



TI Innovation Day France 2010

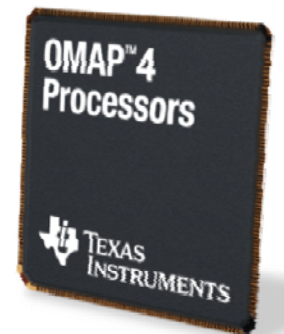
OMAP4 pour les appareils nomades

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OMAP Consumer Business Focus



PMP / Tablet



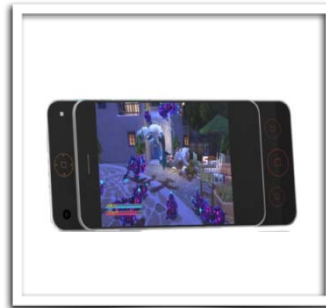
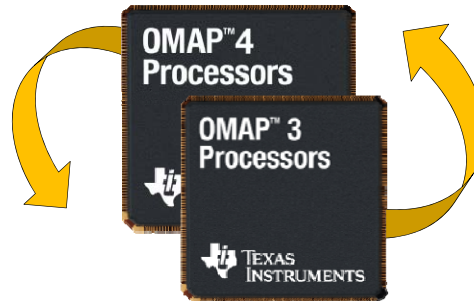
Automotive



eReaders



Smart TVs
Google Box

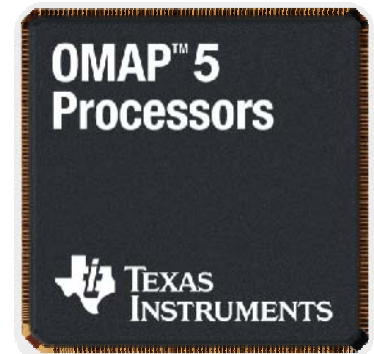
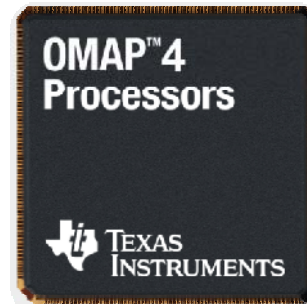


Handheld Gaming



Robotics

OMAP Consumer Roadmap



MPU	Video	2D/3D	ISP
Up to 1GHz per core Dual Cortex -A9 5000 DMIPS	IVA3 HW Acc. with DSP C64+ ; Full HD Enc/Dec 1080p30 Multi Standard & 3D 720p30	Power SGX 540	ISP v.5

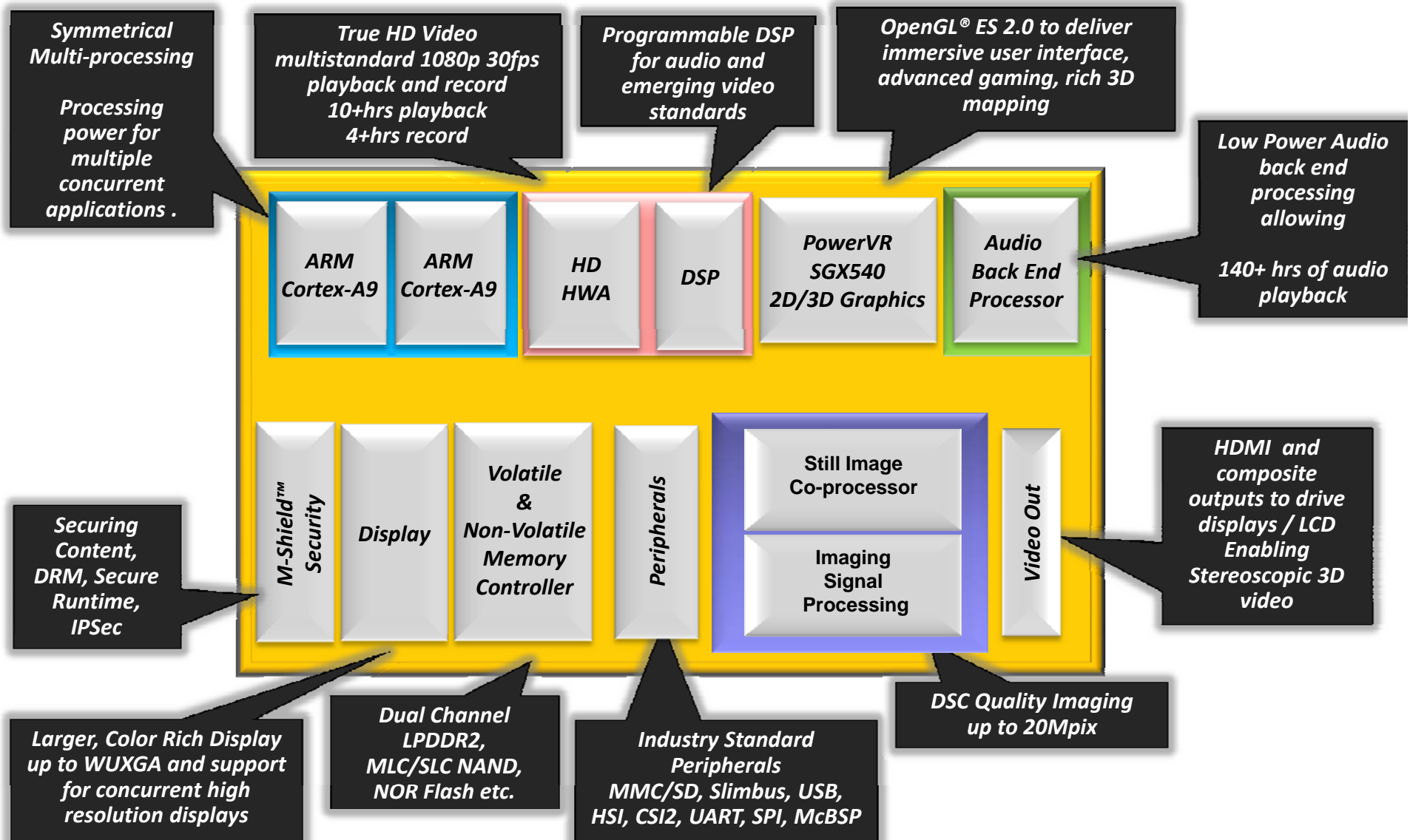
MPU
ARM Cortex A15 "Eagle"

OMAP next Gen

MPU	Video	2D/3D	ISP
1GHz ARM Cortex A8 2000 DMIPS	IVA2 HW Acc. with DSP C64+; 720p30	Power SGX 530	ISP v.3

+150% performance increase

OMAP44x Block Diagram





OMAP4430 At A Glance

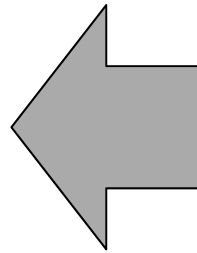
Ushering in Innovation with OMAP4430

- ✓ 45nm process technology evolving to 28nm
- ✓ Symmetric Multi-Processing Dual Core ARM Cortex-A9 MPCore
- ✓ Multi-standard HD-1080p playback and record
- ✓ Low power audio playback via virtual audio chip
- ✓ Imagination Technologies SGX540 3D Graphics core for UI and gaming
- ✓ DSC quality imaging up to 20M pixel
- ✓ High Bandwidth Memory Interfacing (e.g. 2 Channel LPDDR2)
- ✓ Industry Standard Peripherals and interfaces (e.g. MIPI CSI, DSI, Unipro etc)
- ✓ Larger, color rich display support (e.g. WVGA, SXGA, WUXGA)
- ✓ HDMI output for driving external HD displays
- ✓ SmartReflex™2 for advance power management
- ✓ M-shield™ mobile security technology

Image Video Accelerator (IVA3) “Programmable” and “Hardwired”

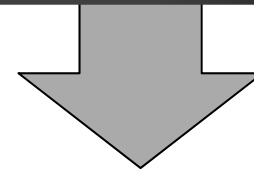


- ◆ Hardwired solution for mainstream Codecs
 - 1080p 30fps encode / decode on IVA-HD
 - MPEG4 ASP, H.264 HP, VC-1 AP, MPEG1/2 MP, Real Video 9/10, ON2 VP6/7, AVS 1.0, DivX 5/6 and more
- ◆ Programmable solution for emerging Codecs and audio – DSP



Tablet Use Cases

- ◆ Playback/Streaming @ 1080p30
- ◆ Stereoscopic playback @ 720p30
- ◆ Camcorder @ 1080p30
- ◆ Slow Motion Camcorder
- ◆ Real-time Transcoding
- ◆ Video Teleconferencing
- ◆ Multichannel Playback
- ◆ Multichannel Camcorder
- ◆ Video Push/Conferencing and local record



Social networking Generation
Facebook, Linked-In, etc... massively
producing, playing & sharing content

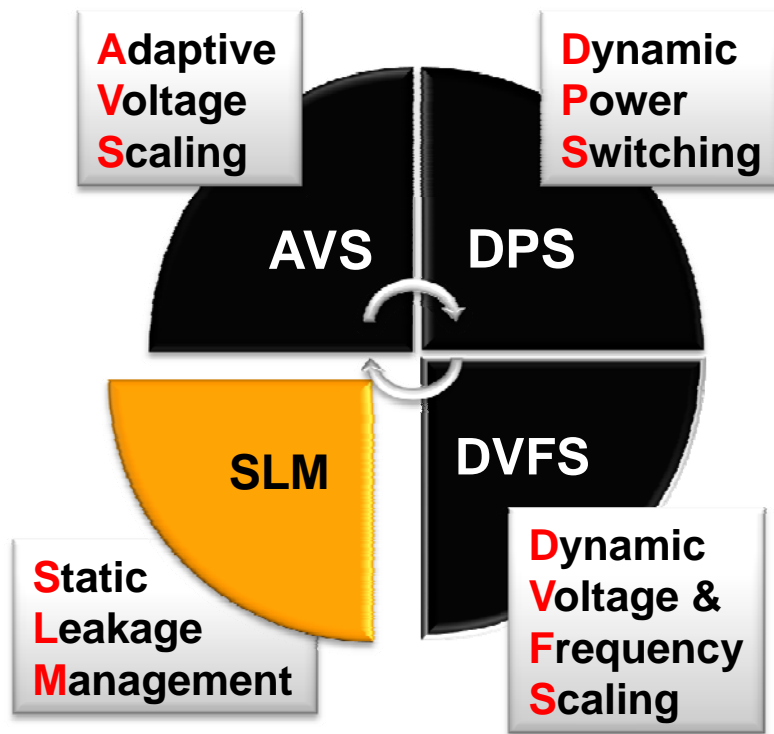
3 pillars to ultimate User Experience

Consumer requirements	Needs	OMAP4 answers
Quick “Application” launch time	Design for the smallest possible Latency	♦ Efficient resource sharing and highly optimized SW ▪ L2 cache sharing Manager
“Multitasking” and Application coexistence	Memory and Bus Bandwidth optimizations	♦ Dual LPDDR2 memory controller DRAM Memory Manager (DMM) ▪ Virtual memory management to increase bandwidth ▪ Memory interleaving management to allow simultaneous access to memory ♦ Bandwidth reduction techniques
Long battery life-time	Improved Power Management	Holistic Power Management at system & Soc level power Management

Dual Cortex A9 - SMP

Power Management Techniques

“**Two**” main categories to manage and greatly improve the overall power profile of your devices on Soc:



Active

Static

➤ **Active** or **Dynamic** Power Management Techniques

Power due to switching activities in the circuits. Involves all systems components: HW modules, device drivers, OS & apps. Falls in 3 Main areas: AVS, DPS & DVFS.

➤ **Static** Power Management Techniques

Always present even when no logic operations are performed.

TI OMAP™ Power and Security Assets

Best-in-class power consumption for the nomad user

- ◆ **DVFS – Dynamic Voltage and Frequency Scaling**
 - Voltage and frequency are changed at run-time based on system activity
- ◆ **DPS – Dynamic Power Switching**
 - Hardware modules can be idled when not being used
- ◆ **AVS – Adaptive Voltage Scaling**
 - The optimal voltage is adjusted within the specified operating point to optimize power consumption
- ◆ **SLM – Standby Leakage Management**
 - Based on the amount of time to be spent in idle, SLM chooses the best power state to enter (retention mode vs. off mode)



Experience	OMAP4
Video Playback	PARIS to NY flight
MP3 playback	6 days

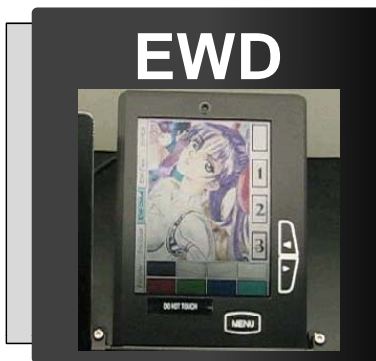
Strong defense against misuse of licensed SW, maps, and services

- ◆ **Strong arsenal of defense with M-Shield™**
 - HW and SW assets for providing flexible and powerful tools enabling misuse of devices and protection of assets
- ◆ **On Tablets typically**
 - Content protection with encryption scheme bind to the device.
 - Secure Boot
 - Software Integrity
 - Anti-Hacking
 - Secure Firmware Update
 - Software IP Protection
 - Secure Content Path / Firewalling

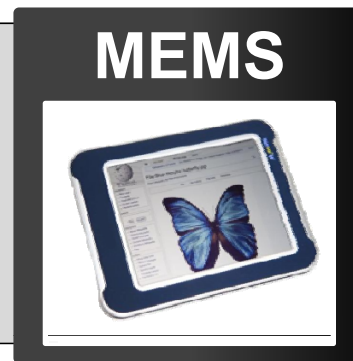


Tablets – New Display Technologies

Electrowetting



MEMS



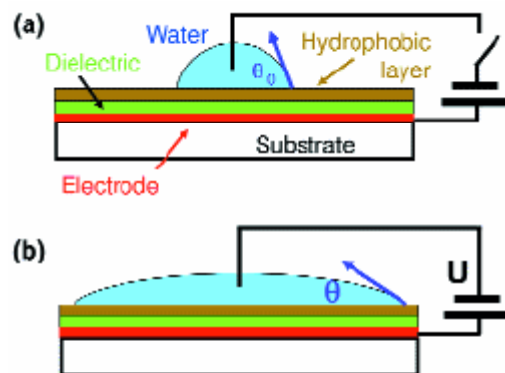
LCD



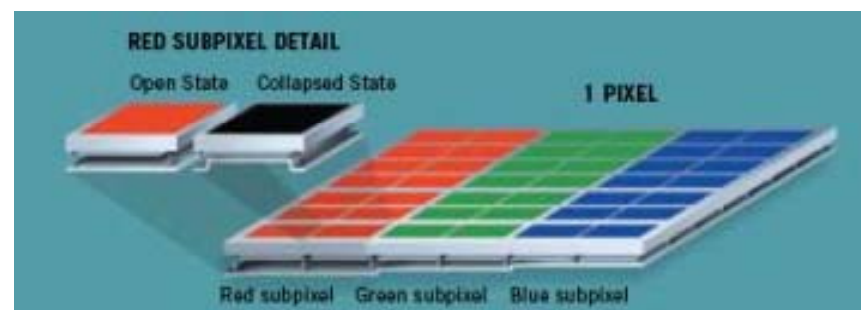
Hybrid LCD



Electrowetting
principles



Microelectromechanical
principles



Comparison of Display Technologies

	Principle	Bi-stable	Backlight	Speed	Angle	Color	Cost	Outdoor
LCD	Liquid crystal	No	Yes	Fast	OK	Yes	Lowest	Bad
Transflective	LCD+mirror	No	Variable	Fast	Good in B&W	Yes	OK	B&W
OLED	Diode	No	No	Very fast	Good	Yes	High	OK
Electrowetting	Electrowetting	"Quasi"	No	Fast	Good	Yes	OK	OK
Electrophoretic	Electrophoresis	Yes	No	Very slow	Very good	Soon	Very High	Very good
MEMS	Microscopic mirrors	Yes	No	Very fast	Good	Yes	Very High	Very good

Consumer Platform Offering

Proof of
technology
& quality
control

Saves
development
time and
resources

Platform approach
created to deliver the
ultimate user
experience and
improve time to
Market

Test & validation



SW Integration



Multimedia Codecs



HW Optimized boards

OMAP™
Solutions



Power
Management
Solutions



Audio
Solutions



Connectivity
Solutions



Analog
Solutions



**Enable the customer to concentrate on differentiation
such as their UI and applications.**

OMAP development Boards

3630



Zoom3

4430



Blaze

Blaze Tablet

OMAP5



Beagleboard XM

<http://beagleboard.org/hardware>



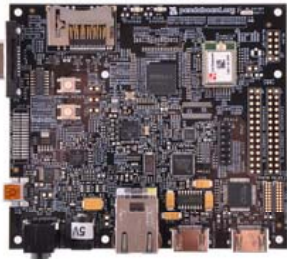
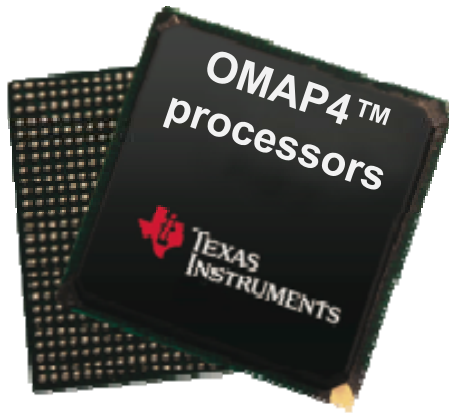
PandaBoard

<http://pandaboard.org/>



What does these
“Low cost
development
platform” enable ?

OMAP "Open Source Community" Benefits



- ◆ **Reduced Time To Market with complete Linux OS validation**
- ◆ **Generate more differentiating value by attracting a strong ecosystem of partners that are competent, innovating with OMAP bringing the hottest advancements**
- ◆ **Thousands of developers testing the software that is used in your product**
 - ▶ Robust Linux Foundation SW tested by the community
 - ▶ Over 19000 OMAP3 development platforms shipped!
- ◆ **Easier migration to OMAP**
 - ▶ Open API's and open source software provide full transparency
- ◆ **Insurance against disruptive changes from rapidly changing open source project**
- ◆ **Multi-functional devices with broad software solutions**

Conclusion

TI's OMAP4 system solution brings an answer to consumer needs with:

- ◆ A complete, power and performance optimized system solution
 - ◆ A responsive User Interface
 - ◆ Fast startup time
 - ◆ Quick application launch time
 - ◆ Seamless transitions across applications (multi-tasking)
 - ◆ Long battery life
- ◆ A mature Linux SW foundation open to community
- ◆ Faster time to market to quickly react to market trends

Thank you!

