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Digital consumer applications in Philips Semiconductors

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Semiconductors div.**

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PS capabilities in Digital domain

PS at a glance

Market trends

Technology capabilities

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Philips Semiconductors

At a glance

- Major division of Philips Electronics, world's 8th largest electronics company
- World's 8th largest semiconductor supplier in 1998, top European semiconductor company
- Sales
 - Integrated circuits: \$3290 million
 - Discrete semiconductors: \$900 million
- 27,000 employees
- 16 manufacturing and assembly sites in 11 countries
- Four System Labs and twelve design centers
- Over 100 sales offices in 44 countries, over 100 sales rep and distributor locations
- Producing 12 million ICs and 4.9 billion discrete devices every day
- Over 45 years of semiconductor experience

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Key products in application domains

Multimedia

- Digital video / audio
- Decoders
- Scalers
- CD-x chipsets

Audio / Video

- Single chip TV
- DTV chipsets
- STB chipsets
- Video chipsets
- Audio chipsets

Mobile Communications

- GSM circuits
- PHS / PDC chipsets
- DECT chipsets
- GPS chipsets
- RF devices

Controllers & Processors

- TriMedia embedded DSP multimedia processor
- R3000 & R4000 MIPS controllers
- XA 16-bit controllers
- 80C51-based 8-bit controllers
- REAL and EPICS DSP

Logic

- 3 and 5 volt logic families, PLDs

Discrete Semiconductors

- Small signal transistors and diodes
- Power transistors and diodes
- RF transistors and modules
- Sensors

Our top 3 positions (worldwide)

- Consumer Systems
- Discrete Semiconductors
- (Car)radio, front end and DSP
- Audio power for wide range of applications
- Power management (DC/DC converters, battery mgt, green SMPS)
- Decoders and motorcontrol in CD-audio, CD-ROM, Video CD, CD-R
- CMOS Logic
- Microcontrollers
- Wireless communication ICs

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PS capabilities in Digital domain

PS at a glance

Market trends

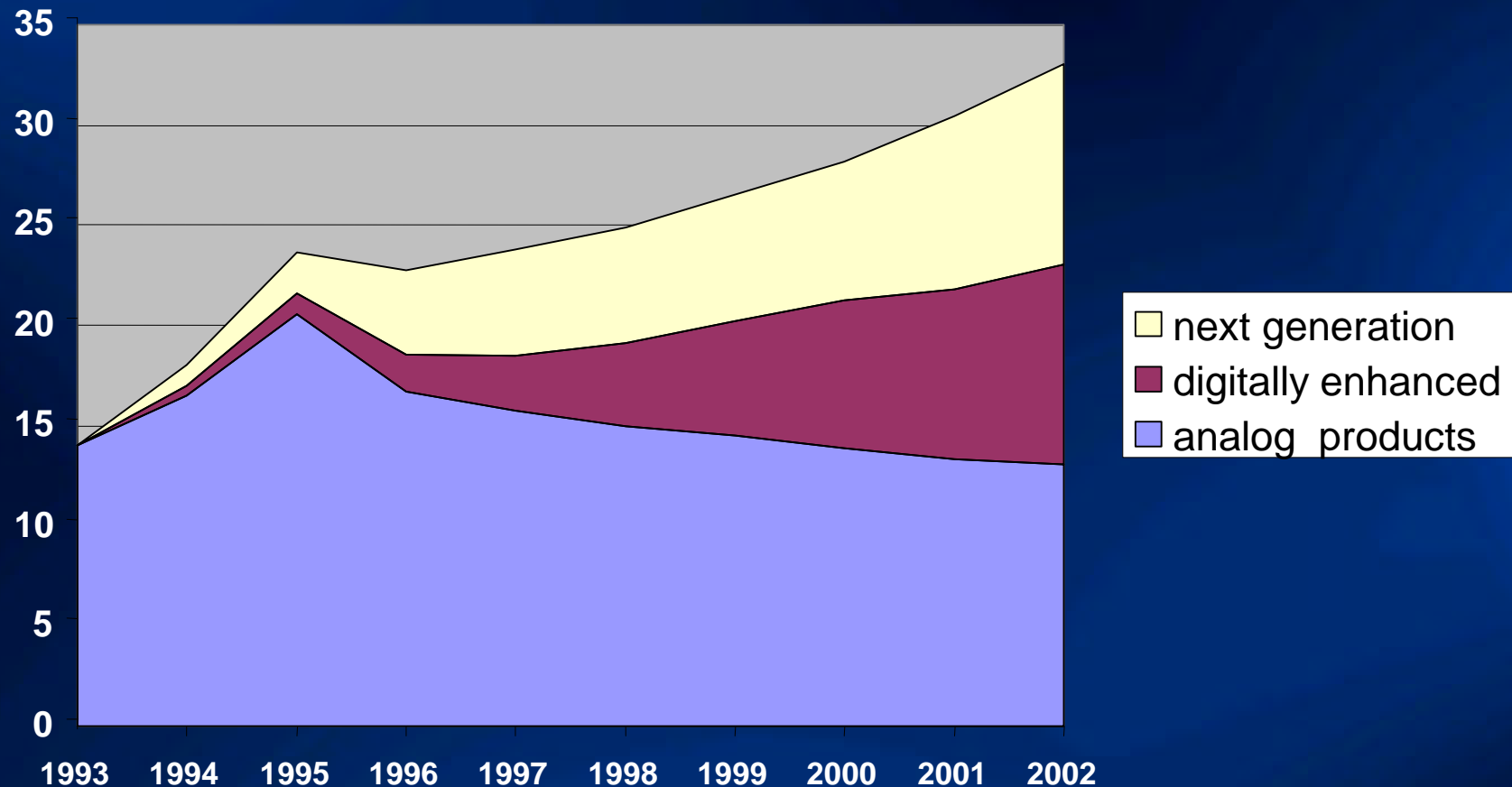
Technology capabilities

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Worldwide Consumer Electronics Semiconductor Market (Billions of Dollars)



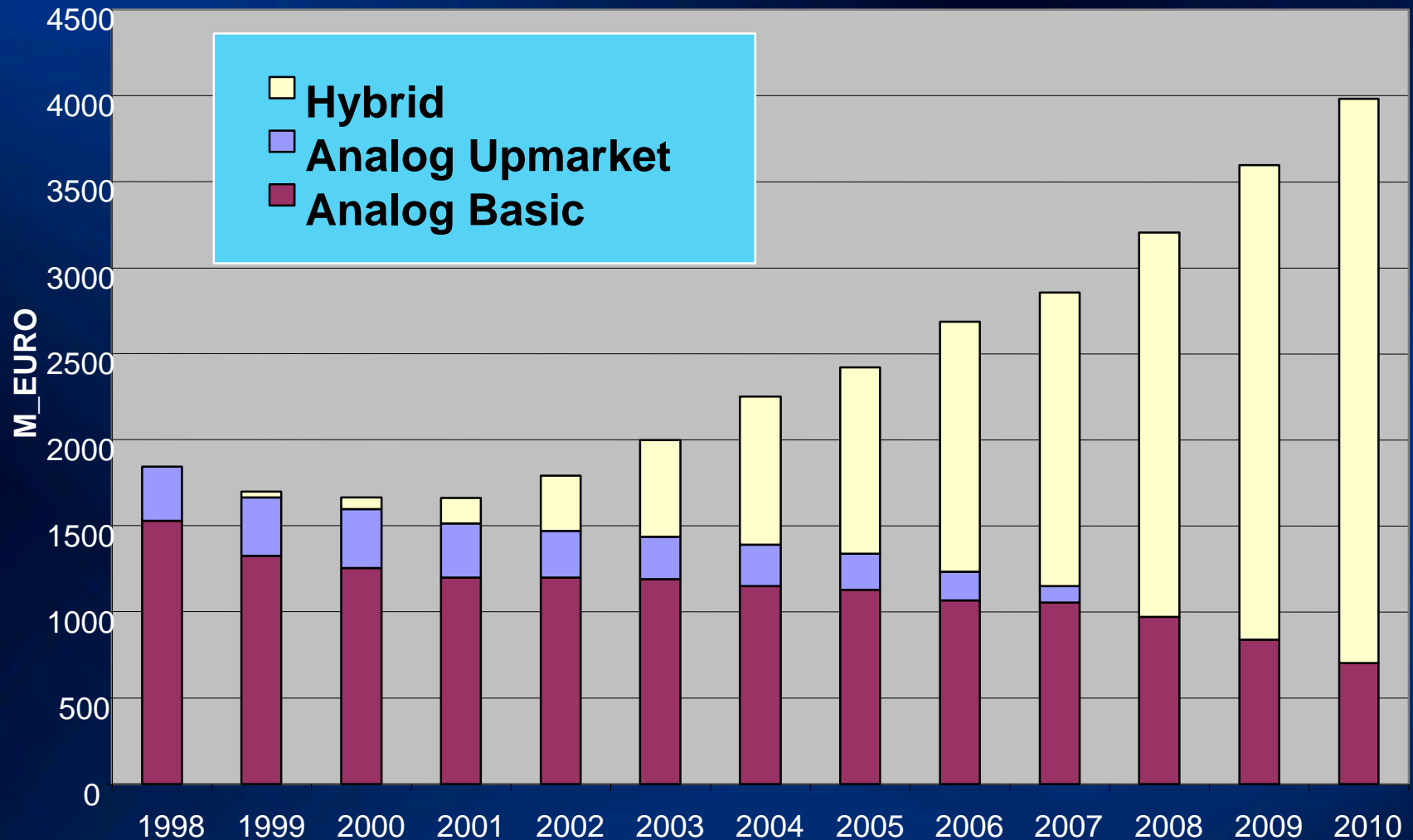
Source : DataQuest Nov 98

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Worldwide Semiconductor Market in TV



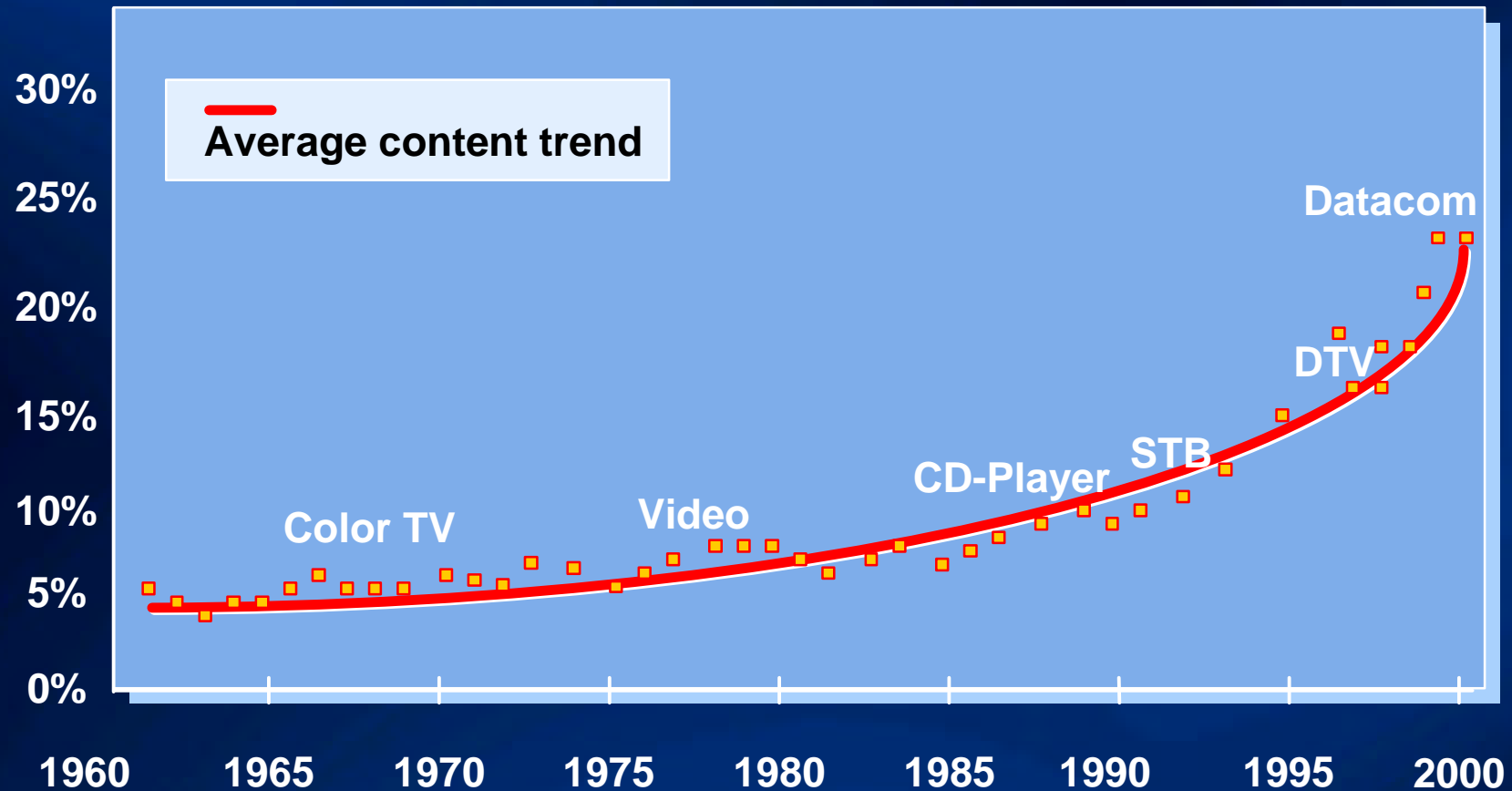
Source: Dataquest /PS

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Semiconductor content of electronic equipment 1960 - 2000



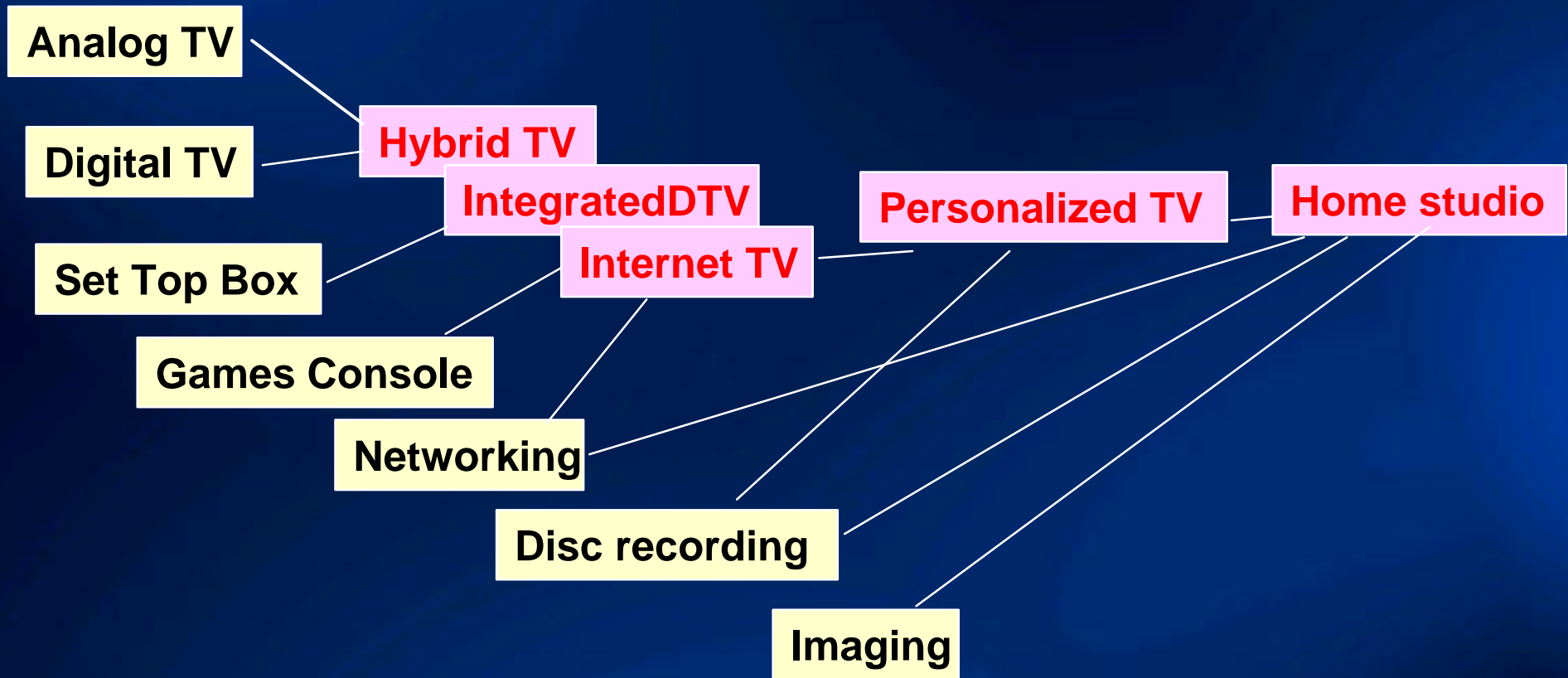
Source: Dataquest / ST / PS

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Synergies/convergence around digital TV



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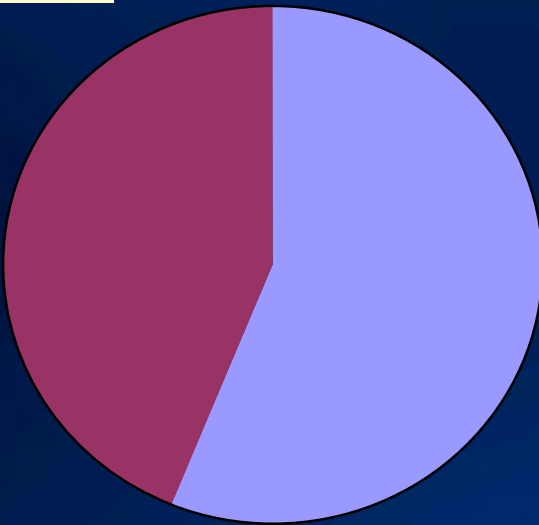


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PS current position in Analog to Digital migration

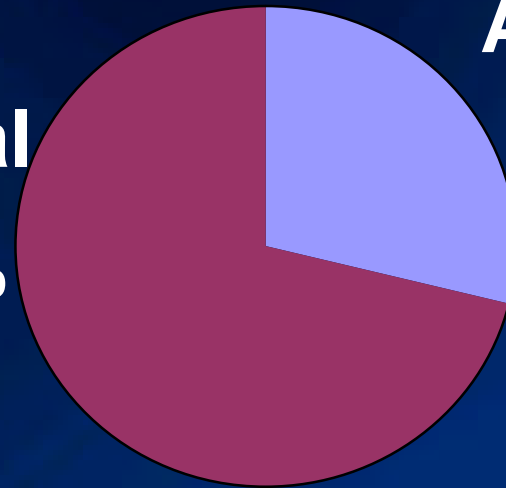
Sales

Digital
44%



Analog
56%

Digital
71%



Analog
29%

**R&D
effort**

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PS capabilities in Digital domain

Technology capabilities

- **Processes :**
 - deep submicron CMOS
 - aligned with STM Crolles and TSMC
- **Design methodologies :**
 - CoReUse / MoReUse
 - Digital Video platform

SSMC

(Systems on Silicon Manufacturing Company)

- Joint venture with TSMC & EDB
- Management in Singapore as of January 1st
- Contractor appointed
- Design complete
- Equipment move in early 2000
- 1st silicon Q3 2000
- Production Q4 2000

- Capacity : 360k 8" wafers / y
- Capability : CMOS13 and higher

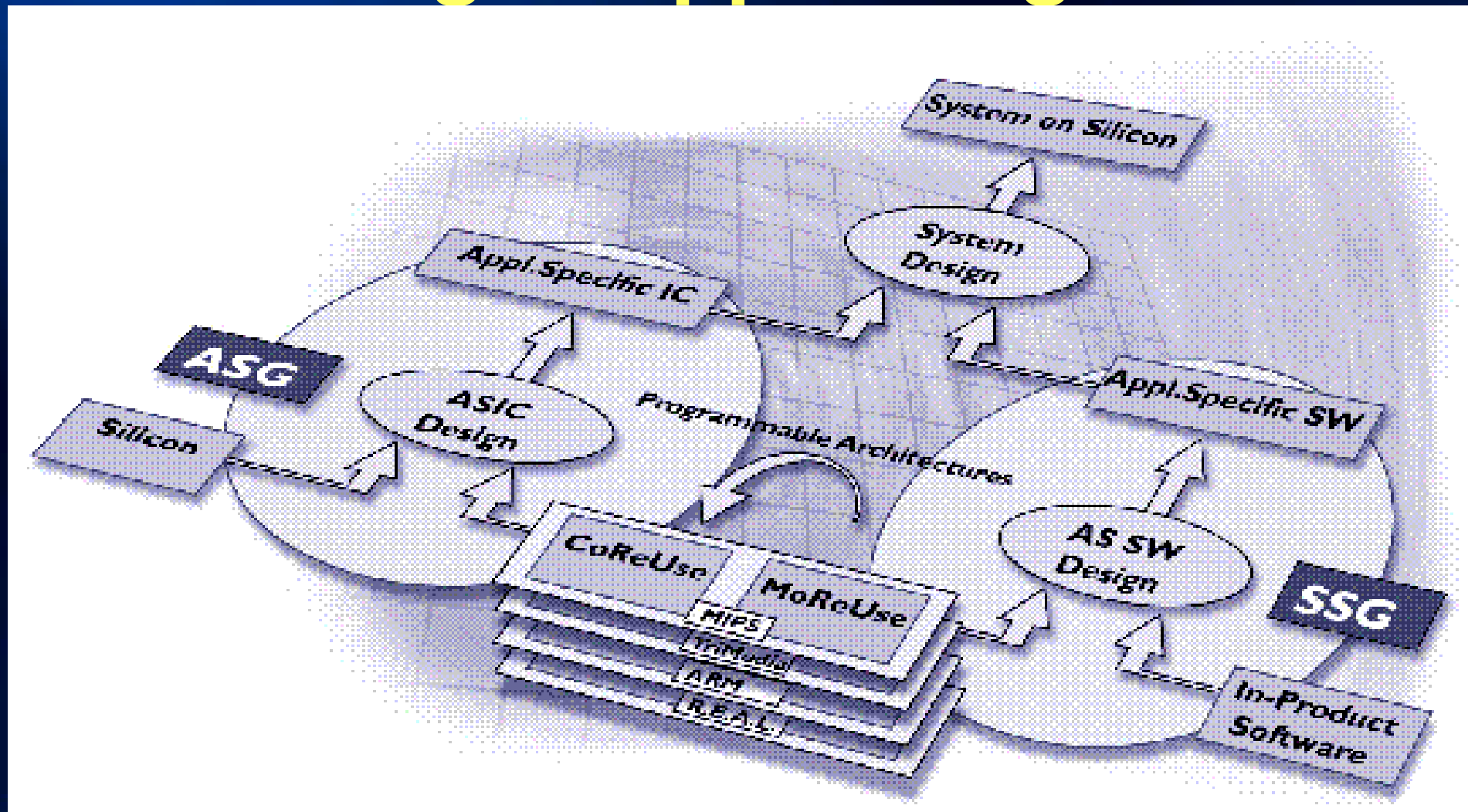


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The design support organization



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Silicon System Platform

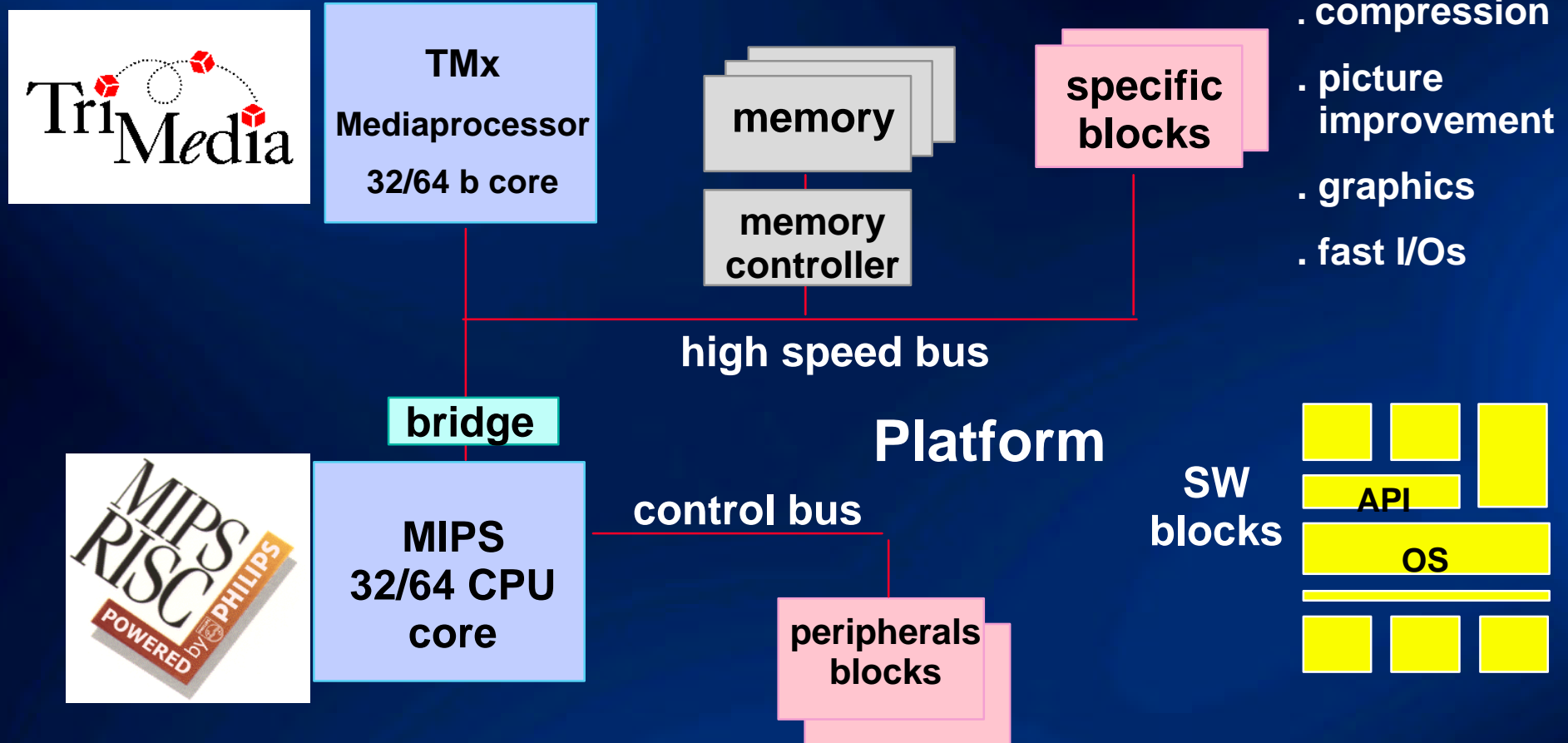
- Generic architecture for signal processing and control
- Applicable within a certain application domain:
 - Digital video (DTV, set-top boxes, DVD, etc.)
 - Cellular telephony (GSM, CDMA, UMTS, etc.)
- Scalable over the various applications within the domain:
 - From high-end to low-end
 - Flexible or cost-optimized
- Hardware and software

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Digital Video Platform



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Platform example: 1

Application domain: Digital TV

Specific applications: DTV, DVB, DVD-video,

Set-top box

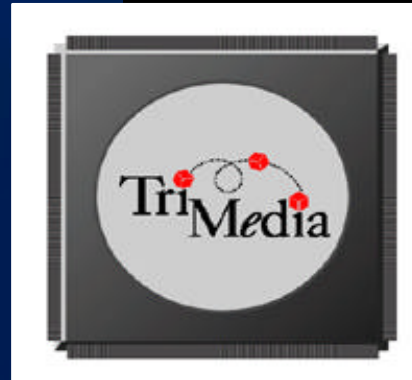
CPU: MIPS

DSP: TriMedia

OS: pSOS

Buses: I²C, USB,

i-Link (IEEE 1394)



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Advantages of the DVP

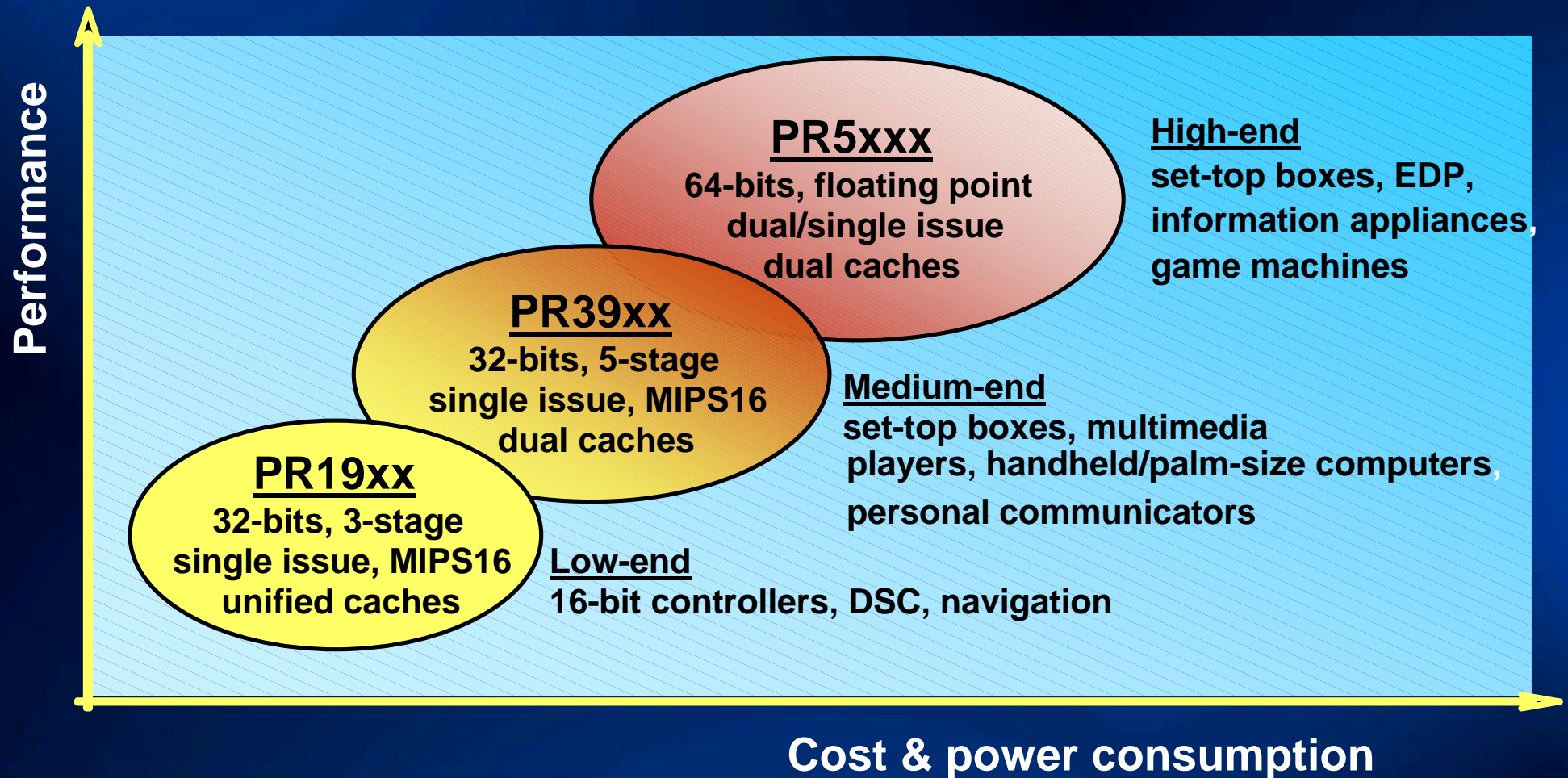
DVP

- **TtM:**
much faster for follow-up products
- **resource usage:**
more optimal resource use
- **market risk:**
technology used in many markets
- **changing customer requirements:**
framework allows faster derivatives
- **design risk:**
allows use of tested blocks

Point Solution(s)

- **TtM:**
may be faster for 1st product
- **resource usage:**
may duplicate effort
- **market risk:**
success depends on single market
- **changing customer requirements :**
derivatives may take longer
- **design risk:**
product may use mostly new blocks

Embedded MIPS core family



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HDTV, NTSC Picture Enhancement, Web Enabled TV ... One Platform

ATSC
HDTV+
GUI

Spyglass
Web
Browser

Original
(input)
NTSC
Image
(480i 3:2
Pull-down)

Enhanced
NTSC
(480P
60fps with
interpolated
missing
frames)



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Today Philips Semiconductors CS is a global leader in analog consumer products.

Analog is our core competence today and remains important for the future.

Major growth opportunities are in the digital area.

Philips Semiconductors aim to achieve the same leadership position in digital consumer electronics.

We are investing in a long term, extended roadmap

Silicon System Platform

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