



# SNOLAB Future Projects Workshop

# Aims of the meeting

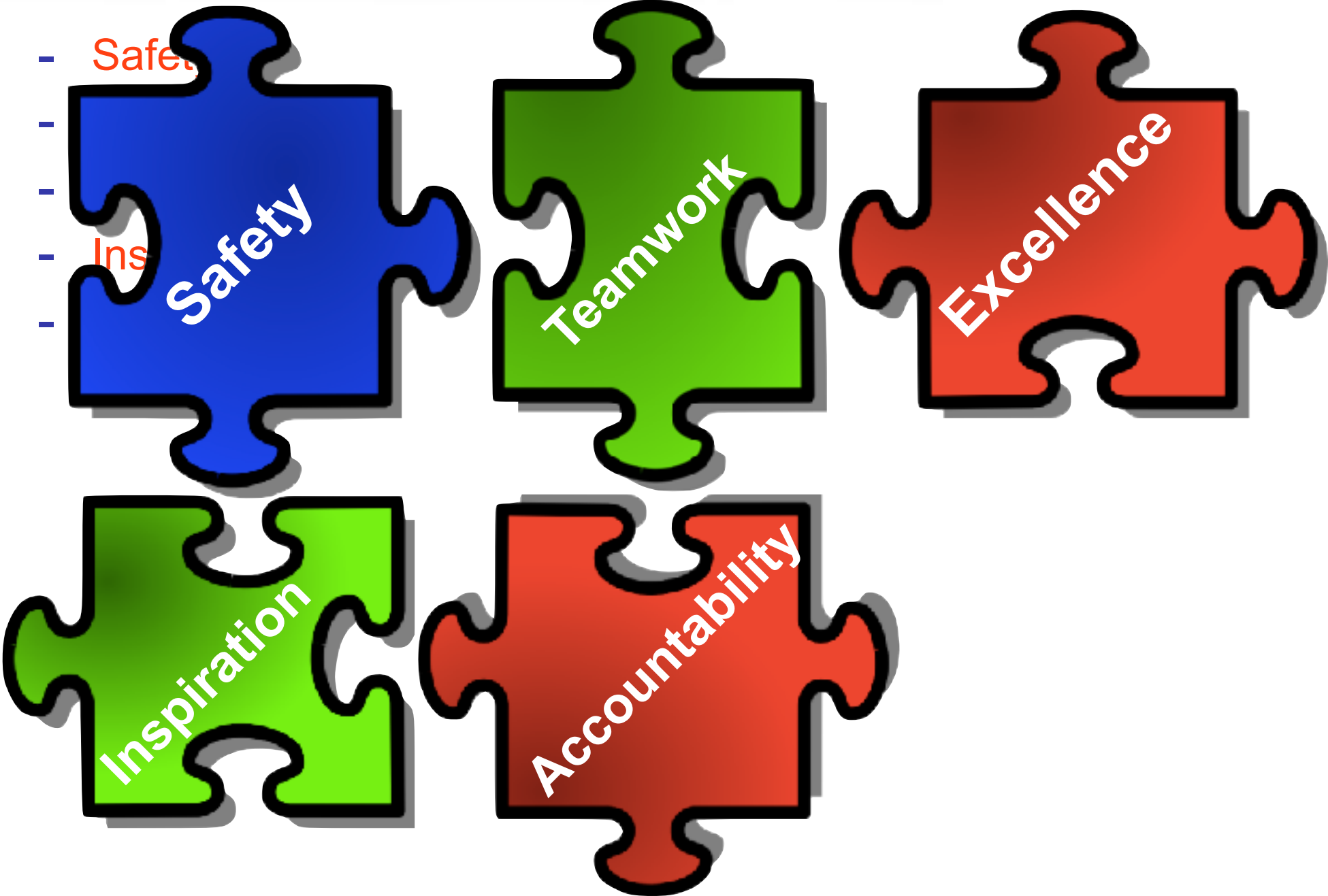


- To continue the dialogue on possible future projects at SNOLAB
  - Aiming for a five to ten year forward look
- To overview resources and space availability within the facility
- To review progress on projects, funding situation, plans for the future
- To discuss infrastructure needs from the facility



*“To be the **location and partner of choice** for deep underground science, **delivering** world-class science and benefit to Canada, and her international partners, by **providing** and **promoting** national and international access to the **unique facilities and expertise** at SNOLAB.”*

# SNOLAB Core Values



# SNOLAB Mission Statement



- **Enable world-class science** to be performed at SNOLAB by national and international experimental collaborations, providing scientific underpin, technical skills and knowledge, generating and developing international connections, and through development of a strong reputation;
- **Spearhead world-class science** at SNOLAB through its own research group as part of the international and national community, developing synergies with other groups worldwide;
- **Catalyse world-class science** at SNOLAB by providing a sought after collaborator in its own right and through providing transformational opportunities for collaboration and knowledge exchange to other groups through workshops, external connections and local interactions;
- **Promote world-class science** and societal benefits through a strong public and professional outreach programme, and through technical knowledge development and transfer;
- **Inspire the next generation** of innovators through strong educational outreach, knowledge transfer and the training of highly qualified personnel;

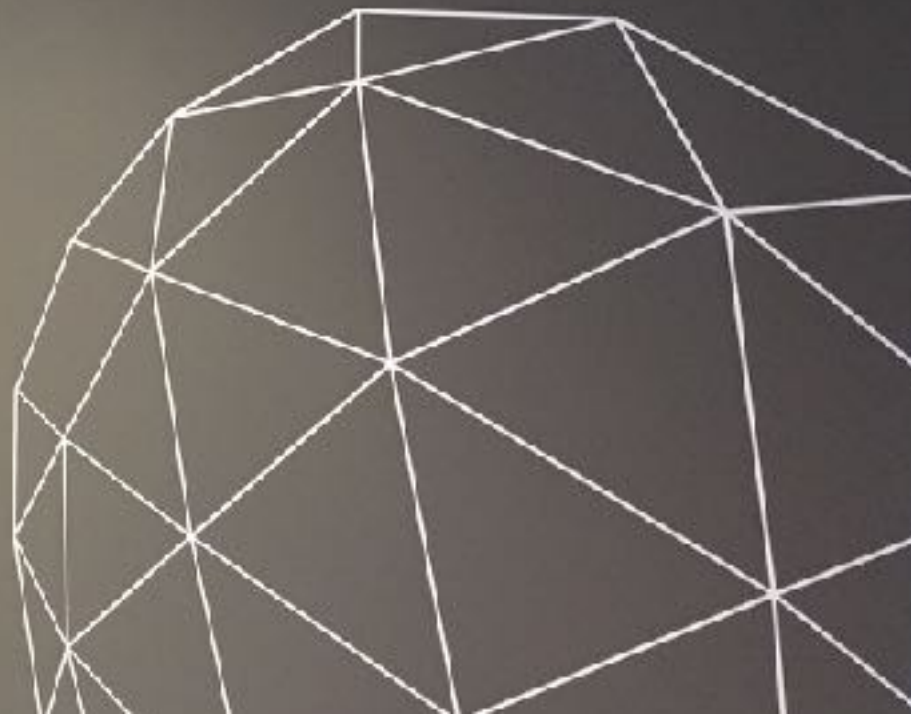


# In case you forget!



*Our Strategic Goals are to:*

- Enable and spearhead world-class science
- Develop infrastructure for world-class science
- Promote world-class science and inspire the next generation
- Develop world-class processes



# Current programme

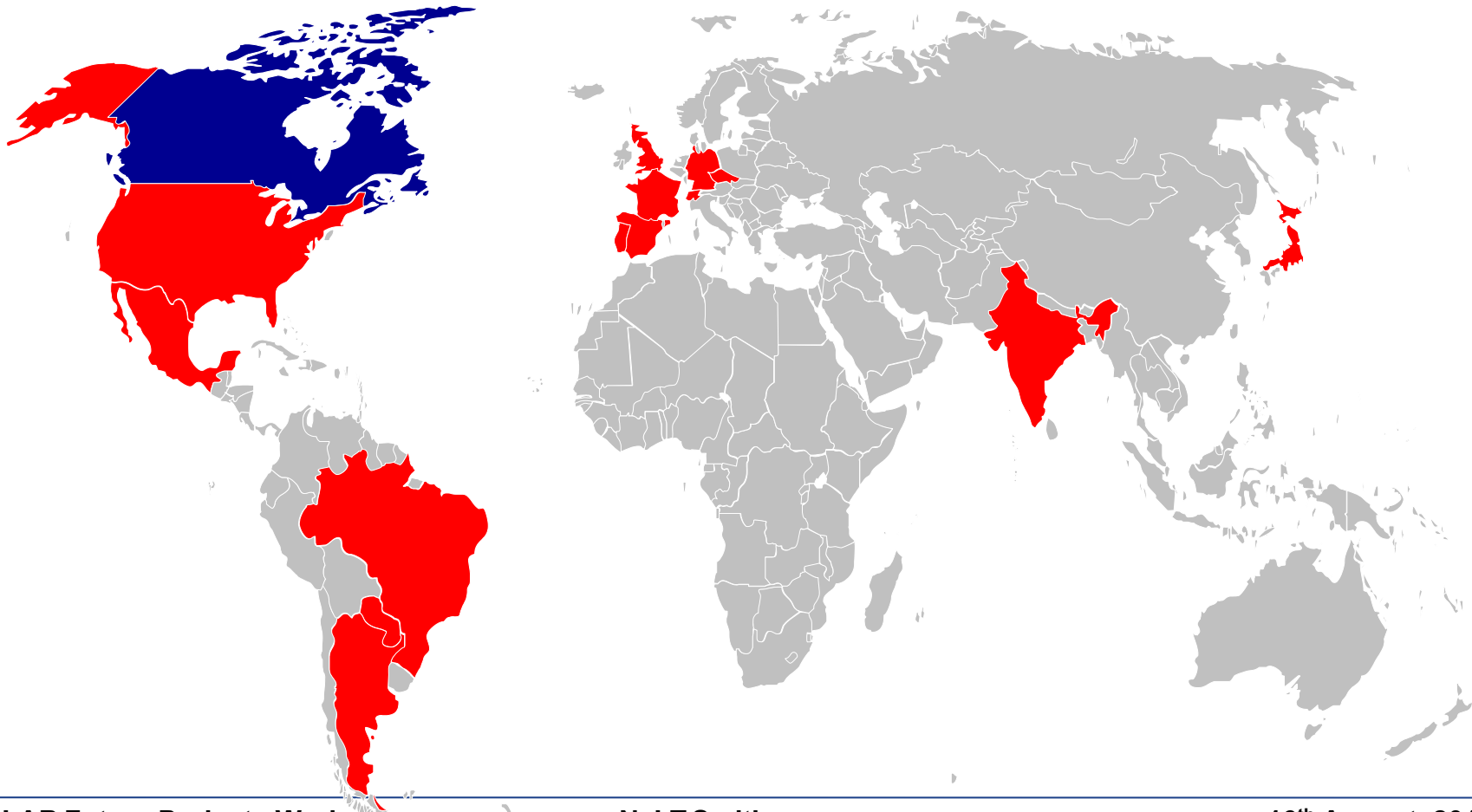


Experiment	Neutrino	Dark Matter	Status	Collaboration Demographics
CUTE		√	In Preparation	Canada, US, UK, France, India, Spain
DAMIC		√	Operational	Canada, US, Argentina, Brazil, Mexico, Paraguay, Switzerland
DEAP-3600		√	Operational	Canada, US, UK
DEAP-50T/CLEAN		√	Letter of Intent	Canada, US, UK
DMTPC		√	Concept Phase	US, UK
DUST			Letter of Intent	Canada
FLAME			Operational	Canada
Ge-1T	√		Letter of Intent	Canada, US
nEXO	√		Concept Phase	Canada, US
HALO	√		Operational	Canada, US, UK, France, Germany, Japan
MiniCLEAN		√	Commissioning	Canada, US
MODCC			Operational	Canada
NEWS		√	In Preparation	Canada, US, France
PICO-60		√	Operational	Canada, US, Czech Republic, India, Mexico
PICO-500		√	Letter of Intent	Canada, US, Czech Republic, India, Mexico
REPAIR			Operational	Canada
SuperCDMS		√	In Preparation	Canada, US, UK, France, India, Spain
SNO+	√		Commissioning	Canada, US, UK, Germany, Mexico, Portugal

# Current community supported

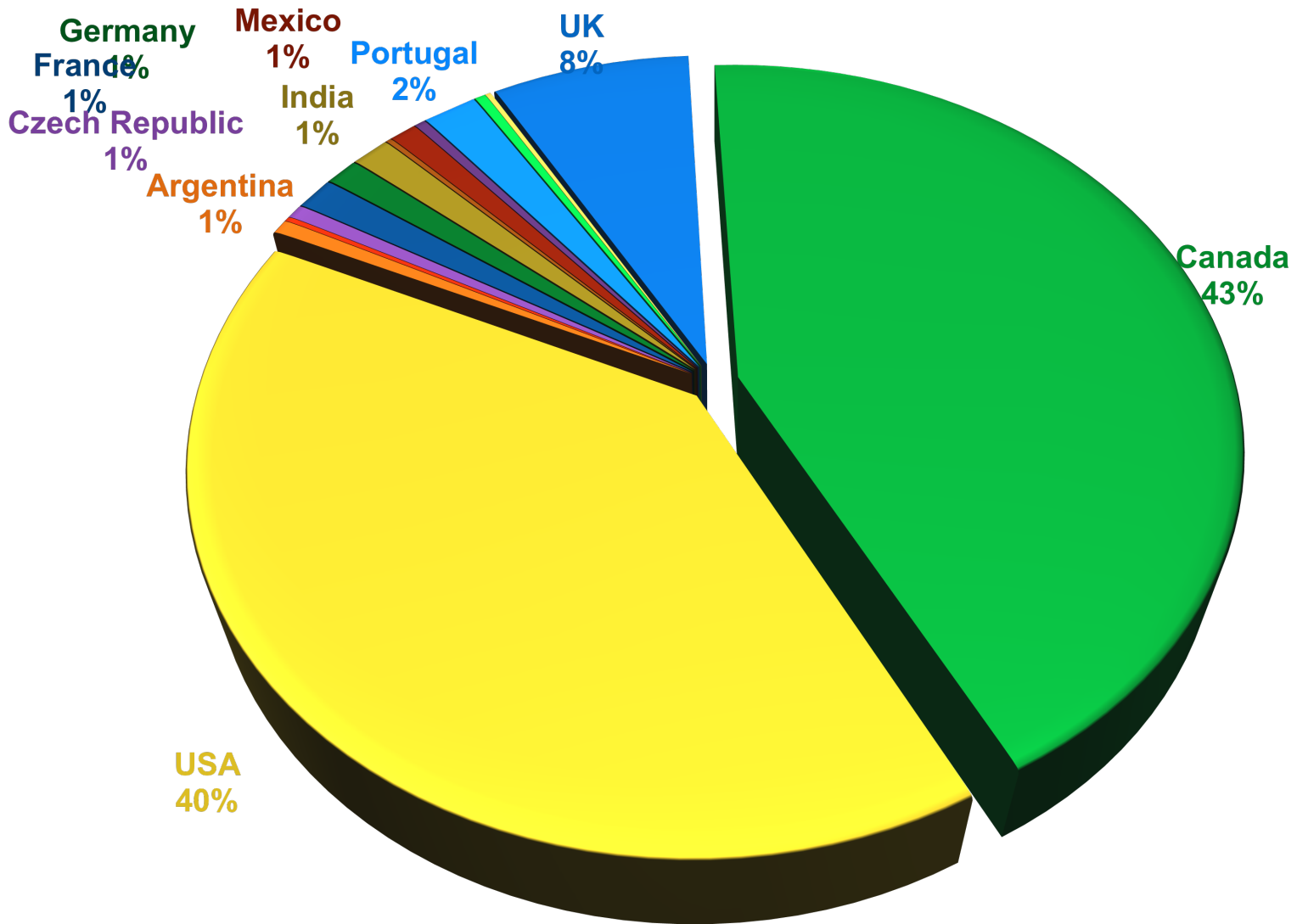


- 164 faculty researchers from 78 institutions over 15 countries
  - ~25% of faculty are Canadian
- ~500 faculty, highly qualified personnel and technical support
- ~11,000 underground person-shifts per year (~50/dayshift)





# Users by Country

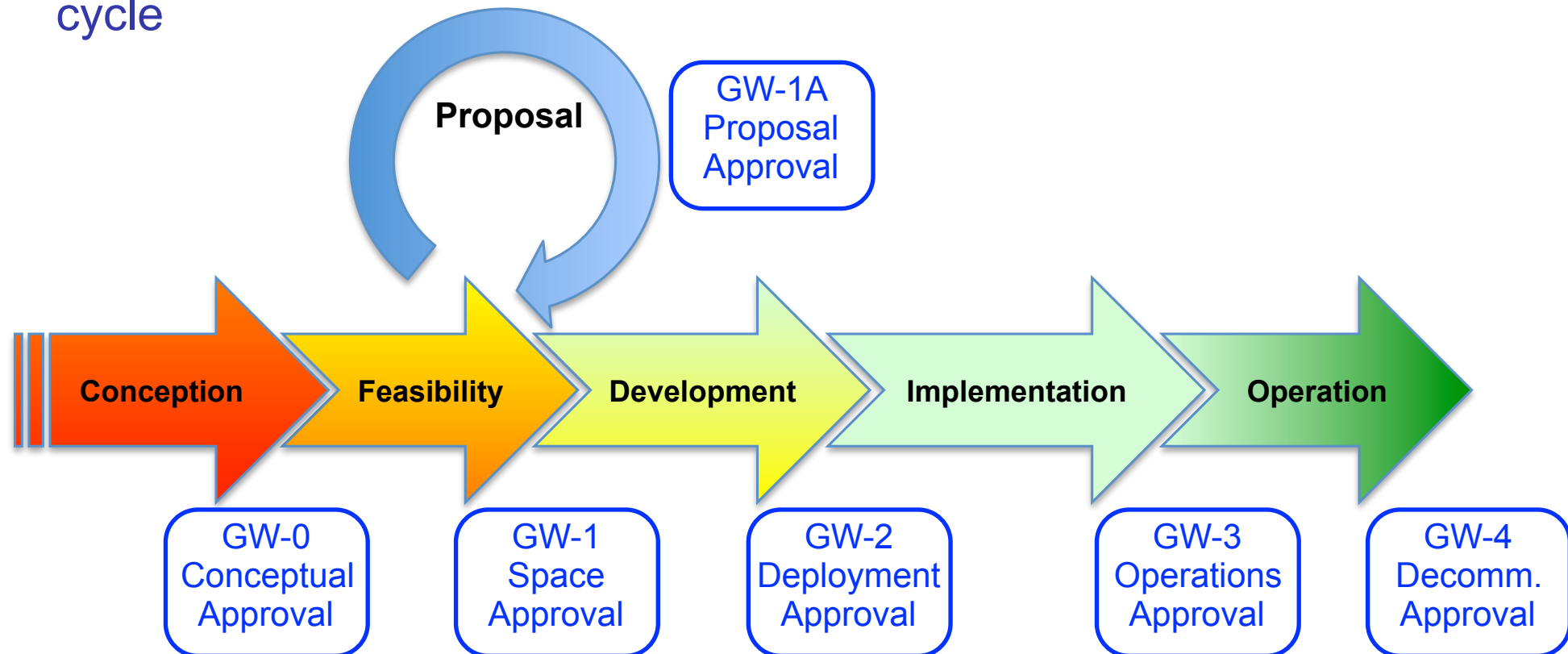


Total Number of Users - 488

# Life Cycle Phases



- Process implemented Fall 2015; aligns with DOE and TRIUMF
- Each phase leads to a GateWay, prior to passing to next phase
- SNOLAB Projects Office supports projects through the process; all projects have a project coordinator assigned
- Expressions of Interest accepted at any time, natural EAC biannual cycle



# SNOLAB Organisation



## SNOLAB Organisational Diagram SL-MCS-LED-10-001-P Rev 64 (August 2017)

Functional and line management organisational chart, job titles descriptive.

*Additional Assignments*

**Laboratory Response Coordinators:** liaison with Vale, primary emergency contact & response, knowledge and veto on underground activities

**GLIMOS:** experiment contact for health and safety, ensure personnel trained and competent, ensure P.I.P. in place

**Surface Laboratory Manager:** co-ordination and management of activity and space within the surface laboratories (**R. Ford**)

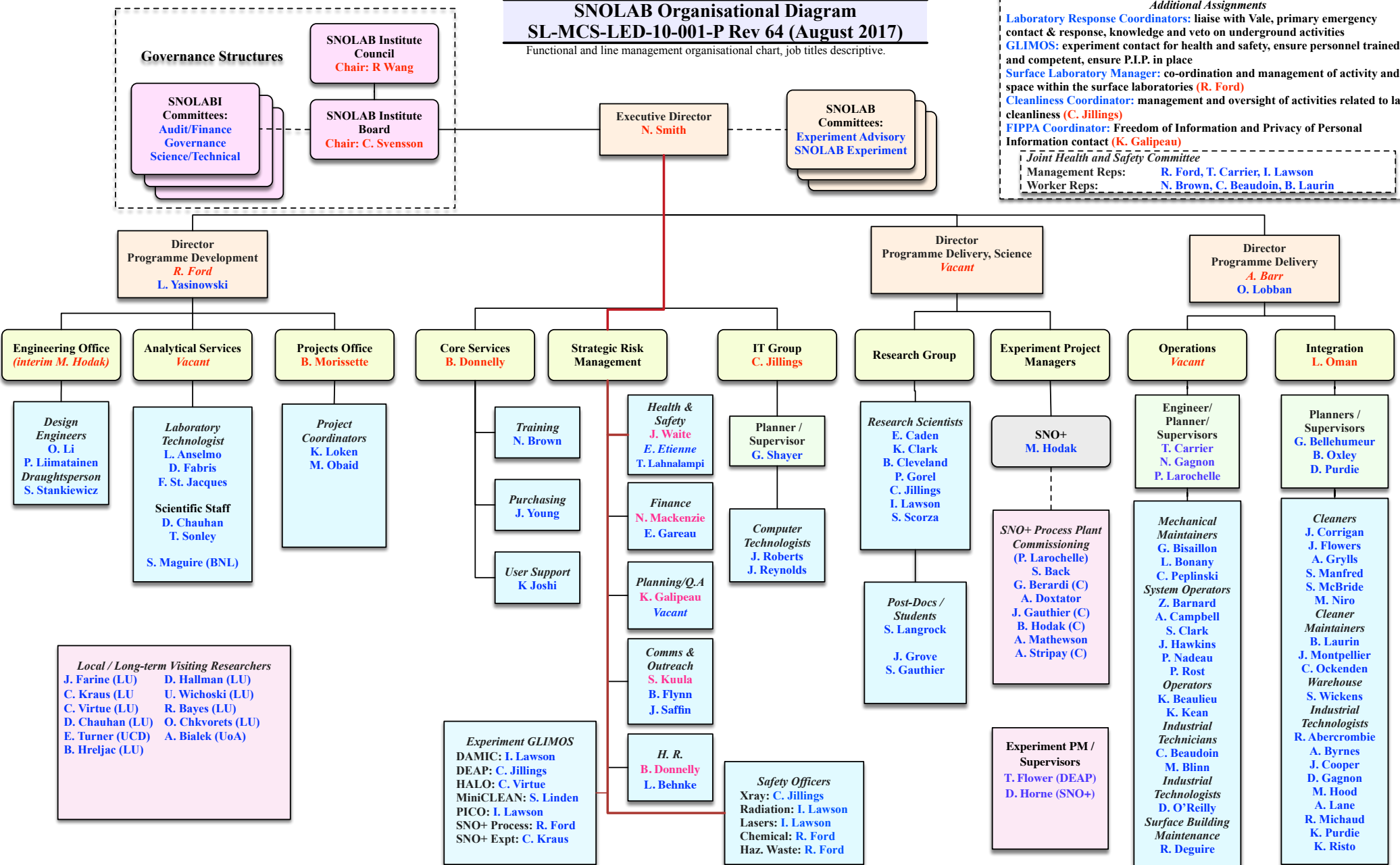
**Cleanliness Coordinator:** management and oversight of activities related to lab cleanliness (**C. Jillings**)

**FIPPA Coordinator:** Freedom of Information and Privacy of Personal Information contact (**K. Galipeau**)

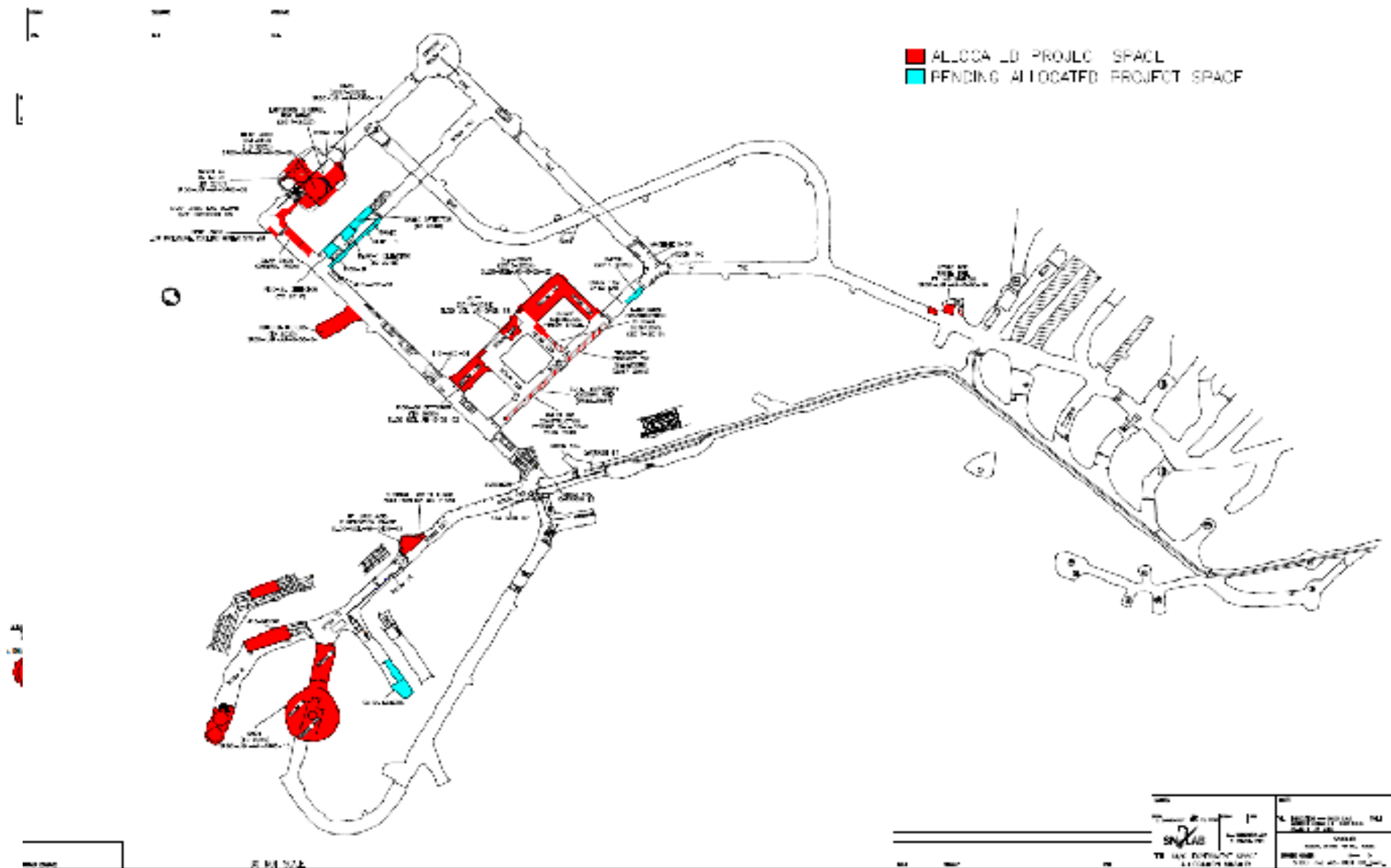
**Joint Health and Safety Committee**

Management Reps: **R. Ford, T. Carrier, I. Lawson**

Worker Reps: **N. Brown, C. Beaudoin, B. Laurin**



# Overview of U/g Lab Space



# Lab developments underway





# New u/g Office/mtg rooms



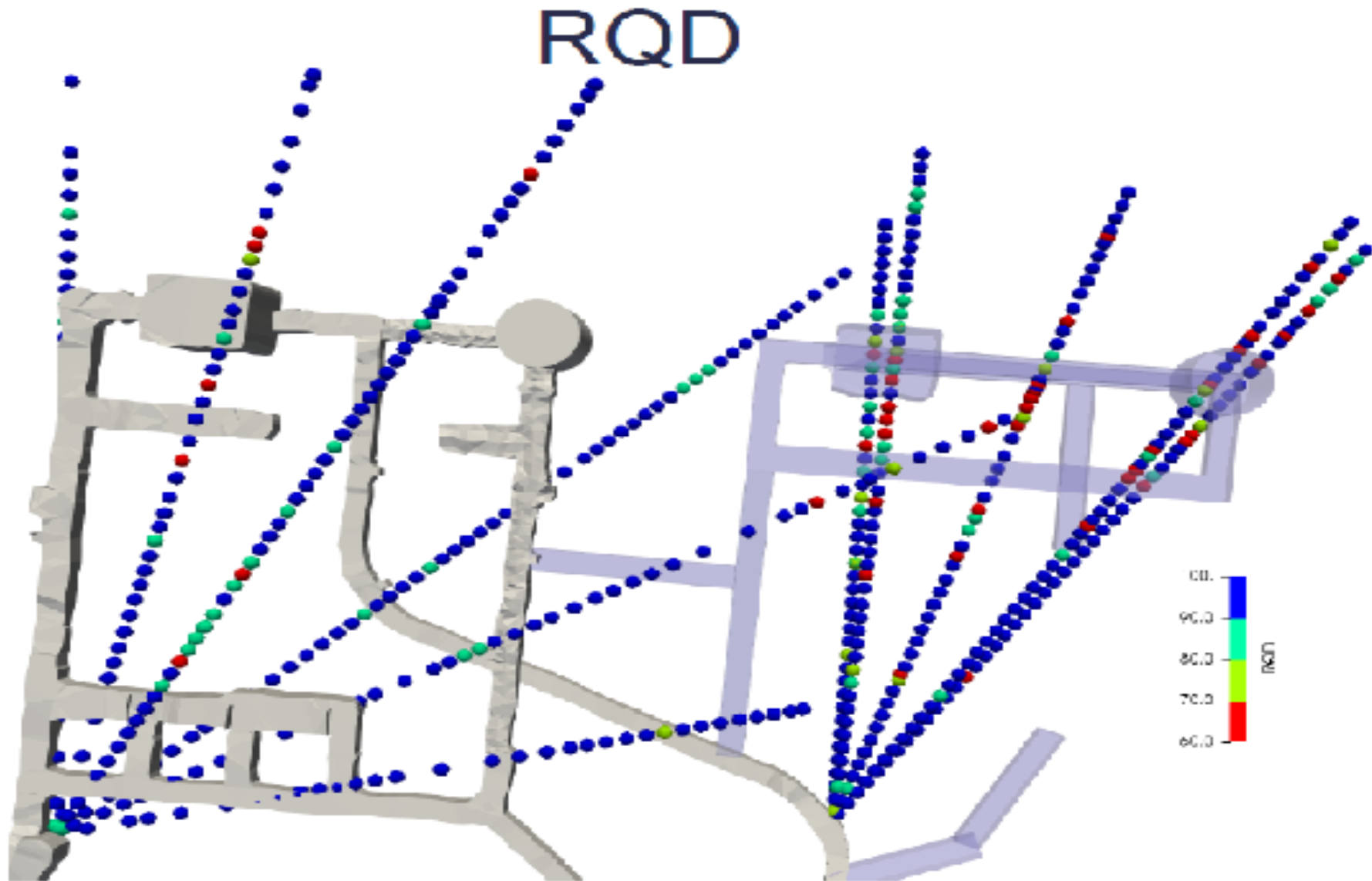
- Current status
  - Reconditioning of 100' of unused drift south of the existing refuge meeting room is complete
  - Survey of the area is complete
  - Preliminary concepts have been submitted to the SNOLAB Design Office for issue of construction drawings
  - 8 open concept desks
  - 2 private offices
  - 1 private meeting room
  - This new area is all within the Refuge boundary
  - Upon release of drawings, public tender through Queens U will take place (12 weeks min)
- Our hope is to start construction early 2018
- Delivery to SNOLAB Operations 2019

# Exploratory drilling

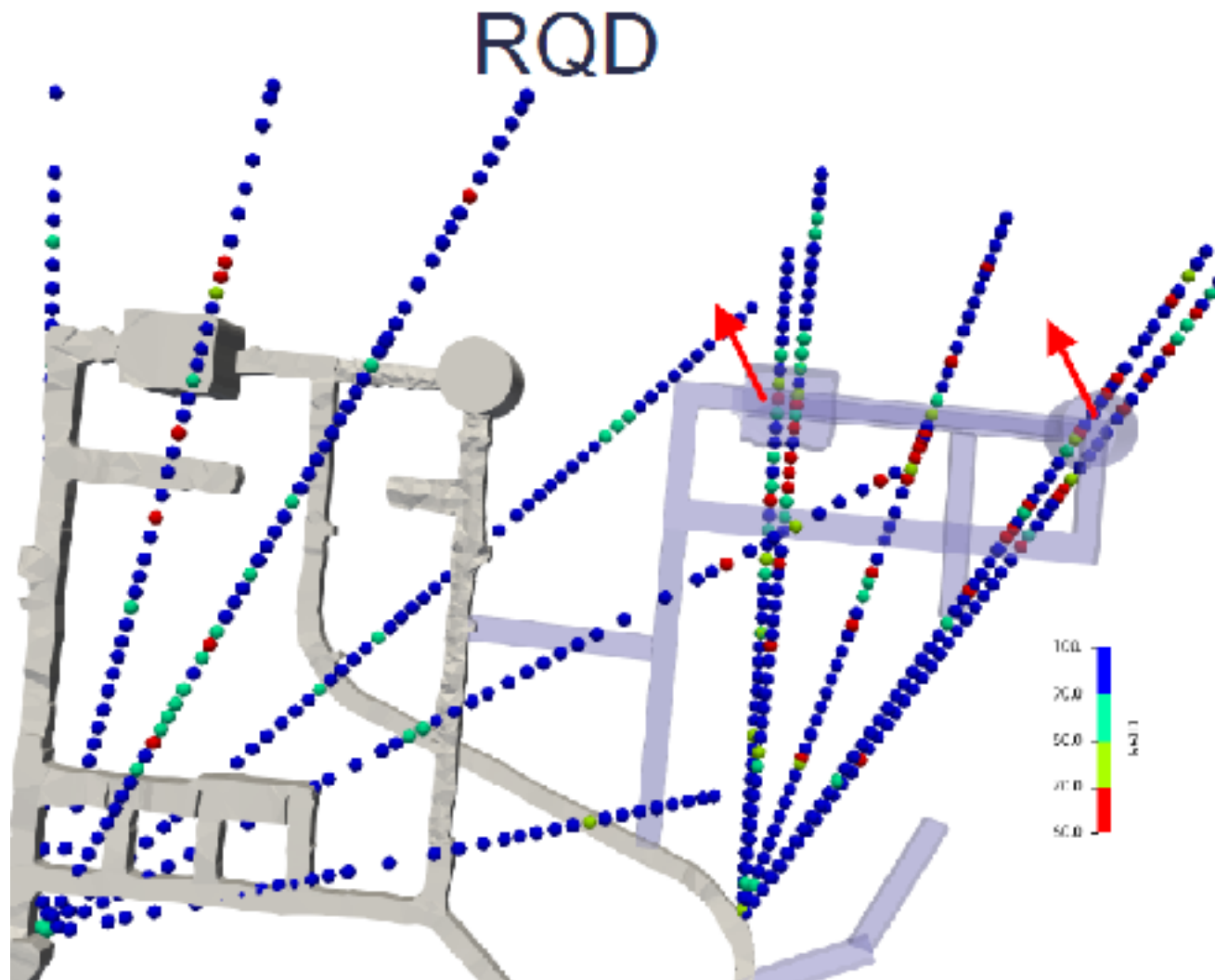


- To explore the possibility of adding two large halls similar in size to the Cube and Cryo Hall to meet the needs of future Experiments.
- Current status
  - Itasca Engineering consulted and developed an exploratory drill plan
  - Drill plan executed by Vale
  - Drilling of five holes was completed early 2017
  - Core logging and interpretation by Itasca completed June 2017
  - Core data suggests shifting the halls south west
  - It is possible to excavate new experimental space on 6800 level

# Exploratory Drilling



# Exploratory drilling



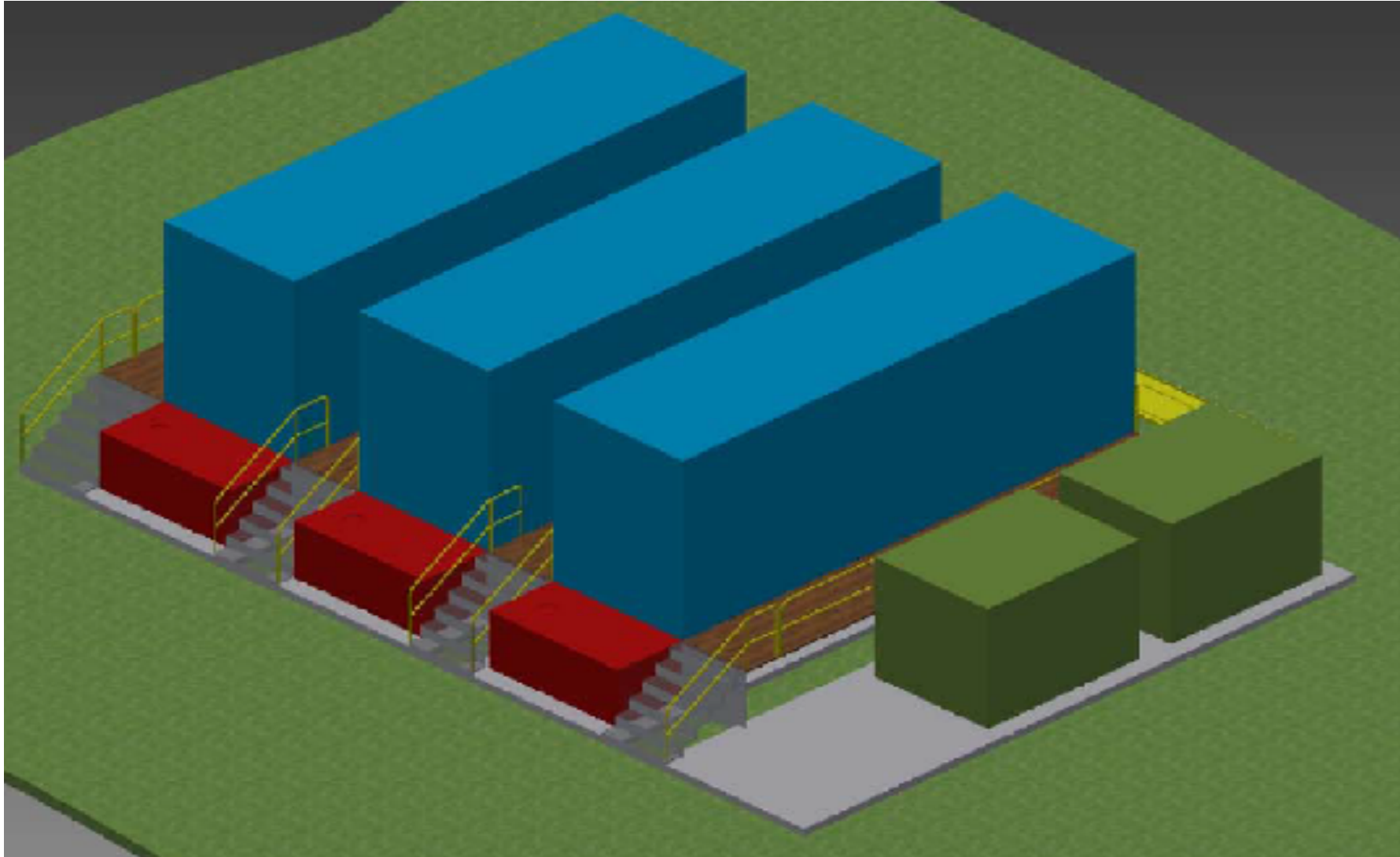
# Backup Diesel Generators



- Current Status
  - Agreements with Vale are in place
  - 3 @ 1 Mw diesel generators will have the capacity to run the entire underground lab now and for the foreseeable future
  - Surface geotechnical investigation is complete
  - Underground electrical switch location has been secured
  - Preliminary designs are complete
  - Public procurement for the 3 generators, ATS and ROB is 90% complete.
  - Expect to issue PO's Sept 2017
  - Break ground on surface spring 2018
  - Deliver system to SNOLAB Operation spring 2019



# 3 x 1Mw Diesel Generators



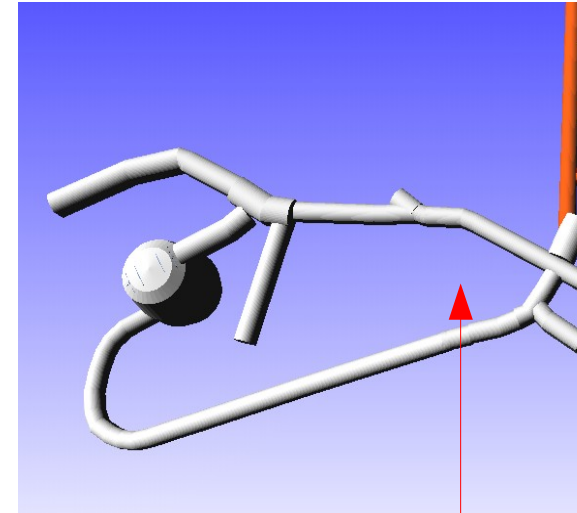
# Future Low Background Counters and Facilities

A new dedicated space is under construction for a low background lab located in the South Drift (Rm 7.)

This drift is isolated from other drifts and is inaccessible to large equipment. This will reduce micro-seismic noise which can effect low background detectors.

A radon free room will be constructed for sample preparation and sample storage underground. Surface air will be used and further purified to reduce radon levels to the order of  $\sim 1 \text{ mBq/m}^3$ . Ambient radon levels in the UG lab are  $135\text{-}150 \text{ Bq/m}^3$ .

Space can accommodate several HPGE detectors, XRF, radon emanation chamber, alpha counters and there is some unallocated space for additional counters which would benefit from low-cosmic ray background.



South Drift  
(Room 7)

# The next few years



- Additional evolution of science programme (with current focus)
- Consolidation of existing threads
- **Science and Infrastructure Goals**
  - Deliver science from existing programme
  - Develop world-class low background counting facility
- **Community Goals**
  - Refinement of plans for Cryopit
  - Engagement in development of Canadian community proposals and programme, with Universities and CFREF
  - Develop international engagement (US/EU double beta process, EU DM cryogenic community). Act as broker/interface where possible
- What do you need from SNOLAB?