CANADIAN MINING SCIENCE & ENGINEERING LABORATORY NETWORK

Nabil Bouzoubaâ

Context

‣ Fragmented Innovation Ecosystem that limits the industry's ability to develop and adopt new technology.

‣ Lack of collaborative efforts between the existing R&D laboratories.

‣ A call from the "National Collaboration Strategy for the Mining Industry", launched by Canada's Energy and Mines Ministers in 2017, highlighting the need for stakeholders from all areas of the mining ecosystem to collaborate and address the "innovation imperative".

The Canadian Mining Science & Engineering Laboratory Network

Launched in May 2017, the Network will respond to these challenges and creates a platform for collaboration to drive innovation.
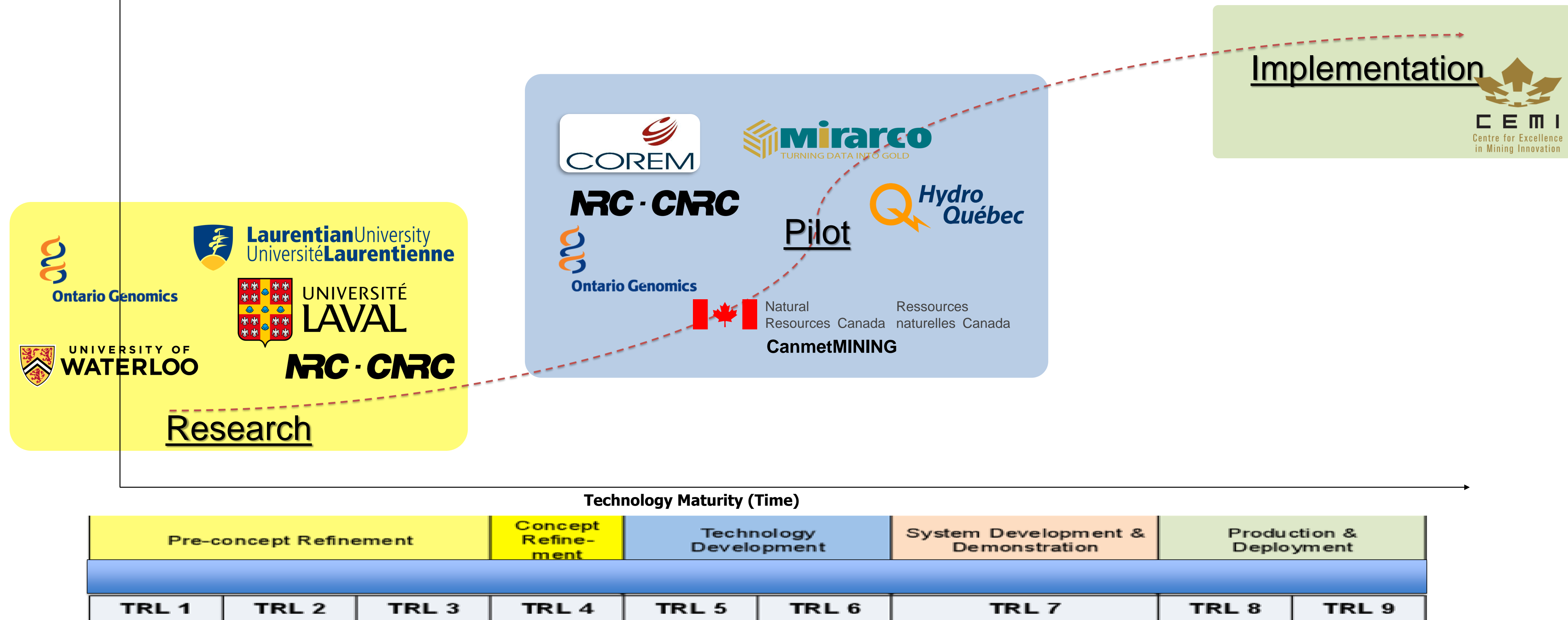
The Lab Network provides a forum for mining and minerals laboratory leaders:

✓to share knowledge,
✓to leverage resources,
✓to create a culture of sharing (in terms of both facilities and expertise) and open communication to develop and address the strategic priorities of the sector, in keeping with the objectives of the Canadian Minerals and Metals Plan.
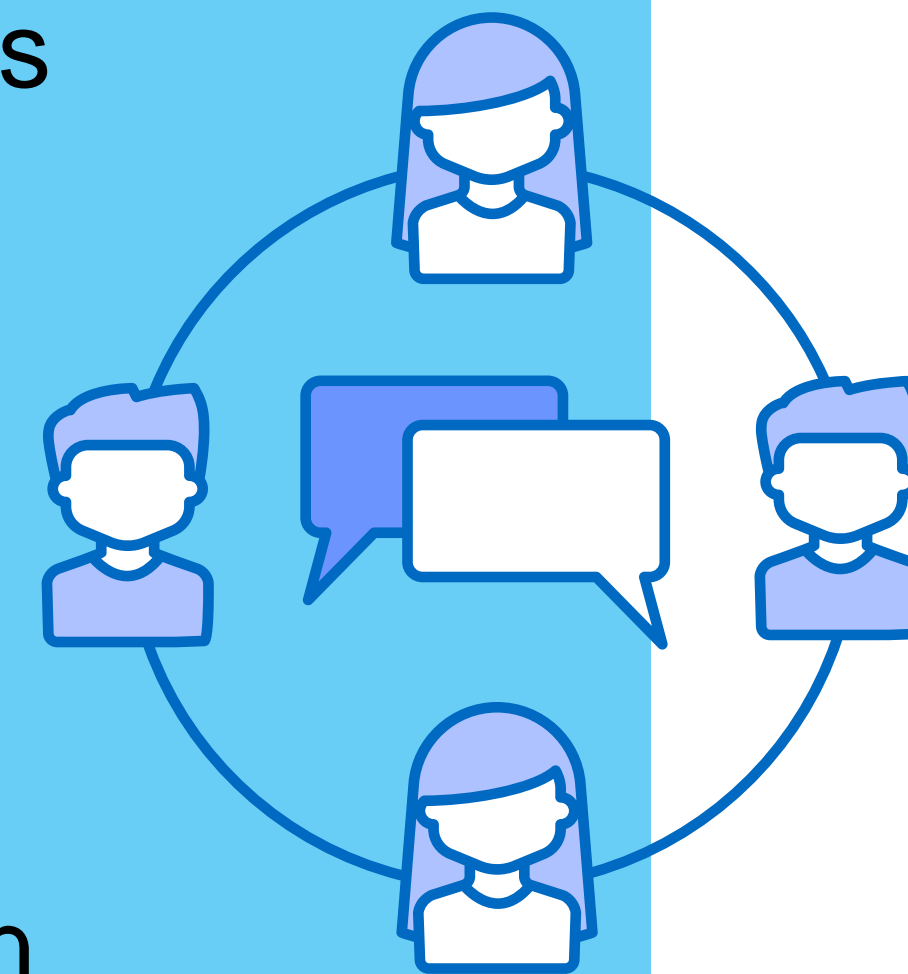
Lab Network Current Members areas of specialization Along the S-curve

The Lab Network is fairly balanced in terms of areas of specialization along the S curve.

Implementation

Pilot

Research

Technology Maturity (Time)

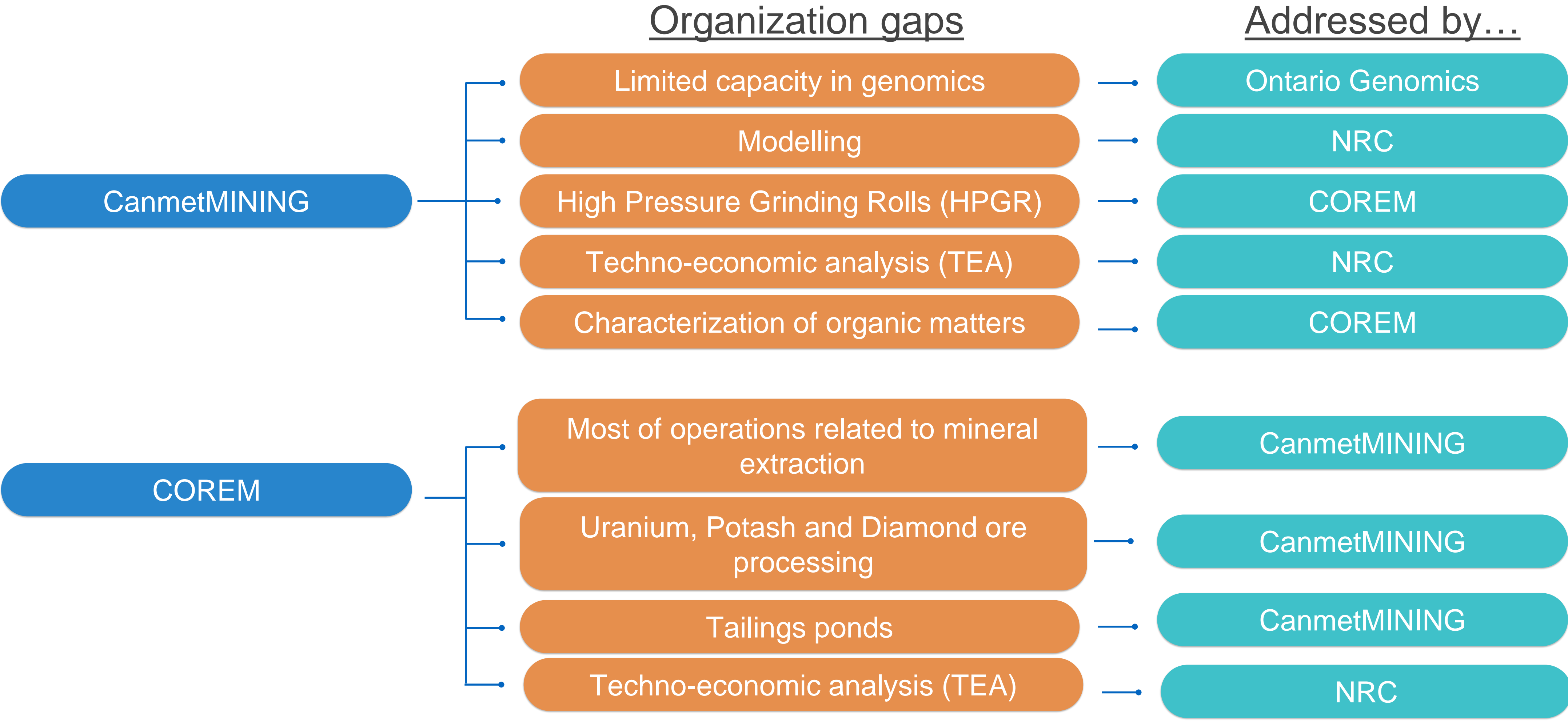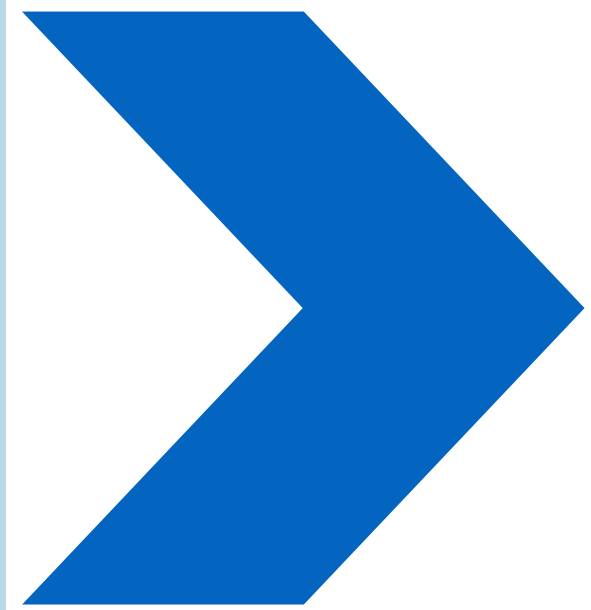| Pre-concept Refinement			Concept Refine-ment	Technology Development		System Development & Demonstration	Production & Deployment	
TRL 1	TRL 2	TRL 3	TRL 4	TRL 5	TRL 6	TRL 7	TRL 8	TRL 9

Network Capabilities

‣ Advanced analytical and mineralogical services
‣ Pyrometallurgy, hydrometallurgy, physical separation labs
‣ Rock mechanics, rock dynamic, backfill and concrete labs
‣ Diesel certification lab
‣ Microbiology, toxicology and radioactive waste labs
‣ Electro-technologies lab (micro grid, batteries…etc)
‣ Pilot and industrial scale set of equip on comminution and processing (HPGR, rotary kiln…etc)
‣ Pilot scale water treatment systems and full scale field facility development
‣ Connection to extensive life science/genomics expertise and capabilities
‣ Modelling, computing and AI capabilities

Examples of complementarities between members

Organization gaps

Addressed by…

CanmetMINING
- Limited capacity in genomics → Ontario Genomics
- Modelling → NRC
- High Pressure Grinding Rolls (HPGR) → COREM
- Techno-economic analysis (TEA) → NRC
- Characterization of organic matters → COREM

COREM
- Most of operations related to mineral extraction → CanmetMINING
- Uranium, Potash and Diamond ore processing → CanmetMINING
- Tailings ponds → CanmetMINING
- Techno-economic analysis (TEA) → NRC

Outcomes of the First Meeting

‣ Members agreed to collaborate on two themes: ore sorting & bioleaching

‣ Themes were decided according to the following criteria:
- Themes addressing critical issues in the mining sector
- Themes involving the greatest number of organizations
- Themes with the strongest complementarities between organizations
- Themes easy to deliver and implement

Ore Sorting

- NRC
- COREM
- CanmetMINING
- CEMI

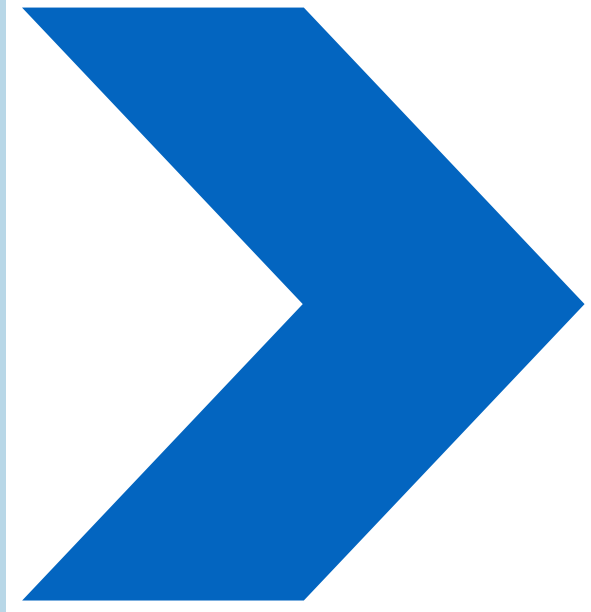## Bioleaching

- NRC
- COREM
- CanmetMINING
- CEMI
- KPM
- Waterloo U

Next steps (short term plan)

January 2019

Formation of technical committees; one per theme

February 2019

Establishing specific projects for each theme

May 2019

Meeting in person in Sudbury to report on specific projects

July 2019

Report to EMMC