

Peter K Kaiser
2018

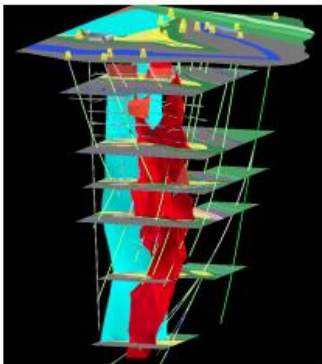
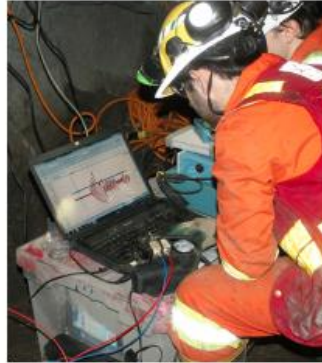


2008 - 2018

Years of Success



Diversity





MIRARCO = what's in a name ?



- **Mining** ✓ ... and beyond
- **Innovation** ✓ ... and implementation
- **Rehabilitation and** ✓ ... and climate change adaptation
- **Applied Research Corporation** ✓ ... ensuring value for R&D investments



Last lecture 1987 - 2017

<https://video.team.laurentian.ca/mediasite>



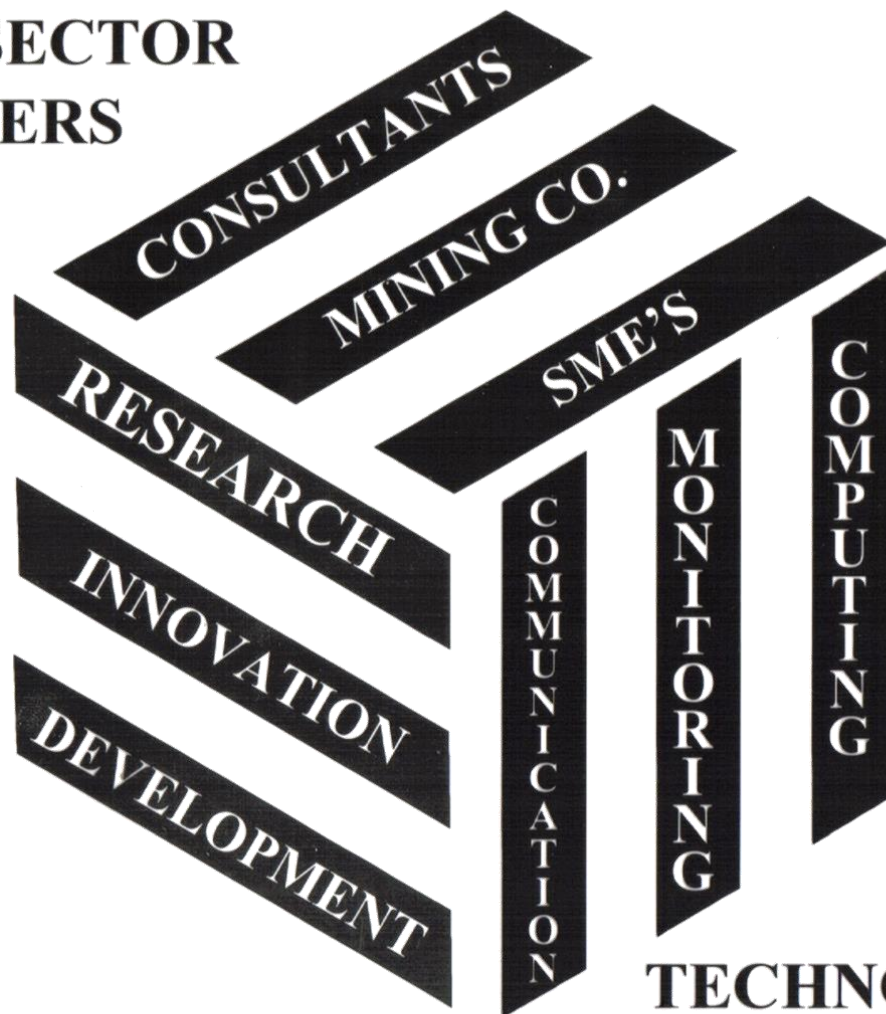


From the archives ... *The CORNERSTONE*



**PRIVATE SECTOR
PARTNERS**

R&D



**TECHNOLOGY
PROVIDERS**

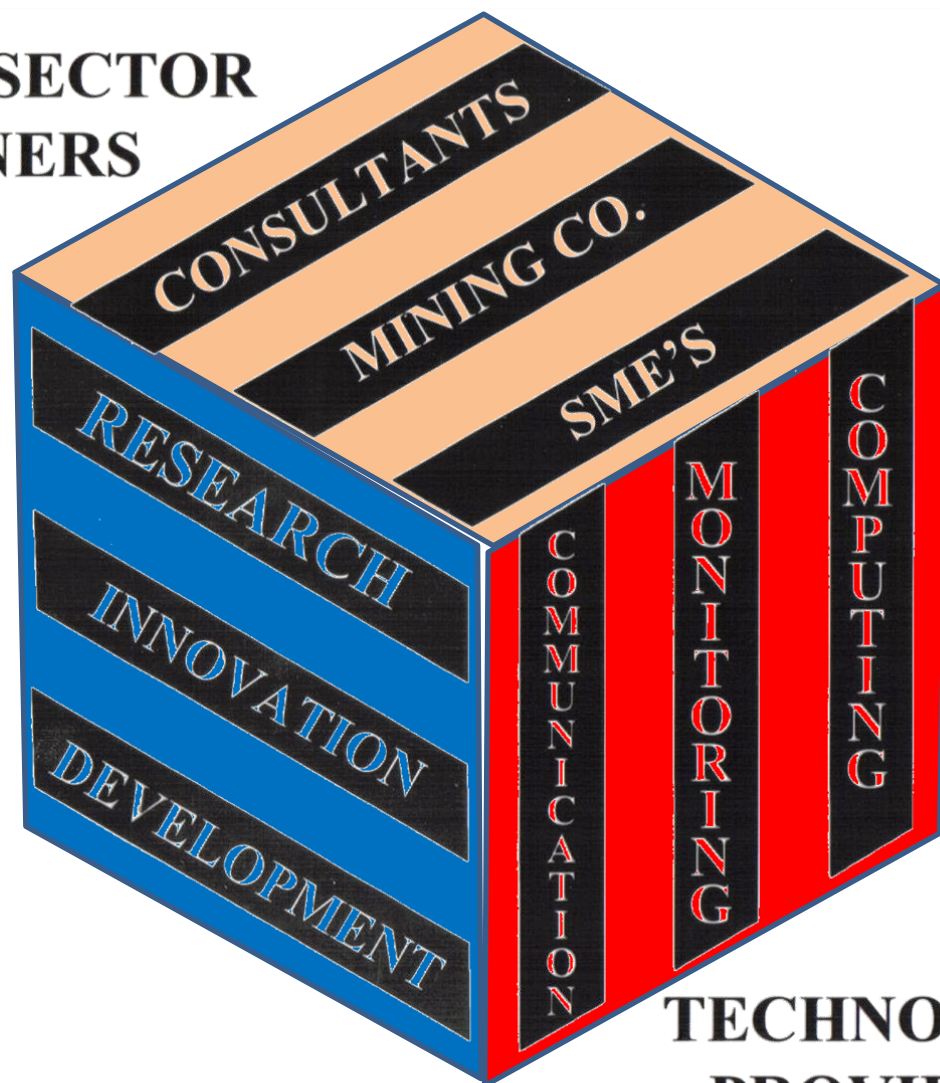


Politically adaptive *CORNERSTONE*



**PRIVATE SECTOR
PARTNERS**

R&D

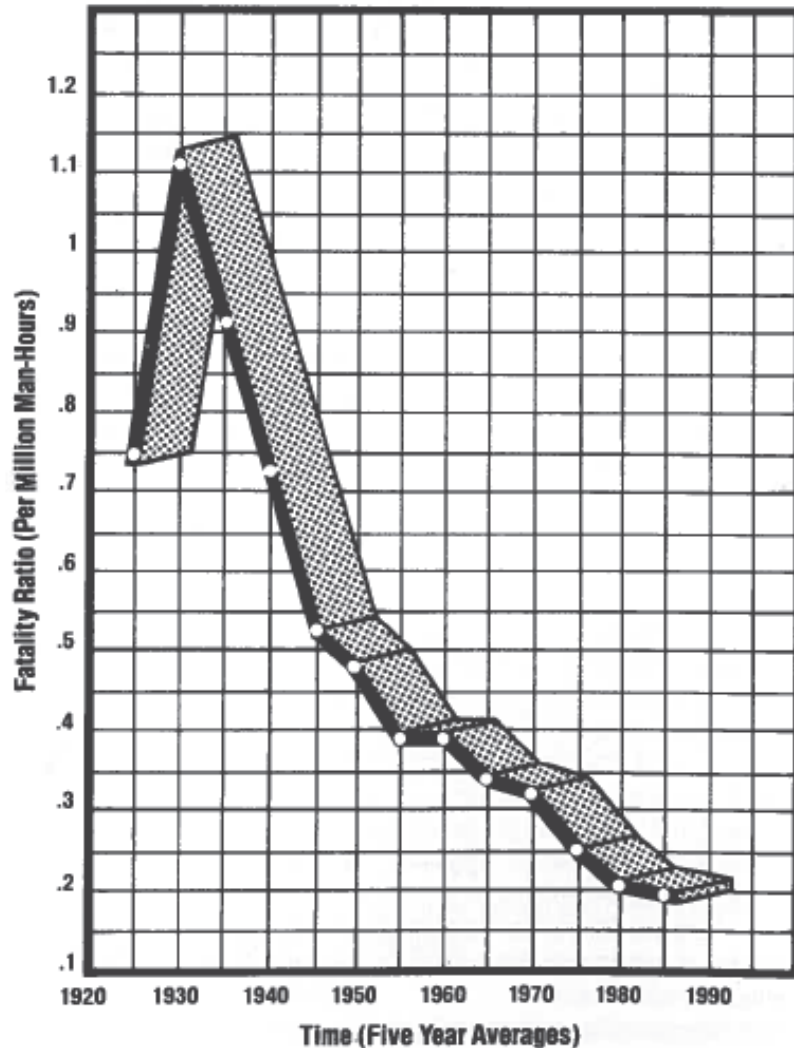


**TECHNOLOGY
PROVIDERS**

1987 – we had an engineering problem ...



FIGURE 1. FATALITY HISTORY 1920 - 1984



www.mirarco.org



10:12 a.m.
June 20, 1984

So did we have a serious engineering problem

- **rockbursts**
- rock falls
- injuries and fatalities

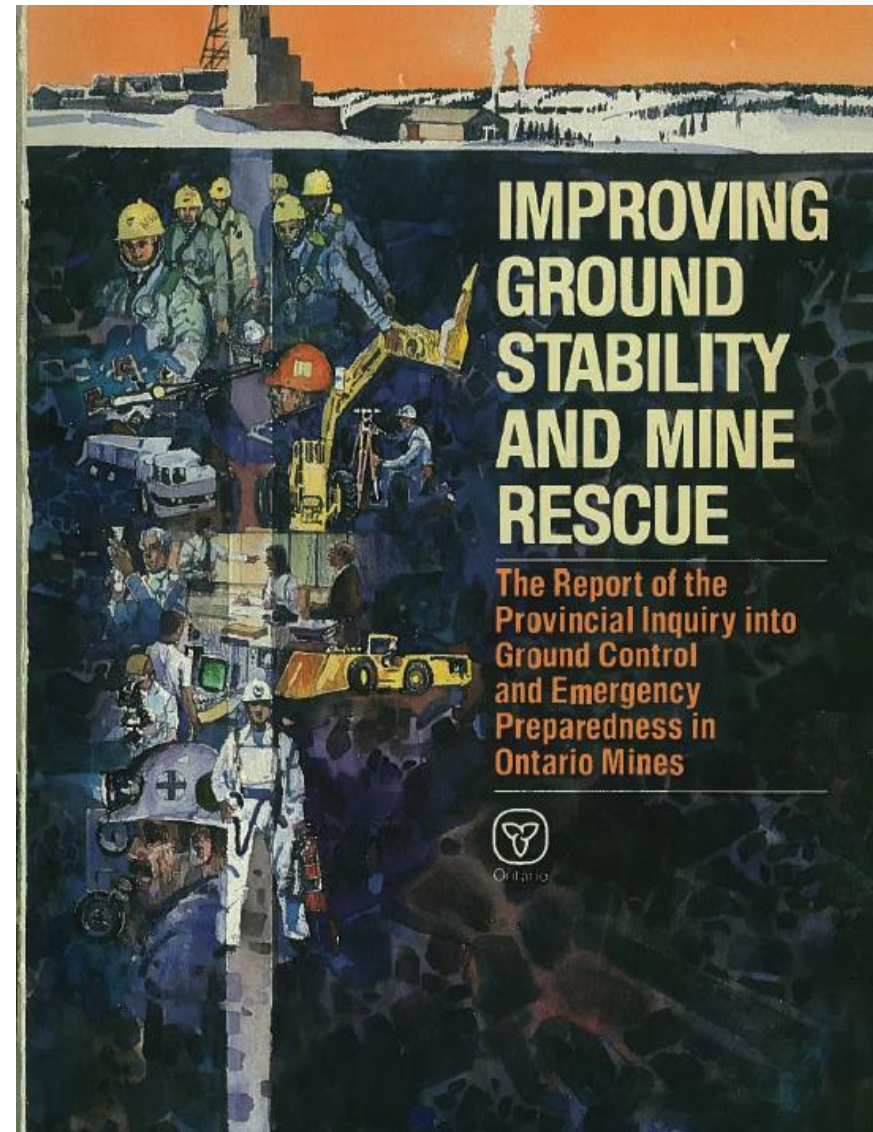


1986 Stevenson's commission - Provincial Inquiry into Ground Control and Emergency Preparedness



Safety ... progress had to be made at all fronts ...

- Commitment from the top ...
Zero tolerance
- Commitment of the workers ...
Safety first
- Commitment from Academia ...
Advance the **state-of-the-art**
- Commitment from Ontario Government and Industry ...
Funding research



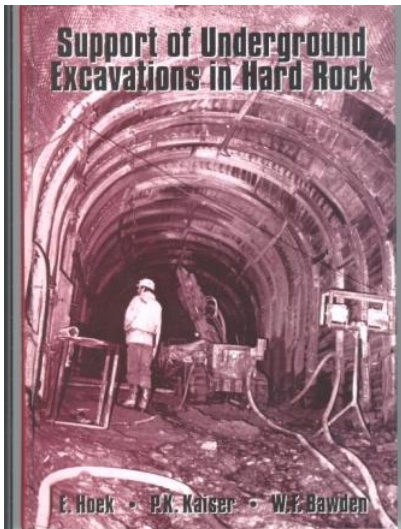


Ontario & Industry

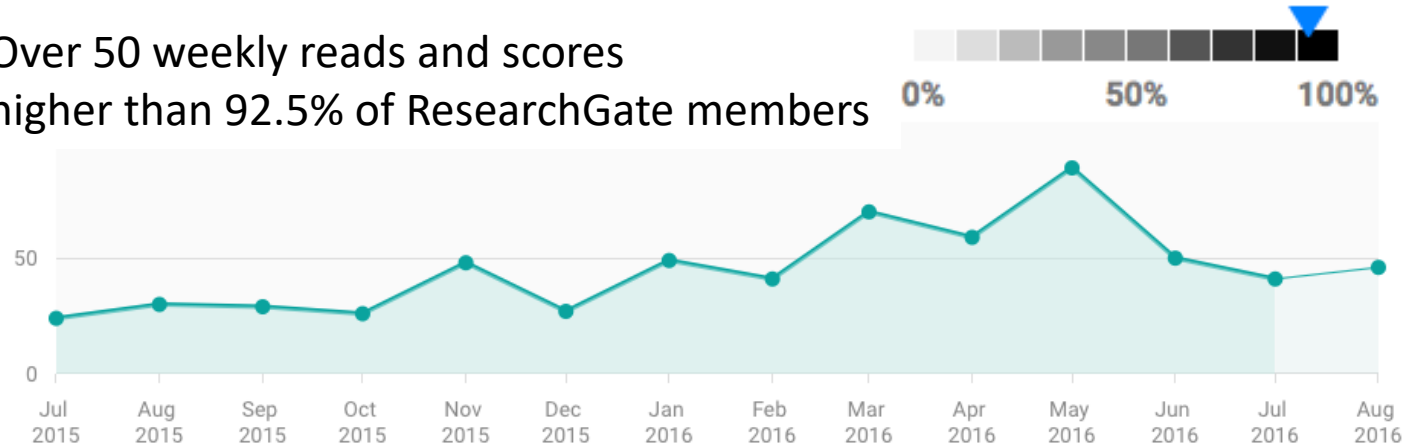
(H. Brehault, Placer Dome)



Your score is higher than 92.5% of ResearchGate members'.



Over 50 weekly reads and scores higher than 92.5% of ResearchGate members



... fostered a most productive, collaborative environment
between three of Ontario's leading mining programs



... it takes leaders to capitalize on opportunities



... and they teach you a lot along the way

This is for
real !
Align you
goals !

Invest your
profit !

All matter !

Tell me what you
achieved !

Listen to
industry !

We trust in
those that
deliver value!

How can we help ?



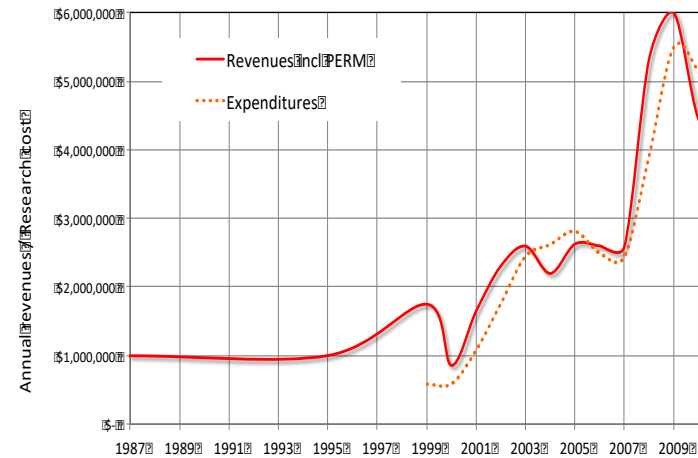
Innovation through Collaboration needs Leaders



... and leaders inside LU and MIRARCO



Ross Paul and Geoff Tesson



Board Chairs



Warren Holmes
Chair from 1999 - 2003



George Pirie
Chair from 2004 - 2005



Brian Maynard
Chair from 2006



James Gowans
Chair from 2007



Marc Boudreau
Chair from 2009 - 2016



Andre Lauzon
Chair from 2017 - present



... and technical/science excellence inside ...



Andrew Dasys
Director, Innovation and
Development Group (IDG)
Director, Centre for Inter-
disciplinary Monitoring Technology
2000-2005
Director, Enhanced Vision
Optimization (EVO), 2005-
VP, Commercialization,



Sean Maloney
Director, Geomechanics Research
Centre (GRC), 2008-2017



Al Douglas
Project Coordinator,
Centre for Environmental Monitoring,
2007-2008
Operations Manager,
Elliot Lake Research Field Station,
2006-2009
Director, Climate Centre,
2007-present
Chief Administrative Officer,
MIRARCO, 2015-2017



Ming Cai
Chair, Geomechanics Research,
2009-present



Dougal McCreath
Director,
Elliot Lake Research
Field Station
(affiliated MIRARCO
centre),
2000-2001



Mark Andersen
Director,
Centre for Mining
Technology (CMT),
1999-2000

**Leaders
MIRARCO**



Graeme Spiers
Director, Centre for Environmental
Monitoring (CEM), 1999-2010
Director, Environmental
Monitoring & Rehabilitation (EMR),
2010-2011
Director, Elliot Lake Research Field
Station, 2002-present
Chair, Environmental Monitoring,
1999 - present



Paul Dunn
Director, Centre for Mining
Technology (CMT),
2001-2005



Dale McKinnon
Director, Ventilation and
Production Optimization
(VPO), 2010-2011



Dean Millar
Director, Energy, Renewables &
Carbon Management (ERCM),
2011-2017
Chair, Energy in Mining,
2011- 2017



Vic Pakalnis



Lorrie Fava
Director, Ventilation & Production
Optimization (VPO), 2013-2017
Director, Software Centre,
2018-present



Jacqueline Richard
Coordinator,
Climate Centre,
2007-present

20 years of success ...

**Thank to dedicated leaders
and
outstanding R&D teams
including
many PDFs and students**



Did research have an impact ?



Many ways to measure impact and value

- Collaboration
 - Global network and global reach
 - Real and virtual network
- Ontario funding
 - Economic impact
 - Spin-off companies and jobs
- Safety impact
 - Collective progress
 - Industry supported by academia





National and international growth of geomechanics research NETWORK with first generation spin-off companies in Ontario

- 1st Generation Profs (16)
- 1st Gen-spin-offs (5)





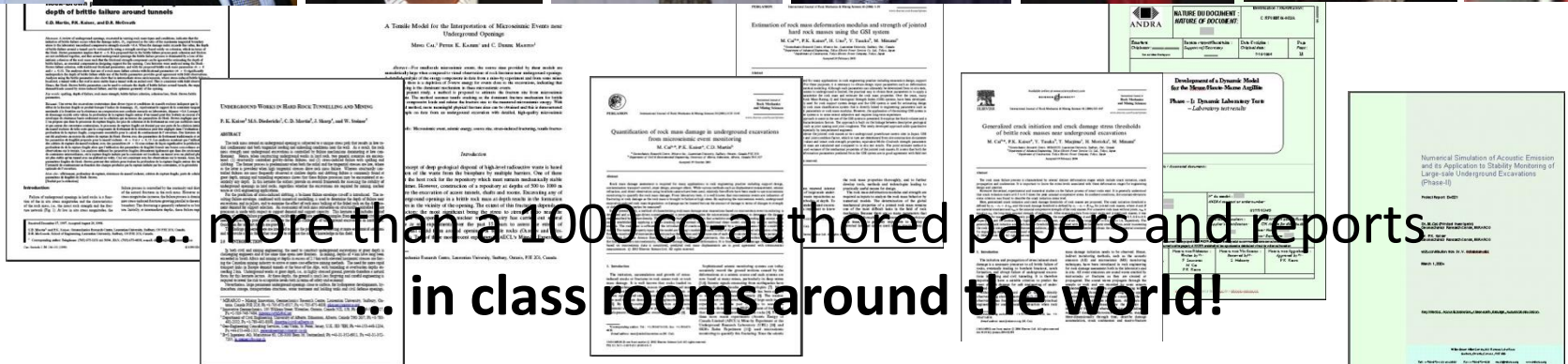
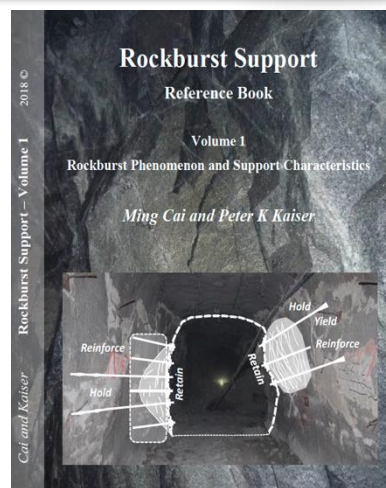
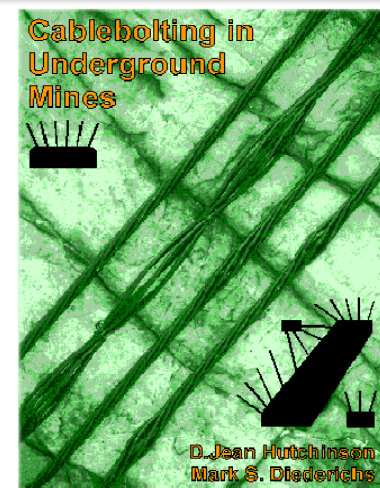
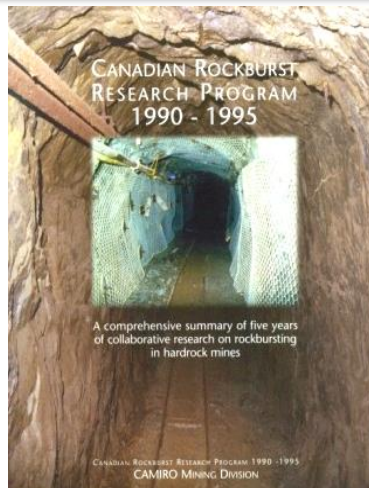
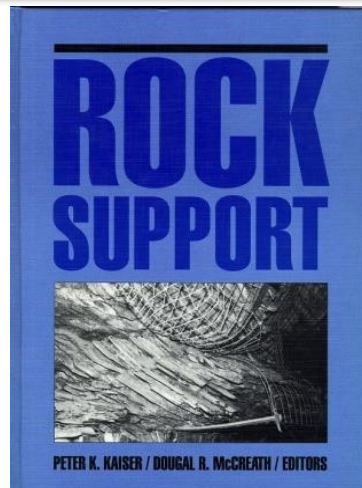
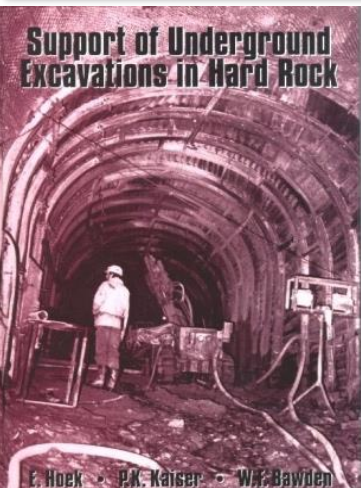
Double
number of
Professors
and
spin-offs

- 1st Generation Profs
- ★ 2nd Generation Profs
- 1st Gen-spin-offs
- 2nd Gen-spin-offs





Knowledge Transfer and Export in geomechanics alone ...



more than a 1000 co-authored papers and reports
... in class rooms around the world!

Knowledge export → making research relevant

Grasberg – Indonesia
largest gold mine
third largest copper mine
in the world
~20'000 employees

Expertise now an Ontario
Export around the world:

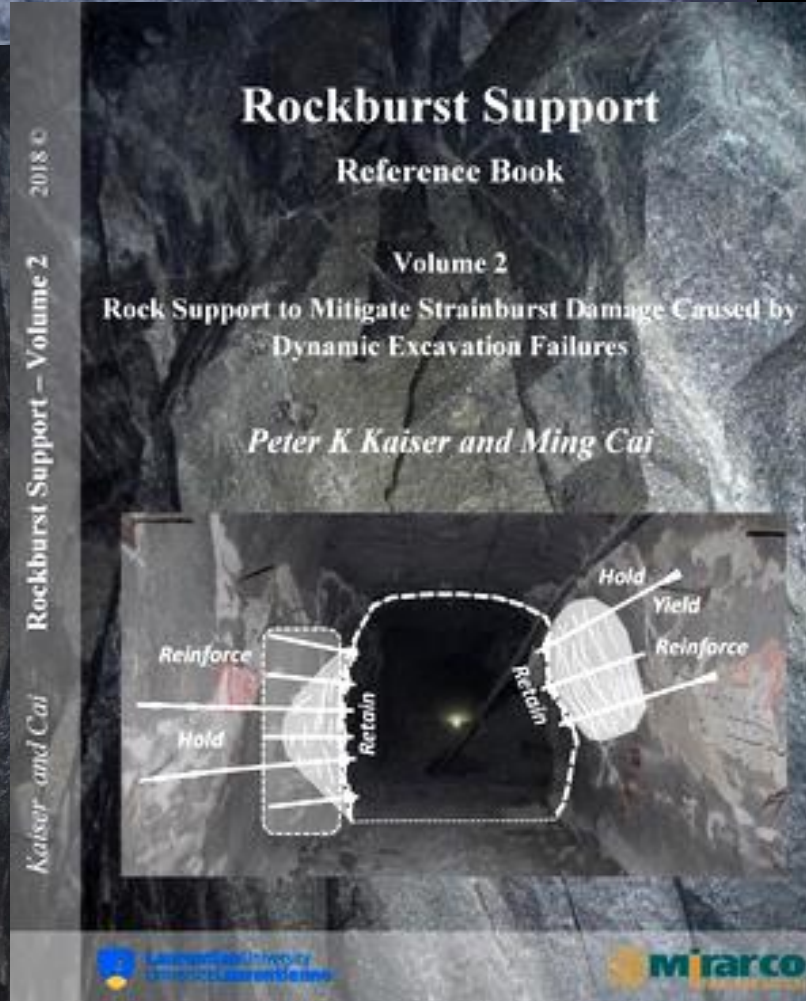
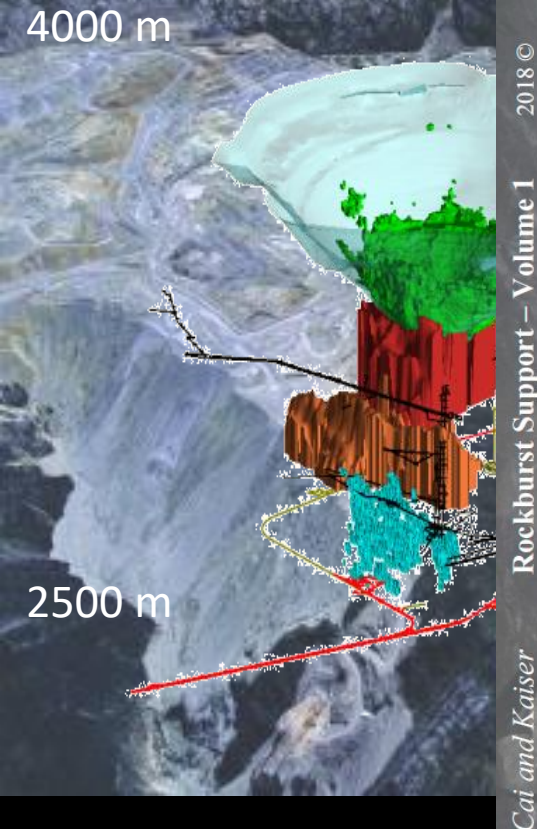
- Freeport

Golder Associates
Canada/Sudbury
Drs Bewick, Castro
and Carvalho

Codelco

Drs Diederichs/Martin
China

Dr. Cai





CFI funding for Virtual Reality Network

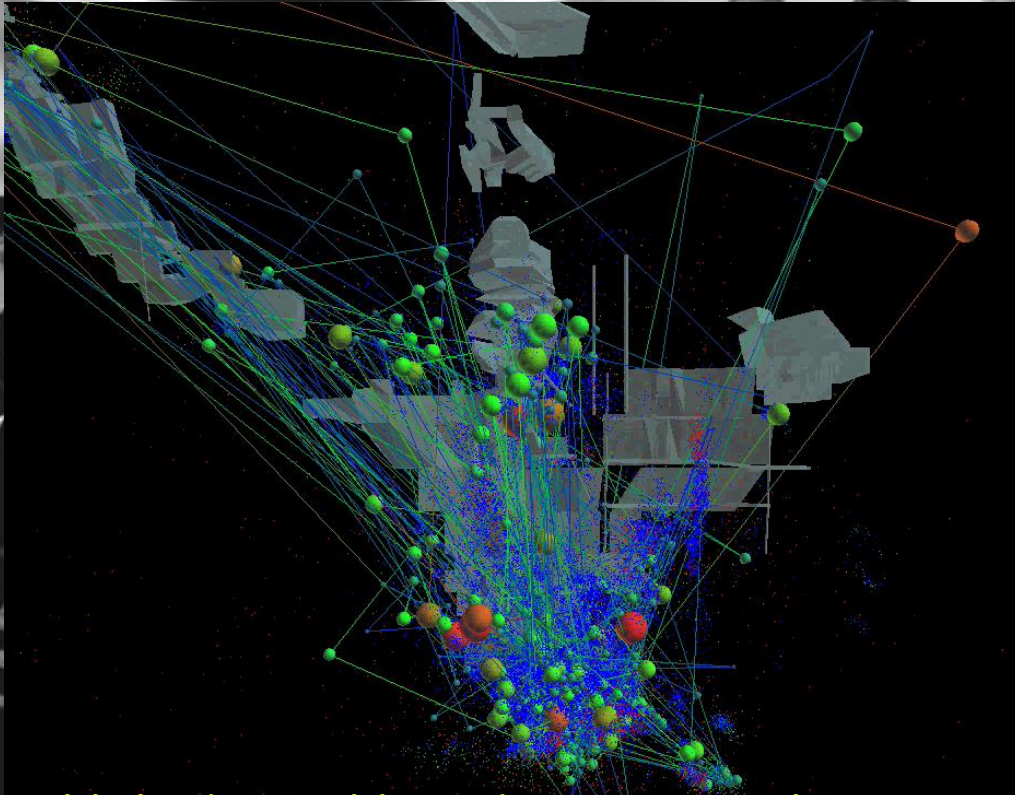
Innovation in creating value from existing data



2001 Opening 1st VR facility for mining

2002 portable VR at CIM Vancouver for Goldcorp

2008 Release ParaviewGeo



2003 to 2013 Established portable and international VR network in mining





6 National and 4 international VR Facilities



Mines

Vale Inco – Creighton
Goldcorp – Redlake

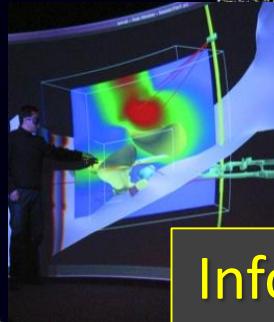
NAVNET

- Sudbury
- Thunder Bay
- Timmins

Salt Lake City – USA
Rio Tinto Northern Hemisphere
Interpretation Center



Codelco – Chile
Chuquicamata Center



Xuzhou China
Xuzhou Coal

Shenyang China
North Eastern University



Information → Knowledge
... better planning
... longterm value
... risk mitigation
... mine safety

→ at 5 mines and near many more

→ near collaborating research institutions



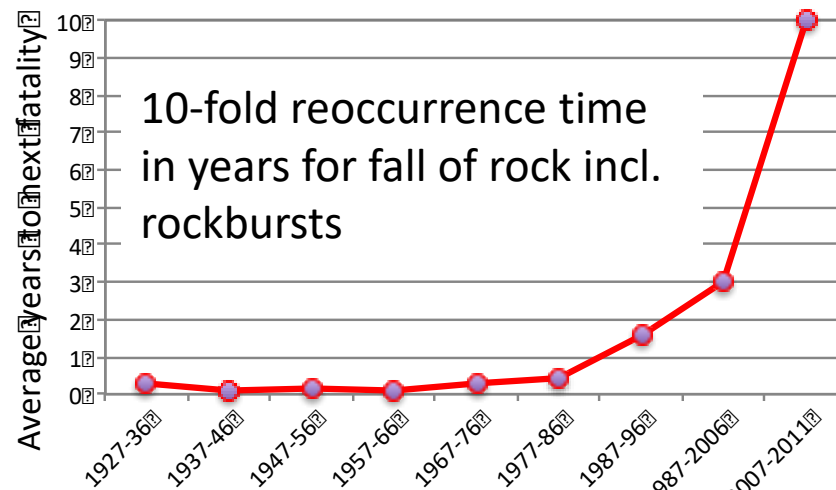
30 years ago – agreed Safety in mining was priority



Huge progress through wide **collaboration**

... between industry and academia ... **with a commitment**

- from the top ... **Zero tolerance**
- from the work force ... **Safety first**
 - Miners are the ultimate beneficiary as they go under every day
- from Government ... **Invest in people**
- from Academia ... **Advance state-of-the-art**

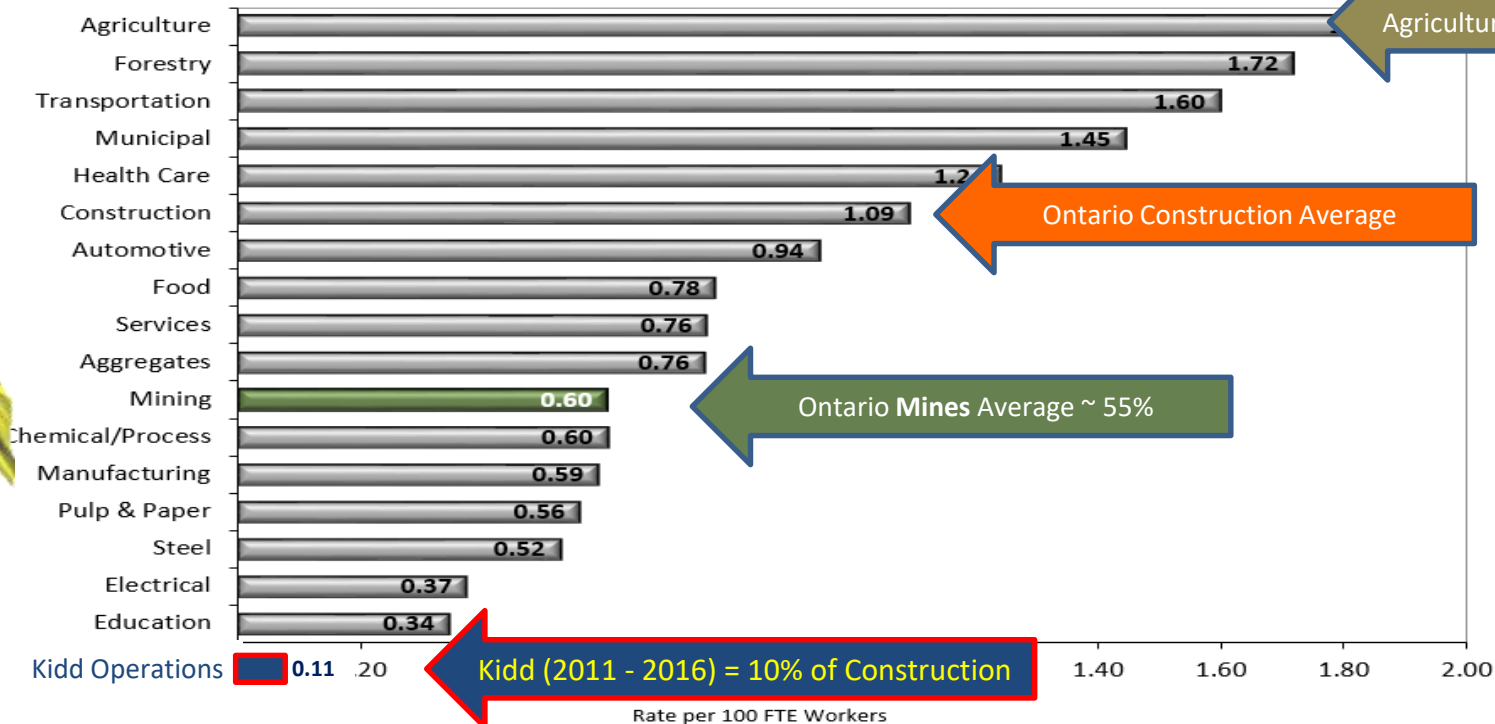
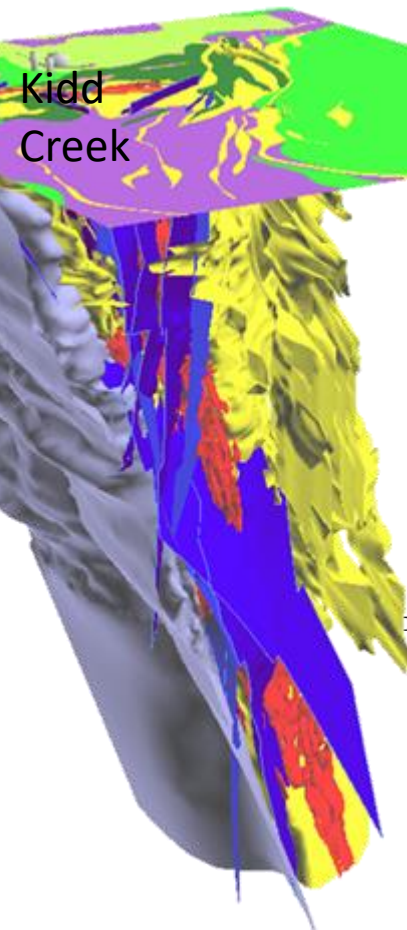




Safety share

... if you put your mind to safety, you get safety and good performance too (despite depth)

2015 Lost-time Injury Rates by Ontario Industrial Sector



Research pays dividends

**It has an economic
and
social impact**



Thanks to all involved ...
and
appologies to those I missed



THANK YOU

