

# **E2E Link Monitoring**

LHC OPN Meeting

Géant2 3rd Technical Workshop,

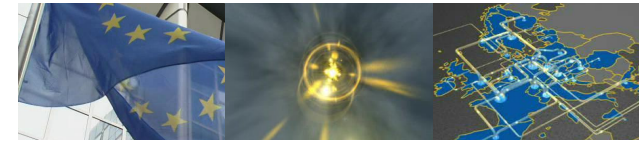
Cambridge, UK, 12 January, 2007

Matthias Hamm – DFN, JRA4/WI3

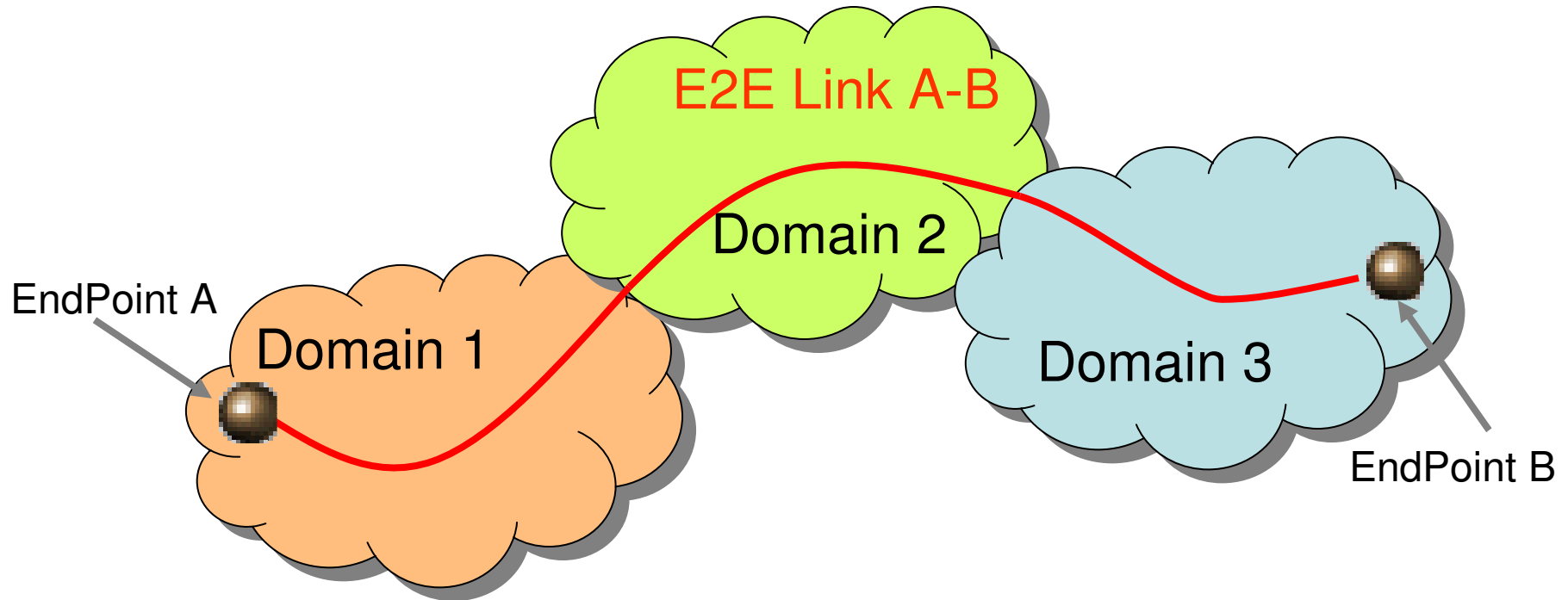
Mark Yampolskiy – DFN, JRA4/WI3

# E2E Link Monitoring

## Problem space

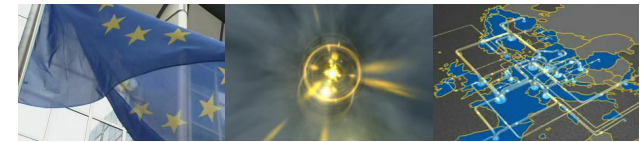


Connect. Communicate. Collaborate

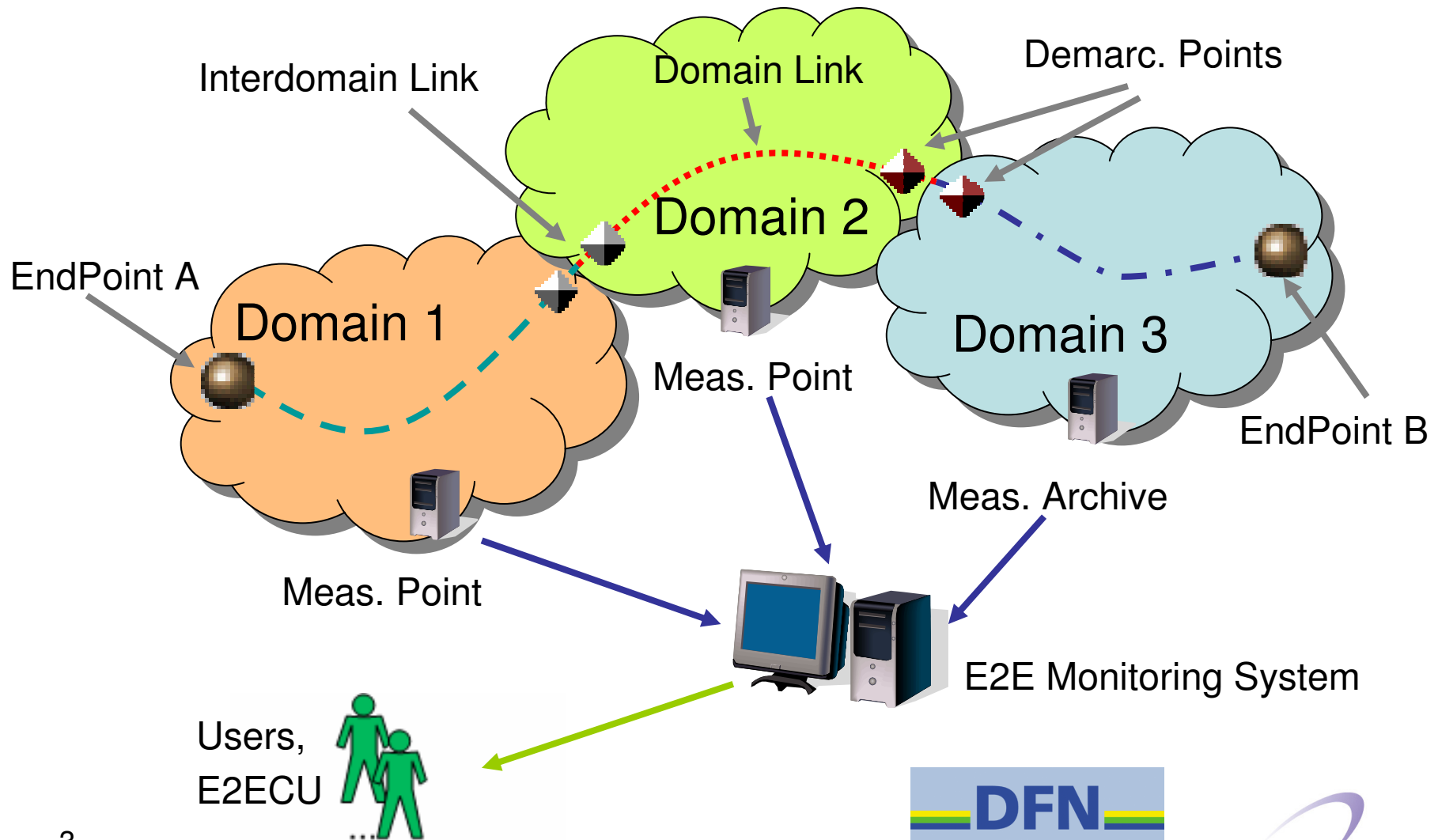


Want (near) real-time monitoring (link status) of whole End-2-End Link A-B

# E2E Link Monitoring Solution

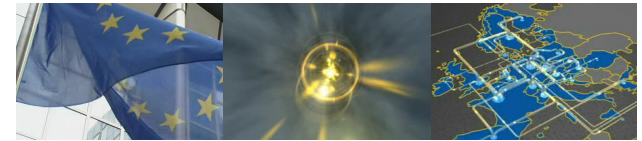


Connect. Communicate. Collaborate



# E2E Link Monitoring

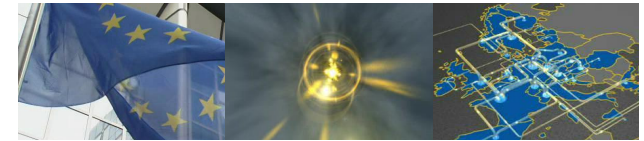
## Current State



Connect. Communicate. Collaborate

- Data model for E2E Link monitoring is agreed
- First version of E2E Monitoring System with semi-graphical User Interface is implemented
- Operational (Up/Down) and Administrative states are monitored
- Different views are supported (Project, Domain, Problem Links)
- Integration with other management tools
  - SNMP-Traps
  - E-Mail notifications

# E2E Link Monitoring Collaborations

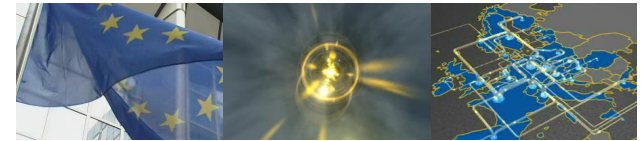


Connect. Communicate. Collaborate

| Task  | Services               | Co-operation Partner   |
|---|------------------------|------------------------|
| Data Exchange between MP/MA and Mon. System       | perfSONAR, NMWG Schema | JRA1, GGF              |
| Topology Information                              | cNIS                   | SA3                    |
| Authentication and Authorization                  | eduROAM, eduGAIN       | JRA5                   |
| Support of Bandwidth-on-Demand Activity           | Visualization Tool     | JRA3                   |
| Coordinate requirements and enhancements          |                        | DANTE, E2ECU and users |
| Development of Measurement Acquisition components |                        | NRENs                  |

# E2E Link Monitoring

## Work In Progress

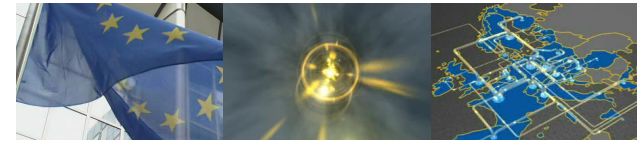


Connect. Communicate. Collaborate

- Statistics
  - Collected data can be used for QoS Monitoring
  - Possible QoS Parameters: Link Availability and Reliability
  - Monthly and weekly Reports are planned
- Graphical Weathermap
  - Display whole E2E Links on a map
  - Colors show link status
  - Use semi-graphical view for detailed link information
- Improvement of Tool Integration
  - Make monitoring information available as a perfSONAR MA service
  - Support of SNMP get

# E2E Link Monitoring

## Possible Extensions (Discussion)



Connect. Communicate. Collaborate

- Refinement of State Model
  - Operational: “Degraded” or other states
  - Administrative: rework due to operational experience
- More detailed Monitoring Data
  - Topology Points: Devices, Interfaces, ...
  - Monitored Links: Optical Trails, NW Technologies, physical measurement data, ...
- Support additional Network Metrics and QoS Parameters
  - Bandwidth and Link Utilization
  - Connection Quality