Architectures for LonWorks®
Home Automation Systems

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Echelon
Open Control Networks
Echelon’s Vision

- Virtually every component will have its 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

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

- Echelon Technology 1988
- EBV Distribution
- Chip Mfg. Cypress/Toshiba
- LONWORKS Independent Developers
- >4,000 OEM Thousands of devices
- Installers, Network Integrators
- LONMARK International
- LONMARK Spain
- Specifiers, Architects, End Users
- LONMARK España
EN14908 Global Building Management

(FIRE)

SECURITY
Doors
Occupancy

ACCESS CONTROL

ENERGY
Meters
Air Conditioning
Heating
Lights
Generators

LIGHTING
Scheduling
Presence

ELEVATORS
Traffic
Maintenance

24/7 Monitoring
Faults
Parking

HVAC
AHU
Boiler
Pumps
Fancoil
Air Quality
Energy Saving
Coeur Defense

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
Home Automation Solutions

more features

less features

more expensive

less expensive
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**

- **PCs and A/V Equipment**
  - Audio/Video integration with lights & blinds, ...

- **Service Providers**
  - Remote service and diagnostics for appliances
  - Intrusion / Gas / Water leakages notification
  - Smart maintenance

- **Consumer Products**
  - Security
  - Safety
  - Comfort
  - Scenarios

- **Energy Saving**
  - Utility load shedding
  - Energy measurement and management with electric utility
  - Intelligent white goods and smart devices
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

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

PL 3170

- Neuron Core
- Power Line Transceiver
- EN14908 Protocol, ISI library
- Flash
- RAM

Discrete Interface Circuitry

Coupling Circuit

Power Supply
• 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
LonBridge Software Platform
For OSGi and UPnP Gateways

 LonWorks HA Network

 UPnP TCP/IP Network

 LonBridge

 Wireless

 Mobile Devices

 LonMark ESPAÑA

 ECHELON
Consumer Expectations

- Easy configuration and installation
- Security and reliability
- Seamless interoperation and integration into data network
  - Intuitive controls
4HomeMedia UI / Software Architecture
Consumer Expectations

- Easy configuration and installation
- Security and reliability
- Seamless interoperation and integration into data network
- Intuitive controls
Product Availability

- Simon Vit@
- ISDE Domolon
- eControls
- Samsung HOMEVITA
- KyungDong
- DongMoon
- Secyourit SIENNA
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
  - Collaborative site managed by Echelon
  - Member companies may provide
    - Promotional Contents
    - Hypertext links
    - Application stories and articles
Thank You

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