

International Institute of Energy Systems Integration (iiESI)

A European Perspective

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STRATEGIC ENERGY TECHNOLOGIES PLAN

CONFERENCE 2013 DUBLIN



...**renewable energy integration** as well as roll-out solutions for integration into intelligent electricity grids

.... and **integration of heating/cooling**

... integration of CHP and micro-CHP into smart grids

.... integration of other types of **microgeneration, demand response and storage into the grid**

...innovation is needed in system **integration, interoperable technologies, services, tools, co-ordination schemes, business processes, market architectures and regulatory regimes to plan, build, monitor, control and safely operate end-to-end networks in** an open, competitive, decarbonised, sustainable and climate-change resilient market, under normal and emergency conditions

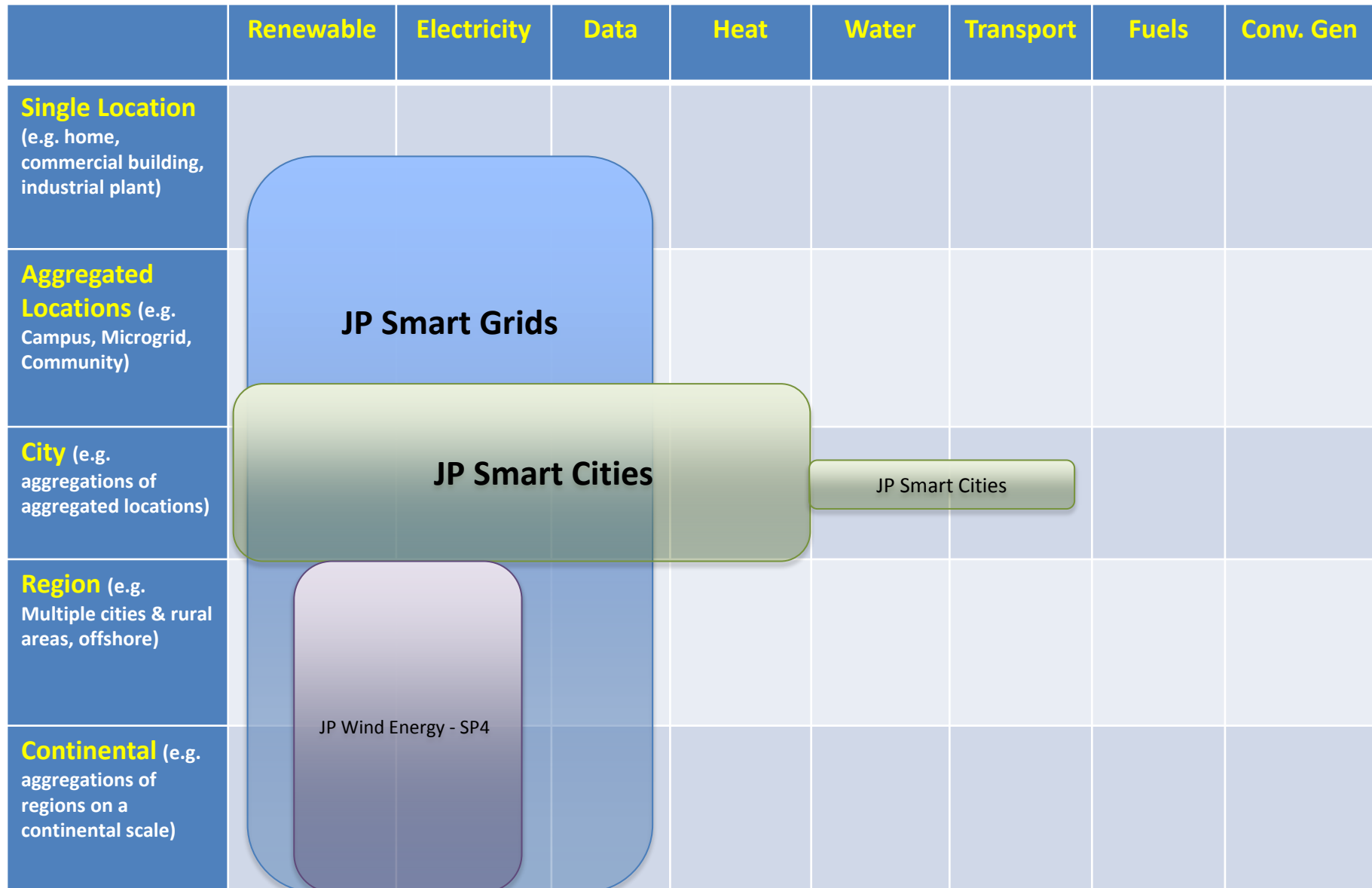
...integration of **ICT in electricity grid systems**



Optimisation of the energy system

- **Ensure a cost-effective and optimal matching of energy demand and supply;**
- **Contribution of all technologies to system flexibility, stability, security & safety and system interoperability;**
- **Holistic systems at local/urban level;**
- **Rationalisation of investments needs;**
- **Interplay issues between electricity and gas, electricity and heating and cooling and new energy carriers;**
- **Storage;**
- **Resilience of the system**

EERA Energy Systems Integration Landscape



Global Partnerships

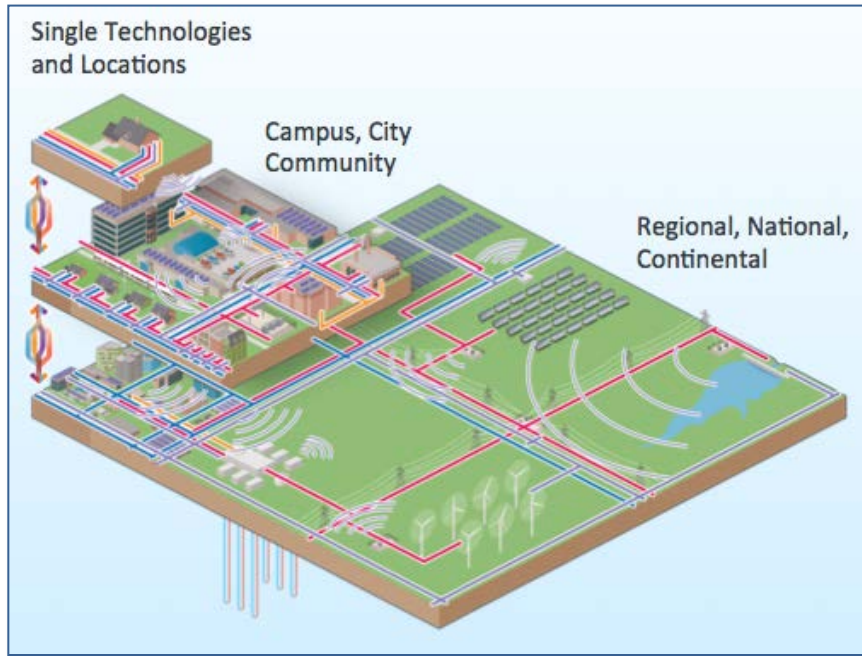
- National Renewable Energy Laboratory new \$150M facility “Energy Systems Integration Facility”



<http://www.nrel.gov/esi/esif.html>

- Electric Power Research Institute
- Tsinghua
- etc.





Energy Systems Integration (ESI) 101

One week course for PhD
students and industry

NREL, Golden, Colorado, USA

Mid July 2014

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