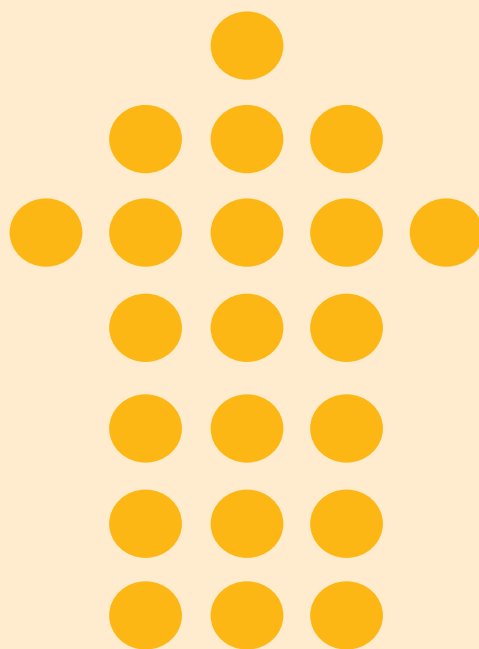


REACH NC:

The Research, Engagement, and Capabilities Hub of North Carolina

Connecting People, Ideas, and Investment

A RENCI/REACH NC WHITE PAPER



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Summary

REACH NC, the Research, Engagement, and Capabilities Hub of North Carolina, is a unique, custom-built Web gateway to North Carolina's vast expertise network. Its core purpose is to serve the citizens of North Carolina and those interested in doing business in the state by offering an unprecedented level of transparency regarding thousands of experts and intellectual resources across North Carolina.

Based on a robust technical infrastructure, REACH NC automatically generates current, detailed information about leaders in a variety of fields, allowing researchers, economic developers, companies, and other organizations to easily locate and access experts in specific areas. The free, user-friendly REACH NC Web portal can be used to connect researchers with collaborators, businesses with potential employees or partners, organizations with speakers, members of the media with sources, and more. As the nation's largest such multi-institutional researcher networking portal, REACH NC is also a model for similar initiatives emerging in other states and communities around the country.

The Challenge

As the maxim holds, "It's not what you know, but who you know." From winning a research grant to building a startup, professional connections are vital. Yet despite our ever-increasing digital connectivity and the Internet's enormous potential to bring people together, it remains difficult to find the right people at the right time—especially if those people are outside your everyday sphere.

Take, for example, the real case of a company in North Carolina seeking microbiologists to test its new line of specialty microscopes. The company wants to reach beyond the "usual suspects" in its own digital Rolodex to find researchers who can be truly independent testers. A Google search turns up many microbiologists, but it's hard to pinpoint experts based nearby. LinkedIn and other social media networks provide some leads, but many profiles are incomplete or hidden.

Publication libraries like PubMed and Web of Science help to identify experts, but make it difficult to find local results or see a person's activities beyond publications. After a tedious journey through the individual websites and faculty lists of numerous universities, businesses, and institutions, as a last resort the company contacted their representative at the NC Biotechnology Center's Charlotte office, who took an active interest in the search and steered the company toward REACH NC. Within a few minutes, the REACH NC system delivered a list of microscopy experts at North Carolina research institutions who were qualified to test the new equipment and provide meaningful feedback to the company.

Similar frustrating stories play out in numerous other scenarios. As funding agencies place increasing emphasis on multidisciplinary work, researchers spend hours scouring the Internet to find collaborators for grant proposals or research projects. Businesses considering moving into a new area or seeking to build partnerships face a similar daunting search for expertise and capacity. Legislators, university administrators, or others seeking a "meta" view of a state's expertise network are often forced to

At a Glance

- REACH NC is an award-winning Web portal providing easy access to more than 9,500 top experts and 1,500 research assets from across North Carolina's academic and research institutions.
- Now entering its third year, REACH NC is growing rapidly. It has demonstrated success in helping researchers, universities, businesses, economic developers, and the general public tap into the state's vast expertise network to spark collaborations; attract research funding; encourage business investment; and find advisors, speakers, and other resources.
- As the nation's largest multi-institutional research networking portal, REACH NC serves as a model for network-building initiatives in other communities.

The Team

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rely on clunky spreadsheets or multiple systems that contain incomplete or outdated information.

These are exactly the types of challenges REACH NC was created to solve. By harvesting large stores of publicly-available information, REACH NC creates comprehensive expert profiles that can be quickly searched,

Ideas into Action

REACH NC was initially developed as a partnership between the University of North Carolina at Chapel Hill, North Carolina State University, and the Renaissance Computing Institute (RENCI) with startup funding from UNC General Administration, The North Carolina Translational and Clinical Sciences Institute (NC TraCS), and Duke University to launch an expertise profiling project. The portal launched in 2011 and has received additional funding from the North Carolina Biotechnology Center, TUCASI/ Research Triangle Foundation, and the Golden LEAF Foundation.

Today, the REACH NC database houses more than 9,500 expert profiles. An additional 8,000 profiles are in development and are expected to be before the end of 2014. With profiles representing 17 UNC system campuses, Duke University, and the multinational research corporation RTI International, REACH NC is the largest multidisciplinary, multi-institutional expertise profiling database in the nation.

To supplement its large pool of expert profiles, REACH NC launched a collection of research assets in 2014. Its Resource Finder tool allows users to locate assets such as wet labs, service labs, scientific instruments, clinical trial participation opportunities, and open source software across the state. The first statewide implementation of its kind, the Resource Finder currently includes nearly 1,500 resources from six UNC campuses and Duke University and is being actively expanded.

Users from around the world have found the portal valuable for locating experts, building collaborations, and achieving a variety of other goals.

A Robust Technological Infrastructure

REACH NC is a custom-built Web portal with a robust technical back end. The foundation of its expert database is the Elsevier SciVal expert profiling system, a commercially-available tool that generates researcher expertise profiles based upon publicly-available data sources such as peer-reviewed publications, grants, and patents. The Resource Finder tool, used to access the system's research assets, is powered by the eagle-i open-source tool from Harvard University¹.

evaluated, and compared. REACH NC allows users to identify specific individuals, analyze professional networks, or generate high-level data about overall capacity—addressing a critical need for information-seekers and saving time and money.

A key strength of REACH NC is that its expert profiles are generated and updated automatically with accurate, up-to-date information. Some people-finder resources, such as institutional websites or LinkedIn, rely on manual data entry, often resulting in profiles that are incomplete or outdated. Other resources, such as PubMed, are automated and up-to-date, but pull information from a single data source, reflecting only one aspect of an expert's work. REACH NC is different because its expert profiles are automatically populated with reliable data drawn from SCOPUS (a database of about 30,000 peer-reviewed journals) and RAMSeS (a grants database maintained by the UNC system).

Additional data such as course information and patent information are also included in REACH NC to build a richer, more robust researcher profile. This makes profiles both comprehensive and up-to-date, reducing the administrative burden of keeping the data current. Peer-reviewed publications, patents, courses taught, grants received, collaborative partners, and other data are automatically displayed on each expert's profile without any need for manual data entry. If desired, experts can edit their profile to include additional information.

A Rich, User-Friendly Experience

Despite its complex back end, REACH NC data is easily accessible through a user-friendly Web portal that meets the diverse needs of its users (see Figure 1).

To locate specific experts, REACH NC users can either select from a list of concepts or search by name or keyword. Each expert profile includes areas of expertise, publications, grants, employers, journals, and an interactive visualization of trends in the expert's research focus over time. Profiles also include information about the expert's professional network, such as publication coauthors, experts from the same institution, and experts with similar experience, as well as an interactive visualization of the expert's research

¹eagle-i is funded by Harvard Catalyst, The Harvard Clinical and Translational Science Center (grant number 1UL1 TR001102-01).

network. Users can also use REACH NC to contact experts of interest.

The Resource Finder allows users to easily browse or search to find research assets of interest. Filtering by institution or resource type provides a quick way to assess the landscape of resources and get information about specifications, availability, and fees. Users can then contact resource owners through the REACH NC system.

To analyze networks of experts across the state, REACH NC users can use sophisticated tools to quickly see the connections among experts who have coauthored papers together, worked at the same institution, published papers in the same journal, or collaborated

on grants (see Figure 2). Additional visualization tools, now in Beta-test mode, visually reveal key areas of overlap between specific disciplines or subdisciplines—offering a quick way to find highly-qualified candidates for multidisciplinary collaboration.

REACH NC can also be used to generate “meta-” level insights about North Carolina’s educational and research activity. For example, by searching for experts in a particular specialty, users can quickly see the number of local experts with that specialty, their publication volume, the number of grants received in that area, and more. Searching by institution can yield insights about a particular institution’s research strengths and diversity, a feature organizations have found useful for internal and external reporting.

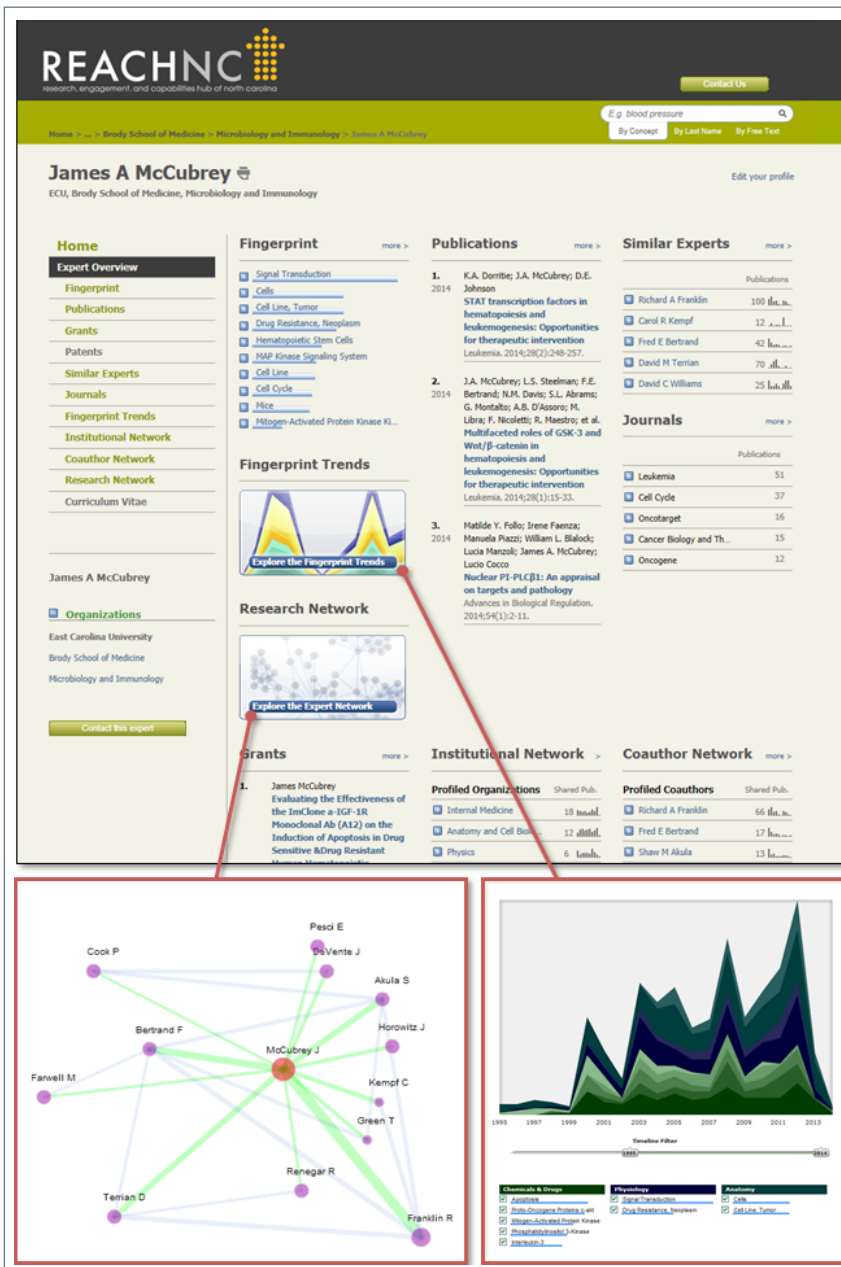
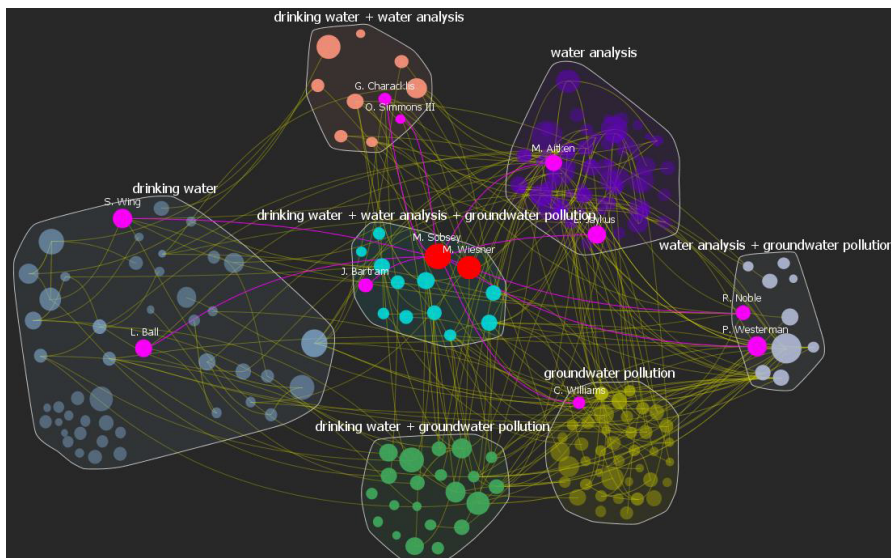


Figure 1. A typical researcher profile in REACH NC. Profiles, which can be searched by concept, last name, or full text, identify the researcher’s areas of expertise, list recent publications, and highlight connections to other researchers. Visualization tools allow the user to quickly get a sense of the researcher’s professional network and research trends over time.



Figures 2a and 2b. Output from REACH NC’s sophisticated visualization tools. These tools are being developed to enhance the use of REACH NC to analyze the overall expertise network or find researchers who are highly active in the areas of overlap among different areas of study. They can be used at varying levels of detail, from locating individual experts in specific subdisciplines (left) to visualizing the number of experts and links in broad categories (below). Visualization tools developed by Hong Yi, RENCI.

Proven Value for Users

Web analytics and direct communications with REACH NC’s users have revealed the system’s proven value for its target users.

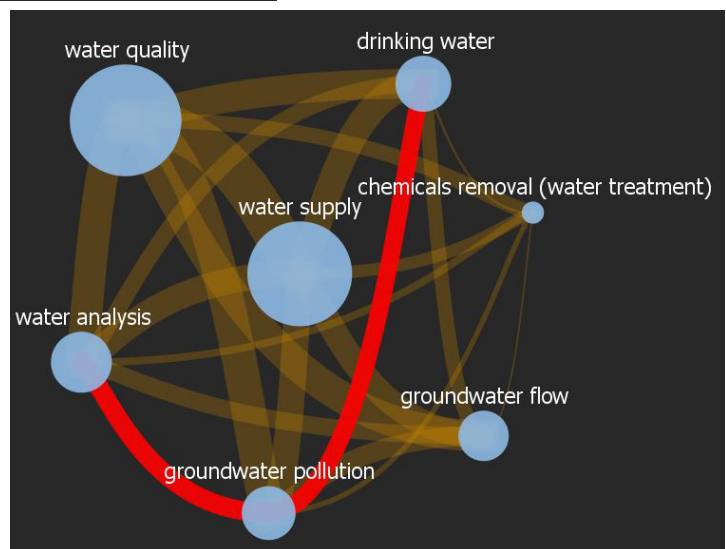
Over the past year, the site attracted more than a quarter of a million visitors, of whom more than 217,000 were unique visitors. About half of REACH NC’s visitors come from within North Carolina and about three-quarters are from within the United States. India, the United Kingdom, China, Canada, and Germany represent the most significant portion of international visitors.

The top uses of REACH NC (as revealed by inquiries to REACH NC staff and voluntary forms users fill out when contacting experts through the REACH NC system) are for research on expert activity in NC, identifying expert speakers or panelists, finding collaborators on grant proposals, projects or publications, and economic development and business recruiting. Although the biomedical and life sciences are the most well-represented disciplines in REACH NC’s current expertise network, the system also includes experts from a broad range of disciplines such as engineering, social science, education, and public health.

In keeping with its goals and priorities, REACH NC serves as a useful tool for its four primary audiences: faculty/experts, university administrators, the business community, and the public (see figure 3).

For faculty/experts and university administrators, it is particularly valuable for:

- Finding new collaborators outside researchers’ existing networks.
- Aggregating faculty activity information for internal



and external institutional reports.

- Identifying individuals who are eligible and qualified for awards.
- Identifying subject matter experts to speak at events.
- Finding internal experts to review proposals for funding opportunities.

For the public and business community, it has been used for:

- Identifying collaborators and consultants for external partners such as private businesses.
- Accessing expert reviewers, speakers, and advisors for nonprofit organizations and foundations.
- Highlighting North Carolina’s expertise and capacity for economic development purposes.
- Answering public inquiries about past publications and research.

Evolving Capabilities and Future Growth

REACH NC is still being actively developed and improved to respond to evolving technological capabilities and users' needs. A primary goal for 2014 is to make public an additional 9,000 expert profiles that are currently being populated and tested. In addition, several projects are underway to improve the quality of content available on the portal, as well as to maintain and improve the site's technical backbone. Long-term sustainability plans are being developed under the guidance of the REACH NC Executive Council.

The Upshot

REACH NC serves the people and businesses of North Carolina—as well as the larger research community—by providing an easy-to-use portal for finding experts and research assets in diverse fields from biomedical research to education. Unlike other databases and Web-based professional network

In the mid-term, the REACH NC team is focused on broadening the portal's relevance and applications for a variety of uses. In particular, developers are striving to make REACH NC more useful for administrative efficiencies, grant development, faculty, staff, and student recruitment, successful business attraction and retention, and increasing research funding and activity. The collections of researcher profiles and research assets are being actively expanded, and additional tools, such as new visualization capabilities, are being developed to enhance the utility of REACH NC data.

systems, REACH NC provides expert profiles that are automatically generated, accurate, comprehensive, and current, allowing users to quickly identify experts, explore relationships between experts or institutions, and analyze North Carolina's overall educational and research capacity.



Stories of Success

Although many of its uses go untracked, anecdotes and user feedback reveal that REACH NC is successfully serving its users for the benefit of researchers, businesses, and the state as a whole. Here are a few examples:

- REACH NC was awarded the 2013 Award of Excellence in Leadership and Collaboration in a national competition conducted by the University Economic Development Association. The highly competitive program recognized REACH NC for its innovative use of public and private partnerships to help transform North Carolina's campuses into engines of economic prosperity.
- REACH NC has been used by multiple research teams during the preparation of large research and development grants. For example, the portal was used to find data and collaborators to support UNC's application for the National Institutes of Health Clinical and Translational Science Awards (CTSA), leading to an award of \$54.6 million.
- NC Secretary of Commerce Sharon Decker used REACH NC as a recruitment tool to showcase the number of vaccine experts in North Carolina during a meeting with a vaccine manufacturing company considering expansion of operations in the state.
- A solar panel production company that brought 75 manufacturing jobs and 30 management positions to Henderson, NC, has used REACH NC to learn about energy experts and resources available in the state, and is continuing to use REACH as it considers expanding.
- A Triangle area economic development agency used REACH NC to identify expert collaborators for two ongoing projects: recruiting a landfill-to-methane gas project to the state, and helping a tire recycling company relocate their operations to the state.

What REACH NC Users Are Saying...

Here is a sampling of user testimonials from economic developers and university administrators and faculty interviewed during a recent REACH NC evaluation and improvement project:

"I use REACH NC any time I'm promoting brainpower in North Carolina."

"REACH NC is the best thing out there that does what it does. It is a real model and has a lot of potential."

"More people need to know about REACH NC. Economic developers at all levels - local, regional and state - should know the tool is there and know its uses."

The Big Picture

The impact of REACH NC stretches beyond the state of North Carolina, its research institutions, and its business development initiatives. Because REACH NC is based on technological foundations that are available nationally, similar projects could be developed for other states or research communities. In fact, six other states and one Canadian province have

already contacted REACH NC representatives to learn how they can replicate the model. As leaders explore their expert profiling needs and resources, REACH NC is serving as a national model for the technologies, user interfaces, and features that can transform a large, complex database of information into a truly comprehensive, useful gateway for multiple scientific, educational, and economic benefits.

About RENCI

RENCI, an institute of UNC Chapel Hill, develops and deploys advanced technologies to enable research discoveries and practical innovations. RENCI partners with scientists, policy makers, and industry to engage and solve the problems that affect North Carolina, the U.S., and the world. RENCI is a collaboration involving UNC Chapel Hill, Duke University and North Carolina State University. For more information, see www.renci.org.

