NORDUnet
Nordic Infrastructure for Research & Education

NORDUnet GOLE Update

GLIF TECH Meeting,
14th Annual Global LambdaGrid Workshop

Queenstown, NZ, 29 Sep 2014

Lars Fischer

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Nordic Countries

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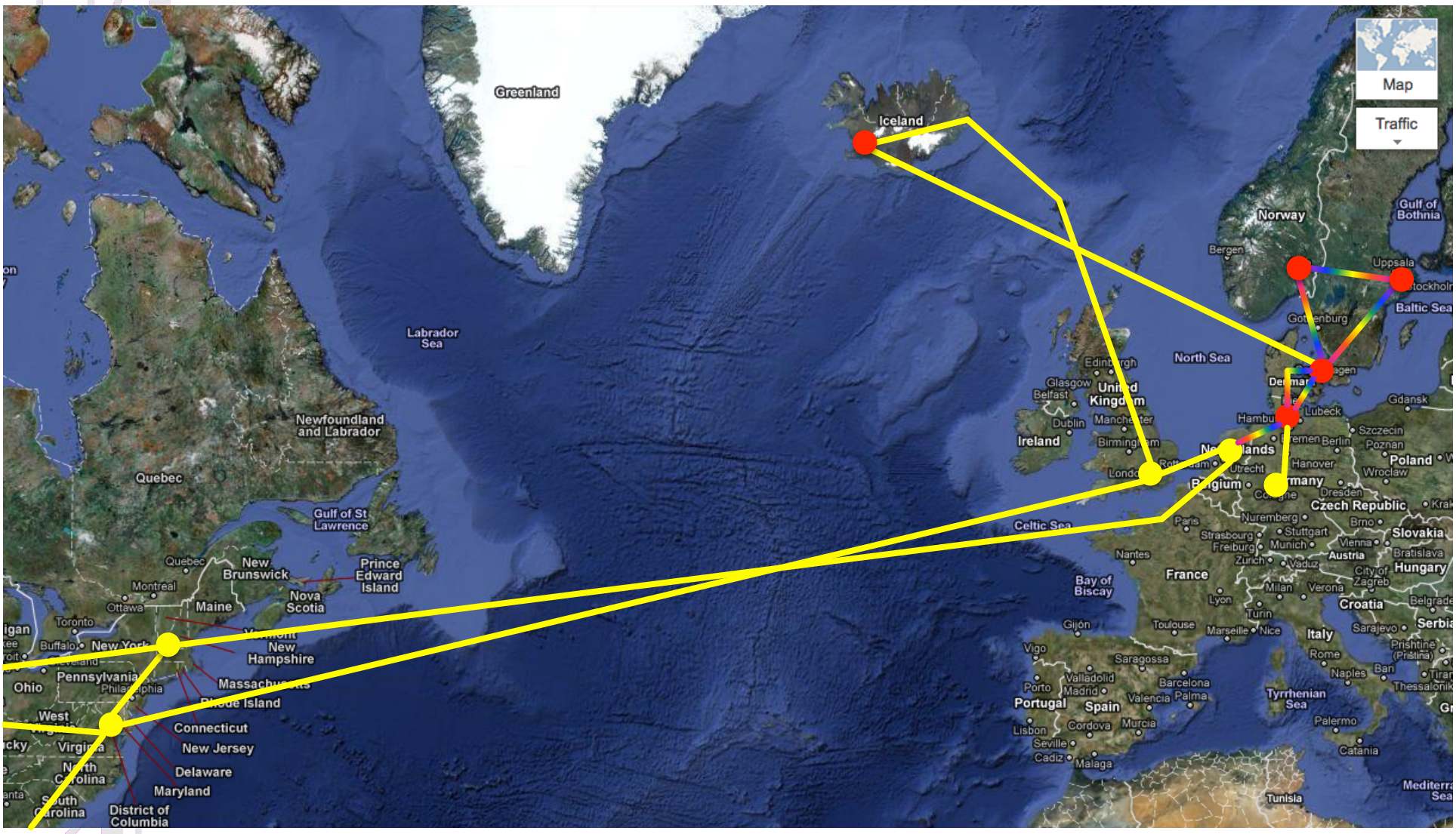
NORDUnet Network



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Status

- Peering
  - Frankfurt: √ completed 2012
  - US expansion: √ completed 2012
- New Fibre tenders
  - CPH-HMB x2: √ completed 2013 (L3 / GC)
  - HMB-LDN: √ completed 2013 (Interoute)
  - LDN-AMS: √ completed 2013 (Interoute)
- New Equipment tenders
  - Transmission Equipment: √ completed 2013 (Ciena) framework agreement for NRENs
  - IP Equipment: √ completed 2014 (Juniper)

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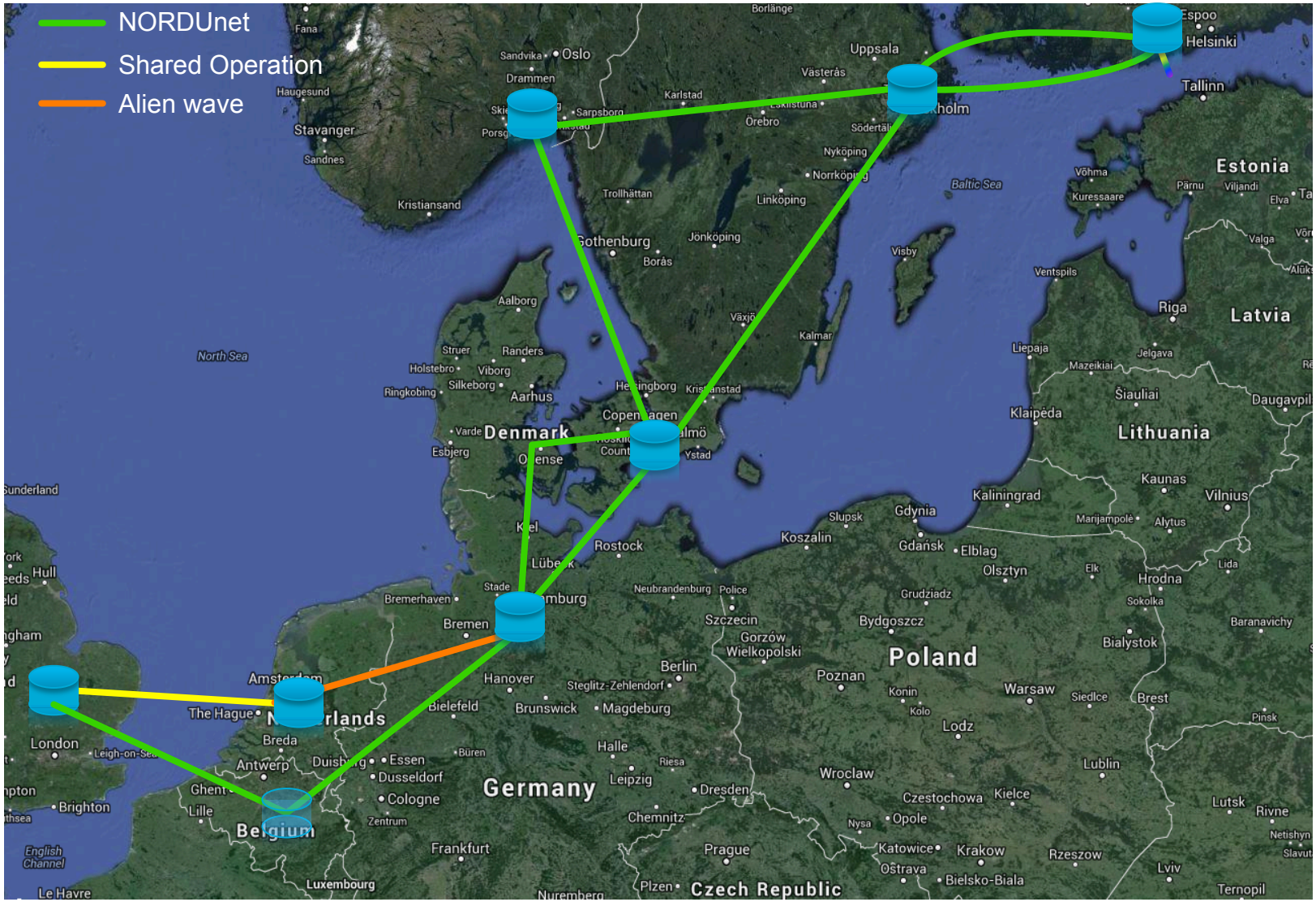
NORDUnet Optical Network



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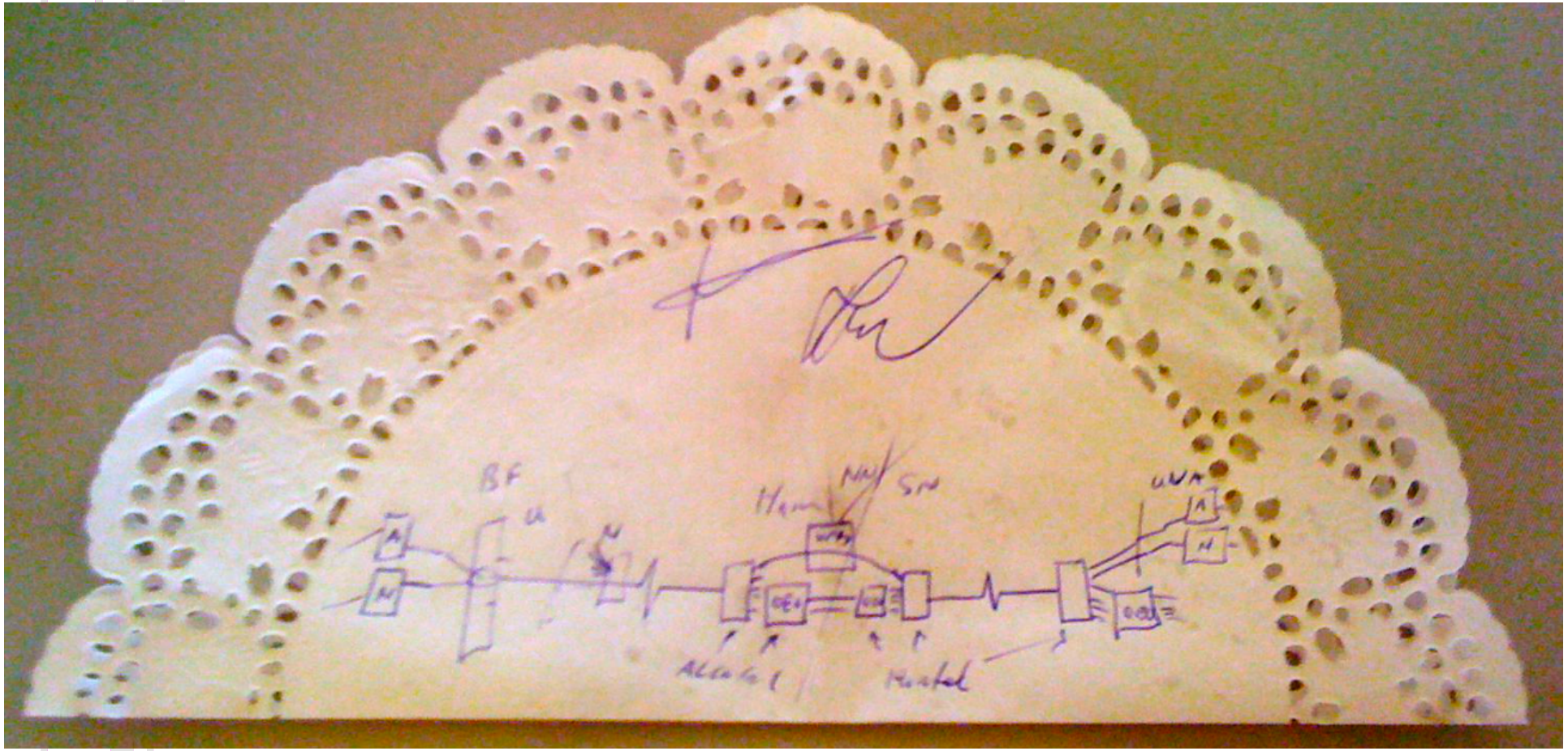
Fibre Sharing



- Alien Wave design, NORDUnet / SURFnet, May 2008
- (photo: Cees de Laat)

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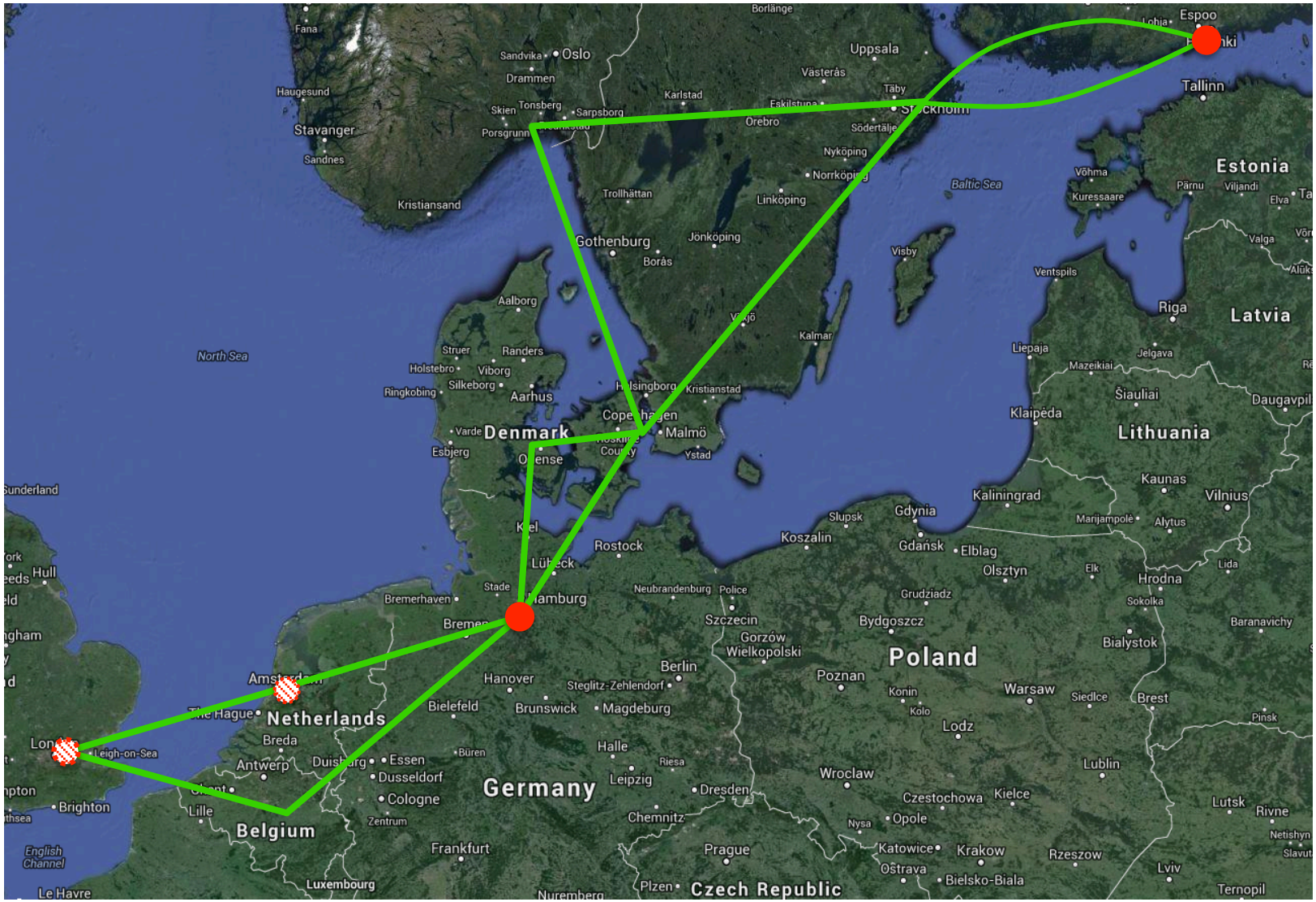
NORDUnet Open Exchange (NOX)



Where NORDUnet fabric meet (several) other networks

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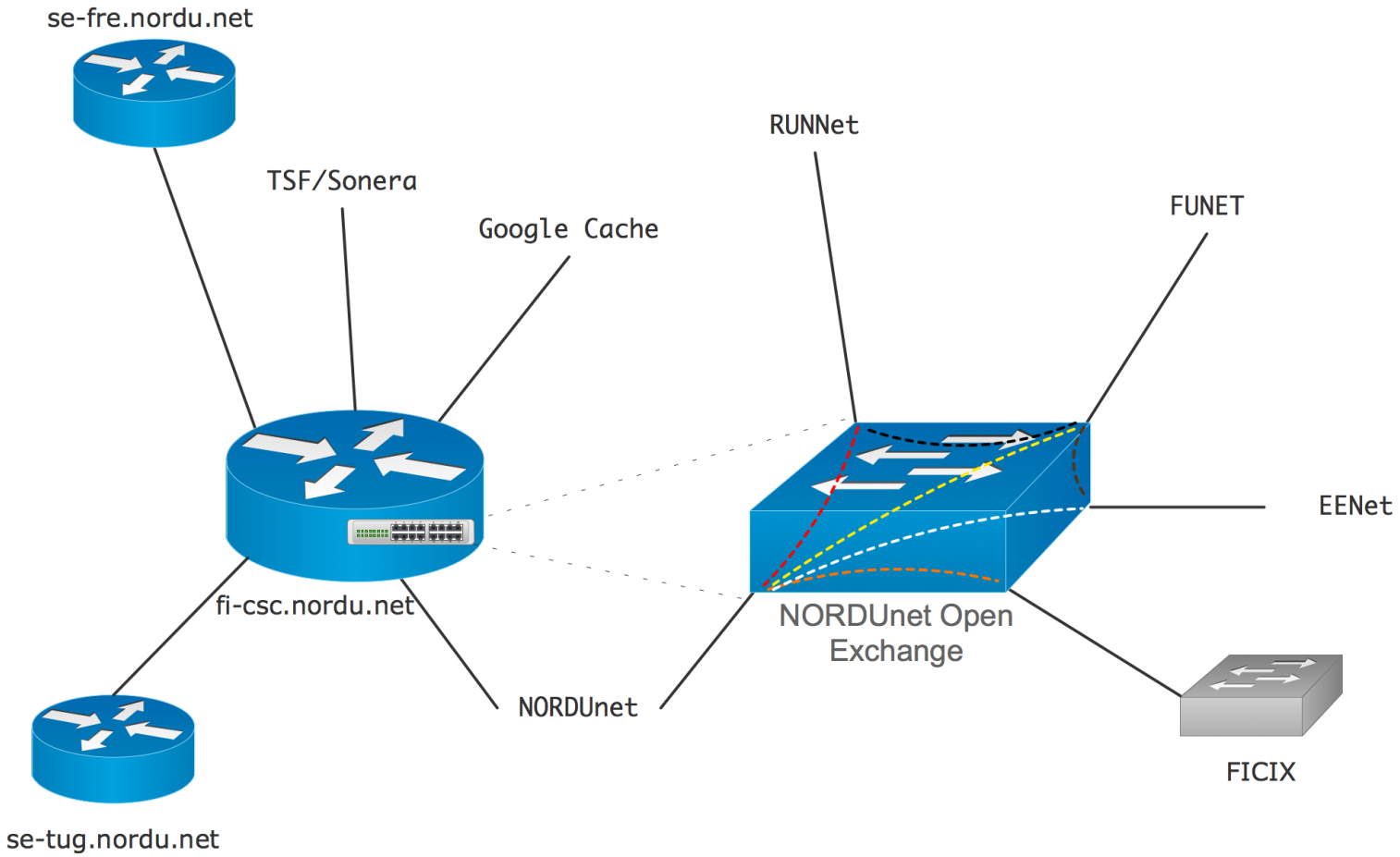
NOX Helsinki



Ethernet switching fabric, with (potential) MPLS and OpenFlow capabilities, adjacent to routing capability

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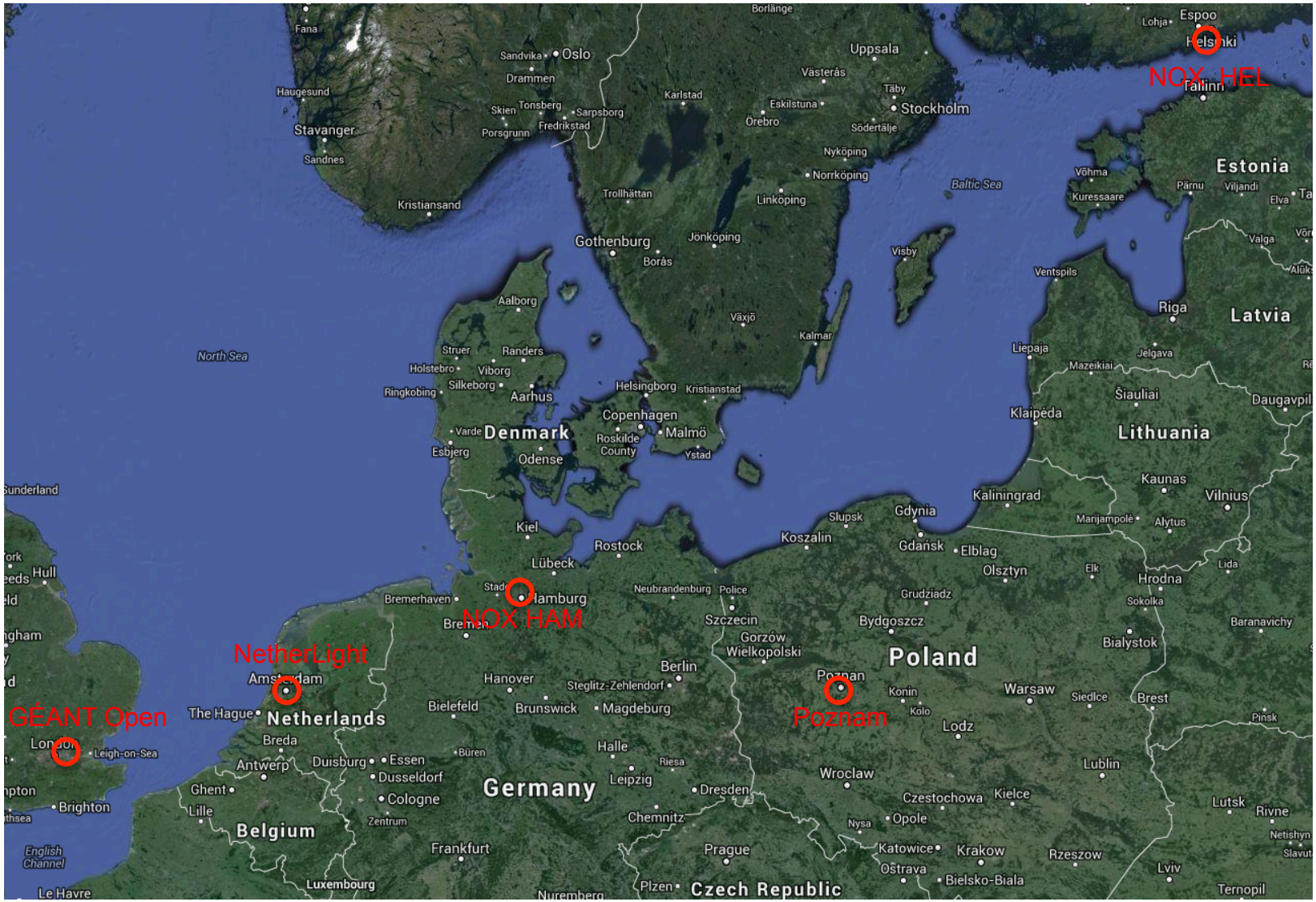
GOLEs, North-West Europe



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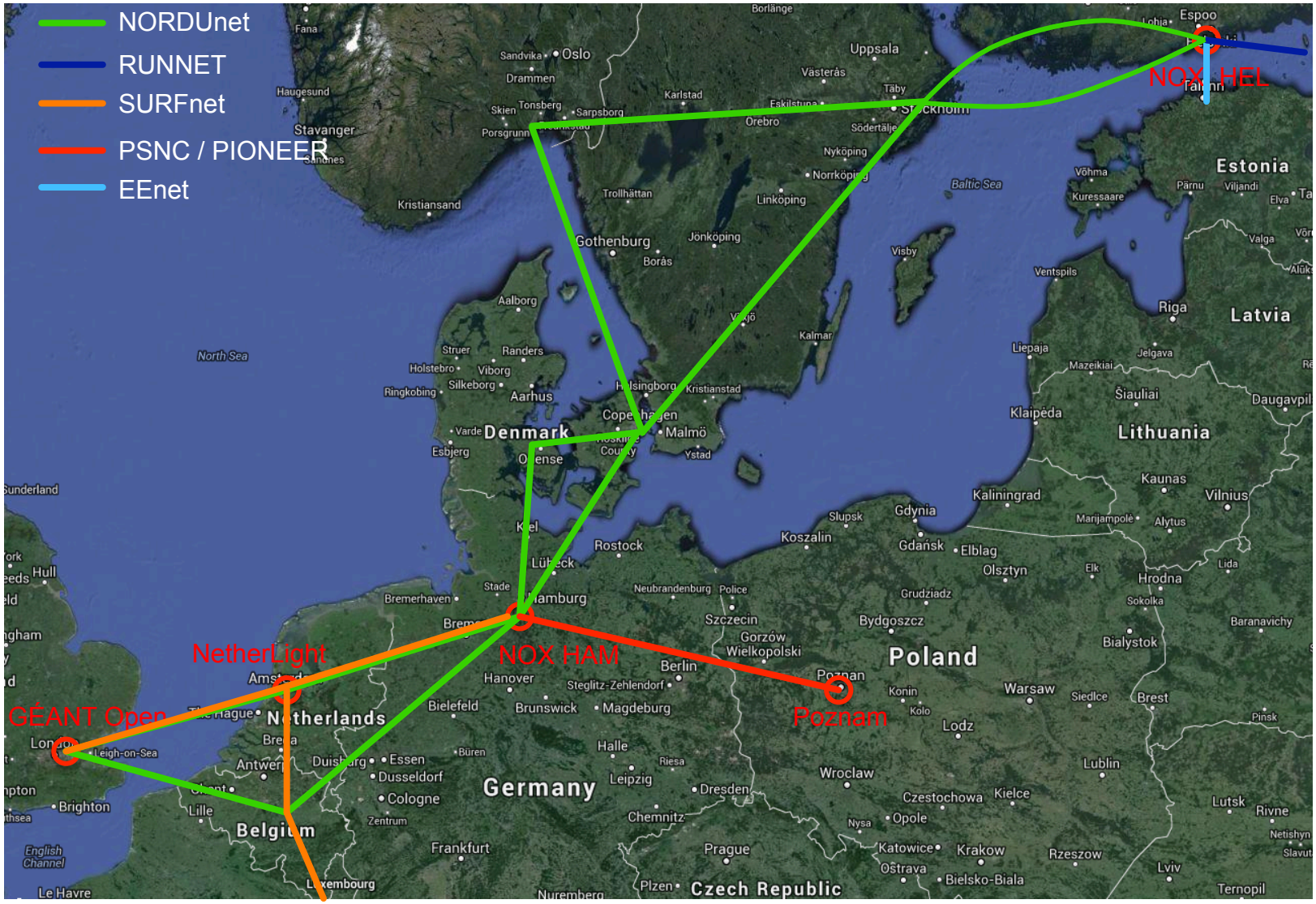
North-West Europe CBF



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GOLE: Core Network Element

- Moving towards meeting all NREN partners at Open Exchanges
- Examples
  - SURFnet, GÉANT, ESnet (x3)
  - Internet2 (x2)
  - PIONEER, EEnet, RUNNET (x1)
- GOLE connectivity
  - Own optical infrastructure
  - Cross-Border Fibres
  - Fibre / Spectrum sharing
  - Trans-Atlantic shared infrastructure