ITU-T SSG: IMT-2000 Core Network Activities

1.2: ITU and IMT-2000 Overview

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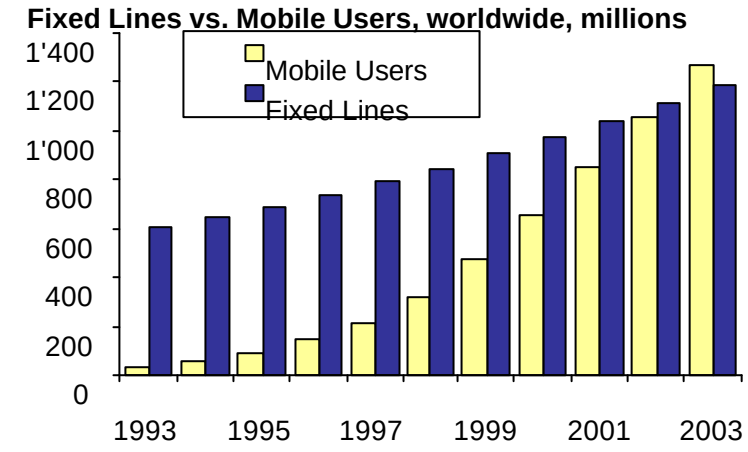
Abstract: ITU-T: IMT-2000 Core Network Activities

This presentation will provide an overview of the ITU-T Special Study Group on "IMT 2000 and Beyond." It will provide a brief background to the formation and work of this Study Group, summarize the results that have been achieved to date, and then concentrate on the content and timetables of the current work and what it is intended to deliver. Finally, some views on the future content and direction of this work will be provided.

Outline

- **Brief historical review: why create the SSG**
- **SSG Mandate and work structure**
- **Results to date and work in progress**
- **Introduction to Vision beyond IMT-2000**

Mobile Revolution is underway



Source: ITU World Telecommunication Indicators Database.

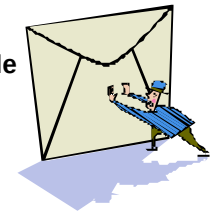
Forecasts

Many available!

- **Example: Yankee Group, News Release 24 Jun 03:**
  - **estimate 18.6 percent of world's population currently has mobile phones**
  - **global wireless user base will increase 49% over next 4 years, reach 1.72 billion by 2007**
  - **global cellular subscriber revenue will grow from $387 billion in 2002 to $584 billion in 2007, similar in value to crude oil production**
  - **full text is available at: http://www.yankeegroup.com/public/news_releases/news_release_detail.jsp?ID=PressReleases/news_06-24-2003_corporate.htm**

Why is the ITU-T SSG Special?

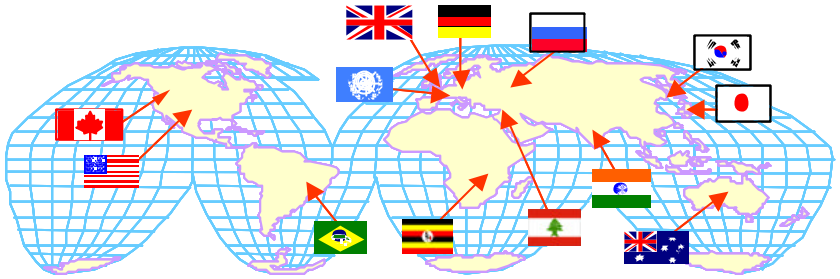
- **Given significant freedom in conducting its business:**
  - **Paperless meetings to maximum extent possible**
  - **Reduced meeting notice requirements**
  - **Reduced contribution submission deadline**
  - **All documents made available on ITU web site**
  - **Formal meeting reports made available quickly**
  - **Use of e-meetings, teleconferences, other means to conduct work**



- **Plus has the usual powers of a Study Group:**
  - **Create and approve Recommendations**

Why is the ITU-T SSG Special?

- **Management Team**
  - **Larger than usual**
  - **Strength in diversity:**
    - **viewpoints from vendors, operators and regulators**
    - **viewpoints from developed and developing countries**



Summary of SSG Mandate

- **Lead SG on IMT-2000 and beyond and for mobility**
  - **Primary responsibility within ITU-T for overall network aspects of IMT-2000 and beyond**
- **To study:**
  - **Vision for IMT-2000 and Beyond (circa 2010)**
  - **Identification and globalization of IMT-2000 Family members**
  - **Support harmonization of evolving IMT-2000 Family members**
  - **Convergence of fixed and wireless networks**
- **To assist developing countries in applying IMT-2000**
- **Emphasis on strong cooperative relations and complementary programs with SDOs, 3GPPs**
- **Make use of provisional working procedures specific to SSG:**
  - **Recommendation A.9: Provisional working procedures for SSG**

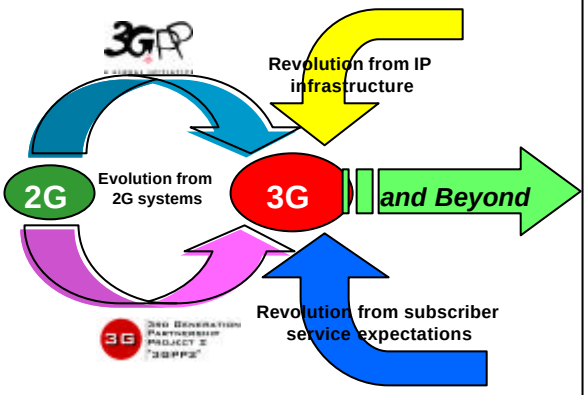
SSG Approach

EMPHASIS ON:

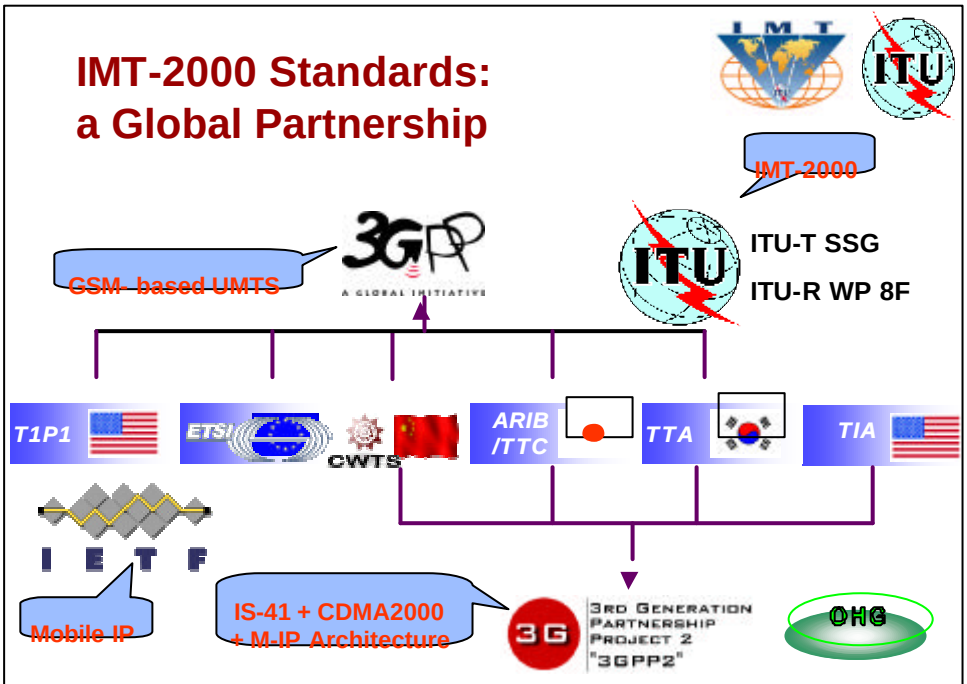
- **Collaboration**
- **Cooperation**
- **Partnering**

BUT NOT:

- **Duplication of work**



IMT-2000 Standards: a Global Partnership



SSG Mandate translated into Study Questions

- Q.1/SSG Service and network capability requirements and network architecture (“Vision”)
- Q.2/SSG NNI Mobility Management protocol (Stage 3)
- Q.3/SSG Identification of existing and evolving IMT-2000 Systems (“ID Systems”)
- Q.4/SSG Interworking functions to be used with existing and evolving IMT-2000 systems
- Q.5/SSG Preparation of a Handbook on IMT-2000 (“Handbook”)
- Q.6/SSG Harmonisation of evolving IMT-2000 Systems
- Q.7/SSG Convergence of fixed and existing IMT-2000 systems (“Convergence”)
- Q.8/SSG Special Study Group working procedures (“Procedures”) (now deleted: work finished)

Details available at: http://www.itu.int/ITU-T/studygroups/ssg/questions.html

Q.1/SSG: Vision

- Closely coupled with ITU-R WP 8F efforts towards their PDNR IMT.VIS
  - Working together to ensure consistency between Radio and Core Network views: describe a single, common ITU “Vision”
  - ITU-T Rec. Q.1702 (“Long-Term Vision of Network Aspects for Systems Beyond IMT-2000”) approved Jul 02
  - ITU-R Rec. M.1645 (“Framework and overall objectives of the future development of IMT-2000 and systems beyond IMT-2000”) approved Jun 03

Q.2, 4, 6, 7/SSG: Mobility Mgmt., Interworking, Harmonization, Convergence

- Acting as a catalyst and facilitator toward global roaming, service and network interoperability
  - Promote adoption of common approaches
  - Identify differences, candidate solutions, interact with regional bodies to facilitate agreements
- Supporting OHG initiative toward a common IP Core Network approach
  - Operator involvement and support essential to drive agreements and achieve success
- No need for an interworking-specific activity has emerged (Q.4/SSG)

Q.2/SSG: Mobility Management

- Acting as a catalyst and facilitator toward globally consistent Mobility Management
- MM requirements based on Vision, Harmonization, and Fixed/Mobile Convergence studies
- Technical Report nearing completion
  - assessing protocol candidates based on:
    - compatibility with emerging IP-based Core Networks
    - re-use of existing specifications from IETF, partner SDOs of 3GPPs, IEEE, others
    - smooth migration to longer term requirements

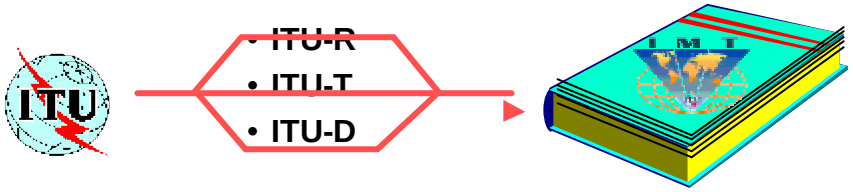
Q.3/SSG: ID IMT-2000 Systems

- Q.1741.1 (Rel. 99) approved Apr 2002
- Q.1741.2 (Rel. 4) approved Dec 2002
- Q.1741.3 (Rel. 5) approved Sep 2003

- Q.1742.1: (Jul 01) approved Dec 2002
- Q.1742.2: (Jul 02) approved Jul 2003

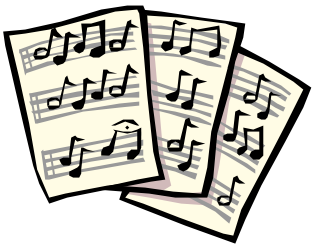
Q.5/SSG: Handbook: Deployment of IMT-2000 Systems

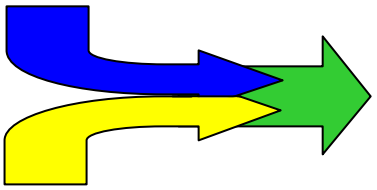
- Collaborative effort across ITU-T, ITU-R and ITU-D
- First edition approved and available as of 18 Aug 03:
  - http://www.itu.int/publications/bookstore.html
  - listed under ITU-R
- Second edition now being developed to enhance and extend first edition



Q.6 and 7/SSG: Harmonization and Convergence

- **Related yet not the same:**
  - **“Harmonization”: increasing commonality of infrastructure for delivering a given service**
  - **“Convergence”: bringing together seemingly unrelated services and networks**





Q.6/SSG: Harmonization

- **Benefits of Core Network Harmonization**
  - **Users: easy roaming, more and more variety of services, reduced charges**
  - **Vendors: open architecture, single platform**
  - **Network Operators: reduced deployment costs, increased service transparency, stimulates deployment of IP multimedia services**
- **Deliverable “Harmonization of Evolving IMT-2000 Systems”**
  - **summarizes harmonization to date, identifies directions**
  - **includes material on Emergency Services and supporting consistent application of existing Lawful Intercept initiatives**

Q.7/SSG Convergence of fixed and existing IMT-2000 systems

- Increasing heterogeneity of access technologies means increasing need for a common Core Network
  - application of existing fixed network infrastructure in support of IMT-2000 subscribers
  - draft new Rec. Q.FMCReq "Principles and requirements for convergence of fixed and existing IMT-2000 systems" anticipated to be ready for approval at next SSG meeting

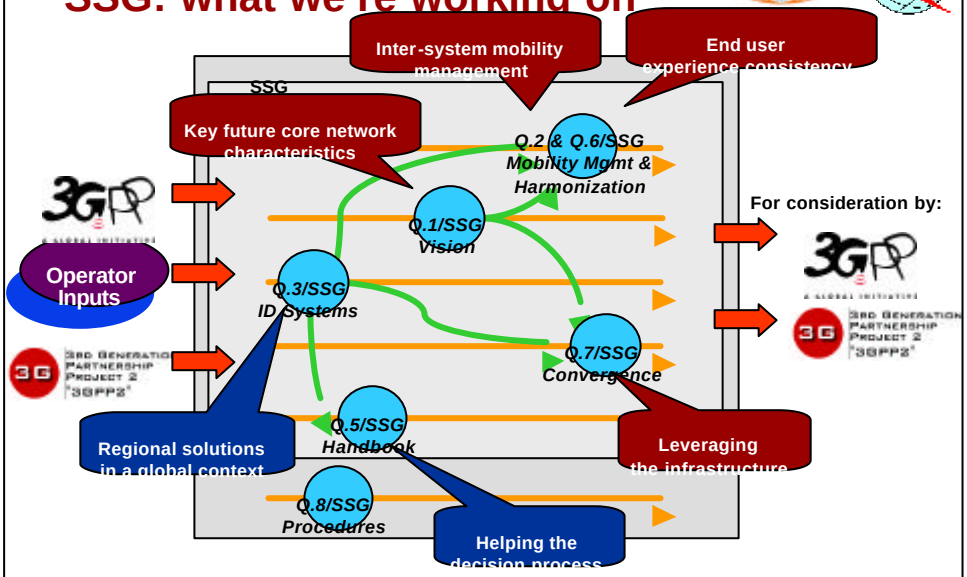
Q.8/SSG: Procedures

- Enhanced Rec. A.9 substantially finalized in May 02 SSG meeting
  - bottom-up approach on selected ITU reform aspects
  - e-meeting guidelines, other aspects, based on practical experience
- No consensus on alternative form of deliverable ("technical specifications"): not incl. in Rec. A.9
- Revised Rec. A.9 "Determined" by TSAG Jun 02

SSG Work Plan

Type	Q	Date	Subject
Q.SNFB	1	2Q 2004	Service capabilities of network aspects and network capabilities requirements
Q.FNAB	1	TBD	Long-term high-level network architecture for beyond IMT 2000 systems, including definition of functional entities (FEs), allocation of functional capabilities to FEs, and interfaces model among FEs
TR	2	2Q 2004	Mobility Management Requirements for harmonized IMT-2000 family of systems
TR	2	4Q 2004	Mobility Management Framework and Functional Architecture for Systems Beyond IMT-2000
TR	2	2Q 2005	Mobility Management Functional Information Flows and Protocol Development (if needed)
Q.1741.4	3	2Q 2004	IMT 2000 References to Release 6 of GSM evolved UMTS Core Network
Q.1742.3	3	4Q 2003	IMT-2000 References (approved as of July 2003) to ANSI-41 evolved Core Network with cdma2000 Access Network
Amendments	5	4Q 2004	Amendment to Edition 1 of Handbook to assist countries in the deployment of existing and evolving IMT-2000 systems
2nd Edition	5	2Q 2005	Edition 2 of Handbook to assist countries in the deployment of existing and evolving IMT-2000 systems
Supplement	6	4Q 2003	Document entitled "Emergency Services for IMT-2000 Networks – Requirements for Harmonization and Convergence"
TBD	6	2Q 2004	Document on the Harmonization of evolving IMT-2000 Systems
Q.FMCReq	7	4Q 2003	Principles and requirements for convergence of public fixed networks and IMT-2000 networks
Rec.	7	4Q 2004	Network architecture and interface requirements to facilitate evolution of existing public fixed networks towards converged core network, supporting IMT-2000 capabilities
Rec.	7	4Q 2005	Access network interface requirements for utilizing IMT-2000 radio access technologies as FWA with existing public fixed networks
Rec.	7	4Q 2006	Architectural and network interface requirements for converged core network to facilitate services transparency to users across different access arrangements, including migration path for network convergence
Supplement	7	2Q 2004	Document on the lawful interception requirements for the converged and the harmonized networks.

SSG: what we're working on



Looking forward: the Internet and Telecoms Convergence

- PSTN designed for voice
  - Data added by making it behave like voice (modems, ...)
- ISDN designed for both data and voice
  - Voice treated as data using CS paradigm (2B+D, ...)
- Internet designed around “best effort” data transfer (IP, ...)
  - QoS, performance issues for voice, high quality audio, high quality video, real time interactive applications
  - can be addressed using a “managed” internet
- Major changes in data capabilities of access interfaces

What does this mean for the IMT-2000 Core Network?

- Common CN solution: IP-based using IETF protocols
- Integration of Wireless LANs into basic mobile telecommunications paradigm
- Common issues to be dealt with:
  - QoS
  - Fraud/Privacy
  - CS interworking
  - Charging
- Solution: do it on a common infrastructure
- But there are issues ...

Thank you!