

# Chapter 10

## Telecommunications Management Network

# TMN

- Necessity for interoperability basis for TMN
- Need for management of more than just the network components
- Networks / subnetworks need to be managed
- Services - internal and external need management
- Business management needs to be addressed
- TMN joint effort by ITU-T and ISO

# OS: Trunk Testing System

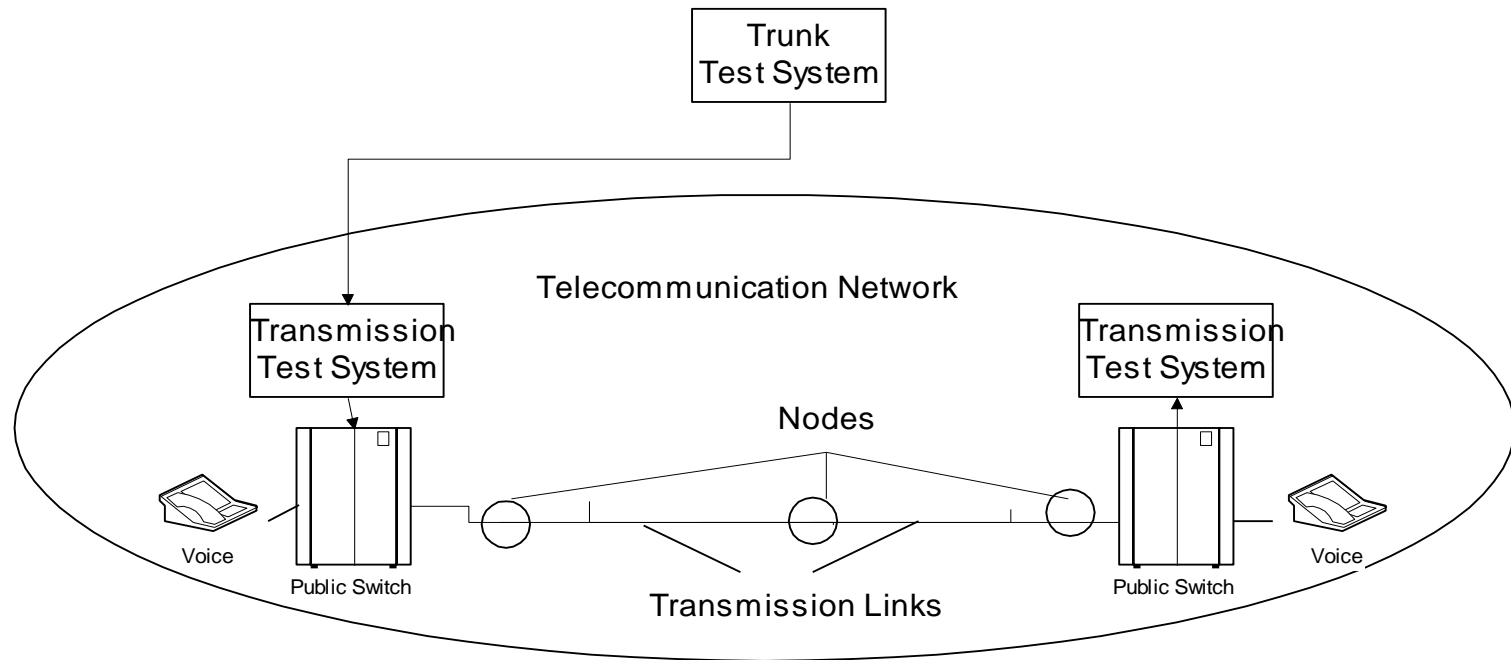


Figure 11.1 Operations System for Network Transmission

# OS: Telephone Switch Traffic

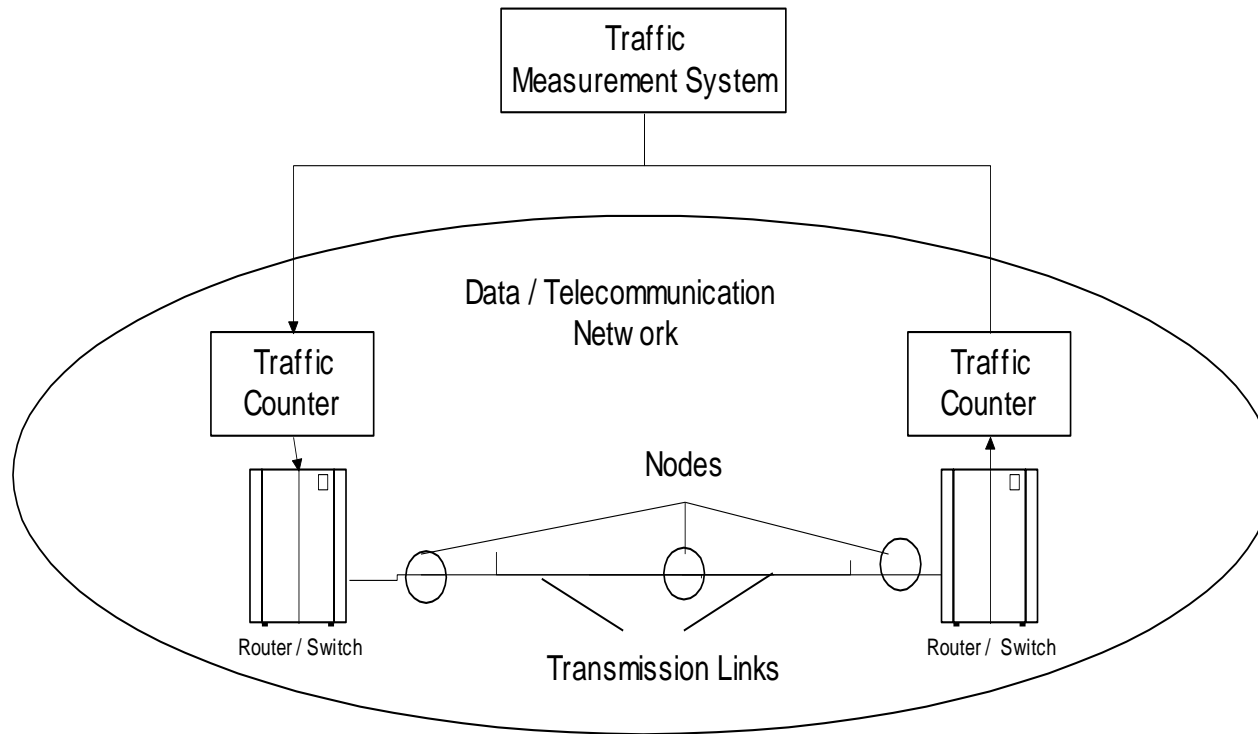


Figure 11.2 Operations System for Traffic Measurement

# TMN Conceptual Model

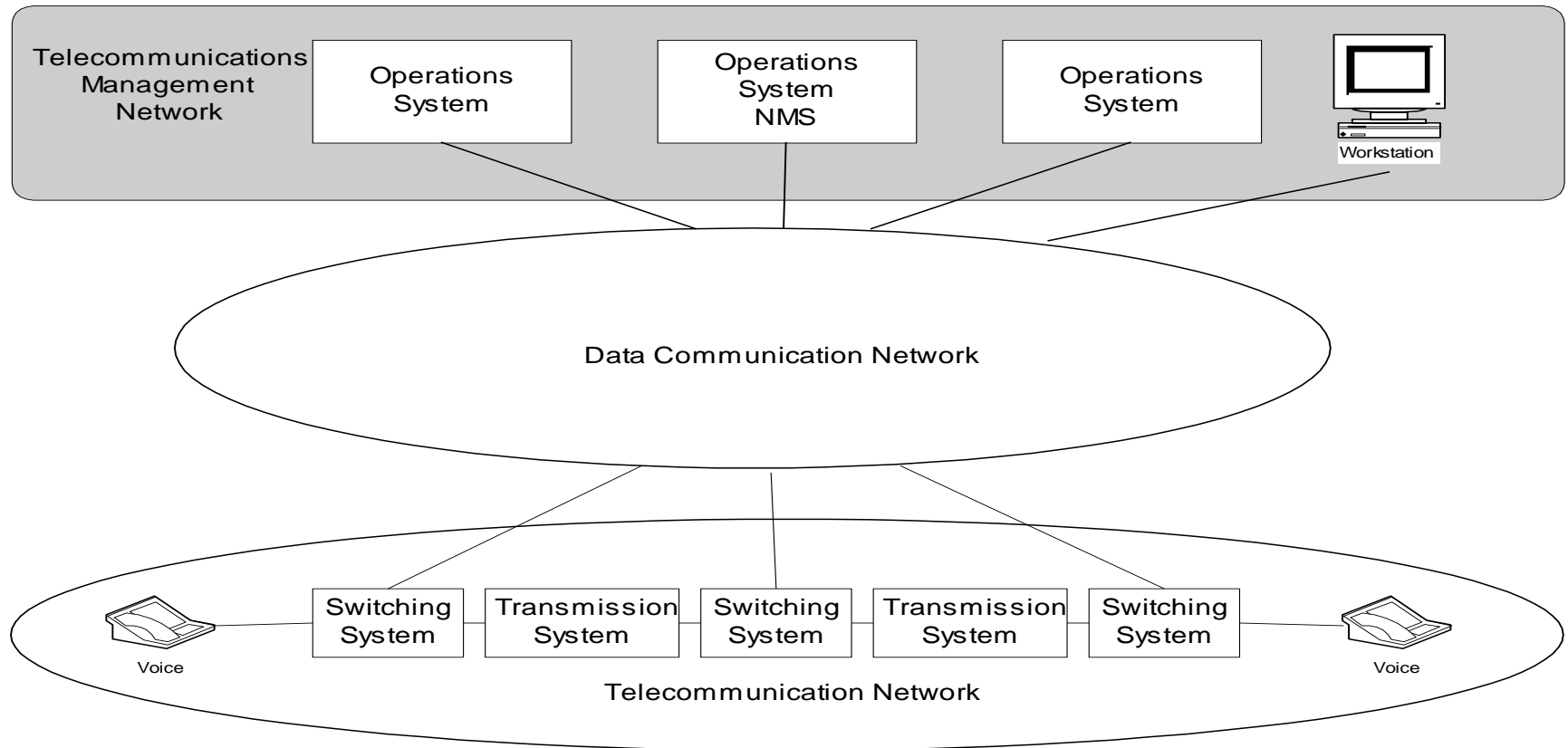


Figure 11.3 TMN Relationship to Data and Telecommunication Network

# TMN Conceptual Model

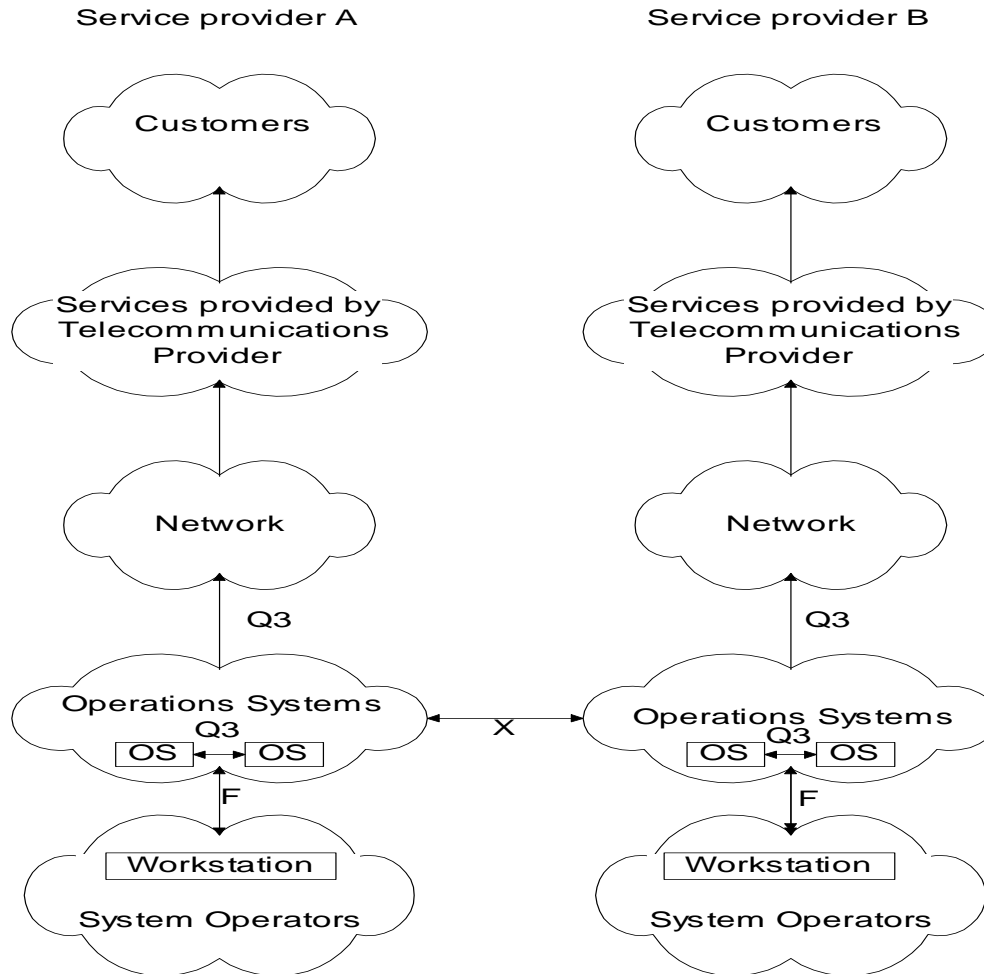
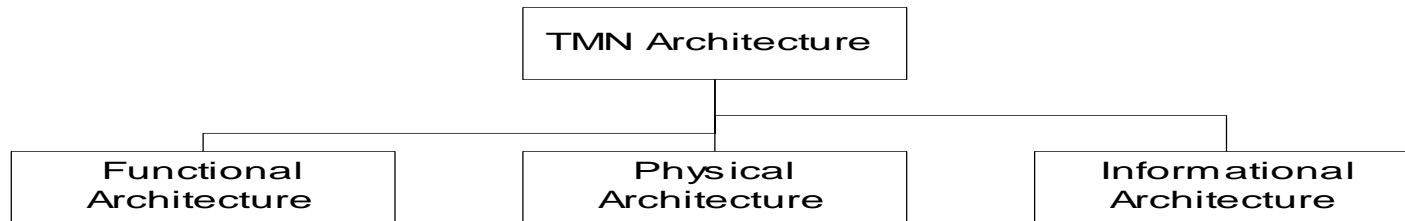


Figure 11.4 TMN Conceptual Model

# TMN Architecture



**Figure 11.6 TMN Architecture**

- Functional architecture:
  - Functional modules or blocks
  - Reference points between modules
- Physical architecture:
  - Physical blocks
  - Physical interfaces between the blocks
- Informational architecture:
  - Information exchange between entities
  - Object oriented

# Functional Architecture

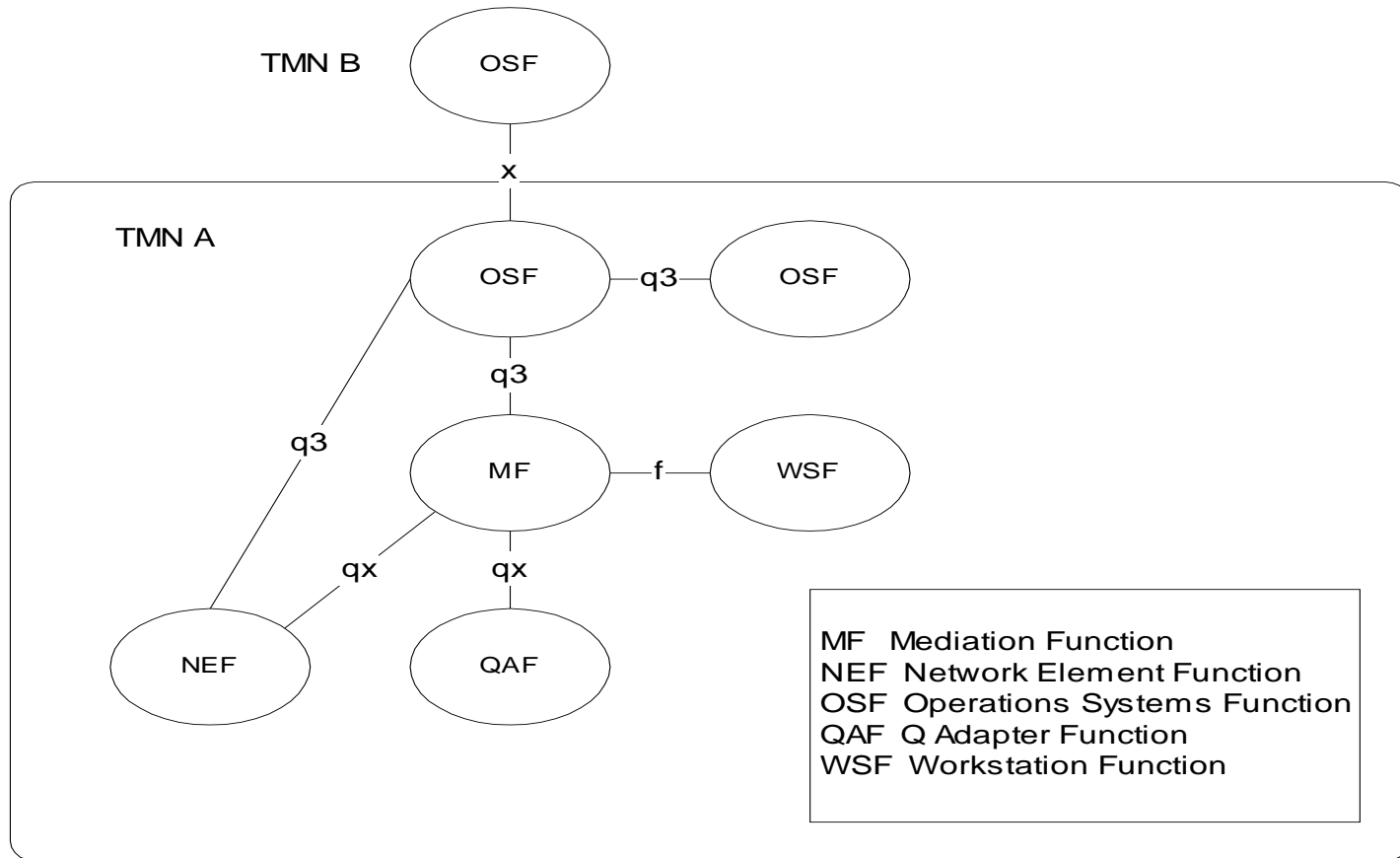


Figure 11.7 TMN Functional Architecture



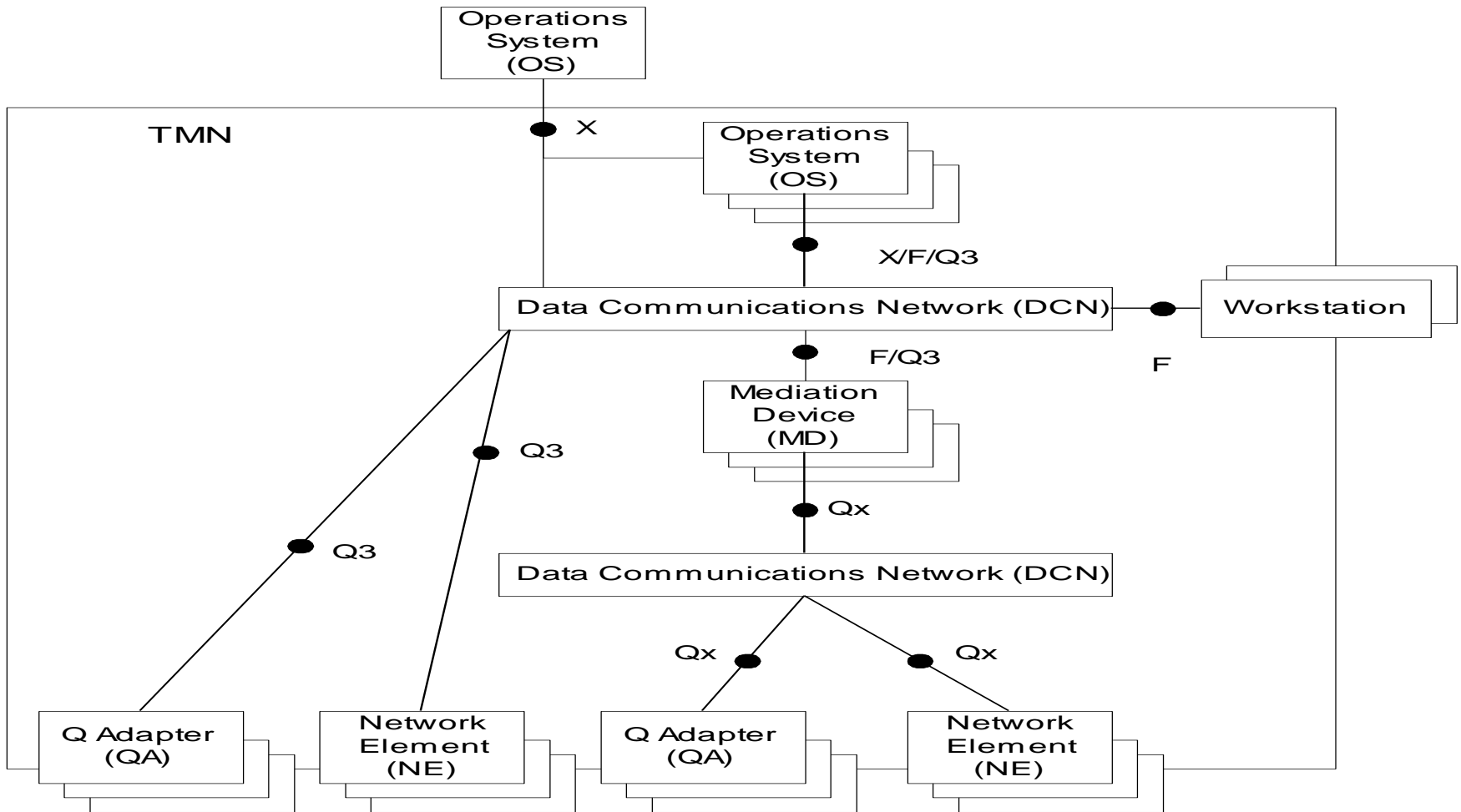
# TMN Reference Point



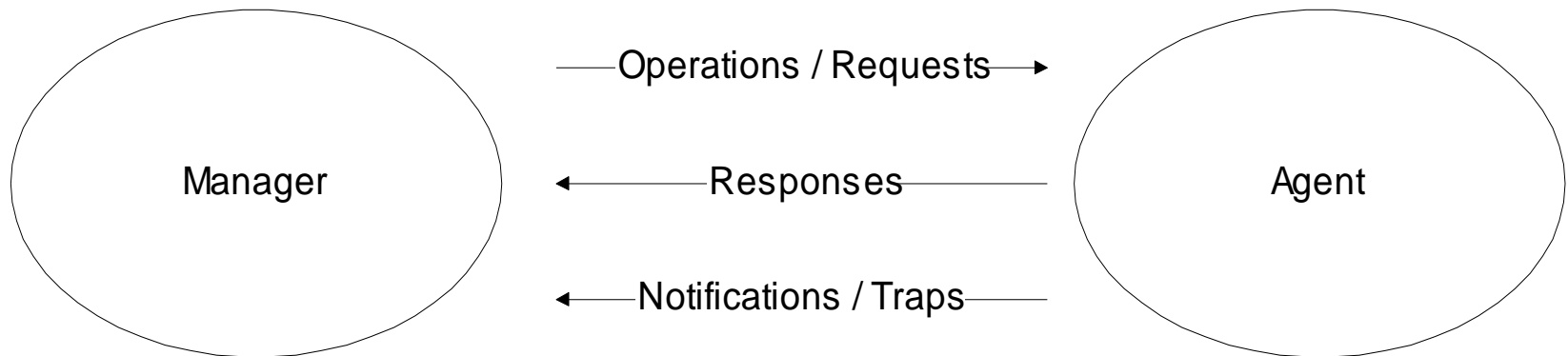
**Figure 11.8 TMN Reference Point**

- Function blocks connected by conceptual interfaces, called *reference point*
- Designated by lower case letters (upper case letter for physical interfaces)
- x: Interface between operations systems that belong to different domains; e.g., interface between two NMSs belonging to two different domains
- q3: Interface between two OSFs in the same domain
- qx: Interface between mediation function such as RMON and agent in the network element
- f: Interface to the workstation

# Physical Architecture

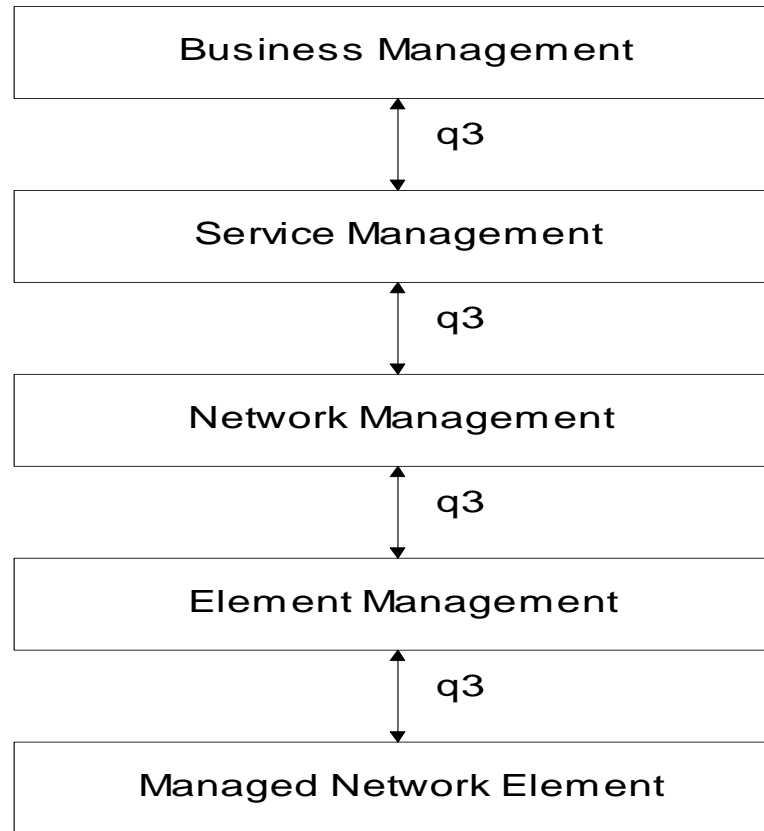


# Information Architecture



**Figure 11.10 TMN Information Architecture**

# Service Architecture



**Figure 11.11 TMN Service Architecture**

# TMN Services & Functions

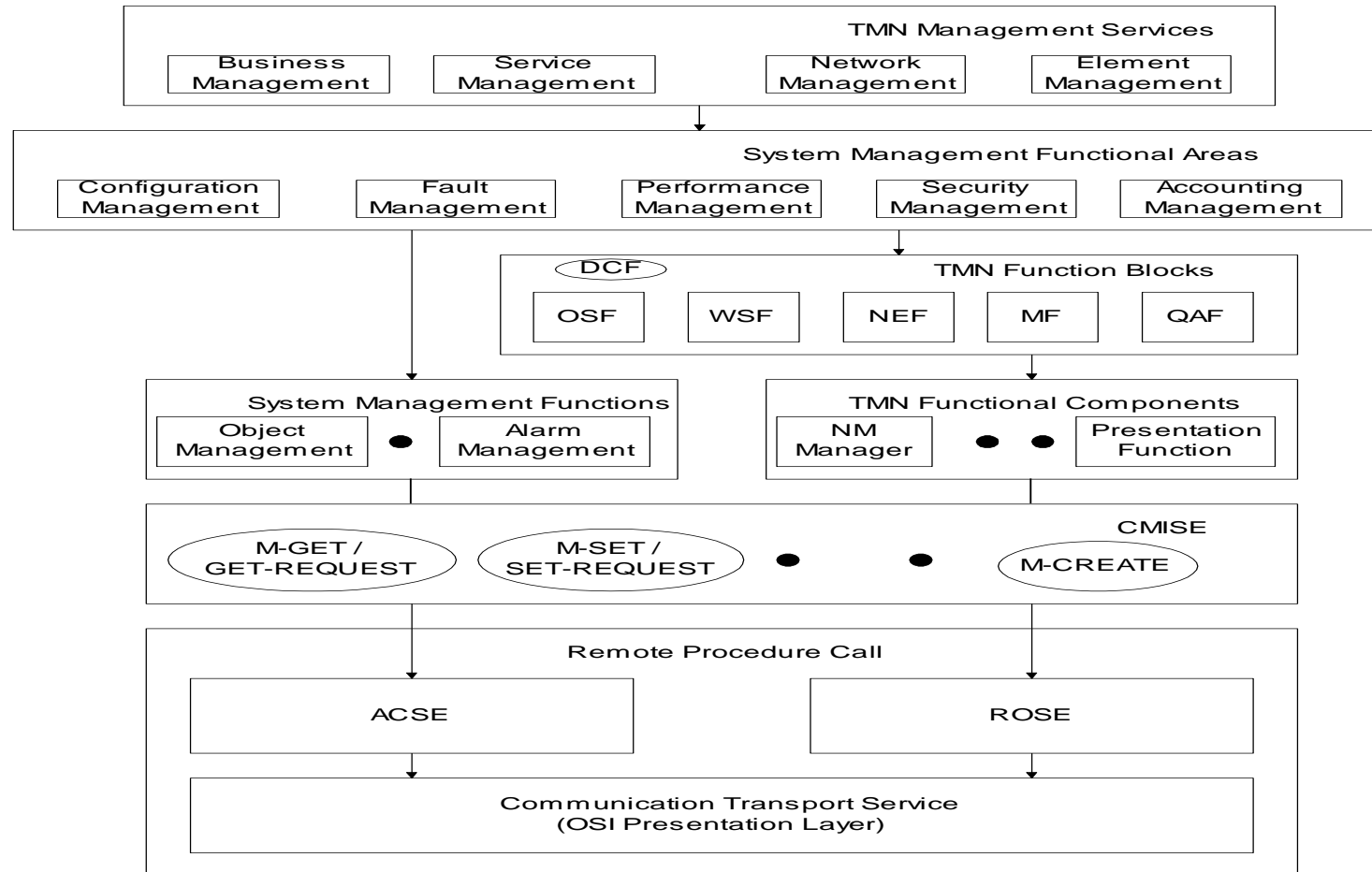


Figure 11.13 TMN Services and Functions

# Example (NMF)

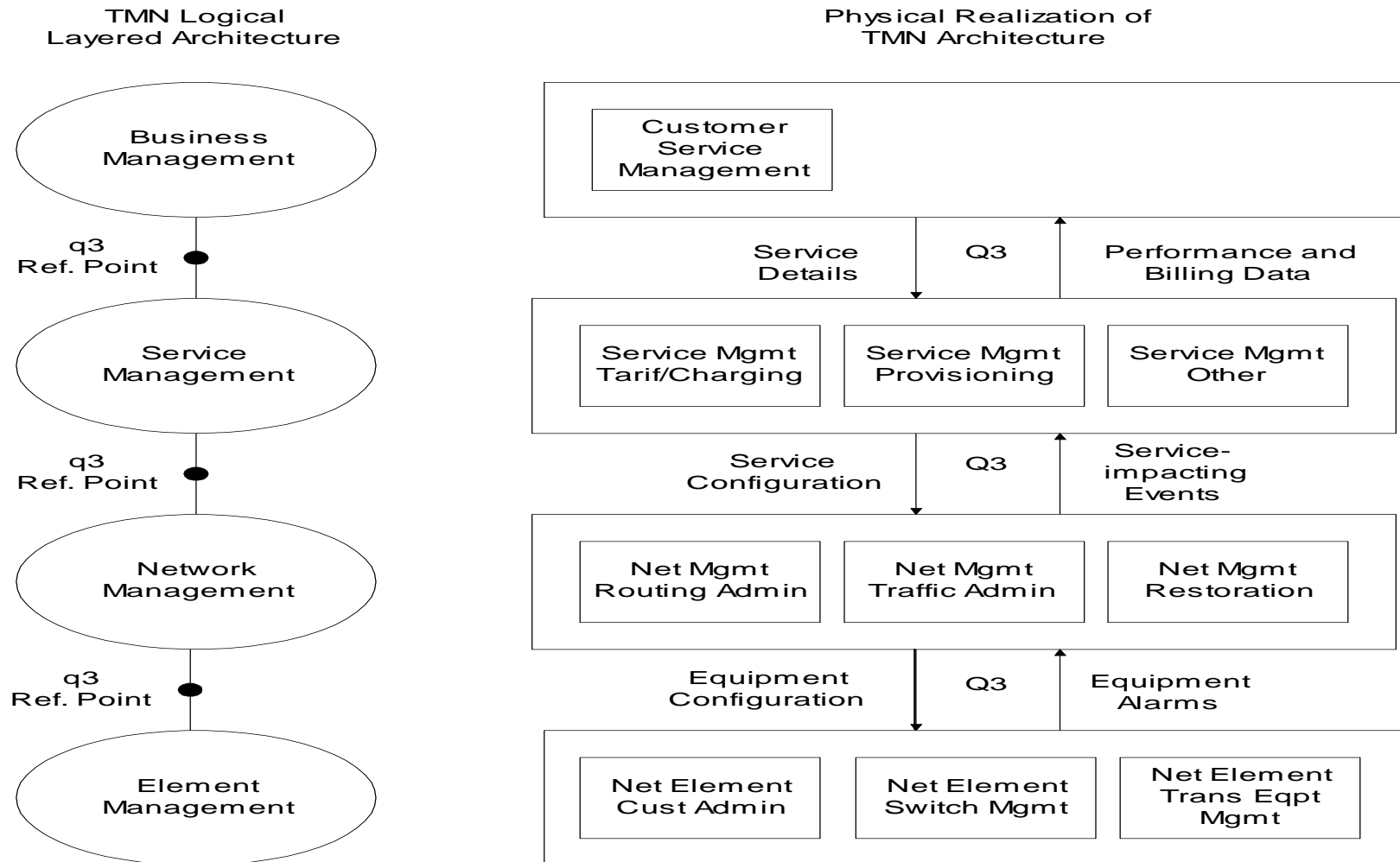


Figure 11.14 TMN Realization Example (NMF)