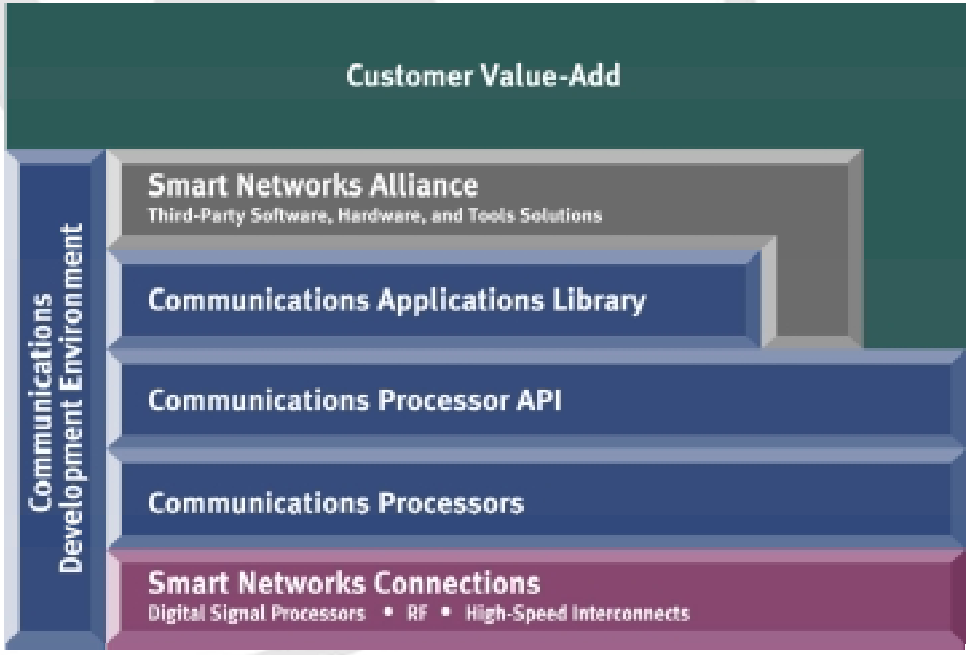
# Announcing the MSC8102 - Industry's Highest Performance DSP




## Smart Networks Platform

Digital DNA™ from Motorola

# Today's Announcement

- Announcing the MSC8102 - The Industry's Highest Performance DSP
- Motorola's second StarCore-based DSP
- Building on the Success of the MSC8101
- Integrated with Motorola's Smart Networks Platform
- Enabling the Next Generation of Smart Networks

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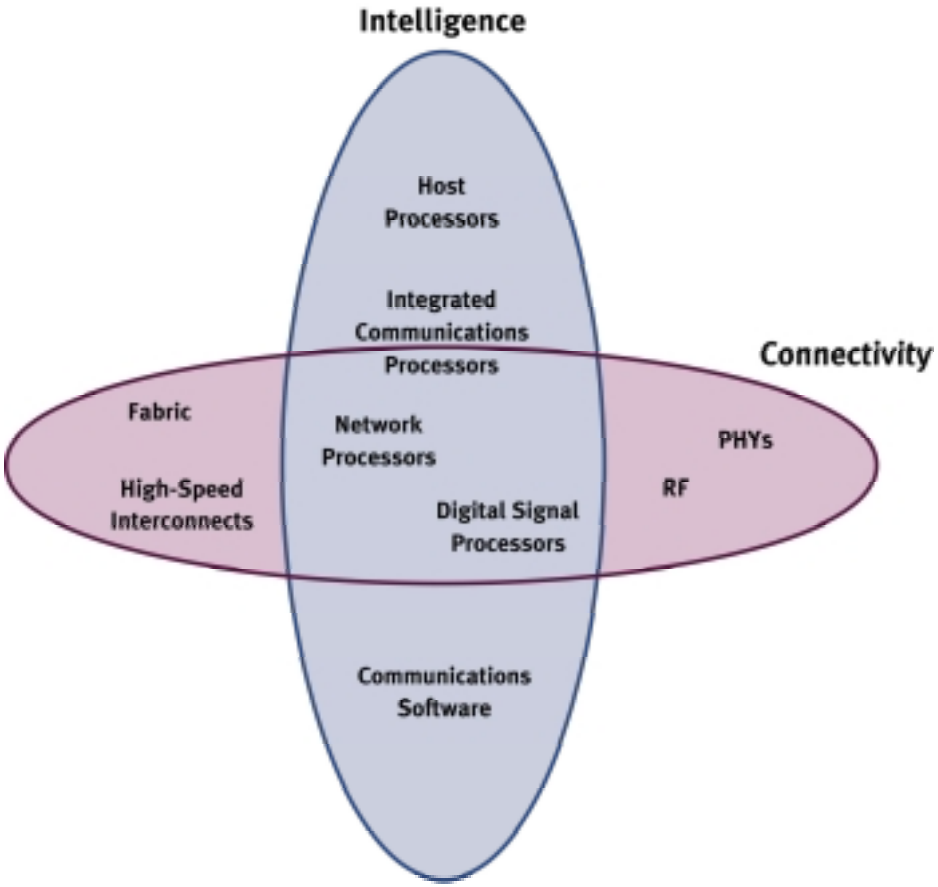
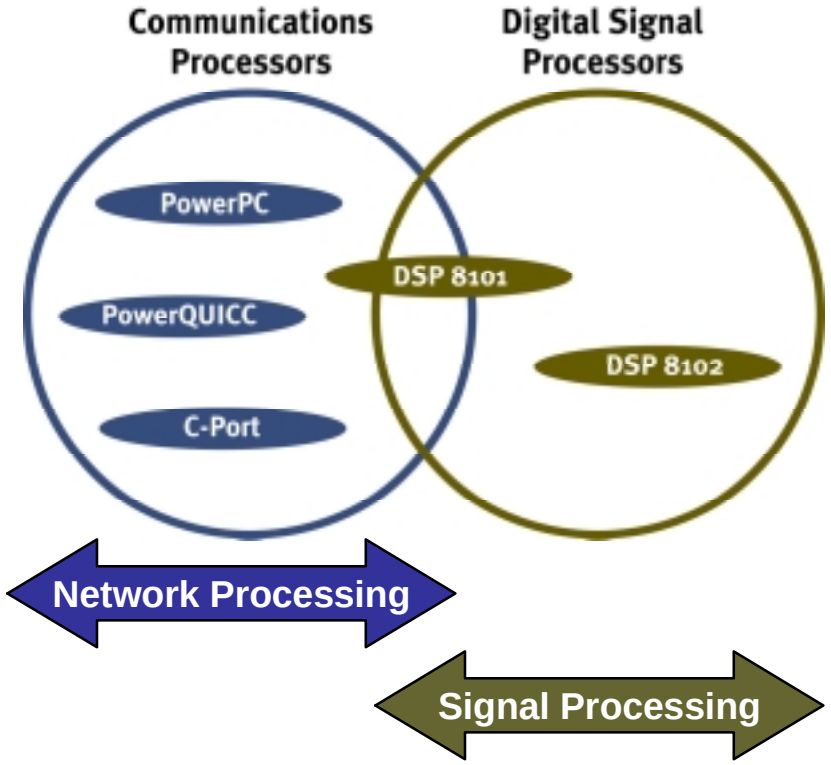
# Motorola DSPs Bring Intelligence to Network Infrastructure Connectivity




**Smart Networks Systems**

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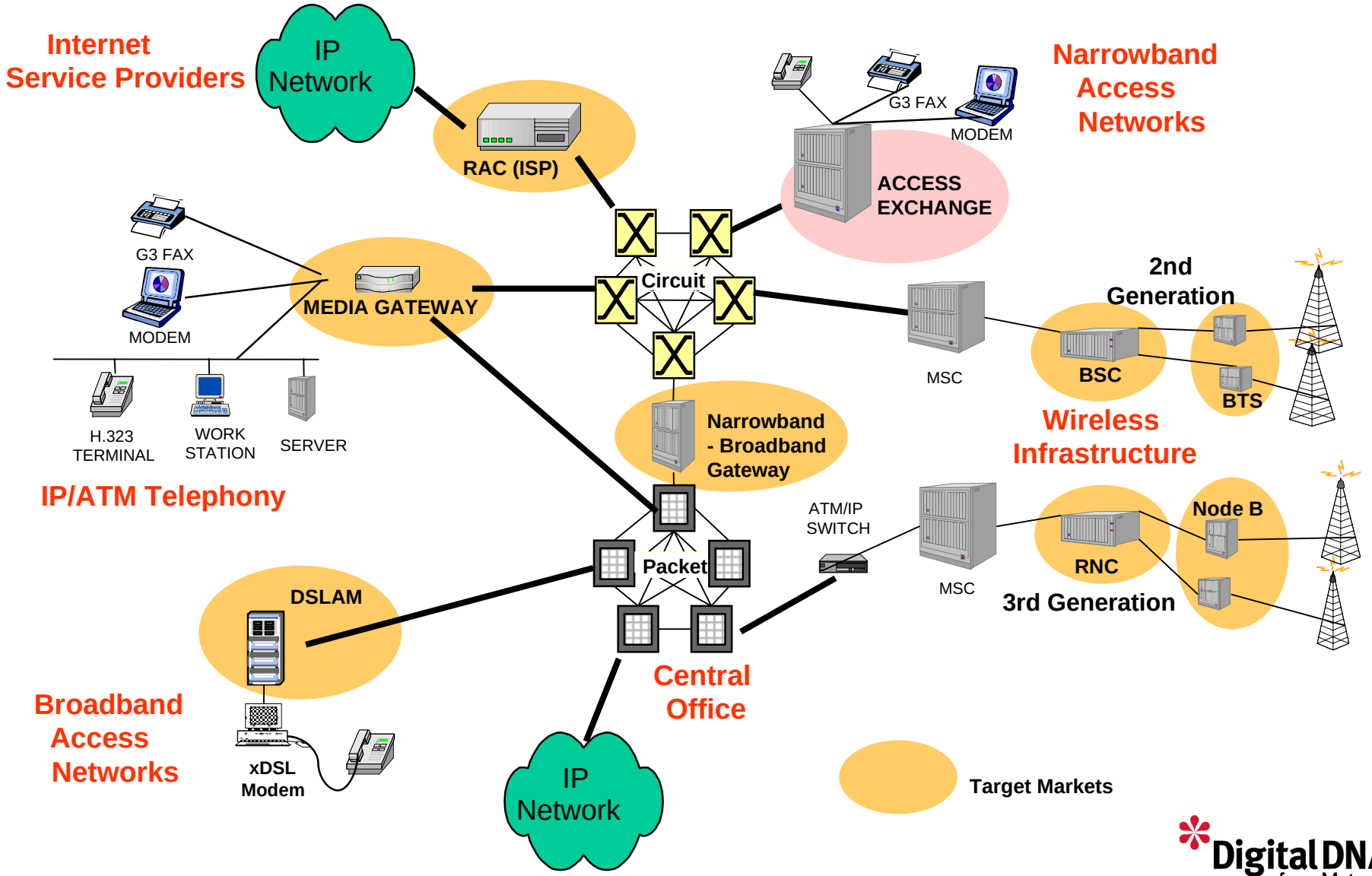
# Smart Networks Platform Network Infrastructure DSP Target Markets

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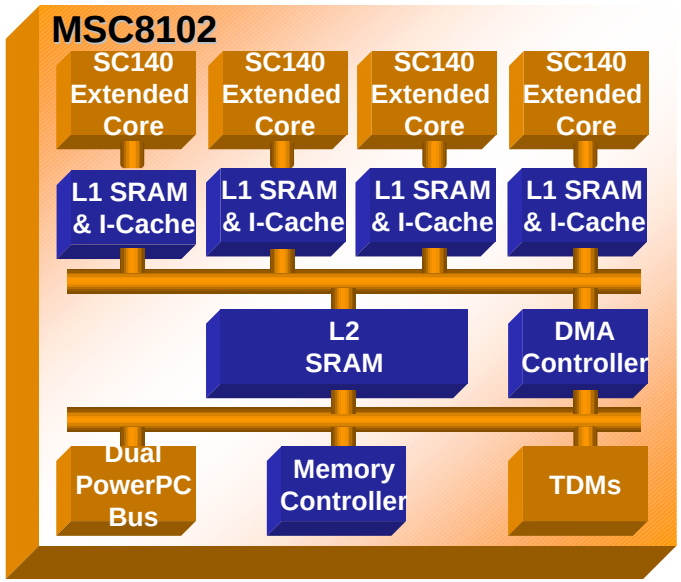
# Announcing the MSC8102

- **Industry's Highest Performance DSP**
  - Four 300 MHz StarCore SC140 DSP Extended Cores
  - 16 ALUs – 4800 MMACs, 12G RISC MIPS
  - Performance equivalent to a 1.2 GHz SC140 core
- **Industry's Largest On-chip SRAM**
  - 1436 KByte (11.488 Mbit)
  - Efficient, multi-level memory hierarchy
- **Industry's Highest I/O Throughput**
  - Dual PowerPC system and local buses
  - Four serial TDM interfaces
- **Very Low Power Dissipation in a Small FC-PBGA Package**
  - 1.6 Watts
  - 18 x 18 mm or 16 x 16 mm package

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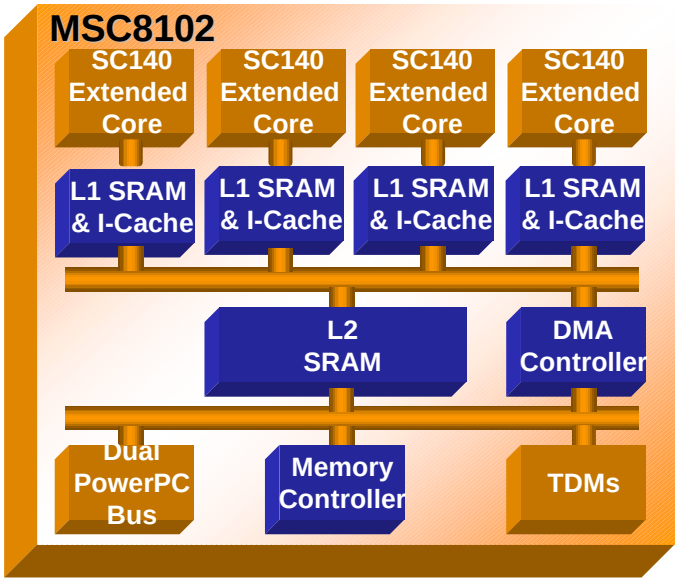
# Additional MSC8102 Benefits

- **Each SC140 Extended Core**
  - 224 KB L1 SRAM private memory
  - 16 KB of real-time instruction cache
  - Enhanced Filter Coprocessor (EFCOP)
- **Additional High-Density SRAM**
  - 476 KB L2 shared SRAM @ 300 MHz
- **9.6 Gbps Peak Bus Throughput**
  - 32-bit PowerPC 60x System Bus Interface
  - 32- or 64-bit PowerPC 60x Direct Slave or Local Bus
- **400 Mbps Peak Serial Data Throughput**
  - Four Independent Time Division Multiplex interfaces
- **Core-independent 32 Channel DMA Controller**

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# MSC8101 and MSC8102 Compatibility

- **Industry's First StarCore-based DSP**
  - MSC8102 uses same proven extended Core
- **Industry's Most Powerful Network-ready DSP**
  - MSC8101 uses PowerQUICC II CPM
  - Can provide network interface for DSP farm of MSC8102 devices
- **Industry's First PowerPC™ bus Compatible DSP**
  - MSC8102 uses same bus interface
- **Industry's First DSP to use 0.13 micron HiP6 Copper Process Technology**
  - MSC8102 uses the same process technology

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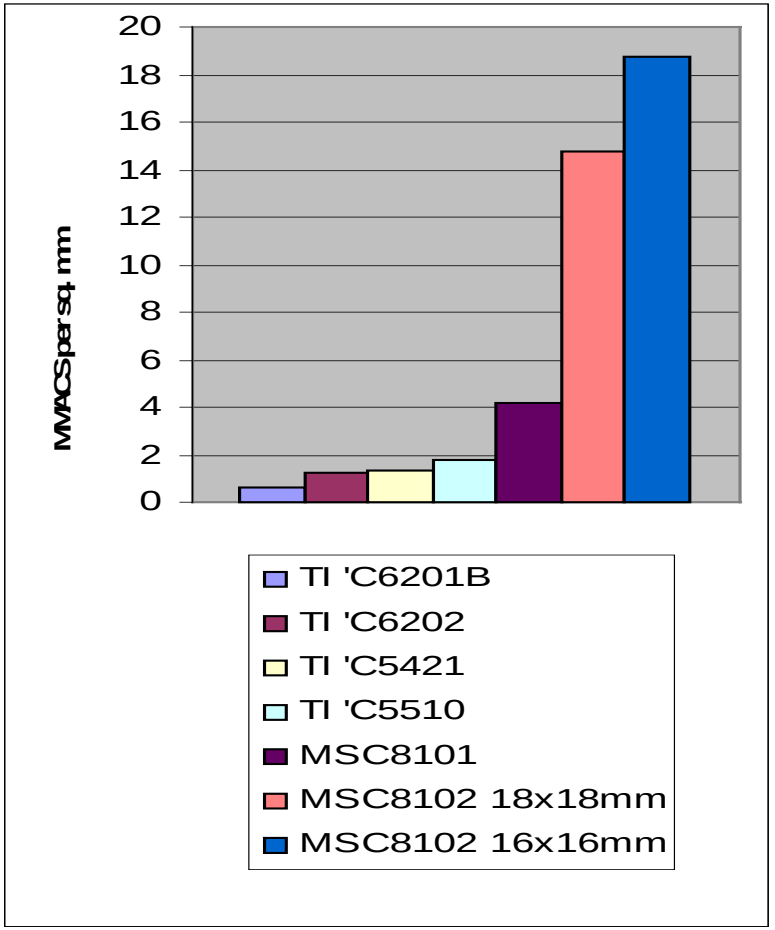
# Motorola - The Performance Density Leader

- **Massive processing power and small footprint enables the highest density solutions**
- **Expected maximum number of channels**
  - More than 60 Universal (voice/fax/modem) channels
  - More than 80 Compressed Voice channels
  - Up to 600 non-compressed (G.711) channels
  - Up to 8 ADSL channels

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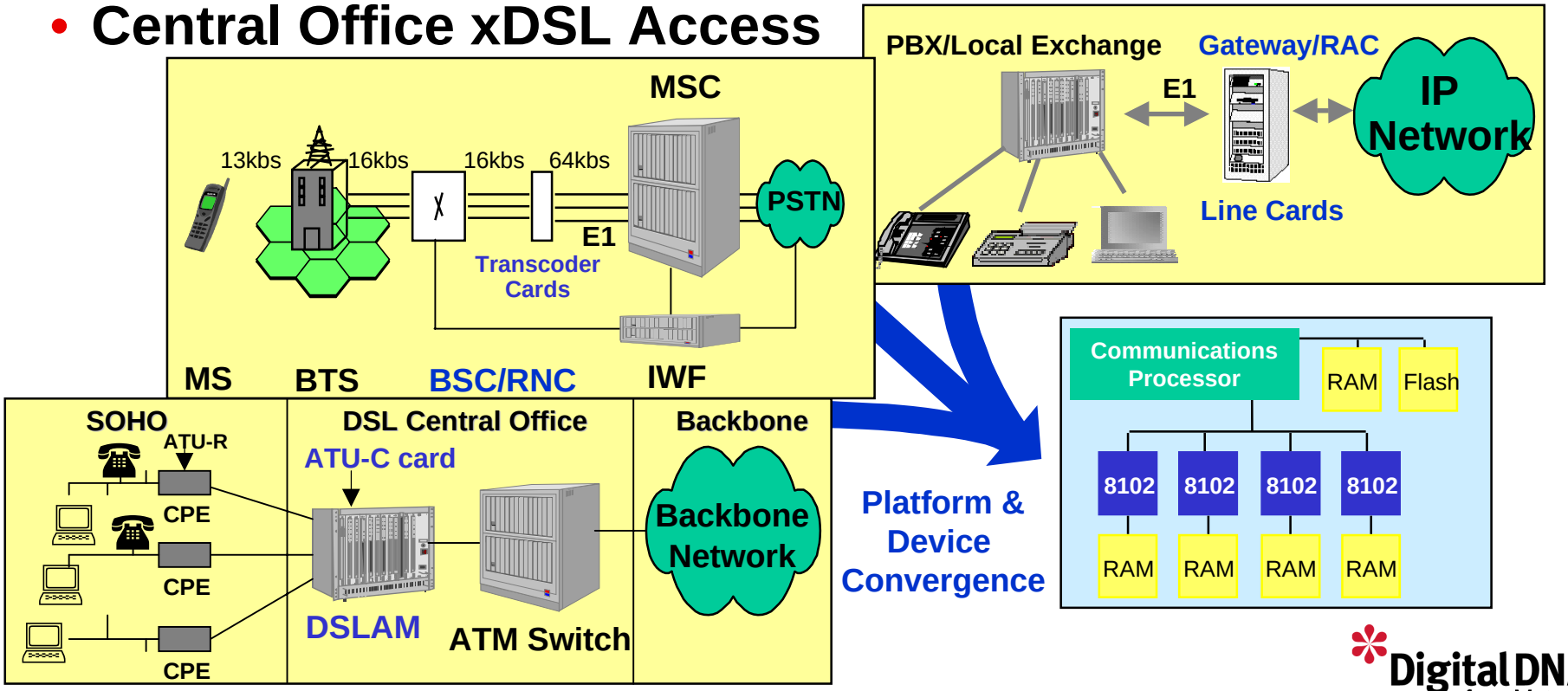
# Multi-Channel Applications: Where Density Rules

- **Wireline Packet Telephony**
  - Universal Channels - Voice, FAX, Modem
- **Wireless Transcoders**
  - GSM, IS-136, IS-95, EDGE, CDMA2000, W-CDMA, 3GPP
- **Central Office xDSL Access**

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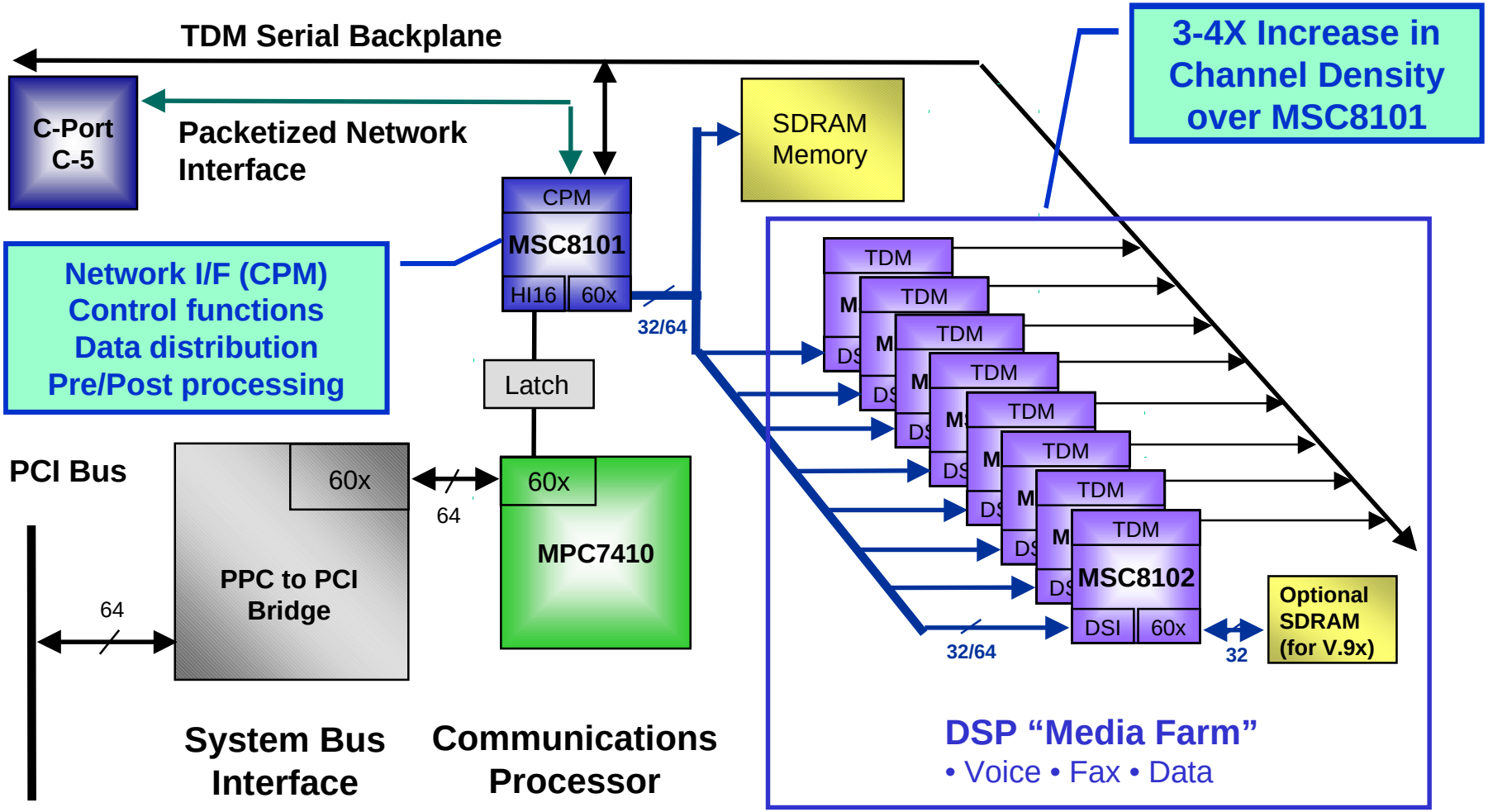
# Boosting Channel Density for Carrier Class Applications




***Processing up to T3/E3 or OC-3 rates per board***

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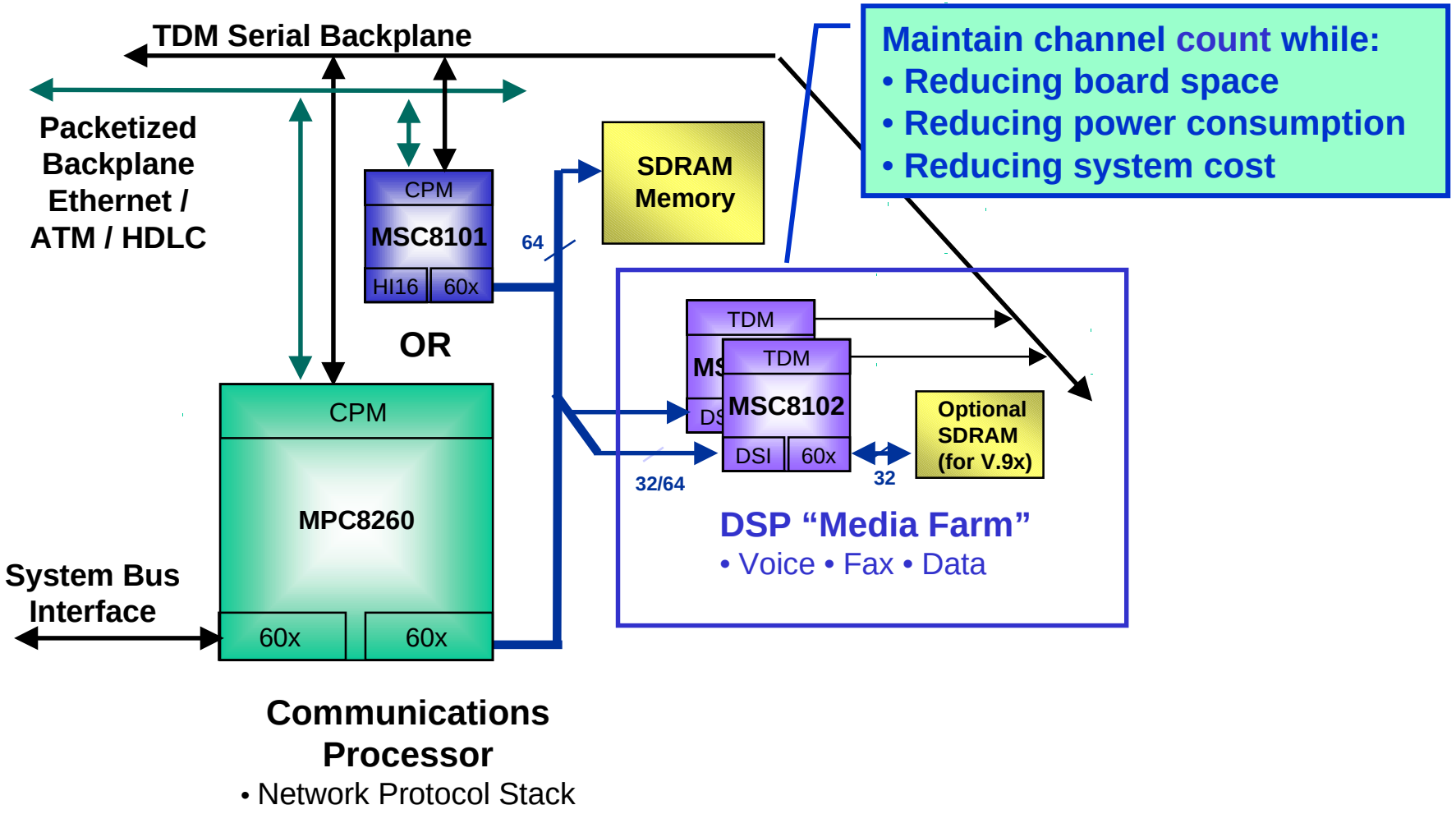
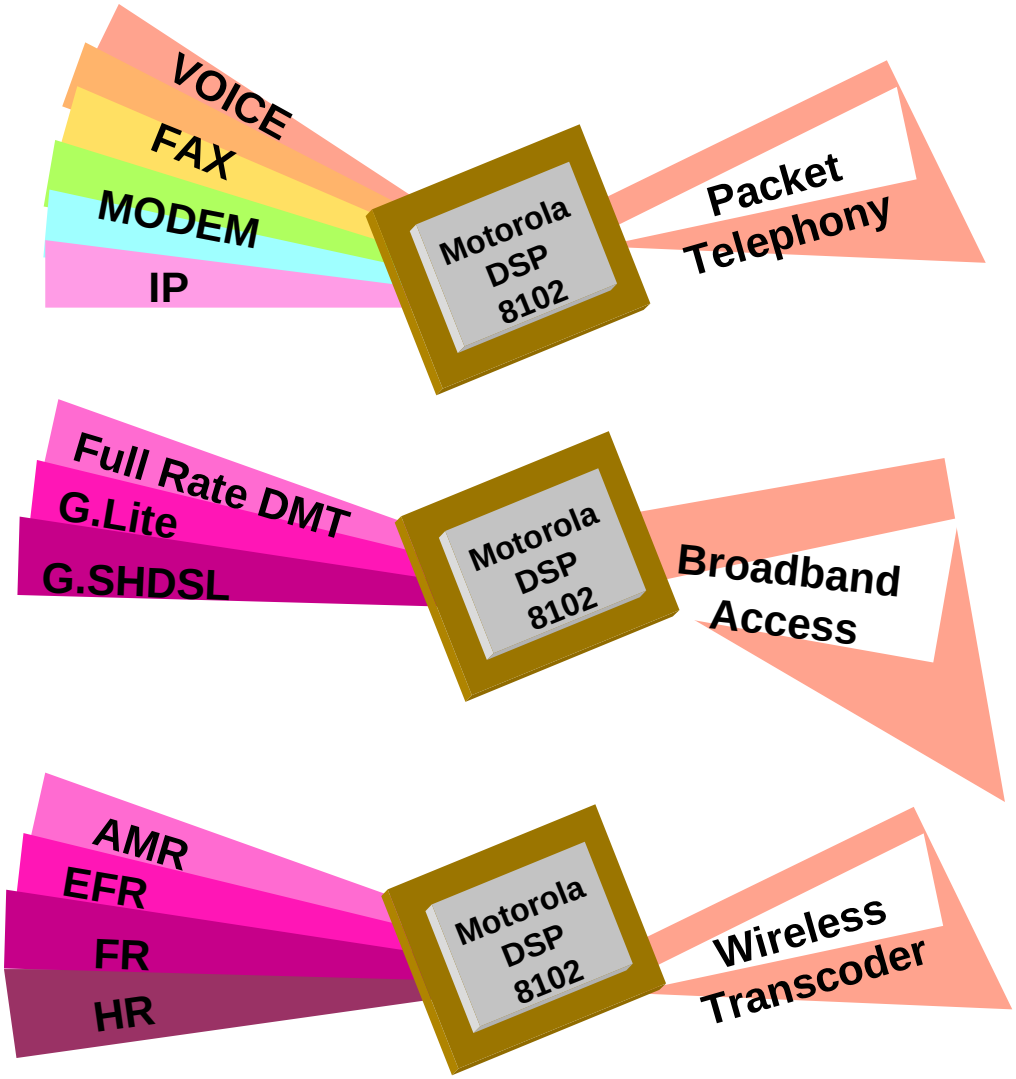
# Enabling Smaller Form Factor Systems for ROBO / Enterprise Applications



# MSC8102 Enables Many Applications

- **Software-based Convergence Platform**
  - Multi-Port, Multi-Protocol
  - Dynamic Allocation
  - Maximum Flexibility
  - Simple Upgradeability
- **Common Hardware Design**
- **Common Programming Model**
- **Common Development Environment**

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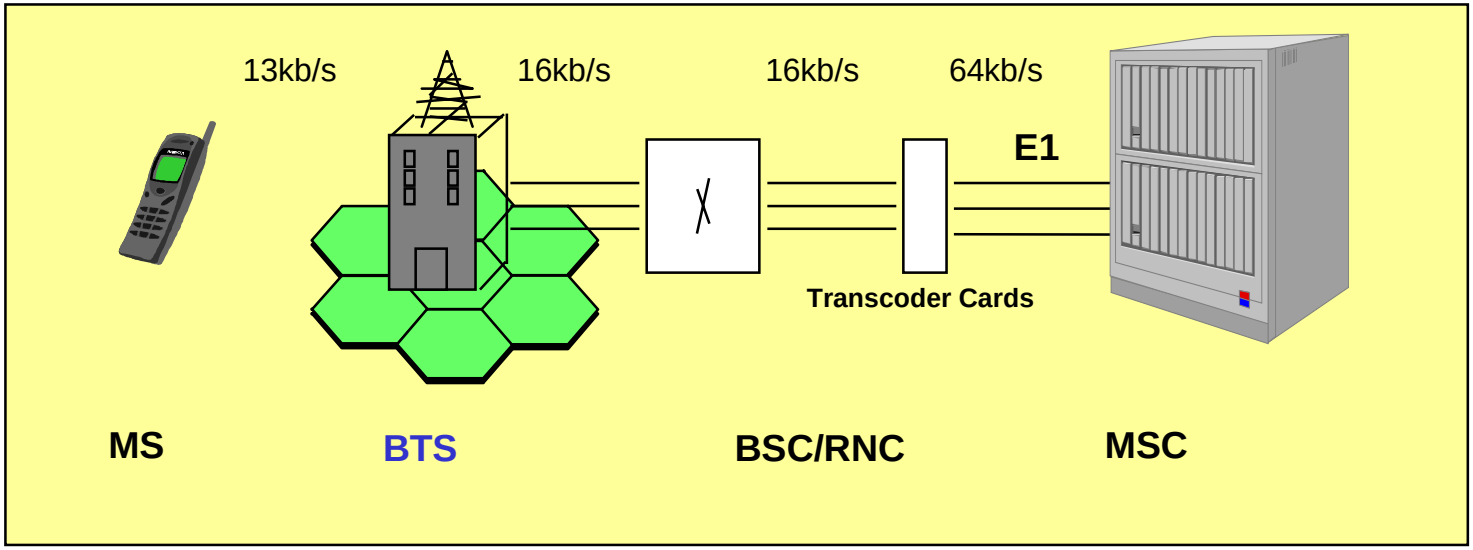
# Raw DSP MIPS Applications: Where Performance Rules

- **Displaces ASICs and FPGAs**
  - Enabling New Features and Standards via Software
- **High-Performance BTS Programmable Engine**
  - 3G BTS Chip-Rate assist processor
  - 3G BTS Symbol-Rate software based processor
  - EDGE BTS multi-carrier software based processor

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# Next Generation 3G BTS Applications

• 1 carrrier/board
• 128ch/board
• Multiple ASICs
• Multiple DSPs

Chip Rate

CR ASIC

Control SW

Symbol Rate

SR ASIC

MSC8101 DSP

1st Generation BTS

• Enables new features

• 128 ch/board
• Reduce or eliminate hard-wired ASICs
• Reduce number of DSPs

Smart Antenna

CR ASIC

MSC8102 DSP

Multi-User Detection

CR ASIC

MSC8102 DSP

Chip Rate

CR ASIC

MSC8102 DSP

Control SW

Symbol Rate

MSC8102 DSP

• Added flexibility - programmable
• Reduce cost/channel
• Reduce power consumption
• Reduce board space

2nd Generation BTS

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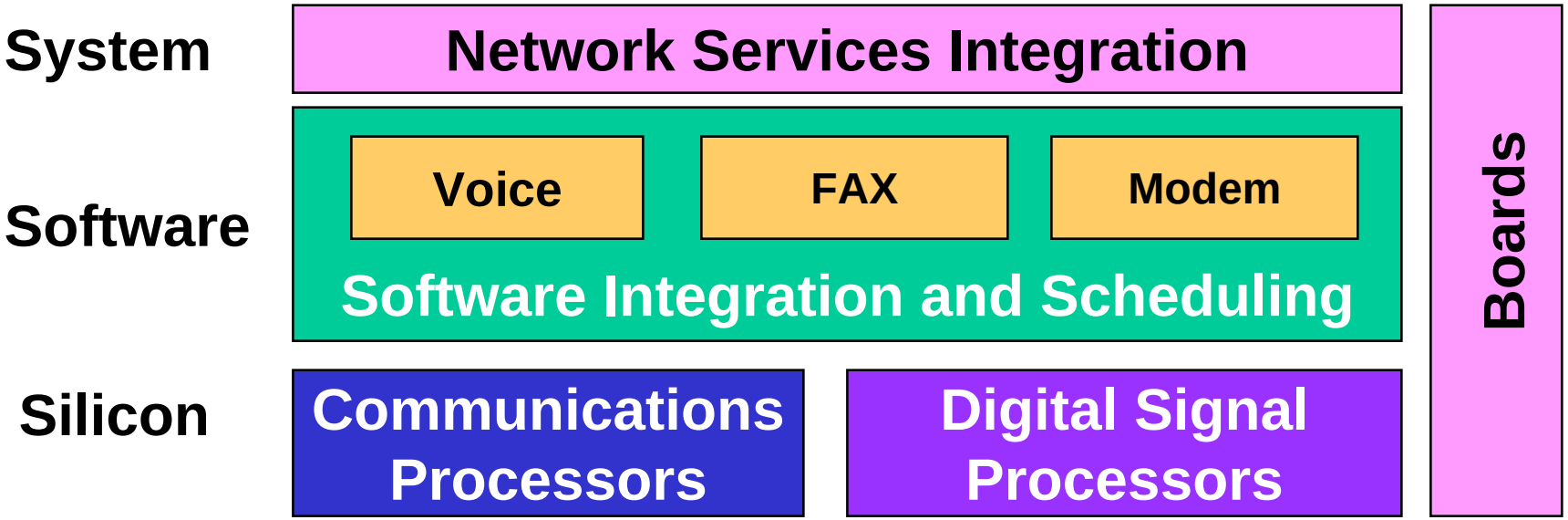
# Integrated System Solutions

- **Customers demand an integrated approach at both the hardware and software levels**
  - Addressed by the Smart Networks Platform
  - Software: Integration of key network stacks and protocols
  - Hardware: Board level products or reference designs

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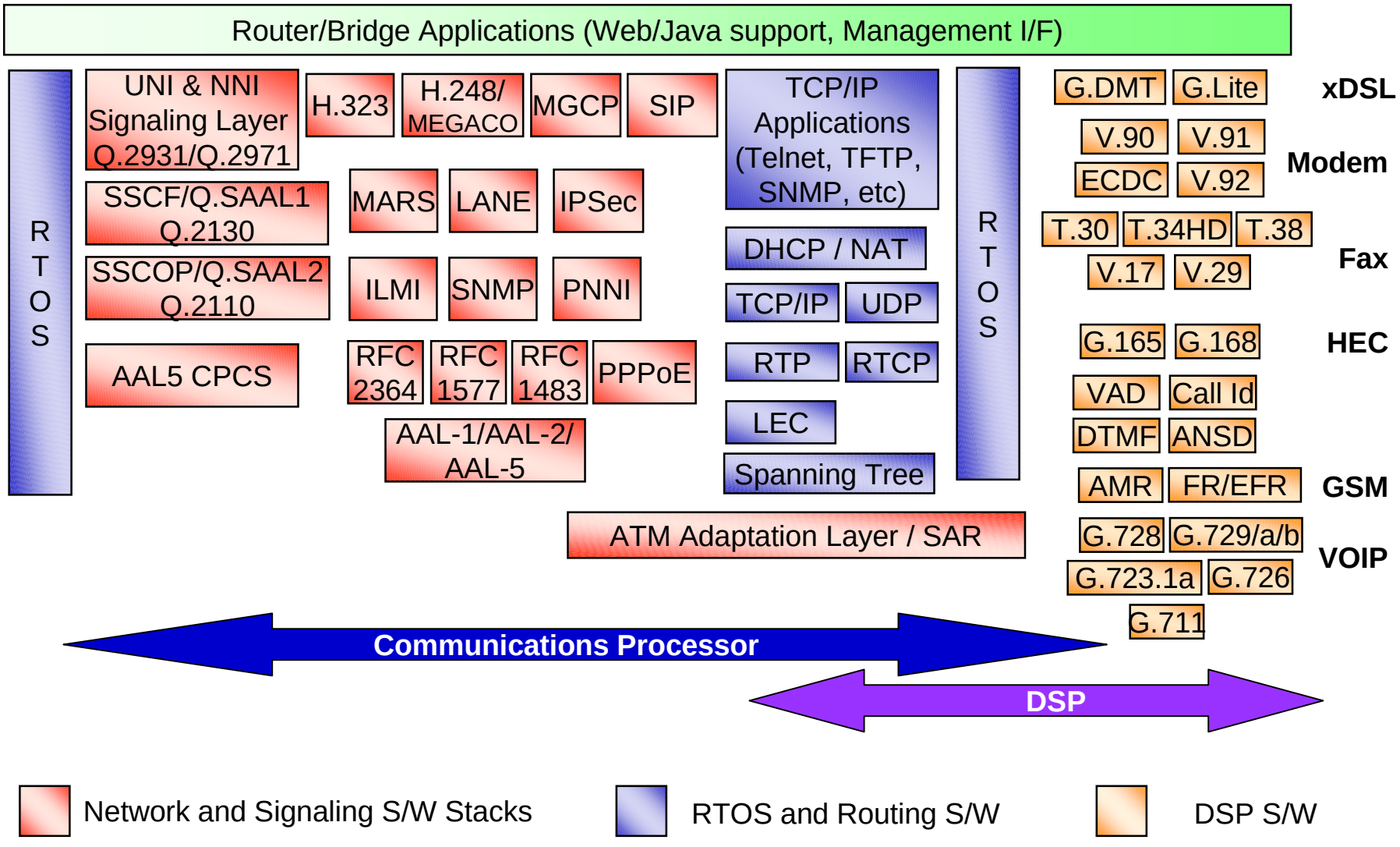
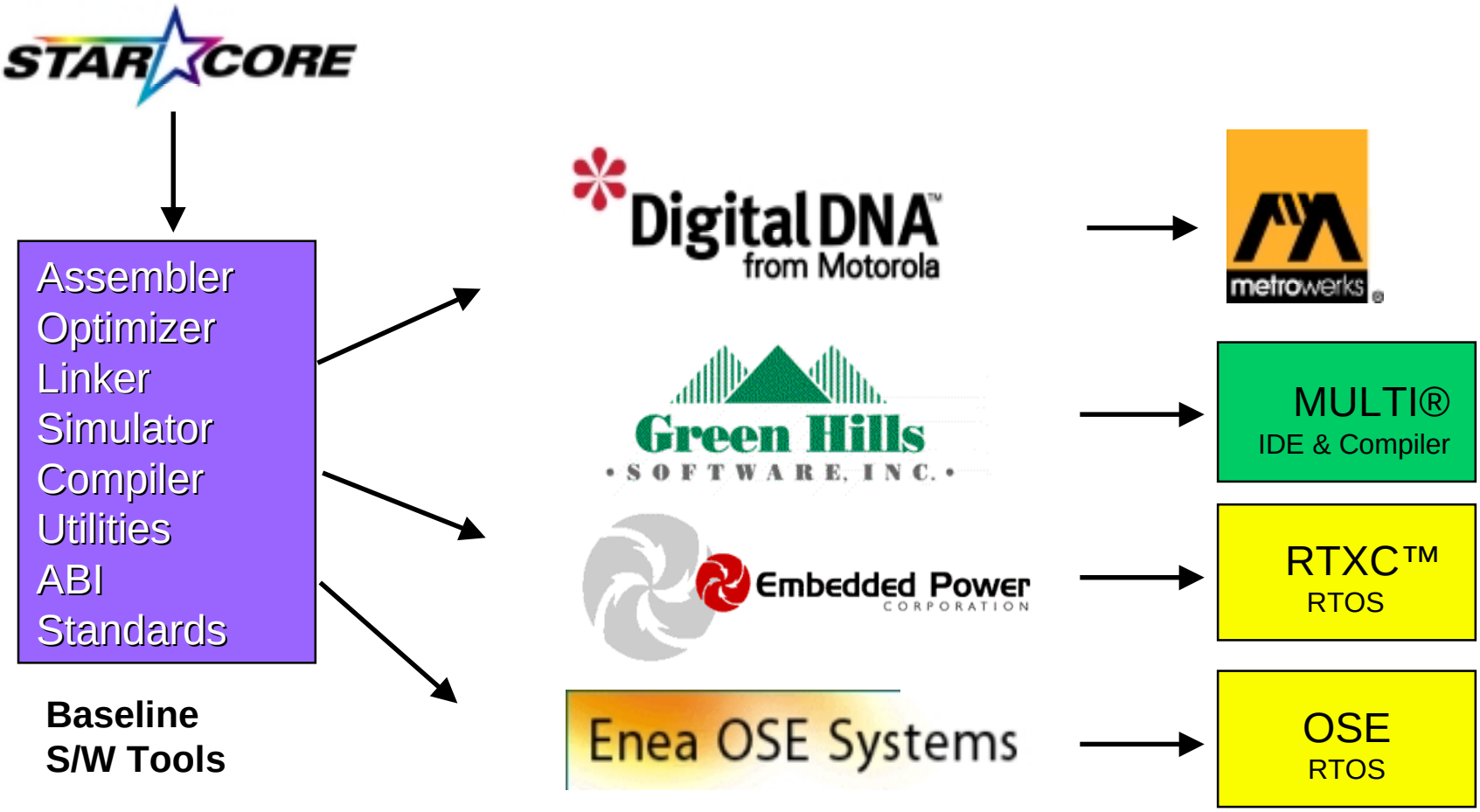
# Integrated Software Solutions



# MSC810x S/W Development Tools




MSC8102 customers are designing their systems today by leveraging MSC8101 software and tools

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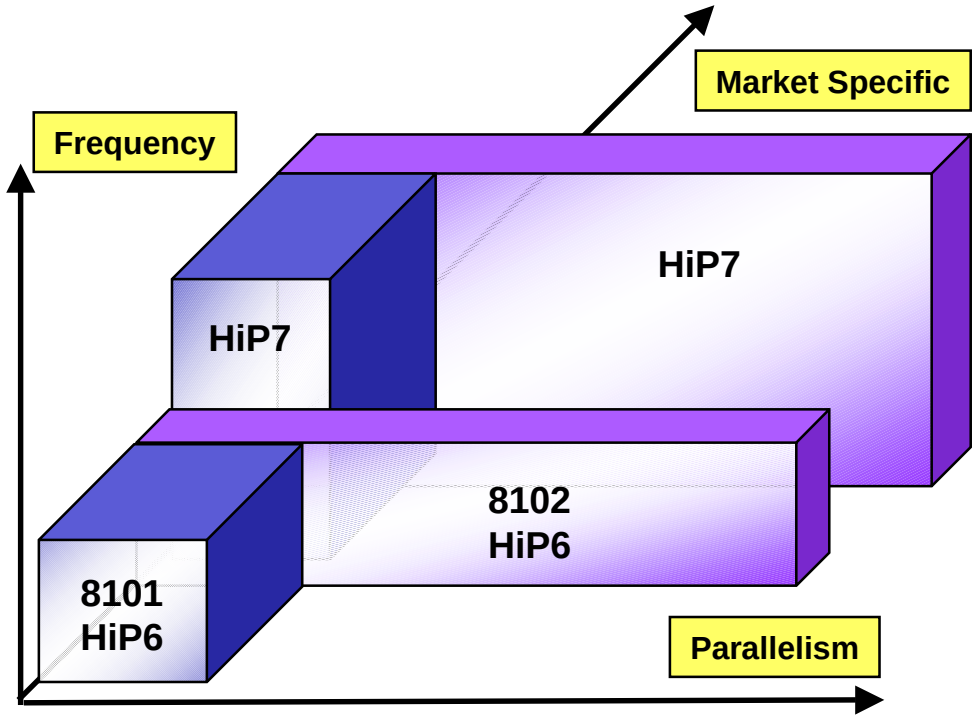
# Future MSC810x Product Directions

- **Frequency**
  - Higher frequency enabled through process technology improvements
- **Market-specific**
  - Specialized I/O interfaces and integration
  - Specialized coprocessors
- **Parallelism**
  - Multiple cores
  - General purpose hardware coprocessors

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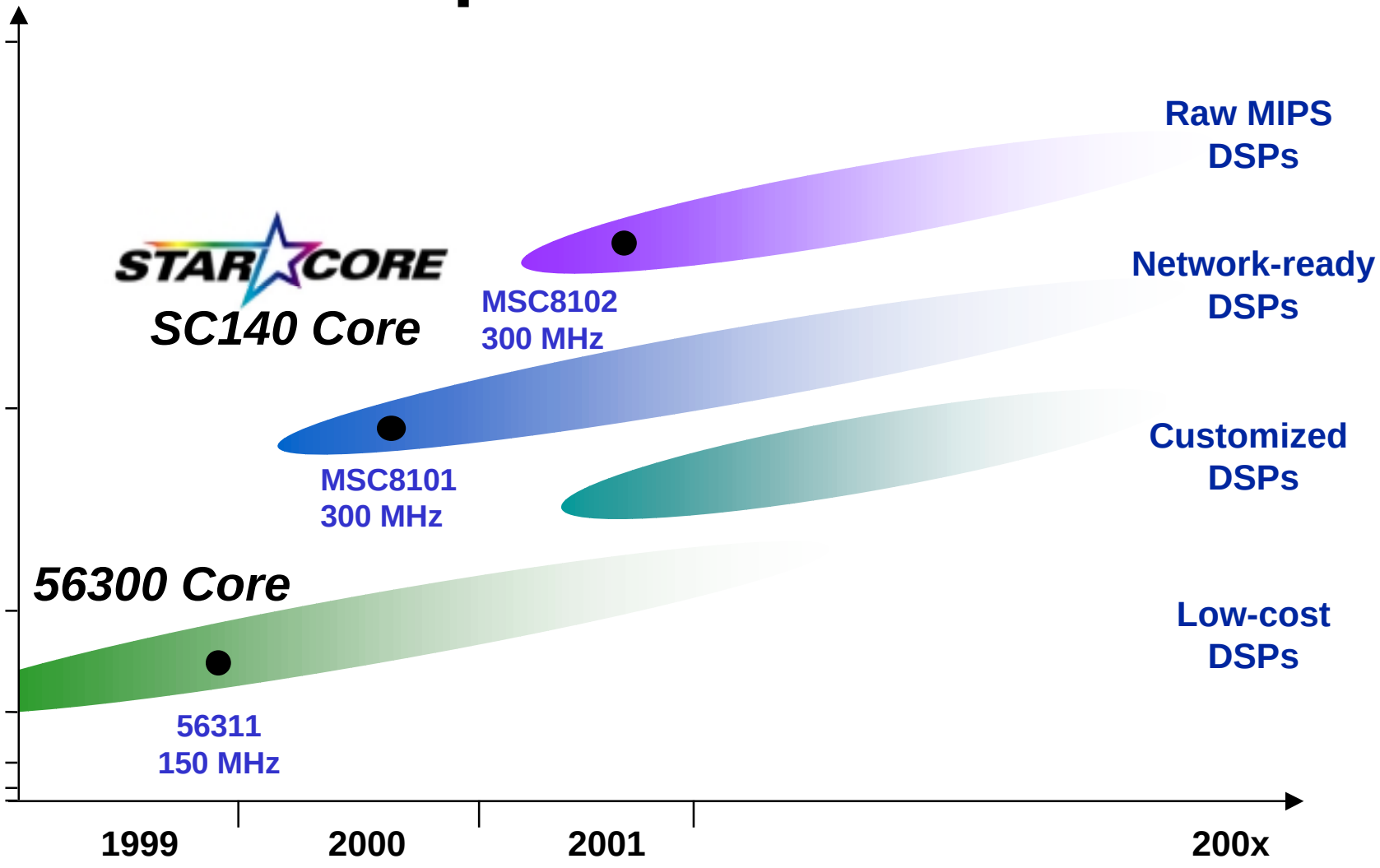
# Motorola Networking Infrastructure DSP Roadmap

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# Summary

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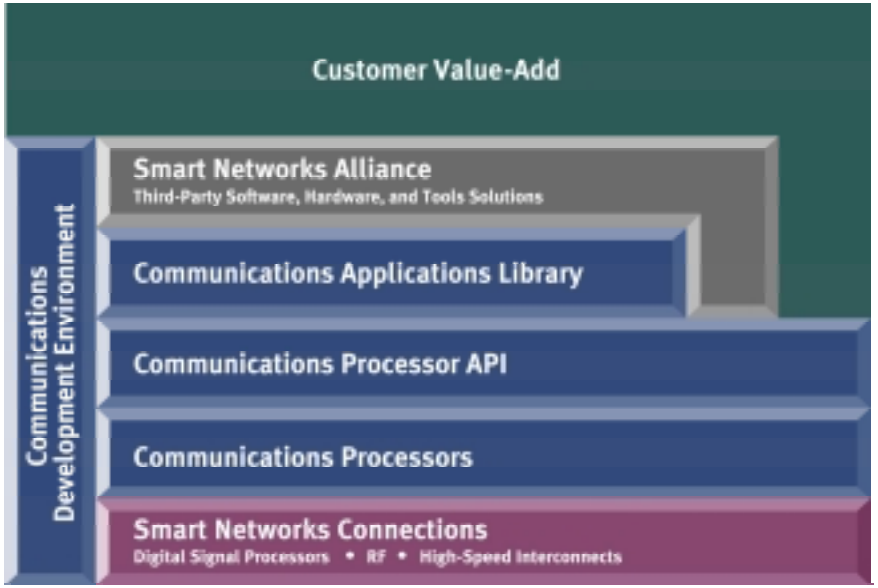


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