

# Topology Exchange and path finding in NSI environments

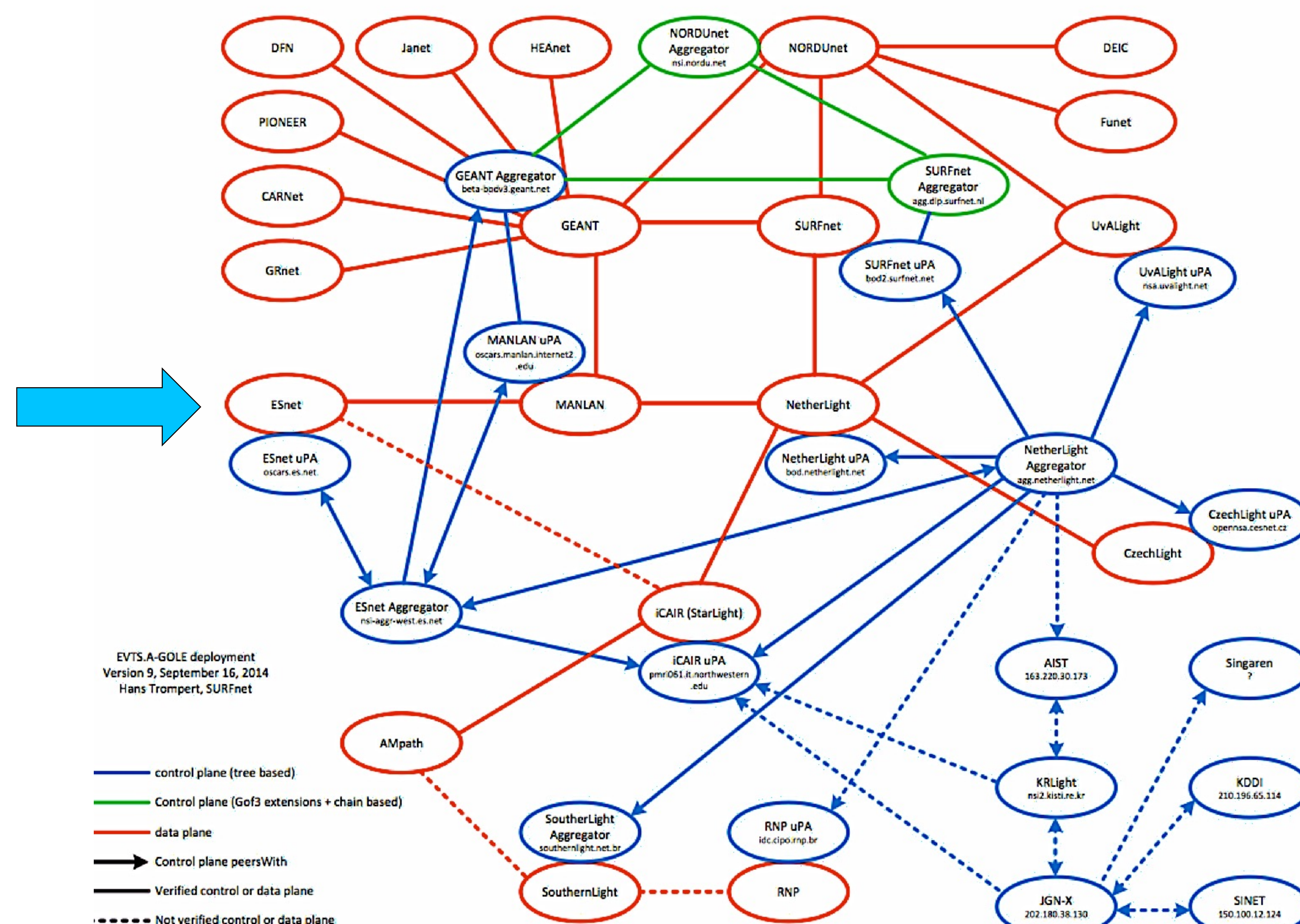
Ralph Koning, Miroslav Zivkovic, Stavros Konstantaras, Paola Grosso (UvA)  
Farabi Iqbal, Fernando Kuipers (TUDelft)

AutoGOLE as a production facility

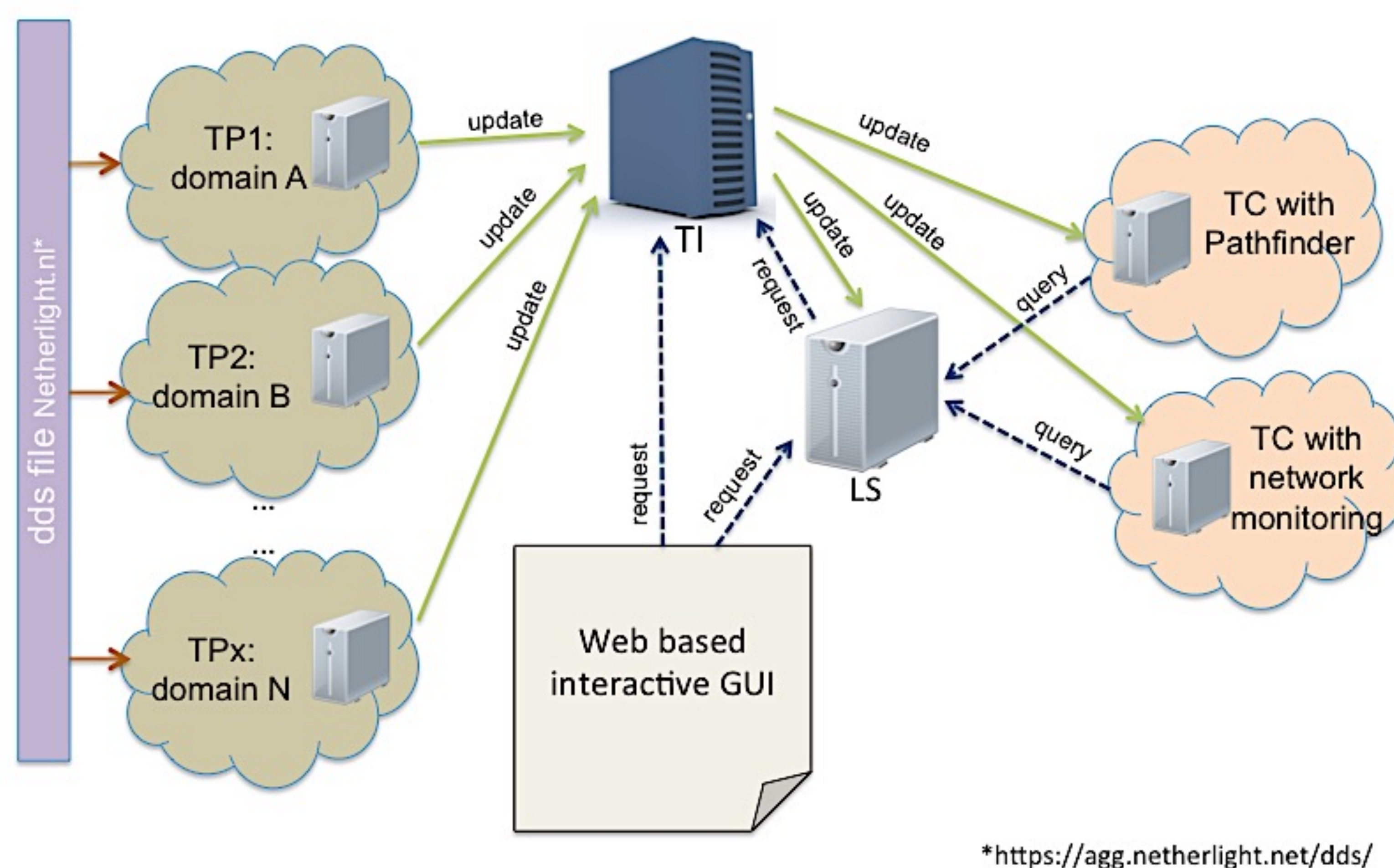


The Automated GOLE was moved into production on Friday September 12, 2014. We do expect further necessary improvements throughout the fabric and need user involvement to evolve.

NSI requires network topology knowledge to negotiate, reserve and provision end-to-end paths on demand. But how can we exchange this?



## Architecture implementation (SC14)



### Three main components

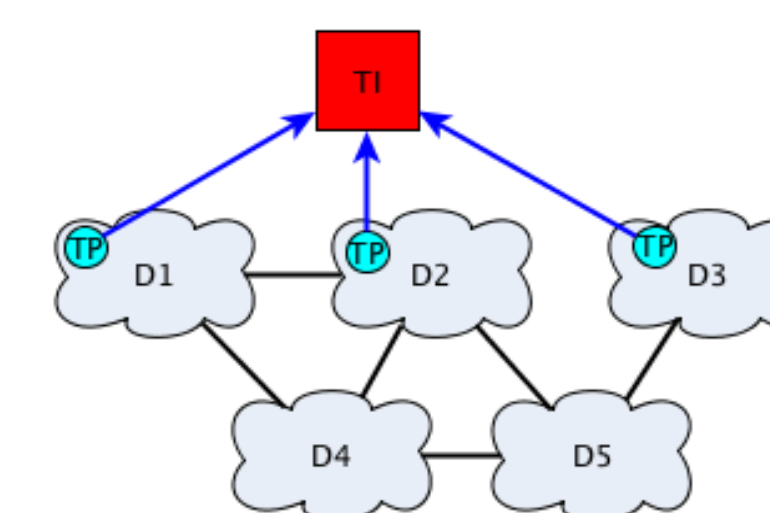
- **Topology Index** — Stores the location of the served topologies
- **Topology Provider** — Serves the topology files
- **Topology Consumer** — Processes the topology information

### Advantages

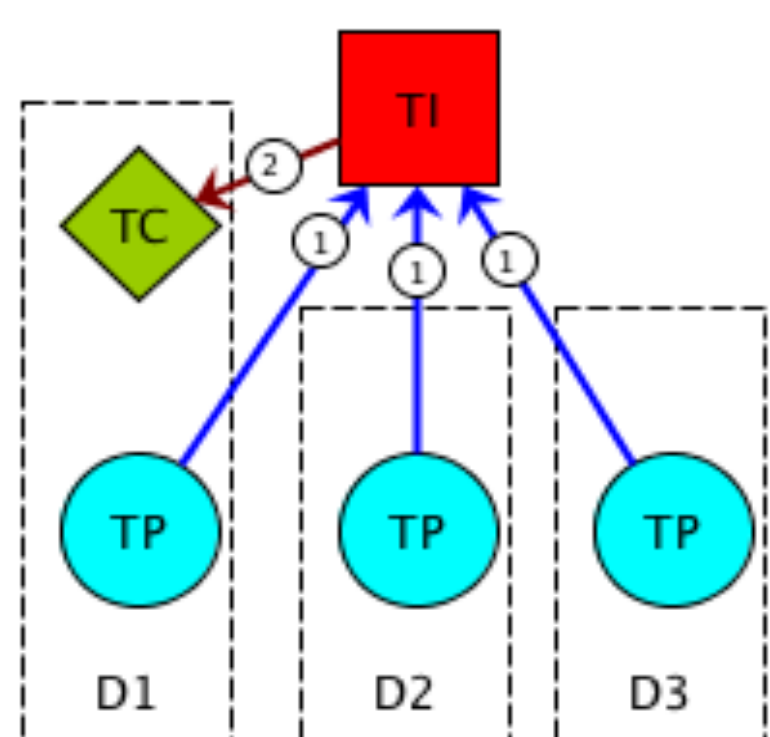
- **Simple** easy to re-use components
- Based on **real topology information** from the Automated GOLE
- NSA implementation **independent**

### Topology Index format

| domain | version | location            | neighbours | foreign |
|--------|---------|---------------------|------------|---------|
| D1     | 01      | http://d1.net/topo/ | D2         | D4      |
| D2     | 01      | http://d2.net/topo/ | D1         | D4, D5  |
| D3     | 01      | http://d3.net/topo/ |            | D5      |



### Topology Distribution



- TPs send their updates to TI
- TI notifies the subscribed TCs
- TCs retrieve the summary information from TI
- TCs obtain the topologies from respective providers

### Further Information

- <http://sne.science.uva.nl/sne/gigaport3>
- <http://www.glif.is>
- <http://sc.delaat.net>
- <https://www.surf.nl/kennis-en-innovatie/innovatieprojecten/startdatum-2009/gigaport3.html>

### Inter-Domain Path finding

- ID path that satisfies given requirements
  - Via or not via certain domains
  - Via or not via certain links
  - Predefined sequence of certain domain or links
- ID links may be described using many attributes
- Different (optimal) path-finding algorithms are supported for given topology

