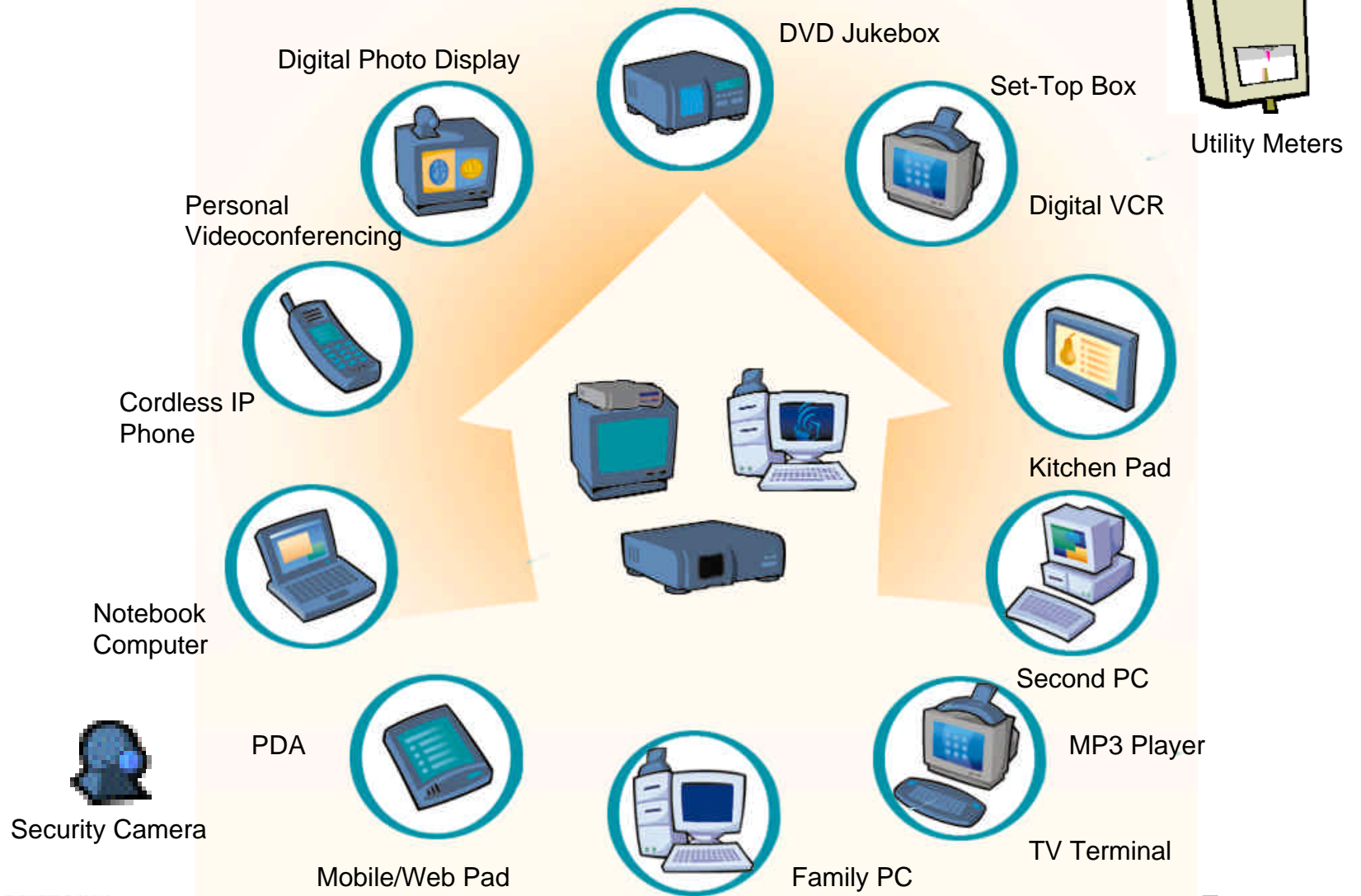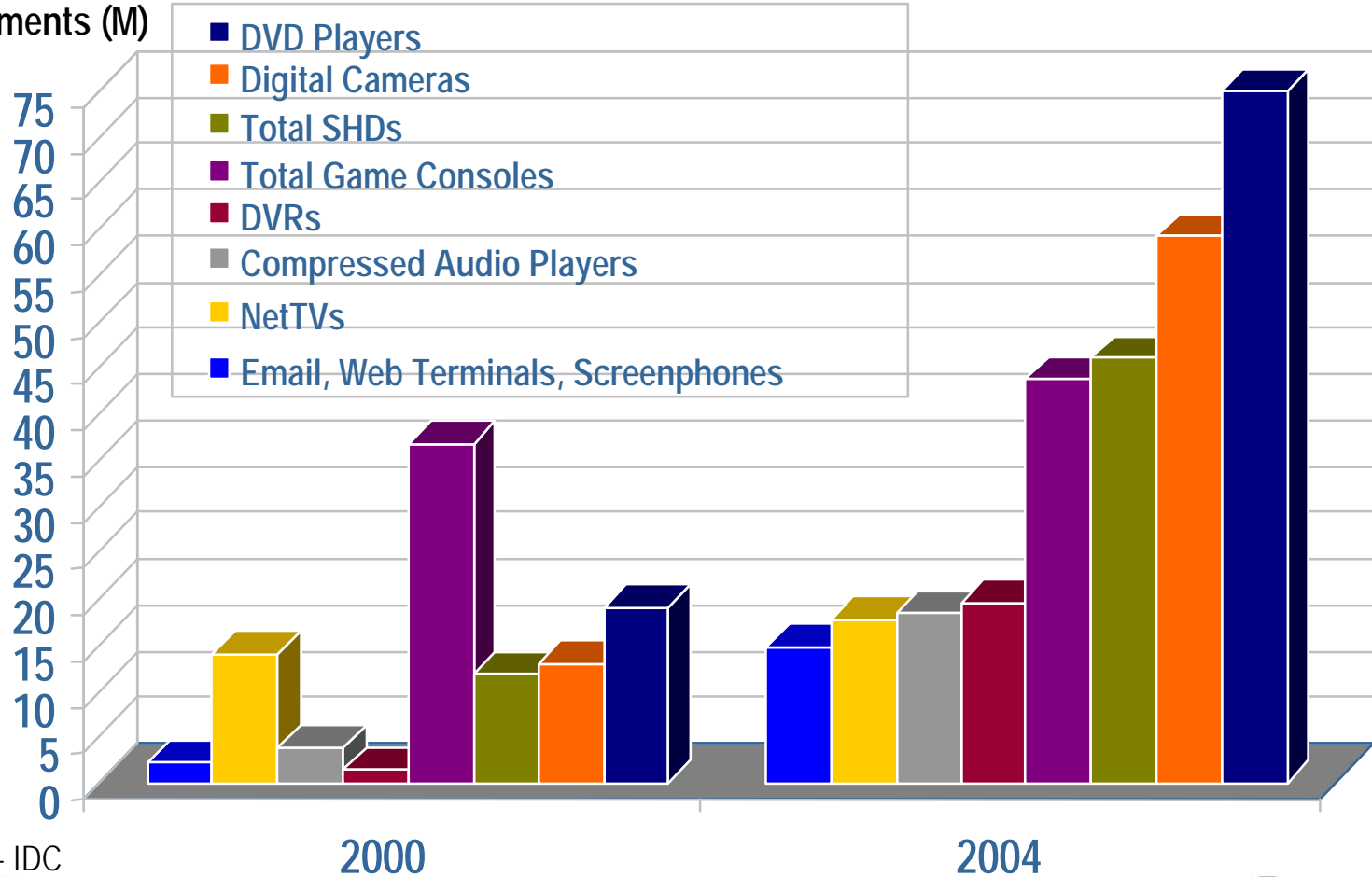# Information Appliances (IA)

Definition

- ◆ Information appliances (a.k.a. Internet appliances) are
  - — An emerging category of digital consumer electronics that provide the consumer with a low-cost, easy-to-use, instant-on device, lightweight, reliable, special-purpose access to the features and benefits of the Internet

- ◆ Enabling infotainment
  - — Accessing email on the move
  - — Checking driving directions when on the road
  - — Managing appointments & schedules when waiting at the doctor's office
  - — Playing video games when relaxing on the sofa

Information Appliances

DVD Jukebox

Digital Photo Display

Set-Top Box

Utility Meters

Personal Videoconferencing

Digital VCR

Cordless IP Phone

Kitchen Pad

Notebook Computer

Second PC

PDA

MP3 Player

Security Camera

Mobile/Web Pad

Family PC

TV Terminal

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WW IA Unit Shipments - Information Appliances

Worldwide Unit Shipments (M)

Legend:
- DVD Players
- Digital Cameras
- Total SHDs
- Total Game Consoles
- DVRs
- Compressed Audio Players
- NetTVs
- Email, Web Terminals, Screenphones

Y-axis: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

X-axis: 2000, 2004

Source - IDC

Information Appliances

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Market Forecast and Analysis

- ◆ 18.5 million IAs will ship in the U.S. by 2001, compared with 15.7 home PCs

- ◆ IA market will hit $15.3 billion by 2002

- ◆ 55 million handheld/notebook devices will be sold by 2002, up from 13.9 million in 1999

Source - IDC

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Information Appliances

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Don't Need the PC!

- ◆ Access to the Web and e-mail was the exclusive domain of the PC until the arrival of IAs
    - — IAs are an alternative to the PC and are designed to benefit from network services

- ◆ IAs are rapidly outgrowing PCs
    - — Lack of PC portability
    - — Heavy price tag associated with the PC
    - — Complicated software installation involved in the PC

Market Forecast and Analysis

- ◆ IAs will out-ship PCs in the US, with PC revenues falling below IA revenues
  - — Home IAs will out-ship PCs
    - – 22 million in-home IAs (excluding Internet-enabled mobile phones & telematics systems) will ship in the US, compared with 18 million home PCs in 2001
  - — IA revenues will rise above falling PC revenues
    - – By 2005, total revenues from all IAs (including Internet-enabled mobile phones and telematics systems) will reach $33.7 billion

Source - Parks Associates

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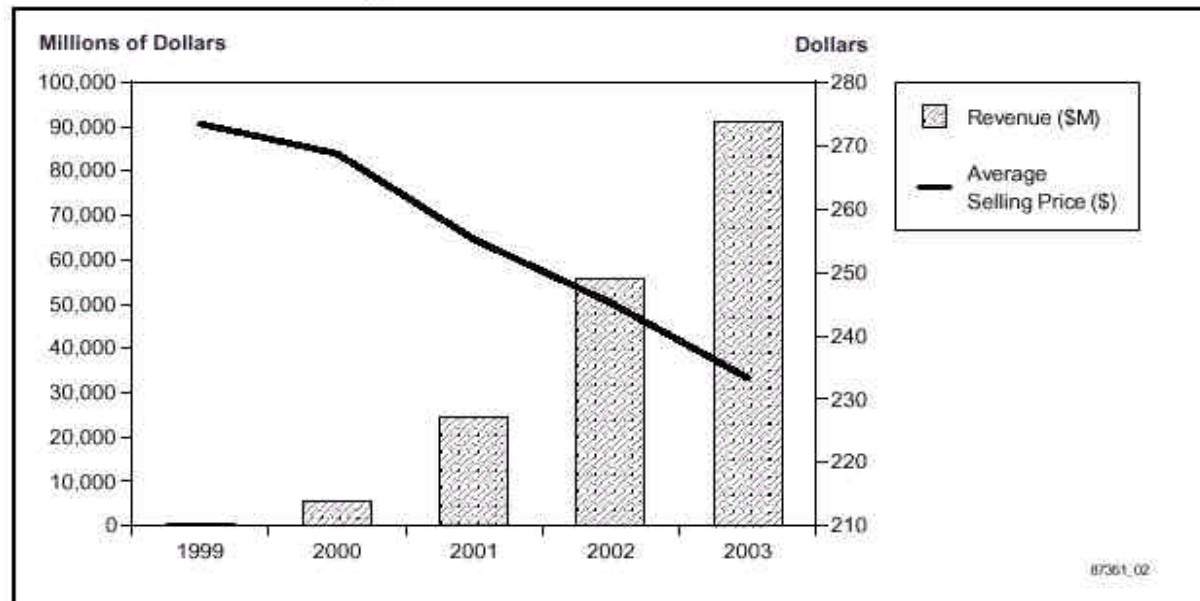EMERGING STANDARDS
& PROTOCOLS

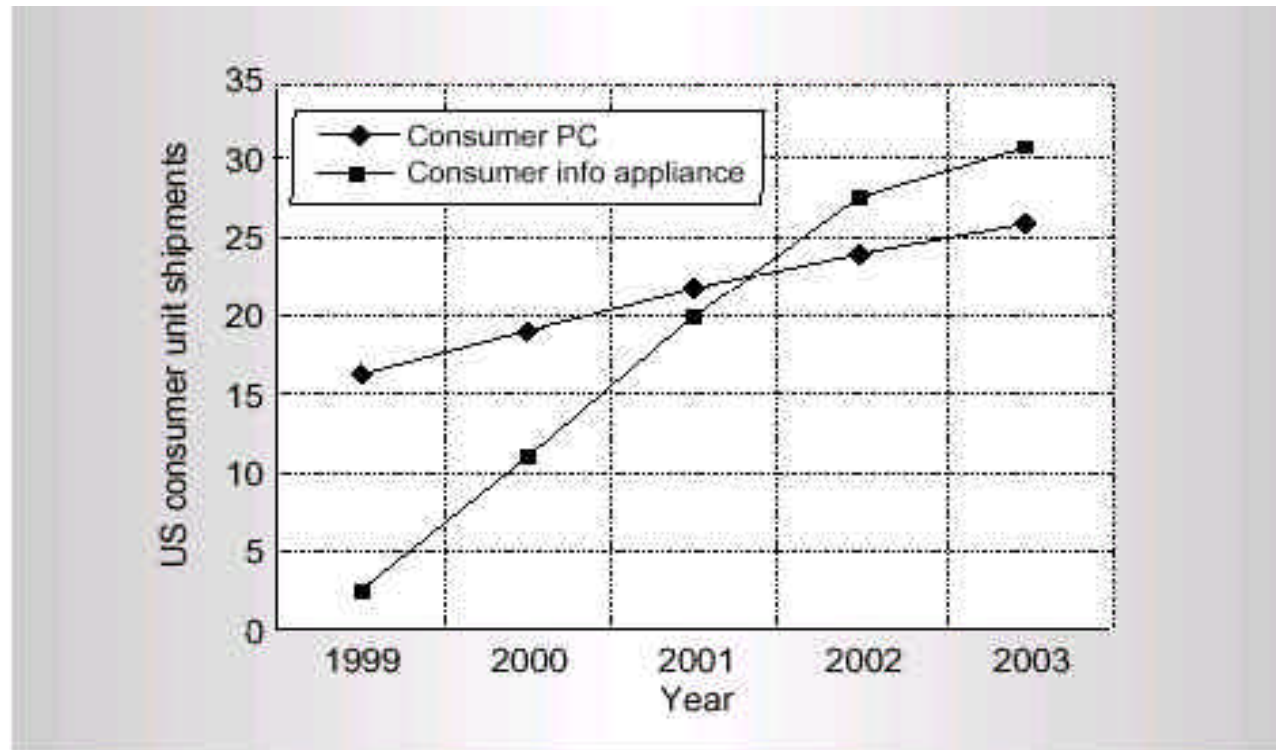Information Appliances

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Market Forecast and Analysis

- WW production of IAs will explode from 1.8 million units in 1999 to 391 million units in 2003

- WW revenue for IAs is forecast to grow from $497 million in 1999 to $91 billion in 2003

Worldwide Information Appliance Production Forecast

Source: Dataquest (March 2000)

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Growth in PCs and IAs

IDC predicts that the IAs will grow rapidly, eventually far exceeding the number of PCs in the home -
Web & e-mail access will no longer be the exclusive domain of the PC

Source - IDC

Information Appliances

Trends: Adding Utility to Consumer Devices

Today	Tech Trend	Tomorrow

Tech Trend
- ✓ Higher performance
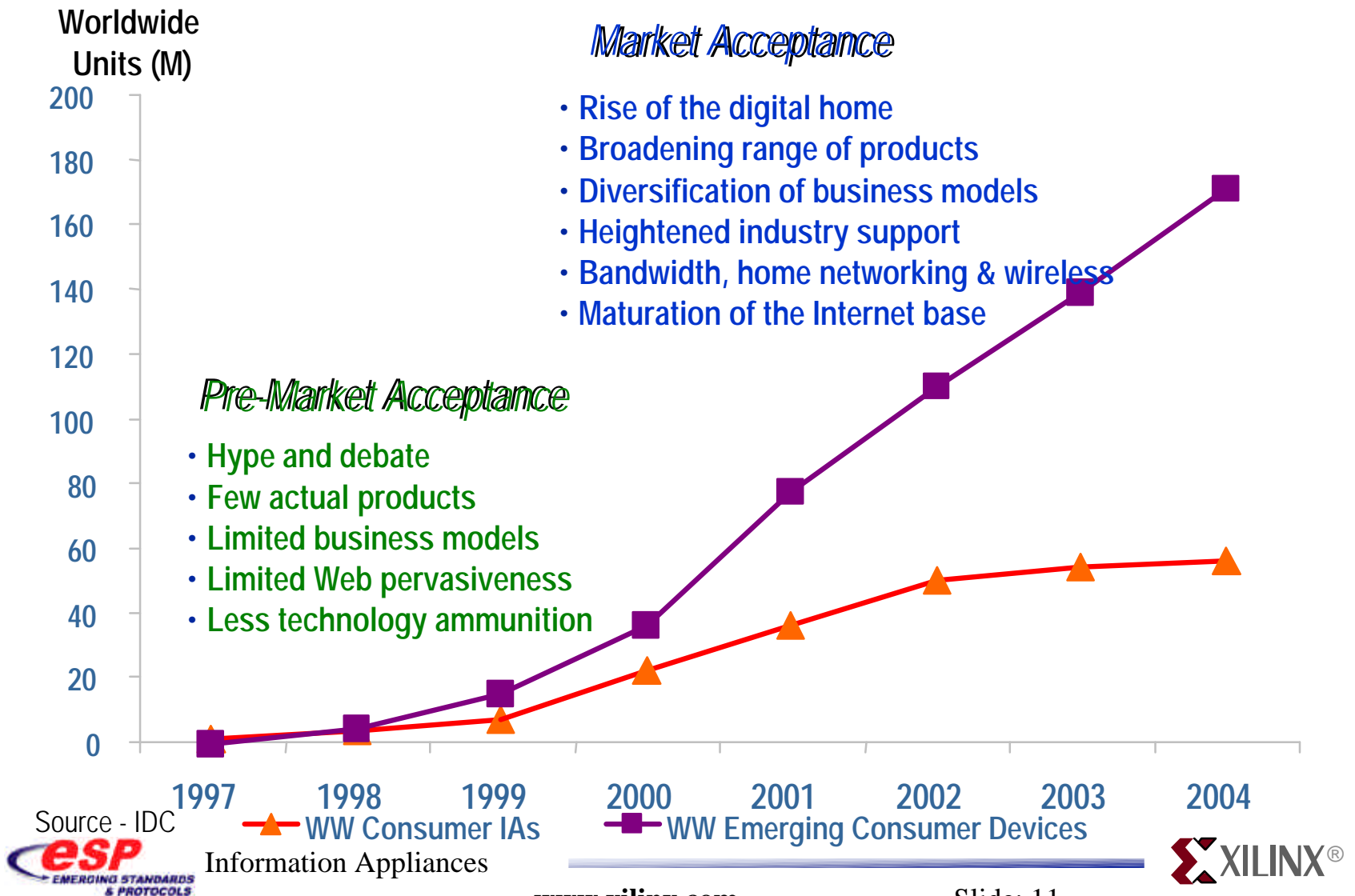- ✓ Lower power requirements
- ✓ Lower pin count

Tomorrow
- ✓ GPS in 2000
- ✓ Voice navigation in 2001

- ✓ Affordable wireless PAN and WAN in 2001

- ✓ eBook readers in 2000
- ✓ media players in 2000

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Phases of Market Acceptance of Consumer Devices / IAs

Worldwide Units (M)

Market Acceptance

- Rise of the digital home
- Broadening range of products
- Diversification of business models
- Heightened industry support
- Bandwidth, home networking & wireless
- Maturation of the Internet base

Pre-Market Acceptance

- Hype and debate
- Few actual products
- Limited business models
- Limited Web pervasiveness
- Less technology ammunition

200
180
160
140
120
100
80
60
40
20
0

1997 1998 1999 2000 2001 2002 2003 2004

Source - IDC

▲ WW Consumer IAs   ■ WW Emerging Consumer Devices

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Factors for the Success of IAs

- ◆ "Services" are the offering

- ◆ Product design must achieve elegance

- ◆ Branding and channels
  - — Established names & established channels are key

- ◆ Business models
  - — Low-cost solutions backed by partnerships & sustainable services

- ◆ Critical, supporting technologies must hit their strides
  - — Broadband, wireless & home networking

- ◆ Heightened industry investment must continue

- ◆ New product concepts must gain significant consumer awareness

Functional Requirements

Functional Requirements of Information Appliances	
Ubiquity	Prevalence of network access points
Reliability	Operational consistency in face of environmental fluctuation such as noise interference, multipath
Cost	Affordable for mass market
Speed	Support high speed distribution of media rich content (>10Mbps)
Mobility	Must support "untethered" devices
QoS: Quality of Service	Must support scalable QoS levels for application requirements of individual devices
Security	User authentication, encryption, & remote access protection
Remote Management	Ability for external network management (queries, configuration, upgrades)
Ease of Use	Operational complexity must be similar to existing technologies, such as TVs and telephones