Louisiana Optical Network Initiative (LONI)

Lonnie Leger

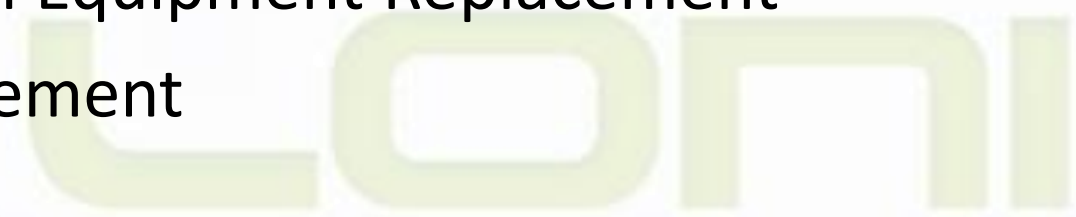Executive Director

BOR Finance Committee, 9/21/16

Budget Over The Past Four Years
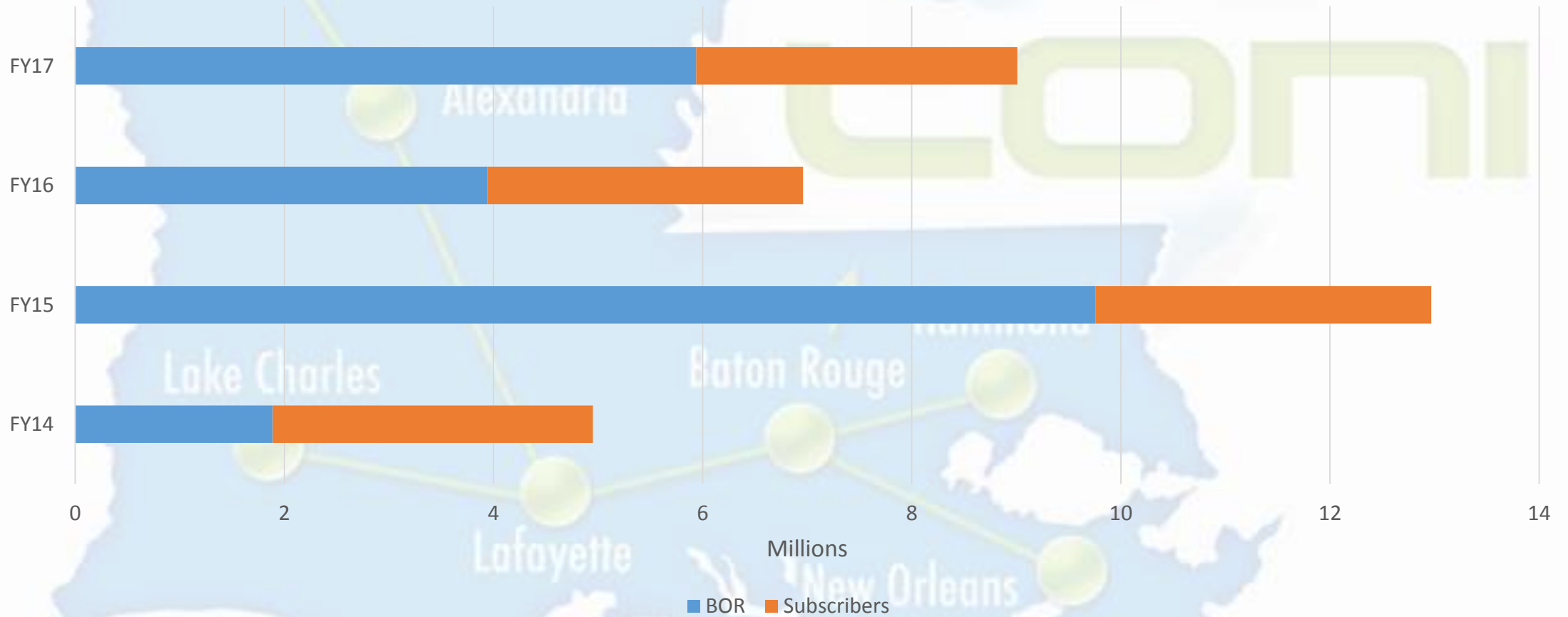
Significant Projects

- FY17 – Fiber Construction, Optical Equipment Replacement
- FY16 – Optical Equipment Replacement
- FY15 – Queen Bee Replacement
- FY14 – Internet Equipment Replacement

Who do we work for?   Who is our employer?

www.regents.state.la.us

www.lsu.edu

Louisiana Optical Network Initiative

The Organization

www.loni.org

THE LONI NETWORK IS AN ASSET OWNED BY THE LOUISIANA BOARD OF REGENTS AND OPERATED WITH THE ASSISTANCE OF THE LONI MANAGEMENT COUNCIL AND LONI NETWORK OPERATION CENTER STAFF AT LSU. THE LONI MANAGEMENT COUNCIL, WHOSE MEMBERS REPRESENT STATE GOVERNMENT AND HIGHER EDUCATION, IS CHARGED WITH MAKING RECOMMENDATIONS TO THE COMMISSIONER OF HIGHER EDUCATION ON THE MANAGEMENT OF OPERATIONS AND ASSOCIATED BUSINESS ACTIVITIES OF LONI. THE COUNCIL'S DECISIONS AND RECOMMENDATIONS ARE GUIDED BY THE LONI GOALS AND OBJECTIVES AS DEFINED BY THE LOUISIANA BOARD OF REGENTS IN RESPONSE TO GUBERNATORIAL AND LEGISLATIVE DIRECTIVES.

What we do

- The Louisiana Optical Network Initiative, or [LONI](#), is a state-of-the-art, fiber optics network that runs throughout Louisiana, connecting post-secondary institutions to the Internet, Internet2 and each other, allowing greater collaboration on research and business affairs.

- LONI offers its participants a world-class network and high performance computing environment with the strategic integration of highly available and scalable bandwidth, as well as computational, storage and personnel resources. This network was conceived to transform research and education in Louisiana and to attract industry and government partners into the State to capitalize upon this resource.

LONI Factoids

1,674

Total miles of fiber in the LONI network

65

Total miles of fiber owned by LONI network

64

Technical and community college campuses on LONI

1.5+

Number of Petaflops in LONI's main compute node, QB2

5

No High Education Subscribers

5

Health Science, Medical & Nursing Schools, and Biomedical Research Centers on LONI

20

Universities on the LONI architecture

2

Adjoining state optical architectures: MissiON (Mississippi Optical Network) and ARE-ON (Arkansas Research and Education Optical Network)

NETWORK NODES

Louisiana
- Louisiana State University
- Louisiana State University Health, Medical, and Biomedical Centers
- Tulane University
- Louisiana Tech University
- University of Louisiana-Lafayette
- University of New Orleans
- Southern University
- University of Louisiana-Monroe
- Grambling State University
- McNeese State University
- Nicholls State University
- Northwestern State University
- Southeastern Louisiana University
- Xavier University
- Community College System: 10 colleges and 40 campuses
- Technical Community Colleges: 4 colleges and 40 campuses
- Research: 7 organizations
- State: 3 Louisiana agencies

Mississippi
- University of Mississippi
- Mississippi State University
- University of Southern Mississippi
- Jackson State University

Louisiana Optical Network Initiative
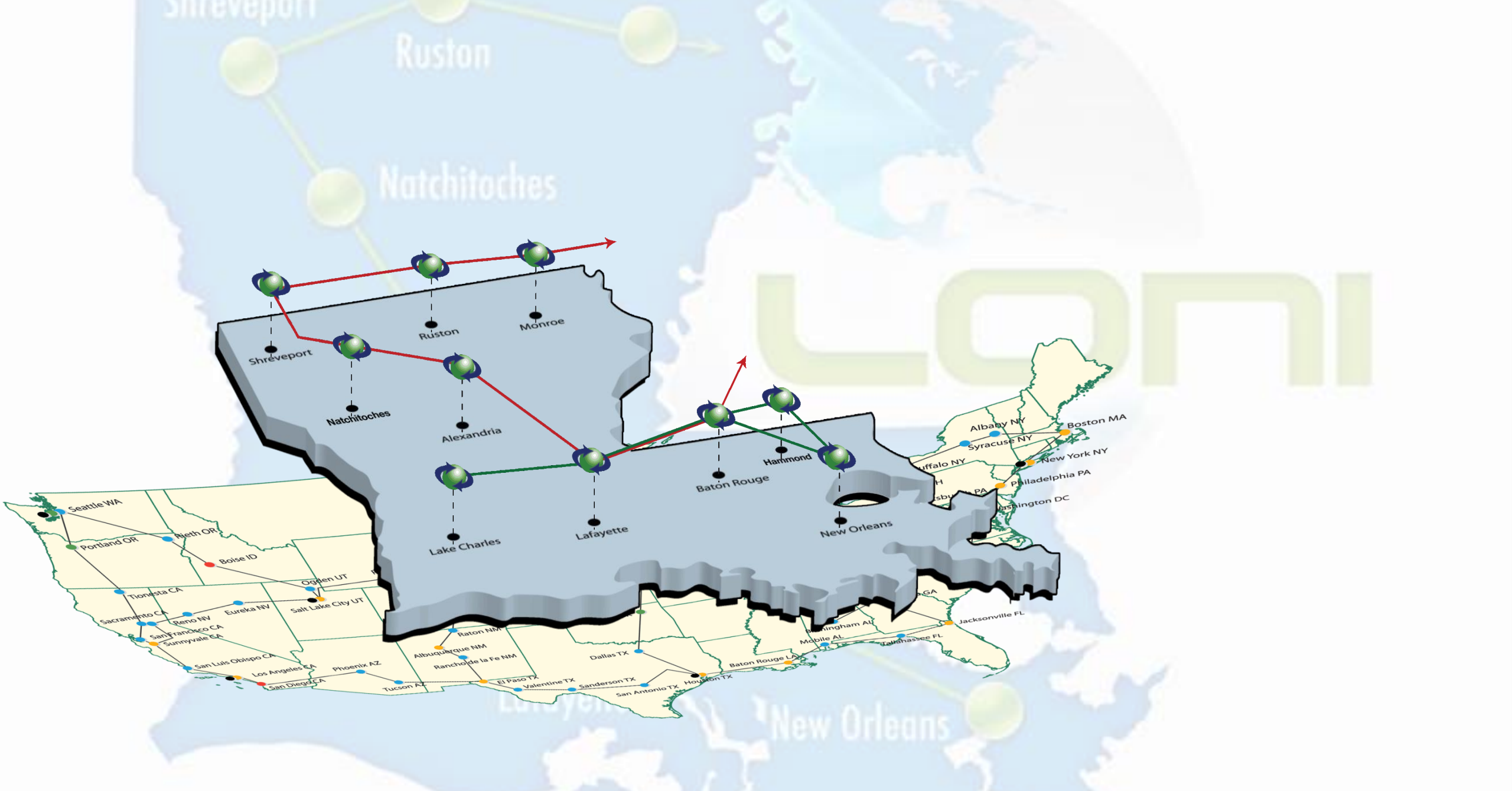
Louisiana Optical Network Initiative

Relationships

EDUCAUSE 2016 Top 10 IT Issues

1. Information Security
2. Optimizing Educational Technology
3. Student Success Technologies
4. IT Workforce Hiring and Retention
5. Institutional Data Management
6. IT Funding
7. Business Intelligence and Analytics
8. Enterprise Application Integration
9. IT Organizational Development
10. E-learning and Online Education

LSU 2020 Top IT Goals and Issues

1. Maintain a Modern, State-of-the-Art Network and Infrastructure
2. Enable Research Through Strategic Investment
3. Ensure Service Security and Integrity
4. Enhance Faculty Teaching and Student Learning
5. Ubiquitous Access to Information
6. Agile IT Service Delivery
7. Exemplary Customer Service
8. Transparent Operations Model
9. Stakeholder Engagement

LONI 2016 Top IT Issues

1. State Budget
2. Stakeholder Engagement
3. Staffing Levels
4. Fiber IRU Renewals
5. Network Virtualization
6. Cloud Service Enablement
7. Big Data Flows
8. Openflow/SDN/NFV
9. Transparency

Points of Pain

- Speed of Change
- Staffing Levels
- Cash Flow
- Technology Complexities
- IRU and Leased Fiber Terms

Drivers

- State Funding
- State Governance
- Bandwidth Demand
- Bandwidth Pricing
- Staffing Levels
- Technology Complexities
- Technology Mergers

Complying Events

- Compute Virtualization
- Operations Maturity
- Network Maturity
- Product Maturity
- User Maturity
- Threat Maturity

Trends

- Cloud Service Provider Services
- Internet of Things (Sensors)
- Wearable Technology (Biohealth)
- Big Data Flows (3GBPS and Higher)
- Flow Management (End-to-End)
- Network Virtualization
- Coordinated Security
- 1G WiFi

Value Proposition

- Moving Content to Eyeballs
- Direct Participant Involvement
- Mature and Stable Customer Experience
- Research and Business Participation
- Volume Buying Power

Investment

- Approximately $58M has been invested by BOR over the past 11 years
- Pending Investment: $10M-$12M on dark fiber and equipment

Return on Investment Examples

- Louisiana institutions in 11 years have received external funding from agencies like NSF and NIH in excess of $84.7M with LONI participating as either a contributor or a vital resource to the proposal.

- As an additional snap-shot of return, 13 faculty across 3 institutions between 2004-2012 were awarded just over $66M in external funding for research with LONI participating as either a contributor or a vital resource to the proposal.

Return on Investment

- Louisiana Biomedical Research Network([LBRN](#))
  - $45M / 15-year NIH Grant
  - The Bioinformatics, Biostatistics, and Computational Biology Core (BBCC) is divided into four sub-units, led by faculty and staff across four Louisiana campuses. The Cyberinfrastructure and Biomedical Data Analytics (CBDA) sub-unit supports the use of high performance computing (HPC) and the Louisiana Optical Network Initiative ([LONI](#)), and enables primarily undergraduate institution (PUI) investigators to conduct research engaging biomedical "big data" (e.g., genome-scale sequence alignment).
  - The partner institutions: Louisiana State University (LSU: lead institution), Louisiana State University-Shreveport (LSUS), Grambling State University (GSU), Louisiana Tech University (LA Tech), Southeastern Louisiana University (SLU), Southern University at Baton Rouge (SUBR), University of Louisiana at Monroe (ULM), and Xavier University (Xavier).

Return on Investment

- Consortium for Innovation in Manufacturing and Materials (CIMM)
  - $20M / 5-year NSF Grant
  - Strategic investments over the past 20 years in experimental and computational materials research and infrastructure have yielded significant opportunities for long-term growth in Louisiana. CIMM directly capitalizes on the successes of Louisiana's 2010 NSF RII award, which established the successful Louisiana Alliance for Simulation-Guided Materials Applications (LA-SiGMA) and wraps up this fall.
  - The Consortium members are: Louisiana State University (LSU: lead institution), Grambling State University (GSU), Louisiana Tech University (LA Tech), University of New Orleans (UNO), and Southern University at Baton Rouge (SUBR).

Return on Investment

- Enhanced Research Opportunities and Success for Our Faculty
- Enhanced Research Collaborations with Other Universities
- Enhanced Educational Opportunities for Our Students
- Enhanced Recruitment of Top-Notch Faculty
- Supported Partnerships with the Private Sector

Louisiana: a model for advancing regional e-Research through cyberinfrastructure

"This effort to advance Louisiana provides a model for building regional cyberinfrastructure based upon local needs but consistent with and integrating into national-level efforts. It has led to an unprecedented level of partnering between the state's research universities and to the largest amount of per capita computing accessible to the state's researchers. In addition, the ongoing projects to develop software and services and to increase collaboration are building a base that has the potential to transform the state's educational system and economy."[1]

(1) Daniel S. Katz, Gabrielle Allen, Ricardo Cortez, Carolina Cruz-Neira, R. Gottumukkala, Z. D. Green- wood, Les Guice, Shantenu Jha, R. Kolluru, Tevï¬?k Kosar, Lonnie Leger, H. Liu, Charlie McMahon, Jarek Nabrzyski, Bety Rodriguez- Milla, Ed Seidel, G. Spe. "Louisiana: A Model for Advancing Regional e-Research through Cyberinfrastructure," Phil. Trans. R. Soc. A, v.28, 2009, p. 1897., doi: 10.1098/rsta.2009.0037

Savings to the Schools

- We save 89 institution sites approximately $530K annually or $5.8M over the past 11 years to operate LONI as a statewide consortium network versus each school creating their own.

- We save our participating institutions approximately $2.4M annually for Internet bandwidth over what is offered from OTS according to their [catalog].

Connect with Us

Lonnie Leger

lonnie@lsu.edu

225-578-8391

Follow us on Twitter: @LONI_LSU

Like us on Facebook: LONI - Louisiana Optical Network Initiative