



OptIPuter All Hands Meeting and Open House

Calit2 Auditorium, UCSD

January 21-23, 2007

Meeting Goals and Outcomes

The following information was described in our last annual report: *OptIPuter FY2006 Annual Progress Report and FY2007 Program Plan (PPP)*. Below are excerpts of what we said we were going to do this year. Are we doing it? Will we complete this work by the end of Year 5 of the award on September 30, 2007?

1. **Document Year 5 Timeline and Accomplishments to date.** (NOTE: Team leaders should collect PPTs of accomplishments from team members prior to the meeting.)
 2. **Year 5 general milestones and goals:**
 - a. What were the highlights of SC'06?
 - b. Can we quantitatively assess the data acquisition and collaboration capabilities afforded by the emerging OptIPuter technologies in national-scale geoscience and bioscience projects?
 - c. Do we have "5-layer" application solutions (control planes, protocols, middleware, toolkits, applications)?
 - d. Are we deploying and documenting the OptIPuter's design for the broader e-Science community?
 - i. What application scientists outside the initial cohort of project investigators are using the OptIPuter?
 - e. What is the OptIPortal and the Gold Standard OptIPuter Implementation?
 - i. What is the necessary hardware and software?
 - ii. What technology transfer efforts need to be put in place to deploy OptIPortals now and after the OptIPuter award is over at the end of Year 5?
 - e. How are we moving to parallel lambdas?
 3. **Year 5 OptIPuter team milestones and goals – from 2006/2007 PPP:**
 - a. **Infrastructure:** By the conclusion of this award, the goal is to transport traffic over multiple user planes using a variable switching model, bring lambdas to endpoints, and achieve a 1:1 national bisection bandwidth ratio.
 - b. **Software:** UCSD will perform extensive monitoring and tuning of integrated OptIPuter DVC-enabled applications on a range of network testbeds with a wide range of datasets and resource configurations. Demonstrations of an integrated capability for applications to easily access OptIPuter's unique capabilities (configurable networks, optimized resource selection, high-speed transport protocols) through the DVC abstraction will be shown. LambdaRAM will be evaluated alongside alternatives for storing data, which the market will have developed over the five years. The results of research on low-level packet security will be implemented. A software system for real-time control of scientific instruments over optical networks will be released to the community.
 - c. **Data, Visualization and Collaboration:** Lessons learned from monitoring and tuning OptIPuter applications and middleware will provide feedback for improvements in data, visualization and collaboration technologies. SAGE-enabled multicasting will be demonstrated and compared to conventional IP multicasting over the shared Internet. A third-generation data middleware and data services infrastructure will be released and integrated with the applications.
 - d. **Applications:** UCSD/NCMIR/BIRN and UCSD/SIO will continue to port application codes to advanced cluster architectures, integrate codes with DVC to test with partner sites over the various OptIPuter testbeds, and help transfer OptIPuter technologies to new user communities. Outreach activities will continue with elementary schools in the San Diego and Chicagoland areas; lessons learned in these programs will be used to develop robust curricula and training materials for national distribution and workshops will be held for interested teachers. Last, an annual OptIPuter meeting will be held, with some days dedicated to OptIPuter partners and some days open to the wider e-science and high-performance computing and communications communities.
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AGENDA

Calit2 Auditorium, University of California, San Diego

For a map and directions, see <www.calit2.net/about/info/ucsd/index.php>

SUNDAY, JANUARY 21, 2007

6:00 Informal group dinner at the La Jolla Shores Hotel (formerly the Sea Lodge), Acapulco Room

MONDAY, JANUARY 22, 2007

8:00 Shuttle bus departs Sea Lodge for Calit2; continental breakfast at meeting

9:00 Welcome and Introductions (All) – Larry Smarr

9:10 OptIPuter Year-5 Accomplishments and Activities – Larry Smarr

- Review Year 5 timeline (item #1 above) – *to be discussed in team breakouts*
- Review Year 5 general goals (item #2 above) – *to be discussed in afternoon and on Tuesday*
- Review Year 5 team goals (item #3 above) – *to be discussed in team breakouts*

9:30 Prepare Team PPT Year-5 Accomplishments/Activities presentations – Team breakouts
(rooms to be determined; teams can merge with other teams)

- Applications and Outreach – Mark Ellisman/Raj Singh, John Orcutt/Graham Kent, Atul Nayak (for Debi Kilb)
- Visualization, Collaboration and Data Mining/Retrieval – Jason Leigh
- System Software and Middleware – Nut Taesombut (for Andrew Chien)
- Networking; Hardware Infrastructure, Data Storage – Tom DeFanti, Phil Papadopoulos

10:30 BREAK

10:45 Prepare and finalize Team PPT Year-5 Accomplishments/Activities presentations
(work through lunch as necessary)

12:00 LUNCH (Box lunches at Calit2)

1:30 Team Team PPT Year-5 Accomplishments/Activities presentations
(15-minute presentations; ~5 minute Q&As)

- Applications and Outreach – Mark Ellisman/Raj Singh, John Orcutt/Graham Kent, Atul Nayak (for Debi Kilb)
- Visualization, Collaboration and Data Mining/Retrieval – Jason Leigh
- System Software and Middleware – Nut Taesombut (for Andrew Chien)
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3:00 BREAK

3:30 Discussions (All) – Larry Smarr

Having heard Year-5 Accomplishments/Activities, discuss:

- Year 5 General Milestones and Goals (see item #2 above) – Larry Smarr
- Year 5 Team Milestones and Goals (see item #3 above) – Larry Smarr
- Schedule for 2007 FINAL PPP – Maxine Brown

5:15 Shuttle bus to Sea Lodge

6:00 Informal group dinner at the La Jolla Shores Hotel (formerly the Sea Lodge), Acapulco Room

TUESDAY, JANUARY 23, 2007

8:00 Shuttle bus departs Sea Lodge for Calit2; continental breakfast at meeting

9:00 OptIPuter: The Road Ahead – Larry Smarr

Application presentations

Are you using OptIPuter technologies? Are you using lambdas? What problems are you encountering?

- 9:00 Telescience – Mark Ellisman
- 9:10 Earthscope/RIDGE/RoadNet – Graham Kent
- 9:20 CAMERA – Paul Gilna
- 9:30 CineGrid – Tom DeFanti
- 9:40 LOOKING/ORION – Ron Johnson and Matt Arrott
- 9:55 North/Central American LambdaGrids (Mexico/CICESE, Canada, US) – John Orcutt and Larry Smarr
- 10:10 Discussion – All

10:20 BREAK

10:50 OptIPuter: The Road Ahead, continued

Technology presentations

Are you using OptIPuter technologies? Are you using lambdas? What problems are you encountering?

- 10:50 OptIPortal teleconferencing audio/video research – Dan Sandin
- 11:00 Making Varrier an OptIPortal – Dan Sandin
- 11:10 SAGE Future Plans – Jason Leigh
- 11:20 Phosphorous/StarPlane – Cees de Laat
- 11:30 Optical Multicast – Joe Mambretti
- 11:40 Streaming Audio for CineGrid and GridJam – Peter Otto and Jack Ox
- 11:50 Discussion – All

12:00 LUNCH (Box lunches at Calit2)

1:00 International Collaborations (Panel) – Larry Smarr, Radha Nandkumar, Peter Arzberger, Cees de Laat, Tom DeFanti, Paul Gilna, Mark Ellisman

2:00 The Road Ahead: Discussions – Larry Smarr

3:00 Wrap-Up – Larry Smarr

3:15 Adjourn; shuttle bus returns to Sea Lodge