Intro to PICMG

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Regarding the Views Expressed

- The views I am expressing on PICMG standards and related products should NOT be considered the formal position, explanation, or interpretation of the PICMG consortium.

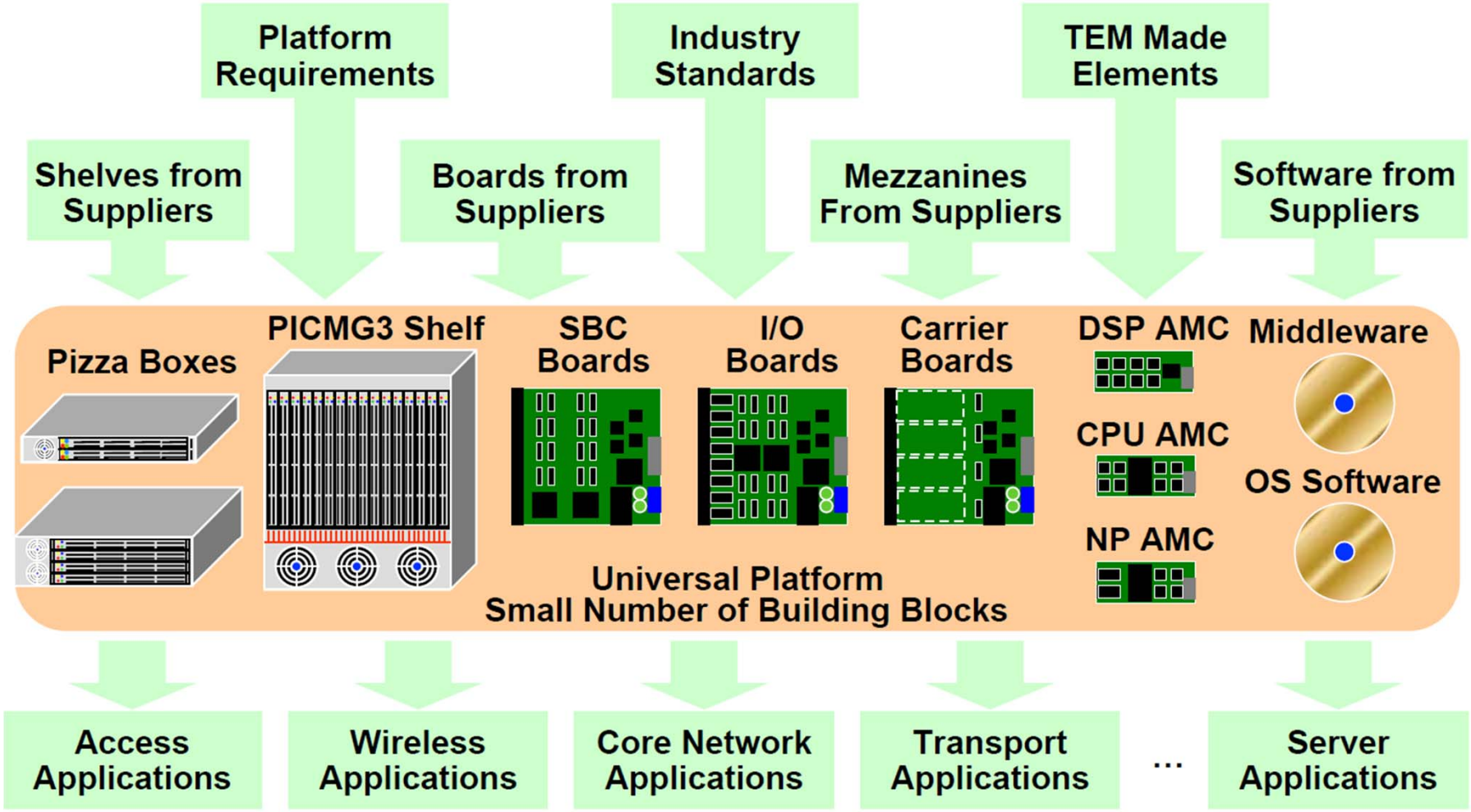
Vitals

- PICMG = PCI Industrial Computer Manufacturer Group
- PICMG was founded in 1994 to develop open standards for industrial computers.
- It has 300+ member companies – large and small
- Started moving into communications technologies in 1994 with CompactPCI
- Rigorous Intellectual Property Policy designed to uncover IP early in the process so it can be included or excluded as committee see fit. NO PICMG spec to date needs a license to implement.

PICMG in Telco

- PICMG was approached by several telco equipment providers in 2001 to develop high performance open standards suitable for the Central Office.
- ATCA (Advanced Telecommunications Computing Architecture)
  - Completed in 2003.
  - Continues to evolve with higher speeds and rugged systems for mil/aero applications as well as telco.
  - 43 specs completed to date.
- 95+% of ATCA backplanes are Ethernet.
- Primary application focus:
  - Telco carrier grade applications based on standard fabric solutions
- Additional PICMG efforts:
  - AMC: Advanced Mezzanine Card
  - CompactPCI
  - COM Express
  - CompactTCA
  - Product Classification Working Group
  - System Fabric Plane / Internal Time Division Multiplexing (SFP / ITDM)

Platform Building Blocks



http://www.picmg.org/pdf/supercomm_tutorial.pdf

Typical AdvancedTCA Shelf

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AdvancedTCA Standards

- Kickoff of informal “Santa Barbara” group 7/20/2001
  - Officially incorporated as PICMG3 11/13/2001 with 105 companies
  - Subteams: Form Factor, Backplane/Fabric, RASM
  - Base Spec (PICMG3.0) covers mechanical, power, cooling, interconnect, and
- Subsidiary specs:
  - 3.1: Ethernet and Fiberchannel Transport
  - 3.2: InfiniBand Transport
  - 3.3: StarFabric Transport
  - 3.4: PCI Express Transport
  - 3.5: Serial RapidIO

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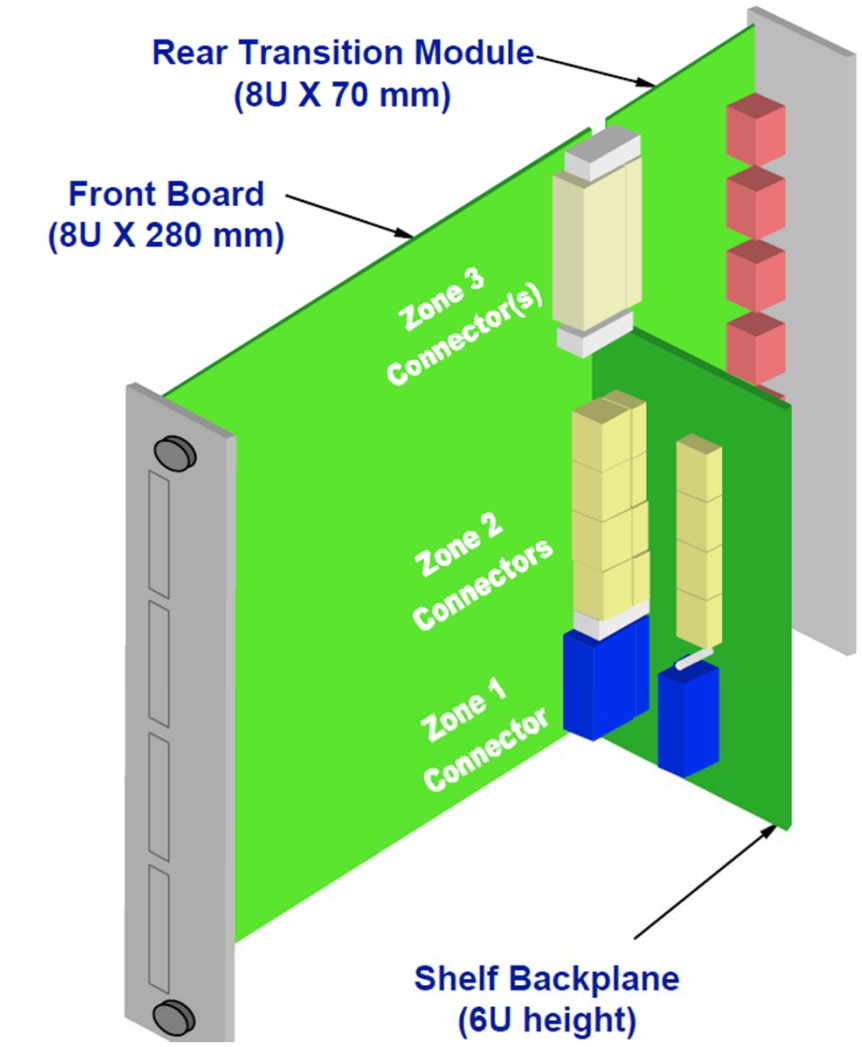
AdvancedTCA – Backplane Framework



Zone 2 Backplane Interfaces:

Base Interface
- 10/100/1000 BASE-T Ethernet
- Dual Star fabric topology

Fabric Interface
- SERDES (3.125 Gbps min)
- 1x, 2x, or 4x Channels
- Star or Mesh fabric topology
- Interoperability defined by subsidiary specifications

Synchronization Interface
- Three dedicated clock interfaces (8kHz, 19.44 MHz, user defined)
- Redundant buses
- MLVDS signaling

Update Channel
- Point to point connection between two slots

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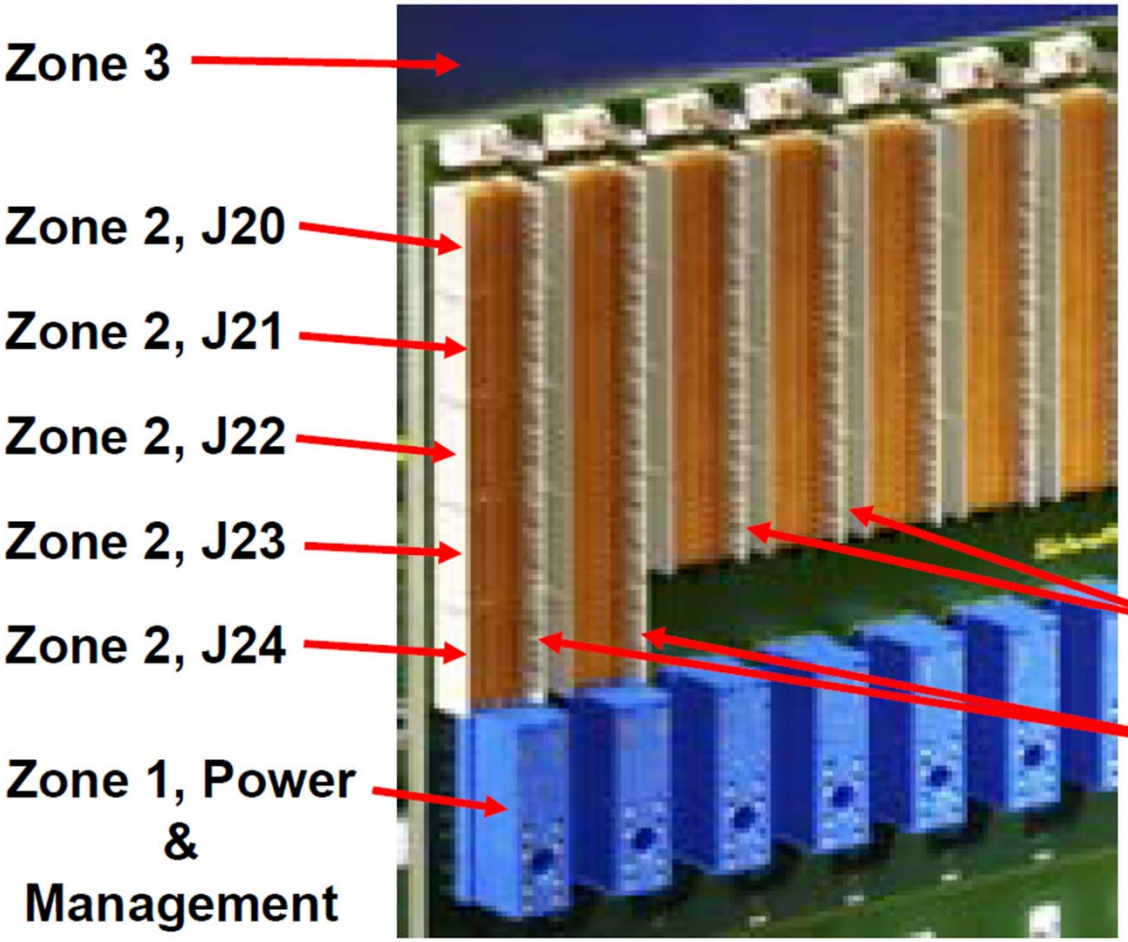
Backplane



- The connector population depends on the architecture of the Fabric
- This is a Full Mesh backplane

Node slots

Base Interface Hub slots

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ATCA Challenges

- Many suppliers of the different subcomponents
  - Decouples development schedules of blades and backplanes
  - All must operate seamlessly
- ATCA can't define an entire channel and only look at budgets at both ends
  - Blade from company "A" must work with company "B" backplane and receiver board from company "C"

KR and KR4 Status

- PICMG 3.1 subcommittee is working on the spec for use of 10GBASE-KR and 40GBASE-KR4 in ATCA
  - Performing simulations to define their channel model(s)
  - Use these models to derive requirements for their spec
    - Segment limits
    - Compliance tests

THANK YOU!