NetherLight GOLE update

Migiel de Vos

16th Annual Global LambdaGrid Workshop, September 29-30, 2016 – Miami, Florida, USA

Locations

GLIF Open Lightpath Exchange operated by SURFnet

- Vancis, Science Park, Amsterdam
- Equinix AM7, Amsterdam[1]

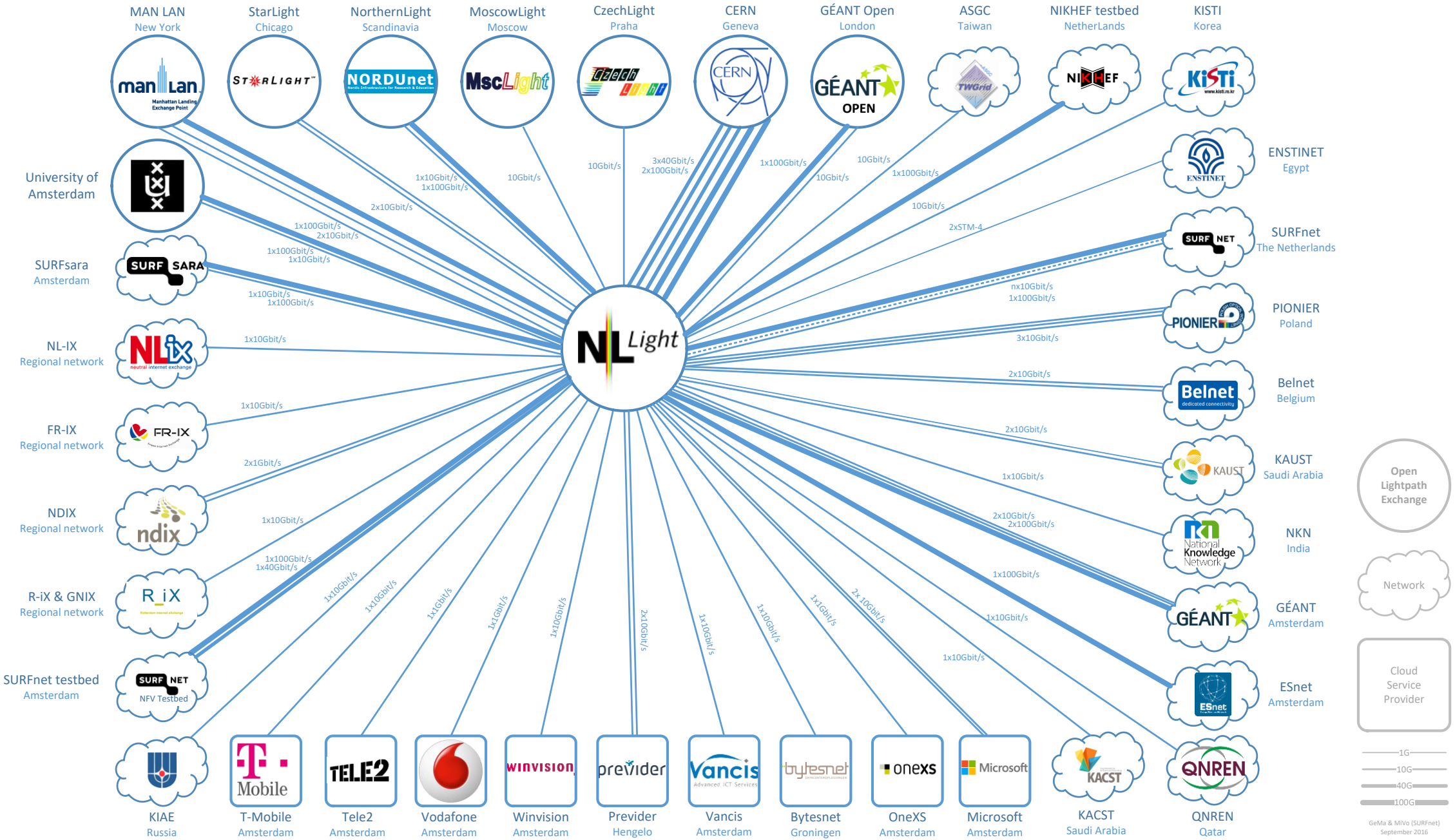
http://www.netherlight.net/

[1] Formerly known as Telecity AMS2, Amsterdam

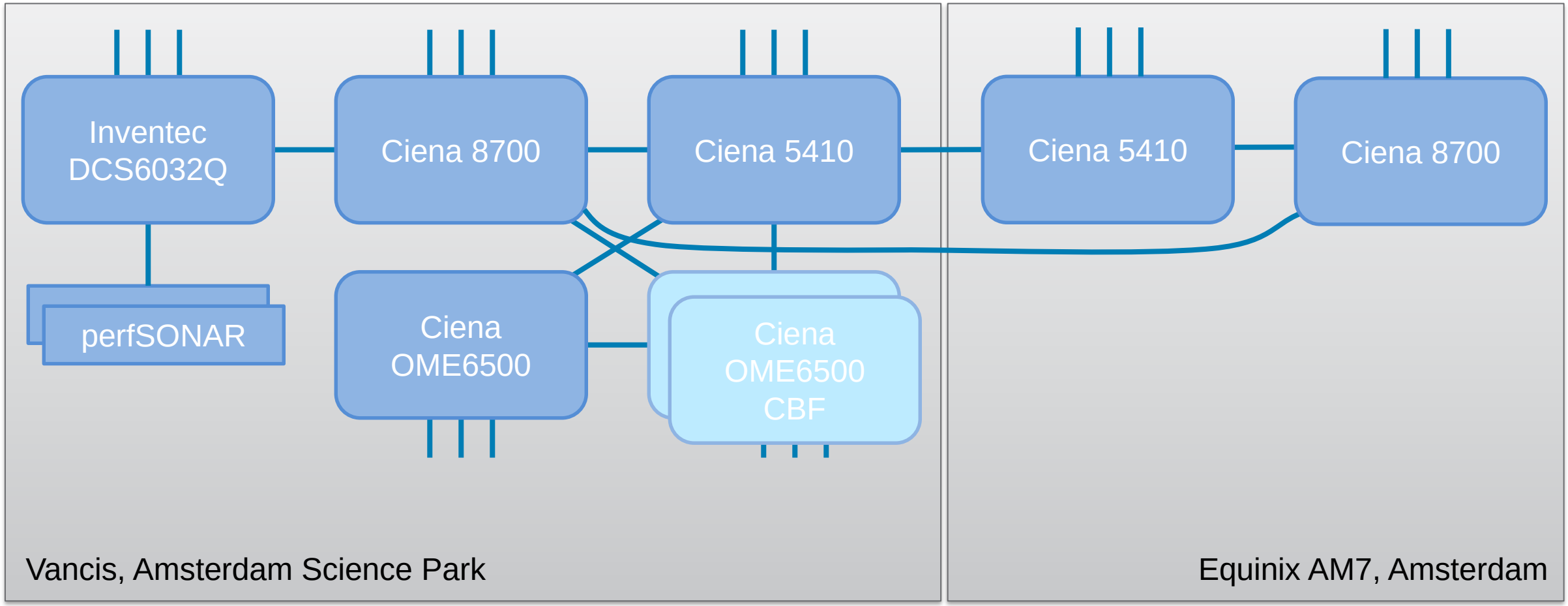
NetherLight - Purpose

Open Lightpath Exchange

- Research & Education (international)
- Cloud Services
- Innovation


MAN LAN
New York
StarLight
Chicago
NorthernLight
Scandinavia
MoscowLight
Moscow
CzechLight
Praha
CERN
Geneva
GÉANT Open
London
ASGC
Taiwan
NIKHEF testbed
NetherLands
KISTI
Korea
University of Amsterdam
SURFsara
Amsterdam
NL-IX
Regional network
FR-IX
Regional network
NDIX
Regional network
R-iX & GNIX
Regional network
SURFnet testbed
Amsterdam
NL Light
ENSTINET
Egypt
SURFnet
The Netherlands
PIONIER
Poland
Belnet
Belgium
KAUST
Saudi Arabia
NKN
India
GÉANT
Amsterdam
ESnet
Amsterdam
QNREN
Qatar
KACST
Saudi Arabia
KIAE
Russia
T-Mobile
Amsterdam
Tele2
Amsterdam
Vodafone
Amsterdam
Winvision
Amsterdam
Previder
Hengelo
Vancis
Amsterdam
Bytesnet
Groningen
OneXS
Amsterdam
Microsoft
Amsterdam
Open Lightpath Exchange
Network
Cloud Service Provider
1G
10G
40G
100G
GeMa & MiVo (SURFnet)
September 2016

NetherLight - Internal Topology



100G perfSONAR nodes

Two systems

- Intel Xeon E5-1630V3 – 10M Cache, 3.7GHz
- 4x8GB DDR4 2133mhz ECC
- ConnectX-4 EN network interface card, 100GbE dual-port QSFP28, PCIe3.0 x16

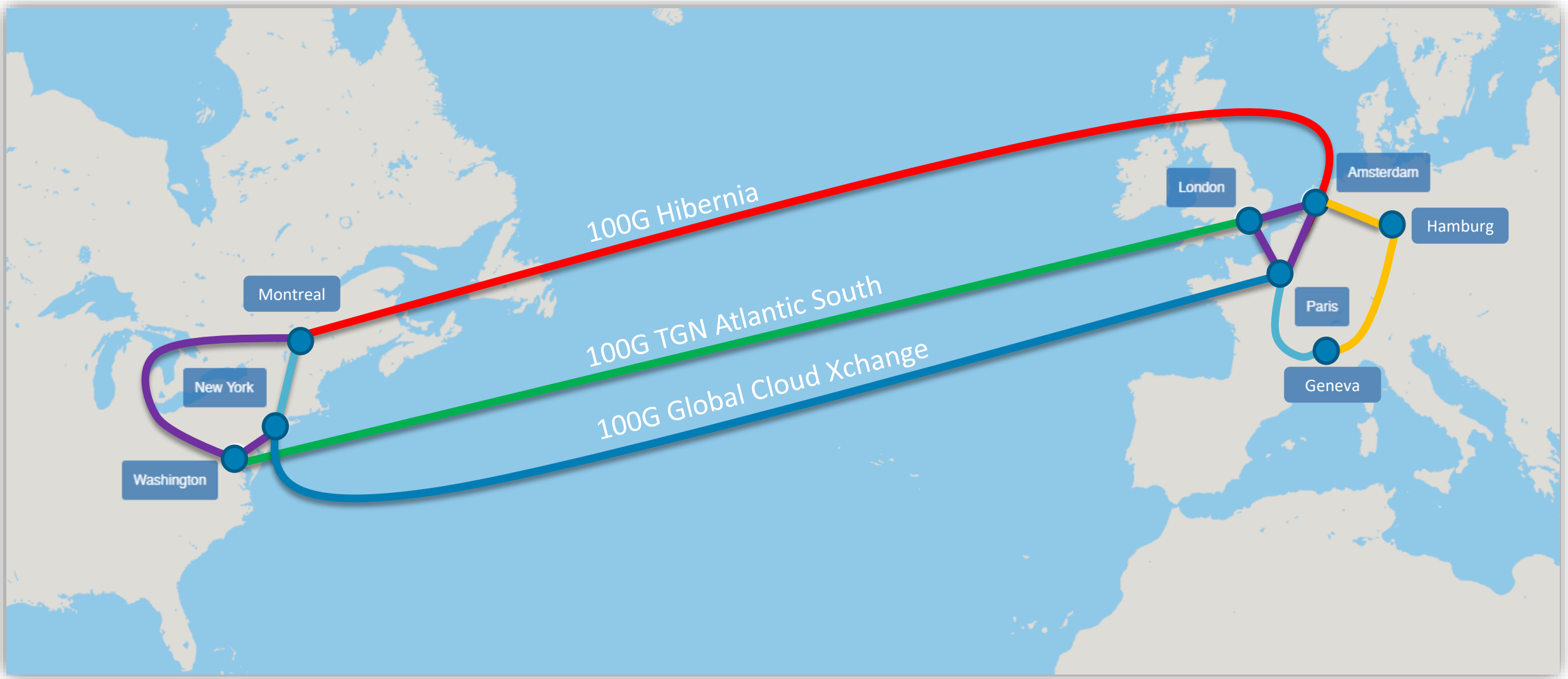
Performance tests executed by UvA/SNE student, Jelte Fennema

- Included testing with DPDK and trying to use iperf3 on top of DPDK
- https://homepages.staff.os3.nl/~delaat/rp/2015-2016/p94/report.pdf

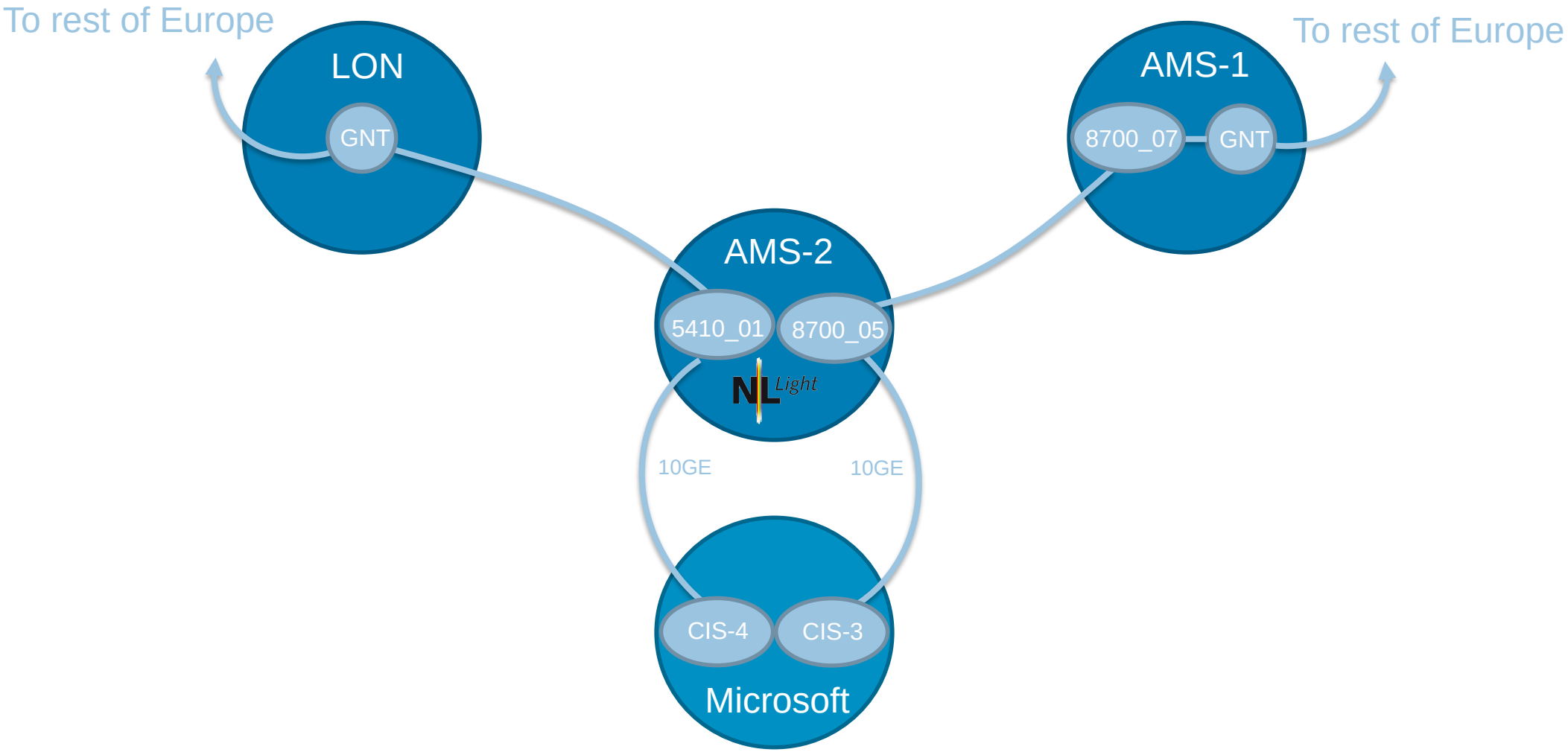
PerfSONAR toolkit running in a Docker container

- https://github.com/MigielDV/perfsonar

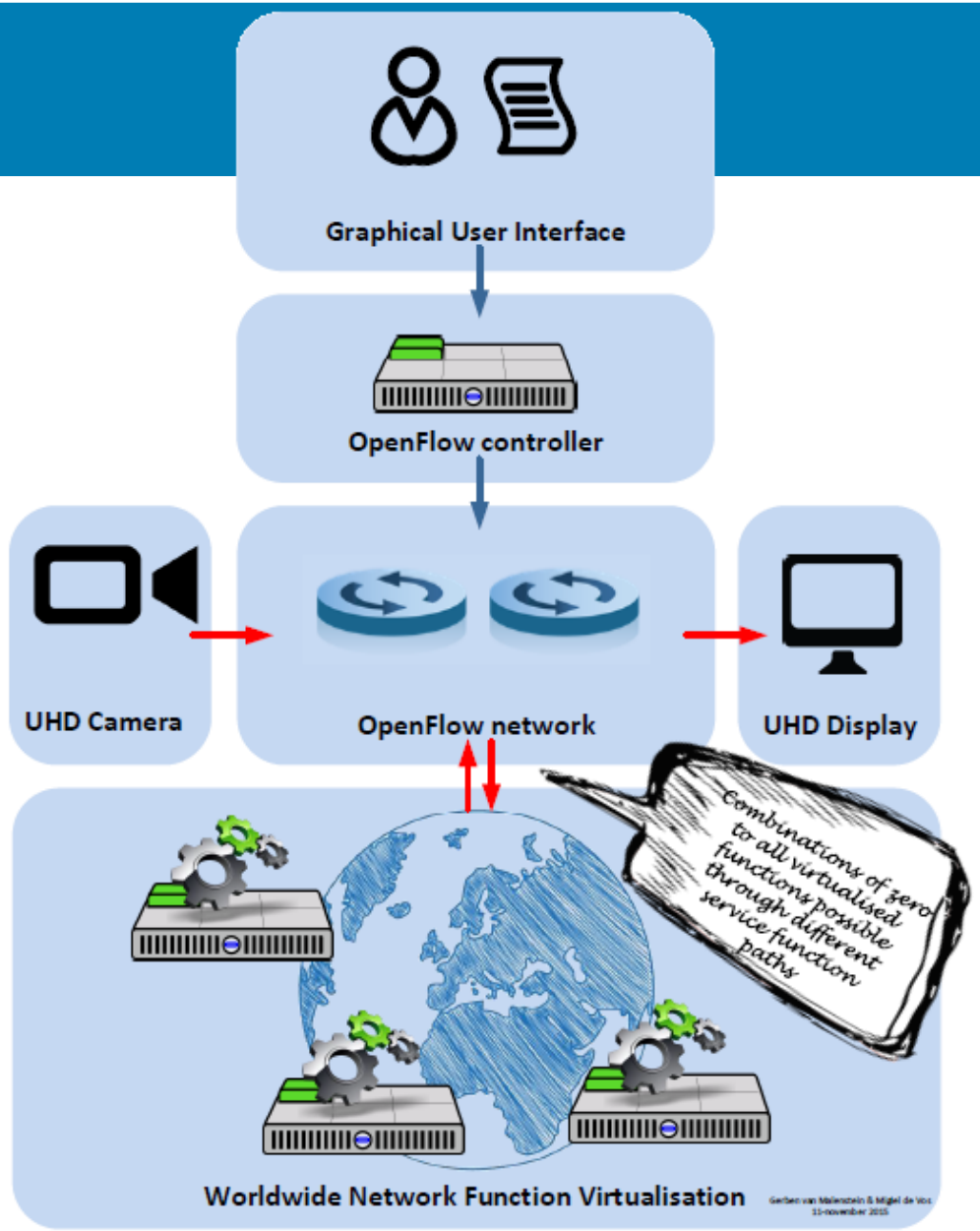
ANA - Reliable Transatlantic connectivity



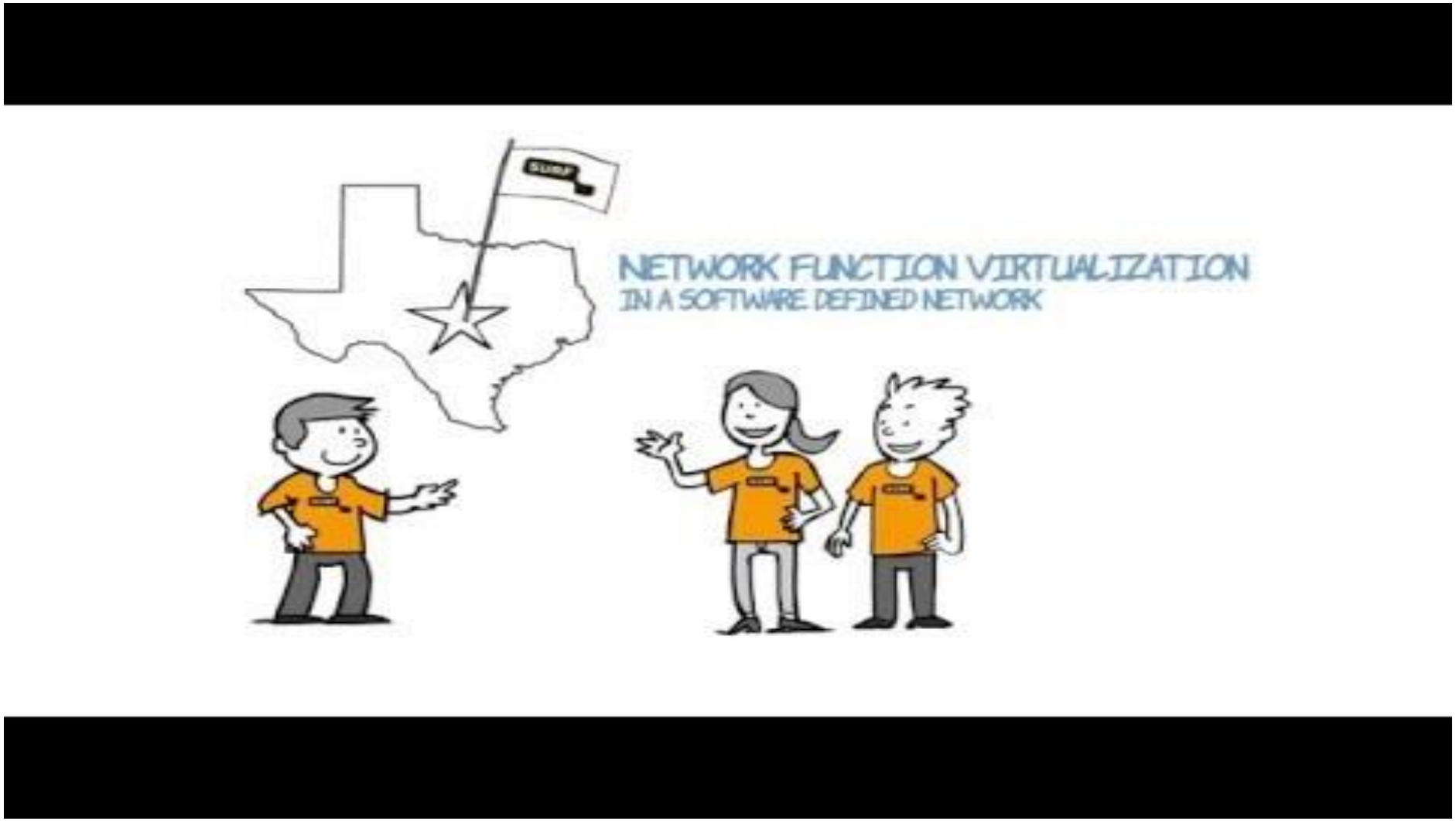
ExpressRoute @ NetherLight for Europe



SC'15 – SFC


Graphical User Interface
OpenFlow controller
UHD Camera
OpenFlow network
UHD Display
Combinations of zero to all virtualised functions possible through different service function paths
Worldwide Network Function Virtualisation

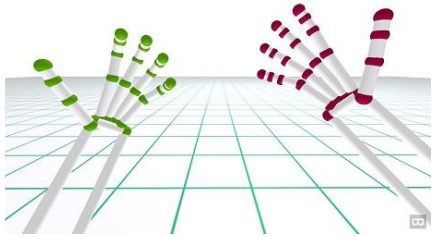
SC'15 DEMO MOVIE



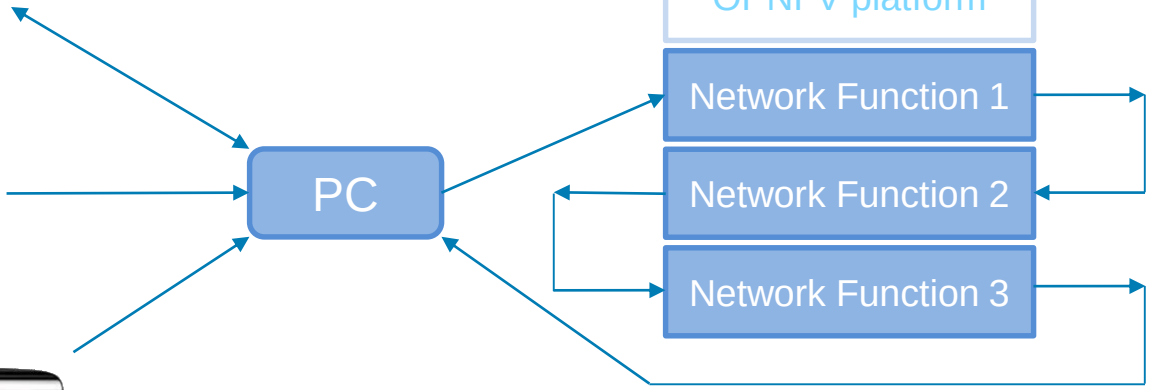
SC'16 DEMO PLAN

Oculus Rift

Leap Motion



Kinect



2016

Expanding 100G density at both NetherLight locations

Decommission 2x10G to New York

Insertion of Montreal Open Exchange in Hibernia path (AMS-NYC)

New connectors: NKN, KACST, KIAE

CBF upgrades

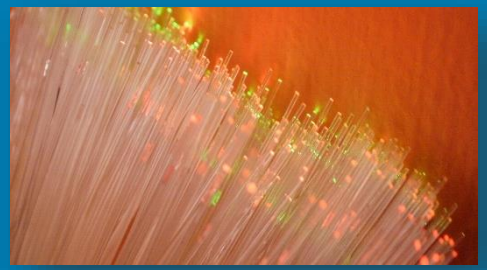
- Working with PSNC on HAM-FRA-GEN alien wave
- Moving POP in Paris to Interxion

Further automation of service provisioning

- Default mode of operation from NOC to self-service via BoD/portal
- Global provisioning via AutoGOLE
- First SDX features implemented: OpenNSA controlled switch in pre-production
- Further experimenting with NFV via NetherLight

2017

- NFV functions testing
- Technology scouting orchestrator
- Deploy first SURFnet8 hardware
- Integration with SURFnet network dashboard
- Integration with SURFcumulus



Cover image

Author: Roshan Nikam
Title: Fiber Optic Cables
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https://www.surf.nl/

http://www.netherlight.net/