a large system view French Pilot project on Smartgrids

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On behalf of the consortium

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GREENLYS

- Call for demo projects from (ADEME / French government)
- Pilot project proposal in two cities: Grenoble and Lyon
- Kick off November 2011

ADEME

Agence de l'Environnement et de la Maîtrise de l'Energie

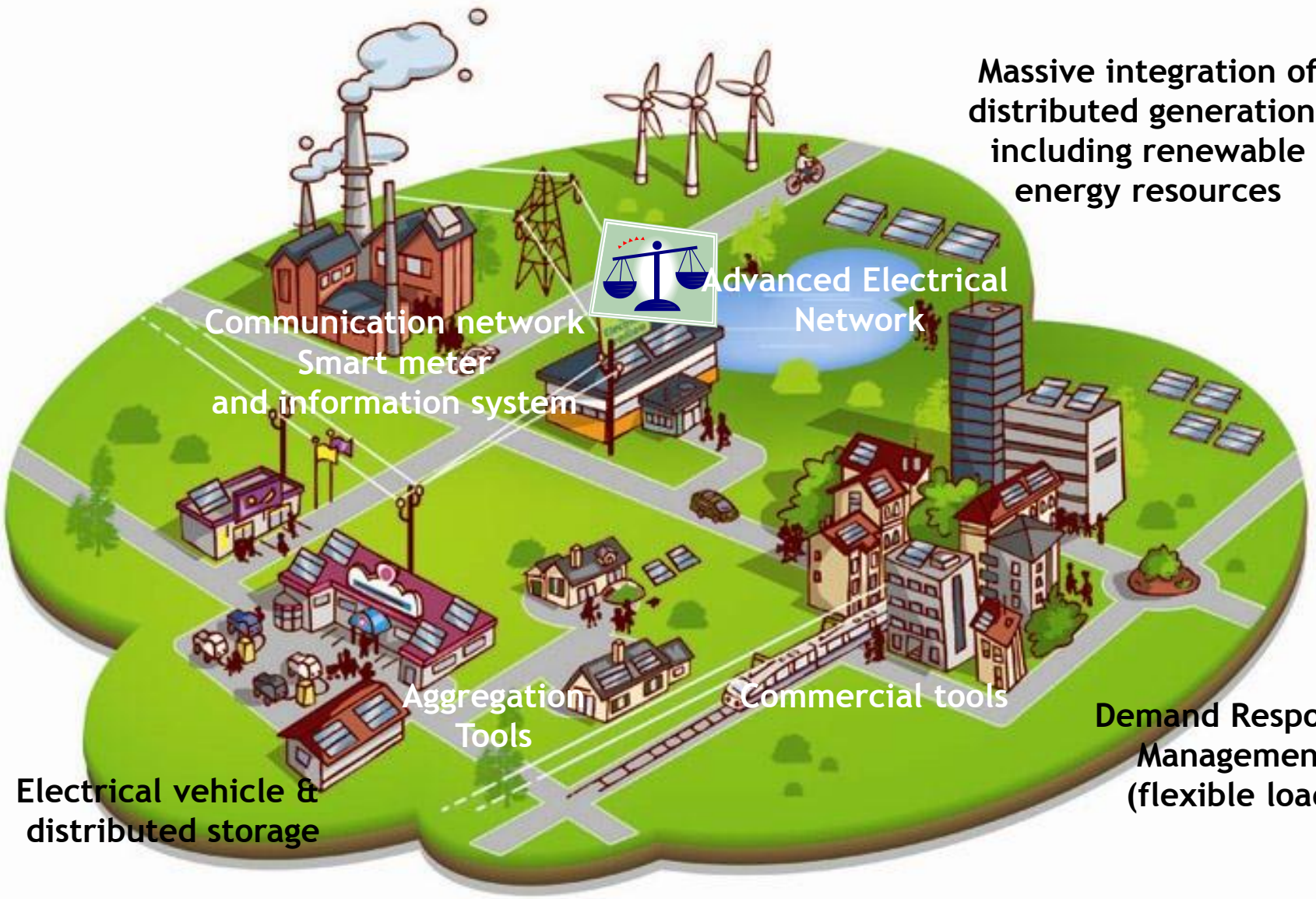
Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

VILLE DE LYON

GRANDLYON communauté

VILLE DE GRENOBLE

GREENLYS:A value through system view of Smartgrids



GREENLYS: Main characteristics

➢1-A consortium involving different types of smartgrids stakeholders

- ✓ Covering the value chain of the electrical system:
  - ✓DSO, TSO, suppliers, technology providers (energy systems, ICT)
  - ✓Universities and R&D centers
  - ✓End-users, local communities, producers associations

➢2-A project to build up a systemic vision

- ✓Coupling an advanced distribution network (operations and assets management) and advanced management of a complete DER portfolio (distributed generation, flexible loads and electrical vehicles) through AMI (Advanced Metering Infrastructure) including the LINKY smart meter

➢3-A demonstrator to experiment SG at real and significant scale

- ✓ Fours districts within two cities, representatives of a diversified population
- ✓ An ambition which could reach 2000 residential end-users (1000 in each city)
- ✓ Two complementary sites:
  - ✓ Nation wide DSO (ErDF – Lyon) and Integrated local DSO (GEG Grenoble)
  - ✓ Complementary experimentations (technological options, regulated or not tariff)

➢4- Expected results

- ✓ Analysis of the added value chain for market development
- ✓ Analysis of the transitions for larger scale smart grid deployment

The consortium

GreenLys

Electrical chain actors

RTE

TSO

Academic & Research center

Technology Providers

CORE CONSORTIUM TEAM

eRDF
ÉLECTRICITÉ RÉSEAU DISTRIBUTION FRANCE

Nation wide DSO
PROJECT COORDINATOR

LEPII

Economic University

Grenoble INP

Scientific University

Gaz Electricité de Grenoble

Local electricity company (integrated)

cea

R&D Center

GDF SUEZ

National suppliers

Energy Technology Providers

ALSTOM

Schneider Electric

Energy Technology Providers

Atos Origin

ICT Technology Providers

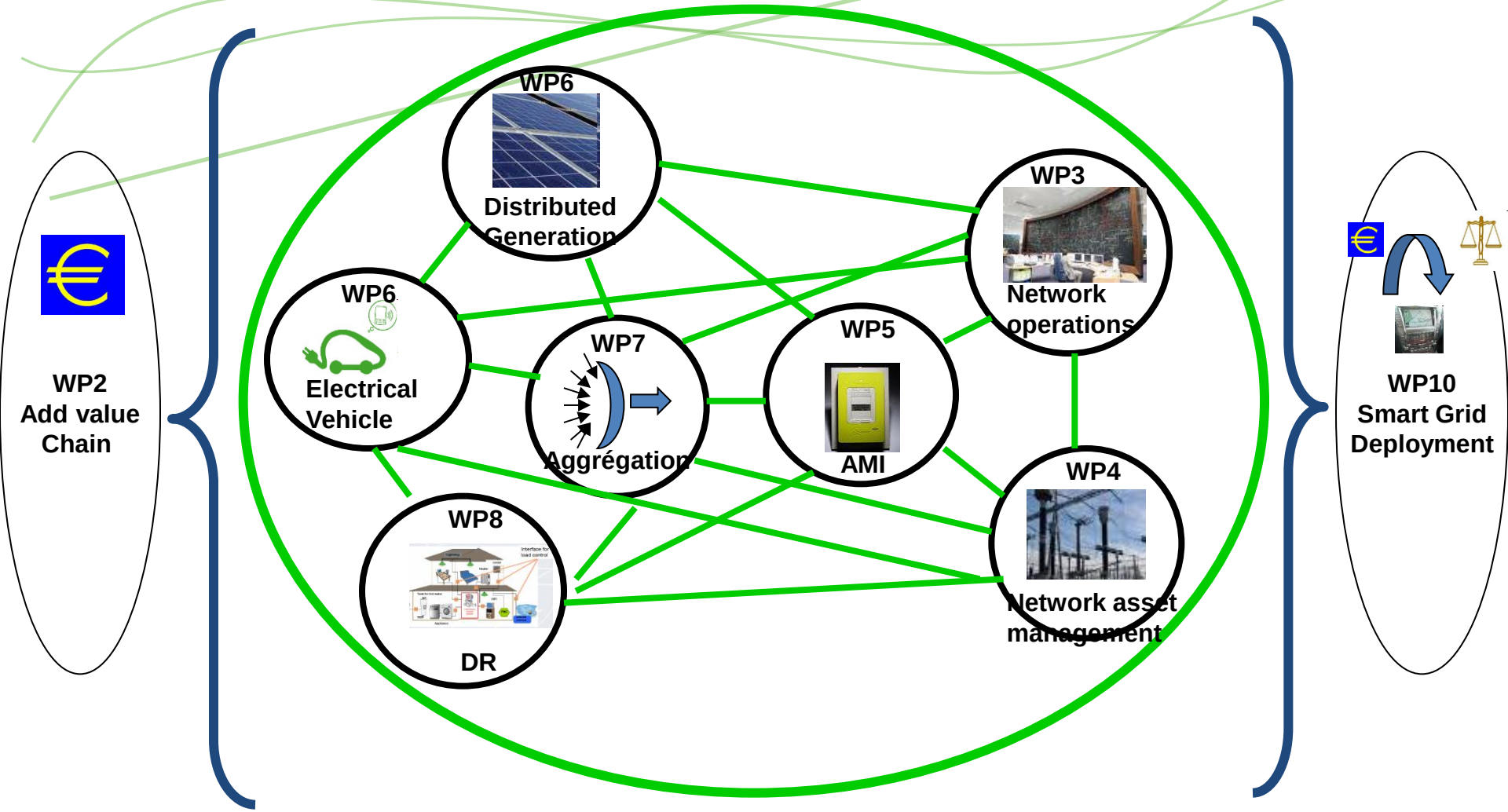
HESPUL

Distributed Producers Association

RHONALPENERGIE Environnement

Local communities assocation

GREENLYS Structure
=> smart interaction of actors and functions



Project structuring and Management

GreenLys

Project Management

WP 0
Project Management

WP1
Communication

WP 2
Economy and environmental interest of a Smartgrid

WP10
Specifications, management of transitions and technological steps

WP 3
Advanced Network Operation

WP 5
Smart meter and Advanced Metering Infrastructure

WP 7
Aggregation

WP 4
Assets management of the Network

Lot 6
Integration of EV, storage and distributed generation

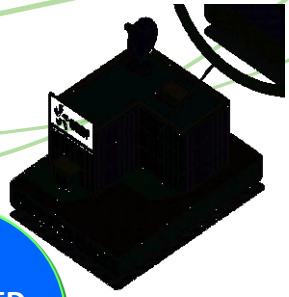
WP 8
New Tariffs and energy services For Load control

WP 9
Technological Platforms of the demonstrator

Lyon

Grenoble

A Real Scale Experimentation - GRENOBLE



UP TO 1000 SMART METER

ADVANCED TRANSFORMERS

500 RESIDENTIALS
20 TERTIARY

AMM + Sites multi fluides

Réseau Auto-cicatrisant et supervision BT

Offres MDE + Action D/R + alerte conso

GRENOBLE :
2 DISTRICTS
Caserne de Bonne
Presqu'île

1 HIGH LEVEL CHARGING STATION FOR EV

18 PHOTOVOLTAÏC BtoB

Services aux producteurs

Services à l'agrégateur

Prévision production décentralisée

36 ELECTRICAL VEHICLES (distributed Storage)

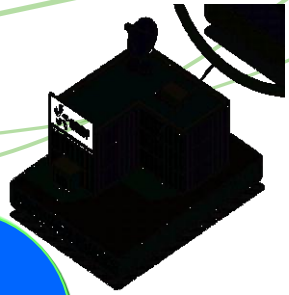
Services opérateurs
Services fournisseurs

15 COGENERATIONS BtoB

10 ECOGENERATORS

A Real Scale Experimentation - LYON

UP TO 700 SMART METER



ADVANCED TRANSFORMERS

500 RESIDENTIALS
20 TERTIARY

AMM

Réseau Auto-cicatrisant et supervision BT

76 PHOTOVOLTAÏC BtoB

Prévision production décentralisée

2 COGENERATIONS BtoB

Services opérateurs
Services fournisseurs

30 ECOGENERATORS

100 ELECTRICAL VEHICLES

Services aux producteurs
Services à l'agrégateur

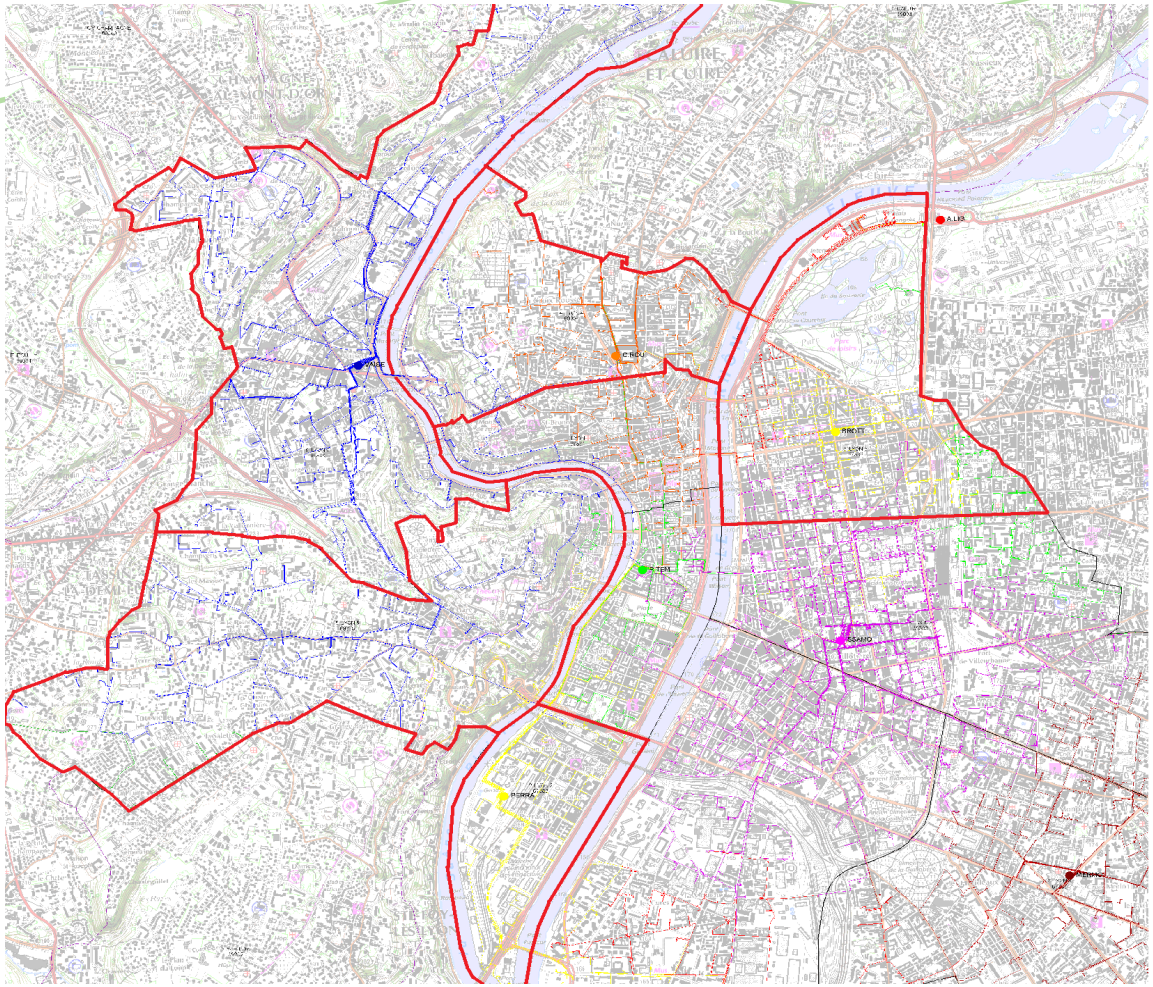
SELF SERVICE CARS

Offres MDE + Action D/R + alerte conso

LYON:
2 SITES
Center town districts
Confluence

3-c Lot 9.1 :

DEMONSTRATEUR ZONE LYON



3-d: Lot 9.1 :

ZONE LYON CONFLUENCE

1. Place des Archives

2. Groupe scolaire, crèche et piste d'athlétisme

3. Bureaux et logements

4. Stade de football

5. Parc de Saône
1re tranche (7 hectares)

6. Saône Park
175 logements

7. Lyon Islands
292 logements

8. Le Monolithe
147 logements
et 15000 m² de bureaux

9. Capitainerie et MJC

10. Place nautique

11. Pôle de loisirs et de commerces + hôtel + parking

12. Hôtel de région

13. Immeuble de bureaux Eiffage

Docks, quai Rambaud

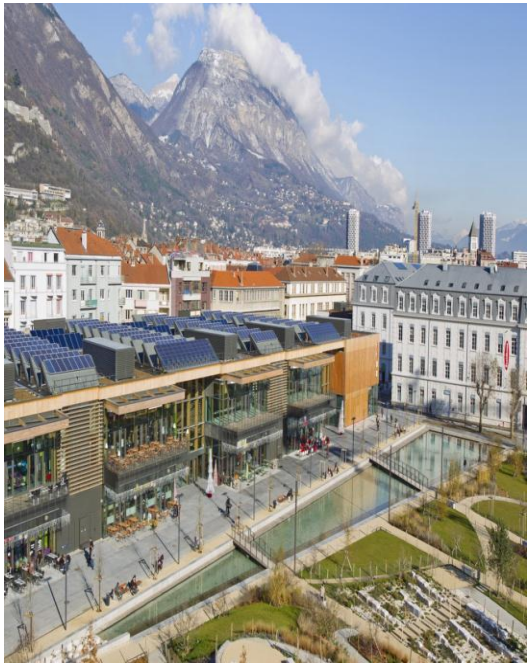
14. Le Progrès
15. Espace Group (pavillon des radios)
16. Les Salins
17. Les douanes, 45 quai Rambaud (réhabilitation)
18. La Sucrière (réhabilitation)
19. Pavillon 6 (Rudy Ricciotti)
20. Pavillon 7 (Jakob Mac-Farlane)

21. Pavillon 8 (Odile Decq-Benoît Cornette)

22. Musée

3-e Lot 9.2 :

Caserne de Bonne



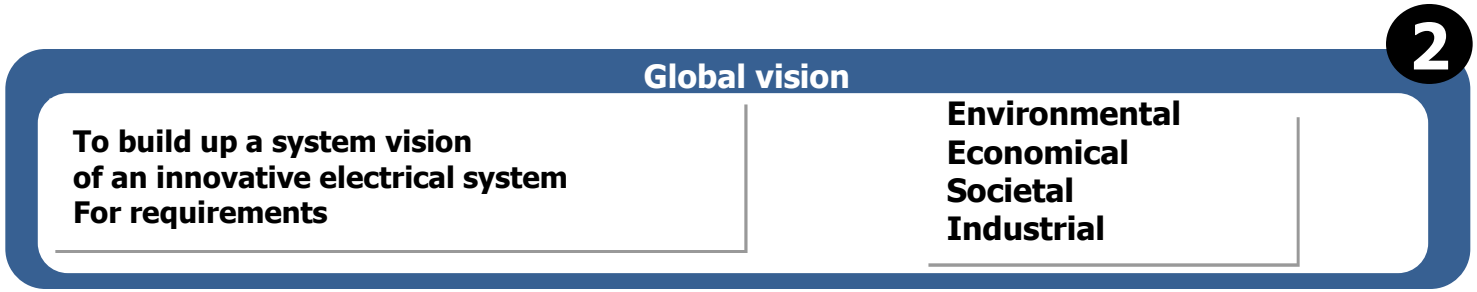
3-f Lot 9.2 :

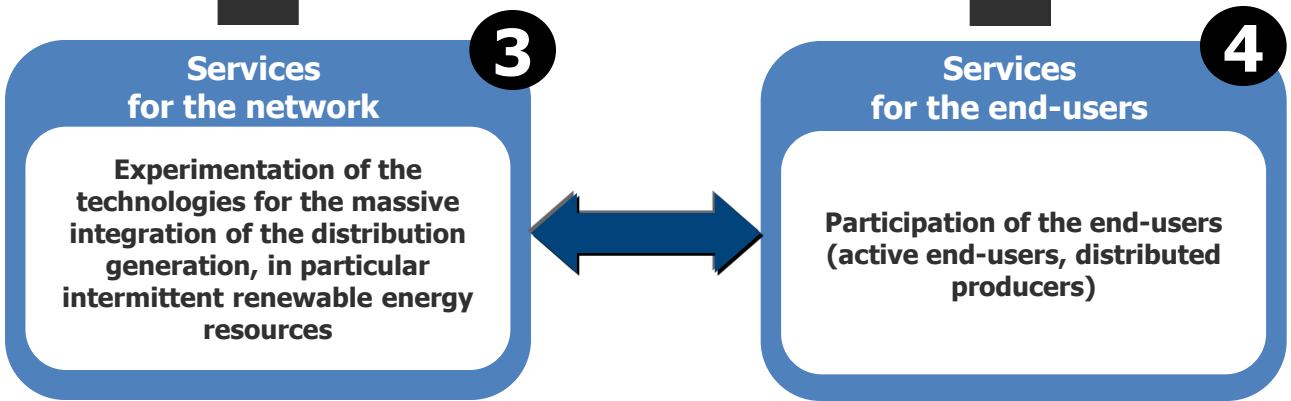
Presqu'île

Expected results
Added value chain

To identify and quantify the added value of the smart grids (1)

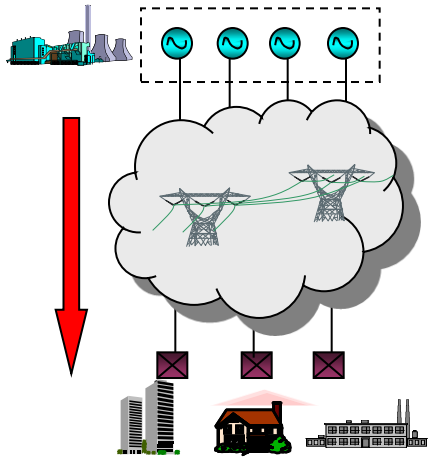
- Security and quality of networks
- Economical added value
- Environmental added value
- Societal added value





Specifications and management of transitions/technical steps

Todays's power system



Transition scenarios
Step structured

Technological transitions
IC Technologies
Power/energy technologies

Régulatory transitions
DG integration and grid access
System functions / and grid services
Balancing mechanisms, etc.

Economical transitions
Cost of system operations
Investments
Asset management…

Power grid with enforced intelligence
Increased integration
DG (REN), diffuse storage, PHEV
Charging mangt DR (BI)

Quality and reliability
Equal access to energy
Competitive cost of energy

Quality and reliability
Equal access to energy
Competitive cost of energy

METHODOLOGICAL TOOLS FOR GRID TRANSTION

TRANSFER FOR LARGE SCALE DEPLOYMENT

LONG TERM TRANSITIONS

→ The project has been submitted Nov. 2009!!
→ The largest SG pilot project demo in France
→ 40 M€ (Smartmeters/AMI not included -already funded)
→ High expectations and foreseen difficulties
→ A solid and engaged consortium