Leverage Cloud and SaaS for Improved Collaboration and Speed

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ptc

LIVEWORX

A NEW ERA IN PRODUCT LIFECYCLE INNOVATION

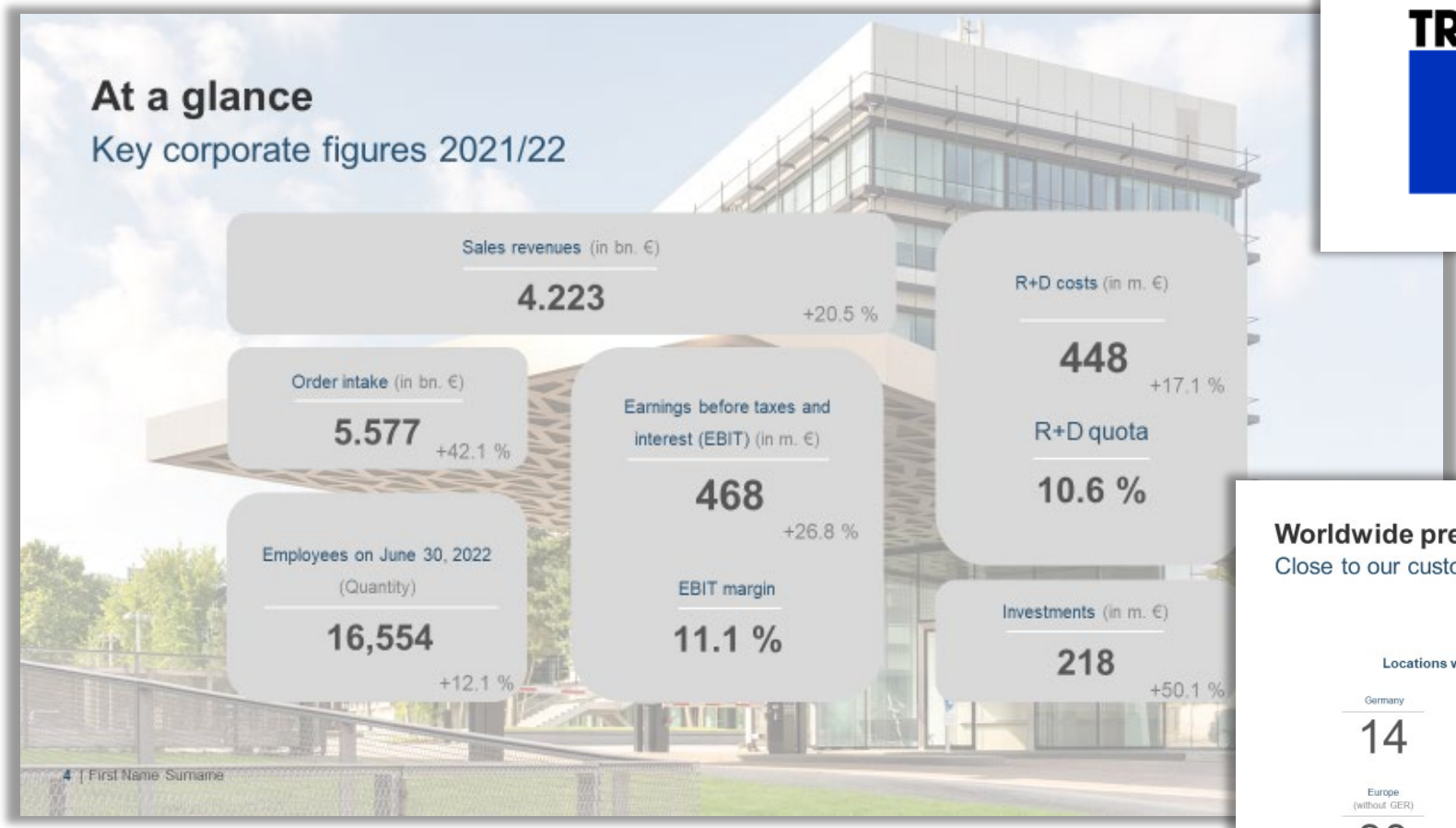
SESSION ID: PL1113B

LEVERAGE CLOUD AND SAAS FOR IMPROVED COLLABORATION AND SPEED

Harald Vogt

Lead Software Architect, TRUMPF

TRUMPF IN NUMBERS



TRUMPF 100 1923–2023

TRUMPF BUSINESS AREAS

Machine Tools business division

Machines for laser cutting

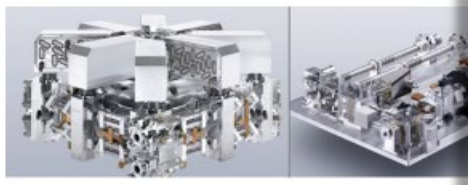
Machines for punching and punch laser processing

Machines for bending

Machines for laser welding

Laser Technology business division

CO_2 and solid state lasers



Laser marking systems

Our other future fields

Electronics

Process power supply for high technology application

Additive Manufacturing

Additive manufacturing for innovative components

Photonic Components

Laser diodes for sensors, data communication and heat treatment

OUR PLM MISSION STATEMENT

*As a high-tech machine tool company, we are enriching and augmenting our products with **digital solutions and services**. This enables us to implement data-based business models.*

To further expand our portfolio, we need improved capabilities to retrieve and exploit product data throughout the overall lifecycle.

*The strategic initiative **PLM Next** establishes the required methods, processes, and tools to facilitate major application areas such as the simulation of machines and systems, functional modeling, configuration of complex solutions, and data-based optimiziation of decisions during the product development process.*

The PTC partnership helps us to establish extended bill-of-material information and functionality in our PLM system, supporting the group's strategy, including our sustainability goals.

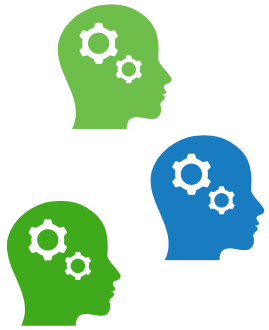
OUR APPROACH TO EVOLVING PLM

The PLM Next Reality Lab

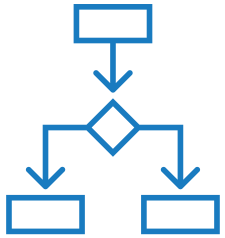
Implementing the PLM Roadmap & Architecture

Driving Innovations

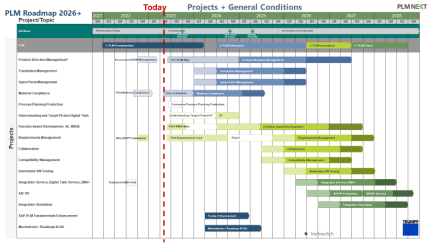
THE TRUMPF PROGRAM PLM NEXT



Determine course of action, develop PLM strategy



Solution evaluation, decision



Create and implement roadmap

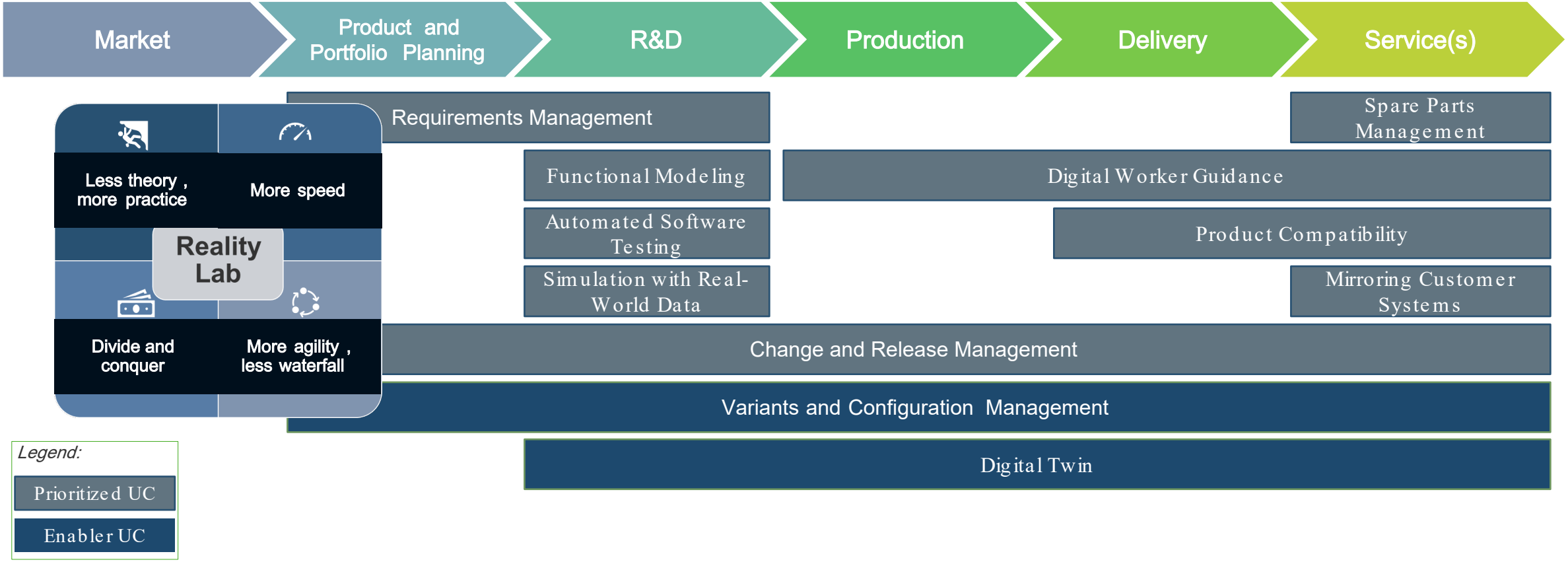
Benefit

2020

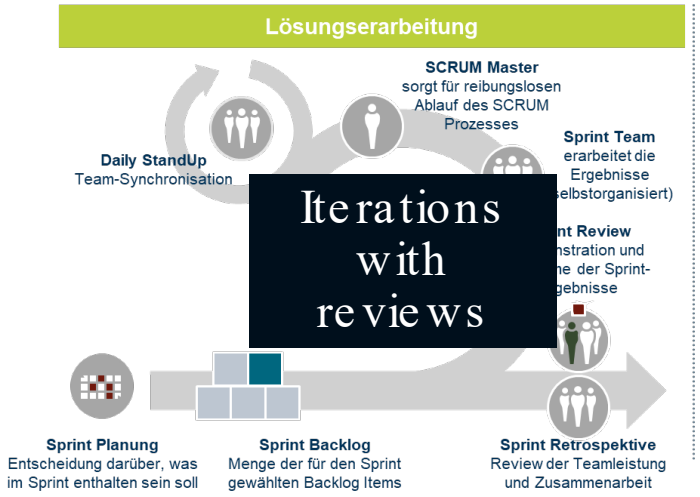
2026+

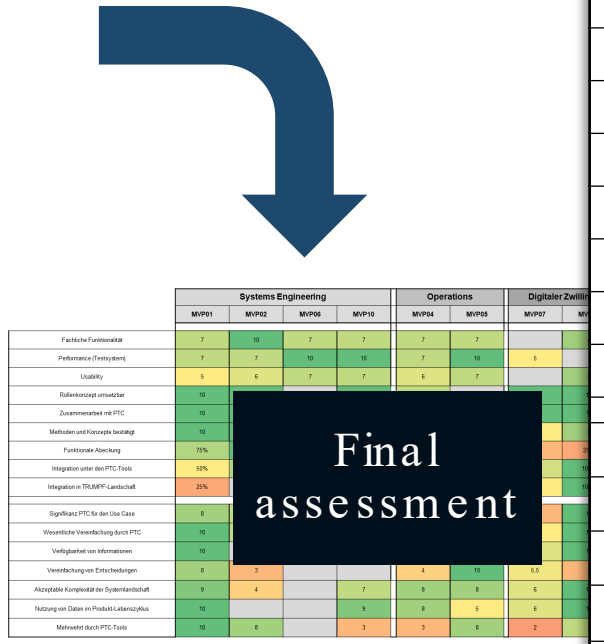
THE REALITY LAB APPROACH TO DECISION MAKING

Time-boxed evalution of PTC solutions using the most relevant (regarding PLM) use cases within the TRUMPF value chain – final go/ no-go decision based on results:



ITERATIVE, USECASE BASED EVALUATION (AGILE)





Case-oriented functionality
Performance (Test system)
Usability
Role concept implementation
Cooperation mit PTC
Confirmation of methods and concepts
Functional coverage
Integration of PTC tools
Integration with TRUMPF landscape
Relevance of PTC for use case
Simplification through PTC
Information availability
Facilitation of decisions
Complexity of system landscape
Usage of data in product lifecycle
Added value through PTC tools

REALITY LAB TAKE-AWAYS

- Reality Lab as an alternative to „traditional“ provider and solution evaluation
- User stories as the foundation for system evaluation
- Guided validation of user story feasibility within a PTC sandbox
- Intensive Q&A between experts from both sides; high workload !
- Strong commitment by PTC was necessary – and we got it!

- Identified key areas with high potential
- High workload
- High confidence for vendor decision

- 25 project team members
- 80 contributors
- 8 use cases
- 5 months preparation
- 9 months execution
- 3-6 months per use case
- ~10 user stories per use case
- Top management level oversight
- Company -wide communications
- Benefit analysis

KEY RESULTS

- **Requirements Management**
- rv&s vs. Codebeamer
- Wanted: New cloud-based tool!
- High potential impact on the development process

- **Functional Modeling**
- Reality Lab confirmed high value of the approach
- Tool offering adequate
- Long-term goal due to high impact on development method

- **Product simulation**
- Important topic due to product complexity
- Wide applicability: Compatibility, functionality, configuration, etc,
- Minor controbution from PLM

IMPLEMENTING THE PLM ROADMAP

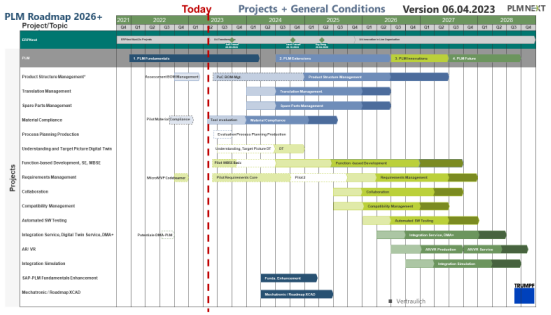
- Step 1:Establish Windchill as the CAD repository
  - Solidworks integration
  - Migrate the existing database from SAP
  - Update our CAD-related processes
- Step 2: Design the future product structure management landscape
  - Benefit from Windchill capabilities
  - Integrate with established tools
  - Support novel applications
- Step 3: Start with innovation projects
  - Requirements management
  - Functional modeling

- Challenge: Integrate with established tools – or adapt the organisation
- Challenge: Keep the organisation up to speed under changing environment

windchill®

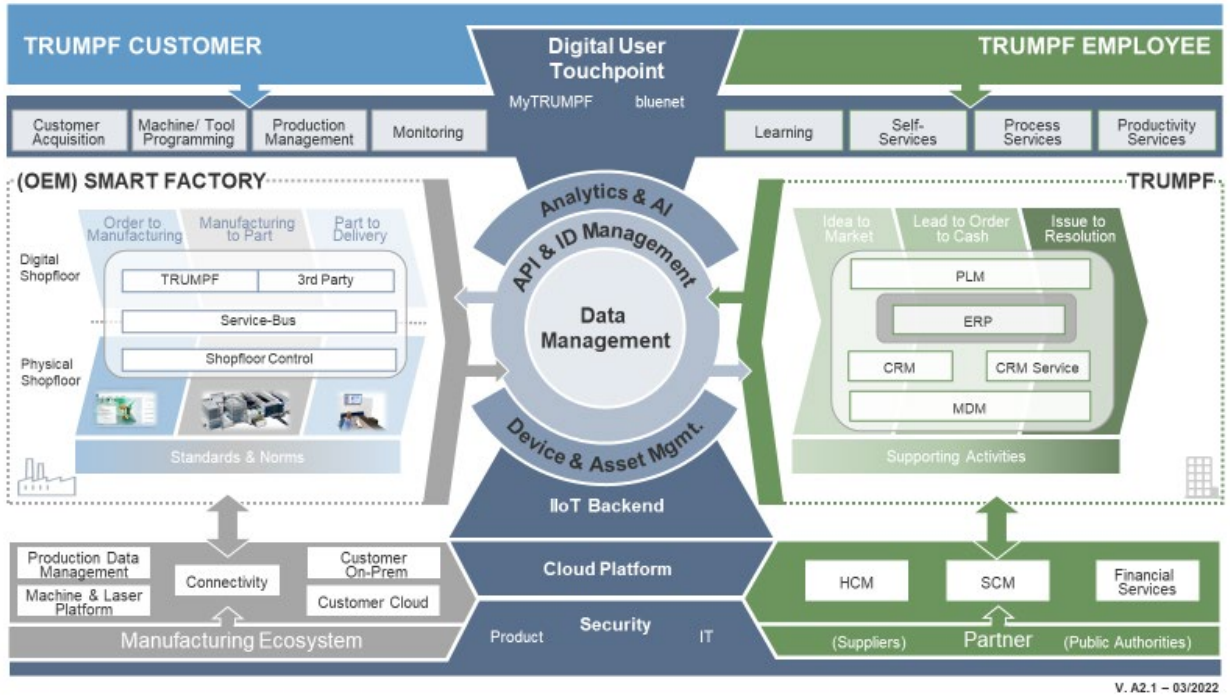
codebeamer™

windchill modeler



EVOLVING THE PLM SYSTEM LANDSCAPE

- TRUMPF Digital Reference Architecture: unifies customer products / solutions and business IT
- Scalability through cloud-based services
- Evolving the traditional PLM architecture through consolidation and with modeling
- Close data loops through customer smart factory solutions



Ongoing: Integration of PTC solutions:

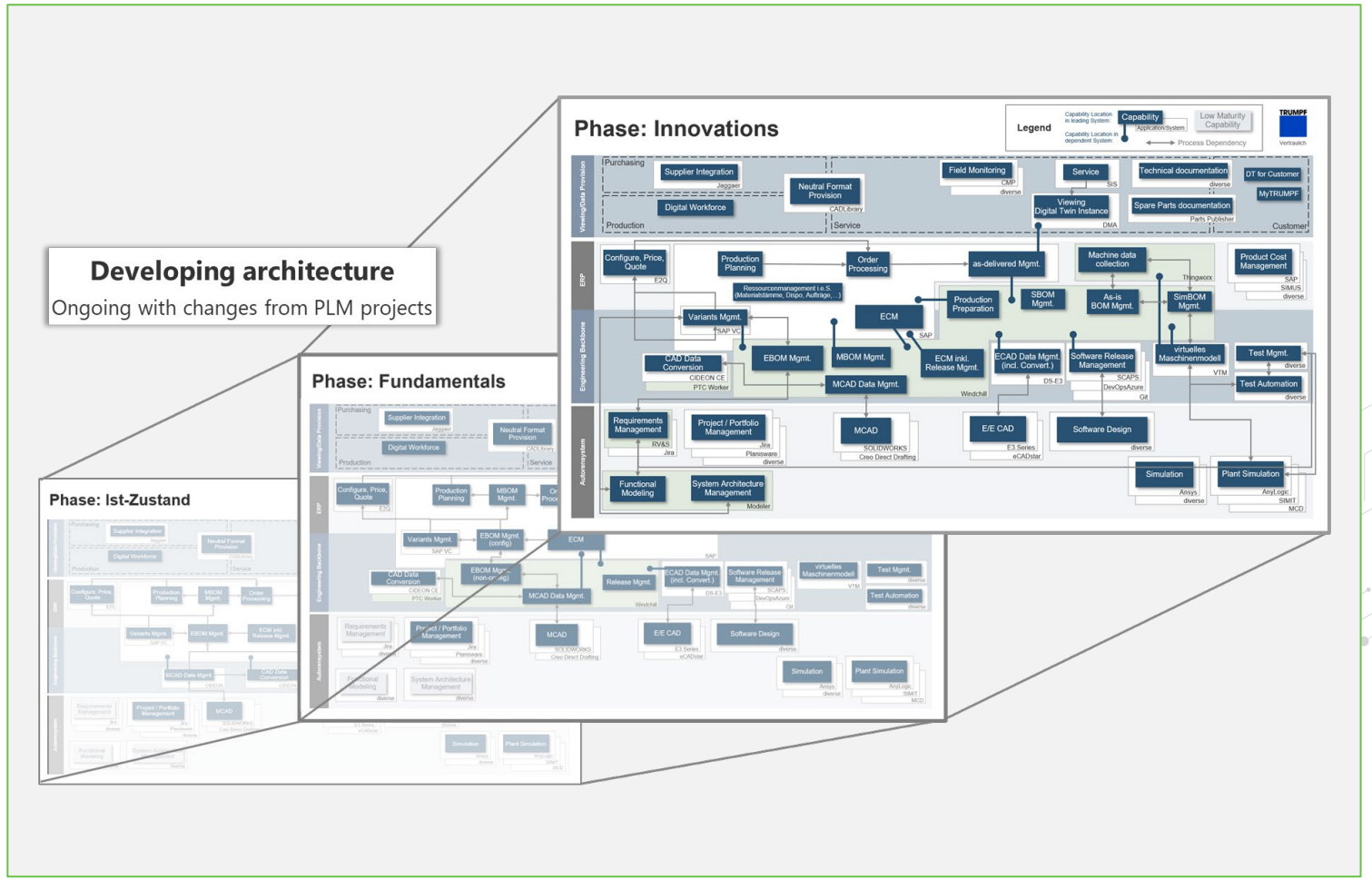
vuforia®

windchill®

thingworx®

IT ARCHITECTUREINTEGRATION

- Evolving the existing architecture from bottom to top
- Guided by the IT architects organisation
- Driven by extended use cases building on what we have today
- Consolidateexisting systems, add systems for innovation



DRIVING INNOVATIVE METHODS

- **Systems Engineering** : a foundation for innovative approaches to product improvement
  - Innovation? Focus, yes!
  - What is SE after all? Philosophy, perspective, tools, methods, collaboration, formalization, …
- Different level of maturity throughout the organisation
  - In some areas, the job title „systems engineer“ has been established
  - Product modeling has proven useful
  - Grassroots -driven interest for wider application
- The way ahead
  - Interested parties convene in a „Community of Practice“
  - Use the PLM program as a framework for pilots

“What are communities of practice? In brief, they’re groups of people informally bound together by shared expertise and passion for a joint enterprise”

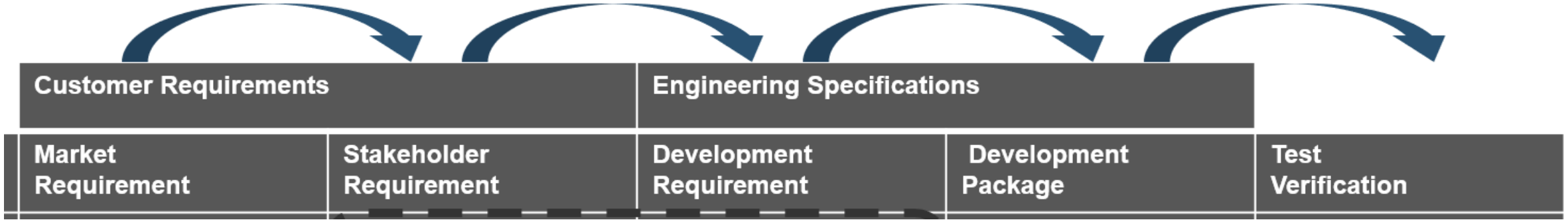
- Wenger/ Snyder, HBR 2000/01

DRIVING INNOVATIVE TOOLS

- **Requirements Management** – universally used, but heterogenous approaches and underdeveloped formalization
- Current approaches lack support in …
  - Customer interaction
  - Requirements validation
  - Risk management
  - Reusability
  - Versioning
  - …

- Heterogeneous needs
  - Development process phases
  - Product families
  - Stakeholders
  - Project/team approaches (agile or hybrid)

- Objectives
  - Process harmonization
  - Tool standardization
- Rationale
  - Foster collaboration
  - Minimize administration overhead
- Evaluation and establish Codebeamer



CONCLUSION

- The Reality Lab approach to solution validation has disclosed the strengths and limitations , and set the focus for the design of the PLM roadmap
  - Prioritize the topics with low dependencies and high potential
  - Further deepen the evaluation of complex , high-impact topics (e.g. BOM management)
- The Digital Reference Architecture provides a useful framework for system decisions and business process implementation
  - Emphasis on cloud solutions offers a lower barrier to entry
- PLM is a great framework for introducing innovative methods and tools , with the perspective of deep integration

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THANK YOU

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