

CCITT Annual Report 2007

Center for the Commercialization of Innovative Transportation Technology

January 1, 2007-December 1, 2007

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CCITT's Theme

The theme of the Center for the Commercialization of Innovative Transportation Technology (CCITT or "see it") at Northwestern University is to foster the commercialization or implementation of innovative technologies for multiple modes of surface transportation including, but not limited to, railways, mass transit, highways and waterways.

Our goal is to fund late-stage or translational research projects and to provide commercialization consulting services that will result in the implementation of innovative transportation technologies. A formidable challenge, however, is the transition from research ideas generated in a university research environment to implementation in the commercial (public or private) sector. This challenge is not to be taken lightly. A primary barrier to the transition of research

ideas to implantation is the unavailability of development funding between government research grants and capital from the private sector. The outcomes of university-based basic and applied research projects quite often do not result in a concept readiness level suitable either for licensing or company formation, and therefore commercialization and implementation.

MIT's Deshpande Center for Technological Innovation refers to this development funding between research ideas and implementation as the "innovation gap" as shown in Figure 1. Thus, CCITT focuses on funding late-stage or translational research projects at Northwestern that support the needs and priorities of state and federal public transportation agencies and private sector transportation and logistics companies in an

effort to bridge this "innovative gap". In an effort to nurture the transition from idea to implementation, the Center will also provide guidance and assistance with the commercialization process before, during and after the translational research projects.

Stage of Technology Transfer

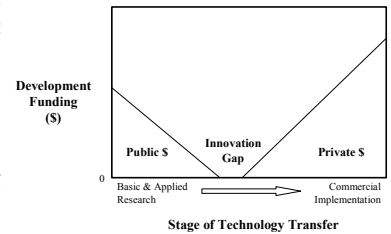


Figure 1. Along the continuum of technology transfer from research to commercialization implementation of products evolving from a university research environment, a funding gap exists (the "Innovation Gap") between government (public) research grants and capital from the private sector.

Management Structure

CCITT is managed by Northwestern University's Office for Research. CCITT operates synergistically with another Northwestern center, the Homeland Security Innovation and Entrepreneurship Center (HSIEC), that specializes in the commercialization of technology innovations. The Director of

HSIEC acts as the Director of CCITT as well. As shown in Figure 2, the CCITT/HSIEC Director reports to the Associate Vice President for Research Operations at Northwestern University.

HSIEC, funded by the State of Illinois, assists entrepreneurs and high-growth, small businesses with developing

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Management Structure, continued...

solutions for transportation system surety (i.e. resilience and security). HSIEC has formed a strong advisory board to fulfill its mission. HSIEC's advisory board consists primarily of private-sector corporate members from the transportation, logistics, defense, and critical infrastructure industries for guidance on market needs in transportation surety.

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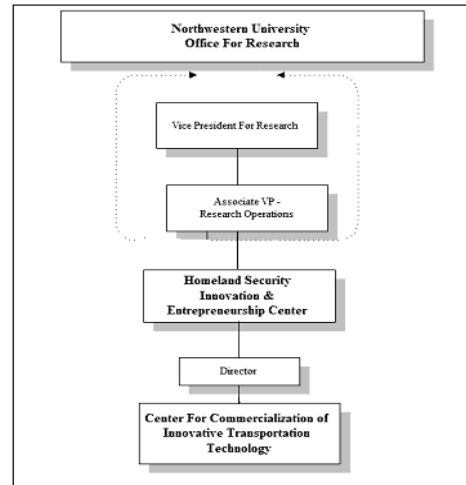


Figure 2. Northwestern Organizational Chart for CCITT

Overview of Center Programs

EDUCATIONAL PROGRAM
Northwestern University has a long history of supporting transportation related education through several academic departments and centers including the Department of Civil and Environmental Engineering, the Department of Industrial Engineering and Management Science, the Infrastructure Technology Institute and the Transportation Center in the McCormick School of Engineering. The two aforementioned engineering departments offer the primary courses in transportation and logistics at Northwestern.

In addition, the McCormick School has a strong focus on design engineering, entrepreneurship and innovation. These activities are driven by the Institute for Design Engineering and Applications and the Center for

Entrepreneurship and Innovation.

Our education program goal is not to create new transportation courses but to leverage the existing transportation courses and courses in the design engineering curriculum to engage students in transportation design and development problems. Our desired outcome is to increase the number of students participating in transportation design projects through exiting courses and through innovation gap research projects.

The Center will engage students to explore the safety, mobility, global connectivity, environmental impact, and security of our country's surface transportation systems in three primary ways.

1. Three to six undergraduate, graduate, doctoral or post-

doctoral students per year will participate in late-stage, innovation gap research projects.

2. CCITT intends to collaborate with various existing programs and centers at Northwestern to engage students in the surface transportation field. These include the Institute for Design Engineering and Applications, the Center for Entrepreneurship and Innovation; and the Medill Integrated Marketing Communications Program.
3. Identify leaders from the transportation industry for on-campus speaking opportunities similar to the Center for Entrepreneurship and Innovation's speaker series.

CCITT will also select one stu-

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Education, Research and Technology



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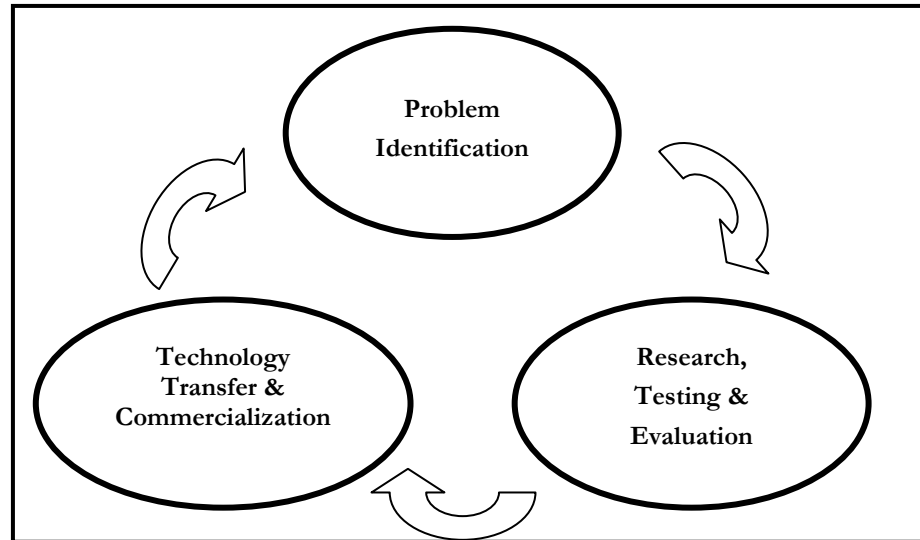


Figure 3. CCITT expects to foster a continuous cycle of problem identification, research, and commercial impact.

dents participating in research projects and classroom-based design projects, award the student a \$1000 stipend and send the student to the winter meeting of the Transportation Research Board.

RESEARCH PROGRAM

The ultimate goal of our research program is to increase the implementation of university developed technologies and applications in the surface transportation community. As shown in Figure 3, CCITT intends to establish a self-reinforcing research program cycle that consists of three basic elements: Problem Identification; Research, Testing and Evaluation; and Technology Transfer and Commercialization.

Our research program will emphasize applied (translational or innovation gap) research activities and not basic research studies. The Center expects to fund and monitor three to six independent research projects per year.

The characteristics of typical funded projects are expected to

be:

- Proof of concept development, feasibility demonstrations, product risk-reduction studies, prototype development, etc.
- Novel, unique, and potentially disruptive technology
- Technical risk reduction primarily, but business risk reduction considered
- Market or need driven projects as defined by transportation practitioners
- Measurable outcomes: projects must identify milestones that if achieved would lead to successful commercialization

TECHNOLOGY TRANSFER PROGRAM

CCITT will provide a sound platform for technology transfer and implementation of market-driven opportunities. In addition to fostering the transfer of information through the traditional academic means of papers and presentations, CCITT seeks to foster direct relationships with transportation practitioners. Our program will require collaboration with public

or private sector transportation practitioners, and public or private sector transportation data sources.

CCITT will use various platforms of communication to bridge the academic and practitioner knowledge and information gap. First and foremost, CCITT will establish an advisory team (or steering committee) of stakeholders for each research project team that will provide insight and feedback to the team during the course of the project. We anticipate this advisory team will act as champions for the transfer of the technology as well. In addition, CCITT will seek to bridge the innovation gap through personal relationship building and Center-sponsored workshops and seminars. At the end of each quarter, CCITT plans to convene a seminar to present the outcomes of each research project to the local and regional transportation community in partnership with Northwestern's Transportation Center.

Center for the Commercialization of
Innovative Transportation Technology

Center Accomplishments



CCITT is a newly formed Tier II University Transportation Center. The strategic plan for CCITT was approved in November 2007, near the end of our first grant reporting period, December 31, 2007.

CCITT completed the following by the end of 2007:

- Submitted and received approval for strategic plan
- Establish a two-phase research proposal process
- Recruited a peer review committee to review the research proposals
- Launched an effort to develop the Center webpage
- Launched an effort to recruit support staff for the Center

In November 2007, CCITT issued a call for proposals campus wide for innovative transportation research projects. As anticipated, proposals were received from traditional sources of transportation research and non-traditional sources in the McCormick School of Engineering and the Weinberg College of Arts and Sciences. During November and December 2007, CCITT received pre-proposals from several principal investigators on the Northwestern campus. A subset of these investigators was selected to submit full proposals. These proposals were sent out for review in December. CCITT reviewed, approved and awarded research projects and notified principal investiga-

tors in January 2008.

A common theme was observed from the full-proposal round. Each proposal in some way, shape or form addressed the issue of transportation system resiliency. In relation to the national strategy for surface transportation, the research projects selected will address congestion issues, environmental impact issues, and safety issues. But at the end of the day, our goal at CCITT is to push the research down the path to make an impact on the transportation community after the completion of the projects. We look forward to this challenge.

Funding Sources and Expenditures, Fiscal Year 2007



The strategic plan for CCITT, a newly formed Tier II University Transportation Center, was approved in November 2007. CCITT's items of expenditure are estimates based on the strategic plan and sources of funding. In FY 2007, all actual expenditures were related to administration expenses. The final breakdown of the Center's sources of funding will be driven by the matching sources of funding established through Center-selected research projects. Two primary sources of funding are from the Federal Grant and from the State of Illinois Department of Commerce and Economic Opportunity. CCITT also anticipates a significant source of funding from Northwestern University as a matching source of funds to the research projects. Therefore, figures 4 and 5, respectively, demonstrate our best estimate of funding sources and expenditures for our first grant year cycle.

Figure 4. CCITT Sources of Funding

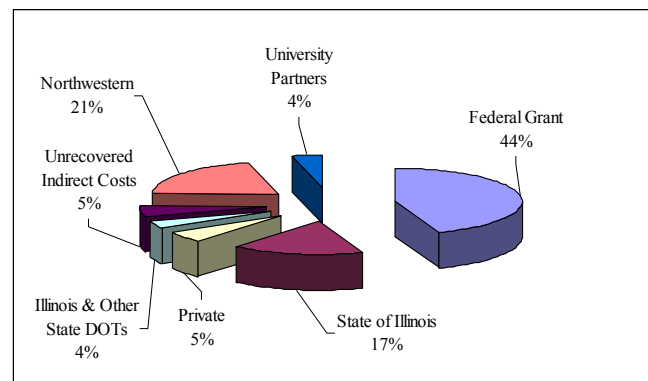
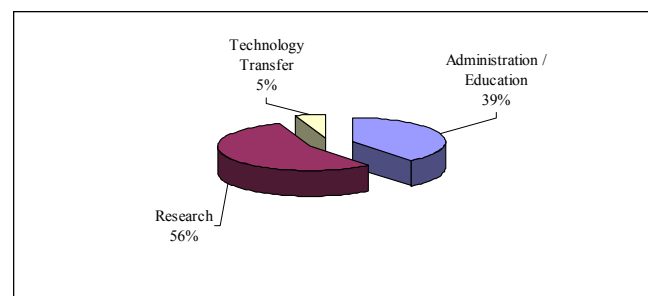


Figure 5. CCITT Categories and Expenditures





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