Philips Semiconductors …

Enabling a world without wires

Phil Pollok
Senior Vice President

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Market Application Landscape

Text

Graphics

Internet

Hi-Fi audio

Streaming video

Digital video

Multi-channel video

Long Range

Short Range

GSM/CDMA

GPRS/3G

LMDS

802.11a/HL2

802.11b

Bluetooth 2

Bluetooth 1

ZigBee

WAN
Wide Area Network

LAN
Local Area Network

PAN
Personal Area Network

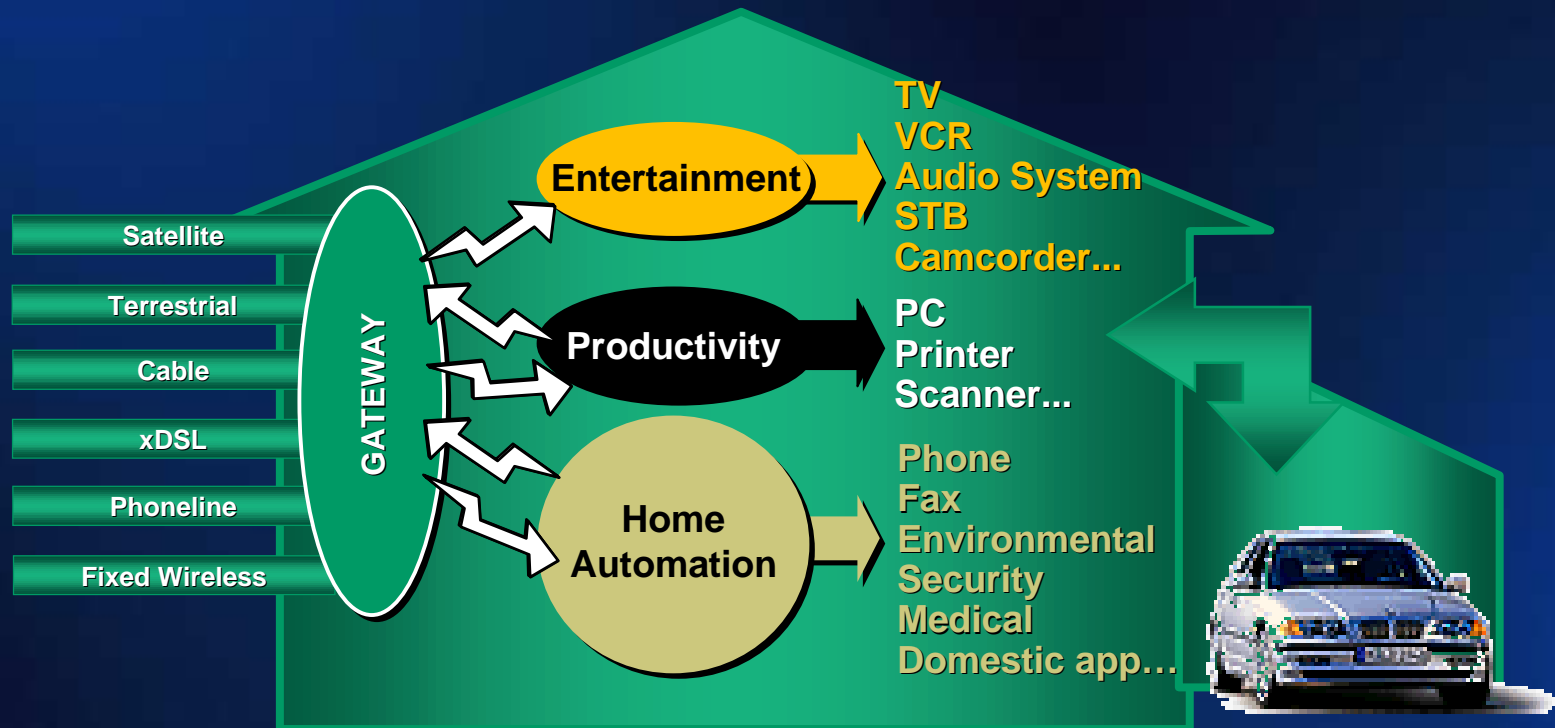**Low Speed**

High Speed
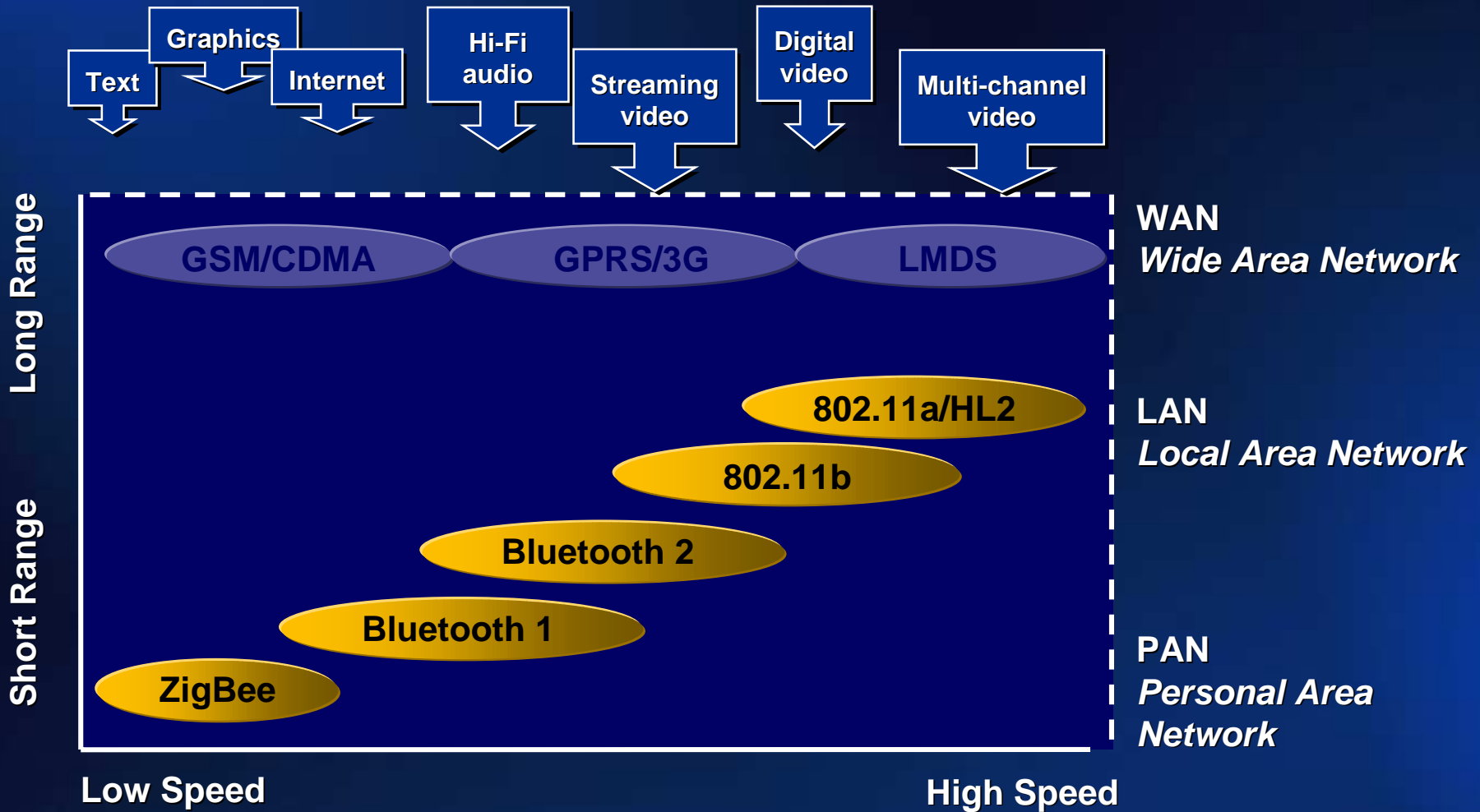
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PS Vision of Wireless Connectivity Ubiquitous in Home, Away and Office

- PS believes wireless will be the dominant and pervasive connectivity technology
- Interoperability must be achieved through standardization
- Wireless connections must be aggressively cost reduced

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Market trends

- **Market driven by multiple applications**
  - Headsets, Handsets and Internet Devices
  - PC Cards and computer peripherals
  - Home systems for security and for entertainment systems
- **Multiple Standards**
  - 802.11 and derivatives progressing
  - Bluetooth and ZigBee will equally become prevalent
  - Increasing focus on high data rate standards
- **Commoditization**
  - Wireless connectivity will become prevalent
- **Evolution of customer requirements**
  - Increasing requirement for complete solutions

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Setting the scene:
What do people really want?

AT HOME:

- **No new wires**
- **One simple remote control
  for TV, DVD, lights, phone …**

- **Eliminate wires between home
  PC and peripherals …**

- **Enable home security devices**
  - **smoke sensors, burglar alarms, webcams,
    door lock, cameras - to provide integrated security ...**

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Setting the scene:
What do people really want?

IN THE OFFICE

- **Reduce the cost of cabling, and increase flexibility …**

- **Allow laptop users to roam within the building …**

- **Connect mobile phones to the office phone system ...**

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Setting the scene:
What do people really want?

ON THE MOVE

- **Wireless headsets**
  - **possibly built into ear-rings, glasses …**

- **PDA/phone connected to the office on demand …**

- **Context aware mobile phone which can add 'location' services ...**

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Setting the scene:
What do people really want?

IN THE CAR

- Car recognises your phone in your pocket and connects to car …

- Music device that enables you to download tracks at home and bring to the car …

- Road toll and gas pump payment ...

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Setting the scene:
What do people
really want?

Easy to use embedded wireless connectivity at the right performance, the right price
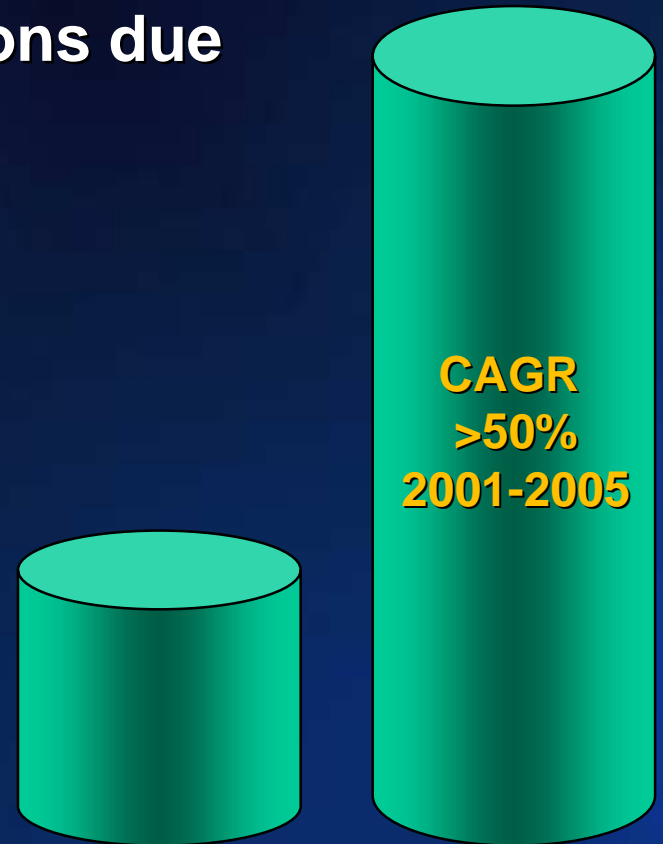
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Measuring the wireless opportunity

- **No single source of market predictions due to multiple applications**

- **Consensus of opinion shows $3-5bn by 2005**

- **Real opportunities - assuming:**
  - **easy to implement**
  - **cost/benefit**

**CAGR
>50%
2001-2005**

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Philips Semiconductors is driving the connected world

- First to ship over **6 million 802.11** radio chipsets
- The power behind over **half of all 802.11 modules**
- Acknowledged **leader in RF** and interfaces
- First to deliver a commercial **Bluetooth** compliant chipset
- First to ship a **million Bluetooth** devices
- First to offer both **Bluetooth and ZigBee** (802.15.2) connectivity solutions

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PS Strategy to become #1

- **Standards** leadership driving wireless application development

- **Wide portfolio of wireless connectivity expertise - 802.11, Bluetooth, ZigBee, wireless 1394**

- **Leader in RF technology and BiCMOS processes**

- **Integration with full systems - including consumer and mobile communications**

- **Customer partnerships: partnering with leading customers in each major application area**

- **Ability to drive down prices through consumer design and manufacturing expertise**

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Driving the standards

- **Chair of the 802.11 standards committee**
- **First supplier to work with Ericsson to bring Bluetooth into reality**
- **Leading the workgroup on the audio/video profile standard for Bluetooth**
- **Philips Semiconductors proposal of ZigBee adopted as the standard for IEEE 802.15.2 - the new standard for low power and low data rate connectivity**
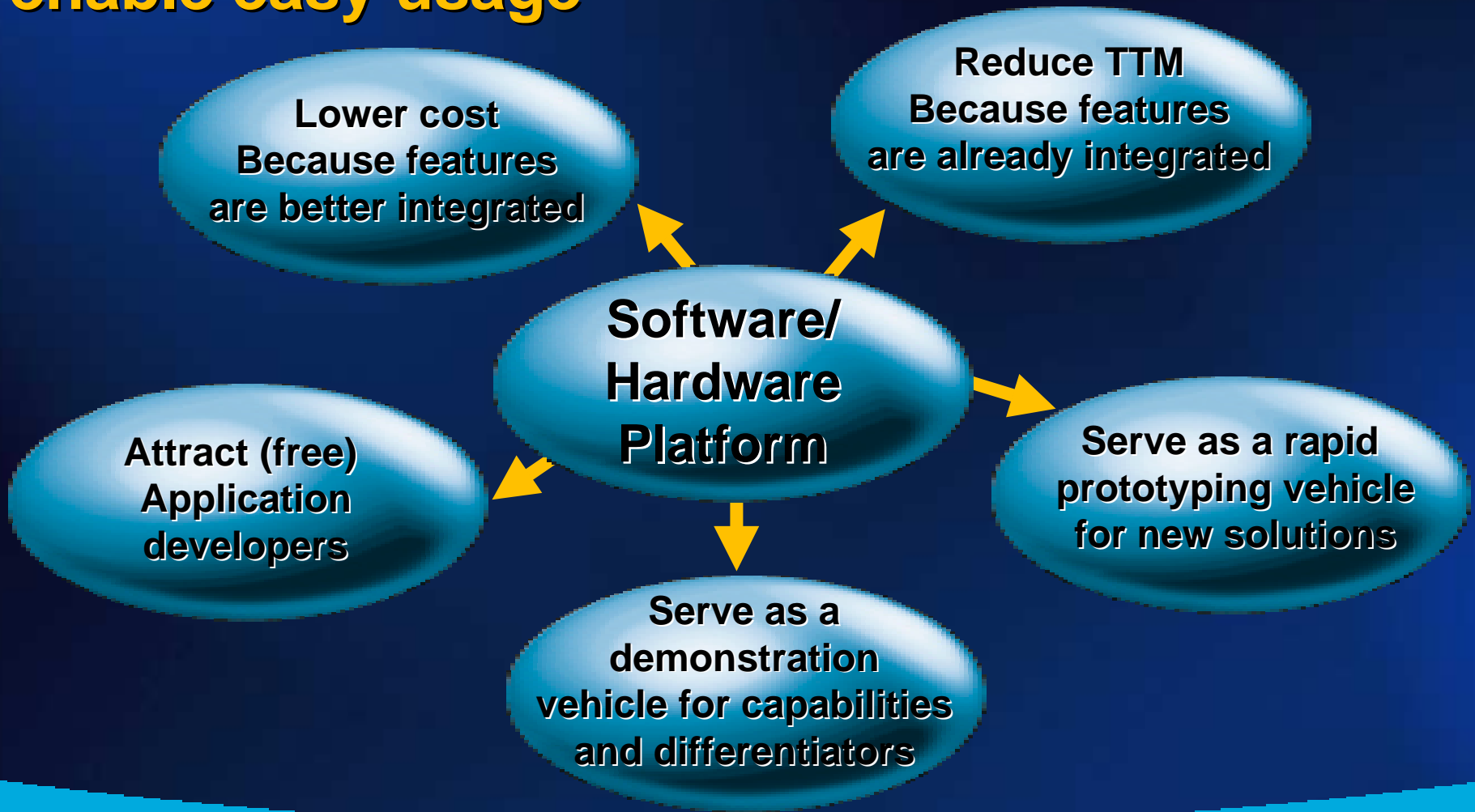- **Founding member of the 1394 wireless standard**

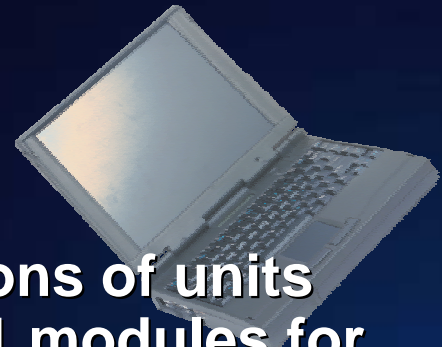**Driving interoperability and co-existence**

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Adopting the platform approach to enable easy usage

Lower cost
Because features
are better integrated

Reduce TTM
Because features
are already integrated

Software/
Hardware
Platform

Attract (free)
Application
developers

Serve as a rapid
prototyping vehicle
for new solutions

Serve as a
demonstration
vehicle for capabilities
and differentiators

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Bringing The Technology To Life

- **Creating demonstrators of Context Aware Mobile Phone applications**

- **Developing wireless connectivity solutions for PC peripherals**

- **Shipping millions of units to make 802.11 modules for wireless LAN applications**

- **Partnering with customers to develop standards and implementation, using millions of units for home automation, HVAC and security**

- **Developing Bluetooth applications with headset customers**

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Investing in future wireless technologies

- **A key focus area for Royal Philips Electronics**
- **Leveraging expertise across the entire company**
  - **Research developing new technologies for high-speed and advanced connectivity**
  - **Semiconductors creating industry-leading silicon**
  - **Components delivering modules**
  - **Consumer divisions working on new products/applications**
- **Novel User Interfaces; multi-mode integration; hardware and software connectivity platforms**

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Summary

- **Wireless connectivity will be ubiquitous. A market for silicon of $3-5B by 2005, with explosive growth of >50% CAGR**

- **Philips is a leading volume supplier of real products for Bluetooth, 802.11 and ZigBee.**

- **PS has the core competencies in RF systems which will drive cost, usability and standards**

- **Philips has a unique breadth of components, modules, systems and application solutions**

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