Some notes on EU microgrids-related R&D

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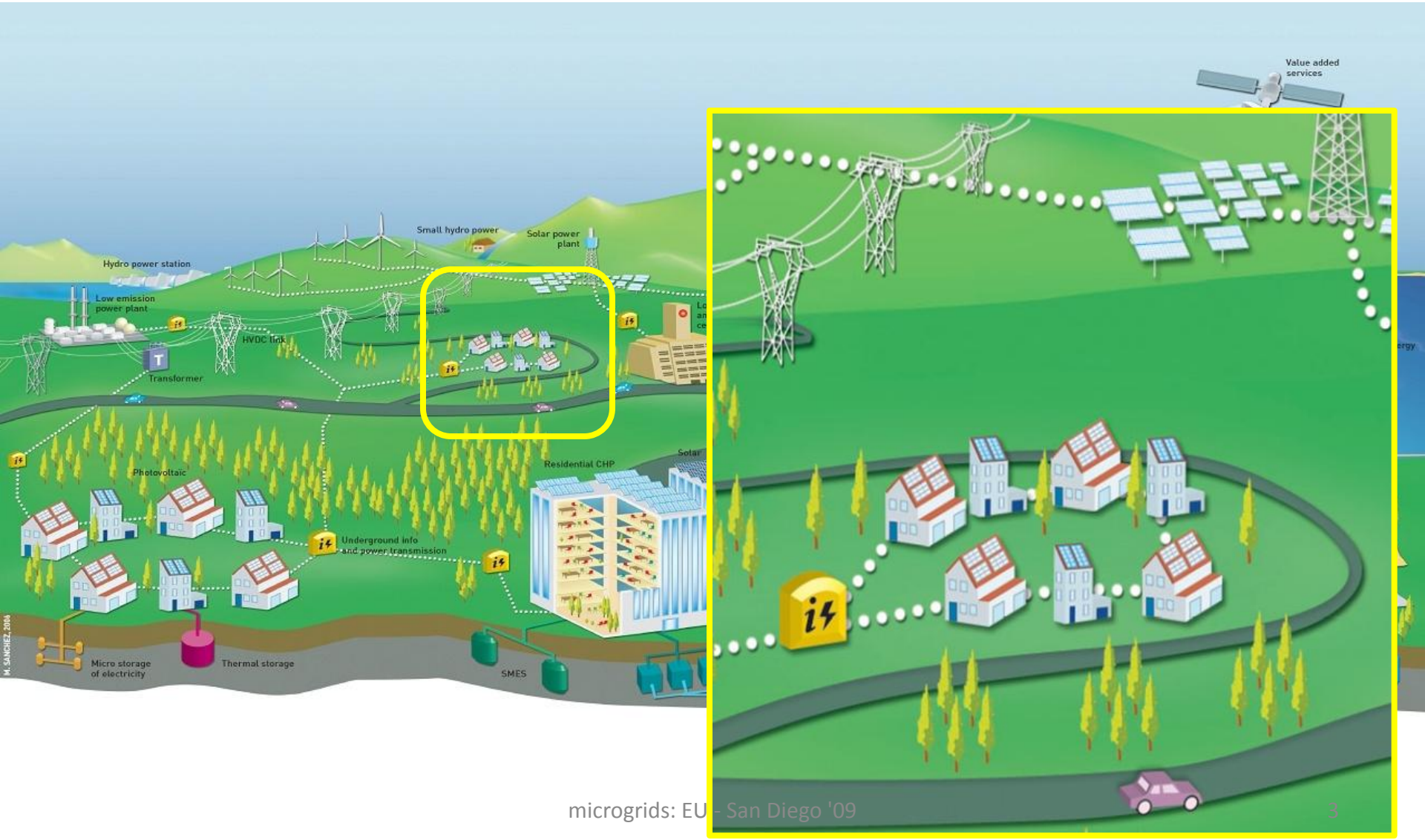
K.U.Leuven, Belgium

Zero-emission Antarctic microgrid: Princess Elisabeth base (B.)

http://www.antarcticstation.org/

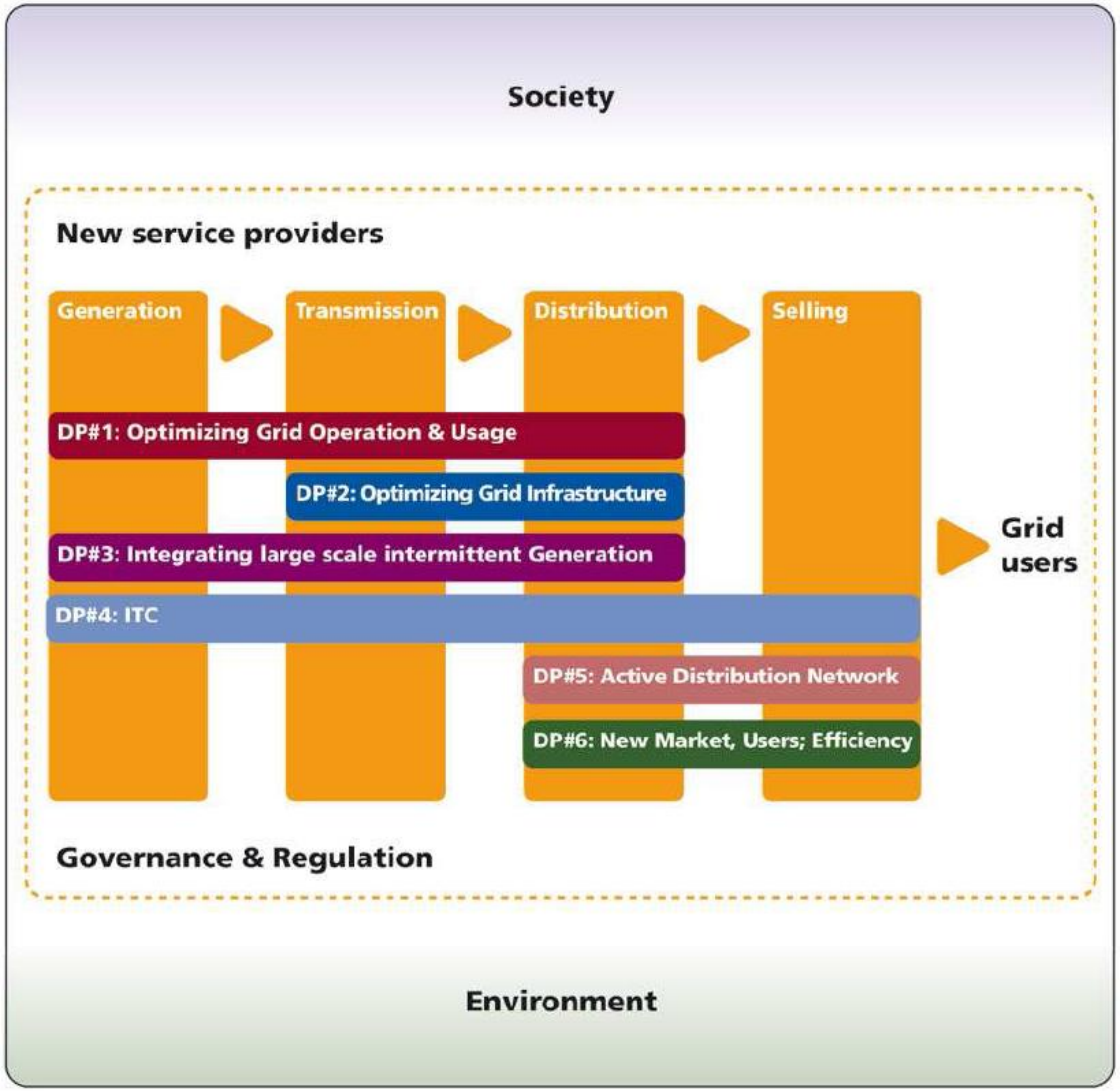
SmartGrids ETP: vision on µgrids

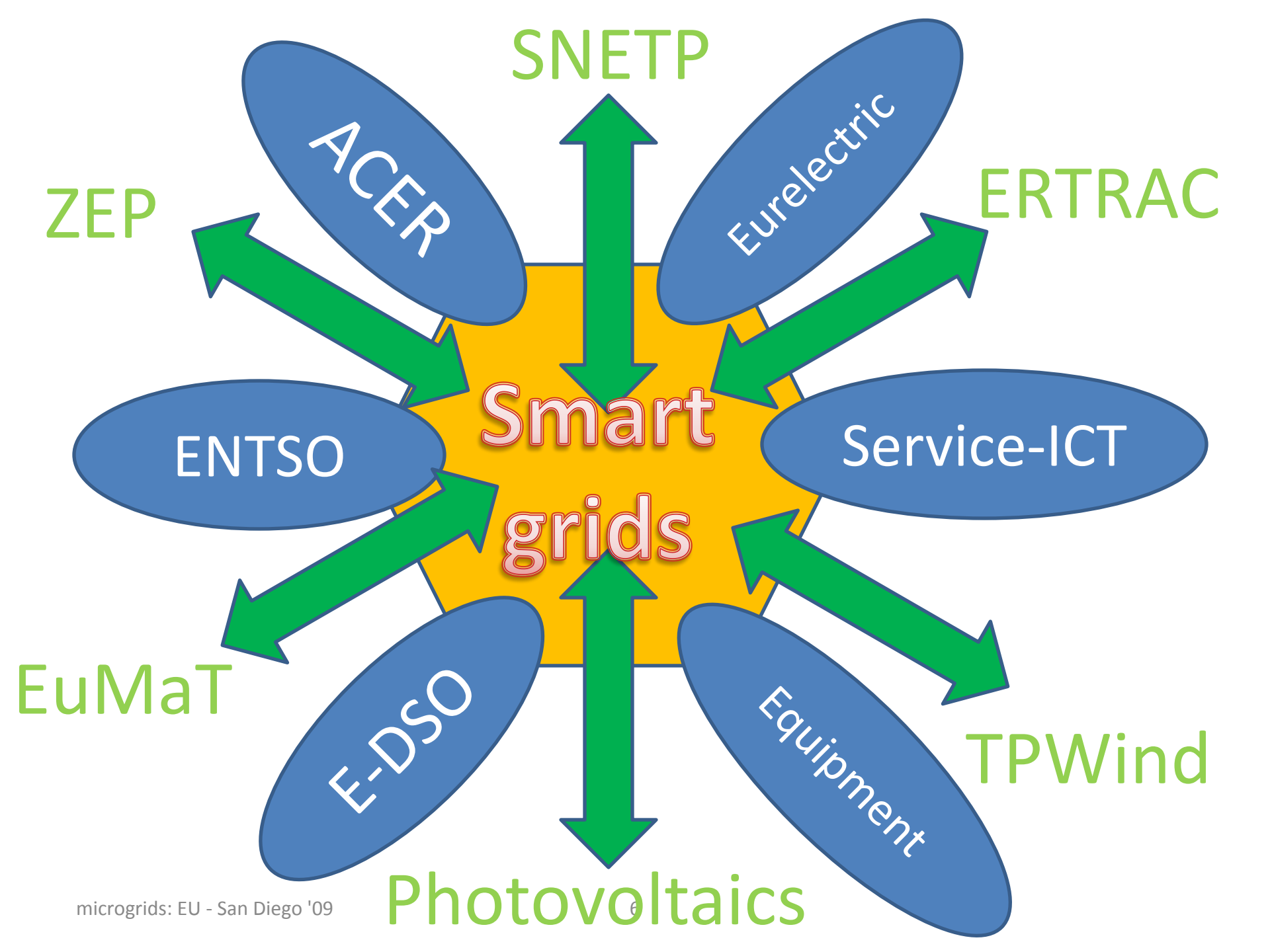


The Technology Platform

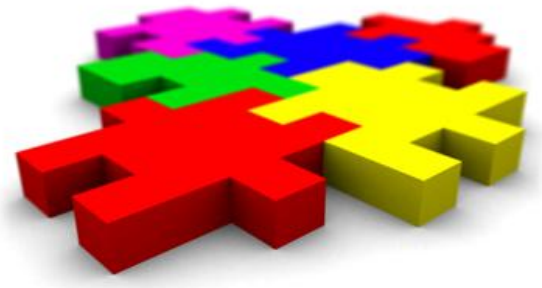
- The Platform brings together key EU stakeholders
- Vision document published
- Strategic Research Agenda published
- Smart Grids short video is available on the website
- The Strategic Deployment Document is in final drafting

SmartGrids Deployment Document

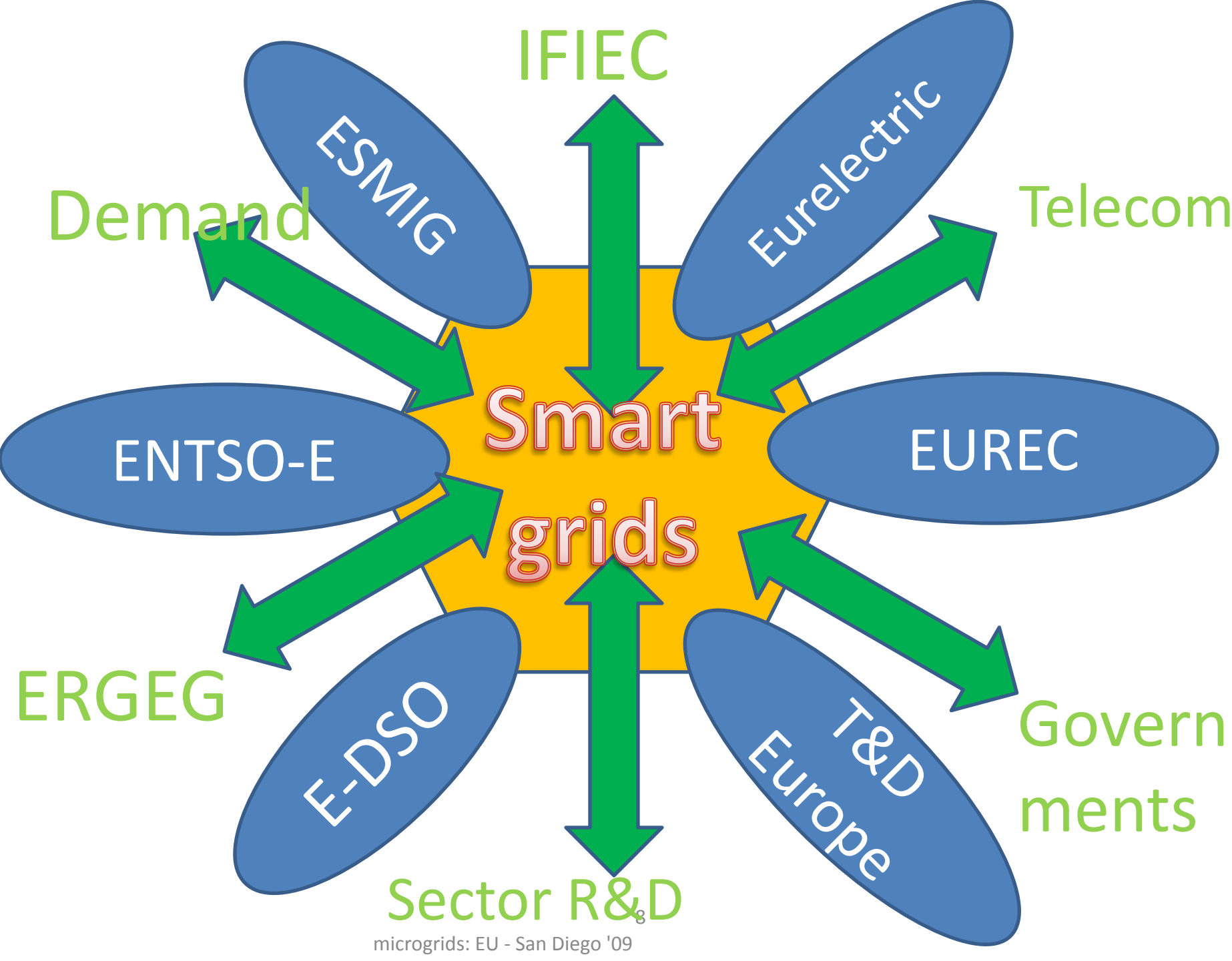



SNETP
ACER
Eurelectric
ZEP
ERTRAC
Smart grids
ENTSO
Service-ICT
EuMaT
E-DSO
Equipment
TPWind
Photovoltaics

much more than technology…



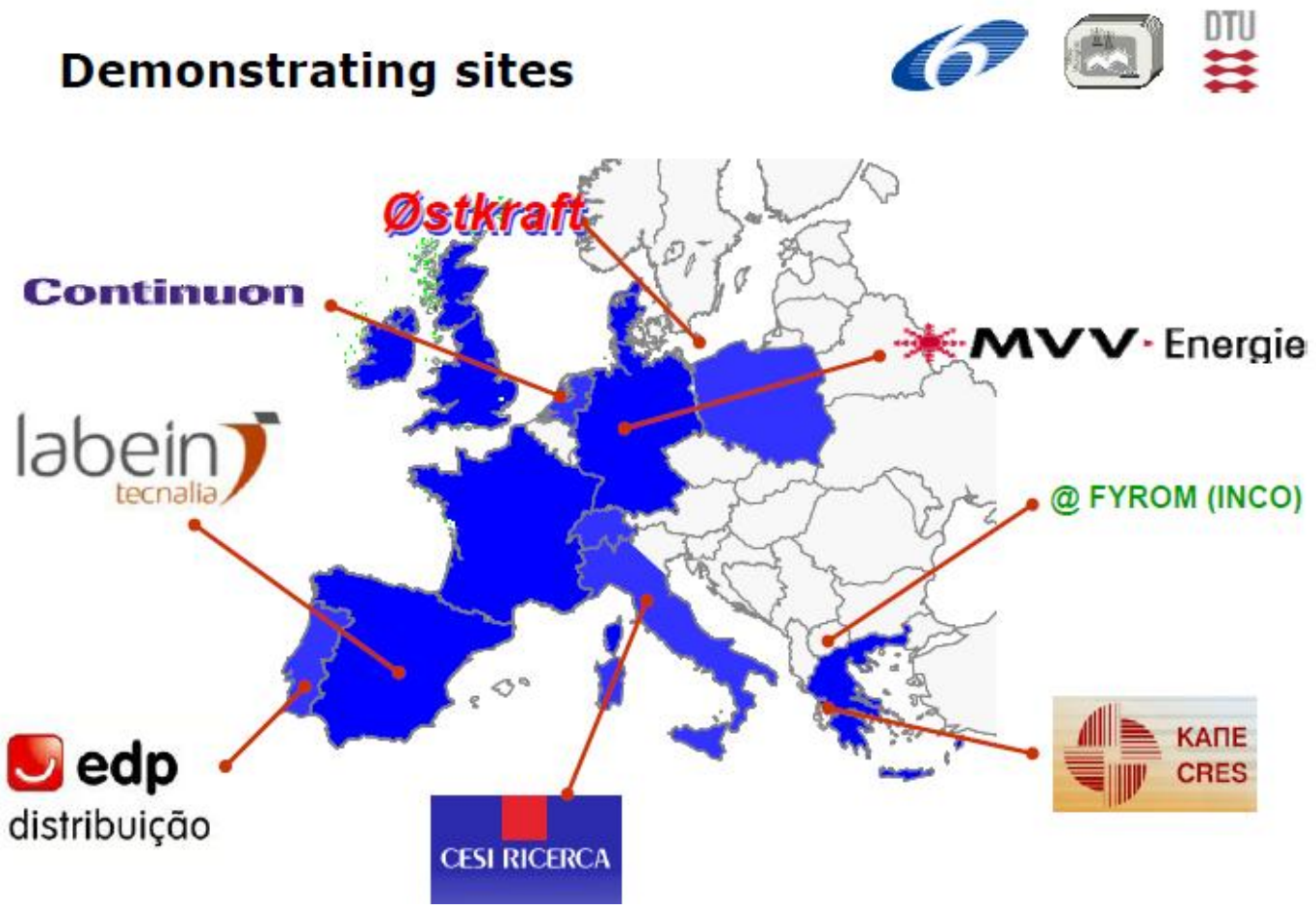
Smart Grids extend beyond networks and will embrace transport, the built environment, the behaviours and engagement of customers, and will need societal acceptance.


IFIEC
ESMIG
Eurelectric
Demand
Telecom
Smart grids
ENTSO-E
EUREC
ERGEG
E-DSO
T&D Europe
Governments
Sector R&D

Status of research program FP7

- Previous calls Energy & ICT
- New calls out on Energy
  - 2.9.1: solar power plant: Demo MWe size, better than state of the art, produce electricity and fresh water
  - 7.1.1: smart electricity distribution (35 M€ (15 RTD+20 TREN)) 1-3 projects
    - active distribution electricity networks
    - integrate small/medium scale RES, CHP heat pumps, storage (direct and indirect)
    - integrate more than one energy supply
    - consider roll-out for electric vehicles
    - development & demo components with several thousand users of mixed profiles
    - participation of DSO wanted

On-going: More Microgrids



Some new projects: VSYNC

- http://www.vsync.eu/
- **Virtual Synchronous Machines** (**VSG**'s) For Frequency Stabilisation In Future Grids With A Significant Share Of Decentralized Generation.

Some new projects: ADDRESS

- ADDRESS stands for the 'Active distribution networks with full integration of demand and distributed energy resources'.
- Its aim is to deliver a comprehensive commercial and technical framework for the development of 'active demand' in the smart grids of the future.
- http://www.addressfp7.org

address
interactive
energy

Some new projects: 11 * 7MW wind turbines on transmission grid

- Enercon E-126
- Rated power: 6 MW (to be 7MW)
- Estimated production: 18 GWh
- Total height: 198 m
- Rotor diameter: 127 m
- Gearless Direct Drive generator
- Low rotational speed (12 rpm)
- To demonstrate: (commercial) delivery of ancillary services to the transmission grid

National and regional projects

- Many governments have approved funding to demonstrate smart grids, including microgrids
  - Germany: Mannheim
  - Belgium: Linear-project (4000 houses)
  - …