

# **Global Collaborative Efforts in Defining the Vision for Systems Beyond IMT-2000**

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# INTRODUCTION

- The ITU-T Special Study Group (SSG) and ITU-R Working Party 8F (WP 8F) are currently collaboratively developing a common vision of systems beyond IMT-2000.
- Caveat: Because this work is ongoing in both SSG and WP 8F, the information contained within this presentation should be considered to be a snapshot of progress and of the ongoing discussions. Some of the material has not been fully agreed at the Working Party level and none of the information is contained in approved recommendations in either the ITU-T or ITU-R.

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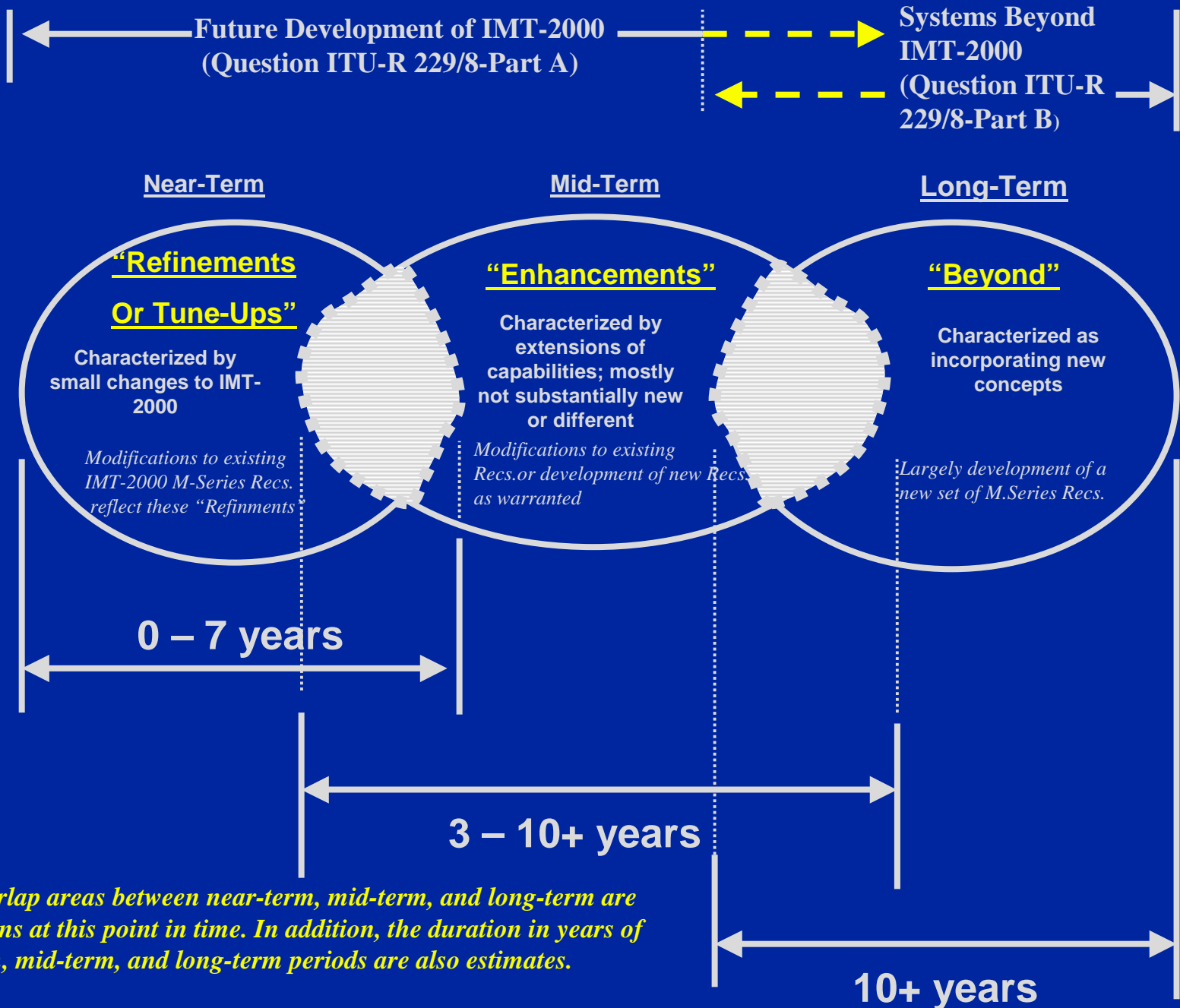
# Defining the Issues

# Some Specific Issues Currently Being Addressed by ITU-T SSG and ITU-R WP 8F

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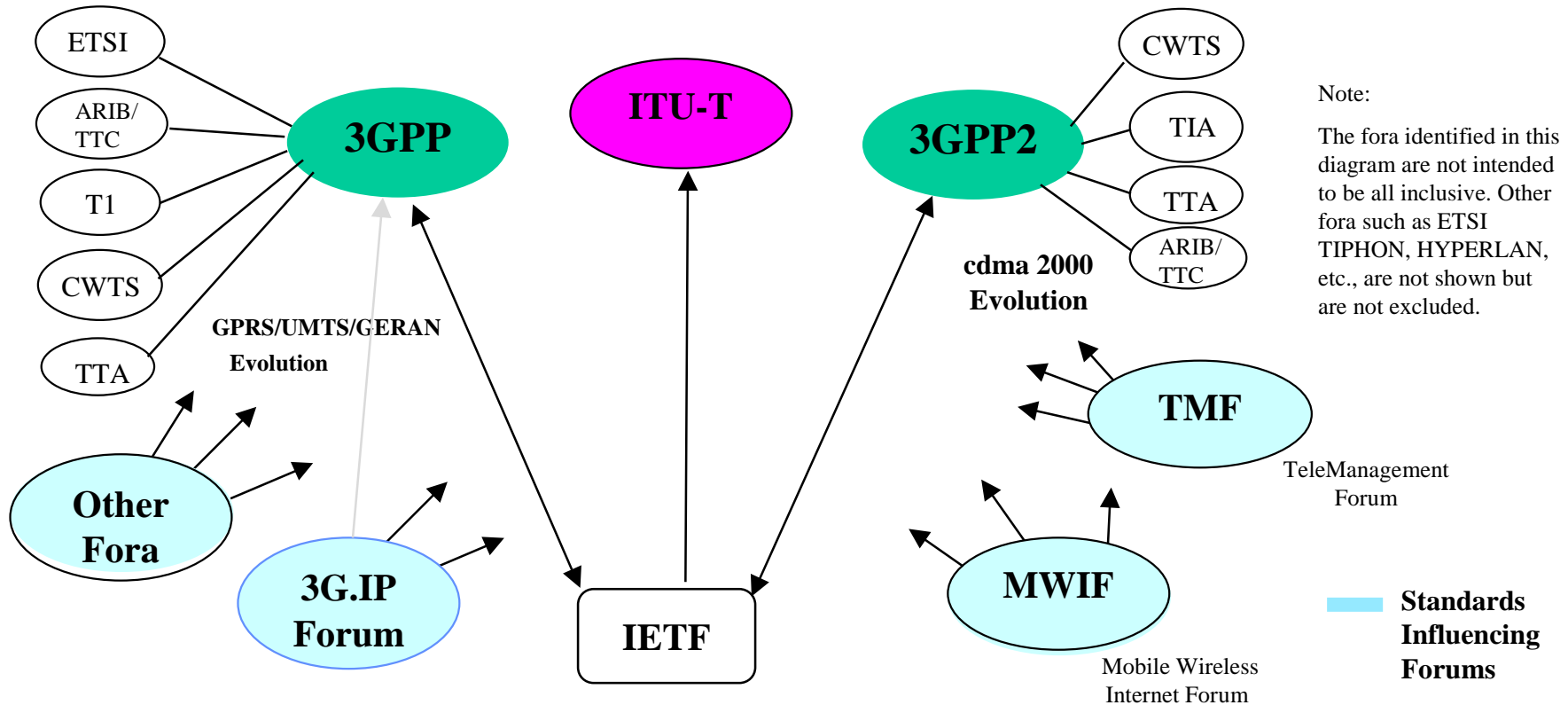
- Need for a common ITU vision of systems beyond IMT-2000 (Collaboration amongst ITU Sectors)
- Global collaboration between the ITU and relevant external organizations
- Need for a common global understanding of the following:
  - enhancements to IMT-2000
  - future development of IMT-2000
  - systems beyond IMT-2000
  - integration of IMT-2000 with other systems
  - convergence of systems and convergence of services

# One View of the Future Development of IMT-2000 and Systems Beyond IMT-2000



*Note: the overlap areas between near-term, mid-term, and long-term are approximations at this point in time. In addition, the duration in years of the near-term, mid-term, and long-term periods are also estimates.*

# An Example of Why Global Collaboration is Needed: Current IMT-2000 IP-based Core Network Standardization Landscape



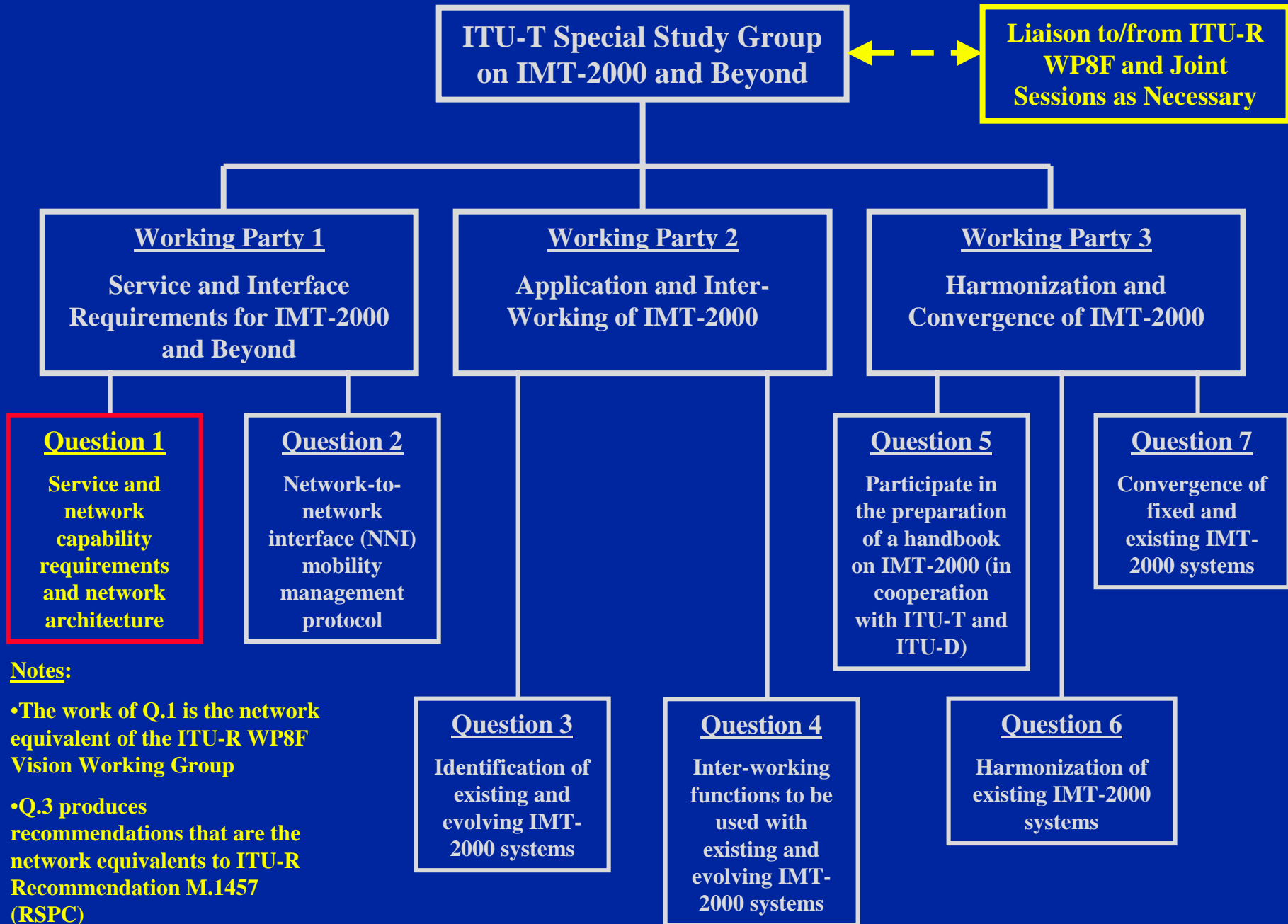
**Assertion:** Network operators want, ideally, a common IP-based network architecture. However, there will not likely be such a common IP architecture in the near term, therefore operators want *easily interoperable* IP-based networks.

**Problem:** Many fora are addressing IP-based core network requirements. Unfortunately, these fora are not addressing an IP-based internetworking solution.

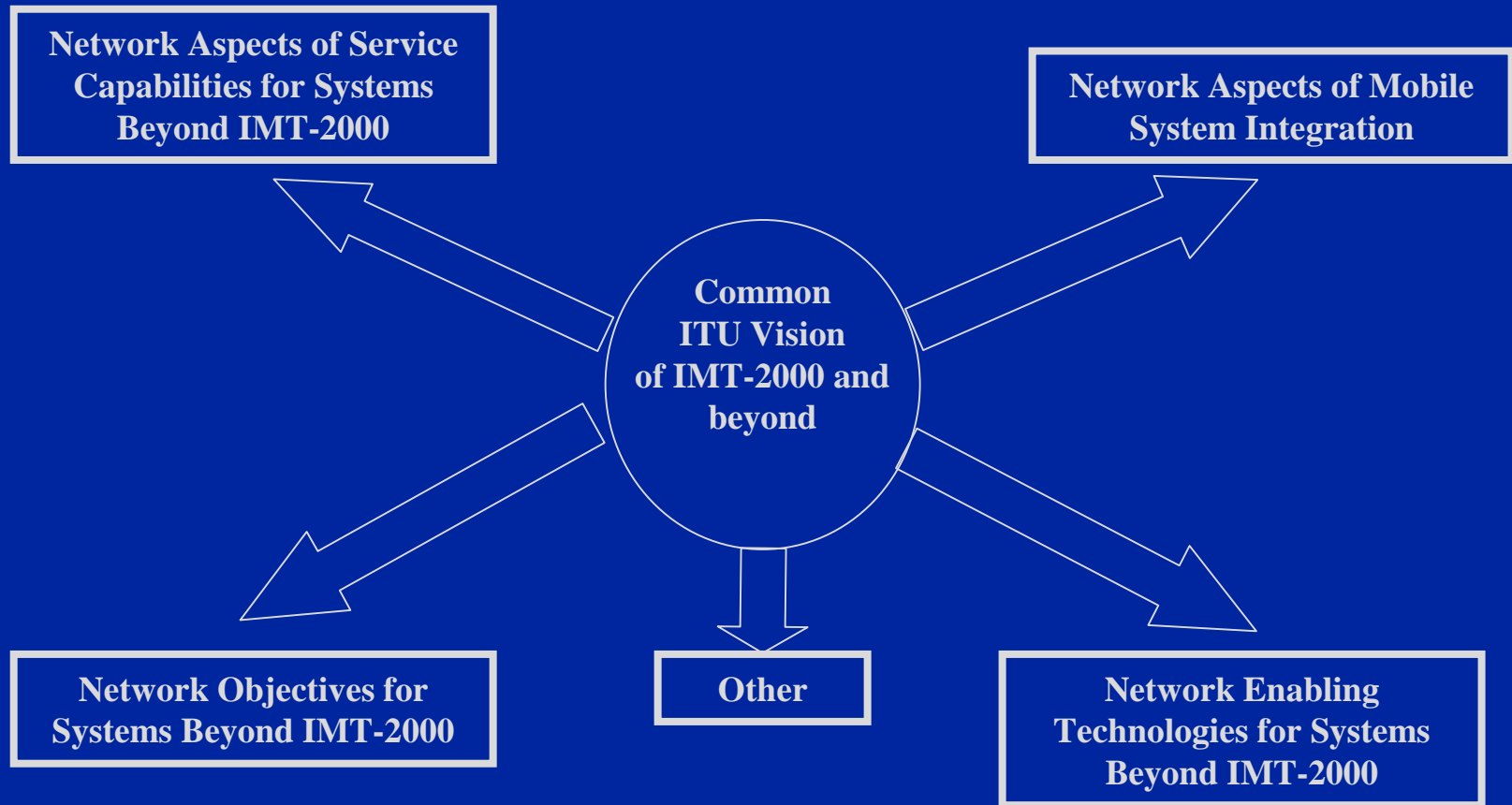
# ITU-T Special Study Group Vision Activities



# ITU-T Special Study Group on IMT-2000 and Beyond



# ITU Vision as the nucleus of detailed ITU-T Recommendations on network aspects of systems beyond IMT-2000



**Note: The details of this diagram are still being discussed within SSG. The general principle of using the common ITU vision of systems beyond IMT-2000 as a nucleus for the development of other more detailed recommendations has been agreed. Work on the services capabilities recommendation has begun.**

# Some Key Drivers from an ITU-T Special Study Group Perspective

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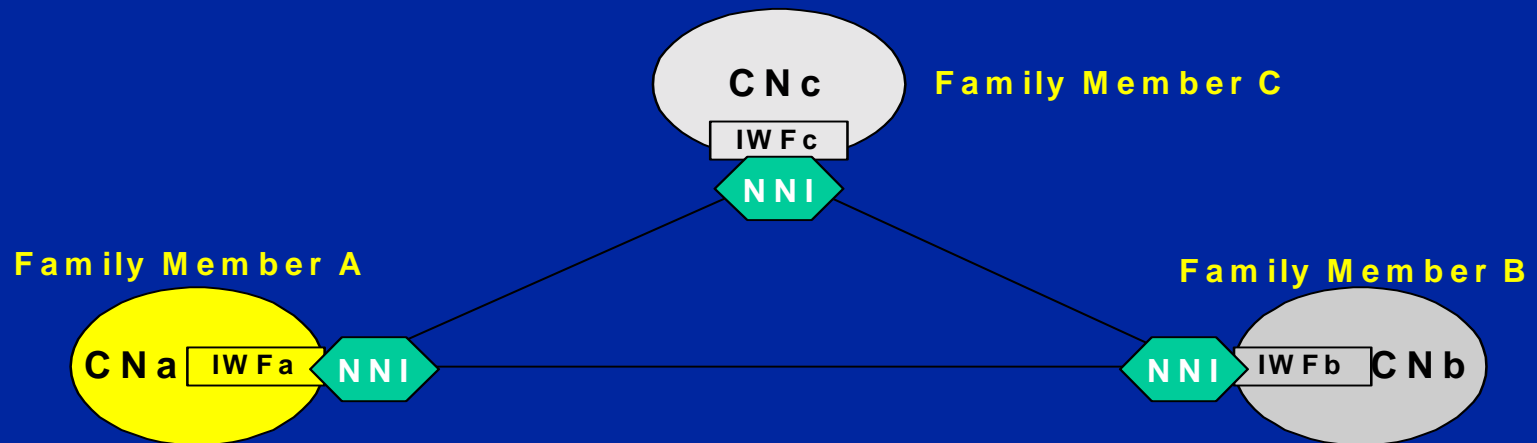
- Network-to-Network Interface
- Mobility Management
- Protocol requirements
- Protocol development

# Specific Vision Activities of ITU-T SSG

- **Vision Report:** Develop and maintain a long-term (focused around year 2010) vision in conjunction with ITU-R WP8F for future mobile service and network capabilities requirements 1st release of the document – 2Q 2002
- **Gap analysis:** Conduct and review a gap analysis between this vision and ongoing work in internal and external organisations towards this vision, in order to identify areas, if any, where the SSG can apply its expertise
- **Survey:** Conduct a survey of external organizations:  
Questionnaire - Service and Network Capability Requirements

# Network-to-Network Interoperability (NNI)

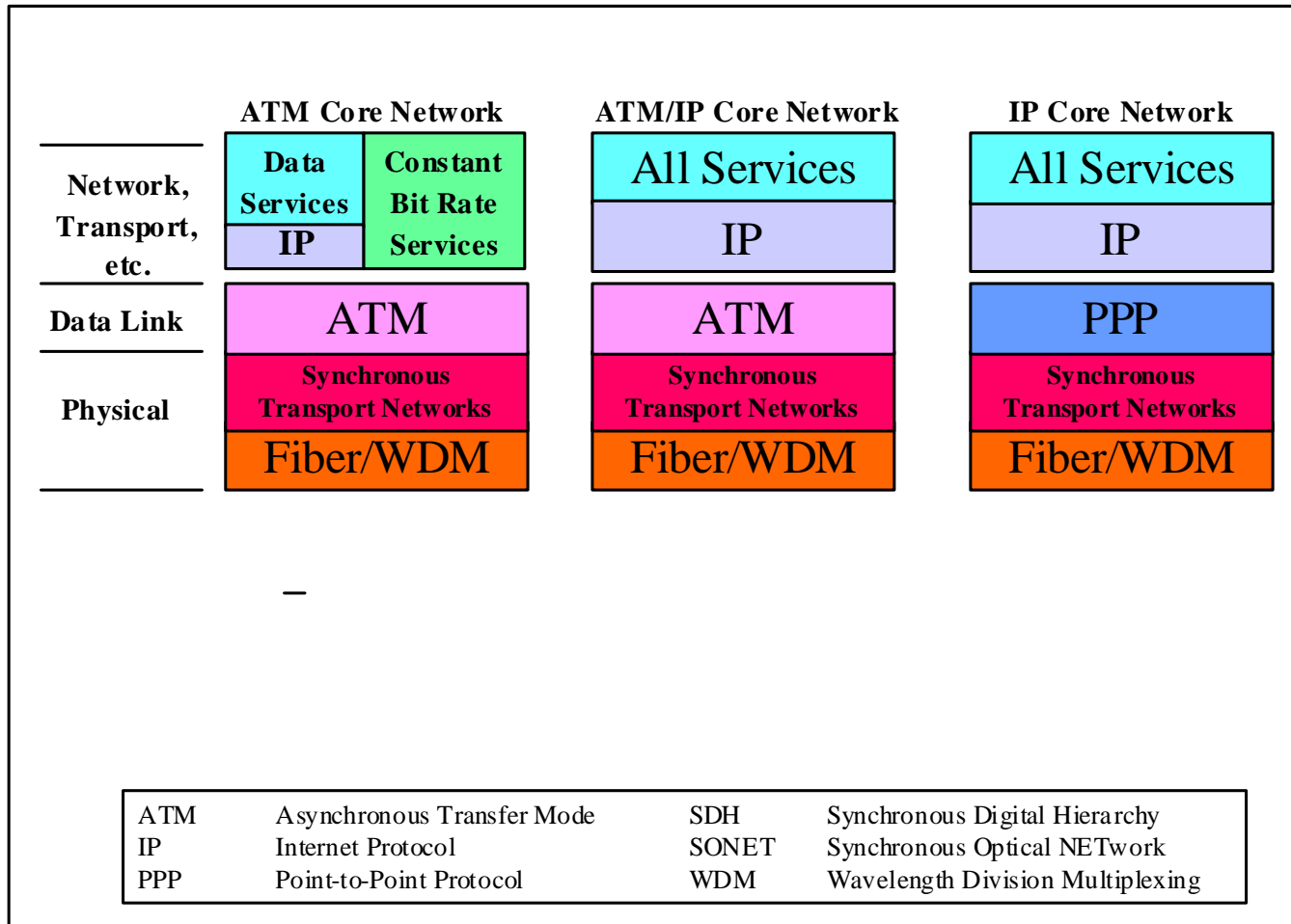
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CN - Core Network; core network may be IP-based

IWF - Interworking Facility

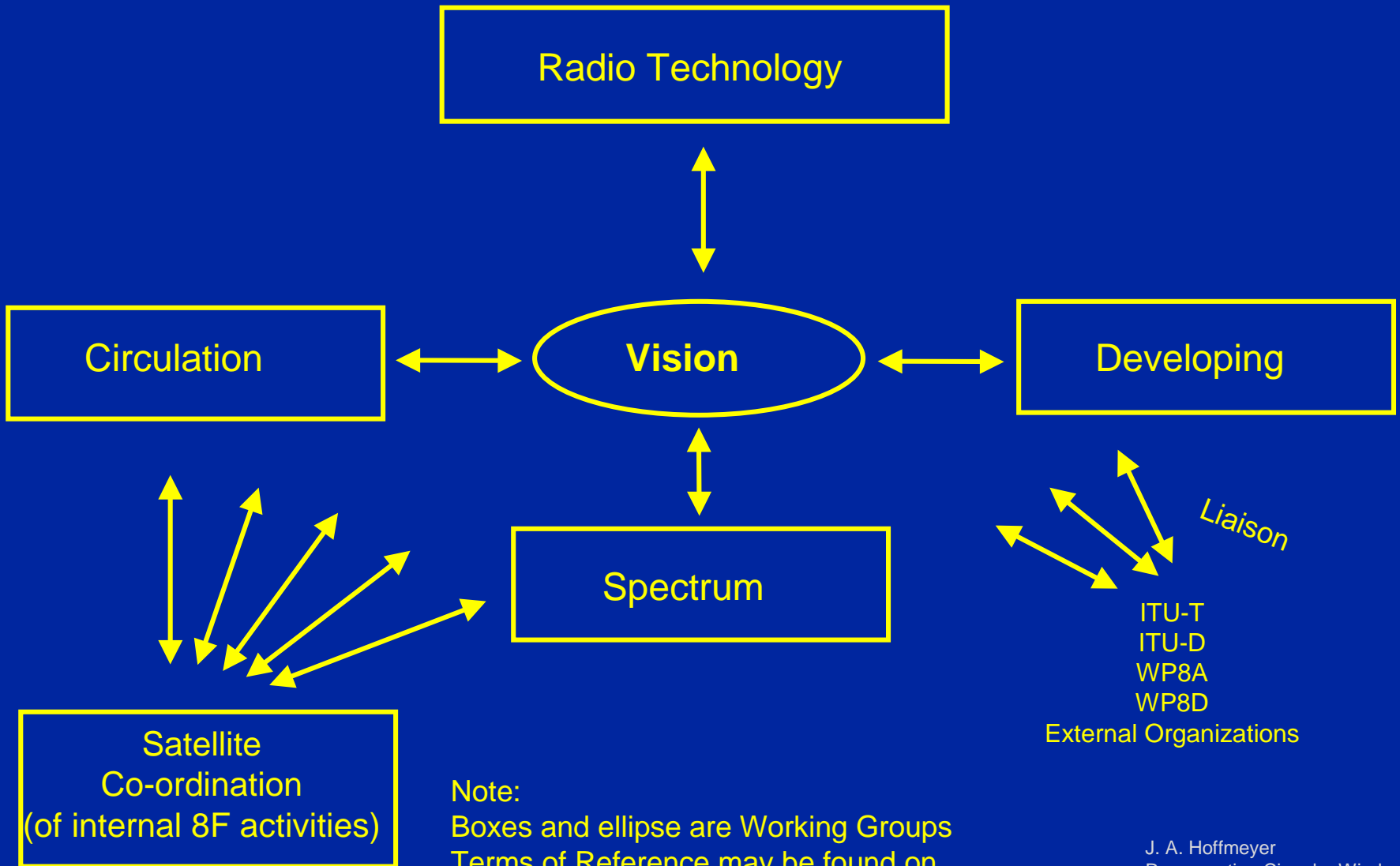
# Possible Future Layer Architecture Network Scenarios



# ITU-R Working Party 8F Vision Activities

# ITU-R Working Party 8F

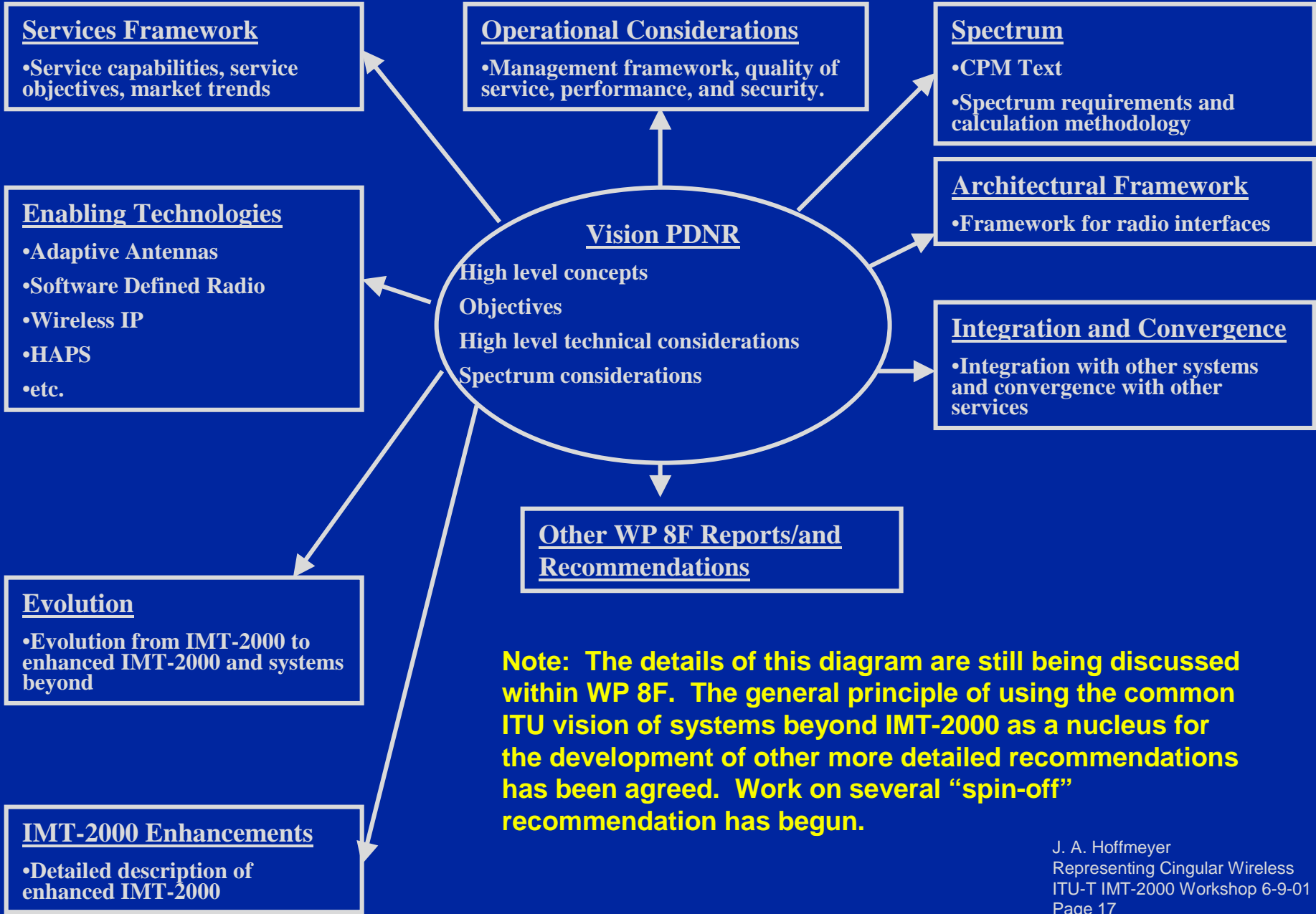
## Internal Working Group Relationship Diagram



Note:  
Boxes and ellipse are Working Groups  
Terms of Reference may be found on  
<http://www.itu.int/imt>



# Vision PDNR - Nucleus of ITU-R WP 8F Long-Range Programme



**Note: The details of this diagram are still being discussed within WP 8F. The general principle of using the common ITU vision of systems beyond IMT-2000 as a nucleus for the development of other more detailed recommendations has been agreed. Work on several “spin-off” recommendation has begun.**

# Key Elements of ITU-R WP 8F Work Programme

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## 1. Spectrum

## 2. Enhancements of IMT-2000 and Specification of Systems Beyond IMT-2000

- Update of ITU-R Recommendation M.1457, Detailed Specifications of the Radio Interfaces of IMT-2000
- Development of set of M-Series Recommendations for Systems Beyond IMT-2000

**Note: Items (1) and (2) are not disjoint. They are closely interrelated.**

# Spectrum Requirements for Systems Beyond IMT-2000 - A Key Driver from an ITU-R Perspective

## M-Series Documents for IMT-2000

ITU-R Recs. M-687-2, M-816 .....

High-level Service Requirements and Service Framework

Future M-Series Documents for Systems Beyond IMT-2000

ITU-R Report M-.2023 .....

Projected Demands for Services

These documents are in the planning and development stages

ITU-R Report M-2023 .....

Traffic Projections

ITU-R Recs. M-1390, M-1391.....



Spectrum Calculation Methodology

ITU-R Reports M-2023, M-2024 .....

Spectrum Requirements

# ITU-R WORKING PARTY 8F

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- WP8F's charter is to:
  - be responsible for the overall system aspects of IMT-2000
  - continue the global development of IMT-2000
    - working with proponent organizations, partnership projects and standards development organizations
  - develop the vision of IMT beyond IMT-2000 
  - focus on terrestrial components
  - coordinate with ITU-R WP8D re satellite; and also with ITU-T and ITU-D
- Included in the work assigned to WP8F are issues such as:
  - spectrum needs 
  - higher data rate capabilities
  - Internet Protocol (IP)-based service needs of mobile systems
  - developing country needs

# Specific ITU-R Vision Milestones

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- PDNR - Vision and Objectives of the Ongoing Enhancement of IMT-2000 and of Systems Beyond IMT-2000: **2Q 2002**
- Other M-Series Recommendations and Reports: **Specific milestones are in WP 8F Work Plans**

# Timeline for Developing Spectrum Requirements for Systems Beyond IMT-2000

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- CPM Text Development by ITU-R WP 8F - May 2002
- Conference Preparatory Meeting - November 2002
- World Radiocommunication Conference - June/July 2003
  - Agenda Item 1.21: to consider progress of the ITU-R studies concerning the technical and regulatory requirements of terrestrial wireless interactive multimedia applications, in accordance with Resolution 737 (WRC-2000), with a view to facilitating global harmonization
  - Agenda Item 1.22: to consider progress of ITU-R studies concerning future development of IMT-2000 and systems beyond IMT-2000, in accordance with Resolution 228 (WRC-2000)
- World Radiocommunication Conference 2006

**Global Collaborative Efforts in Developing A Long-Range Vision for Systems Beyond IMT-2000 Including Wireless Multimedia and IP Requirements**

**How the ITU is Working the Issues**

# Collaborative ITU-R/ITU-T Work in Development of a Common ITU Vision for Systems Beyond IMT-2000

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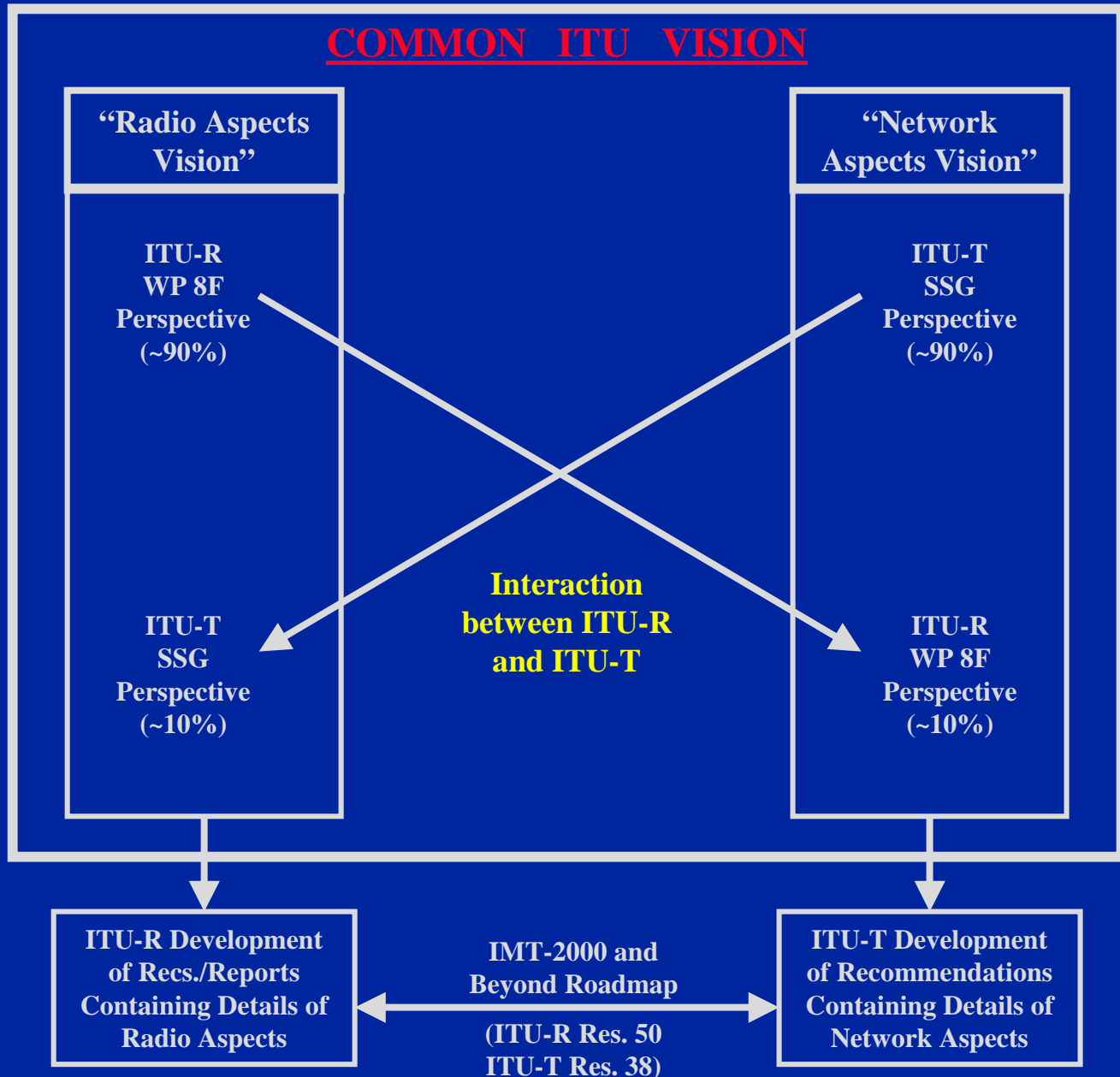
- There is agreement in both ITU-R WP 8F and ITU-T that there should be a single ITU vision of systems beyond IMT-2000.
- ITU-T SSG is working on developing an ITU-T Preliminary Draft New Resolution on the vision of systems beyond IMT-2000 that is synergistic with the ITU-R WP 8F Vision Preliminary Draft New Resolution - rapid progress is being made in both sectors.



# Development of Common ITU Vision for IMT-2000 and Beyond

## Note:

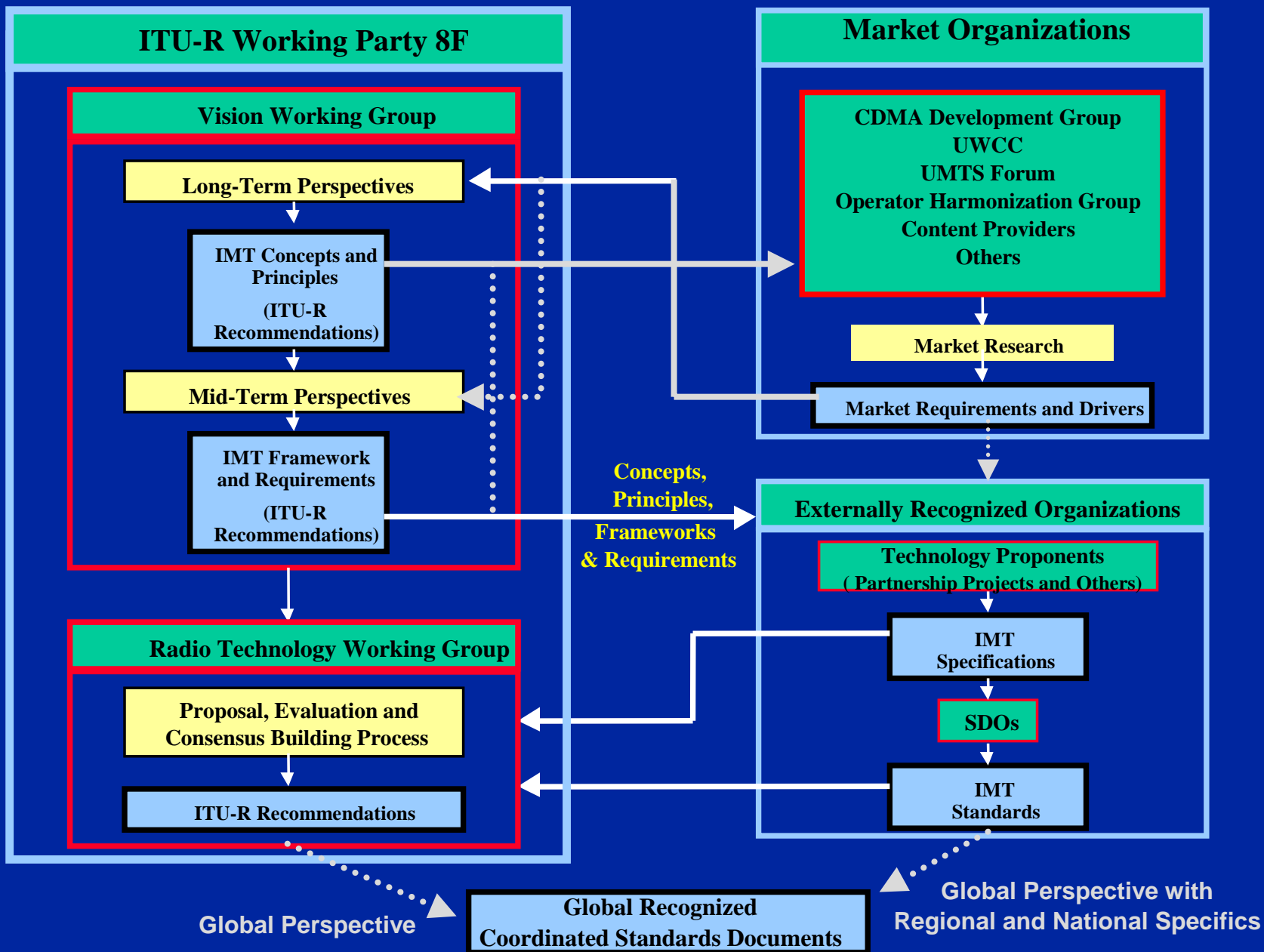
The percentages shown indicate the approximate scope of the information developed respectively by the "R" and "T" Sectors while mindful of the special needs of the developing countries as represented by the ITU-D.



# IMT-2000 Became and Is Now a Global Partnership

- ITU-R and ITU-T ensure a global perspective on IMT-2000 for the developmental and evolution vision, for worldwide compatibility, for international roaming, for user needs, for baseline requirements, for core specifications, and fosters global consensus.
- Partnership Projects ensure a global perspective on the technology developments and are a primary developer of the radio interface technical specifications.
- SDO's ensure regional and local suitability and applicability of the global core specifications. Their efforts result in IMT-2000 standards that are based upon the technical specifications produced by the Partnership Projects.
- Recommendation ITU-R M.1457 and ITU-T Q.REF reflects this partnering of organizations and the division of work and responsibility.
- Formal business arrangements between ITU and external organizations reflect the responsibilities and roles and ensure the integrity of ITU-R IMT-2000 standards and ITU processes.

# Organizations and Process for International Partnering in Development of IMT Requirements, Specifications, Standards, and Recommendations



# Summary

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- **Global collaborative work with external organizations is the norm for both ITU-T and ITU-R with the use of normative references.**
- **Wireless Standards Development - A New Paradigm for the ITU in the collaborative work with relevant external organizations.**
- **Increased collaboration with external organizations is needed in the development of the vision of systems beyond IMT-2000**
  - Formal liaisons and Chairman's letters
  - E-mail reflectors
  - Workshops
  - Joint experts group meetings
  - Other ??
- **Collaborative work on vision for systems beyond IMT-2000 between ITU-R and ITU-T has begun.**
- **ITU-T SSG and ITU-R WP 8F have both made rapid progress in the development of the common vision of systems beyond IMT-2000**
- **The ITU-T Recommendation on the network aspects of the vision of systems beyond IMT-2000 and the ITU-R Recommendation on the radio aspects of the vision of systems beyond IMT-2000 are expected to be the nucleus respectively of additional, more detailed ITU-T Recommendations and ITU-R Recommendations related to systems beyond IMT-2000/**