



2006 ATCA Summit plus NASA/Ames Visit

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ATCA Summit

- Note: 100% Telecom oriented summit
 - When questioned about analog electronics applications, answer “there are some interesting military applications”
 - Only known product is SAIC digitizer, which isn’t in public catalog
- Commercial Sponsors (a sample)
 - Intel, Motorola, AMD, ENEA, Kontron, freescale semiconductors, Alliance Systems, GE Fanuc
- Note: Cisco, Foundry not present at summit.
 - Consensus was that these vendors will never come onboard ATCA bandwagon.
 - ATCA seems to be more about arming the “barbarians at the gate” who wish to compete with the likes of Cisco, Foundry



ATCA Ecosystem

- Organizations
 - **All working together to create a standards-based ecosystem for telecom**
 - **CP-TA (Comm. Platform Trade Assoc.)**
 - www.cp-ta.org
 - Developing interoperability test requirements and detailed test procedures for ATCA, CGL, and SAF
 - **SCOPE Alliance**
 - www.scope-alliance.org
 - Developing reference architecture and base platform profiles
 - “Every vendor calculates 5-nines differently. This needs to be standardized.” – Tom Fryer (Motorola)
 - **SAF (Service Availability Forum)**
 - www.saforum.org
 - HPI, AIS, and SMI specifications for high availability
 - **OSDL (Open Source Development Lab)**
 - www.osdl.org
 - Develop definition of CGL (Carrier Grade Linux)



Motivation

- Why invest in an open standards telecom ecosystem?
 - **Lack of agility with proprietary verticals**
 - **Commoditization of basic functions (“everybody has a T1 line card”)**
 - Focus on service features, not platform development
 - **Triple Play making apps increasingly important and where vendors differentiate themselves**
 - Voice, Data, Video
 - Ex. video on demand, VOIP voicemail systems, network based storage
 - Plus wireless versions of all of the above...



Pictures

Advanced TCA Architecture



- Common platform for high-availability telecom & computing applications
- Advanced mezzanine card (AMC)



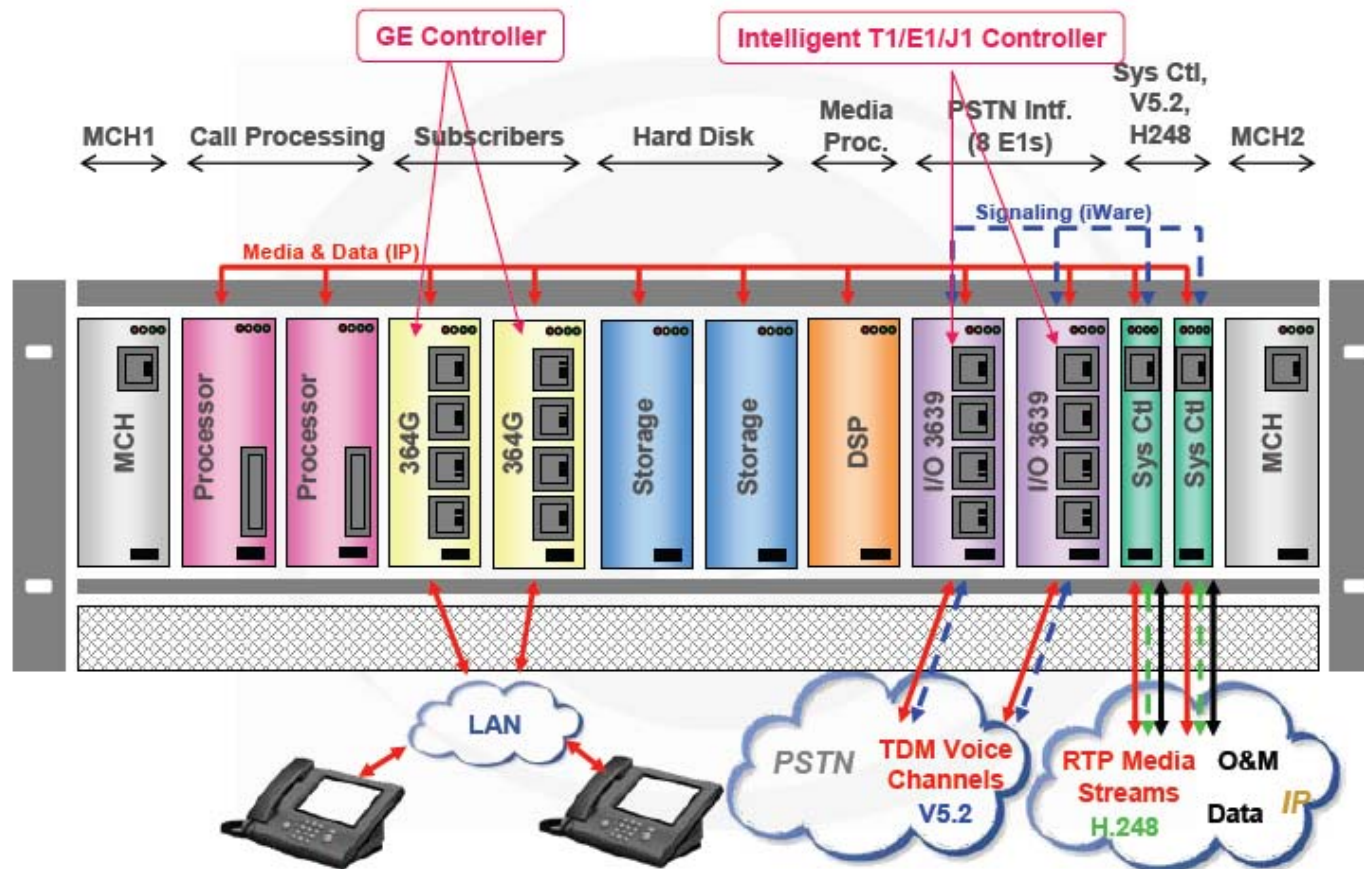
- μ TCA
 - AMC-based system
- ATCA / μ TCA Infrastructure
 - Management
 - Switching





microTCA/AMC example

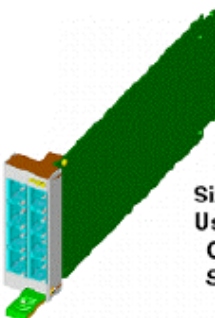
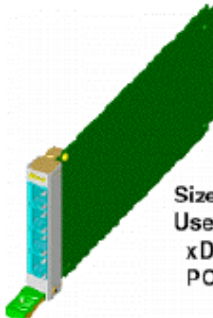
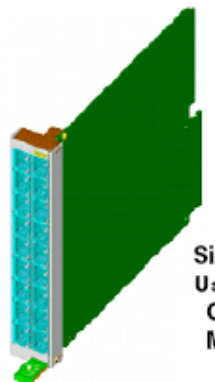
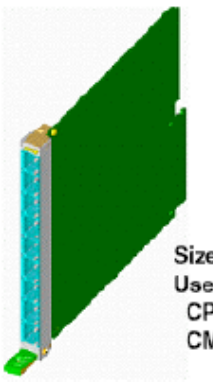
IP PBX Example





AMC Form Factors

AdvancedMC – Module Form Factors

	Full-Height (Full-Size)	Half-Height (Compact)
Single-Width (Single)	 <p>Size: 73.8 x 28.95 x 181.5 mm Uses: I/O (up to 8 RJ-45s / SFPs), CPUs, DSPs, NPs, RF, optics, Small disk drives</p>	 <p>Size: 73.8 x 13.88 x 181.5 mm Uses: I/O (up to 4 RJ-45s / SFPs), xDSL, POTS, T1, DS3, OC-3/12, PON, Wi-Fi, Wi-Max, FPGAs</p>
Double-Width (Double)	 <p>Size: 148.8 x 28.95 x 181.5 mm Uses: I/O (up to 18 RJ-45s), CPUs, DSPs, NPs, RF, optics, Medium disk drives, DVDs</p>	 <p>Size: 148.8 x 13.88 x 181.5 mm Uses: I/O (up to 9 RJ-45s), xDSL, CPUs, DSPs, NPs, RF, optics, CMTS, bulk RAM, Flash, PoE</p>

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(AMC.0 R1.0 ECN-002 proposed name changes)

Source: PICMG



Transition Boards, of course...

- Vadatech, Inc.
 - **All have IPMI and (carrier) hot swap**
 - **ATCA Carrier for VMEbus boards**
 - Maps VME P1/P2 to ATCA Zone 3 (user zone) as PCI Express
 - Maps VME P0 to ATCA Zone 2 Base ethernet (VITA 31.1 specification)
 - **ATCA Carrier for 2 PCIe modules**
 - Maps PCIe to PCI Express on ATCA Zone 3
 - **ATCA Carrier for 2 PCI-X modules**
 - Maps PCI-X to PCI Express on ATCA Zone 3
 - **ATCA Carrier for CompactPCI board**
 - Maps to PCI Express on ATCA Zone 3



NASA/Ames Visit

- Purpose: learn more about NASA's automated diagnosis work.
- Met with:
 - **Sriram Narasimhan** – lead architect of Livingstone2 and HyDE diagnosis engines
 - **Ann Patterson-Hine** – head of Systems Health Management Group – applies Livingstone2 and HyDE to real systems
- Turns out that Sriram is graduate of Vanderbilt's program, which is the other people I have been talking to about automated diagnosis



NASA/Ames Visit

- Livingstone2
 - **Discrete diagnosis engine**
 - Models only things like on/off, high/med/low.
 - Production quality tool, small runtime engine in C++
 - Considerable work done to parameterize and control combinatorial explosion
 - <http://opensource.arc.nasa.gov/project.jsp?id=6>
- HyDE
 - **Hybrid diagnosis engine**
 - Discrete diagnosis engine combined with
 - Continuous diagnosis engine
 - Can model continuous things like summed signals or flows
 - Not open source right now, but can probably be made available to us



NASA/Ames Visit

- Not integrated in closed loop with system
 - **Don't trust propositional logic engine with direct control of hardware, but...**
- Provides guidance and advice to astronauts and ground-based control.

- Possible ILC applications:
 - **Post-mortem trip diagnosis**
 - **Reduce MTTR for non-obvious faults by providing diagnosis candidates**