

Research into Optical Spectrum Usage on subsea cable systems

-

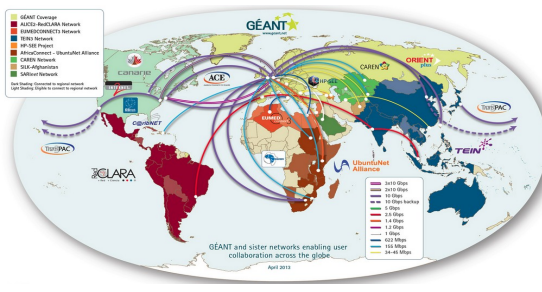
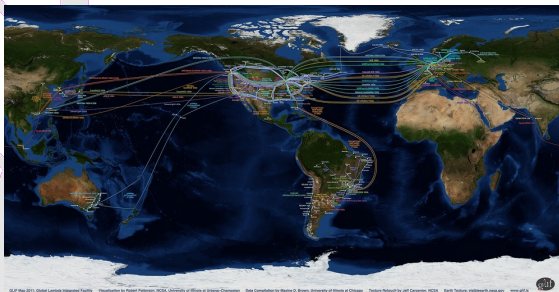
Erik-Jan Bos

(per videolink from The Netherlands)

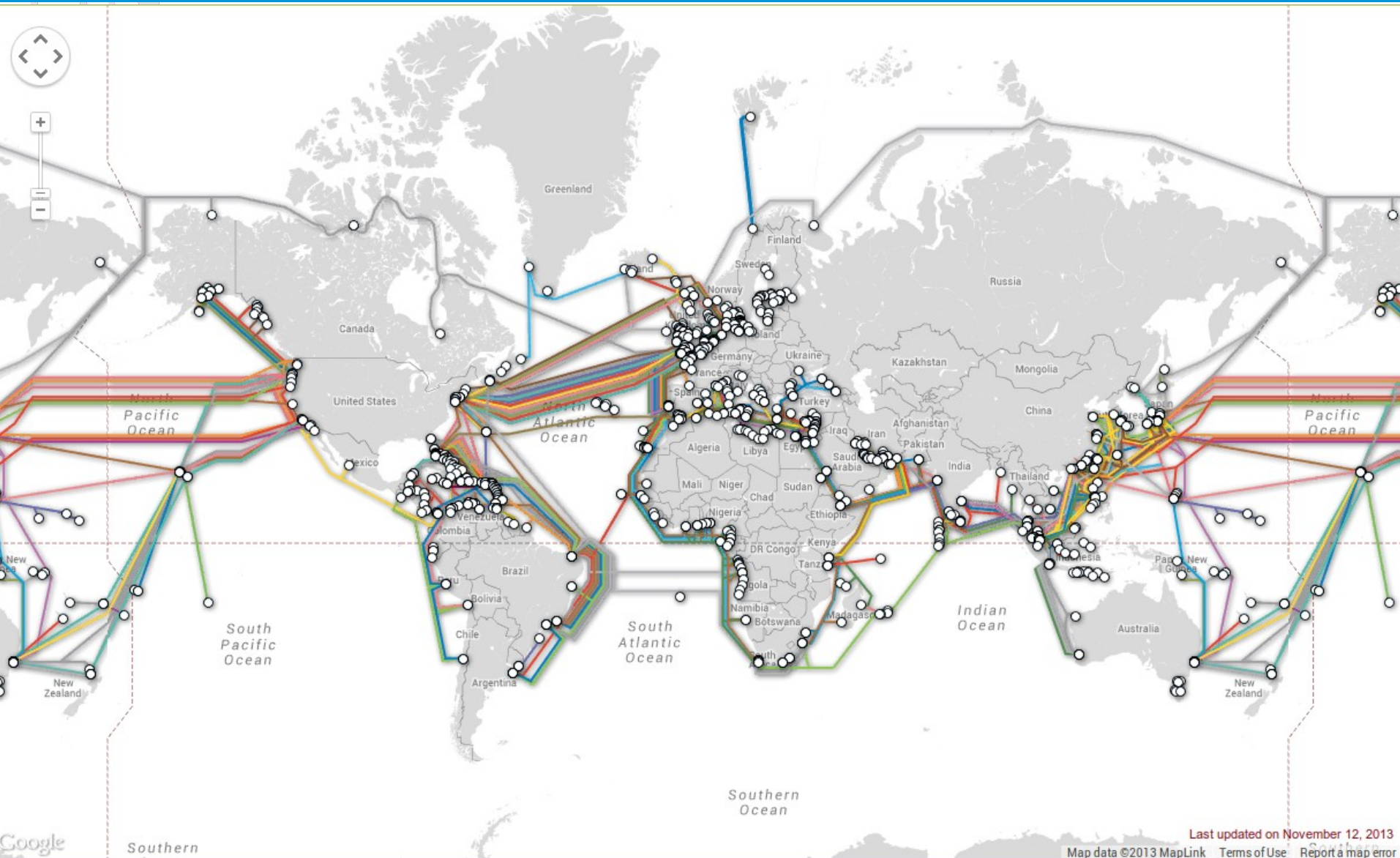
2nd TERENA Network Architects Workshop
Praha, CZ – November 13-14, 2013



- Current model based on short term lease of transmission service
 - E.g. 10 Gbit/s lambda for 2 years
- R&E Networks today lease a lot of bandwidth on intercontinental paths



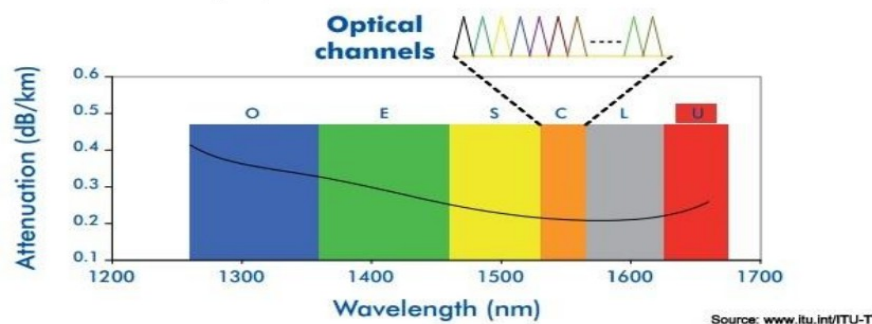
- Research into extending/expanding in two dimensions, lead to *spectrum thinking*:
 - Bandwidth
 - Time (i.e. lease period)



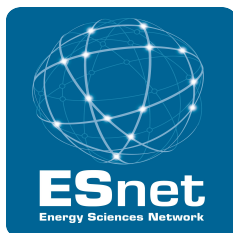
Source: TeleGeography Submarine Cable Map

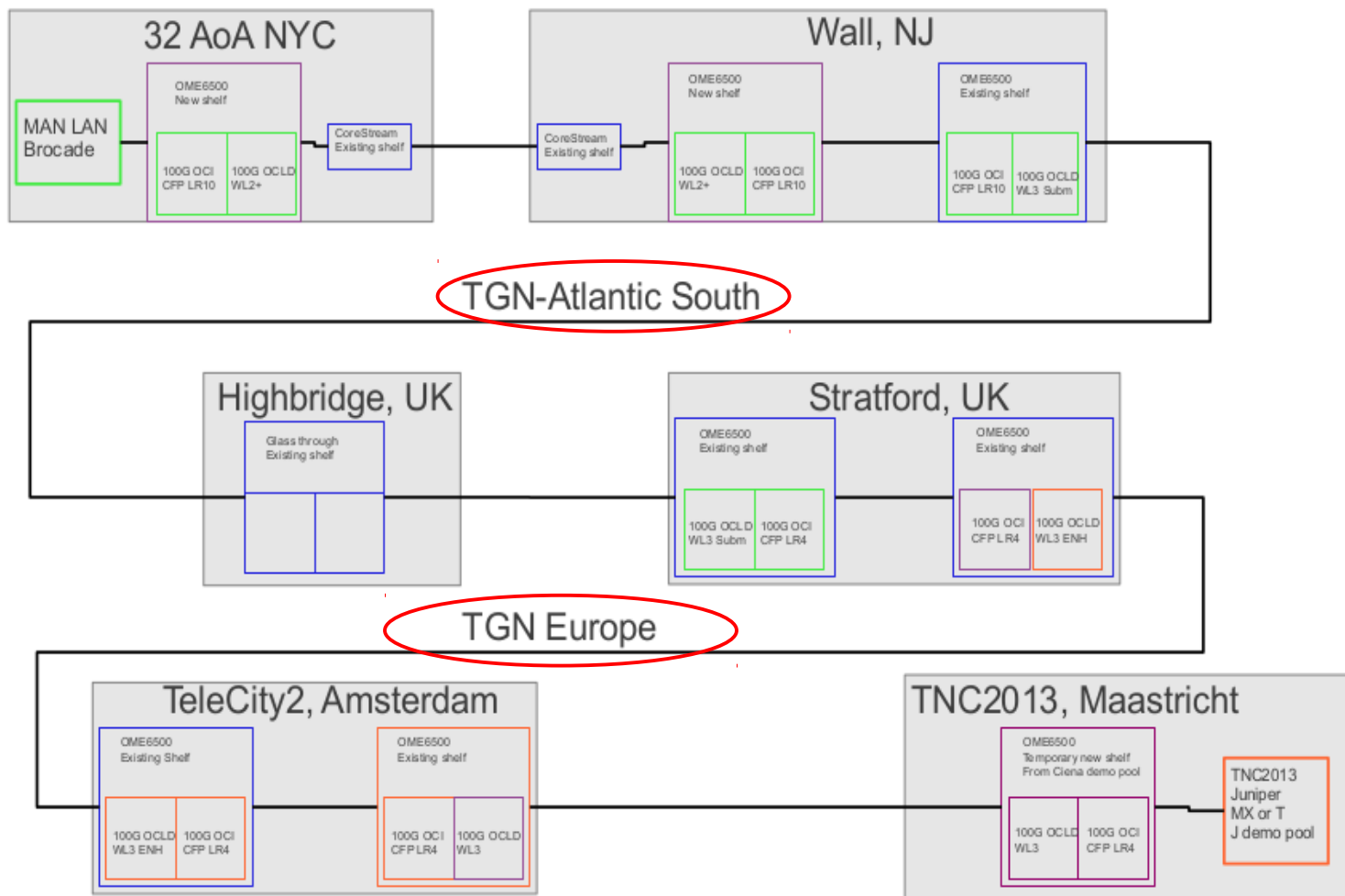
- Engaged various carriers in the discussions
- New “optical spectrum product” (not yet in price books):
 - min(15 year lease, life time of cable)
 - e.g. Quarter of fiber pair
 - Common equipment sharing or split spectrum
- Pricing models, like IRU:
 - Upfront investment
 - Plus O&M fee (3-4%/year)

- C-band usage



- Example
 - 3400 GHz for spectrum sale on one trans-Atlantic fiber pair
 - Min BW/customer = 850 GHz
 - Derivable data rate = 0.735 bit/s/Hz
 - Throughput = $\beta(y, 10)$ [Gbit/s]
where $y = ('k' \text{ GHz})$
 - $\frac{1}{4}$: 850 GHz \rightarrow 620 Gbit/s





Thank you. Comments? Remarks? Questions?

**2nd Network Architects Workshop
Praha, CZ – November 13-14, 2013**

NORDUnet

Nordic Infrastructure for Research & Education

