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Architectures for LonWorks® Home Automation Systems

Luca Coppadoro
Echelon



Open Control Networks Echelon's Vision



- Virtually every component will have it's own intelligence...
- **Intelligent Devices Anywhere**
 - ..and they will be effectively tied together
- **Working Together**
 - ...to support integrated functional control
- **Based on a Global Standard**
 -LonWorks

What is Possible Today



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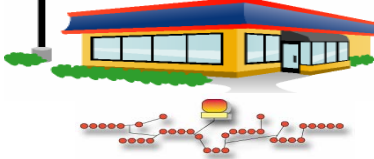
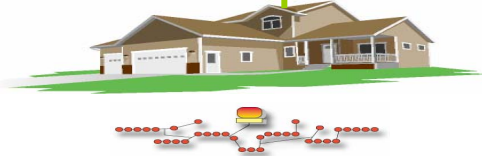
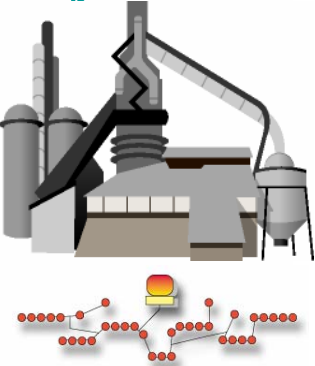


Increasing Business
Intelligence

Transforming Data into
Knowledge



Connecting Networks
to Networks



Enabling Intelligent
Devices and Networks



LonWorks European Standard



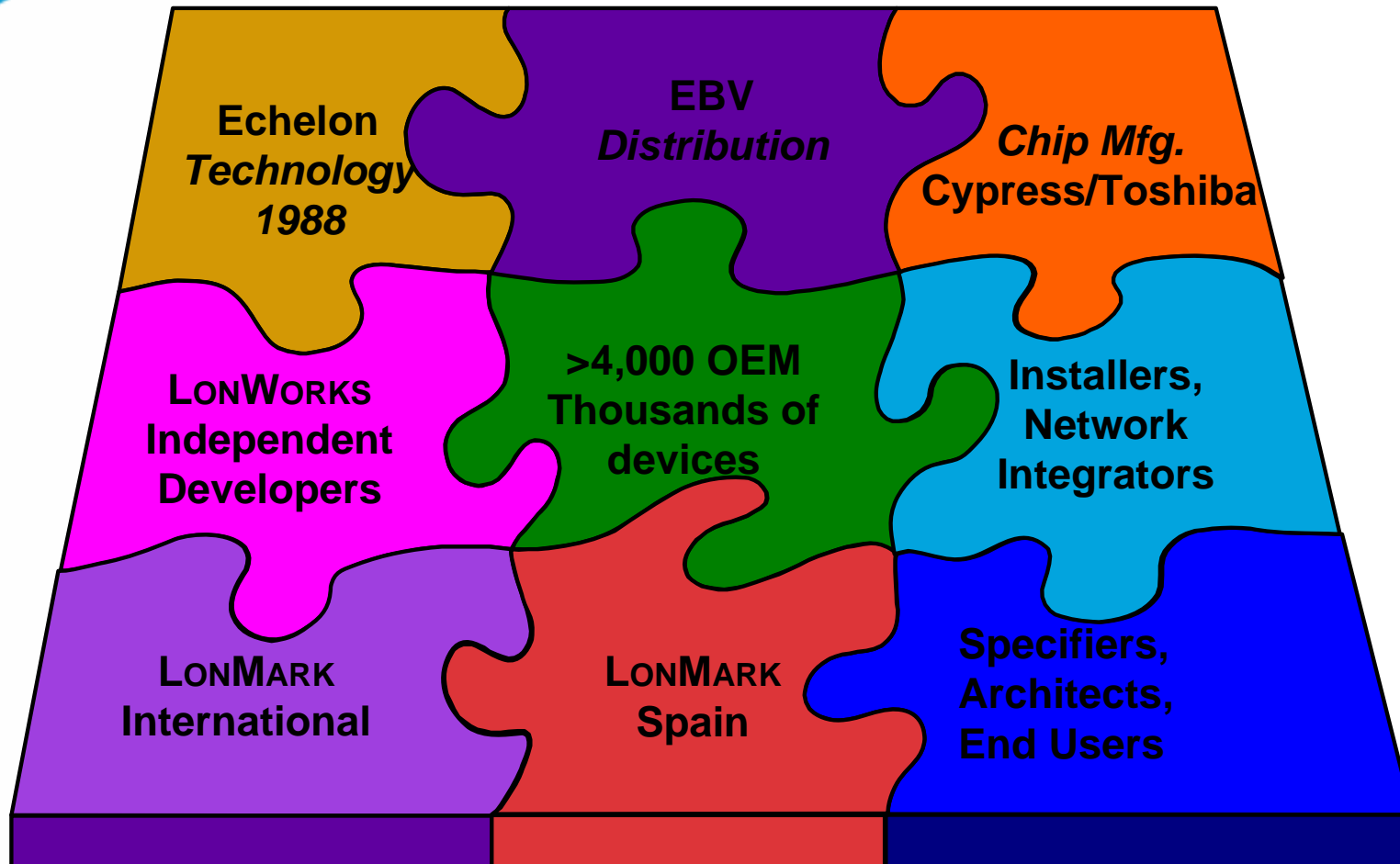
- EN14908 Series 1 & 2 (protocol & twisted pair communication)
 - Since 2005
- EN14908 Series 3 & 4 (Power Line & IP 852)
 - Since end 2006

Note: Historically the protocol is also known as *LonTalk*® or *ANSI/CEA/EIA 709.1-2-3* in USA

EN14908 Ecosystem - Players



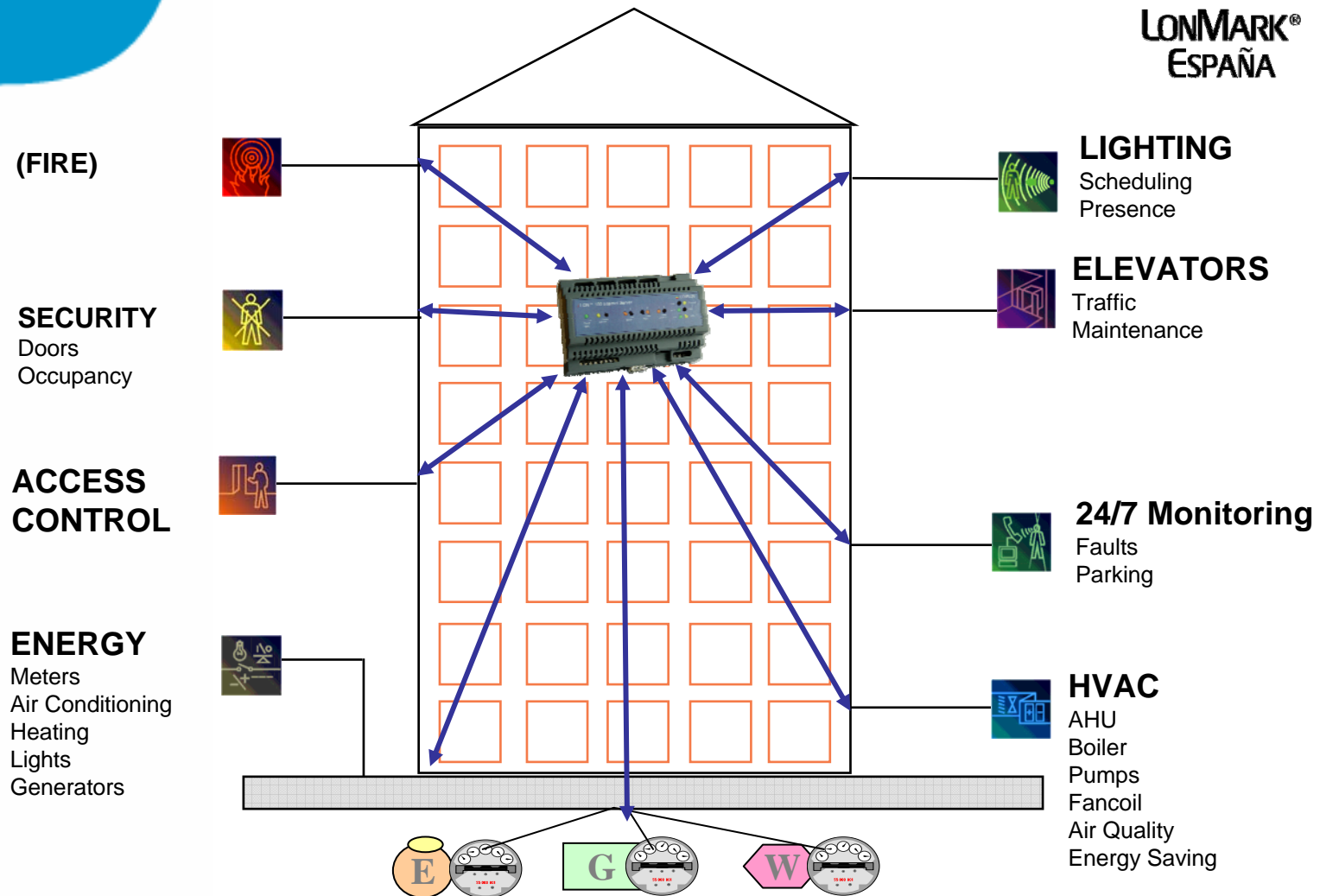
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EN14908 Global Building Management



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Coeur Defense



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Coeur Défense

5-7, place de La Défense
Quartier Défense 4
92 La Défense

- Biggest Office centre in Europe, in La Défense, Paris
- Over 182,000 m² and 5 towers
- 8 restaurants, 2.800 parking places



Building Automation System

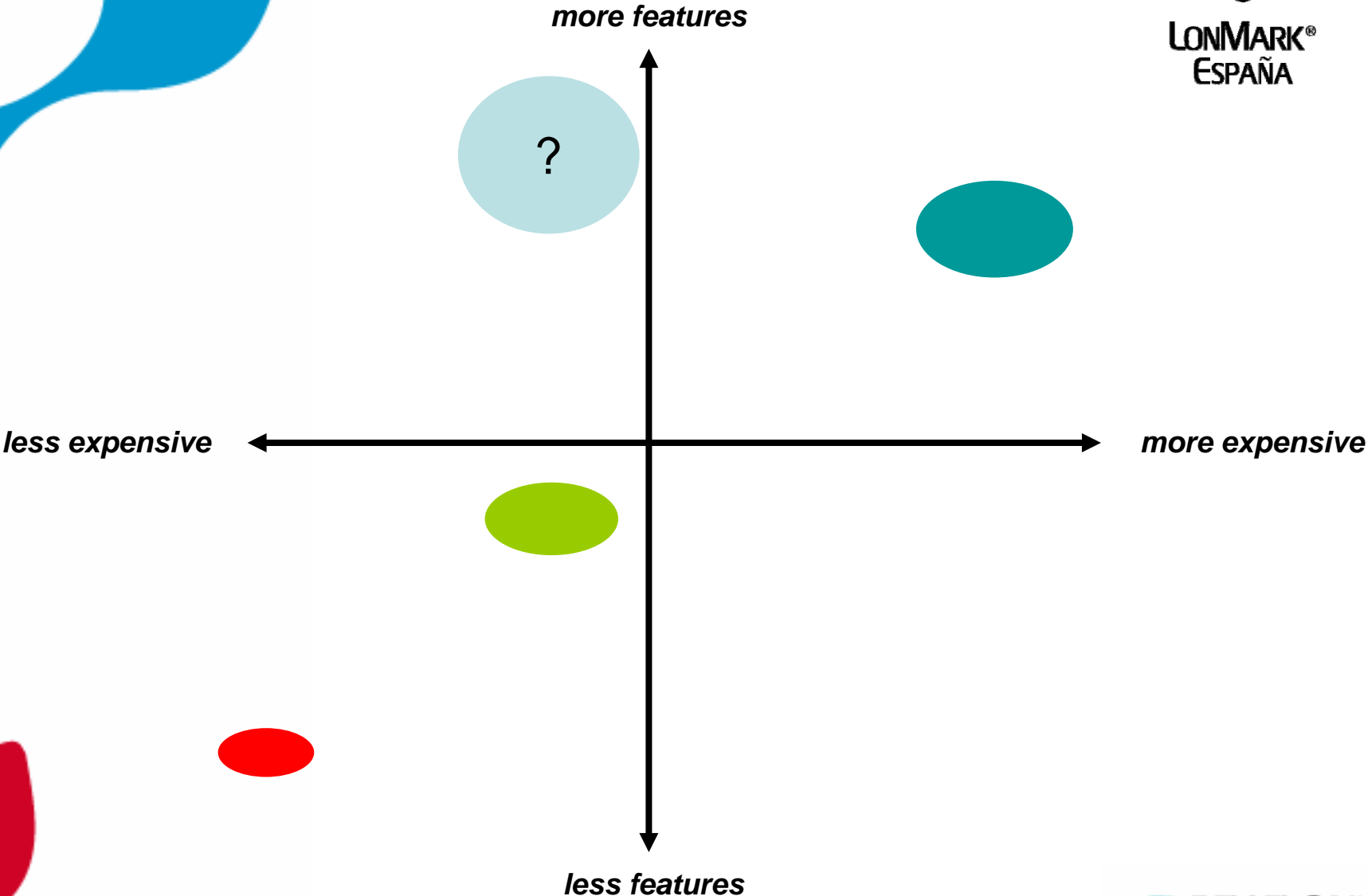
- 15.000 LonWorks devices
- *i*.Lon 100-based architecture

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Home Automation Solutions



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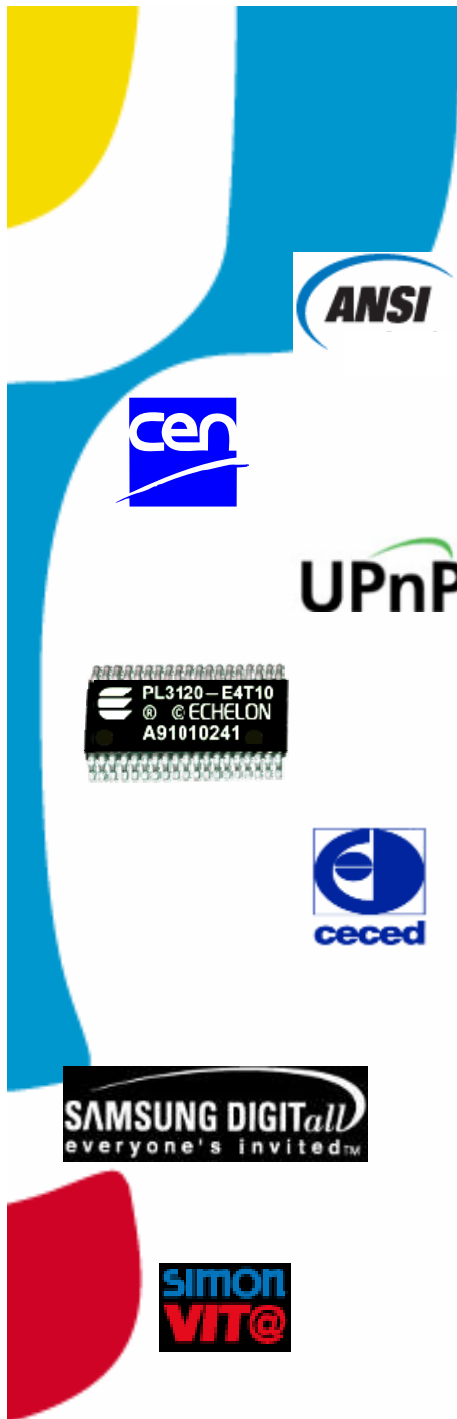


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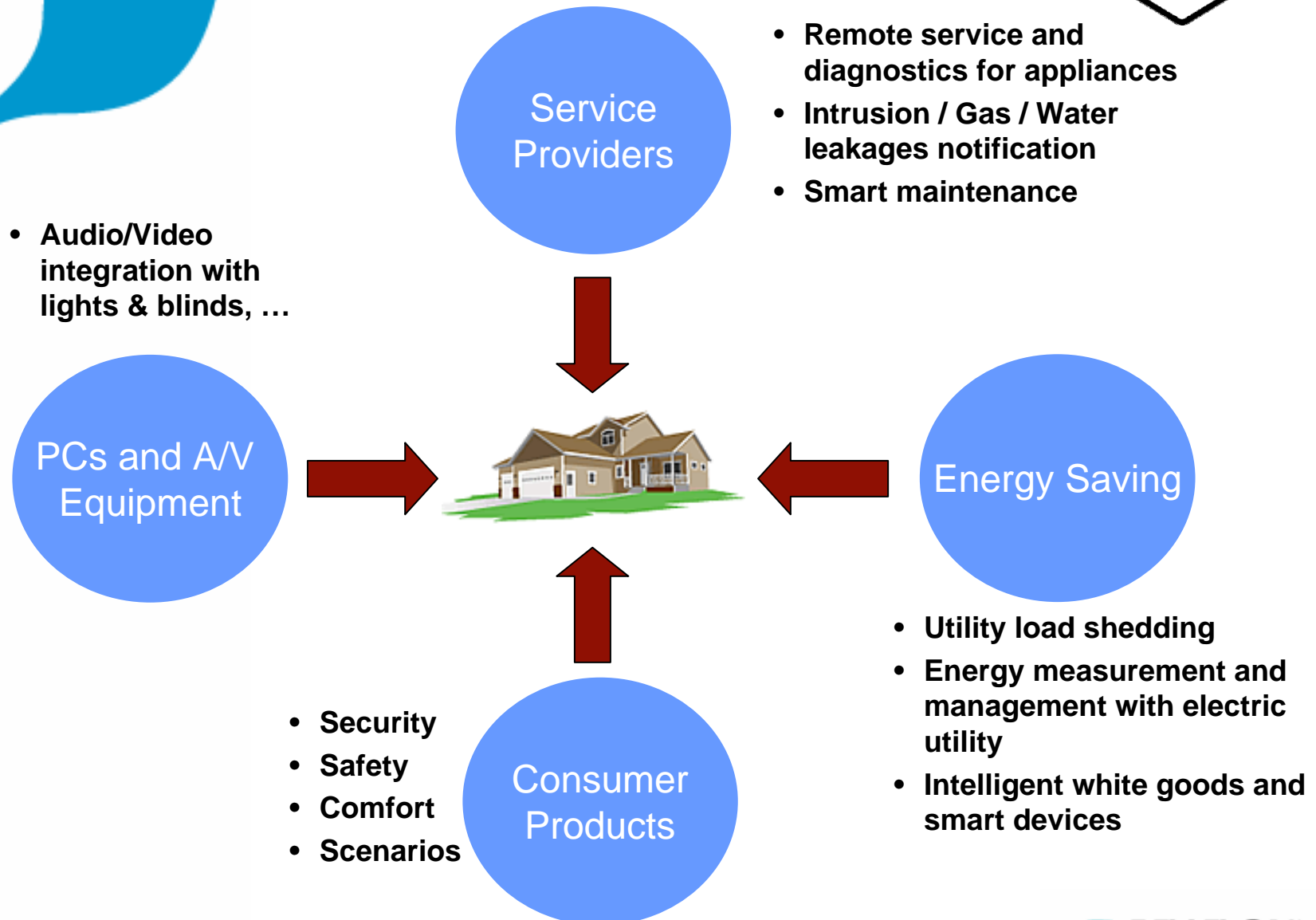
New Landscape



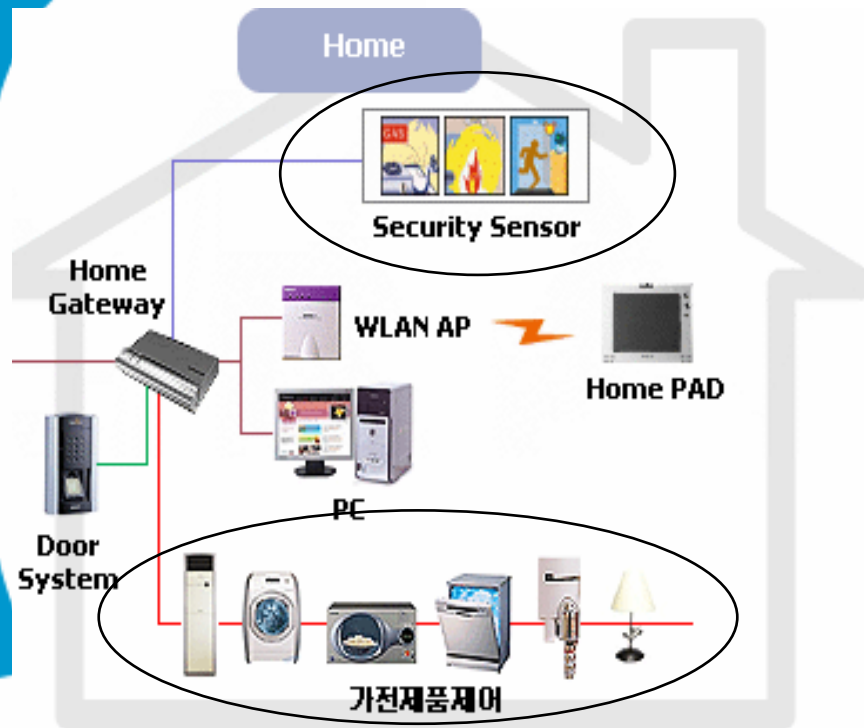
- LONWORKS® is now accepted as an open standard
 - ANSI/CEA 709.1-2, EN14908
- Echelon actively participates in CEN, CEA, ISO
 - Committees/members reveal new opportunities
- Echelon engagement with UPnP
 - Technical and steering committee
- Cost-effective, home-specific power line solution
 - Power Line Smart Transceivers, switched-leg circuit
- CECED (European appliance manufacturers association) AIS protocol implemented with LonMark
 - Development of a powerful self-installation methodology
- Adoption by *Samsung* and *Simon* has garnered a lot of interest
 - Legitimized LONWORKS technology for use in home automation
- Emergence of market movers in international markets
 - Samsung
 - Simon
 - KyungDong



Home Automation Market Entry Points

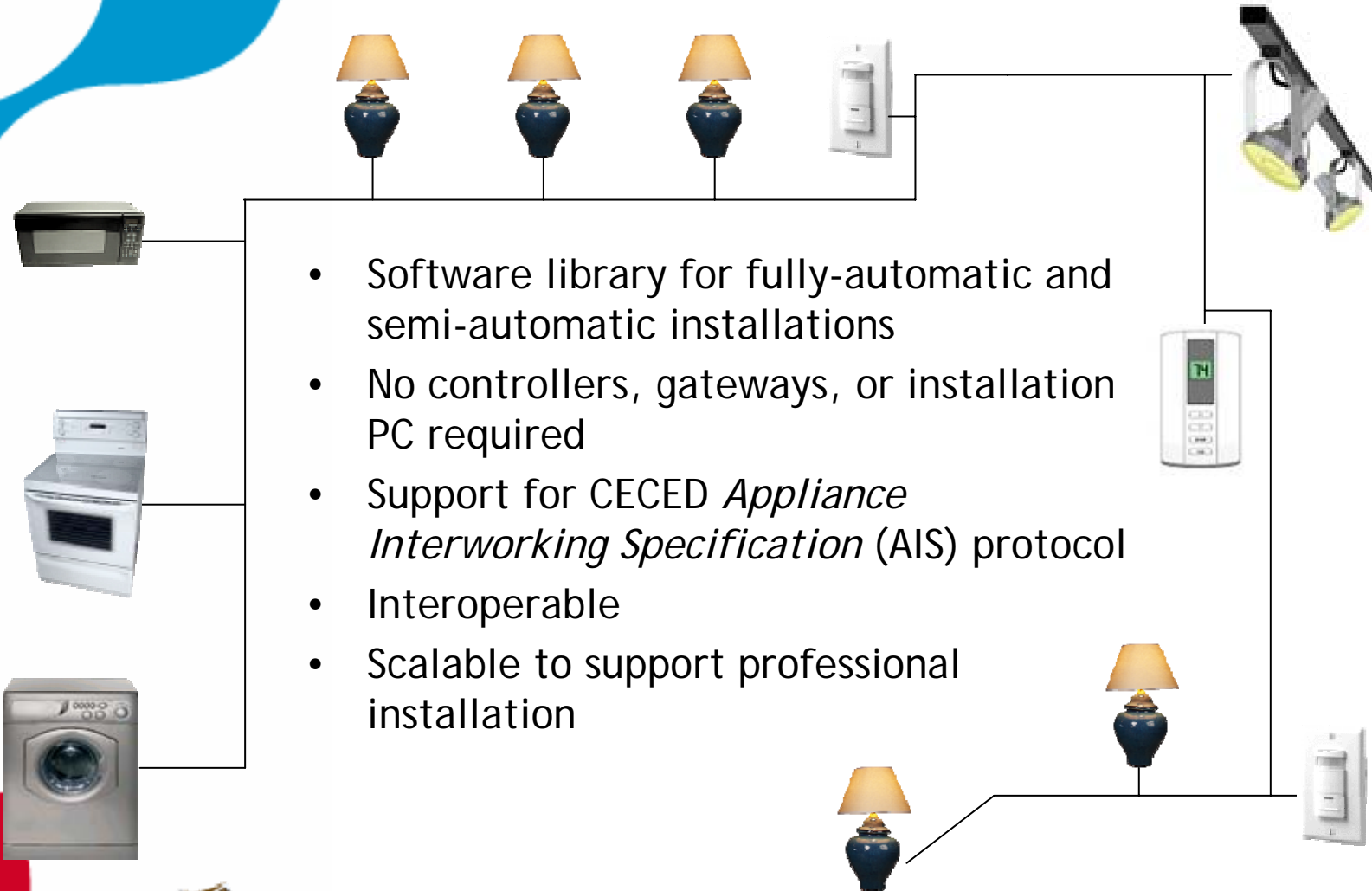


Consumer Expectations



- *Easy configuration and installation*

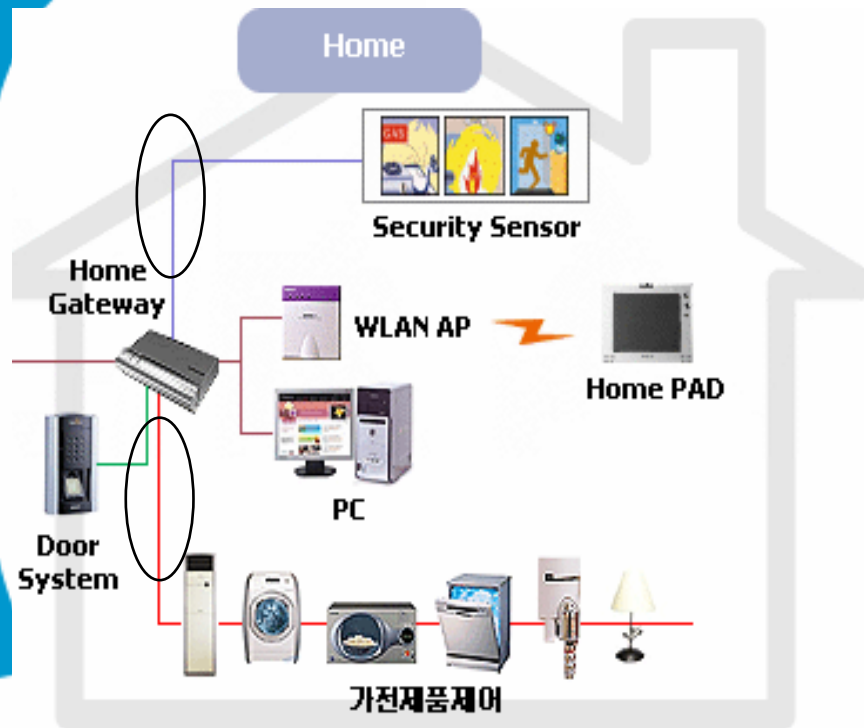
Interoperable Self-Installation (ISI)



- Software library for fully-automatic and semi-automatic installations
- No controllers, gateways, or installation PC required
- Support for CECED *Appliance Interworking Specification* (AIS) protocol
- Interoperable
- Scalable to support professional installation



Consumer Expectations



- ✓ *Easy configuration and installation*
- *Security and reliability*

New Powerline Technology for the Home



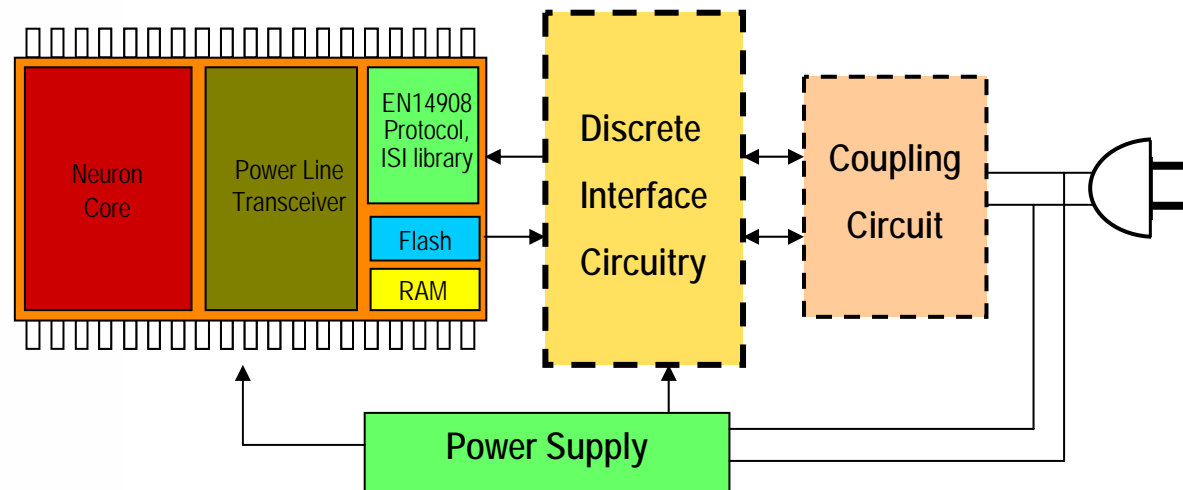
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PL 3170



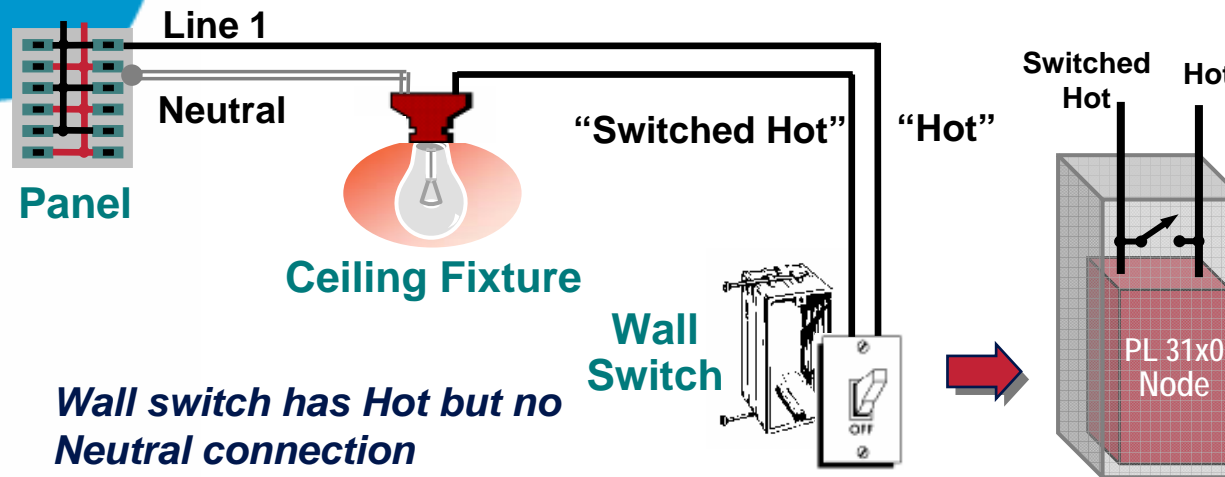
- Full *System-On-Chip*
- Integrated *ISI technology*
- Smaller devices
- Shorter time-to-market
- Availability Q3-07



Switched-Leg Operation



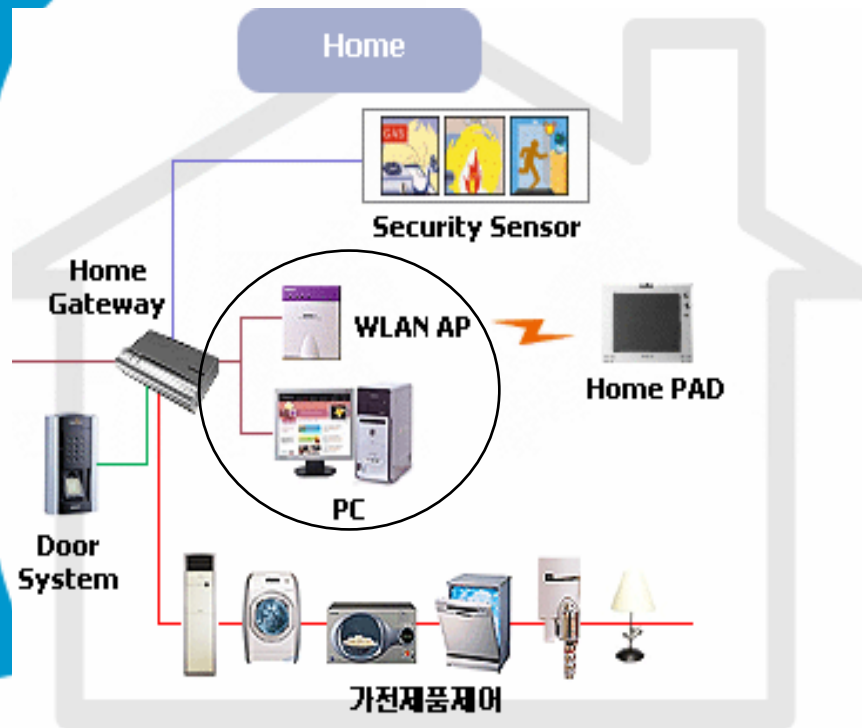
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- Support for switched-leg circuits is essential for any type of home control application
 - 50% of all homes
- Echelon's power line technology can operate on a switched-leg lighting circuit
 - Low-current node operation, high immunity to noise, amplifier for wide impedance variations
 - Fluorescent and incandescent bulbs



Consumer Expectations

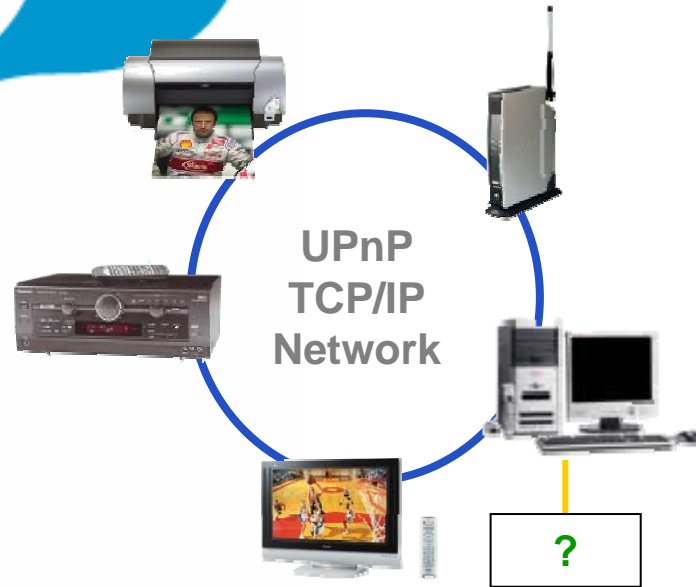


- ✓ *Easy configuration* and *installation*
- ✓ *Security* and *reliability*
- Seamless *interoperation* and *integration* into data network

Convergence of Control & A/V



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Wireless



Mobile
Devices

LonWorks
HA
Network



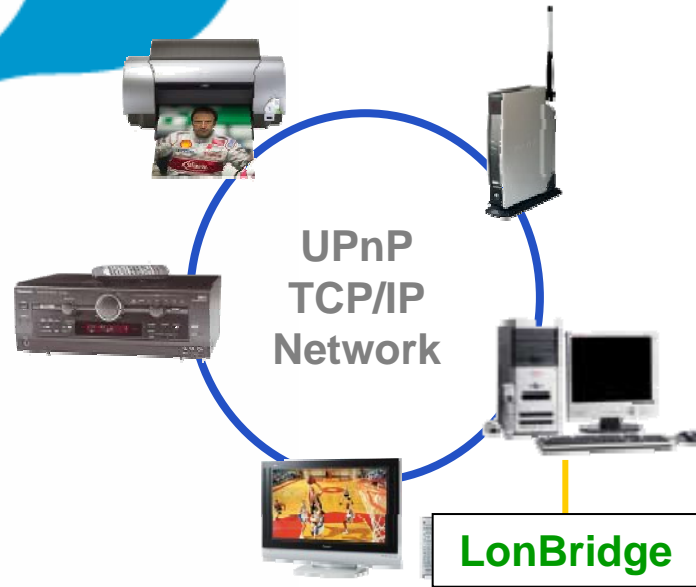
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LonBridge Software Platform

For OSGi and UPnP Gateways



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Wireless

A black lightning bolt icon representing wireless connectivity.

Mobile
Devices

LonWorks
HA
Network



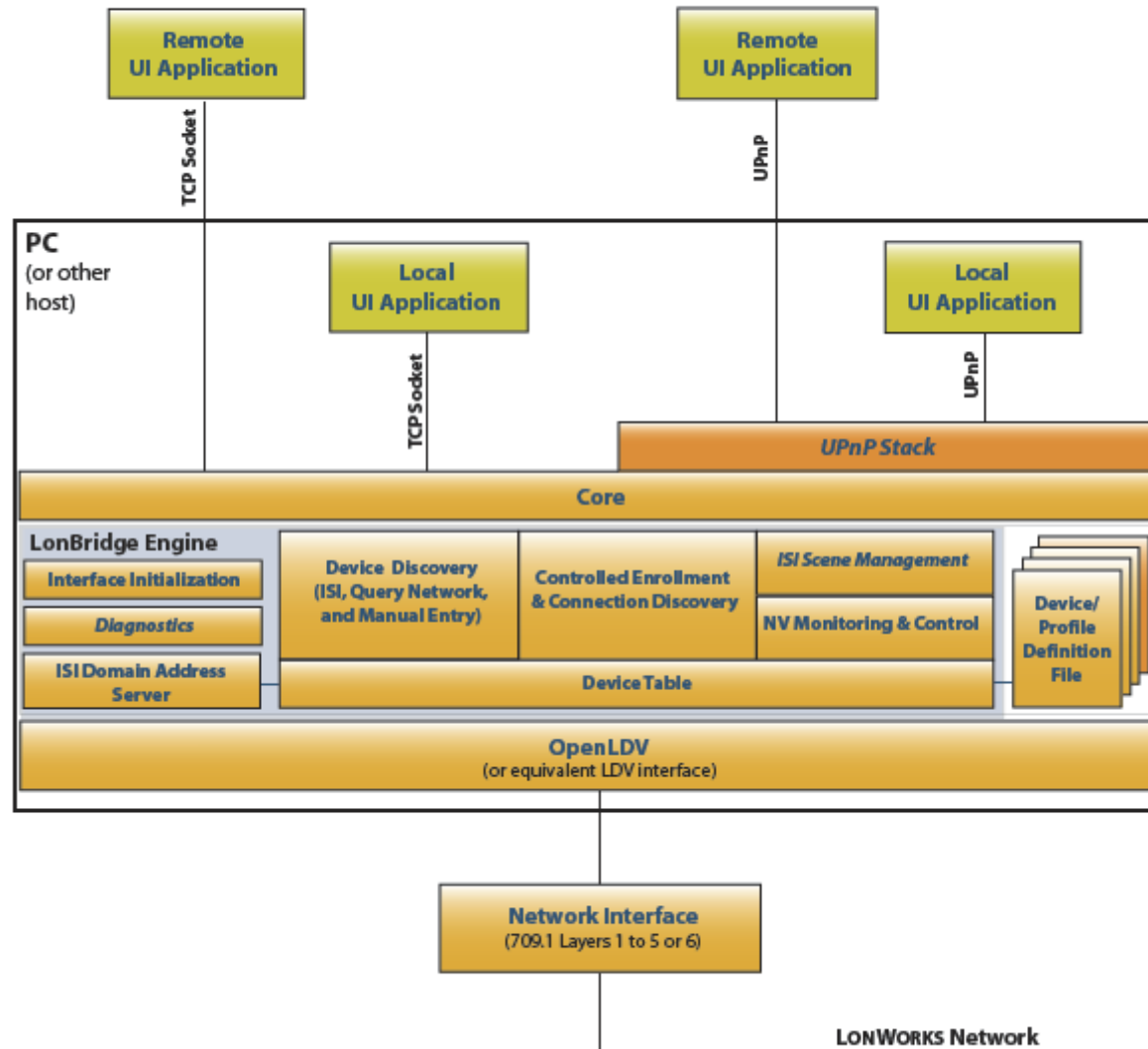
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LonBridge Software Platform Architecture



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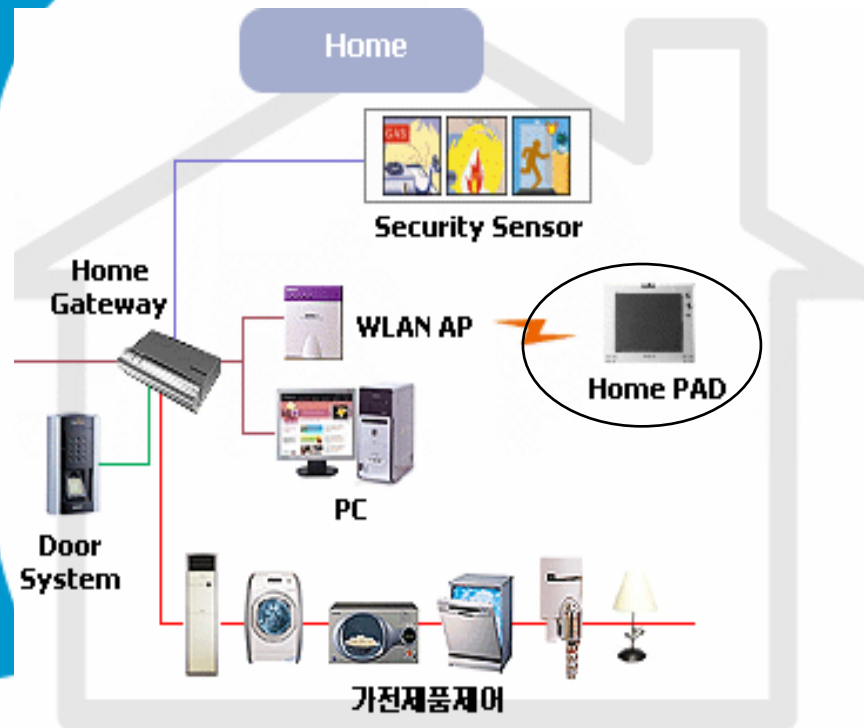
Echelon LonBridge™ Block Diagram



LONWORKS Network



Consumer Expectations

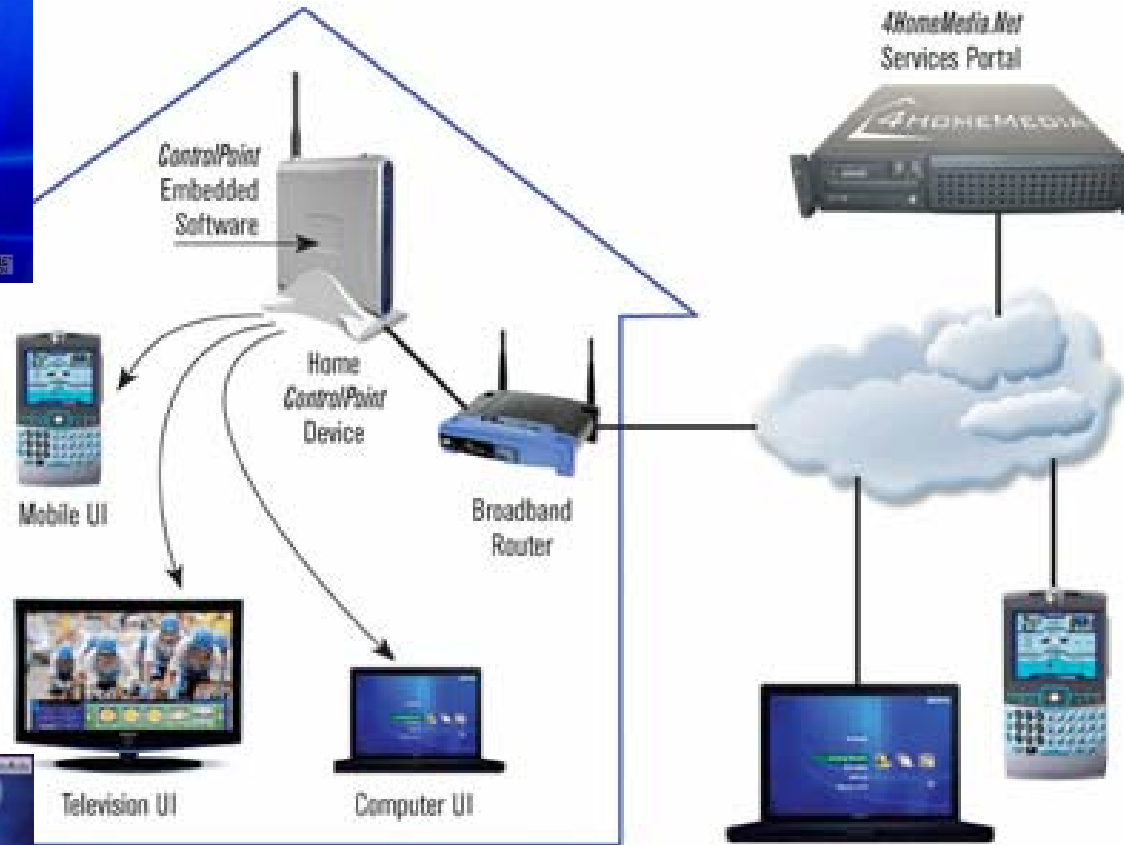


- ✓ *Easy configuration* and *installation*
- ✓ *Security* and *reliability*
- ✓ Seamless *interoperation* and *integration* into data network
- *Intuitive* controls

4HomeMedia UI / Software Architecture

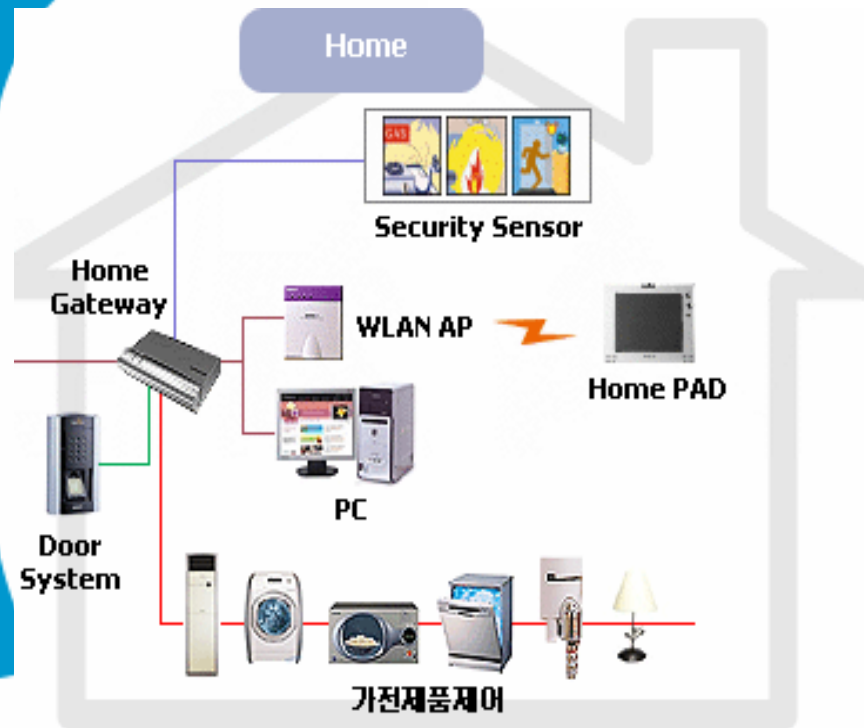


4HomeMedia UI / Software Architecture



Remote Access via PC and Mobile Devices

Consumer Expectations



- ✓ *Easy configuration* and *installation*
- ✓ *Security* and *reliability*
- ✓ Seamless *interoperation* and *integration* into data network
- ✓ *Intuitive* controls

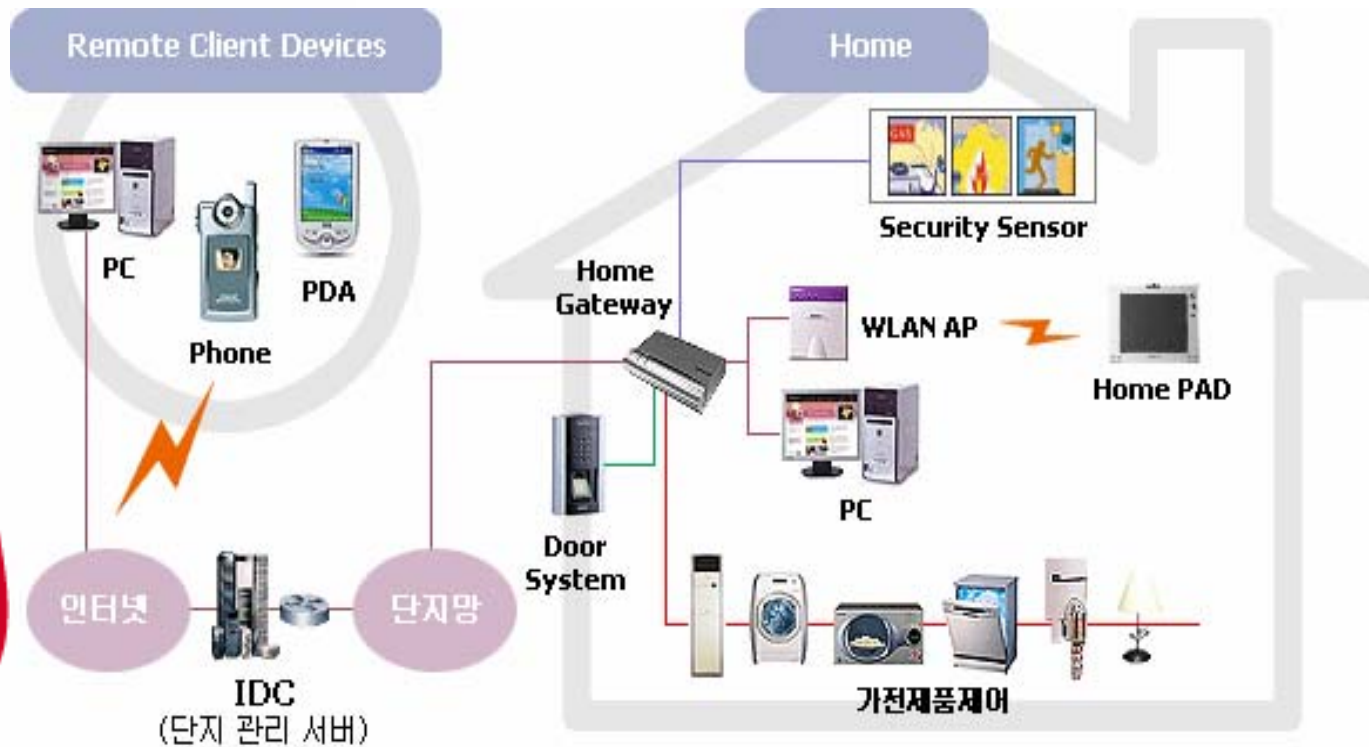
Product Availability



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- Simon Vit@
- ISDE Domolon
- eControls

- Samsung HOMEVITA
- KyungDong
- DongMoon
- Secyourit SIENNA



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Introducing The Digital Home® Alliance



- Goals
 - Create consumer awareness of compatible, affordable, off-the-shelf products
 - Help members reach more customers
- Market Approach
 - Promote value not technology
 - Establish a global network of industry leaders offering home automation products and services



Alliance Structure



- Flat organization with no membership tiers
 - One membership level only
- No membership fees
 - “Pay as you go” marketing programs
- Special reference designs for Echelon home automation products



Alliance Actions



- Logo Program
- Establish home control in terms of value to consumer
- Deemphasize technology, protocol and hide complexity from consumers
- Dedicated Web Portal - <http://www.digitalhome.com>
 - Collaborative site managed by Echelon
 - Member companies may provide
 - Promotional Contents
 - Hypertext links
 - Application stories and articles



Current DHA Members





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Thank You

luca@echelon.co.uk

