"Networked and integrated application of industrial data analysis for value-creating, competence-oriented collaboration in dynamic value creation networks".

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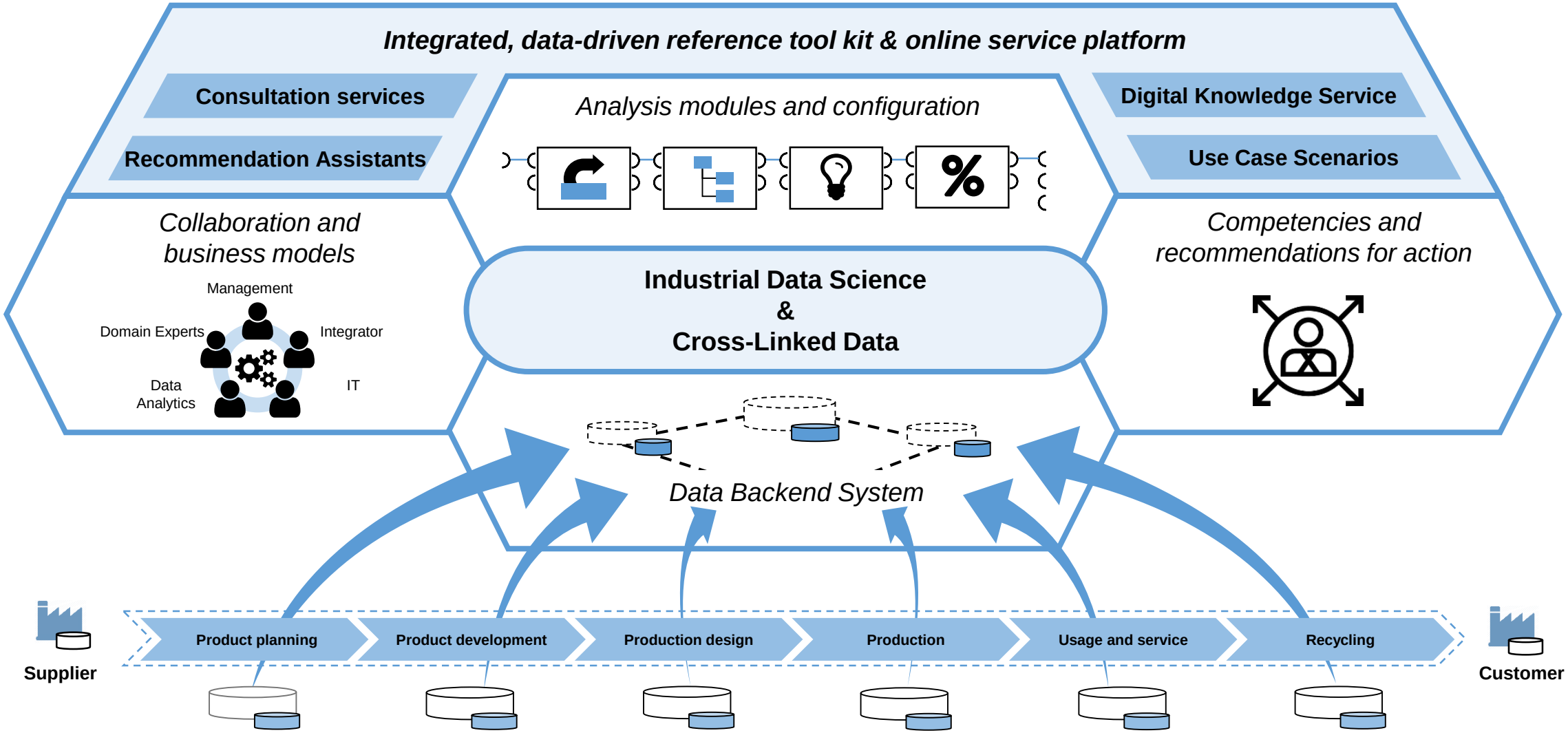
für Bildung
und Forschung

Integration of Data Science into Value Creation Networks

PTKA
Projektträger Karlsruhe
im Karlsruher Institut für Technologie

Miele
VOLKSWAGEN
ERCO
BRABANT & LEHNERT Werkzeug- Vorrichtungsbau GmbH
mosaiic
rapidminer
PIDTec.
CONTACT Software
NEOCOSMO
AREND PROZESSAUTOMATION
IPS Institut für Produktionssysteme
DFK
VPE
FACHDIDAKTIK IN DER TECHNIK

Integration of Data Science into Value Creation Networks



AKKORD-Project

Integrated application of Industrial Data Analysis

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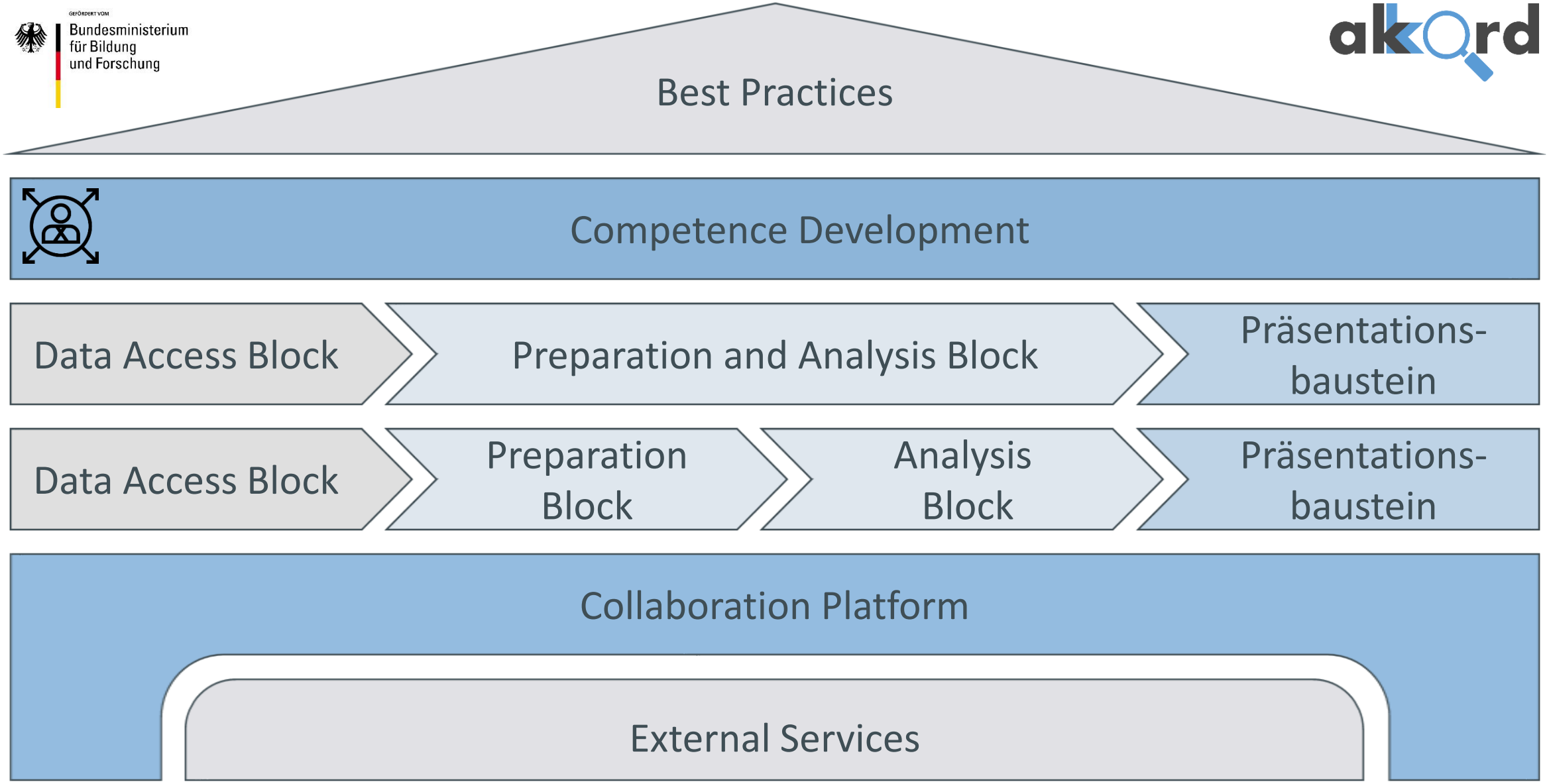

AKKORD-Project

Integrated application of Industrial Data Analysis

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Best Practice UC1

VOLKSWAGEN

Best Practice UC2

Miele

Best Practice UC3

ERCO

akkord

Competence Development A1 B1 Z1

Industrial Engineering Block

Quality Management Block

Integrated Data Analytics Block

Potential Analysis Block

Business Model Block

Adaptierbare Bausteinvorlage

Collaboration Platform

akkord work&learn

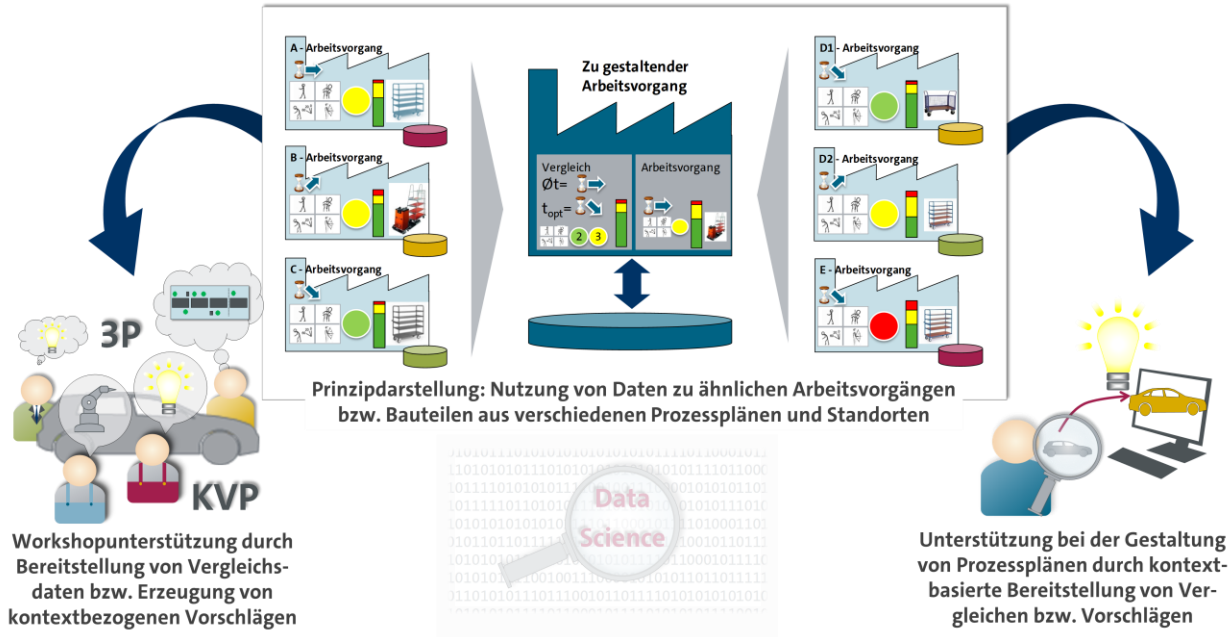
UC 1: Comprehensive, predictive Industrial Engineering
Volkswagen AG

Goal

The aim is to strengthen the design function of industrial engineering through the automated analysis of process data. This is intended to avoid expenditure for manual comparisons and research as well as multiple solution developments.

Work content

- Development of a methodology for the identification of similar work systems
- Development of a benchmarking for the automated comparison and evaluation of similar work systems in IT systems for work process design
- Development and implementation of data mining methods for the situational and context-related provision of suggestions for product design / process design / targeting



UC 2: Data-driven, networked Quality Management

Miele

Goal

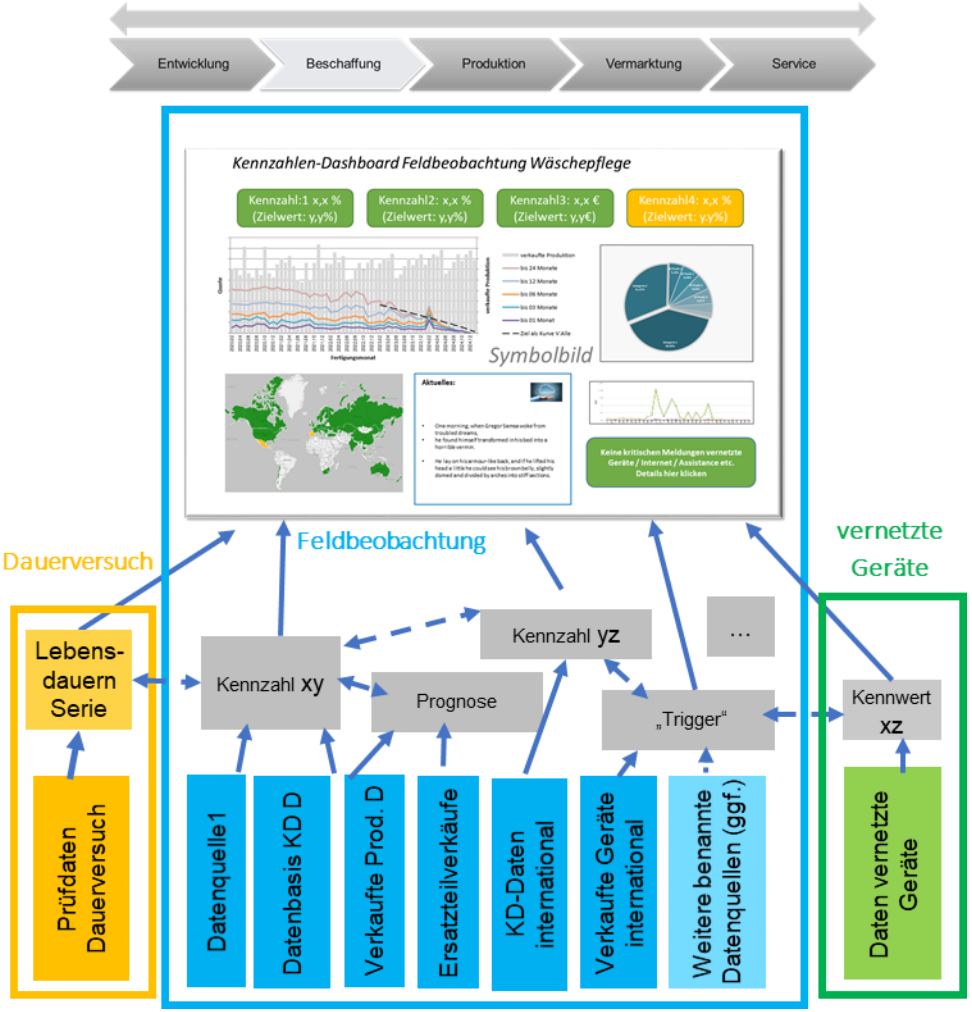
The goal is the development of a holistic and networked reporting and analysis tool. In terms of an integrated quality management, this tool is to represent the quality situation with feedback and learning loops and provide user-specific analysis options. Accompanying this, cross-hierarchical competencies for the use of data in the company are to be developed.

Work content

- Development of a user-specific tool for the presentation of key figures, visualization of correlations and provision of analyses from existing networkable data sources
- Rollout of the concept in the company

Partner

Leading partner:	Miele
Development:	mosaiic, RapidMiner, neocosmo, CONTACT
Research:	IPS, FdT, DFKI



UC 3: The 4 - month window (integrated order forecasting)

ERCO

Goal

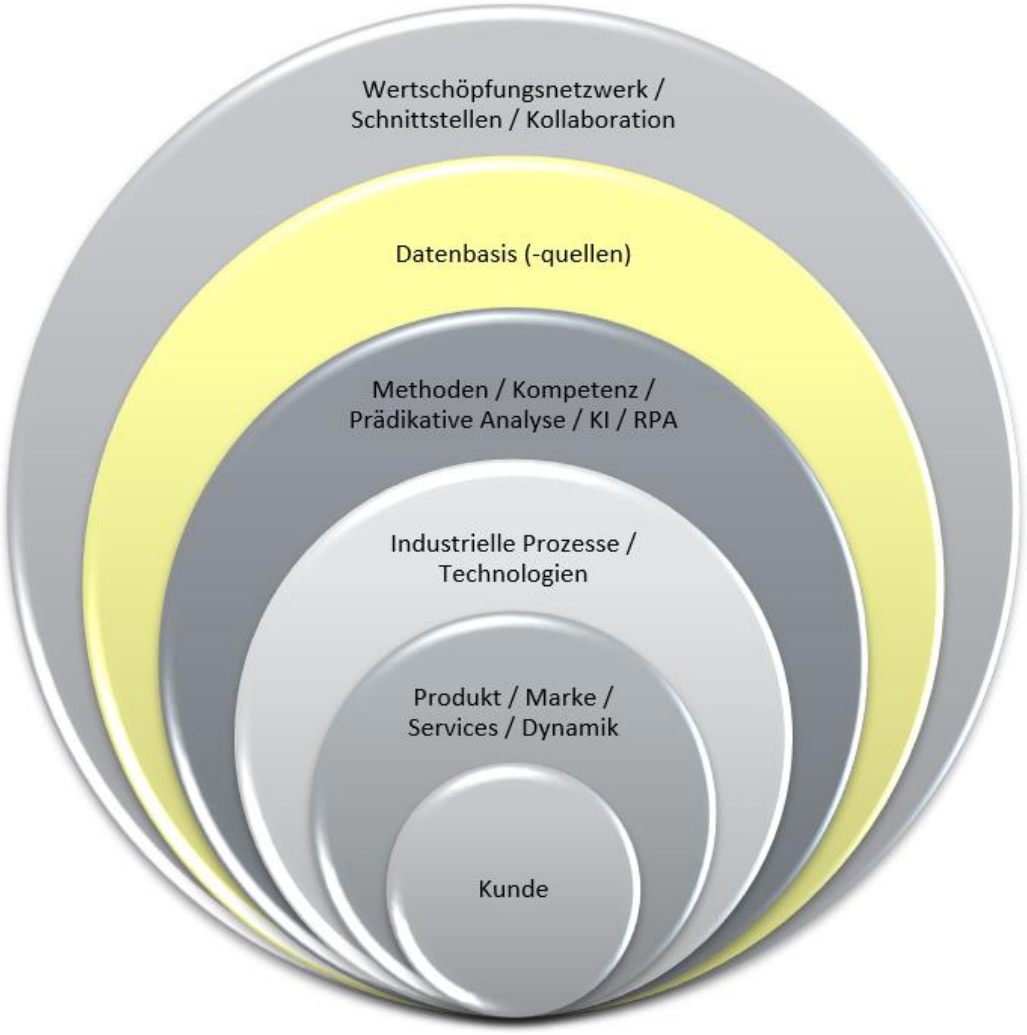
The aim is to enrich data with information from social media, the web and the erco.com homepage and thus obtain a qualitatively better statement for determining the probability of an offer. The AKKORD research project also focuses on the goal of value-creating collaboration with the eleven global sales companies as well as manufacturing and production, including supplier integration

Work content

- Project and offer information is evaluated for a period of four months within the framework of a forecast system
- This information is used to adjust the supply chain as well as the capacitive design

Partner

Leading partner:	ERCO
Deveploment:	RapidMiner, mosaiic
Research:	DFKI, VPE



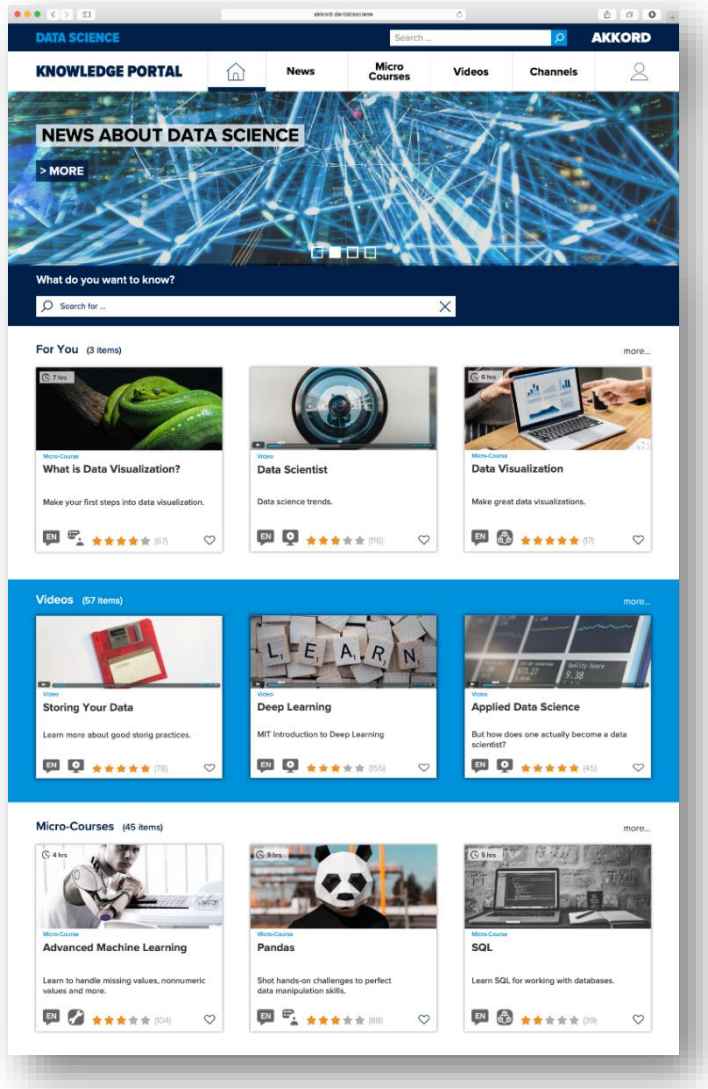
UC 5: Directed and SME-oriented competence development
NEOCOSMO

Goal

The topic of Use Case 5 is the development of competencies in the field of industrial data analysis. For this purpose, the goal is to design and develop a digital knowledge service based on concepts and methods for competence building and competence assurance. It should provide learning content and make intelligent recommendations for action that are adapted to the individual level of knowledge of each learner. In addition, a practical application and evaluation of the knowledge service by the application partners is envisaged.

Work content

- Definition of measurable competencies & development of measurement tools
- Generation of technology-based learning modules for industrial data analysis
- Development of a digital knowledge service and integration of measurement instruments and learning modules
- Practical application and evaluation



Partner

Leading partner:	NEOCOSMO	Co-Partner:	FdT
Development:	AREND, mosaiic, RapidMiner	Research:	IPS
Applicants:	Volkswagen, Miele, ERCO		

UC 6: Data acquisition via I4.0 technologies

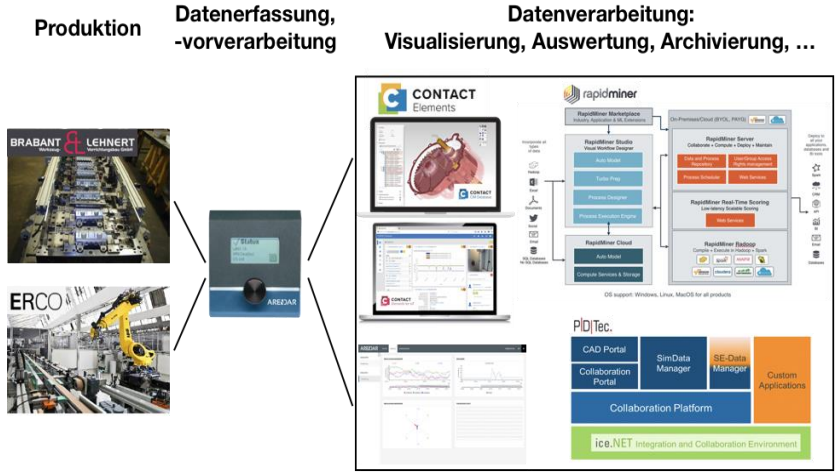
AREND

Goal

The core objective is the development of a holistic retrofitting approach from the subsequent installation of an edge device, the establishment of data provision and visualization to the integration of predictive analysis results. Secondary goals are the consolidation of the acquisition and management concepts of machine data from the use cases. Furthermore, data collection and management concepts are to be linked to visualization and analysis tools.

Work content

- Collection of data from production processes and intelligent components in toolmaking (Brabant & Lehnert) and in the production of luminaires (ERCO)
- Collection and preprocessing of data by the edge gateway ARENDAR.
- Provision (visualization) of data by the ARENDAR and/or the software CONTACT Elements.
- Compilation and normalization of all collected data in the PDTec ice.NET platform.
- Data evaluation, predictive analyses with the analysis platform RapidMiner



UC 7: Conclusions from social media data on the business model

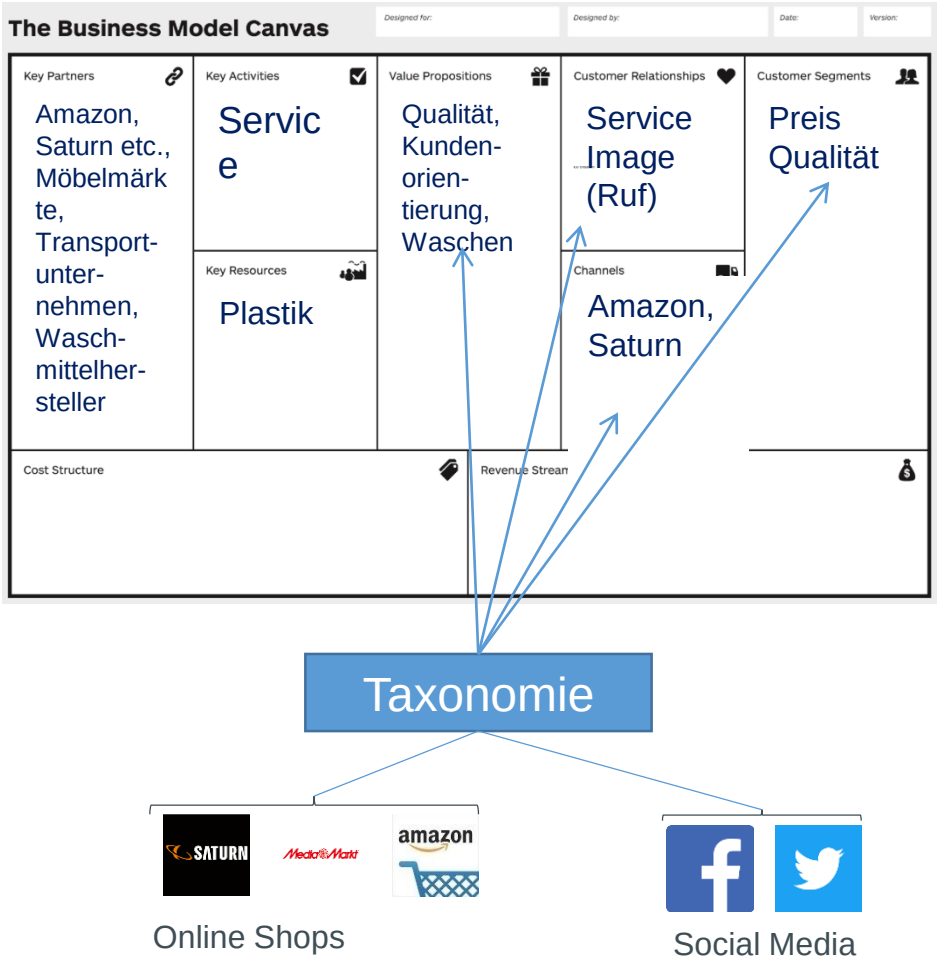
DFKI

Goal

The theme of Use Case 7 is to draw conclusions from social media data and evaluations of online stores on the business model and to derive from this the risks and potential for the business model. The goal is to reduce comments, news and product reviews to meaningful aspects with the help of natural language processing methods. These social aspects are then linked to areas of the business model and on this basis recommendations for improvement are made using business model patterns.

Work content

- Development of software sensors for data acquisition
- Creating an NLP model to derive the social media aspects
- Creating a business model taxonomy to link the social media aspects with the business model
- Generation of recommendations based on existing business model patterns
- Practical application and evaluation



UC 8: Data Analytics Rollout-Strategies

mosaiic GmbH

Goal

The goal of UC8 is the development of concepts and recommendations for action and their integration into a modular system in order to be able to introduce data analytics approaches in a prototype. The interaction of people, technology and organization is examined. In addition, the industry standards CRISP-DM and ASUM-DM will be linked with mosaiic's expertise in business analysis and rollout management to derive coherent rollout strategies and develop control measures.

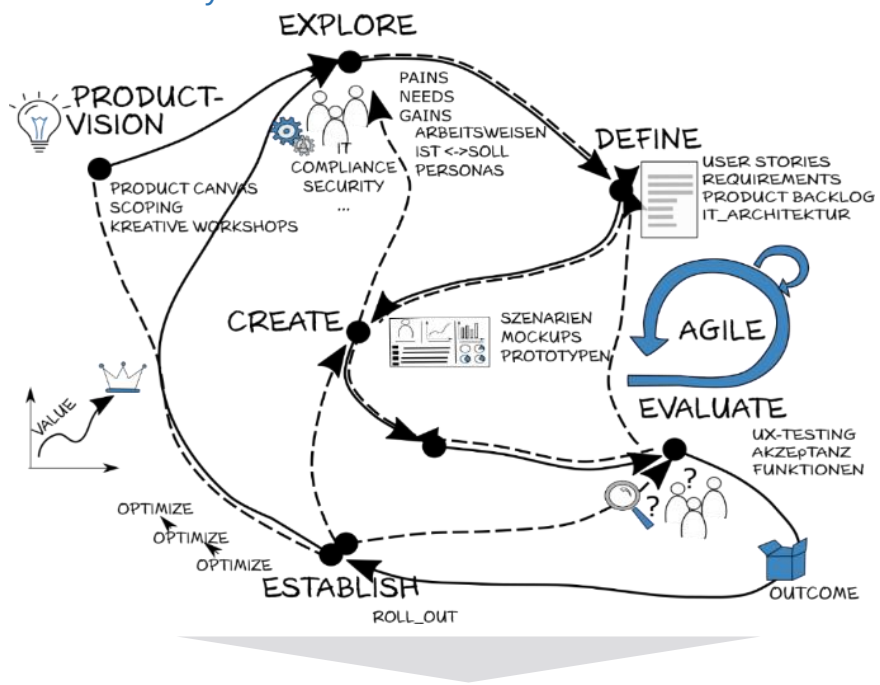
Work content

- Development of a method kit for the rollout of data analytics approaches
- Integration and interaction of Data Analytics, CRISP/ASUM-DM, Agilem Project Management, Competencies and Organization
- Recommended actions for change management
- Validation of the framework through application in UC 2

Partner

Leading partner:	mosaiic	Application:	Miele (ev. VW, ERCO)
Research:	IPS	Development:	RapidMiner, PDTec

Business Analyse



Roll-Out Management