

# Gaining focus: Developing a “tops-down” approach to multicore processor architectures

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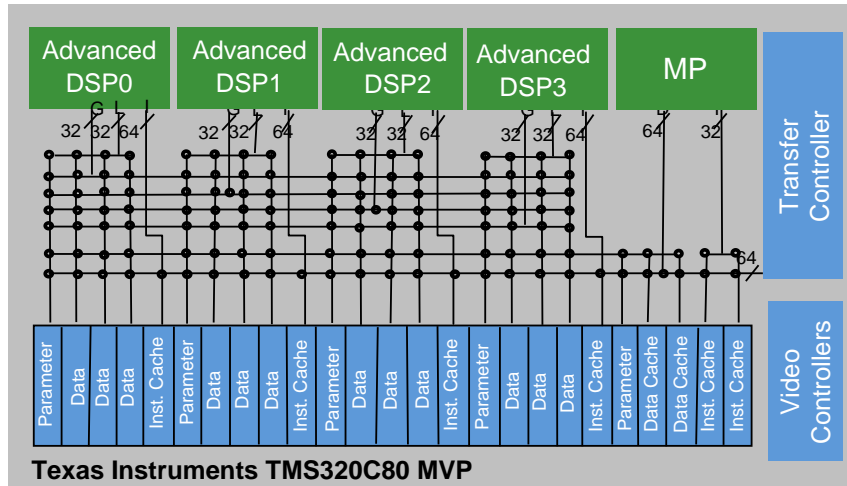


## Bottoms-up approach

- How many cores can I get on a chip?
- How much processing power can the chip deliver?



# Image, Graphics, Video TMS320C80

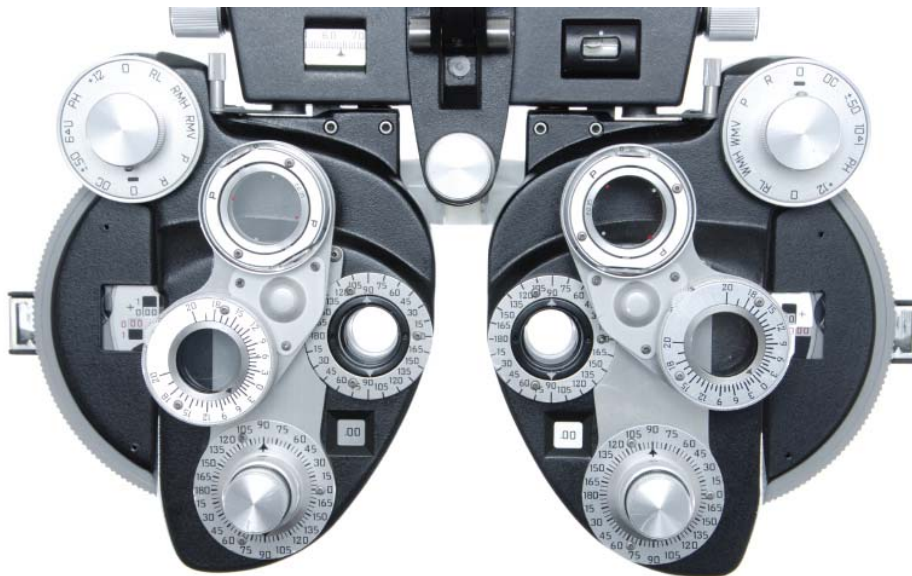


- Delivered 10x more MIPS
- Four DSPs and a microprocessor
- Market failure because
  - didn't meet some of the customer's key needs
  - software and development tools were limited

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## Tops-down approach



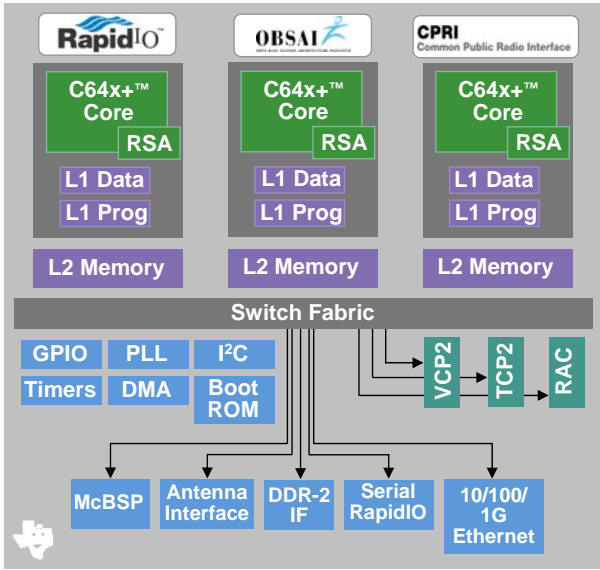
- What is the market? Who are the customers?
- What are the board-level requirements?
- What are the power, cost and performance requirements?
- What kind of software must be delivered?

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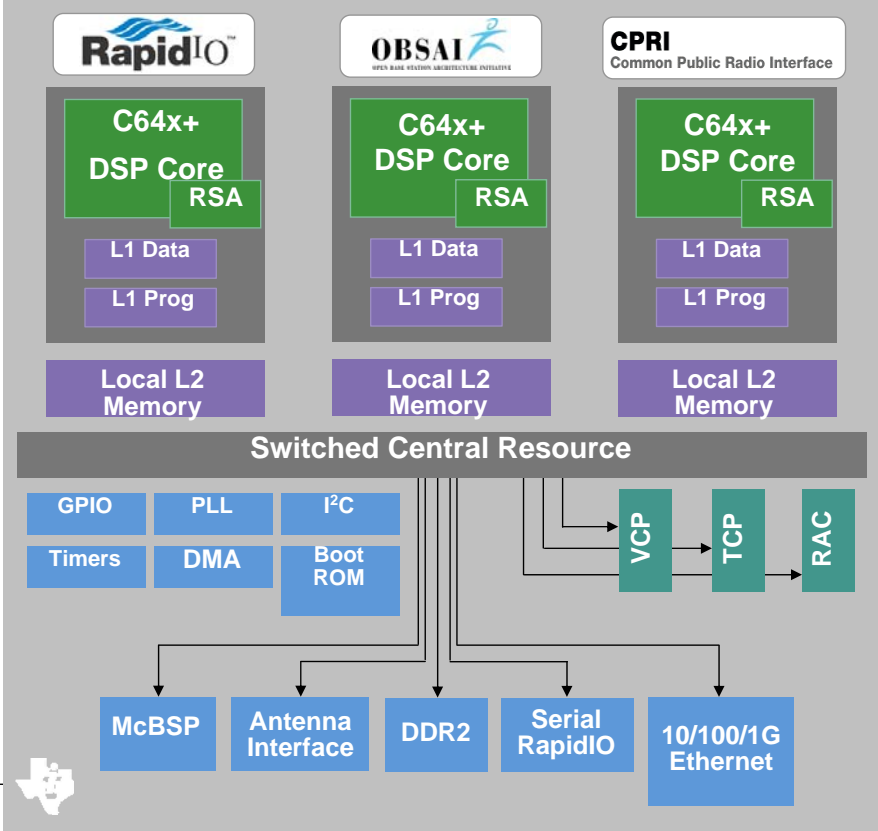


# Wireless Infrastructure Platform TCI6488

- 3 GHz
- Multicore
- Shared data memory
- Accelerators

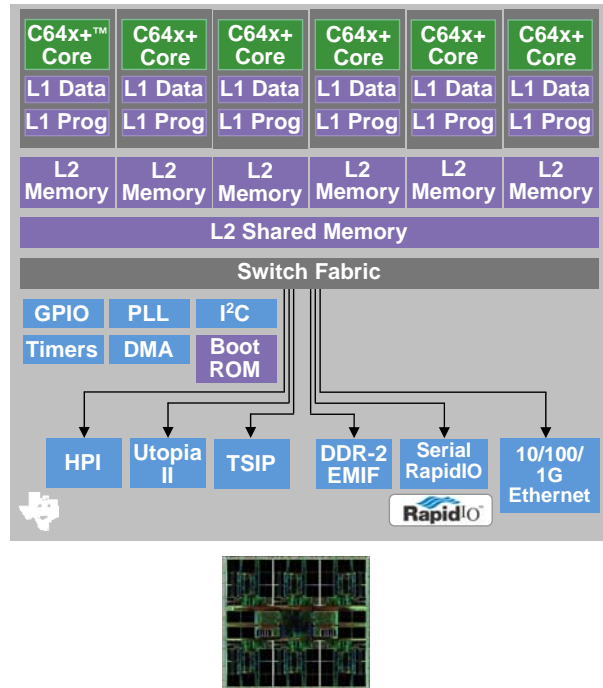


# Wireless Infrastructure Platform TCI6488



# Carrier Infrastructure Platform TNETV3020

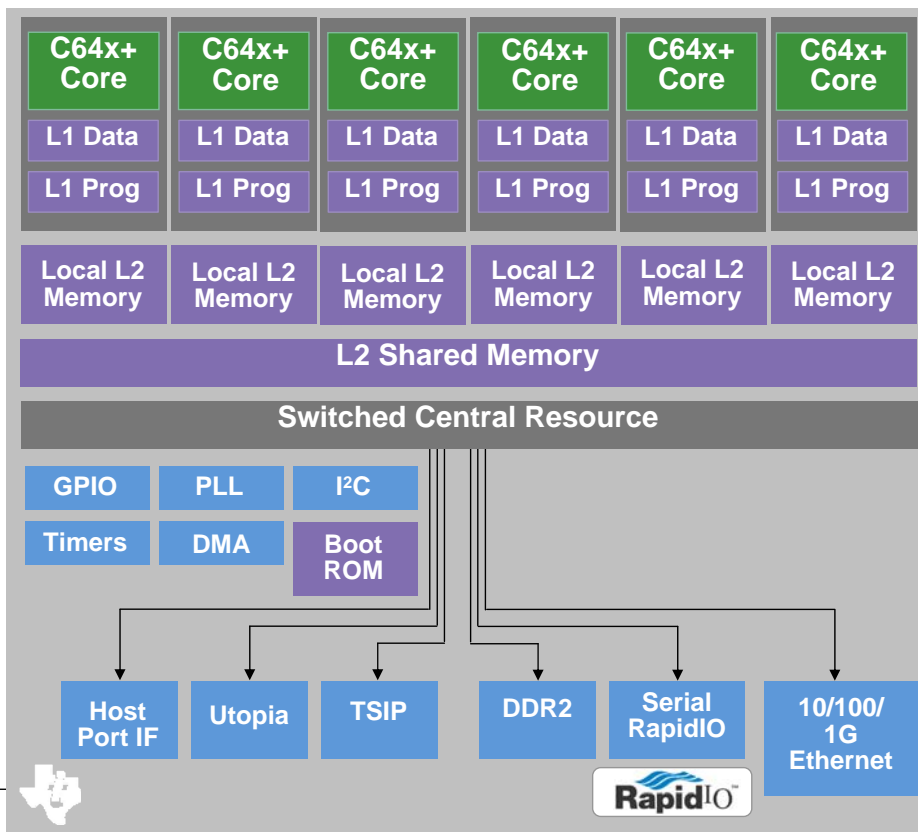
- 3 GHz
- Multicore
- Shared prog memory
- Application software



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# Carrier Infrastructure Platform TNETV3020



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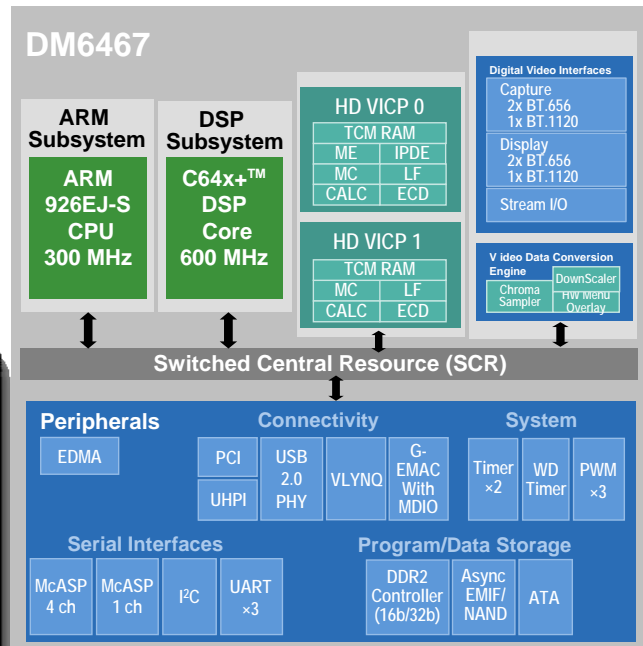
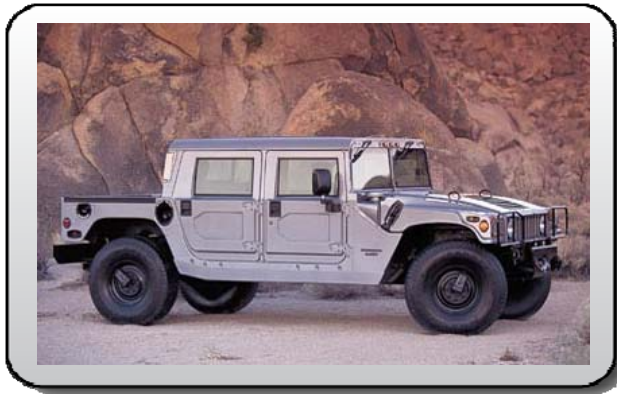
## Tops-down is a better approach

- MP platforms are more successful when the market and customer requirements are known at development time
  - System architectures can be optimized
  - Performance/power/flexibility can be addressed
  - The right set of software can be offered, improving the customer's time to market



# HD Video Platform TMS320DM6467

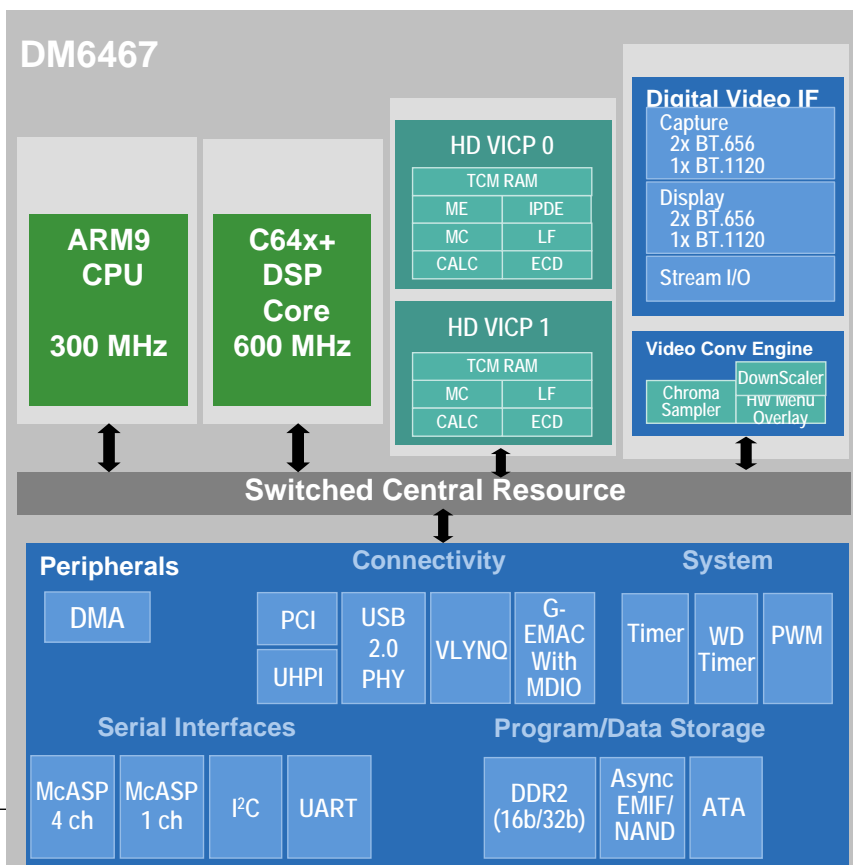
- Optimized for video
- Heterogeneous with DSP and ARM cores
- Embedded software and accelerators



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# HD Video Platform TMS320DM6467



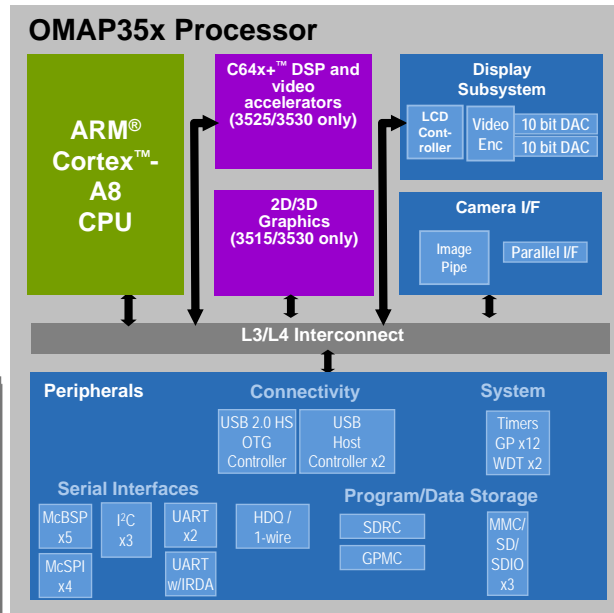
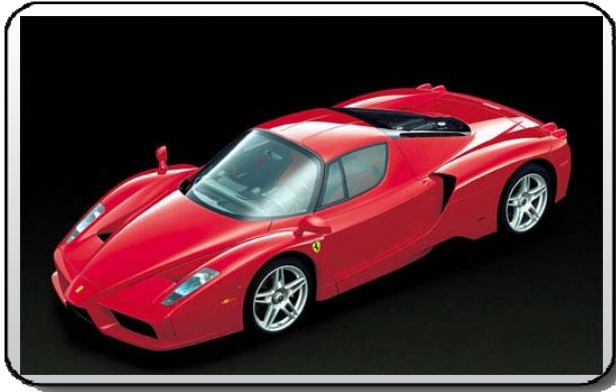
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# Open Multimedia Application Platform

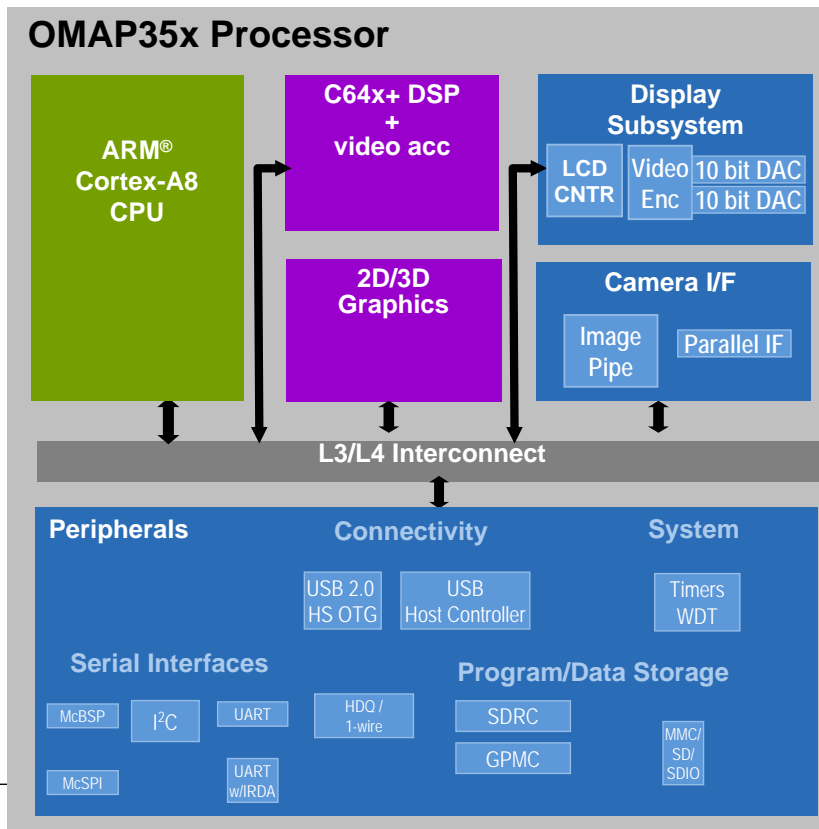
- Optimized for wireless handsets
- Open system application development
- Specialized coprocessors



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# Open Multimedia Application Platform



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## MPSoC Challenges

- Visualization of data synchronization and task scheduling
- Virtualization of hardware and software details – how much is needed?
- Operating system support – Linux, DSP/BIOS
- Software tools that support parallel processing and multi-threading



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## Conclusion

- Design perspective is critical to success
- Tops-down approach will give clarity to the development process
- Market requirements drive hardware/software tradeoffs and integration decisions
- The right set of software and tools must be delivered with the platform



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