



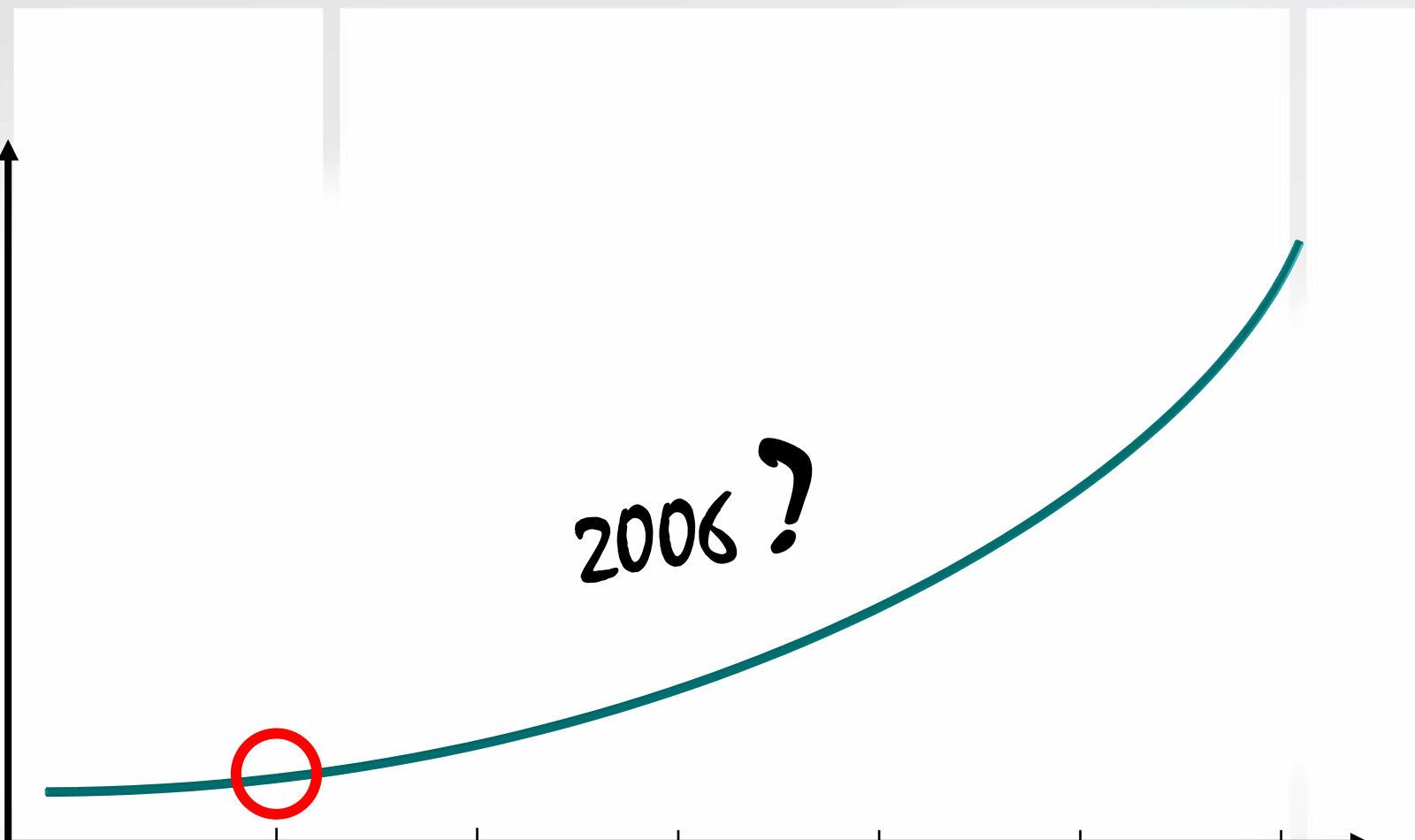
Architectures for LonWorks® Home Automation Systems

Luca Coppadoro

Echelon

Home Automation Market

size



2001
2002
2003
2004
TODAY

years
TIME



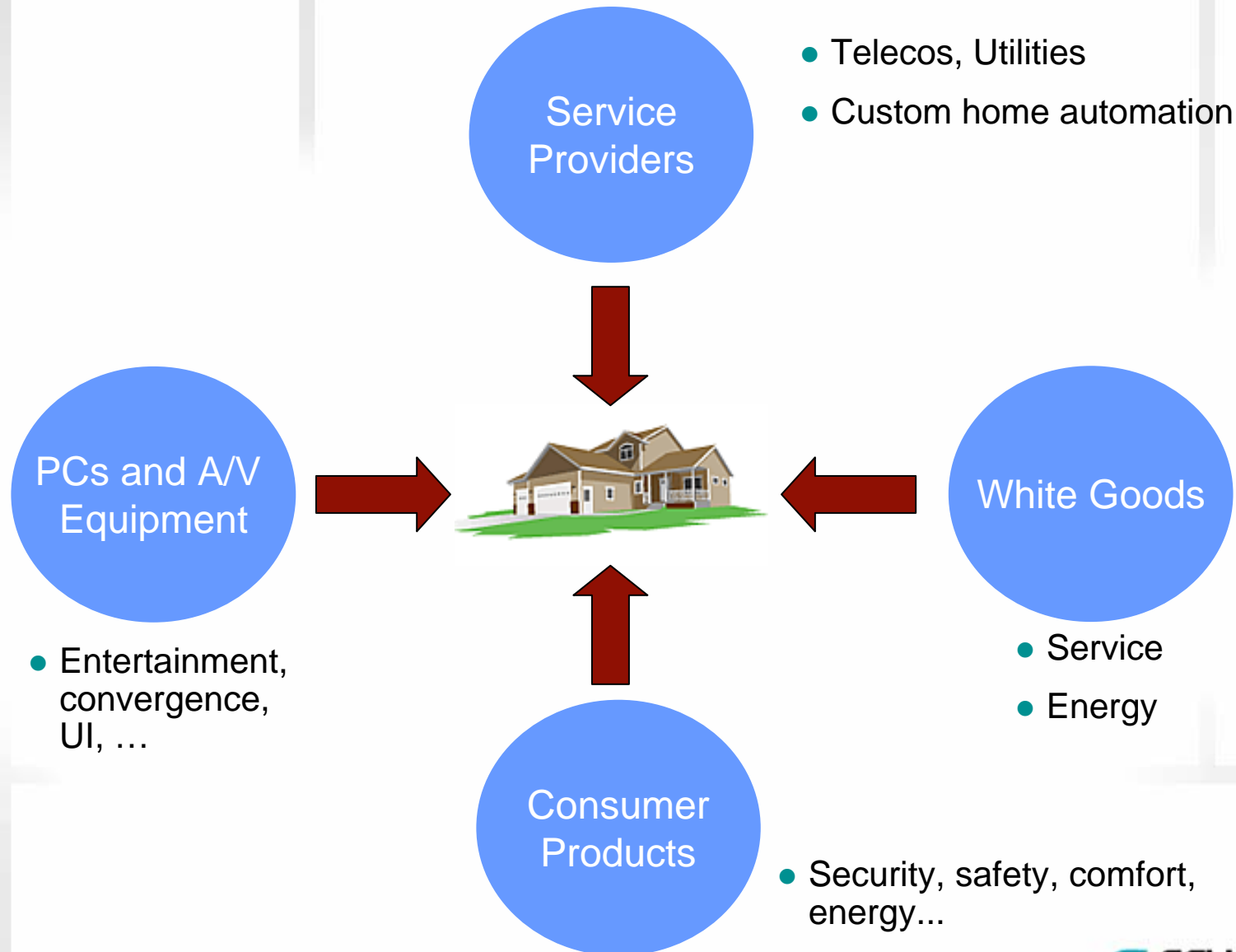
New Landscape



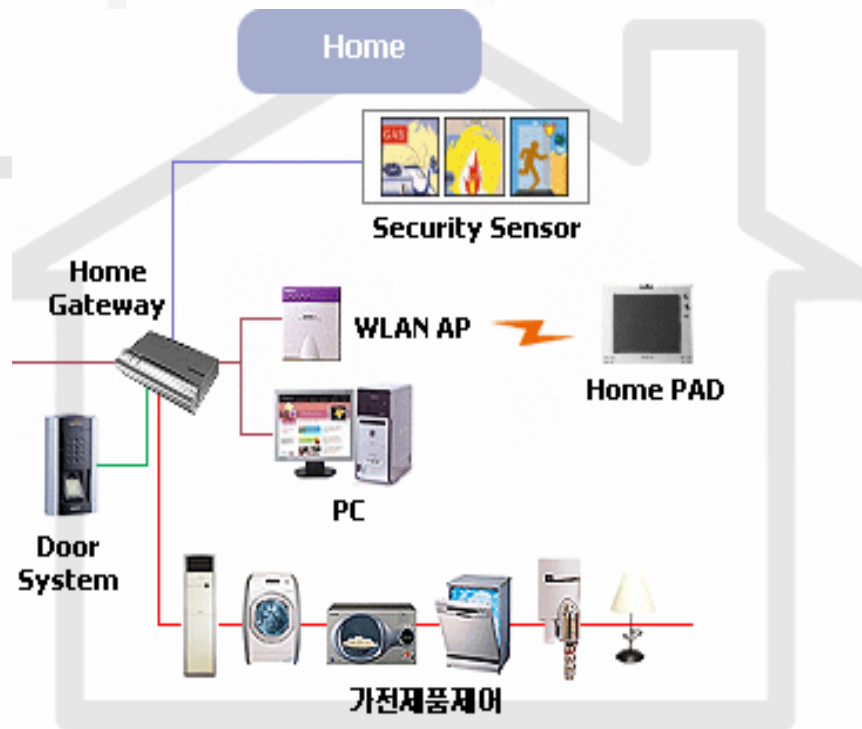
- LONWORKS® is now accepted as an open standard
 - ANSI/CEA 709.1/2, EN14908
- Echelon actively participates in CEN, CEA, ISO
 - Committees/members reveal new opportunities
- Active re-engagement with UPnP
 - Technical and steering committee
- Cost-effective power line solution
 - Power Line Smart Transceivers, switched-leg circuit
- Active involvement with CECED (European appliance manufacturers association)
 - 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
 - KyungDong
 - DongMoon



Market Entry Points

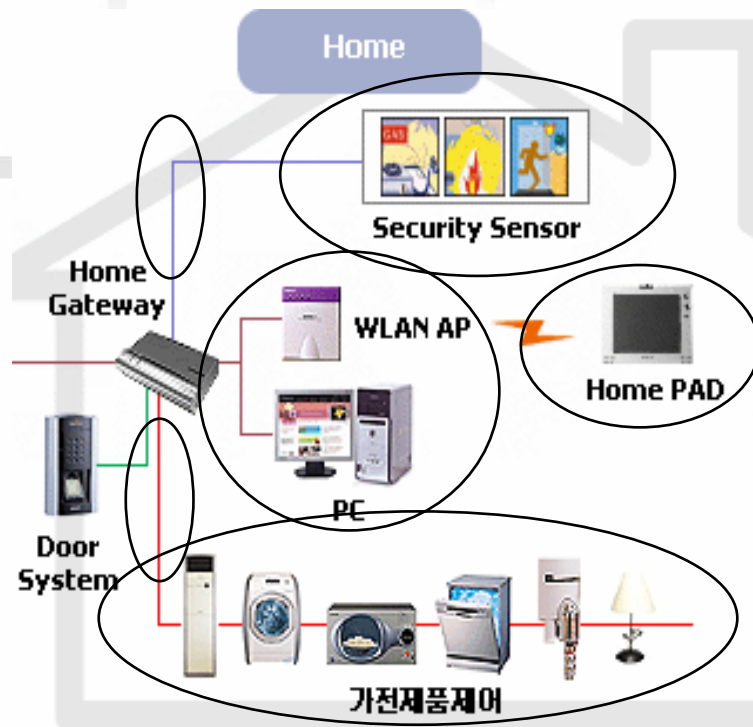


Consumer Reasons



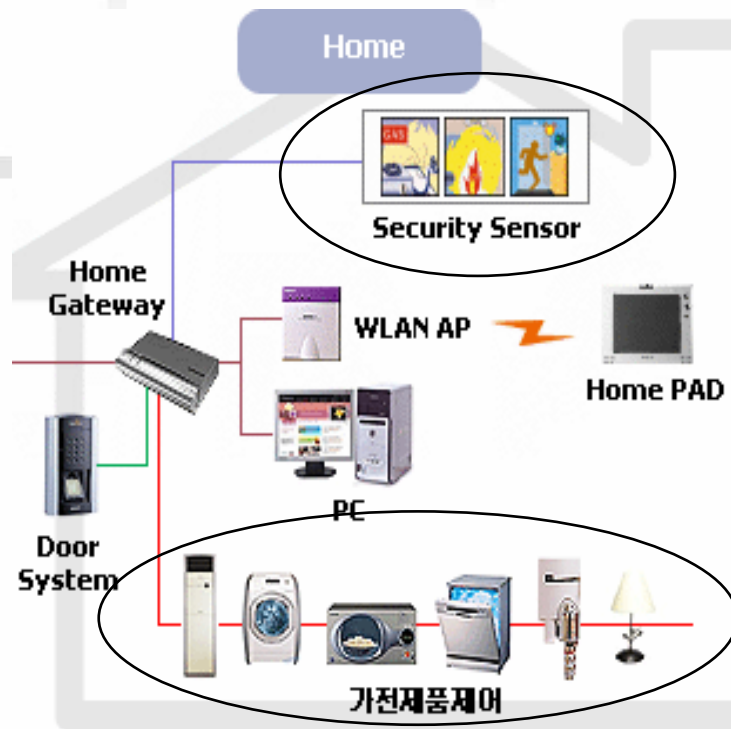
- *Useful* system applications
 - Safety
 - Security
 - Energy savings
 - Comfort
 - Entertainment
- *"Show off"* factor

Consumer Expectations



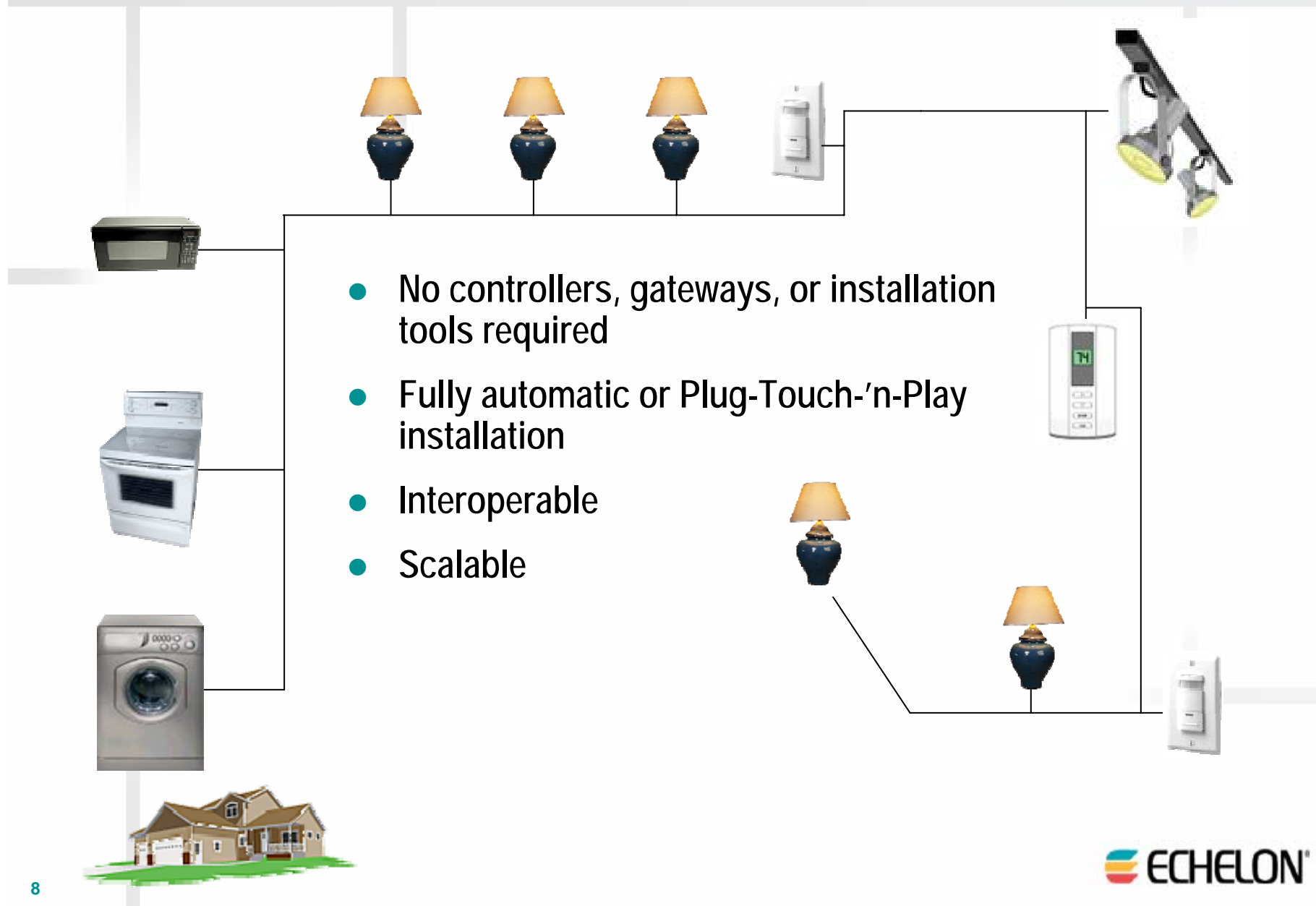
- *Easy configuration* and *installation*
- *Intuitive* controls
- Seamless *interoperation*
- *Security* and *reliability*
- *Integration* into data network

Consumer Expectations

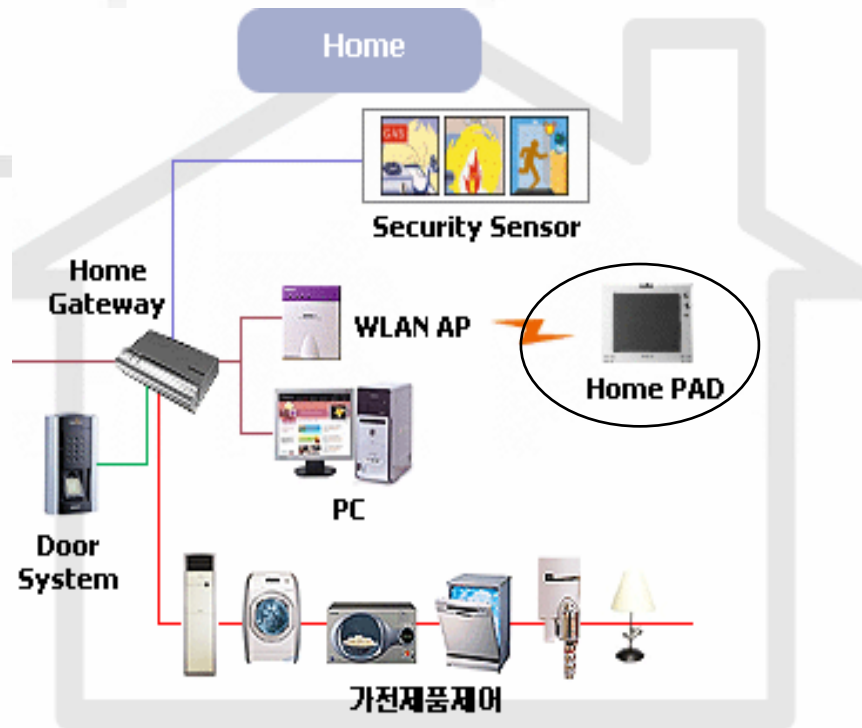


- *Easy configuration and installation*

Interoperable Self-Installation (ISI)



Consumer Expectations



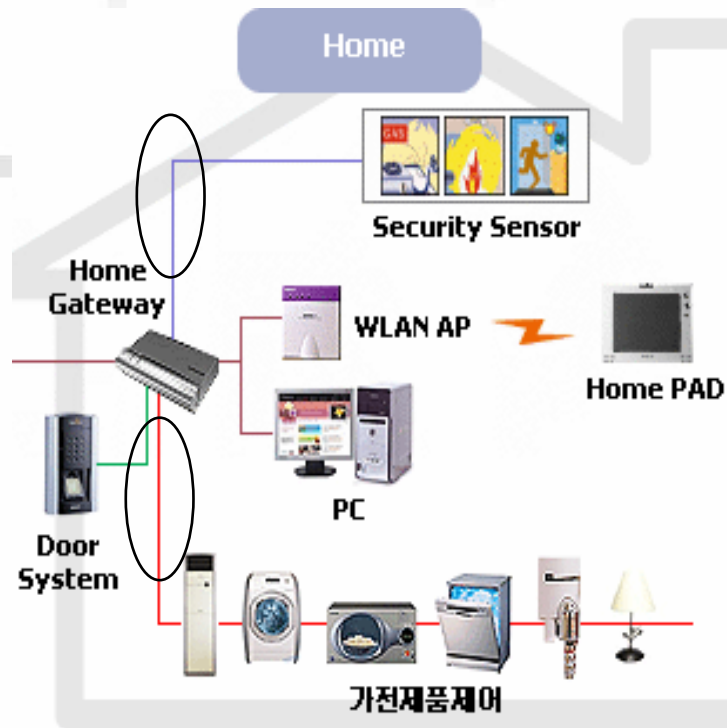
- ✓ *Easy configuration and installation*
- *Intuitive controls*

4HomeMedia UI / Software Architecture



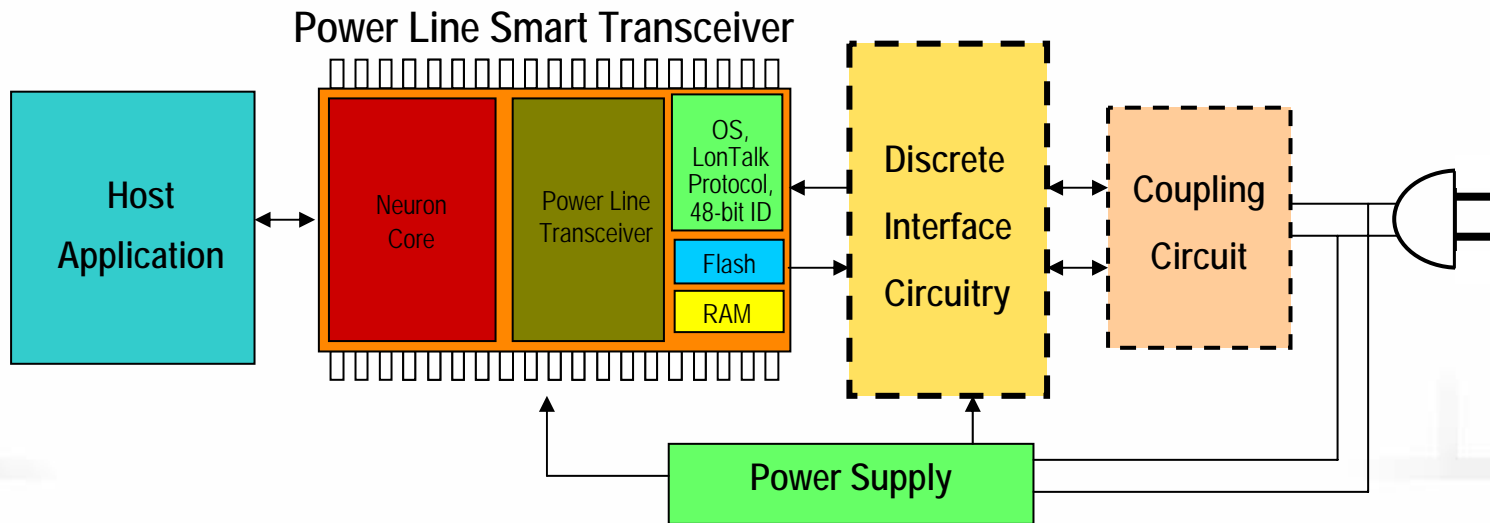
- Intuitive, context-based user-experience for LONWORKS - based consumer devices
- Cross-platform user-interface (Media Center, mobiles, PDA) with real-time, two-way status
- Client-server and network-based architecture
- Extensible, XML-based platform
- Supports most computer OSs and MIPS Linux embedded devices
- OEM/ODM implementation-friendly software

Consumer Expectations



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

Powerline Technology

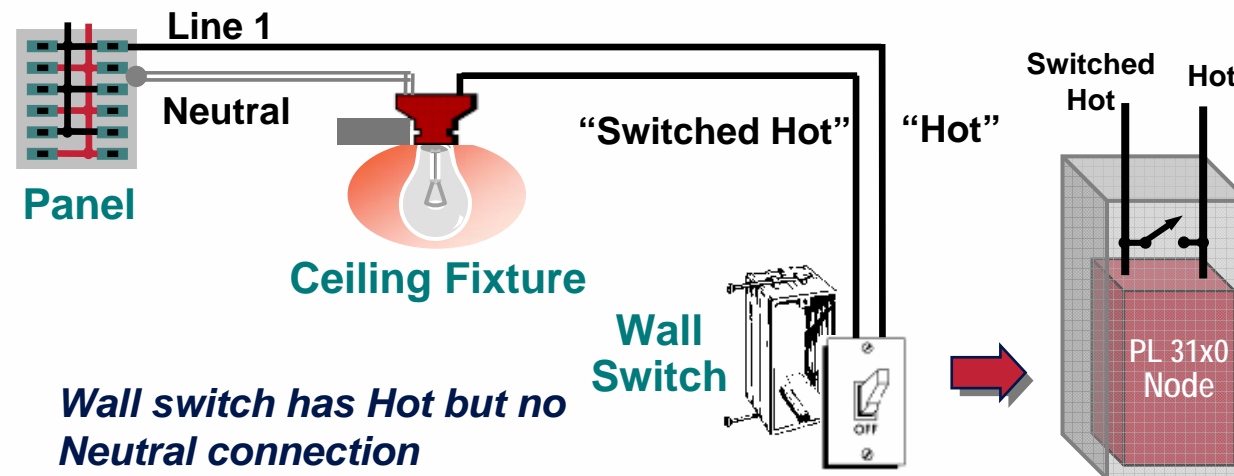


System on Chip for Typical Device

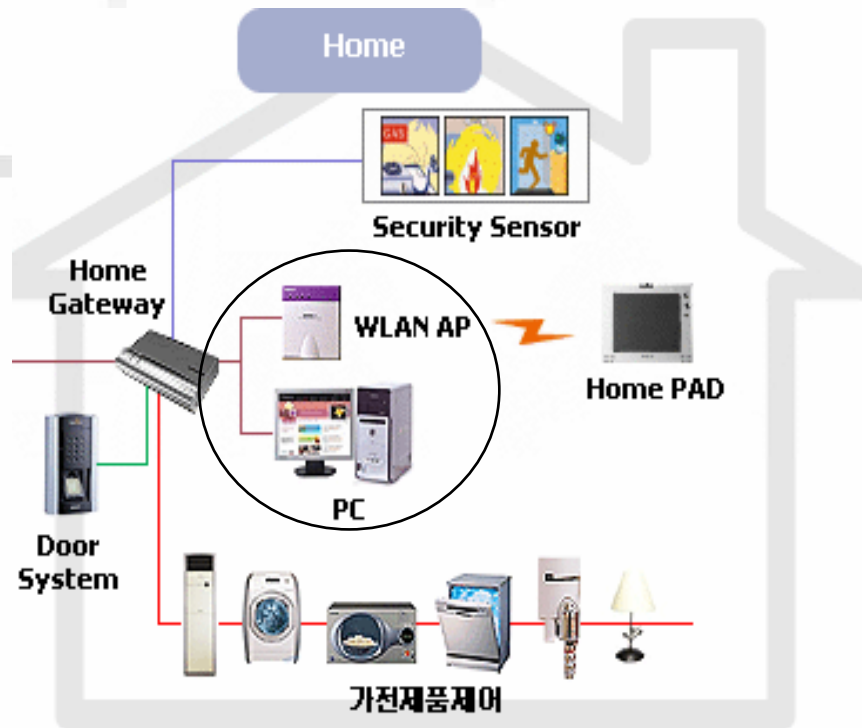


Switched-Leg Operation

- 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

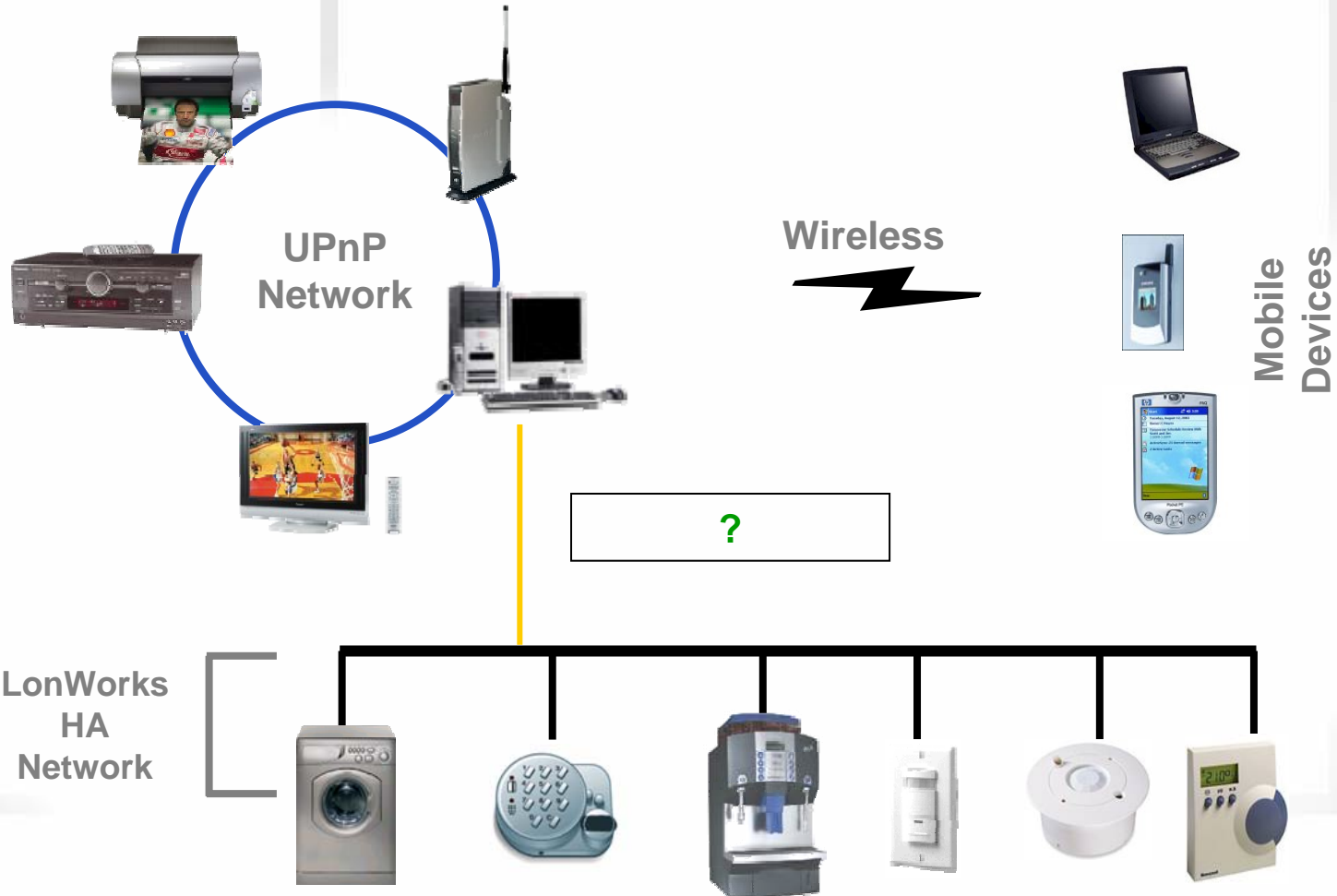


Consumer Expectations

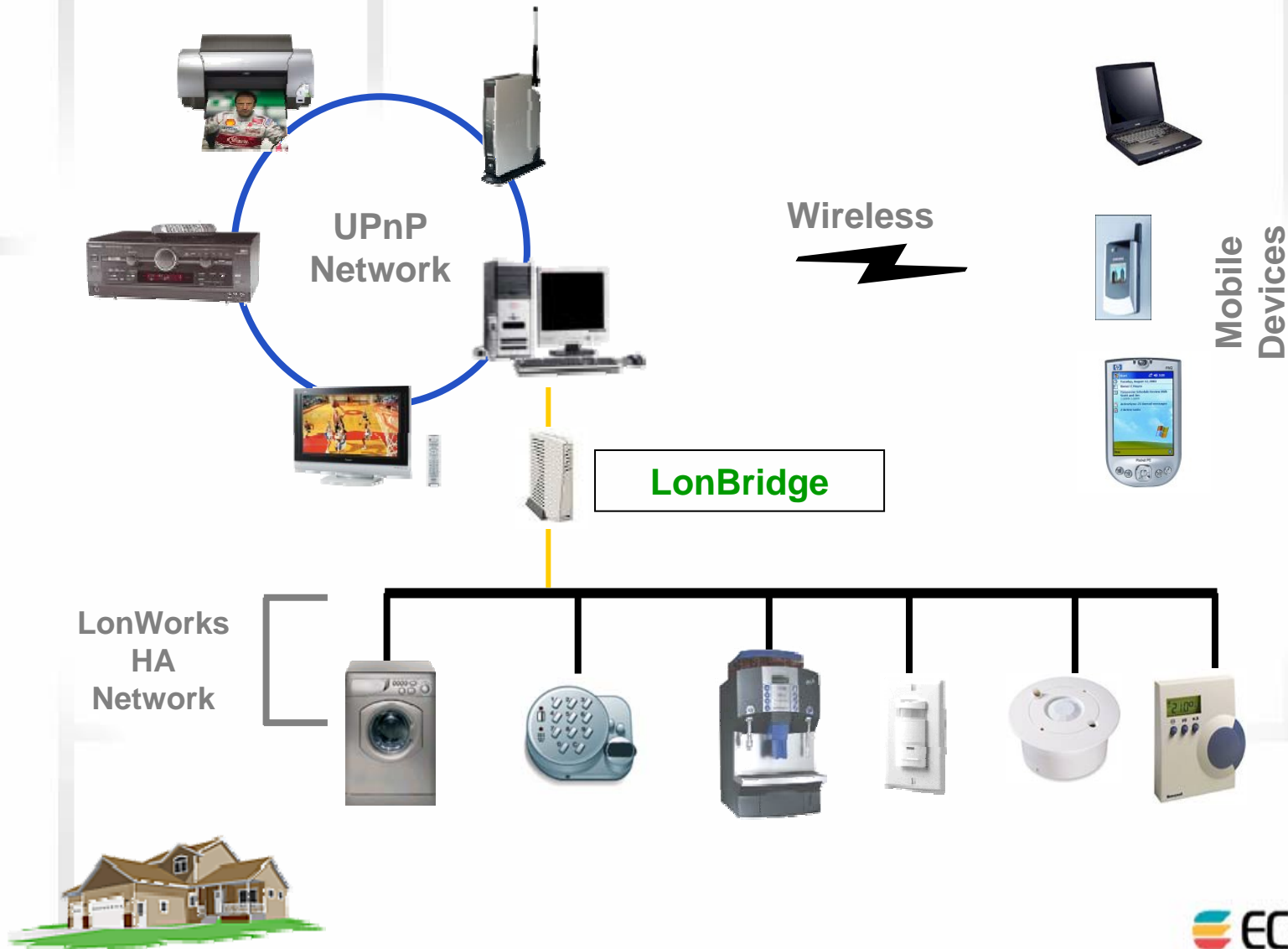


- ✓ *Easy configuration* and *installation*
- ✓ *Intuitive* controls
- ✓ *Security* and *reliability*
- Seamless *interoperation* and *integration* into data network

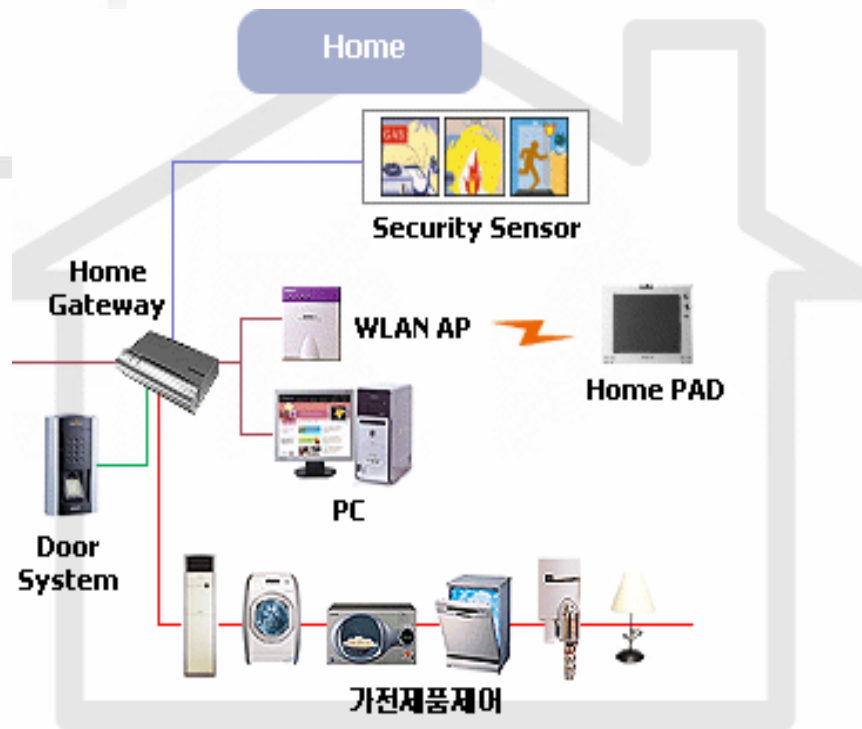
Convergence of Control & A/V



LonBridge for OSGi / UPnP Gateway



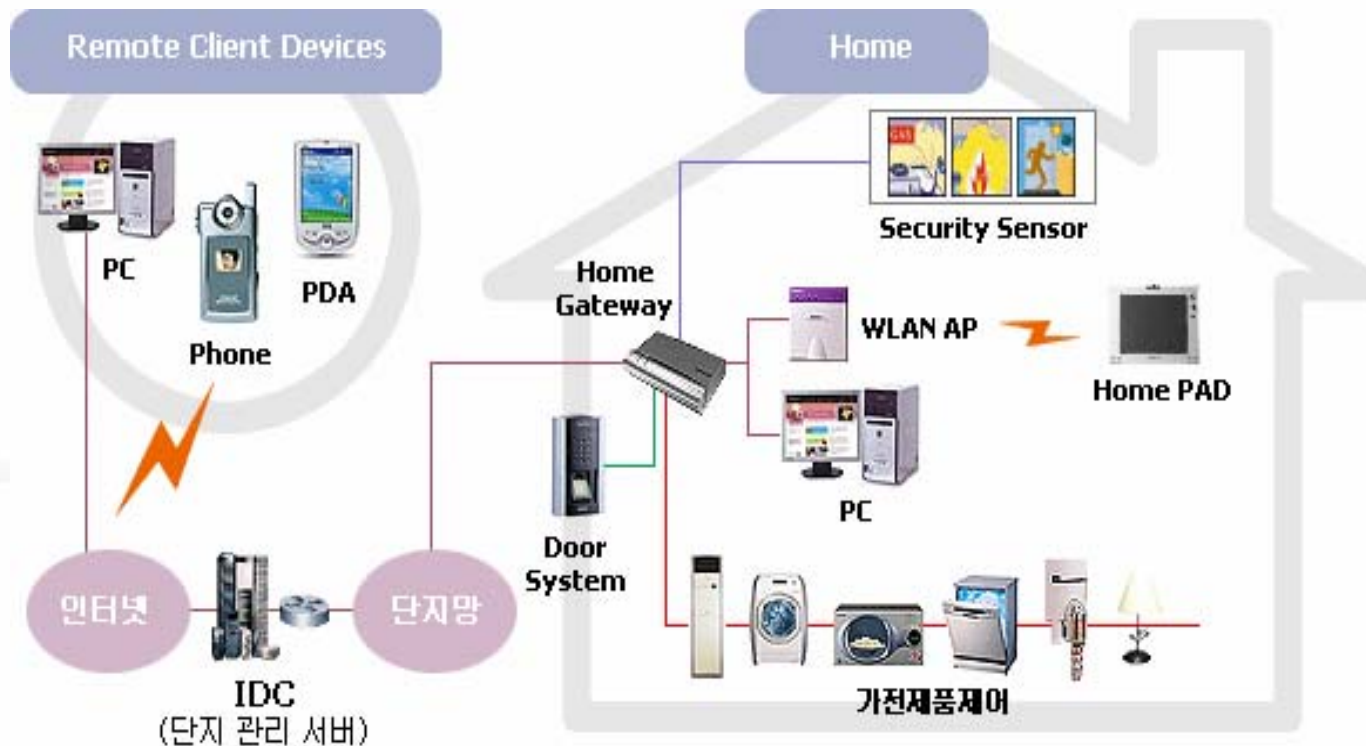
Consumer Expectations



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

Product Availability

- Samsung HOMEVITA
- Simon
- Secyourit SIENNA
- ISDE
- KyungDong
- DongMoon



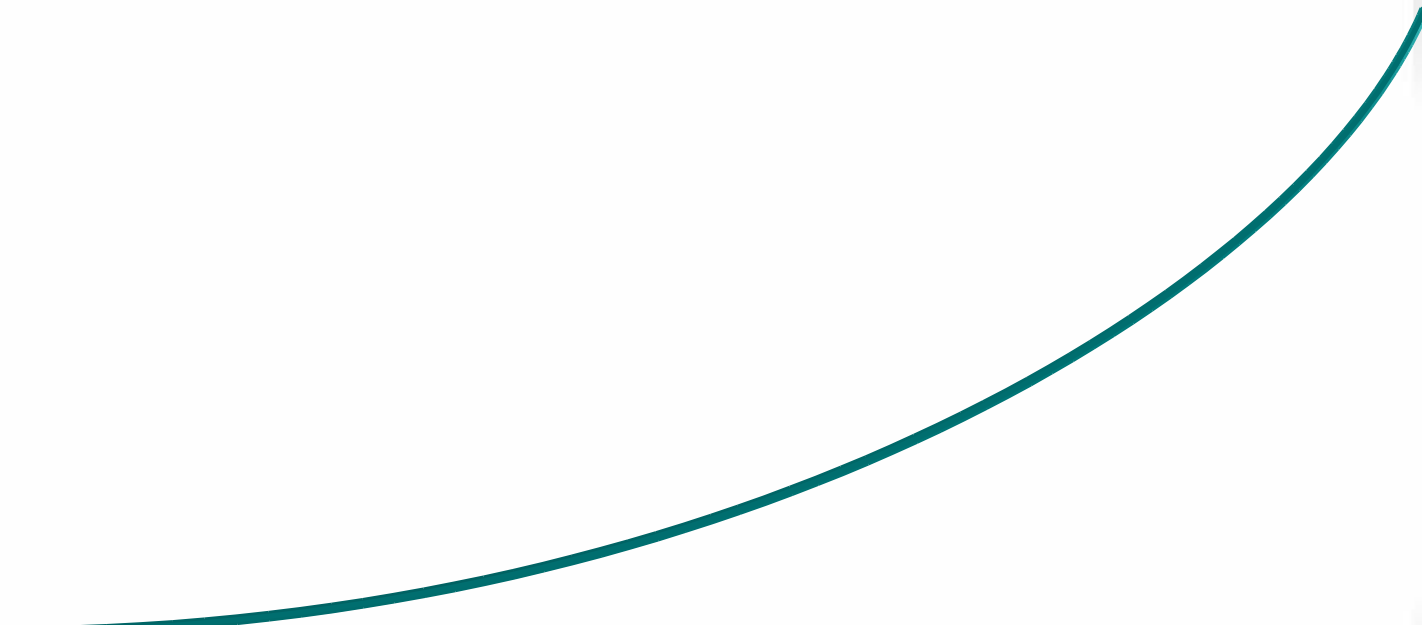
So...

size



2006 !

years





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Thank You

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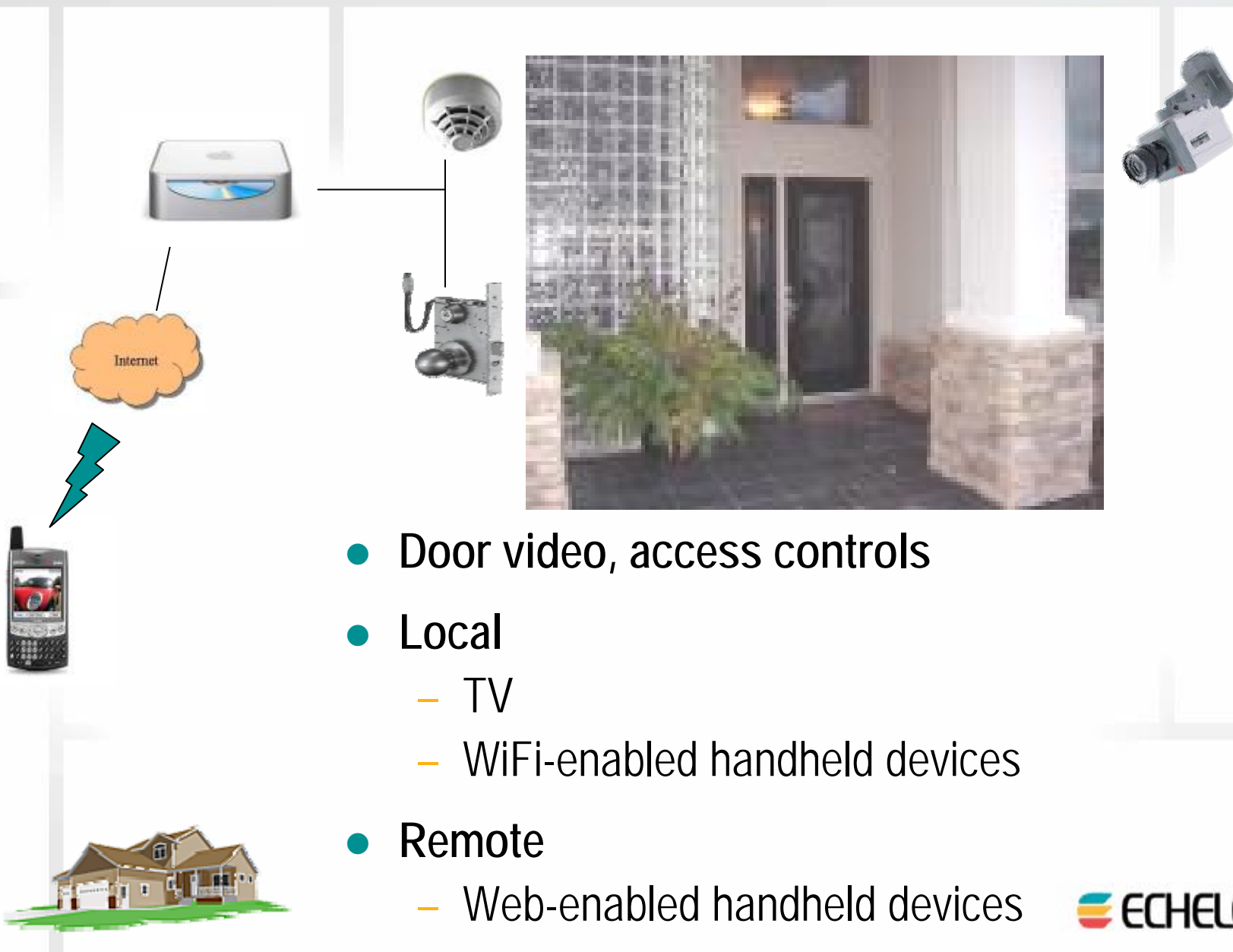
Scenarios for Enabling Consumer Market

Key Customer Experiences

- **Remote Access & Home Security**
 - Remotely opening of door locks
 - Gas detection notification
 - Motion detection



Door Access Control & Security – Example



Key Customer Experiences

- **Remote Access & Home Security**
 - Remotely opening of door locks
 - Gas detection notification
 - Motion detection
- **Energy Conservation**
 - Simple method to managing energy usage in a home
 - Thermostat set back, Drying cycles in cloth dryers etc
 - Lighting scene controls



Energy Conservation – Example



- Consumer configurable – Thermostat setback
- White goods cycle management
- Lighting Scenes



Key Customer Experiences

- **Remote Access & Home Security**
 - Remotely opening of door locks
 - Gas detection notification
 - Motion detection
- **Energy Conservation**
 - Simple method to managing energy usage in a home
 - Thermostat set back, Drying cycles in cloth dryers etc
 - Lighting scene controls
- **Entertainment**
 - Audio/Video integration with lights & blinds, etc.



Home Theater Environment – Example



Integrated home theatre
and lighting control



Echelon Digital Home Architecture

- Robust Power Line Technology (silicon chip)
- Lamp module and switched-leg Dimmer (reference design)
- Easy installation with ISI (code library)
- LonBridge™ with device Plug-ins (software)
- Easy and Intuitive user interface (software)

LOW COST
EASY TO USE
INTEGRATED
OPEN

