

Labs Network Industrie 4.0

Germany-wide test scenarios for the efficient way
in industry 4.0 innovations

June 2017



LNI4.0 founders

Our network feels connected to the entire German industry!



Dr. Klaus Mittelbach
Treasurer



Thomas Hahn
Chairman



Giesecke & Devrient

Axel Deininger
Vice Chairman



Hartmut Rauen



Dr. Hans Jörg Stotz



Prof. Dr. Peter Post



Dr. Heinrich Arnold



Wolfgang Dorst



Hewlett Packard
Enterprise

In cooperation with:



STANDARDIZATION
COUNCIL
INDUSTRIE 4.0

Cooperation partners



■ P L A T T F O R M ■ INDUSTRIE 4.0

- Strategy and recommended actions
- SME mobilization
- International cooperation

Digital
Transformation



- Network of test labs
- Practical testing
- Validated return for standardization

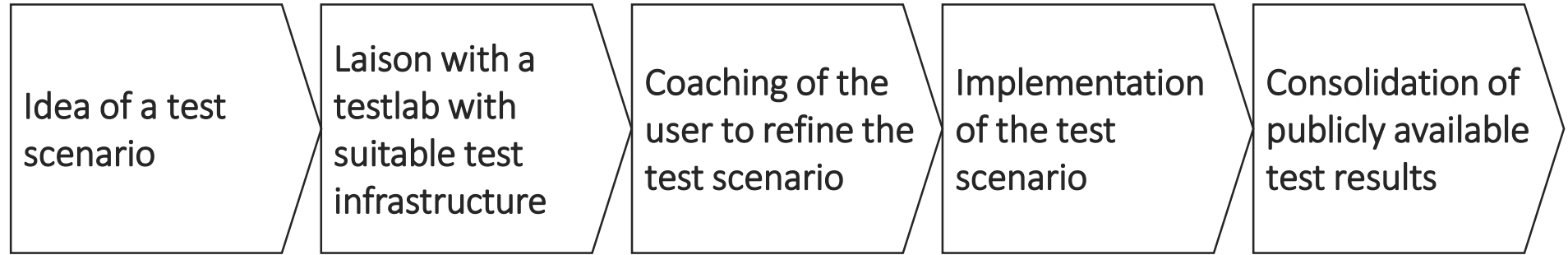


STANDARDIZATION
COUNCIL
INDUSTRIE 4.0

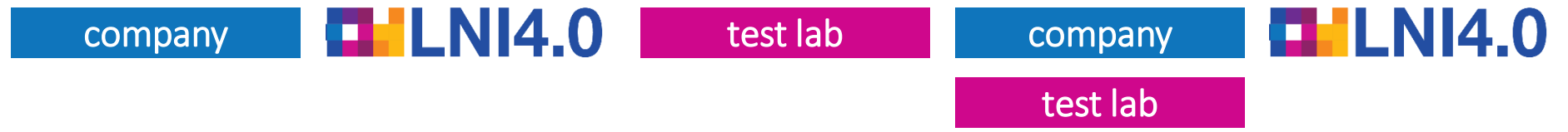
- Initiation of cross-sector standards
- Coordination of standards
- Strengthen the German international collaborations

Involved Stakeholders

Overall “ideal” process



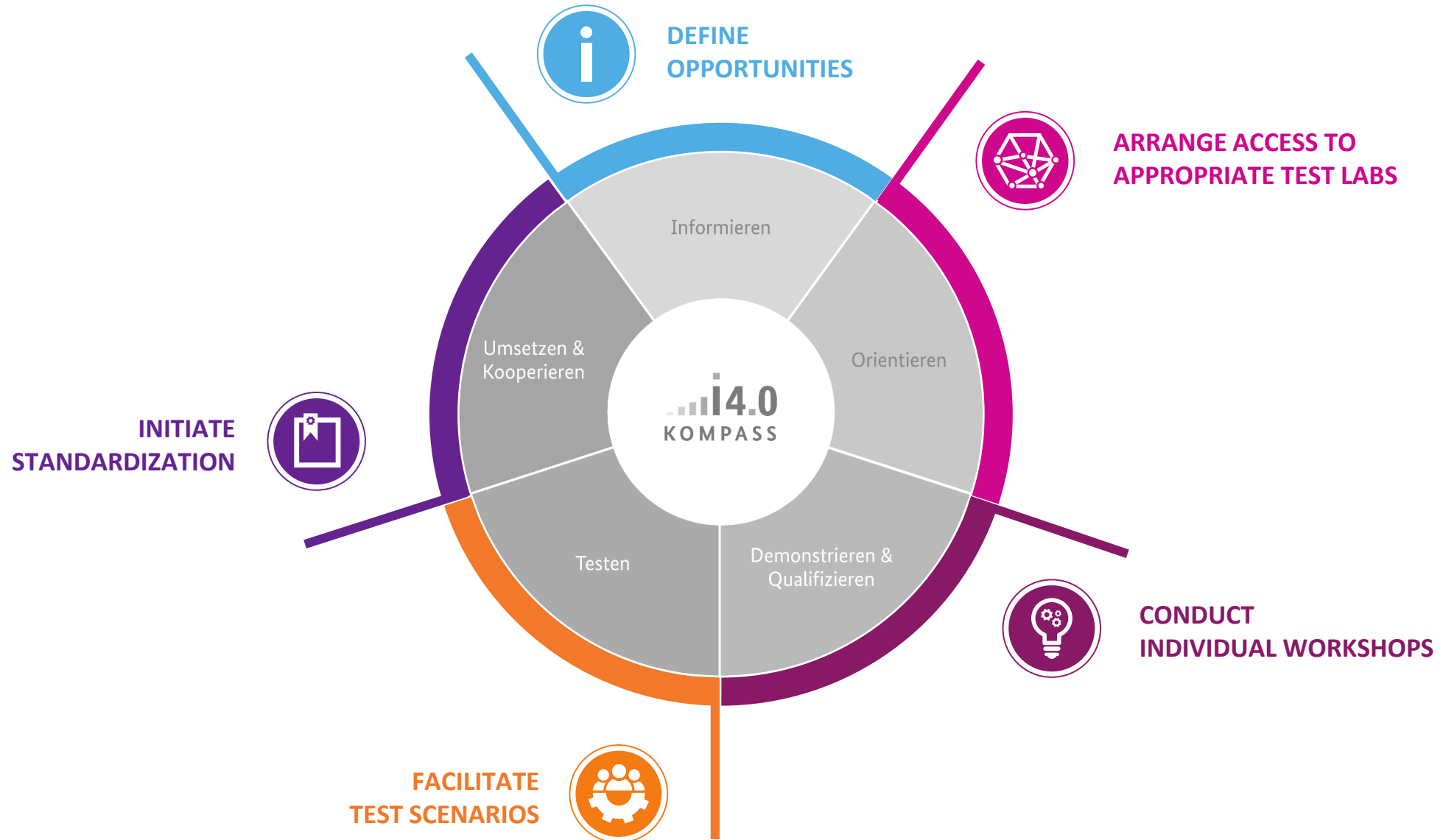
responsible



involved



Our offering along SME maturity



Testlabs

- 30 test lab cooperation
- High availability
- Regional distribution
- Local contacts
- Broad technology mix
- [VDMA labs](#)
- International cooperation



- Mittelstand 4.0 – Kompetenzzentren
- Mittelstand-Digital
- Digital Hub Zentren
- de:hub digital ecosystems

Test Scenario Examples

EdBoard – Industrie 4.0 Learning Table

I4Production

Click Day Industrie 4.0

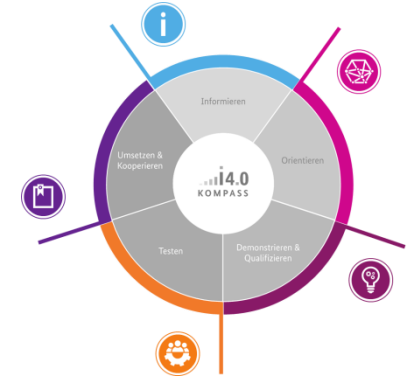
I4.0 Lab Berlin Company Boot Camp

www.lni40.de/en/

Composites 4.0: Smart Structures for Automotive

Strukturintegrität

Energieübertragung



Digital Energy Value Stream for lean & green Process Chains in Production

Modularization of Mechatronic Function and Process Modules for Special Purpose Machine Manufacture

Augmented Reality – Innovative Visualization of Prototypes

Big Data Analytics in Electronics Manufacturing

Machine Data Acquisition in Production

FactoryView – Seeing the Factory Digitally and in Real Time

Production 4.0 - Agile Planning and Flexible Processes

Industrie 4.0 in Mechatronics Education

Validation of the Concept of Industrie 4.0 Components in an Existing Environment

Implementation of the RAMI4.0 Administration Shell

netIOT DI-Portal, netIOT AIN, Sensors & Actuators, Bar code scanner, EtherNet/IP, UC 500

Predictive Maintenance of Offshore Wind Farms

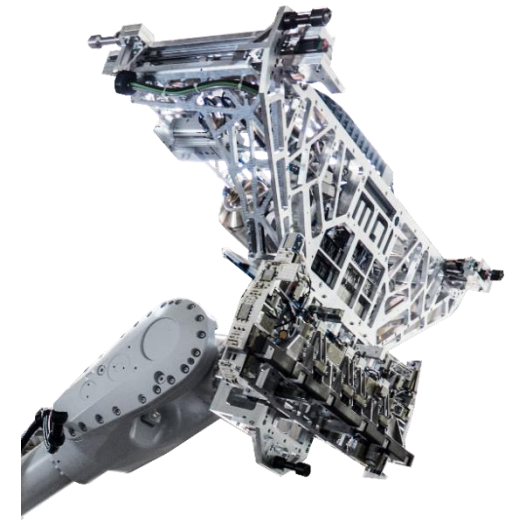
Networking of Medical Devices in the Operating Room

Test Project Example

MODULARIZATION OF MECHATRONIC FUNCTION AND PROCESS MODULES



CONDUCT INDIVIDUAL WORKSHOPS



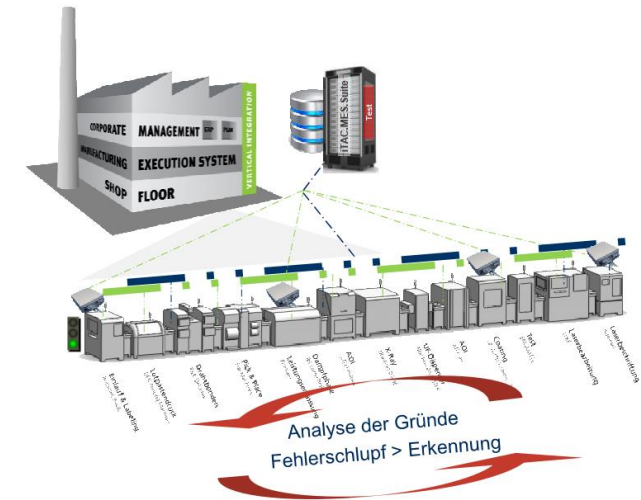
- Solution approach
 - Investigate whether it is possible in future to modularize individual function modules.
 - Create standardized interfaces between process components or between these and the controllers used by the SME.
 - M.A.i expects that this will shorten the specific development time from initial customer inquiry through to a production-ready solution.
- Project procedure
 - Capture customer requirements
 - Analysis of existing diversity of solutions
 - Categorization based on product requirements
 - Reduction of solution space and transfer into generic modules
 - Exemplary software tool support



Test Project Example

BIG DATA ANALYTICS IN ELECTRONICS MANUFACTURING

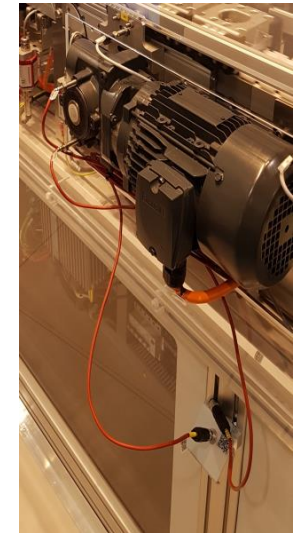
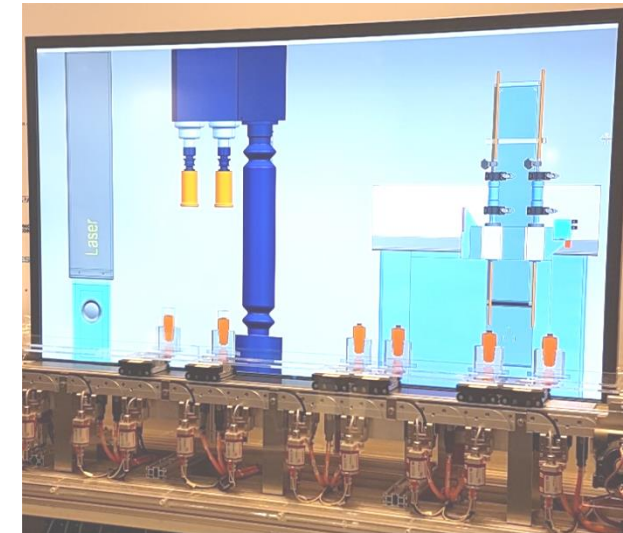
- Solution approach
 - Minimize disruption and maximize quality through big data analytics.
 - Predict and manage maintenance intervals to avoid defects like the
 - tombstone effect
 - solder bridge
 - inaccurate positioning
 - missing component
- Project procedure
 - Identify defect dependencies.
 - Implement a digital twin to simulate and test extreme conditions.



Test Project Example

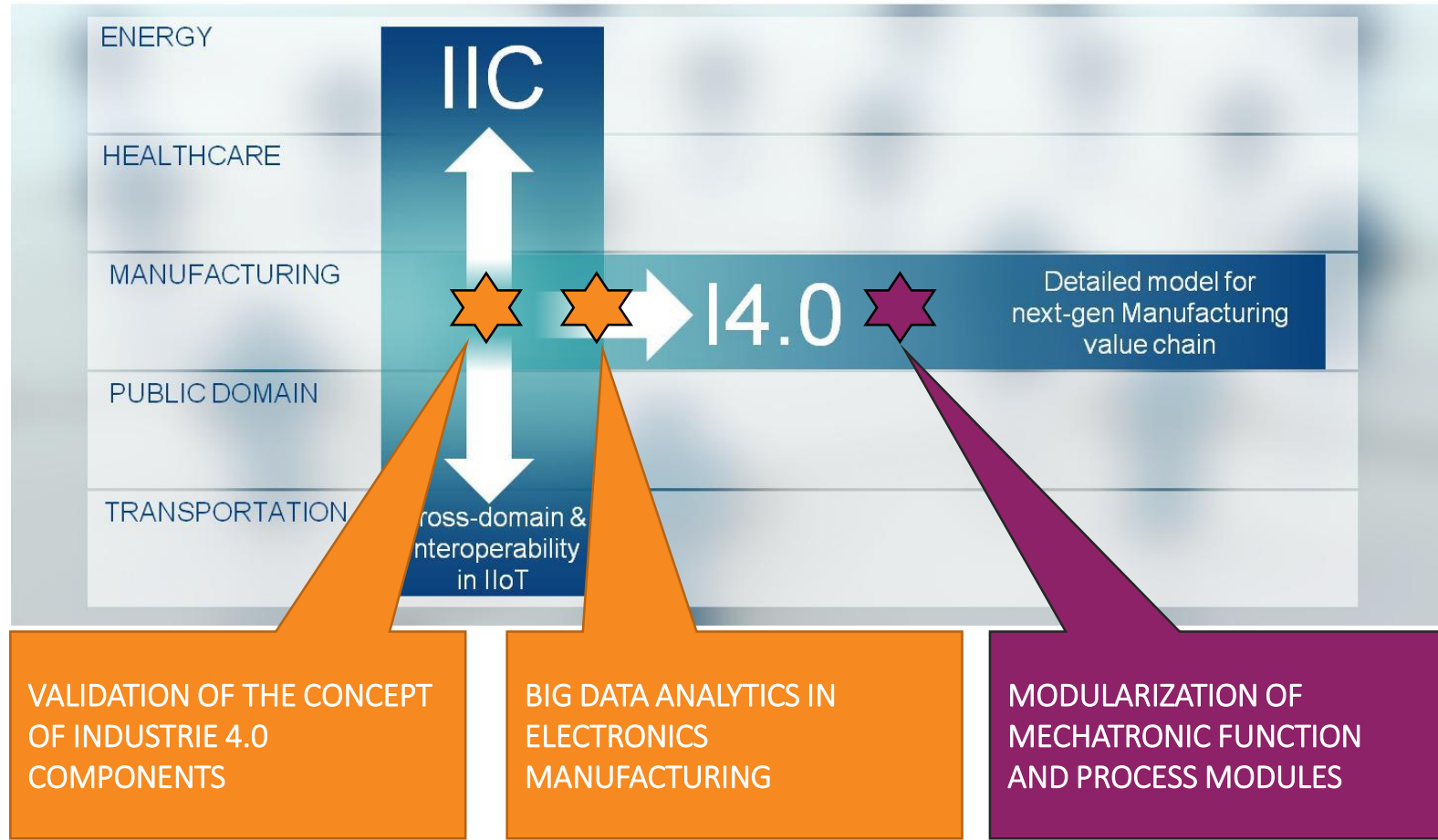
VALIDATION OF THE CONCEPT OF INDUSTRIE 4.0 COMPONENTS

- Solution approach
 - Implementation of the administration shell for Industrie 4.0 components.
 - Using openAAS to validate selected RAMI4.0 concepts in an existing environment.
 - Browse through the relevant openAAS objects and their contents.
- Project procedure
 - Combines a physical flexible transportation system (Multi-Carrier-System) and a virtualized production plant.
 - Both are connected to a cloud to analyze usage and energy consumption data.
 - Several use cases will result in appropriate standardization activities.
 - Presentation of the results at the 2017 Hannover Fair.



Plattform Industrie 4.0 and IIC

Complementary Domain Focus Areas



Publically available Information:

- Exemplification of the Industrie 4.0 Application Scenario Value-Based Service following IIRA Structure



[Link](#)

How can I participate?



Please contact us!

info@lni40.de

www.lni40.de/en/

As a company

- Discuss your specific requirements with us
- Formulate your test scenario
- We will find a suitable test lab and partners for you

As a test lab

- Inform us about your test environment, cooperation, strategy and application expertise
- Provide information about test scenarios and results

Thank you!

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