

**CANADIAN SCIENCE POLICY
CONFERENCE**

**WORKSHOP / SYMPOSIUM 2
SCIENCE DIPLOMACY**

INSTITUTIONAL LINKAGES AND ACADEMIC / GOVERNMENT / PRIVATE PARTNERSHIPS

**CANADIAN & INDIAN SCIENCE & TECHNOLOGY
SECTOR**

(CANADA – INDIA S&T MAPPING STUDY)

AUTHORS

- **RAVI SEETHAPATHY - IIT ALUMNI – Co-CHAIR**
- **DR. DAVID JOHNSTON – THEN PRESIDENT,
UNIVERSITY OF WATERLOO – Co-CHAIR**

PREPARED FOR THE GOVERNMENT OF CANADA - 2004

INSTITUTIONAL AGREEMENTS

Canada-India Science & Technology program

- **Institutional agreements signed in Mumbai, during visit of Premier of Ontario, Hon. Dalton McGuinty to India, January 2007**
- **York University & Indian Institute of Technology, Bombay – 2007 in Mumbai, India**
- **McMaster University and Indian Institutes of Technology Bombay, Kanpur and Madras –2007, 2008 in Mumbai, India.**
- **University of Toronto and Indian Institute of Technology, Bombay, 2012 in Toronto, Canada.**
- **Ryerson University and Indian Institute of Technology, Bombay, 2012 in Toronto, Canada**
- **Waterloo University and Indian Institute of Technology, Bombay 2007, 2012 in Mumbai, India and Waterloo, Canada**

CANADA – INDIA S&T

ONTARIO DELEGATION & INSTITUTIONAL AGREEMENTS SIGNED – MUMBAI - 2007



Face-to-Face Meetings Strengthen India-Ontario Connections



While half a world may geographically separate India from Ontario, Canada, an increasing number of connections are bringing the two closer together, especially in the field of research collaborations.

In January 2007, Ontario Premier (and the province's first Minister of Research and Innovation) Dalton McGuinty led a delegation of more than 100 business and academic leaders on a seven-day mission to India. The goal was to promote two-way trade, investment and research collaborations.

"We are impressed by the exciting India of today and we are intent on playing a bigger role in India's future," said Premier McGuinty while delivering his first major speech of the trade mission. "We are focused on areas where we

can help Ontario, by developing the opportunities that will, in turn, strengthen our people."

Two-way trade between India and Ontario is growing – increasing to \$1.1 billion annually from what it was five years ago. Ontario is also home to more than 470,000 Indo-Canadians, one of the largest communities outside of India.

During the January mission, a series of seminars, roundtables and one-on-one meetings brought Ontario delegates together with more than 800 Indian guests and potential partners in four cities: New Delhi, Mumbai, Bangalore and Chandigarh. So far, the India mission has resulted in eleven Memorandums of Understanding between academic and research organizations in Ontario and India.

CANADA – INDIA S&T

PRESIDENTS OF CANADIAN UNIVERSITIES AT VICE CHANCELLORS' CONCLAVE – IIT-BOMBAY



Strategies for Growth

In order to help articulate a strategic vision for IIT Bombay, an international Vice Chancellors Conclave was held in January 2008 to share ideas and experiences among academic leaders on how to create and sustain growth and to be among the leading research universities in the world. Here's a brief glimpse into what was discussed.

Fifty years ago:

India's IITs will "provide scientists and technologists of the highest calibre who would engage in research, design and development to help building the nation towards self-reliance in her technological needs ...

- Jawaharlal Nehru (1958)

Today:

In the emerging scenario, the IITs have a glorious opportunity to play their role in the cutting-edge fields of science and technology. For this to become a reality, IITs have to rank par passu with the best in the world. The IIT brand has, therefore, to be moved up the value ladder from the undergraduate to the post-graduate and PhD range and even beyond post-doctoral level to move mature heights

CANADA – INDIA S&T

PRESIDENT OF U WATERLOO (Presently, Governor General of Canada with Director, IIT-Bombay in Mumbai



and an exchange of faculty and students. Common areas of interest have been broadly identified. They include organic electronics, thin films, Micro Electro Mechanical Systems (MEMS), nano-biotech, nano-measurements and nano-bio-systems.

India-Ontario nano workshop held at University of Waterloo

To begin exploring possible collaborations, the Ontario Ministry of Research and Innovation sponsored a joint India-Ontario nanotechnology workshop at the University of Waterloo in June 2007. The workshop brought together experts to showcase each jurisdiction's relative strengths in nanotechnology research and to enable the researchers to make person-to-person contacts.

"Research is really a contact sport," said the University of Waterloo's Christopher Pringle, one of the workshop organizers. "Workshops like these provide the forum where the experts can make contact."

The workshop brought together 90 participants from, among other organizations, the Indian Institute of Technology (IITB), the Indian Institute of Science (Bangalore), five Ontario universities, other leading research organizations from both countries and large companies such as Tata Consultancy Services (TCS) and Xenix Canada.

Keynote speakers included Professor Ashok Mitra (Director, Indian Institute of Technology, Bombay), Professor Raymond LaFlamme (Director, Institute for Quantum Computing, Waterloo) and Ontario's Deputy Minister of Research and Innovation Dr. Alexandre Gosselin.

Over a five-day period, the workshop participants held themed discussions and visited nano research facilities at three universities (Waterloo, McMaster University in Hamilton and the University of Toronto). They were also briefed on nano research underway at two other universities, Queen's University in Kingston and the University of Western Ontario in London.

"It was an incredibly productive workshop," said Waterloo's Patricia Nieve, Assistant Professor in the Department of Mechanical Engineering. "We 'clicked' in many, many ways. We were able to identify a number of specific projects where collaboration makes a lot of sense. In some cases, they have state-of-the-art equipment to do the materials development and we have top-line equipment that can do the fabrication. Our areas of research are very much in synch."

"The chemistry between the researchers was excellent," said Pringle. "We're well on the way to pulling some real meat on our project ideas."

In addition to developing specific project proposals, one

to all the Faculty, students and staff of

the Indian institute of Technology, Bombay.



Waterloo
ENGINEERING

UW President David Johnston and Prof. Ashok Mitra, taken at the MOU signing ceremony during the visit of the Premier of Ontario, Hon Dalton McGuinty in January this year.

Warmest wishes and congratulations of the upcoming celebrations of your Golden Jubilee.

The University of Waterloo commemorates its 50th anniversary this year.

As we move forward we hope our collaborations and partnerships will grow and prosper.

From the faculty, students and staff at the University of Waterloo.



CANADA, USA, INDIA - S&T



GLOBAL IMPACT

PRESIDENT BILL CLINTON – CALLS IIT ALUMNI TO PARTNER IN AMERICA’S GROWTH PAN IIT 2009 IN CHICAGO

“...I have immense respect for the role that IIT has played in all of its campuses in the growth of India and now in the growth of the United States.”
- President Clinton

“... He was the 42nd president of U.S., the 1st democrat to be awarded two terms in 6 decades. He is also the 1st president who started a deep friendship with India; he went to India and spent four days there, visited its villages and got to know the people. He loves India and he loves Indian food.” - Vin Gupta



Thank you very much.

Thank you... Thank you very much.

First I want to thank my good friend (Vin Gupta) here for his introduction. Thank you very much for inviting me. I would like to thank my friend, Vin for a Raja is now the president of global fund on HDV. We do a lot of work together and together we started something called The America-India foundation which I expect some of you have either contributed to or have been asked to contribute to after the Gujarat earthquake and they are doing wonderful work in India now. I would also like to thank someone here from my foundation, K. D. McLean who runs our climate change work here in Chicago. We worked for the city of Chicago on retrofitting the merchandise on the America's biggest building to be much more energy efficient, and many of you who come from around here will know that Chicago is also the number one city in America when it comes to between the roofs over the buildings, the easiest thing you can do to cut your air conditioner bill or your heating bill. I am delighted to be here for a number of reasons, first of all I have immense respect for the role that IIT has played in all of its campuses in the growth of India and now in the growth of the United States and I am very very happy today. Secondly, I think having so many people at a conference on innovation and entrepreneurship

S&T - CONFERENCES

P I T E C H
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**Pan IIT 2010 Conclave
 Sustainable Transformation
 Our New India**

**Conversation with
 Nobel Laureate
 Dr. Ramakrishnan**

**IIT DELHI Celebrates
 Golden Jubilee**

The Expanding Family : Eight new IITs are born



▲ *Anandaree Warrior, CTO, CISCO Systems*

President Bill Clinton at PANIIT ▼



...and in Canada, 27 Sept 2010, Special Convocation for conferment of an Honorary degree on Dr. A P J Abdul Kalam, former President of India, at University of Waterloo, Canada



◀ *Mr. V Prem Watsa (IIT-M), Chancellor, University of Waterloo, Dr. A P J Abdul Kalam, President of India and Mr. Kenneth A Lavigne, Mace Bearer & Registrar - University of Waterloo*



▶ *Dr. David L. Johnston, President & Vice Chancellors, University of Waterloo & Governor General (4 Oct. 2010 -), Canada with Rabin Folia (IIT-B) and Dr. Mitali De (IIT-M)*

CANADIAN DELEGATION AT IIT – BOMBAY, JAN 2013



CANADIAN DELEGATION AT IIT – BOMBAY, JAN 2013



INSTITUTIONAL AGREEMENTS

Also extend beyond the southern borders

Managed from Canada

College of Engineering Pune

and

**Saint Bonaventure University,
NY. USA**

- **Agreement signed in 2012.**
- **Delegation from COEP visited St. Bonaventure University – Oct. 2013**

CANADIAN DELEGATION AT COLLEGE OF ENGINEERING PUNE, INDIA – JAN 2013



FRANK SCARPITTI

DR. ANIL SAHASRABUDHE

CANADIAN DELEGATION IIT GANDHINAGAR, INDIA – JAN 2013



SIGNING MOU AT IIT GANDHINAGAR – CANADIAN INDUSTRY & ACADEMIA, JAN 2013



CANADIAN DELEGATION AT IIT MADRAS RESEARCH CENTER – CHENNAI, JAN 2013



CANADIAN DELEGATION AT IIT MADRAS – CHENNAI, JAN 2013



CUSP – CENTRE FOR URBAN SCIENCE AND PROGRESS – IN NEW YORK CITY

- **A unique public-private research center that uses New York City as its laboratory and classroom to help cities around the world become more productive, livable, equitable, and resilient.**
- **CUSP observes, analyzes, and models cities to optimize outcomes, prototype new solutions, formalize new tools and processes, and develop new expertise/experts. These activities will make CUSP the world’s leading authority in the emerging field of “Urban Informatics.”**

CUSP – CENTRE FOR URBAN SCIENCE AND PROGRESS – IN NEW YORK CITY

Academic institutions

- **New York University**
- **Carnegie Mellon University**
- **The City University of New York**
- **Indian Institute of Technology, Bombay**
- **University of Toronto**
- **University of Warwick**

CUSP – CENTRE FOR URBAN SCIENCE AND PROGRESS – IN NEW YORK CITY

Industry partners

- **IBM**
- **Microsoft**
- **Xerox**
- **Cisco**
- **Consolidated Edison**
- **Lutron**
- **National Grid**
- **Siemens**
- **AECOM, Arup, IDEO**

Agency partners

- **Mayor's Office for Operations**
- **New York City Economic Development Corporation (EDC)**
- **Department of Buildings (DOB)**
- **Department of Citywide Administrative Services (DCAS)**
- **Department of City Planning (DCP)**
- **Department of Design and Construction (DDC)**
- **Department of Environmental Protection**
- **Department of Finance (DOF)**
- **Department of Information Technology and Telecommunications (DOITT)**
- **Department of Parks & Recreation (DPR)**
- **Department of Transportation (DOT)**
- **Fire Department City of New York (FDNY)**
- **Health and Hospitals Corporation (HHC)**
- **Metropolitan Transportation Authority (MTA)**
- **New York City Police Department (NYPD)**
- **The Port Authority of New York & New Jersey**

POND – DESHPANDE CENTER UNIVERSITY OF NEW BRUNSWICK

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ADVISORS

- **RAJ MELVILLE – IIT-BOMBAY, MIT, PITECH EDITOR**
- **+ + + +**

SELECTED EXAMPLES OF STRATEGIC INNOVATIVE NETWORKS

- **SINE: SOCIETY FOR INNOVATION AND ENTREPRENEURSHIP - IIT BOMBAY. CAN WE NOT HAVE COSINE IN CANADA?**
- **FAN : FACULTY ALUMNI NETWORK**
- **Washington University in St. Louis, USA and Indian Institute of Technology(WUSTL-IITB) Corporate Alliance (Nov 2013)**
- **McDonnell Academy Global Energy and Environment Partnership (MAGEEP),**
 - **Solar Energy Research Institute for India and the U.S. (SERIIUS) – SERIIUS is a \$62 million venture jointly funded by the government of India, the U.S. Department of Energy and global corporations.**
 - **Joint Executive MBA program between IIT Bombay and Washington University**
 - **Technology Park near Mumbai**

Challenges and a Path Forward

- **Investment of high level IP (Intellectual Property) by committed S&T people**
- **IP ownership**
- **Project and program identification in specific areas: energy, healthcare, infrastructure**
- **Partner identification**
- **Funding and resource allocation**
- **Application of Technology**
- **Human resource development and its mobility between nations**
- **Search for innovative solutions**
- **Encouraging diaspora to enhance programs**
- **Create S&T jobs and R&D opportunities**

THANK YOU



Rabiz N. Foda

P.Eng. FEC; MIET, SMIEEE

Email: foda@computer.org

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