

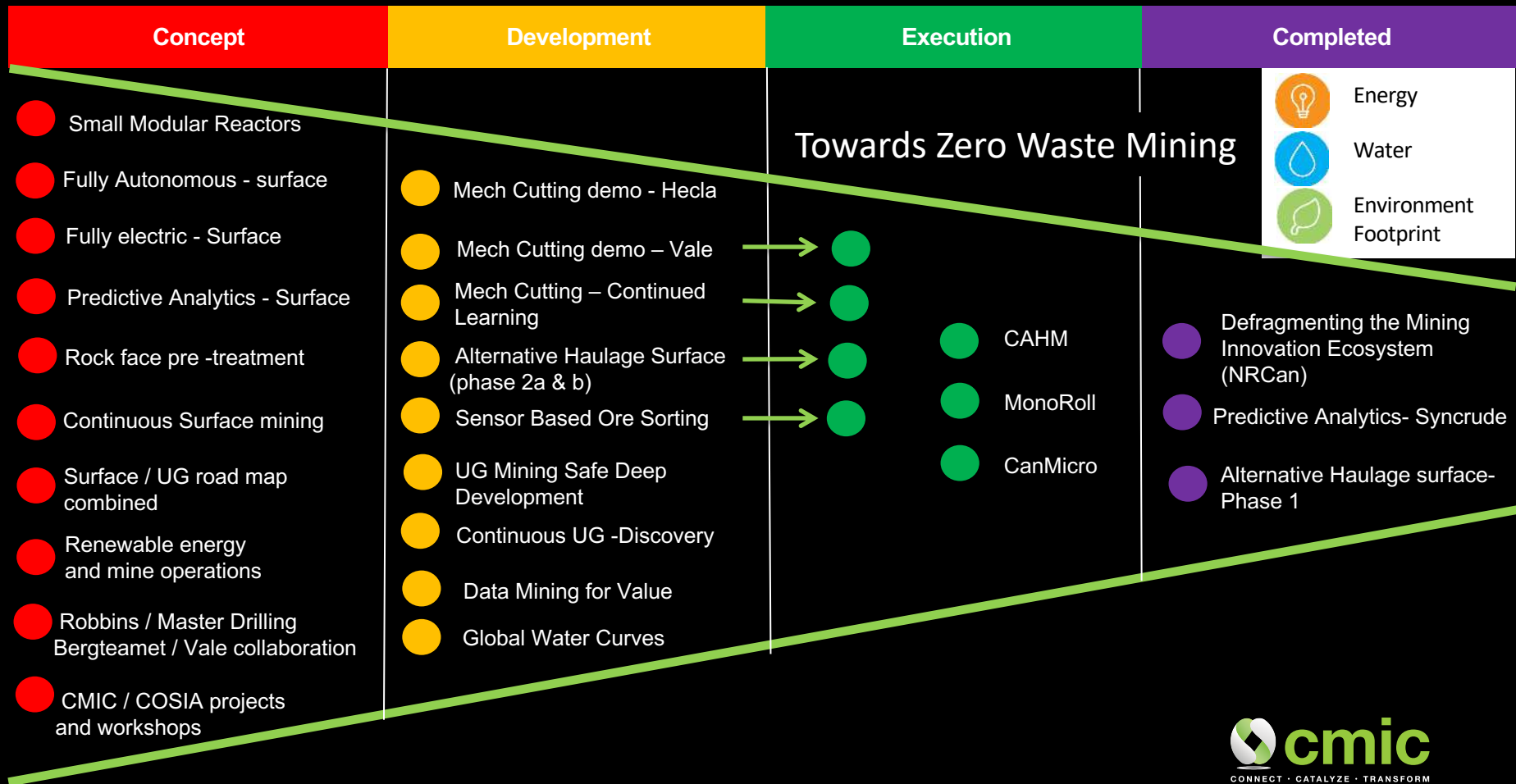


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Projects in the Pipeline...

Trevor Kelly and Gillian Holcroft

CMIC Project pipeline: 2020



Portfolio Overview- TZWM

Portfolio	Project	Towards Zero Waste Mining		
		Energy	Water	Environmental footprint
MINING	Mechanical Cutting- Demonstration			
	Alternative Haulage			
	Mechanical Cutting- Continued Learning			
	Underground Mining Safe Deep Development			
INTEGRATION	Sensor Based Ore Sorting			
PROCESSING	CAHM			
	MonoRoll			
	CanMicro			
	Data Mining for Value			
	Global Water Curves			

Projects in Development Pipeline

Underground Safe Deep Development (SDD)

➤ Project Scope

- ❑ Remove operators from the active mining face.
- ❑ Multi – phase approach
 - Initial proof of concept are face prep & load, wire, fire
 - All activities 5m from the face.
 - Remote
 - Automated
- CMIC recommended level setting process to unite industry voice & focus project streams
- Project has been socialized with multiple mining companies resulting in extensive expression of interest.



Mechanical Cutting – Continued Learning

Project scope

- Continue to identify and investigate low cost cutting collaborations for members.
- Develop and maintain relationships with OEM's and disruptive organizations
- Arrange site visits for members to view cutting technologies .
- Perform workshops to focus underground consortium on specific projects
- Initiate confidentiality and sharing agreements to enable open sharing of information.

Continued Learning and Project Alignment

	2020												2021								
	J	f	M	A	M	J	J	A	S	O	N	D	J	f	M	A	M	J	J	A	
MRE Event - cutting test demo (reallocation)						■															
Project Alignment Workshop									■												
Underground Roadmap Alignment and update										■											
Collaboration investigation and						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
MRE Events and site visits										■										■	



Sensor Based Ore Sorting Overview

- **Industry Driven:** Identified by CMIC members as a technology that could disrupt mining industry. CMIC was asked to develop a proposal to create a multi-commodity mining company led consortium. Proposal was sent out on May 30th. Goal is to have 5 to 10 Mining Companies sign up by mid-June.
- **Purpose:** Share experiences, identify gaps & ultimately align sensor and sorter vendors to accelerate implementation of ore sorting solutions (within 2-3 years)
 - ❑ 1st Phase → 6 Months
 - ❑ 2nd Phase → 18 to 24 months

Scope of Work

PHASE 1 LEVEL SETTING PROCESS

Workshop 1

Experience Share



EXAMPLE TOPICS

- Bulk Sorting
- Particle sorting
- Sensors
- Ore body knowledge (eg. heterogeneity)
- Other consortiums
- Business case
- Case studies

ACTIVITIES
Explore latest advances in Sensing, Sorting
Engage known & new vendors – development plans? Co-create? Challenge Vendors?

Summarize Findings

Workshop 2

Review & Gap Identification



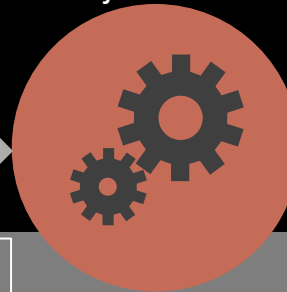
ACTIVITIES

Review Gaps & Prioritize.
Invite vendors?

Summarize Findings

Workshop 3

Scoping & Project Plans

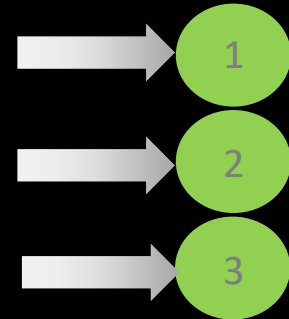


ACTIVITIES
Sub-project planning

ACTIVITIES
Draft proposals for sub-project scope

PHASE 2 EXECUTION

Sub-Projects



- ❖ Tech Eval.
- ❖ Piloting
- ❖ Demo
- ❖ Value Prop.
- ❖ Other?

6 months

Sensor Based Ore Sorting- *6 month- Fast-paced schedule*

Milestone	Deliverable	Completion Schedule
Project Launch	Project Charter and Role Description approved; Consortium membership finalised. Funding secured	June 30, 2020
Pre-Workshop 1 Preparation	Workshop preparation material distributed to participants	July 15, 2020
WORKSHOP 1		July 31, 2020
Workshop 1 Outcome	Workshop outcome report: Priorities & Gaps identified	Aug. 7, 2020
Pre-Workshop 2 Preparation	Workshop preparation material distributed to participants including finding from Bridging of gaps	Sept. 30, 2020
WORKSHOP 2		Oct 15, 2020
Workshop 2 Outcome	Workshop 2 Outcome Report: Initial sub-project identification	Oct 31, 2020
Pre-Workshop 3 Preparation	Initial "straw-man" sub-project charters	Nov. 15, 2020
WORKSHOP 3		Nov 30, 2020
Workshop 3 Outcome	Workshop 3 Outcome Report and sub-project charters:	Dec 15, 2020

Data Mining for Value- Kick off 2020?

XPS Glencore → Project Champion, CMIC Project Management support

Project
Charter
Nov. 2019

Phase 1
Level Set
4 months

- Survey & Benchmark Partner Operations (Systems, software, algorithms...)
- Baseline questionnaire completed
- Outcome- Sharing of best practices & gaps (confidential sources)

Phase 2
Data Collection & Analysis
4 months

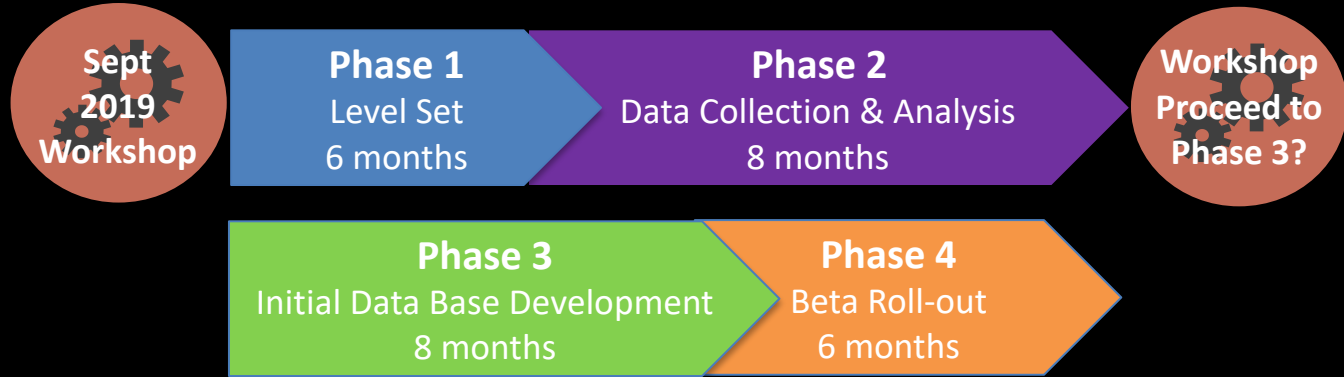
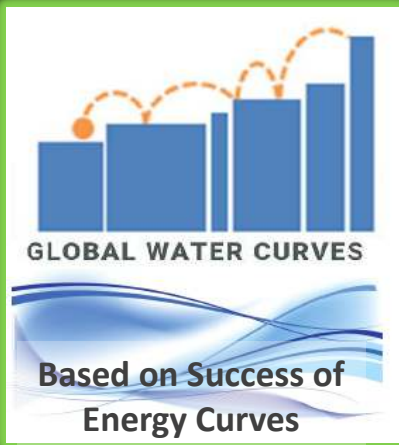
- Select clean “partner” datasets & use multiple data analytics tools to evaluate outputs (project is software agnostic)
- Outcomes → which tools / datasets work well and generate realistic/robust results and which tools / datasets are problematic and why?

Project needs at least 5 and ideally 10 mining company participants to commit

Water Curves in partnership with CEEC



Goal: Deliver a new industry tool “Global Water Curves Database” to drive industry knowledge sharing & accelerate more water efficient technology uptake & innovation.



Project needs at least 5 and ideally 10 mining company participants to commit

Water Savings

Measuring and understanding water usage in mining will provide the industry with the insights to reduce water consumption, save on water costs, and play a part in protecting our shared future

Social License to Operate

Making a commitment to reducing the industry's impact on water will be key to maintaining our social license to operate with communities, governments, and regulators

Best Practice Adoption

Creating a global tool to measure and understand water consumption will encourage best practice adoption and can ultimately help stimulate a more collaborative and innovative future for mining

Executive Understanding

Building industry-wide benchmarks provides technical experts with the tools to effectively communicate the importance of water-related technologies and initiatives with mining executives

Safety and Sustainability

Increasing our understanding around the implications of water use in mining can help us to improve water related safety for those on site, in nearby communities, and for the rest of the world



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**Let us know if you want to learn more and get
involved!**

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&

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