

Residential Ethernet Tutorial

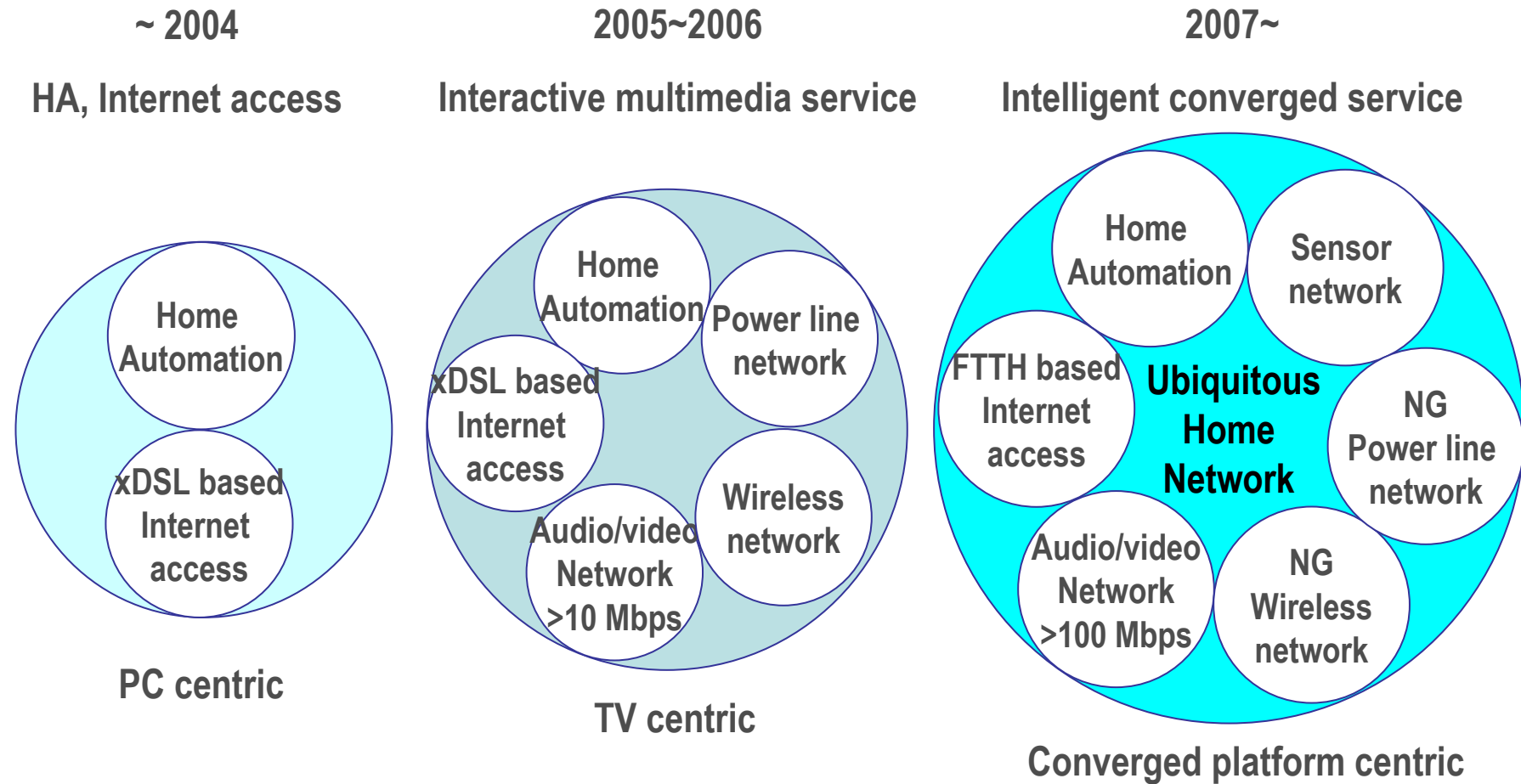
Market Potential

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New market opportunity



Network based home applications are now creating new market segments.

The home network is at the heart of the digital home

- ❑ Enabling home entertainment networks is key to opening up several large potential markets.

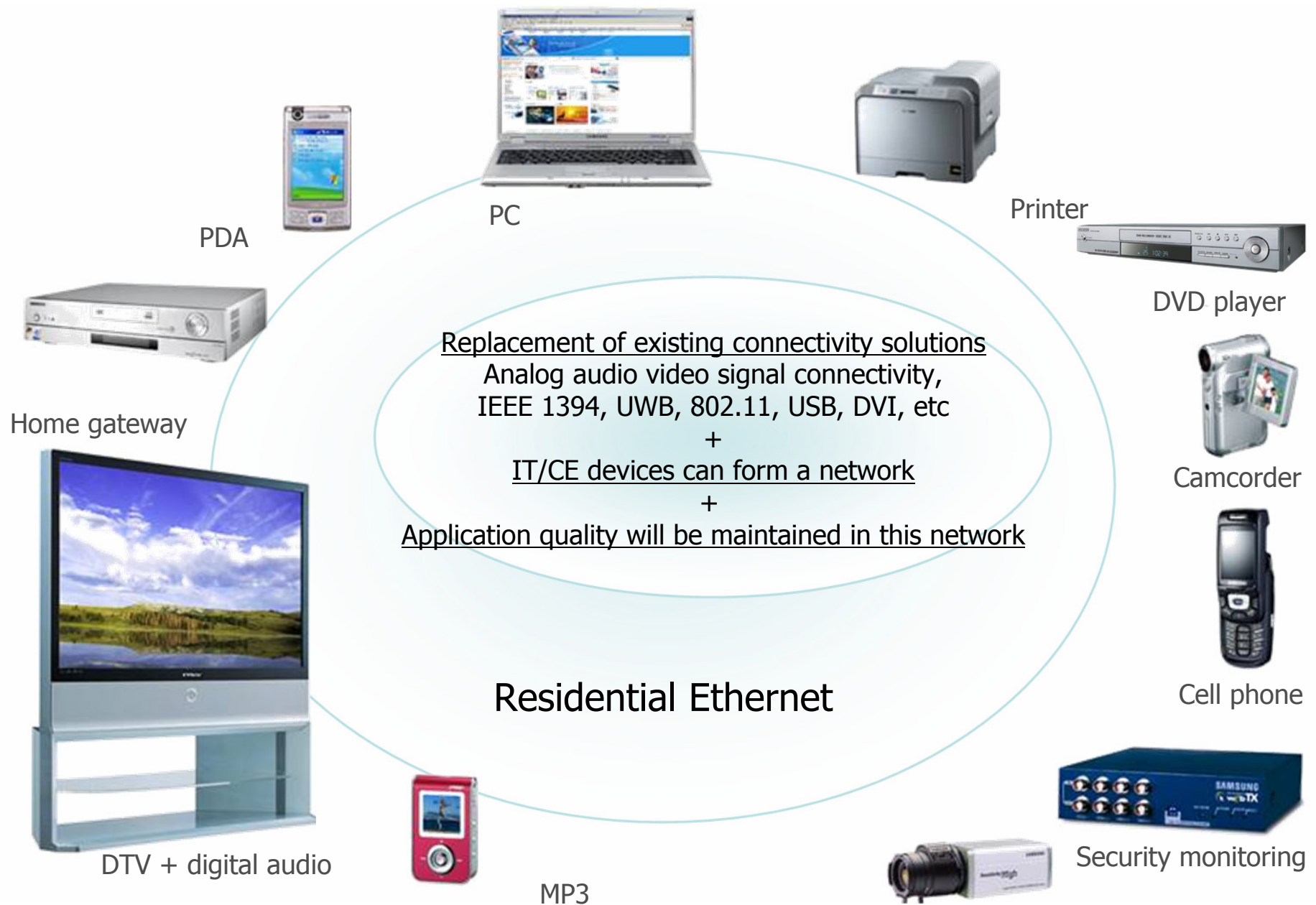
Residential Ethernet enables a converged connectivity solution

	Access network	Home gateway	Home network	Internet information terminal	Home network service
Concept	Connectivity with internet outside home	Interface between access and home network	Connectivity between terminals	Terminal with function to share information with external network	Various kinds of service through home network terminal
Related tech. And product	xDSL - Cable - Power line - Wireless - Satellite - FTTH	- HaVi - OSGi - UPnP - Jini - VESA-HN - LonWorks Cebus - DLNA	Phone line - Ethernet - Power line - WLAN - UWB - Bluetooth - RF, IrDA - 1394	Web phone - Communication device - Entertainment device - Computing device	Home automation - Entertainment service - Telephony service - Health, welfare service

Why Residential Ethernet ?

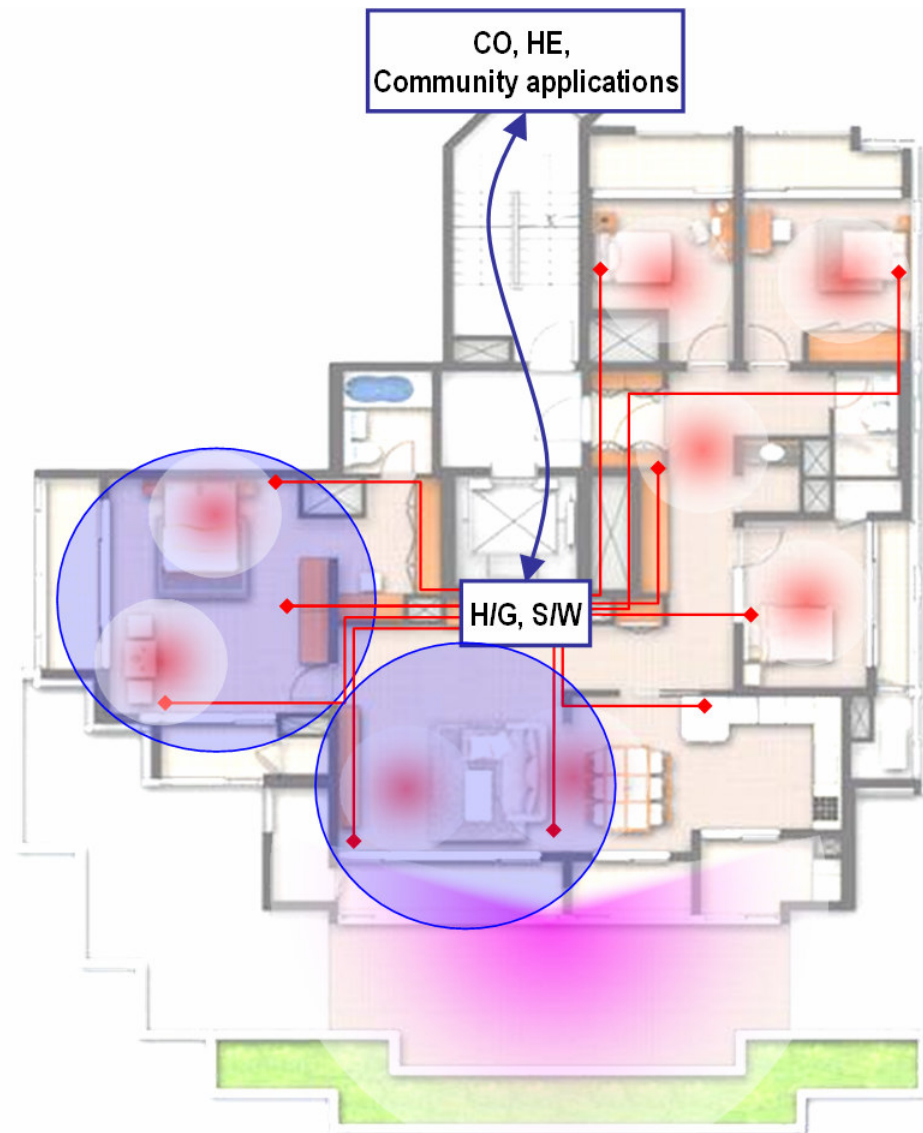
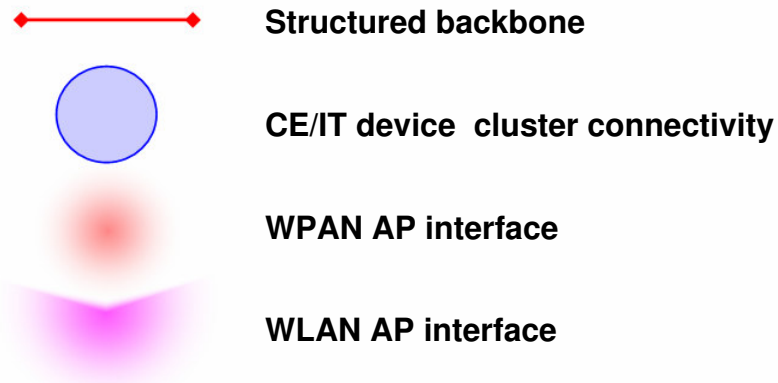
- ❑ *Residential Ethernet* adds ability to legacy Ethernet to provide isochronous delivery of A/V signals at the attractive cost/performance ratio of Ethernet
 - Most different type of connectivity solutions in residential area can be serviced through Residential Ethernet
 - Such as analog/digital video link, analog audio links, conventional Ethernet, UWB, 802.11, USB, IEEE 1394, etc
- ❑ *Residential Ethernet* scales from medium (FE) to high bandwidth (10GE) PHYs
 - Display, MP3, PC, Audio, Digital TV, Set-top box, access point, media player (DVD, ng-DVD), game-box, etc
- ❑ *Residential Ethernet* offers cost effective, interference free, backbone for hybrid home network supporting asynchronous data and isochronous A/V signals
 - Wired connections between stationary devices in different rooms
 - Wireless connections to mobile devices

Potential applications area of *Residential Ethernet*



A future digital home networking model

- ❑ Multiple services in the home
- ❑ Home appliances and information terminals are connected by wired/wireless networks.
- ❑ The home network is connected to the access network through a home gateway
- ❑ **Enhanced functionality of ResE will replace the connectivity solution of home applications**

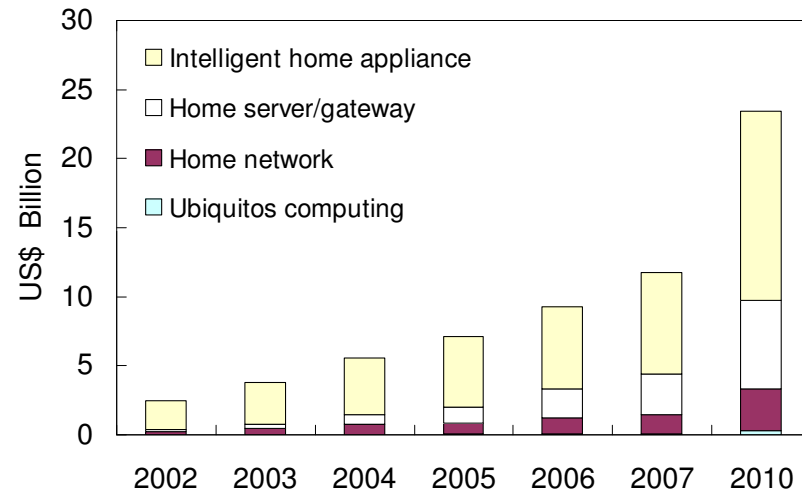


Global home network market potential

- ❑ 22 million houses are equipped the home network on year 2003
- ❑ That will increased to 130 million until year 2008. (43% CAGR)
- ❑ This network installation will shift the PC based network to entertainment oriented network.

- ❑ Many homes already have structured CAT5 wiring in place;
 - New homes come with structured wiring installed
 - 10 million houses at 2008 in US according (2004 research data)*

- ❑ The market size of the digital home (wired/wireless network, home gateway, portable/fixed terminal, consumer electronics) is growing rapidly at 18% a year (2002 research data)*



Reference: 2002~2003 research data*

	2002	2003	2004	2005	2006	2007	CAG R
Global	40.7	51.8	63.8	76.8	89.4	102.6	20%
Korea	2.5	3.8	5.6	7.1	9.3	11.8	36%

Global intelligent home networking market forecasting
Reference: 2002~2003 research data*

*: The numbers based on 3rd Party Research. Available the reference information by request

Broad Market Potential

Broad set(s) of applications

Multiple vendors, multiple users

Balanced cost (LAN vs. attached stations)

- ☐ “Residential Ethernet” networks represent a new and very broad application space for Ethernet. The digital networking port* on consumer electronics (96 billion USD in 2003) equipment has not yet been decided, and 802.3/Ethernet has a strong possibility of being the dominant, long-term solution of choice if it also provides isochronous services.
- ☐ At the RE Study Group meetings, individuals from companies representing component suppliers, equipment vendors and users expressed their support for the project. Ethernet equipment vendors and customers are able to achieve an optimal cost balance between the network infrastructure components and the attached stations.
- ☐ *NOTE: 174 million ports in 2004; 2008 - 458 million; growth rate 21%, 50/50 wireless/wireline (3rd. Party Research)

Digital home networking in Korea

- ❑ Korea government has set goals for the future digital home enhancement.
 - Digital home project (started July 2003) : more than 10 million digital homes (61%) by 2007
 - Smart home project (started July 2003)
 - Cyber building grading policy are boosting the home network environment. (Started since Nov. 2000)

- ❑ Communication, CE, construction industry, broadcasting companies have formed several consortiums to meet the goal of the projects
 - KT consortium : KT, KTF, Samsung, KBS, Bank etc.
 - SKT consortium : SKT, Hanaro telecom, LG, Daewoo, SBS etc.

Home network grade regulation in Korea

Cyber Building Grade	Specification				Main Use Case
	2003.11 Version			Initial version (2000)	
	Wire type/Topology	Ethernet Wall Plug*	External Connection spec		
Super grade	Better than Cat5e/Star	2 x 2 pairs in each room	SMF 2 cores MMF 2 cores Total 4 cores	Better than 1 st grade	Multimedia networking (+ wireless infra)
1st grade	Better than Cat5e/Upgradeable to STAR	4pairs in living room 2paris in other rooms	Cat5e 4 pair x 2	100Mbps 2 ports per room	Data communication, control, and sensing
2nd grade	Better than Cat5e/Upgradeable to STAR	2 pairs in every room	Cat5e 4 pairs	100Mbps 1 port per room	Data communication
3rd grade	Better than Cat3/Upgradeable to STAR	2 pairs in living room 1 pair in other rooms	Cat3 4 pairs	10Mbps 1 port per room	Data communication

*: RJ45 or optical connector

More than 1 million houses are certified as a cyber building by 2003 (more than 10% of all house)

Summary

- ❑ *Residential Ethernet* networks represent a new and very broad application space for Ethernet.
 - Combines data networking, CE device A/V connectivity and Wireless AP interconnection in a single network
 - Increasing availability of structured wiring in homes will help to make *Residential Ethernet* a mainstream home networking solution; therefore the related market will grow rapidly
 - With isochronous traffic support Residential Ethernet will become the unified connectivity solution for CE A/V and IT devices
 - The technology will expand its application area to similar environments such as car, transportation, small office, etc.; therefore the market will grow even faster