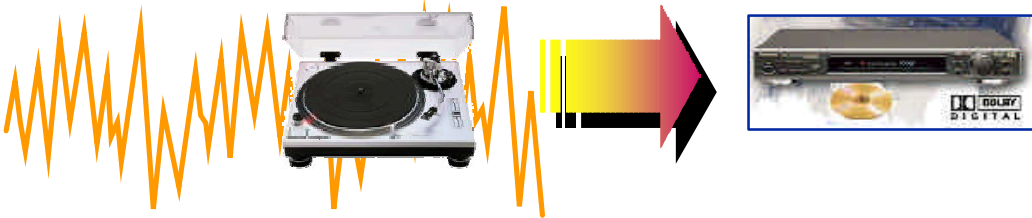
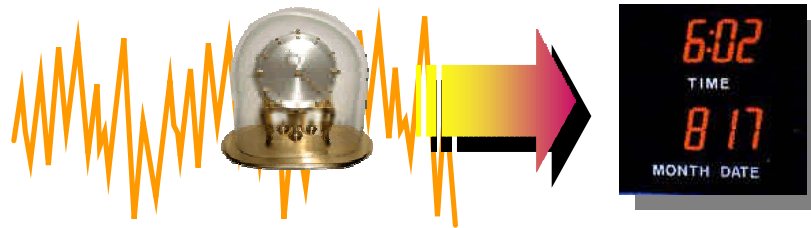




Introduction

State of the Market

The Digital Age of Consumer Electronics



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Digital technology brings
Higher accuracy
Higher reliability
Faster speed
Lower power
Lower cost

Digital Logic Spawns New Consumer Products

Replay TV

Revolutionizing the way we watch television



Consumer Satellite Modems

Revolutionizing high speed home Internet access



Desktop Video Editing

Delivering video editing to the home



Smart Card

Revolutionizing the way we purchase products

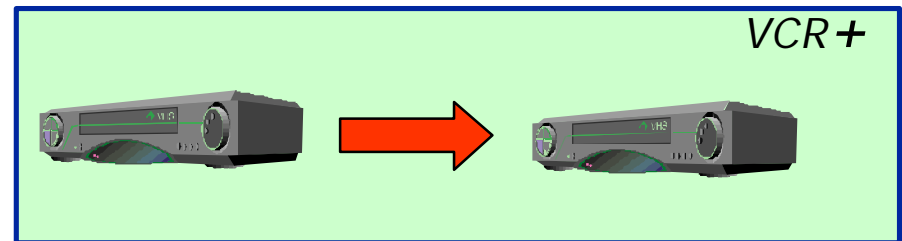
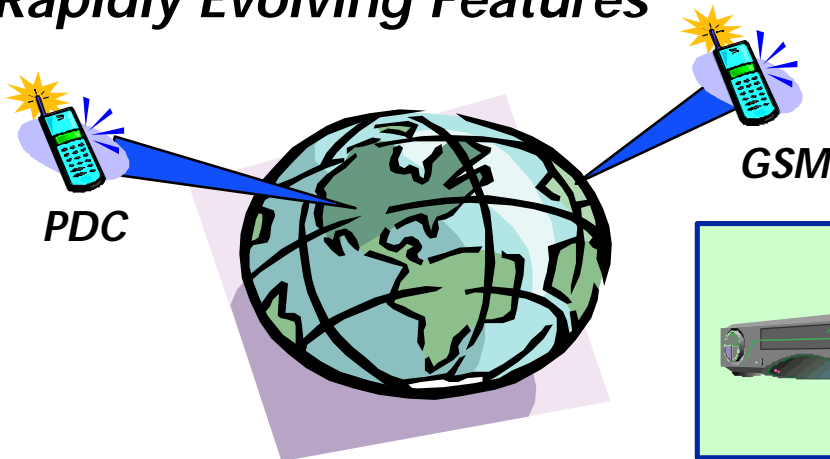
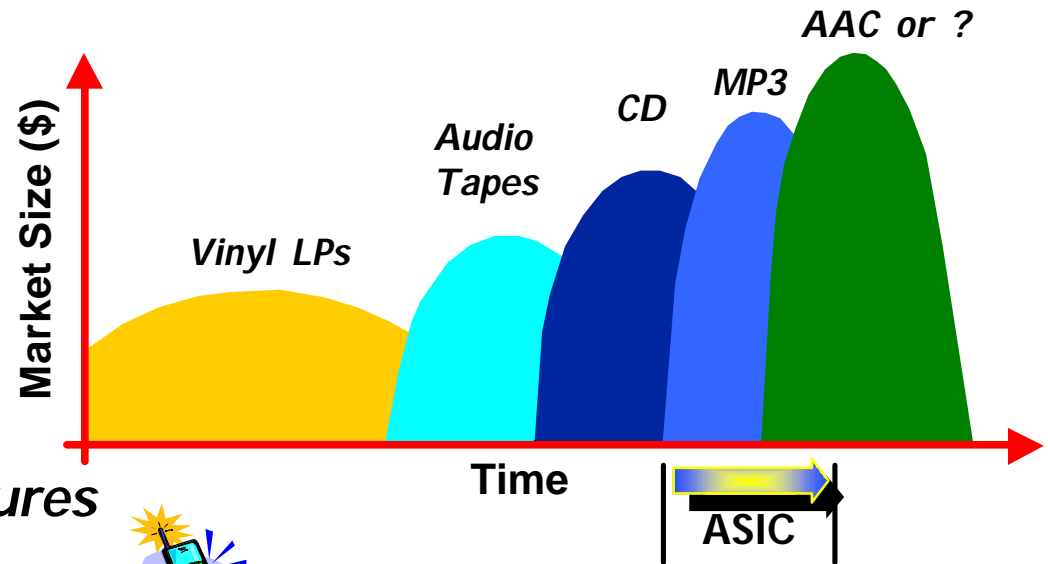


MP3 Players

The new revolution in portable digital music

ASICs Cannot Meet Consumer Market Requirements

- *Short Product Life Cycles*
- *Changing Standards*
- *Multiple Standards*
- *Rapidly Evolving Features*



New Dimensions to Home Internet Access

- ◆ Internet revolution
 - New ways to communicate, entertain & educate
 - Millions of users rushing to Gain Internet access
- ◆ Applications & services are fueling demand for high-speed Internet access
 - E-mail, instant messaging, shopping, games, research
- ◆ Home users are embracing a variety of new services
 - Broadband access will evolve to bring new dimensions to the Internet experience

Device Networking in a New Age

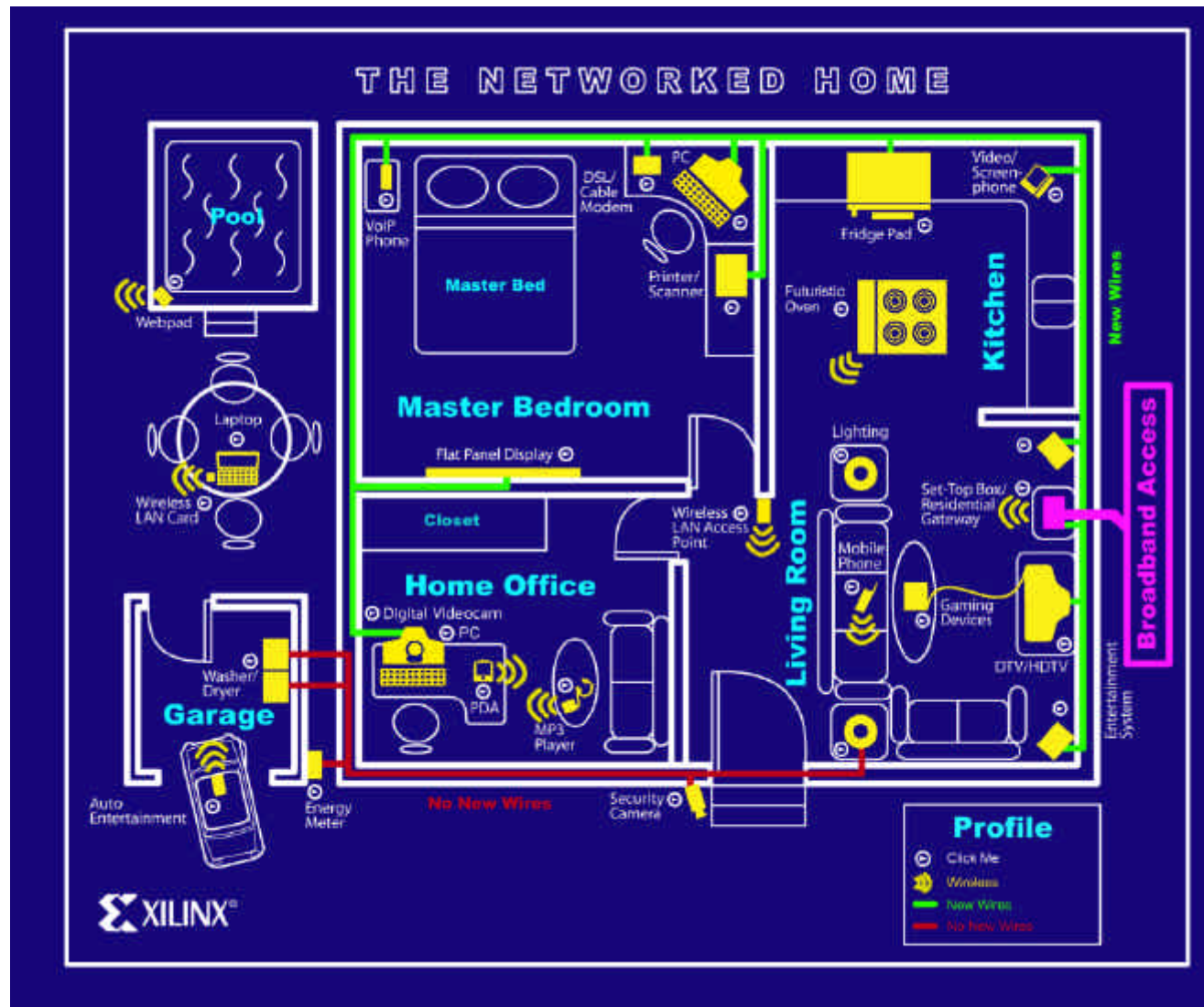
Networking Solution for Controlling & Managing Smart Devices

- ◆ The “new age of information” or “new age of communication” - Whatever you want to call it!
 - Ubiquitous computing
 - Post-PC age
 - e-Business
 - e-Commerce
 - e-Services

Convergence Is Happening!

- ◆ Invisible computing embedded within everyday devices
 - Increasing intelligence of everyday appliances
- ◆ Digital revolution
 - Infrastructure: Circuit-switched to IP-based networks
 - Analog TV to Digital TV
- ◆ Internet is ubiquitous
 - Being deployed within commercial channels
 - Business-to-Business commerce, secure transaction processing, banking
- ◆ Deregulation of global infrastructure
 - Multiple industries such as telecom, cable and utilities

Problem: Islands of Technology



The Push for Home Networking

- ◆ Rapid growth in multiple-PC household penetration (by Dataquest)
 - PC penetration exceeds 50% in US households
 - Multi-PC households growth: 15M (in 1998) to 26M (in 2003)
- ◆ Increasing Internet usage (by Yankee Group)
 - Nearly 90% of PC households will be online by 2001
 - Online households growth: 20% (in 1997) to 47% (in 2001)
- ◆ Broadband Internet access (by Forrester Research)
 - Broadband penetration growth: less than 1M (in 1998) to more than 15M (in 2002)
 - % Penetration of online households: increases from 2% (in 1998) to 26% (in 2002)

The Push for Home Networking

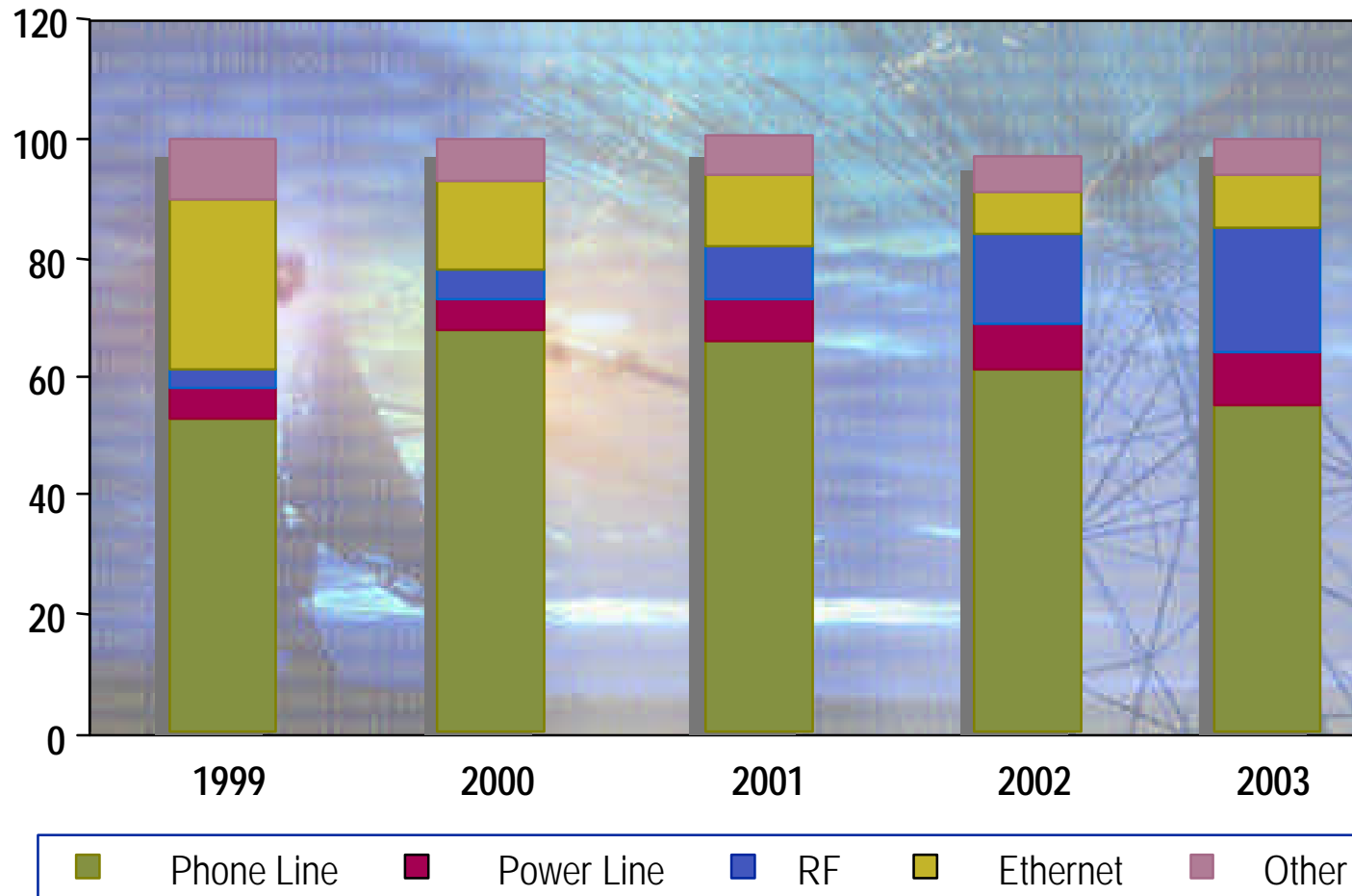
- ◆ More digital appliances are coming into the home (by IDC)
 - DSS, DVD, Digital TV
 - Web-Top boxes, set-top boxes
 - PDAs, mobile (cellular) phones
 - Digital cameras
 - Installed base of internet appliances will exceed 50M by 2001
- ◆ More digital content entering the home
 - Published Content
 - CD-ROMs, DVDs, DVRs, digital photography
 - Networked Content
 - DTV, DBS, VoIP, MP3, movies-on-demand, streaming media

History Repeats Itself Again...

◆ Television

- There was a time when one television set per home was considered a luxury
- Today 76% of US households have two or more television sets
- Three factors contributed to multiple TV ownership
 - Purchase of newer/bigger/ better television
 - Additional television to reduce conflicts over TV use
 - Television in bedroom / kitchen
- Replace the word "TV" with "PC" and history repeats itself again!

Applications Driving Home Networking



Source: Cahners In-Stat Group



Information Appliances

www.xilinx.com

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State of the Internet Connectivity Market

- ◆ Most homes access the Internet via dialup modems at 28.8kbps or 56kbps
 - Not an “always on” connection
 - Requires modem synchronization
 - Users hope that connection is established right away
 - Phones & faxes cannot be accessed while on the Internet
- ◆ Broadband connectivity
 - Simpler & significantly faster Internet access
 - Always on connection
 - No dialing & synchronization required
 - No worry about the phoneline
 - Data & telephone can share the same line at the same time



Home Networking - The Complete Solution

Vision

What is Home Networking?

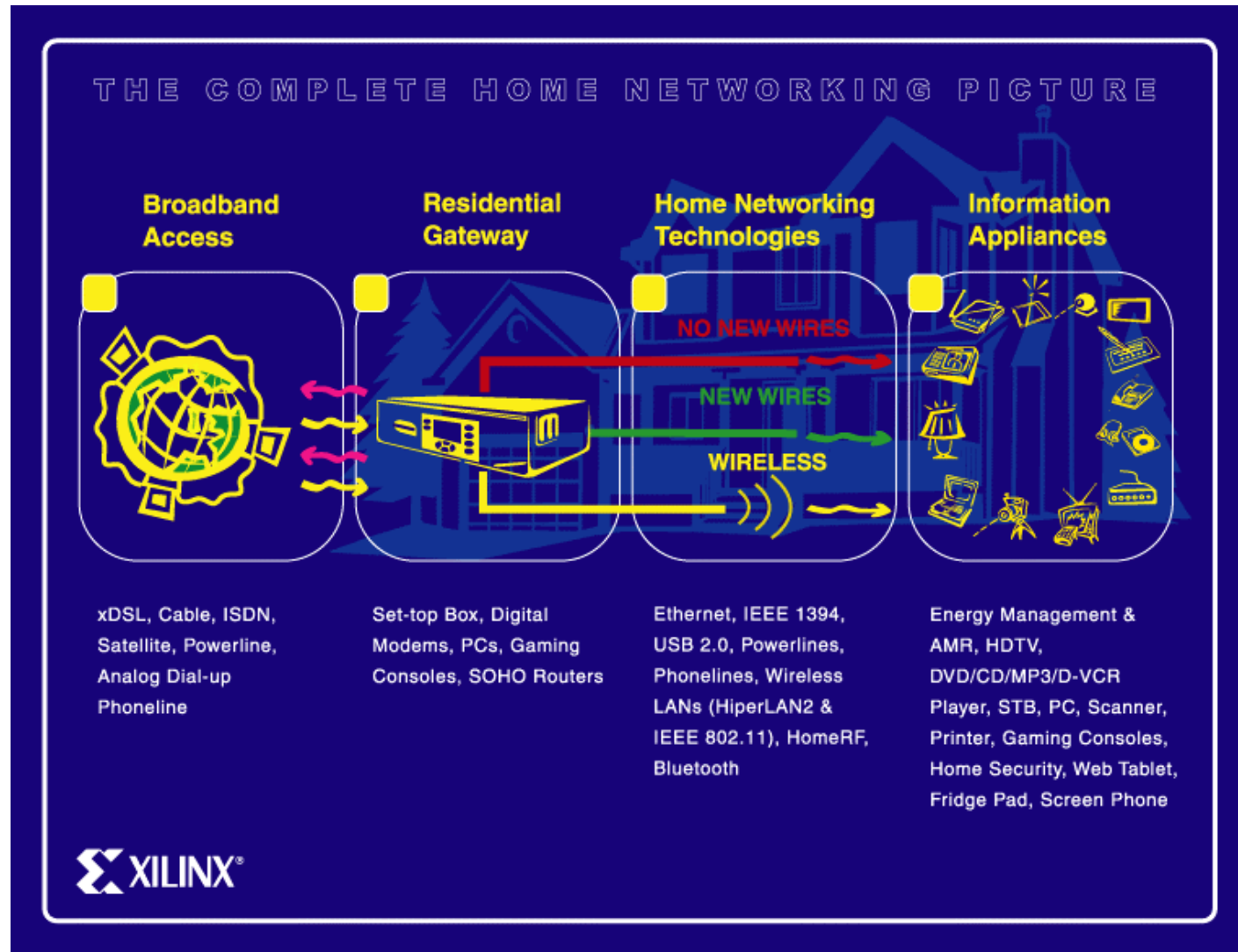
- ◆ The distribution of information (Audio, Video, & Data) around the home and their interface with attached devices and external services
- ◆ The interconnection and interoperation of
 - Home appliances
 - Entertainment devices
 - PC hardware
 - Telecommunication devices
 - Security, lighting and environmental control systems

Its All About Convergence

Goal of Home Networking

- ◆ Provide the ability to access information, entertainment and communicate anywhere, anytime
 - Bring the Internet to the hands of the consumer
 - Interconnect people in data, voice and video
 - Enables users to communicate & share data
 - Bring interconnectivity to intelligent devices
 - Always on, anytime, anywhere access to the home network

Four Aspects to Home Networking



Market Requirements and Solutions Available

	Market Requirements	Solutions Available
Broadband Access	High Speed Access for Data, Voice and Video, Always on, Simultaneous Up-link & Down-link Communication, Support Simultaneous and Multi-User Access	xDSL, Cable, Powerline, Satellite, Mobile/Wireless
Residential Gateway	Provides Access into the Home, Remote Management Access Platform, Bridging between Different Networks, Firewall and Security, E-Services Capabilities	Open System Gateway initiative (OSGI), Jini, UPnP, HAVi, DVI
Home Networking Technologies	Low Cost, Speed, Mobility, Quality of Service, Security, Reliability, Ubiquity, Ease of Use	No new wires (Phonelines, Powerlines), New wires (Ethernet, 1394, USB2.0, Optic Fiber), Wireless (HomeRF, Bluetooth, Wireless LAN)
Information Application Networks	Digital electronics with advanced computational capabilities that add more value and convenience when networked	Digital TV, HDTV, set-top box, internet screen phones, digital VCR, gaming consoles, MP3 players, cordless phones, security systems, utility meters, PCs, web pads & terminals, PDAs, digital cameras, auto PCs etc.