



# **MSVD Program Within BLAZE**

## **Multi Standard Video Decoder**

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Subject – Demonstration – Work Package 2A

Project - BLAZE

Week 709.2



# NXP Semiconductors

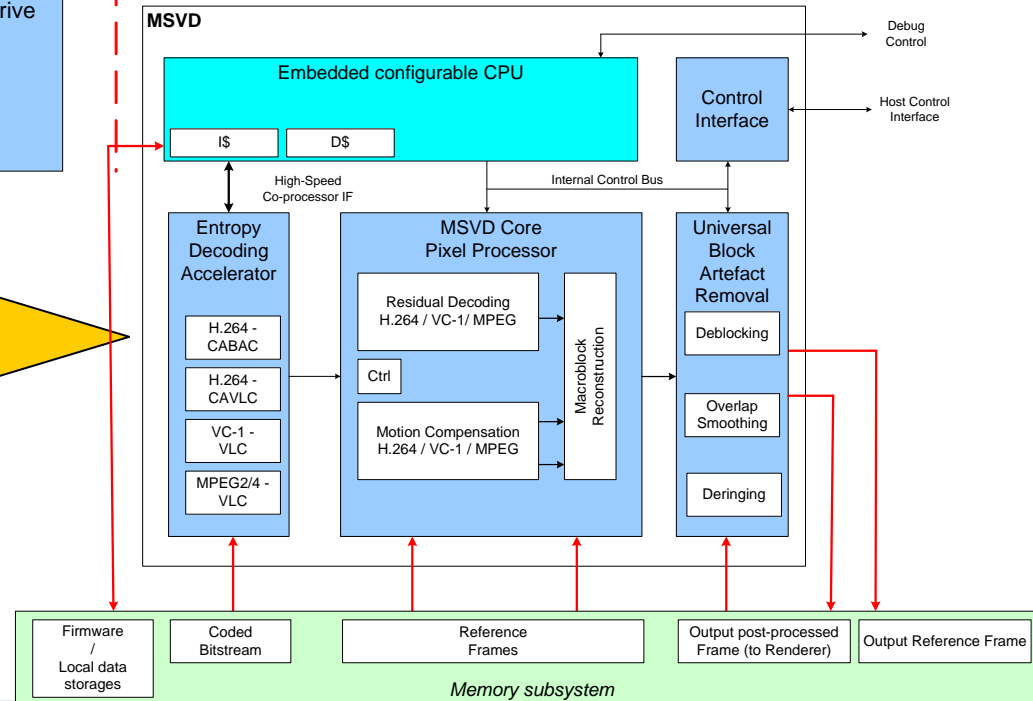
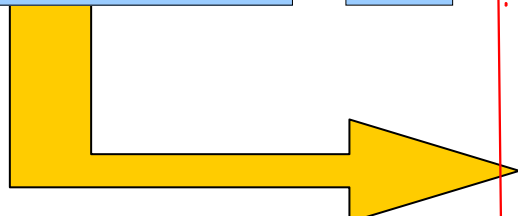
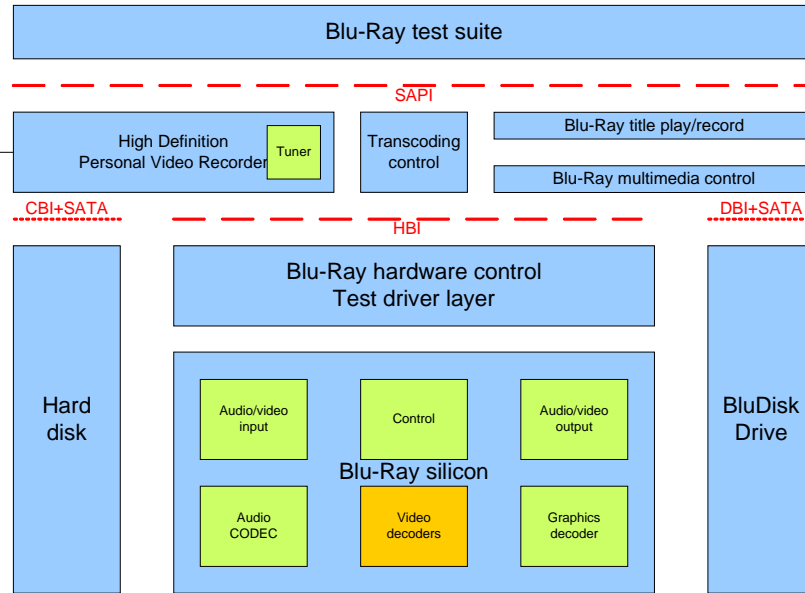
- ▶ Established in 2006  
(formerly a division of Philips)
- ▶ Builds on a heritage of  
50+ years of experience in Semiconductors
- ▶ Provides engineers and designers with  
semiconductors and software that deliver  
better sensory experiences
- ▶ Top-10 supplier with sales of € 4.8 Bln (2005)
- ▶ Headquarters: Eindhoven, the Netherlands
- ▶ Sales
  - 35% greater China
  - 31% rest of Asia
  - 25% Europe
  - 9% north America



- ▶ Key focus areas
  - Mobile & personal
  - Home
  - Automotive & identification
  - Multi-market semiconductors



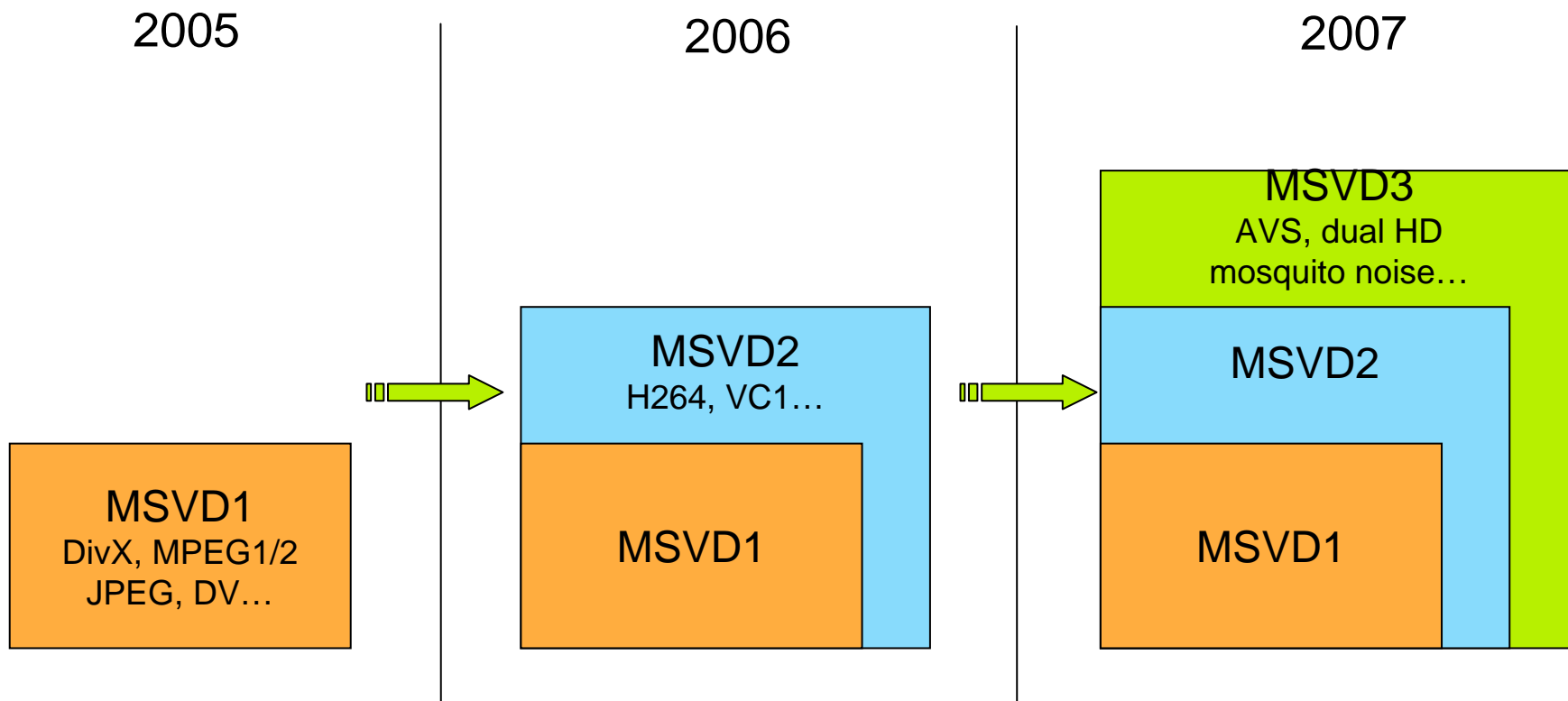
# MSVD Within BLAZE



# MSVD Program Activity

- ▶ Multi-standard video decoder (MSVD) program consists in
  - MSVD1 -> standard definition – maintenance phase
  - MSVD2 -> high definition – development phase
  - MSVD3 -> emerging format – study phase
- ▶ One intellectual property for all video formats
  - Pictures: JPEG
  - Standard Definition: DV, MPEG1, MPEG2, MPEG4 – DivX (Xvid)
  - High definition: MPEG2 & H264 & VC1 (WM9)
  - Post-processing: dual decoding, de-blocking, de-ringing...

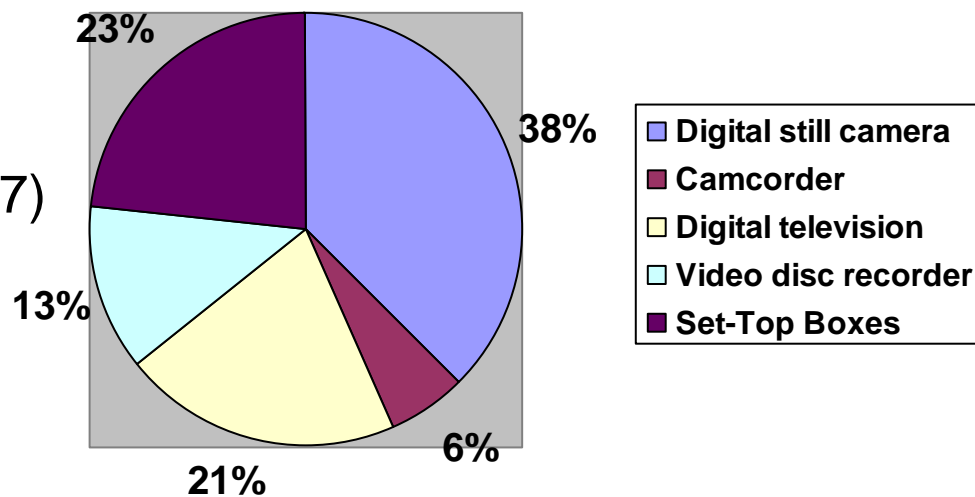
# MSVD Program Roadmap



# One Intellectual Property for 6 Areas

1. Storage -> Blu-ray & DVD recorder
2. High Definition Television (available in 2008)
3. Set-top box (available now)
4. Picture Frame (available in 2007)
5. Mobile (on study)
6. Computer system (on study)

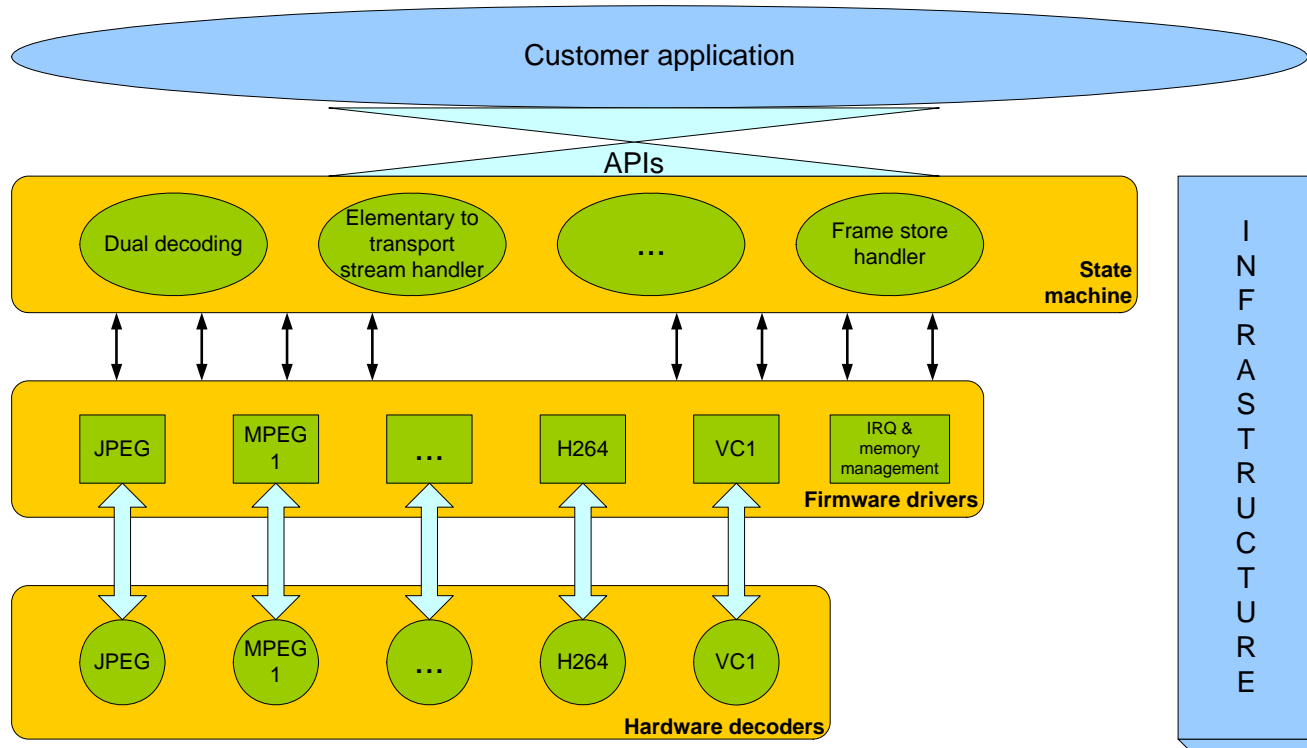
Video in silicon market share in 2006



# One Intellectual Property for Several Markets

<i>Application</i>	<i>Care-about</i>	<i>CODECS used</i>	<i>Roadmap</i>
<b>Blu-Ray / DVD</b>	High quality / Random access / Low cost	MPEG-2 MP	H264/WMV9
<b>Digital Terrestrial Television</b>	High quality	MPEG-2	MPEG-2 / H264 / AVS 1.0
<b>Digital video camcorders</b>	Low power / High quality / Low bitrates	DV	MPEG2 / MPEG4
<b>Digital video to handset</b>	Low power / Low bit-rate / Error robustness	WMV9 / H264	
<b>Internet streaming</b>	Low bitrates / Multi-format decoders / Rights management	WMV9 / Real Video / MPEG-4 / (QuickTime) / (DivX)	
<b>Mobile streaming</b>	Low complexity decoding / Error robustness	MPEG4 SP	RV / H264 BP / WM9 / AVS-M
<b>Personal Video Recorders</b>	High quality / High bitrates / Random access	MPEG-2	WM9 / H264
<b>Satellite Television</b>	High quality	MPEG-2	H264 High Profile
<b>Security/surveillance</b>	Multiple encoding	Motion JPEG / H263	MPEG-4 SP / H264
<b>Videophone Video conferencing</b>	Low delay / Low bitrates	H261 / H263	H264 BP

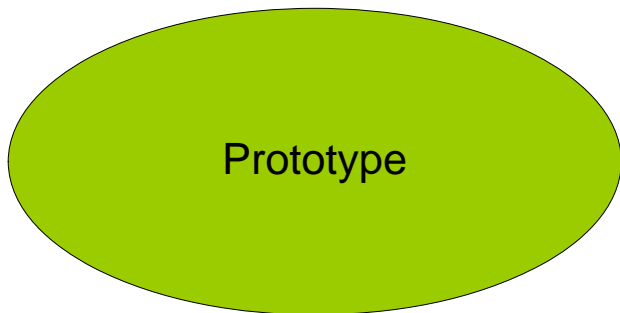
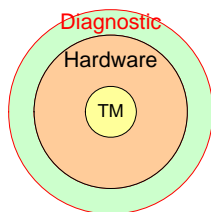
# MSVD System Architecture



- ▶ At the application level, each video format is seen similarly
- ▶ Analogies have been made between all the formats supported by MSVD and MPEG2
- ▶ Only a couple of API post processing functions are format specific (e.g.: JPEG rotate and rescale)

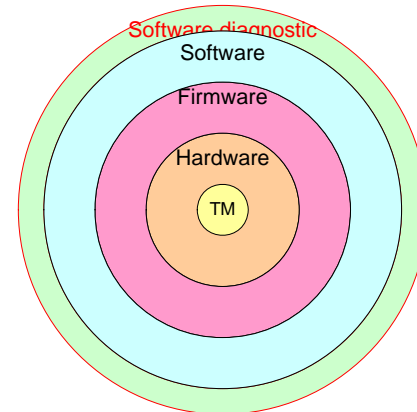
# Validation Strategy

Standardization streams  
(Allegro, SMTP...)  
1200 test streams



Silicon available &  
platform operational  
(SDK)

Public domain streams  
(encoder supplier, customer test  
streams...)  
& dynamic behaviour



**Verification** using simulations on prototype  
Required to check the algorithms  
Done by the **hardware** sub-project

**Validation** in real time on silicon  
Required to check the performances  
Done by the **software** sub-project

# Demonstration Diagram Done for BLAZE

1. The PC is sending script commands to the PNX8335 board via a serial link to select the targeted stream
2. The embedded application is getting the selected stream from the USB hard disk drive.
3. The MSVD is decoding the stream whatever is the format
4. The NXP platform is transmitting the output to the high definition television

