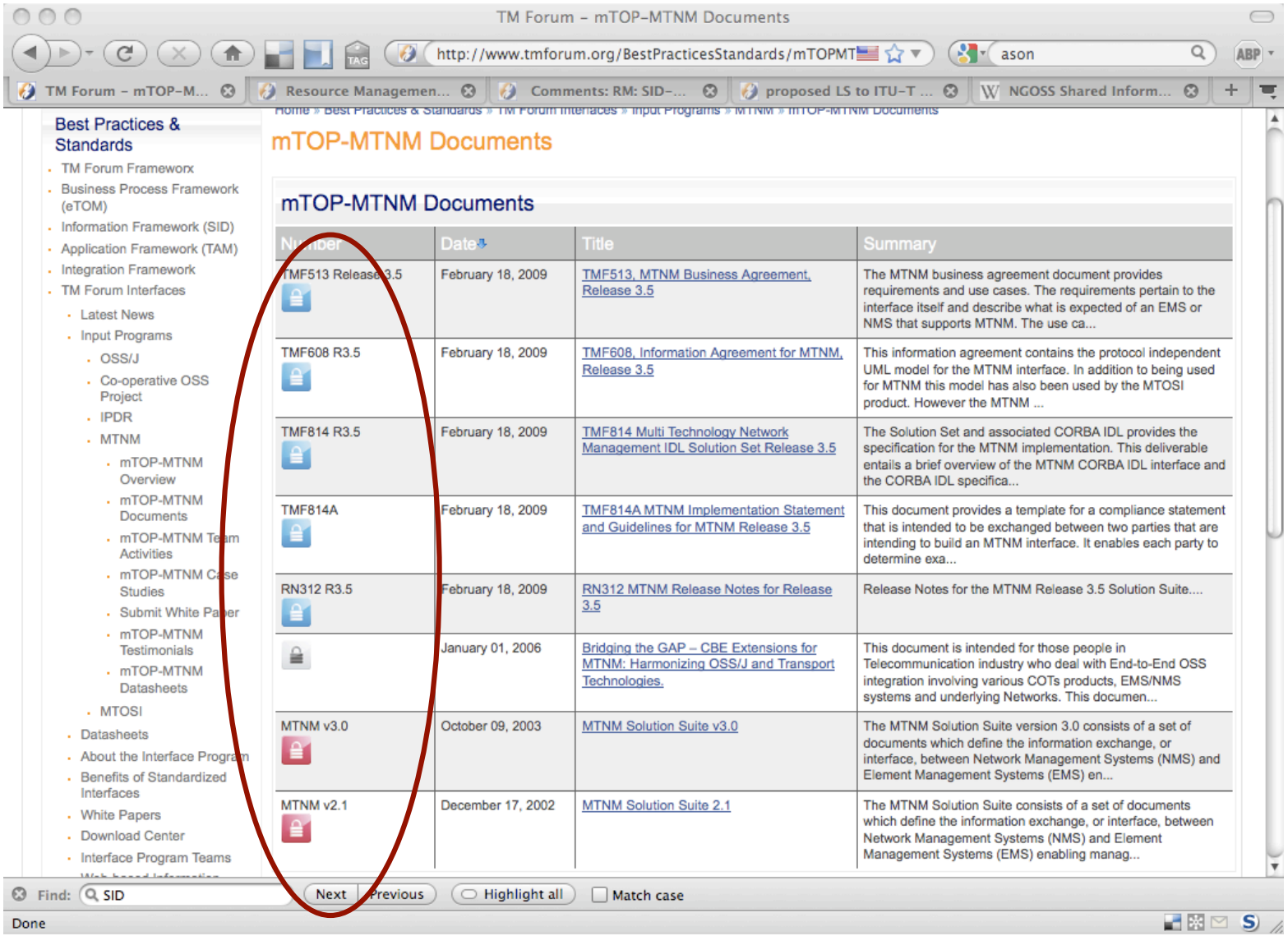
Related Work: TMForum and ITU

Freek Dijkstra

TMForum IPR Policies Apply



TMForum and ITU-T

ITU-T International Telecommunication Union (Standards Sector)
ITU founded1865 (!); ITU-T (CCIT) founded 1925.
Focus on transmission technology and telecom services.

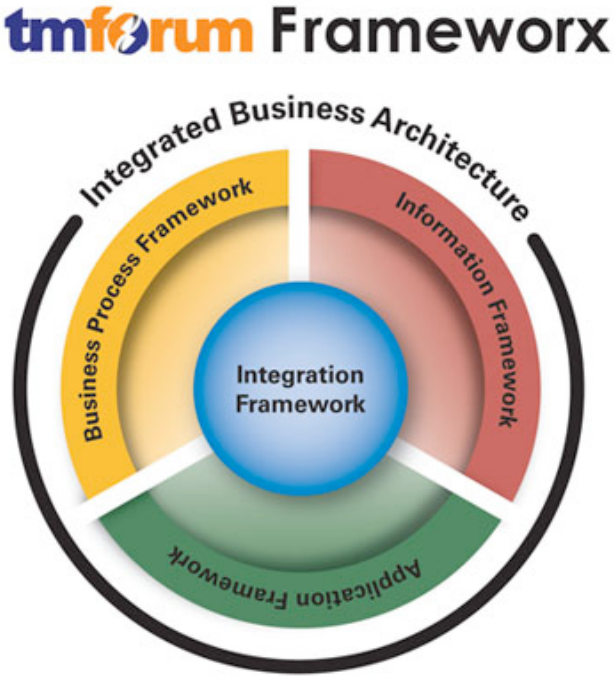
TMForum Telemanagement Forum
Founded 1984
"The voice of the OSS/BSS industry"

(OGF founded 1988; focus on grid service)

Operations & Business Support Systems

TMForum Standards

- **Business Process Framework (eTOM)**
  Common vocabulary for both business and functional processes.
  Describes relation between *service plane* and *business plane* (long document)
- **Information Framework (SID)**
  Common language and ability to align data with pertinent business processes.
- **Application Framework (TAM)**
  Standardized model for grouping function and data into recognizable applications or services.
- **Integration Framework (TNA)**
  Unifying function in the Solution Frameworks
- **Service Delivery Framework (SDF)**
  Maintain control of service lifecycle management
- **IPsphere Framework**
  Business layer for rapid service delivery



TMForum Best Practices

- **Revenue Assurance**
- **Managing Service Quality**
- **Certified Compliance Testing**
- **Catalyst Program** (Rapid Prototyping)

TMForum Software Interfaces (=API)

TMForum Interface Program (TIP)

- **MTOSI (Multi-Technology Operations System Interface)**
  Interfaces for network and service management for transport networks
- **MTNM (Multi-Technology Network Management)**
  Interfaces that model the management of multi-technology networks
- **OSS/J (Operations Support Systems / Java)**
  Multi-technology APIs that deliver on Solution Frameworks (NGOSS (next gen OSS)) design guidelines for component-based management systems
- **IPDR (Internet Protocol Detail Record)**
  Interfaces used for usage data management and accounting
- **Identity Management**
  Unified identity management across operational systems

MTNM

- **UML**-based interface between the Network Management Layer (NML) and Element Management Layer (EML).
- Support for ATM, frame relay, SONET/SDH, DSL and Ethernet.
- Business Scenarios:
  - Inventory Discovery
  - Connection Provisioning
  - Equipment Provisioning
  - Performance Management

TMForum Resource Management

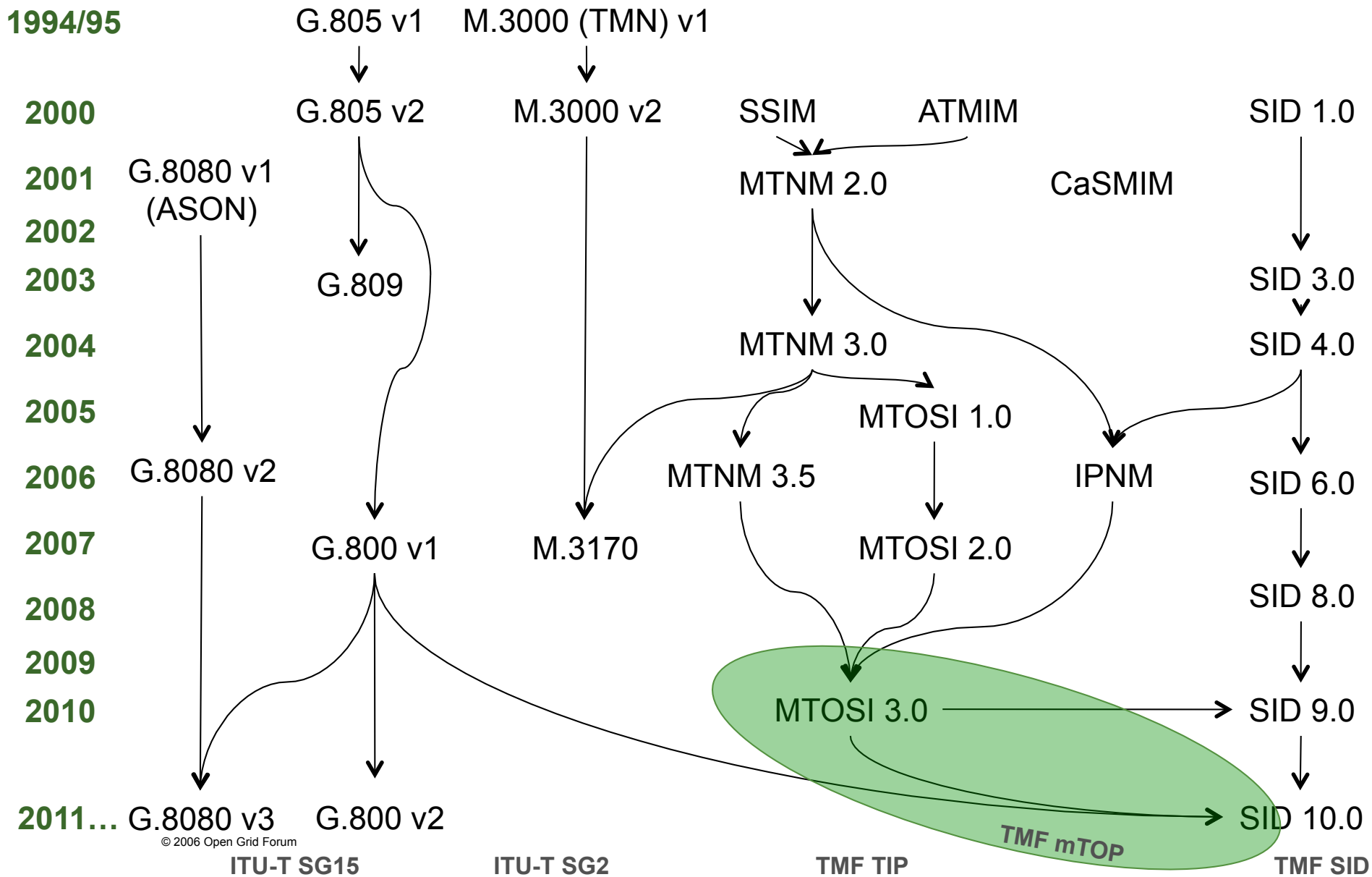
- Ensures consistency of **resource descriptions** between frameworks
- Resources are **Logical Network Resources**
  (note: everything is logical, physical is irrelevant!)

- **Three tasks** (2010)
  - ConConConvergence (Connection-Connectionless Convergence)
  - SID-MTNM/MTOSI Alignment
  - Model inspired by G.800

- Integration of MTNM, MTOSI and SID models
  - **Phase I** (completed): Integrate MTNM and MTOSI and include in SID as-is.
  - **Phase II** (started sep 2009): Create a new model based on G.800

- MTNM, MTOSI and SID are all **UML models**

Timeline



ITU-T Study Group 15

Study Period 2009-2012:

Q 1/15 Coordination of Access Network Transport standards
Q 2/15 Optical systems for fibre access networks
Q 3/15 General characteristics of transport networks
Q 4/15 Transceivers for customer access and in-premises networking systems on metallic conductors
Q 5/15 Characteristics and test methods of optical fibres and cables
Q 6/15 Characteristics of optical systems for terrestrial transport networks
Q 7/15 Characteristics of optical components and subsystems
Q 8/15 Characteristics of optical fibre submarine cable systems
Q 9/15 Transport equipment and network protection/restoration
Q 10/15 OAM for transport networks
Q 11/15 Signal structures, interfaces and interworking for transport networks
Q 12/15 Transport network architectures
Q 13/15 Network synchronization and time distribution performance
Q 14/15 Management and control of transport systems and equipment
Q 15/15 Test and measurement techniques and instrumentation
Q 16/15 Optical physical infrastructure and cables
Q 17/15 Maintenance and operation of optical fibre cable networks
Q 18/15 Development of optical networks in the access area

ITU-T Q12/15

Tasks in Q12/15 (Transport network architectures):

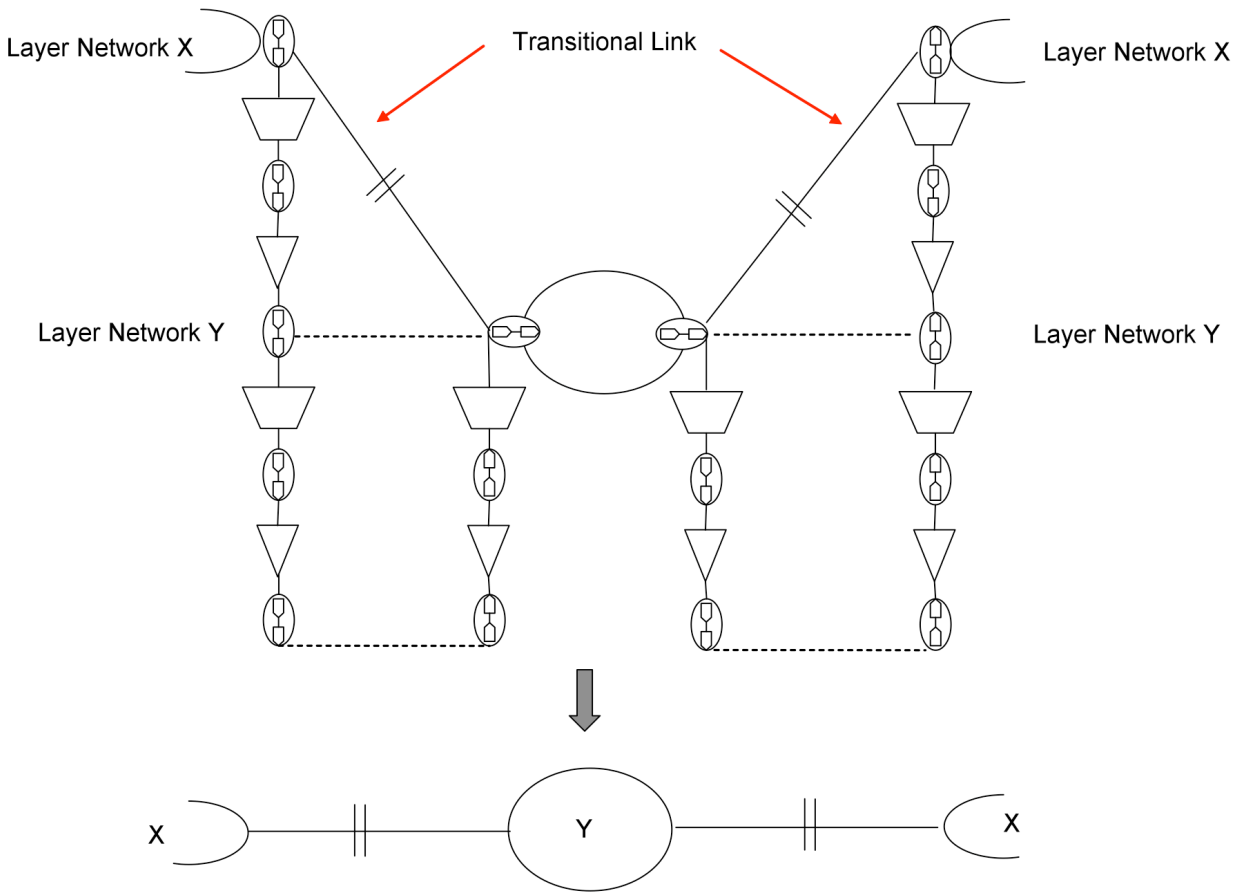
- Maintenance of Recommendations I.326 and G.803
- Refinement and enhancement of Recommendations G.800, G.805, G.809, G.8080, G. 8010, G.8110 and G.872
- Develop a revised version of Recommendation G.8110.1 to align with the MPLS-TP architecture.

Current revisions:

• G.800	Unified functional architecture of transport networks
• G.803	Architecture of Transport Networks based on the Synchronous Digital Hierarchy (SDH)
• G.872	Architecture of Optical Transport Networks
• G.8010/Y.1306	Ethernet Layer Network Architecture
• G.8080/Y.1304	Automatic Switched Optical Networks
• G.8110/Y.1370	MPLS Layer Network Architecture
• G.8110.1/Y.1370.1	Architecture of MPLS-TP Layer Network

Transitional Link Concept

- A **transitional link** consists of the **link port** at the edge of one subnetwork and a corresponding **link port** at the edge of **another subnetwork** that operates on **different** instances of **characteristic information** or whose characteristic information is the same but with different Layer Information. A transitional link (topological component) is supported by or implemented by layer processors and/or adaptation/termination functions (transport processing functions). A transitional link can be partitioned into parallel transitional links, or a concatenation of transitional links. It can also be partitioned into a concatenation of transitional links and zero or more links.



Feedback on Transitional Links

- Distinguish between **Transport** functions and **Transform** functions
- Transitional Link is **not a new topological component**
- Component in a topology **view** for (multilayer) **routing**.
- The described routing topology view is **incomplete** (e.g. it does not describe routing restrictions, which is needed for a complete view).
- There may be **more** application specific **views**.
- Define each derivation from topology to a specific view in a **separate document**
- Requirement of 1:1 relation between source and sink is very **limited** (multiplexing and inverse multiplexing are not supported).