



TransLight / StarLight

NSF Cooperative Agreement OCI-0441094

www.startap.net/translight

QUARTERLY REPORT August 1, 2010 – October 31, 2010

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1. Participants

1.A. Primary Personnel

Participant's Name(s)	Project Role(s)	>160 Hours/Yr
Thomas A. DeFanti (1)	Principal Investigator	Yes
Maxine Brown (2)	Co-Principal Investigator	Yes

- (1) Tom DeFanti, PI, focuses on managing the link procurement process, network engineering, budgets and accounts payable, interfacing with personnel from Internet2, ESnet, NLR and DANTE/GEANT2, coordinating project management and oversight activities with the NSF, and performing day-to-day project management. He participates in regularly scheduled IRNC phone calls and attends meetings as requested.
- (2) Maxine Brown, co-PI, focuses on managing documentation and education and outreach activities, and is responsible for TransLight/StarLight quarterly and annual reports, web pages and events planning. She also participates in regularly scheduled IRNC phone calls and attends meetings as requested.

1.B. Other Senior Personnel (Excluding PI and Co-PI)

Additional people who contribute greatly to the project are listed below. While some receive a salary from this grant, others provide in-kind services:

Participant's Name(s)	Project Role(s)	>160 Hours/Yr
Alan Verlo (3)	Professional staff	Yes
Laura Wolf (4)	Professional staff	Yes
Steve Sander (5)	Professional staff	Yes
Patrick Hallihan (6)	Professional staff	Yes
Lance Long (7)	Professional staff	Yes
Linda Winkler (8)	Professional staff	Yes
Rick Summerhill (9)	Professional staff	Yes
Roberto Sabatino (10)	Professional staff	Yes
Erik-Jan Bos (11)	Professional staff	Yes
Kees Neggers (12)	Other Senior Personnel	Yes
Joe Mambretti (13)	Other Senior Personnel	Yes
Dana Plepys (14)	Professional staff	Yes

- (3) Alan Verlo is the TransLight/StarLight network engineer, and is a member of the StarLight engineering team. For many years Verlo has also been a member of the SC conferences' SCinet committee, focusing on enabling international SC research demos that have network connections at StarLight in Chicago. He was also co-chair of the iGrid 2005 international cyberinfrastructure team, responsible for clusters and international networking. Verlo regularly participates in JET and GLIF Tech meetings.
- (4) Laura Wolf was responsible for TransLight/StarLight technical writing and web documentation; she left UIC in August 2009 for a position at Argonne National Laboratory.
- (5) Steve Sander was the TransLight/StarLight budget, accounts payable and equipment procurement person. He retired from UIC in August 2010 and his responsibilities were taken over by Dana Plepys.
- (6) Patrick Hallihan reported to Alan Verlo and was technical support staff. He left UIC in August 2010.
- (7) Lance Long reports to Alan Verlo and is technical support staff.
- (8) Linda Winkler of Argonne National Laboratory, while not compensated by UIC, serves as part-time StarLight engineer with Alan Verlo and assists with TransLight/StarLight. For many years, Winkler has been a member of the SCinet committee, helping enable international SC research demos with network connections at StarLight in Chicago. She was also co-chair of the iGrid 2005 international cyberinfrastructure team, responsible for clusters and international networking.
- (9) Rick Summerhill was the Internet2 Chief Technology Officer and, while not compensated by UIC, was one of the stewards of the TransLight/StarLight link that connects the Internet2 network at MAN LAN to the GEANT2 POP at the Amsterdam Internet Exchange. Summerhill retired June 2009.

- (10) Roberto Sabatino is the DANTE Chief Technology Officer and, while not compensated by UIC, is one of the stewards of the TransLight/StarLight link that connects the Internet2 network at MAN LAN to the GÉANT2 POP at the Amsterdam Internet Exchange.
- (11) Erik-Jan Bos is SURFnet Chief Technology Officer. While not compensated by UIC, he is one of the stewards of the TransLight/StarLight link connecting StarLight in Chicago to NetherLight in Amsterdam.
- (12) Kees Neggers is SURFnet Managing Director and a founder and current chair of GLIF. While not compensated by UIC, he does the tenders and procures both TransLight/StarLight links on UIC's behalf, and is one of the stewards of the TransLight/StarLight link connecting StarLight in Chicago to NetherLight in Amsterdam.
- (13) Joe Mambretti is the StarLight managing director and head of the International Center for Advanced Internet Research (iCAIR) at Northwestern University. While not compensated by UIC, he has been a strong supporter and advisor regarding our IRNC efforts. Mambretti has assisted with connectivity issues, not only at StarLight, but also at MAN LAN.
- (14) Dana Plepys assumed responsibility for TransLight/StarLight administration and finances after the previous person (Steve Sander) retired.

1.C. Other Organizations That Have Been Involved as Partners

Argonne National Laboratory

Argonne National Laboratory's Mathematics and Computer Science Division (MCS) <www.mcs.anl.gov> has been, and continues to be, a strong supporter of US international networking activities. Linda Winkler has facilitated STAR TAP/StarLight network engineering since its inception, and continues to serve as a senior engineer today; her salary comes from Argonne.

Northwestern University

Joe Mambretti, director of Northwestern's International Center for Advanced Internet Research (iCAIR) <www.icair.org>, also runs the StarLight facility <www.startap.net/starlight>, and assists with connectivity issues.

SURFnet

SURFnet, the national network for research and education in the Netherlands <www.surfnet.nl>, is a TransLight/StarLight "key institutional partner," responsible for negotiating, procuring and implementing the TransLight OC-192 circuit(s) between Open Exchanges in the US and in Europe, which UIC pays for upon receipt of an invoice from SURFnet, as has been our practice since our previous NSF HPIIS Euro-Link award.

1.D. Other Collaborators or Contacts

CANARIE

The Canadian Network for the Advancement of Research, Industry and Education (CANARIE) <www.canarie.ca> is Canada's advanced Internet development organization. It operates the CANARIE Network, a series of point-to-point optical wavelengths, most of which are provisioned at 10Gbps speeds, interconnecting Canada's provincial research networks with each other and international peer networks, and forming an innovative framework to support grids and e-Science.

DANTE

Owned by European NRENs, the DANTE <www.dante.net> organization plans, builds and operates pan-European networks for research and education. The GÉANT2 project is a collaboration among 30 National Research & Education Networks representing 34 countries across Europe, the European Commission, and DANTE. Its principal purpose is to develop the GÉANT2 network -- a multi-gigabit pan-European data communications network for research and education <www.geant2.net>.

TransLight/StarLight funding provides a 10Gbps routed infrastructure to connect the Internet2 network, NLR PacketNet and DOE/ESnet with DANTE/GÉANT2. TransLight/StarLight also makes a 10Gbps switched infrastructure available for use.

ESnet

The Energy Sciences Network (ESnet) <www.es.net> is funded by the DOE Office of Science to provide network and collaboration services in support of the agency's research missions, serving thousands of DOE scientists and collaborators worldwide. ESnet provides direct connections to all major DOE sites with high-performance speeds, as well as fast interconnections to more than 100 other networks. TransLight/StarLight funding provides a 10Gbps routed infrastructure to connect the Internet2 network, NLR PacketNet and DOE/ESnet with DANTE/GÉANT2. TransLight/StarLight also makes a 10Gbps switched infrastructure available for use.

Global Lambda Integrated Facility (GLIF)

GLIF <www.glif.is> is an international virtual organization of NRENs, consortia and institutions that promotes lambda networking. GLIF provides lambdas internationally as an integrated facility to support data-intensive scientific research, and supports middleware development for lambda networking. It brings together premier networking engineers to develop an international infrastructure by identifying equipment, connection requirements, and necessary engineering functions and services.

GLORIAD

GLORIAD, the Global Ring Network for Advanced Applications Development, <www.gloriad.org> is constructing a dedicated lightwave round-the-world connecting scientific organizations in the US, Russia, China, Korea, Canada, the Netherlands and the Nordic countries. GLORIAD currently has 3x1Gbps VLANs on the TransLight/StarLight CHI/AMS link to NetherLight. Russia, a GLORIAD partner, connects to NetherLight in Amsterdam from Moscow via Stockholm.

Internet2

Internet2 <www.internet2.edu> is a consortium of leading US research universities working in partnership with industry and government to develop and deploy advanced network applications and technologies. In Spring 2007, the new Internet2 network <www.internet2.edu/network/>, a hybrid optical and packet network designed in collaboration with Level 3 Communications, came online. TransLight/StarLight funding provides a 10Gbps routed infrastructure to connect the Internet2 network, NLR PacketNet and DOE/ESnet with DANTE/GÉANT2. TransLight/StarLight also makes a 10Gbps switched infrastructure available for use by Internet2, initially the Internet2-DCN (Dynamic Circuit Network) and now the Internet2-ION (Interoperable On-demand Network).

National LambdaRail (NLR)

NLR <www.nlr.net> is a major initiative of US research universities and private sector technology companies to provide a national-scale infrastructure for research and experimentation in networking technologies and applications. TransLight/StarLight considers itself, in part, to be the international extension of NLR, and encourages data-intensive e-science drivers needing gigabits of bandwidth to use NLR FrameNet and international links for schedulable production services not available with "best effort" networks. TransLight/StarLight funding provides a 10Gbps routed infrastructure to connect the Internet2 network, NLR PacketNet and DOE/ESnet with DANTE/GÉANT2. TransLight/StarLight also makes a 10Gbps switched infrastructure available for use by NLR FrameNet.

TransLight/PacificWave

TransLight/PacificWave <www.pacificwave.net/participants/irnc> is an IRNC-supported distributed exchange facility on the West Coast (in Seattle, Sunnyvale, and Los Angeles) to allow interconnection of international research and education networks with US research networks. TransLight/PacificWave is the sister project to TransLight/StarLight.

2. Activities and Findings

2.A. Research Activities

2.A.1. Accomplishments and Milestones

In Year 6, TransLight/StarLight funded two international links. Effective July 1, 2010, Indiana University, which received an IRNC #2 award for US/European connectivity, signed an MOU with SURFnet to keep these circuits in place until such time as Indiana could tender and procure its own circuits to Europe.

Meanwhile, UIC had funds left over and received a no-cost extension, through July 31, 2011, to cover salaries as we transition the operation of our US/Europe circuits to the new IRNC:ProNet awardee, document user applications and requirements, participate in network-relevant workshops and meetings, and ramp up our new IRNC #2 Experimental Networking award.

We have been working on the following activities during the third quarter of Year 6 of the grant:

- Preparing the TransLight/StarLight quarterly report
- Provisioning VLANs on TransLight/StarLight CHI/AMS for e-science applications
- Representing TransLight/StarLight at major conferences and workshops
- Identifying and assisting applications on both IRNC circuits
- Continuing to update the TransLight/StarLight website <www.startup.net/translight>
- Continuing to contribute to the GLIF applications website <www.glif.is/apps>
- Participated in and helped prepare demonstrations for the GLIF 10th Annual LambdaGrid Workshop, October 2010
- Continuing preparations for SC'10 international application demonstrations

2.A.2. NYC/AMS Network Operations and Engineering

PoP Connectivity and Peering

No updates to report.

Usage

No updates to report.

Routing Policies

No updates to report.

Peering Policies

No updates to report.

Security

No updates to report.

Engineering

No updates to report.

NOC Operations

No updates to report.

RENOG

No updates to report.

2.A.3. CHI/AMS Network Operations and Engineering

PoP Connectivity and Peering

No updates to report.

Usage

No updates to report.

Routing Policies

No updates to report.

Peering Policies

No updates to report.

Security

No updates to report.

Engineering

No updates to report.

Engineering: LightPath Services

The following VLANs on the TransLight/StarLight CHI/AMS were recently put in place:

- **FEI (Netherlands) to Rio de Janeiro...** Eindhoven Technical University, in collaboration with FEI, a leading scientific instruments company in The Netherlands that develops electron and ion-beam microscopes and other instruments for nanoscale applications across many industries, requested a VLAN from Amsterdam to Rio over the same topology as the HEPGrid/CERN VLANs previously provisioned, for a demo at the International Microscopy Conference (IMC17) in Rio de Janeiro (September 19-24, 2010). Alan Verlo worked with NetherLight, RNP and others to provision this VLAN.

NOC Operations

No updates to report.

2.B. Research Findings

2.B.1. E-Science Application Organizing and Support

Tom DeFanti and Maxine Brown are involved with the following organizations and conferences:

- 10th Annual LambdaGrid Workshop, sponsored by GLIF. Maxine Brown served as a member of the Program Committee. Tom DeFanti and Joe Mambretti participated.
- CineGrid@TIFF 2010 (Tokyo International Film Festival) had a one-day CineGrid workshop. Tom DeFanti was one of the organizers, as well as a participant.
- 5th Annual CineGrid International Workshop, sponsored by CineGrid and hosted by Calit2 at UCSD, December 12-15, 2010. Tom DeFanti is a co-organizer and member of the Program Committee.

2.B.2. E-Science Application Support (Quantified Science Drivers)

International Applications 2010

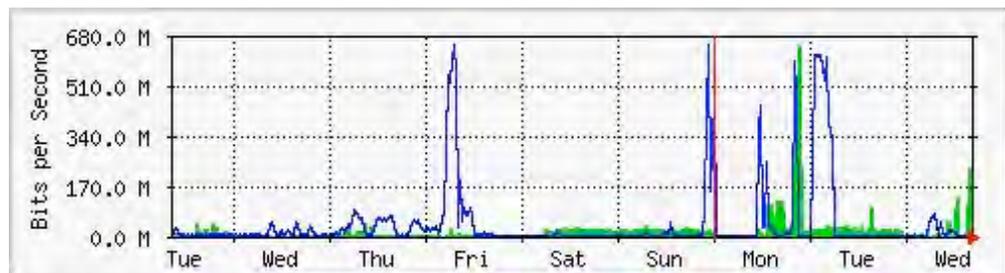


CineGrid: J2K 4K 60P Streaming Evaluation

Collaborators:

- Calit2; UIC/EVL; Pacific Interface; StarLight; US
- NTT Europe
- NTT Network Innovation Laboratories; Keio University; JGN2plus; Japan
- CinePOST; CESNET; Czech Republic

NTT Network Innovation Laboratories (Japan) and CinePOST (Czech Republic) conducted a major CineGrid demonstration, *J2K 4K 60P streaming evaluation*, from April 4-8, 2010. Additional demonstrations successfully took place through August 2010, and the professionals said they would consider using 4K technologies in future workflows. Here is the MRTG graph for TransLight/StarLight, taken August 18.



This demonstration used JGN2plus (Tokyo to UCSD), CAVEwave (UCSD to StarLight), TransLight/StarLight (StarLight to NetherLight), and then CESNET (Amsterdam to Prague).



CosmoGrid: The Gravitational Billion Body Problem 2010

<http://modesta.science.uva.nl/Projects/2008/CosmoGrid/>

<http://wiki.2048x2048x2048.org/>

Collaborators:

- Drexel University; Vanderbilt University; StarLight; US
- CANARIE; Canada
- Department of General Sciences and Department of Astronomy, University of Tokyo; National Astronomical Observatory of Japan (NAOJ)/Center for Computational Astrophysics; JGN2plus; SINET3; T-LEX; Japan
- Astronomical Institute (“Anton Pannekoek”), Computational Science and System and Network Engineering Science, University of Amsterdam (UvA); University of Leiden/Leiden Observatory (Sterrewacht Leiden); SARA; SURFnet; The Netherlands
- University of Edinburgh/School of Mathematics; UK
- Ludwig-Maximilians Universität at München; Germany

Researchers in Tokyo and Amsterdam are building an intercontinental supercomputer grid to run cosmological N-body simulations of 10 billion particles. This collaboration began last year, and early progress was reported in previous TransLight/StarLight reports. This is an update of 2010 activities.

At the GLIF 2010 Workshop, October 13-14, 2010, SARA showed visualizations from CosmoGrid’s simulations of cluster formations after the Big Bang.



Choir to Choir

<http://www.youtube.com/user/ChoirtoChoir#p/a/u/1/k3gDDs58U-w>
<http://visualexchange.net/>

Collaborators:

- Center for Research in Entertainment and Learning (CREL), Calit2/UCSD; Calit2/UC-Irvine (UCI), Visual Exchange Network (VEN); Pangaea Networks; National LambdaRail (NLR); Cisco Wave (C-Wave); StarLight; US
- InTv.co.il; Beit Avi Chai; Bezeq International; Israel

On September 14, 2010, the first of a series of *Choir to Choir* demonstrations was held at three sites – two choirs (one at UCI and one in Jerusalem) and one conductor (at UCSD). In the following months, the goal is to have five Choirs and one Conductor at six separate sites.

For this demo, a Men's Choir at Calit2/UCI and a Woman's Choir at a theater in Jerusalem sang with the conductor at Calit2/UCSD. They sang together in real time with audiences both in Irvine and Jerusalem. The sound was uncompressed 8-channel audio across the network. Both audiences responded with great enthusiasm.



Using fiber-optic links instead of satellites for large-scale, live events creates new real-time capabilities that allow groups to collaborate cost effectively and enables multiple audiences to engage in new forms of multi-venue participatory media.

Alan Verlo, TransLight/StarLight network engineer, worked with a team to create a lightpath between Israel and San Diego and Irvine. The path originated in Israel over BEZEQ to New York City, then NLR FrameNet from New York to Chicago (StarLight). From Chicago, the path went over CAVEwave and C-Wave (separate east/west paths) to San Diego, and over CENIC to Irvine.



FENIUS @ GLIF 2010

<http://www.glif.is/publications/press/20101129.html>

<http://www.glif.is/meetings/2010/tech/vollbrecht-dynamicgole.pdf>

<http://code.google.com/p/fenius/>

<http://www.ultralight.org/~azher/idc/Glif2010/>

Collaborators:

- *Participating GOLEs:* CERNLight (Switzerland), CzechLight (Czech Republic), JGNLight (Japan), MAN LAN (US), NetherLight (the Netherlands), NorthernLight (Sweden), PSNCLight (Poland) and StarLight (US)
- *Other participating networks and institutions:* AIST (Japan), CESNET (Czech Republic), Internet2 (US), KDDI (Japan), USLHCnet (US), University of Amsterdam (Netherlands), and University of Essex (UK)

GLIF successfully demonstrated a pilot implementation of an automated lightpath system (*the Automated GOLE Pilot Project*) at the 10th Annual Global LambdaGrid Workshop in Geneva on 13 October 2010.

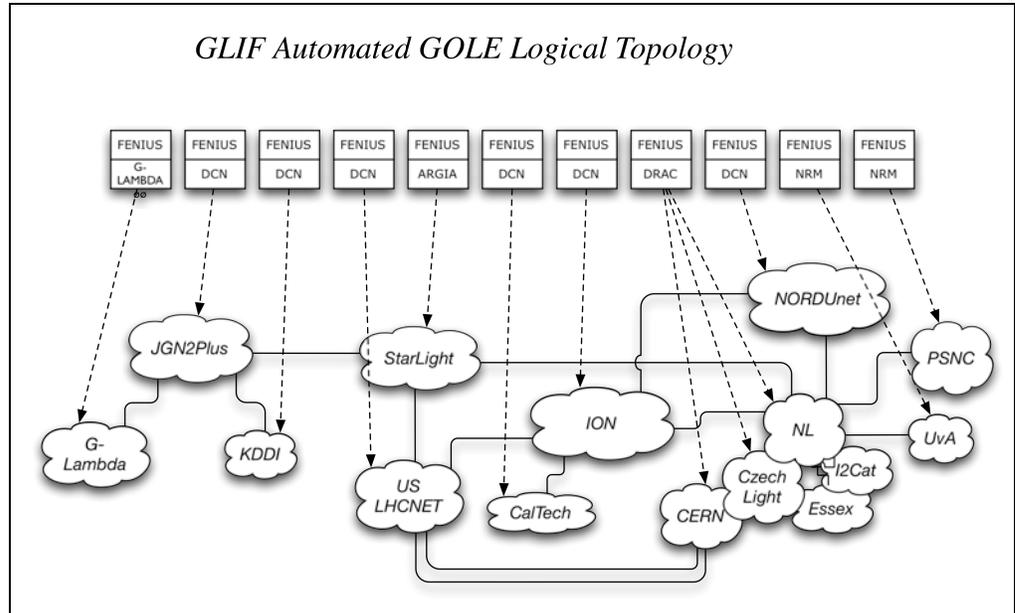
While GLIF has been instrumental in facilitating high-performance applications worldwide, it has been necessary to manually set up lightpaths at each intervening GLIF Open Lightpath Exchange (GOLE). This not only requires significant administrative effort, but it can take several hours to configure each lightpath. There are significant advantages to being able to automatically establish lightpaths.

One obstacle to automating this process is that GOLEs utilize a variety of equipment with different control mechanisms (e.g., Argia/UCLP, DCN/OSCARS, DRAC, G-Lambda), not to mention they fall under different administrative domains. To facilitate dynamic set up, it is necessary to have a standard way of requesting and configuring lightpaths across all GOLEs. It is also necessary to advertise resource availability at each GOLE so that a comprehensive topology can be built up for reachability purposes.

The Automated GOLE Pilot builds on Fenius software developed by ESnet, which is a common API for setting up lightpaths, but translates requests to the different underlying control mechanisms at the GOLEs. This allows lightpaths to be established on demand or reserved in advance for specific periods, along with dedicated capacity and performance characteristics.



Eight GOLEs participated in the demonstrations, along with three additional sites, including the GLIF 2010 venue. Lightpaths were successively brought up and torn down between each location in conjunction with the perfSONAR PinGER service for monitoring and display, providing proof-of-concept and a platform for further development.



The demonstrations represented the initial phase of the pilot project, and there are now two further objectives. The first objective is to work with the Open Grid Forum (OGF) Network Services Interface Working Group to develop a standardized API that can be implemented by GLIF. Complementary to this is the further development of topology distribution and IP layer negotiation protocols, with a view to making these elements more robust. The second objective is to start involving demanding users and application developers who are interested in the capacity and performance offered by dynamic lightpaths, and who would be willing to work with GOLE operators by providing feedback and helping develop best practices.

Below are snapshots, taken by Caltech, for some of the USLHCNet-provided circuits used at GLIF 2010 that were dynamically created from ESnet Fenius (through USLHCNet IDC). *Note that StarLight is part of the overall configuration. When a request is made for a connection between, for example, StarLight and NetherLight, that connection is shown on the displays when it becomes active.*

Ferrius Web UI

Reserve Query List

Ferrius SuperAgent

1. First endpoint

Network: ION / MANLAN
 Group: Default
 Endpoint: MANLAN perSONAR
 VLAN: 1791

2. Last endpoint

Network: G-lambda
 Group: Default
 Endpoint: AIST perSONAR

3. Bandwidth

Bandwidth (Mbps): 300

4. Scheduling

Times are in your timezone (Europe/Amsterdam)

Setup: 2010-10-14 11:20:00
 Tear-down: 2010-10-14 11:25:00

5. Interdomain

View interdomain path

Network: ipx.netnet2.edu ipx.netnet2.edu

6. Submit!

Request reservation

Interdomain topology

connections:
 • NetherLight

Automated-GOLE PingER services

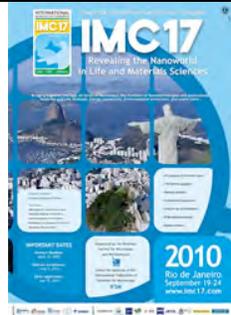
performance perSONAR powered

PingER results

Last Updated: 13-Oct-10 14:58:49 GMT

GOLEs	StarLight	NetherLight	MANLAN	NorduNet	CERNLight	CzechLight	UvA	PSNC	JGN2 G-Lambda	StarLight USLHCnet	MANLAN USLHCnet	CERNLight USLHCnet	JGN2 G-Lambda USLHCnet
StarLight		●			●		●	●	●				
NetherLight	●												
MANLAN		●		●	●							●	
NorduNet			●		●								
CERNLight	●		●	●						●	●		●
CzechLight													
UvA	●												
PSNC	●								●				
JGN2 G-Lambda	●							●					

● Reachable ● Unreachable ? Not Available



International Microscopy Congress (IMC17)

<http://www.imc-17.com>

<http://www.nc-rj.rnp.br/~leandro.ciuffo/photos/IMC17/> (photos)

Collaborators:

- FEI; Eindhoven Technical University; The Netherlands
- *Network providers and GOEs*: RNP, WHREN-LILA, AMPATH, AtlanticWave, MAX, CAVEwave, StarLight, TransLight/StarLight, SURFnet, NetherLight

The 17th International Microscopy Congress (IMC17) took place September 19-24, 2010 in Rio de Janeiro, Brazil. FEI, a leading scientific instruments company in The Netherlands, and Eindhoven Technical University successfully did a remote electron microscope demonstration over a lightpath between Amsterdam and Rio.



In the above pictures, the left photo shows the demo itself: Ferry Stavast from FEI company is operating an electron microscope located in Eindhoven. The photo on the right is a detail from RNP's booth at IMC17. RNP had a TV screen showing the GLIF map/video. The wall image illustrated the lightpath from Rio to Eindhoven.

The lightpath was provisioned from Rio to Sao Paulo (RNP Ipê), Sao Paulo to Miami (WHREN-LILA to AMPATH), Miami to Washington DC (AtlanticWave), Washington DC to Chicago (CAVEwave), Chicago to Amsterdam (IRNC TransLight/StarLight), and SURFnet (Amsterdam to Eindhoven).

2.B.3. Education, Outreach and Broader Participation

EVL and Calit2 do a number of tours for high-school students and undergraduate students to excite them about going to college and to encourage them to pursue careers in science and/or engineering. Tours/demos are also conducted for teachers, campus visitors and company representatives. Most tours consist of an overview presentation of collaborative research, including IRNC/GLIF activities, followed by hands-on demonstrations of advanced, networked visualization technologies. EVL and Calit2 participated in the following broader outreach activities over the past year.



November 13-19, 2010. Dr. Wally Goncharoff, UIC Project Lead the Way (PLTW) Affiliate Professor and a Lecturer in the Electrical and Computer Engineering Department, was accepted into the SC10 Education Program. (This is an all-expense four-day intensive SC program that immerses participants in high-performance computing, networking, storage and analysis.) Given that Goncharoff organizes a number of tours for the UIC College of Engineering, notably to EVL, he was interested in understanding more about the HPC work we do.



October 29, 2010. Luc Renambot of EVL participated in the UIC 2010 Frank Armitage Lecture in Biomedical Visualization, which features “visual geniuses” in medical and scientific illustration, animation, imaging and direction. On the last day of the meeting, Renambot hosted 35 attendees at EVL, giving a presentation and demonstrations of the Lab’s research efforts.



October 11, 2010. UIC/EVL hosted high-school students participating in the UIC Computer Science Open House.



October 4 & 6, 2010. EVL gave two tours to computer-science undergraduates enrolled in the UIC COE’s Engineering 100 course. Engineering 100 is a general orientation class for undergraduates. As part of the course, students are divided into groups according to their majors and Teaching Assistants (TAs) in those respective majors provide more specific information about coursework, careers and real-world applications. Computer-science TA Phil Pilosi, who also works part-time at EVL through funds obtained from the NSF Research Experiences for Undergraduates (REU) program, organized the “field trip” to EVL. Approximately 80 incoming computer-science majors visited EVL in two groups, on October 4 and 6, to learn about EVL’s many advanced visualization research and development activities. “The overwhelming response was Wow!” Pilosi said, “as they learned that computer science can be fun.”

2.B.4. Community Partnerships: Meetings and Events

TransLight/StarLight principals have participated in the following meetings and events, promoting IRNC efforts.



October 13-14, 2010. Tom DeFanti (Calit2), Maxine Brown (EVL) and Joe Mambretti (NU) participated in the GLIF 10th Annual Global LambdaGrid Workshop, held at CERN in Geneva, Switzerland. Brown is co-chair of the GLIF Research & Applications Working Group, and as part of her session, Tom DeFanti gave the presentation “TransLight/StarLight: The Lightpath is not the Goal, the GOLE is the Goal.” SAGE was one of several international application and middleware experiments mentioned in his presentation. In the same session, Mambretti gave two presentations: “HPDMnet @ GLIF 2010” and “iGENI.” Mambretti also did HPDMnet demos and assisted Poznan Supercomputer Center to showcase their 4K initiative.

September 21, 2010. Alan Verlo participated in a JET meeting.

September 21, 2010. EVL professor Andy Johnson attended the Open Community Meeting: NSF Task Force for Cyberlearning and Workforce Development, in Arlington, VA. He submitted a white paper on EVL’s Cyber-Commons room, a technology-enhanced meeting room on a university campus that supports local and distance collaboration and promotes group-oriented problem solving in formal and informal situations. Accessibility to advanced optical networking is critical to this environment.



August 27, 2010. A delegation from China’s Dalian University of Technology, their president and four others, visited UIC to sign an MOU regarding student exchange with the UIC Chancellor. As part of their day’s activities, they visited EVL, where Maxine Brown provided a brief presentation followed by hands-on demonstrations of EVL’s networked visualization technologies.

August 17, 2010. Alan Verlo participated in a JET meeting.

2.B.5. Plans for the Coming Quarter

TransLight/StarLight plans for the fourth quarter of Year 5 (November 1, 2009 – January 31, 2010) include:

- Continue provisioning VLANs on TransLight/StarLight CHI/AMS for e-science applications
- Continue representing TransLight/StarLight at major conferences and workshops
- Continue identifying and developing production applications on both IRNC circuits
- Continue updating the TransLight/StarLight website
- Continue to contribute to the GLIF applications website
- Provide appropriate support for successful networked demonstrations at SC10

2.C. Research Training

National Research & Education Network (NREN) management and engineers from Internet2, ESnet, NLR and DANTE work closely with IRNC management and engineers at UIC and SURFnet, as well as at MAN LAN, StarLight, and NetherLight, to facilitate connectivity and greater advances in global networking than a single-investigator effort can afford. In addition, numerous researchers, middleware developers, network engineers and international NRENs are involved as users of TransLight/StarLight. This global, dedicated community has elected to work together, on a persistent basis, to further the goals of international e-science collaboration.

2.D. Education/Outreach

TransLight/StarLight's primary education and outreach activities include web documentation, articles, and conference presentations and demonstrations. We also provide PowerPoint presentations and other teaching materials to collaborators to give presentations at conferences, government briefings, etc.

EVL has partnered with NCSA and ANL since 1986, with NU/iCAIR since 1994, and with Calit2/UCSD since 2000, in ongoing efforts to develop national/international collaborations at major professional conferences, notably ACM/IEEE Supercomputing (SC), IEEE High Performance Distributed Computing (HPDC), Internet2 Member Meetings and GLIF Workshops. We have participated in European conferences, NORDUnet annual meetings and a UKERNA seminar on optical networking. Our success has been in the development of teams, tools, hardware, system software, and human interface models on an accelerated schedule to enable multi-site collaborations for complex problem solving.

We participate in the annual GLIF workshop and SC conference, and have participated in AAAS 2008 and 2009, to promote the goals of IRNC and TransLight/StarLight. We also organized the iGrid 2005 in San Diego in September 2005 to showcase international advanced applications and middleware developments.

3. Publications and Products

3.A. Journals/Papers

None.

3.B. Books/Publications

None.

3.C. Internet Dissemination

www.startup.net/translight

3.D. Other Specific Products

Other than the information reported here, we have not developed any other specific product of significance.

4. Contributions

4.A. Contributions within Discipline

TransLight/StarLight, by its very nature, is interdisciplinary. There is clearly a fine team of computer scientists, computational scientists and networking engineers involved with TransLight/StarLight, facilitating greater advances in global networking than single-investigator efforts can afford.

TransLight/StarLight developed its management team in the Chicago area (UIC/EVL), and leverages the efforts of its IRNC partners (particularly TransLight/PacificWave, GLORIAD and WHREN-LILA), and technical and administrative contacts at national NRENs (Internet2, ESnet and NLR) and foreign NRENs (DANTE and SURFnet).

4.B. Contributions to Other Disciplines

Within the Computational Science and the Computer Science communities, TransLight/StarLight efforts help lead 21st century discipline science and computer science innovation. TransLight/StarLight's 10Gbps routed circuit connecting Internet2, NLR, ESnet and GÉANT2 provides greater transatlantic connectivity, and the 10Gbps switched circuit between StarLight and NetherLight provides long-distance, high-bandwidth capability for demanding data-intensive e-science applications.

4.C. Contributions to Human Resource Development

We promote TransLight/StarLight through web documentation, articles, demonstrations and presentations at major networking conferences (e.g., SC, HPDC, Internet2), workshops (GLIF, PFLDNet), scientific conferences (AAAS), as well as PowerPoint presentations and other instructional material. We teach the infrastructure, the grid advancements, the technological innovations and the application advancements that global connectivity enables. In fact, thanks to previous NSF funding of STAR TAP, StarLight and Euro-Link, we have a current mailing list of ~400 <stars@startap.net> individuals, from academia, government and industry, interested in information about international networking developments.

4.D. Contributions to Resources for Research and Education

TransLight/StarLight is a necessary and integral part of application advances and technological innovations for the US Computational Science and Computer Science research and education communities, as well as of major interest to network engineers. In particular, the TransLight/StarLight switched circuit between StarLight and NetherLight is part of the GLIF LambdaGrid fabric and represents a major resource for science and technology.

4.E. Contributions Beyond Science and Engineering

Because of TransLight/StarLight's interest in advanced applications and lightpath provisioning, we often get inquiries from network equipment manufacturers and telecommunication providers about partnering with us to create and showcase a marketplace for wavelength-based network services and products. We look forward to working with these companies and introducing them to the Nation's foremost university and Federal laboratory networking engineers, computer programmers and applications scientists, who are developing and using today's evolving grid technologies. Our users expect us to grow in capacity and sophistication, and we look forward to the engineering challenges ahead.

5. Conference Proceedings

None.

6. Special Requirements

6.A. Objectives and Scope

A brief summary of the work to be performed during the next year of support if changed from the original proposal.

Our scope of work has not changed.

6.B. Special Reporting Requirements

Do special terms and conditions of your award require you to report any specific information that you have not yet reported?

No.

6.C. Animals, Biohazards, Human Subjects

Has there been any significant change in animal care and use, biohazards, or use of human subjects from what was originally approved (or approved later)?

No.