



# GRID+ Interaction Workshop

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## Integration of Smart Customers

Vienna, 25 April 2013

*With the support of  
AIT – Austrian Institute of Technology*



[www.gridplus.eu](http://www.gridplus.eu)



# GRID+ Workshop

## Integration of Smart Customers

### Agenda



- 9:00 – 10:00** Introductory presentations (*AIT, BMVIT, EEGI/GRID+, E-CONTROL*)
- 10:00 – 11:00** Presentation of projects interacting in the event
- 11:00 – 11:30* *Coffee break*
- 11:30 -12:15** Panel discussion I: *Increase Network flexibility in European Smart Customer Activities*
- 12:15 – 13:00** Breakout discussions
- 13:00 – 14:15* *Networking lunch*
- 14:15 – 14:30** Report-out and discussion Panel I
- 14:30 – 14:45** Presentation: Demand Side Integration in the Smart Grid Model Region Salzburg (SGMS)
- 14:45 – 15:30** Panel discussion II: *Energy efficiency in new or refurbished urban districts using smart distribution grids*
- 15:30 – 16:15** Breakout discussions
- 16:15 – 16:45** Report-out and discussion Panel II
- 16:45 – 17:00** Closing comments and next steps



# GRID+ Workshop

## Integration of Smart Customers



**Welcome!**  
**Herzlich Willkommen!**





# GRID+ Workshop Integration of Smart Customers



## Introductory presentations

### **Michael Hübner (BMVIT)**

Abteilung III/I 3 - Energie- und Umwelttechnologien

*Keynote address*

### **Michele de Nigris (RSE)**

Director of T&D Technologies, GRID+ Coordinator

*The role of GRID+ and EEGI*

### **Florian Pichler (E-Control Austria)**

Customer Affairs

*A 2020 Vision for Europe's Energy Customers*



# GRID+ Interaction Workshop

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## Integration of Smart Customers

Presentation of projects interacting in the event



# Grid4EU



## Innovation for Energy Networks



### Main issues addressed / objectives:

- **C1 – Integration of smart customers**
  - > *Implementing active, more efficient participation of customers to electricity markets (active demand)*
  - > *Improving peak load management through increased interactions between network operations and electricity customers*
- **C2 – Integration of DER and new uses**
  - > *Using more renewable energy sources connected to distribution networks*
  - > *Securing energy supply and network reliability (through EV, storage)*
  - > *Integration of storage in network management*
- **C3 – Network operations**
  - > *Improving MV and LV networks supervision & automation*
  - > *Operating islanded areas*

**Budget:** 54M€



# Grid4EU

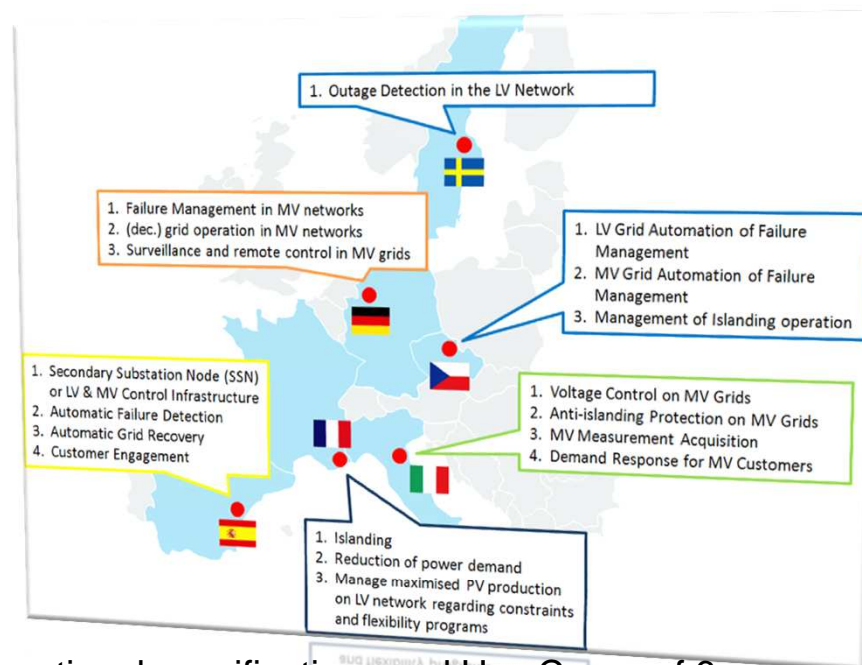


## Innovation for Energy Networks

### Results achieved:

8 common KPIs defined at project level and more KPIs defined at demo level

	RWE	WATTENFALL	ISE RICHIOIA	Enel	CEZ	ERDF	
Energy losses (GW2.2_KPI.1)	✓		✓	✓	✓	✓	The monitoring and in some cases minimization of energy losses through different solutions presented in DEMO projects.
Fault Awareness, Localization and Isolation Time (GW2.2_KPI.2)	✓	✓	✓		✓		Faster reaction time to grid failures and faults
Network Hosting Capacity (GW2.2_KPI.3)	✓			✓		✓	Increased hosting capacity of RES in the MV and LV grid
Line voltage profiles (GW2.2_KPI.4)				✓	✓	✓	Power Quality improvements (in this case voltage quality)
Islanding metric (GW2.2_KPI.5)					✓	✓	Voltage deviation during islanding
Use of standards (GW2.2_KPI.8)	✓		✓	✓		✓	Actual use of standards in different DEMOs with respect to initially declared use
Recruitment (GW2.2_KPI.6)			✓	✓		✓	Fraction of consumers and producers accepting participation in the different demos
Active Participation (GW2.2_KPI.7)			✓	✓		✓	Fraction of consumers/producers actively taking part in the different demos



Functional specifications and Use Cases of 6 demonstrators defined according to a common methodology (Smart Grid Architecture Model – SGAM)

- Description of the functional and technical architecture with standards implemented (ongoing work with mandate M490)
- Joint work with GRID+ on Scalability and Replication studies methodology
- Knowledge Sharing at GRID+ / EEGI events (e.g. InnoGrid2020+, Hannover Messe)



# PREMIO Project



## Implementation in Region PACA, a replicable local energy architecture of smartgrids address :

- **Smartgrids with operational...**
  - Integration of distributed generation
  - Dynamic load control
  - Energy efficiency initiatives
  - Users Behavior analysis
- **To learn lessons during the project**
  - Development of architecture
  - Installation of equipment
  - Recruitment of customer
  - Improvement of demand response acceptability

**Budget:** 8 M€



## Results achieved:

- **Return of experience in architecture development**
  - Necessity of telecommunication actor
- **The business model for residential customer need low cost installation**
- **User behavior is a major part of smartgrids demonstrator**
- **Experimental data coming from management of different equipment**

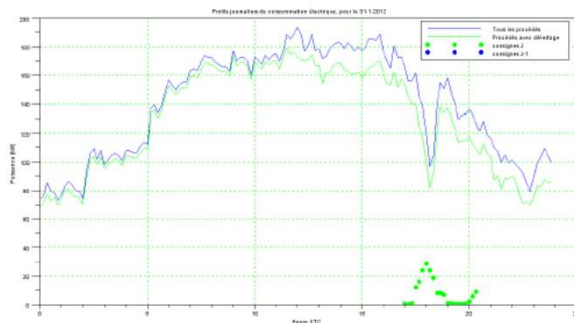


Figure 66 : Journée du 31/01/2012 - Profil de consommation électrique de l'ensemble des hébergeurs (bleu). Profil de consommation électrique de l'ensemble des hébergeurs dont l'expérimentation a effectivement délésté cette journée là (vert). Les points bleus et verts représentent respectivement la somme des valeurs des consignes J-1 et consignes J envoyées aux expérimentations sur la journée. Par convention, l'énergie produite par les MICROSCOPE est soustraite, puisqu'il s'agit d'un 'soulagement' pour le réseau local, à l'inverse sa recharge est ajouté à la consommation électrique globale.





# MODELEC

## Modelling the Behaviour of Residential People Facing Demand Response



### Main issues addressed/objectives:

- Active demand
- Participation of residential consumers to the grid security
- Enabling demand response with residential electrical devices (electrical heating mainly)
- Conducting behavioural study to ensure the engagement
- Improvement of a Home energy Management System (HEMS)
- 1000 customers involved

**Budget:** 2,1 M €



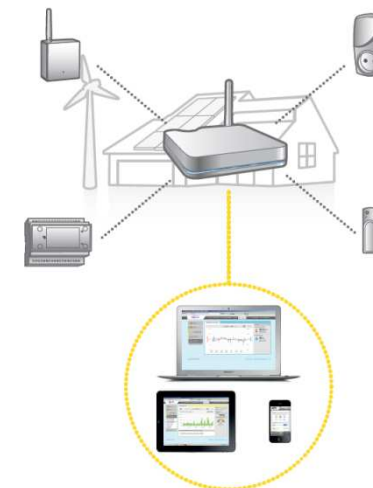
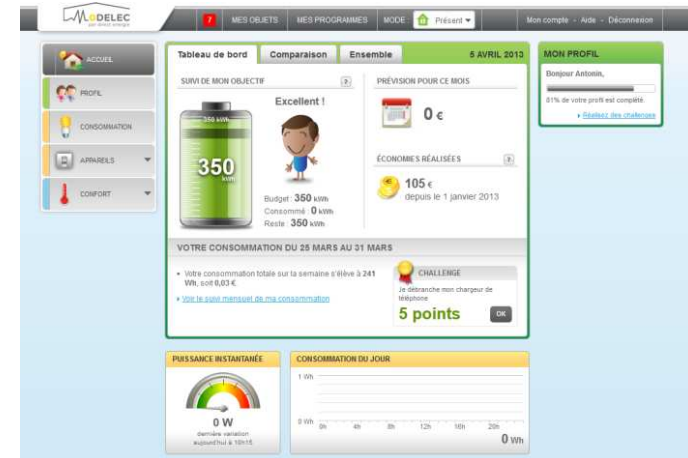
# MODELEC

## Modelling the Behaviour of Residential People Facing Demand Response



### Results achieved:

- Residential demand response must be correlated with HEMS
- Key drivers:
  - Be part of a “community”
  - Explaining the reasons of DR
  - Giving the possibility of opting out
- Partners: Poweo Direct Energie, Ijenko, GES, CEAQ (Sorbonne university)





# LINEAR

## Local Intelligent Networks and Energy Active Regions



### Main issues addressed/objectives:

- **Implement demand side management in a large-scale demo in Flanders**
- **Flemish project, started in 2009, in the coming months the first demand response tests**
- **The following business cases are tested:**
  - ✓ **Wind balancing for BRP**
  - ✓ **Defer grid investments for the DSO by optimizing transformer lifetime and preventing power quality issues**
  - ✓ **Portfolio management, time-of-use pricing schemes**

**Budget:** 40 M€



# LINEAR

## Local Intelligent Networks and Energy Active Regions



### Results achieved:





# AMI1Cy Project

Advanced Metering Infrastructure Cyprus



## Main issues addressed/objectives:

- Investigate interoperability of an AMI system based on PLC communication infrastructure
- Availability of real-time price signals
- Application of time-of use tariffs
- Application of prepaid meters
- Application of Net Metering for RES DG
- Possibility of visualizing and controlling power consumption
- Evaluate Cost and Benefit analysis for the full rollout of an AMI system in Cyprus

**Budget:** 1,8 M €

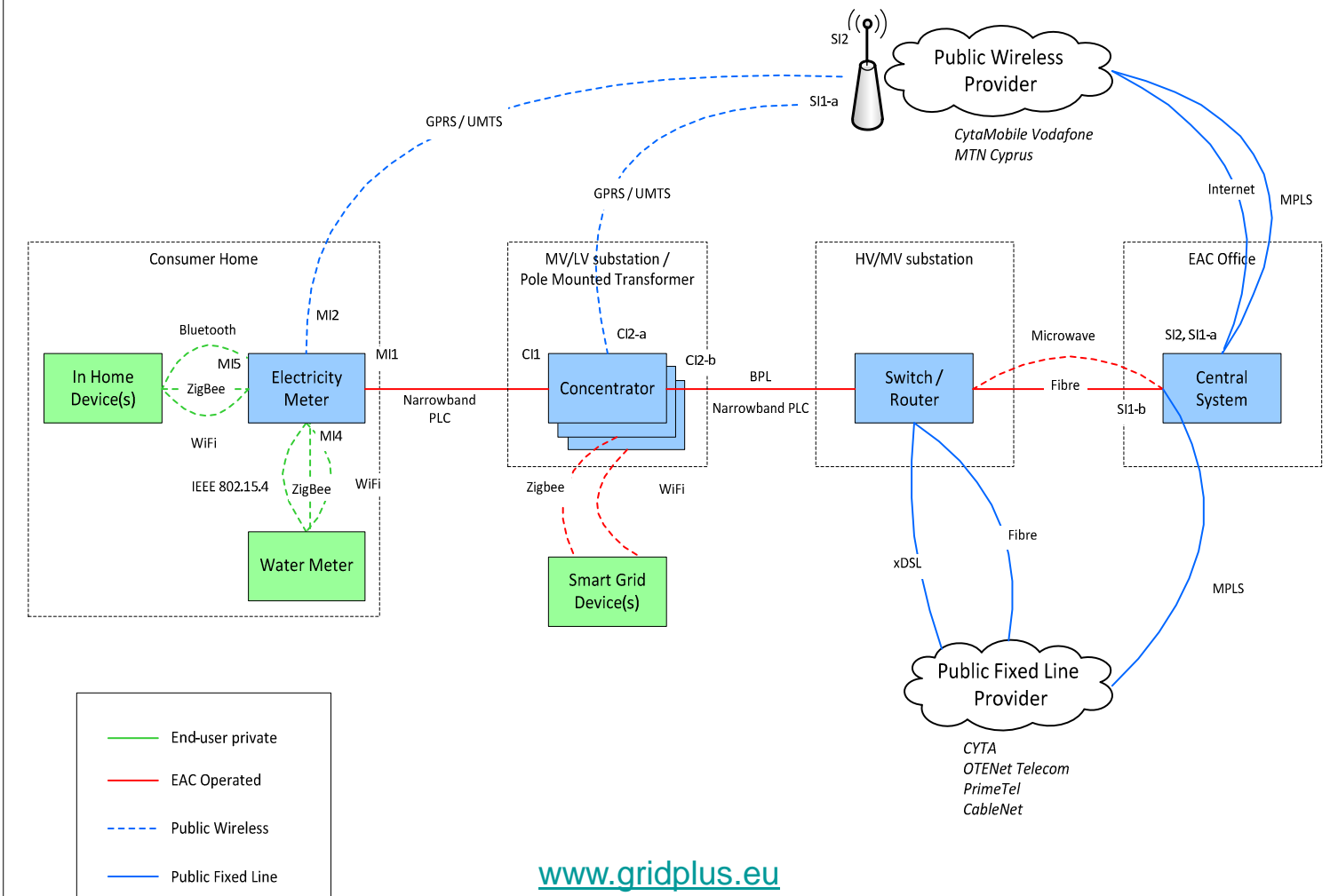


# AMI1Cy Project

## Advanced Metering Infrastructure Cyprus



Telecommunication Options recommended for EAC's Smart Metering / Smart Grid





DG ENERGY

## S3C

### Smart Consumer - Smart Customer Smart Citizen



### Main issues addressed/objectives:

- **EEGI-objective: Peak shaving and energy saving with a full range of incentives**  
(Cluster 1: Integration of smart customers, C1.2.2)
- **Shortcomings in Smart Grid Discussion:**
  - concentration on functions of smart meters
  - restriction to monetary stimuli
  - ignoring needs and scepticism on the customers' side
  - little insight in advanced socio-economic mean

“We thought we were undertaking an infrastructure project but it turned out to be a customer project”

Chris Johns, President of PG&E

- **S3C: concentration on social and marketing issues**

**Budget:** 2.1 mio €

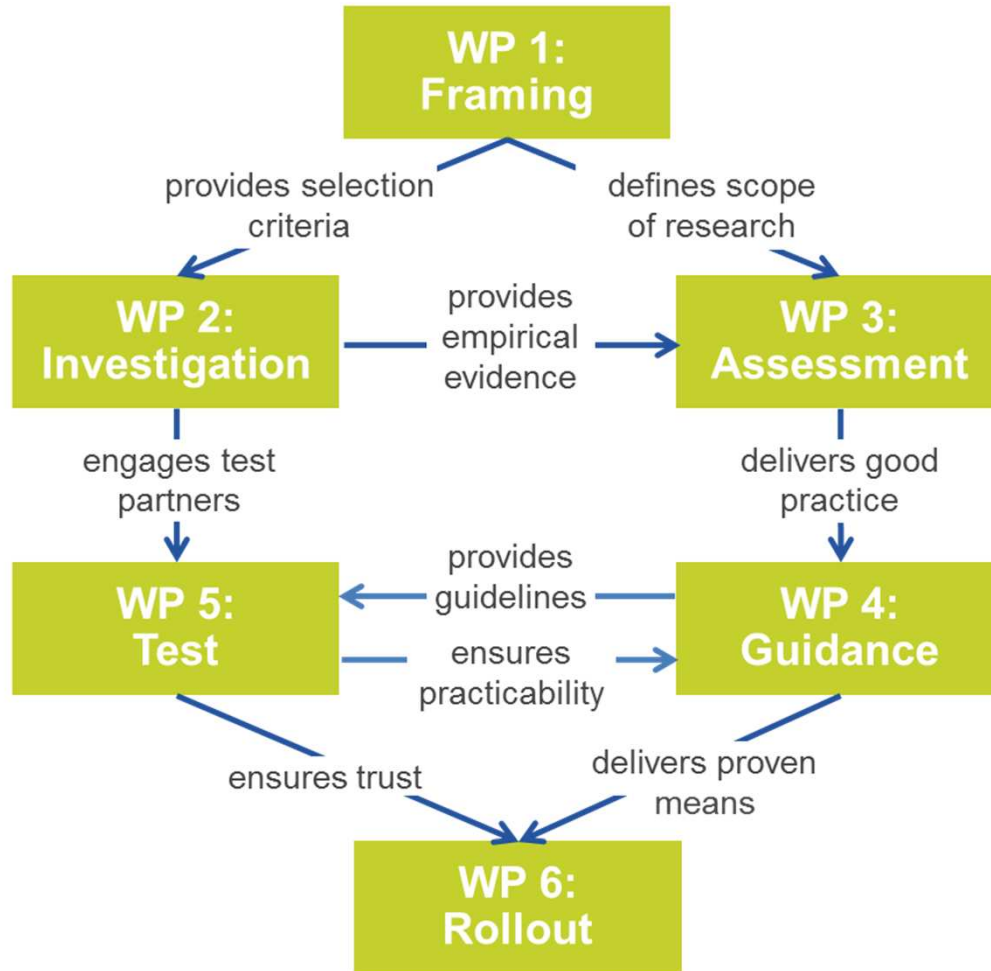




SMART CONSUMER  
 SMART CUSTOMER  
 SMART CITIZEN



WP 7:  
 Management



**Results planned:**

- D3.2: analyses of individual projects
- D4.3: interactive toolkit with guidance for practitioners
- D5.1: detailed case analyses of 'Family of Projects' members who used the guidelines
- D5.2: Recommendations for policy makers, regulatory and standardisation bodies



# S3C

## Smart Consumer - Smart Customer Smart Citizen



## EXPECTED RESULTS

- interactive toolkit with robust guidance for practitioners
- report with detailed case analyses of 'Family of Projects' members who used the tools and the guidelines
- general and country specific recommendations for policy makers, regulatory and standardisation bodies and associations to support setting favourable framework conditions



DG CONNECT



Future Internet Smart Utility Services



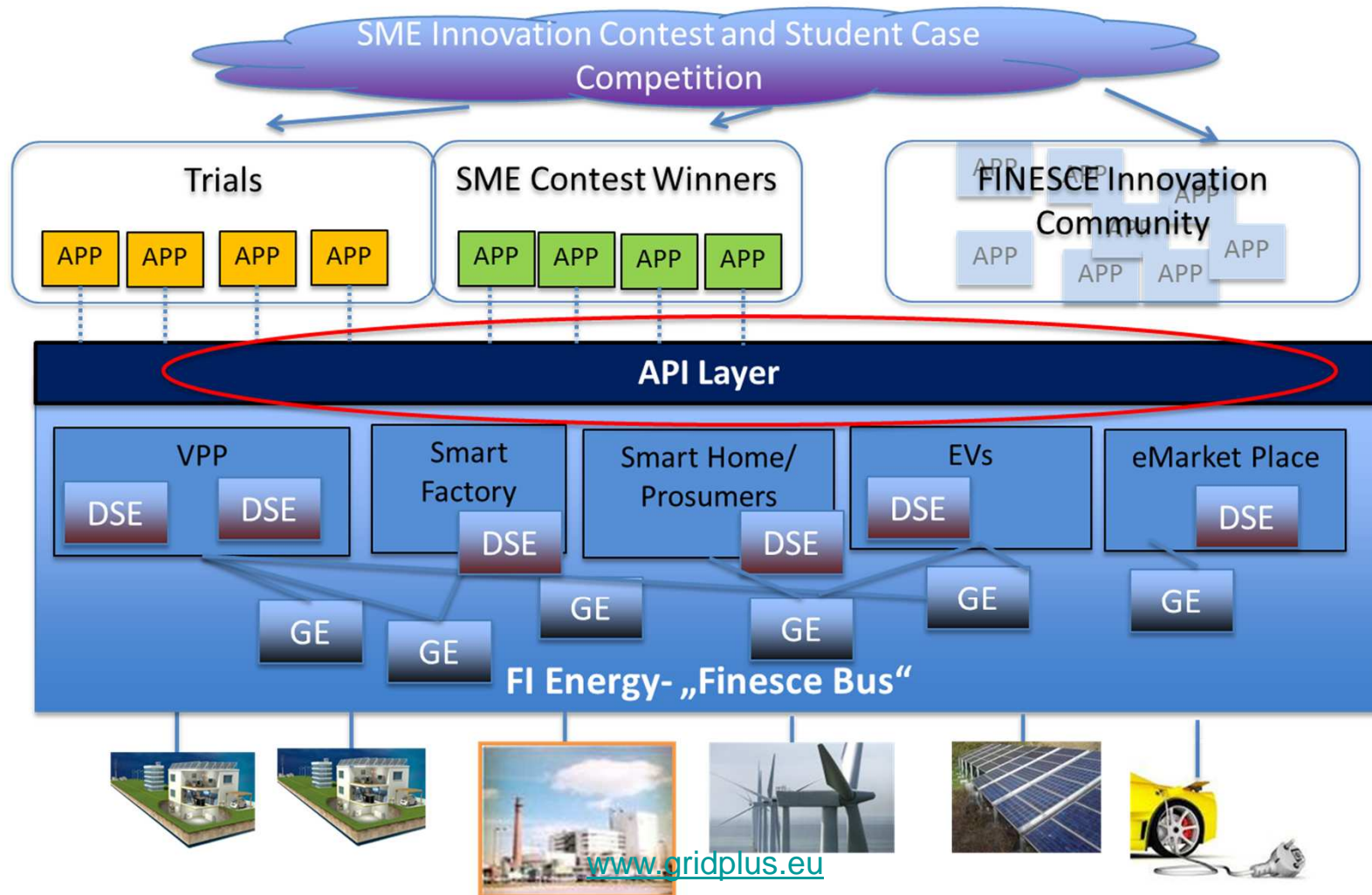
## Main issues addressed/objectives:

- **Future Internernet PPP:**  
provision and test of enablers for all objectives of EEGI
- **Major issues:**
  - internet of things
  - smart home and smart city
  - electric vehicles
  - smart factory
  - security
  - market

>>>> **boost for smart applications in smart energy domain**

**Budget:** > 10 mio € [www.gridplus.eu](http://www.gridplus.eu)

### Future Internet Smart Utility Services



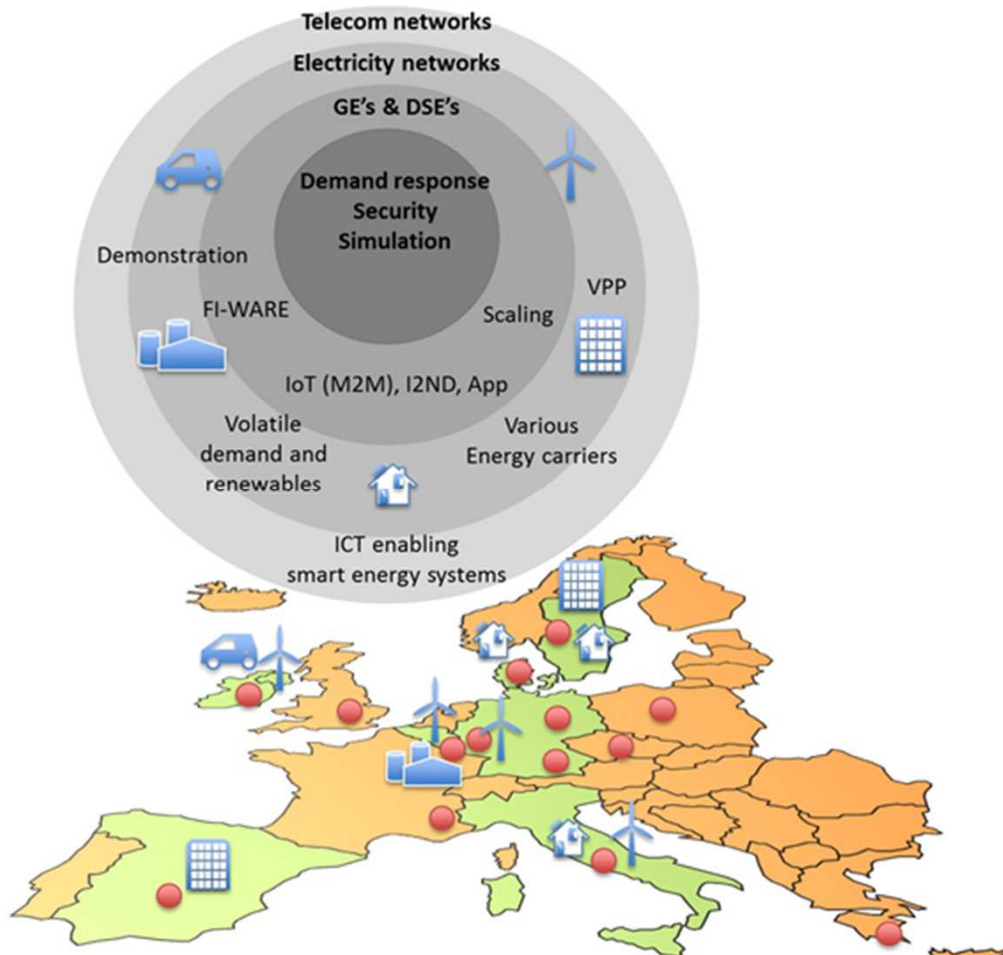


**Future Internet Smart Utility Services**

## Results planned:

- Generic and Domain Specific Enablers with interface definition (FINESCE-API), validated in field trials
- FINESCE Innovation Community
  - participants in FINESCE open call (1.25 mio €)
  - participants in FI PPP Phase III call
  - participants of Horizon 2020 joint projects

# FINESCE Overview



Transform Energy infrastructures towards Smart Energy systems by trialling network enabled applications using common functionality provided by Fi-WARE, developing novel service layer enhancements encapsulated in the FINESCE-API, and by enabling the development of innovation opportunities for ICT and Utility actors as well as in the community providing public services.

- **To make available a set of scalable and interoperable applications in the Smart Energy Domain on the top of FI-WARE GEs**
- **To validate FI-WARE GEs in limited scale real life pilots, in an IP based architecture for Smart Energy Services, in 7 countries**
- **To prepare the ground for phase 3 large scale pilot set up and implementation by synchronization with the capacity building project**
- **To set up an open innovation energy-oriented ecosystem for the flourishing of ICT SMEs which will ensure the long term sustainability of the FI-WARE platform**
- **Raising awareness of, and innovation transfer to, the energy stakeholders to accelerating their take-up of innovation in the energy domain and secure the long term sustainability of the FINESCE business ecosystem**



# GRID+ Workshop Integration of Smart Customers



## Panel I

*Moderated by Rainer Bacher, Bacher Energie*

# ***Lessons Learned in European Smart Customer Activities – How is increased network flexibility achieved?***

*Panellists:*

- *Venizelos Efthymiou, Electricity Authority of Cyprus*
- *Pascal Rioual, Capenergies*
- *Antonin Coliche, Poweo Direct Energie*
- *Maja Felicia Bendtsen, Østkraft*



# GRID+ Workshop Integration of Smart Customers



## Panel I

***Lessons Learned in European Smart  
Customer Activities – How is increased  
network flexibility achieved?***

***Report out and discussion***





# GRID+ Workshop Integration of Smart Customers



## Project Presentation

**Demand Side Integration  
in the Smart Grid Model Region Salzburg (SGMS)**



**SMARTGRIDS**  
*Model Region Salzburg*

**Mr. Daniel Reiter (Salzburg AG)**



# GRID+ Workshop Integration of Smart Customers



## Panel II

*Moderated by Peter Verboven, VITO*

# ***Enabling maximum energy efficiency in new or refurbished urban districts using smart distribution grids***

*Panellists:*

- *Daniel Reiter, Salzburg AG*
- *Ludwig Karg, BAUM Group*
- *Pieter Vingerhoets, KU Leuven,*
- *Florian Pichler, e-Control*



# GRID+ Workshop Integration of Smart Customers



## Panel II

***Enabling maximum energy efficiency in  
new or refurbished urban districts  
using smart distribution grids***

***Report out and discussion***



# GRID+ Workshop Integration of Smart Customers



## *Closing comments*



# GRID+ Workshop Integration of Smart Customers



***Thank you and see you soon!***  
***Vielen Dank und bis bald!***

**Please visit [www.gridplus.eu](http://www.gridplus.eu) for more information  
and news on future interaction events**