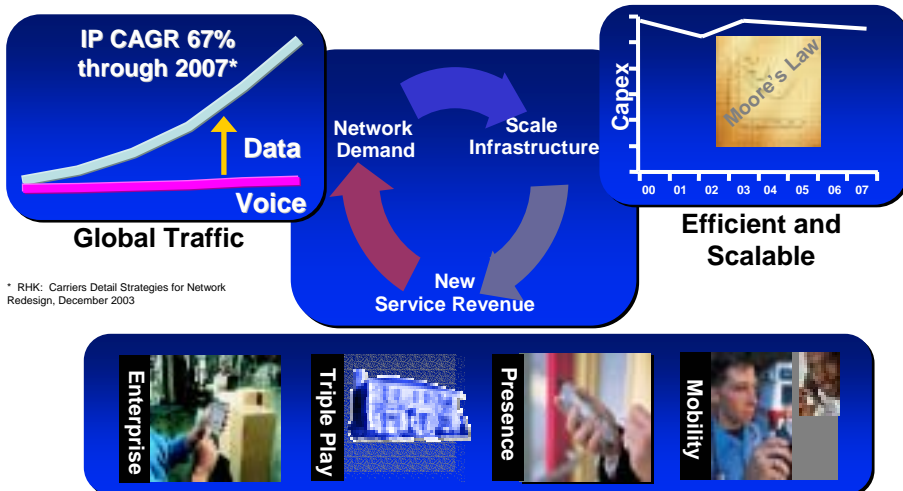


What is Your Modular Strategy?

Anthony Ambrose,
General Manager, Modular Platform
Programs, Intel Corporation



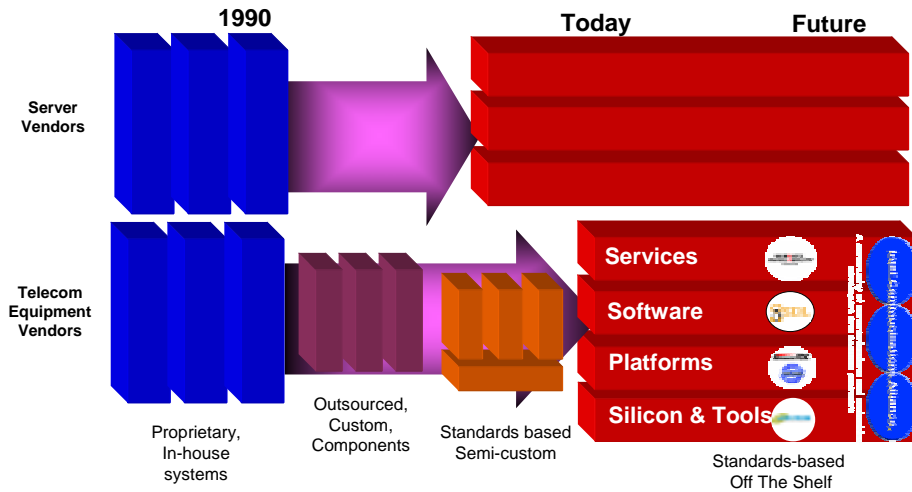
Macro Conditions driving Modularity



* RHK: Carriers Detail Strategies for Network Redesign, December 2003



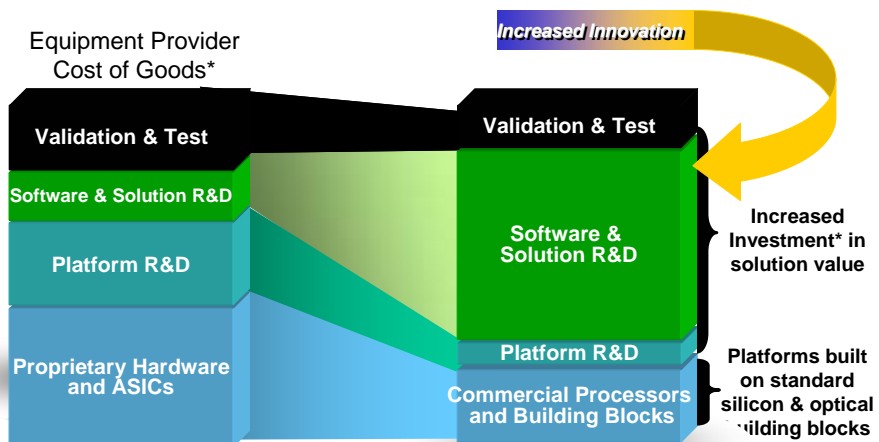
Transition to Modular Building Blocks



* Other names and brands may be claimed as the property of others

Telecom Equipment Manufacturers

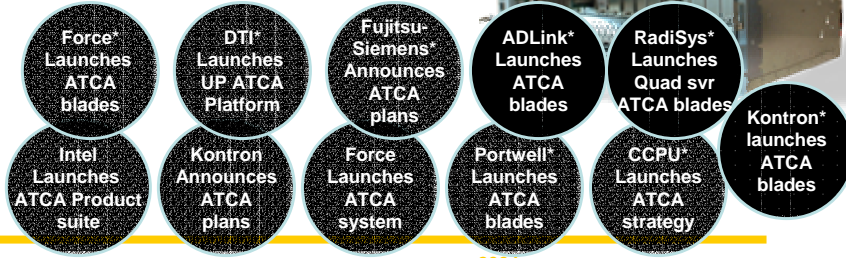
Will focus investment on Software and Solution



*Actual Investment will vary – conceptual chart based on Yankee Group report, 2/03: "ATCA Packet Processing Blades Value Proposition Study"

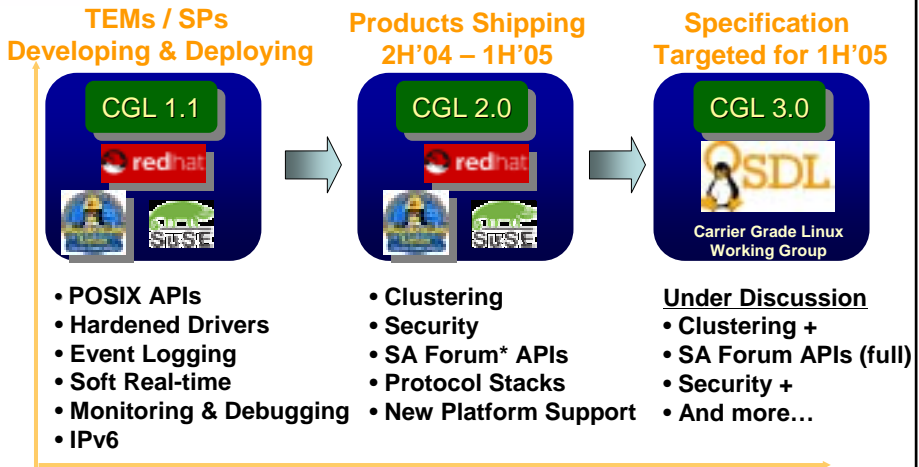
AdvancedTCA* Products

- 50+ Product demos at Supercomm 2004
- 7th Interoperability Workshop completed
- 33 Companies, 122 Products*



**Based on product roadmaps and stated product plans from ecosystem companies, which are subject to change. Ecosystem growth is a directional estimate. *Other brands and names may be claimed as the property of others.

Carrier Grade Linux* Momentum



CGL Momentum Continues to Grow

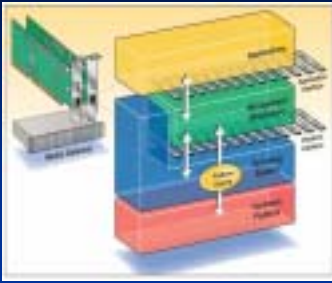
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Standard High Availability Interfaces

Service Availability Forum* Initiative

- Fostering an ecosystem to enable the use of commercial off-the-shelf building blocks in the creation of high availability network infrastructure products, systems and services

Key interfaces within telecom equipment stack



Hardware Platform Interface Specification

- Launched 10/7/02, New version released 5/3/04
- Separates the hardware from the management middleware and makes each independent of the other

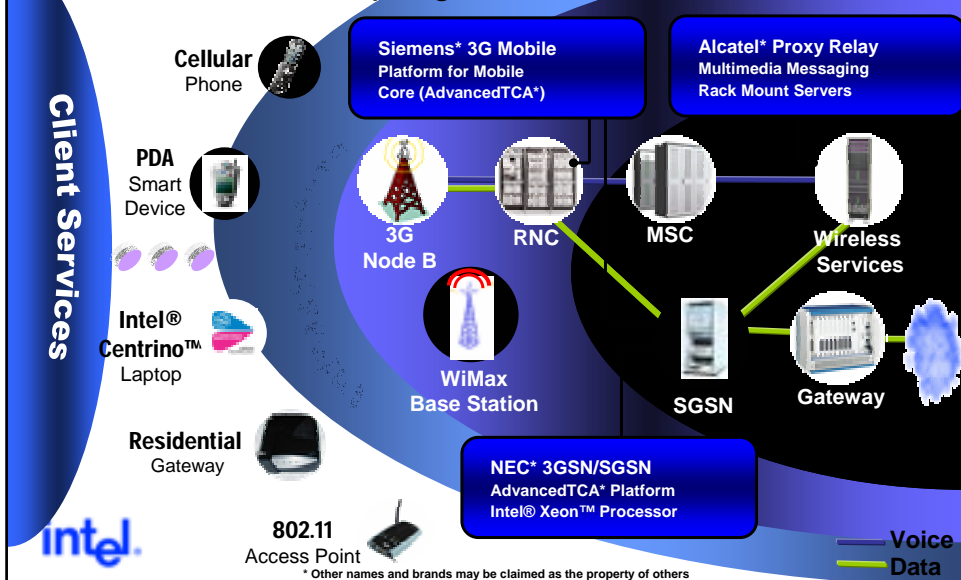
Application Interface Specification

- Launched 4/14/03
- Standardizes the interface between Service Availability Forum compliant High Availability middleware and service applications



* Other names and brands may be claimed as the property of others

TEMs Adopting Modular Platforms



* Other names and brands may be claimed as the property of others

Modularity: Economic benefits

Silicon

Platform Ecosystem

Equipment Providers

Service Providers

Faster service deployment

TTM⁽³⁾ 12-18 Months
HW Dev up to 40% reduction

Price/Performance⁽¹⁾ 3x
Power/Space⁽²⁾ 5x/12x

1. Tolly Group 1/03.
2. Intel / TEM 2002.
3. Yankee Group 2/03

shaping the future

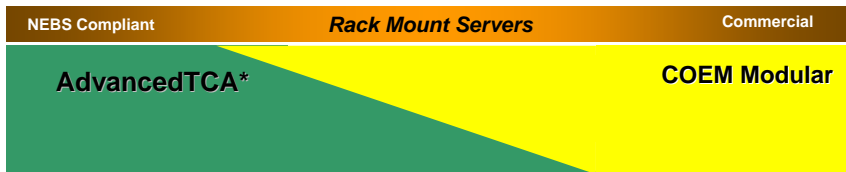
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Modular Platforms Positioning

Switch-Based Telco Network Infrastructure	Server based Telco Network Infrastructure	xSP Datacenter	Enterprise
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Increasing ISV Choice
Common OS & Mgmt Hooks



IO Optimized

Compute Optimized

- Optimized around I/O
- IO & Compute Capable
- Open Industry Standard
- Building blocks

- Server Optimized
- Compute Intensive
- Targeted Eco-system
- Integrated solutions

Infrastructure

Services

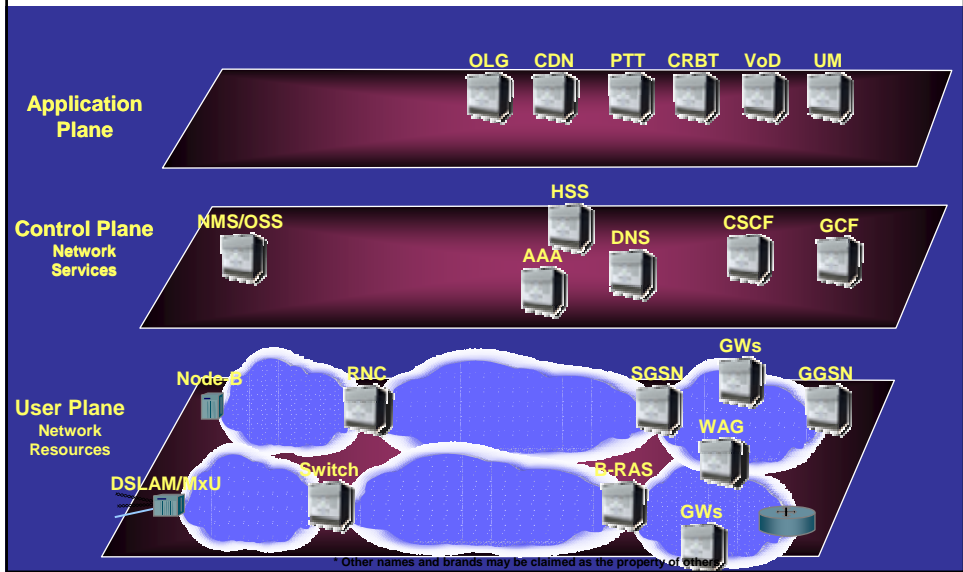
Data Center



Increasing Momentum for Open Standards

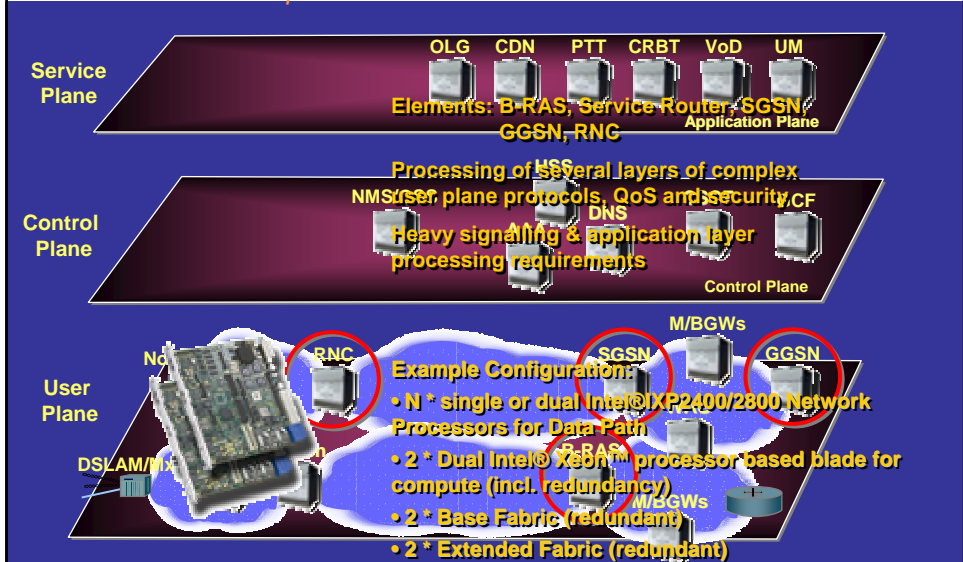
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AdvancedTCA* in the Next Generation Network



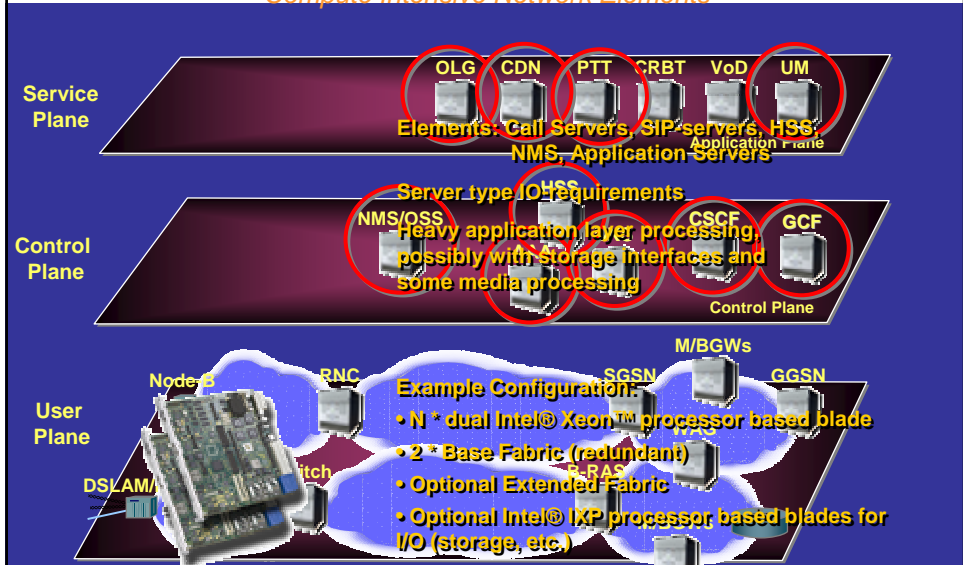
Modularity Enables Building Block Re-Use

Compute & I/O Intensive Network Elements

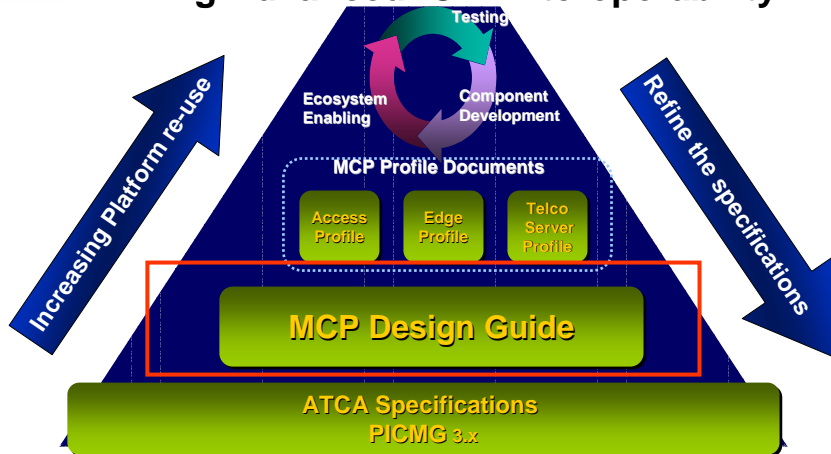


Modularity Enables Building Block Re-Use

Compute Intensive Network Elements



Driving Advanced TCA* Interoperability

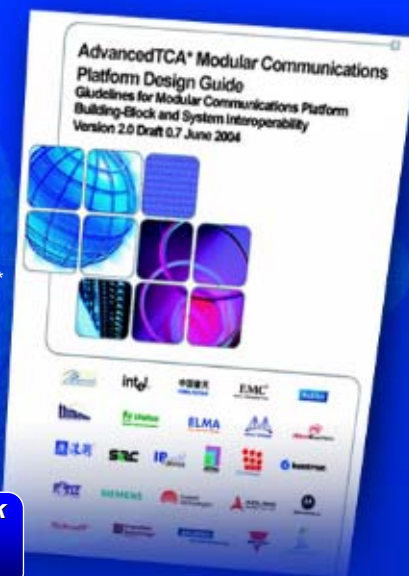


*Specification has flexibility, but many different approaches.
Industry & Intel define common, re-usable solutions.*

MCP Design Guide

- A tool to aid designers in developing common, interoperable communications platforms
- 2nd Edition
 - Narrowing of AdvancedTCA* variables to achieve interoperability
 - Overall architecture aligned AdvancedTCA* HW and MCP SW framework
 - Fabric & manageability guidance provided
- Authored by Intel, and reviewed by major OEMs and System Integrators

*Reducing industry fragmentation risk
Lowering Implementation Costs
across the supply chain*



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the future

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What's Next for Modular Comms Platforms?

- Modular Adoption Accelerating....
 - AdvancedTCA* product deployments will ramp through 2H04
 - TEM announcements through 2004
 - New segments targeted; AMC spec ratified
- Interoperability demanded....
 - 2nd Ed. AdvancedTCA* Design Guide Q304
 - AdvancedTCA* Interop Workshops
 - OSDL release of CGL spec 3.0
 - Programmable processing within MCP through NPF, IETF

*Maintaining interoperability is the key to
long term volume and cost targets*



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Advanced Mezzanine Card (AMC)



- **Next gen Mezzanine Standard**
 - Optimized for AdvancedTCA*
 - Robust system Management
 - Hot Swap Capability
 - Increased throughput
 - 21 duplex ports @ upto 12.5Gb/s each. Designed to enabled SPI-4.2
- **PICMG* Driven**
 - 95 Participating Companies
 - D0.9 (spec) posted
 - 14+ vendors investing
- **Product demos at Supercomm 2004**

AMC.1 PCI Express & AS	AMC.2 GbE	AMC.3 Storage
----------------------------------	---------------------	-------------------------

PICMG* AMC.0 AMC Base Specification

- Mechanical Form Factor
- Power
- Thermal envelope
- Connector definition
- IPMI System Management
- Data Transport Framework

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Modular Communications Platforms Common platform across multiple network elements

Intel® processors and components Industry Standards Carrier Grade Rack Mount Servers AdvancedTCA* platforms

Scalable, Innovative New Services

Standard Hardware
Standardized OS
Standardized API
Equipment Provider Solutions

Faster Time to Market

intel. **modular communications platforms for scalable, quick service delivery**

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Summary

- Modularity is here: The industry is rapidly adopting modular communications platforms based on Intel® processors and building blocks
- Modular Communications Platforms deliver value across the supply chain
- Opportunity: Move to Modular Communications Platforms for faster service delivery and platform cost reduction
 - Support AdvancedTCA* design guide and interoperability efforts
 - Continue to support standards efforts
 - Focus on delivery and interoperability across the supply chain



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**What's your
modular
strategy?**



Intel® Communications Alliance

A community of communications and embedded
developers and solution providers

intel.

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