GreenSONAR

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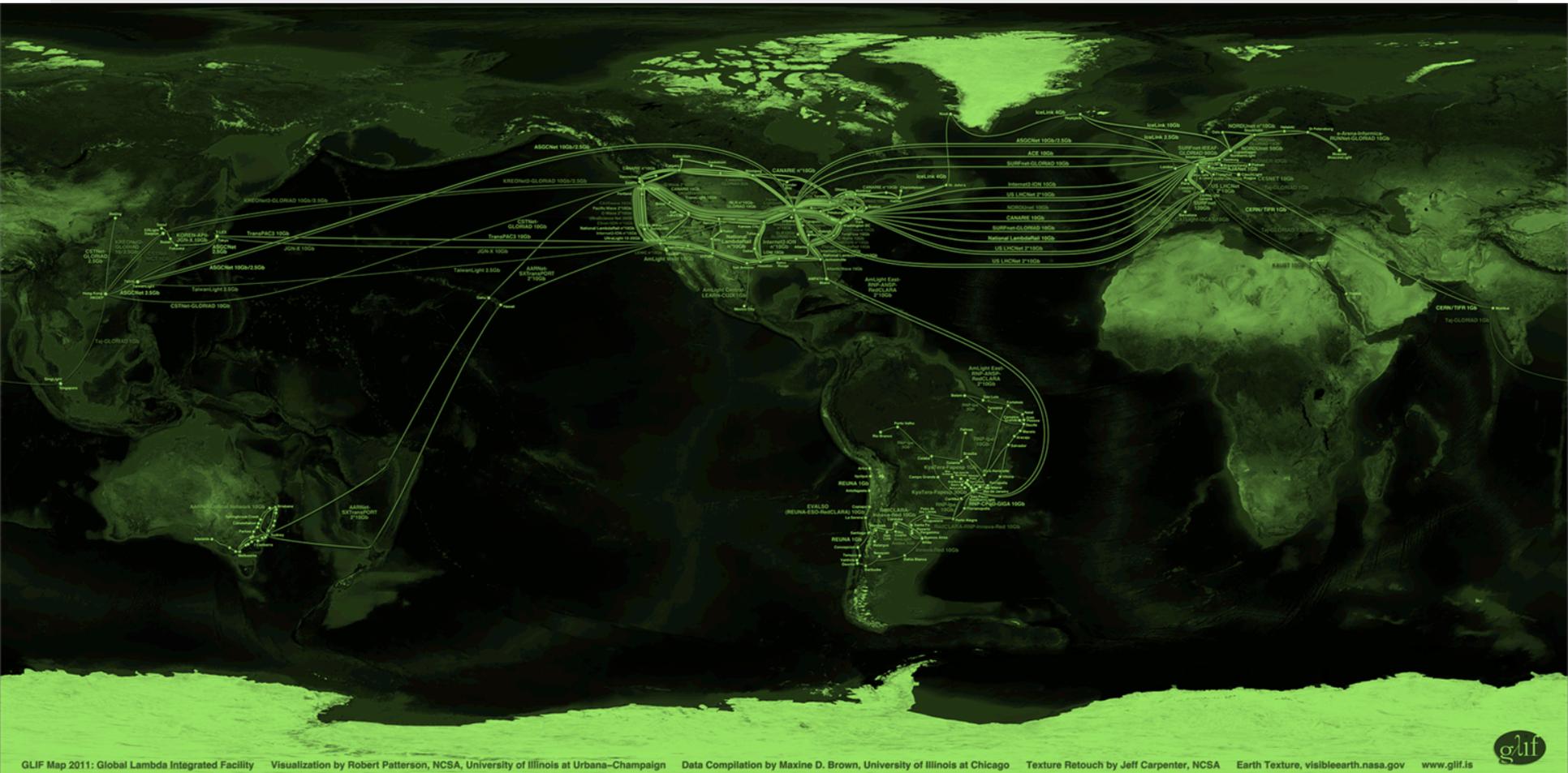
Could you sleep last night?

■ Bill St. Arnaud quoted a study from climatologist Ken Caldeira

   □ To stabilize at 2degree

   warming we need ~900

   carbon-emission-free

   power plants of 500 MW

   generating power over

   the next 50 years.

The green GLIF community

GLIF Map 2011: Global Lambda Integrated Facility   Visualization by Robert Patterson, NCSA, University of Illinois at Urbana–Champaign   Data Compilation by Maxine D. Brown, University of Illinois at Chicago   Texture Retouch by Jeff Carpenter, NCSA   Earth Texture, visibleearth.nasa.gov   www.glif.is
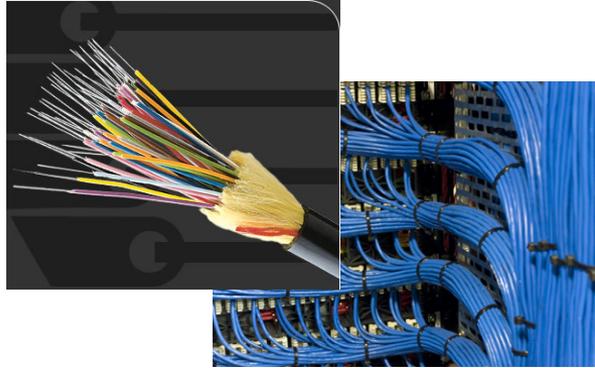
Inder's "Green" Mantras

1. You cannot manage, what you don't measure

2. Publish/Share information that you measure
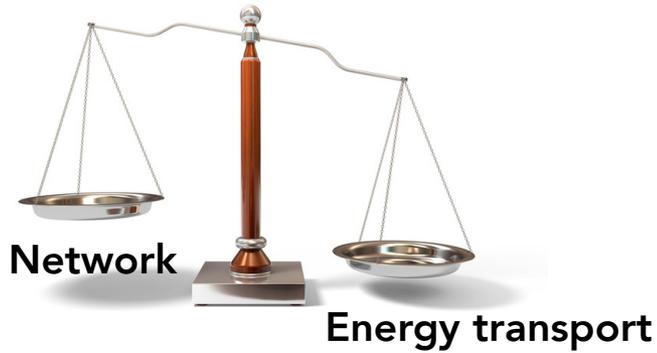
3. Consider the whole system and not the parts

Mantra #1: You cannot manage, what you don't measure

- We want to balance between the performance and power consumption
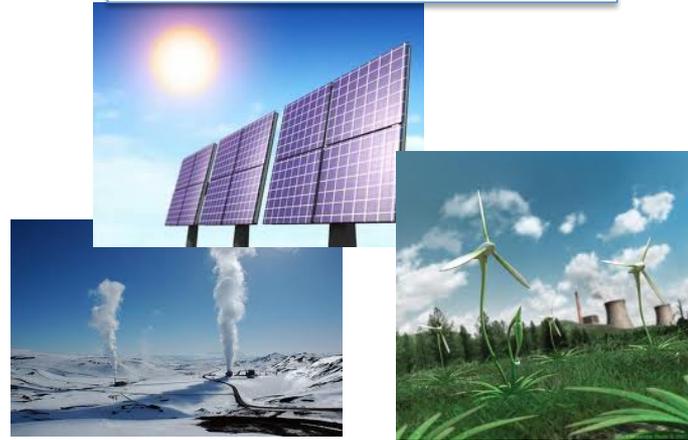
Network infrastructures

Green energy sources

CO$_2$ footprint;
Energy needed and lost

CO$_2$ footprint;
Energy needed and lost

Network

Energy transport

Network

Energy transport

Bits to energy!

Energy to bits!

Mantra #1: You cannot manage, what you don't measure

■ We want to balance between the performance and power consumption

■ Performance we know; we need the power consumption.

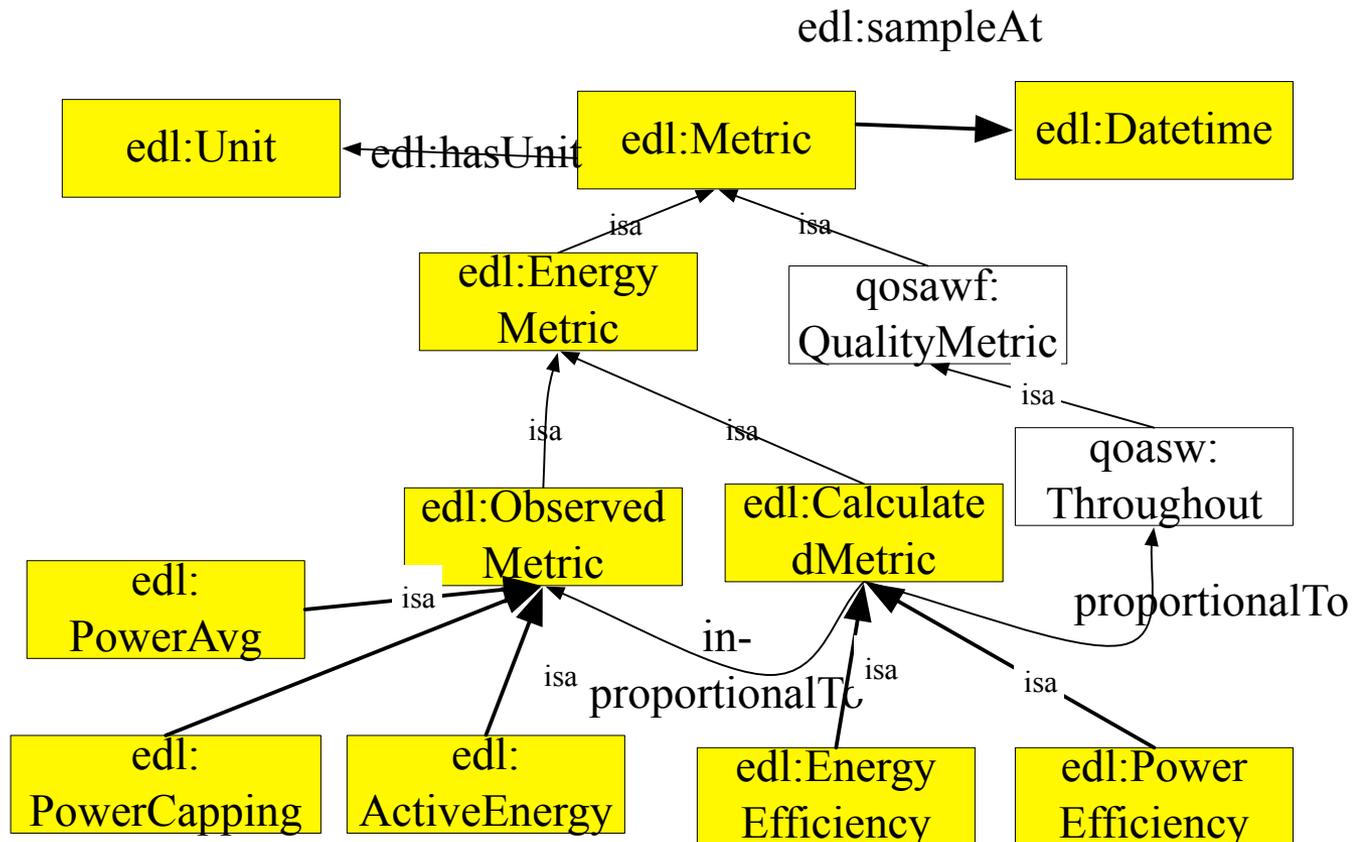■ *Who in the GLIF community measures the power consumption in the GOLEs?*

GreenSONAR

- Our idea:
- apply NM & PerfSonar methods and architecture to Green & Energy information

- We need interfaces to PerfSONAR NM and PerfSONAR NMC

Mantra #2: Publish/Share information that you measure

- By sharing data you can use to optimize network usage and data transfer algorithms:

  - Data to cheap energy or green energy to data type of decisions.

- See: https://my.es.net/ani/power

Who has published data to share?

Energy Description Language - EDL

Mantra #3: Consider the whole system and not the parts

■ Not the single router or switch:

   □ The whole network, as a system

■ Not the network alone:

   □ Network, storage, computing energy consumption

■ *Can we put the information from all the GOLEs together?*

Next steps

■ Collect GLIF community power measurements using GreenSONAR tool

■ Share the data with EDL

■ Ultimately: produce a GLIF energy footprint

Even more concretely

- Inder, Cees and I will continue our cooperation
  - □ Looking actively for funding and students

- *Who else wants to join/contribute/share data?*

QUESTIONS?

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http://wiki.cs.vu.nl/greenclouds

Not related.
A reminder:

Special section in FGCS on "**Collaborative research using eScience infrastructure and high speed networks**"
http://www.journals.elsevier.com/future-generation-computer-systems/calls-for-papers/collaborative-research

Deadline 31 October 2013

Summary questions

- *Who in the GLIF community measures the power consumption in the GOLEs?*

- *Who has published data to share?*

- *Can we put the information from all the GOLEs together?*

- *Who else wants to join/contribute/share data?*