



**iCORE**

ALBERTA INFORMATICS  
CIRCLE OF RESEARCH EXCELLENCE

# newsletter

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## Innovation strategy for Alberta to define key strengths

Senior leaders at Alberta universities, government and research organizations are mobilizing the development of an innovation strategy specific to Alberta. It is designed to clarify Alberta's strengths and profile within the Canada Innovation Strategy that Industry Minister Allan Rock is activating this fall.

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**If we are proactive in developing a strategy for Alberta, then we can better shape the way we achieve our goals – that is, excellence in our target areas of strength and ingenuity.**

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The Alberta-specific plan was initiated by iCORE President Brian Unger after Allan Rock met with Alberta innovation leaders in the spring. Rock was travelling across Canada and holding small group meetings in anticipation of the launch of Canada's Innovation Strategy, and sought the views of researchers and university administrators on how the strategy might take shape in different parts of the country.

"If we are proactive in developing a strategy for Alberta, then we can better shape the way we achieve our goals – that is, excellence in our target areas of strength and ingenuity," Dr Unger explained.

Alberta's strengths must be identified with some precision, according to Dr Elizabeth Cannon, who is helping to spearhead the group.

"We need to focus on aspects of innovation in which Alberta has demonstrated strength. This will help create a distinct role for Alberta in the fabric of the larger Canada Innovation Strategy," she explains.

The initial documents describing Canada's Innovation Strategy consist of two papers, one that focuses on people as the greatest resource in a knowledge-based society. The second is a plan for building a more competitive economy, and proposes goals in four key areas:

- 1) finding better ways to create knowledge and bring these ideas to market;
- 2) finding ways to develop, attract and retain "the best and brightest";
- 3) looking at ways to improve business and regulatory policies that support innovation;
- 4) supporting innovation at the local level so that communities are magnets for investment and new ventures.

The federal initiative was undertaken in response to economic indicators that show that real income is falling in Canada, and a gap is emerging between incomes in Canada and our closest neighbour, the United States. The report explains, "If we do not narrow the gap further, we risk an outflow of talent and capital, which could contribute to a decline in our standard of living and, ultimately, the quality of life of Canadians." It concludes that the gap is due to a productivity gap, but that prospects for improved productivity, as a result of support for innovation, are bright.

While this Alberta-wide effort takes shape, iCORE is drafting a white paper on its role within the Canada Innovation Strategy to inform the larger initiative.

## Province-wide communications group formed

A newly formed information and communications technology (ICT) communications group met in July for the first time to explore ways of bringing together disparate communications efforts all similarly designed to support the development of Alberta's ICT sector.

The group includes the communications directors from the research universities (Alberta, Calgary, Lethbridge), as well as from the Alberta Research Council, Alberta Informatics Circle of Research Excellence, Alberta Ingenuity Fund, TRILabs, Netera Alliance, and Innovation and Science.

"Success of the development of Alberta as an ICT cluster of excellence depends on the combined efforts of a number of stakeholders," according to an Innovation and Science report advocating the creation of this group.

"It makes a great deal of sense to establish a mechanism for regularly sharing updates on each others' campaigns, for exploring ways of collaborating on campaigns, for having a forum to discuss things like joint advertisements – which have significant impact but are too expensive for any single organization," iCORE's Director of Communications Mary Anne Moser says.

"There is also a strong subtle message in showing unified support for a vision of ICT in Alberta. It expresses confidence."

The group will meet periodically throughout the year, and will dovetail its efforts with the emerging Alberta Innovation Strategy, so that the role of ICT can be positioned within the bigger picture of Alberta innovation.

# New iCORE Visiting Professors program announced

iCORE has launched a new grant program to support visiting professors in information science and engineering at Alberta universities for periods from six months to two years.

The iCORE Visiting Professor program is designed to promote research innovation and global collaboration by bringing leading researchers to Alberta, fostering collaborative pursuits, and promoting the Alberta research community in a global research arena.

Awards are in the range of \$50,000 to \$250,000 and may be used to host a world-class visiting professor at an Alberta university. Grants may be renewed for up to an additional year.

"Researchers were telling us that they needed

## PROGRAM HIGHLIGHTS

- supports Visiting Professors working in information science and engineering
- Alberta universities act as host
- six months to two year stays
- \$50,000 to \$250,000 awards

a program that would help them bring the world's best to Alberta for half-year to two-year stays," iCORE's Director of Programs Lynn Sutherland explains. "iCORE's flagship grant programs

typically require a three- to five-year commitment, and that is often too much for well-established researchers who are settled elsewhere. But at the same time, we want to help facilitate collaboration with these researchers."

The program was officially proposed by Dr Witold Pedrycz in the department of electrical and computer engineering at the University of Alberta. He explained that "excellence, innovation and global collaboration are particularly dependent on a vibrant collaboration between researchers coming from different research cultures and residing in different countries. Such collaborations are critical in fast moving and highly competitive areas such as information and communications technology (ICT)."

In addition to the goal of fostering collaboration, key objectives of this program are to:

- Strengthen existing areas of expertise in university science and engineering research departments and the Alberta research community in general;
- Explore possibilities and assess new emerging research areas;
- Increase awareness of Alberta as a strong, well-funded and innovative research environment;
- Enable exploration of Alberta by top researchers prior to making a long-term commitment.

iCORE Visiting Professors are internationally recognized in one of the target areas of research supported by iCORE. They are typically in the top five percent of their fields with outstanding research records. Successful candidates may come from academia, government or corporate research institutions or industry.

Evaluation criteria are similar as for iCORE's flagship grant programs, requiring, for example, evidence of research excellence, ability to help develop an internationally recognized research team, and clear benefits to the university.

The university department or group of researchers that will host the visiting professor must initiate the application. Proposals are accepted at any time.

For more information, visit [www.icore.ca](http://www.icore.ca) or contact Lynn Sutherland at 403-210-5335, [sutherland@icore.ca](mailto:sutherland@icore.ca).

## FALL SCHEDULE

### iCORE Distinguished Lecturer Series

The iCORE Distinguished Lecturer Series will continue this fall with lectures from world-class researchers and iCORE grant recipients.

The purpose of the lecture series is to present highlights of research in information science and engineering that is relevant to Alberta research teams, and to create a regular forum to network and share ideas concerning research related to the information and communications technology (ICT) sector in Alberta. As the series progresses, it is also intended to increase awareness of the scope, quality and potential impact of excellent information science and engineering research in Alberta.

Wednesday September 18, 4 pm

**MARK FREEMAN**

*The physics of small in nanotechnology*

*Live location:* Biosciences 587, U of C  
Reception to follow

Wednesday October 16, 4 pm

**CAREY WILLIAMSON**

*The future of broadband wireless*

*Live location:* Civil Engineering 231, U of A  
Reception to follow

Wednesday November 13, 4 pm

**HUGH WILLIAMS**

*The mathematical foundations of communications security*

*Live location:* Civil Engineering 231, U of A  
Reception to follow

#### Multicast locations

This lecture series is multicast to several locations on the Alberta Video Classroom Network.

Multicast locations include:

University of Alberta (Telus Centre 134)

University of Calgary (Biosciences 587)

Mount Royal College (T107)

SAIT (TRT 304)

NAIT (H003)

#### Webcast

Webcast available at

[www.icore.ca](http://www.icore.ca) 24 hours later

# Better understanding of wireless traffic in the works

Telus Mobility and the Alberta Informatics Circle of Research Excellence (iCORE) have partnered to create an Industrial Research Chair in the area of Wireless Traffic Modeling and Simulation at the University of Calgary.

Dr Carey Williamson, currently an iCORE Professor in Broadband Wireless Networks, will receive \$100,000 a year from both Telus and iCORE for five years to undertake research into the modeling and analysis of wireless Internet traffic.

Research goals include developing and validating traffic models for different wireless service classes such as voice, email, images, video, multimedia and web access. The goal of the research is to support the design and provisioning of wireless and wired backbone networks.

A request for proposals for this award was issued earlier this year, citing the need for an exceptional researcher involved in industry-oriented research.

"Dr Carey Williamson is one of a kind, with a research program full of innovation, focus, and promise for short-term application to meet the needs of his corporate partners," says Fred Stewart, iCORE's Director of Corporate Relations. "We want

to encourage research, where appropriate, that will benefit companies that invest in explorations for the future."

Telus is a company with interests in Alberta that can be well-served by university-based research. Through this Chair, Telus aims to support research into providing sufficient headroom for voice and data traffic on its network.

## RESEARCH PROGRAM DETAIL

On voice services the traditional method for provisioning is to model the number of channels versus occupancy of the channels, in order to maintain a blocking grade of service. Voice traffic intensity is characterized by specifying the number of busy hour call attempts and the average holding time per call.

Then, using a model for a given blocking probability, the number of channels required per sector is determined. In some types of data transfer, this method works, assuming an average power per user going out, and an average pole capacity and loading on the reverse path; all three factors need to be determined per sector.

TELUS Mobility assumes voice and data

traffic can be modelled separately in a mutually exclusive environment. Therefore there exists a need for a method to model fundamental and supplemental data channels in opposition to the occupancy of the channels to maintain data throughput, or packet delay probability.

An initial three-step provisioning methodology will give TELUS Mobility an efficient plan for network growth leading to competitive service level. These initial steps are to:

- Develop a method for characterizing data traffic intensity for specific data services and the combination of these services;
- Develop a rule of thumb occupancy versus channels, for maintaining a data throughput;
- Define the range of accuracy of the rule of thumb and factors having the largest impact.

As part of the award, an application for matching NSERC funding for the Industrial Chair will also be sought within a year.

The award begins September 1, 2002.

## New iCORE report a window on research progress



Progress and highlights of iCORE-funded research teams will be published this fall in an inaugural volume of the iCORE Research Report.

The 80-page publication outlines the activities and achievements of the iCORE research teams that have been established in conjunction with Alberta universities and industry. The volume conveys the exceptional energy and calibre of iCORE-supported research teams.

It includes full reports on the progress of all iCORE research teams that have completed at least one full year of operation and preliminary reports from the newer award recipients. Topics include research program overview, research highlights, list of team members, collaboration activities and publications.

Full reports are provided by: Norman C. Beaulieu, Graham Jullien, Michael Brett and Mark Freeman, Gerard Lachapelle and Jonathan Schaeffer.

Preliminary reports are also included from recipients of iCORE establishment grants who have not yet completed a full year, including: Guenther Ruhe, Christian Schlegel, Hugh Williams, Carey Williamson.

To obtain a copy of this report, contact Betty Ann Snyder at 403-210-5489 or [snyder@icore.ca](mailto:snyder@icore.ca).

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## President's Report

We fully expected that summer would be a time when things would slow down, but that has turned out not to be the case. iCORE finalized a new grant program this summer, confirmed two new Chair appointments, initiated development of an Alberta strategy for university research as part of the Canadian Innovation Strategy, supported four conferences, and prepared its first Research Report – to mention a few.

This is just the secretariat business. The activities of the Informatics Circle of Research Excellence are much more impressive. The "circle" now includes an impressive and expanding list of stellar research teams:

- Wireless Communications Laboratory
- Advanced Technology Information Processing Systems
- Wireless Location Research Group
- Nanoscale Engineering Physics Initiative
- High Performance Artificial Intelligence Systems Laboratory
- Broadband Wireless Networks
- Software Engineering Decision Support
- Algorithmic Number Theory and Cryptography
- High Capacity Digital Communications

We are preparing to launch two more research teams this fall:

- Wireless Science and Technology Initiative
- Wireless Traffic Modeling and Simulation

These research teams have come about as a result of the energy and vision of key researchers at Alberta universities. I would like to take this opportunity, on a bright August day, to reflect on the role that exceptional Alberta researchers and program administrators have played in making this happen – and to thank you.

## Year in Review now available

The 2001-2002 annual report for iCORE is now available. The 32-page glossy publication uses the theme of the "power of ideas" to highlight new awards and progress in iCORE's second full year of operation. Dr Robert Church's notebook, showing the page where he first scribbled down the idea for iCORE, sets the stage for the report.

Copies are available from the iCORE secretariat. Contact Betty Ann Snyder at (403) 210-5410 or [snyder@icore.ca](mailto:snyder@icore.ca).

## Summer conferences make links

iCORE participated in several major summer conferences held in Alberta this summer, in areas related to its target research areas.

Connections were made that may help to build Alberta's research teams through sponsorship of conferences including the National Conference on American Association Artificial Intelligence, International Conference on Knowledge Discovery and Data Mining, International Conference on Intelligent Systems for Molecular Biology, and International Conference on Cognitive Informatics. iCORE also helped several start-up companies supported by Calgary Technologies Inc make connections with the research community through use of its booth space at the Intelligent Systems for Molecular Biology conference.

Sponsorship of conferences helps to demonstrate Alberta's support for innovative and outstanding research programs to international audiences of researchers.

Researchers interested in iCORE support to increase the exposure and profile of research teams in information science and engineering at Alberta universities should apply for iCORE's Informatics Strategy, Planning and Recruiting (ISPR) grants. More information is available at [www.icore.ca](http://www.icore.ca).