GLIF - Global Lambda Integrated Facility

GLIF Overview

Kees Neggers
ONT3 Tokyo, September 2006

GLIF Vision

Linking the World with Light

- Optical networks are the central architectural element in support of this decade's most demanding e-science applications.
- Research should not have any geographical boundaries.
- Hybrid networks are the next-generation networks:
  - Packet-switched Internet for regular many-to-many usage
  - Dedicated lightpaths for guaranteed high-speed few-to-few usage.

What is GLIF?

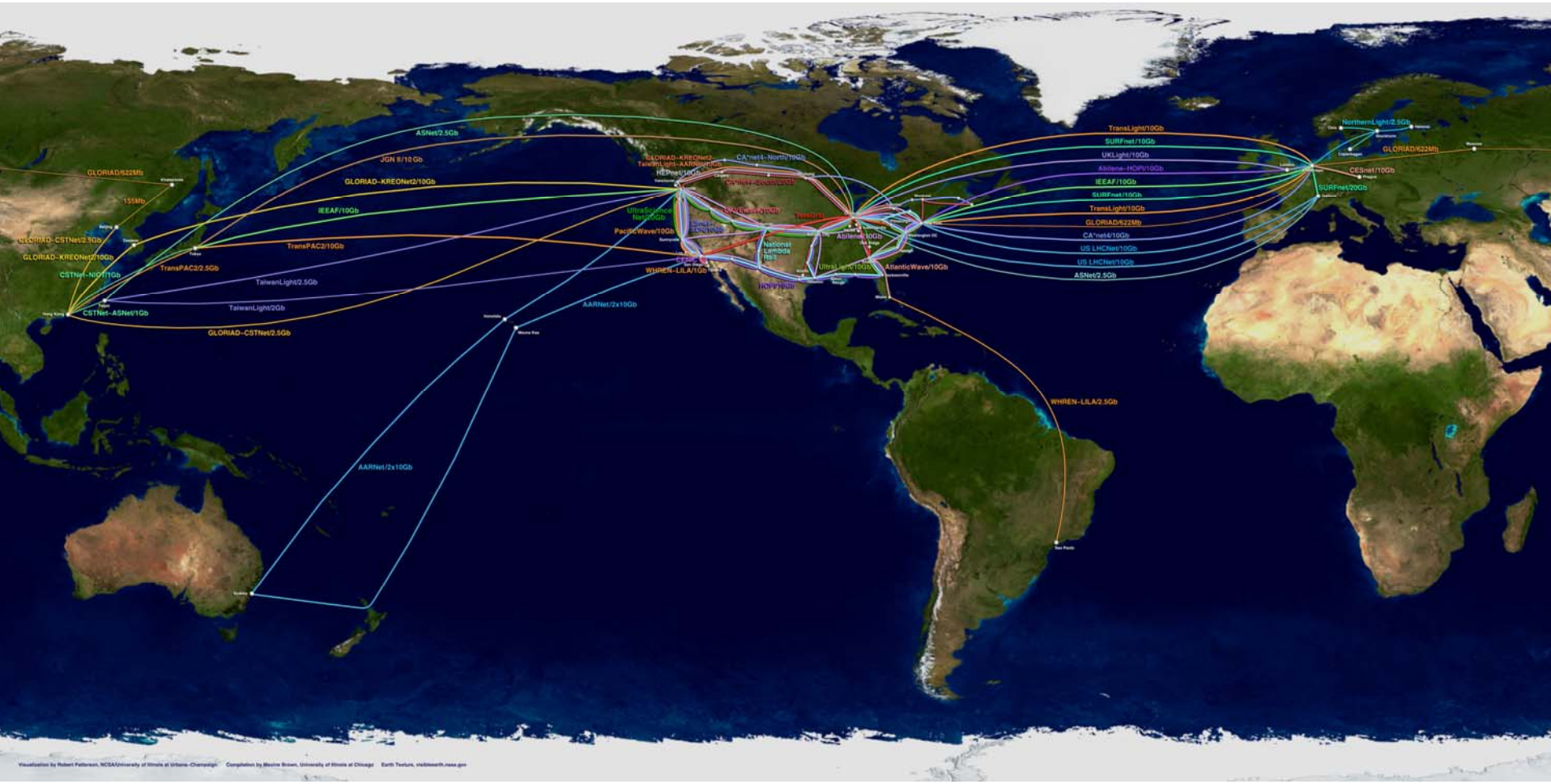
- Established in August 2003 at 3rd LambdaGrid Workshop in Reykjavik.
- International virtual organisation to promote and support optical networking
- Collaborative initiative of worldwide NRENs, institutions and consortia working with lambdas.
- Provides a global-scale laboratory to facilitate application and middleware development, and to build distributed systems.
- A forum for making contacts, exchanging information and experiences, and resolving technical problems.
- Working towards harmonisation of policy, service and fault management processes.

GLIF Organisation

- Open to any organisation sharing vision of optical interconnection of different facilities, who voluntarily contribute network resources (e.g. equipment, lambdas) or actively participate in relevant activities.
- Managed as cooperative activity with ‘participants’ rather than ‘members’.
- Participants operate under lightweight governance structure.
- Secretariat functions provided by TERENA with contributions from sponsors.
- Currently 43 participants (see http://www.glif.is/participants/).

GLIF Participants

GLIF Infrastructure



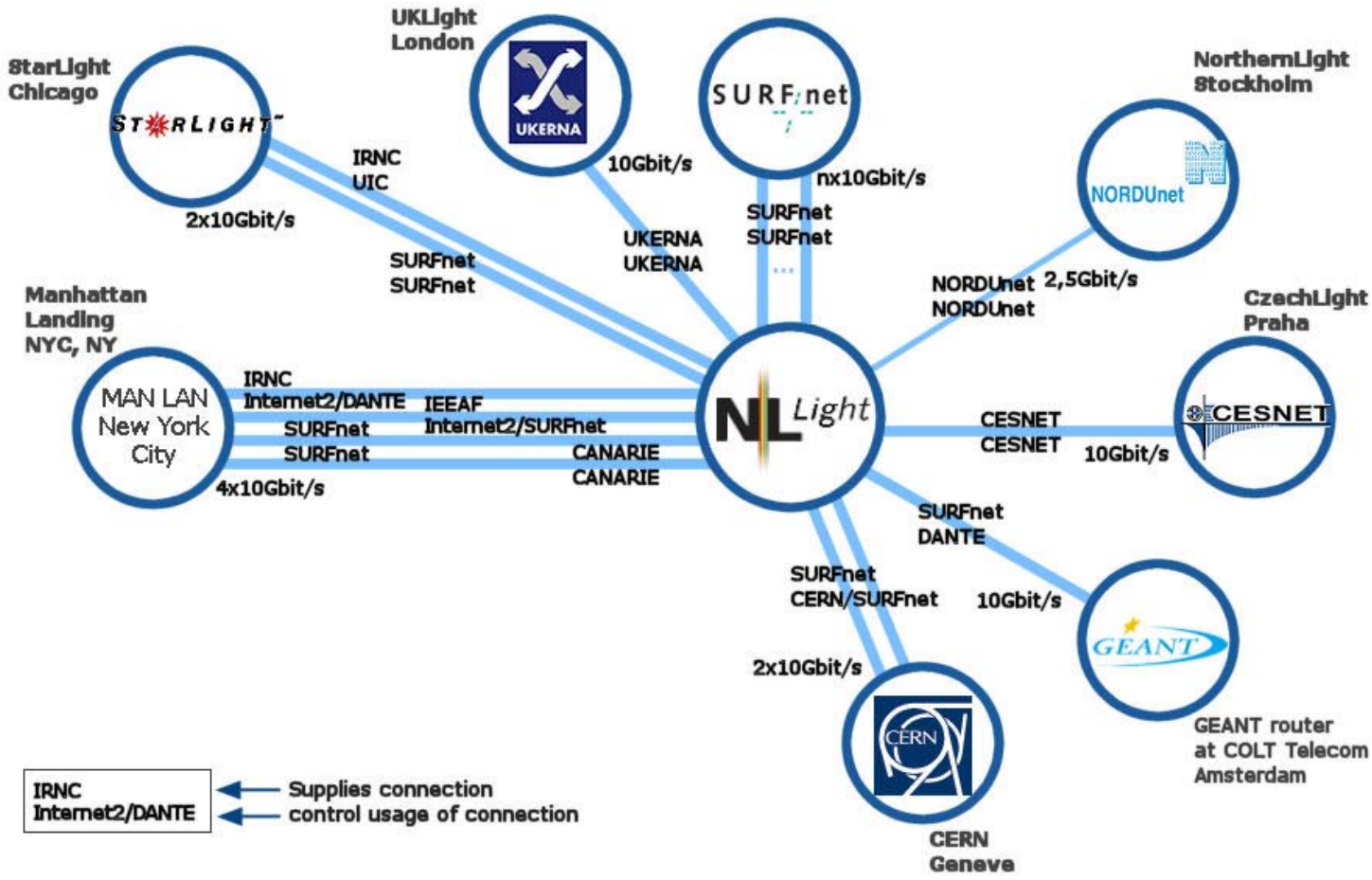
GLIF Open Lightpath Exchanges (GOLEs)

- GLIF lambdas are interconnected through established exchange points known as GOLEs.
- GOLEs are comprised of equipment capable of terminating lambdas and performing lightpath switching, allowing end-to-end connections (e.g. Nortel HDXc, Cisco ONS 15454).
- Open connection policy (i.e. no restriction on interconnection with commercial networks) and interconnect at least two autonomous optical domains.
- Coordination effort to document resources, set-up and tear-down connections, troubleshoot, and establish common policies. Monthly teleconferences improving liaison.
- http://www.glif.is/resources/

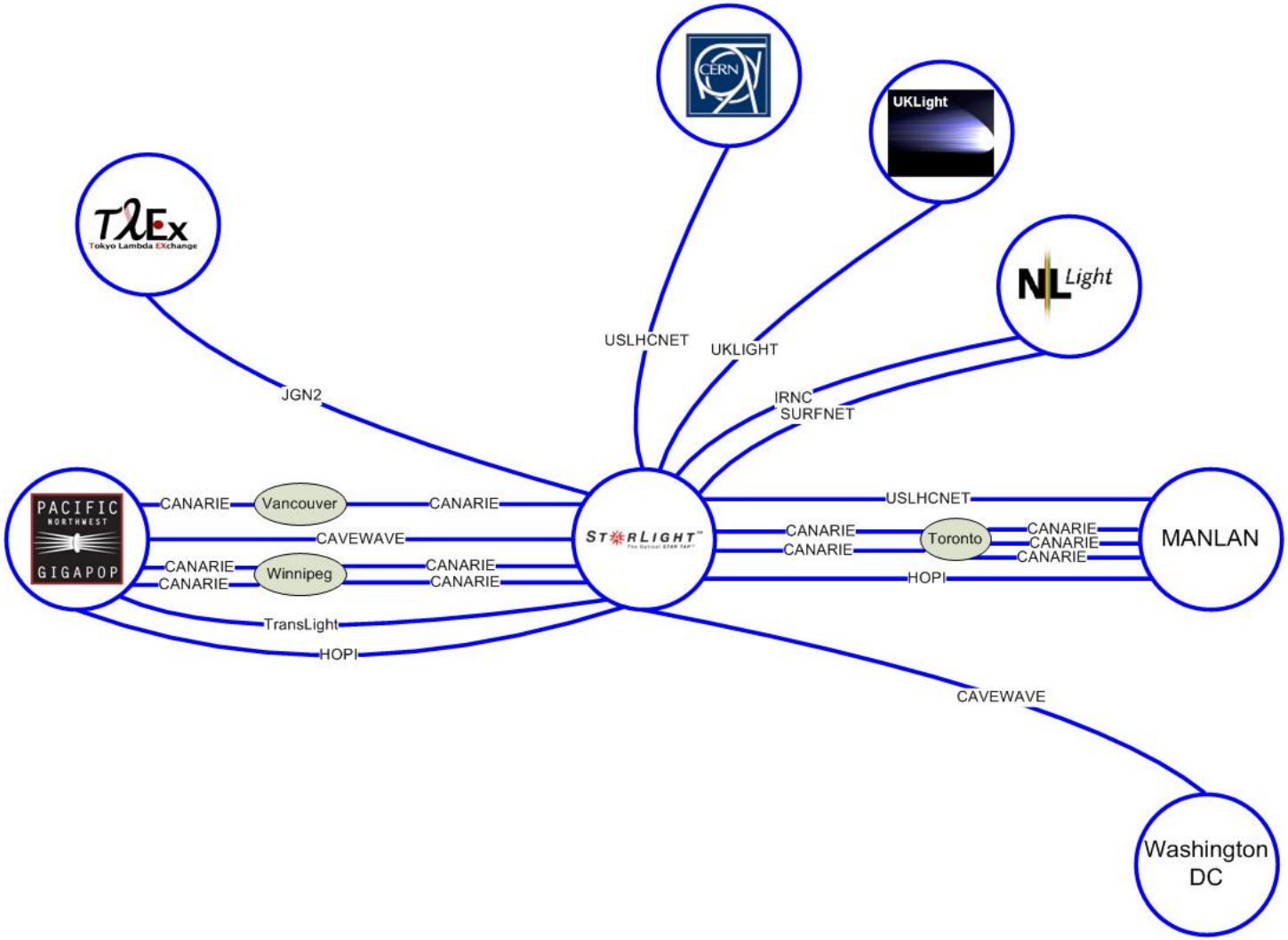
GOLEs documented on the GLIF Resources website

- CANARIE-StarLight - Chicago
- CANARIE-PNWGP - Seattle
- CERN - Geneva
- KRLight - Seoul
- MAN LAN - New York
- NetherLight - Amsterdam
- NorthernLight - Stockholm
- Pacific Northwest GigaPoP - Seattle
- StarLight - Chicago
- T-LEX - Tokyo
- UKLight - London
- UltraLight - Los Angeles

Example Topology of a GOLE - NetherLight

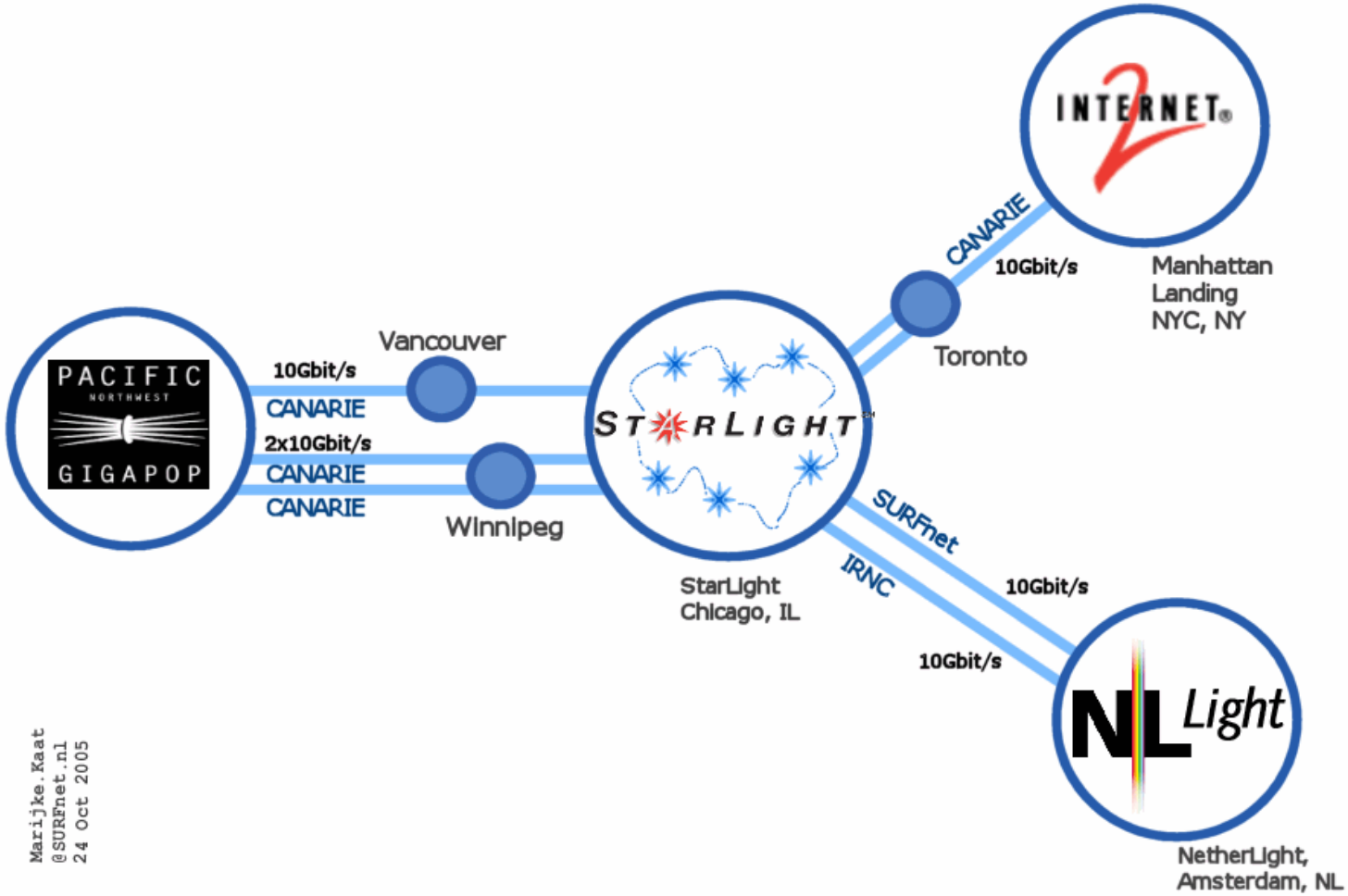


StarLight



By Linda Winkler
8/2/2006

CANARIE StarLight



GLIF Activities

- Governance & Growth Working Group
  - Chair: Kees Neggers (SURFnet)
- Technical Issues Working Group
  - Co-Chairs: Erik-Jan Bos (SURFnet) & René Hatem (CANARIE)
- Control Plane & Grid Integration Middleware Working Group
  - Chair: Gigi Karmous-Edwards (MCNC)
- Research & Applications Working Group
  - Co-Chairs: Maxine Brown (UIC) & Larry Smarr (UCSD)

Governance and Growth Working Group

Currently meets once-per-year at GLIF Workshop

Role:

- Sets overall objectives and ways of working of the GLIF
- Formulates GLIF policies.
- Defines rules concerning participation in the GLIF.
- Supervises the GLIF Secretariat (TERENA).

Secretary: Karel Vietsch

Mailing List: gov@glif.is

Research & Applications Working Group

Currently meets once-per-year at GLIF Workshop

Role:

- **Identify applications that can benefit from LambdaGrids and define the services that the user communities need.**
- **Stimulate the use of the emerging LambdaGrid**

Mailing List: rap@glif.is

Technical Issues Working Group

Currently meets twice per year

Role:

- Identify connection requirements.
- Identify equipment being used.
- Identify functions and services to be provided.
- Define standard terms for GLIF technical resources.
- Develop database of GLIF technical resources.
- Identify and document best current practices within GLIF.

Secretary: Kevin Meynell

Mailing List: tech@glif.is

Technical Issues Working Group

Current activities:

- Agreed standard terminology.
- Documented resources (lambdas, equipment, contact information etc...).
- Development of GLIF repository (moved to CP WG).
- Developing service contracting & fault resolution process.
- Established GOLE coordination.
- Investigated SDH v GE at transmission level.
- Optical monitoring issues (e.g. lambdaMON).
- Development of TL-1 toolkit (allows Perl communication with TL1-capable devices)

Control Plane and Grid Integration Middleware WG

Currently meets twice per year

Role:

- Agree on the interfaces and protocols that communicate on the control planes of the contributed resources.
- Determine what information needs to be exchanged.
- Investigate automation of control plane mechanisms.

Secretary: Licia Florio

Mailing List: controlplane@glif.is

Control Plane and Grid Integration Middleware WG

Current activities:

- Definition of control plane functions (routing, signalling, neighbour discovery, local resource management).
- Development of service definitions (i.e. what the user receives).
- Development of Network Description Language
  - Based on RDF (XML metadata model).
  - Used to describe resources and functionality in a distributed fashion.
  - Network topology visualisation system.
  - Looking at portal and lightpath brokering services.
  - http://www.science.uva.nl/research/sne/ndl

6th Annual Global LambdaGrid Workshop

- The 2006 GLIF Workshop will be held on 11-13 September 2006 in Tokyo, Japan.

- Hosted by NICT, the WIDE Project and JGN-II.
- http://www.glif.is/meetings/2006/

GLIF Secretariat Sponsors

Thank you!