



**BIG
DATA**

Big Data Data - Analytics - Expert Knowledge

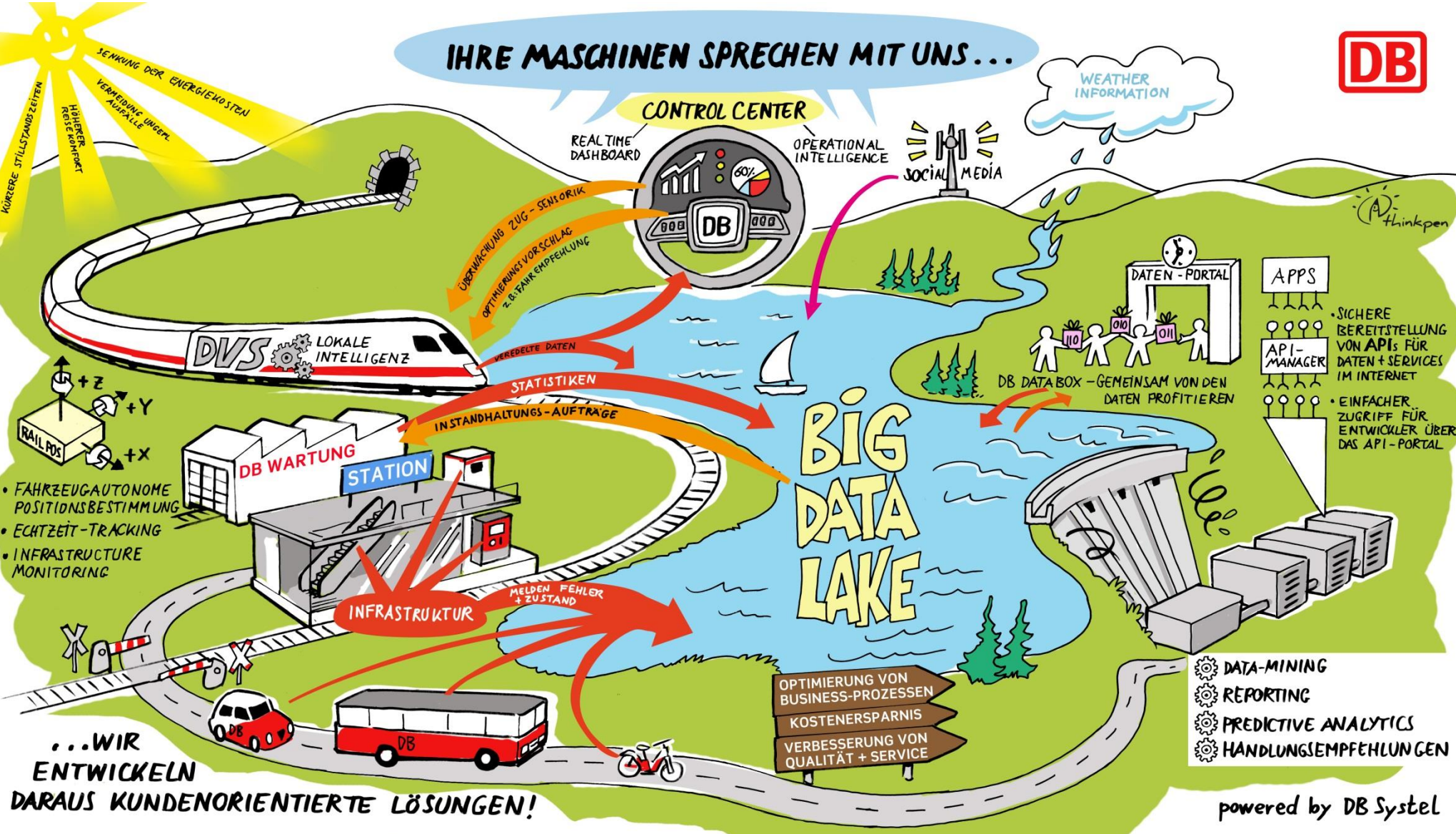
ZERO.ONE.DATA powered by DB Systel | 05.07.2016



CODE ZUKUNFT
STRATEGIE SYSTEM



IHRE MASCHINEN SPRECHEN MIT UNS...



KÜRZERE STILLSTANDSZEITEN
 HÖHERER REISEKOMFORT
 SENKUNG DER ENERGIEKOSTEN
 VERMIDUNG UNSERER AUFFALLE

+Z
 +Y
 +X
 RAIL POS
 FAHRZEUGAUTONOME POSITIONSBESTIMMUNG
 ECHTZEIT-TRACKING
 INFRASTRUCTURE MONITORING

INFRASTRUKTUR
 MELDEN FEHLER + ZUSTAND

OPTIMIERUNG VON BUSINESS-PROZESSEN
 KOSTENERSPARNIS
 VERBESSERUNG VON QUALITÄT + SERVICE

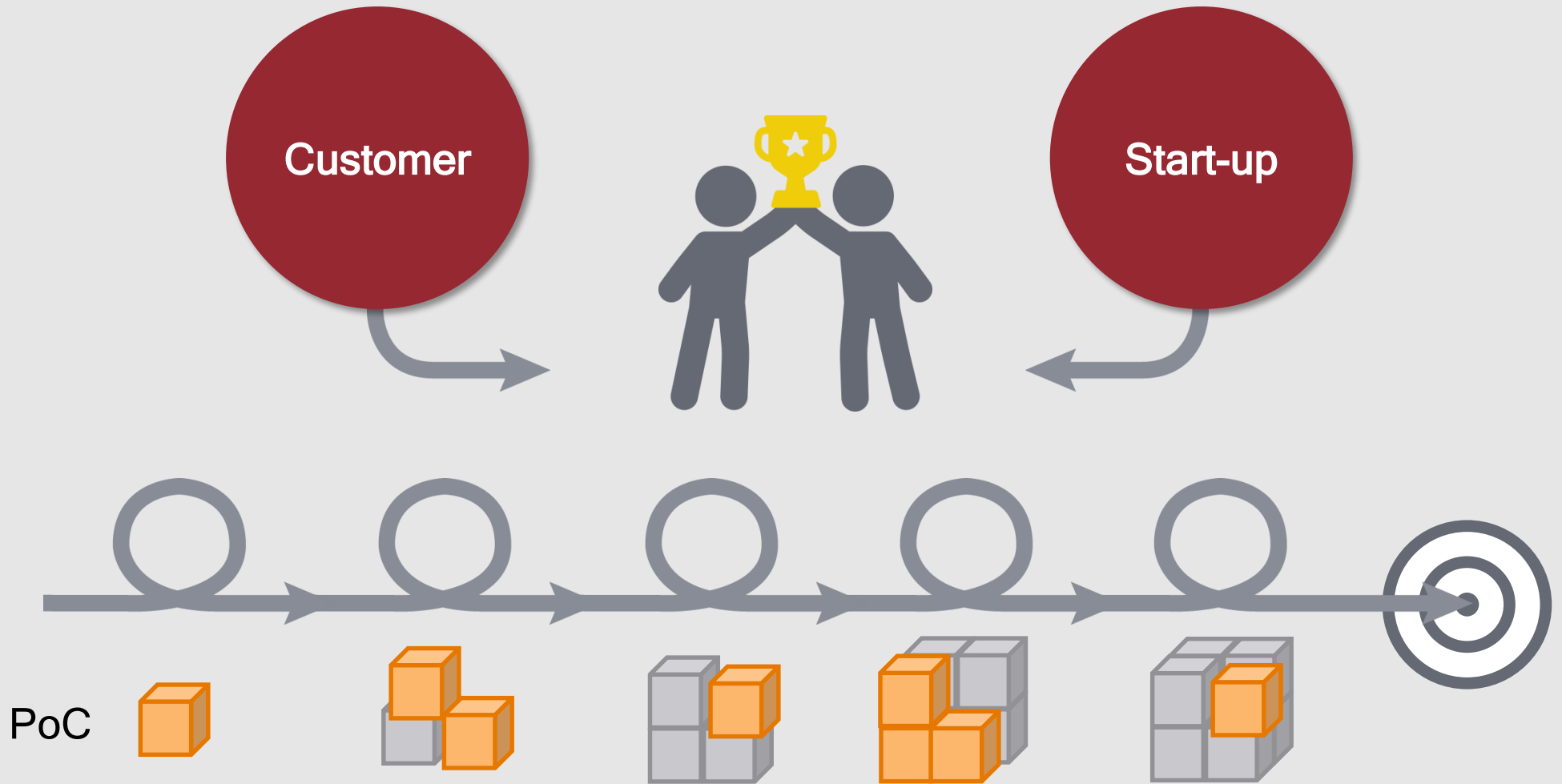
We can learn a lot about the Future through a fundamental Analysis of the Past

Information as a strategic resource for the implementation of business objectives



Source: Chart based on USU AG und Gartner, Inc.)

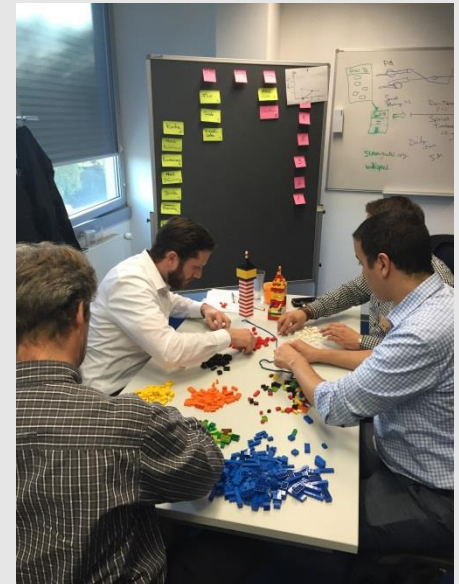
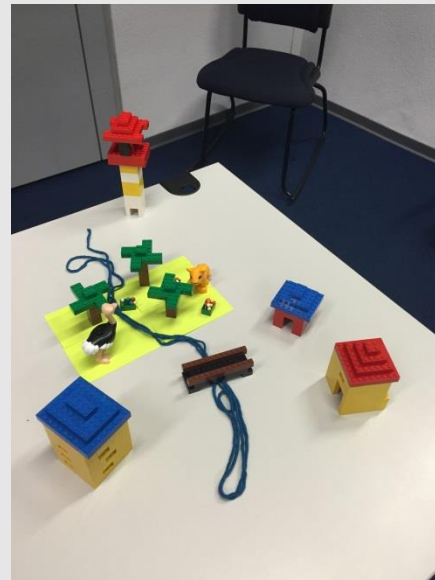
We work agile, let's start an Use case project!



DB Energy Lighthouse Project Big Data Agile Methods - Design Thinking

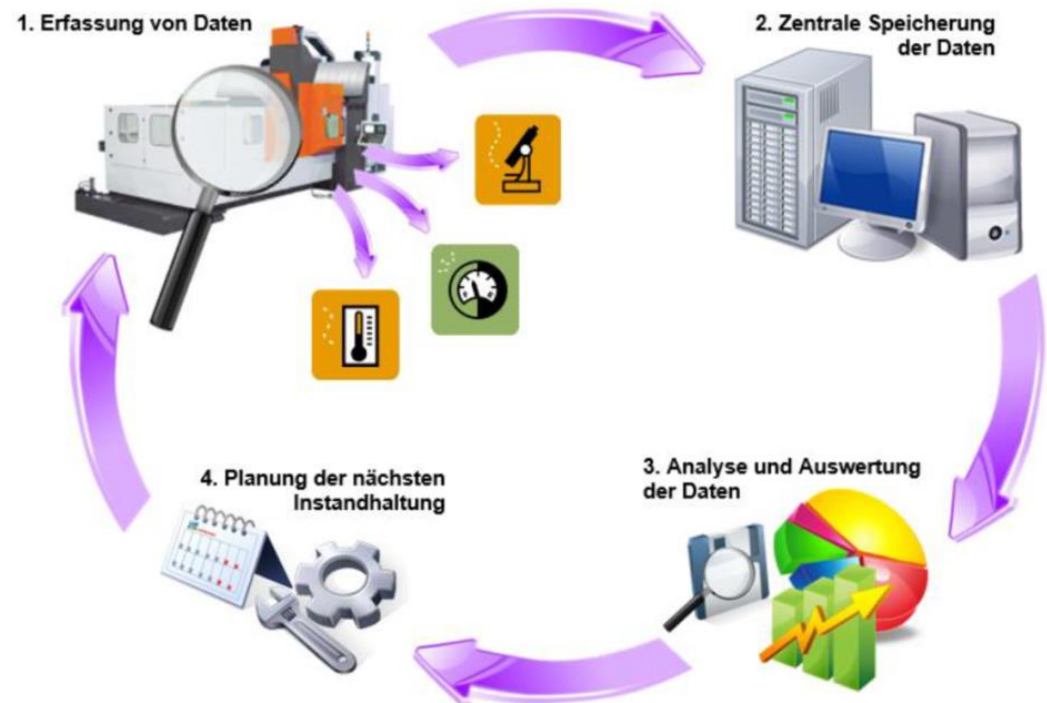
Background:

In the innovation project of the customer's request was methodically trained new, agile process models are validated and applied. For this purpose, a design thinking approach should be applied. The necessary training of the team members on the customer side was shortly developed by ZERO.ONE.DATA together with the Design Thinking Community of DB Systel and performed.



All identified maintenance strategies to minimize the target downtime

- **Preventive Maintenance (PM)**
Maintenance work is planned to extend the lifetime
- **Condition based Maintenance (CBM)**
Maintenance work is carried out depending on the state
- **Predictive Maintenance (PdM)**
Required maintenance measures can be predicted?
 - **Condition based PdM**
to make continuous and / or periodic monitoring a failure prediction
 - **Statistical based PdM**
Determining a failure prediction using of statistical methods



Solution component Use Cases

8 Use Cases

You profit from concrete use cases quickly and at reasonable cost

Service content

Together with you, we develop a proof of concept for any Big Data task.

- An experienced Data Scientist guides you over a period of about 6 weeks.
- The Big Data platform is available with analysis tools for the integration and data analysis.
- The initial business analysis is covered as part of a workshop (approximately one week). Scenarios and data will be analyzed and evaluated on suitability.

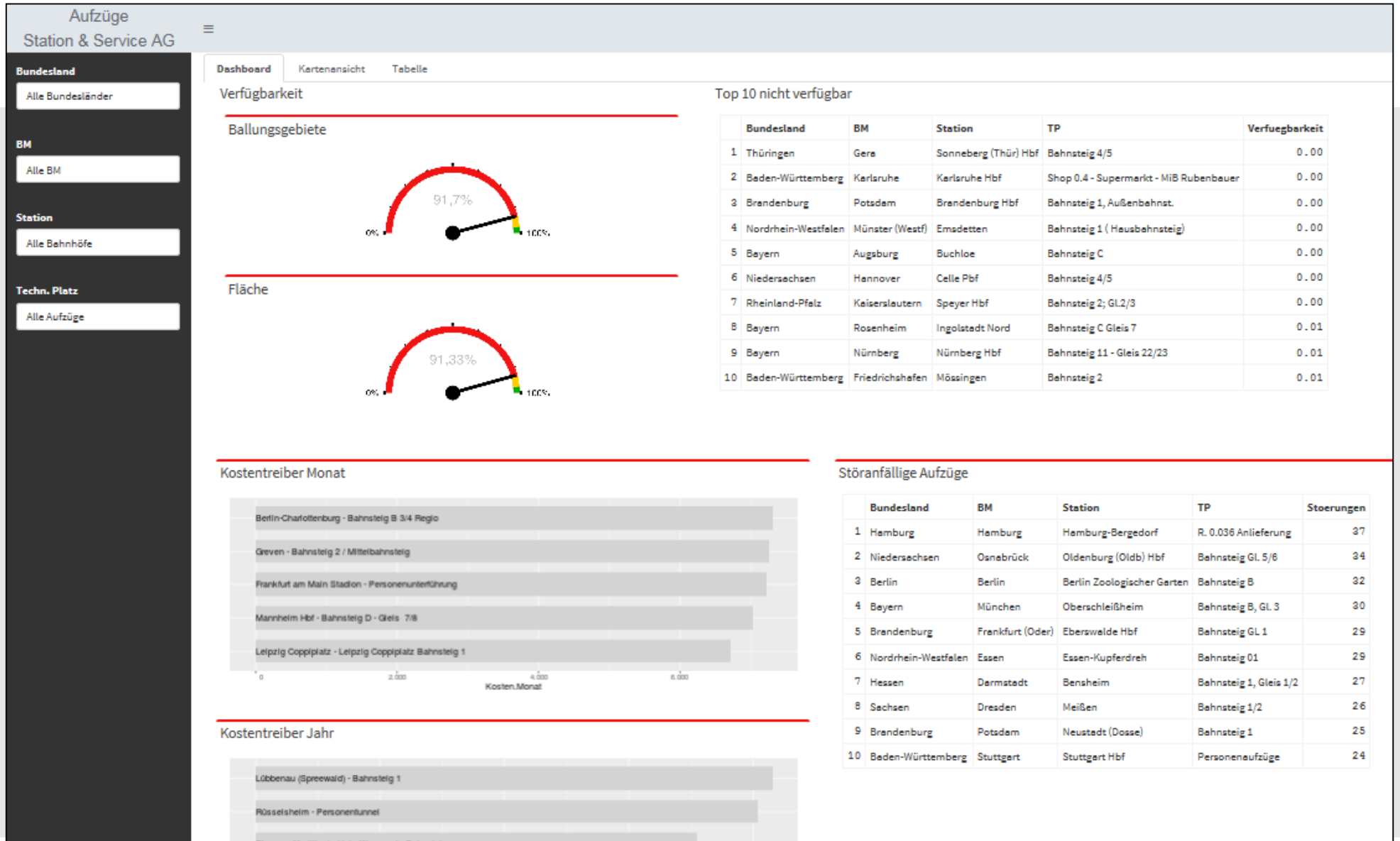
You profit from the following results:

- The benefits from the Big Data task is validated in practice.
- Different data sources are combined and analyzed.
- The results of the analysis are well documented and
- concrete recommendations derived.

Price model

If, during the initial workshop, it is determined that there is no chance of success for the given Use Case, the job can be cancelled

Proposal to DB Station & Service



Datenportal databox



Launch at 11th May

- Joint initiative of Infrastructure 4.0 and ZERO.ONE.DATA
- Exchange platform to promote data sharing across borders organizational in the group
- Ability to share data and analysis, comment and evaluate quality
- Create added value through data sharing
- Non-discrimination is guaranteed

DB databox

Aktuelles | Daten | Analysen | Community | Über databox | FAQ | Datensätze suchen...

databox
Gemeinsam von Daten profitieren.
→ mehr

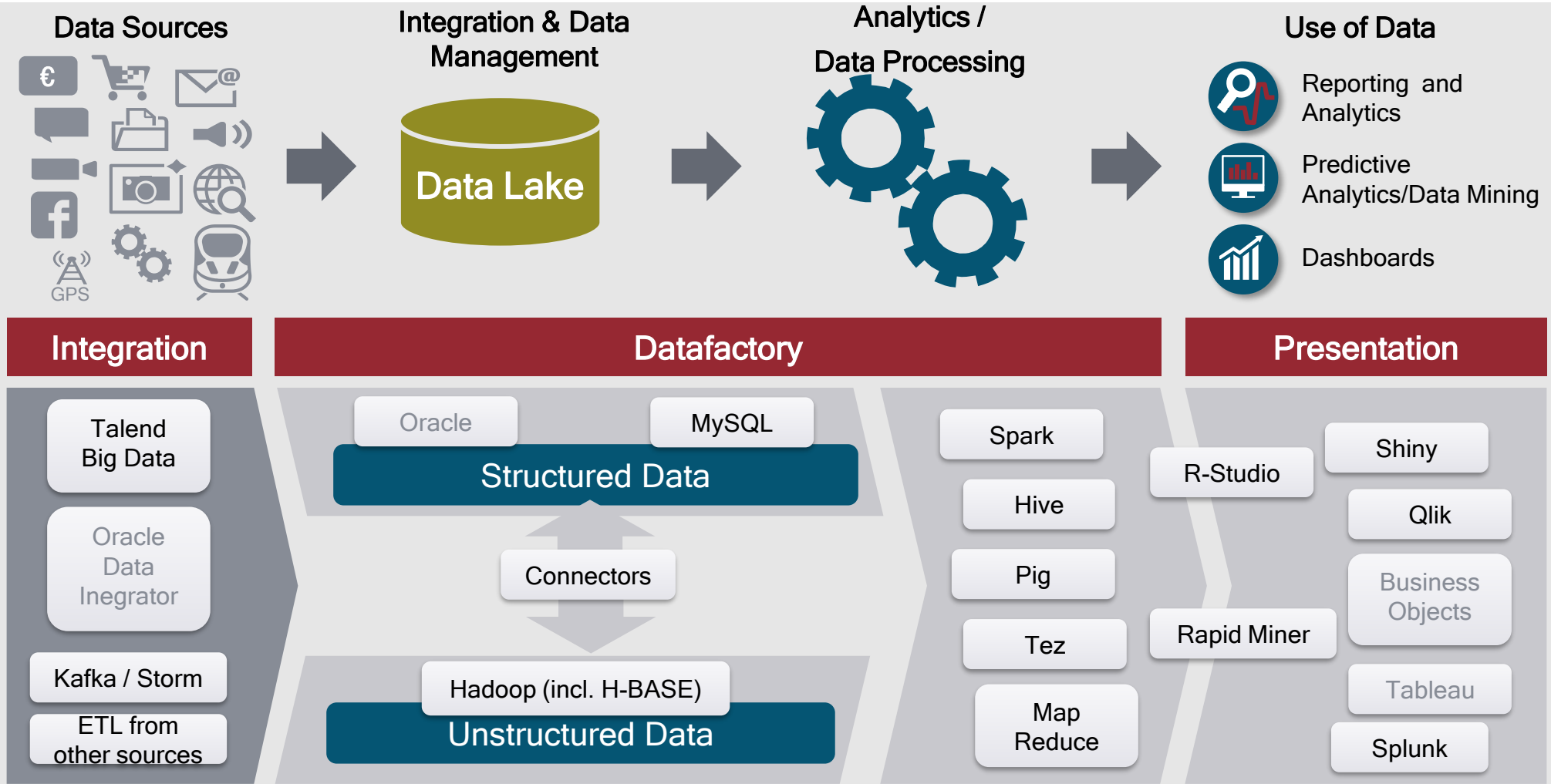
Daten
Datensätze - Ansprechpartner - Herunterladen

Analysen
Ergebnisse - Vorgehen - Präsentation

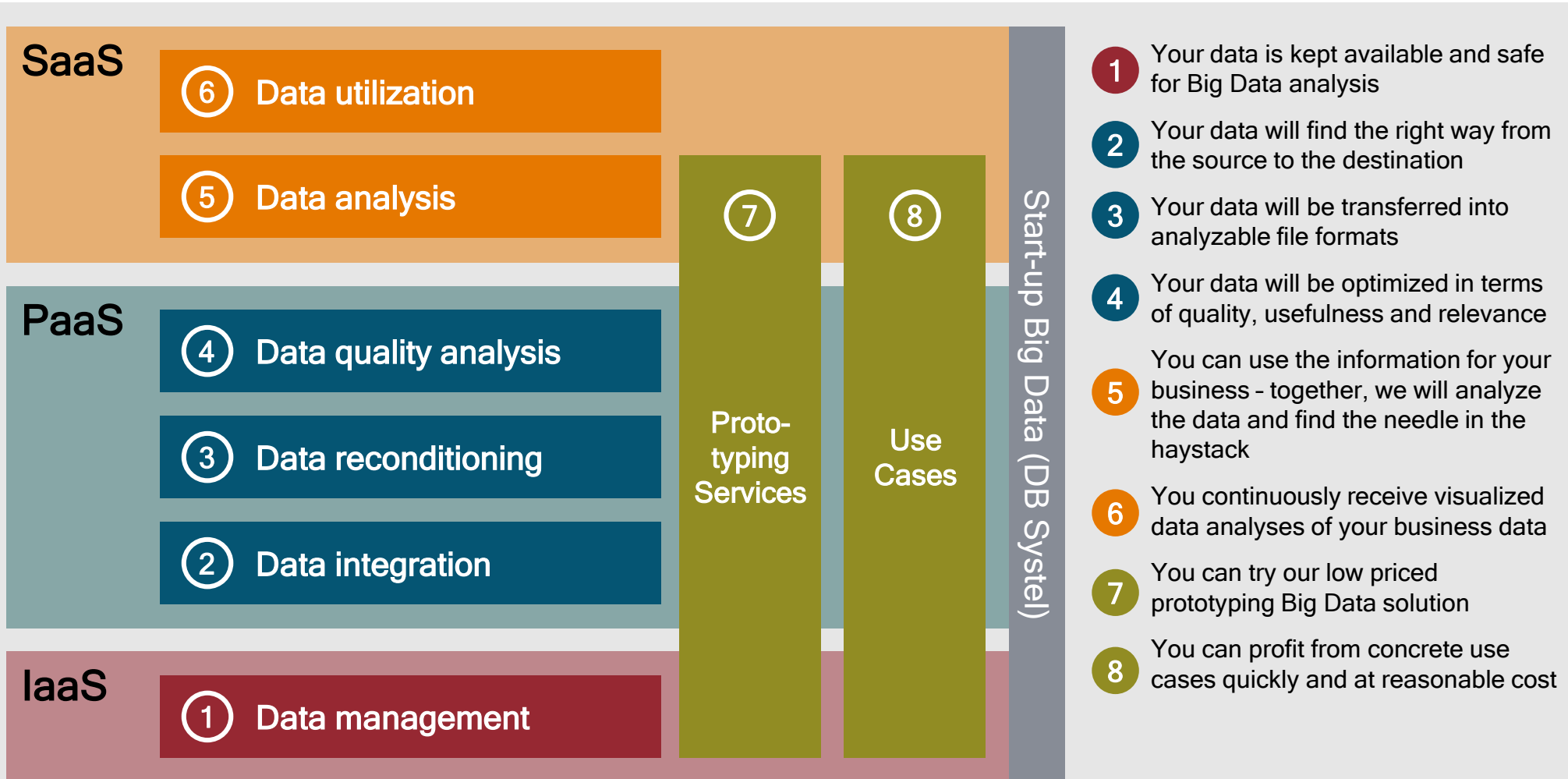
Community
Austausch - Lernen - Vernetzen

Der Name steht : Datenportal wird zu databox

The start-up Big Data architecture is based on commercially available technology



Choose from our Solution Modules what fits best for you





**BIG
DATA**



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Deutschland*

Thank you for your attention!

Questions or suggestions ...?

Solution component Prototyping Services

7 Prototyping

You can try our low priced prototyping Big Data solution

Service content

To be able to try out Big Data quickly and easily, there are two "entry-level models" available:

- **EXKLUSIVE:** Exclusive usage of the platform with net 22 TB Storage and tools for data analysis and data integration: Rapidminer, R-Studio, Talent, ...
- **SHARED:** Proportionate use of the platform with net 3 TB Storage and tools for data analysis and data integration: Rapidminer, R-Studio, Talent, ...

Consulting services are not included, but can be ordered optionally on top

Price model

Discontinuation on a monthly basis. After 12 months, there may be price adjustments.

30 days for free

Example Use Cases and Products under Development

You can use concrete use cases quickly and at reasonable cost

Example Use Cases

Employee turnover	Data Mining	Forecasting how long a newly hired employees will remain with the new employer
Wear & Energy	Analyses & Prediction	Make energy consumption in the context of infrastructure wear assessable
Availability	Analyses	Calculate availability of operating stations, vehicles and routes
Smart Freight Assets	Predictive Maintenance	Prediction of Motor outages
Track possessions	Analyses & Prediction	Synchronize different maintenance measures and timetables optimally

Example Products

ZERO.ONE.TEXT MINING	Analyses	The product provides a quick and easy overview of the central themes in the text
ZERO.ONE.COCKPIT	Dashboard	Predefined, real-time-capable, mobile responsive, scalable u. Inexpensive Dashboard

Service Module Data Management

1 Data Management

Your data is kept available and safe for Big Data analysis

Service content

The function data storage is, in essence, an IaaS offering. We offer a permanent and Big Data compliant storage of data in our infrastructure. This enables the subsequent data processing and data usage.

The client determines how long the data must be available. The deletion of data is performed by ZERO.ONE.DATA in accordance with the contract and logs of the deletion are kept.

- Use of the platform with net 3 TB Storage and Tools for data analysis and data integration: Rapidminer, R-Studio, Talend, ...

Price model

Discontinuation month. After 12 months, there may be price adjustments.

30 Days free

Agenda



BIG DATA

1. DB Systel Start-up Big Data
2. Service Offering
3. Use Case / Proof of Value
4. Datenportal databox
5. Internet of Things
6. API Manager

The Internet of Things as an enabler of digitization offensive

Change = Upraise

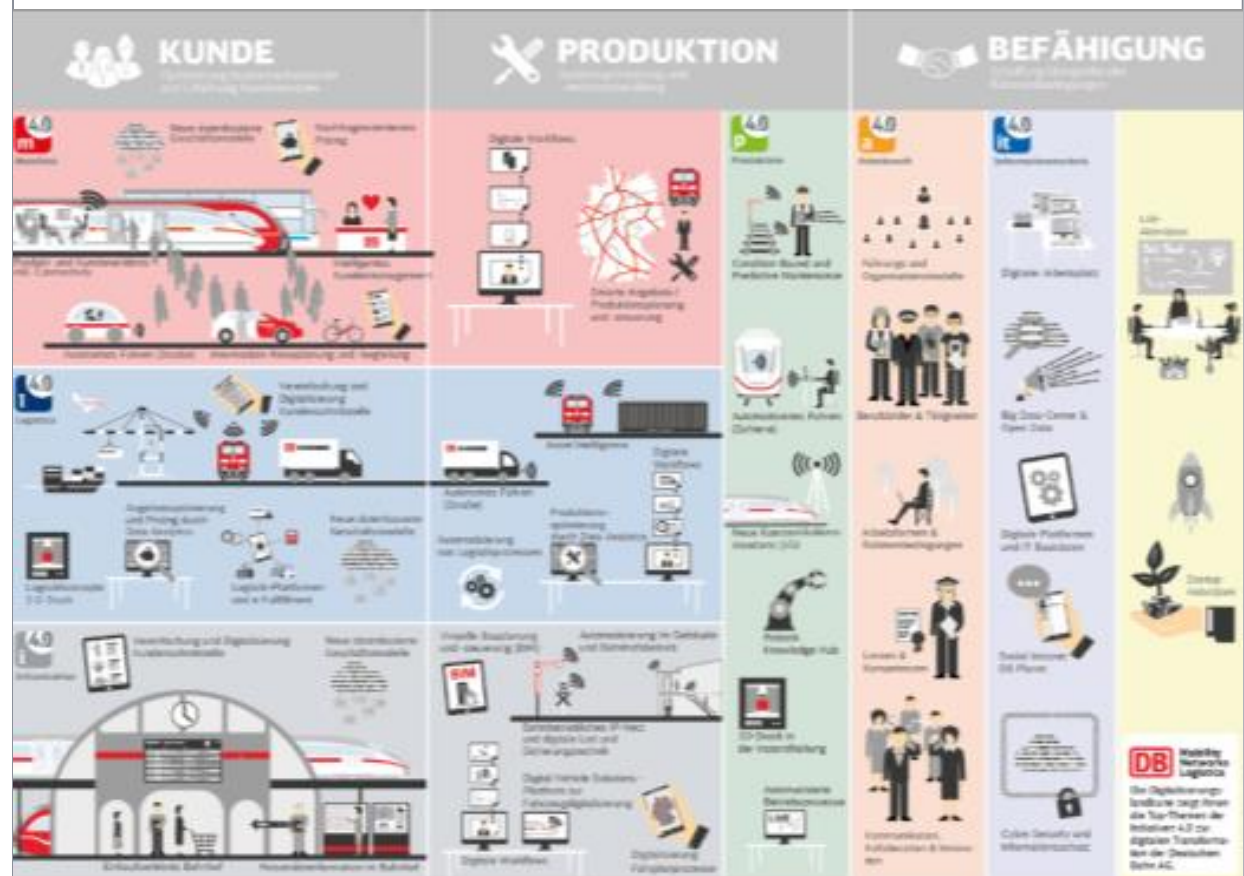


„Nur wer die Digitalisierung auch als Chance begreift, wird in Zukunft zu den Gewinnern gehören.“



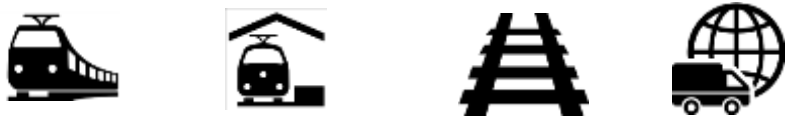
- The Internet of Things (IoT) will in future make a significant value contribution to the digitization offensive of DB.
- By connecting the "real" and "virtual" world streamlined operations, achieve significant productivity improvements and establish new business models.
- Data will be the linchpin.

DB digitization map



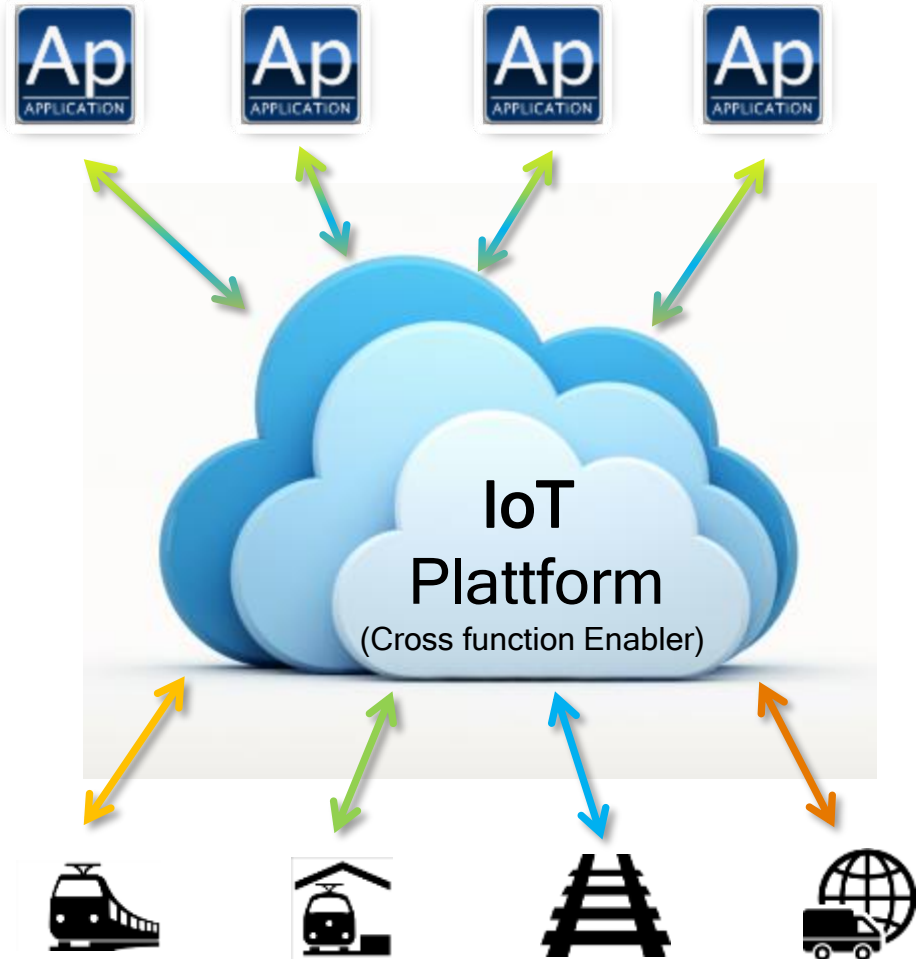
A uniform IoT platform generates use case overarching value and enabled the true potential of IoT

Today: Order-Driven Silo solutions



- Silos
 - per Group company
 - per Solution area
 - per Use Case
 - per ...

Tomorrow: IoT platform



A uniform and future-oriented IoT platform is mandatory!



Horizontal Enabler

Each IoT Application requires the same functions one IoT platform

Key Points of a IoT Platform:

- Open Architecture
- Open Source Framework
- client capable and scalable
 - End-to-End Security
 - Open IoT ecosystem
- Strong IoT Community

Applications, Big Data & Analytics - interface applications, big data & analytics

Application Enablement - Event processing, develop-deploy-run, open interfaces

Device Management - device registration, configuration, SW-management, device lifecycle management

IoT Broker - efficient communication between the cloud and the things

E2E Security - authentication & identity management

Gateways & Communication - communication & processing unit, communication infrastructure

Physical Devices - Sensors, Actors, Devices, Machines

Internet of Things (IoT@DB Systel)

IoT Show Case Silvertower



MQTT



- Sensors and actors are building the bridge between the real and the virtual world.
- IOT Gateways are connecting Sensors and Actors with the Control Center.

Silberturm Skydeck

Willkommen im Silberturm!

DB

Anzahl der Personen im Gebäude:

1778

Zu- und Abgänge der letzten 10 Minuten

Letzte Aktualisierung: 23.02.2016 14:12 Uhr

Das Internet der Dinge zum Anfassen

Lange Schlangen vor den Aufzügen zur Mittagszeit - wer kennt das nicht? Kann das Internet der Dinge hier Abhilfe schaffen? LPW 2 und die Initiative 3 bringen das Internet der Dinge in den Silberturm!

M2M-Showcase im Silberturm

Seitens LPW 2 wurden in Zusammenarbeit mit der Initiative 3 „Innovationsreduktion“ Personenzähler sowohl im Eingangsbereich zum Skydeck als auch hier im Zugangsbereich der Aufzüge im Foyer installiert.

Hoch-Komplexionsniveau: COM wurde für den M2M Showcase bereits eine datenschutz-rechtliche (persönlichkeits) eingepreist. Die Sensoren detektieren, ob ein Mensch in Bewegung ist oder stehen/geht. Die Erkennung erfolgt über einen optischen Sensor. Personenbezogene Daten werden nicht erhoben. Die optische Erkennung wird im Ergebnis mit einer IP (190.100.1.100) gespeichert und via MQTT Protokoll an einen zentralen Server geschickt. Dieser für 1 Stunde im Netzwerk nicht gespeichert und nicht übertragen.

TECH

Silberturm Skydeck

Willkommen im Skydeck!

DB

Anzahl der Personen im Skydeck:

13

Zu- und Abgänge der letzten 30 Minuten:

→ 47 → 53

Letzte Aktualisierung: 23.02.2016 14:04 Uhr

Events im Skydeck

Resuch Herr Dr. Grube im Skydeck

23.02.2016 12:00 - 18:00 Uhr

max. **31**

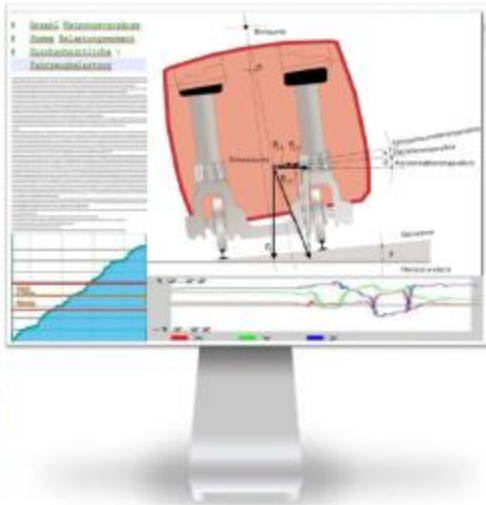
TECH

Internet of Things (IoT@DB System)

IoT Show Case Rail Position

Tilting technology - Predictive Analytics

Sensors detect the stress of tilting georeferenced. Realtime data, thresholds and Logging-Information can be analyzed in the control center.



RailPos

RE 2204

Reset



2016-02-08T09:42:41.514Z: zu große Neigung nach rechts (52.0491,13.5187,0.0)
 2016-02-08T09:44:08.233Z: zu große Neigung nach rechts (52.0491,13.5187,0.0)
 2016-02-08T09:44:31.426Z: zu große Neigung nach rechts (52.0491,13.5187,0.0)
 2016-02-08T09:44:32.951Z: zu große Neigung nach rechts (52.0491,13.5187,0.0)
 2016-02-08T09:44:34.263Z: zu große Neigung nach rechts (52.0491,13.5187,0.0)
 2016-02-08T09:44:35.780Z: zu große Neigung nach rechts (52.0491,13.5187,0.0)

Roll:	4.10	-4.60	9.40
Pitch:	4.20	-0.40	5.50
Yaw:	-5.10	-5.40	2.30
Motortemperatur:	35.90	35.90	40.40
Neigungen:	18	Temperaturverlauf	
Geschwindigkeit:	0.00	Lastwechsel	



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Agenda

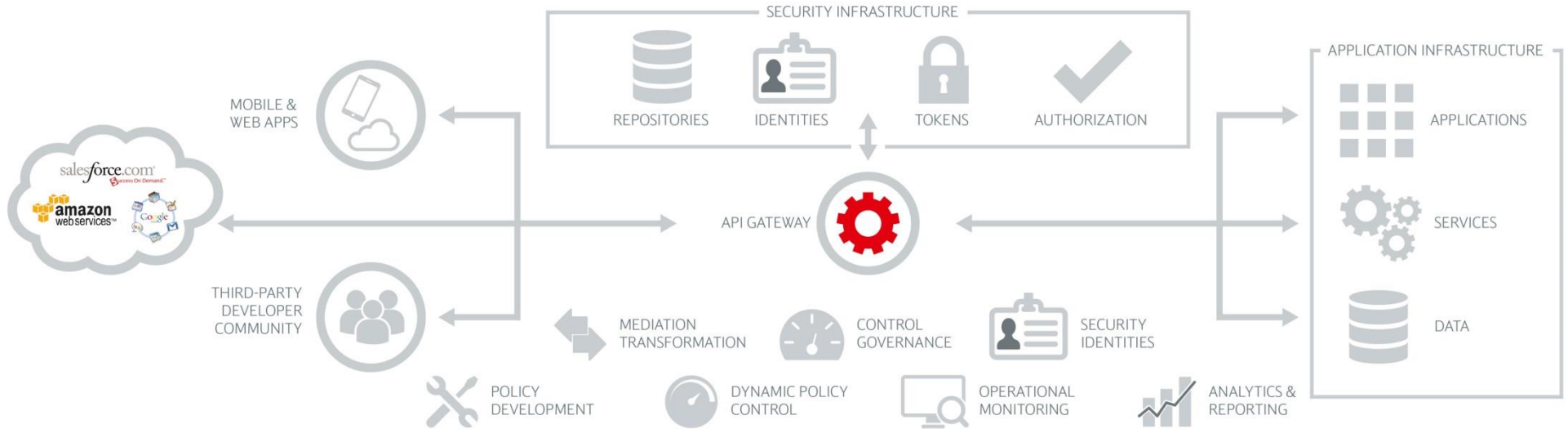


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In open value and innovation ecosystems Developers need easy access to APIs Deutsche Bahn

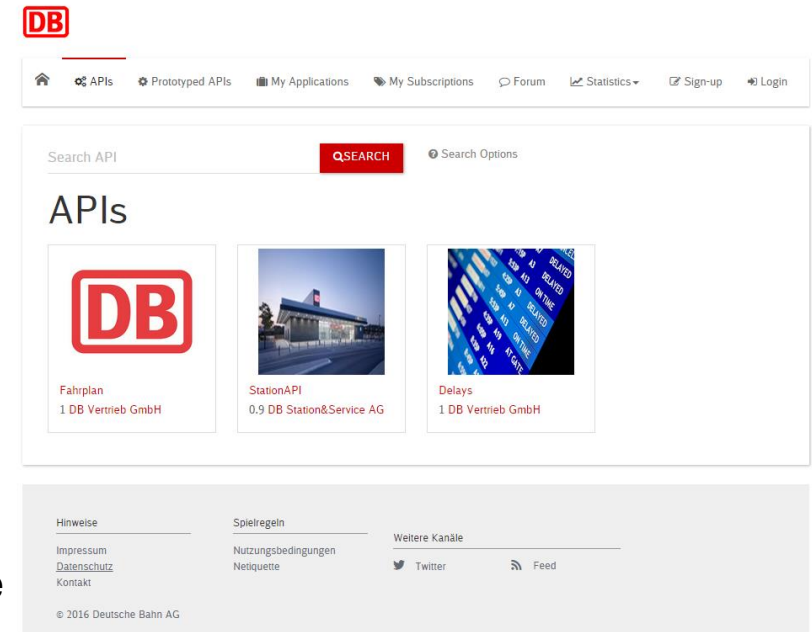
Overview of API Management Solution



DB Systel is currently building a scalable, multi-tenant API management platform in a pilot environment

Kernfunktionalitäten

- API - Gateway <https://api.deutschebahn.com>
 - secure and scalable deployment of APIs (REST, SOAP) on the Internet
 - Authorization check (API-Keys, OAuth)
 - Caching
 - Überwachung von Quotas, Thresholds
- Developer-Portal <https://developer.deutschebahn.com>
 - Self-Service for registration and management of access keys
 - Providing API catalog and documentation
 - Sandbox for testing the operation of an API
- API Lifecycle und version management
- Statistics for the analysis of API usage



Developers Portal of prototypes