

# The MUPBED Project

Brussels, December 3-4, 2007



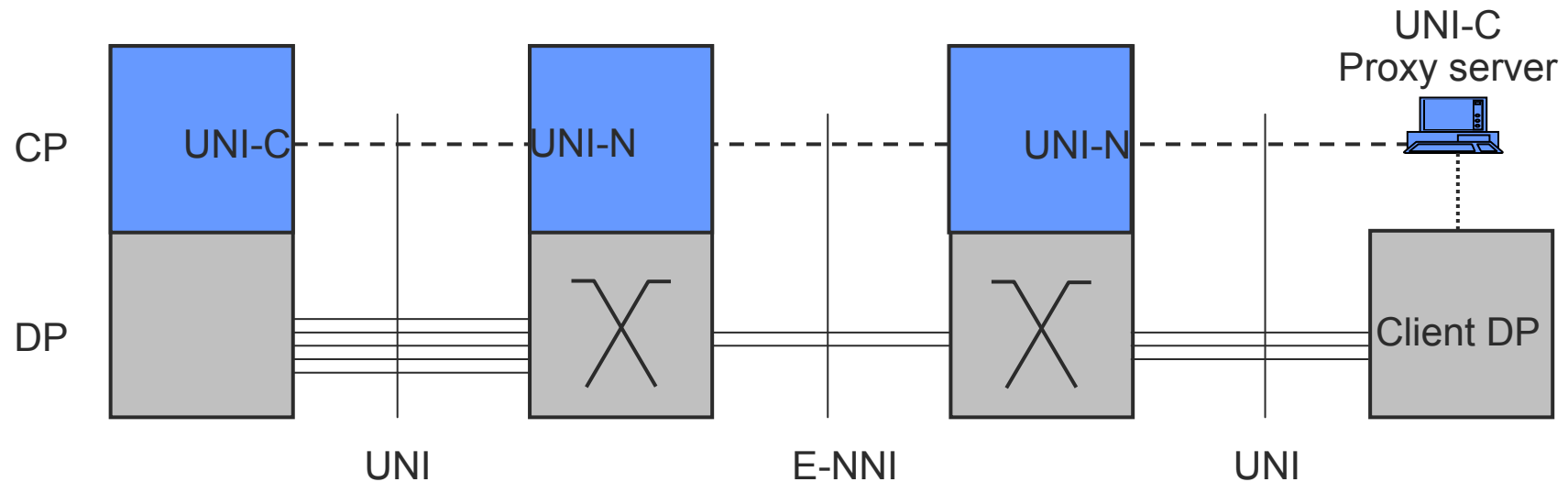
Multi-Partner European Test Beds for Research Networking

Mupbed UNI-C Proxy

<http://www.ist-mupbed.eu/>

# MUPBED

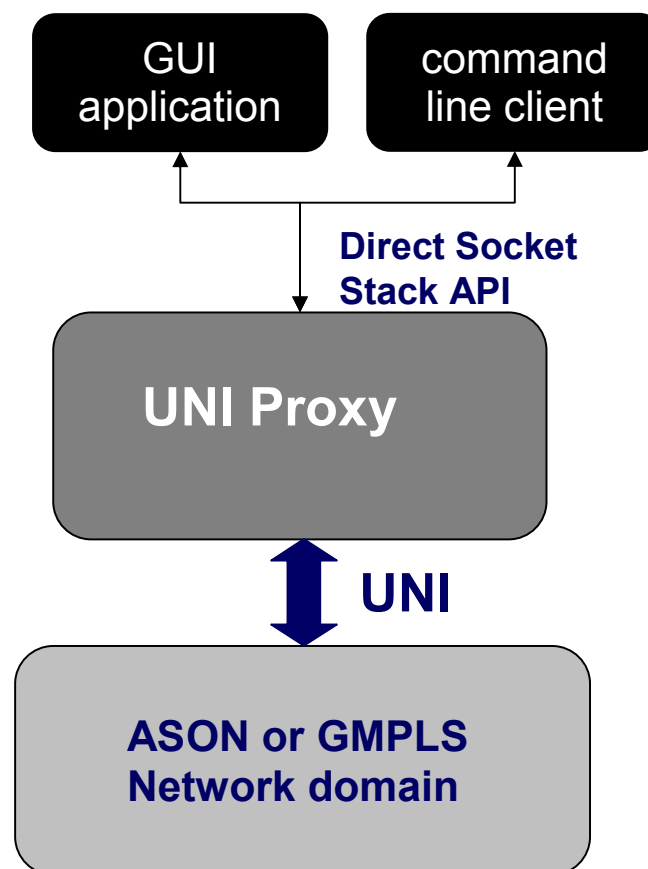
## OIF Control Plane Interface Implementations



- Use of control plane proxy servers is highly desirable and needed for legacy equipment
- Data equipment that mostly is not ASON/GMPLS control plane enabled
- Applications based on IT (Servers, PC clusters, mainframes)

# MUPBED UNI-C Proxy

- key issue:  
enabling applications and client networks to use the emerging control plane solutions !
- MUPBED approach: “multi-purpose” UNI Proxy
- simple and lean interface between the applications and the UNI Proxy
- Proxy key features:
  - works in Control Plane as signaling end-point
  - manages GMPLS/ASON paths (creation and termination)
  - implements RSVP protocol only
  - any application can use it directly
- [Check for more details at the end of this chapter](#)

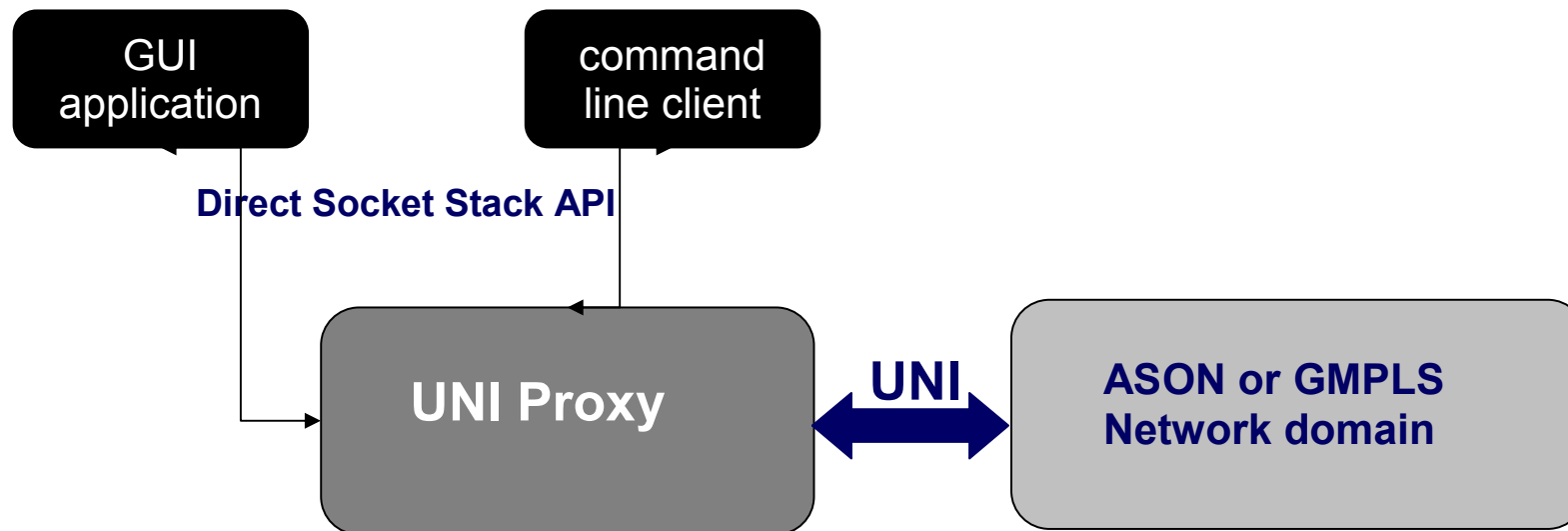


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# Direct Socket Stack

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- The Direct Socket Stack vertical application integration was introduced to provide a **simple and lean interface** between the applications and the PSNC UNI Proxy
  - TCP socket based *request-replay* communication protocol
  - used as an API (management protocol) for UNI Proxy



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## Direct Socket Stack – why is it useful?

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- Providing simple API interface for applications
- Direct access to network control plane:
  - Manual „administrator” tool
  - Network management systems
  - Proxy for different technology domain interworking
  - Applications with straightforward needs
  - Part of more sophisticated application-network stacks
- Hiding control plane protocol type and its specific procedures:
  - IETF RSVP-TE end-point
  - ASON RSVP-TE UNI-C 1.0R2
  - ASON RSVP-TE UNI-C 2.0
- **Open source** solution! It is easily available on SourceForge:
  - <http://sourceforge.net/projects/rsvp-agent/>

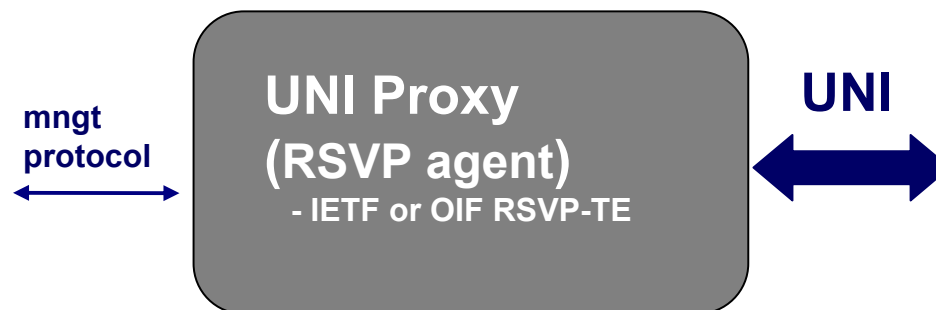


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## PSNC UNI Proxy - idea

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- UNI Proxy provides ASON/GMPLS functionalities to non-control plane enabled and to IETF/GMPLS network elements or network domains
- PSNC UNI Proxy:
  - works in Control Plane as signalling end-point
  - manages of GMPLS/ASON paths (creation, status querying and termination)
  - implements RSVP protocol only (so it is also named: the RSVP agent)
  - any application can use it directly by management API protocol

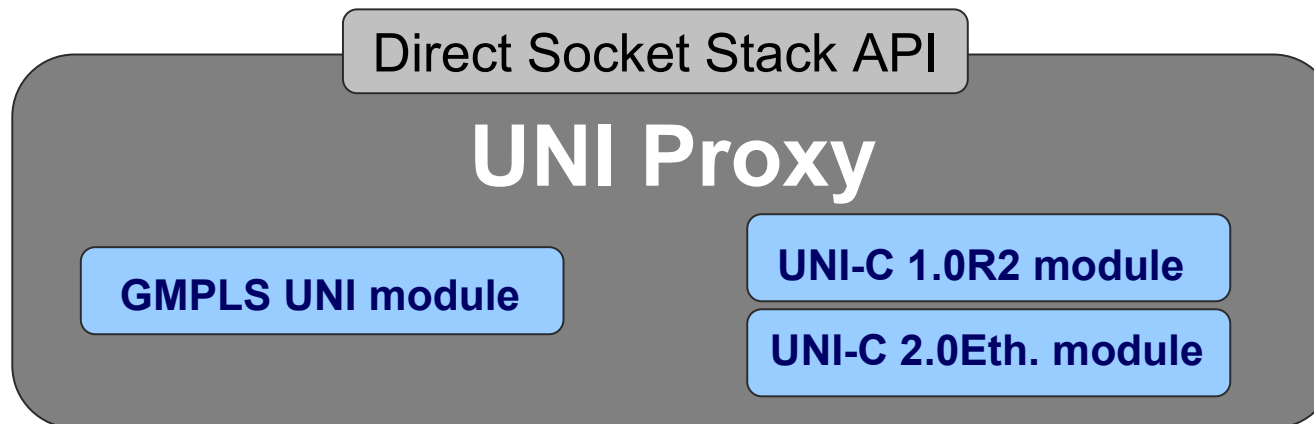


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# PSNC UNI Proxy – structure and modules

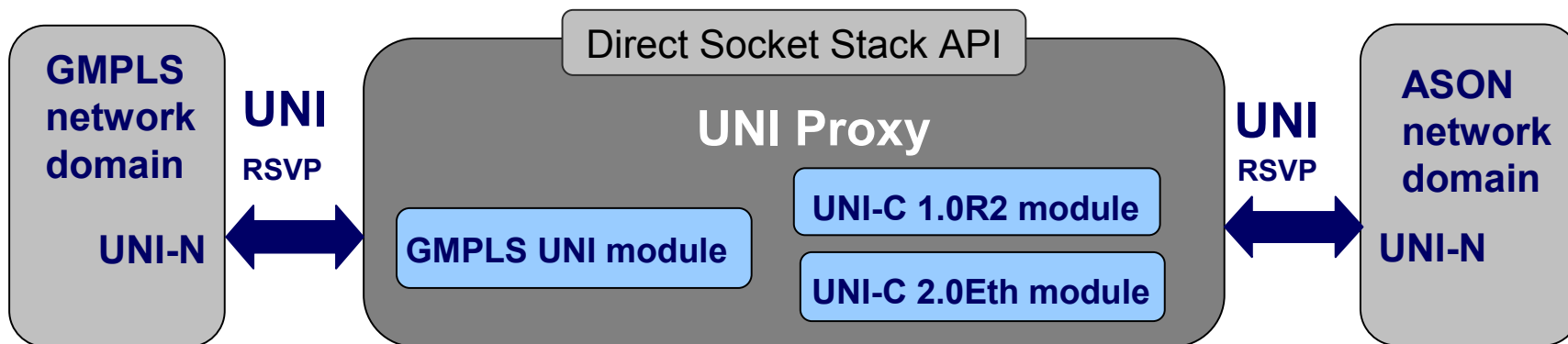
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- PSNC UNI Proxy structure:
  - management module - Direct Socket Stack API
  - two RSVP-TE standards implementation:
    - IETF RSVP-TE end-point (ingress and egress) module
    - OIF UNI-C 1.0R2 / 2.0Eth. RSVP-TE module



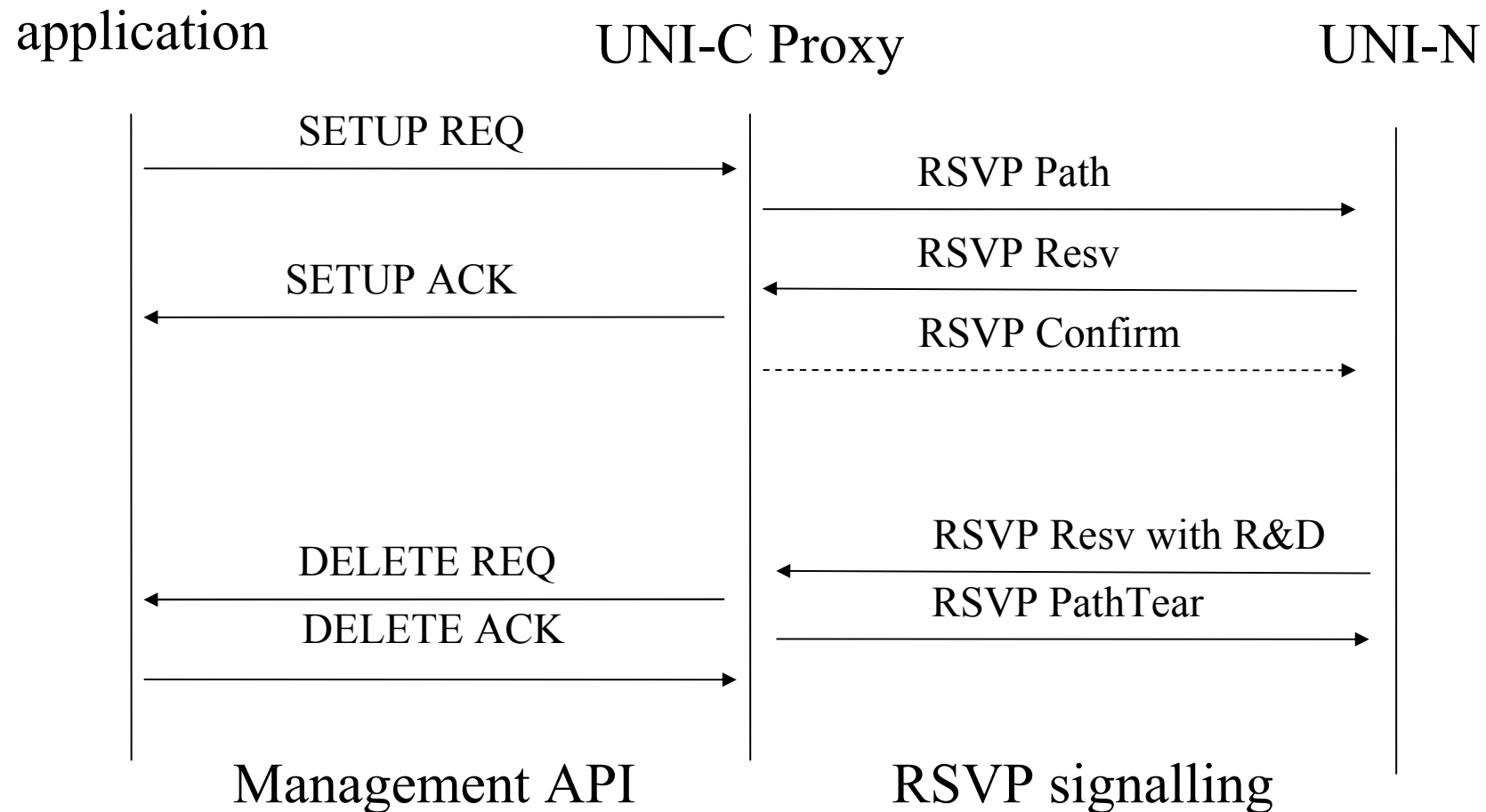
# PSNC UNI Proxy – compatibility and functionality

- IETF RSVP-TE implementation was tested in PSNC testbed network with Juniper M7 and M10 routers (JunOS 7.3 and 8.0)
- ASON UNI-C 2.0 RSVP-TE implementation was tested with DT Navtel emulator and Ericsson SDH cross-connects
- management API interface provides functionality of setup, teardown of a path and querying of path status
- Management API interface transports many parameters used for ASON/GMPLS path creation or querying of path status

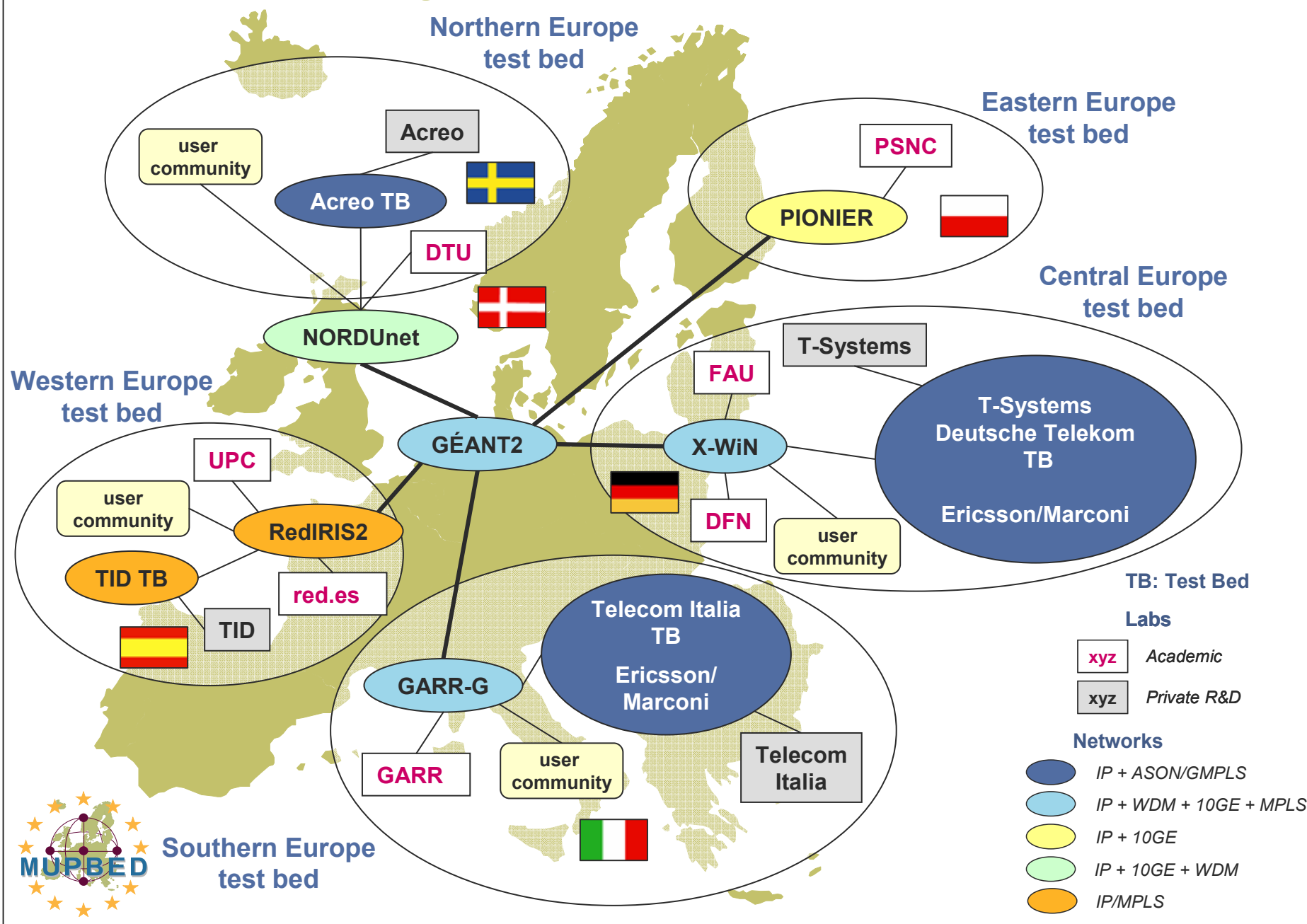




# PSNC UNI-C Proxy – message flow

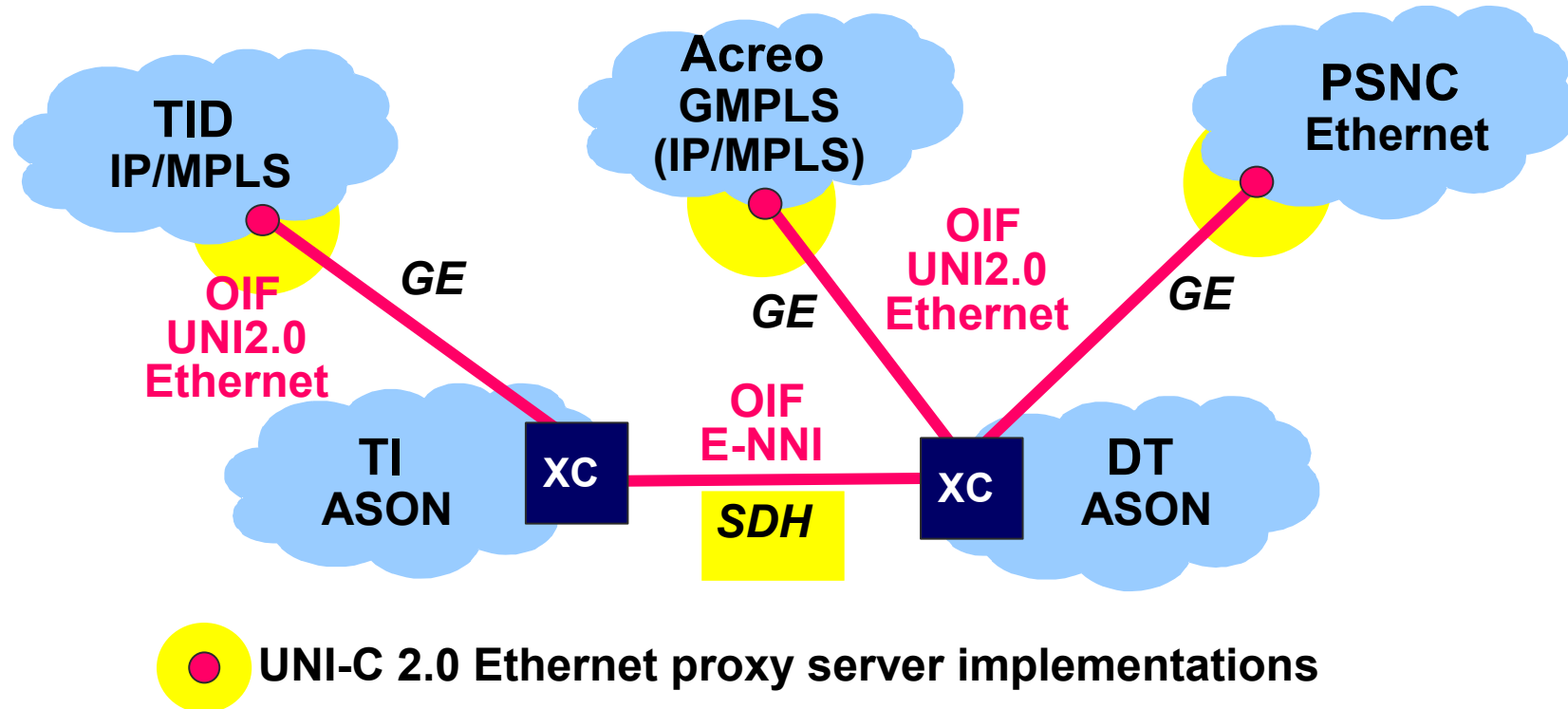


# Layout of MUPBED Network



# MUPBED Network Control Plane Architecture

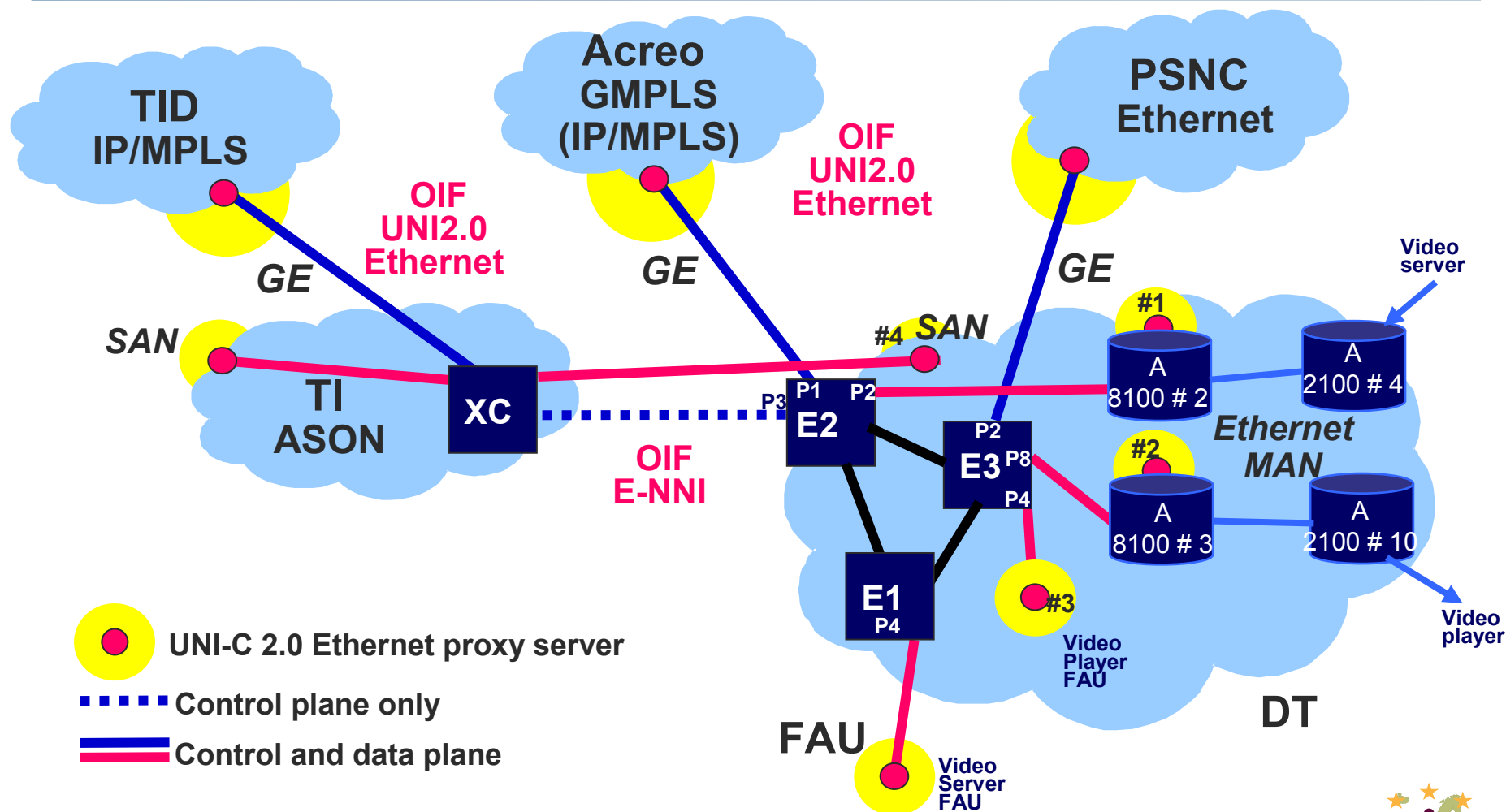
## Implementation in the MUPBED network



Automatic interworking of network domains could be achieved, while maintaining the individual architecture and technology approach of each domain

# MUPBED Network Final Configuration – Sep. 2007

## Data and Control Plane



# MUPBED Consortium

- **Equipment Manufacturers**

- Ericsson (Germany); Project Co-ordinator
- Marconi SpA (Italy)
- Juniper Networks (Ireland)



- **Network Operators**

- Telecom Italia (Italy)
- Deutsche Telekom - T-Systems (Germany)
- Telefonica I+D (Spain)
- Magyar Telekom (Hungary)



- **Research Centres**

- ACREO (Sweden)
- TU Denmark (Denmark)
- CSP - Innovazione nelle ICT s.c. a r.l. (Italy)  
(resigned June 30, 2006)
- Politecnico di Milano (Italy)
- University of Erlangen-Nuremberg (Germany)
- DFN-Verein (Germany)
- GARR (Italy)
- RedIRIS/Red.es (Spain)
- PSNC (Poland)



- **[www.ist-mupbed.eu](http://www.ist-mupbed.eu)**

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