New Direction for Digital Signal Processing

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Digital Signal Processing Side note

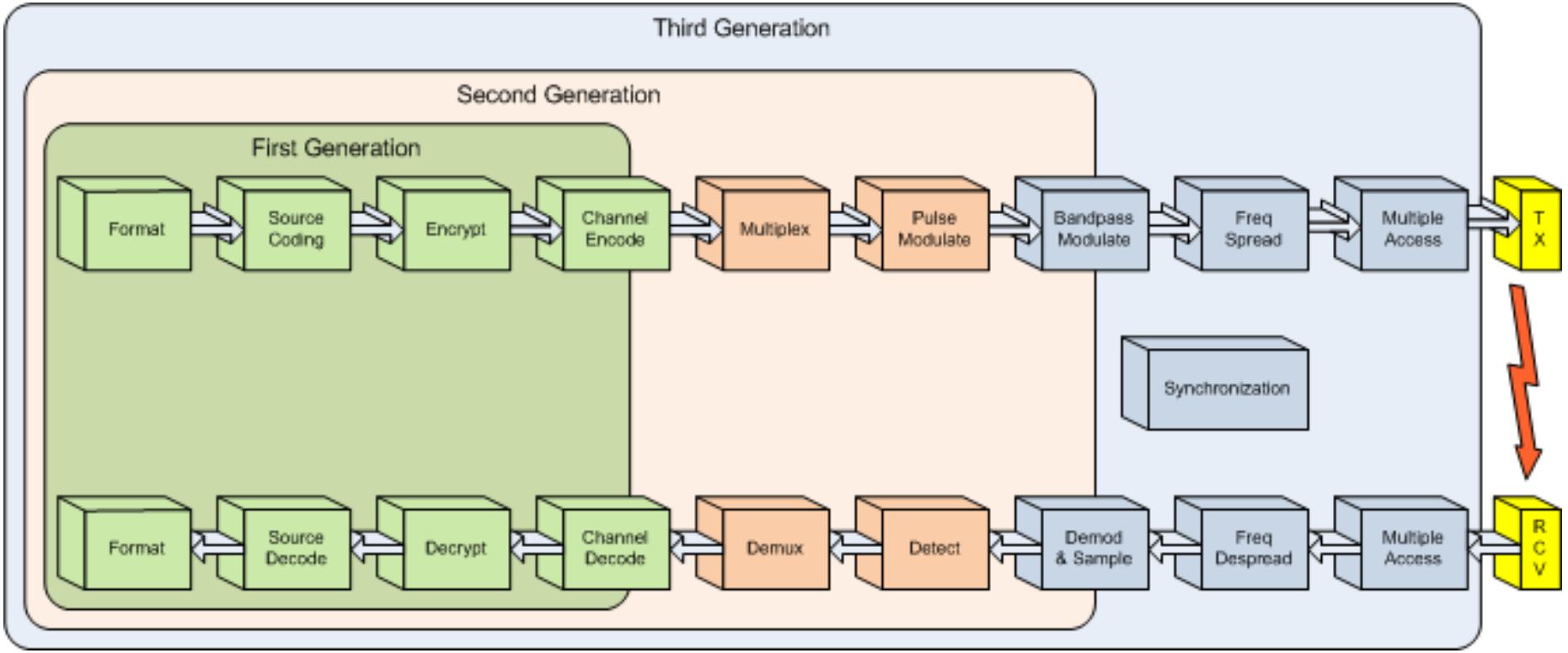
- The emphasis on this presentation is the lower production volume Digital Signal Processing applications.

- High volume, small applications such as cell phones where board real-estate can take advantage of Applications Specific Integrated Circuits (ASIC). These platforms the high cost of development is amortized over a huge production volume

DSP Processing has come full circle

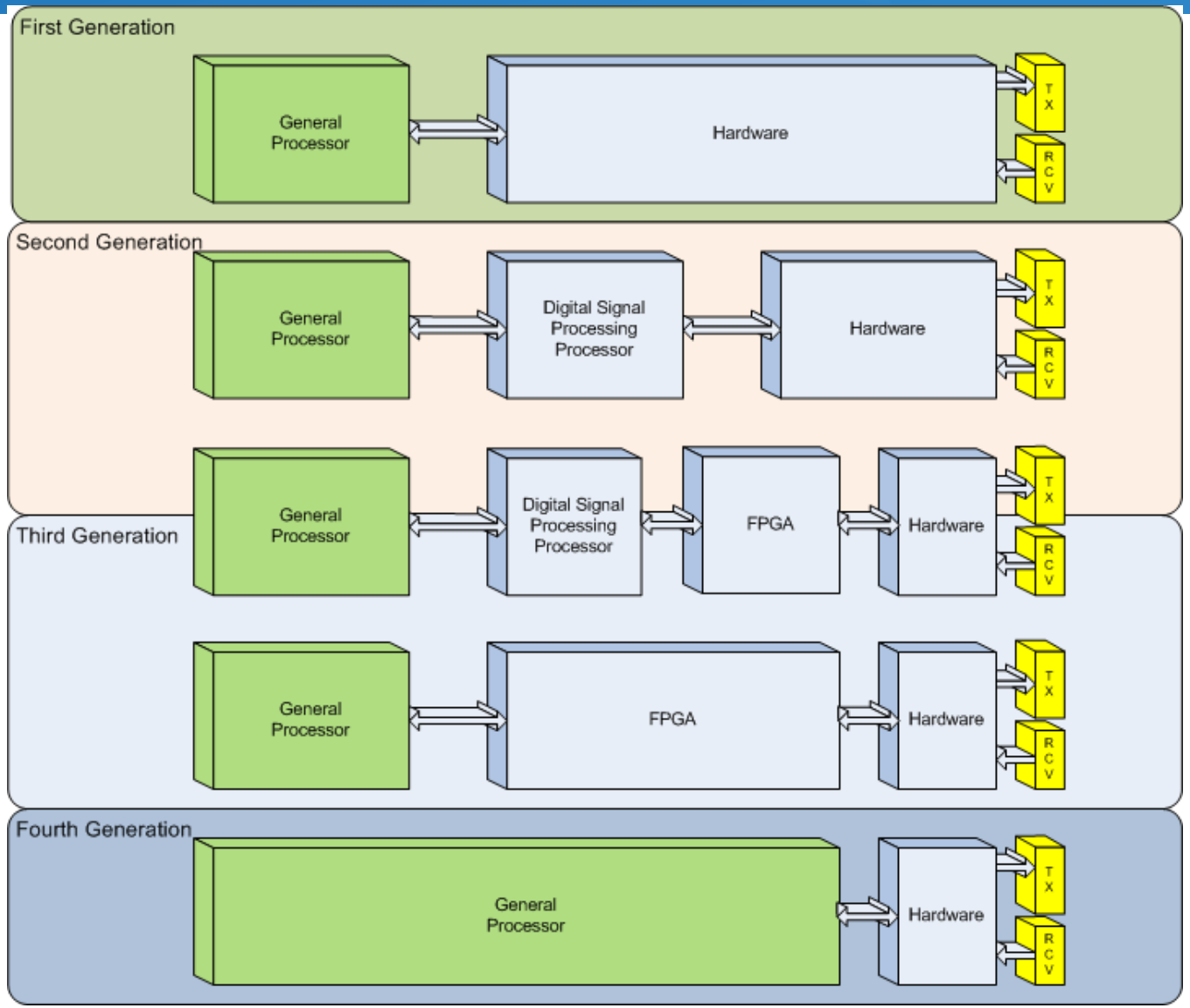
- First Generation; General Processors preformed source and channel coding.
- Second Generation; DSP Processors preformed math intensive algorithms.
- Third Generation; FPGA allowed math intensive algorithms to be pipelined and divided into parallel processing.
- Fourth Generation; General processors can perform pipelined math intensive algorithms with parallel processing threads and scalable architectures.

Evolution of Software Defined Radio



Note: Similar block diagrams illustrate Sonar and Radar applications.

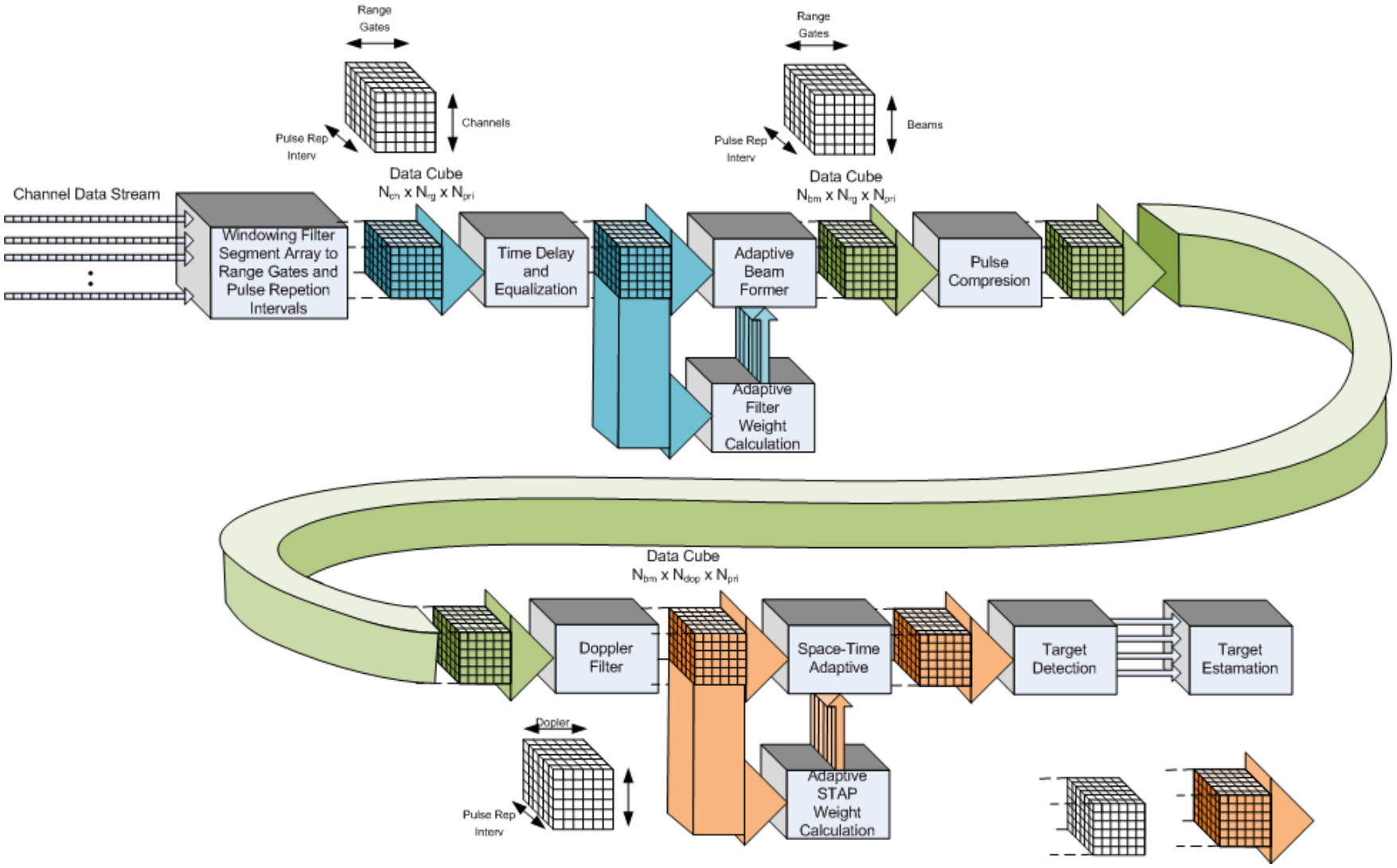
Block Diagrams of DSP systems



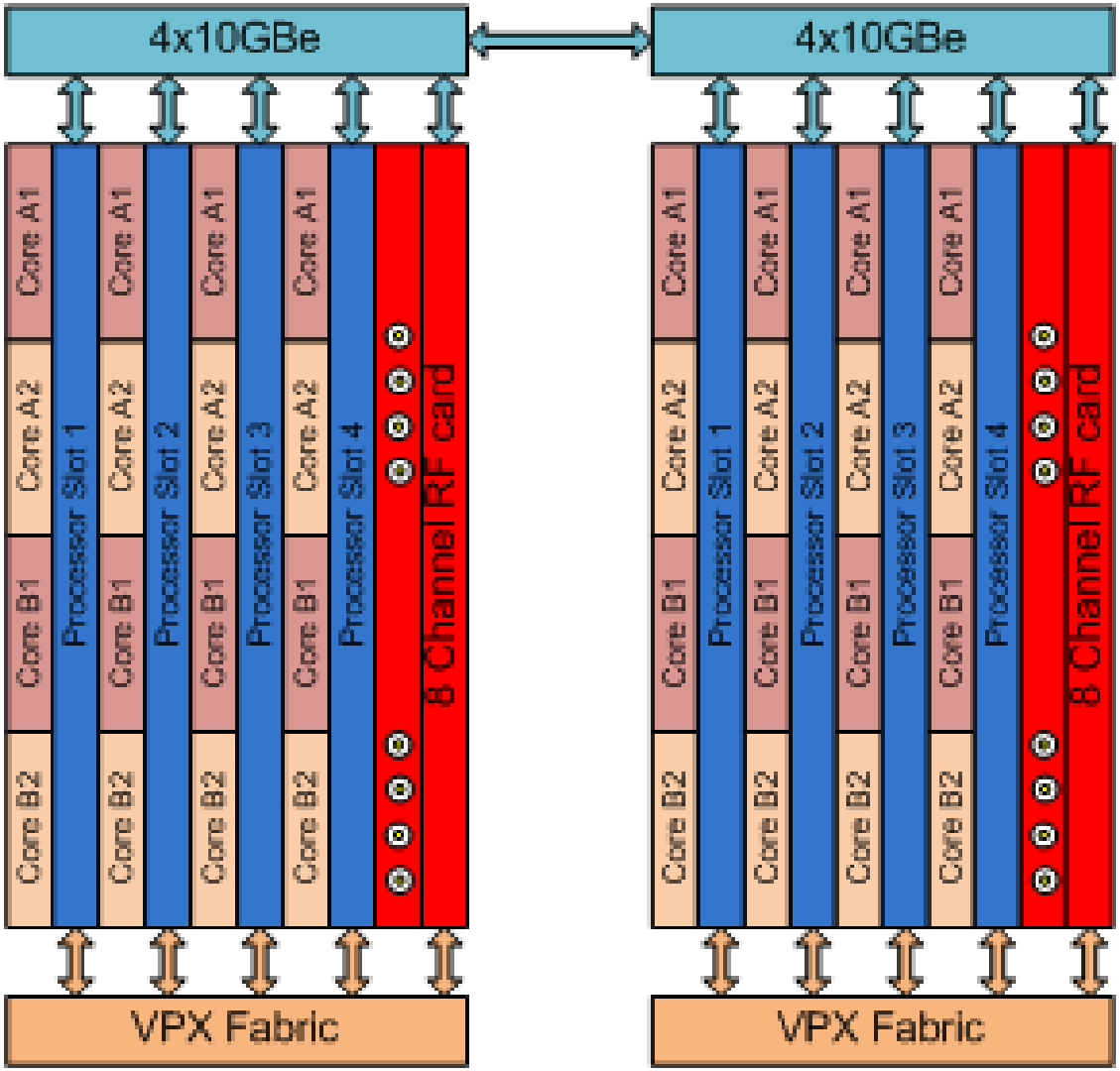
General Processor Development

- Consumer markets have demanded faster, more powerful and efficient processors.
  - Memory Caches
  - Instruction pipe lines
  - Brach prediction
  - Single instruction multiple data
  - Single clock math primitives
  - Multi-threading
  - Multi-core processors

Processing Block Diagram for Radar



Scalable Processing Engine



Advantages of General Processors

- Scale of economy has developed affordable and powerful processors
- A Single software team and one configuration management system
- Does not require special software skills
- Scalable to the application
- General processor manufactures have maintained continuity in newer products. Code will not become obsolete with new processor releases.
- Lower developmental cost
- Lower reoccurring cost.

Thank you
for your attention

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