

Challenges of interoperability testing in complex systems.

International Mobility Days 2021



living the future



Interoperability?

*Ability of different systems to work together
as seamlessly as possible.*

Challenges

- Drivetrain from ICE to BEV (micromobility to trucks)
- High degree of networking / communication of the individual components
- Grid integration of charging infrastructure and energy storage (e.g.: vehicle battery, fuel cells) into existing systems/infrastructure
- Evolution of "intelligent" algorithms (e.g.: driver assistance systems, billing systems,

Important for: Endusers, manufacturers, operators, planners & system integrators

Objective: Secure and functioning systems

Standardisation:

Base: Standardization of the interfaces and communication protocols of individual components and systems (e.g.: Cross domain communication)





Mechanics-Materials



Electric Safety, EMC

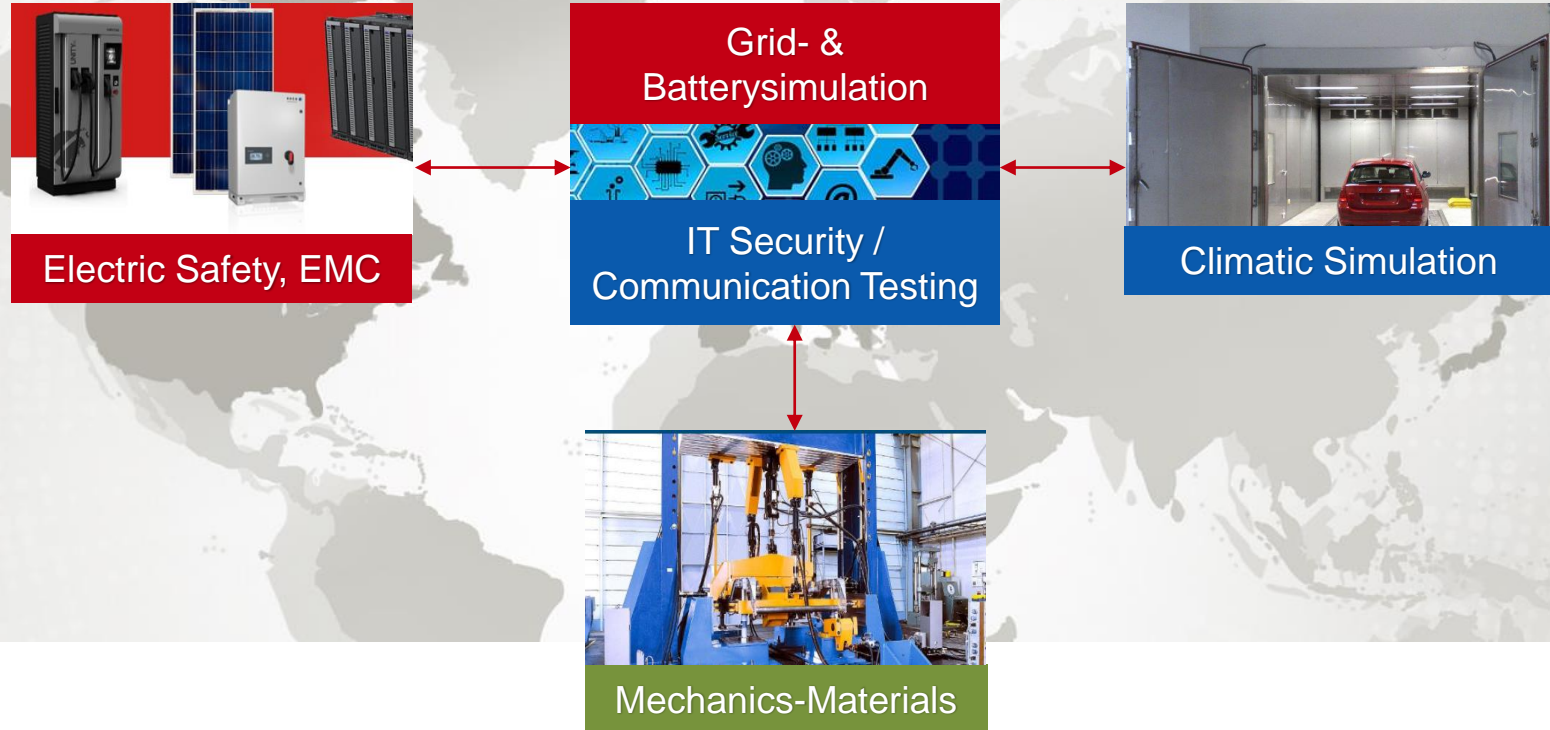


IT Security



Climatic Simulation

Interoperability Testing



Technology & Innovation Center

Testing laboratory and technology partner for business and research.



Safety, security, quality and reliability
Modern and flexible infrastructure and
technological excellence.
Integrative & sustainable solutions



ISO/IEC 17025

E-Power & Mobility
Environmental
Mechanical & Material
Digital – Services

Deutschstraße 10, A-1230 Vienna

from development support to type approval



Power supplies

- Grid simulation: 400kVA | 1,000 VAC (L-L) | 16 – 800Hz
- Battery simulation: 378kW | 1,500 VDC | 756 ADC



Communication monitoring & control for charging station/e-vehicle

- Communication standards worldwide for AC&DC [CCS, GB/T, CHAdeMO, ChaoJi]
- Error simulation AC/DC



EMC Low Voltage Testing

Permissions:

Accredited testing laboratory
EN ISO/IEC 17025

Notified body „0408“



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IT Security: Certification of safety-critical systems



Secure software development

Verification of development methods and environment

- Principles of secure software development are applied
- Appropriate level of quality in development is ensured
- Includes deployment and maintenance (patches)
- Not strictly ML-specific

Functional requirements

Validation of data and Machine Learning models

- Audit catalog based on theoretical principles and best practices in ML.
- Currently applicable to supervised learning, modular extensions are planned
- Mostly qualitative audit by ML experts. Quantitative audit difficult due to high complexity.

Ethics and data privacy

Consideration of ethical and data protection standards

- EU "ethical guidelines for trustworthy AI" (if applicable).
- Conformity with GDPR (if applicable)



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