



Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
Nationales Metrologieinstitut

Outlook and example for Digitization:

Windforce – Testbed Industry 4.0

IMEKO 23rd TC3, 13th TC5 and 4th TC22
International Conference

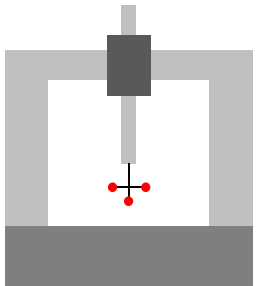
30 May to 1 June, 2017, Helsinki, Finland

Julia Hornig, Frank Härtig and Rolf Kumme




Competence Center Wind Energy (CCW)

a



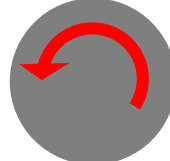
$3D$ in m
Coordinate Measuring Technology

b

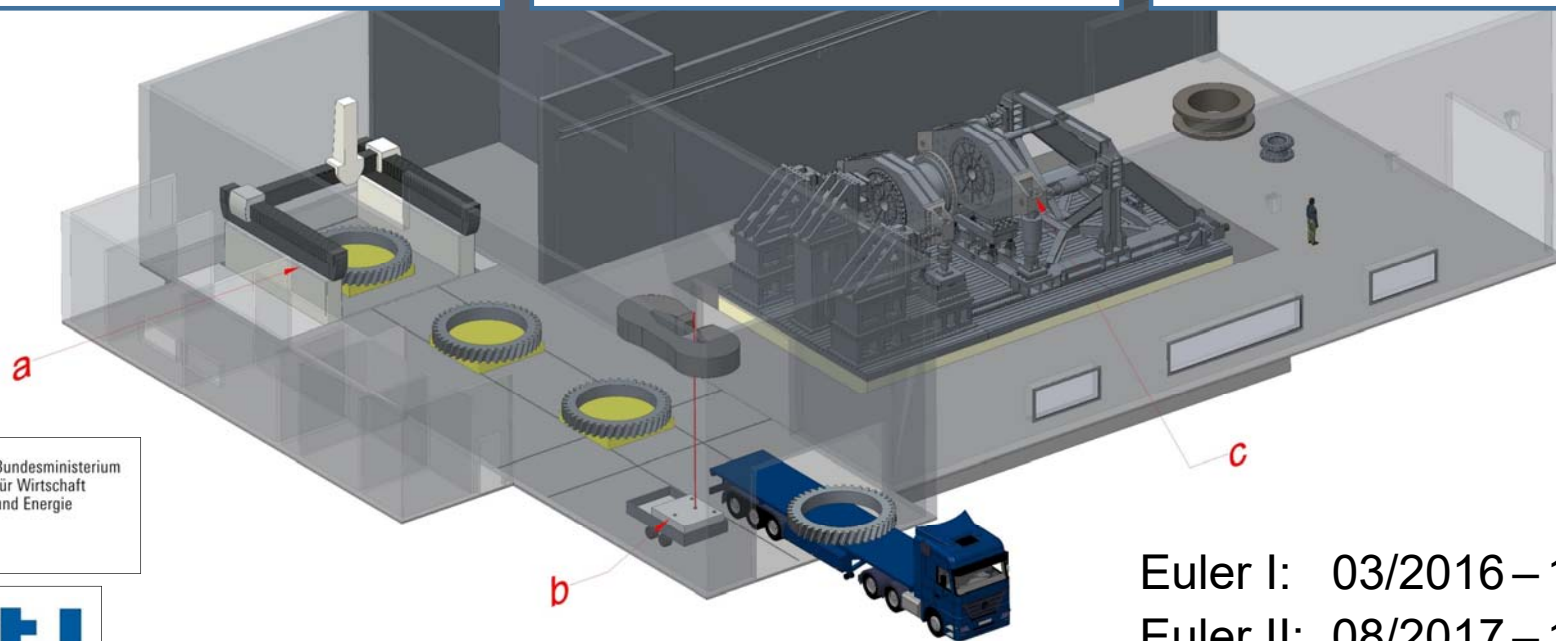


$3Dv$ in $\frac{m}{s}$
3D Windspeed Measurement

c

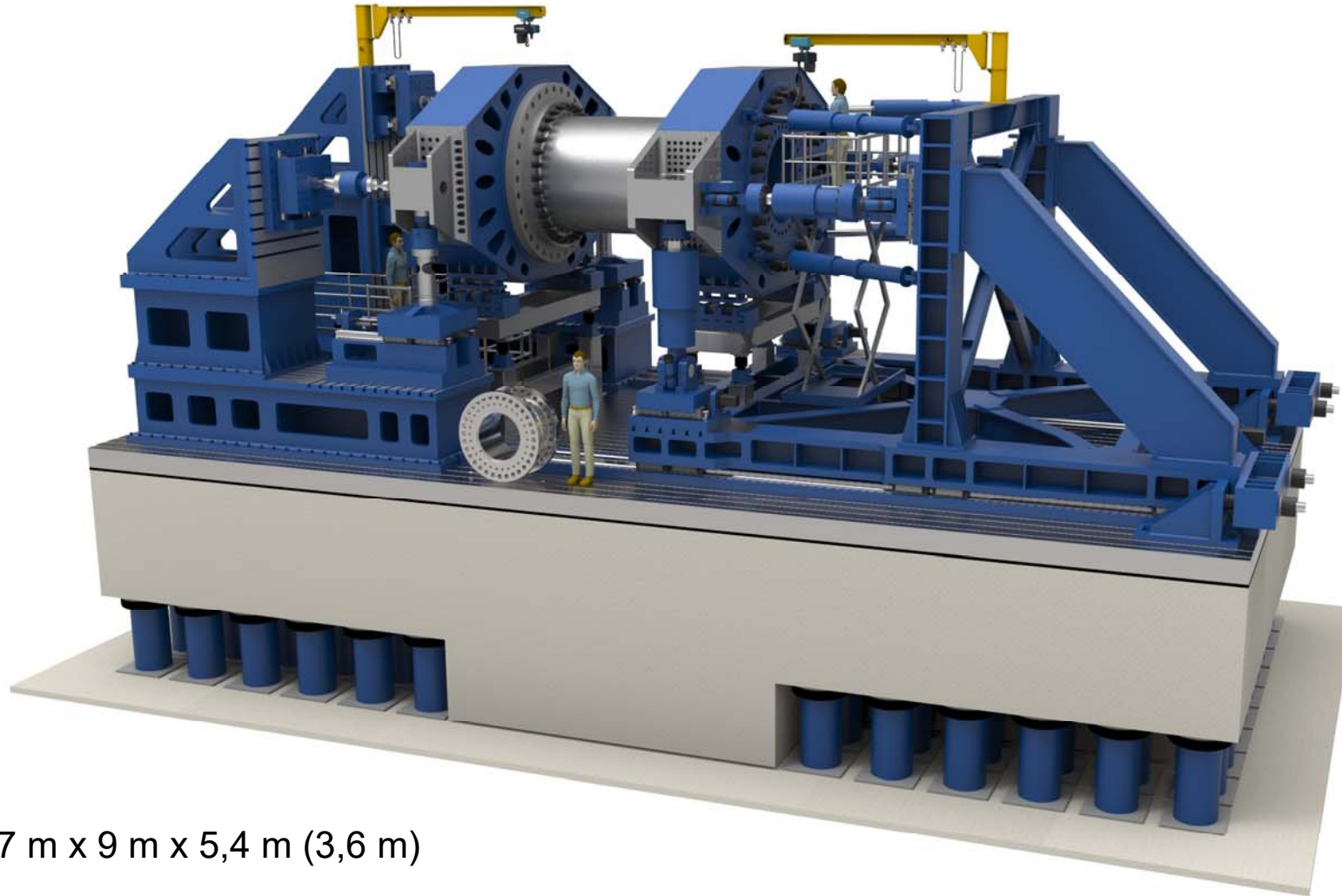


$F \cdot l$ in $N \cdot m$
Torque Measurement



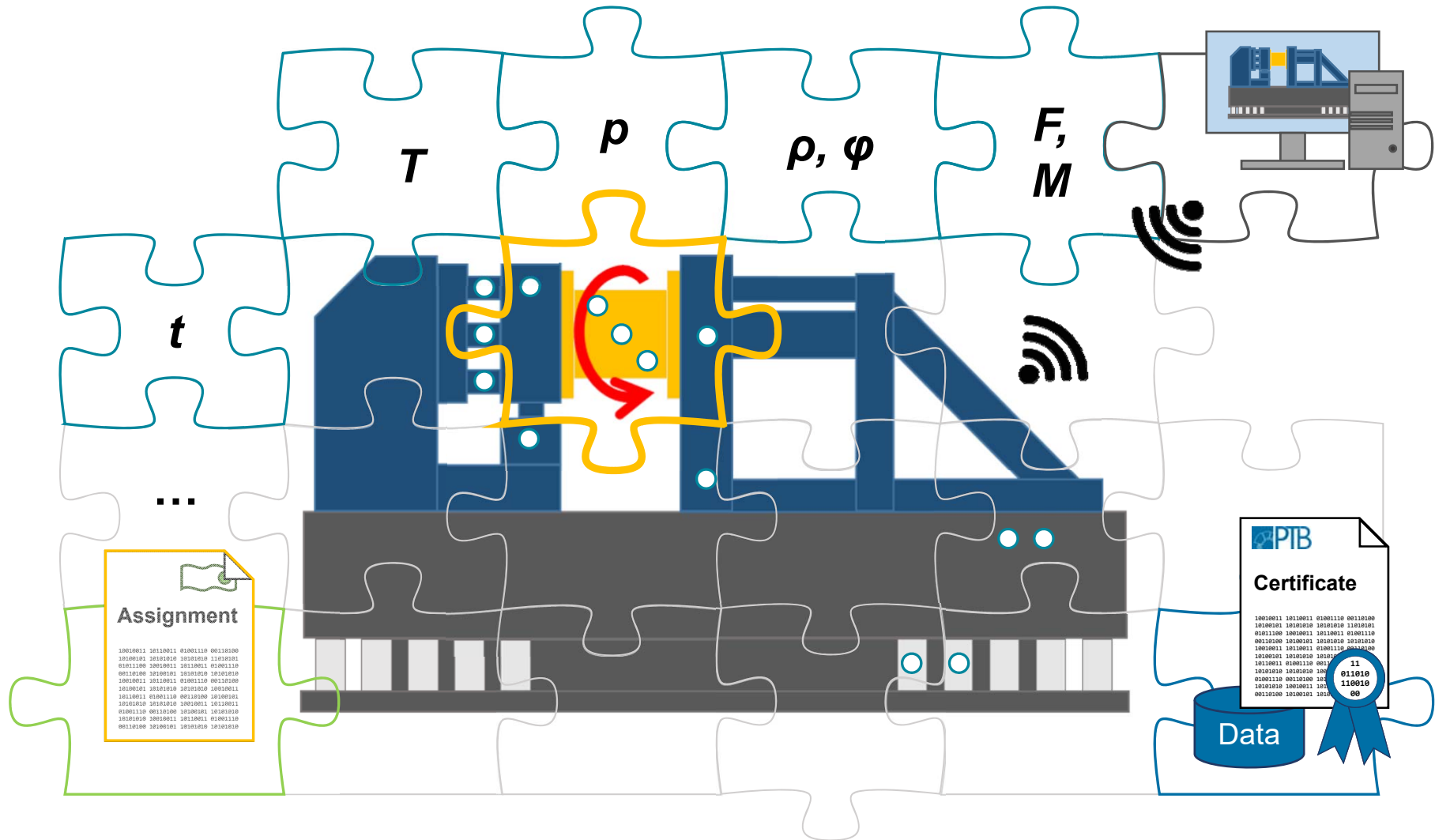
Euler I: 03/2016 – 12/2017
Euler II: 08/2017 – 12/2018
Project End: 12/2020

Design Torque Standard Machine

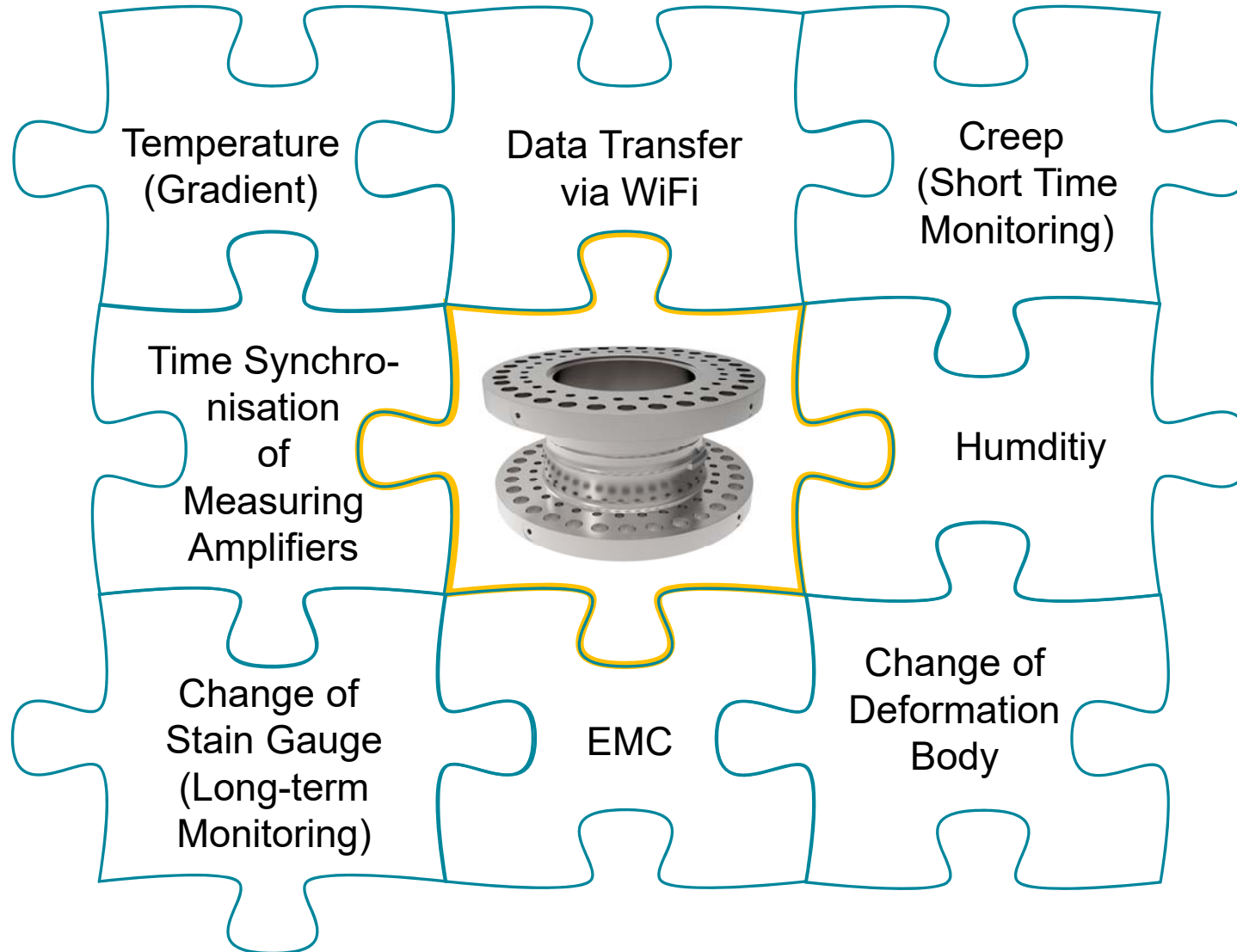


17 m x 9 m x 5,4 m (3,6 m)

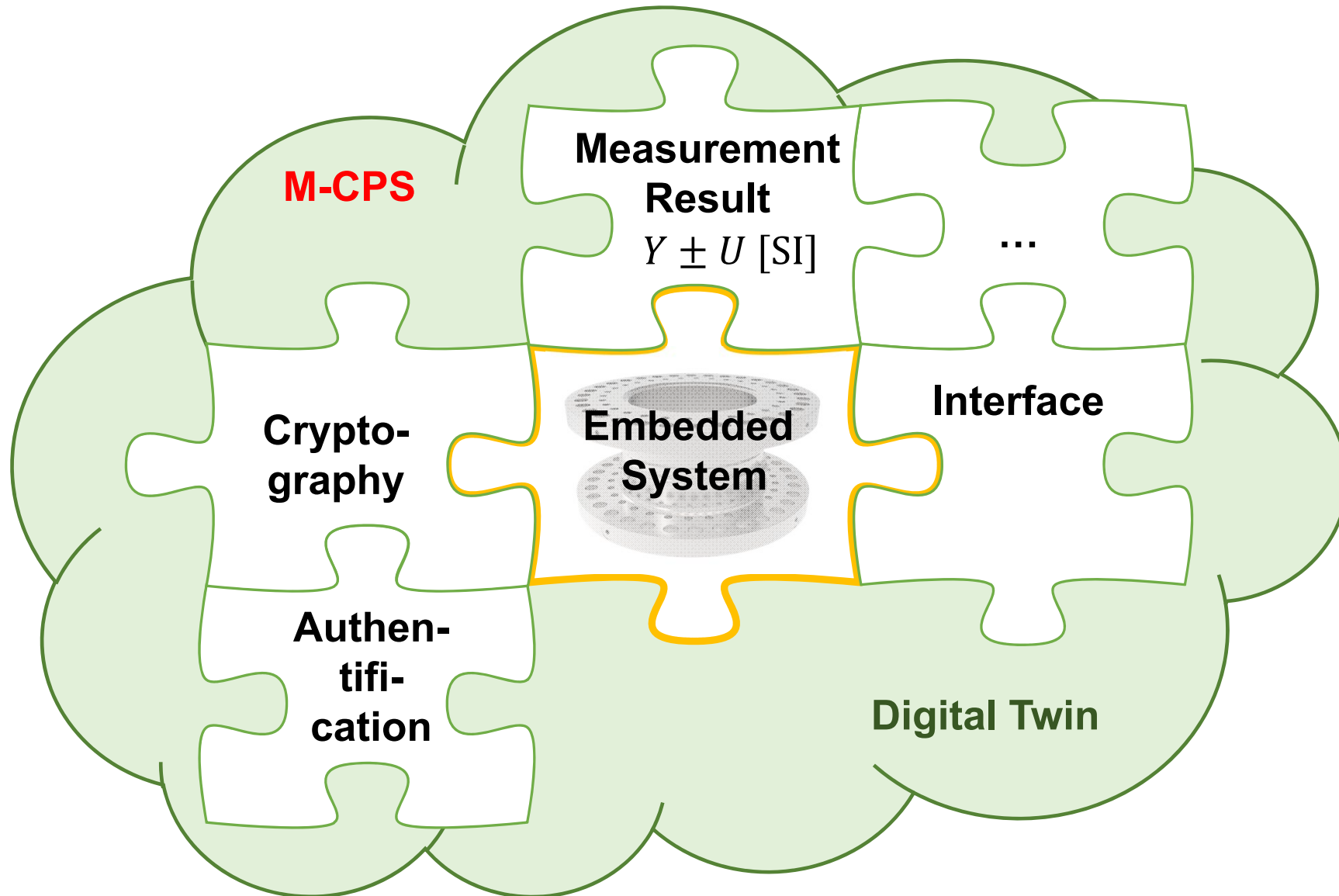
Digital Torque Standard Machine

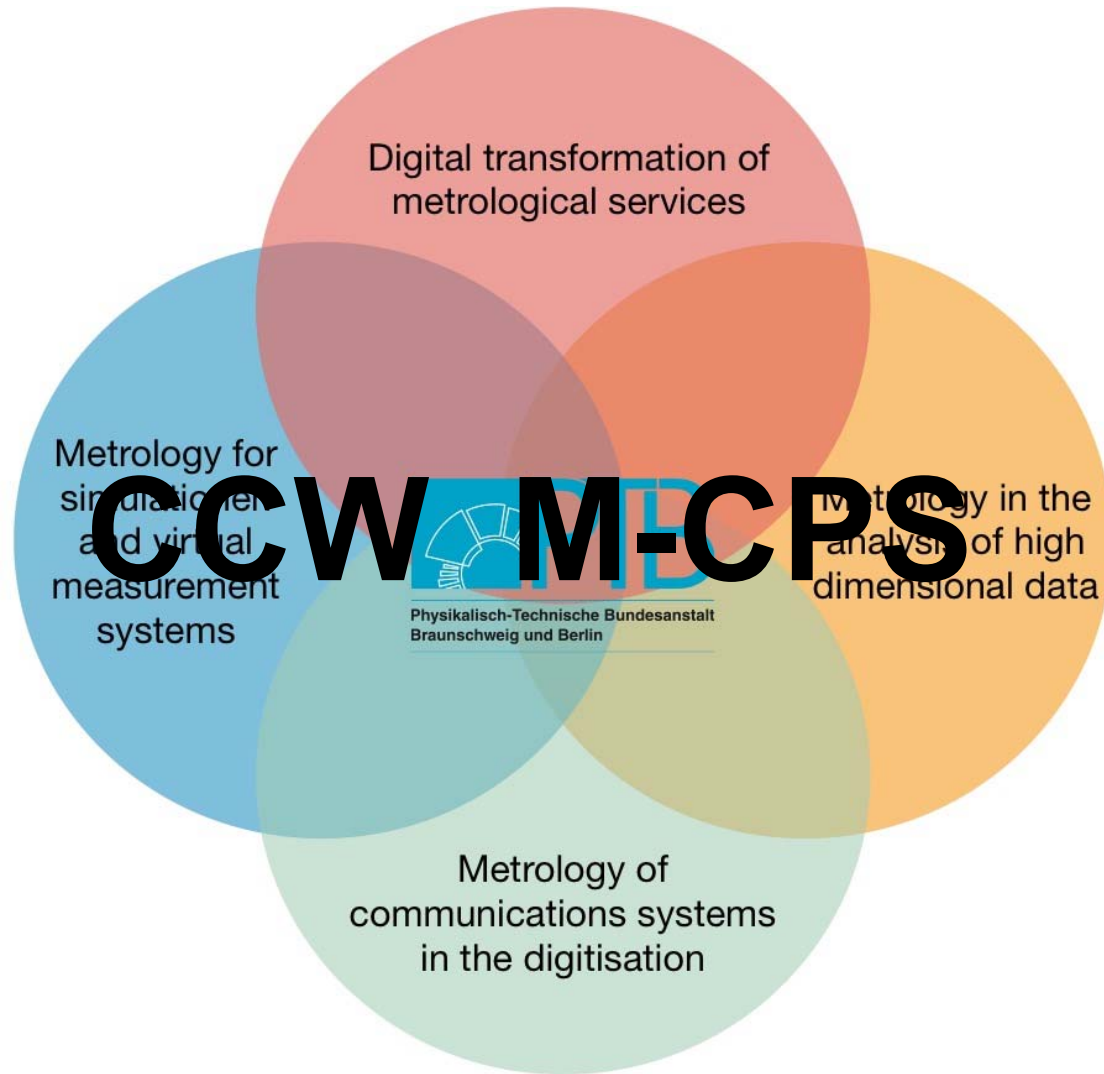


Digital Torque Transducer



Metrological Cyber Physical System





Questions for the Roundtable



Present and future situation in Mass, Force and Torque (TC3), Hardness (TC5) and Vibration (TC22) ?

Calibration of digital systems ?

- measurement result and uncertainty
- digital calibration certificate

Use in distributed systems ?

- synchronization in distributed systems, time base
- data format
- digital interface and data exchange
- standardization

Many thanks for your attention.

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