



The ATM Forum

ATM Forum Update



Marlis Humphrey, Chairman of the Board of Directors
The ATM Forum

Work in Progress : AB V2.4
24 Jul 2003





Agenda

- 1. About The ATM Forum**
 - 2. New Trends for 2003-2005 & The ATM/Broadband Roadmap**
 - 3. Broadband Exchange**
 - 4. Operator Action Council**
 - 5. Working Together**
 - 6. Appendix**
- 

About the ATM Forum

- **Mission**

The ATM Forum is an international non-profit organization formed with the objective of accelerating the use of ATM (Asynchronous Transfer Mode) products and services through a rapid convergence of interoperability specifications. The Forum promotes industry cooperation and awareness.

- **Accomplishments**

Since its formation in 1991, The ATM Forum has generated very strong interest within the communications industry and produced 200 specifications (11 this past year) (see [Approved Specifications](#)).

- Anchorage Accord still in effect
- Infrastructure work mostly done; interworking with other technologies now a focus
- Co-Location Partners to develop synergy
- Interaction with: ITU-T SG 2, 11, 13, 15, 17; ISO/IEC JTC 1; DSL Forum; IETF; T1; ETSI; MPLS-F; BCDF; FSAN

- **Structure & Key Activities**

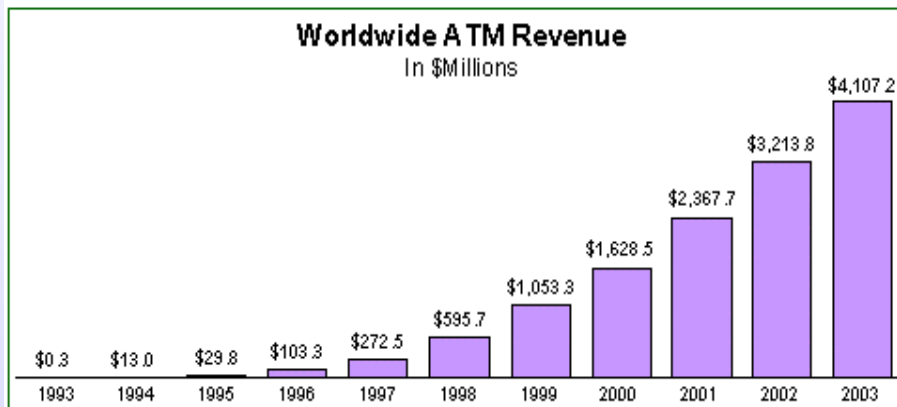
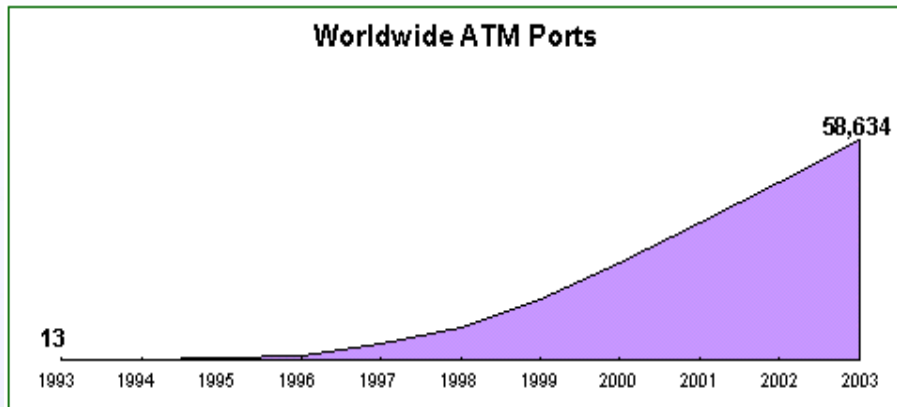
The ATM Forum consists of a worldwide Technical Committee, market awareness programs such as Broadband Exchange, and a membership group for ATM end-users. The ATM Forum is supported by offices in San Francisco, London, and Tokyo.



ATM Market View

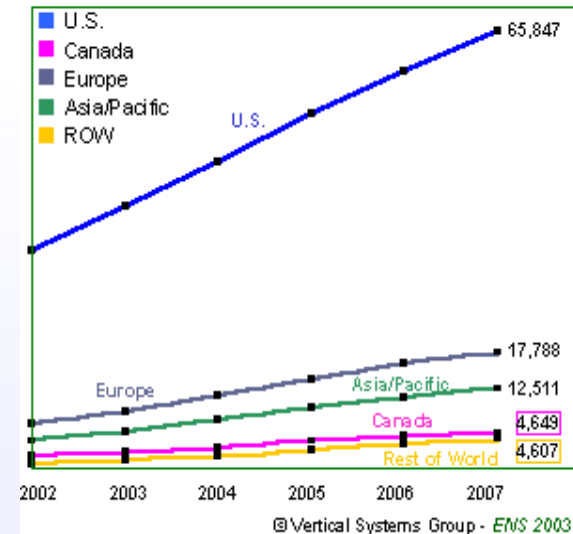
The Tip of the Iceberg: ATM Public UNI Services Only

(to 2003)

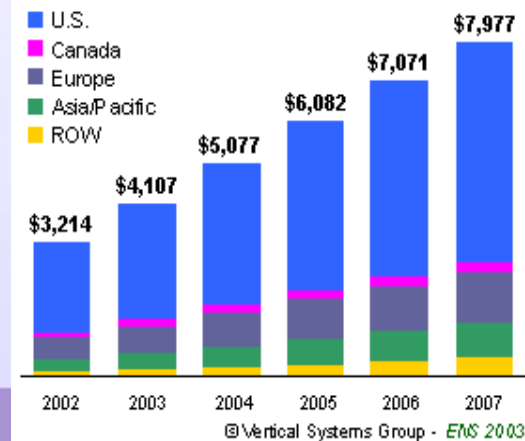


(to 2007)

Worldwide ATM Ports by Region



Worldwide ATM Revenue by Region
In \$Millions



New Technical Work Items Under Consideration

- **CS (Control Signalling):**
 - PNNI (Signalling and Routing) for (e.g. Optical) Transport Networks
 - Proxy Server Enhancements for Vendor/Service Provider Unique services
 - PNNI for OTN/GMPLS Interworking?
 - RSVP to ATM Signalling Interworking
 - SIP to ATM Signalling Interworking
 - Signalling & Routing Support of ATM-MPLS Service Interworking
 - IP/ATM Interworking Signalling Support
 - Other as Network Operators Identify New Needs including Extensions &
 - Maintenance as Needed
- **AIC (ATM IP Collaboration):**
 - Neo IPoA (IPv4/IPv6 Address Support for IP over ATM (new version) w/o Address Translations)
 - SIP ATM SVC Mechanism Interworking
 - IP/ATM Interworking?
 - Metro Ethernet Support
 - RSVP to ATM Signalling Interworking (T.B.D.)
- **VMOA (Voice & Multimedia over ATM):**
 - VoMPLS to VoATM (AAL-1 and AAL-2) Interworking
 - NGNA Phase 2
 - MPEG4 (and/or Other Video Codecs) over ATM
 - RSVP to ATM Signalling Interworking
 - SIP to ATM Signalling Interworking?
 - NGNA Security (with SEC)
- **Potential Collaboration:**
 - Next Generation Networks (NGN) with ETSI (TIPHON and SPAN); MSF,
 - Interworking Voice over ATM with Voice over MPLS (MPLS Forum)
 - Interworking VoIP with VoATM (IETF, MSF, IPCC?)
 - IETF SIP for voice and video
 - IMTC for video
- **NM:**
 - NM for ATM/MPLS ATM/IP Interworking
 - Mechanisms for FSAN, DSLF
 - ILMI for MPLS
 - Services Management (including M5)
 - SLA Support (definition, monitoring and assurance) (I.160)

For A Comprehensive View see [Appendix](#)

For Current Work Items see [Spec Watch](#)

Contact rltownsend@lucent.com for More Information



Market Awareness Plans

- 4 BBX (Broadband Exchange) programs & white papers
 - **Wireless – July 2003**
 - **Converged Networks – October 2003**
 - **Metro Ethernet – +/- January 2004**
 - **NGN – +/- April 2004**
- 2 other collateral pieces
 - **ATM story on Service Provider OPEX or similar (tbc)**
 - **Other ATM or packet positioning white paper (tbc)**
 - **“Did You Know Series”, i.e. short papers on niche topics, e.g. AAL2 voice, AIC work on content delivery architectures, etc.**
- International Conference on Communication and Broadband Networking (ICBN '04):
 - **Jointly organized 3-day conference & Asian Interoperability Demo focusing on communication and Networking technologies that facilitate Access, Move and Storage of network information and content**
 - **Dates: TBA (February or March 2004 (Q3))**
 - **Potential co-organizers & supporters: ITFE (Korea Institute of Information and Telecommunication Facilities), MPLS FR Alliance, etc.**
- Next Generation Network Round Table Conference
 - **Jointly organized 2-day conference focusing on Next Generation Network**
 - **Dates: TBA (May or June 2004 (Q4))**
 - **Potential co-organizers & supporters: TTC(Japan), TTA (Korea) , MPLS FR Alliance, ARIB, ITU, etc.**

Contact mary@atmforum.com for More Information





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2. **New Trends for 2003-2005 & The ATM/Broadband Roadmap**
3. Broadband Exchange
4. Operator Action Council
5. Working Together
6. Appendix



Roadmap Status & Horizon Scan

- **Updated Window to 2003 – 2005**
- **Major Shifts from Last Year**
 - Slowing
 - Industry Innovation & Forum/SDO Contributions
 - OC-768
 - Advancing/Launching
 - MPLS-ATM-MPLS Interworking
 - IPv4/IPv6 Native Addressing for ATM
 - SIP Interworking
 - MetroEthernet Interworking Roadmap Review
 - New
 - Ubiquitous Computing / Pervasive Computing now within the Window



About the Roadmap

- **Roadmap Mechanism**

1. BBX (BroadBand eXchange) Program



- **Roadmap Elements**

1. Identify/Define the *Emerging Opportunities* for Broadband/ATM

1. Market Opportunity
2. Application Definition
3. Reference Diagrams
4. Problems to Be Solved (Industry Gaps)

2. Identify & Sequence the *Functional or Technical elements* required in each area

- Evolve to level of detail relevant to the Working Groups

3. Identify Industry *Terms of Reference (TOR)* or *Key Documents*

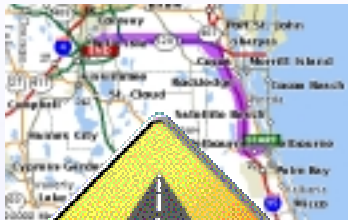
4. Identify Relevant *Organizations*

1. Understanding Requirements
2. Developing Shared Workplans



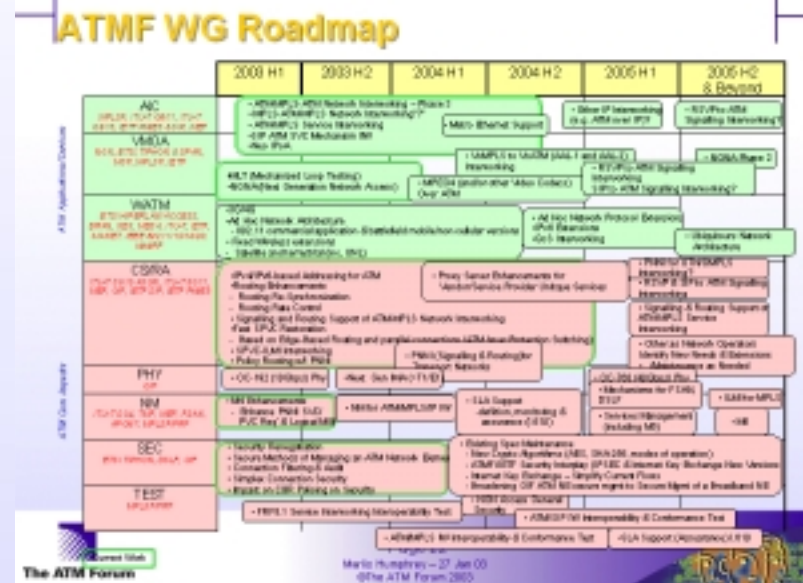
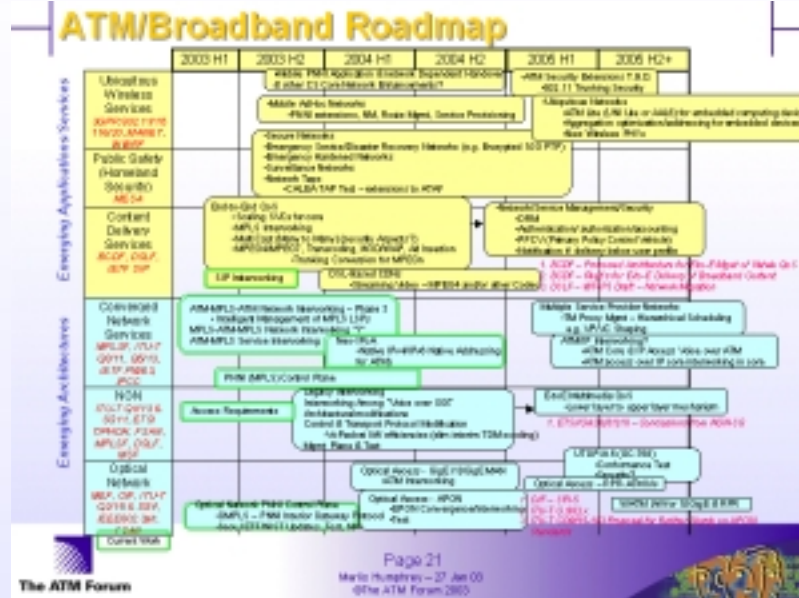
- **Roadmap Outputs**

1. (Potential) Future Work Items
2. Potential Collaborations
3. BOD Strategic Initiatives



About the Roadmap (cont'd)

- “The Roadmap” is the ATM Forum’s Strategic Plan in 2 Charts



Strategic Direction – Internal View

New Opportunities *New Applications/Services Support*

- Ubiquitous Wireless Services
- Public Safety/Homeland Security
- Content Delivery Services

Secure video, mobile video instant messaging, fixed high definition video, VDSL, multicast, adhoc networking, PNNI

Leverage Embedded Equipment Base *New Architecture/Technology Interworking*

- Converged Network Services
- Next Generation Networks

MPLS Service Interworking, ...

Leverage Know-How *New Technology Interworking*

- Optical Networks

PNNI control plane



Roadmap Briefings Aug 2002 – Jun 2003

**BUSINESS
COMMUNICATIONS
REVIEW**

SCHEMA

Gartner

**Vertical
Systems
Group**

**COMMUNICATIONS WEEK
INTERNATIONAL**

ovum

IDC
Analyze the Future

**YANKEE
GROUP**

**COMMUNICATIONS
& NETWORKING**
THE CANADIAN JOURNAL FOR TELECOM AND NETWORKING PROFESSIONALS

*Nefw
Breeze*
Quarterly of The ITW Association of Japan, Inc.

Intelligentis

ITU

**Telecommunications
Magazine**

**INFONETICS
RESEARCH**

**China
TeleFeX**
Shanghai China 2002
中国上海国际电信产业交易会暨论坛
China/Shanghai International
Telecommunications Development
Forum & Exhibition 2002

TELECOM COM

Ubiquitous Network Technical Summit - 2002
Tokyo, Japan

Macau Lotus Satellite TV

INTERNATIONAL CONFERENCE ON COMMUNICATION AND BROADBAND NETWORKING
Bangalore, India

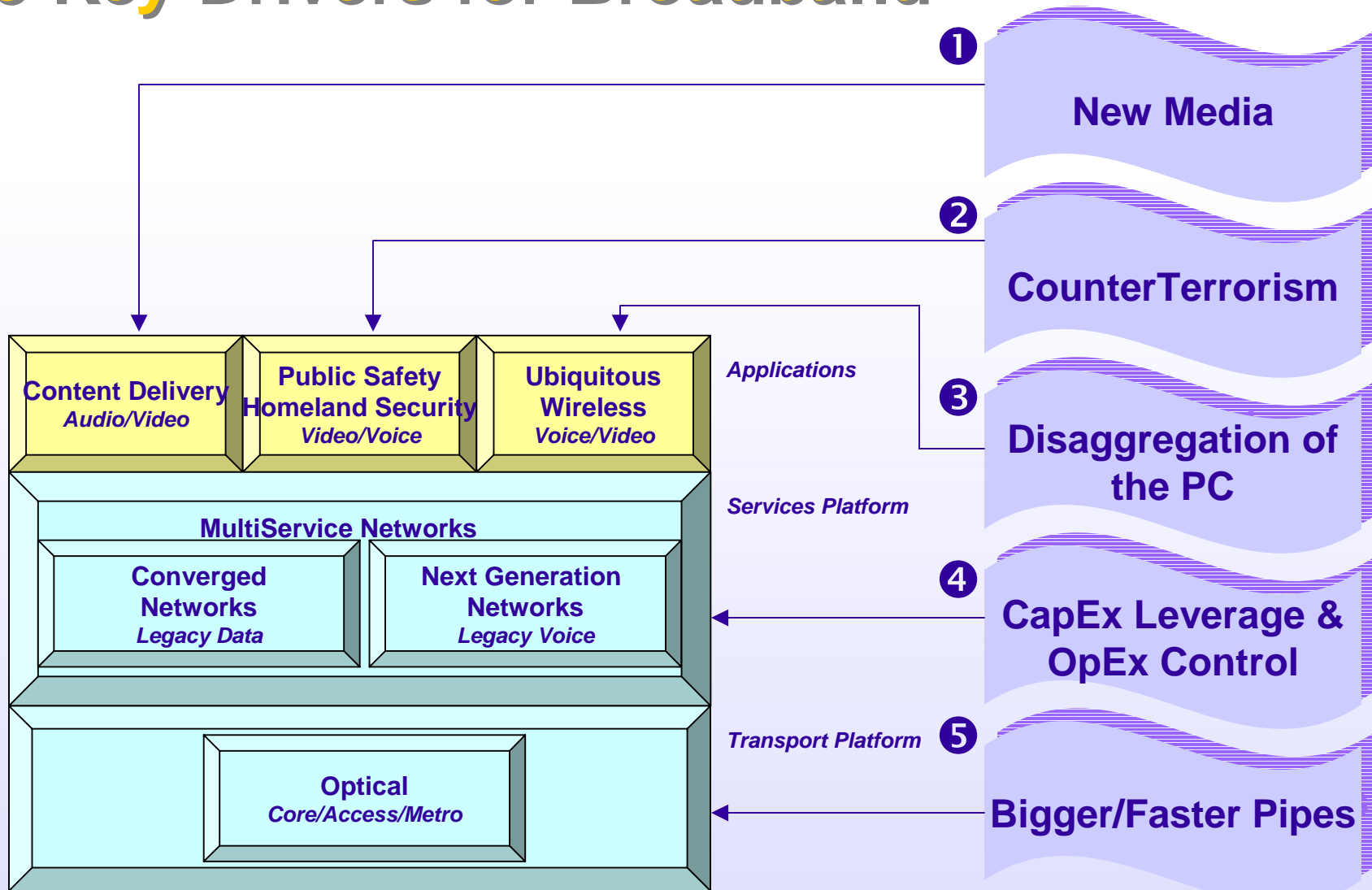
The ATM Forum

**ITU-T 2003 INFORMAL
FORUM SUMMIT**

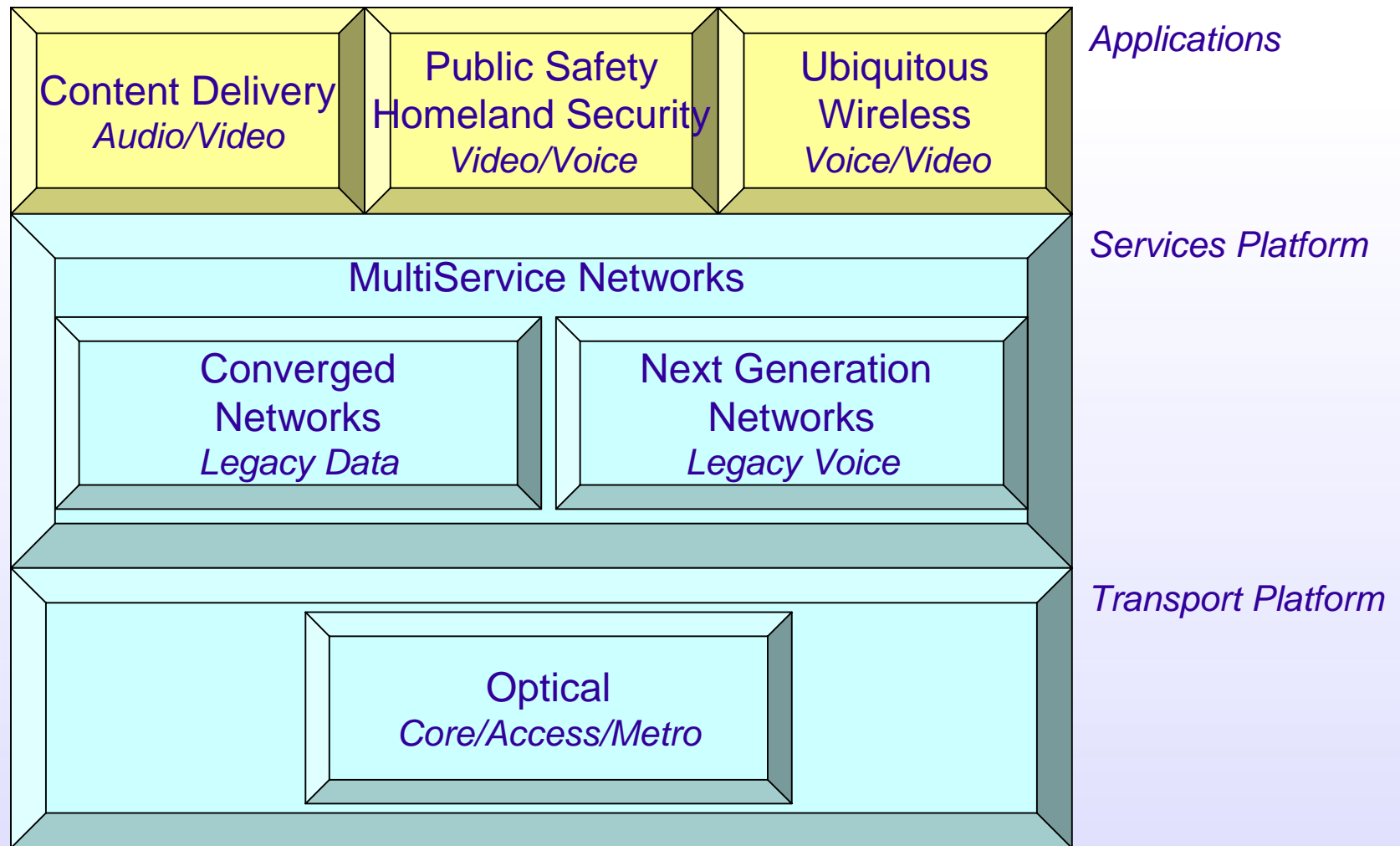
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Marlis Humphrey – 24 Jul 03
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5 Key Drivers for Broadband



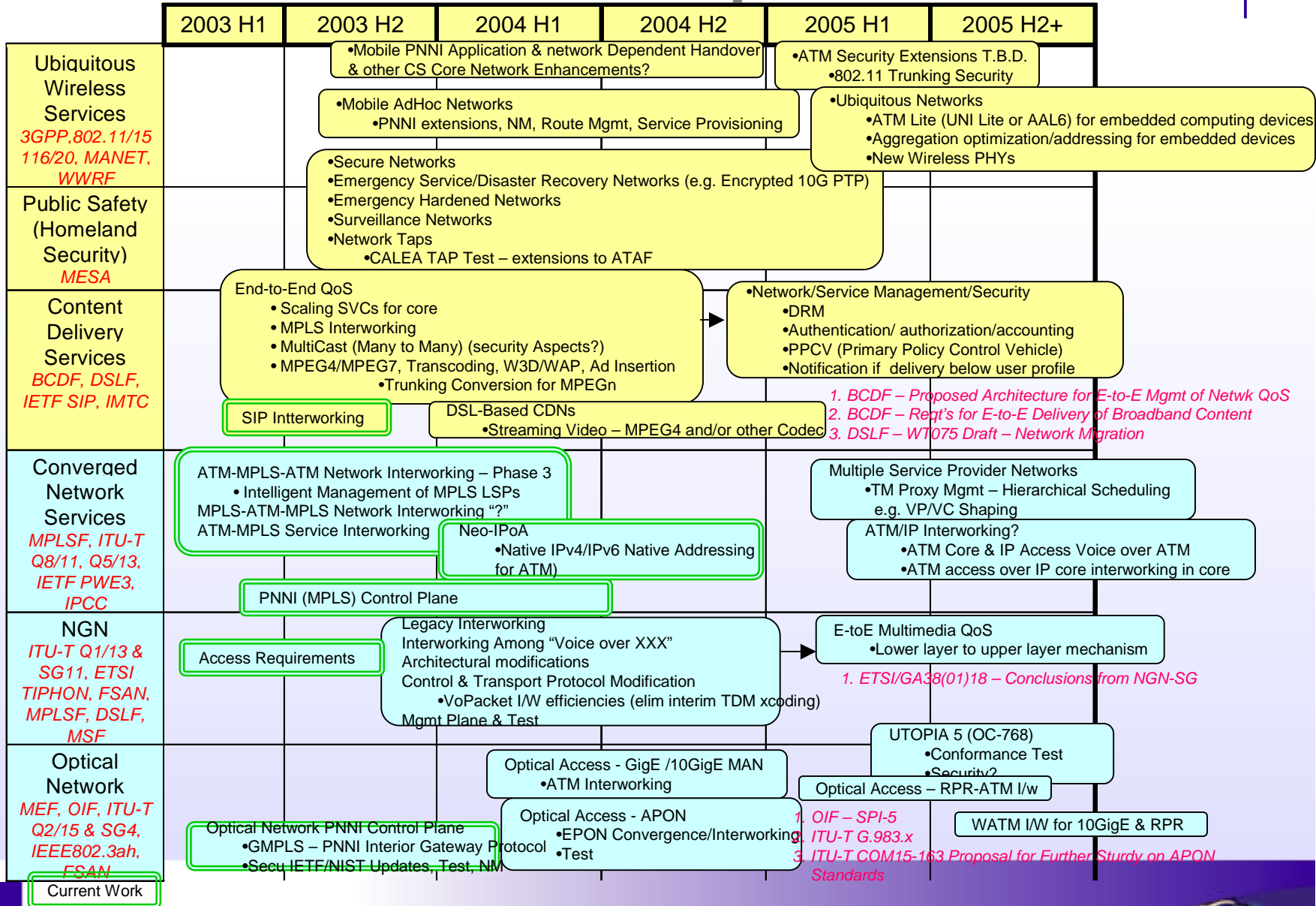
Emerging Broadband Opportunities



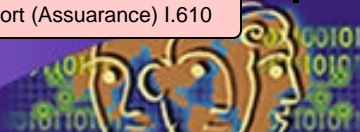
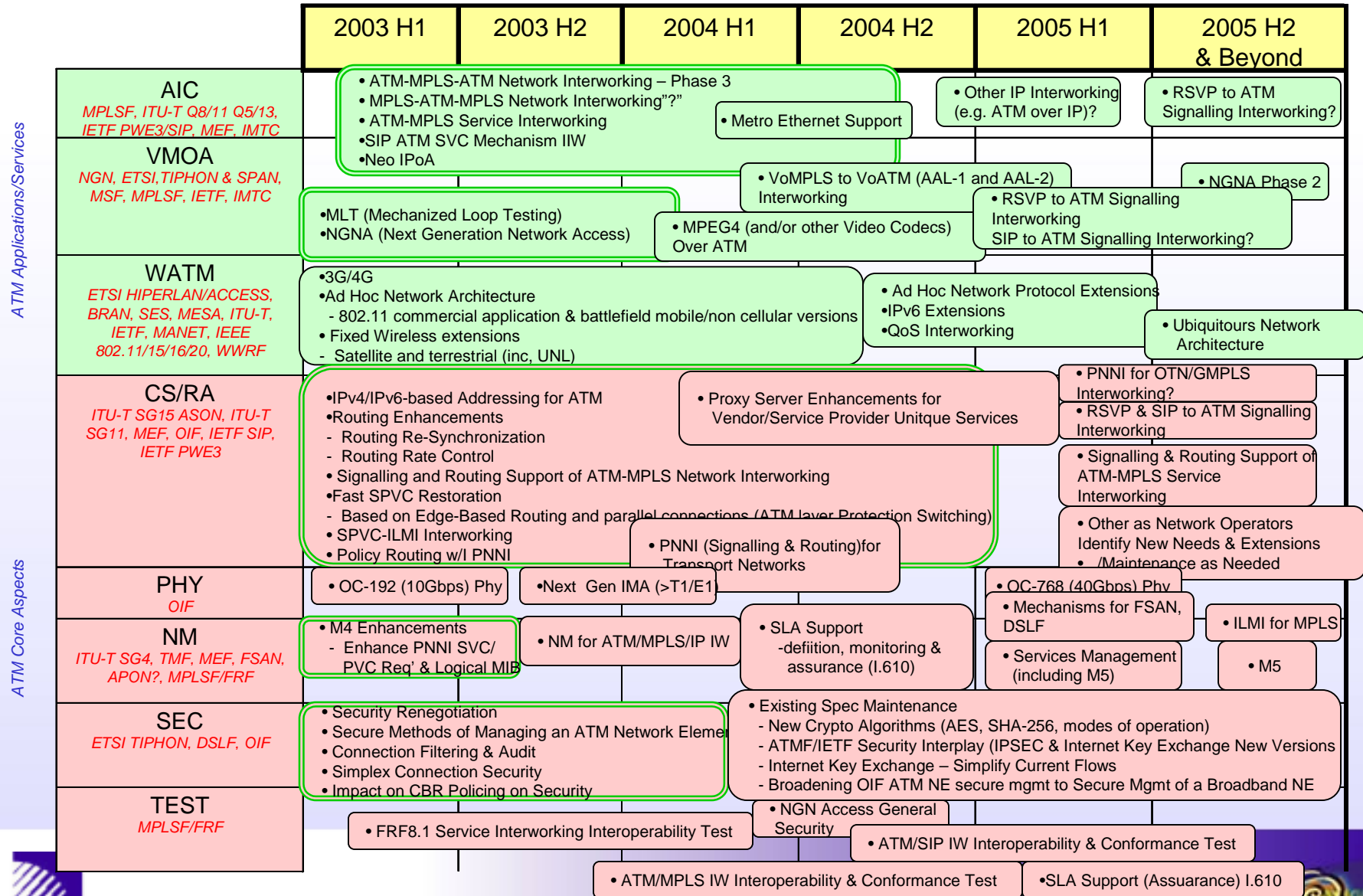
ATM/Broadband Roadmap

Emerging Applications/Services

Emerging Architectures



ATMF WG Roadmap



Roadmap & Future Work Items

Note:

- *The ATM Forum is a contribution-driven organization.*
- *Technical work items appearing on the “Roadmap” or as “Future Work Items” are items that have been identified as potential future work items.*
- *Some of these work items may actually be progressed via active contributions and some may not be pursued in due course for lack of industry interest or due to changes in industry circumstances or priorities.*
- *As such, timeframes for Future Work Items on the Roadmap indicate possible relative timing. Work will progress at a rate driven by the level of contributions.*



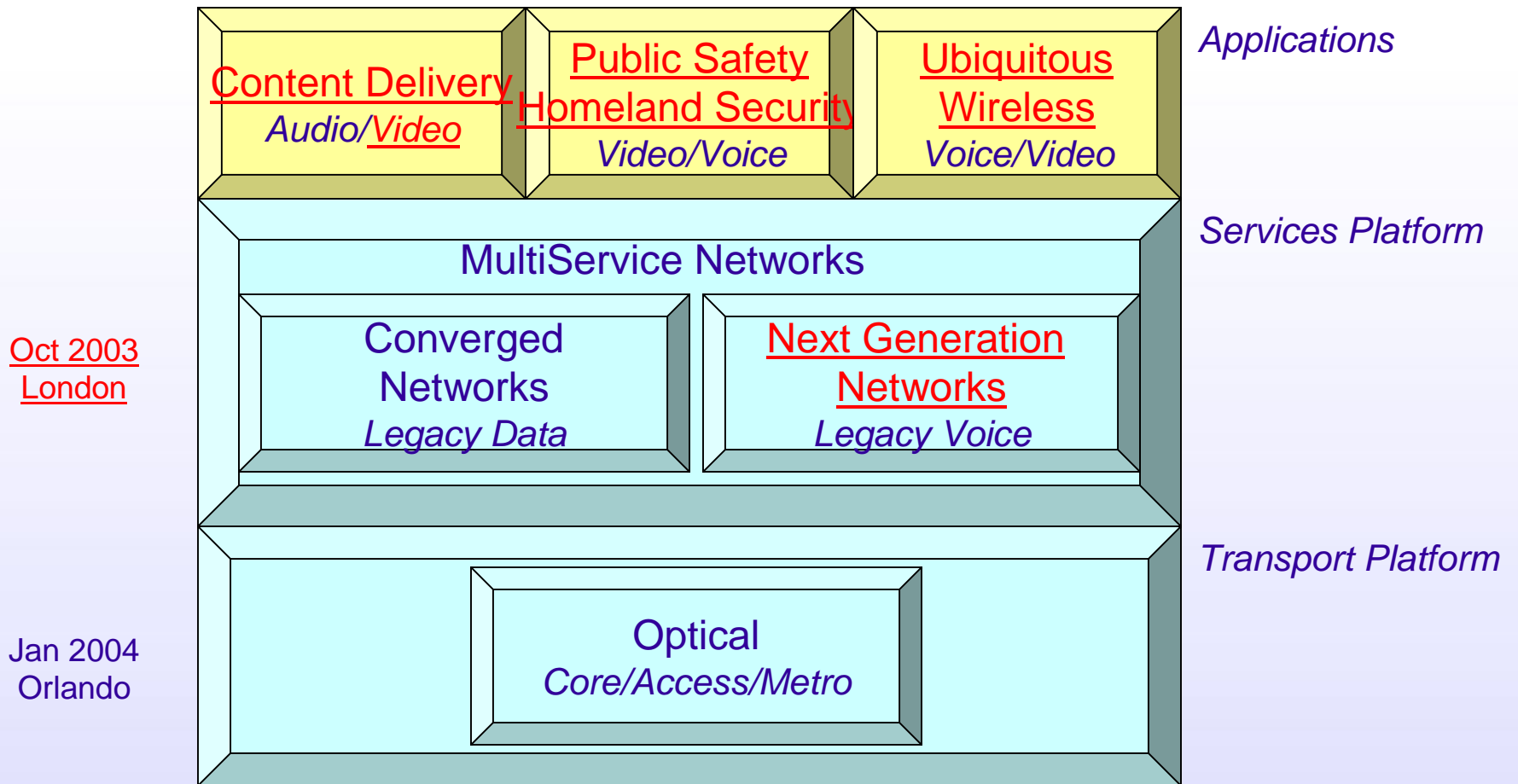


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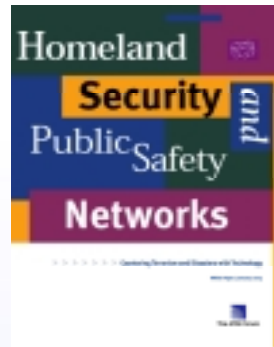
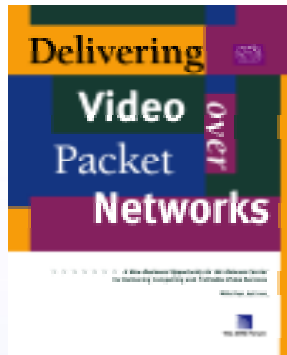


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Broadband Exchange Findings – The Presentations



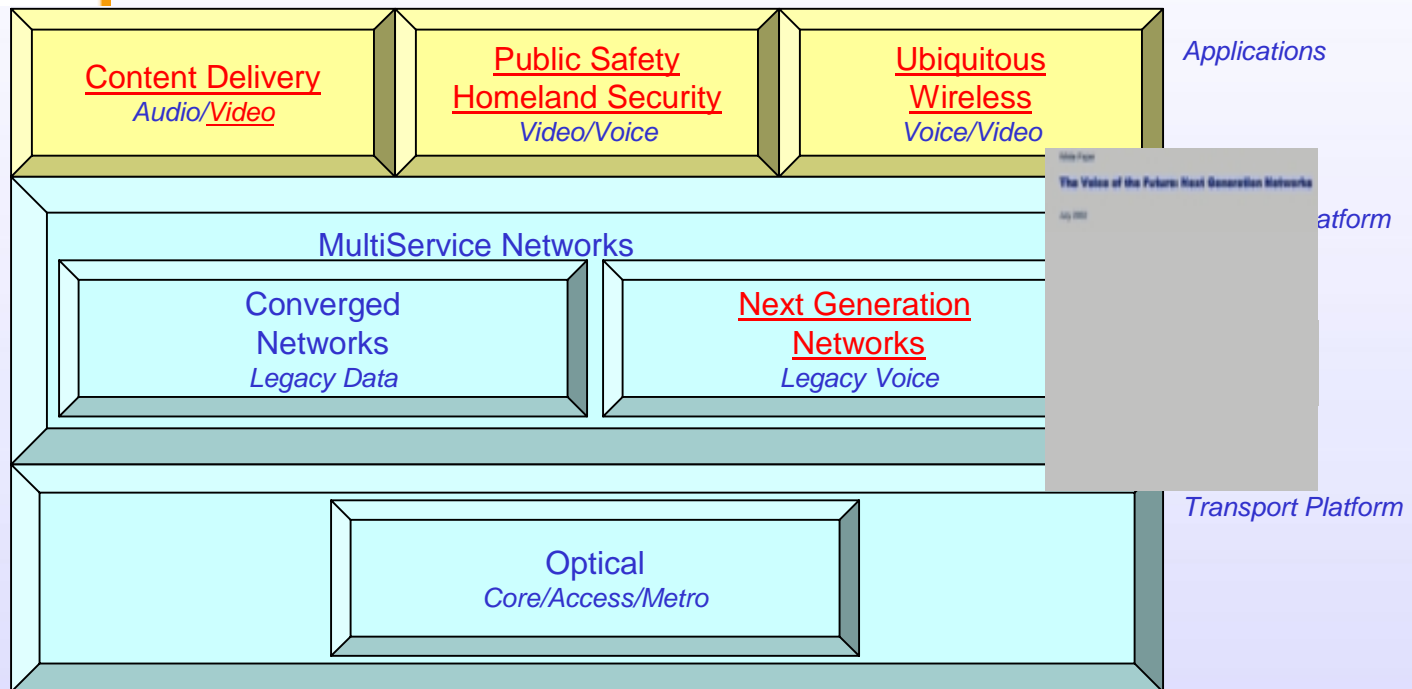
Broadband Exchange Findings – The White Papers



Next Generation Wireless Paper Available Oct 2003

Oct 2003
London

Jan 2004
Orlando



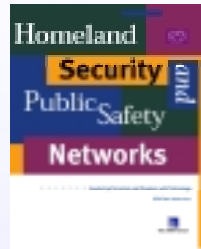


Delivering Video Over Packet Networks April 2003

Available for view and download at

<http://www.atmforum.com/aboutatm/video.html>

Historically, transporting video from source to destination has been considered challenging enough to require the deployment of video-dedicated networks. However, as enterprises and service providers strive to achieve the business benefits of network convergence, video must be treated as just another medium to be transported over a single packet network. This white paper examines the practicalities of achieving video services delivery via packet networks, identifies users' service needs and requirements, maps those requirements to a business case and looks at how services will be delivered using packet network infrastructures.

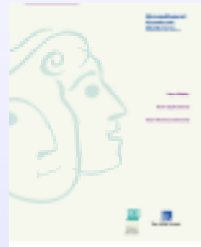


Homeland Security and Public Networks January 2003

Available for online viewing and download at

<http://www.atmforum.com/aboutatm/HomelandSecurity.html>

One of the six focus areas identified by The ATM Forum in their "Broadband Roadmap" is that of Homeland Security and Public Safety networks. The roadmap approaches these as market opportunities – with three new networking architectures and three innovative application areas. This topic is one of the new application areas



Broadband Content Delivery: New Media, New Applications, New Revenue Streams October 2002

Available for online viewing and download at

<http://www.atmforum.com/aboutatm/bcd.html>

One of the six focus areas identified by The ATM Forum in their "Broadband Roadmap" is that of content delivery. As the telecoms industry moves towards a new era of broadband networking, it becomes evident that new direction is needed to drive the necessary development work in broadband technologies. The roadmap identifies six key emerging market opportunities - three new networking architectures and three innovative application areas.



The Voice of the Future: Next Generation Networks July 2002

Available for online viewing and download at

<http://www.atmforum.com/aboutatm/ngn.html>

The ATM Forum has always been associated with the development of ATM specifications and indeed this is still the mainstay of its charter. However, with ATM being one of a number of technologies being deployed in broadband networks today, there is a strong need for these technologies to combine effectively together. In order to accelerate this process, The ATM Forum initiated the Broadband Exchange to bring together the industry to work towards common goals. Each event explores a different theme associated with broadband technologies and applications.



2003 Meeting Co-Location Plan & BBX

2003 Dates (week of)	Venue	Broadband Exchange	Actual/Discussion Underway
JAN 26	West Coast NA • SF Bay Area	Content Delivery – Video over Packet	MPLSF/FRF BCDF MEF (Roadmap Review) ISC (IPCC) (SIP Tutorial)
APR 27	Europe • Madrid	Advanced Mobile & Wireless	BCDF 3GPP (BBX)
JUL 08 <i>Annual Meeting</i>	East Coast NA • Tyson's Corner, VA	Packet Networks for Next Generation Mobile & Wireless	MPLS/FR Alliance BCDF 3GPP (BBX)
OCT 13	Europe • London	Converged Networks	MPLS/FR Alliance

Cancelled





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Operator Action Council

*Feasibility Assessment
presented to*



July 9, 2003

www.verticalsystems.com



Study Scope



- The **Operator Action Council (OAC)** is envisioned as an autonomous advisory group of senior network planners from major service providers in North America, Europe and Asia-Pacific, providing business and technology requirements input to participating technology forums.
- In order to assess the viability of the OAC in North America, Vertical Systems Group was commissioned for a Service Provider Survey (SPS) to identify and contact network planners regarding the following areas:
 - ▶ Interest level in the OAC concept
 - ▶ Perception of technology forums relative to the planning function
 - ▶ “Hot topics” for consideration by the forums/OAC
 - ▶ Logistical issues for participation in the OAC

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SPS Methodology



- The SPS project was initiated in June 2003. Vertical worked with Andy Bray/Netrius to develop support materials, including an introductory letter and a Discussion Guide.
- For the SPS survey sample, Vertical selected sixteen companies across IXC, ILEC, CLEC and other Service Provider segments:

AT&T	Global Crossing	McLeod	Sprint
BellSouth	Infonet	New Edge Networks	Time Warner
Broadwing	Level 3	Qwest	Verizon
Equant	MCI	SBC	XO
- More than 50 individuals at these companies were contacted during the qualification process. Vertical scheduled in-depth interviews via teleconference with eleven companies between June 25 and July 7. Other companies agreed to participate in the study, but could not do so within the project timetable. Interview duration averaged one hour.

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Participant Profile



- Study results are based on interviews with executives at AT&T, BellSouth, Broadwing, Equant, Global Crossing, Infonet, New Edge Networks, Qwest, SBC, Sprint and Verizon.
- All SPS participants have a planning/strategic function and some also support software/hardware development or product marketing. Individual scope of responsibility varies considerably by geography (e.g., local, national, global) and type of product (e.g., single to multiple products, data, voice, etc.).
- The majority of participants have limited or no direct contact with forums. Most rely on internal technical organizations (e.g., AT&T Labs) and vendors for technical information.
- Service providers represented in this study have a range of different business models (e.g., incumbents vs. startups, legacy services vs. emerging services, facilities-based vs. reseller, etc.).
- Financial constraints and staff layoffs at some companies have limited resources available for forum participation.

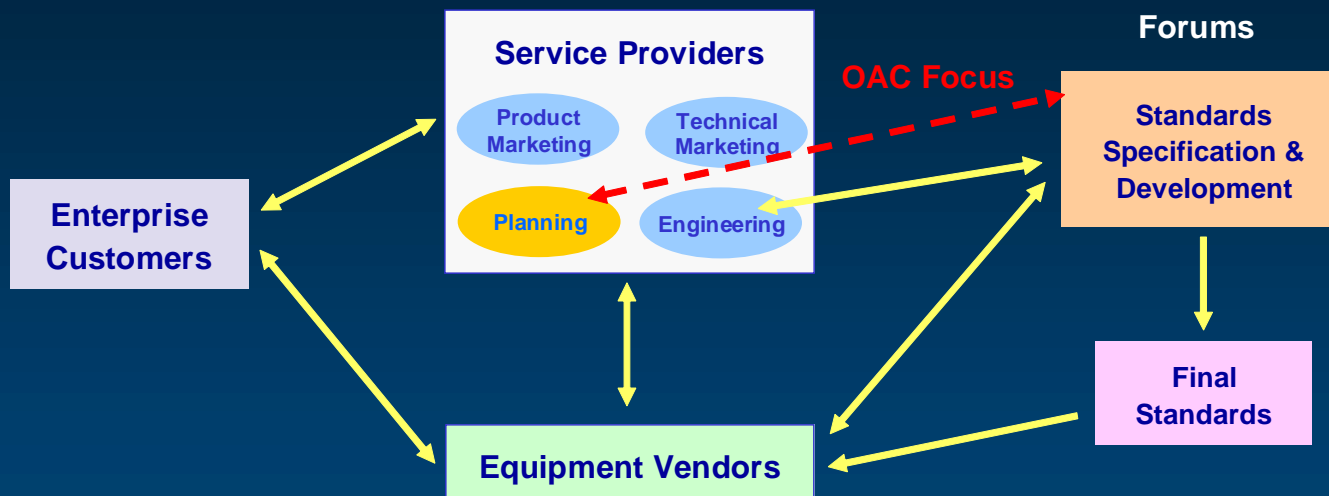
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Bottom Line

Standards Development Process



- Service provider planners have minimal direct input to forums.
- Standards development is driven by technologists.
- Current forum process is not responsive to market needs.



OAC Next Steps

1. Propose Straw Framework & Pilot Project to North America Operators

- Get Feedback, Modify as Needed

2. Assess Concept Viability in Europe

- Study to be completed by Oct 2003

3. Assess Concept Viability with Additional Forums

- Socialize Concept, Get Feedback, Modify as Needed, Assess Level of Interest

For full presentation on Vertical Systems findings, including hot topics, contact:
Marlis.Humphrey@harris.com





Agenda



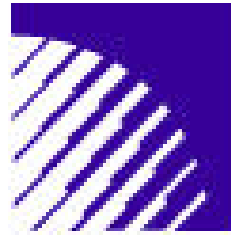
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Invitation to Work Together

- **Technical Work**
 - Joint Work Items - See Roadmap for Areas of Common Interest
 - CoLocate Meetings to Build Synergies
 - Contact rltownsend@lucent.com
- **Information Exchange / Solution Discussion**
 - Broadband Exchange - Participate In / Co-Chair a BBX Conference of Common Interest
 - Contact mary@atmforum.com
- **Market Awareness**
 - Conferences - Participate-In as Speaker, Exhibitor, and/or Co-Sponsor - Especially Asia Pacific & Developing Countries
 - Contact mary@atmforum.com
- **Service Provider Requirements**
 - OAC (Operator Action Council) - Support Launch and/or Support Requirements
 - Contact Marlis.Humphrey@harris.com



An ATM FORUM Presentation



The ATM Forum

This is a presentation on behalf of
The ATM Forum.

For more information, contact
info@atmforum.com or visit
www.atmforum.com





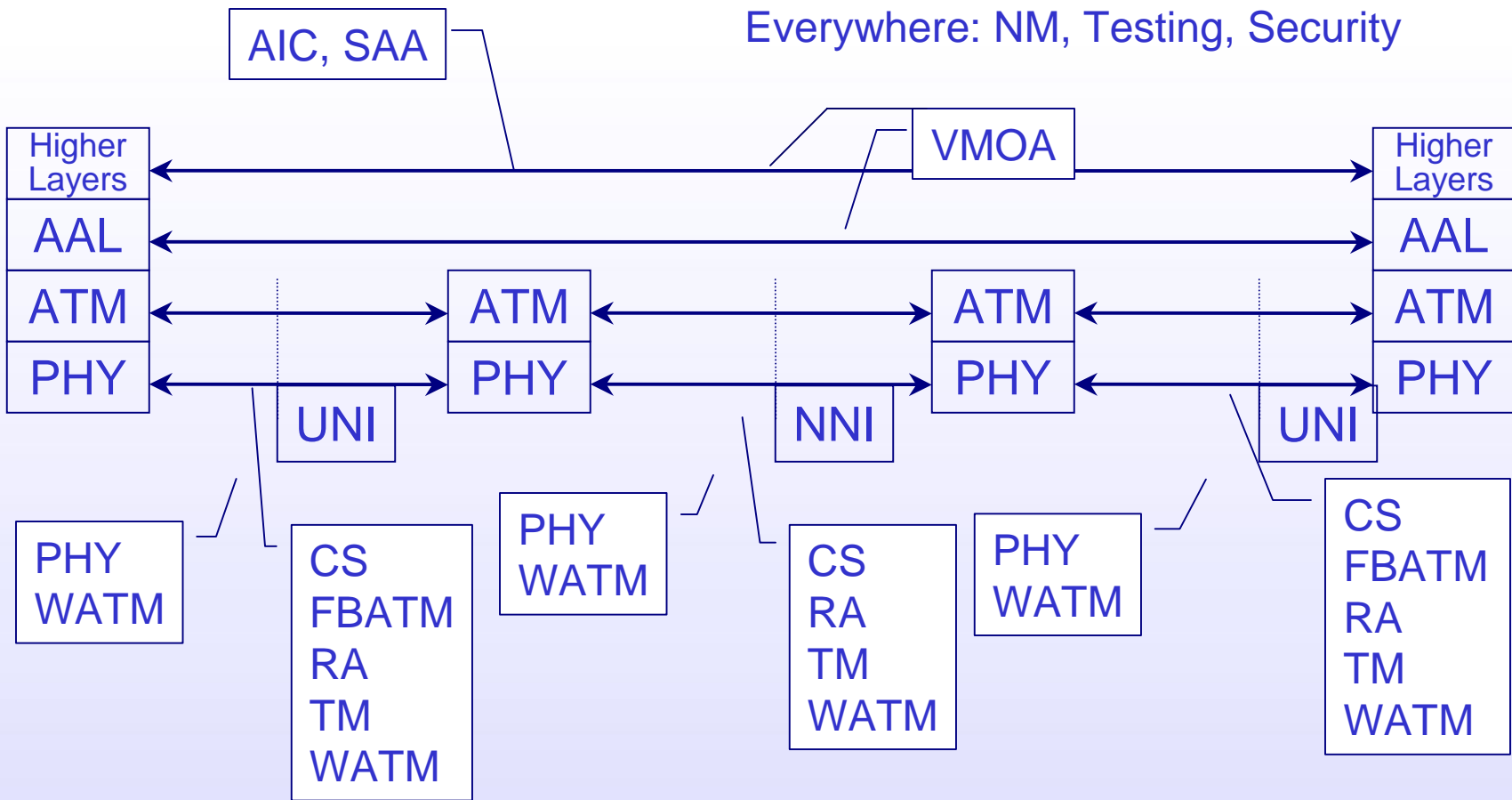
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Where the WGs Work

Everywhere: NM, Testing, Security



Physical Layer

- **Scope**
 - All physical layers
 - Usually add ATM specific details to existing physical layer standard
- **Current Work**
 - OC-192 (10Gbps) Phy
- **Future Work**
 - OC-768 (40Gbps) Phy
 - Next Gen IMA (beyond T1/E1)
- **Potential Collaboration**
 - OIF



Wireless ATM

- **Scope**
 - Enhancements for wireless support
 - protocol extensions for each new wireless network including: TM, NM, QoS and (for mobile wireless) handoff, location management, and routing
- **Current Work**
- **Future Work**
 - 3G/4G
 - Ad Hoc Network architecture
 - 802.11 commercial application & battlefield mobile/non-cellular versions
 - Fixed Wireless extensions
 - satellite and terrestrial (inc, UNL)
 - Ad Hoc Network protocol extensions
 - IPv6 Extensions
 - QoS Interworking
 - Ubiquitous Network Architecture
- **Potential Collaboration**
 - ETSI HIPERLAN/ACCESS, BRAN, SES, MESA, ITU-T, IETF MANET, IEEE 802.11/15/16/20, WWRF



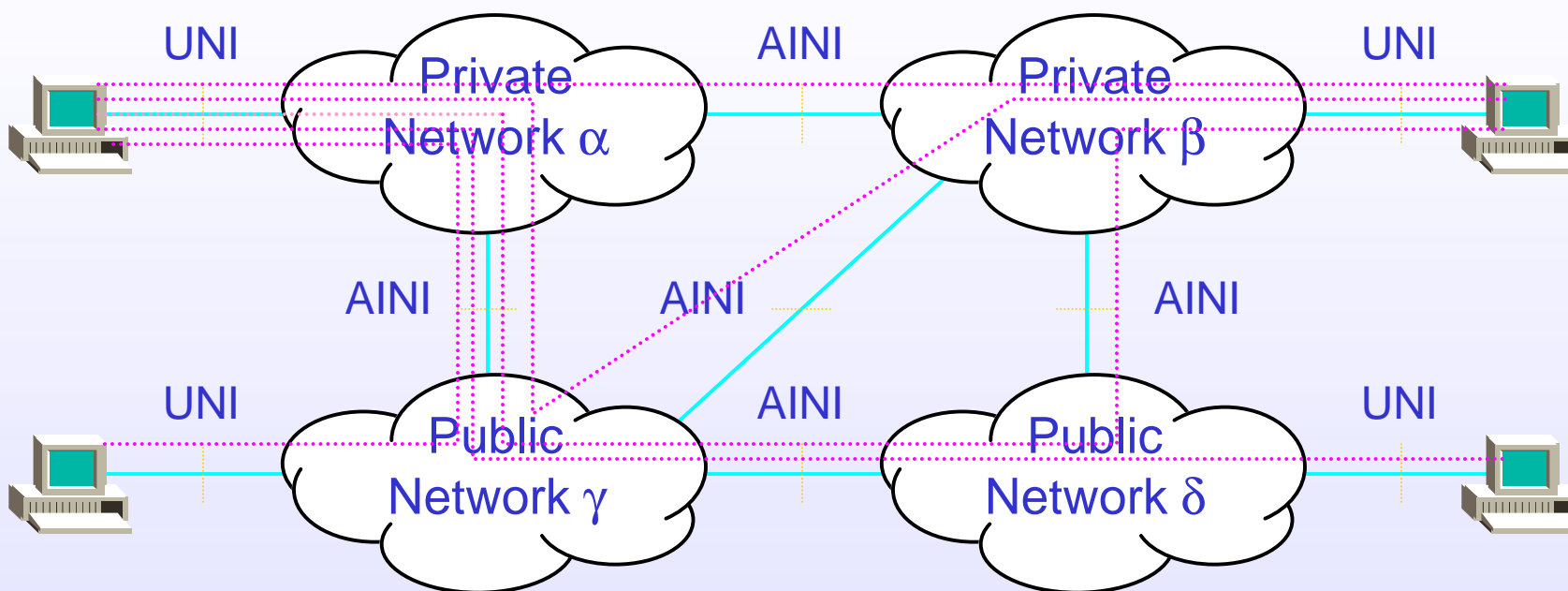
Control Signalling / Routing & Addressing

- **Scope**
 - All signalling for connection control, addressing issues and routing of connections
- **Current Work**
 - IPv4/IPv6-based Addressing for ATM
 - Routing Enhancements
 - Routing Re-Synchronization
 - Routing Rate Control
 - Signalling & Routing Support of ATM-MPLS Network Interworking
 - Fast SPVC Restoration
 - Based on Edge-Based Routing and parallel connections (ATM layer Protection Switching)
 - Policy Routing w/i PNNI
- **Future Work**
 - PNNI (Signalling and Routing) for (e.g. Optical) Transport Networks
 - Proxy Server Enhancements for Vendor/Service Provider Unique services
 - PNNI for OTN/GMPLS Interworking?
 - RSVP to ATM Signalling Interworking
 - SIP to ATM Signalling Interworking
 - Signalling & Routing Support of ATM-MPLS Service Interworking
 - IP/ATM Interworking Signalling Support
 - Other as Network Operators Identify New Needs including Extensions & Maintenance as Needed
- **Potential Collaboration**

- ITU-T SG15 ASON, ITU-T SG11, Metro Ethernet Forum, OIF, IETF SIP, IETF PW3



ATM Network Interfaces



- Full connectivity even if
 - Different address spaces
 - Routing constraints



ATM - IP Collaboration

- **Scope**
 - Support of IP in ATM networks
- **Current Work**
 - ATM-MPLS-ATM Network Interworking – Phase 2
 - ATM-MPLS-ATM Networking Interworking - Phase 3 – glue to intelligently manage MPLS LSPs
 - MPLS-ATM-MPLS Network Interworking ”?”
 - ATM-MPLS Service Interworking
- **Future Work**
 - Neo IPoA (IPv4/IPv6 address support for IP over ATM (new version) w/o address translations)
 - SIP ATM SVC Mechanism Interworking
 - IP/ATM Interworking?
 - Metro Ethernet Support
 - RSVP to ATM Signalling Interworking (T.B.D.)
- **Potential Collaboration**
 - MPLSF, ITU-T Q5/13, IETF PWE3, Metro Ethernet Forum, IET SIP, IPCC?, IMTC



Voice and Multimedia Over ATM

- **Scope**
 - Efficiently carry and interwork voice, video and telephony (data and signaling) over ATM
- **Current Work Items**
 - MLT (Mechanized Loop Testing)
 - NGNA (Next Generation Network Access)
- **Potential Future Work**
 - VoMPLS to VoATM (AAL-1 and AAL-2) Interworking
 - NGNA Phase 2
 - MPEG4 (and/or other Video Codecs) over ATM
 - RSVP to ATM Signalling Interworking
 - SIP to ATM Signalling Interworking?
- **Potential Collaboration**
 - Next Generation Networks (NGN) with ETSI (TIPHON and SPAN); MSF,
 - Interworking Voice over ATM with Voice over MPLS (MPLS Forum)
 - Interworking VoIP with VoATM (IETF, MSF, IPCC?)
 - IETF SIP for voice and video
 - IMTC for video



Services and Applications

- **Scope**
 - “Other” higher layer functions
- **Current Work**
 - FRF8 Service Interworking – CAC enhancement (likely will be handled in AIC)
 - None
- **Future Work**
 - Broadband Content Delivery, Homeland Security, 3G Mobile Trunking, 4G
- **Potential Collaboration**
 - MPLSF/FRF Alliance, BCDF, MESA, 3GPP



Network Management

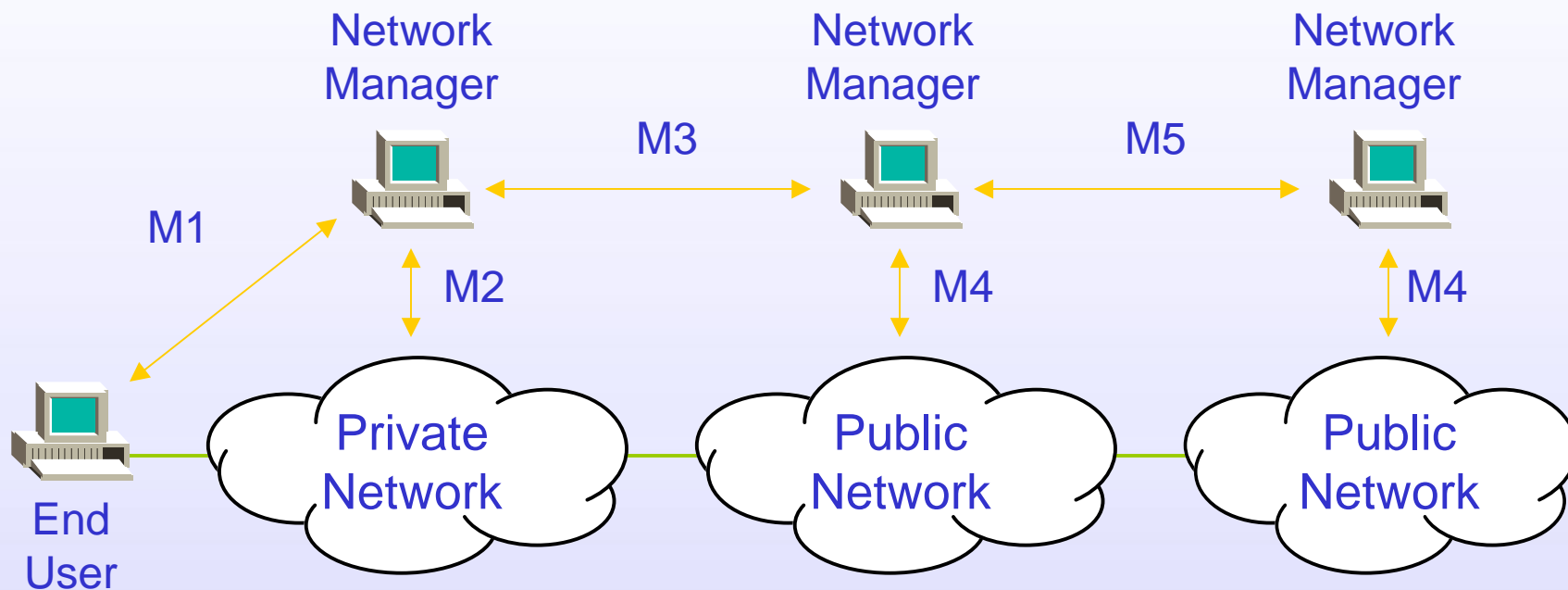
- **Scope**
 - Defining Interfaces, Protocols and Object Models for the Management of Telecommunication Services, Networks, and Equipments which uses ATM Technology
 1. Requirements & Logical MIB
 2. Protocol Specific Models (NE View & Network View)
 - SNMP, CMIP, CORBA
- **Current Work**
 - M4 Enhancements?
 - Enhance PNNI SVC/SPVC Requirements & Logical MIB
- **Future Work**
 - NM for ATM/MPLS ATM/IP Interworking
 - Mechanisms for FSAN, DSLF
 - ILMI for MPLS
 - Services Management (including M5)
 - SLA Support (definition, monitoring and assurance) (I.160)
- **Potential Collaboration**
 - ITU-T SG4, TMF, Metro Ethernet Forum, FSAN (APON)?, MPLSF/FRF Alliance
- ***Special Notes: existing CALEA tap spec (ATAF – ATM Test Access Function) may have use in Homeland Security applications***



Network Management

Scope

Management related to M_j $j=1, \dots, 5$



Testing

- **Scope**
 - PICS Proforma and Test Suites (Performance, Conformance Abstract and Interoperability)
- **Current Work**
 - None
- **Future Work**
 - FRF8.1 Service Interworking Interoperability Test
 - ATM/MPLS Interworking Interoperability & Conformance Test
 - ATM/SIP Interworking Interoperability & Conformance Test
 - SLA Support (Assurance) (I.610)
- **Potential Collaboration**
 - MPLSF/FRF Alliance
- ***Special Notes: existing CALEA tap spec (ATAF – ATM Test Access Function) may have use in Homeland Security applications***



Security

- **Scope**
 - All security aspects of ATM
- **Current Work**
 - Security Renegotiation
 - Secure Methods of Managing an ATM Network Element
 - Connection Filtering & Audit
 - Simplex Connection Security
 - Impact of CBR Policing on Security
- **Future Work**
 - Existing Spec Maintenance
 - New Crypto Algorithms (AES, SHA-256, modes of operation)
 - ATMF/IETF Security Interplay (IPSEC & Internet Key Exchange New Versions)
 - Internet Key Exchange - Simplify Current Flows
 - Broadening OIF ATM NE secure management to Secure Management of a Broadband Network Element
 - NGN Access general security
- **Potential Collaboration**
 - ETSI TIPHON, DSLF, OIF



Traffic Management

- **Scope**
 - Definitions, algorithms, protocols for managing traffic and QoS in ATM
- **Current Work**
 - None
- **Future Work**
 - NGN QoS extensions?
 - Interworking of existing TM classes
 - Consolidation of numerous classes for MM
 - Hierarchical Traffic Shaping?
 - Other enhancements required by AIC work
 - Interworking QoS mechanisms with MPLS
- **Potential Collaboration**
 - MPLSF

