![PTB – Physikalisch-Technische Bundesanstalt, Braunschweig and Berlin, National Metrology Institute]
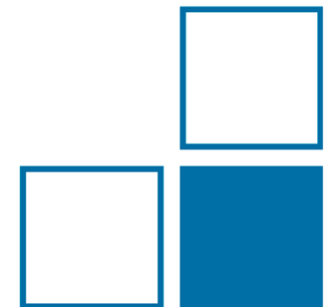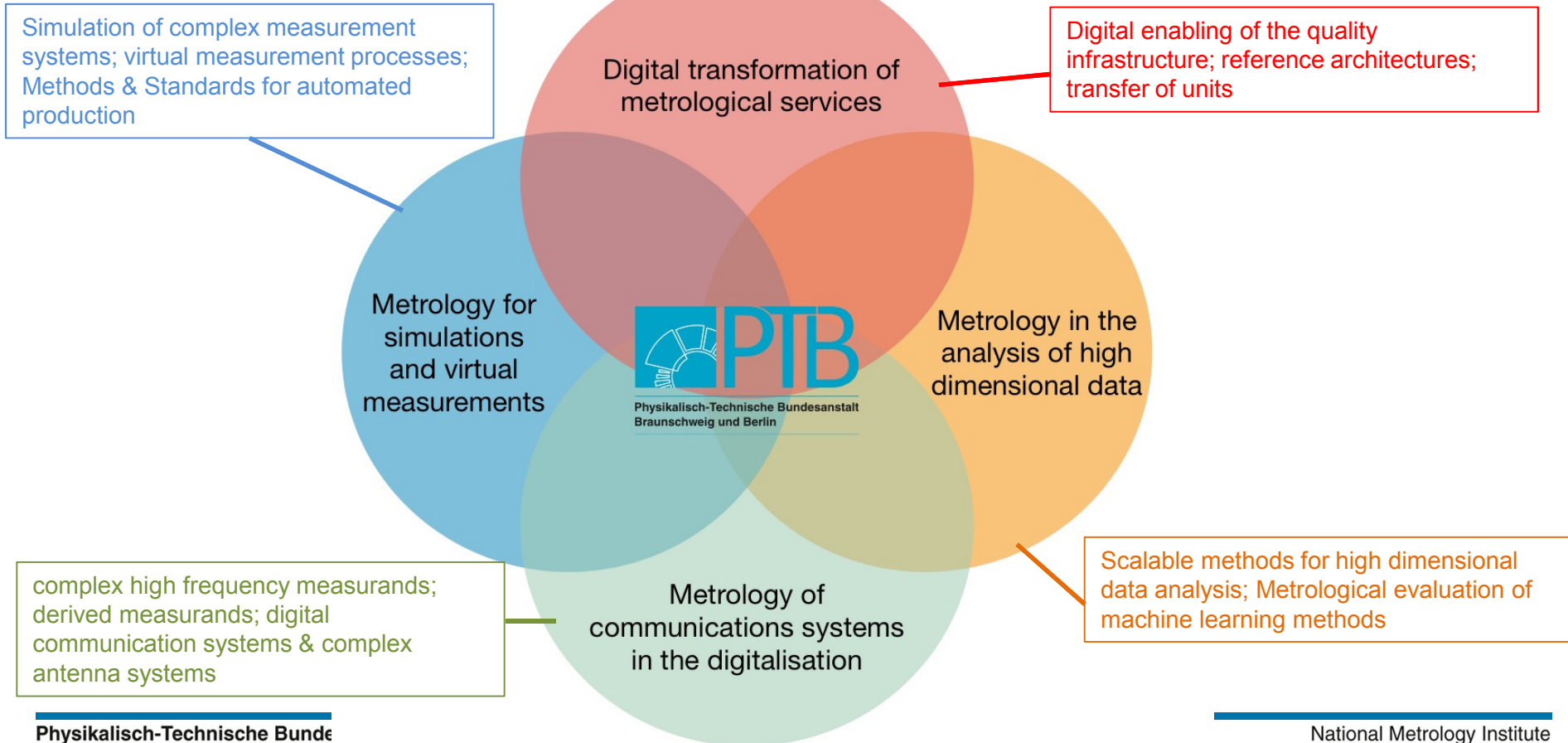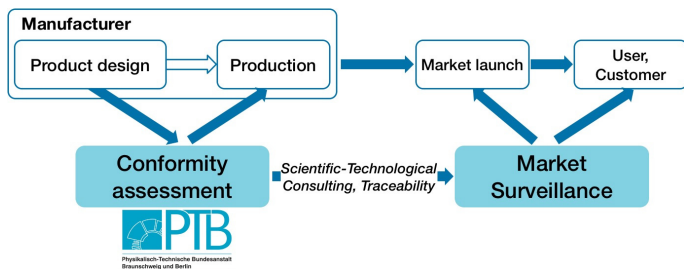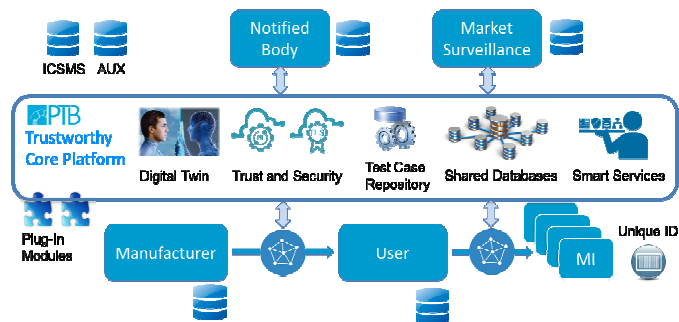
Metrology for the Digitalisation of Economy and Society

Sascha Eichstädt

PSt1 "Coordination Digitalisation"

New key areas for PTB

Simulation of complex measurement systems; virtual measurement processes; Methods & Standards for automated production

Digital enabling of the quality infrastructure; reference architectures; transfer of units

Digital transformation of metrological services

Metrology for simulations and virtual measurements

Metrology in the analysis of high dimensional data

Metrology of communications systems in the digitalisation

complex high frequency measurands; derived measurands; digital communication systems & complex antenna systems

Scalable methods for high dimensional data analysis; Metrological evaluation of machine learning methods

PTB
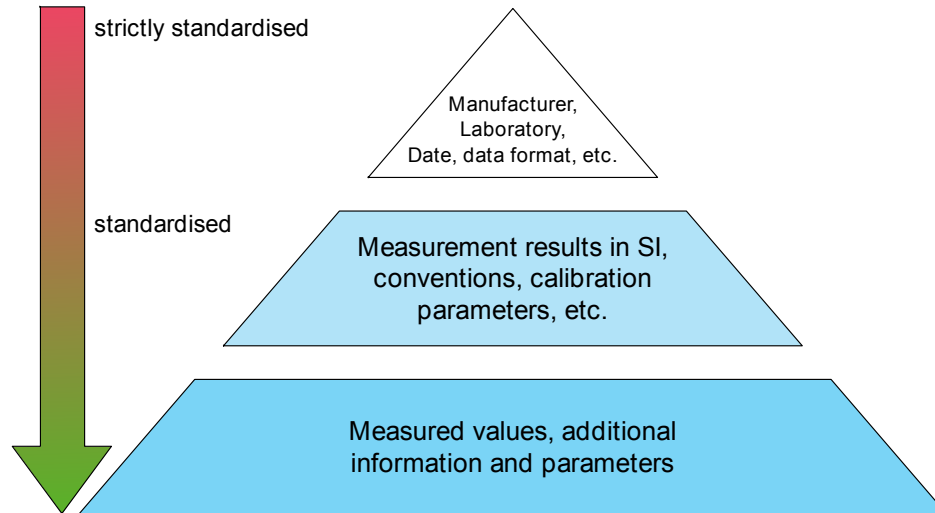Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
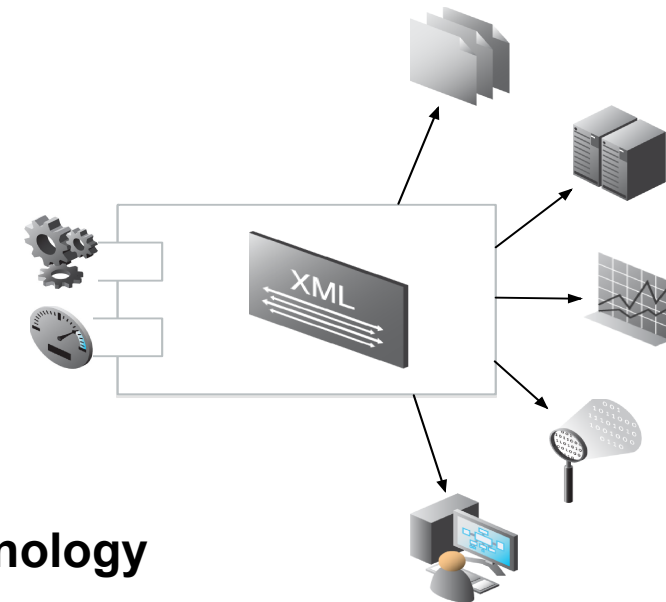
Metrology Cloud

- Digital quality infrastructure (QI)

- Specific access for all players in the QI

- Attachment of existing infrastructures and data bases

- Secure and trustworthy „Core-Platform" @ PTB

- Realisation of new concepts for the digital transformation of metrological services

- Reduction of barriers to innovation and support for data-based services

- National blueprint for a European Metrology Cloud

Digital Calibration Certificate

strictly standardised

Manufacturer, Laboratory, Date, data format, etc.

standardised

Measurement results in SI, conventions, calibration parameters, etc.

Measured values, additional information and parameters

Structure

- Standardised und machine readable
- Contains all necessary information
- All changes are documented
- Accounting for IoT, CPS and other industrial standards

Technology

- XML/DTD schema
- Cryptographics and security
- End-to-end digital operations
- Data base of devices and laboratories
- Data-based services enabled

Activities

- Research group and TU Berlin Junior Professorship „Secure and trustworthy network-connected systems"

- Research group and TU Berlin Junior Professorship „Uncertainty in Machine Learning for Big Data"

- Scientists: Research data management, nonlinear measurands in high frequency communication (5G), digital calibration certificate and SI-based communication

- Testbed „Digital transformation in the quality infrastructure " (Siemens)
- Collaboration in Swedish-German Testbed Initiative
- Project proposal „Digitalisation in the Biotechnology"
- Planned testbed „3D measurement techniques"