

# Towards Integrated Power System Testing

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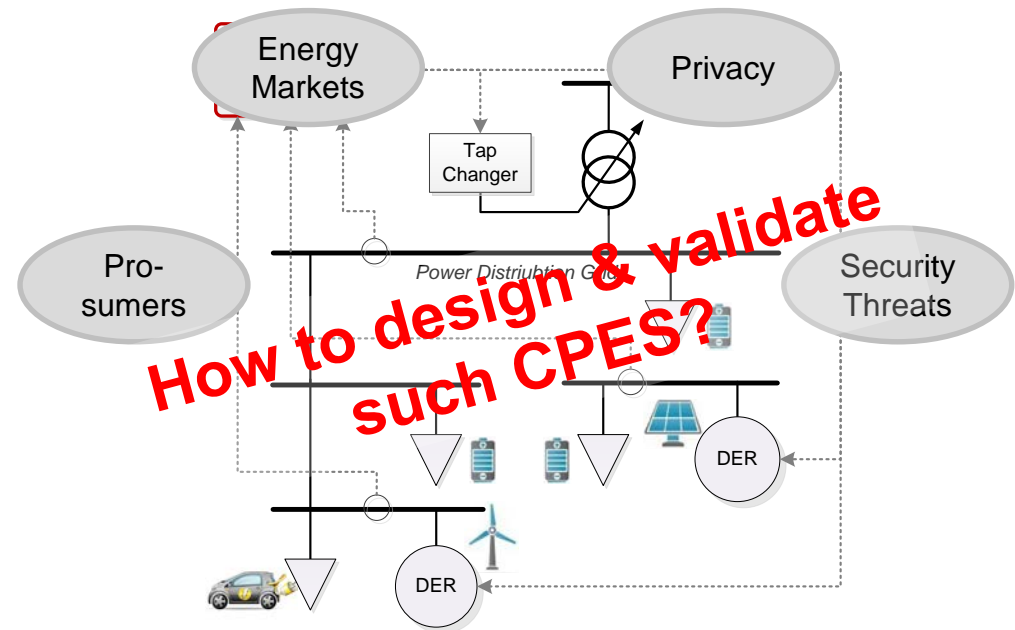
*Round Table II “The way forward: WoC impact on grid evolution”  
ELECTRA IRP Final Event*

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# Higher Complexity in Power Systems

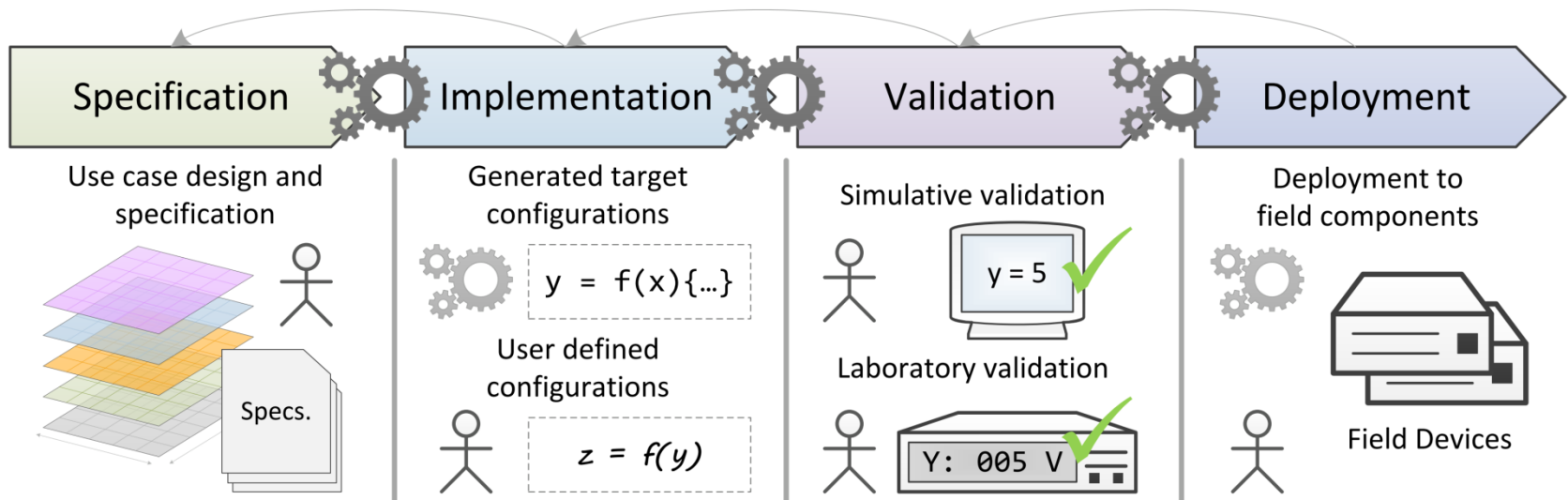
- Planning and operation of the energy infrastructure becomes more complex
  - Large-scale integration of renewable sources (PV, wind, etc.)
  - Controllable loads (batteries, electric vehicles, heat pumps, etc.)
- Trends and future directions
  - Digitalisation of power grids
  - Deeper involvement of consumers and market interaction
  - Linking electricity, gas, and heat grids for higher flexibility and resilience



→ *Cyber-Physical Energy System (CPES)*

# Open Issues and Research Needs

- Vision: *“Providing support from design to implementation & installation”*
  - Integrated system design
  - Validation and testing
  - Installation and roll out



# Integrated Research Infrastructure

- ERIGrid Research Infrastructure (RI) project
  - 18 Partners with 19 first class smart grid labs from 11 European countries
  - 10 Mio Euro Funding from the EC (H2020)
- Future research should be focused on
  - Improvement and integration of design and validation tools
  - Development of system level validation procedures and benchmark criteria
  - Improvement of research infrastructures supporting system level validation
  - Education, training and standardization is also a key factor

