

# Using SS7 & SIGTRAN to Solve Today's Network Challenges

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# Speakers

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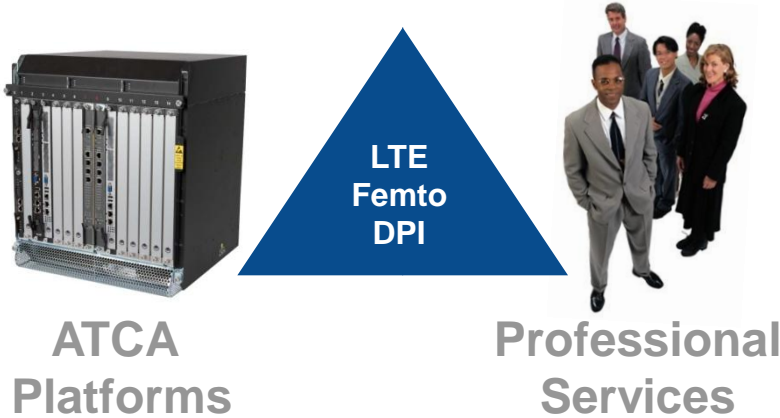
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Senior Solutions Architect  
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# Continuous Computing Overview



Protocol Software



## Over 150 Customers Worldwide



# Interphase Overview

## #1 Brand of SS7 Boards

**Products/  
Solutions**

Signaling/Media  
LTE/WiMAX  
Interworking  
Security  
Packet Processing

**Professional  
Services**

Engineering Design Services  
Electronics Contract  
Manufacturing Services



Communications

Aerospace-Defense

Enterprise

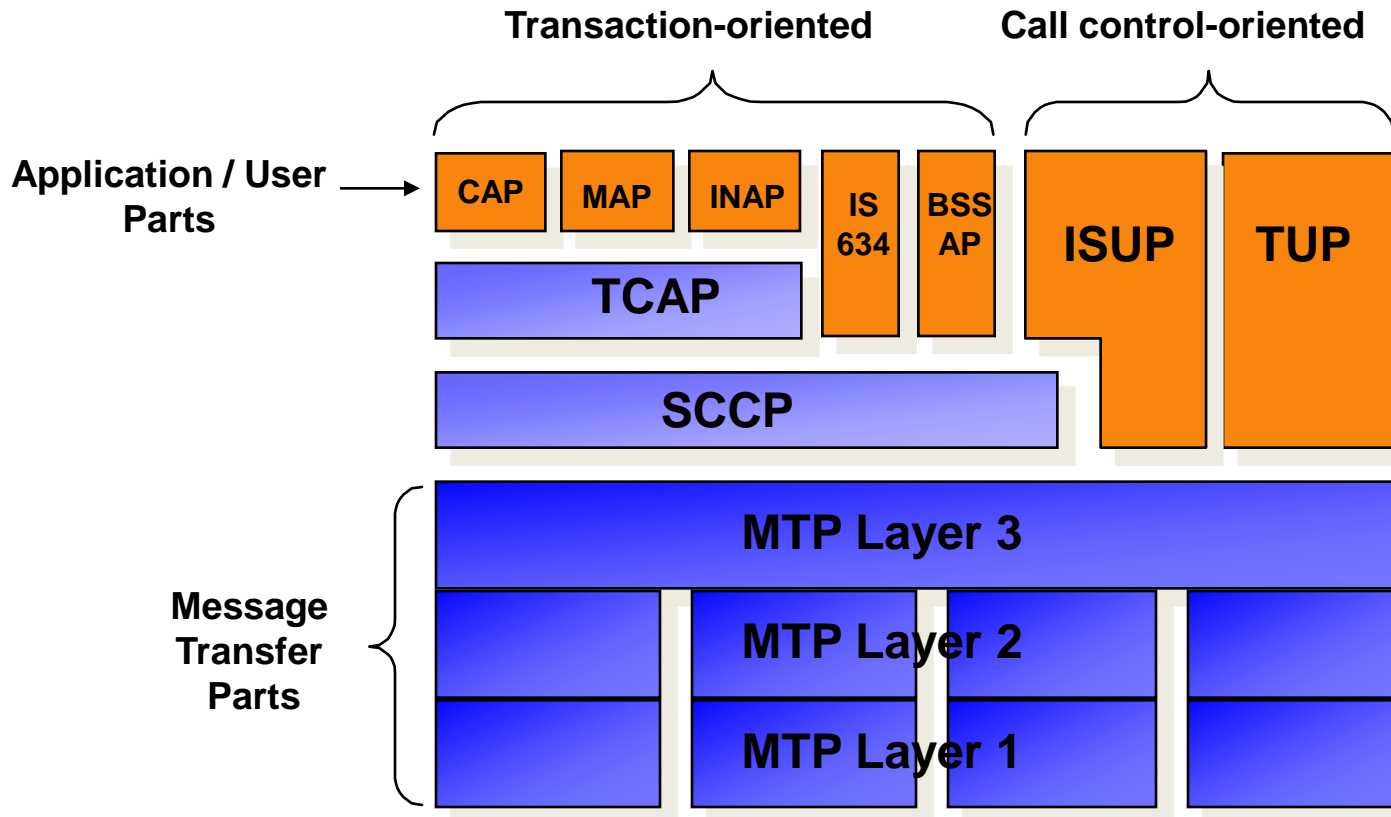
**Trusted by Top Companies**



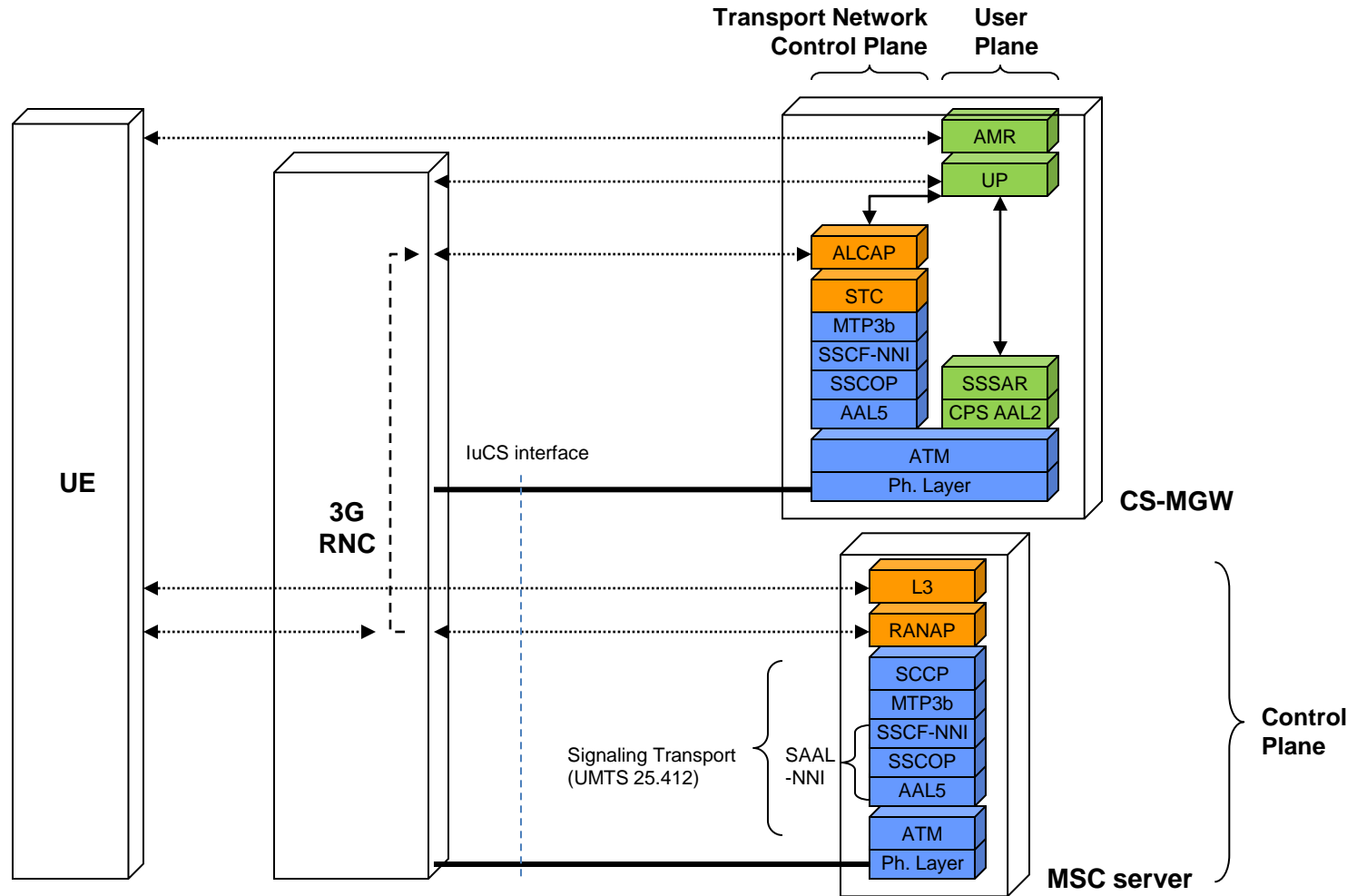
# Agenda

- Technology and Market Overview
- Applications Driving the Market
- Building SS7 / SIGTRAN Solutions

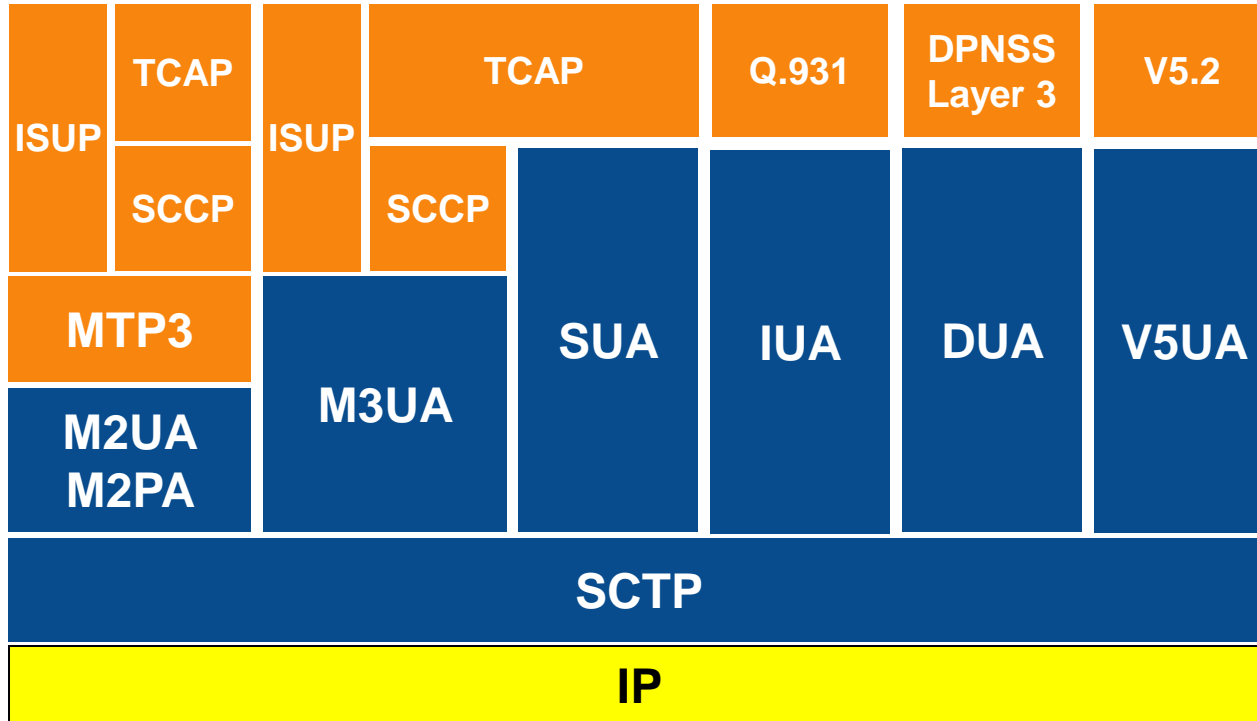
# SS7 Protocols – Narrowband



# Broadband SS7 in 3G RAN

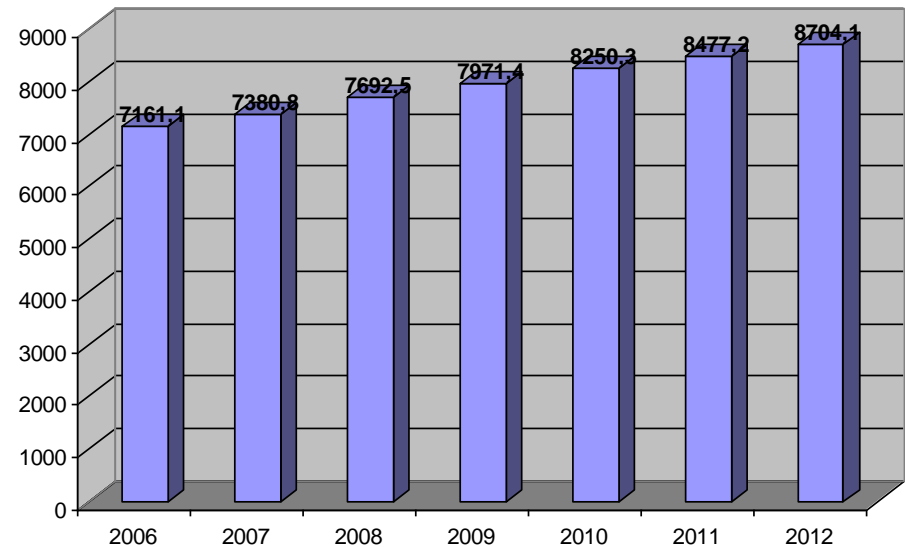


# SIGTRAN Software



# Evolution of SS7 Infrastructure (1)

- SS7 infrastructure market is still growing (\$8.5B by 2012)
  - CAGR of 3.6% throughout period
  - Expansion in China, India, MEA
  - Flat in NA and Europe
- SS7 infrastructure includes the Networks Elements deployed by Service Providers
  - 2G/3G MSCs, HLRs and SMSCs
  - Wireline SSPs
  - STPs
  - SS7 Gateways
  - SS7 & Application Platforms

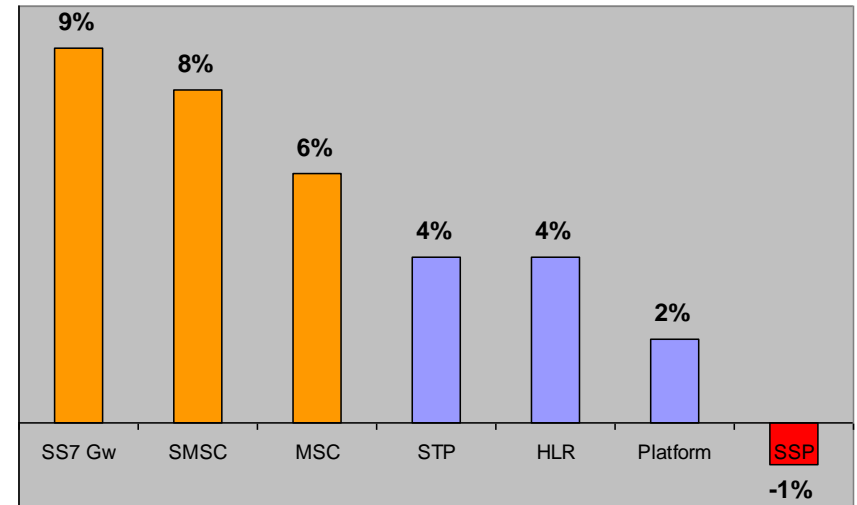


Global Market of SS7 Network Elements (\$B)

(Source: VDC, April 2008)

# Evolution of SS7 Infrastructure (2)

- Top 3 growing SS7 elements
  - Signaling Gateways
  - SMS Centers
  - MSCs
- Main drivers
  - Migration to IP
  - Signaling Gateways enable Carriers to add NG elements into their legacy SS7 networks
  - Continuing expansion of SMS drives demand for SMSC and MSC



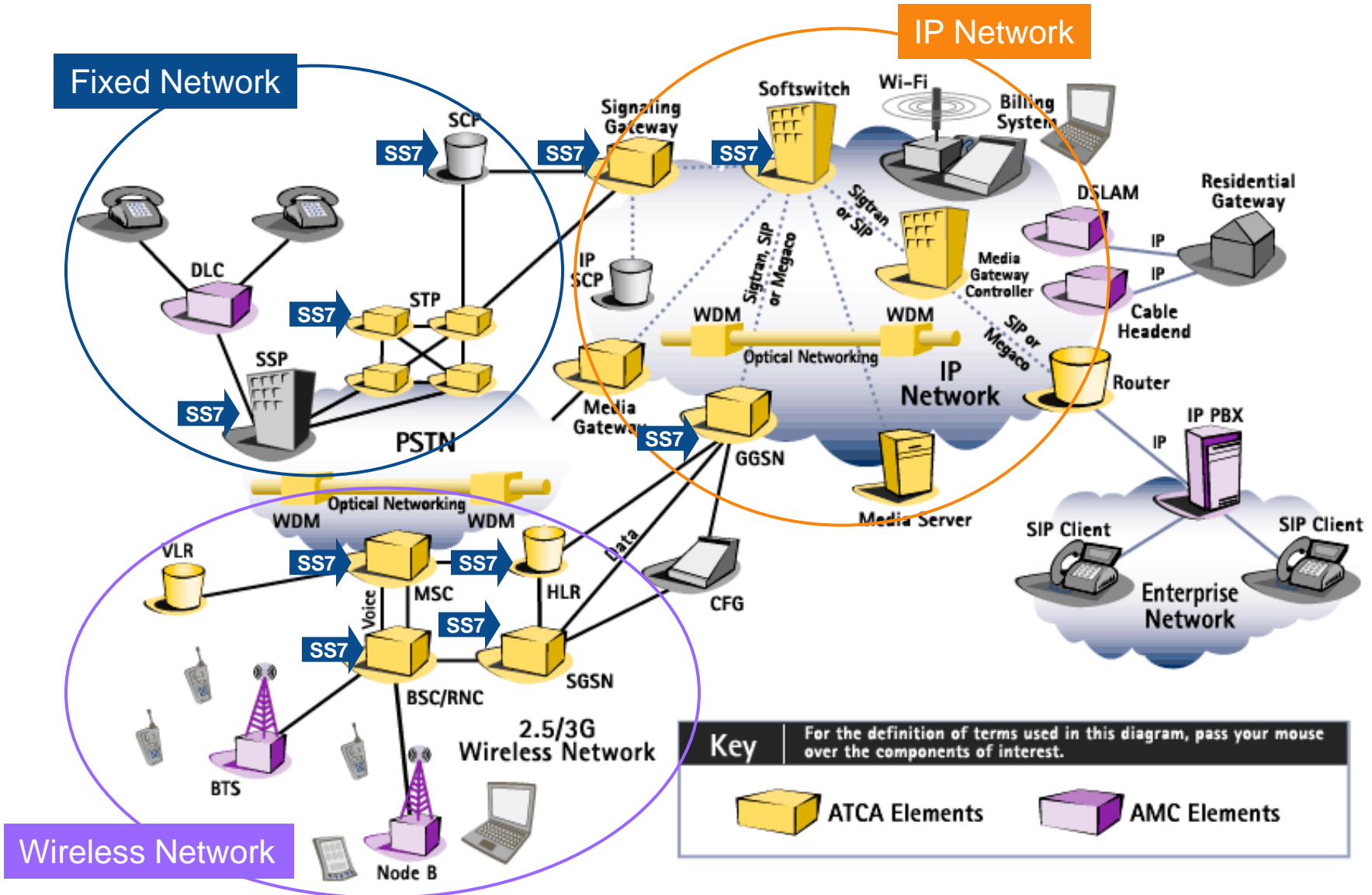
2006-2012 SS7 Network Elements Growth Rates

(Source: VDC, April 2008)

# Why SS7 / SIGTRAN?

- Service Continuity
  - New applications & networks need connectivity to existing deployed circuit switched networks
- Amortized & Proven Technology
  - SS7 network backbones still deployed in developing regions
- Wireless Subscriber Growth
  - 2G / 3G networks largely deployed on SS7 backbones
- Cost Reduction
  - Leveraging IP to reduce network OPEX and CAPEX

# Telecom Networks & SS7 Applications



# Scenarios for SIGTRAN Adoption

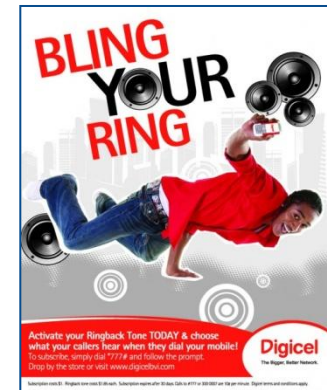
- New Generation of Traditional SS7 Equipment
  - Wireline and 2G Wireless Networks
  - Upgrades and new deployments
  - (internal) IP-based architecture
    - STP, SSP (Class 4/5, MSC), SCP, Service Node
  - (external) IP environment
    - STP, SCP, HLR, SMS-C, SGSN
- Equipment for IP Networks
  - Wireline and Wireless (2G and 3G)
  - New deployments
  - NG Networks
    - IP MG, Softswitch
  - 3G Wireless Networks
    - CS-MGW, MSC-Server, IM-MGW, MGCF

# Key Growth Applications

- Value Added Services (VAS)
  - SMS / MMS, Location, Presence, Ringtones, etc.
- Rebirth of IP Multimedia Subsystem (IMS)
  - IMS critical for Next Gen Mobile
  - Service Continuity
  - Voice over LTE

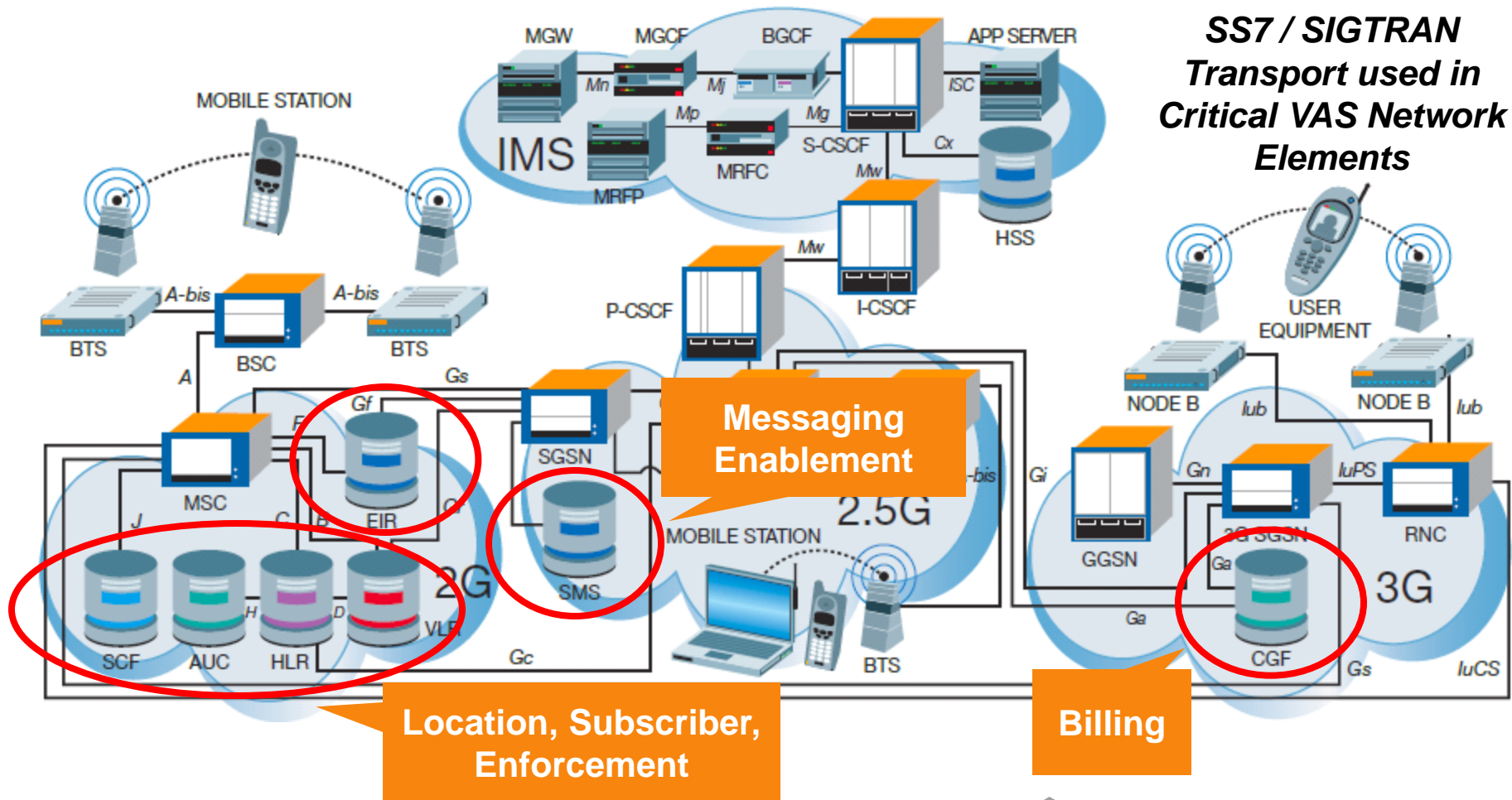
# The VAS Opportunity

- Mobile messaging = \$102B market today
  - SMS, MMS, E-Mail, IM
  - Other VAS: gaming, music, TV, navigation, search, marketing, stock trading, payment
- Source of ARPU growth in dev markets
  - China MVAS over \$22BM in 2009\*
  - India MVAS over \$5B in 2009 – 2010\*
- Low investment with high returns
  - Leans on existing network infrastructure
  - SS7 / SIGTRAN is the tap for VAS providers



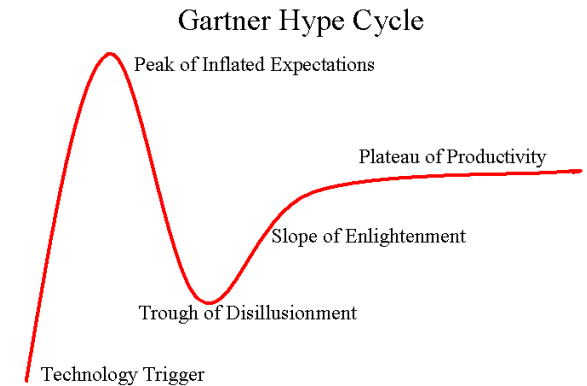
\*Sources:  
 Research & Research (2010),  
 IResearch (2009)

# Network Elements Used in VAS

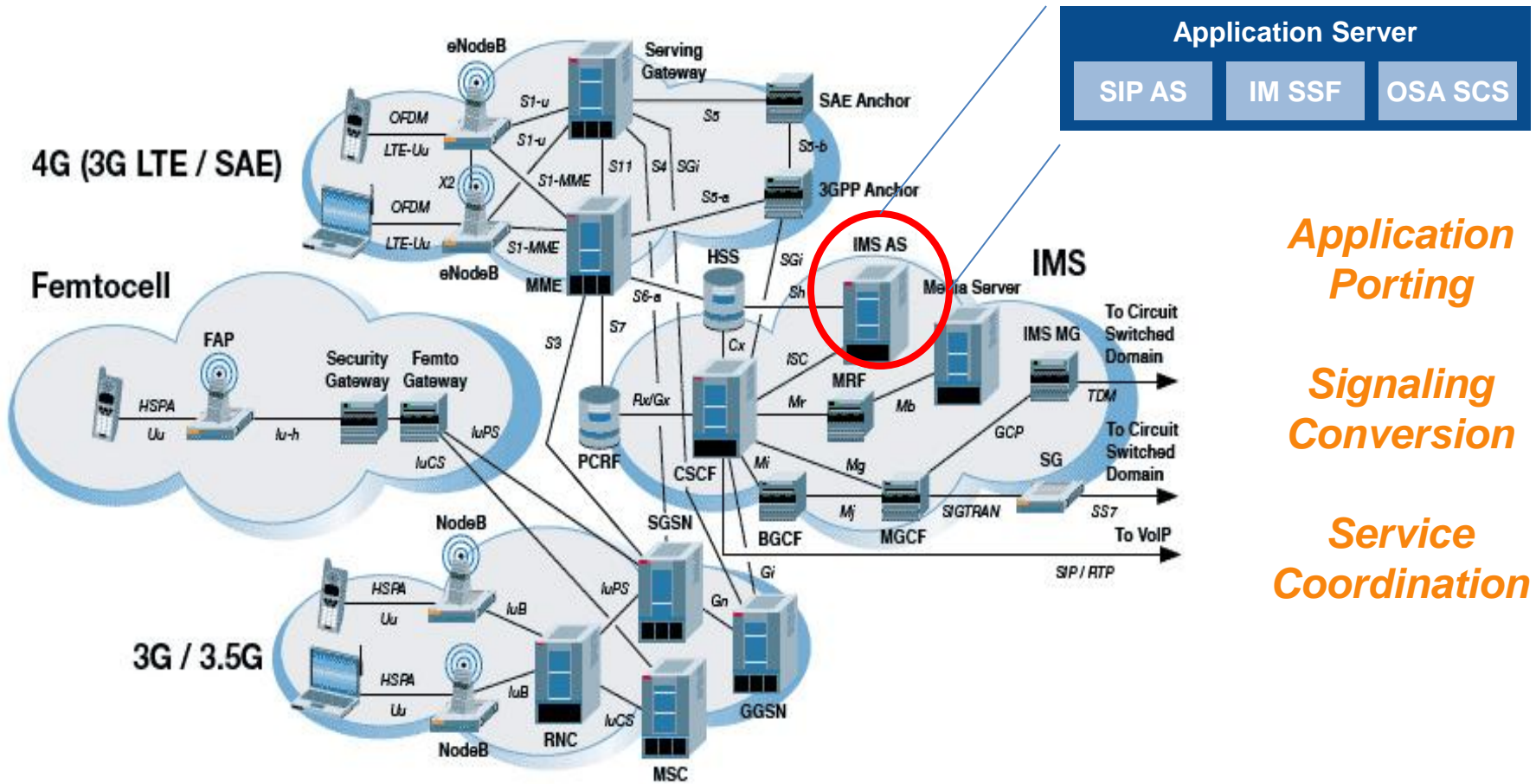


# The IMS Opportunity

- IMS Suffered the Hype Cycle
  - A concept without an application
  - Next generation mobile is the application
- Service Continuity over NGNM
  - VAS / IN porting to new mobile core / RAN
- LTE OneVoice Initiative
  - Specific IMS “profile” for delivering VoLTE
    - GSMA -endorsed
  - Support from almost every major operator worldwide
    - 3 Group, AT&T, Bell Canada, China Mobile, NTTDoCoMo, TeliaSonera, Verizon, Vodafone ...



# IMS Service Layer for the EPC



# SS7 / SIGTRAN Offerings

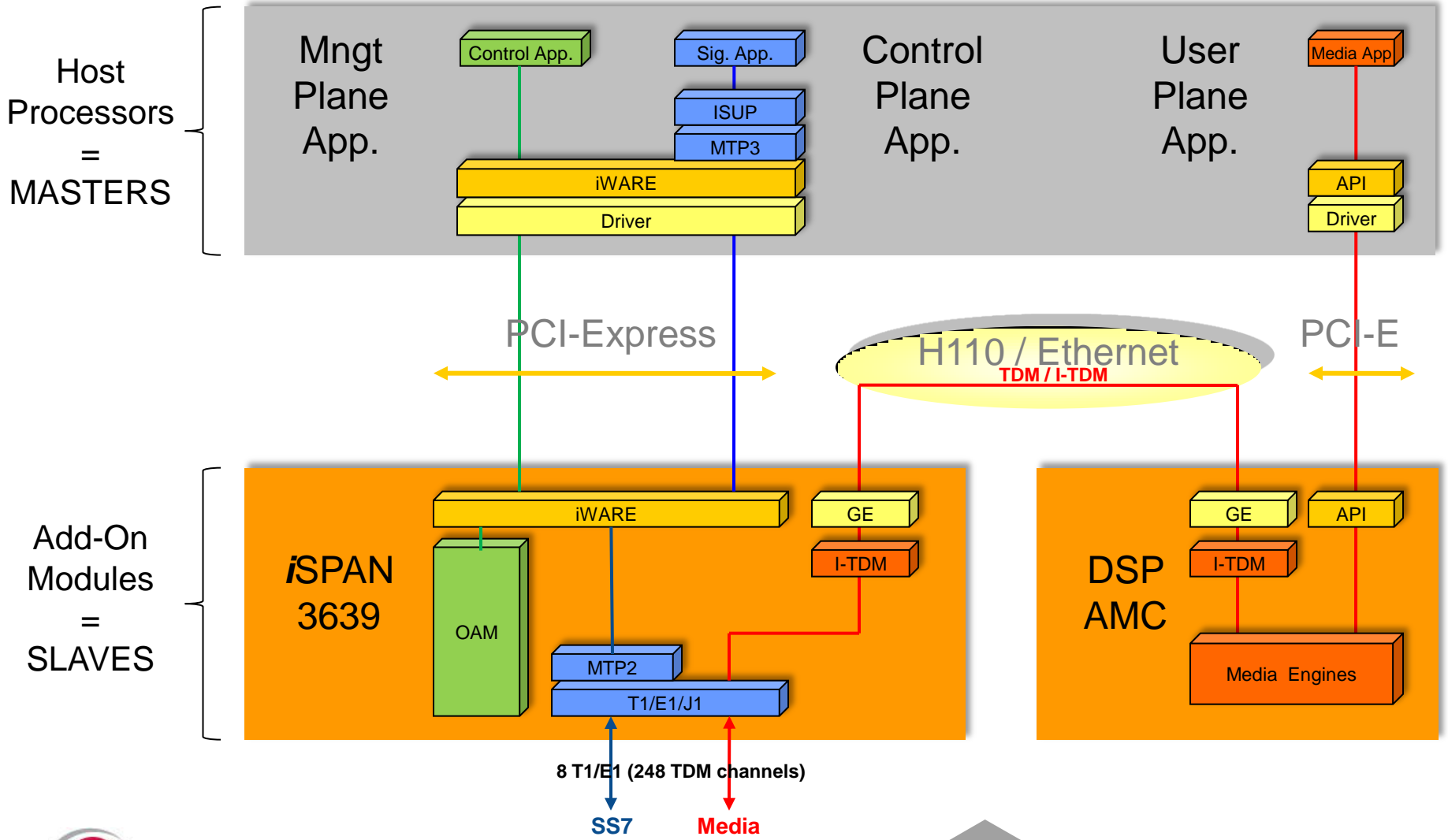
- Solutions for the low protocol layers
  - SS7 Boards
    - Hardware + MTP1-2 protocols
  - SIGTRAN Protocol Stacks
    - SCTP + Adaptation layers => to build Signaling Gateways
  - Signaling Gateways
    - SS7 boards + SIGTRAN protocols + NIF + HA and management, in a fully-packaged appliance
- Solutions for the upper layers (for SS7 and SIGTRAN)
  - Protocol Stacks
    - MTP3 to User/Application Parts (ISUP, MAP, INAP, etc) => to build endpoints
  - SS7 Board+Stack packages
    - Pre-integrated solutions
  - Signaling Servers
    - Front-end units, including boards, protocols & interface to back-end systems

# Trends in SS7 Technology Demand

- Off-The-Shelf SS7 solutions
  - Especially from Tier 1 TEMs
  - With higher level of integration
- PCI-Express interface
  - But demand for PCI/PCI-X solutions still strong
- Low-Profile add-on cards
  - Market split between LP and FH
  - Technical challenge for high-density cards
- Solutions for ATCA/ $\mu$ TCA systems (telco apps)
  - SS7 AdvancedMC modules (AMC)
  - Demand for IP-based Host/Module interface
- Higher T1/E1 port density
  - 2 ports  $\rightarrow$  4 ports  $\rightarrow$  now 8 ports per SS7 module
- Mixed Media Interface & SS7 solutions
  - e.g., with I-TDM (ATCA systems) or raw data mode (HMP on rack-mount servers)

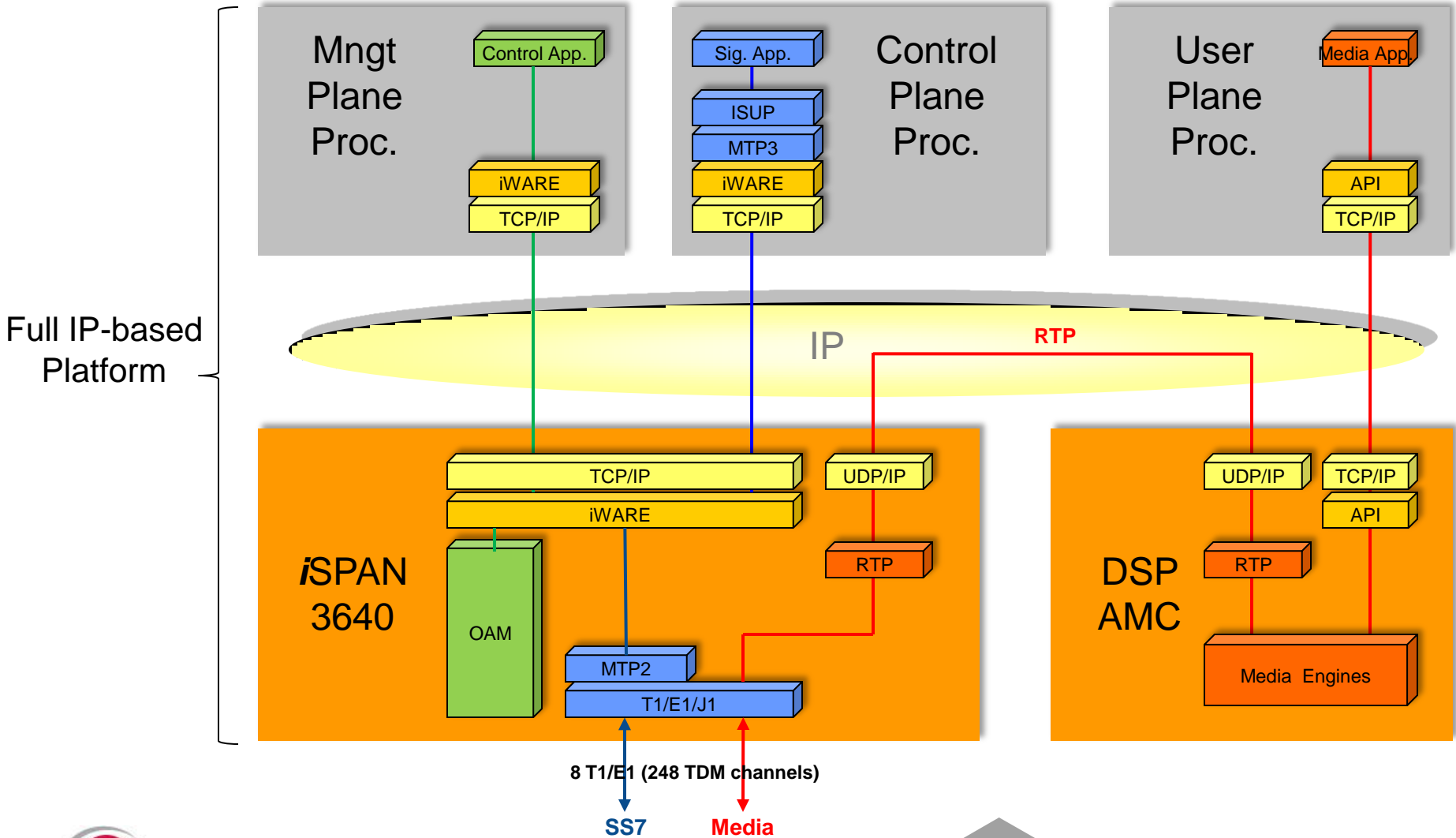
# System Architecture with Add-On Modules

Connectivity Solutions



# System Architecture with Interworking AMC

Interworking Solutions



# Interphase *i*SPAN T1/E1/J1 SS7 Platforms

| Form Factor | Ports | Processor        | Media Process. (EC, NR) | Product Name ( <i>i</i> SPAN) | Msg/s (each dir.) | LSL / HSL | Target Application     |
|-------------|-------|------------------|-------------------------|-------------------------------|-------------------|-----------|------------------------|
| PMC         | 2 / 4 | PQII (8264A)     | No                      | <b>4538/39</b>                | ~10k              | 124 / 4   | Signaling              |
| PCI         | 4     | PQII (8264A)     | No                      | <b>5539F</b>                  | ~10k              | 124 / 4   | Signaling              |
| PCI-X       | 4     | PQII Hip7 (8280) | No                      | <b>5539</b>                   | ~20k              | 124 / 4   | Signaling and/or Media |
| PCIe        | 4 / 8 | PQIII (8560)     | No                      | <b>5639</b>                   | ~45k              | 124 / 8   | Signaling and/or Media |
| PCIe        | 8     | PQIII (8560)     | Yes                     | <b>5639E</b>                  | NA                | NA        | Media                  |
| PCIe LP     | 4     | PQIII (8560)     | No                      | <b>5639L</b>                  | ~45k              | 124 / 4   | Signaling and/or Media |
| AMC         | 4 / 8 | PQIII (8560)     | No                      | <b>3639</b>                   | ~45k              | 124 / 8   | Signaling and/or Media |
| AMC         | 8     | PQIII-QE (8568)  | No                      | <b>3640</b>                   | ~70k              | 248 / 8   | Signaling              |



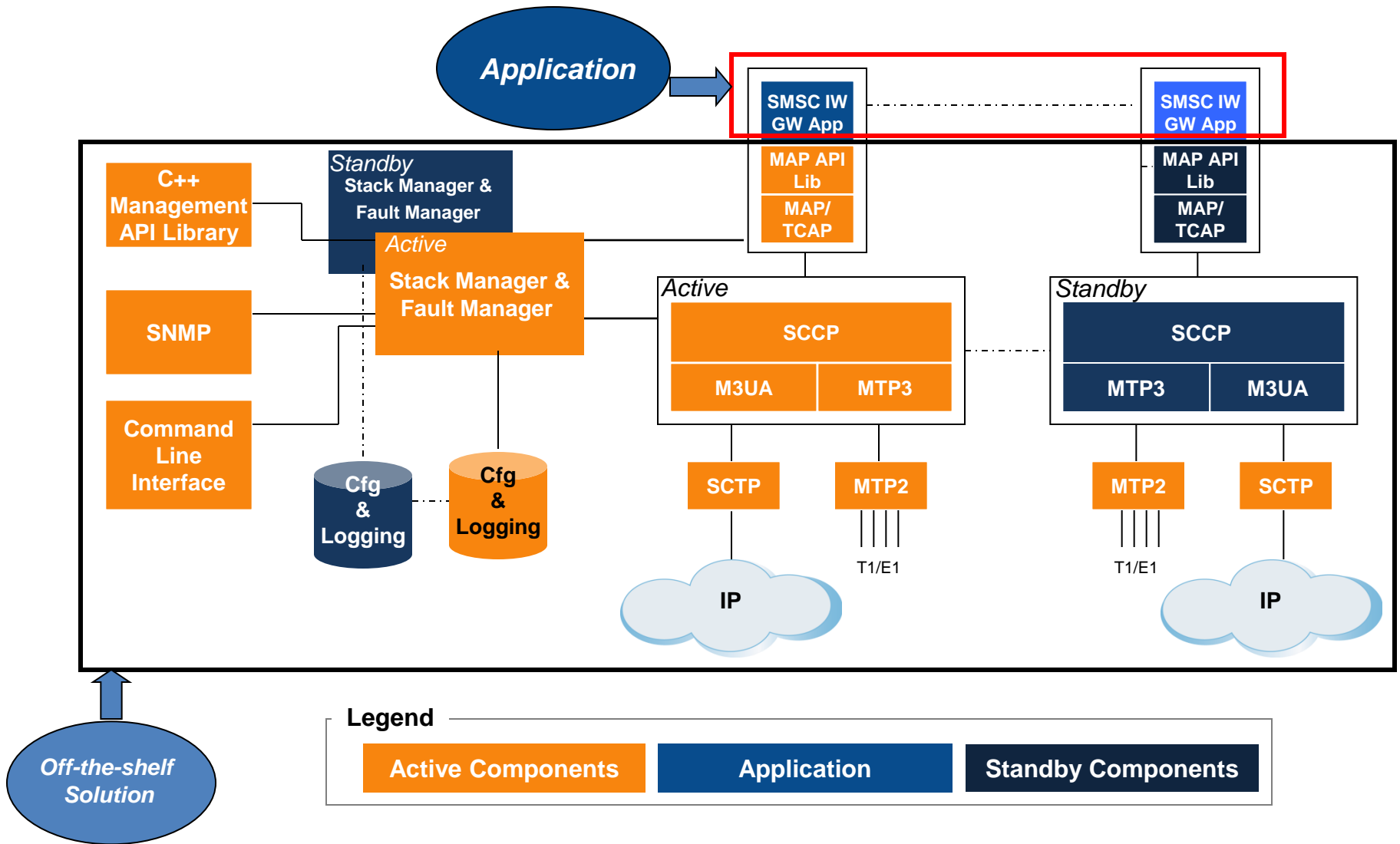
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**iWARE SS7 Software  
Development Suite**



# Application-Ready Solution Architecture



# Trillium Signaling Solutions



**Deployment Proven C-Source Code**



**Integrated Application-Ready Binaries**

**All Generations of Wireless, SS7 / SIGTRAN, VoIP / IMS & Legacy**

# Summary

- Don't Sleep on SS7 / SIGTRAN Technologies
  - Growth potential in multiple markets
- SS7 / SIGTRAN Critical to Next Gen Networks
  - VAS, IMS, 4G ...
- Leverage Integrated Modules and Software
  - Accelerated time-to-market and cost savings

# Questions & Discussion

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