

Advanced International Distributed Programmable Environments for Experimental Network Research

A Demonstration and Presentation By the
Consortium for International Advanced Network Research

Joe Mambretti, Director, (j-mambretti@northwestern.edu)
International Center for Advanced Internet Research (www.icair.org)
Northwestern University
Director, Metropolitan Research and Education Network (www.mren.org)
Co-Director, StarLight, PI-iGENI, PI-OMNINet (www.startap.net/starlight)

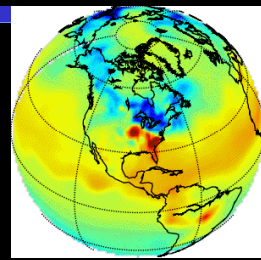
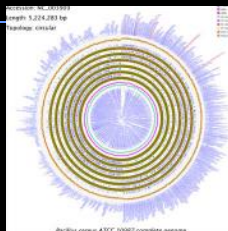
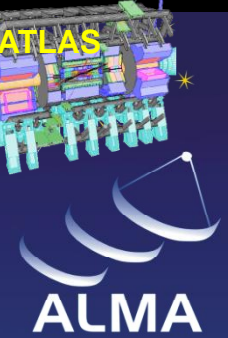
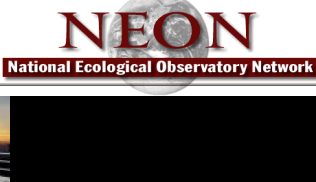
GENI Engineering Conference (GEC 14)
Boston, Massachusetts



Global Networking Research Environments

- **Experimental Network Research Requires**
 - **A) World-Wide Environments Incorporating a Wide Range of Resources That Can Be Discovered, Integrated, Programmed, Utilized for Experiments, etc**
 - **B) Enhanced Mechanisms for Multi-Domain Integration**
 - **C) Processes Based on Existing International Network Research Environments and Federation Processes – With Enhancements and Extensions**
 - **D) Existing Proven International Facilities:, e.g., Global Lambda Integrated Facility (GLIF)**
 - **E) Research Environments Must Be Designed and Managed By Research Communities**





ALMA: Atacama Large Millimeter Array

ANDRILL: Antarctic Geological Drilling
www.andrill.org

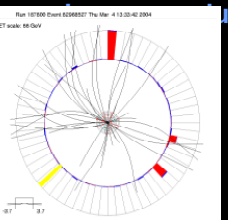
BIRN: Biomedical Informatics Research Network
www.nbirn.net

CAMERA metagenomics
camera.calit2.net

Carbon Tracker
www.esrl.noaa.gov/gmd/ccgg/carbontrack

CineGrid
www.cinegrid.org

LHCONE
www.lhccone.net



DØ (DZero)
www-d0.fnal.gov

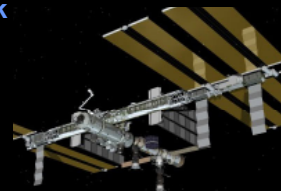
GEON: Geosciences Network
www.geongrid.org



GLEON: Global Lake Ecological Observatory Network



OOI-CI
ci.oceanobservatories.org



ISS: International Space Station
www.nasa.gov/station



CLASS: Comprehensive Large-Array Stewardship System
www.class.noaa.gov



LIGO
www.ligo.org



WLCG
lcg.web.cern.ch/LCG/public/



PRAGMA: Pacific Rim Applications and Grid Middleware Assembly
www.pragma-grid.net



TeraGrid
www.teragrid.org



IVOA: International Virtual Observatory
www.ivoa.net



OSG
www.opensciencegrid.org



Globus Alliance
www.globus.org



SKA
www.skatelescope.org



Sloan Digital Sky Survey
www.sdss.org

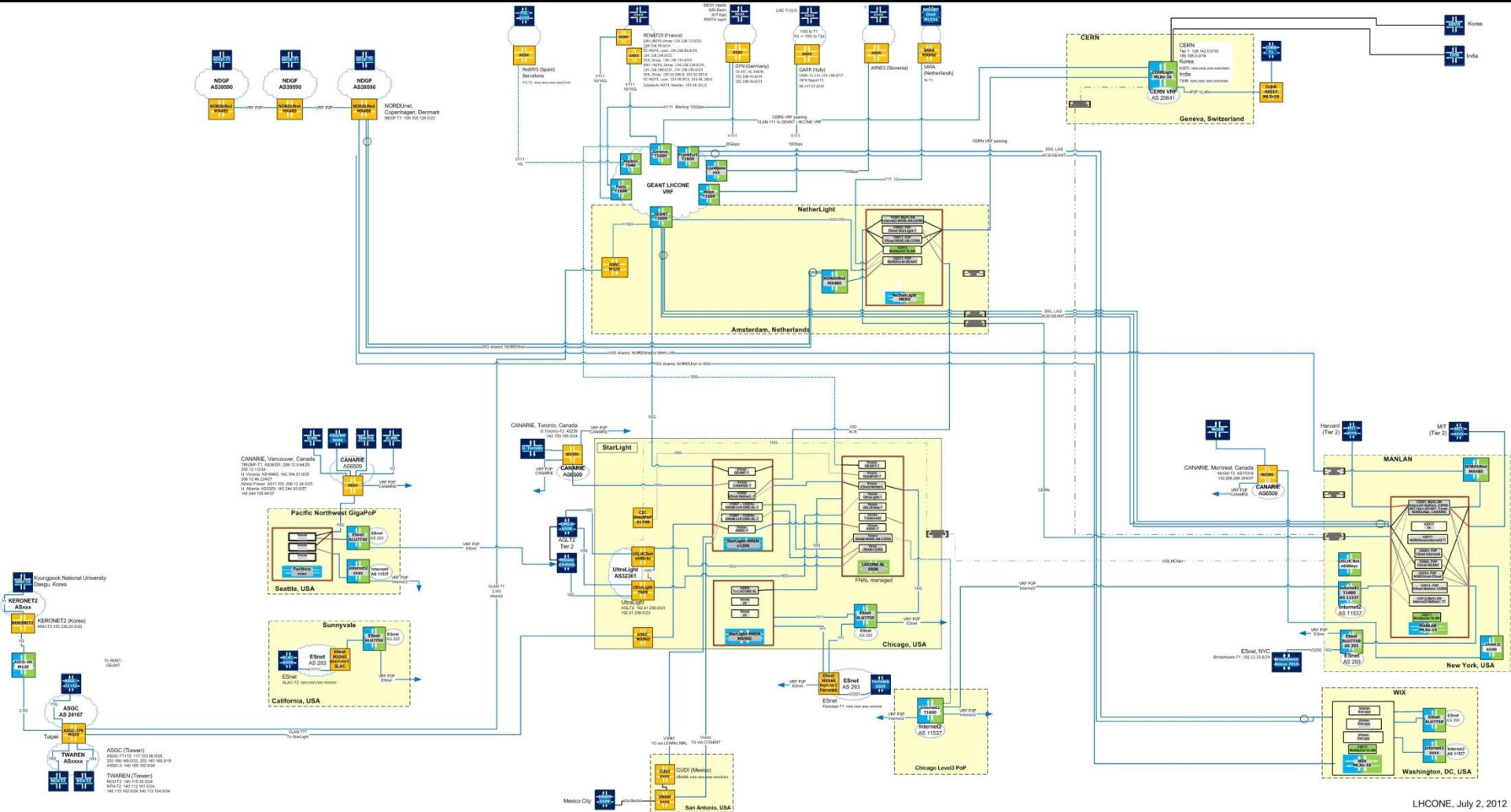


XSEDE
www.xsede.org



Compilation By Maxine Brown

LHC Open Network Environment



The Global Lambda Integrated Facility (GLIF) Provides Advanced Resources and Facilities for Research



USA-RUSSIA-CHINA-KOREA-NETHERLANDS-CANADA-
DENMARK-FINLAND-ICELAND-NORWAY-SWEDEN

INDIA-EGYPT-SINGAPORE-VIETNAM-GREENLAND

GLORIAD-Taj Expansion



The new Taj expansion is highlighted in orange on this map

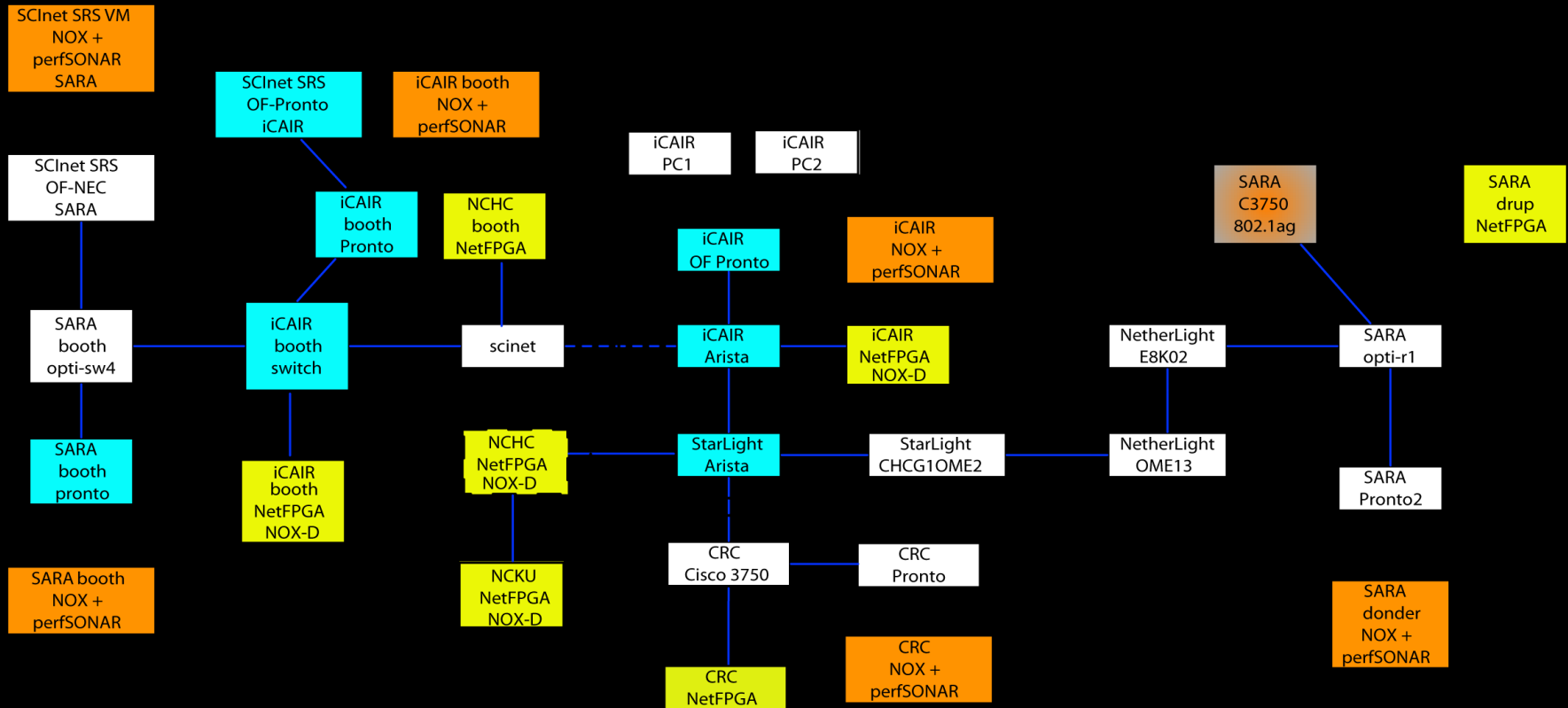
Global Ring Network for Advanced Applications Development



Based on Vision 2007 by Neelke Doorn

SC11 SCinet Research Sandbox OpenFlow Demonstrations

Seattle, Wash November 2011



Current SATW Organizational Participants and Leads

- *ANSP, São Paulo, Luis Fernandez Lopez*
- *Applied Research Center for Computer Network at Skolkovo, Moscow, Ruslan Smeliansky*
- *Centro de Pesquisa e Desenvolvimento de Telabras, São Paulo, Marcos Rogerio Salvador*
- *Canadian Communications Research Centre, Ottawa, Scott Campbell**
- *Computer Network Information Center, Chinese Academy of Sciences, Beijing, Jungling You**
- *Duke University, Durham, Jeff Chase*
- *Electronic and Telecommunications Institute, Daejeon, Myung-Ki Shin*
- *HP Research Labs, Palo Alto, Rick McGeer**
- *International Center for Advanced Internet Research, Northwestern University, Chicago, Joe Mambretti, Jim Chen**
- *Korea Institute of Science and Technology Information, Daejeon, Dongkyun Kim*
- *National Center for High-Performance Computing of Taiwan, Tainan, Te-Lung Liu**
- *National Cheng-Kung University, Tainan, Chu-Sing Yang**



Current Participants

- *National Institute of Information and Communications Technology, Tokyo, Aki Nakao **
- *National Kao Hsiung University of Applied Science, Kaohsiung, Mon-Yen Lou**
- *NICTA, Australia, Max Ott*
- *Princeton University, Princeton, Andy Bavier*
- *Rede Nacional de Ensino e Pesquisa, Brazil, Michael Stanton*
- *Renaissance Computing Institute (RENCI), Chapel Hill, Ilia Baldine*
- *SARA, Amsterdam, Ronald van der Pol**
- *Technische Universitat Kaiserslautern, Kaiserslautern, Paul Muller**
- *University of Amsterdam, Cees de Laat*
- *University of Essex, Colchester, Martin Reed**
- *University of Tokyo, Tokyo, Aki Nakao **
- *University of Utah, Salt Lake City, Rob Ricci*#*

- *** Indicates Participants in the First Demonstrations**





The Future Is Based On Programmable Networks!

- Thanks!!



Boston Harbor

