



ICT Enablers for Smart Energy

EU FP7 FI-PPP FINSENY
(Future INternet for Smart ENergy)
<http://www.fi-ppp-finseny.eu/>

presented by Dr. Johannes Riedl, Siemens AG
on behalf of the FINSENY project

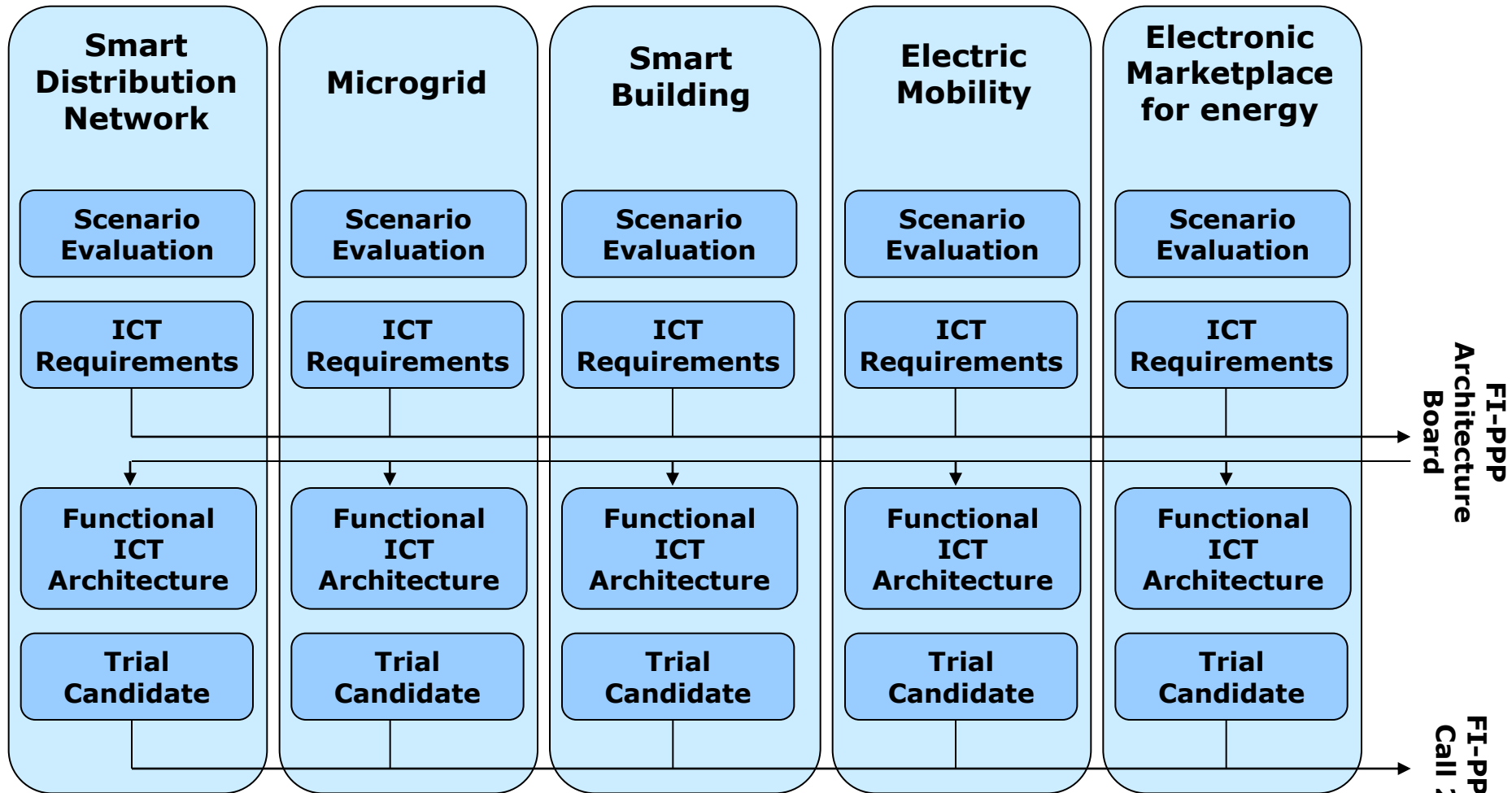


FINSENY consortium





FINSENY Scenarios





Further Activities



- Assessment of FINSENY related activities in Europe
- Smart Grid Stakeholder Group
- Standardization strategy / contributions
- Regulation recommendations
- Security
- Domain specific enablers



ICT Requirements: Identified Future Internet Services (1)



- **Ubiquitous and cost-efficient connectivity service** for any device (e.g., sensor/actuator, power aggregation and transport nodes, servers)
- **E2E Connectivity services**, including a suitable interface

	Connectivity Service 1	Connectivity Service 2	...	Connectivity Service n
Bandwidth	~ 10kbs	~ 100Mbps		
Max. Delay	~ 100ms	-		
Max. Jitter (Determinism)	~ 1ms	-		
Degree of reliability	Failover in case of single fault without data loss	None		
Packet-loss	< 10 ⁻⁹	< 10 ⁻³		
Scalability within one domain	~100	~ 10 Mio		

Examples

"deterministic communication"

"best effort"



ICT Requirements: Identified Future Internet Services (2)



- **Auto-configuration** on different layers, e.g.,
 - integration of a network device in the communication layer
 - integration of a device with its data in the information layer
 - integration of a device with its services in the function layer
- **Data Bus services** providing e.g.,
 - different communication services (e.g., request/response, publish/subscribe, transactions)
 - information exchange between different services
- **SLA management, monitoring & enforcement services**



ICT Requirements: Identified Future Internet Services (3)



- **E2E security services, e.g.,**
 - Authorization of data, event information and commands
 - Data integrity
 - Data confidentiality
 - Cryptographic protection and key management
 - Intrusion detection, DoS protection
- **Scalable parallel and distributed processing platforms, e.g.,** for energy flow calculation & forecasting, large scale planning, simulation.
- **Scalable distributed database solutions:** handling of many tables with a wide variety of sizes, attributes, and relationships



ICT Requirements: Identified Future Internet Services (4)



- **Data access services** for end-users, service providers, business partners:
 - Local and remote access
 - Support of many different access roles
- **Monitoring and management services**, e.g.,
 - Monitoring and management of (communication and energy) assets, from single devices to complete networks, including
 - Asset localization, topology detection, visualization
 - Fault detection/monitoring
 - Remote SW/FW updates
 - Data backup and recovery for critical SW, configuration data, SCADA system data,...
- **Billing and payment services**



Status & Next steps



Done

- Identification & description of use cases within scenarios
- First collection of ICT requirements within scenarios
- Consolidation of first ICT requirements throughout the scenarios

Ongoing

- Coordination with the other FI-PPP usage areas
 - requirements covered by generic enablers
 - requirements covered by specific enablers → taken care by FINSENY

Not yet started

- Perform second iteration of ICT requirements evaluation & enabler specification
- Develop consistent functional ICT architecture for FINSENY scenarios
- Plan for large scale trials



Thank you !

Any Questions?