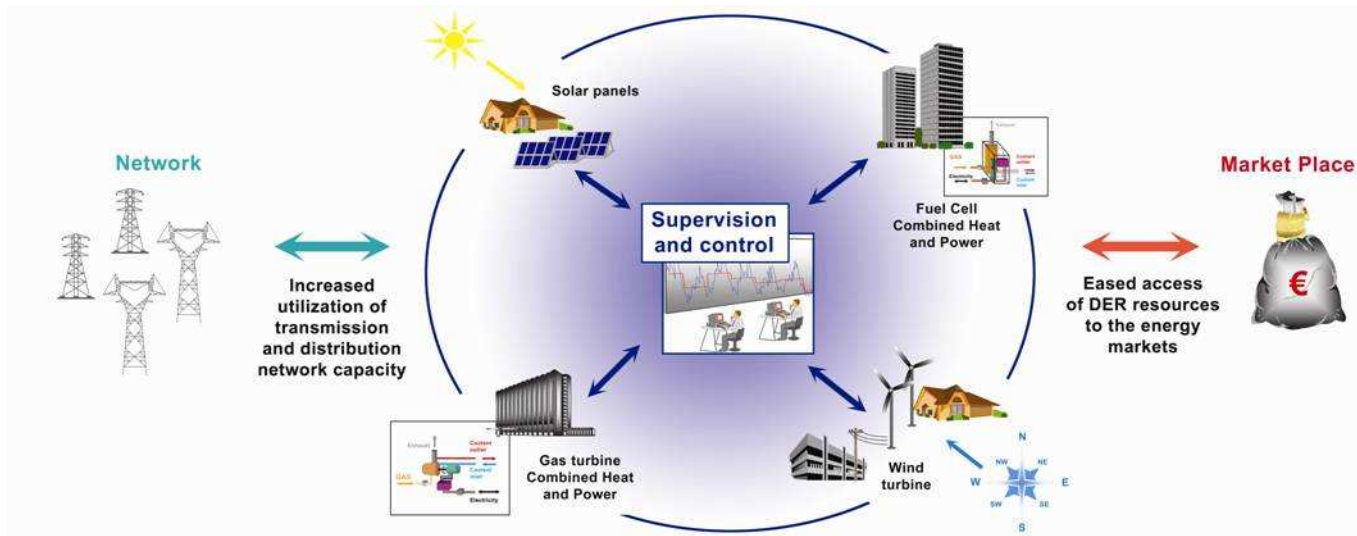


***The FENIX project: Integration of  
Renewables and Distributed  
Generation in Networks***

**fenix**

*'... a step towards the future of  
electricity networks'*

***Enabling Distributed Energy Resources (DER) to make the EU electricity supply system cost efficient, secure and sustainable through aggregation into Large Scale Virtual Power Plant (LSVPP)***



# FENIX Project coordinates

fenix

- FENIX is an European collaborative project, partly funded by the European Commission within the 6th Framework Program for Research
- Launched in **October 2005** and its duration is 4 years (ends September 2009)
- **20 partners** are involved
- The total budget is **14,7 MEuro**

# FENIX Project coordinates

fenix

*FENIX PARTNERS*

# FENIX Partners per Country

fenix

*The Netherlands*



*Romania*



*Slovenia*



*United Kingdom*



*France*



*Spain*

*Germany*

*Austria*

Gamesa



SIEMENS

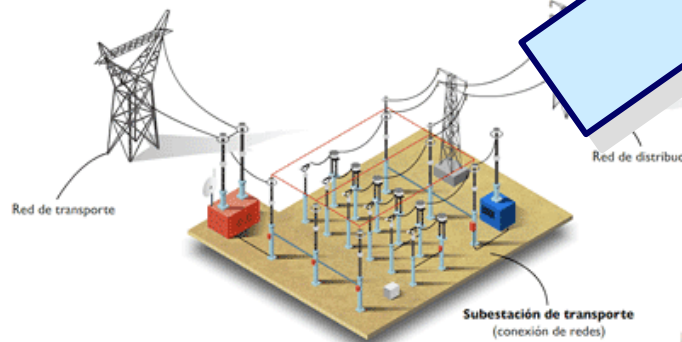
# FENIX Project rationale (1)

fenix

FENIX, same as others FP projects, is a *forerunner* of the *Smartgrids*, a step towards the “future electricity networks”

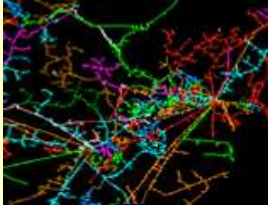


The target: to integrate Distributed Generation through aggregation, so it can contribute to the system needs.

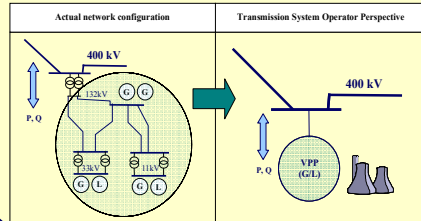


# FENIX Project rationale (2)

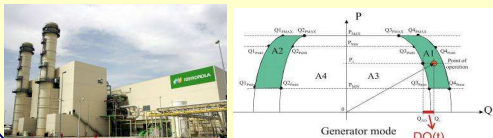
*What electrical services networks need?*



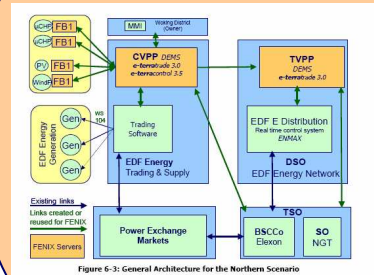
*How should DER be aggregated (Building the Virtual Power Plant) Clarify concepts and overall architecture*



*Which are the technical possibilities for DER, DSM, Storage to supply those services?*



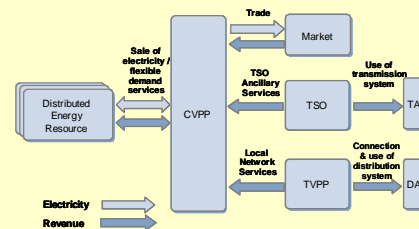
*Specification of the architecture, and development of components*



*Building the demonstrations*



*Cost benefit analysis and impact assesment Regulatory recommendations*



# ***Key research challenges of Fenix***

fenix

1. ***Identify potential present (and future) contribution of DER to networks that can be performed at advantageous cost.***
2. ***Identify network needs and the way to satisfy them using DER***
3. ***Revise regulations, incentive mechanisms and contractual relationships between the different participants (DER, aggregators, network operators and markets), to enhance DER contribution to the network with a fair economic return***
4. ***Investigate aggregation (VPP) so the limited size of DER and their non-deterministic behaviour limitations can be overcome***
5. ***Develop the ICT architecture to make it work:***
  - *At DER level: FENIX box*
  - *At VPP level: DEMS systems*
  - *At system operators: revision of EMS and DMS tools*
6. ***Two physical demonstrations:***
  - *UK (hosted by EDF Energy)*
  - *Spain (hosted by Iberdrola)*



## ***Benefits for DER owners***

- Increasing value of assets through the markets
- Reduce financial risk through aggregation
- Improve the ability to negotiate commercial conditions
- Extract value from DER flexibilities



## ***Benefits for society***

- Increasing the global efficiency of the electrical power system by capturing flexibility of DER
- Facilitate the renewable targets and reduce CO2 emissions
- Improve consumer choice
- Open the energy markets to small scale participants



# *Benefits for TSO and DSO*

- Increase the observability of DER for operation through aggregation
- Take advantage of flexibility of DER for network management
- Improve optimization of the grid investments
- Improve the coordination between DSO and TSO
- Mitigate the complexity of operation caused by the growth in inflexible generation



**Thank you**