ITU-T Work on ASON Management

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MPLS
2004

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Management Plane's Role

- **Management plane ultimately responsible**
  - Recording transport plane resources and activities
  - Assigning control of transport resources to Control Plane
  - Responding to resource exhaustion notifications
- **Significant Carrier Deployment Issue**
  - Consistent feedback from carriers
  - Management = reliability/efficiency/economy
 - Legacy systems need to be included

ASON Management Approach

- ASON Management work extends existing transport network management work
  - TMF and SG IV
    - NMS to EMS interface
    - Extend for distributed connection management
  - Previous SDH/OTN management work
    - G.774 – SDH Management Information Model
    - G.874/874.1 – OTN Management Model
    - Extend with ASON control plane architecture and components

TMF Activity on Management

- Network to Element Management interfaces
- Multi Technology Network Management Group
- Four documents
  - TMF 513 Business Agreement
  - TMF 608 Multi-Technology Interface Agreement
  - TMF 814A Implementation Statement
  - TMF 814 IDL Implementation
- Assumes network already provisioned
- Specifies network aspects only
- Feeds into ITU-T SG IV

TMF MTNM Focus

NMS

NML-EML Interface

EMS

Control Plane

Transport Plane

NE   NE   NE
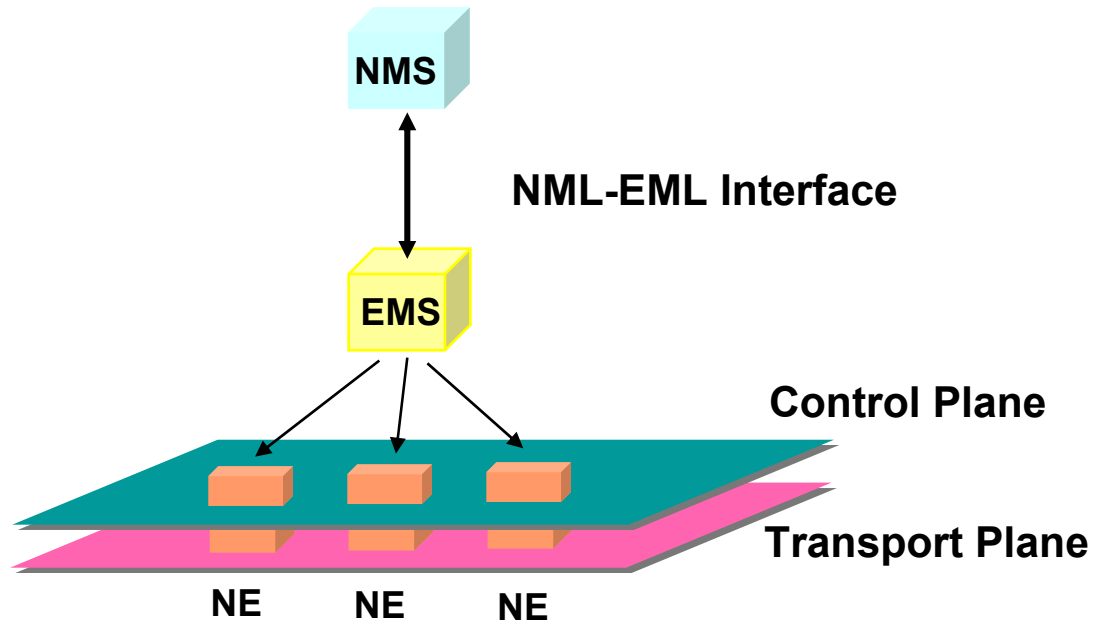
MTNM – What is it? What does it do?

- Multi-Technology Network Management Modeling Team
  - CIENA has been involved in the since Oct '99. Beginning of work on version 2.0.
  - Develops the NML-EML Interface
    - Defines a "standard" interface for multi-vendor/multi-technolgy management
    - A common way for NMSs to manage SONET/SDH, ATM, DSL, Frame Relay and Ethernet services
    - Specifications: TMF513, TMF608, TMF814 and TMF814A
  - Current released version is 3.0.
 - Version 3.5 is under development.

What's in version 3.5

- Three main areas
  - Control Plane Management
    - Understanding the CP topology, provisioning end to end connections using the CP.
  - Generalized OS-OS Interface
    - The short-term goal is to derive or develop an XML information model based on TMF608 for the purpose of exchanging network inventory and circuit information. In particular, the focus is on inventory retrieval and notifications concerning current and planned inventory, but not on historical inventory.
  - Ethernet Services

ITU-T SG15 Activity on Management

- Element Management - Element interfaces
  - adopts network model from TMF
- ITU work is complementary to TMF
  - provides Element model allowing provisioning
  - requirements
  - protocol neutral models (UML)
- Adds presence of control plane and control network to previous work

Relationship of Management, Control and Transport Planes
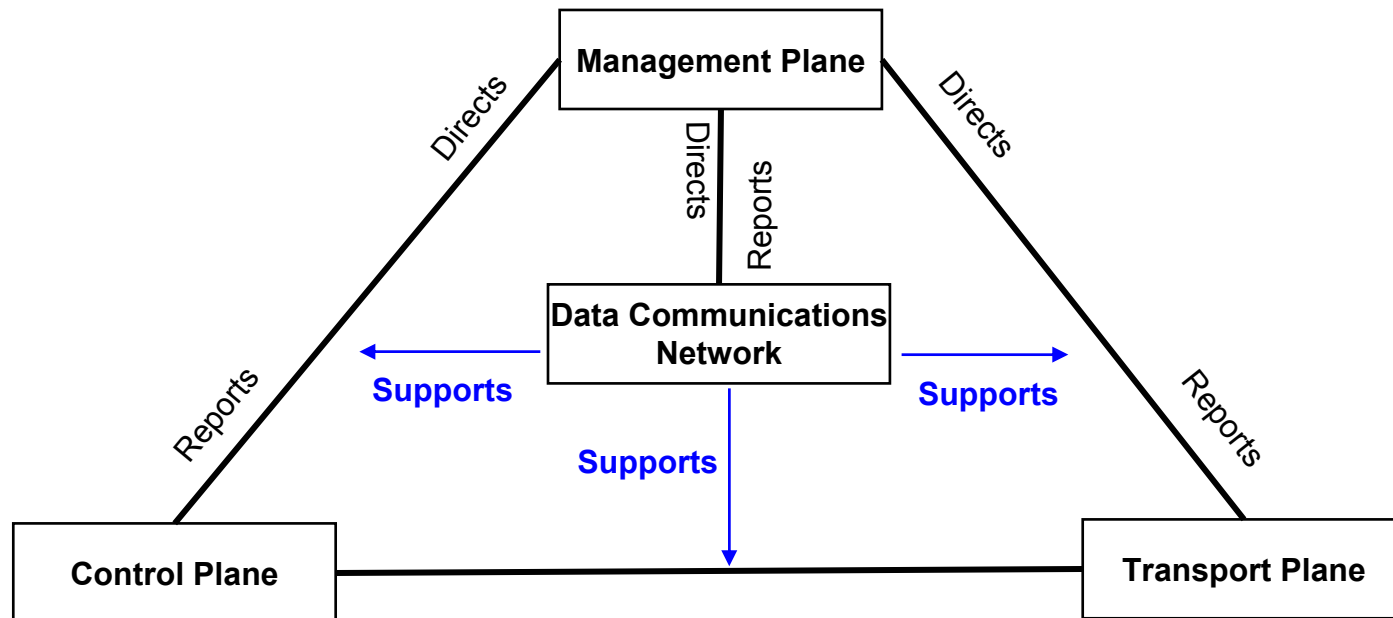
ITU-T Planned Documents

- G.7718 - Framework for ASON management
  - Requirements for control plane management
  - Reiterates requirements from many sources in one place

- G.7718.1 - Protocol-neutral information model
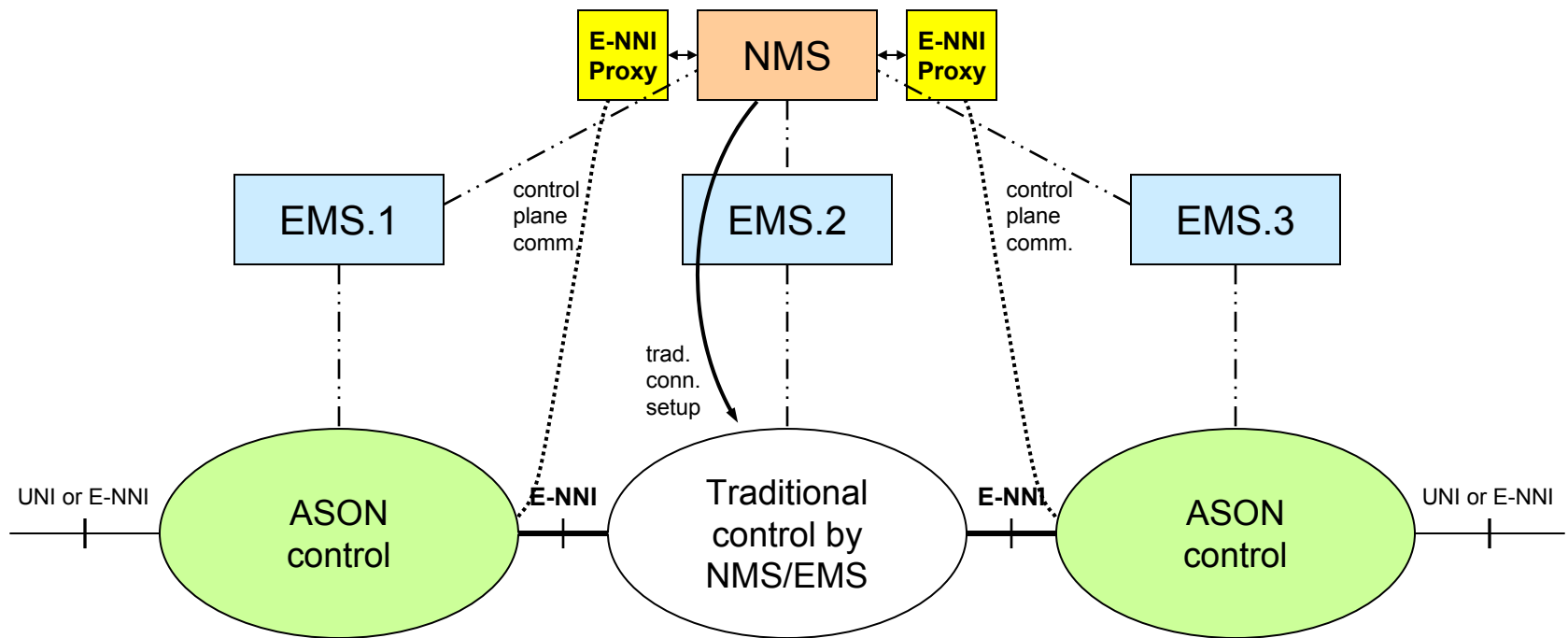 - Derives and specifies ASON managed objects
  - Protocol-neutral
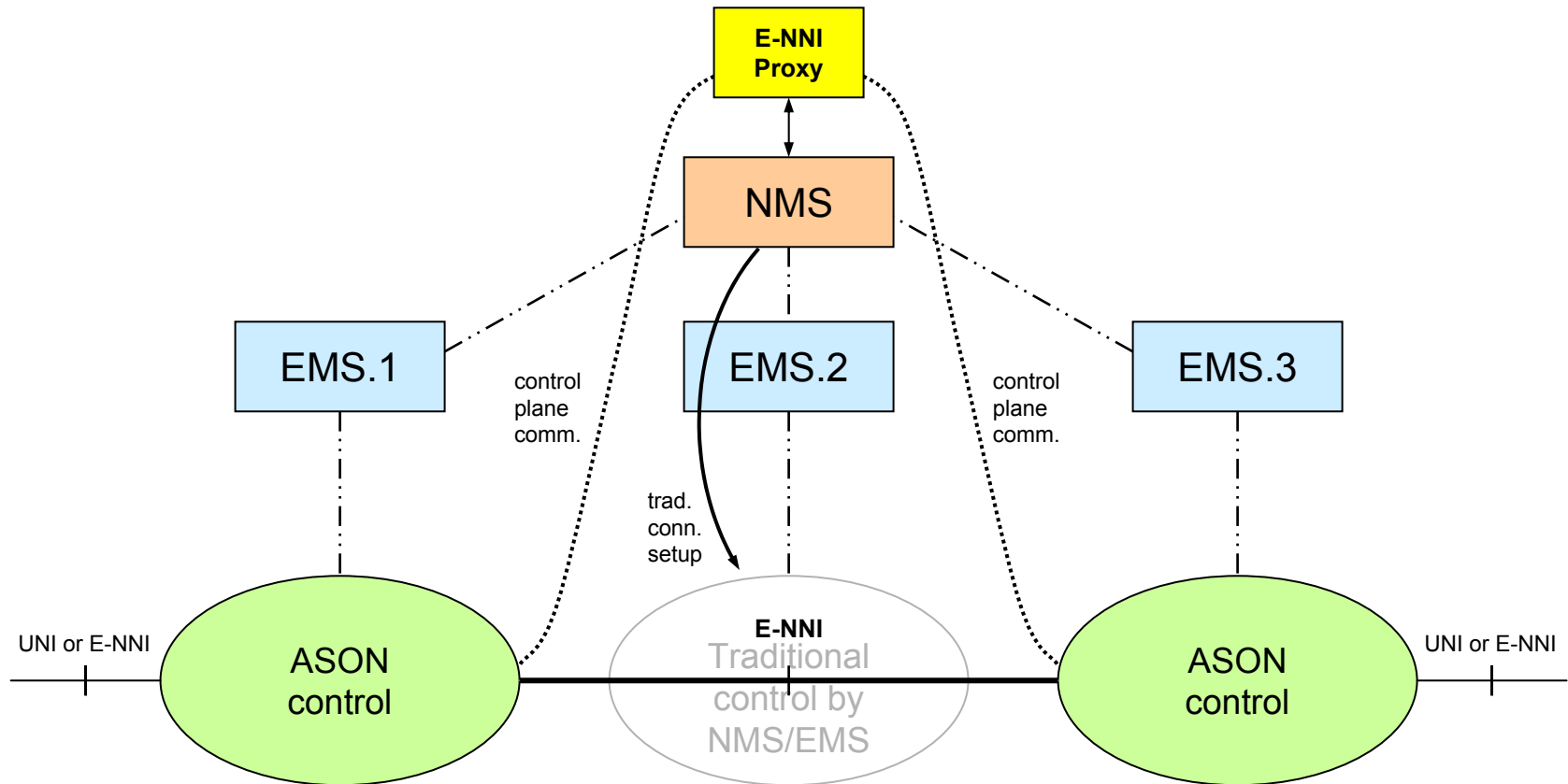
ITU-T ASON Management Work

G.7718 Framework

G.7718.1 Model

NMS

EMS

Control Plane

NE   NE   NE

Transport Plane
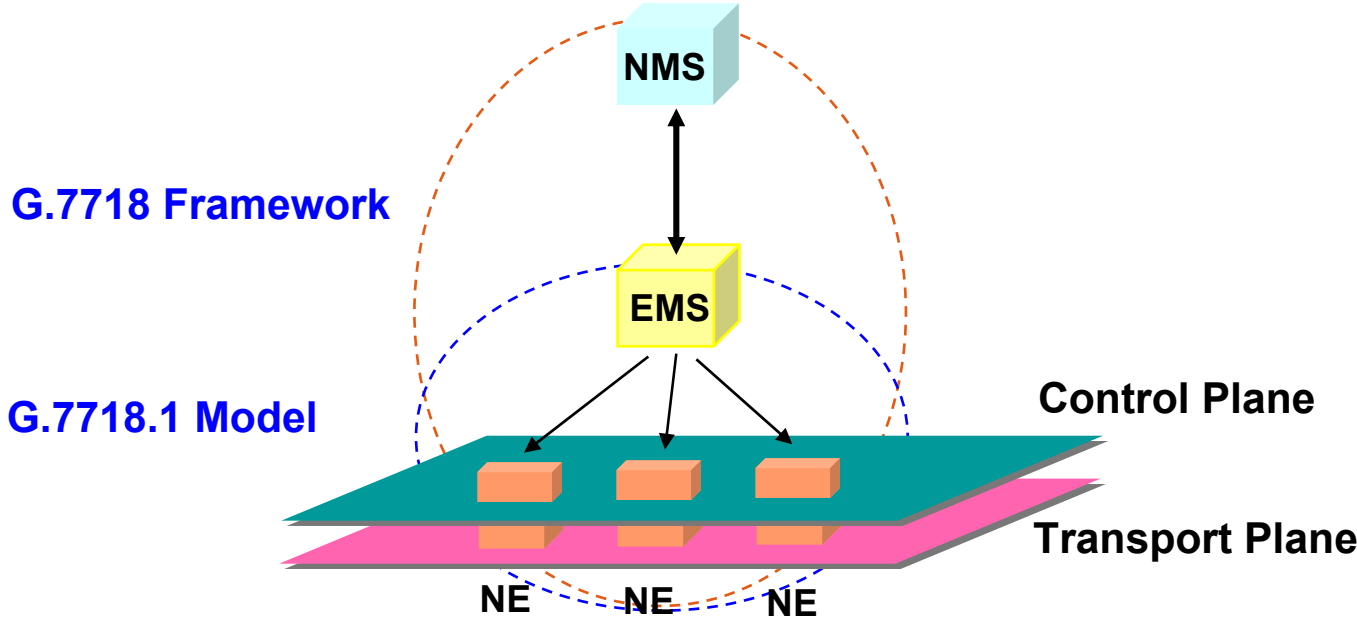
Possible Realizations
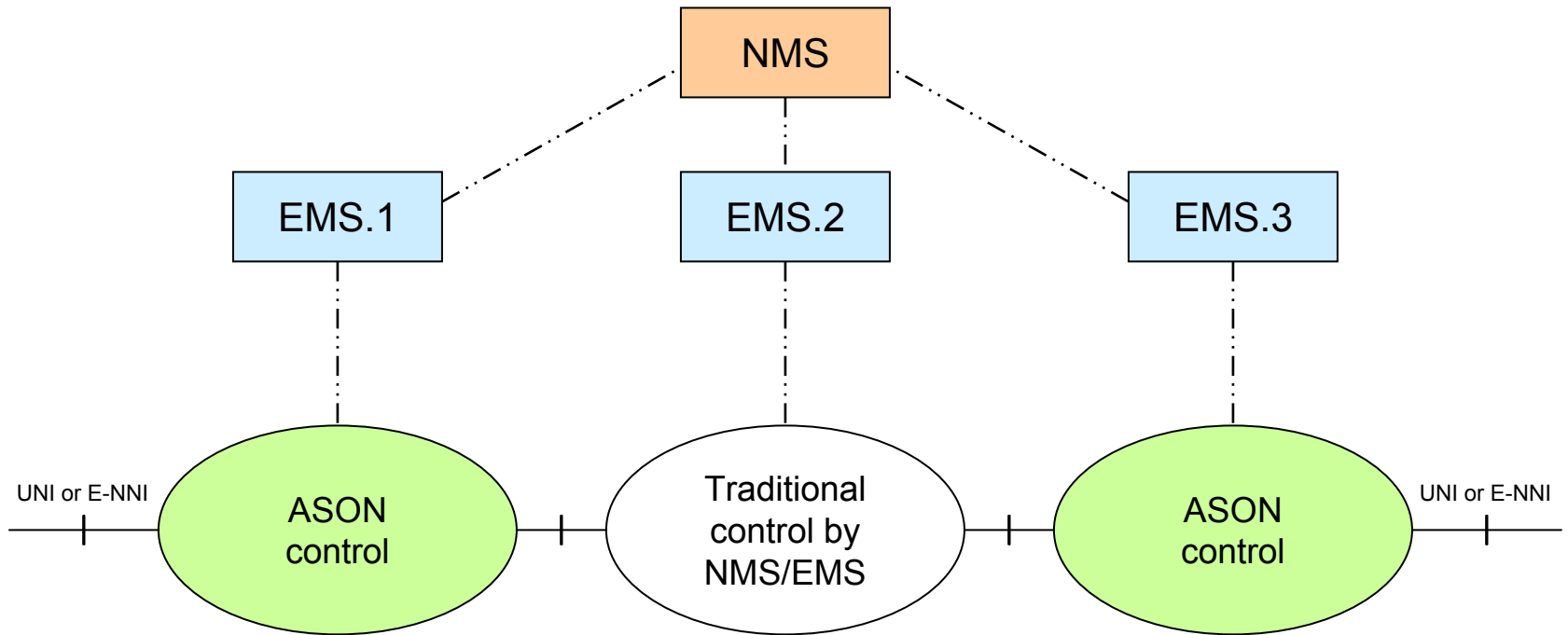
# Dynamic Connection Across Legacy Subnet

Static Connection Across Legacy Subnet

Planned Approach to ASON Modeling

- ASON components do not make good objects
  - Functional entities separate from implementation
  - Should not be managed as objects
- Manage ASON topology entities
  - Routing Areas and Links
- Manage ASON services and protocols
  - Routing, Signaling, Discovery
- Domains set up by configuring services and protocols at domain edges

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ASON UML Class Diagram (example)
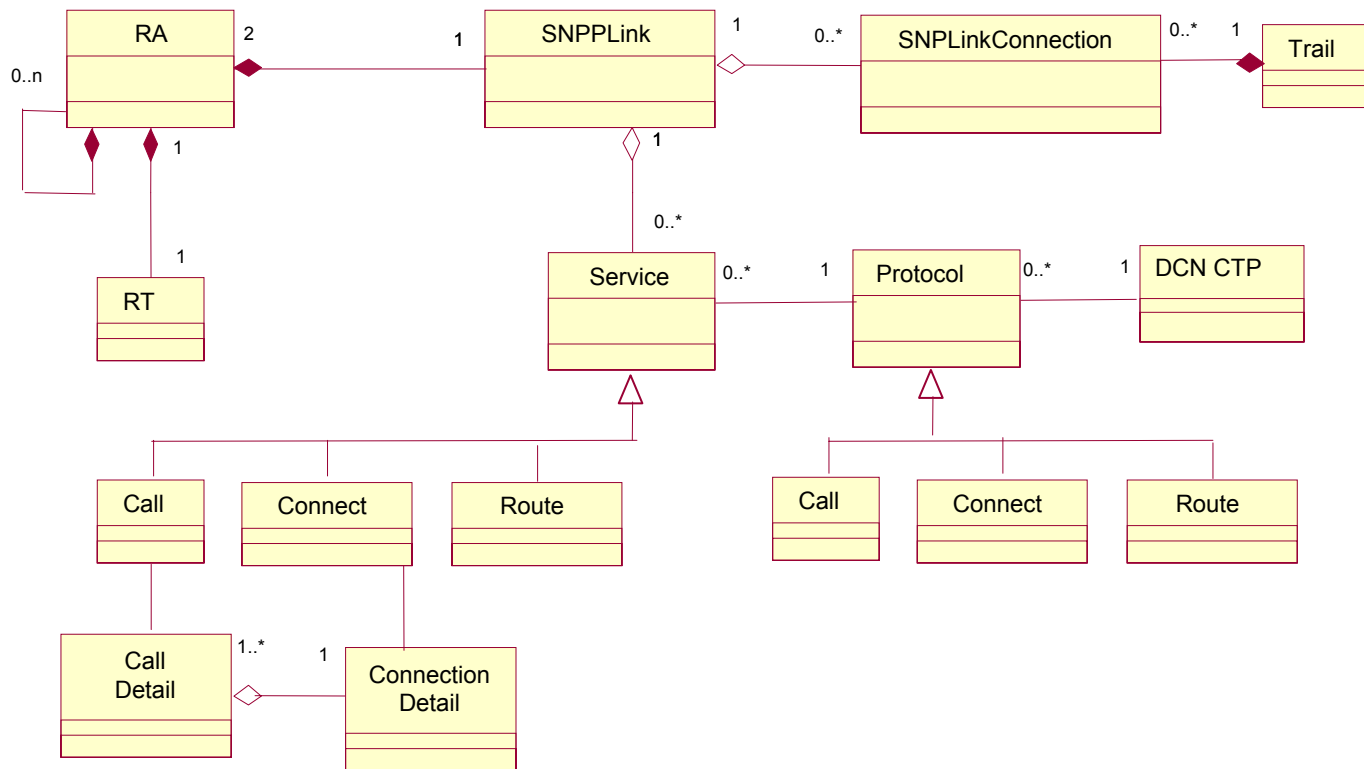
Future Work

- G.7718
  - Framework document
  - Stable draft completed 9/04
  - Planned for consent 11/04
- G.7718.1
  - Information model
  - First draft completed
  - Planned for consent in late 2005