



# **Centre for Excellence in Mining Innovation**

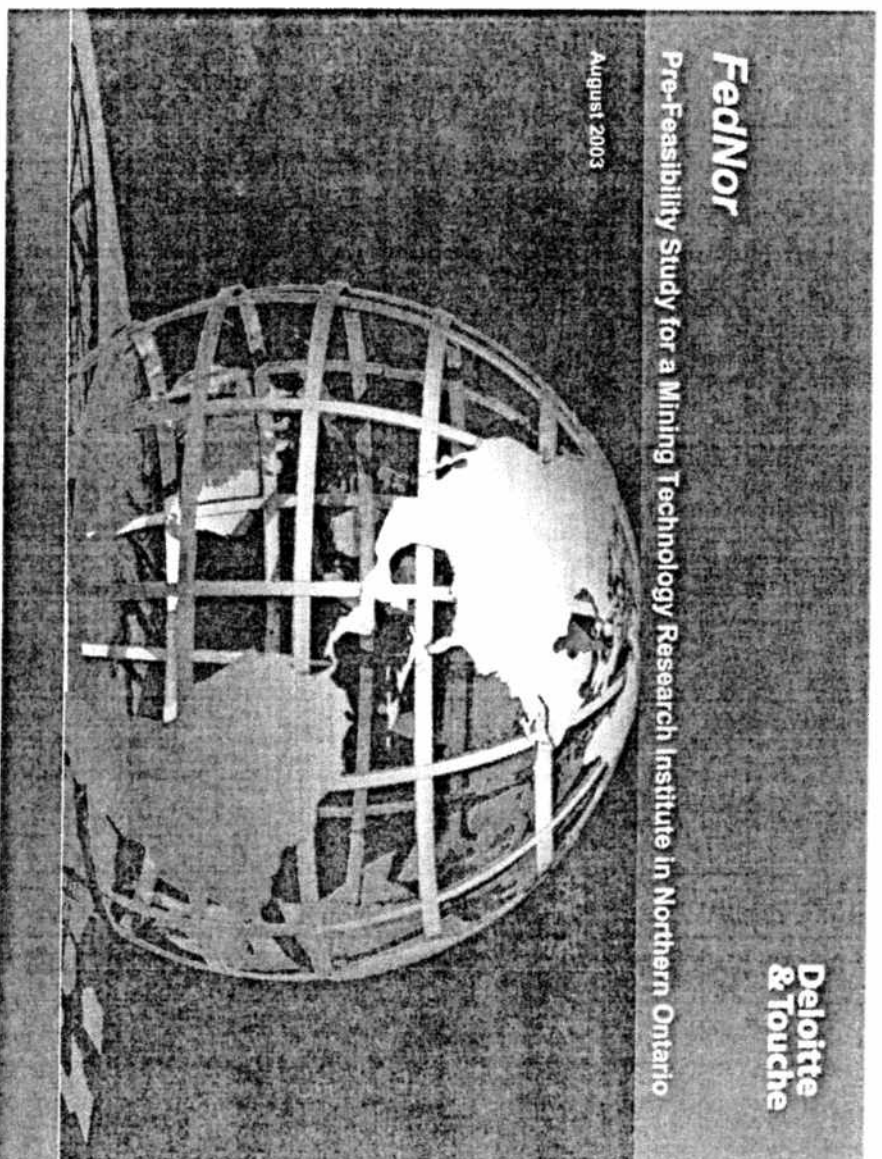
**July, 2006**

**Presentation to the**

**Council of the City of Greater Sudbury.**

**John B. Gammon  
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# August 2003 – Deloitte & Touche



# **Ontario Mineral Industry Cluster Council**

## **Membership – November 2003**

- Major multinational Mines
- Operating Mines
- Junior exploration companies
- Prospectors
- Universities
- Colleges
- Research Institutions
- Mining Municipalities
- Labour Unions
- Environmental NGO's
- Aboriginal organizations
- Multinational equipment suppliers
- Local suppliers of equipment and services
- Federal government
- Provincial government
- Economic development agencies
- Industry associations



**2004-2005**

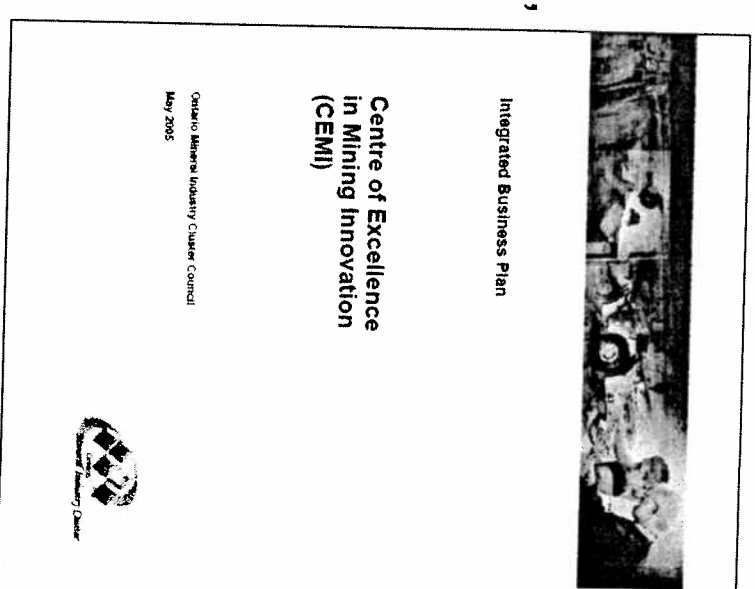
## **OMICC conceived the idea of CEMI**

### **‘Centre for Excellence in Mining Innovation’**

**‘A vision for Sudbury to become an international centre for world class, industry-driven research, advancing state-of-the-art concepts, processes and methodologies in support of the regional, national and international exploration and mining industries, and providers of mining services and supplies.’**

# CEMI Business Plan – May 2005

- OMICC – led
- Five Working Groups (industry, academics, government representation)
- OMICC – identified research themes:
  - Exploration
  - Deep Mining
  - Automation/Telerobotics
  - Environment/Reclamation
  - Mine Process Engineering



Available at [omicc.ca](http://omicc.ca)



## **CEMI Vision:**

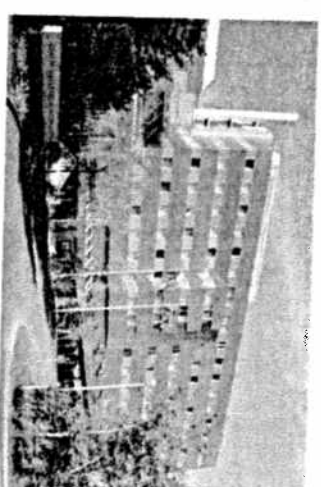
# **Integrated within Sudbury's Mining Cluster**

- Mining operations
- Exploration companies
- Mining supply and service companies
- SAMSSA & CAMESE
- CEMI
- OGS
- CANMET & WGM labs
- NORCAT
- CAMIRO/DMRC
- LU, Cambrian, Boréal
- City of Greater Sudbury

# Laurentian University

## Why Laurentian University:

Laurentian University already hosts 6 mining related Research Chairs, 9 Mining Research Centres and 7 mining-related graduate programs at the M. Eng., M.Sc., and PhD

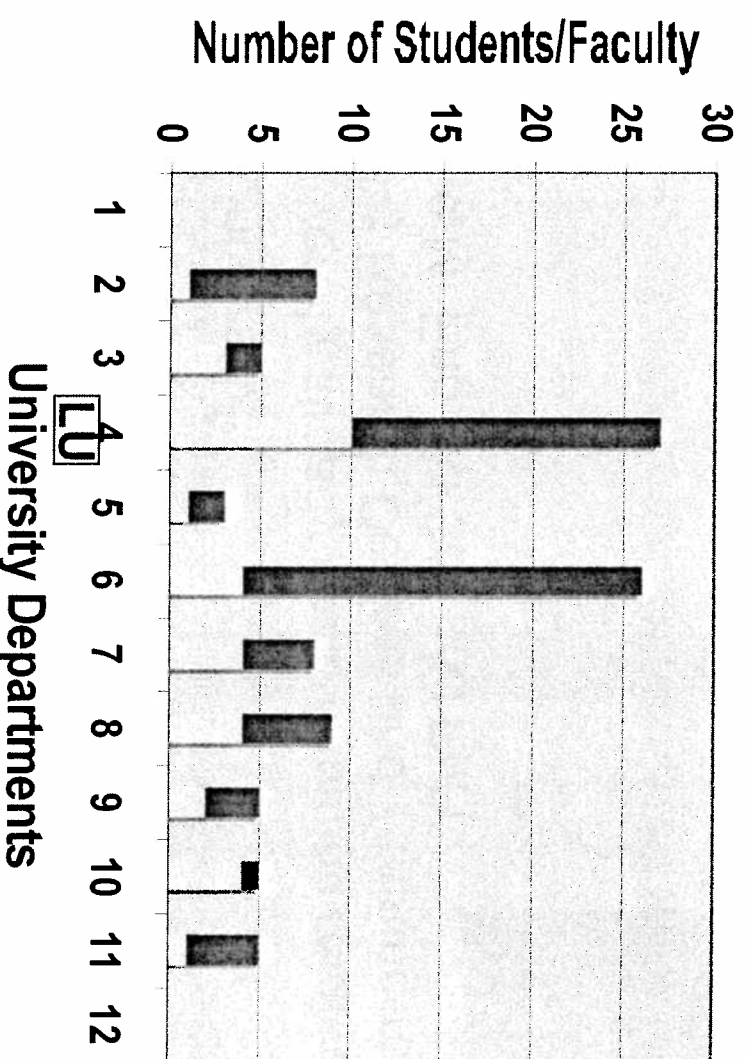


## Laurentian University's Mining Vision:

“Laurentian University will become the National Centre of Excellence in Mining Innovation – education, research, technology, and commercialization – by energetically building on acknowledged strengths in mineral exploration, mining engineering, robotics, and environmental sciences.”

# Mineral Exploration Research Centre (MERC)

## Graduate Students Mineral Deposits and Environments



Number of graduate students (red) and core faculty (yellow) teaching &/or conducting research in mineral deposits within the Ontario University system, by Department.





## **December 16<sup>th</sup>, 2005**

### **Laurentian University announced:**

- Enthusiastically endorsing CEMI Vision
- Allocating funding to develop the concept
- Establishing the Mining Initiatives Office to advance planning
- Establishing an Advisory Board

# CEMI Advisory Board

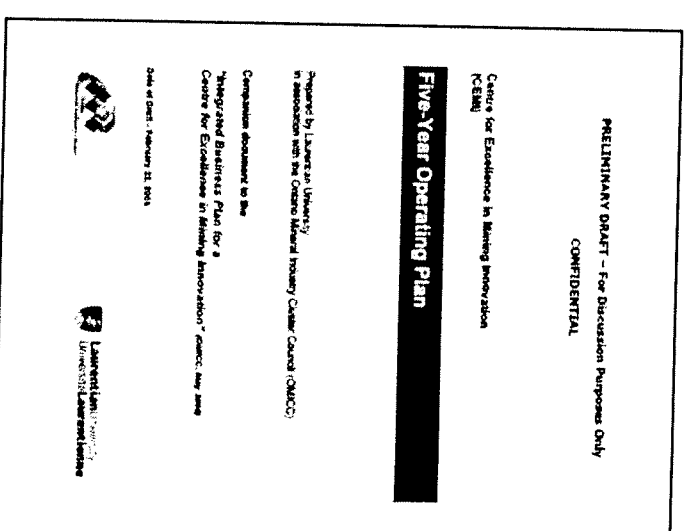
Laurentian University  
Teck Cominco  
Cambrian College  
SAMSSA  
Laurentian University  
City of Greater Sudbury  
INCO  
Laurentian University  
Labour Sector  
Falconbridge  
Ministry of Northern Dev. & Mines  
Ontario Mining Association  
Natural Resources Canada  
Ministry of Northern Dev. & Mines  
FNX Mining Company  
MIRARCO  
CAMIRO  
Rio Tinto  
Natural Resources Canada  
FedNor  
INCO  
Laurentian University  
AMIRA International Ltd  
Laurentian University

CEMI Director  
General Manager, Underground Operations  
President  
President (& Director, Cast Resource Equip)  
Vice-President, Administration  
Mayor  
President, North America/Europe  
Director, Mining Initiatives  
International President, USWA  
Vice-President, Mining  
Deputy Minister  
President  
Assistant Deputy Minister  
Assistant Deputy Minister, Mines & Minerals Sector  
President & CEO  
Board Member (& Senior Consultant w/ Golder & Associates)  
Management Committee Member  
Principal Consultant Manager  
Assistant Deputy Minister, Mines & Minerals Sector  
Director General  
Vice-President, Exploration  
Associate Vice-President, Research  
Chief Executive Officer  
President (Interim CEMI Chair)

Dale Andres  
Sylvia Barnard  
Mike Castron  
David Courtemanche  
Mark Cutfani  
John Gammon  
Leo Gerard  
Allen Hayward  
Suzanne Herbert  
Chris Hodgson  
Irwin Itzkovitch  
Christine Kaszycki  
Terry MacGibbon  
Doug Morrison  
Allan Moss  
Allan Moss  
Gary Nash  
Louise Paquette  
Nick Sheard  
Liette Vasseur  
Deming Whitman  
Judith Woodsworth

# March 2006: Mining Initiatives Office has developed a conceptual “Five Year Operating Plan”

Includes conceptual details of  
research projects that would be  
supported during the 5 year start-up  
phase.



# **CEMI will build new research capacity in Sudbury**

Establish new industry sponsored research Chairs in the following areas:

- Exploration geophysics
- Exploration geochemistry
- Mine planning and design
- Mine optimisation
- Deep Mining
- Rapid lateral development
- Environmental reclamation

# **CEMI will bring new and innovative teaching modules to Sudbury**

- Industry – government – university cooperative B.Sc in geosciences
- Ontario wide university collaboration on an M.Sc Programme in exploration geosciences
- PDAC sponsored field school
- “Finishing School” for landed immigrant mining engineers

# **\$32 million to date (cash & in-kind) towards CEMI-linked projects as of March 2006**

- |                              |                                    |
|------------------------------|------------------------------------|
| ▪ Agnico-Eagle               | ▪ Newcrest                         |
| ▪ Barrick Gold               | ▪ Newmont                          |
| ▪ Beihand University (China) | ▪ Northeastern University (Boston) |
| ▪ Bestech                    | ▪ Nuinsco Resources Ltd.           |
| ▪ BHP Billiton               | ▪ OPG Porcupine Joint Venture      |
| ▪ Breakwater Resources Ltd.  | ▪ Placer Dome                      |
| ▪ CANMET                     | ▪ Rio Tinto                        |
| ▪ City of Greater Sudbury    | ▪ TEPSCO (Japan)                   |
| ▪ DeBeers                    | ▪ Golder Associates                |
| ▪ Denison Environmental      | ▪ Goldcorp Inc.                    |
| ▪ Falconbridge Sudbury       | ▪ Inco Ontario                     |
| ▪ Falconbridge Kidd Mine     | ▪ Inco Thompson                    |
| ▪ Laurentian University      | ▪ X Strata                         |
| ▪ Mine Technologies Intl.    |                                    |



## **Research Network**

A key characteristic of these proposed projects is their collaborative nature. There are direct links with other Universities and Research Centres in Ontario and internationally. Strengthening such networks of collaborative research is a CEMI priority.



## **March 23<sup>rd</sup>, 2006**

# **Ontario Budget announces support for CEMI:**

“I am proud to say that our government has listened, and has once again stepped up to bat for the industry. In the 2006 Budget, we announced \$10-million to help launch the new Centre for Excellence in Mining Innovation at Laurentian University in Sudbury.

The proposed centre will be a focal point for a cluster of mineral and related enterprises to help drive wealth creation in the province. It will take advantage of the university's established mining-related research programs, and focus on projects of high value and relevance for industry.”

*Rick Bartolucci, Minister of Northern Development and Mines*



## **March 30th, 2006**

# **INCO announces support for CEMI**


Sudbury, March 30, 2006 –Mark Cutifani, Inco's *President North America/Europe*, today reinforced Inco's commitment to strengthen the future of mining in Sudbury by announcing a \$5 million investment toward the Centre for Excellence in Mining Innovation at Laurentian University.

"Sudbury's rich history and promising future makes it the perfect centre for an institution promoting mining excellence and innovation," said Cutifani. "Inco is proud to demonstrate significant support for this project because we believe the innovative solutions developed here will boost the competitiveness and longevity of our operations – and those of the broader mining industry – in Sudbury and around the world."

# Mining is good for Sudbury

- \$ 180 billion in production to date
  - \$ 38 billion spent on goods and services
  - \$ 35 billion spent on payroll
  - Over a million person years of employment
- Canada's most active mining camp with 12 operating mines.
- > 300 companies selling supplies and services, largest concentration in any Canadian mining camp by far.
- Attracting more exploration investment than the whole province of BC
- Announced commitment of over \$ 1 billion in new investment.

*Source: Ministry of Northern Development & Mines, 2005 figures in Canadian dollars.*



## **Keep Mining in Sudbury by.....**

- Finding new mines
- Extending existing mines to depth
- Mining more efficiently
- Maintaining public acceptance

# **Keep Mining in Sudbury Through CEMI sponsored activity.....**

- Finding new mines
  - Exploration research
- Extending existing mines to depth
  - Deep Mining Research
  - Telerobotics
- Mining more efficiently
  - Mine process research
- Maintaining public acceptance
  - Environmental stewardship research



## **Key outcomes from CEMI research**

- New Mines (> \$ 3 billion generated by each new discovery).
- Existing mine lifetimes extended (> \$ 3 billion in capital and operating in each case).
- Existing mines operating “smarter”, extending profitable lifetimes.
- Up to 75 new highly paid, knowledge based households established in Sudbury.
- New innovative educational programs in place to offset skills shortage.
- CEMI research and knowledge generation creating new opportunities for supply and service industry.

# CEMI 5 year Operating Plan – Identified funding partners

- Federal Government:
  - ☐ NSERC, CFI, NRCCan, FedNor      \$ 13.0 million
- Ontario Government:
  - ☐ ORF, OGS, NOHFC, MNDM      \$ 21.5 million
- Industry:
  - ☐ Cash      \$ 17.0 million
  - ☐ In-Kind      \$ 15.0 million
- Laurentian University:
  - ☐ Cash      \$ 2.6 million
  - ☐ In-Kind      \$ 5.0 million
- City of Greater Sudbury:      \$ ??