



Achievements, Experiences and Lessons Learned from European Smart Grid and DER Research Infrastructures

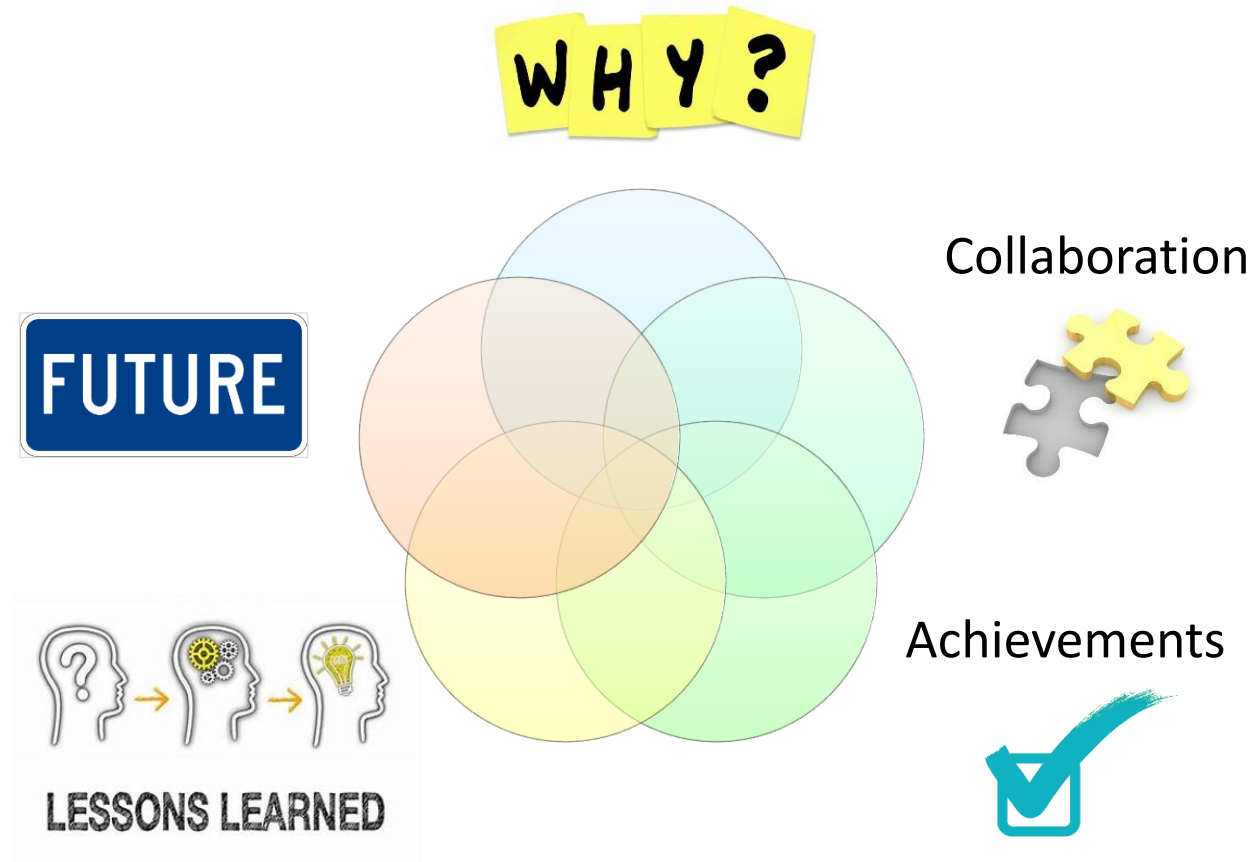
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*IV RICH-2 Symposium – Session 2: Energy & Climate
13 November, 2020*

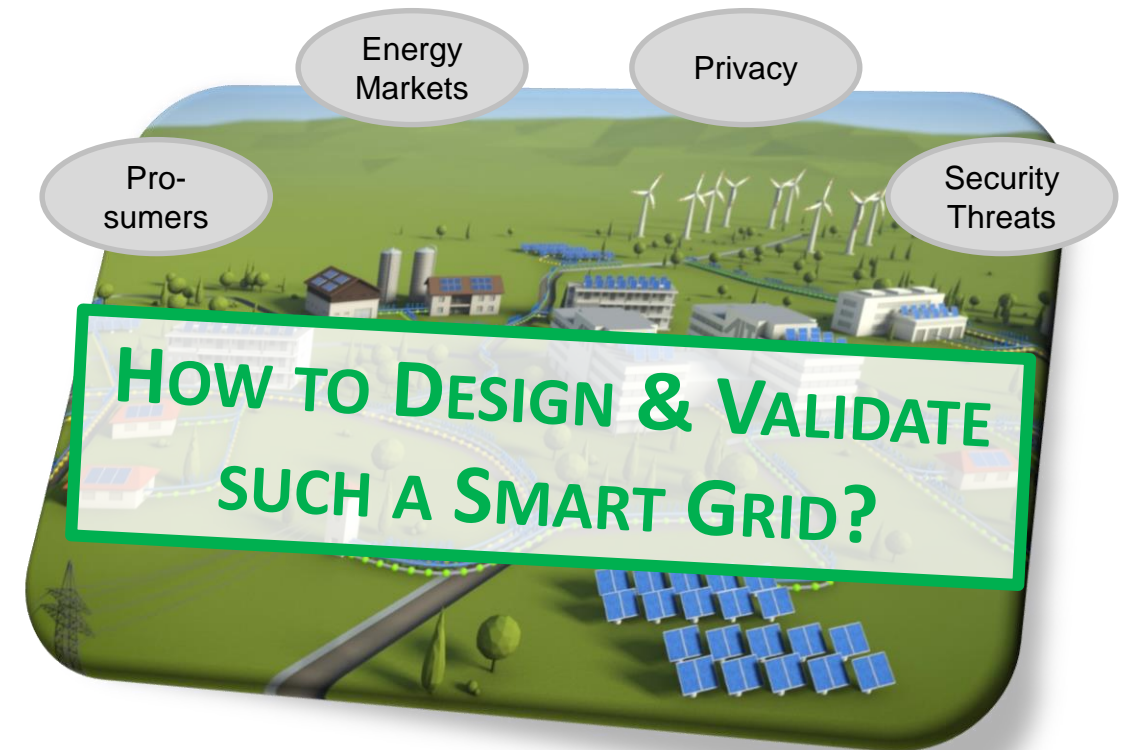


Outline



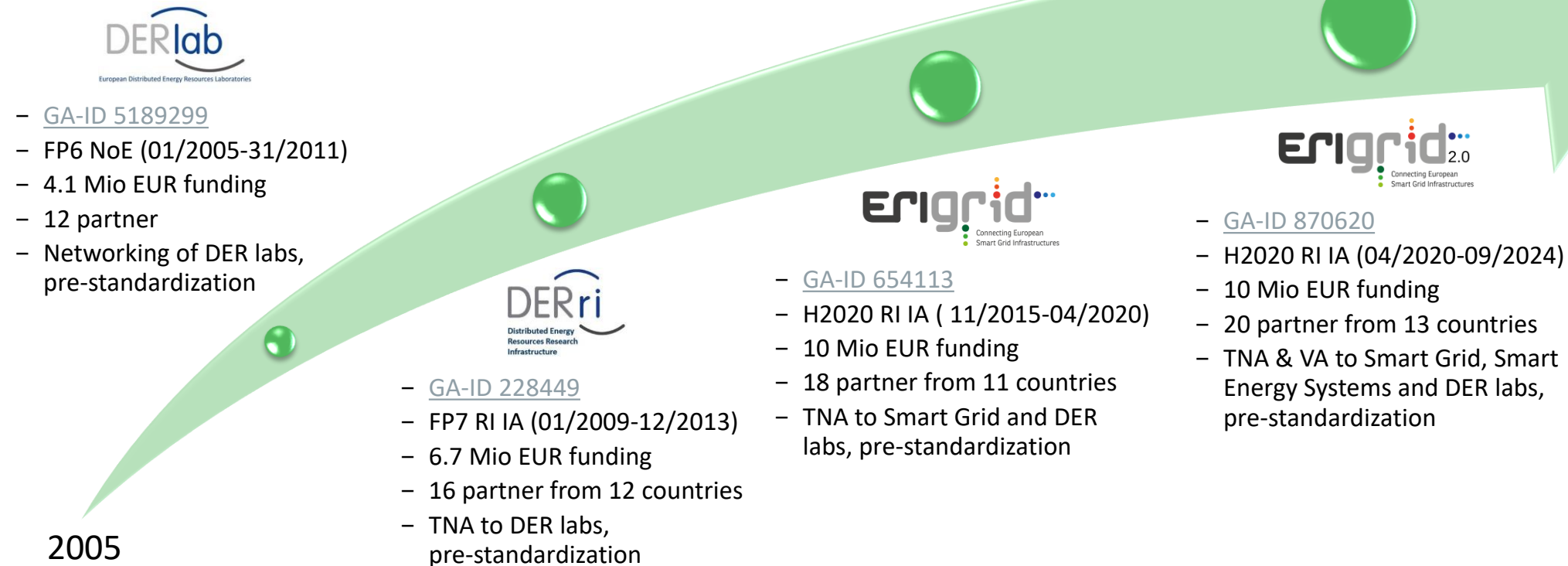
Motivation

- Planning and operation of the energy infrastructure becomes more complex
 - Large-scale integration of renewable sources (Distributed Energy Res./DER – like PV, wind, etc.)
 - Controllable loads (battery storages, electric vehicles, heat pumps, etc.)
- Trends and future directions
 - Digitalisation of energy infrastructure
 - Deeper involvement of consumers and market interaction
 - Sector coupling (linking electricity, gas, and heat grids) for higher flexibility and resilience



Advanced Community

- Long-term,
- Pan-European cooperation

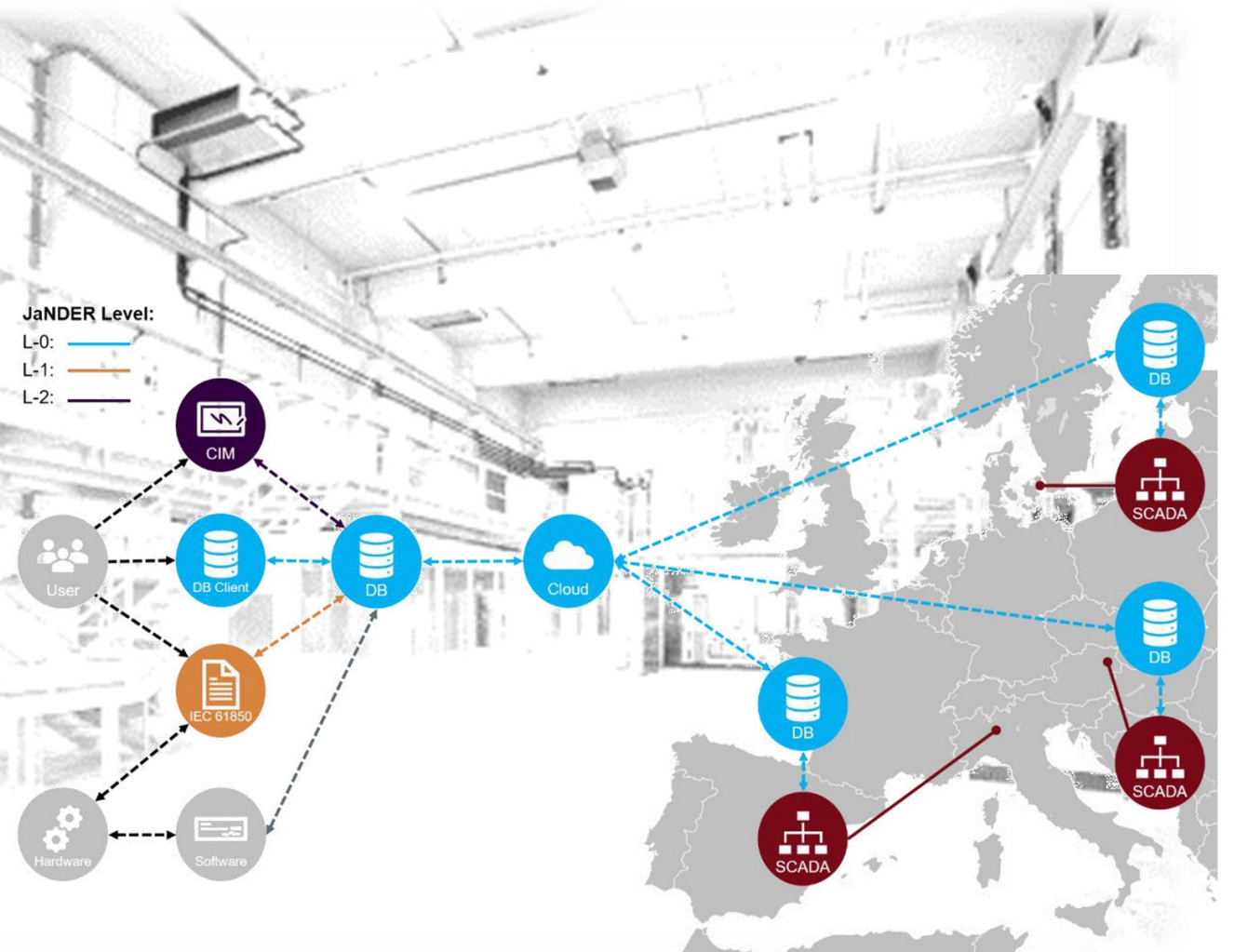
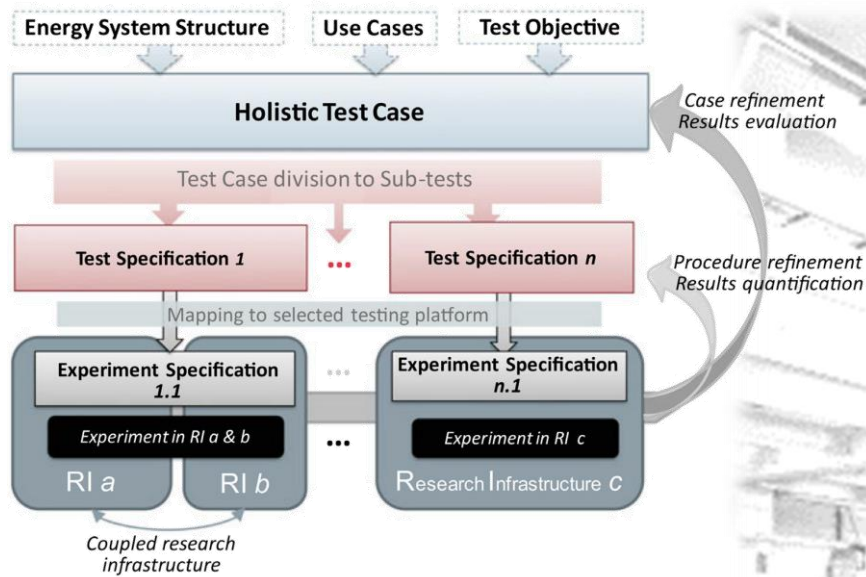


Advanced Community

- Applied research for
 - Sustainable power and energy systems/ smart grid systems
 - Distributed Energy Resources (DER)
- Tight collaboration of partners



Achievements



- Advanced testing methods and tools
- Holistic validation approach for smart grids
 - Virtual Pan-European Smart Grid RI
 - Co-simulation and hardware-in-the-loop based system-level testing



Achievements

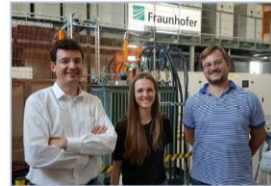
73
user projects from
all over the world
gained lab access



175
engineers accessed
best labs of Europe
free of charge



20
had companies
involved



4
multi-side projects
(involving more than
one laboratory)

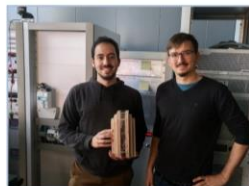


1,000
for over 1,000 days
collectively ERIGrid
labs were in use



14
projects came from
outside Europe

14
projects were led by
companies



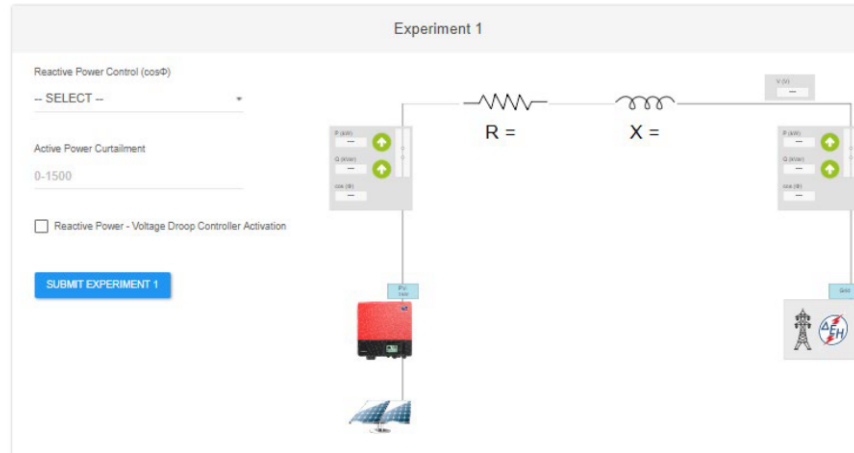
7
projects were from
ERIGrid partners
("internal TA")



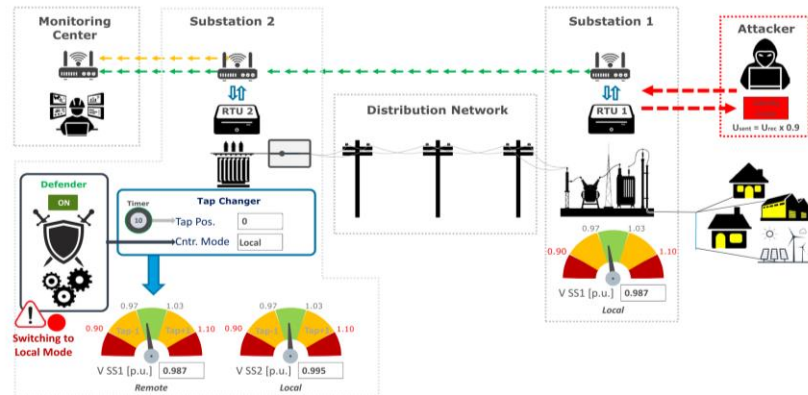
Free access (TNA) to

- Power system,
- Smart grid and
- DER laboratories

Achievements



Remote lab for voltage control experiments



Cyber-resilience tool explaining the impact of cyber attacks



ERIGrid Summer School, Athens (GR), June 2019

Training of researcher and engineers

- Training schools
- Course/education material
- Tutorials and webinars

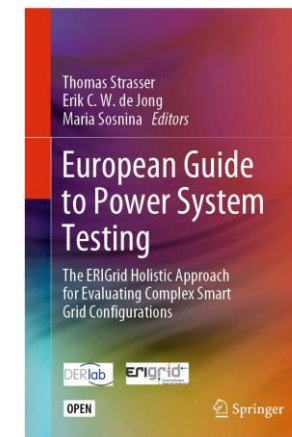
Lessons Learned

Pros

- Exceptional team work, collaboration and results
- Multi-domain education and training essential
- Great feedback from TNA users
- Open research results (open access, open data, joint publications) contribute to innovation
- NA/JRA important for innovation and further development of RI services
- Lab-based RIs are essential for energy transition
- Collaboration on international basis important and beneficial (IEA ISGAN/SIRFN, EERA SG, IEEE-SA – standardization, etc.)

Challenges

- Attracting enough (industrial) TNA user groups
- Integration of new RIs quite difficult (fixed budget)
- TNA budget calculation (proposal & project phase)
- TNA time consuming, too administrative and inflexible



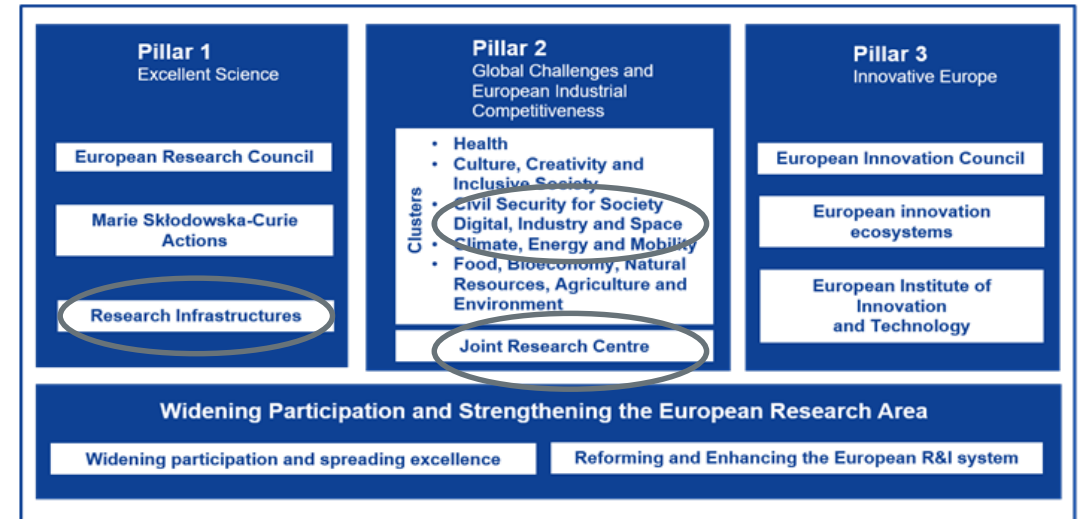
Outlook

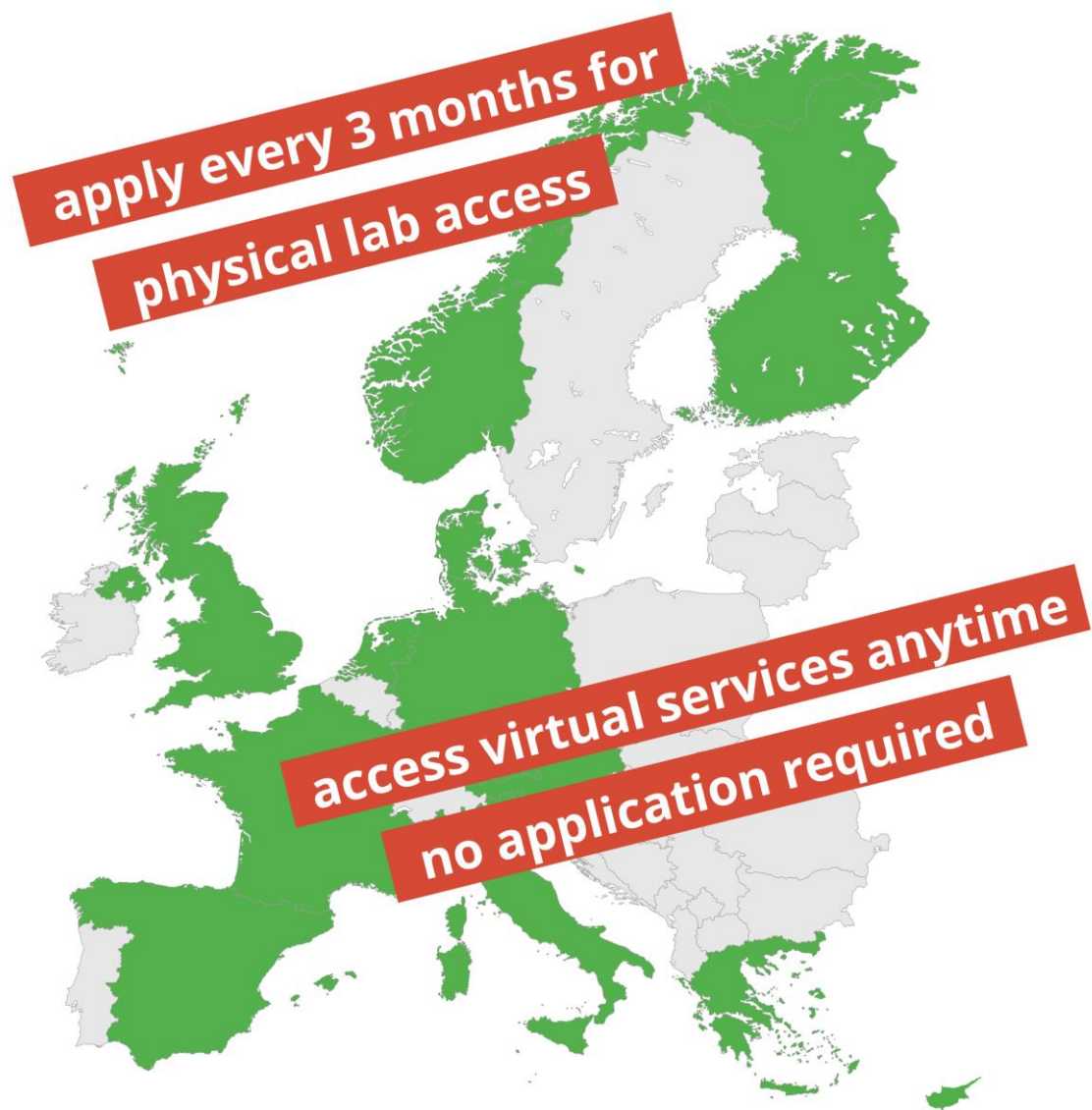
Recommendations

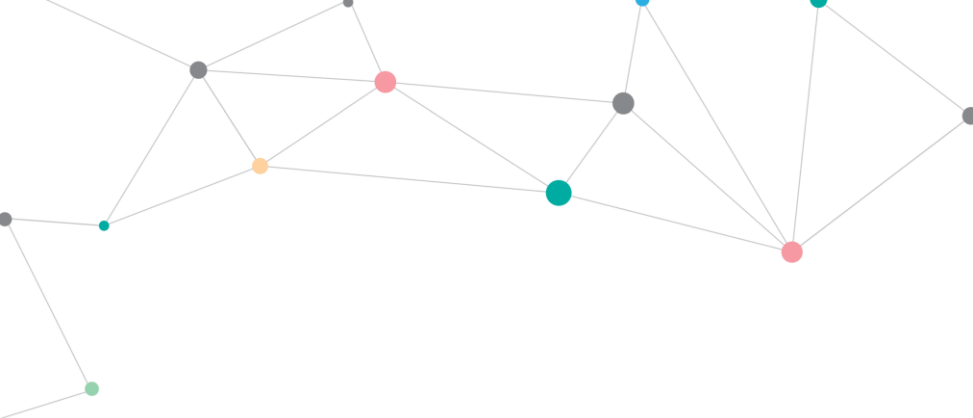
- Simplification of TNA modalities/rules necessary (budget, administration/reporting)
- Focus should also be kept on JRA for future innovation (close cooperation with ETIPs)
- EOSC needs to be better understood and well integrated into RI activities (several opportunities)
- RI cluster should try to cooperate (harmonization, information/knowledge exchange; cf. BRIDGE initiative from DG ENER)

Horizon Europe

- Various links to/with smart grids and smart energy systems







www.erigrd2.eu



@ERIGrid 2.0 Project

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