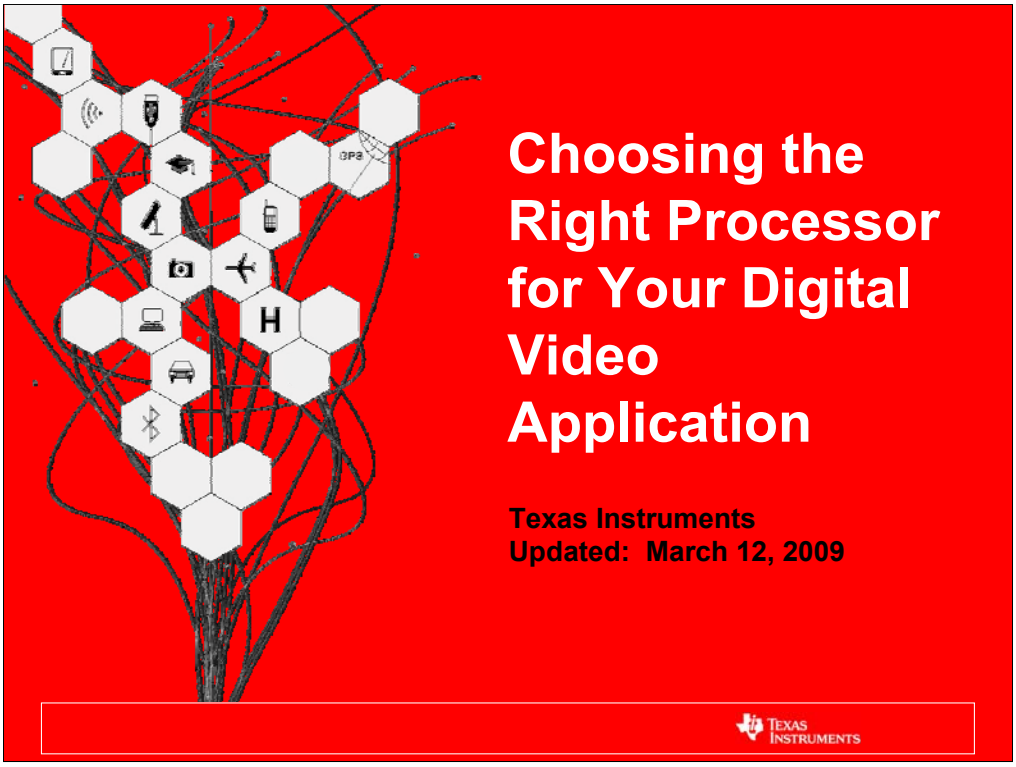
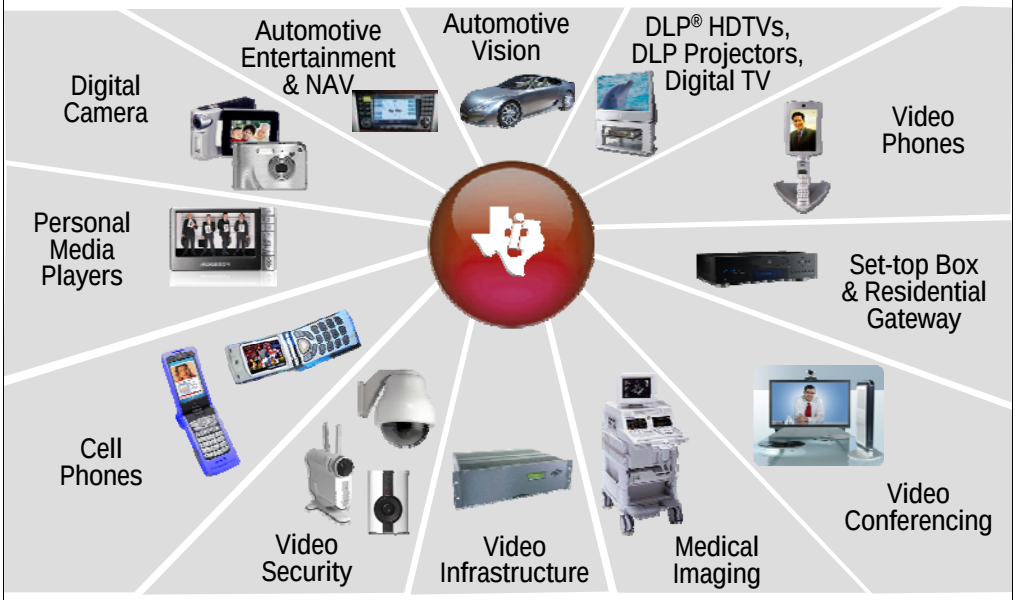
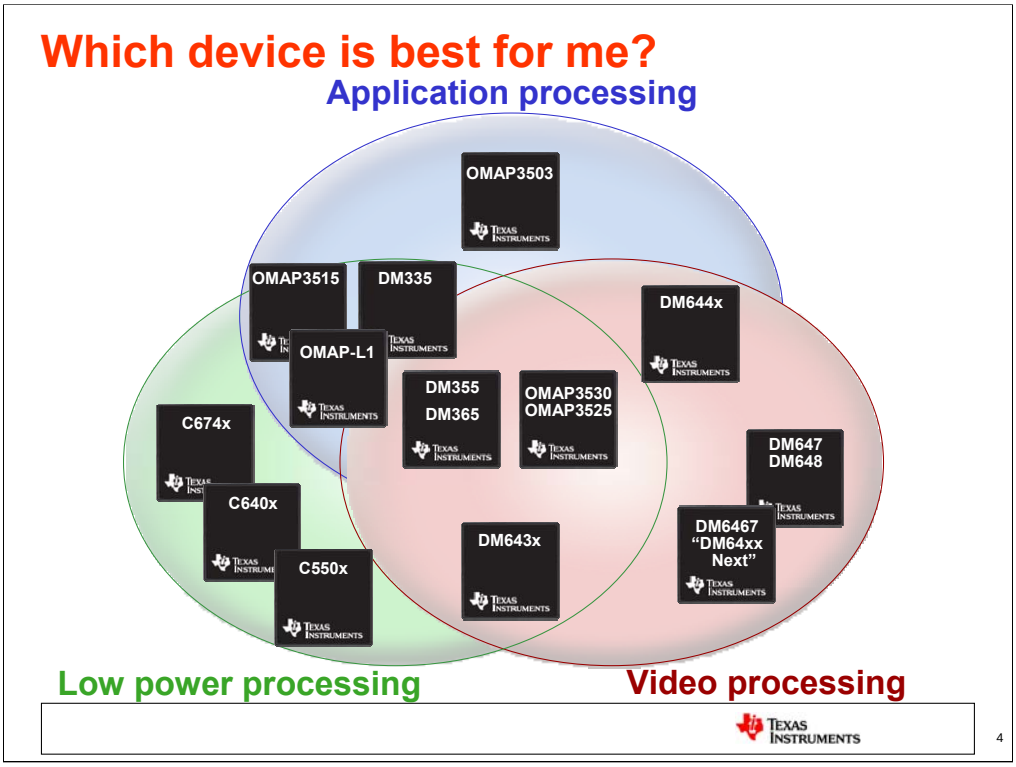

Choosing the Right Processor for Your Digital Video Application
Texas Instruments
Updated: March 12, 2009
Texas Instruments

Agenda

- Introduction
- Video processing considerations
- Device selection for specific video end equipment applications
- Q&A Session

Addressing the digital video spectrum





Applications processing

Highest performance ARM + Graphics

First to market with Cortex-A8

Up to 600MHz ARM Cortex-A8 (~ 1200 ARM9 MIPS)

Up to 10 million polygons/ second with Graphics Accelerator

Customizable HLOS

DM355:

Less than $10

MPEG4 HD video, JPEG

Up to 270 ARM9 MHz

DM644x:

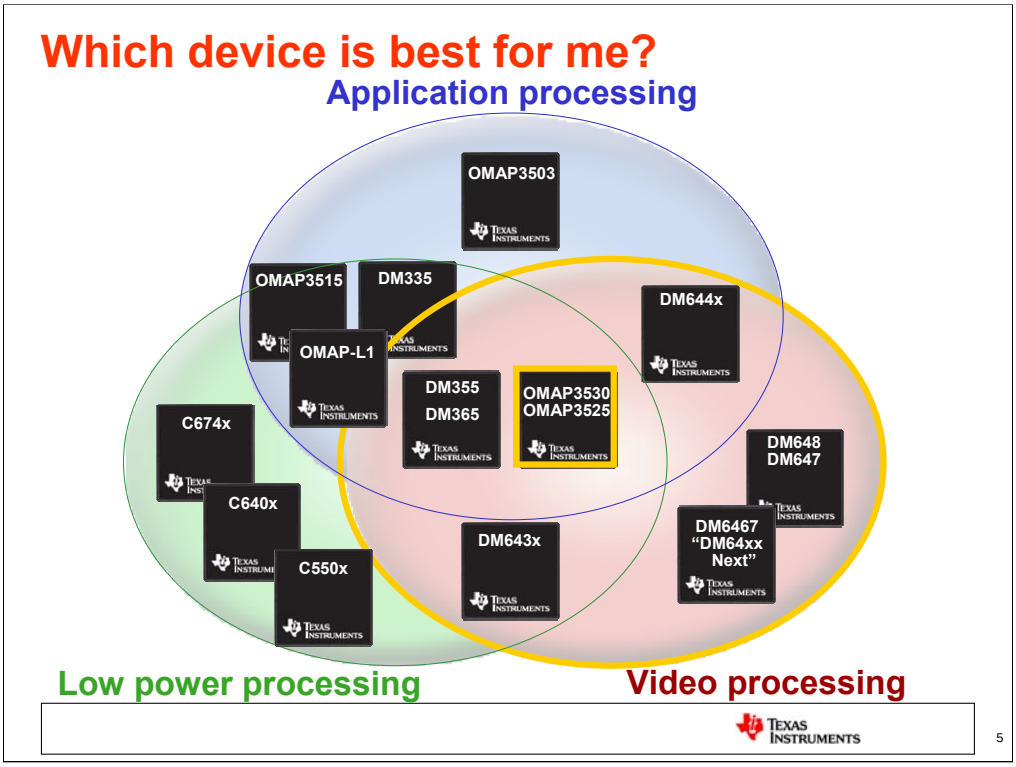
Up to 720p video decode

Up to 600 MHz C64x+ DSP + video accelerator performance

4 10bit video DAC's supporting composite, component, or S-Video

DSP=better at complex mathematics apps

ARM=better at advanced UI and system control



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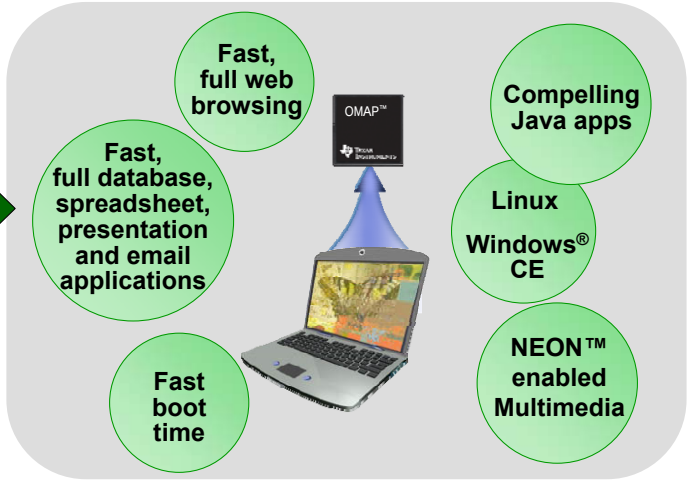
First sampling ARM® Cortex™-A8 core offers a 4X performance improvement vs. ARM 9

NEW

First Sampling ARM® Cortex-A8

- Advanced, Intuitive UI
- Highest-performance ARM, up to 1200 Dhrystone MIPS



OMAP™ 3 processors bring laptop-like performance at handheld power levels

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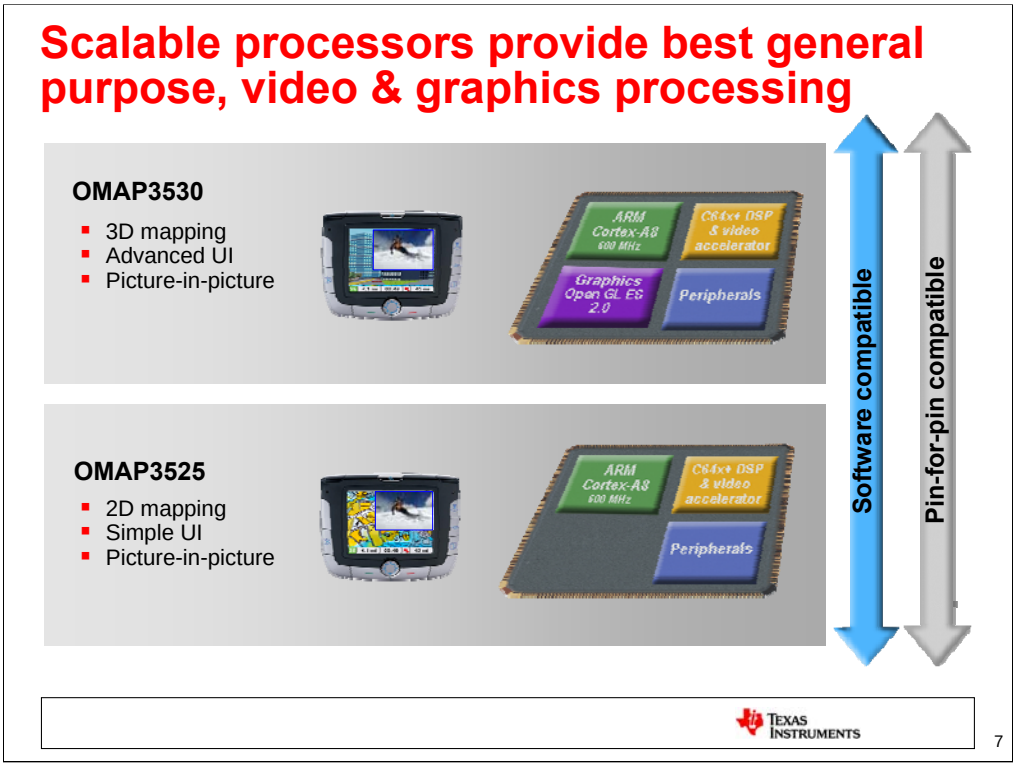


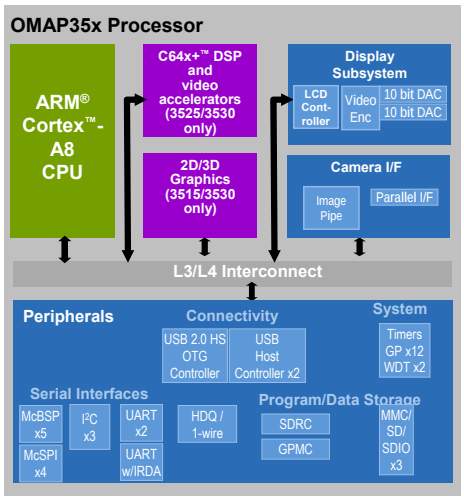
- So we mentioned that scalability of the OMAP35x architecture – they are software and pin for pin compatible. As you can see, that platform -provides several combinations to fit a customer's portfolio of products. Take for instance, a portable navigation device.

- With the OMAP3503 which has the cortex-A8 and peripherals, you will be able to design entry level applications – A PND where the map is in 2D, similar to what you would get on the Internet.

- With the OMAP3515, the device will not just show you a square building, you'll be abel to see it in 3D with 360 degree rotation if needed. If video is the main concern, with the OMAP3525, you have the 2D map, but you can pull video graphics and also have digital TV. For instance, say you click to see real-time traffic or if you need to connect to the Internet to view a quick video. The flagship product, the OMAP3530, allows you to have l the 3D and picture in picture capability.

- So this really gives you an example of how a customer can use one or all of these processors and scale it across a family of products.

Scalable processors provide best general purpose, video & graphics processing



Pin-for-pin compatible

OMAP3525	OMAP3530
ARM® Cortex™ A8	ARM® Cortex™ A8
C64x+ DSP & video accelerator	C64x+ DSP & video accelerator
	2D/3D graphics accelerator – IMG SGX530
L2 256KB L1P 16KB L1D 16KB	L2 256KB L1P 16KB L1D 16KB
LPDDR@166MHz	LPDDR@166MHz
Neon float support	Neon float support
MPEG4 720p 24fps/30fps encode/decode H.264 MP VGA decode H.264BP/VC1/ WMV9 D1 encode/decode	MPEG4 720p 24fps/30fps encode/decode H.264 MP VGA decode H.264BP/VC1/ WMV9 D1 encode/decode
32 ch DMA, SSI, 5 McBSP, 2-3 UART, 4 I2C, IrDA, 4 SPI, MMC/SD, USB	32 ch DMA, SSI, 5 McBSP, 2-3 UART, 4 I2C, IrDA, 4 SPI, MMC/SD, USB
Samples Today, Production April 2009	Samples Today, Production April 2009

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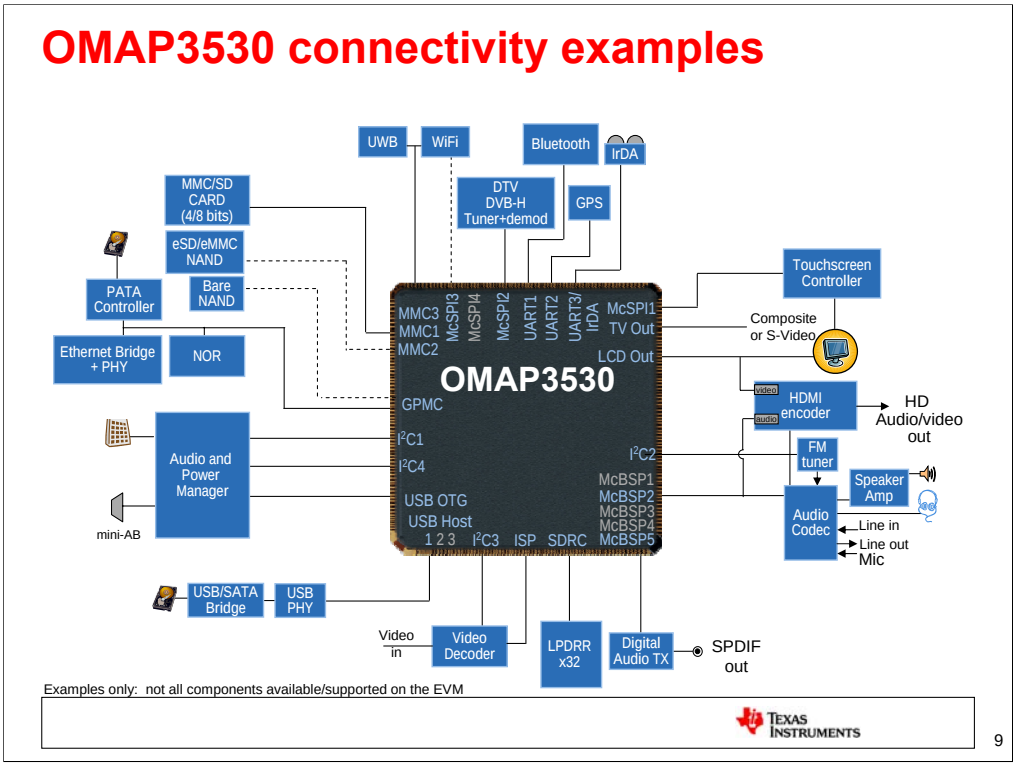
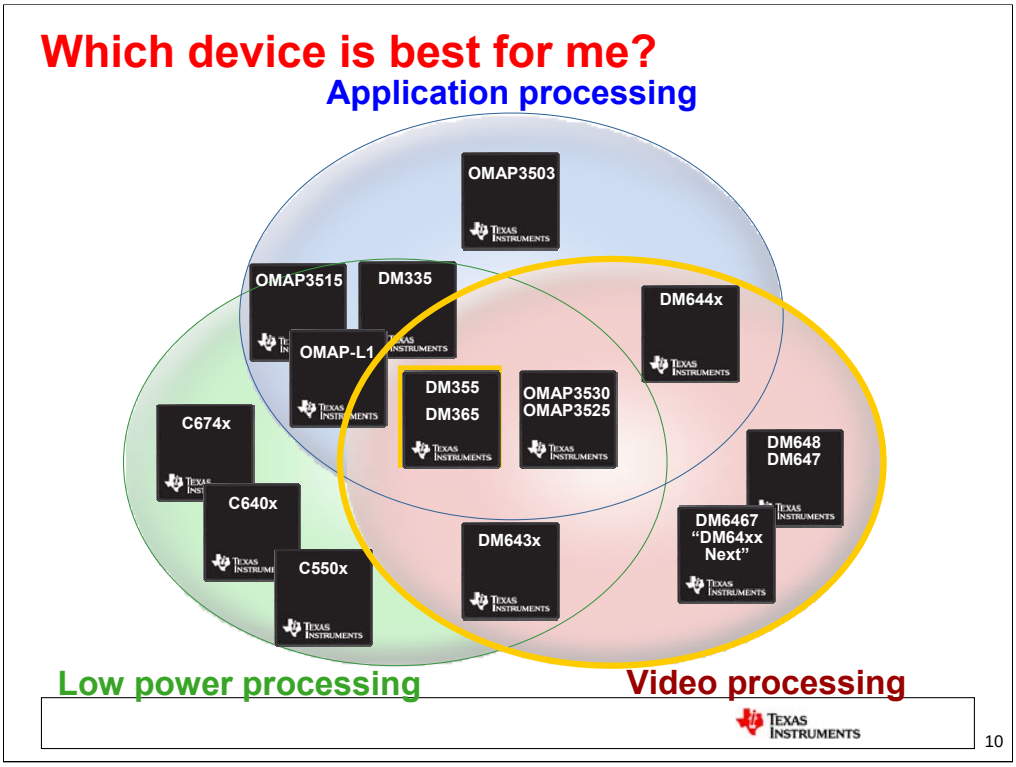


•This slide shows possible connectivity examples for a highly integrated end product.



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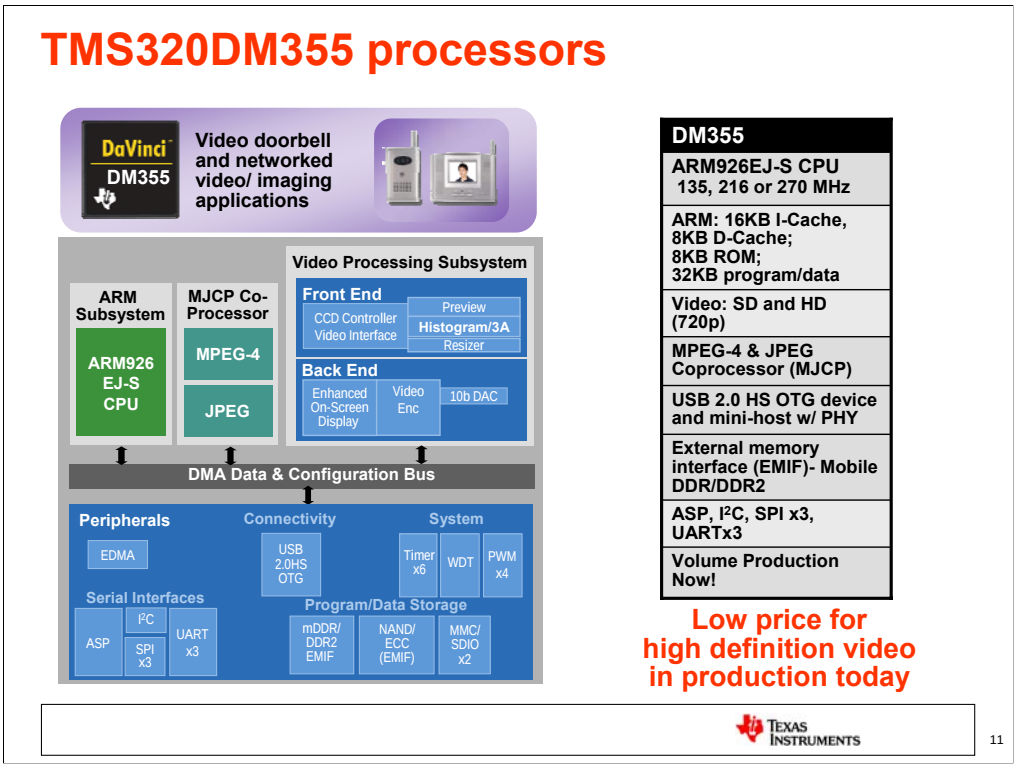


Key Points:

•The first thing you should notice is the DaVinci video sub-systems to do all the video heavy lifting to completely free-up this ARM-based processor

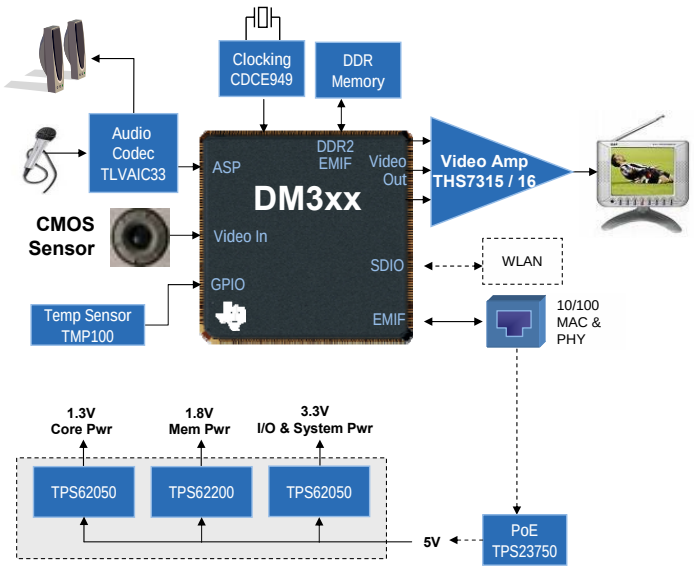
•The signal processing elements from TI are attached to the ARM and freeing the ARM to make it available for the enormous breath of ARM developers to innovate, **such as…**

•ARM is a benign embedded processor for developers to begin developing products on and there is a lot of development in the open source community available to help speed development

•Here are the key DaVinci blocks, which we will go into in more detail on the next slide

- •MJCP – co-processor for MPEG-4 and JPEG
- •VPSS – the same VPSS as other DaVinci processors
- •USB 2.0 – networked processor

DM3xx system diagram – capture



Target Markets:

Diverse range of applications needing advanced video/ imaging capture and display performance with easy to use General Purpose Processing at low power and low cost:

- Electronic Gaming
- Karaoke
- Portable Medical
- Portable Instant Messaging
- Keypad Security
- VOIP / Video Phones
- eDictionary/eBook
- Universal Remote Control
- Internet Radio
- Video Telemetry
- Digital Signage
- Telepresence
- Point of Sale

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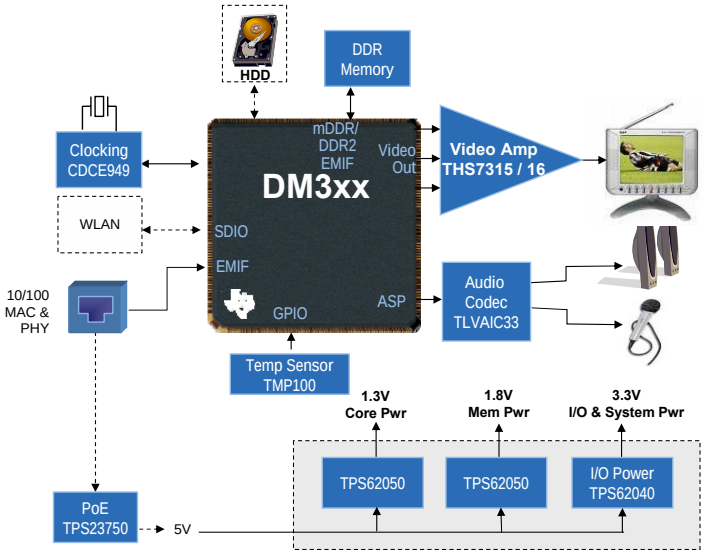
DM3xx system diagram – display



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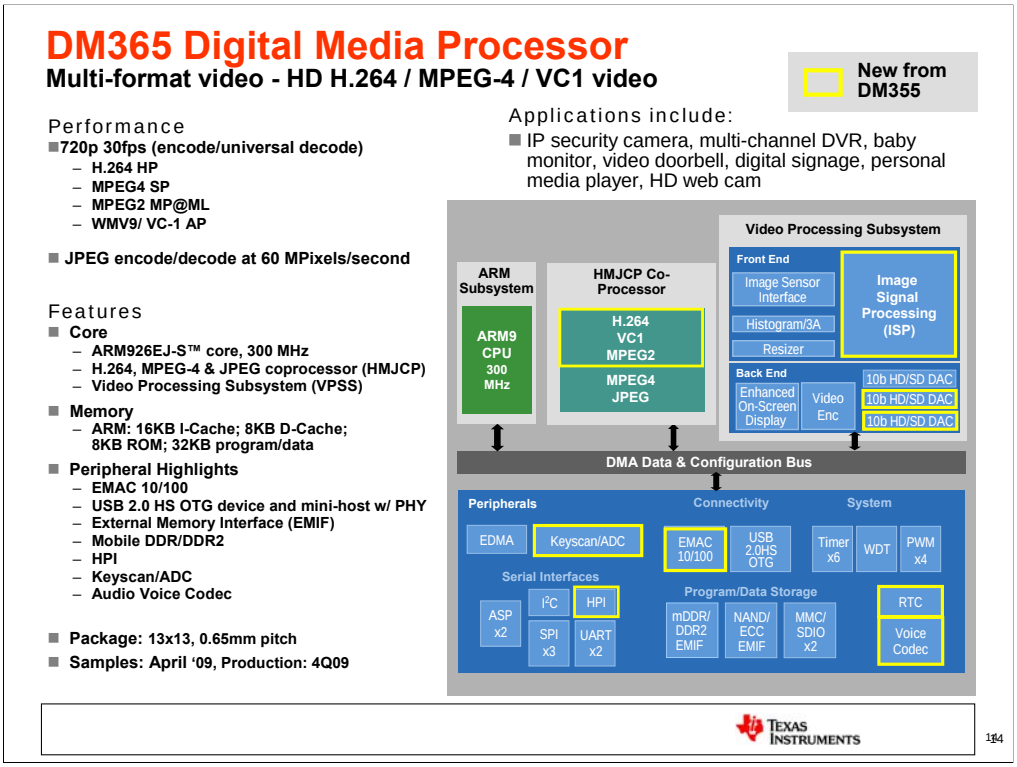
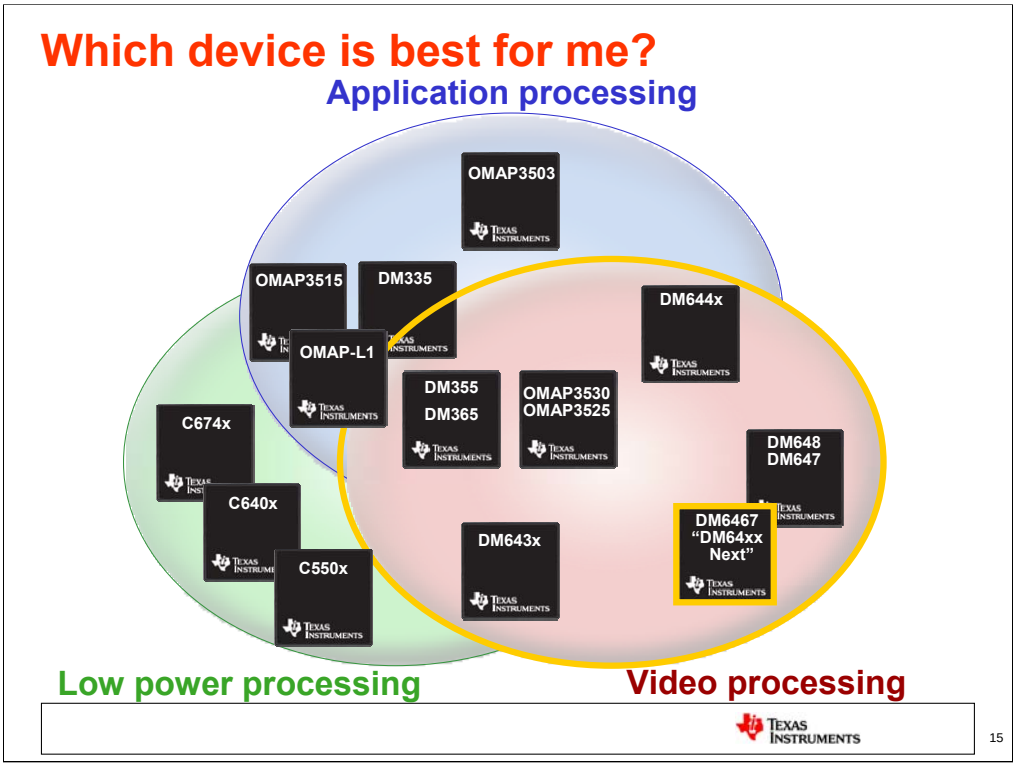


Here, we see the power of the DM365 platform with the proven ARM9 core, video accelerators, and video processing subsystem. The core delivers up to 300MHz with ability to offload all of the encode/decode needs to the HD video accelerators. Within the VPSS is the best in class ISP adding intelligence to video processing. Also within the VPSS is the resizer for zoom in, zoom out, the on screen display functionality for rich menu experience, as well as 3 HD DACs supporting full HD output.

Furthermore, you'll find a wealth of integrated peripherals in the bottom half on the SBD. These include features such as a EMAC, DDR2/mDDR, and USB 2.0. These integrated peripherals allow for a smaller form factor as well as an overall reduced system BOM cost.

Those features highlighted in yellow are add ons in comparison to the DM355. TI is committed to building upon both HW and SW IP in our roadmaps for the ultimate in product scalability. DM365 leverages much of DM355 IP and then builds on that with the latest in technology so TI customers don't have to start from scratch.



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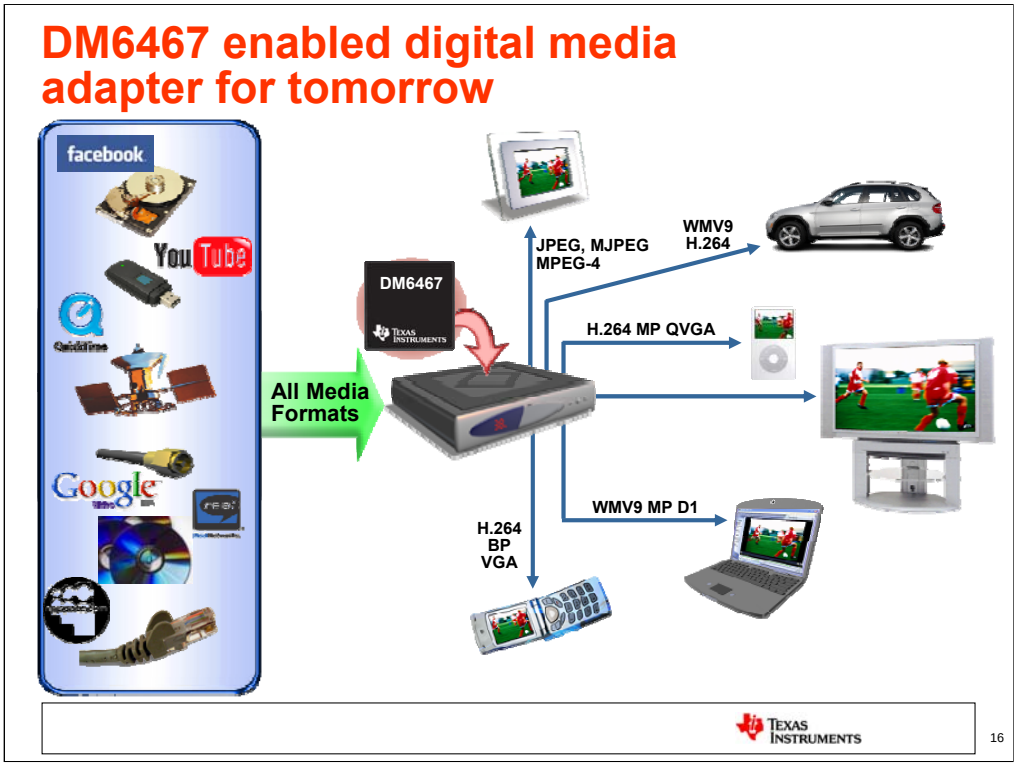


Flexible Video Accelerators can be configured for various Codec formats such as H.264, MPEG4, VC1, MPEG2, etc.)

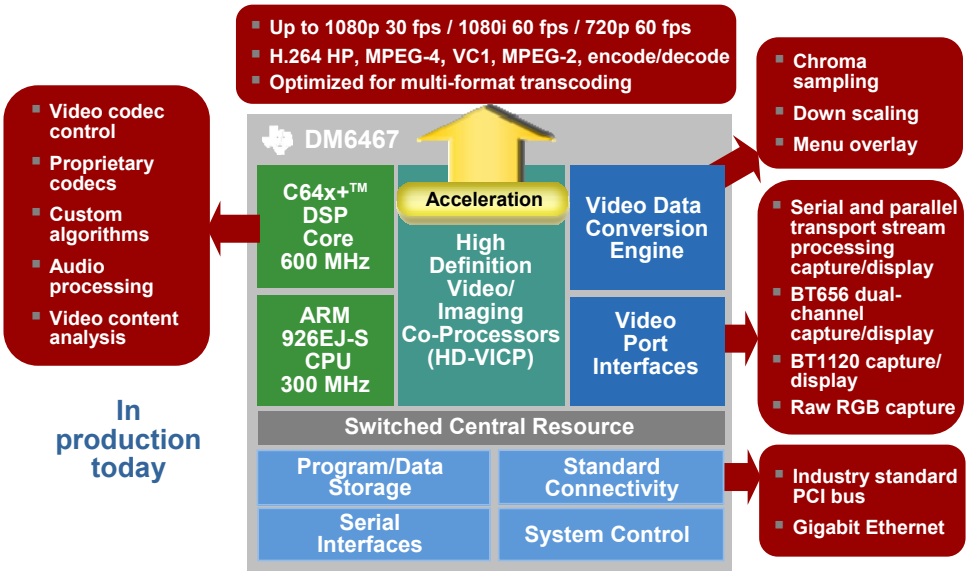
•2 HD VICPs designed to work simultaneously, allowing more efficient transcoding from any format to any other format. Especially targeted to meet MPEG2 MP@HL 1080i → H.264 HP@L4 1080i transcode applications

Make the slide stand alone.

Clean up DMA activities…

- Increased Storage Capacity
- Multiple format

DM6467 delivers multi-format, HD transcoding in a single chip



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TMS320DM6467: HD Video Transcode, Encode and Decode

Features

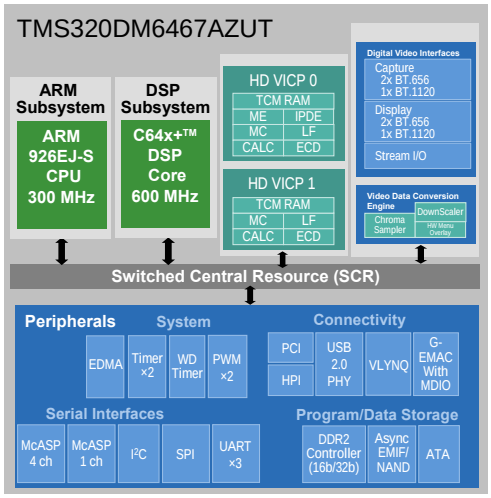
Core
- ARM926EJ-S™ (MPU) at 300/364 MHz
- TMS320C64x+™ DSP Core at 600/729 MHz

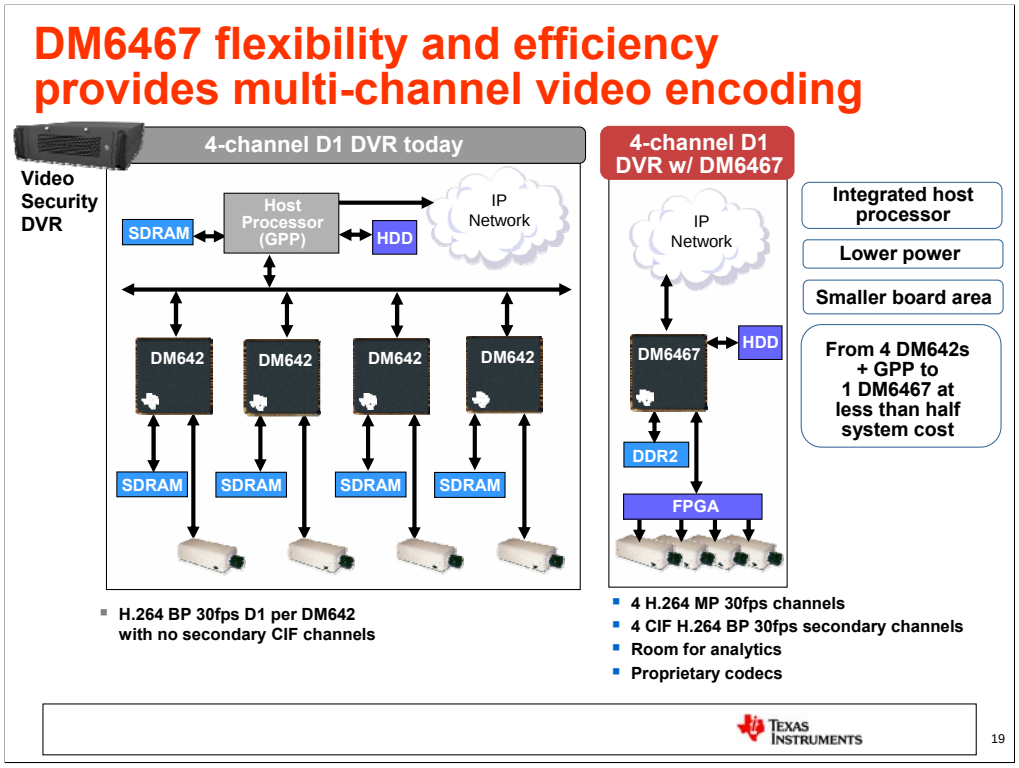
Memory
- ARM: 16K I-Cache, 8K D-Cache, 32K TCM RAM, 8K Boot ROM
- DSP: 32K L1 I-Cache, 32K L1 D-Cache, 128K L2 Cache, 64K Boot ROM

HD Coprocessors
- Real-Time HD-HD Transcoding Up to 1080p
  - Multi-format (mf) HD to mf HD or mf SD
  - Up to 2× real time for HD-to-SD transcode
  - Real-time HD-HD transcoding for PVR
- Video Encode and Decode
  - HD 720p H.264 BP encode
  - HD 1080i/p H.264 HP@L4, decoding; HD 1080i/p VC1/WMV9, decoding; HD 1080i/p MPEG-2 MP@HL, decoding; HD 1080i/p MPEG-4 ASP, decoding; DivX
  - Simultaneous SD H.264 BP 30 fps encode and decode

Benefits
- Scalable video engine building on high-performance C64x+ media DSP, low-cost local controllers, and rich suite of multi-format video accelerators

Applications
- Transcoding (HD-HD, HD-SD) HD-Video Conferencing, HD- IP Set-Top Boxes, Digital Media Adapters, Video Surveillance, Medical Imaging





H.264 BP 30fps D1 per DM642 with no secondary CIF channels

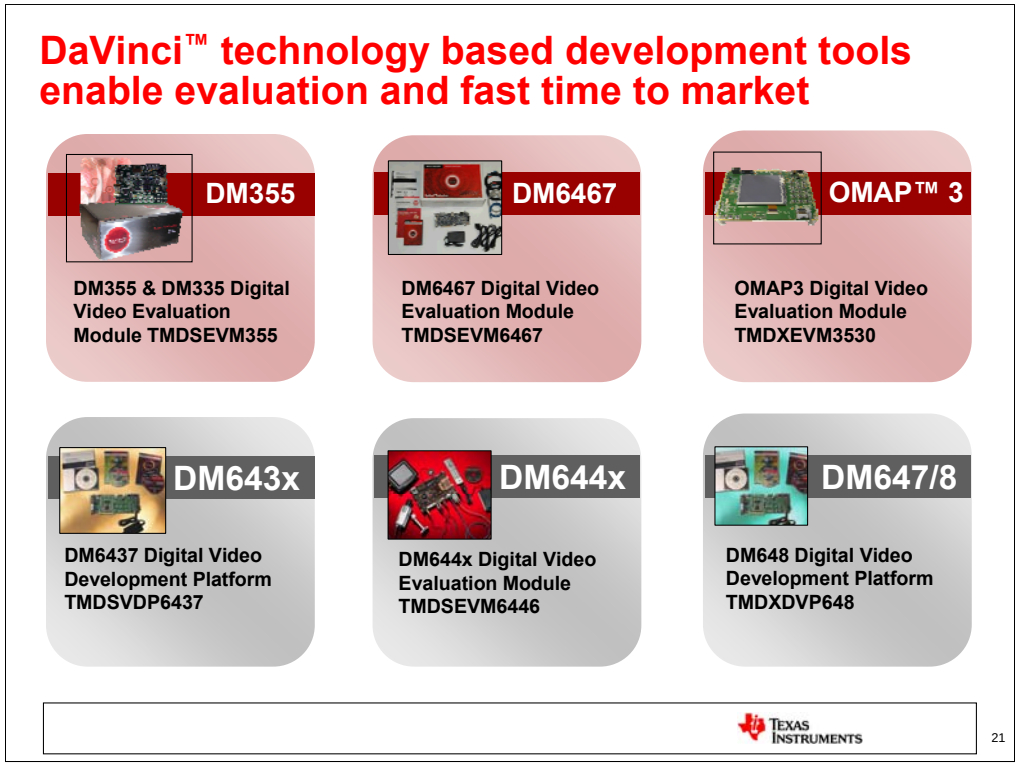
Assumption 25KU 2008 pricing

From 4 @ $32 ea. + $15 GPP + $8 Mem = $151

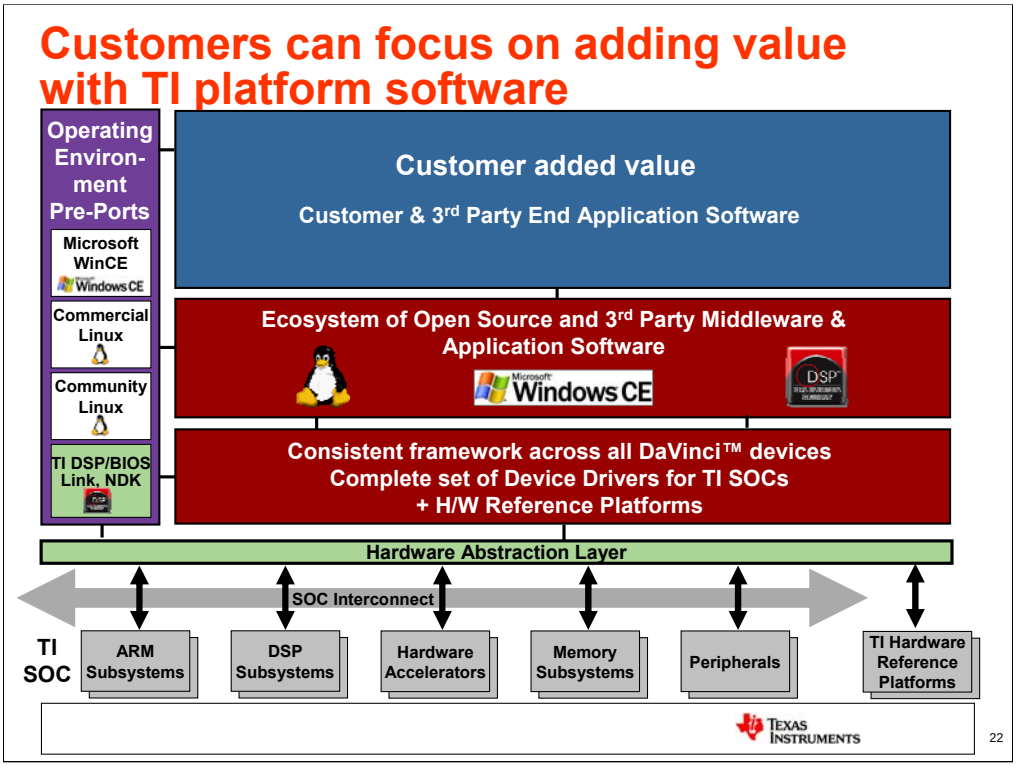
To 1 @ $46 ea. + $4 FPGA = $50

DDR2 enables higher performance and lower cost

TI has and will continue to focus on, develop and promote a complete technology offering for all digital video applications from capture to display and viewing. This complete offering is based on the DaVinci Technology that combines processors, tools, software and system expertise with support to enable innovation, ease of use and faster time to market.



Digital Video Software Development Kit (DVSDK), used in conjunction with the DVEVM, is designed to tune complex systems quickly with multiple tools that improve software integration and system visibility.



PSP – Platform Support Package (PSP)

-Complete set of device drivers for TI SOCs and TI Hardware Reference Platforms

-Fully supported, modular, and optimized for performance and SOC entitlement

-Pre-ported to leading Operating Environments including Linux, WinCE and DSP BIOS

Operating Environment Pre-Ports

-TI supports Microsoft WinCE, Linux, and DSP BIOS

-TI supports both Commercial Linux such as offerings from MontaVista and Community Linux to provide customers a choice between stable released versions (commercial) or latest, greatest (community) version

-Along with supporting these operating environments comes the wealth of commercially available 3rd party software and open source software to enable TI's customers to get to market quicker

TI Multimedia Framework Software

-Multimedia software for speech, audio, imaging, video and other signal processing algorithms

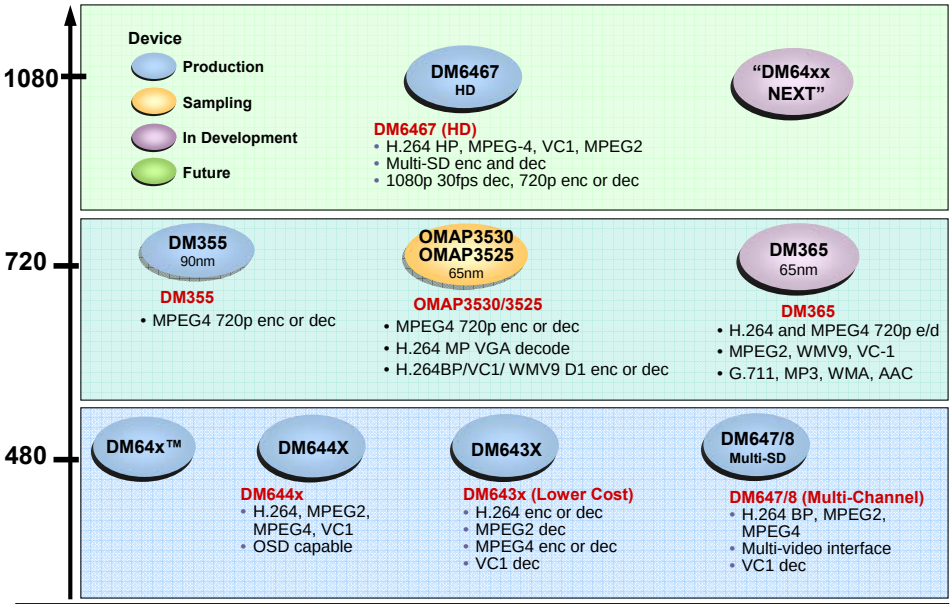
-Multimedia Framework hides complexity of SOC

-Customers can leverage a multimedia components available from TI and a multitude of TI 3rd parties; or provide their own

-Pre-ported to leading operating environments with support for industry standard multimedia APIs such as OpenMax, gStreamer, Direction Show and TI VISA

-TI's Platform software enables customers a

Video device capabilities



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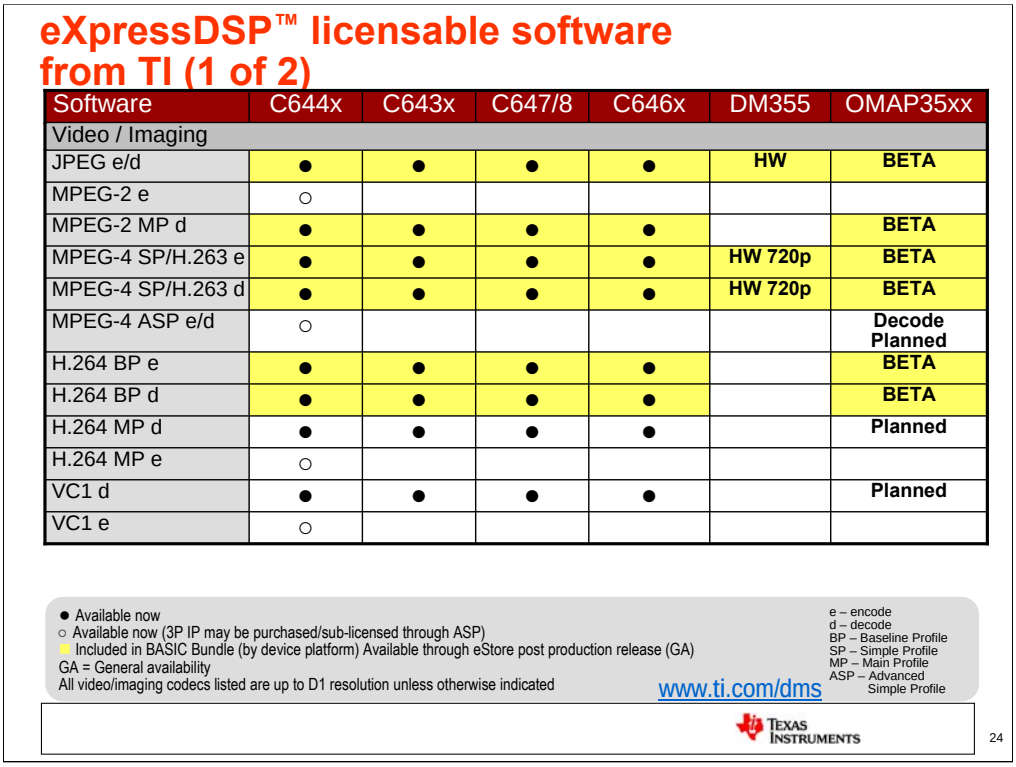

Notes:

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DM646x: the H.264 BP decode will be made available in the basic bundle after GA

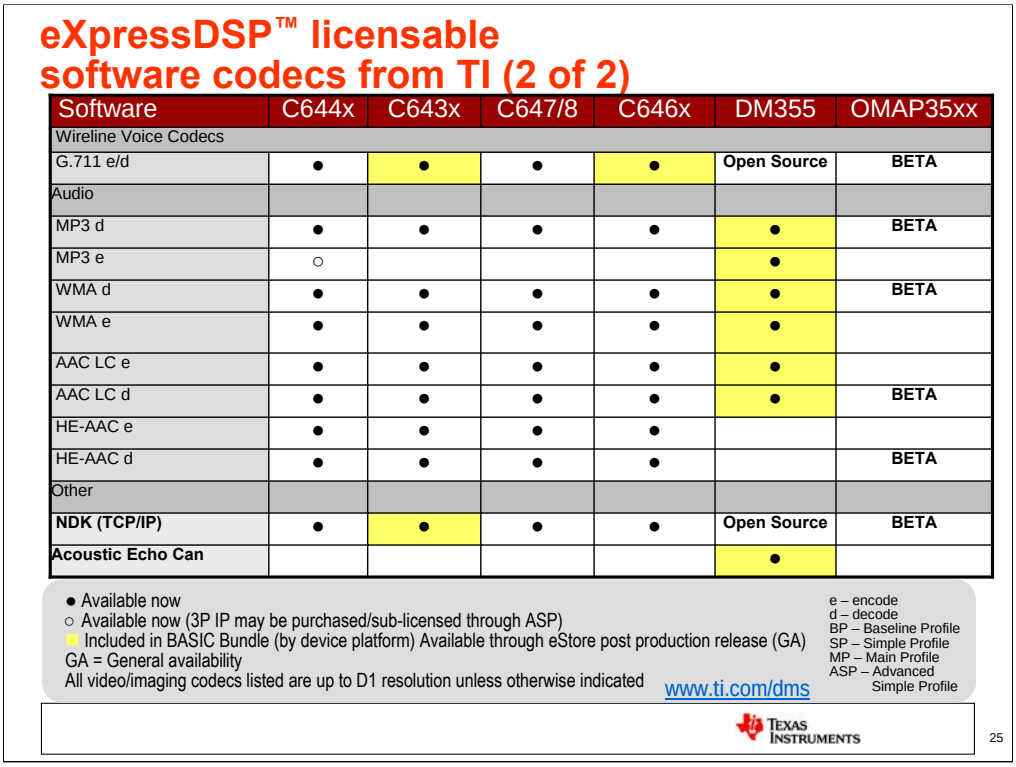
DM644x BASIC Bundle release date e/d Oct 2008

DM647/8 BASIC bundle release date mid-Aug 2008 (H.264 BP dec added Sep 2008)

DM6467 DVSDK includes: MPEG2 decoder, H.264 BP encoder, H.264 BP decoder, G.711

DM643x DVSDK (libraries): G.711 encoder, G.711 decoder, H.264 BP decoder, H.264 BP

DM6446 DVSDK: MPEG-4 SP e/d, MPEG-2 d



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eXpressDSP™ licensable software from TI

- **FREE EVALUATION** provided for all TI software codecs
- Extensive, growing roadmap
- Cross-platform availability with API compatibility
- Complete listing of TI software inventory, including technical documentation available on www.ti.com/digitalmediasoftware or www.ti.com/dms
- Integration Support must be contracted through a TI Authorized Software Providers www.ti.com/asp

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Notes:

DM644x BASIC Bundle release date e/d Oct 2008

DM6446 DVSDK: MPEG-4 SP e/d, MPEG-2 d

BASIC production software codec bundle

- Specific to Device Platform (ie DM646x, DM644x, DM643x, DM647/8, OMAP35xx, etc, exhibit will list “orderable part numbers”)
- Software varies by platform, see chart for list
- OBJECT CODE ONLY
- ONE-TIME PRODUCTION LICENSE FEE for basic bundle will be WAIVED by Texas Instruments, if user accepts electronic production click-wrap and receives software via electronic download (also assumes US Government export regulations are approved)
- NO ADDITIONAL PER DEVICE ROYALTIES APPLY (built into silicon price) Must order appropriate part number specified
- Note: additional TI-direct software licensing options will become available in the future, not all FEES for additional codecs will be waived

Benefits

- Enables Customers to “License” and Purchase Directly from TI
- *myRegisteredSoftware* provides an easy-to-use and self-serve software licensing and registration process for our customers
- Primary role of Authorized Software Providers (ASP) is and will continue to be to provide support and integration services, which must be contracted directly by customers
- Allows customer to choose WHEN or IF they engage services from a ASP

The role of our ASPs

- Authorized Software Providers
- A TI 3P Developer with expertise in one of more of the following areas:
  - ✓ Audio/Video codecs
  - ✓ Specific Application Areas (ex. Portable Media Players)
  - ✓ Operating Systems
  - ✓ System design and integration
- The distribution and support channel for TI software
  - ✓ Customer has the OPTION to license software from an ASP or directly from TI
  - ✓ The ASP supports the software and provides system integration

How do ASPs differentiate?

Intellectual Property
- Reference designs
- Codecs (complementary or higher performing)

Services
- System design
- Algorithm optimization
- Operating System expertise
- Application software development
- Hardware design & prototyping
- Low-to-mid volume manufacturing

Business Model
- Providing full solutions
- Selling standalone codecs
- Standard design services work (time & materials)

ASP summary

Name	Functional Expertise				Preferred Biz Model	Comments
	ARM	DSP	O/S	Add'l SW		
Ateme		++	Linux	H.264	SW "Component Sales" Low volume - OK	SW "Component Sales"
eSol	++		ultron, Linux		Large volume, vertical engagement	
Ittiam	++	+++	Linux, WinCE	Complete codec offering, DSP & ARM	Complete SW Application Low volume - OK	Will also sell SW as components
eInfochips	+	++	Linux		Low volume - OK	Codec Customization, Pricing Flexibility
Ingenient	++	+++	Linux, WinCE, ultron	Complete codec & application sw offering, DSP & ARM	Large volume, vertical engagement Sell Ingenient SW	Manufacturing
Logic	+++		WinCE		Full Turn-key, Low volume - OK	Manufacturing
MPCData	+++		Linux, WinCE		WinCE / SW Design Services Low volume - OK	Microsoft Gold Partner
SEED		++	Linux		SW "Component Sales"	Manufacturing
Wintech		++	Linux, WinCE		Complete SW Application	Manufacturing
Nuvation	+	++	Linux, WinCE		Full Turn-key Low volume - OK	
TES	+++	+	Linux, WinCE	Graphics	Full Turn-key/ODM - OPTIONAL	Manufacturing
Mistral	+	++	Linux, WinCE		Complete SW Application Low volume - OK	Will also sell SW as components

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Important links

- www.ti.com/dms (Digital Media Software)
- www.ti.com/estore (eStore for select software – click on DSP Embedded Software)
- www.ti.com/ASP (Authorized Software Providers)

Get started today

Learn more about the DaVinci™ processors, development tools, API's, frameworks and multimedia codecs and support by visiting www.ti.com/davinci for information such as:

- Technical documentation/briefs
- Benchmarks
- White papers
- Third parties
- Complementary analog devices

Sign-up for DaVinci updates at www.ti.com/davinci

Thank You!

OMAP35x/DM644x/DM643x/DM35x – comparison

Core Feature	OMAP3530/25	OMAP3503/15	DM6446	DM6443	DM6437/5/3	DM35x
CPU	ARM Cortex A8	ARM Cortex A8	ARM926EJ/C64x+	ARM926EJ/C64x+	C64x+	ARM926EJ-S
CPU Frequency	Up to 600 MHz	Up to 600MHz	297/594MHz	297/594MHz	400-600MHz	216-270MHz
Float support	Neon	Neon	No	No	No	No
Core Internal Instruction Memory	16KB cache	16KB cache	ARM: 16KB cache/ 8KB RAM; DSP: 32KB cache/SRAM	ARM: 16KB cache/8KB RAM; DSP:32KB cache/RAM	32KB cache/SRAM	16KB cache
Core Internal Data Memory	16KB cache	16KB cache	ARM:16KB cache; DSP:80KB cache/RAM	ARM:16KB cache; DSP:80KB cache/RAM	80KB cache/RAM	8KB cache
L2 Memory	256KB	256KB	64KB	64KB	128KB	0KB
Embedded SRAM	None	None	None	None	None	32KB
Multiply Accumulate Capability	ARM MAC, IVA Subsystem (C64x DSP 360-430MHz)	ARM MAC	ARM MAC and C64x+ DSP 400-594MHz at 3200-4752MMACs	ARM MAC and C64x+ DSP 400-594MHz at 3200-4752MMACs	3200-4800MMACs	ARM MAC
Video Capabilities	MPEG4 720P 24fps/30fps Encode/Decode H.264 MP VGA Decode H.264BP/VC1/ WMV9 D1 Encode/Decode	MPEG4 D1 24fps/30fps Encode/ Decode H.264 BP D1 12fps/30fps Encode/ Decode	DSP MPEG4 SP 30fps 720P/D1 Decode/Encode WMV9/VC1 30 fps 720P/D1 Decode/Encode H.264 BP 30fps D1 Decode/Encode H.264 MP D1 30fps Decode	MPEG4 SP 720P 30fps Decode WMV9/VC1 720P 30 fps Decode H.264 BP D1 30fps Decode H.264 MP D1 30fps Decode	MPEG4 SP 30fps /D1 Decode or Encode half duplex; full duplex at VGA WMV9/VC1 30 fps D1 Decode H.264 BP 30fps D1 Decode/ VGA Encode at half duplex; full duplex at CIF H.264 MP D1 30fps Decode	MPEG4 SXVGA 30fps Encode and Decode JPEG 75MPixels-per-sec Encode and Decode

OMAP35x/DM644x/DM643x/DM35x – comparison cont'd

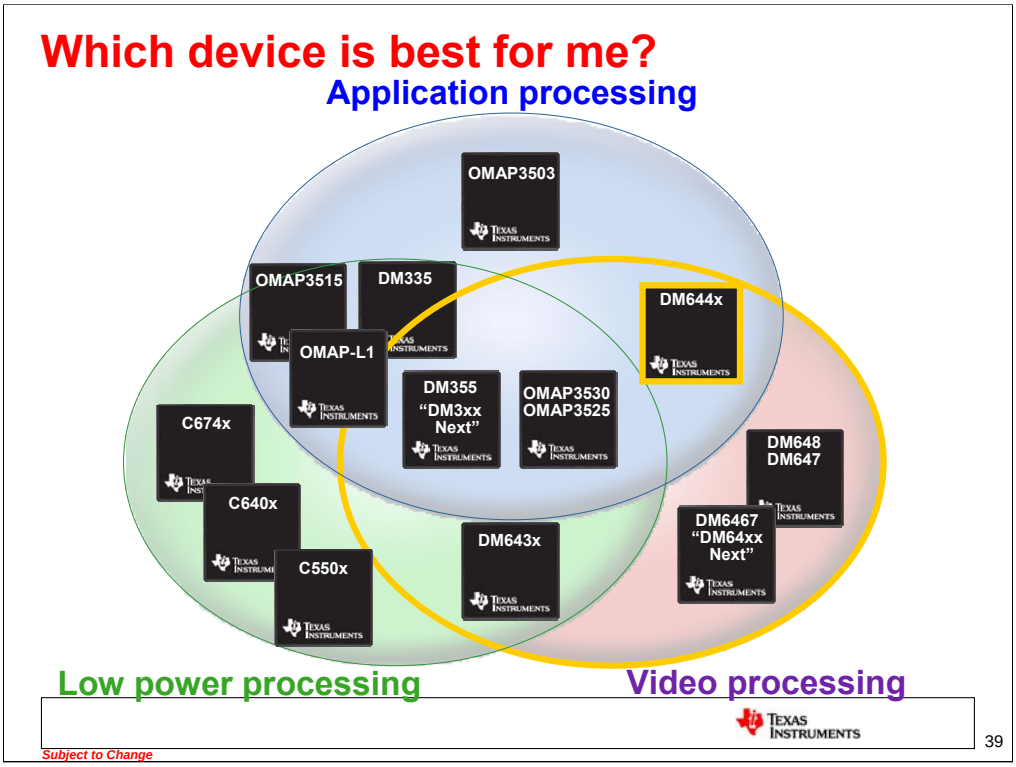
Core Feature	OMAP3530/25	OMAP3503/15	DM6446	DM6443	DM6437/5/3	DM35x
Video performance	Programmable DSP	Programmable ARM Cortex A8	Programmable DSP	Programmable DSP	Programmable DSP	HW accelerator
Image Pre/Post Processing	Color space convert, white balance, resize, histogram, auto focus	Color space convert, white balance, resize, histogram, auto focus	Color space convert, white balance, resize, histogram, auto focus	Resize	Color space convert, white balance, resize, histogram, auto focus (DM6437/5) Resize only (DM6433)	Color space convert, white balance, resize, histogram, auto focus
2D/3D Graphics	2D/3D graphics accelerator- IMG SGX530 (OMAP3530 only)	2D/3D graphics accelerator- IMG SGX530 (OMAP 3515 only)	No	No	No	No
LCD Controller Display Size	Up to 1080i/720p digital NTSC/PAL analog	Up to 1080i/720p digital NTSC/PAL analog	Up to 1080i/720p digital NTSC/PAL analog	Up to 1080i/720p digital NTSC/PAL analog	Up to 1080i/720p digital NTSC/PAL analog (DM6437,DM6433)	Up to 1080i/720p digital NTSC/PAL analog
Camera Interface	CCIR656, 16-bit parallel YCC/RGB	CCIR656, 16-bit parallel YCC/RGB	CCIR656, 16-bit parallel YCC/RGB	No	CCIR656, 16-bit parallel YCC/RGB (DM6437,DM6435)	CCIR656, 16-bit parallel YCC/RGB
Flash Boot	NAND, NOR, MMC/SD	NAND, NOR, MMC/SD	NAND, NOR	NAND, NOR	NAND, NOR	NAND, NOR, MMC/SD
DDR	DDR@166MHz	DDR@166MHz	DDR2@166MHz	DDR2@166MHz	DDR2@166MHz	DDR@171MHz
DMA channels	32	32	64	64	64	64
SSI/i2S	1 SSI, 5 McBSP	1 SSI, 5 McBSP	1 ASP	1 ASP	1 McASP	2 McBSP
RTC	No	No	No	No	No	No
UART	2-3	2-3	3	3	2	3

OMAP35x/DM644x/DM643x/DM35x – comparison cont'd

Peripheral Feature	OMAP3530/25	OMAP3503/15	DM6446	DM6443	DM6437/5/3	DM35x
Timers	12	12	2	2	2	6
I2C	4	4	1	1	1	1
IrDA	Serial Infrared, Medium Infrared, Fast Infrared	Serial Infrared, Medium Infrared, Fast Infrared	No	No	No	No (external)
Configurable SPI	4	4	2	2	1	3 (2 chip selects each)
Single Wire Interface	Yes	Yes	No	No	No	No
Memory Stick Controller	Yes	Yes	Yes	Yes	No	Yes
Watch Dog Timer	Yes	Yes	Yes	Yes	Yes	Yes
PWM	No	No	3	3	3	4 (+4 RTO)
MMC/SD	3	3	1	1	No	2
PCMCIA/ Compact Flash	Through EMIF	Through EMIF	Through EMIF	Through EMIF	Through EMIF	Through EMIF
Smart Card Interface	No	No	No	No	No	No
HDD Interface	Through EMIF	Through EMIF	ATA6	ATA6	Through EMIF	Through EMIF
WiFi support	Host interface through SDIO, CF or USB	Host interface through SDIO, CF or USB	Host interface through SDIO, CF or USB	Host interface through SDIO, CF or USB	Host interface through VLYNQ	Host interface through SDIO
USB	1 HS OTG and 3 Host	1 HS OTG and 3 Host	1 HS and 1 HS/FS Host	1 HS and 1 HS/FS Host	No	1 HS/FS and 1 HS/FS Host Integrated USB2.0 Phy HS OTG (DM355 only)

OMAP35x/DM644x/DM643x/DM35x – comparison cont'd

System Feature	OMAP3525/30	OMAP3503/15	DM6446	DM6443	DM6433/5/7	DM35x
EMAC	No	No	10/100	10/100	10/100	No
Security	HW accelerator	HW accelerator	No	No	No	No
Package Pin #/Type/ Size in mm	12x12mm POP 0.4mm spacing; 16x16mm Non-POP; 0.65mm spacing 14x14mm POP 0.5mm spacing	12x12mm POP 0.4mm spacing; 16x16mm Non-POP; 0.65mm spacing 14x14mm POP 0.5mm spacing	361 pin BGA 16x16 0.8mm spacing	361 pin BGA 16x16 0.8mm spacing	361 pin BGA 16x16 0.8mm spacing 23x23 mm 1.0 mm spacing	329 PBGA 12x12 0.5mm (DM350) 337 PBGA 13x13 0.65mm (DM355
Power Management	DVFS (0.9-1.35V) Standby 0.9V 10 power domains Smart Reflex AVS (adjust for process/temp)	DVFS (0.9-1.35V) Standby 0.9V 10 power domains Smart Reflex AVS (adjust for process/temp)	None	None	None	None
Process	65nm	65nm	90nm	90nm	90nm	90nm
Availability (TMX/TMS)	Now for 0.4mm & 0.65mm spacing/TMS 4Q08 Sep. 08 for 0.5mm spacing / TMS 1Q09	Now for 0.4mm & 0.65mm spacing/TMS 4Q08 Sep. 08 for 0.5mm spacing / TMS 1Q09	Now	Now	Now	Now



Applications processing

Highest performance ARM + Graphics

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Up to 600MHz ARM Cortex-A8 (~ 1200 ARM9 MIPS)

Up to 10 million polygons/ second with Graphics Accelerator

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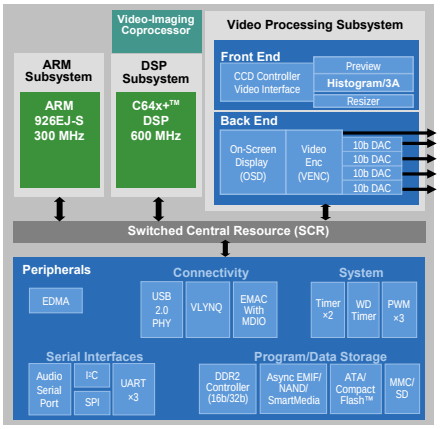
DSP=better at complex mathematics apps

ARM=better at advanced UI and system control

TMS320DM644x processors



Pin-for-pin compatible

	Low Power	Decode	Encode/ Decode
	DM6441	DM6443	DM6446
	C64x+ DSP Core/ 405/513 MHz @ 1.05/1.2 volts	C64x+ DSP Core/ 594 MHz @1.2 volts	C64x+ DSP Core/ 594 MHz @ 1.2 volts
	ARM 202/256 MHz	ARM 297 MHz	ARM 297 MHz
	L2 64KB (DSP) L1 112 KB (DSP) 40 KB (ARM) ROM 10 KB (ARM)	L2 64KB (DSP) L1 112 KB (DSP) 40 KB (ARM) ROM 16 KB (ARM)	L2 64KB (DSP) L1 112 KB (DSP) 40 KB (ARM) ROM 16 KB (ARM)
	Video Port: 1 dedicated output, 1 dedicated input	Video Port: 1 dedicated output	Video Port: 1 dedicated output, 1 dedicated input
	Hardware Accelerators: Resizer, OSD, Previewer, H3A, VICP	Hardware Accelerators: Resizer, OSD	Hardware Accelerators: Resizer, OSD, Previewer, H3A, VICP
	EMIF, 10/100 EMAC, VLYNQ, MMC/SD, ATA/CF	EMIF, 10/100 EMAC, VLYNQ, MMC/SD, ATA/CF	EMIF, 10/100 EMAC, VLYNQ, MMC/SD, ATA/CF
	ASP, I²C, SPI, UART (3), USB, PWM	ASP, I²C, SPI, UART (3), USB, PWM	ASP, I²C, SPI, UART (3), USB, PWM

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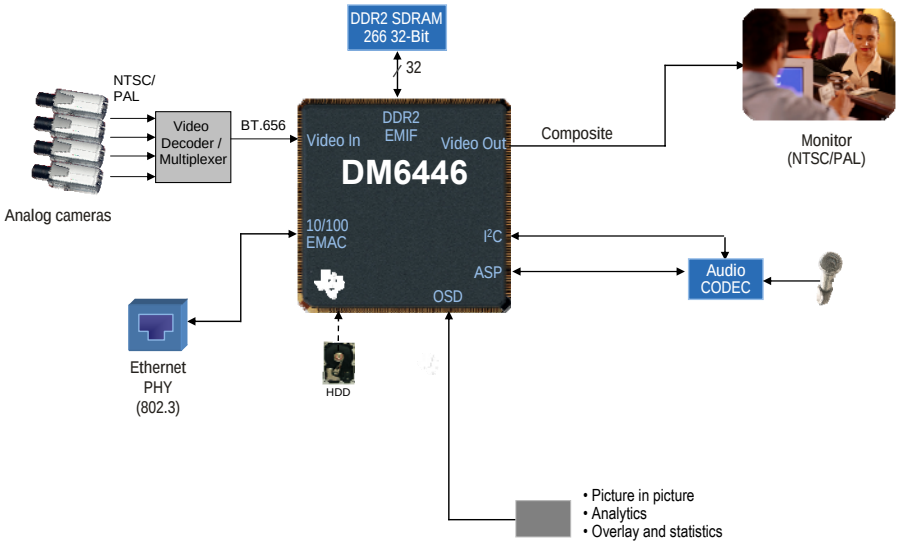
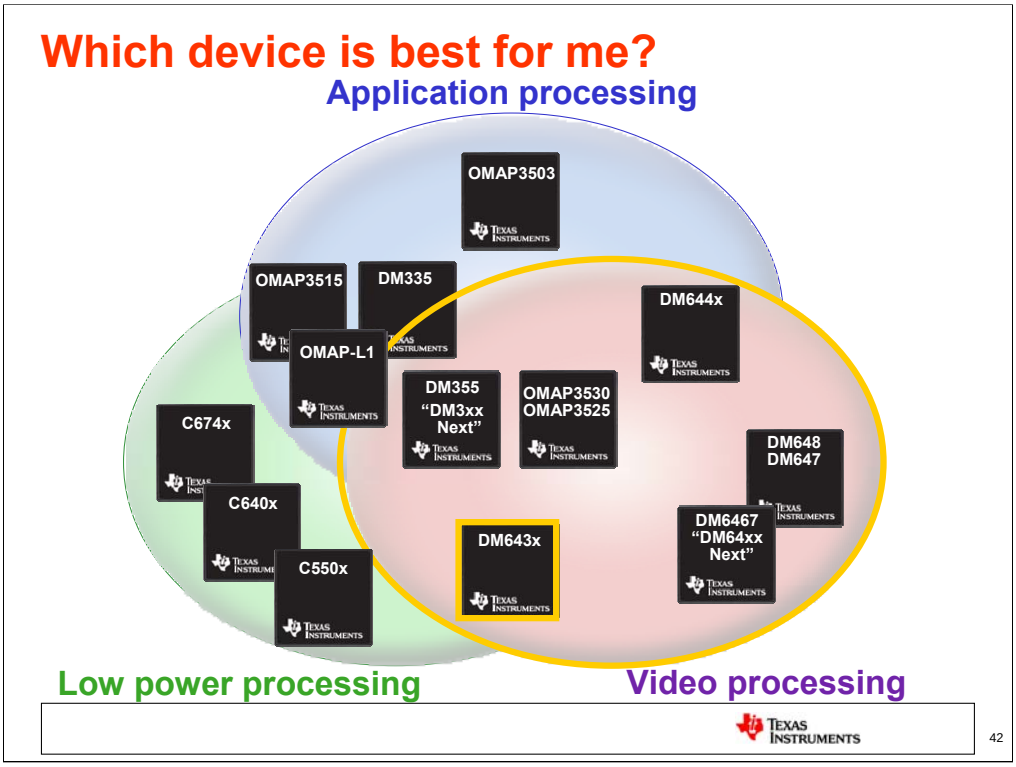
What does high integration vector buy you? Differentiation between devices in yellow.

DM6446 low-end DVR/DVS high-end IP Netcam





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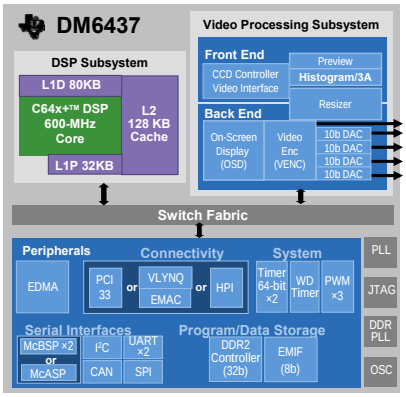

Pin-for-pin compatible
AEC-Q100 auto qual

Encode	Decode	Encode	Encode/ Decode
DM6431	**DM6433**	**DM6435**	**DM6437**
C64x+ DSP Core/ 300 MHz	C64x+ DSP Core/ 700 MHz	C64x+ DSP Core/ 700 MHz	C64x+ DSP Core/ 700 MHz
L2 64KB* L1P 32K* L1D 32K*	L2 128KB* L1P 32KB* L1D 80KB*	L2 128KB* L1P 32KB* L1D 80KB*	L2 128KB* L1P 32KB* L1D 80KB*
DDR2-266 (16b)	DDR2-266 (32b)	DDR2-266 (32b)	DDR2-266 (32b)
Video In: 1 VP 10b	Video In: none	Video In: 1VP 16b VPSS	Video In: 1VP 16b VPSS
Video Out: none	Video Out: VPSS: w/OSD 4 10b DACs	Video Out: none	Video Out: VPSS: w/OSD 4 10b DACs
EMAC or EMIF	PCI or VLYNQ/ EMAC, HPI or EMIF	VLYNQ/ EMAC, HPI or EMIF	PCI or VLYNQ/ EMAC, HPI or EMIF
McASP, I²C, CAN, UART, SPI	McASP, I²C, UART, SPI	McASP, I²C, CAN, UART (2), SPI	McBSP or McASP, I²C, CAN, UART (2), SPI

Please check user guide for MUXing options

** Cache/RAM reconfigurable*

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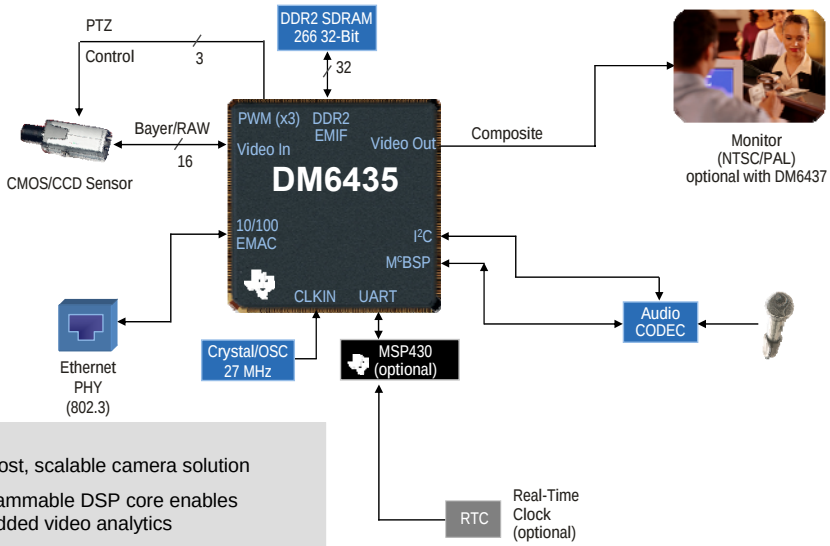
DM6435 processors address security IP Netcam application needs



- Low cost, scalable camera solution
- Programmable DSP core enables embedded video analytics

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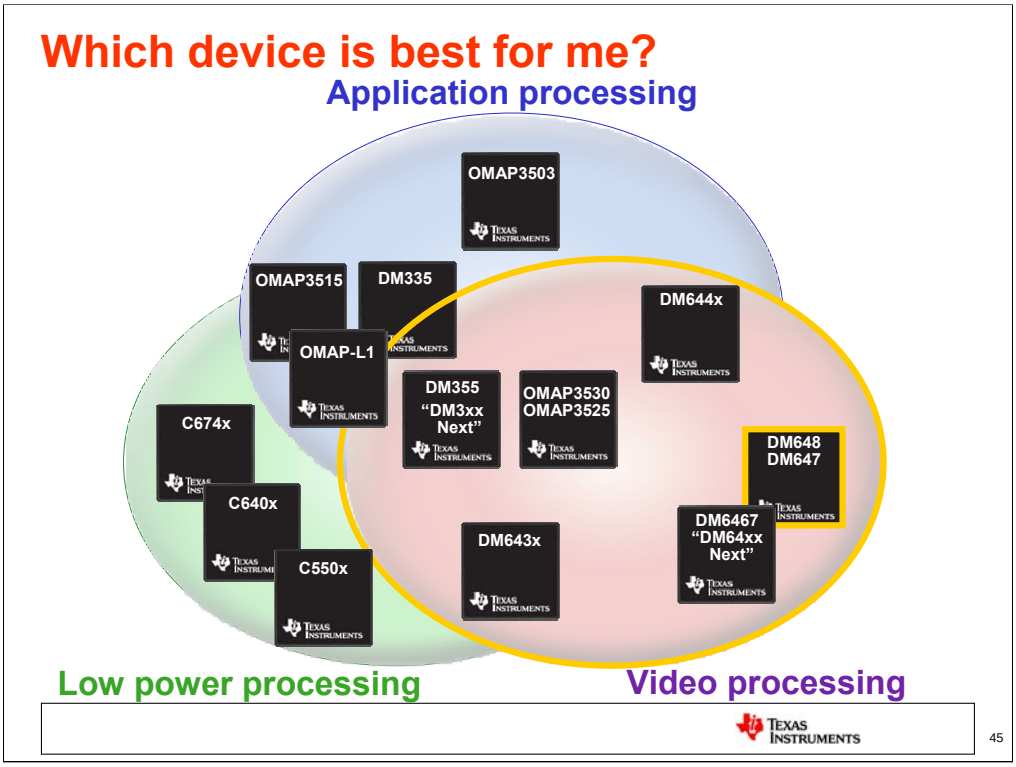

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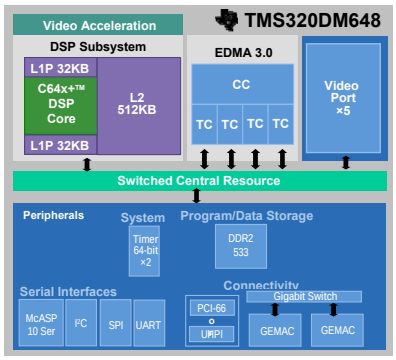
TMS320DM647 and TMS320DM648 processors



Pin-for-pin compatible

DM647	DM648
C64x+ DSP Core 720 and 900 MHz	C64x+ DSP Core 720 and 900 MHz
L2 256KB* L1P 32KB* L1D 32KB*	L2 512KB* L1P 32KB* L1D 32KB*
DDR2-533 (32b)	DDR2-533 (32b)
Five 16-bit, Dual-Channel Video Ports	Five 16-bit, Dual-Channel Video Ports
GEMAC / PCI / UHPI	2 GEMAC with Gigabit Switch / PCI / UHPI
McASP, I²C, SPI, UART	McASP, I²C, SPI, UART

* Cache/RAM reconfigurable

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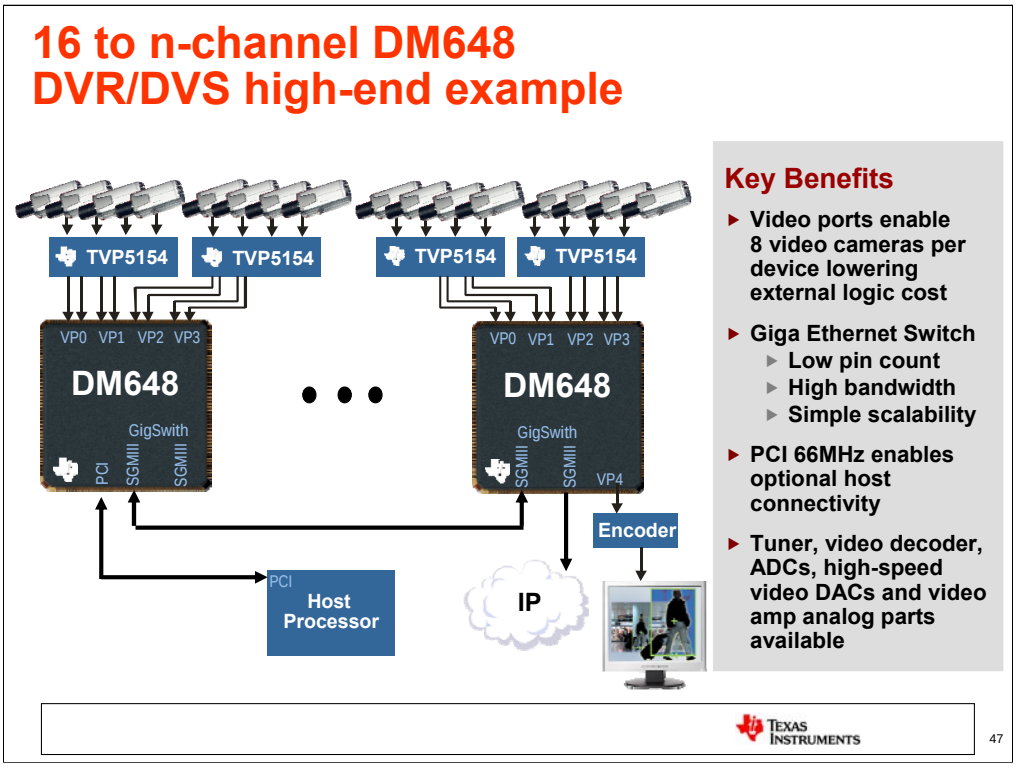
Difference highlighted in yellow. Lots of memory! Gigabit! PCI-66 not PCI-33. Performance goes up to 900MHz.



Here is an example of a multi-channel DVR that is shown to support from 16 to N number of channels depending on the number of DM648 DSP used in the system.

The 4 video ports on DM648 enable 8 cameras per device. The 5th port is used for monitor connectivity.

You also see the TVP5154 decoder from TI's analog products division that is used for decoding PAL/NTSC/SECAM video streams. In addition to the TVP5154, many other TI analog products are used in video security and processing applications including data converters, clock circuits, Operational Amplifiers and power management chips to name a few.

Tuner:	**V-ADC:**	**V-DAC:**	**V-Amp:**
SN761662	**TVP7000**	**THS8133B**	**OPA69x**
SN761667	**TVP7001**	**THS8135**	**OPA355**
SN761668	**TVP5146**	**THS8200**	**OPA3355**
SN761688	**TVP5160**		**OPA3692**

Portfolio Comments:

Analog parts shown are a sampling of a much larger product portfolio. TI also has tuners, receivers, power, connectivity interface, audio and clocking solutions. Please contact your local sales rep for the best part for your application.