Three challenges for the Green Net

Use case and scenario I – Greening the Network

Energy consumption optimization through dynamic management and control of networking equipment, user devices and network domains, by

- Self-adapting load-aware mechanisms on-board core and access network devices to (locally and individually) trade performance with power consumption
- Proxying user presence
- Cooperation among distributed networking equipment to achieve coordinated power-saving strategies

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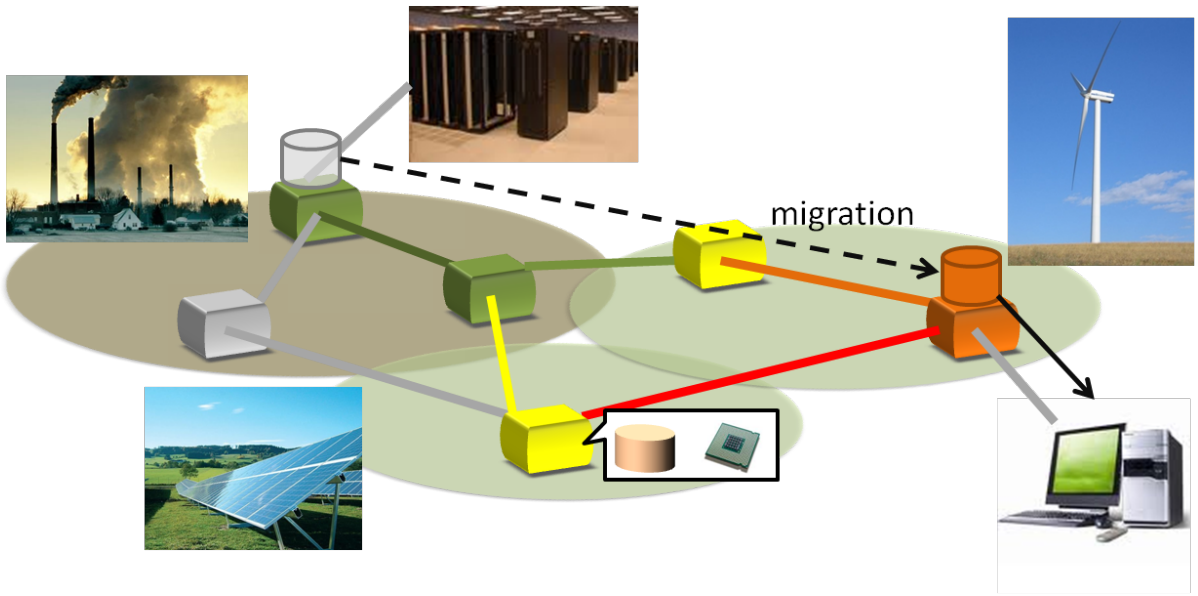
Use case and scenario II – Combining green power sources and ICT resources

ICT energy consumption optimization by dynamically managing the computational, storage and networking resources being aware of green energy production:

- Localize and bind computational, storage and networking resources and (green) energy sources.
- Migrate functionalities, tasks and contents to optimize energy efficiency.
- Adapt the energy profiles of devices (smart standby and power modulation) according to the network and computational load allocation.



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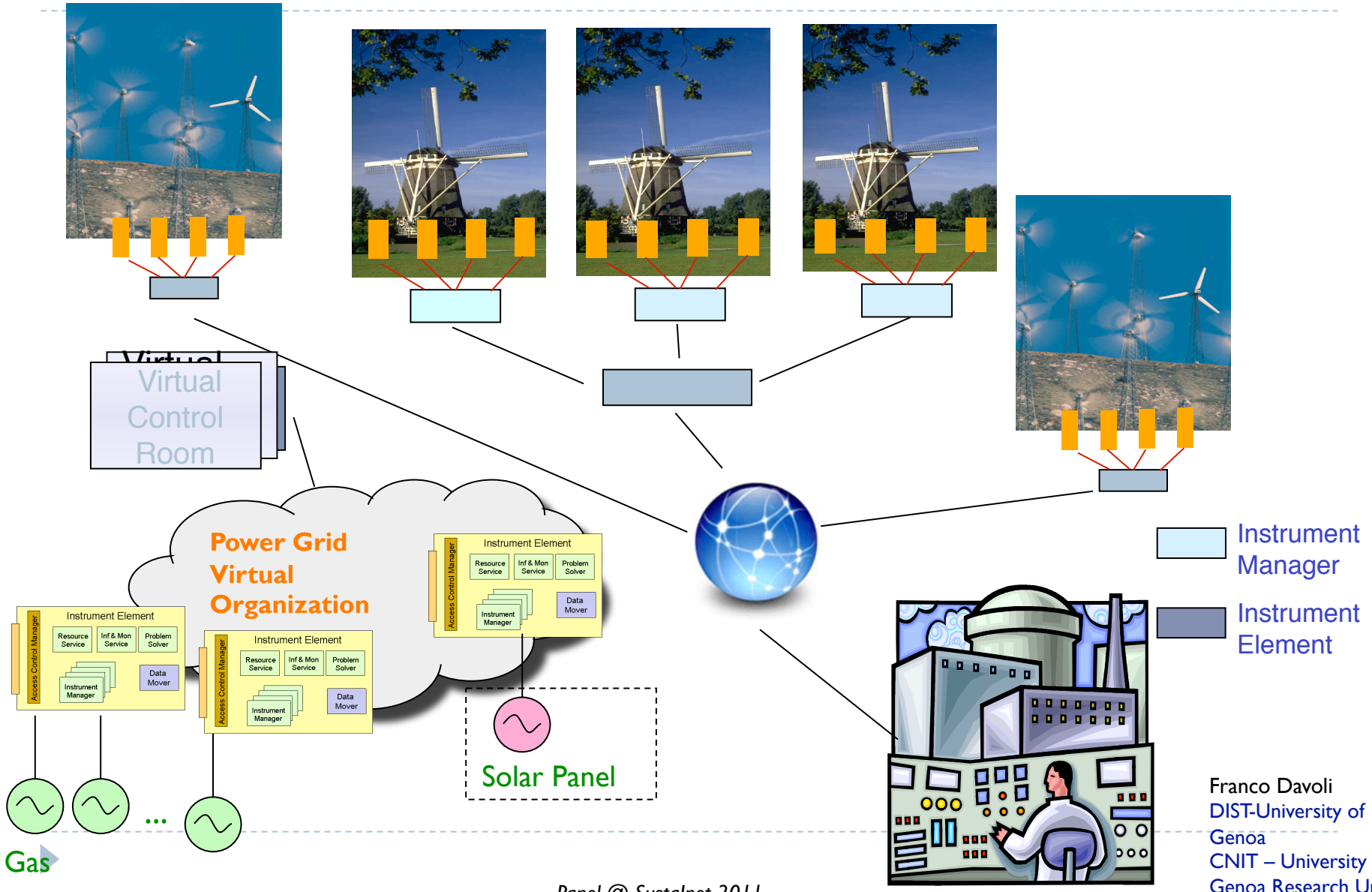
Use case and scenario III – Networking for the Smart Grid



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Use case and scenario III – Networking for the Smart Grid

Provide networking support to smart power grid operations, by

- Collecting and distributing power consumption data from producer and consumer devices (¡Internet of Things!)
- Distributing control actions (from revisited control and optimization strategies taking into account computational power expenditure in the overall power budget)
- Cross-domain interaction among **telecommunication network**, **grid/cloud**, and **energy production/distribution network**

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Three challenges for the Green Net

Which innovative technologies and what kind of experimentation environment (for the TLC network)?

- Integration of networking, computational and storage capabilities in the Internet nodes
- Smart energy consumption reduction technologies (smart standby and power modulation techniques) in all Internet devices
- Software based nodes (routers)
- Virtualization

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