SMARTENING UP OUR FUTURE

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DASSAULT SYSTEMES

SUSTAINABLE MANUFACTURING & SUPPLY CHAIN

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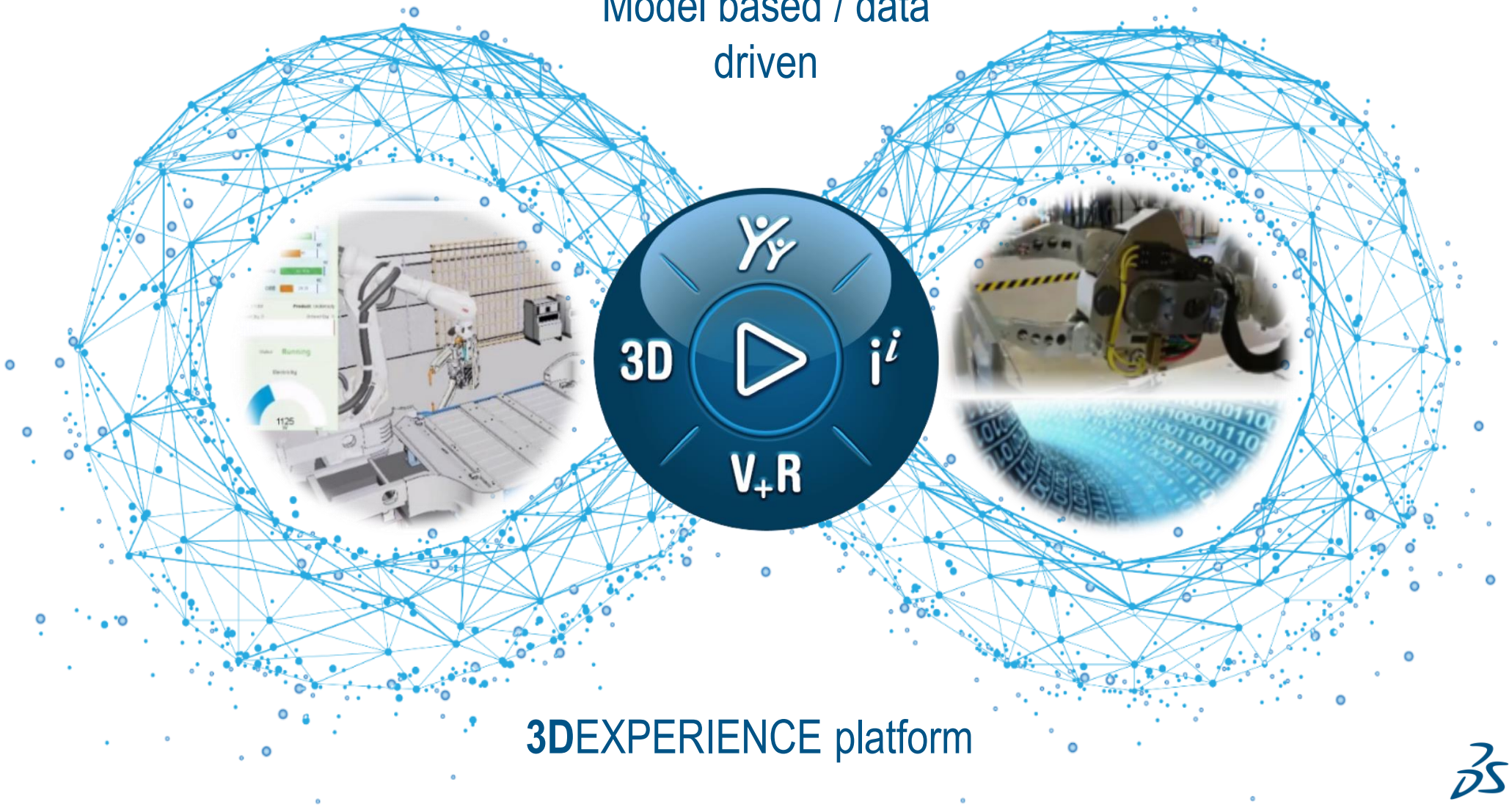
3DEXPERIENCE®

DELMIA – VIRTUAL EXPERIENCES AND REAL-WORLD EVIDENCE

Model based / data driven



3DEXPERIENCE platform

VIRTUAL TWIN EXPERIENCE FOR SUSTAINABLE OPERATIONS

REVEAL POSSIBILITIES
MODELING + SIMULATION + OPTIMIZATION

- Value Network
- Factories, Assets, Logistics, Warehouses, Service Centers
- Product, Process, Resource

MAKE INFORMED DECISIONS
DATA + ML+ AI with
PRACTICAL KNOWLEDGE

COLLABORATE UNIVERSALLY
VISIBILITY + AUGMENTED + CONTEXTUALIZED

Transform and Deliver Sustainable Performance

PROOF OF VALUE: SOLERO ("SMARTENING UP OUR FUTURE")

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PROOF OF VALUE: SUBSEQUENT THREE SESSIONS

REVEAL POSSIBILITIES
MODELING + SIMULATION + OPTIMIZATION

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2. Factories, Assets, Logistics, Warehouses, Service Centers
3. Product, Process, Resource

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Sustainable Manufacturing & Supply Chain - *Smartening Up Our Future.*

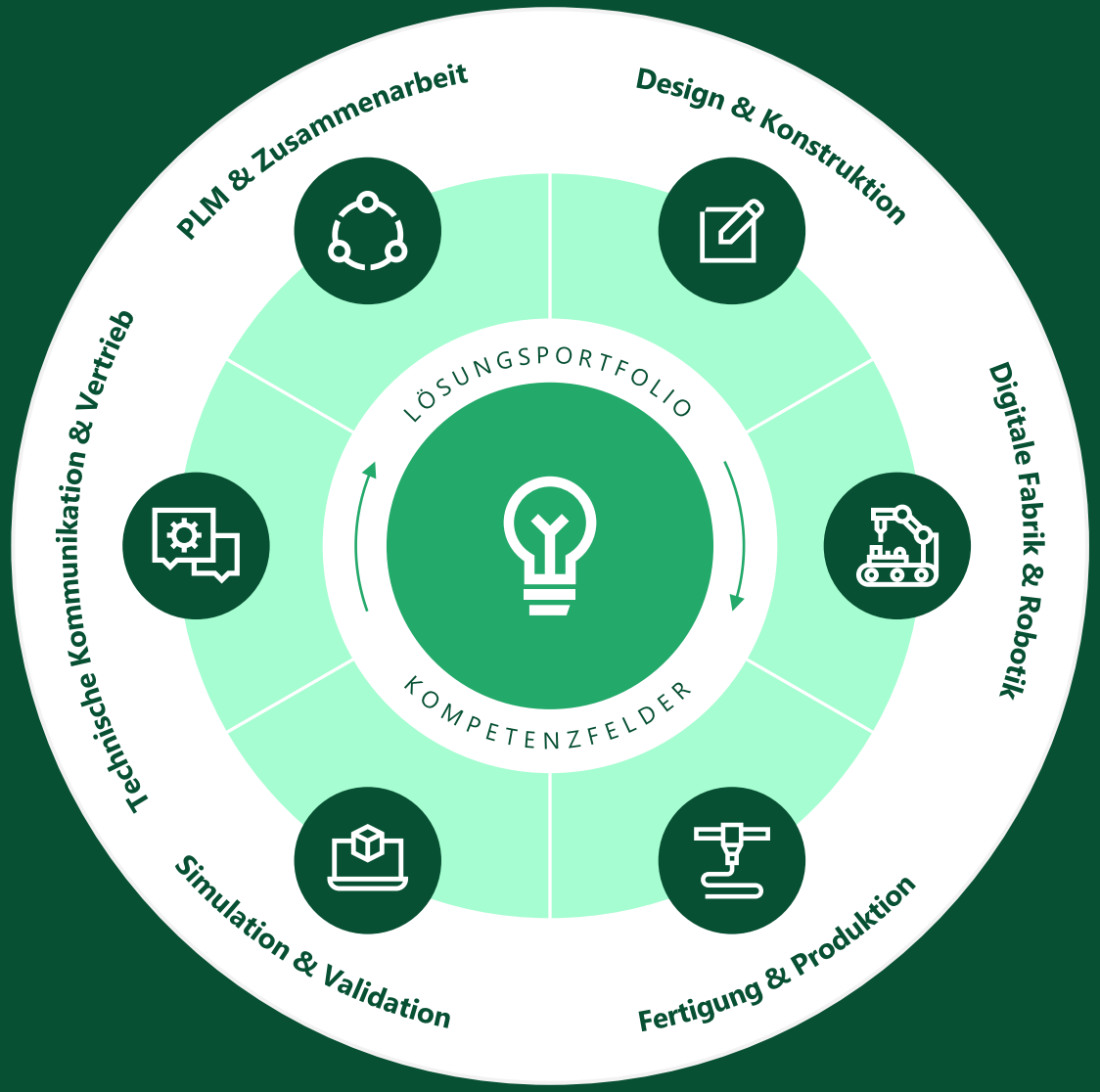
Mike Gregor
General Manager
Bechtle PLM Deutschland

InnoNation Festival | Berlin | 18.09.2024

Ihr starker *PLM-Zukunftspartner.*

Geschäftsbereich PLM, Engineering & Manufacturing der Bechtle Gruppe.

- PLM, CAD, CAM, 3D-Druck, IT-Lösungen und Business Consulting aus einer Hand
- 15+ Competence Center für maßgeschneiderte Lösungen jeder Branche & Anwendung
- 50+ Standorte europaweit
- Flächendeckende, regionale Abdeckung
- 900+ Expert:innen
- 35.000+ Kunden



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Der Einsatz von KI in der Industrie:

Chance zur Wiedererlangung unserer Innovationskraft und zur Standortsicherung.

KI liefert, dient, analysiert, schreibt, kreiert, berät, empfiehlt, ...

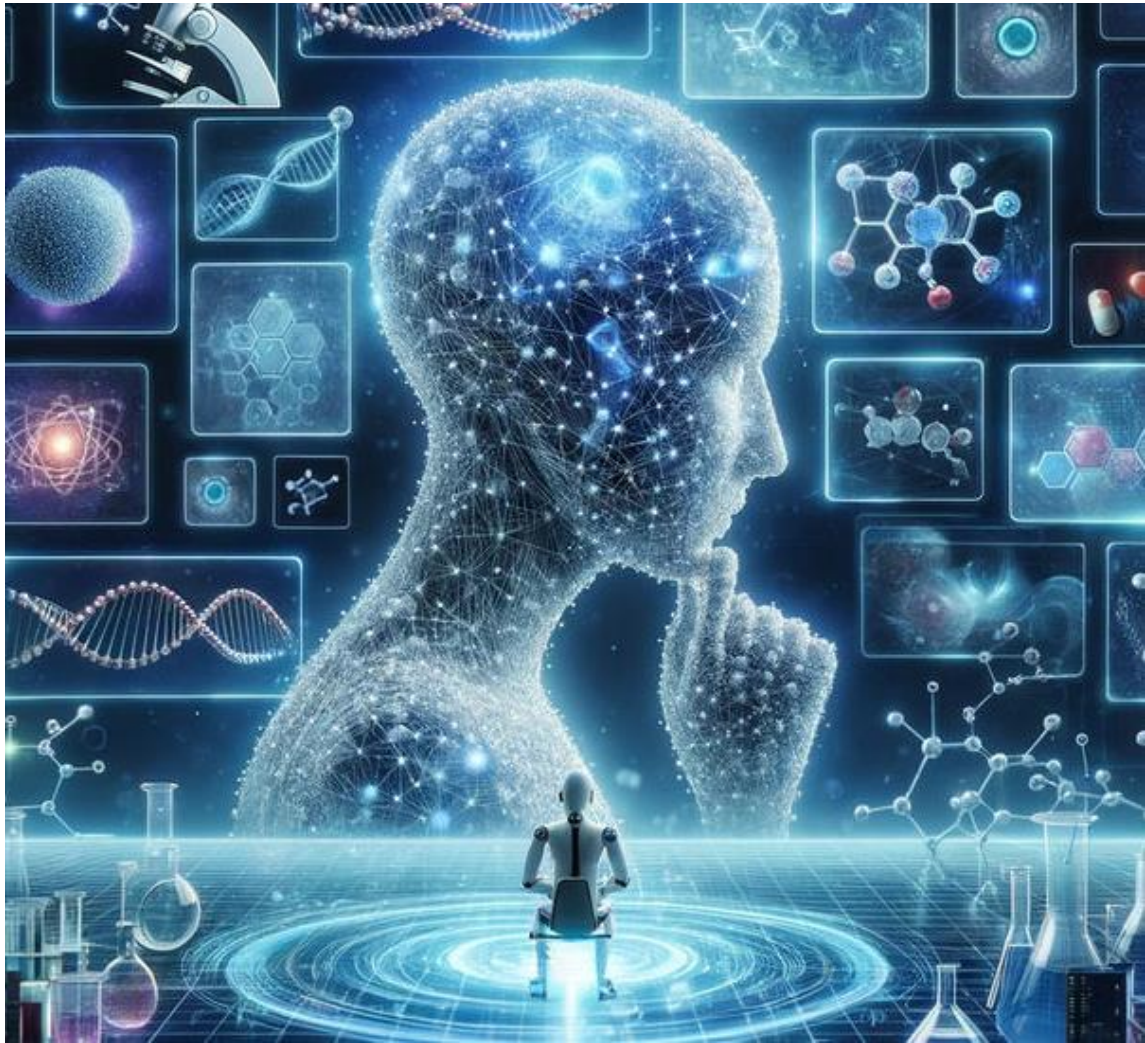
Alltägliche Anwendungen

Wahrnehmung und Einfluss

Umfangreicher und schneller Zugriff auf technologisches Wissen

Transformation der Produktentstehungs- und Prozessentwicklungen

Generative KI wird zukünftig eine enorme Variantenvielzahl von Digitale Zwillingen physischer Produkte und Ihren Umgebungen generieren.



KI und PLM-Systeme: *Beschleunigte Entwicklung und gesteigerte Variantenvielfalt von digitalen Zwillingen.*

Der Einsatz von KI in der Industrie:

Chance zur Wiedererlangung unserer Innovationskraft und zur Standortsicherung.

Produktentstehung & Optimierung

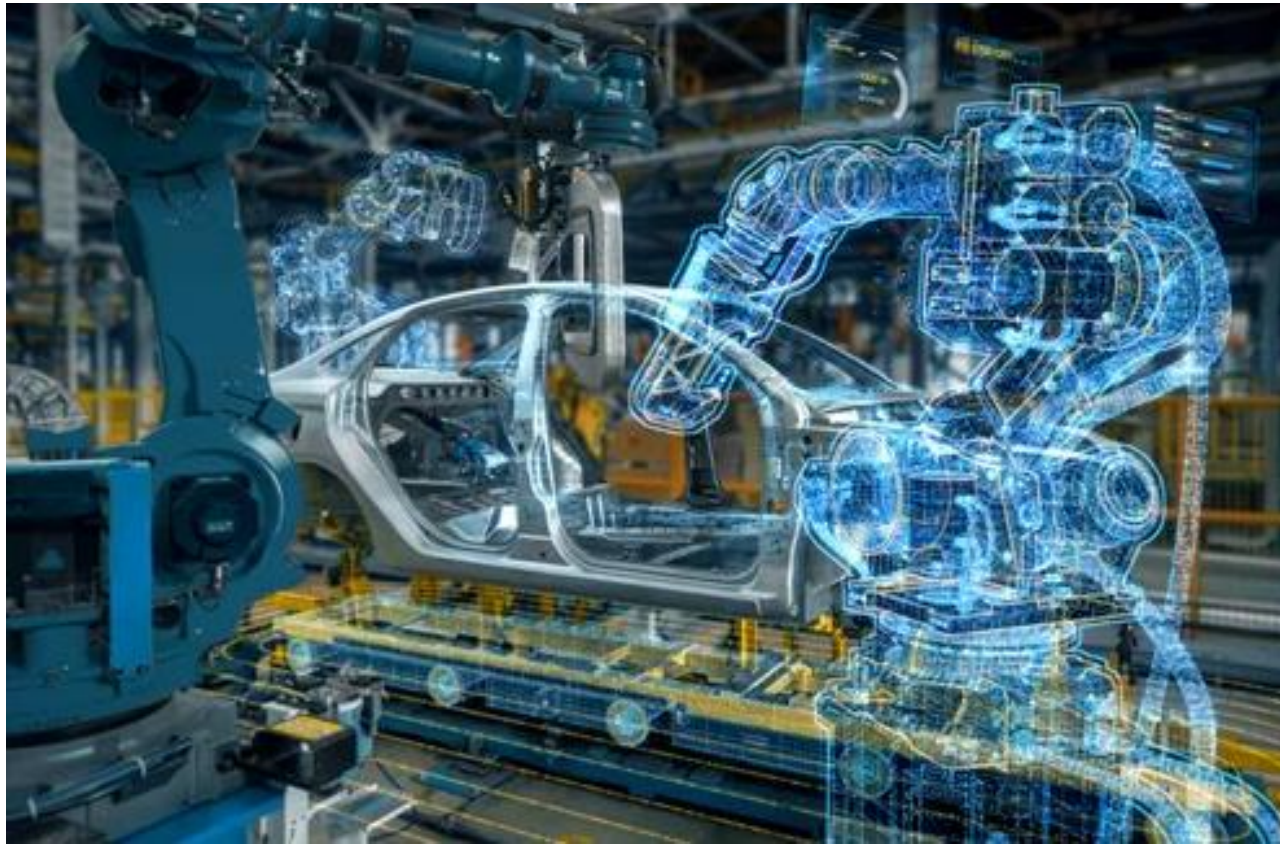
- Generierung von Produktvorschlägen
- Berechnen von n Varianten
- Wegeoptimierung in der Produktion

Nachhaltigkeit & Rückmeldungen

- Optimierung von Werkstoffen und CO2-Bilanz
- Zustands- & Wartungs-informationen vom physischen Objekt an den digitalen Zwilling

Compliance & Dokumentation

- Einhaltung von Richtlinien
- Automatische Erstellung von Dokumentationen



SMARTENING UP OUR FUTURE – HOW WE'RE TRANSFORM OUR OPERATIONS

SOLERO TECHNOLOGIES

SOLERO

Brief introduction

Solero konzentriert sich auf innovative Mobilitätslösungen für Personenkraftwagen, Busse und Nutzfahrzeuge, wobei der Schwerpunkt auf intelligente und maßgeschneiderte elektromagnetische Systeme liegt.

Wir entwickeln fortschrittliche Komponenten für verschiedene Fahrzeugsysteme, darunter:

- **autonomes Fahren**
- **Elektromobilität**
- **Fahrwerksysteme**

Produkte u.a.:

- **Sensor-Reinigungssysteme:**
  Intelligente Verteiler mit bis zu sechs Ventilen für effiziente Reinigungsprozesse in Luft- und Wassersystemen von autonomen Fahrzeugen.

- **Externes Continuous Damping Valve (eCDV):**
  Ein System zur Verbesserung der Fahrzeugleistung und des Fahrkomforts durch Anpassung an die Straßenbedingungen.

K.O. CRITERIA FOR THE USE OF AI

Studies show that between **70%** and **85%** of all AI projects fail.

This is an extremely high rate, which is around twice as high as for conventional software projects

K.O. CRITERIA FOR THE IMPLEMENTATION OF AI

Why AI projects can fail?

Wrong problem selection as an important factor

1. Defined problems do not match actual business needs
2. Use of technology without a clear objective to improve business processes
3. Unrealistic expectations of AI

Data problems

1. Lack of relevant data
2. Poor data quality, such as large gaps or grossly incorrect values
3. Insufficient amount of data
4. Problems with classifying and categorizing data
5. Unstructured data that is not used effectively

Unrealistic expectations

1. Lack of alignment between management goals and practitioners
2. Overestimation of AI capabilities, often influenced by exaggerated media portrayals
3. Lack of understanding of the actual possibilities and limitations of AI

Project management and planning

1. Insufficient project management
2. Planning only up to the prototype instead of up to the solution in operation
3. Lack of coordination between project partners with multiple objectives
4. Insufficient financial resources and time to achieve objectives

Technical and organizational challenges

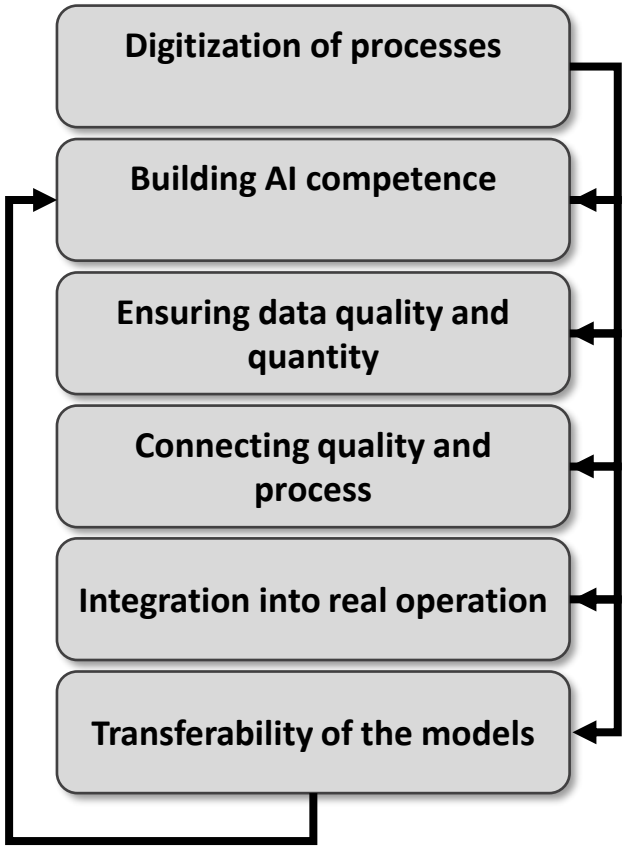
1. Lack of specialists
2. Problems with integration into existing systems and processes
3. Difficulties in transferring AI solutions to productive operation
4. Distraction due to new technological developments that do not always contribute to the project goal

Cultural and acceptance problems

1. Lack of acceptance of AI solutions in companies
2. Lack of employee involvement in the change process
3. Resistance to the introduction of new technologies

MILESTONES ON THE WAY TO AI APPLICATION

What requirements must be fulfilled?



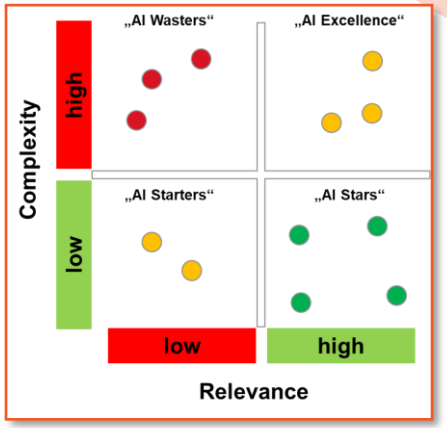
- Retrofitting existing systems, using existing sensors, cleaning up processes
- Training and further education of employees, recruitment of experts
- Standardize and continuously improve data collection, storage, processing and archiving (IT system landscape)
- Interdisciplinary teams of domain experts and data ML specialists
- Use of standardized process models (e.g. CRISP-DM, DMEE, AIMM)
- Continuous model management (e.g. MLOps)

SOLERO TECHNOLOGIES

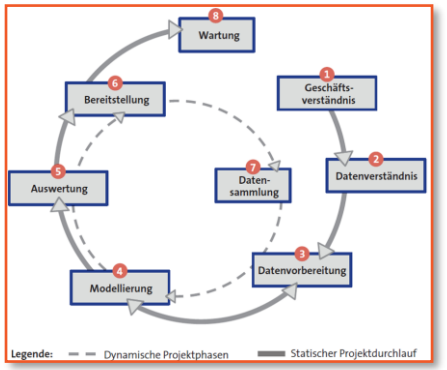
SELECTING THE RIGHT AI PROJECT

How do I choose the right AI project?

- **Relevance / Complexity Matrix**



- **Process models:**
  - **Cross Industry Standard Process for Data Mining (CRISP-DM)**
  - Sample, Explore, Modify, Model, Assess (SEMMA)
  - Knowledge Discovery in Databases (KDD)
  - TDSP (Team Data Science Process) from Microsoft



SOLERO TECHNOLOGIES

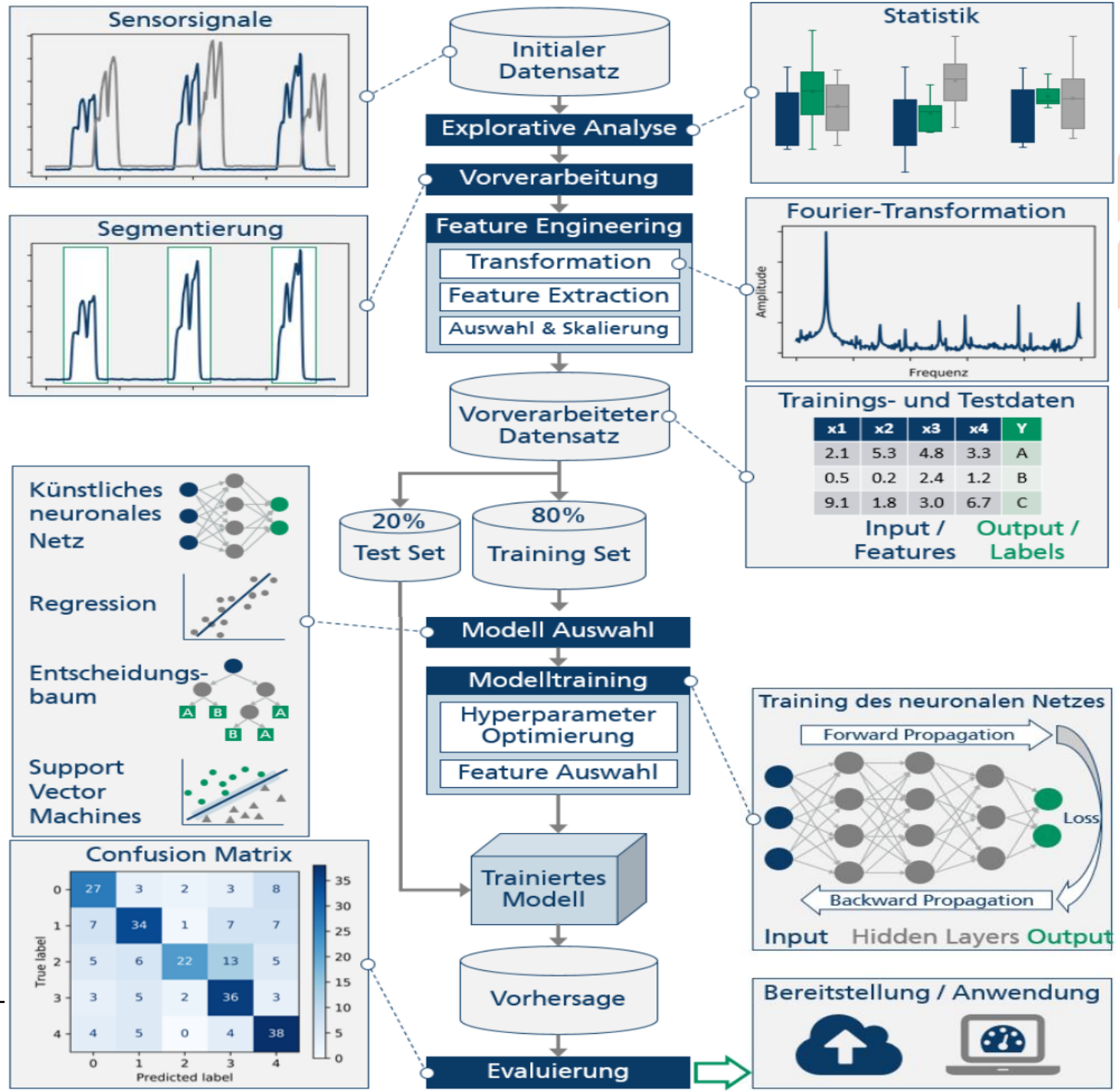
METHODS OF DATA PREPARATION

3. Data Preparation

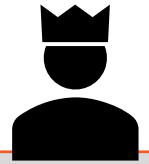
4. Modeling

5. Evaluation

6. Deployment



THE AI CORE TEAM



Project sponsor

- Decision maker
- Aligns AI initiatives with the corporate strategy
- Defines the project goals

Domain expert

- Is familiar with the procedures and processes in the company
- Can assess what type of data can be generated and which data/insights bring the greatest benefit

Data Scientist

- Can analyze data for business decisions
- Knows data analysis methods and which ones to use
- Has knowledge of the implementation of algorithms

Software Engineer

- Is familiar with the company's IT system
- Has knowledge of API development, web development and cloud computing
- Develops applications and deploys them

ECONOMIC ANALYSIS

Cost

- **Development costs**
  - Personnel costs
  - Software costs
  - Hardware costs
  - Training costs
- **Implementation costs**
  - Integration into existing systems,
  - Customizations
- **Ongoing costs**
  - Maintenance costs
  - updates
  - Data management

Benefit

- **Direct financial benefits**
  - Cost savings
  - Increased sales
- **Indirect benefits**
  - Increased efficiency
  - Improved decision making
- **Strategic benefits**
  - competitiveness
  - innovation

The Challenge

- **Return on investment (ROI)**
  - Calculation of the expected ROI over various time periods
  - Consideration of best-case and worst-case scenarios
- **Risk assessment**
  - Technical risks: complexity, scalability
  - Business risks: Market changes, regulatory changes
  - Implementation risks: Time overruns, budget overruns
- **Long-term perspective**
  - Scalability of the solution
  - Potential for future applications and extensions
- **Comparison with alternatives**
  - Cost-benefit analysis compared to conventional solutions
  - Evaluation of “build vs. buy” options

OUR AI USE CASE

Use Case

- **Continuous monitoring of production processes**
  - Data acquisition and integration
  - Development of AI models
  - Implementation of real-time monitoring
  - Automated alerting and reporting
  - Continuous improvement
  - Training and integration

Application / Benefit

- **Application**
  - Support for employees
  - Intelligent production systems
  - Identification of potential bottlenecks
- **Benefit**
  - Reduction of downtimes
  - Time saving
  - Error avoidance
  - Cost optimization
  - automation
  - transparency

The challenge

- Making ROI measurable
- Integration into existing IT infrastructure
- Data quality and availability
- Personnel challenges
- Training and skills development
- Data protection and security
- Goal setting and expectation management
- Continuous adaptation

Thank you very much!

KI und PLM-Systeme: *Beschleunigte Produktentstehung und gesteigerte Varianten- sowie Informationsvielfalt.*

Optimierung durch KI und digitale Zwillinge.

- KI generiert zukünftig viele optimierte Varianten von Modellen und Prozessen und Informationen.
- **Wichtig:** Ohne Kontrolle entstehen "Digitale Waisen" *(unverwaltete Varianten)*.

Rolle von PLM-Systemen.

- PLM-Systeme sind unverzichtbar, um diese Varianten und Informationen zu verwalten.
- Mittlerweile auch in der Cloud verfügbar, was sie für KMUs zugänglich macht.

Standardisierung und Verwaltungsschale.

- Die Asset Administration Shell (ASS) stellt Meta-Informationen zu Produkten und Prozessen herstellerübergreifend bereit.
- **Ziel:** Beschleunigung der Generierung digitaler Zwillinge durch standardisierte Verwaltung.

Fazit

Jetzt gilt es, die Voraussetzungen für die Einführung und effiziente Nutzung von KI in der Industrie zu schaffen, um im Markt bestehen zu können.

Mike Gregor
Geschäftsführer
Bechtle PLM Deutschland

Auf LinkedIn

DASSAULT SYSTEMES

Virtual Worlds for Real Life

THANK YOU FOR YOUR INTEREST