

TEAHA: The European Application Home Alliance.

General Presentation

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Project Objective

The objective of TEAHA is to combine the Home Control world with the Audio Video world through an open, secure, interoperable and seamless **global home platform**

Aims of The Project

- To create a platform that will be able to sustain a wide range of applications irrespective of protocols and type of networks used.
- The platform must be able to support different bouquet of services for the benefit of the customers.
- Operation must be easy and secured with an appropriate quality of service.
- Both Home Control and Audio Video applications must seamlessly co-exist on the same platform.
- To produce a demonstration system that will encompass the spirit of TEAHA.

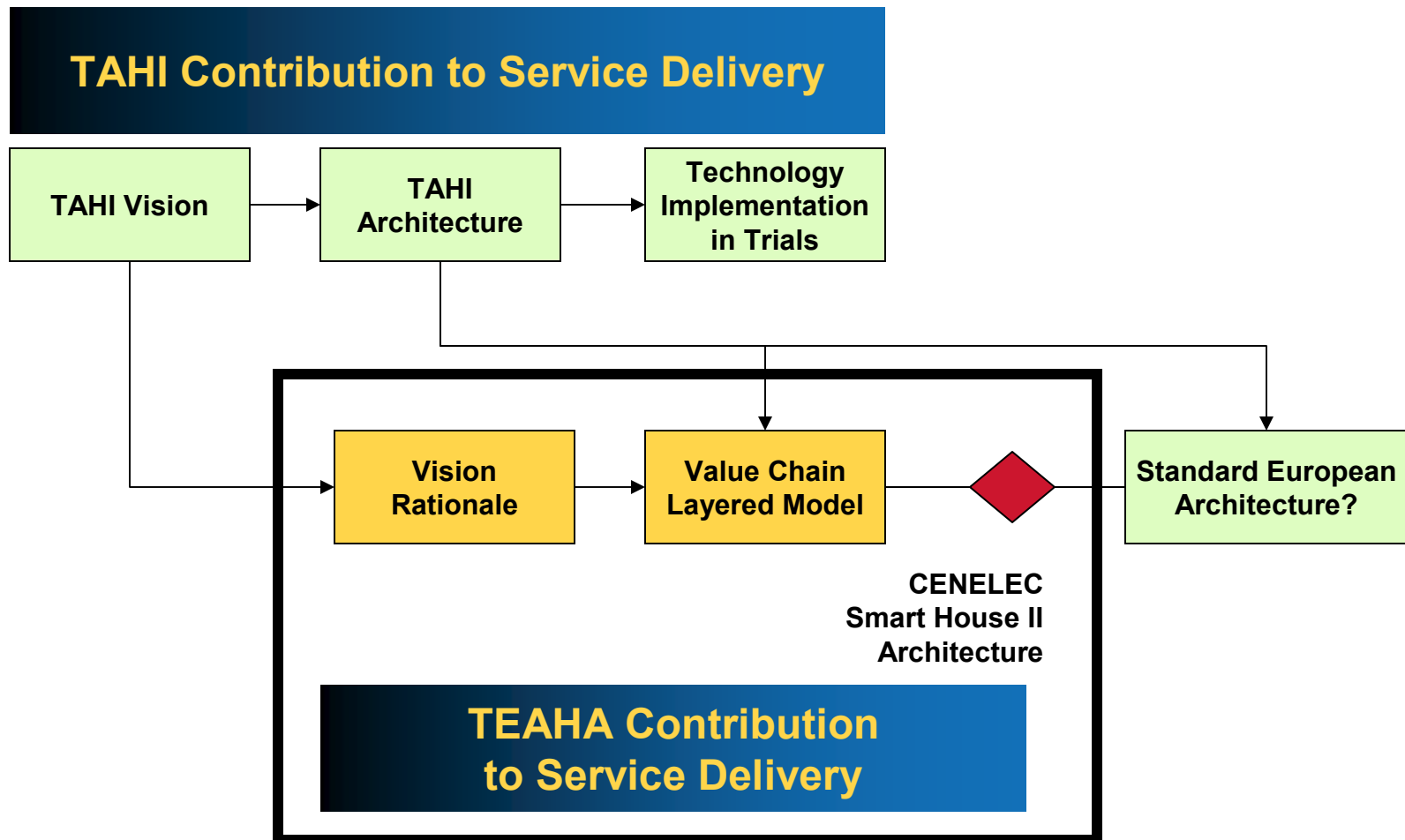
R&D Activities

- The main R&D activities associated with the TEAHA project in support for a seamless interoperable/inter-working global home platform are:
 - specification of an open and secure framework
 - development of a low cost RF communication solution
 - development of an ultra low cost powerline communication solution
 - the development of advanced residential gateway subsystems

Key technologies

- **Open Secure Middleware Framework**
 - Define and develop an open secure framework for seamless interworking
 - Based on TAHI open architecture
- **Convergence of worlds**
 - Protocols and standards. (MHP-OSGi-HAVi- UPnP-JINI.....Konnex-Zigbee)
- **Service Discovery Techniques.**
 - Define a network independent service discovery notation,
 - Investigate new features such as service sub typing, service advertising, service browsing, service catalogue, eventing, garbage collection
- **Security on the platform**
 - Investigation on security issues such as dynamic registration, and management of new components, dependability of registered components and privacy in the home environment.

Vision of the TEAHA System



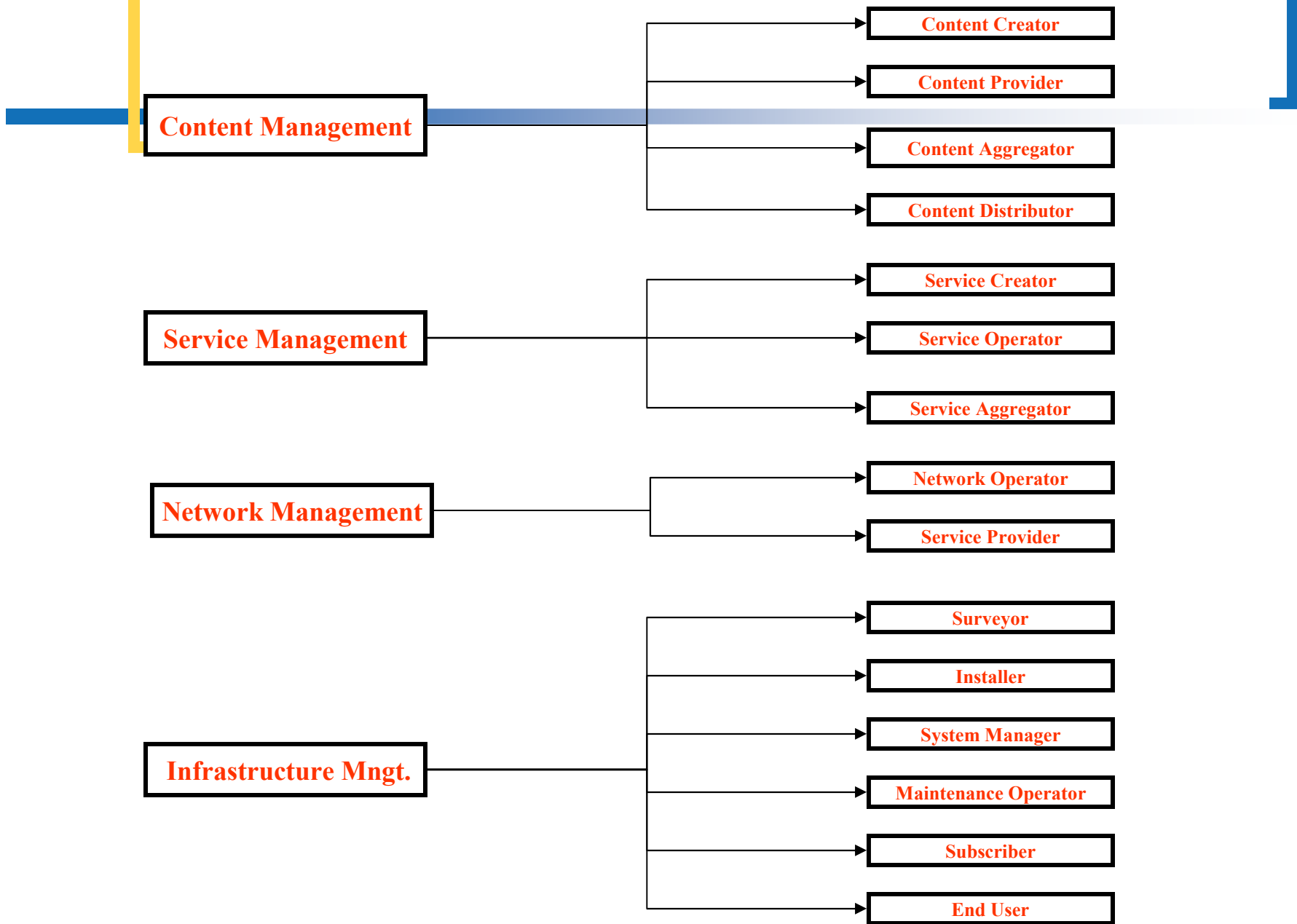
Specification of an open and secure framework

- Adaptation of the TAHI Open Architecture to suit TEAHA requirements
- Use of a cluster based classification system (Taxonomy) for simplicity
- Application of Data and System security from conception
- Implementation of up-to-date Service Discovery Techniques

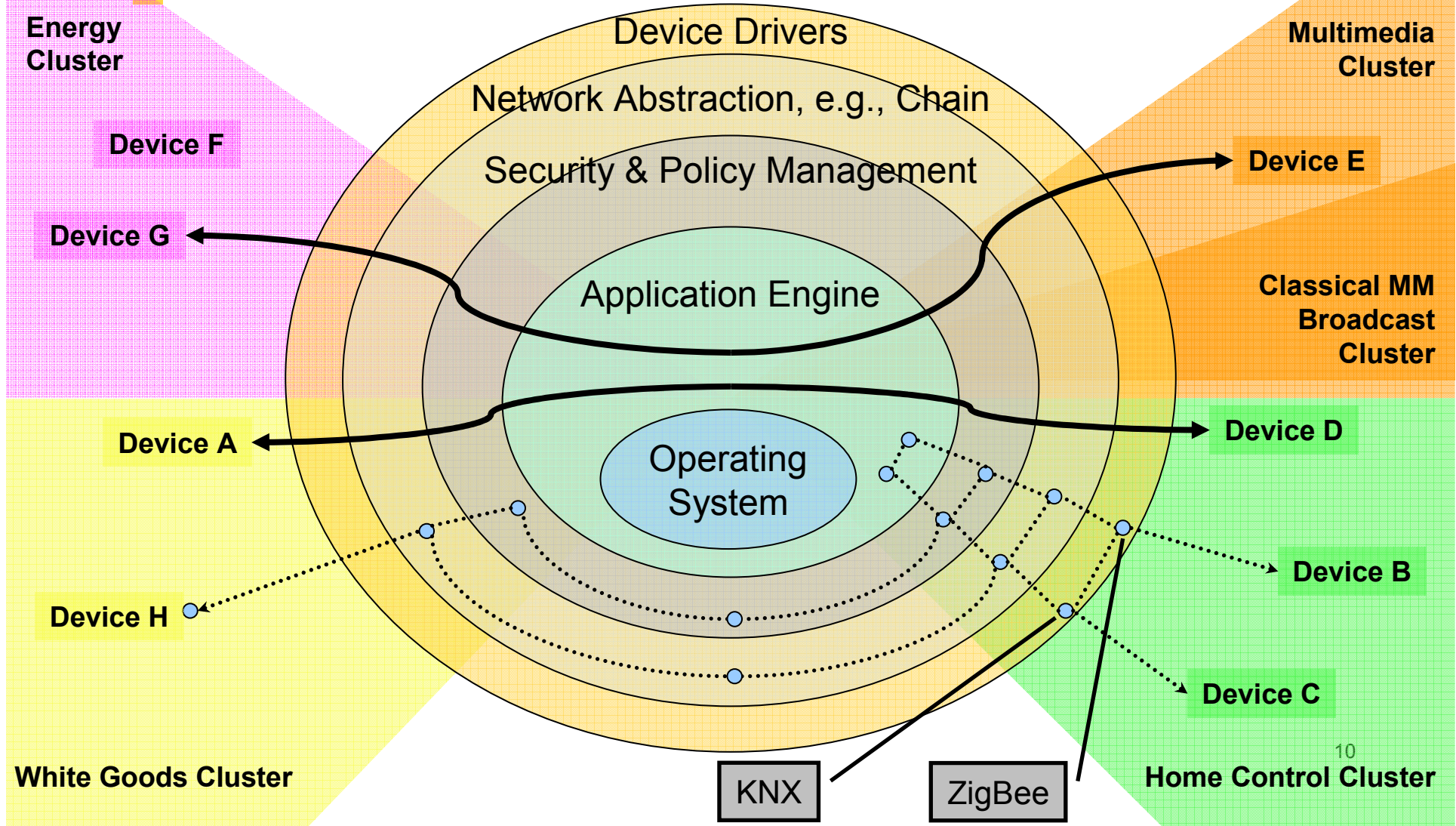
Middleware - TAHI Open Architecture.

- « A description of methodologies of an open architecture for technology and service delivery »
- The TAHI Initiative has defined an open architecture outline which provides guidelines on how to construct and deploy platforms for pervasive delivery of services.
 - Main features of the Architecture
 - The recognition of entity groups in the delivery of a service that are interdependent
 - That each entity group will need (in sequence) an association with the next one
 - That each entity may be described in terms of an Object that characterises the parameters of that entity
 - That any service will need Agents to negotiate between its source and recipient entities, entity by entity
 - That for some services the requirements of service delivery are different to those that control the delivery

TAHI Service Delivery Architecture



Cluster Impact on Architecture



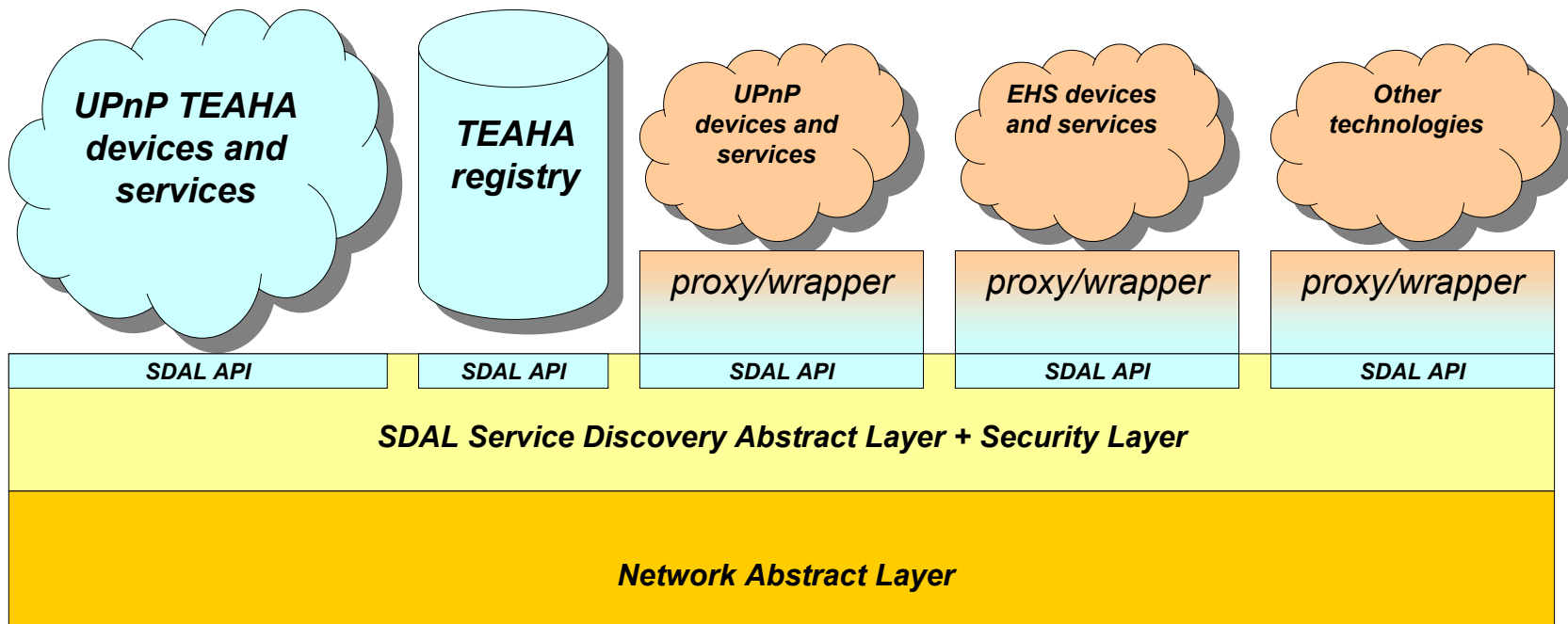
Secure Service Discovery — Objectives

- **Zero configuration requires transparent service discovery**
- **Security parameters initialized during discovery of new devices and services**
- **Security features are embedded in the architecture**

Secure Service Discovery — Architecture

SDAL main features:

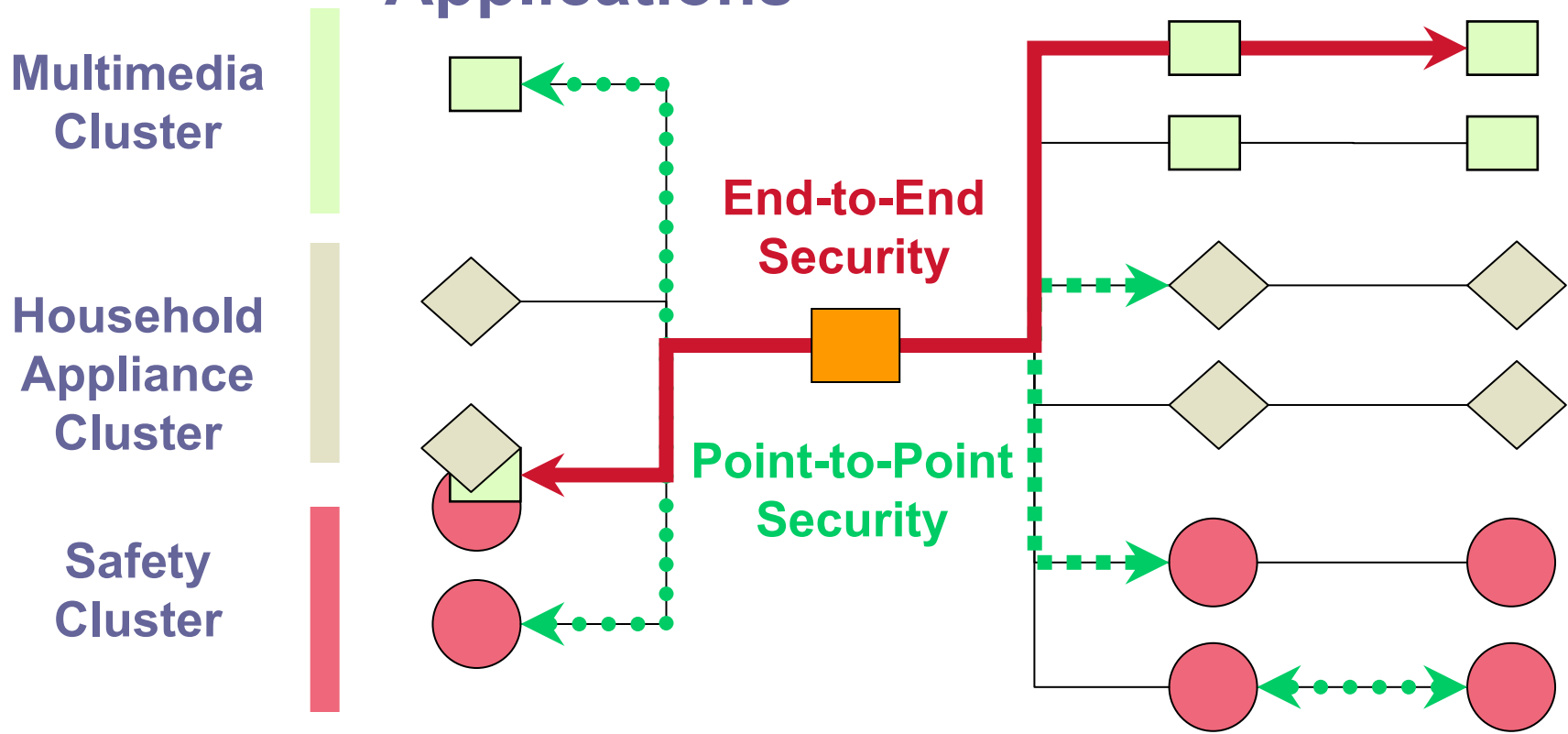
- Services and appliances
- Proxies (wrappers)
- Registry
- SDAL + Security API
- Network Abstract Layer
- Embedded Security



Embedded Security

**Service Providers
Applications**

Devices Users



Development of a low cost RF communication solution

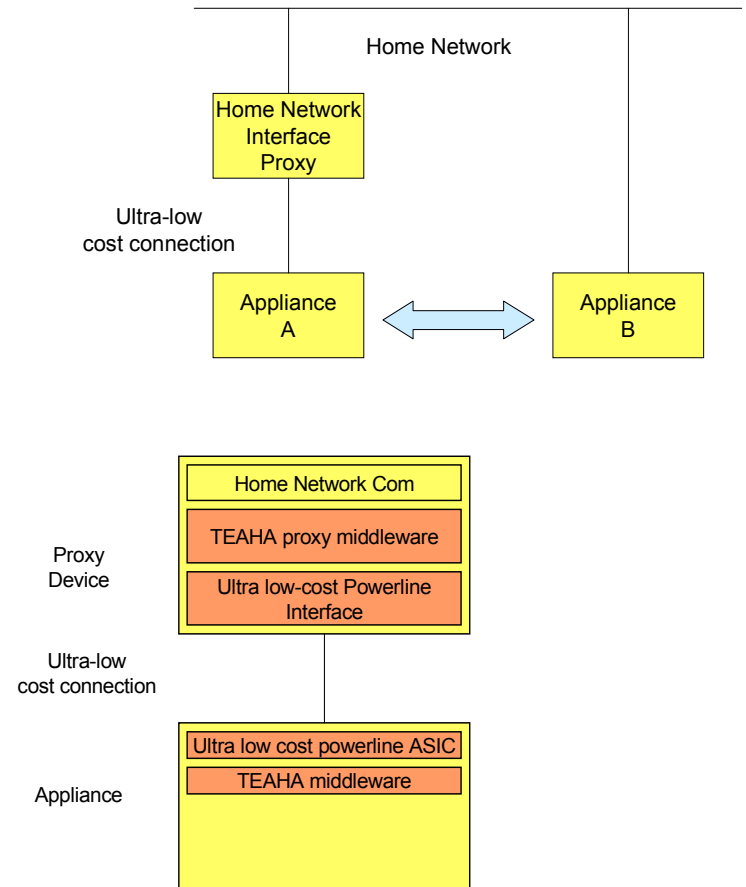
- To validate the usability of low-cost, low-power wireless networking solutions (Zigbee) for future home applications.
 - The Household Appliance Industry needs to improve the available communication components to be used in a mass market.
 - The Zigbee Alliance is defining an ultra low-cost, low-power wireless networking solution, suitable for application such as remote control, home automation, toys and games, industrial sensors, meter reading... etc.
 - Integration of TEAHA concept into one of the prominent RF solutions (Zigbee)

Development of an ultra low cost powerline communication solution

➤ To investigate, define and develop an ultra low cost power line solution for seamless interworking

■ Ultra-low cost powerline

- In order to allow secure connectivity of some devices, an ultra low cost solution consists in physically separating network communication from the device, by including very simple dedicated connection from the device to the network communication systems. (proxy approach)
- investigate issues such as noise, compliance to EMC standards, coexistence with other powerline networks



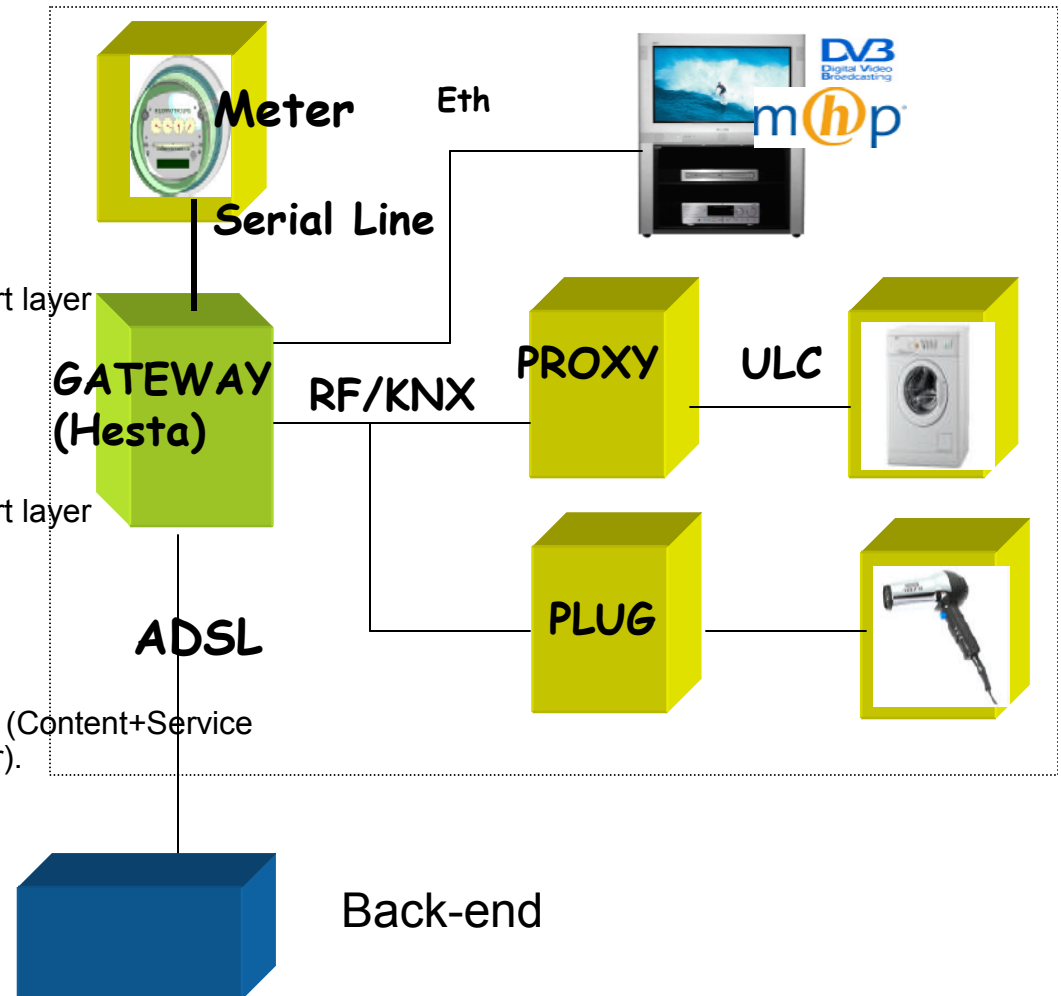
The development of advanced residential gateway subsystems

- To define and develop an end-to-end solution for the dynamic delivery of managed services and applications into the home, based on one or several Residential Gateway(s).

- Residential Gateway end-to-end solution
 - The end-to-end solution will encompass a RG, a Gateway Operator-Aggregator, Service Providers.
 - Enhancements in the three main components (Addition of Business Intelligence to the Aggregator, interconnection with legacy systems, exchange of information among subsystems by means of Web Services)
 - Based on open architectures (TAHI)

Demonstrator outlines

- Merloni Washing-Machine
 - CECED compliant
 - Ultra-low cost powerline connection
- Proxy device
 - RF Zigbee transport layer or EHS/KNX transport layer
 - ULC powerline connection
 - IEEE 802.15.4
- Gateway Subsystems
 - IEEE 802.15.4
 - RF Zigbee transport layer or EHS/KNX transport layer
 - OSGi framework
 - Ethernet / Wifi
 - ADSL interface
- Telefonica Back-End
 - OSGi based platforms for Aggregating services (Content+Service Provision/Service Aggregator/Network Operator).



Dissemination and standardisation

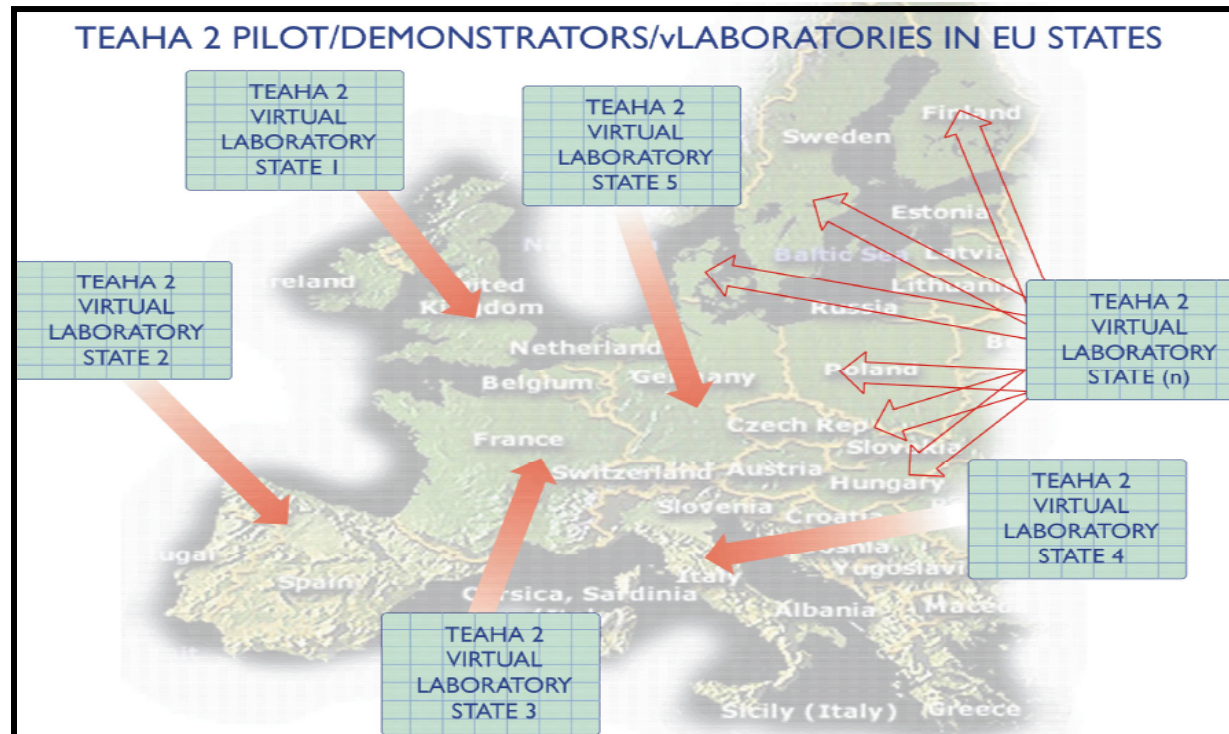
- Contribution to standardization bodies (OSGi, Konnex, EIBA, Zigbee Alliance...).
- Demonstrators to show advance in R&D activities.
- Dissemination (Ensure information of initiatives, especially into the company business units. Organization of documents, brochures, books, workshops, conferences, papers for journals...)
- Links/coordination to Forums, Initiatives, Alliances with common objectives
- Exploitation Plans

Teaha partners

- Technology and semiconductor Partners: Ikerlan, Trialog, WRAP
- Research Partners: KU. Leuven, University Twente
- Telcos and utilities: Telefonica I+D (coordinator), EDF
- Consumer electronics and white goods: Philips Digital System Lab. Fagor, WRAP-Merloni
- Associations: Konnex, TAHI represented by Advantica
- Market Research Company : Homega-Research

Teaha roadmap- trials

- Pave the way for massive field trials in many EU countries.
- Rely on TAHI experience and other initiatives to build connected “virtual laboratories” in many EU States delivering fast feedback on new technologies in use by the citizens of Europe



Closing

Thank you.

**For further information visit:
www.teaha.org.**