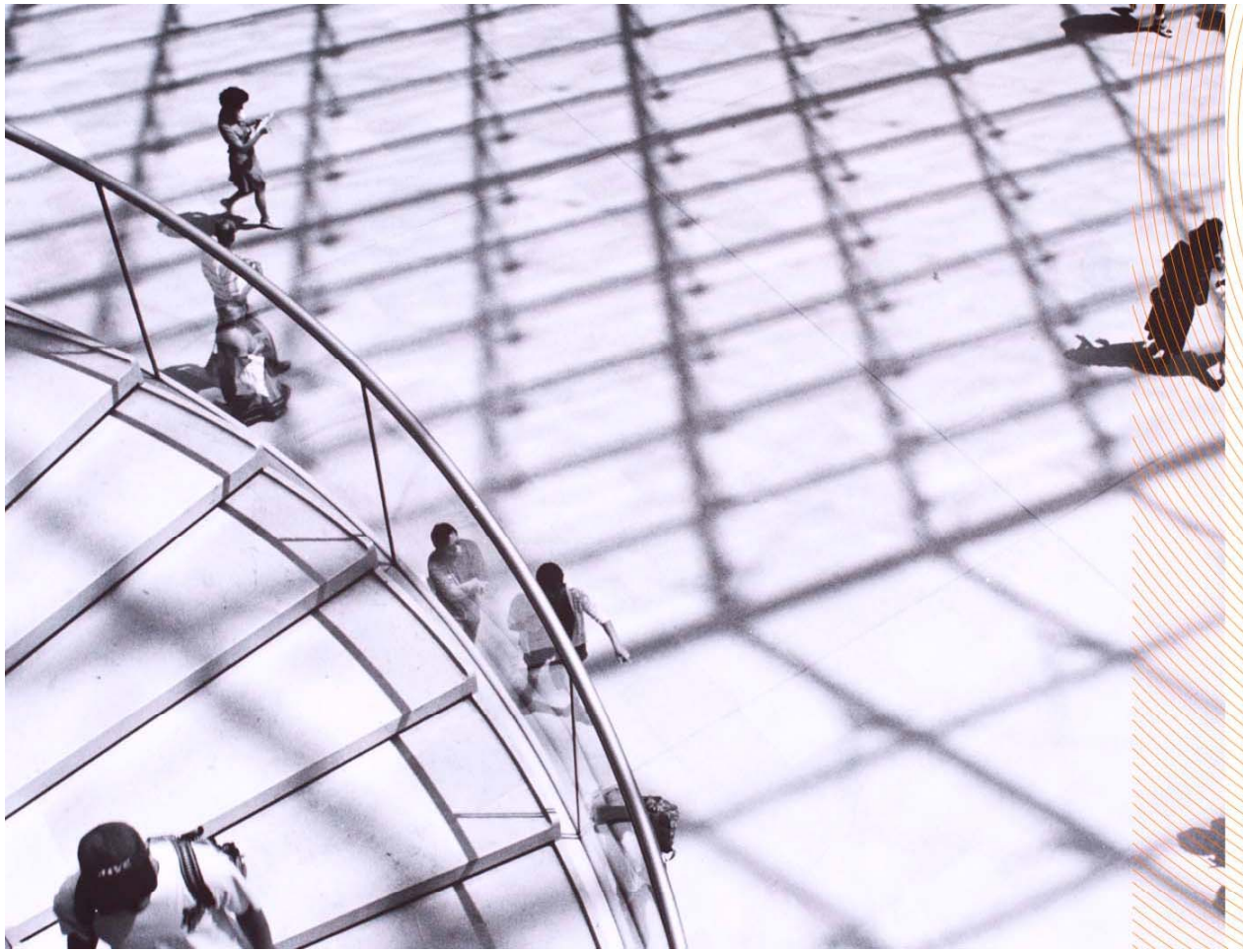


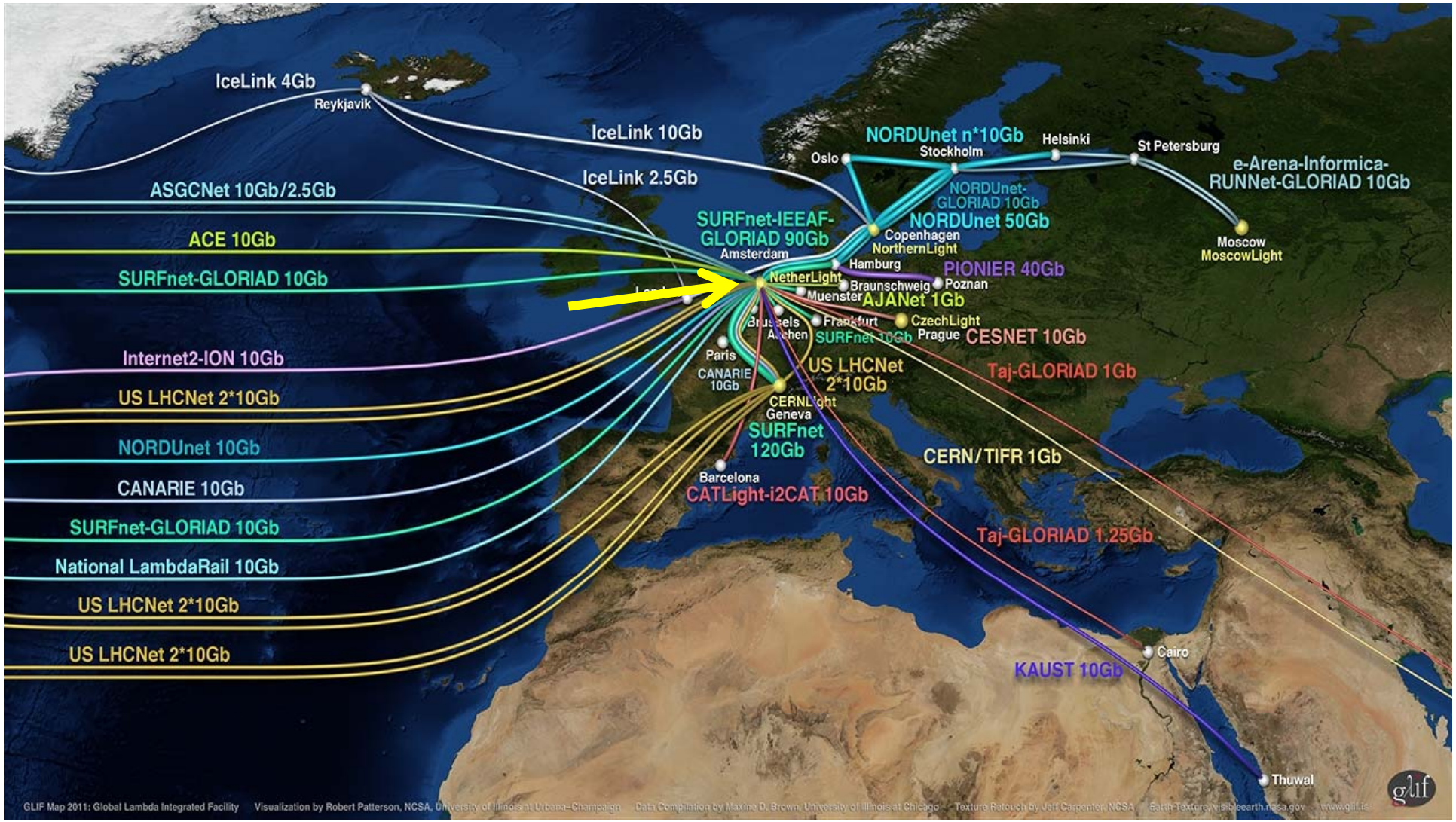
NetherLight GOLE Update

Gerben van Malenstein

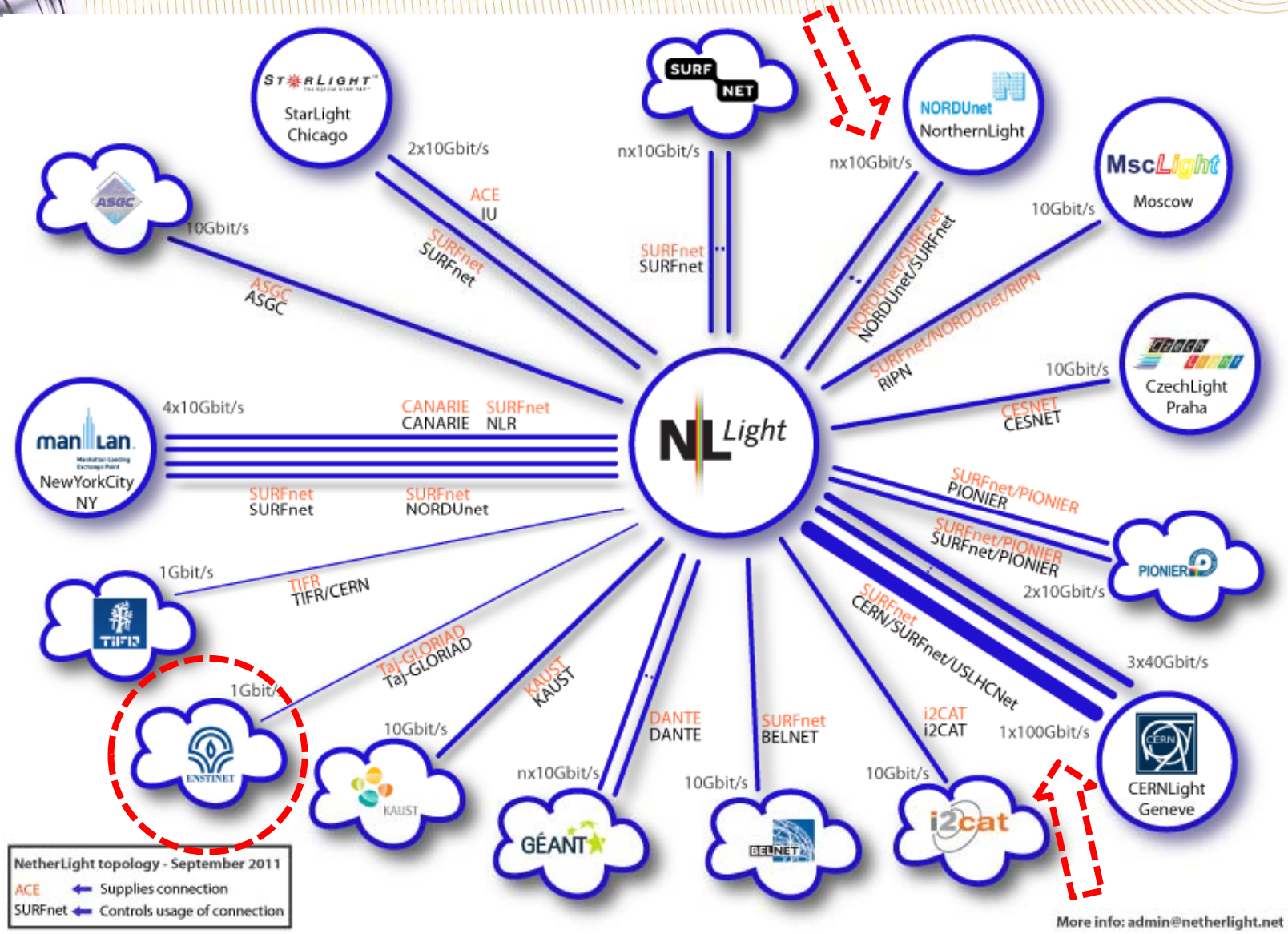
Rio de Janeiro, Brazil – September 13, 2011

11th Annual Global LambdaGrid Workshop

GLIF map Europe



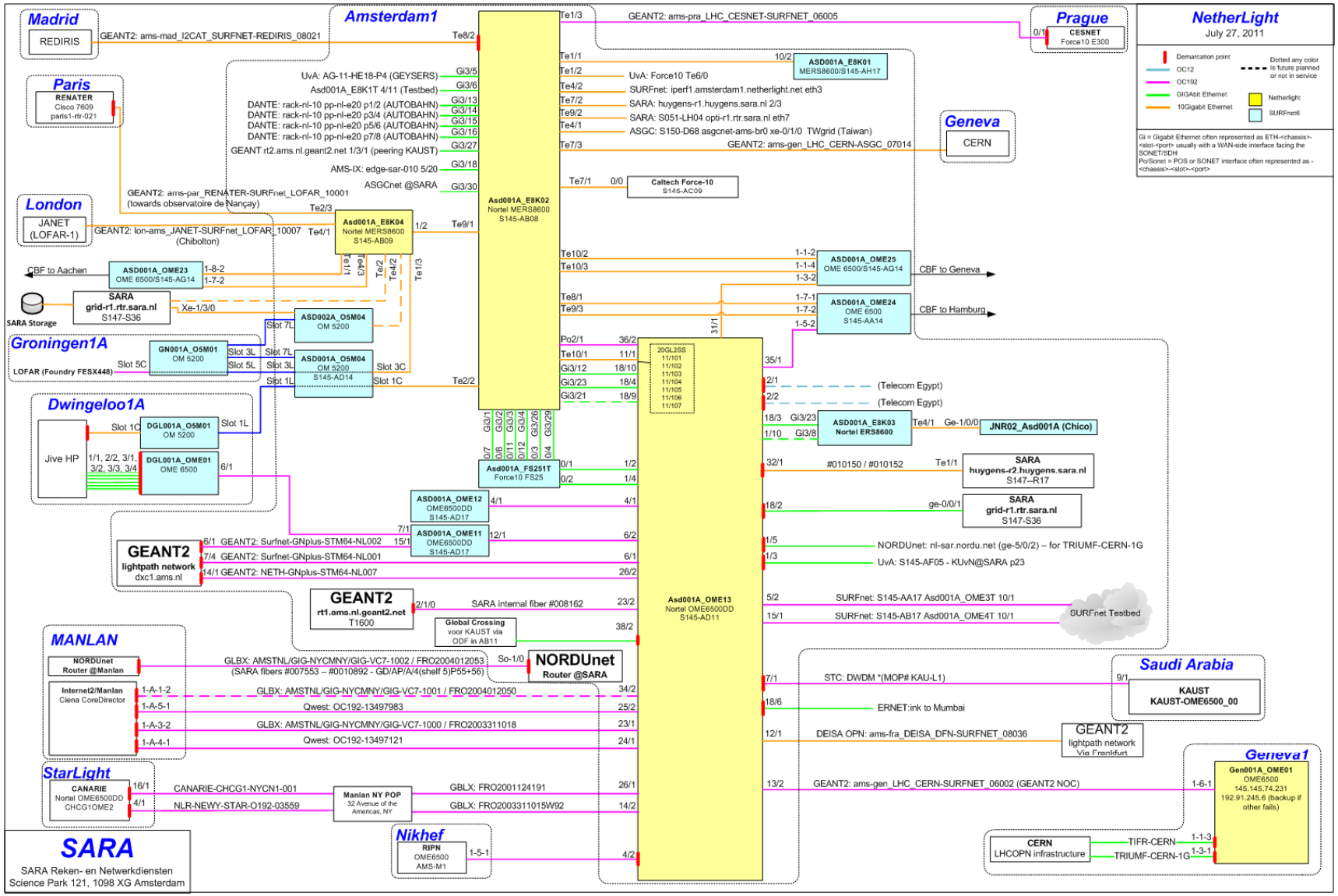
NetherLight connectivity



Current topology

http://noc.netherlight.net/netherlight.png

SURFNET



2011 – Originally planned

?

- 40G trans-Atlantic transmission
  - SC'11?

✓

- 100G clear channel transmission between Amsterdam and Geneva
  - Q3: Pilot
  - Q4: Aiming for production

On-time

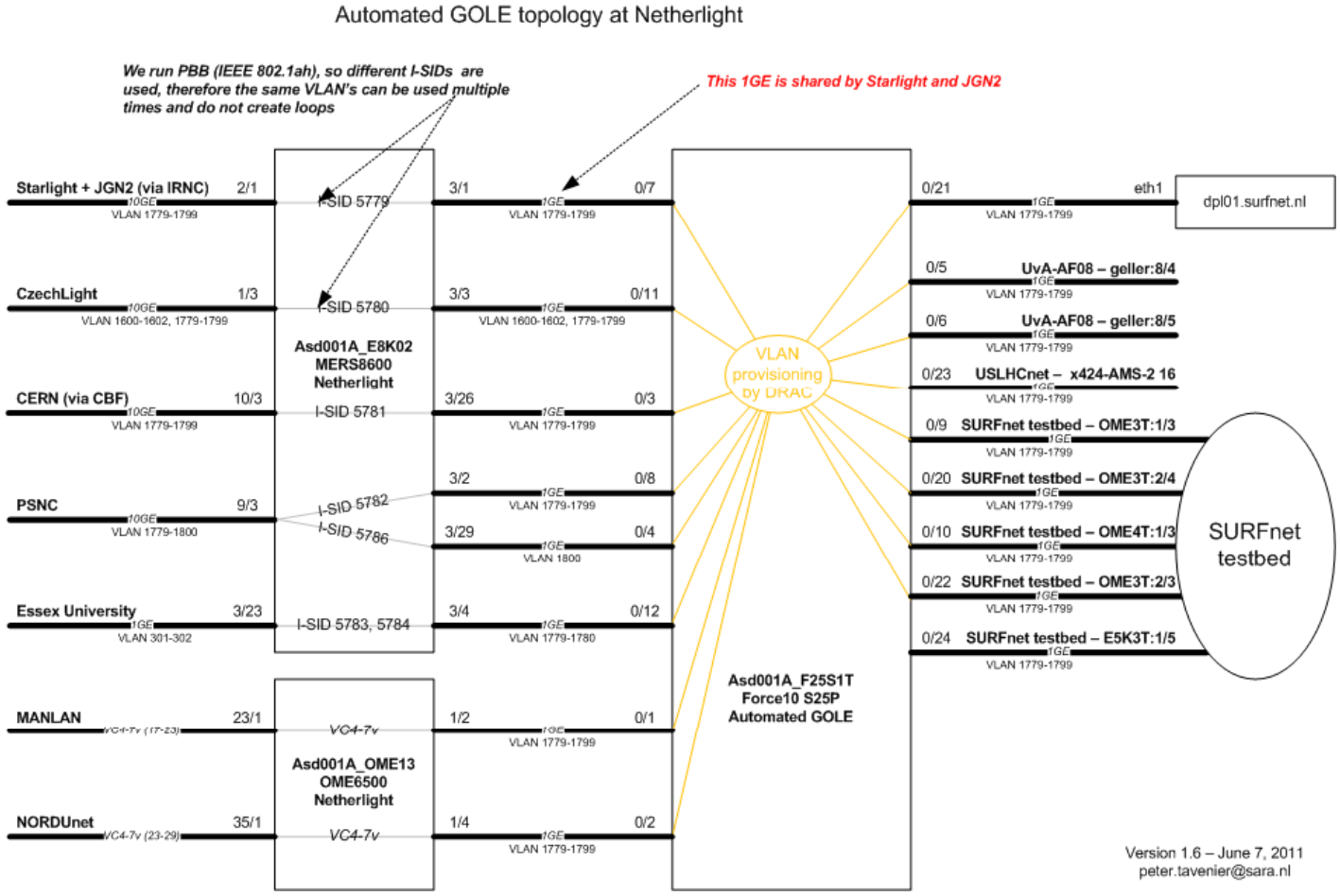
- Next Generation Ethernet available as pre-production service

On-time

- Automated GOLE
  - OGF NSI WG and GLIF DTOX WG progress
    - Next GLIF meeting: **let's demonstrate**!

Automated GOLE and OpenDRAC

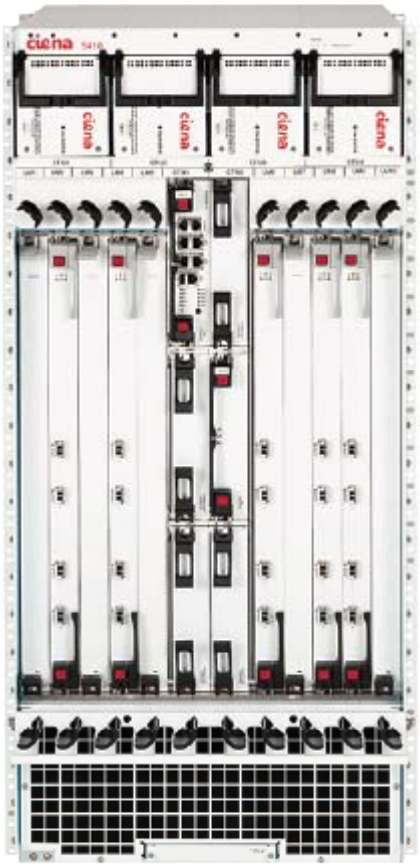
- Force 10 4810 (48x10GbE) switch
  - NEXPReS (e-VLBI) as application, 4Gb/s x 3 radio telescopes



2011 New!

- New website: http://www.netherlight.net
- Paper on Open Exchanges
  - http://www.surfnet.nl/nl/Thema/netherlight/Documents/INT-11-5-Role_of_open_exchanges_in_research_networking.pdf
- SURFnet7 network equipment vendor selected
- LHCONE
- 40G ULH Geneva – Copenhagen
- 100GE interoperability testing with CERN and AMS-IX

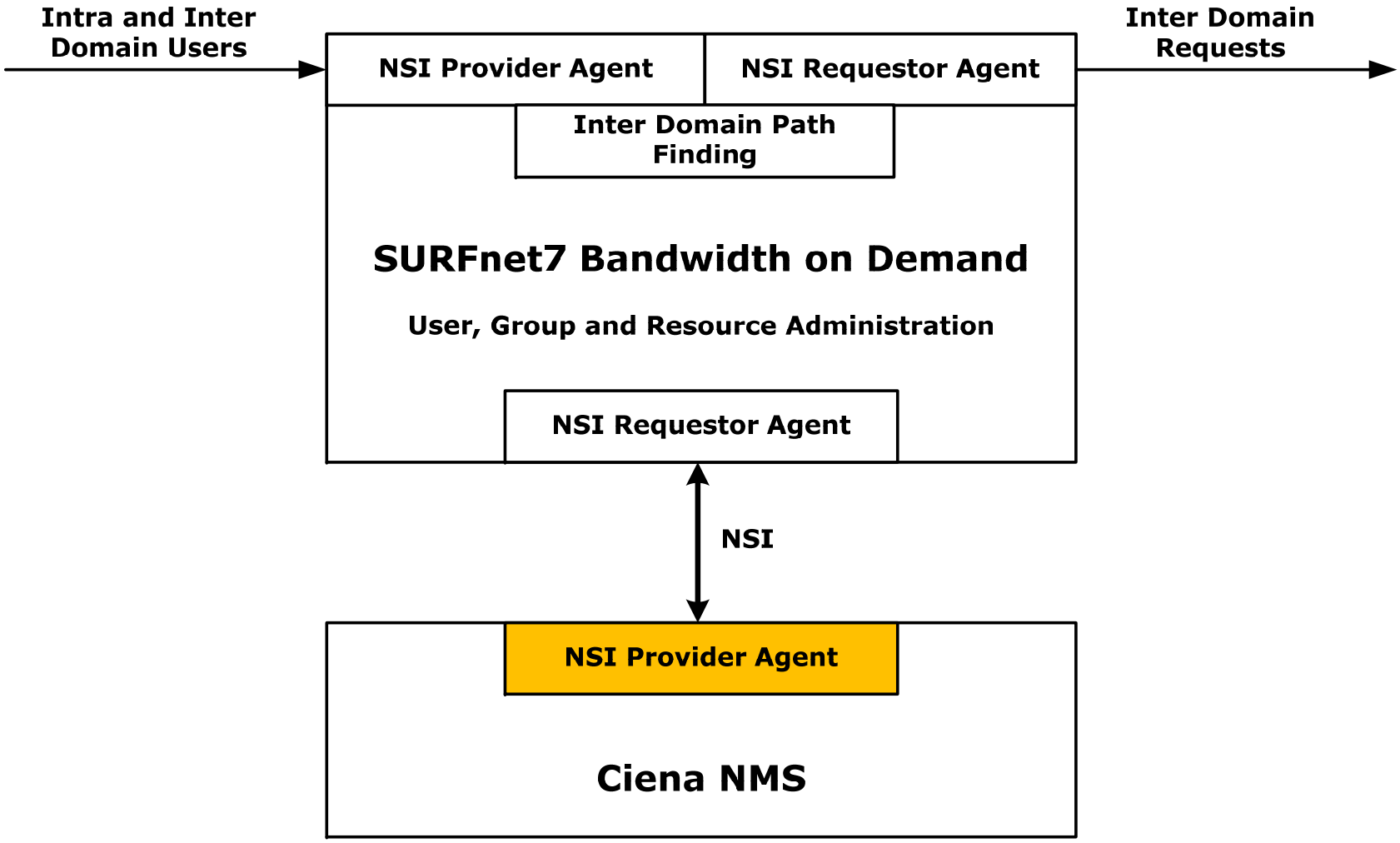
SURFnet7 vendor: Ciena



5410 chassis, front view

- Next Generation Ethernet based on
  - PBB-TE in addition to existing protocols
  - Ciena 5410
    - As successor of the Nortel MERS8600
    - Now: 10 slots x 4 ports x 10GbE
    - Future: 10 slots x 10 ports x 10GbE and beyond 10GbE
- In line with SURFnet7 developments
- Coming to NetherLight by the end of 2011/beginning of 2012

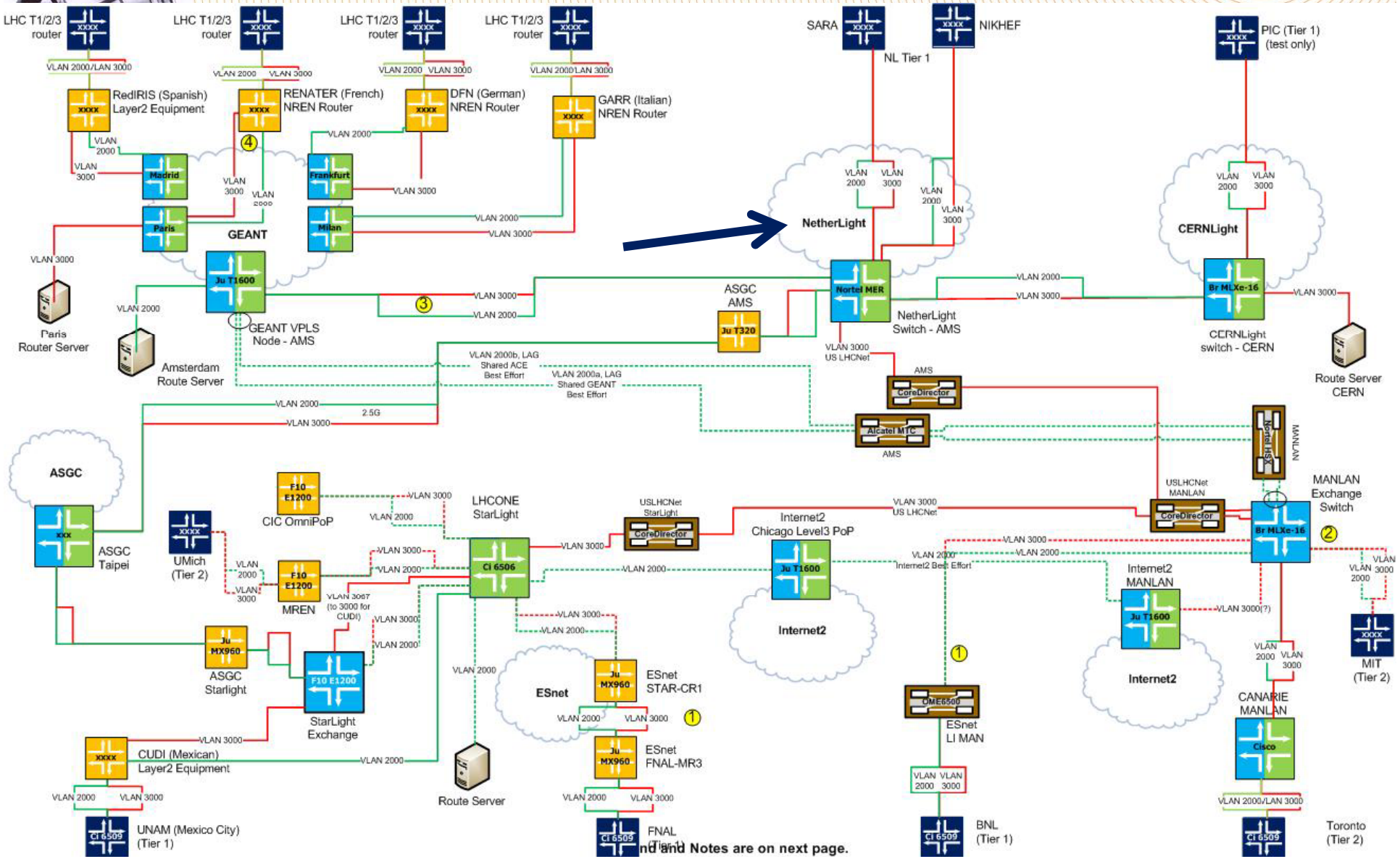
Ciena to implement NSI into production NMS!



LHCONE

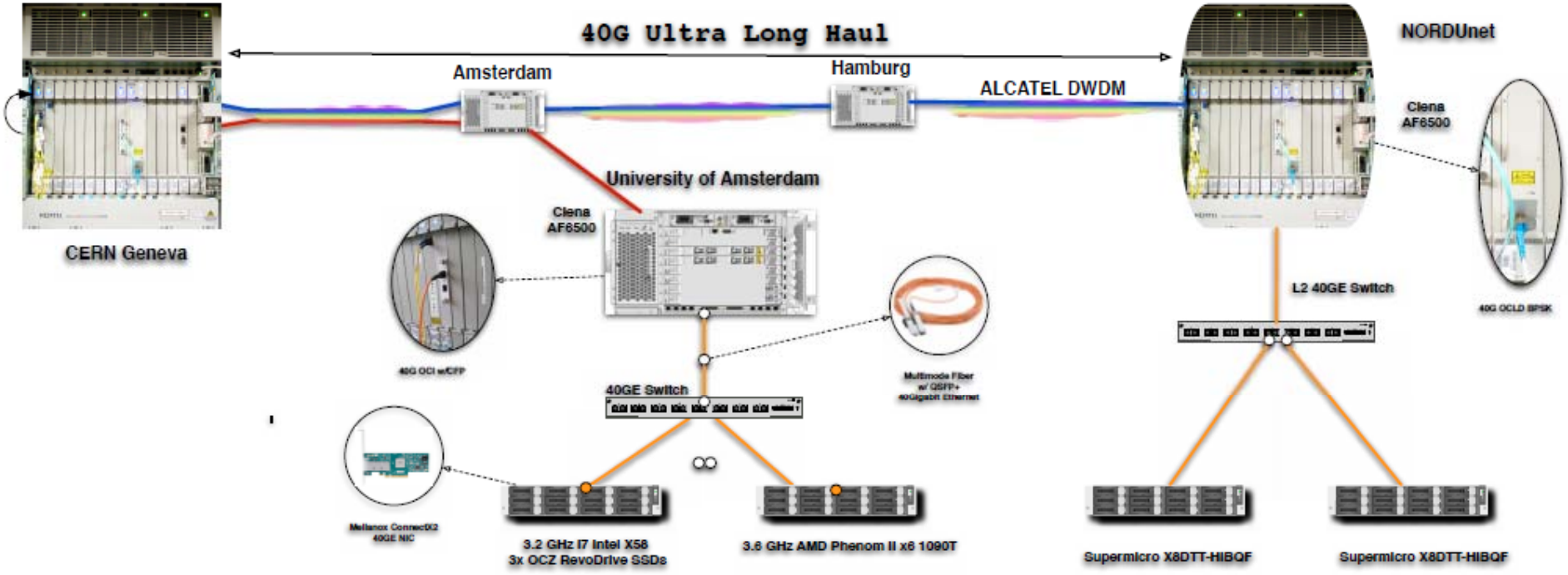
http://www.lhcone.net

Figure: LHCONE Architecture Working Group (Bill Johnston, ESnet)



Legend and Notes are on next page.

40G ULH demonstration



System and Network Engineering Research Group, Universiteit van Amsterdam

http://science.uva.nl/research/sne

UNIVERSITEIT VAN AMSTERDAM

100GE demonstration

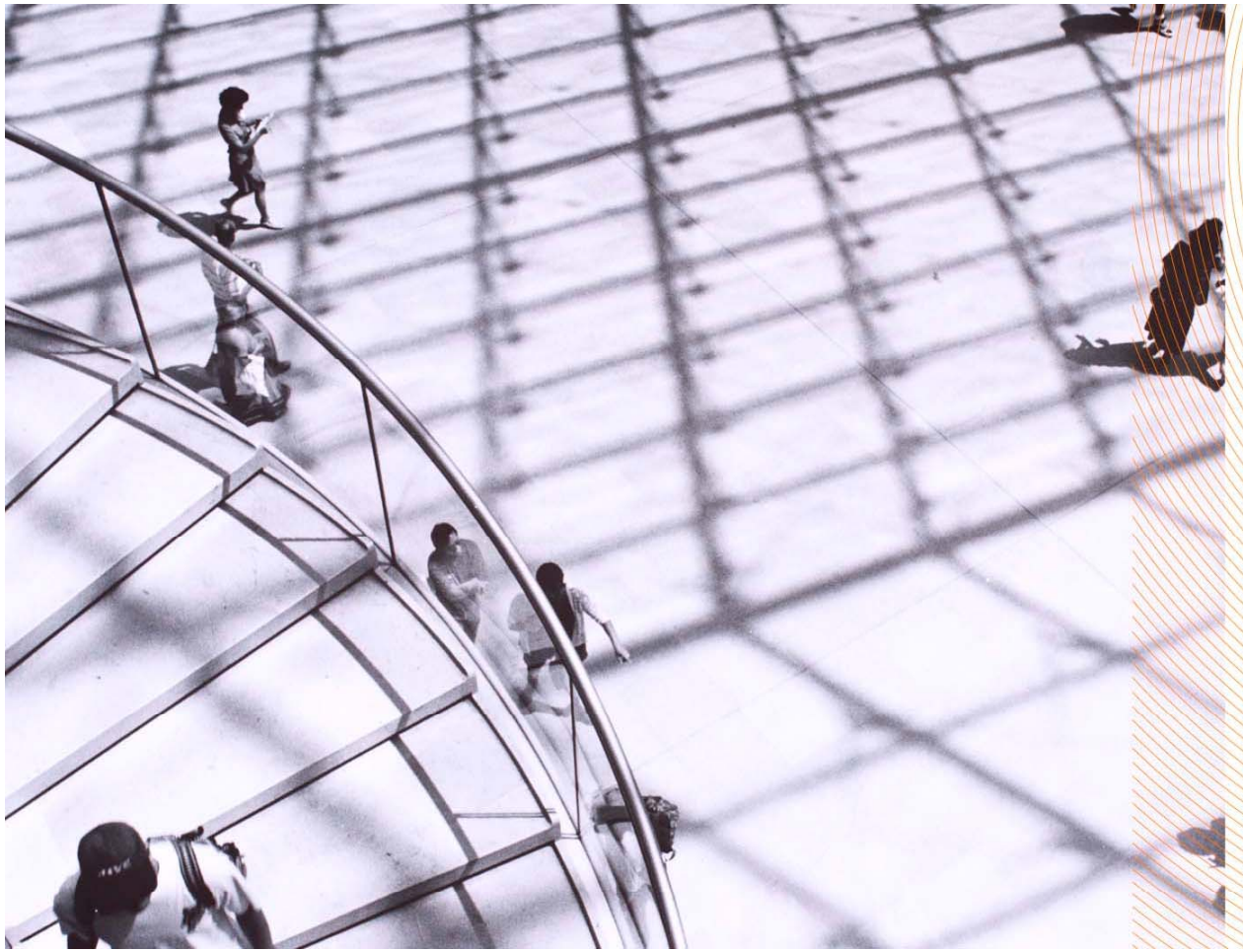
- In collaboration with CERN and AMS-IX
  - On the new Ciena 100G wavelength Ams-Gen
  - Using Brocade 100GE interfaces (LR-4)
  - http://www.ams-ix.net/deployment-of-100gbps-ethernet-interconnection-from-amsterdam-to-geneva-by-ams-ix-cern-and-surfnet/

2012

- Taking NetherLight to the next level
  - Replacing switches with Ciena 5410 Ethernet platform
  - Back-up location
  - Offering extended measurement and management information

- Connecting commercial service-suppliers to NetherLight
  - E.g. storage-providers, other networks, …
  - Green data centers abroad

- Fee per port per 2013
  - Cost-based (not for profit)
  - **Port-based** (not ‘crossconnect’/service-based)



Thank you!

Gerben van Malenstein

gerben.vanmalenstein@surfnet.nl