From start to transport: Submarine Cable Deployment
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NANOG 42 – San Jose, CA

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Agenda

- Sit Rep

- Business Case

- Scope

- Timeline

- Summary

- Interesting Stuff

- Questions

Sitrep

- Surrounded by water

- 1 low-cap cable =< 5 Gb/s

- 1 hi-cap cable @ 720 Gb/s

- History of backhoe "aggression" on the hi-cap backhaul elements

- Low-cap cable is to EOL 'soon'

- Access is unsuitable for high cap requirements

- There isn't a golf course that has good wireless anywhere!

Farice1

Business Case

- Driver

- Redundancy

- Security

- Access

- Performance

- ROI

Scope

- **Parameters**
  - **Wet / Dry Plant**
  - **Desk Top Study "DTS"**
  - **Capacity**
  - **Routing (undersea and terrestrial)**
  - **RFS Date**
- **Risks**
  - **Length**
  - **Repeater distance and sparing**
  - **Shipping, Fisheries, Geology**
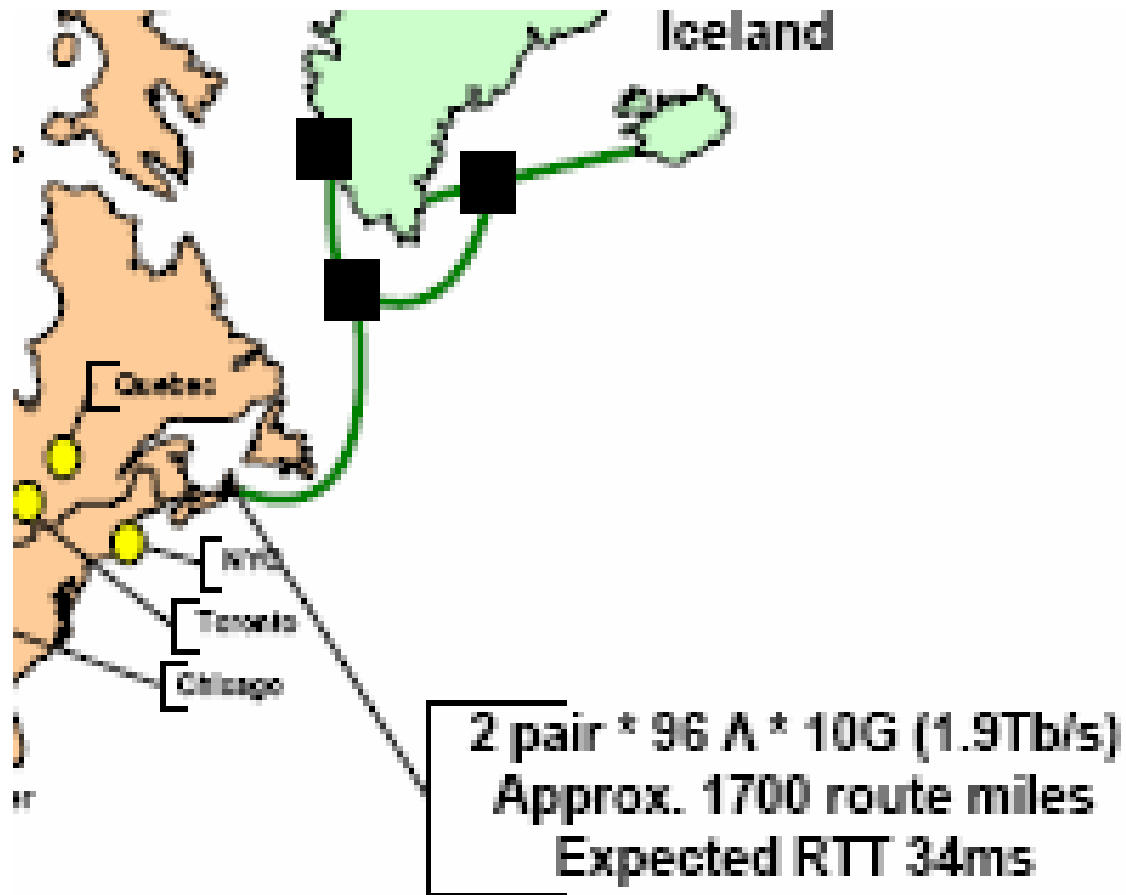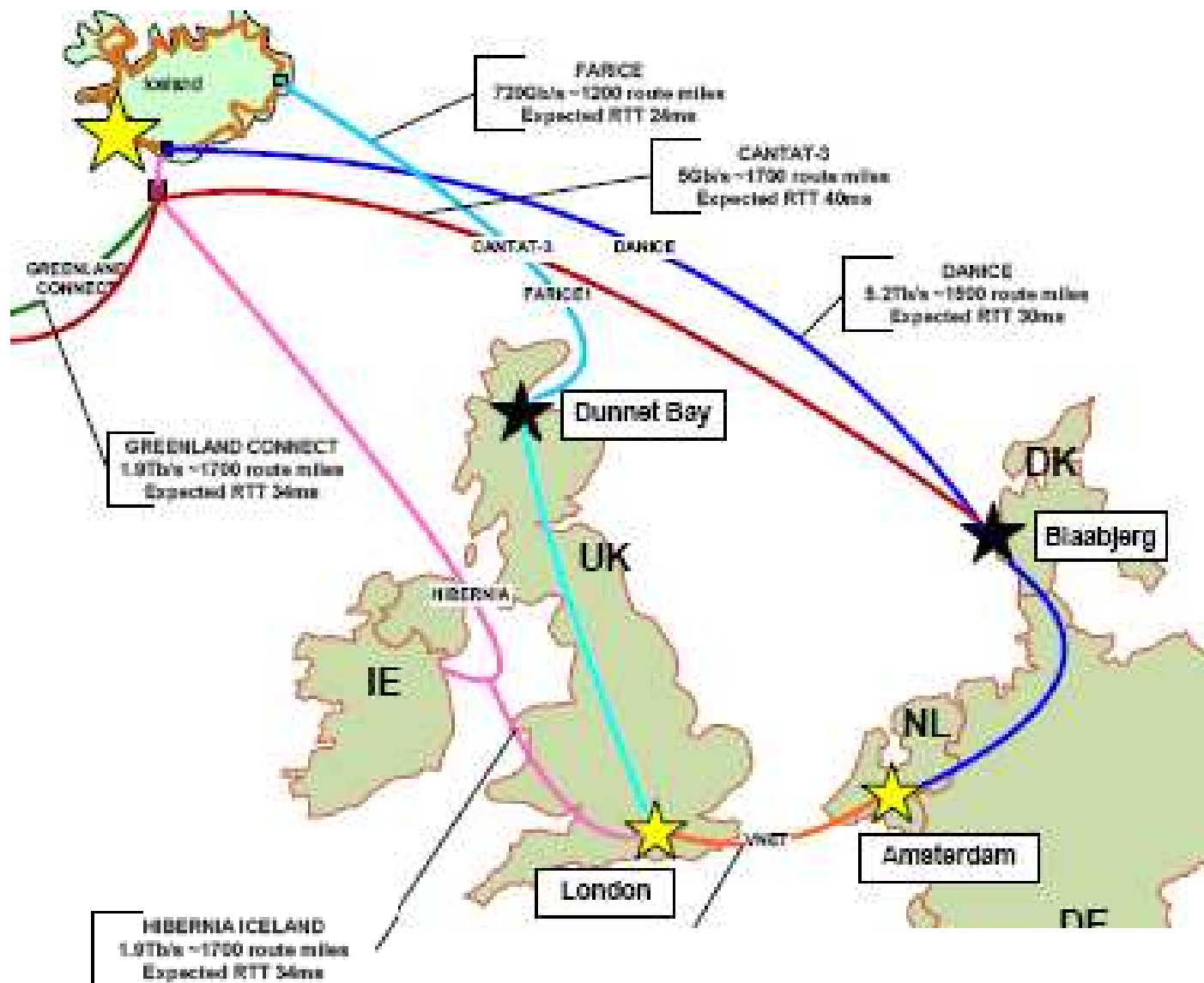 - **Anchors and Backhoes**
  - **Permitting**

Chronology

- **Sign an Intent To Proceed "ITP"**
- **Commission the "DTS"**
- **Vendor begins material acquisition**
- **Complete engineering, RE, sign a final agreement**
- **Finish backhaul selection, ocean survey**
- **Adjust the plan**
- **Manufacture of cable and build out of landing stations**
- **Ship(s) sets to sea for deployment**
- **A/Z ends dropped to the beach**
- **PoP's, backhaul, ready - cross connects ordered**
- **Complete acceptance testing**
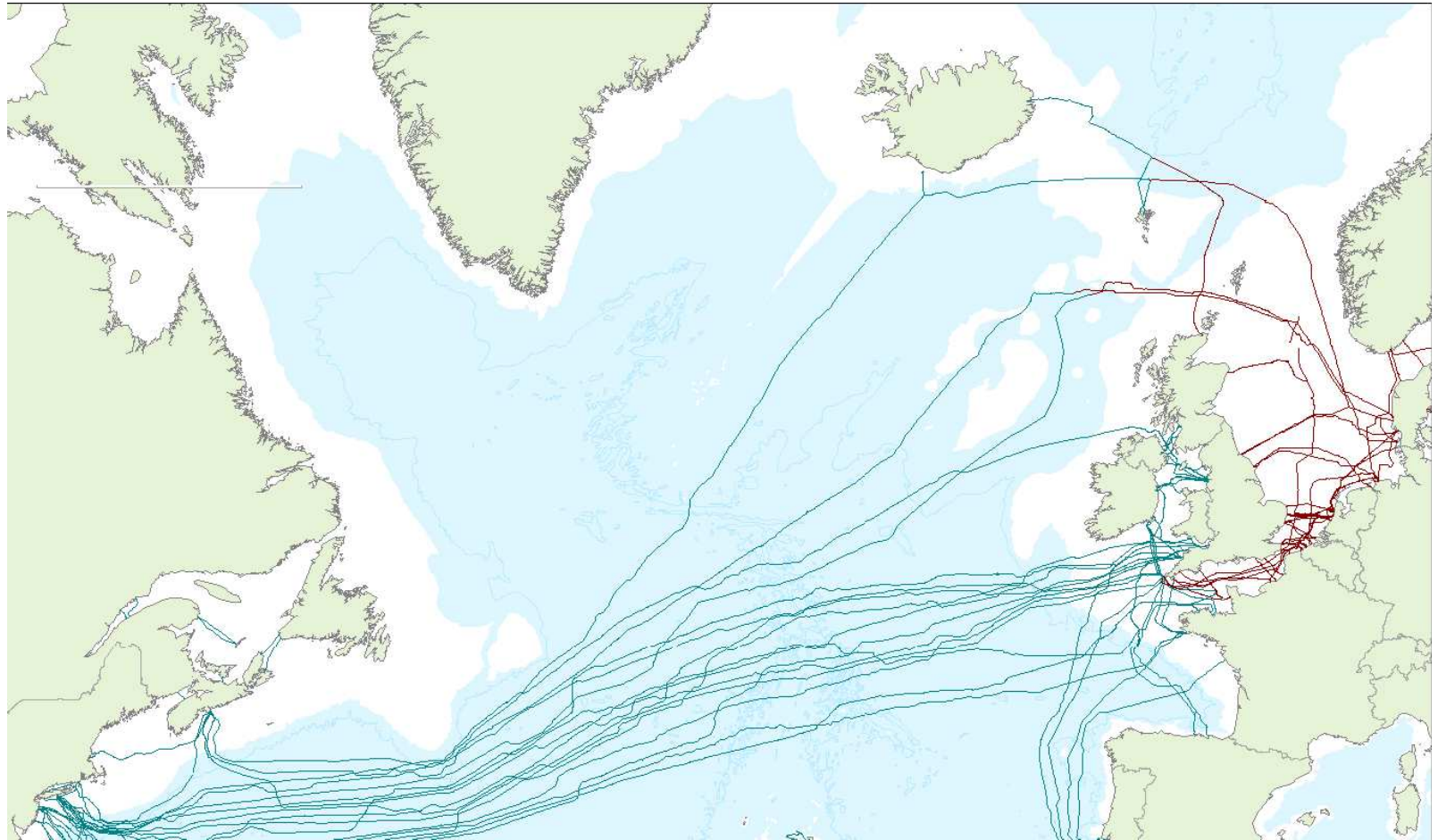- **RFS!**

Surprise! Greenland Connect

Results

Interesting stuff..

- ~41 active u/nets US East and West Coast
- ~42 active u/nets in the UK and North Sea
- ~36 active u/nets in the Baltic and Skagerrak
- ~75 active u/nets in the Med, Red Sea, and Black Sea
- ~50 active cable ships (lay, repair, or both)
- Cables are powered from the landing stations @ -48VDC
- Dense capacity = lower cost per mile
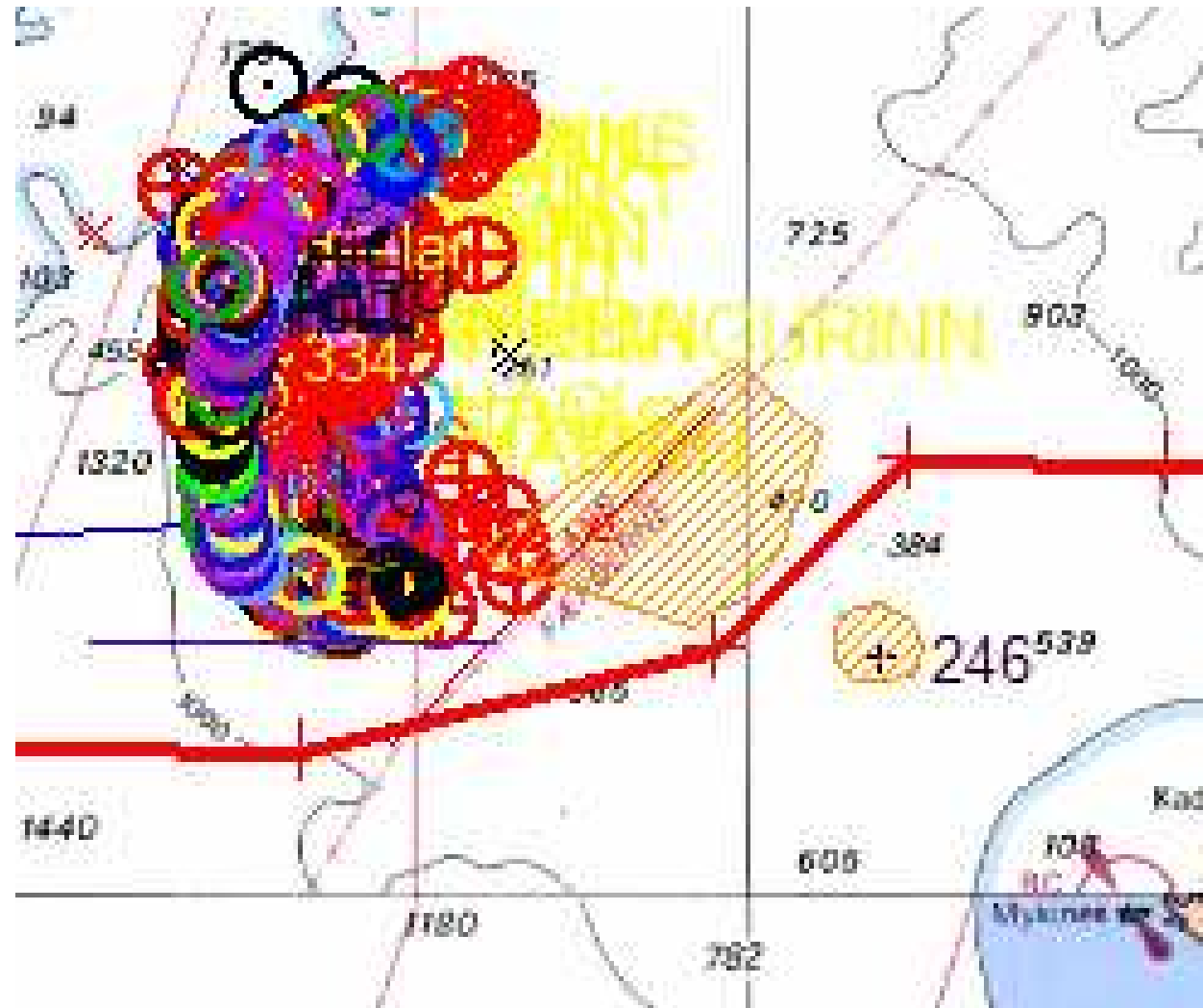- Tough to reverse the unit cost, but generally the more dense the cheaper
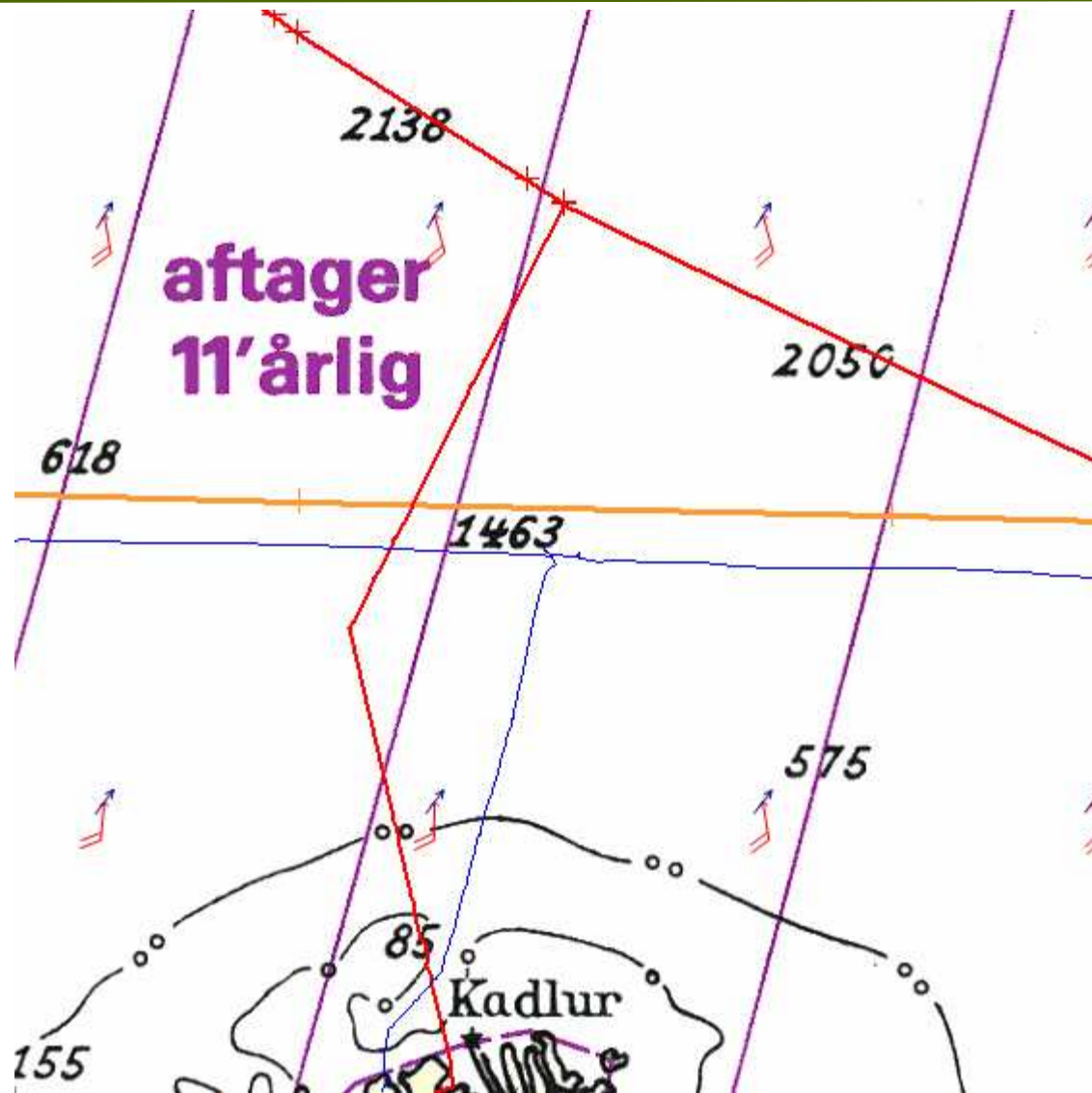
Crossings Map

Summarizing….

- Redundancy and proximity to other routes should be considered a revenue opportunity
- Vendor experience, plant reliability, and vendor reputation matters a much as the operator does\
- Undersea cables are expensive, but not terribly difficult to deploy incorrectly when cutting costs
- Prefix mapping to sub cables might be interesting?
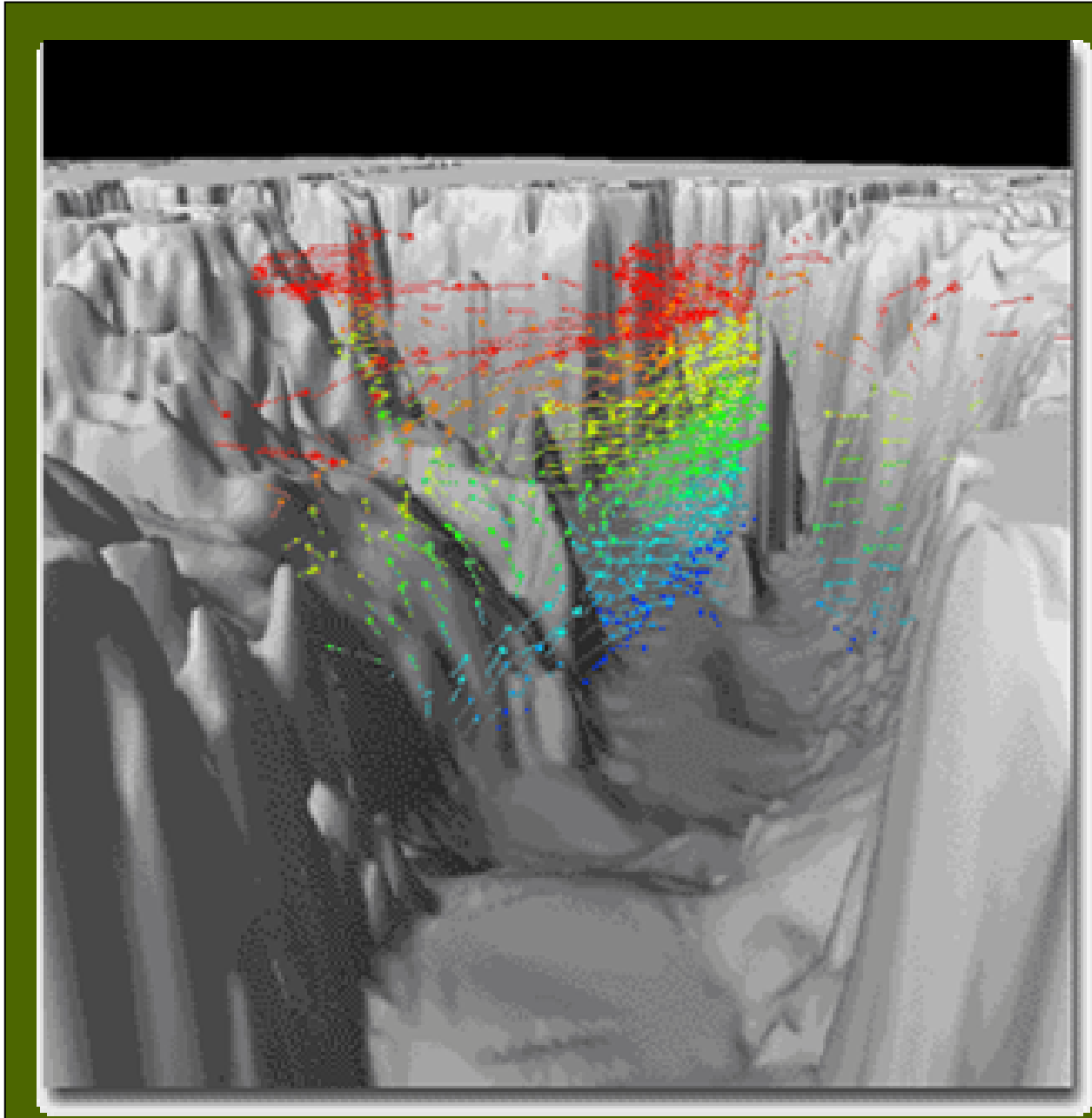- TeleGeography and Cable Operators are your friend
- Be wary of FUD

Fishing Conflicts

Routing

Bathymetry

Landing Station Approach

Credits

- Tyco Marine, New Hampshire, USA
- Tyco Submarine Electronics, Eatentown, NJ USA
- Invest Iceland
- e-Farice www.farice.is
- USGS, ocean bathymetry and geology
- Mapping software that provided route tracing and rudimentary measurements for speed of light to latency calculations
- ICPC, cable maps and cable directories
- My favorite search engine for cable news and expense data points