

RENCI: Research \ Engagement \ Innovation

- *RENCI allows Carolina to compete for key national programs.*
- *RENCI's value is the research collaborations enabled by its cyberinfrastructure and expertise.*
- *RENCI provides critical technology support to increase UNC competitiveness.*

The Institutions best equipped to research, develop, deploy and used advanced cyberinfrastructure will be the problem solvers. *—Edward Seidel, National Science Foundation*

Number of research awards received since July 2009: 18 (25 submitted, \$3.3M awarded)

Pending funding proposals: 34 (14 led by campus partners)

Potential funding for RENCi: \$13.8M

Potential funding for partners: \$69.5M

RENCi's vision: to be the preeminent national center of Cyberinfrastructure (CI) R&D

- CI comprises computing, data management, analytics, software, visualization, virtual organizations, advanced networks and human expertise.
- RENCi's CI originates at UNC, connects to many UNC campuses, other states through national partnerships and international partners.

Strategic Partnership: Medicine/Genomics

- ✓ Partnership with **NC TraCS (UNC CTSA award)** to build the secure virtual workspace needed to conduct research using sensitive patient data.
- ✓ Working with the **Medical Genetics Department** in the **UNC School of Medicine** to build infrastructure to support the application of genomic sequencing to translational research.
- ✓ Participant in a **\$10M, 5-year project** to reduce cardiovascular disease risks in low-income populations. Project leaders are the **Center for Health Promotion and Disease Prevention** and the **UNC School of Medicine**.
- ✓ Collaborating with the **Alcohol Studies Center** on **\$6M** proposal to study adolescent drinking (NIH).

I could not have submitted the multi-institutional proposal "Neurobiology of Adolescent Drinking in Adulthood" without the help of RENCi. The expertise and infrastructure provided by RENCi for collaborative, multi-site studies is a tremendous asset to UNC. *—Fulton Crews, Director, Alcohol Studies Center*

Strategic Partnership: School of Information and Library Science (SILS)

- ✓ Partner with SILS on **\$19.8M NSF DataNet Federation Consortium** proposal. Partners include **Odum Institute, Carolina Data Repository, Duke and NC State**.
- ✓ Partner with **Data Intensive Cyber Environments (DICE)** center to deploy a federated data cyberinfrastructure for Triangle area campuses (**\$2.7M from TUCASI**)
- ✓ Technology lead for **BOT 2.0**, which teaches botany and metadata literacy to non-traditional students using social media technologies (NSF).

Enabling Innovation and Economic Development

- ✓ **Research Engagement & Capabilities Hub for NC:** RENCi visual analytics tools and iRODS-based data warehousing will allow UNC researchers to **find the best strategic collaborators for competitive research partnerships**. Users can query faculty expertise, UNC system capacity by industry and issue, research capacity by region, research strengths and funding trends.
- ✓ **Carolina Launch Pad:** enhances efforts of **Kenan-Flagler Business School** and **Office of Technology Development**; student venture named 2010 **Carolina Challenge** winner.

RENCi's Carolina Launch Pad gave us a place outside the laboratory where we could concentrate on our business idea. That's just not possible when you are in the lab or your campus office. *—Dr. Cam Patterson, Chief of Cardiology, UNC School of Medicine and Director, McAllister Heart Center*



Partnerships that Extend the Reach of UNC

- ✓ High-resolution storm surge modeling made possible by RENCI supercomputers used to develop **new floodplain maps for North Carolina**. Maps are used in regional planning decisions that impact developments worth **hundreds of millions of dollars**.
- ✓ Success of storm surge models led to **\$15M in federal and state funding** to model storm surge and sea level rise and to compute storm surge from the northern Outer Banks to Maryland.

RENCI has played a critical role in adapting my ADCIRC storm surge model for North Carolina and has created an end-to-end system that looks at weather, surge, rain and hydrology as a whole system. RENCI turned a small plant into a garden. –Rick Luetlich, Director, Institute of Marine Sciences

- ✓ **Emergency Managers in 98 of 100 NC counties** have been trained to use **NC-FIRST**, a Web portal that aggregates information from hundreds of sources into a location-specific, customizable and easy-to use format. NC-FIRST enables better emergency response across the state.
- ✓ **RENCI at UNC Asheville** created computer models and decision support tools to understand the impacts of development on mountain communities and to mitigate the effects of floods and landslides.

RENCI at UNC Asheville is **THE** magnet drawing visualization talent to Asheville and birthing an industry. –Mack B. Pearsall, President, Pearsall Operating Company

- ✓ **RENCI at UNC Charlotte's** Urbanization Explorer analyzes the impacts of growth on the environment, public service infrastructure and quality of life from 1970 – 2030. Model originally covered Charlotte region and has expanded to Western NC and will soon cover the Piedmont, Triad and eastern NC.

RENCI connections between Charlotte and Chapel Hill have launched a new research and engagement bridge between our campuses. I look forward to working together to build and sustain new RENCI collaborations. –Philip L. Dubois, Chancellor, UNC Charlotte

- ✓ **RENCI at East Carolina University** created the Coastal Hazards Web Portal for emergency managers and the public, with historical data, forecasts, current conditions and more.
- ✓ **RENCI at the UNC Coastal Studies Institute** uses a 360-degree Immersive Media video camera for storm-related damage assessments in Dare County and to capture 360-degree video of historic and cultural sites, such as the Cape Hatteras Lighthouse. Camera is also being tested as a tool to improve county tax assessments.

Major pending proposals and proposals under development

Proposal Name	Collaborators	Proposal Amount
DataNet Federation Consortium	DICE Center, SILS, Odum Institute	\$19,888,985
Genomics Project	UNC Genetics Department	\$12,500,000
UNC-NADIA	UNC Alcohol Studies Center	\$6,103,116
Multimodel Human Identification from Video	Kenan-Flagler Business School	\$1,641,654
Virtual Organization: Time Resource and Schedule Critical Formation	NC State	\$1,492,626
Petabit Highly Agile Robust Optical System	BBN Technologies	\$1,287,869
Rule-based Scientific Data Management	UC San Diego	\$1,278,039

