

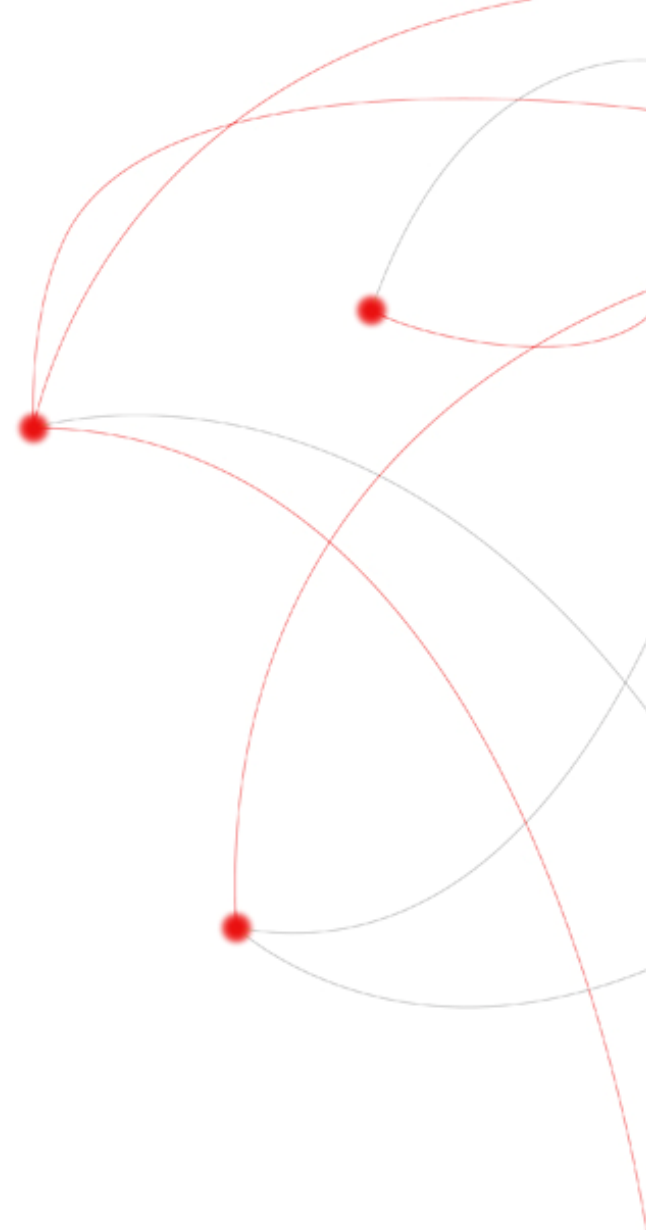


ICT@Home

Energy@Home Project - the perspective of Telecom Italia

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Research&Trends



Energy@Home

► Goal

- define an open and standard platform for the indoor communication between home appliances, smart meter and broadband gateways to enable energy efficiency services

► Approach

- open standards to ensure interoperability between systems from different vendors

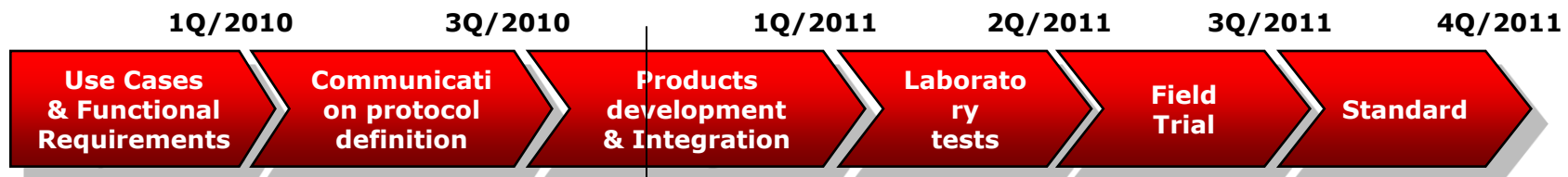
► Use Cases

- Awareness, overload & stand-by control, scheduling of appliances & cost efficiency, mngmt

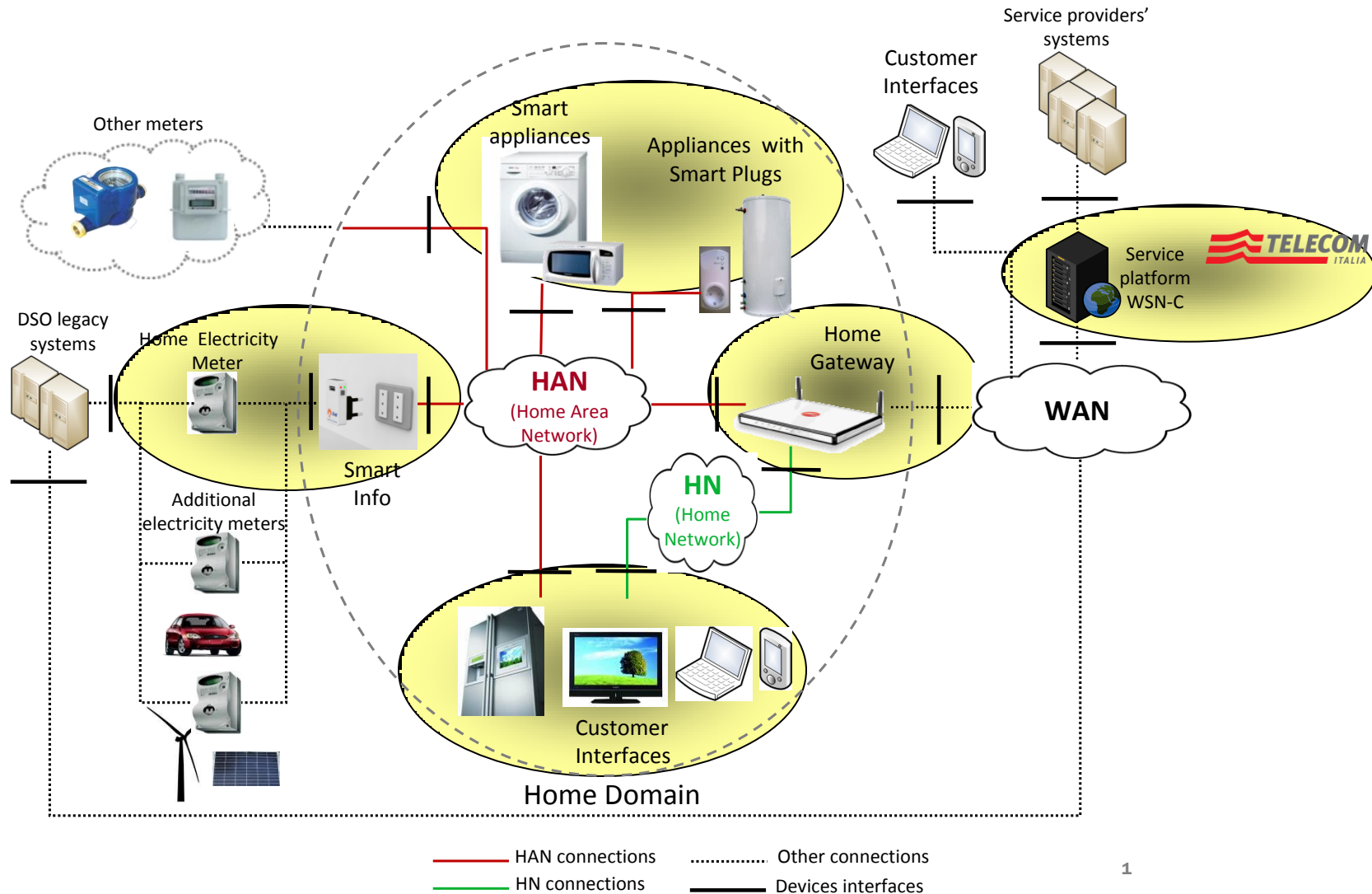
► Project Partners:



► Project Timeline:



Energy@Home : Architecture



Energy@Home Technical Specification

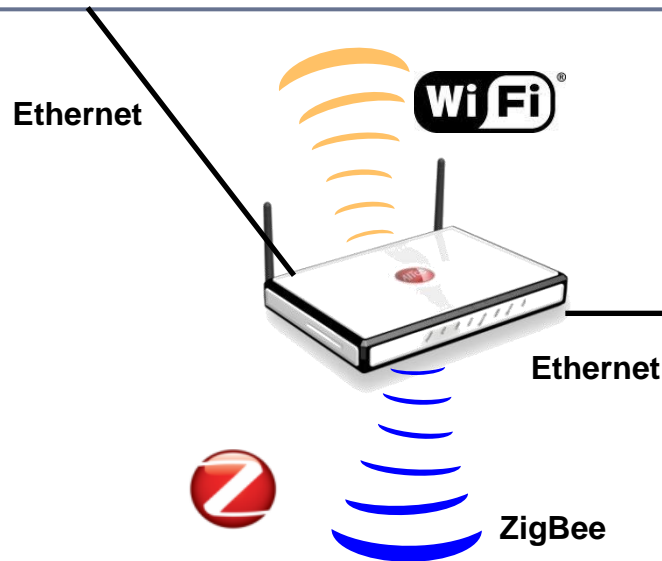
- Specifications of the **HAN communication** protocol that enables the set of use cases defined by the Energy@Home partners
- Specifies the **wireless protocol**, the data model, the set of application messages, and the sequence activity diagrams
- Can be mapped to a standard ZigBee Public Profile that includes connected appliances of CECED and that extends “Home Automation” and “Smart Energy”
- Submitted to ZigBee HA, CECED, HGI



The specs have been designed to be potentially submitted to ZigBee as an extension of existing standard public profiles

Energy@Home for Telecom Italia

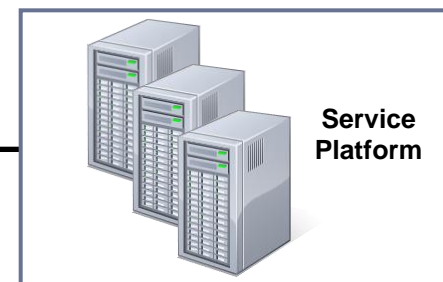
Home Network (HN)



Trend towards 2 networks @ home

- ▶ Home Network, high bandwidth, multimedia
- ▶ Home Area Network, low bandwidth, low consumption (*), automation

(*) 10 devices @ 3W = 260KWh/year = 10% increase for avg italian family!



Telecom Italia Cloud

Home Area Network (HAN)

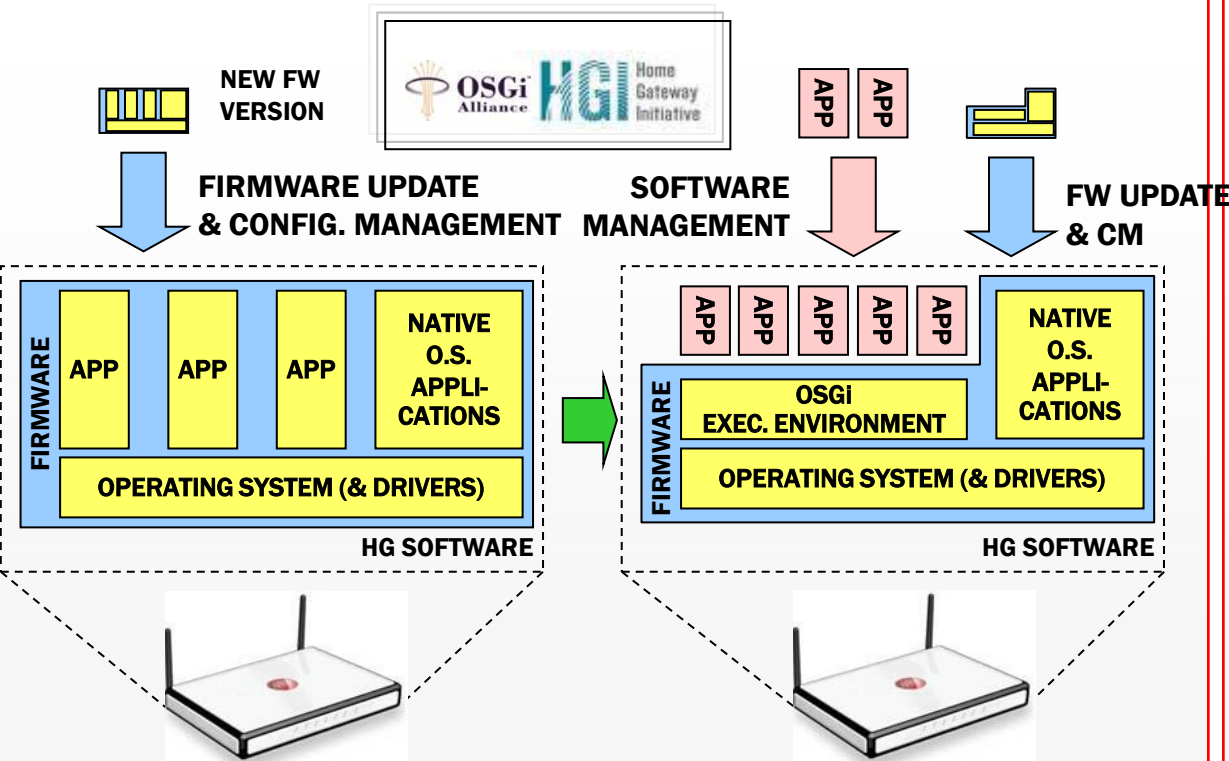


Telecom Italia Components to enable a multitude of VAS:

- ▶ Broadband Gateway with ZigBee Gateway Functionality & OSGi execution environment
- ▶ Horizontal Service Platform in the Data Center

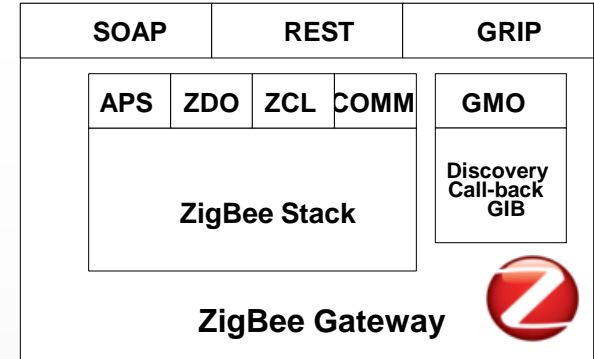
Home Gateway

from Firmware to Software Management



- TI Point of Presence @ home
 - always-on, multiple network i/f, user-aware, in a short distance from appliances
- BB/Internet access point for all the house appliances
- Execution Environment of Bundles (e.g. applications, services)
 - Each bundle is a separate unit
 - Bundles can be remotely managed

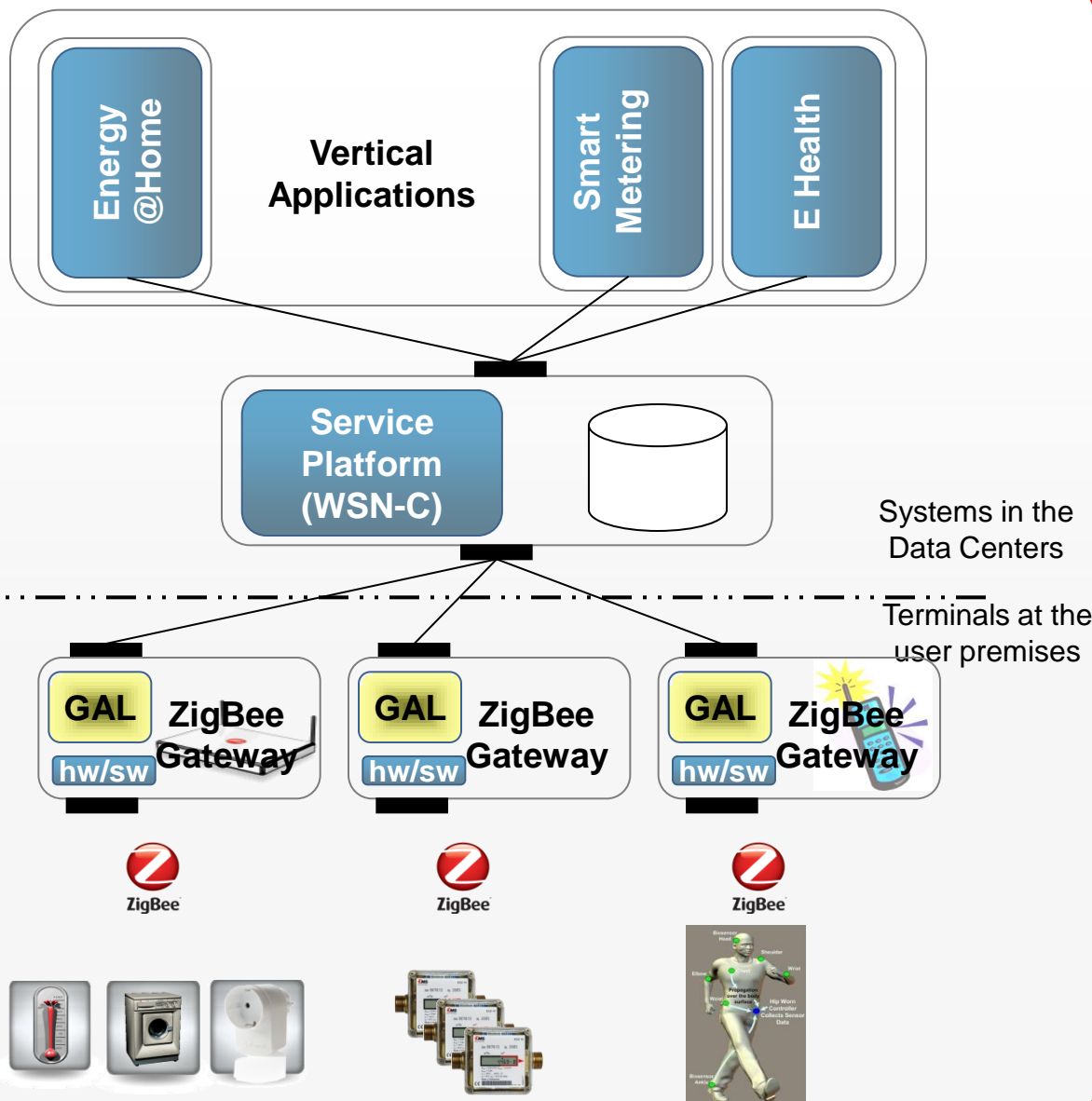
ZigBee Gateway Device



- ZigBee specs of the std i/f to the IP network
- Bindings: SOAP, REST, GRIP
- Functionalities:
 - ZDO and macro operations for network and service discovery
 - ZCL operations to r/w attributes, and configure and report events
 - Endpoint management
 - Access to a ZGD's AIB, NIB, and PIB attributes
 - Flexible start-up and network join operations
 - Ability to control ZigBee security material and operation
 - Bi-directional communication mechanisms between a ZGD and IPHA

M2M Service Platform

Reference Architecture



Service Platform

- ▶ **Independent of the applications**
- ▶ **Will comply with ETSI M2M specs**
- ▶ **Implements all those functionalities which are independent of the application logics**
 - ▶ **devices management (monitoring of operational and connection status, operations, alarms, firmware updates, ...)**
 - ▶ **devices monitoring (archiving of device data, subscription to device events, ...)**
 - ▶ **devices control (setting of thresholds, profile updates, forwarding of actuation commands, ...)**
 - ▶ **devices discovery (dynamic management of M2M resources, support for mobility and devices not always connected, ...)**
- ▶ **Enables 1 app to use several devices and viceversa**

In Home Display: do we need a new device as a customer i/f?

Energy Box



Energy Box?

