Microsoft

Artificial Intelligence in Production and Supply Chain

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Agenda

pmOne – Your Guides to Data Driven Transformation

About Advanced Analytics

Machine Analytics in Customer Projects

Supplier Analytics in Customer Projects

Let's get started: Now

Recap – Q & A

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pmOne Solution Offering

End-to-End approach with focus on providing business value along the value chain.

Supplier Analytics	Machine Analytics	Financial Analytics	Customer Analytics	Strategic Platform

Analysis & Conception	Design	Build	Operation Services

ABOUT ADVANCED ANALYTICS

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Data Science & Machine Learning
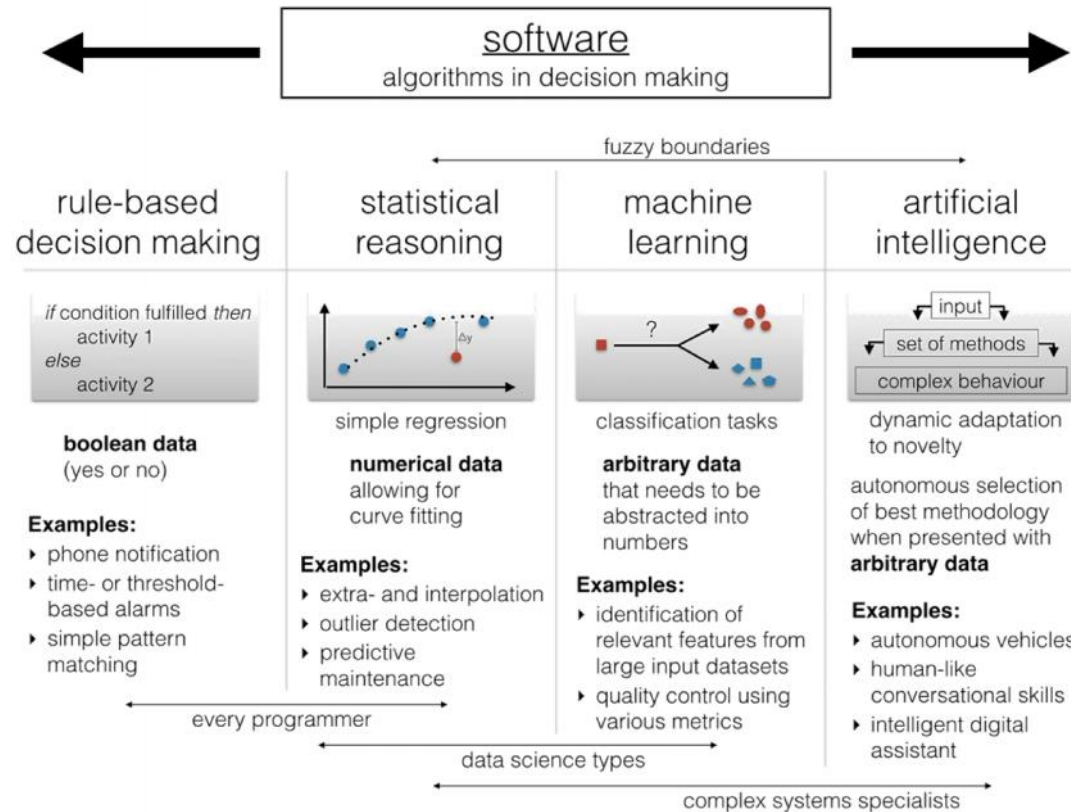
ABOUT MACHINE ANALYTICS

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Machine Analytics Areas

1. Predictive Maintenance

2. Predicting Machine Health

3. Foreign Matter Contamination

4. Shop Floor Digitization

5. Manufacturing Process Optimization

6. Raw Material Issue Prediction

7. Root Cause Analysis

8. Deviation Detection

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Machine Analytics in different Categories

Manufacturing Analytics	IoT Analytics	Hybrid Analytics

Optimization of own production

- Data: process parameters, quality data, environment
- typical use cases: Prediction and optimization of process input parameters, predictive maintenance, digitalization of production

Service monitoring of machines at customer sites

- Data: spread worldwide, sensor data of machines, quality data
- typical use cases: predictive maintenance, faulty part detection, root cause error analysis

Mixture Manufacturing and IoT

- (e.g. the machines built by Manufacturer A are utilized at Manufacturer B)
- Data ownership: has to be defined
- Data: own production environment, machine environment, machine sensor data
- typical use cases: Development of new business models (new services), optimized supply chain event management

What are the Goals?

increase
production yield

shorten downtimes,
optimize OEE

increase production
quality

increase
throughput

increase first time
fix rates

reduce production
costs

Case Studies aus der Automobil-Zulieferer-industrie

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Case Study 1

Projektziele

- Prognose IO/NIO der Maschine auf Basis zweier Signale

- Fehlerklassifikation nach Signaldaten

- Digitalisierung Produktion: Field-Gateways, lokaler SQL-Server, Anbindung Azure Plattform

- hohe tägl. Datenmenge: ~2GB / Roboter

- Architekturmodell, IoT-Hub aufbauen

Predictive Maintenance
Classification OK/NOK

SHOP FLOOR DIGITIZATION
Sensor-Data from Robots

IOT HUB / Platform
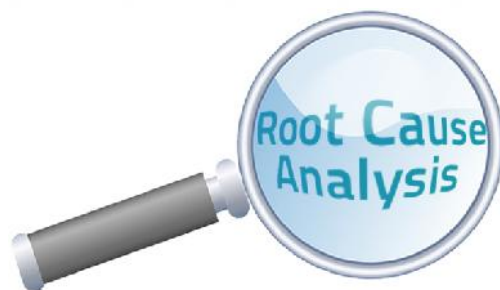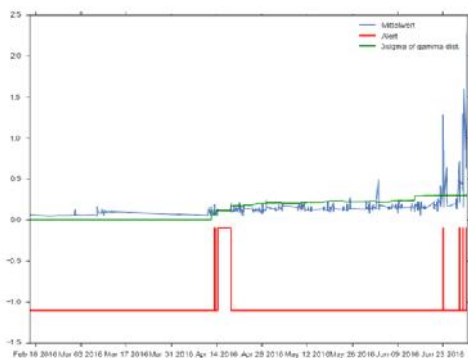Azure Platform, Field Gateways

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Case Study 2

Projektziele

- Einbindung der Geräuschdaten von Einzelkomponenten in das Vorhersage-Modell

- Bestimmung einflussreichster Prozessparameter auf Ausbeute (Yield) – Feature Importance Algorithmen

- Klassifikation gute/schlechte Einstellungen der Prozessparameter

- Recommender: Einstellungen der Parameter nach Qualität vorhergehender Prozessschritte

Faulty Part detection
Correlation Production-Data

Deviation Detection
Yield Optimisation

IOT HUB / Platform
Integration Sensor-Data

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ABOUT SUPPLIER ANALYTICS

Supplier Analytics

Our Focus areas in Procurement

Insights & Analytics
- All relevant Procurement KPIs implemented in an analytical model
- Buyer cockpit for easy access
- From spend analysis to material price forecasting

Process Analytics
- Process Analytics for S2C & P2P
- Interfaces to ERP, e-Sourcing & contract platforms

Digital Workplace
- Collaborative workplace for internal & external collaboration (SEI)
- Role based access to all procurement relevant content

Trendwatching
- Analytics solution to leverage qualitative content for discission making in purchasing
- Crawl web content to detect trend indicators

Supplier 360°

Insights & Analytics | Process Augmentation | Digital Workplace | Trendwatching
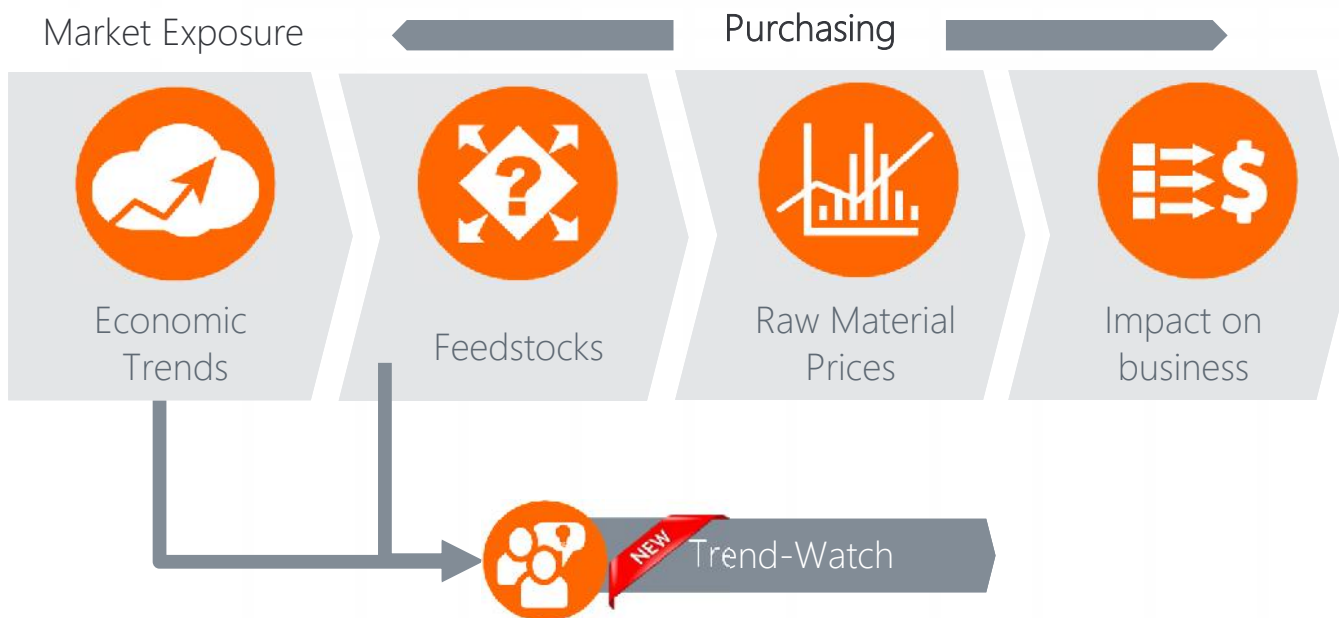
Customer Use-Case: Trendwatching

Raw material watch

Enhance manual analysis processes by advanced analytics

Market Exposure

Purchasing

Economic Trends

Feedstocks

Raw Material Prices

Impact on business

NEW
Trend-Watch

❯ The transition from "manual" to a more digital and data driven sourcing & decision making
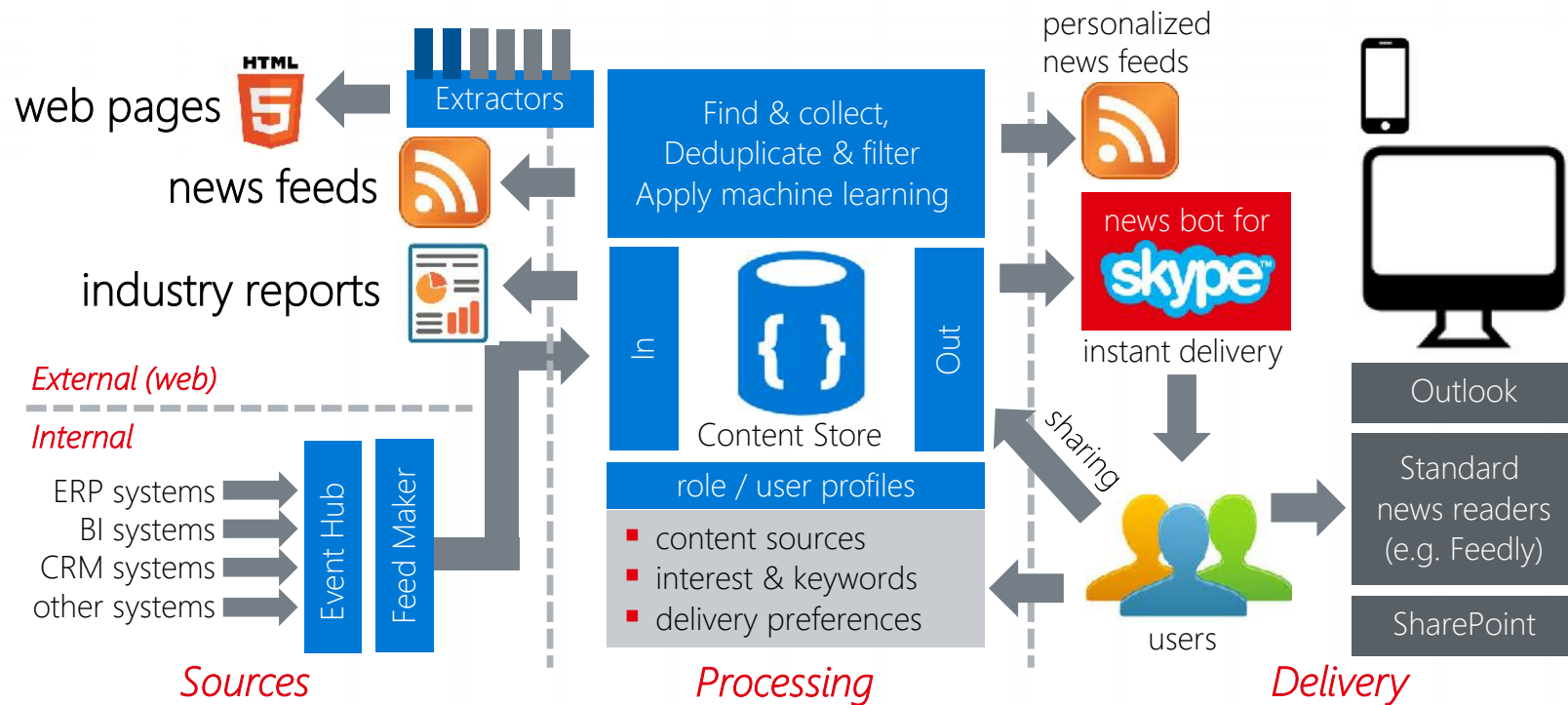
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The vision in a nutshell

Deliver the **right information** to the **right people** at the **right time**, with...

1. A **higly** **scalable platform** that...
2. **constantly collects** and...
3. **instantly delivers**...
4. **focused** and
5. **relevant information** from...
6. **various relevant sources**
7. to **appropriate** receivers,
8. enabling **collaborative** decision making.
9. **Any time** and **anywhere** through
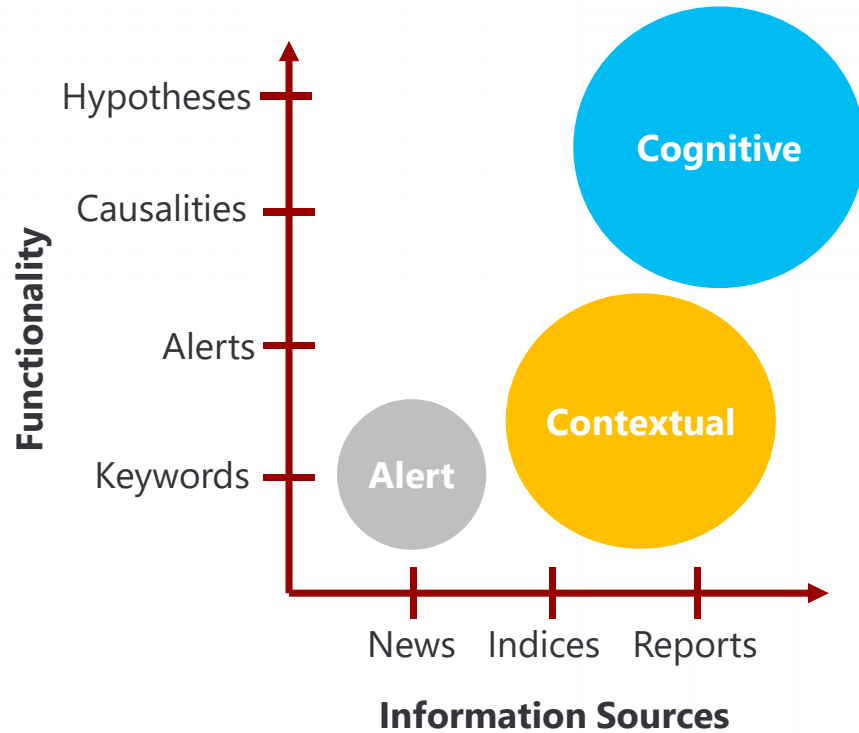10. **end-user self service**.
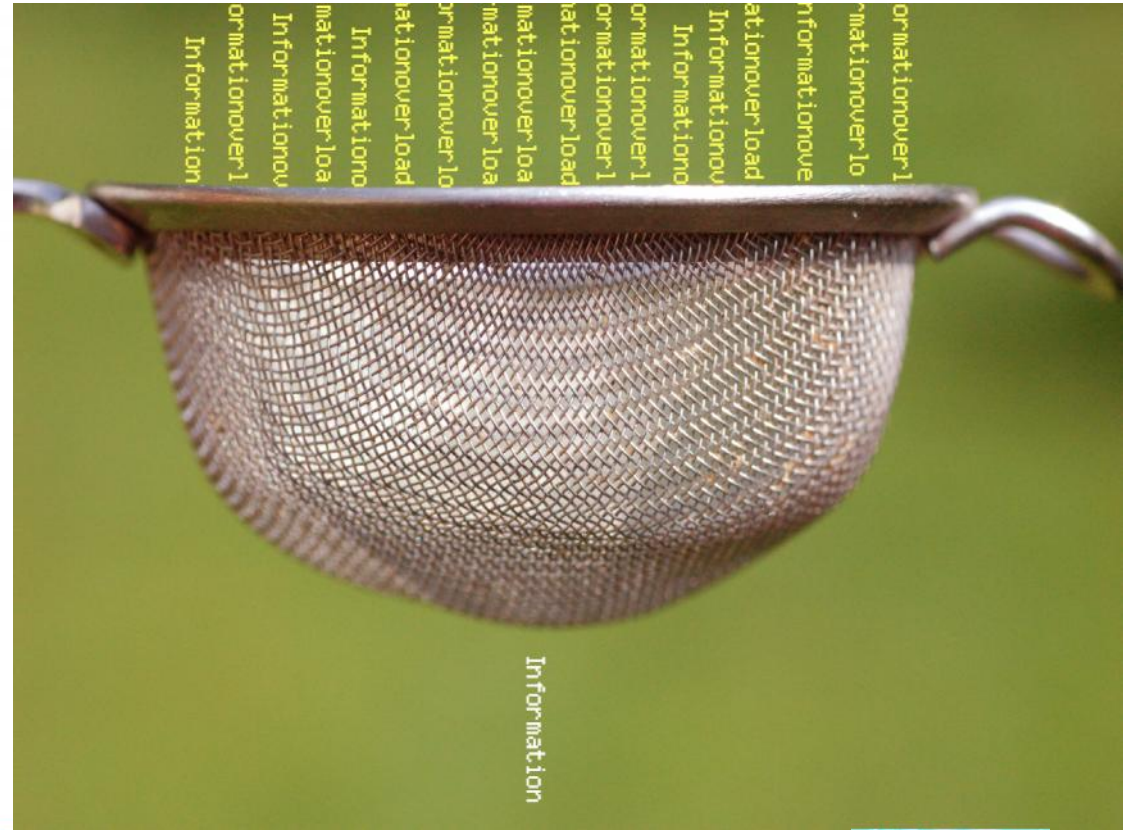
Logical Architecture

Scalable architecture to leverage semi-structured content
from within and outside the organization and to apply advanced analytics (NLP)

web pages

news feeds

industry reports

Extractors

External (web)

Internal

ERP systems
BI systems
CRM systems
other systems

Event Hub

Feed Maker

Find & collect,
Deduplicate & filter
Apply machine learning

In

Out

Content Store

role / user profiles

- content sources
- interest & keywords
- delivery preferences

personalized
news feeds

news bot for
skype™

instant delivery

sharing

users

Outlook

Standard
news readers
(e.g. Feedly)

SharePoint

Sources

Processing

Delivery

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Topic Overview   **Analyse**   ⚙ Settings   ? Help

Raw material watch – Silver Price

Search 🔍

Article	☐ Mark as read	Score

Commodities: Platinum, silver futures jump on weaker US dollar - DIGITALLOOK

13 hours ago on silverfutures-medal-silvero-shiver-olympics

DIGITALLOOKCommodities: Platinum silver futures jump on weaker US dollarDIGITALLOOKMorgan Stanley also expected crude oil and iron futures to trade lower.
Against that backdrop. December 2016 silver futures on COMEX jumped 4.23% to $20.19 an ounce with spot platinum racing up 2.94% alongside it to .....

☑   100%

Reading the Performance of Precious Metals in August - Market Realist

4 days ago on preaciousmetals-medal-silvero-shiver

NasdaqReading the Performance of Precious Metals in AugustMarket RealistFears of an interest hike are rightly playing on precious metals. These are
non-yield-bearing assets that fail with the increase in interest rates offered on Treasuries. Investors often seek a safe-haven place to park .....

☐   80%

Silver Price Awaits impact on Precious Metals from Yellen Comments Tomorrow - Economic Calender

12 days ago on silverprice-medal-silvero-shiver

Economic CalenderSilver Price Awaits impact on Precious Metals from Yellen Comments TomorrowEconomic CalendarAs of 3.30p.m. EST. Silver prices (for December delivery) traded down - $0.041 (-0.22%) lower to $18.515/oz. with today's trading range between $18.440 and $18.620. The 52-week range for .....

☐   62%

COMMODTITY FUTURES WRAPUP: Gold, Silver futures decline; Base metals firm up - Economic Times

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Times of IndiaCOMMODTITY FUTURES WRAPUP: Gold, Silver futures decline; Base metals firm upEconomic TimesSilver prices fell by Rs 103 to Rs 46.360 per kg in
futures trade today as speculators cut down their bets to book profits. Silver for delivery in December was down by Rs 103 or 0.22 per cent to .....
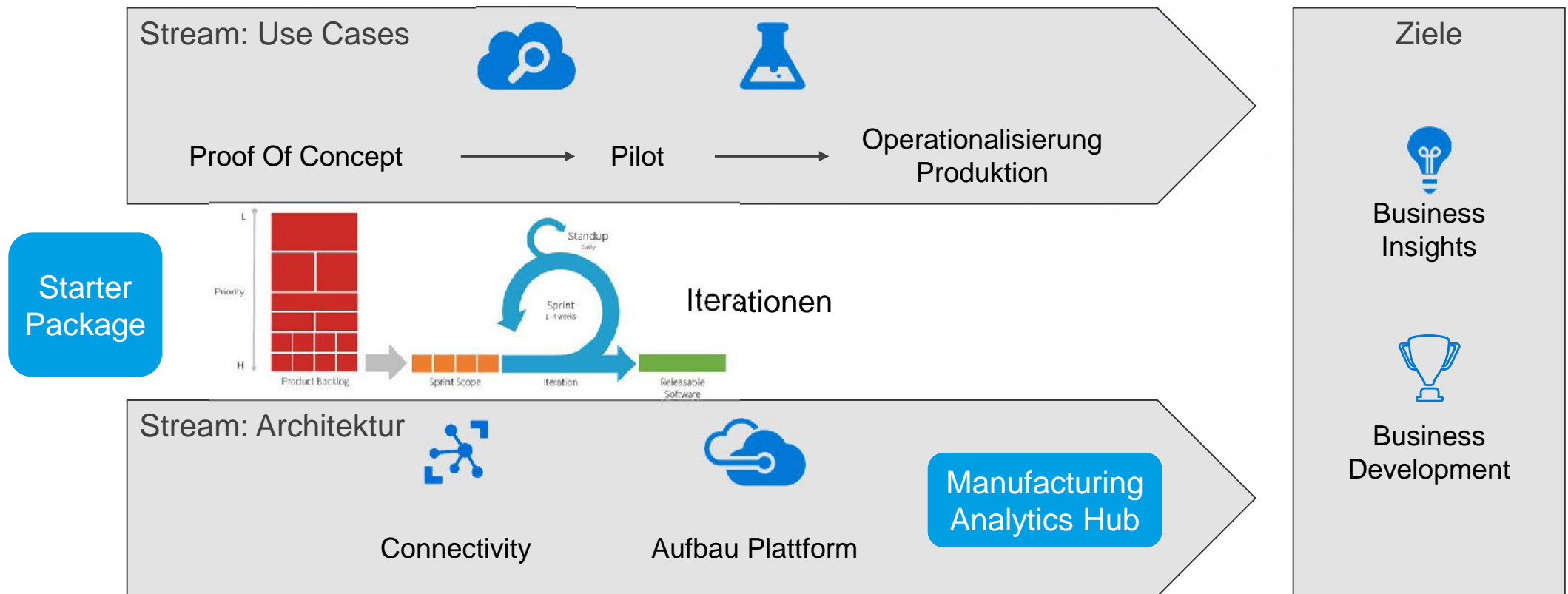
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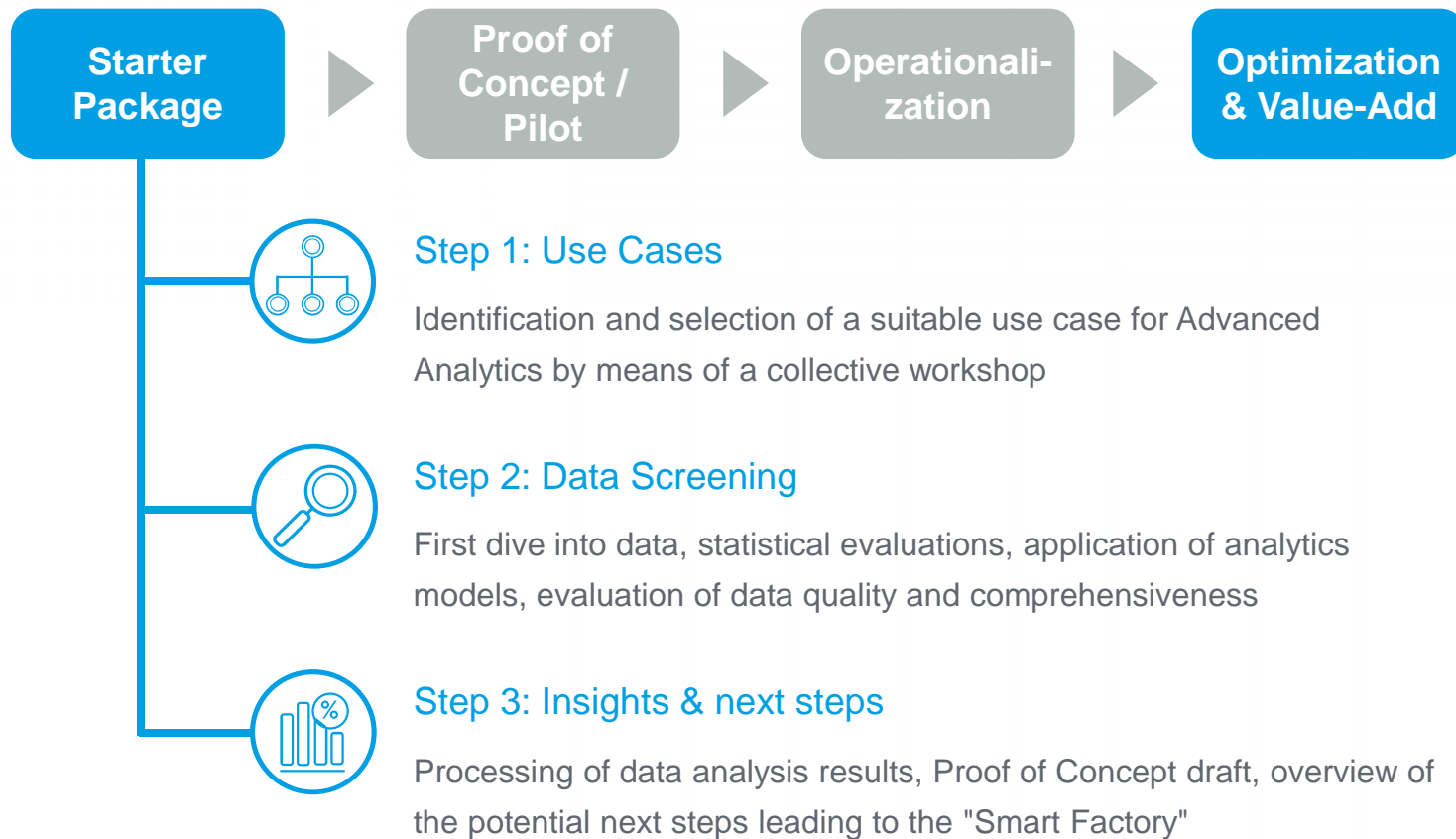
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Why?

Challenges   Ideal Solution

- Large investment into infrastructure & analytics required

- Outcome of projects unclear

- Benefits of use case / business case unclear

- Broadness and newness of topic leads to lack of clarity as to where to begin

- Small investment, no infrastructure needed

- Clear deliverables, next steps are defined

- Calculate the business case together with us as experienced partner

- Easy entry point, gives overview on way to digitization, smart factory and advanced analytics

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Overview

| Starter Package | ▶ | Proof of Concept / Pilot | ▶ | Operationali-zation | ▶ | Optimization & Value-Add |

Step 1: Use Cases

Identification and selection of a suitable use case for Advanced Analytics by means of a collective workshop

Step 2: Data Screening

First dive into data, statistical evaluations, application of analytics models, evaluation of data quality and comprehensiveness

Step 3: Insights & next steps

Processing of data analysis results, Proof of Concept draft, overview of the potential next steps leading to the "Smart Factory"

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RECAP – Q&A

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Data driven.
People minded.

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Customer Analytics

Machine Analytics

Data Management

Finance Analytics

Cloud / Plattform
Strategien