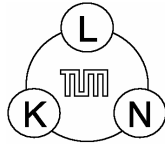


Cost Structures of Transport Networks



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Agenda

- **Motivation**
- **Overview of ASON/ASTN**
 - Network Model and Interfaces
 - Control Plane Architecture
 - Functions of the Control Plane
- **Value Chain und Value System [M. E. Porter]**
- **Network Operators' Value Chain**
- **New Business Opportunities with ASON/ASTN**
- **Conclusion**

Motivation

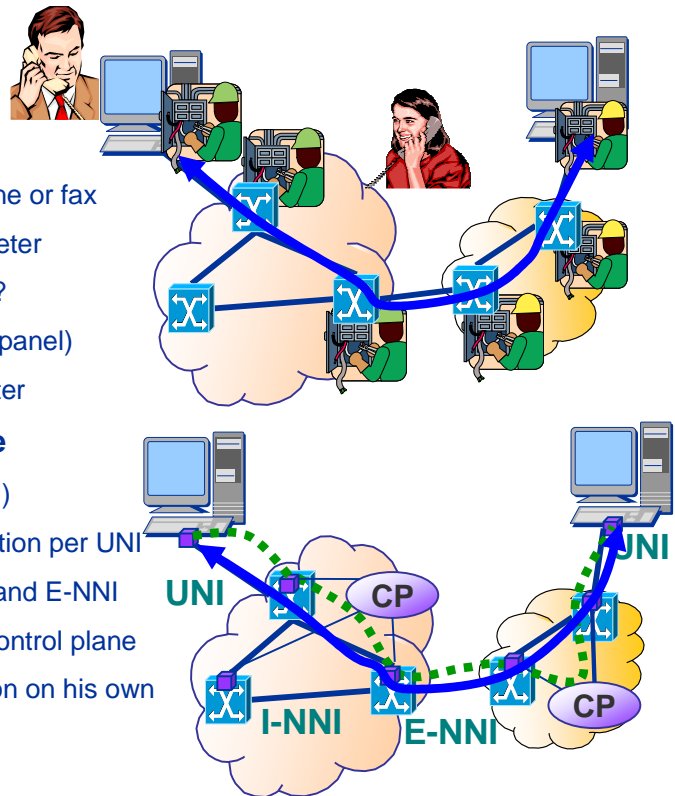
• Today's typical path setup

- Connection ordering per telephone or fax
- Negotiation of connection parameter
- Leasing of bandwidth necessary?
- Manual connection setup (patch-panel)
- Verifying the connection parameter

• Optical path setup in the future

- Introduction of ASON/ASTN (ITU)
- Connection ordering and negotiation per UNI
- Network interworking with I-NNI and E-NNI
- Automatic connection setup by control plane
- Customer 'controls' his connection on his own
- Reduction of OPEX and CAPEX

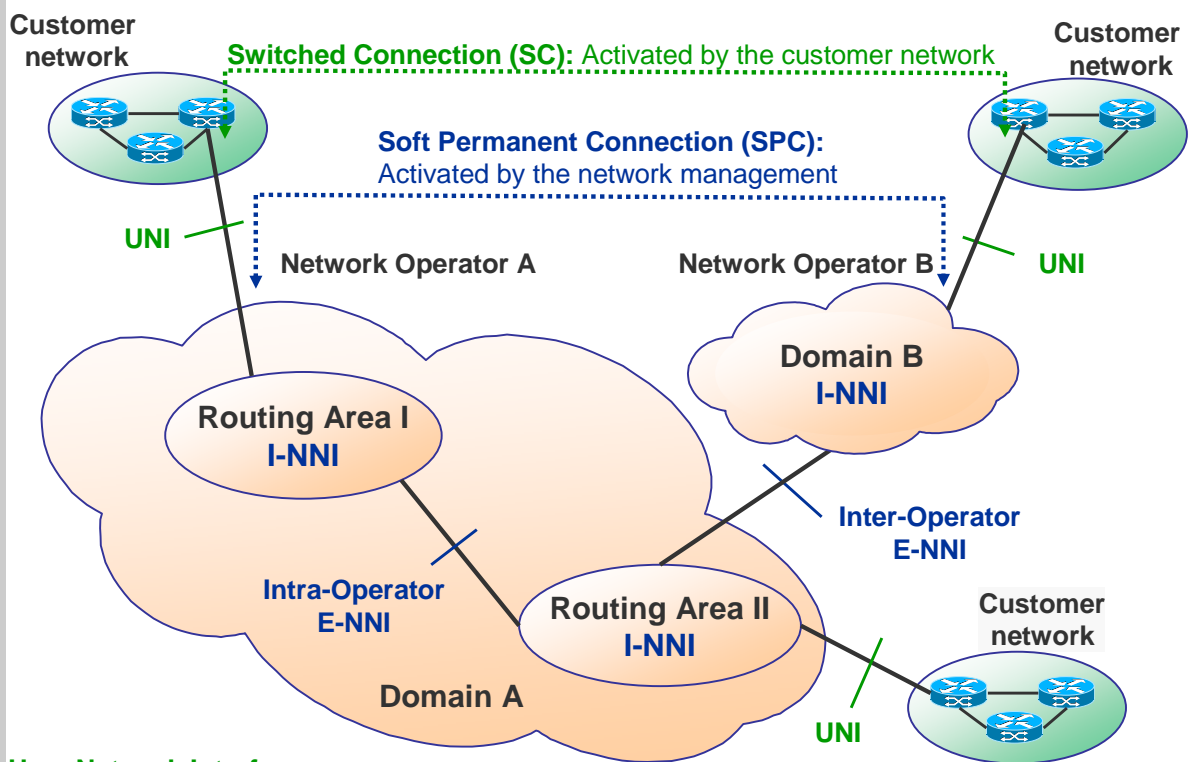
⇒ Fast and flexible



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Overview of ASON/ASTN

Network Model and Interfaces



UNI User Network Interface
NNI Network Network Interface

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Control Plane Architecture

Management Plane
Centralized Network
Management

Control Plane
Distributed
functionality
controlling the
Network

Transport Plane
Data transmission
and -switching



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Functions of the Control Plane

Inventory and Resource Management

1. Neighbor Discovery

2. Global Topology Dissemination

Management Plane

Control Plane

Transport Plane

Dynamic Provisioning

3. Signaling for Connection Provisioning

4. Routing (Path Calculation)

Resilience

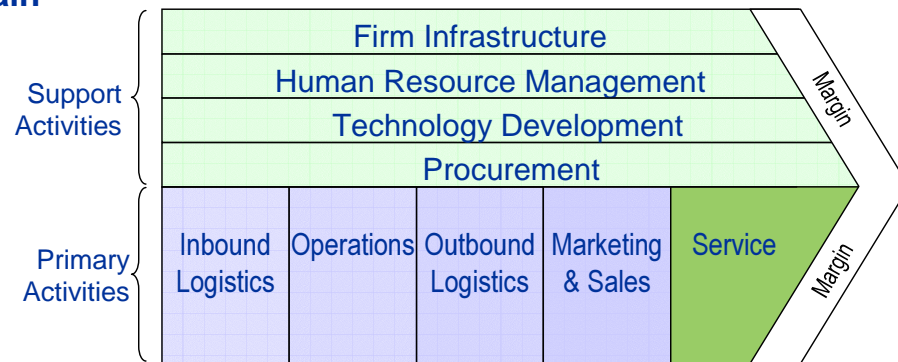
5. Fault Localization

6. Distributed Recovery

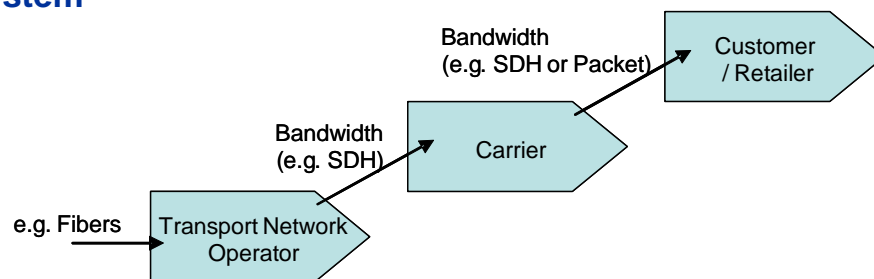
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Value Chain und Value System [M. E. Porter]

Value chain

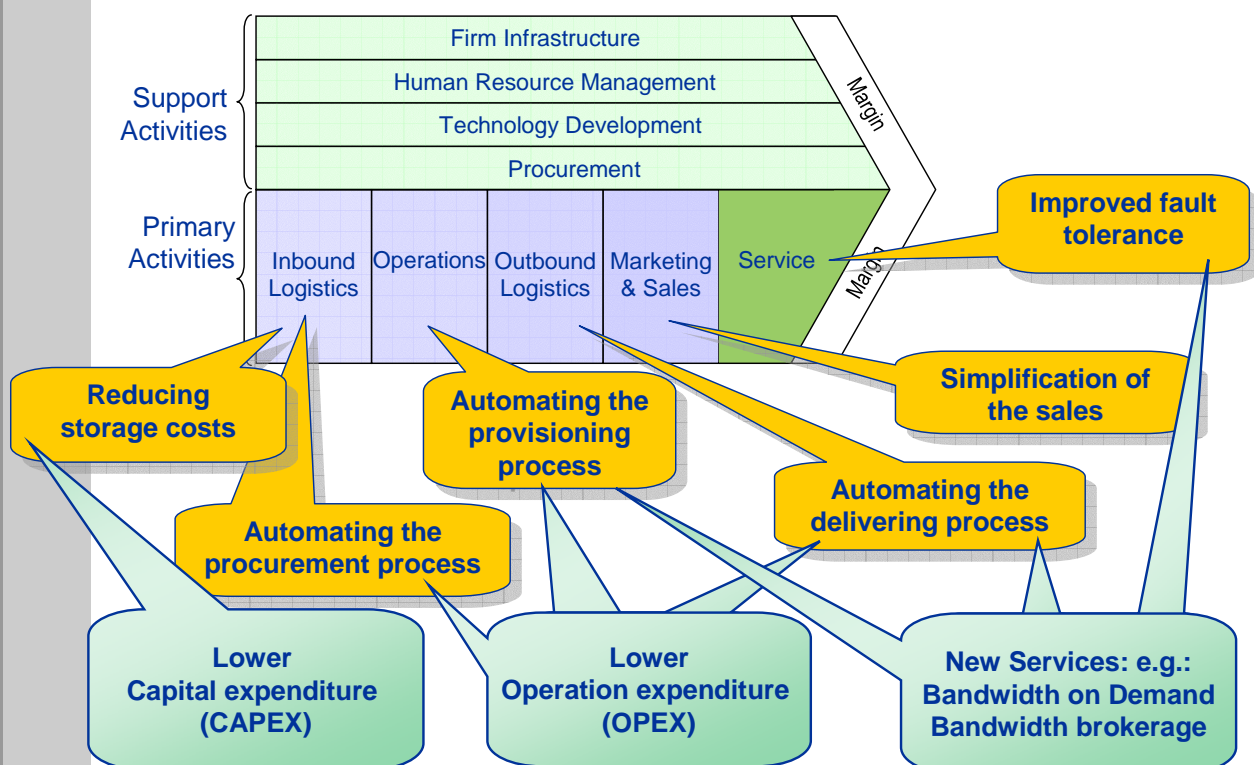


Value system



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Network Operators' Value Chain

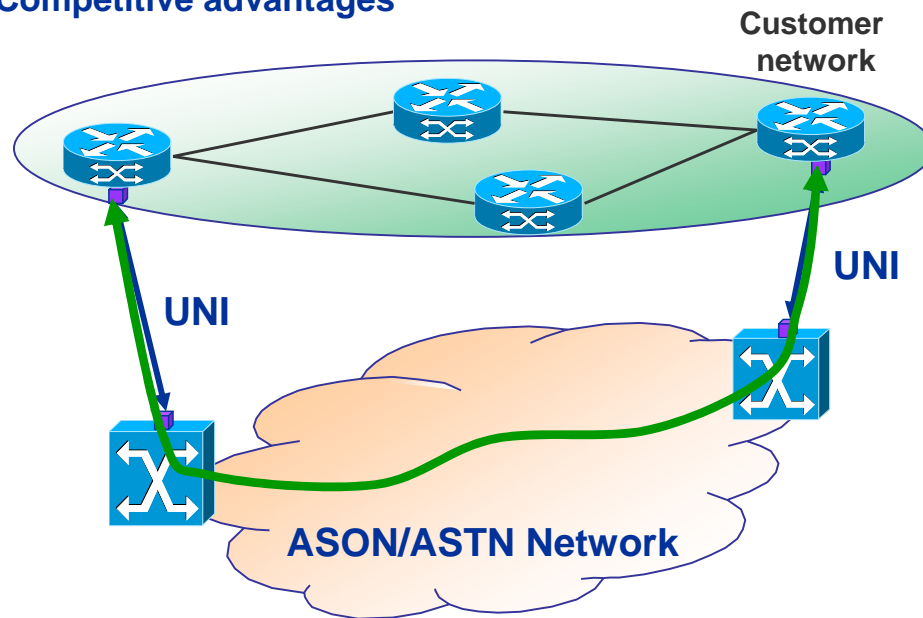


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New Business Opportunities with ASON/ASTN

- **Service-on-demand**

=> Competitive advantages



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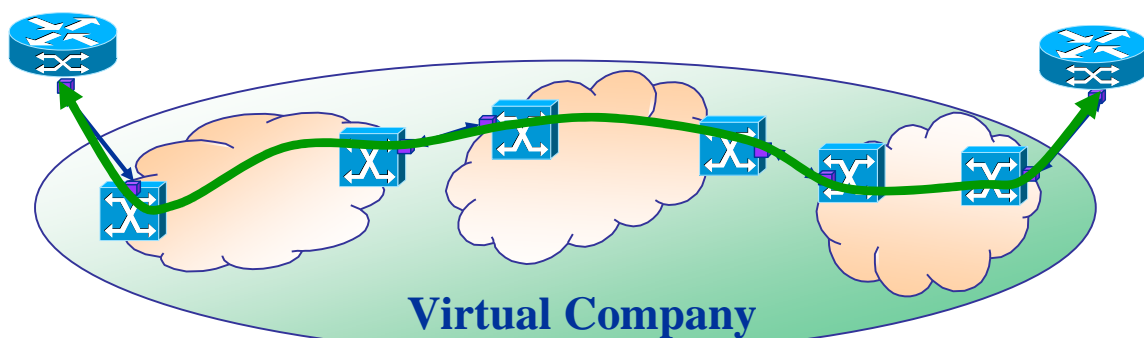
New Business Opportunities with ASON/ASTN

- **Service-on-demand**

- **Virtual companies**

Synergetic coexistence of several companies forming an integrated value system

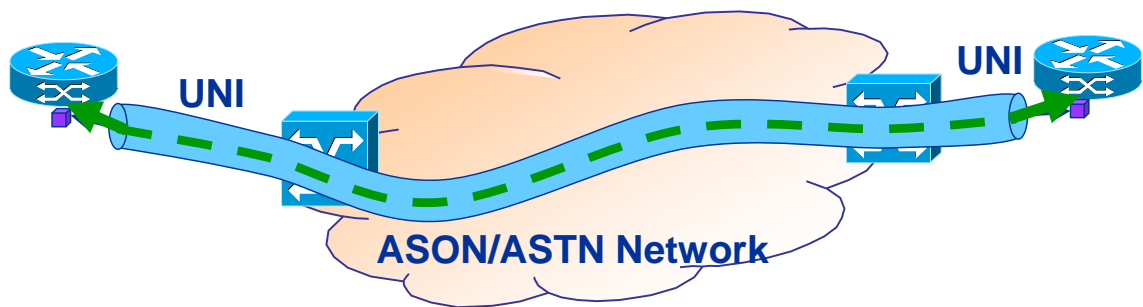
Possibility for covering novel or geographically distinct market segments.



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New Business Opportunities with ASON/ASTN

- **Service-on-demand**
- **Virtual companies**
- **End-to-end Layer-1 Virtual Private Networking**
 - **secure and transparent connection with guaranteed QoS**
 - **e.g. OVPN**



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Conclusion

- **ASON/ASTN simplifies the operating of Transport Networks**
 - ⇒ Acceleration of bandwidth procurement and delivery
 - ⇒ Cost reduction in OPEX and CAPEX
- **Value chain analysis identifies the improvement points for a network operator**
- **New Business Opportunities are available with the introduction of ASON/ASTN**
- **Further research, development and standardisation is necessary**

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