BeyWatch: Building EngergY WATCHer

Sustainable Energy ICT – Lyon 2008

Project Overview: Objectives & Innovation **&** Telefónica initiative

TELEFÓNICA I+D

Lyon: 15th November 2008

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Project Summary & Objectives

BeyWatch is a FP7-ICT-2007 project which covers ICT for *environmental management and energy efficiency*. It proposes an energy-aware and user-centric solution, able to provide intelligent energy monitoring/control and power demand balancing at home/building & neighbour level.

- The system will:
  - A) **Interconnect** legacy professional/ consumer electronic devices with a new generation of energy-aware white-goods, where multilevel **hierarchic metering, control, and scheduling** will be applied (based on power demand, network conditions and personal preferences).
  - B) Via an **innovative hybrid photovoltaic/solar system**, it will be able to produce hot water and energy, which will be used at home or at peak hours fed to the electricity network.
- The proposed system will function in a two layers hierarchy:
  - **Micro-management plane:** interactive monitor/control of all the devices in the home, and RES power generation in order to achieve amortization of loads and peak suppression of small-scale power consumption.
  - **Medium-management plane:** medium-level control and coordination of the energy resources at larger geographical regions.

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Project Summary & Objectives

- Six Innovation areas:

1. Intelligent energy-aware white goods
2. Ultra low-cost in-home communications
3. Devices' monitoring & personalized control
4. Hybrid Photovoltaic/ solar home system
5. Modelling & control of power distribution in local areas
6. Business Support Systems and new business models

- Reduced energy Consumption
- Power demand balancing
- Mutual beneficial contracts
- Contribution to standards
- Contribution to Energy & environmental Sustainability EU vision
- Reduced pollution & CO2 emission

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Project Summary & Objectives

- Design **ultra-low energy-consumption white-goods**
- Implement methods, techniques and services to reduce the power consumption in smart/green homes/blocks/neighbours **by intelligent control of electrical devices**
- Generate **hot water and electricity from RES** at building level, leading to further power savings and energy consumption/production optimisation services
- Elaborate **business plans and BSS applications** that will help the users and the providers to reach beneficiary contracts
- **Motivate user's awareness, towards less CO2 emissions** on the whole energy value chain (production, transportation, distribution, supply) and cleaner environment.

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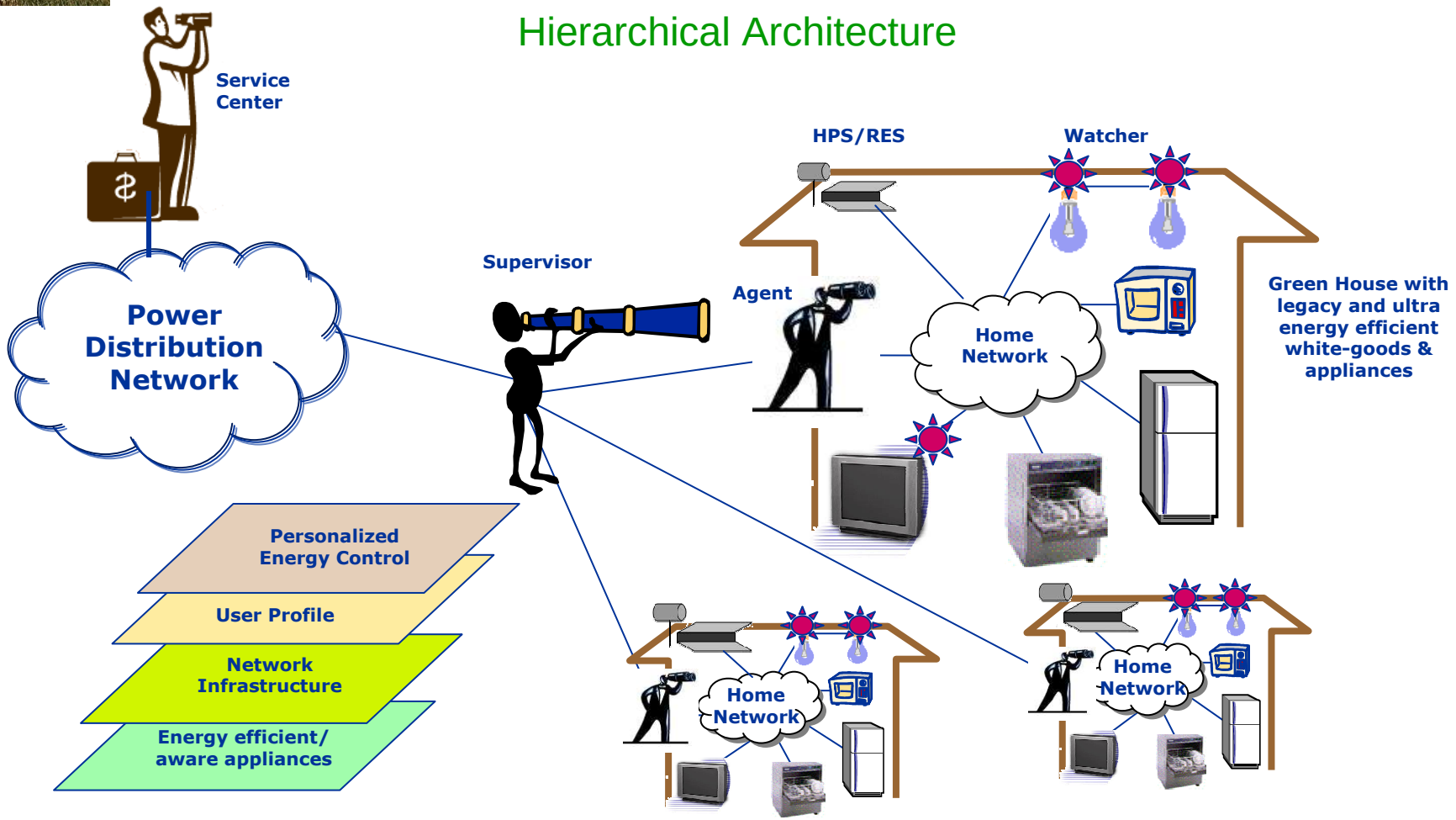
Relevant Innovation Activities

beywatch.eu

Hierarchical Architecture



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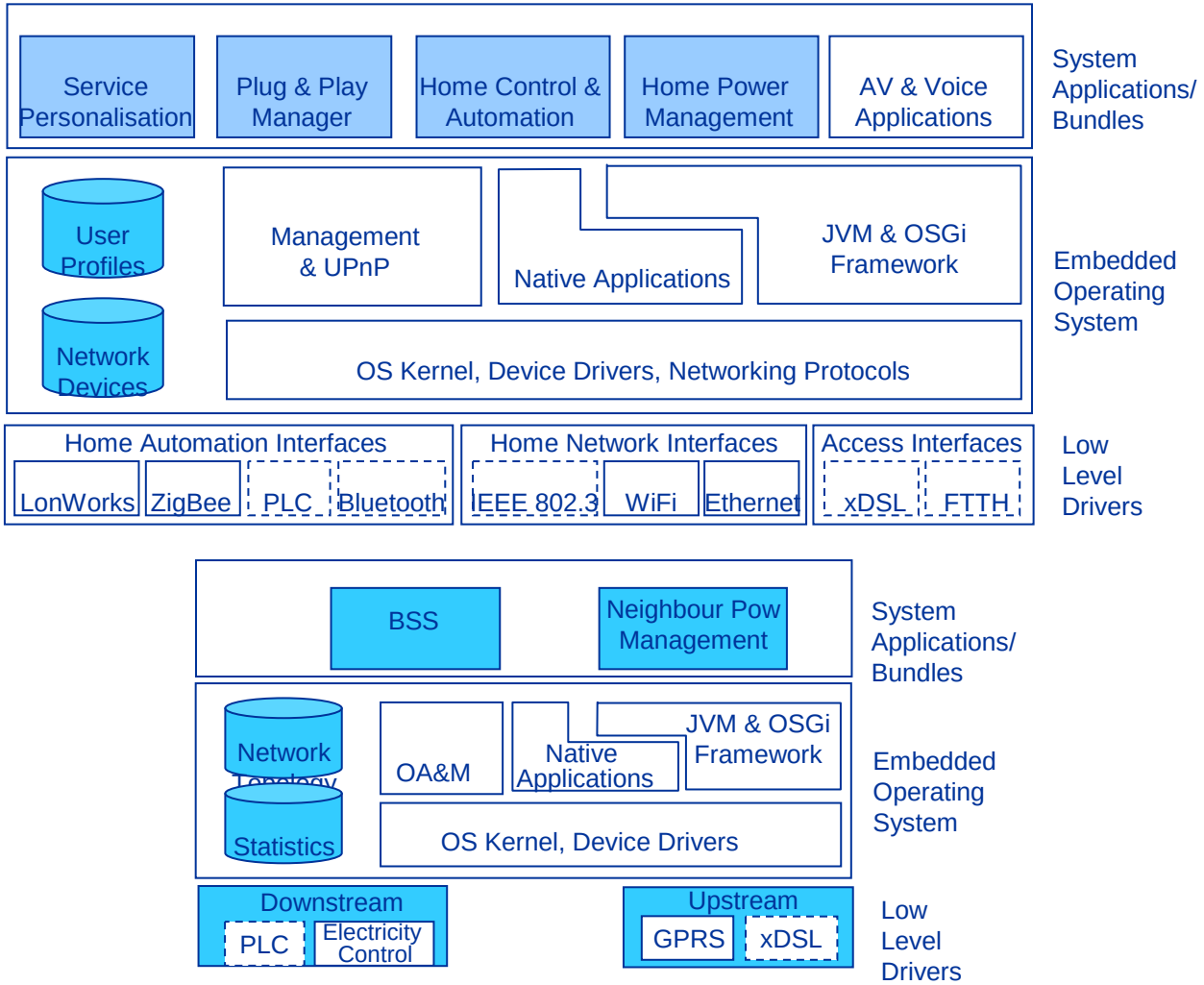
Relevant Innovation Activities

Agent & Supervisor SW Stack



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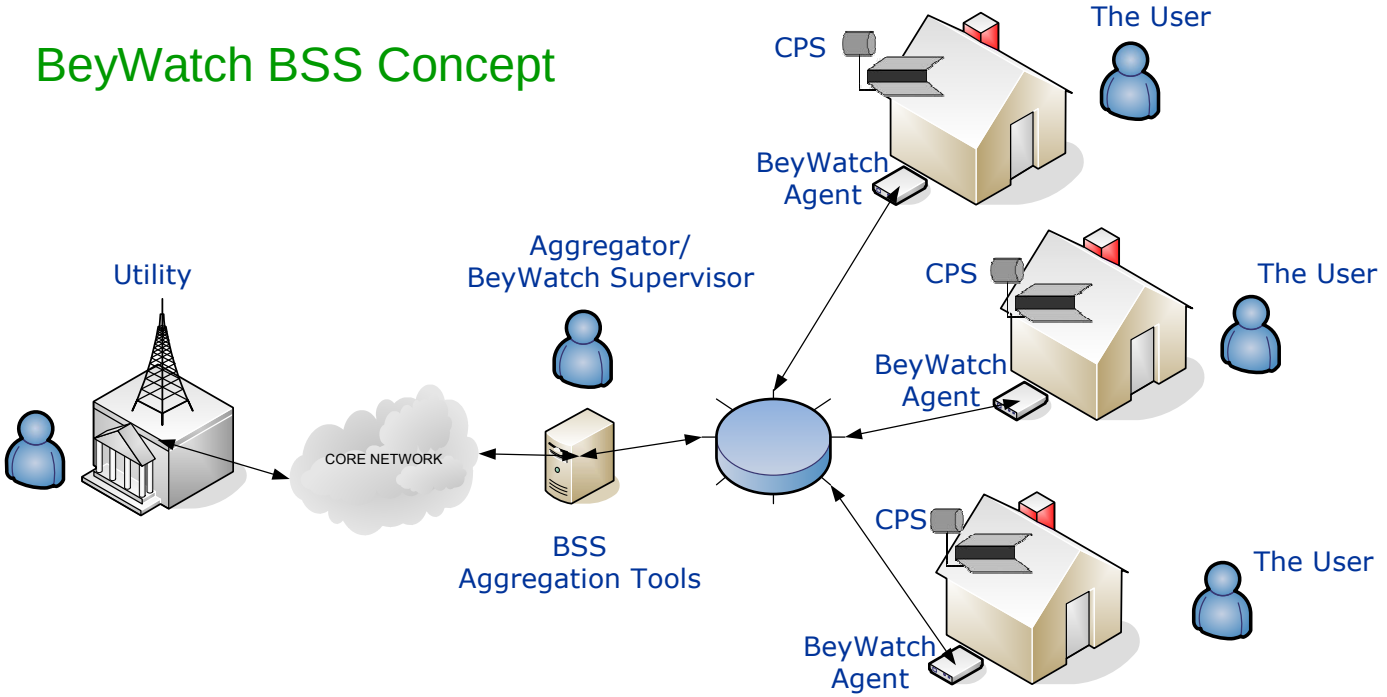
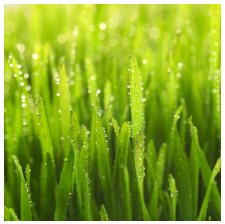
Relevant Innovation Activities

BeyWatch BSS Concept



Service Provider Stakeholder Domain	Telecommunication, Aggregator and Broker Stakeholder Domain	User and Home installation Stakeholder Domain
	• Neighbourhood Energy Information • Customer BSS interface & applications & Billing Information • User and Service provider management	• Energy Meter • Energy Consumption • Energy Generation



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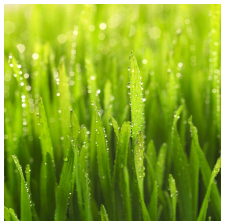
The Telefonica Initiative – HA pack for energy mgnt

- Home automation pack for efficient energy management at home
  - Telefonica is focused on fiber deployment so fiber-related services are the priority
    - Need to offer something else apart from bandwidth to give value to the fiber offer
    - **Home automation for energy management** is a service quite different from traditional BB services — AV related mostly — and may drive the user to the adoption of the fiber.
    - Smart energy management has effect on 2 different aspects: **economical** — decrease monthly electricity bill — and **ecological** — reduce environmental negative impact
  - Home automation service is able to manage the devices that contribute to resources saving – water, electricity and combustibles, having impact both in economical and ecological aspects
    - More comfort and safety for the user at home
    - Better use of natural resources, benefiting from lower rate hours
  - The systems for consume monitoring create conscience in the user about energy consume, enabling a change in user habits to increase energy savings and efficiency



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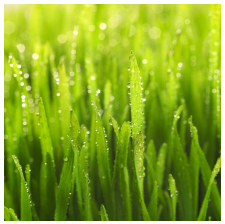
The Telefonica Initiative – HA pack for energy mgnt

- Home automation pack for efficient energy management at home
  - Easy installable pack (PC wizard for configuration and service personalization)
  - PLC, Zwave and Zigbee Pro technologies for managing networked home devices so no works at home are required
  - Fiber gateway for communications and service aggregation
  - Service functionality:
    - Devices programming
    - Home automation scenes for energy saving depending on the activity
    - White goods operating in such a way energy consumption peaks are avoided
    - Statistics of use → Advices for a better use of energy can be given to the user



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The Telefonica Initiative – Service evolution

- Integration of **intelligent networked white goods** and **more low-cost electricity controllers**
- Integration of legacy and advanced **heating systems**
- **Remote metering of electricity consumption** and promotion of **synergies with the national utility companies** for the generation of consumption models
  - Study what would be the business model and service architecture
  - Development of proof of concept for the validation of the initiative

The work done in the framework of BeyWatch project will be used as the baseline for development in Telefonica of the advanced home automation and energy management service