	- Investment reduction through "pay-as-you-use" principle - Increased efficiency and quality through easy deployment, exchange of smart services	- Improved user experience - Enlarged selection to optimize operation - Access to uniform data release models - Transparent management of data and apps	- Integration of individual machine and production data from existing applications - Data sovereignty over own data (via rights concepts)
 ADAMOS	- Generation and use of network effects - Neutral positioning ensured by joint venture	- Cloud-level integration layer for faster platform scaling, customization and independence	- Continuous improvement of data services - Establishment of data-centric business models possible

4. Creating value from data – Recommendations for SME and industry

Although the presented networks differ significantly – the challenges that arise from the economic use and long-term involvement of partners are comparable. In addition to technical questions of interfaces, data formats and interoperability of the involved systems, trust in the partners and the security of the systems are of crucial importance. In principle, however, the technical challenges can be easily solved.

Conception of the value network

The most important success factor of a data-based network is the clear and direct value proposition for each individual participant. A typical starting point here is an innovation in an established industry enabled by the application of new AI technologies. However, the respective companies often lack the know-how in AI technologies. This must be compensated by cooperation with key players in the fields of data sciences and AI technologies. These partners can either act as a complementary element between the company and the customer or interact with the company in isolation. In addition, the cooperation should be strategic and long-term in order to enable sustainable competence development for the companies.

Since the ecosystems of the envisaged value networks can change very dynamically, the projects should be brought to market as early as possible through an agile roll-out. Hence, the methods and expectations of the participants – for example regarding efficiency advantages and user expectations of the product – can be checked and adapted at an early stage. Furthermore, attractive financing models like revenue sharing become realistic.

Conception of the value network

Do	Don't
Transparent network structure with clearly stated value proposition of all participants	Poorly communicated and coordinated projects
Definition of a clear data strategy, which defines quality, relevance and availability of the data necessary for value creation	Collection of data without clearly defined criteria and methods
Strategic and long-term (research) cooperation to generate own competences in the field of data science	Complete outsourcing of AI competencies to external companies without continuous exchange and mutual coordination
Agile roll-out of the product in order to identify obstacles early and to be able to adapt the product	Rigid setting of the timetable and adherence of the original concept
Continuous testing and adjustment of the business model and suitable financing models, e.g. revenue sharing	Adherence to classic business models and convincing the network partners to bear the investment risks themselves

Trust and data security

A successful implementation of data-driven value networks is based on the willingness to share data. To build the necessary trust, the greatest possible transparency and responsibility must be ensured when handling data. Technologically implemented data security is a valuable option here. For example, by evaluating on edge directly at the point of data collection, aggregation of unnecessarily large amounts of data can be avoided and potential misuse can be ruled out. Many examples have shown that a careful selection of a reputable web hosting service located in Germany or Europe to obtain the necessary data infrastructure is a valuable option to ensure data sovereignty and trust. In addition, the decision-making-process of the algorithms used should always be transparent and comprehensible for all participants, so that the human stays in control when using AI methods. For this reason, white-box models that are as comprehensible as possible should be preferred.

Technology and infrastructure

The provision of high-quality data sets for evaluation with AI methods requires considerable technical and partly also human resources. This effort is only possible if either an economic dependency relationship exists between the partners (e.g. customer-supplier relationship) or a direct value can be balanced.

Isolated solutions should be avoided when setting up and using technical infrastructure for (automated) collaboration. Instead, possible advantages of coopetition with other companies via a common platform should be considered. If no standard is established for the respective industry, the possibility of participating in national and international standardization initiatives should be sought.

Trust and data security

Do	Don't
Responsible and transparent handling of sensitive data of the network partners, e.g. through careful selection of web hosters	Grassroots aggregation of data, intentional or unintentional disclosure to third parties, use of dubious web hosters
Adherence to the principle of data slimness and use of technically implemented data protection, e.g. through on edge concepts	Storage of as much raw data as possible from the network partners and evaluate elsewhere
Follow the white box principle to make analysis results comprehensible for other participants	Use of AI technology with incomprehensible results that the user must accept

Technology and infrastructure

Do	Don't
Orientation towards existing file formats or participation in standardization projects to make the value network scalable	Creation of your own project-specific file standards as competition to existing solutions
Coordination with network participants about format and quality of data	Manual data cleaning of the divided data
Target group-oriented interface of the data platform	Technically complex and constantly changing user environment

Implications for the implementation of data-based value networks in SME

Artificial Intelligence is a key technology of the 21st century, also for small and medium-sized businesses. The presented cases show the potential of data-based value creation for SME in the area of increasing production efficiency and preventing production losses, as well as in AI-based, efficient resource planning and reduction of logistical bottlenecks. Other examples show how completely new business models are created through shared data and the use of Artificial Intelligence methods.

The central challenge for small and medium-sized enterprises to tap this potential is above all to acquire the know-how for the implementation of data-based value networks in the respective company through cooperation with AI start-ups, large corporations and research institutions. Before the implementation it must first also be reflected how a particular use case fits the organizational goals and whether the assumed potential added value is realistic, so that new business models can be strategically planned from the outset. Consumer confidence in the products and services must also be created, for which data protection, data sovereignty and a high level of data security must be guaranteed. Furthermore, small and medium-sized commercial enterprises must constantly update and adapt products and services, since customer behavior changes and the quality of AI applications, for example, may otherwise be outdated over time. Another prerequisite for this is that new data and AI-based value networks are built on suitable digital infrastructures so that the database can be continuously updated, maintained and optimized. On the basis of suitable data management, pilot projects can be successfully scaled and new value models can be made possible.

Outlook

Increasing digitalization and networking is accompanied by a growing availability of data which, after appropriate aggregation, processing and analysis using methods of Artificial Intelligence can be the basis for new value innovations. The presented examples are often self-contained and therefore only scalable and monetizable to a limited degree. In the future, scaling will be realized by collecting data in cross-company data marketplaces, which will open new value creation models.

The core aspects that companies should consider for successfully implementing data-based value networks include, among other things, the definition of a clear data strategy that determines the quality, relevance and availability of the necessary data needed to create value.

In addition, the establishment of strategically oriented know-how cooperations with key players from the business or academic world as well as the continuous, agile reflection and adaptation of the business model must be cultivated.

At the same time, on the institutional side, open questions regarding the further development of the data economy need to be clarified, for example to ensure the technical interoperability of data, the creation of reference architectures and valid standards, or regulatory issues such as competition law. This must be done against the background of the tension between general accessibility to data from heterogeneous sources on the one hand and the consideration of data protection or data security as well as ensuring data sovereignty on the other hand.

Although many of these issues are currently being worked on and open questions still exist, the examples presented here show that successful cooperation within digital ecosystems is already possible, where value is created from data.

Literature

acatech – Deutsche Akademie der Technikwissenschaften (2017): Wegweiser Smart Service Welt – Smart Services im digitalen Wertschöpfungsnetz, München.

acatech et al. (2018): Smart Service Welt 2018 – Wo stehen wir? Wohin gehen wir? München.

Al-Debei, Mutaz M. und David Avison (2010): Developing a Unified Framework of the Business Model Concept, in: European Journal of Information Systems, Jg. 19, Nr. 3, S. 359–376.

Bundesministerium für Bildung und Forschung (2020): Künstliche Intelligenz. #ChanceKI. Berlin.

Bundesregierung der Bundesrepublik Deutschland (2018): Strategie Künstliche Intelligenz der Bundesregierung (Federführung: BMBF, BMWi, BMAS). Berlin

European Commission (2020): Weißbuch zur Künstlichen Intelligenz – ein europäisches Konzept für Exzellenz und Vertrauen. Brüssel.

European Commission (2019): Ethics guidelines for trustworthy AI. Brussels.

Fraunhofer-Gesellschaft / Industrial Data Space Association: Reference Architecture Model Industrial Data Space IDS. Version 2.0. Berlin.

Fraunhofer-Institut für Software und Systemtechnik ISST / iw Consult (2019): Readiness Data Economy. Bereitschaft der deutschen Unternehmen für die Teilhabe an der Datenwirtschaft. iw, Köln.

Hightech-Forum / Bundesministerium für Bildung und Forschung (2020): Zukunft der Wertschöpfung. Positionspapier, München, 03/2020.

Kagermann, H., Winter, J. (2018): Die zweite Welle der Digitalisierung. Deutschlands Chance, in: Mair, S./Messner, D./Meyer, L. (Hrsg): Deutschland und die Welt 2030 – Was sich verändert und wie wir handeln müssen, Berlin, S. 225–233.

Kawohl, J. (2020): The Ecosystem Strategy Map. Available online at: https://ecosystemizer.com

Parker, Geoffrey G.; Van Alstyne, Marshall W. & Choudary, Sangeet Paul (2016): Platform Revolution: How Networked Markets Are Transforming the Economy, New York.

Picot, A., Reichwald, R. & Wigand, R. (2013): Die grenzenlose Unternehmung. Information, Organisation und Management. Lehrbuch zur Unternehmensführung im Informationszeitalter. Springer, Heidelberg.

Plattform Lernende Systeme (2019): Neue Geschäftsmodelle mit Künstlicher Intelligenz – Bericht der Arbeitsgruppe Geschäftsmodellinnovationen, 2019.

Ramge, T. & Mayer-Schönberger, V. (2017): Das Digital: Markt, Wertschöpfung und Gerechtigkeit im Datenkapitalismus. Berlin.

Silvestri, L. & Gulati, R. (2015): From Periphery to Core. A Process Model for Embracing Sustainability. In: Henderson, R. et al.: Leading Sustainable Change. An Organizational Perspective. Oxford, S. 81–111.

Shah, J. et al. (2016): Artificial Intelligence and Life in 2030. One Hundred Year Study on Artificial Intelligence: Report of the 2015–2016 Study Panel. Stanford.

Tiwana, A. (2013): Platform Ecosystems: Aligning Architecture, Governance, and Strategy, Waltham, Massachusetts.

Wahlster, W. (2017): Künstliche Intelligenz als Grundlage autonomer Systeme, in: Informatik-Spektrum 40 (5), S. 409–418.

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The executive steering committee decides the strategic and content-related focus of the platform and provides the impetus for its work. Its members from science, research and industry represent critical topics, disciplines, industries and businesses of various sizes in the field of self-learning systems. The members were appointed by the Federal Ministry of Education and Research (BMBF).

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About the Plattform Lernende Systeme

To design self-learning systems in the interest of society – this was the aim of the Plattform Lernende Systeme, which was initiated in 2017 by the Federal Ministry of Education and Research (BMBF) at the suggestion of the Autonomous Systems Forum of the High-Tech Forum and acatech – National Academy of Science and Engineering. The platform bundles the existing expertise in the field of artificial intelligence and supports Germany's further path to becoming an internationally leading technology provider. The approximately 200 members of the platform are organized in working groups and a steering committee. They demonstrate the personal, social and economic benefits of learning systems and identify challenges and design options.

You can find more case studies of AI and data-based value networks on our special Website:
https://www.plattform-lernende-systeme.de/datenoekosysteme.html

The use cases presented here are continuously supplemented by further practical examples, which are presented on our Website.

Your company is also part of a value network that enables access to new applications and technologies or uses AI methods by sharing data? We would be pleased to also present your use case on our Website.

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