



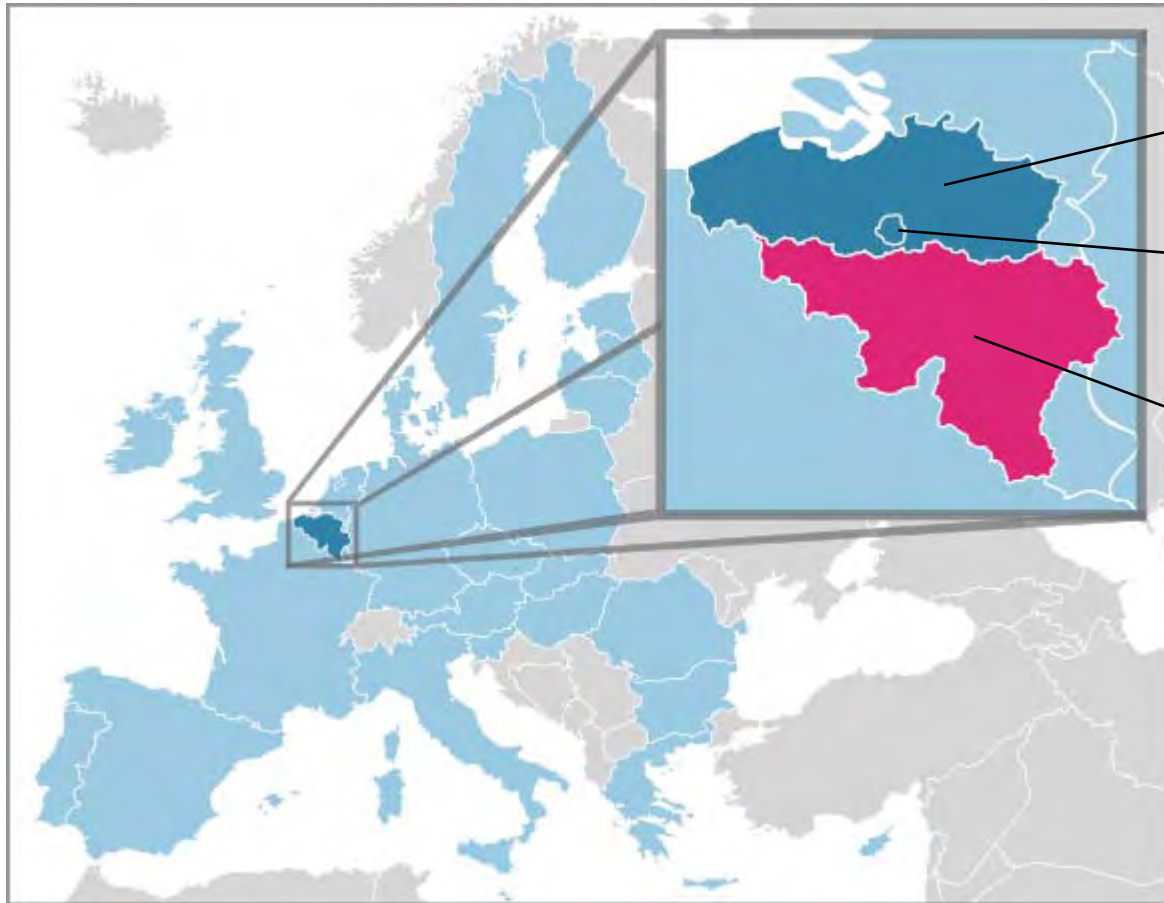
# Infrax's vision on smart grids

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**infrax**

# Belgium - Regions



Flanders

Brussels

Wallonia

# Infrac within Flanders





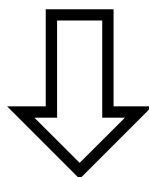
**Interelectra**

Uw basis van vertrouwen

**iveg**



Energie-  
en teledistributie



**infrax**

niet zichtbaar, wel belangrijk!

**infrax**

# Infrac activities Overview

<b>Activity</b>	<b>Municipalities</b>	<b>Customers</b>
Connections	<b>102</b>	<b>1 614 000</b>
Electricity	<b>68</b>	<b>575 000</b>
Natural gas	<b>82</b>	<b>235 000</b>
Cable television	<b>77</b>	<b>504 000</b>
Sewerage	<b>56</b>	<b>300 000</b>
employees		<b>1 370</b>

# Facing network challenges



**Renewables**



**PHEV**



**Smart Metering**



# What are smart grids?

The whole of technology to answer to the new expectations of the distribution networks

- Existing technologies: smarter approach, investment optimisation thanks to more knowledge through measurements
- New technologies: need for standardisation, regulation and testing  
-> opportunities for industry !

# Infrax's main concern

- In Infrax territory: high concentration of dispersed generation. At several places the 2020 targets are already realised and the limits of the existing network are reached
- Nevertheless Infrax is searching for ways to integrate even more DG  
cfr. Political goal in province Limburg to become CO<sub>2</sub>-Neutral
- Need for quick and practical solutions!
  - Use of existing technologies
  - Pragmatic approach, not too academic
  - Real-life implementations



# From passive to active networks

1. Optimise existing network investments to increase hosting capacity



2. **Short term development:**  
smart inverters, adjusted network interface, smart EV chargers

Local optimisation @ PCC  
Tuning of DP, storage and load to the distribution network



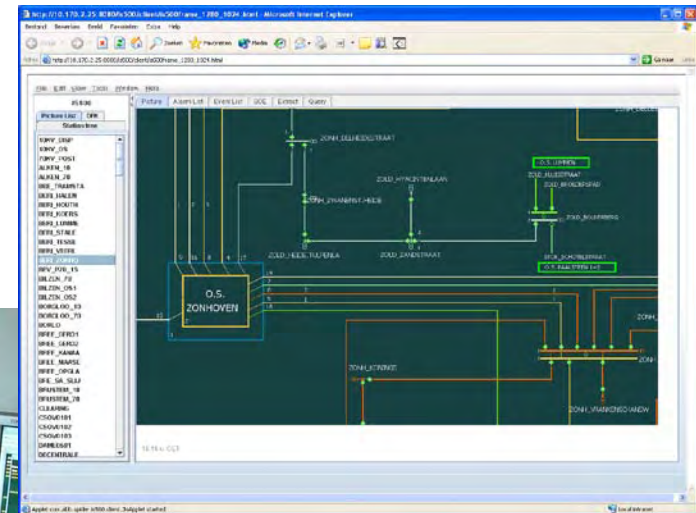
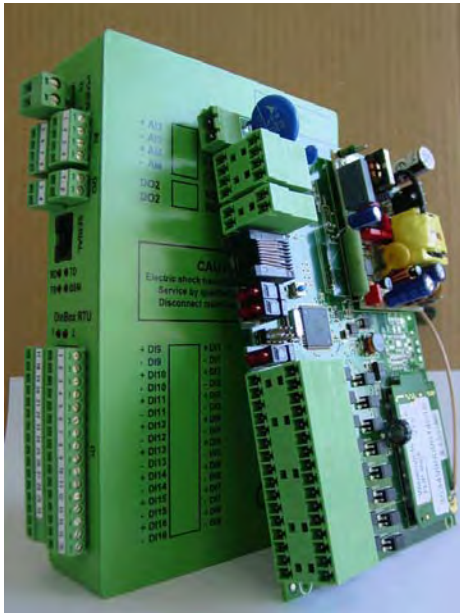
3. **Long term development:**  
Communication technology, protocols, legislation, pilot projects to test technology in real life situations

Global optimisation of energy fluxes over the whole distribution network



# What is Infrac doing now ?

- Monitoring and measuring:
  - digital protection relays, telemonitoring short circuit indicators,...
- Active network management:
  - real-time control of the MV-network, Distribution management system, advanced automation of MV-network,...



# Infrax and development

- Flemish smart grid platform
- Linear Project “Intelligent networks and smart decentralised energy production in Flanders”
- Pilot project smart meters – Proof of concept of broadband HFC technology.
- Meta-PV project



# European demonstration project Meta-PV



- Active electrical support of the existing distribution network by decentralised production
- Large scale demonstration
- Start october 2009
- Duration : 4,5 years
- Project budget:
  - Innovative part: 9 million euro (partly subsidized)
  - Solar panels: 30 million euro (private investment via LRM)

# PROJECT PARTNERS



University of Ljubljana  
Faculty of *Electrical Engineering*





# META-PV objectives



## Active network control and active inverters

- Increase of DG capacity of 50%
- Investment ~10% of network extension cost
- Fault ride through
- No limiting PV in parts of the network
- Islanding possible
- Maintaining Power Quality, Safety and reliability of power supply

LARGE SCALE demonstration in EXISTING networks

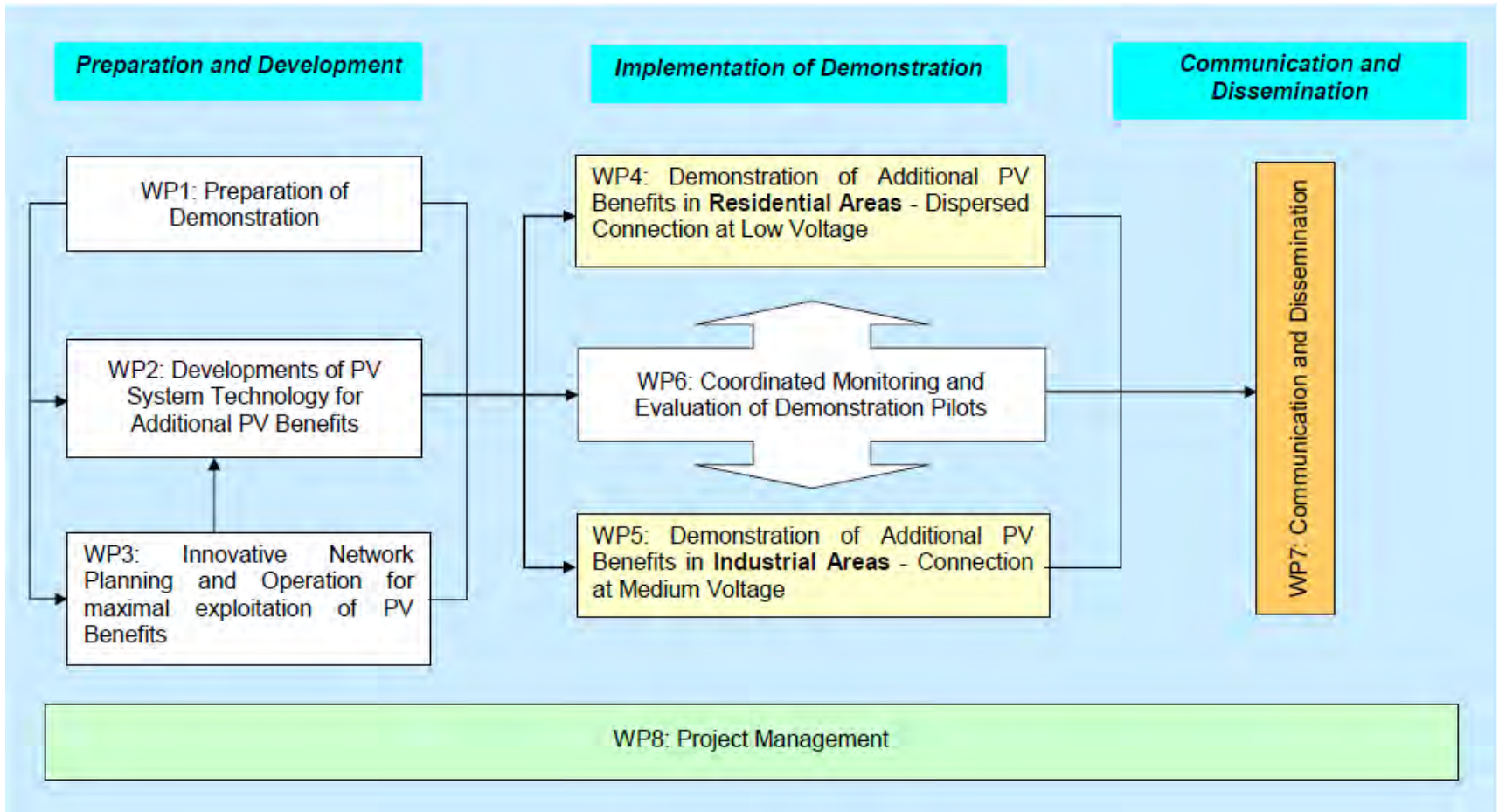


# Meta-PV Concrete



- Phase 1 : preparation and development from both PV and network point of view
  - Development of new inverters with advanced possibilities
  - Elaboration of improved planning and operation of distribution networks
- Phase 2 : 2-level demonstration in Limburg
  - LV-level: in existing residential areas:  $\pm$  130 PV-systems 3-5 kWp
  - MV-level: existing industrial areas:  $\pm$  30 PV-systems 200 kWp
  - 10% with battery storage

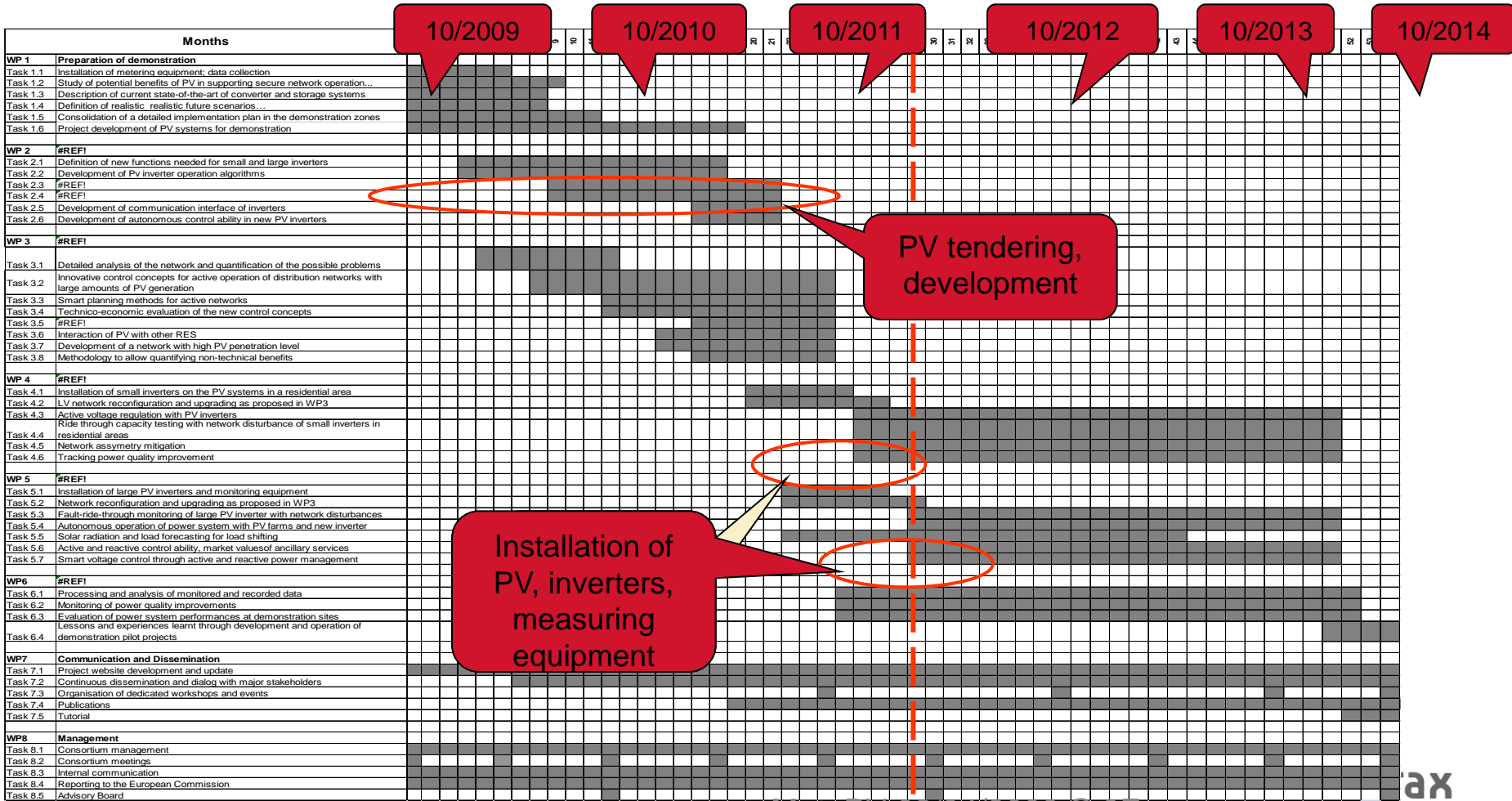
# Project structure



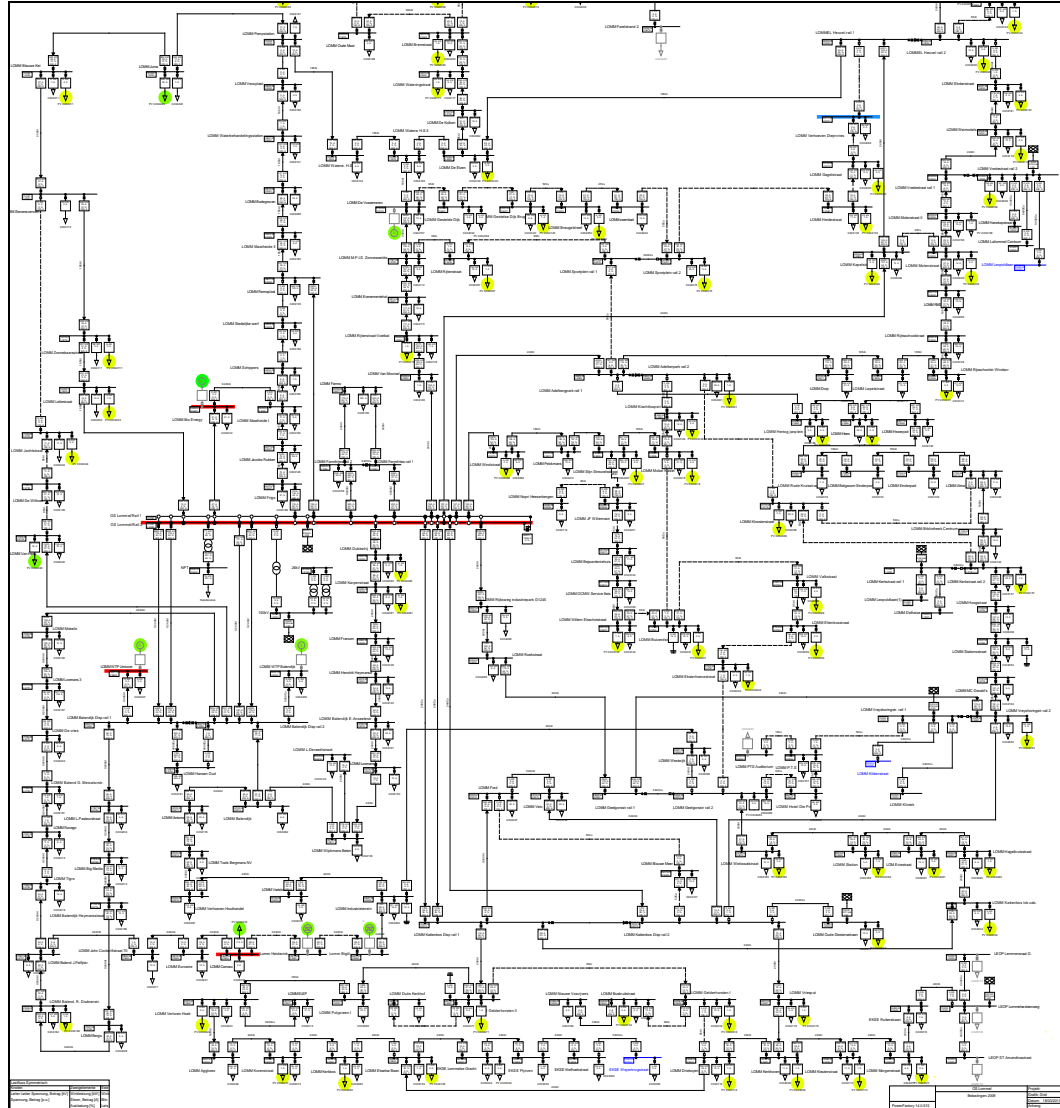


# Planning

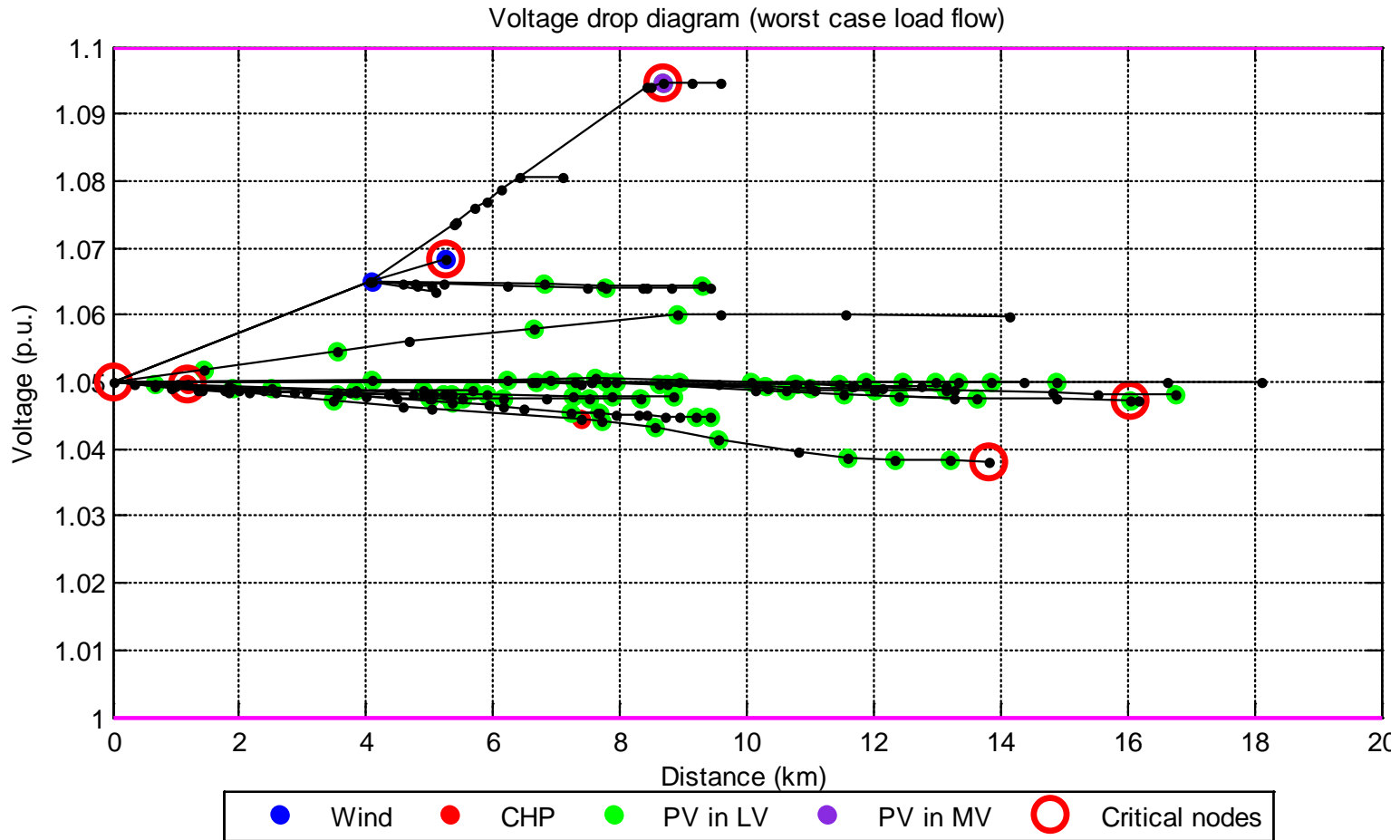
... operational in autumn 2011 !



# Considered MV network



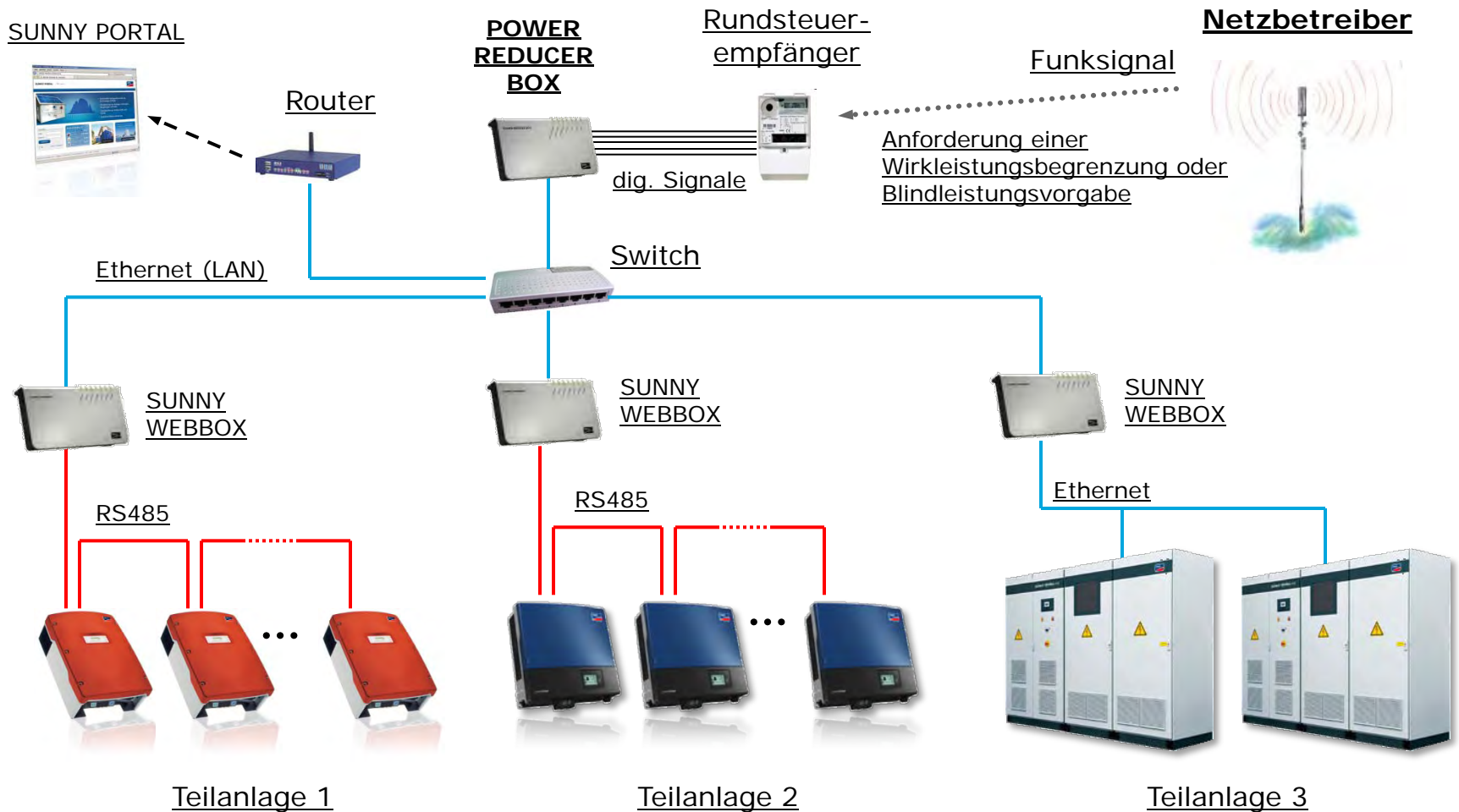
# Network analyses to determine the U- and I-hosting capacity



# Example of one considered LV network



# Example of communication solutions



■ [www.metapv.eu](http://www.metapv.eu)

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