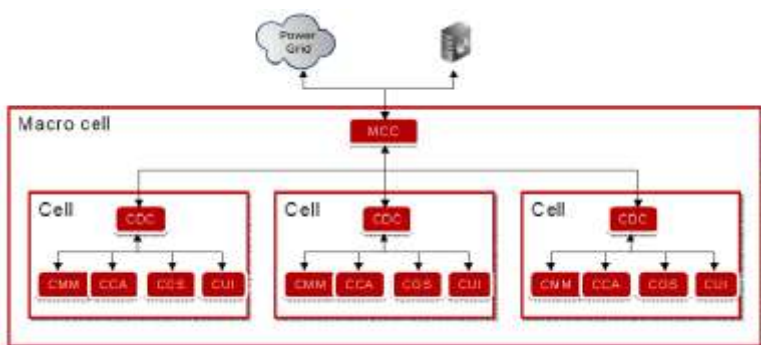


A new approach: a building level management policy by MacroCell device

Significant progress has been made in this project's period. Far from system specifications, now the time to introduce prototypes has come. First of all, the MacroCell device, which runs all the higher level energy management policies and allows maintaining the whole building consumption curve within the bounds established in the contract with the utility provider.

It is a web server which manages a private network at building level: through the action of the data gathering component, the MacroCell is able to obtain data from the web, as weather and temperature forecast, and to send them to the Cells under its domain.

The aggregated consumption and generation data of each Cell are stored in the MacroCell database. By exploiting this information, the MacroCell algorithms forecast the Cells load curve and processes this knowledge to send suggestions to the Cell: the eDIANA final user is advised to change his/her load activation scheduling in order to achieve a more efficient and energy saving behaviour.



Energy-awareness and centralized load-management at Cell level

Several components have been developed at the eDIANA Cell level that will be attached to the different devices/appliances that exist in a Cell, as the Power Consumption Sensor (PCS) and the intelligent Embedded interface (iEi): the first one measures the power consumed by the device it is attached to, and the second one sends that information to a central concentrator node (Cell-Device Concentrator or CDC). The iEi also allows the device to be remotely managed by the CDC.

The Cell-Device Concentrator is the central element of the Cell, as it contains the central database and the load-management algorithms. This device collects the information sent by the different iEi-s and by the higher-level MacroCell Concentrator, and according to the results of the load-management algorithms it decides which devices should be turned on/off at each time.

An eDIANA cell-level user interface has also been developed for monitoring the power consumption at the Cell, and to therefore improve the user-awareness of the energy use. It is an attractive and user-friendly interface that has been integrated on a Philips Net TV and a Smartphone.



The eDIANA User Interface (UI) has been developed to support eDIANA's main goal: significantly reducing energy consumption. Mainly, the UI provides users feedback about their energy consumption.

As a central unit in the building, the TV will bring eDIANA in the user's daily life while the mobile UI will allow the user to access the system remotely. During Next project's period, all of the components introduced will have to face integration and tests to proof platform's reliability.

eDIANA relevant dates

Upcoming Events

- 13 April 2011, Point-One Lustrum event, Tilburg, Netherlands
- 10-12 May 2011, Catrene Design and Technology Conference, Dresden, Germany
- 30 to 31 March 2011, Energy from Waste - Avoid wasting the opportunities, Manchester, United Kingdom
- 30 March 2011, Powering Wireless Sensor Networks, Munich, Bavaria, Germany
- 6 to 8 April 2011, Energy Management in Cultural Heritage, Dubrovnik, Croatia
- 17 to 18 May 2011, Retrofit Solutions - Renovating the UK Housing Stock for a Sustainable Future, Birmingham, United Kingdom
- 16 - 17 June 2011 - SAVE ENERGY 2011 Conference - Helsinki, Finland
- 21 to 22 June 2011, European Smart Metering Forum & Smart Metering Update 2011, London, United Kingdom
- 1 - 8 August 2011- GreenCom 2011 : The 2011 IEEE/ACM International Conference on Green Computing and Communications - Chengdu, Sichuan, China

More Info at

http://www.artemis-ediana.eu/ediana_events_press.php

eDIANA Contacts

Project Coordinator Name:

Rafael C. Socorro

Institution:

Acciona Infraestructuras (ES)

Email:

rsocorro1@acciona.es

More Info at http://www.artemis-ediana.eu/ediana_contact.php

Executive summary

Main Objectives

eDIANA's main goal is improve energy efficiency in residential and non-residential buildings through the use of embedded devices.

This project is a strongly application-oriented initiative which is focused on the conceptualization, design, development, demonstration and validation of new devices operating in a uniform platform called eDIANA.

Technical Approach

The eDIANA platform is a model-based architecture, implemented through an open middleware including specifications, design methods, tools, standards and procedures for platform validation and verification. eDIANA Platform will enable the interoperability of heterogeneous devices at the Cell (living/working units) and MacroCell (building) level, and it will provide the hook to connect the building as a node in the producer/consumer electrical grid.

Expected Impacts

The technology to be developed in eDIANA will improve energy efficiency and optimize building energy consumption by 25%, providing real-time measurement, integration and control. Moreover, comfort will improve making the user aware and enabling user-controlled policies for household devices. Such progress in the state of the art will enable the building to become an "active MacroCell" in the energy network, connected to similar MacroCells in the district or urban area.

Project Partners

