



# LONI

# Design and Capabilities

Louisiana Tech

LONI Symposium 2005

May 4<sup>th</sup>-5<sup>th</sup>

# What is LONI?

One of the Board of Regents recent initiatives supported by the Governor and Higher Education is the establishment of a high-speed fiber optic network connecting our major research institutions to foster expansion in academic and private sector research for the betterment of the citizens of the State.

The Louisiana Optical Network Initiative (LONI) is this high speed computing and networking resource supporting scientific research and the development of new technologies, protocols, and applications to positively impact higher education and economic development in Louisiana. LONI is a statewide asset administered under the authority of the Board of Regents.



# What is LONI?

Louisiana Optical Network Initiative



# What is LONI?

Great State of Louisiana

Fiber Optics

Collaborative Network

Funded Initiative



# Great State of Louisiana

## Grade B

*Presented by the Governor's Executive Budget 2006-2005*

# 52%

*Based upon LSU's Reilly Center on Media & Public Affairs  
2005 statewide opinion study*

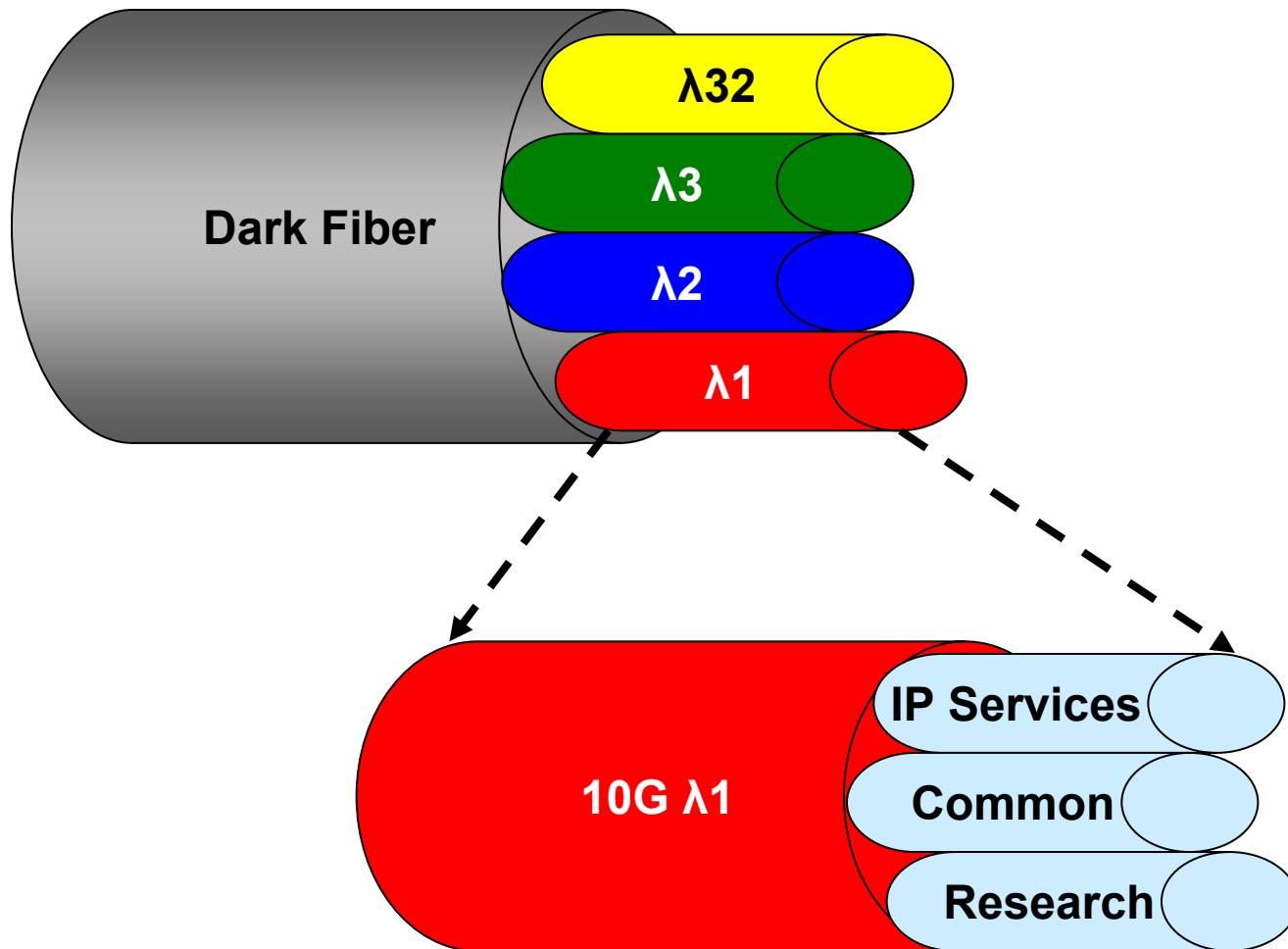


# Fiber Optics

- Current theoretical transmission limitation is approximately 100 Tb/s
- Current best laboratory results are about 10 Tb/s
- Current largest DWDM system in the world is approximately 1.6 Tb/s
- Diameter of fiber 8-10  $\mu\text{m}$
- Diameter of human hair 45  $\mu\text{m}$



# Fiber Optics



# Collaborative **N**etwork

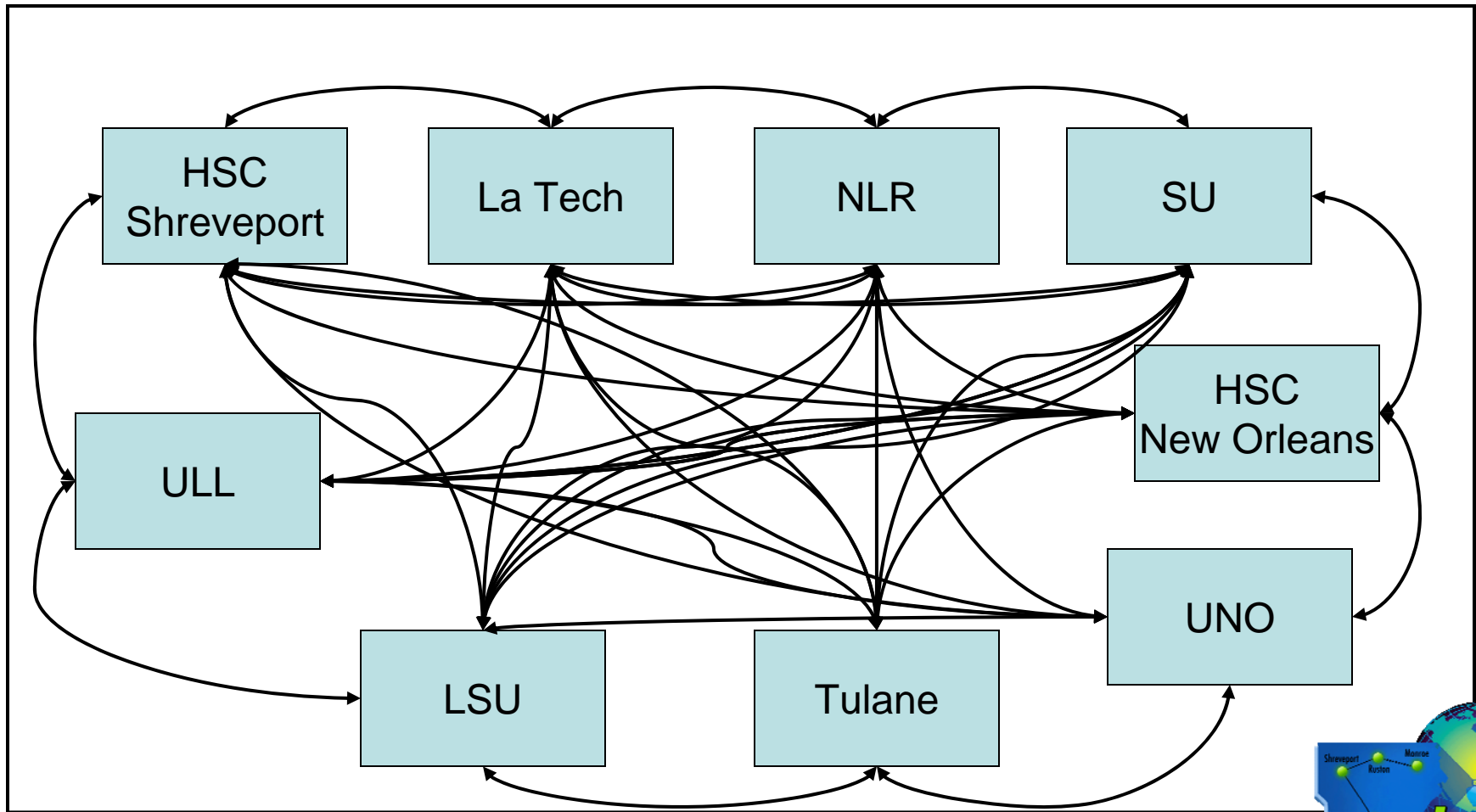
## Member Institutions

- Louisiana Tech University
- Louisiana State University Health Science Center – Shreveport
- University of Louisiana at Lafayette
- Southern University – Baton Rouge
- Louisiana State University – Baton Rouge
- Louisiana State University Health Science Center – New Orleans
- University of New Orleans
- Tulane University





# Collaborative Network

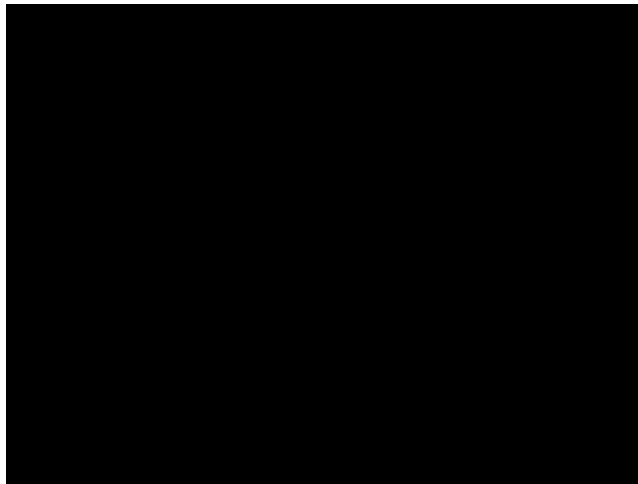


# Collaborative **N**etwork

- **ANY-to-ANY**
- **a.k.a Tele-collaboration**
- **Enables sharing of information, knowledge, and insight**
- **Multiple location sharing work and interacting in real time learning and research**
- **Linking high-powered grid computational resources at each of the 8 Member Institutions**



# Funded Initiative

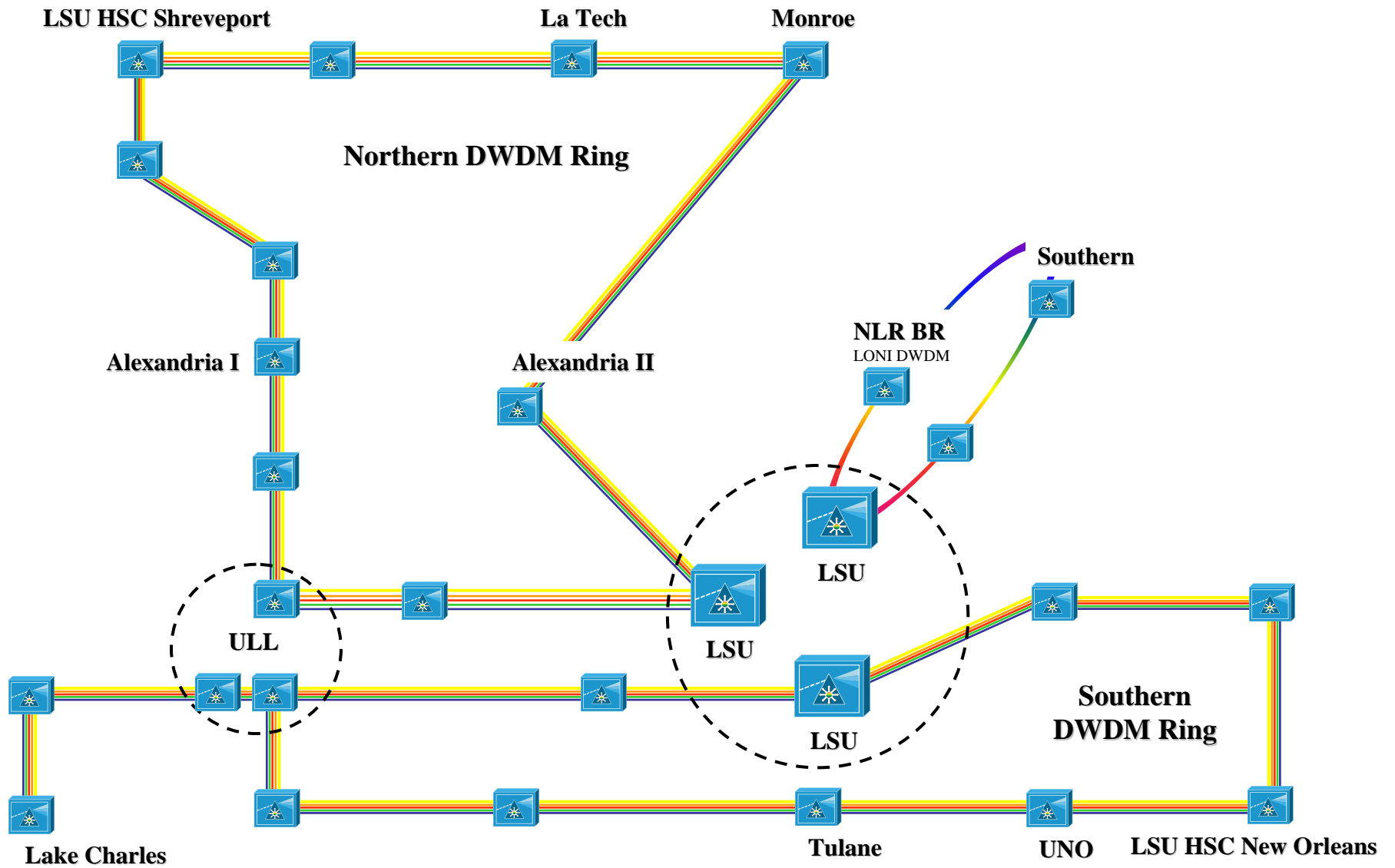


# LONI Design

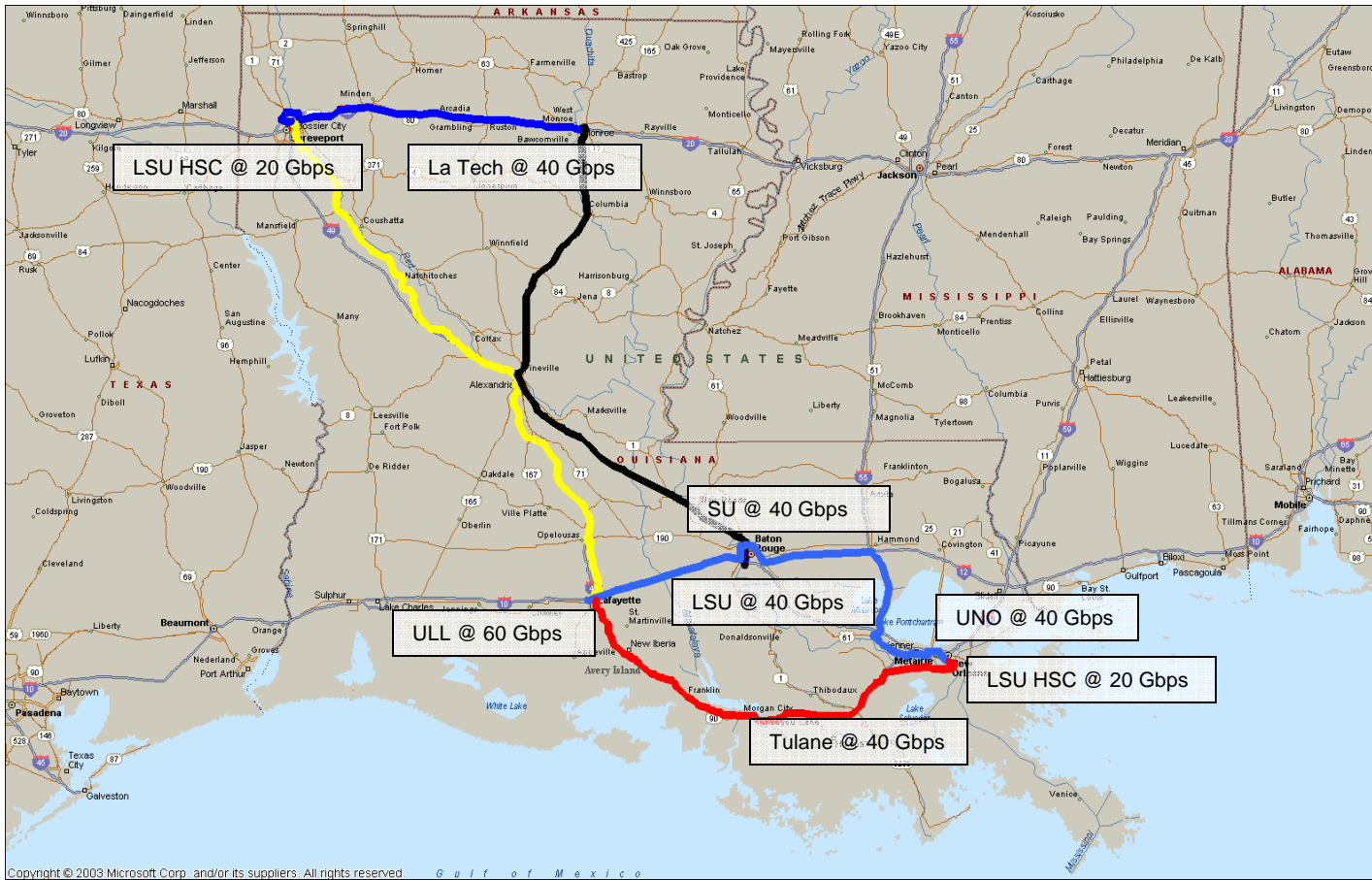
- **Based on dense wave division multiplexing (DWDM) optical transmission**
- **Phase I capacity of 32 wavelengths per fiber pair**
- **Phase I will have three rings (Southern, Northern, NLR) each with a 32 wavelength capacity expandable to 96**
- **Each wavelength operates at 10 Gbps**
- **Phase I will utilize some 1,120 route miles of dark fiber**



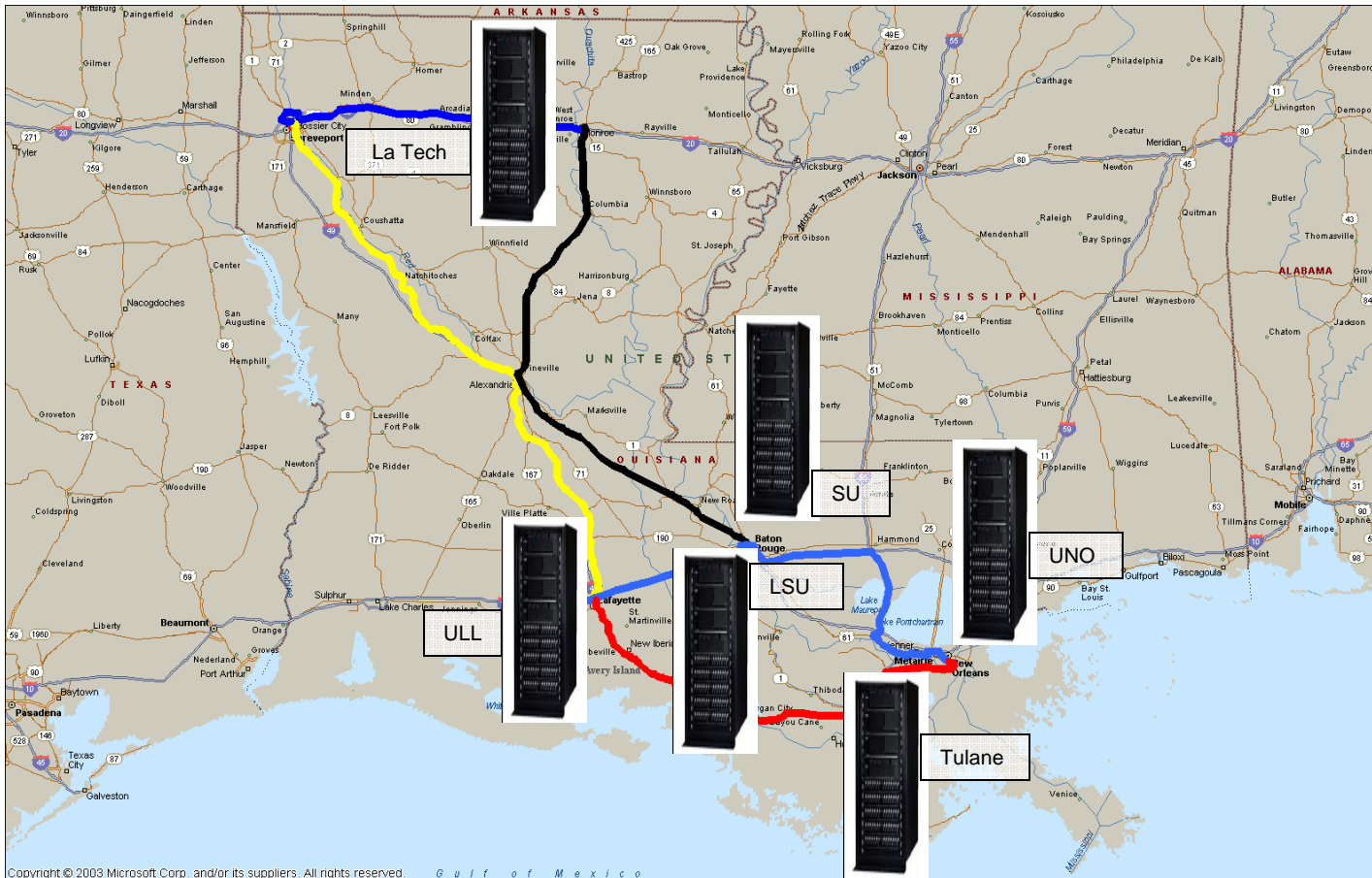
# LONI Design



# LONI Design



# LONI Design



# LONI Design

- **Southern Loop**
  - **University of Louisiana at Lafayette with 30 Gbps**
  - **Louisiana State University – Baton Rouge**
  - **Louisiana State University Health Science Center – New Orleans with 20 Gbps**
  - **University of New Orleans with 40 Gbps**
  - **Tulane University with 40 Gbps**





# LONI Design

- Northern Loop
  - Louisiana Tech University with 40 Gbps
  - Louisiana State University Health Science Center – Shreveport with 20 Gbps
  - University of Louisiana at Lafayette with 30 Gbps
  - Louisiana State University – Baton Rouge



# LONI Design

- NLR Loop
  - NLR Node – Baton Rouge with 40 Gbps
  - Southern University – Baton Rouge with 40 Gbps
  - Louisiana State University – Baton Rouge with 40 Gbps



# LONI Design

- **Phase I Services**
  - **Dedicated wavelengths between Members for common traffic**
  - **Dedicated wavelengths between Members for research traffic**
  - **IP connectivity to each Member**
  - **IP connectivity to NLR**
  - **Secondary IP connectivity to Internet**
  - **Secondary IP connectivity to Internet2**



# LONI Capacity

- **Phase I for LONI will have an aggregate transport capacity of approximately 550 Gb/s (it would take about 4 minutes to transport every book in the Library of Congress that is equivalent to about 28936 DVDs)**
- **Florida Lambda Rail will have an initial aggregate transport capacity of approximately 90 Gb/s**
- **I-Wire (Illinois) has a aggregate transport capacity of approximately 82.5 Gbps**
- **Third Frontier Network (Ohio) has an initial aggregate transport capacity of approximately 5 Gbps**



# LONI Status 5/2005

- 1<sup>st</sup> Long-haul Dark Fiber RFP being evaluated
- Dark Fiber to NLR RFP being evaluated
- Conducting facility reviews at LSU, SU, ULL, LSU HSC-New Orleans, UNO, Tulane, LSU HSC-Shreveport and La Tech
- 2<sup>nd</sup> Long-haul Dark Fiber submitted to OSP
- Network Equipment and Service RFP submitted to OSP



# LONI Next Steps

- **Grid Computation Recommendation**
- **Facility readiness on all campuses by start of August**
- **NLR POP in Baton Rouge end of August**
- **iGrid Demostration end of September**



# LONI Home Page

[www.loni.org](http://www.loni.org)

**LONI**  
Louisiana Optical Network Initiative

"Governor Blanco endorses  
the LONI Project."



**Governor  
Kathleen Blanco**

- About LONI
- Project Status
- Events
- Governance
- LONI Staff and Support
- Research
- Economic Development
- Related Links



[Click here to see video...](#)

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# Questions

