

ADSM in Spain. Results from GAD Project.
Aims, Developments and ongoing results

**Gestión Activa
de la Demanda**

Laura Moreno (ITE)
Isabel Navalón (IBD)
Susana Bañares (REE)
Alfredo Quijano (ITE)

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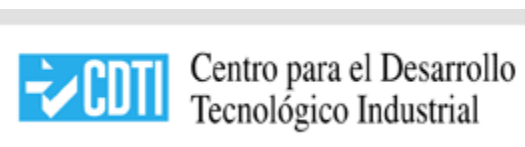


- GAD Aims
- Background
- GAD consortium
- Agents involved and Benefits
- GAD implementation proposal
- Next Steps

Aims and Expected Impact



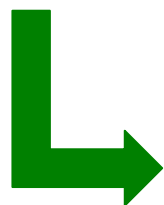
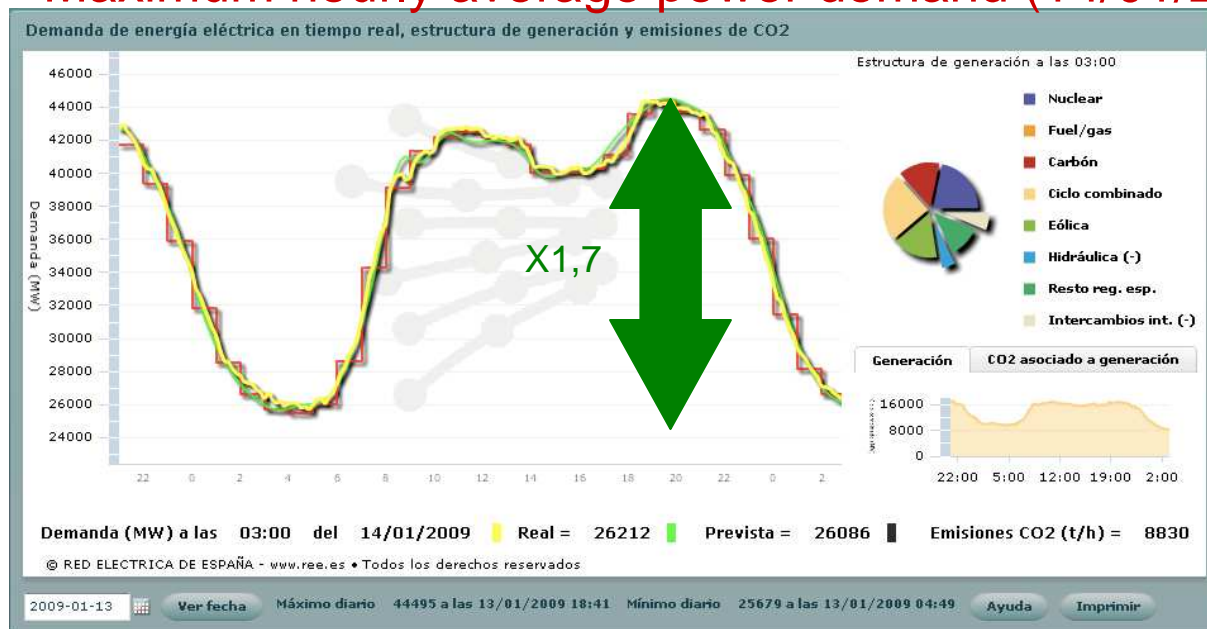
- Aims
 - Active Demand Side management using smart devices with embedded system approach. These devices allow the load curve lamination and the reduction of the electric demand.
- Expected Impact in Electrical System
 - Infrastructures optimization
 - Improvement of security of supply
 - Development of end user awareness on the generation costs on peak demand periods
 - Reduction of Green House Effect gases emissions
 - Development of national industry capacities related to smart grids and smart metering.
- GAD project
 - 23 M€
 - 4 years term(2007 a 2010)
 - Funded by program CENIT 2007 of CDTI



Background



- Load curve of Spanish Electrical System (Source: www.ree.es). Maximum hourly average power demand (14/01/2009)



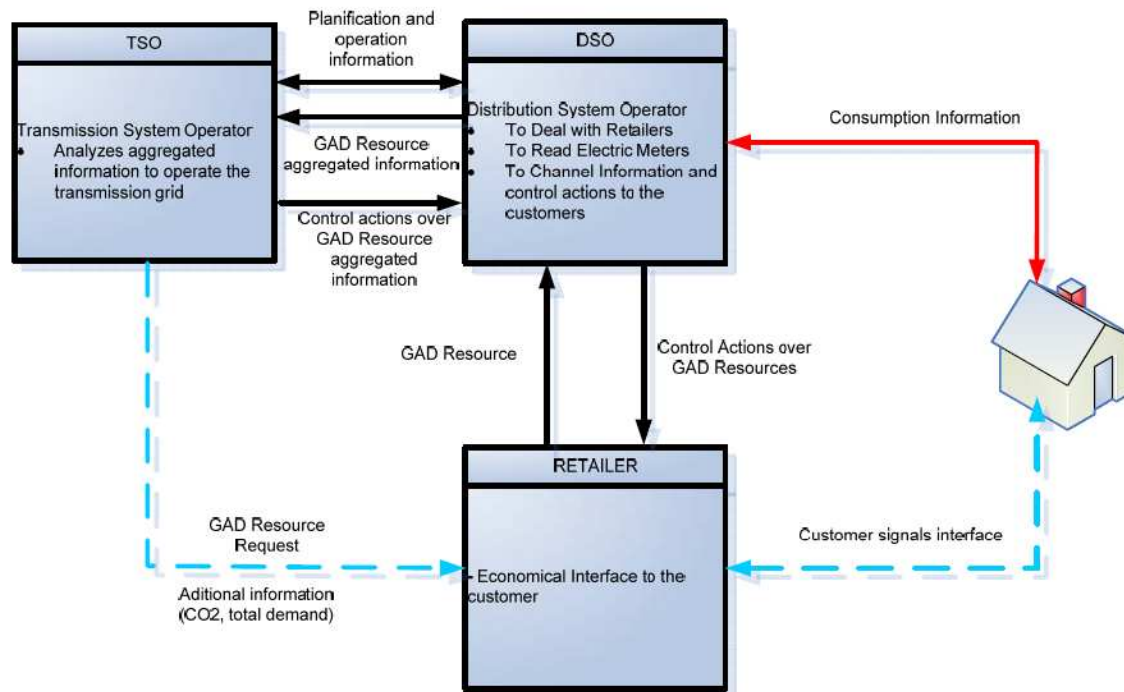
There's a need of optimising the load curve, transferring consumption from peak periods to valley periods

Consortium

- Utilities(2 DSO, 1TSO)
- Control Systems Integrators
- Meter manufacturers
- Appliances manufacturers
- Home automation solutions integrators
- Systems and SW engineering
- Communication equipment manufacturer
- 14 R&D Institutions



Agents Involved



- Agents Relationship
- GAD communication channel
- Outside GAD communication channel

Agents Involved. Benefits



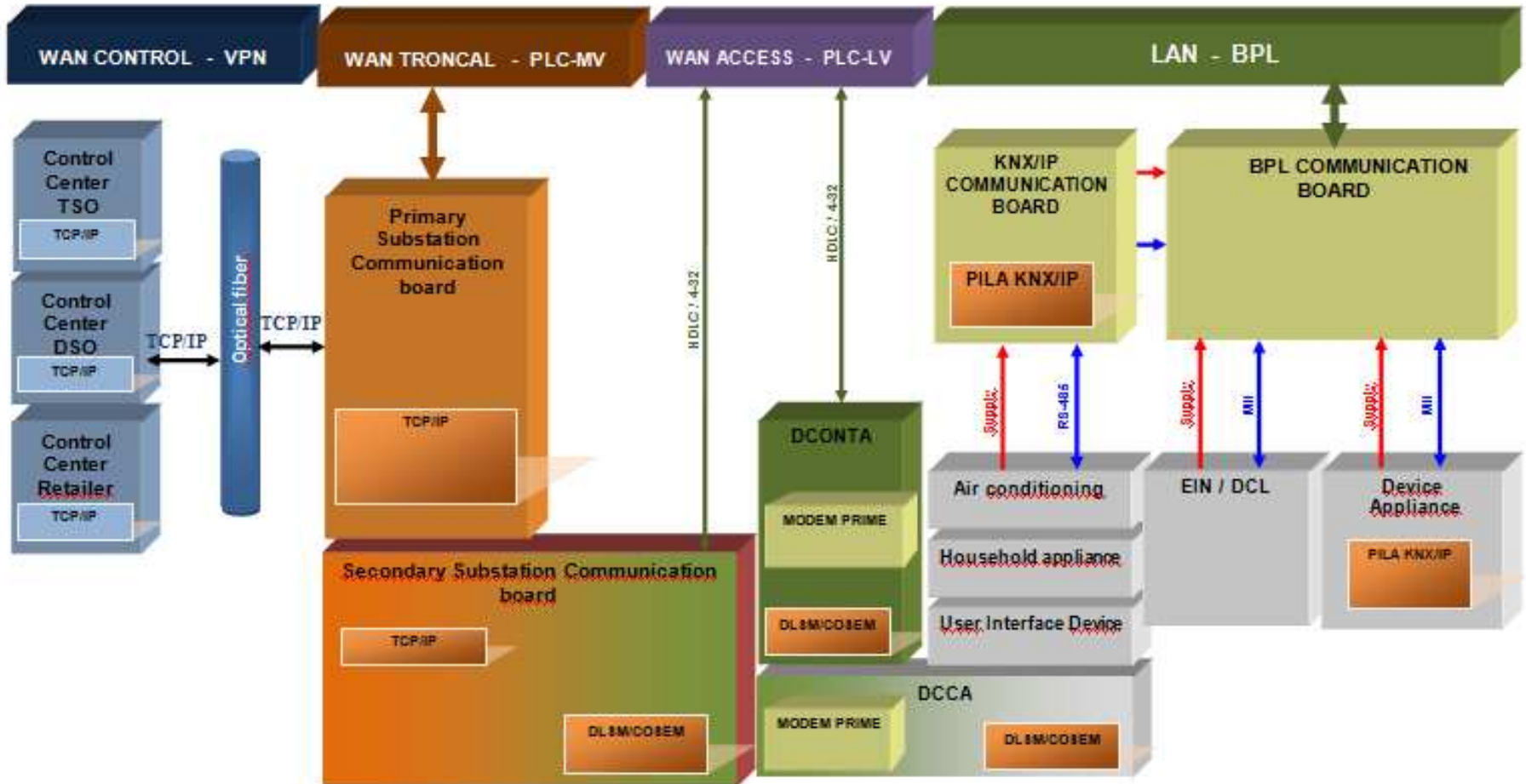
- TSO Benefits
 - Quality and reliability improvement
 - Reducing and postponing the need of new generation and grid infrastructures
 - Integration of an increasing amount of non manageable renewable generation
 - Technical losses reduction
 - Contribution to the climate change mitigation
- DSO Benefits
 - Same as TSO +
 - More visibility at low voltage grid
 - Increase the quality of supply

Agents Involved. Benefits

- Retailer Benefits
 - Product differentiation
 - Quality of service



GAD IMPLEMENTATION PROPOSAL



GAD IMPLEMENTATION PROPOSAL



WEB SERVICE

OS

TCP/IP
(Fibra Óptica)

CDTI Centro para el Desarrollo Tecnológico Industrial

Agente	Provincia	Fecha inicio	Fecha fin
OS	Madrid	26/01/2009	15/03/2009
OS	Castellón	15/03/2009	30/03/2009
OR	Santusa	15/03/2009	30/03/2009
		22/06/2009	22/08/2009
		22/06/2009	22/08/2009
		22/06/2009	22/08/2009
		10/10/2009	15/10/2009
		23/12/2009	09/01/2010
		23/12/2009	09/01/2010
		23/12/2009	09/01/2010
		23/12/2009	09/01/2010
		3/12/2009	09/01/2010
		3/12/2009	09/01/2010

RED ELÉCTRICA DE ESPAÑA

19/02/2009 09:26 > Recibida reducción INF de IBO

SGCL-OS > Operación > Provincias

Map Legend: SC (400 kV, 220 kV), LV (400 kV, 220 kV), HV (400 kV, 220 kV), Trafo

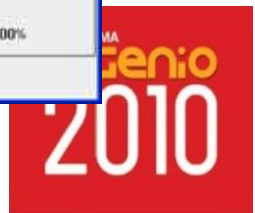
GAD disponible: 100%

Graph X-axis: 18:00, 20:00, 22:00

Sliders: 09:00 - 12:00 (100%), 21:00 - 00:00 (100%)

Buttons: GAD = 0, Salir

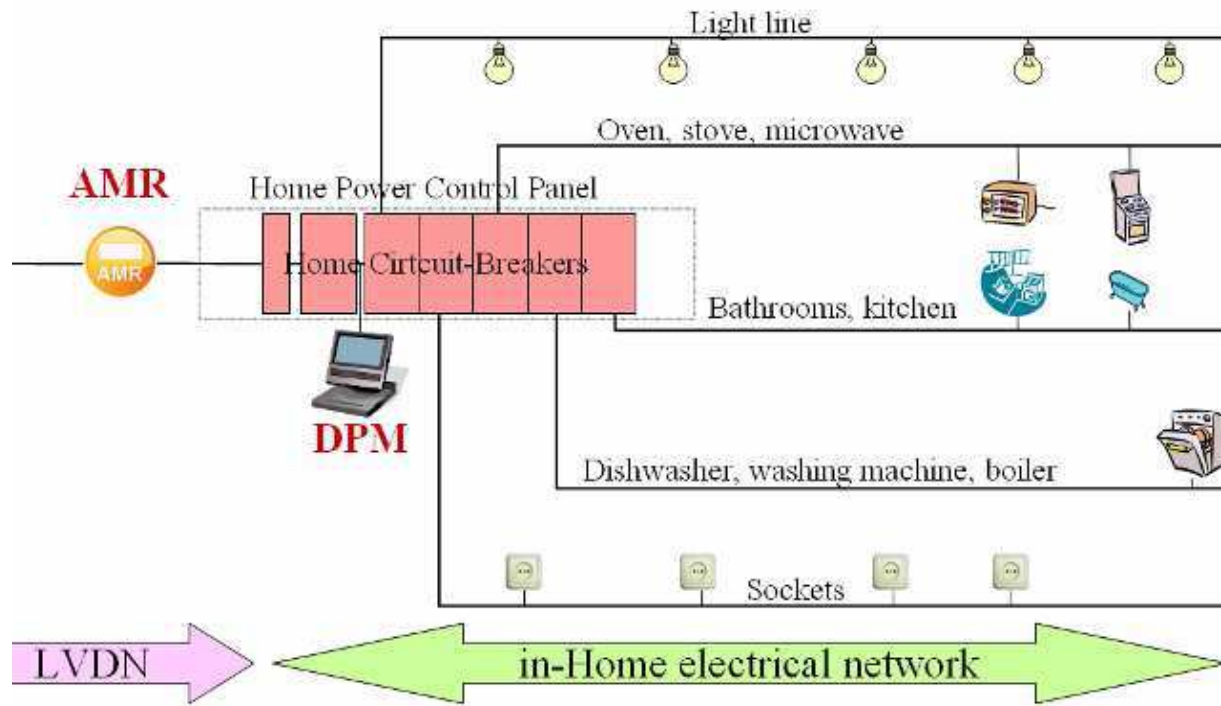
PROYECTO GESTION ACTIVA DE LA DEMANDA. PROGRAMA CENT



GAD IMPLEMENTATION PROPOSAL



- Architecture of devices at customer home



GAD IMPLEMENTATION PROPOSAL



- Pilot for technological test. Location: ITE



- ECST
- ECCT
- DCONTA
- DPM(DCCA)
- DIFU
- Smart Appliances
- Smart Plugs



PROYECTO GESTIÓN ACTIVA DE LA DEMANDA. F

PROGRAMA
ingenio
2010

NEXT STEPS



- Standardization of protocols
- Evaluation of Demand side management resource
- New legislation to promote demand side management.
- New tariffs.
- Customer awareness.



Questions?

Laura Moreno Sarrión
ITE
GAD Secretaría Técnica
secretaria.gad@ite.es

www.gadproject.com