SNOLAB

Future Projects Workshop

Nigel Smith
Executive Director

Welcome!

Aims of the meeting

- Review current programme, plans for the future
- Extend the dialogue on possible future projects at SNOLAB
  - Aiming for a five to ten year forward look
- Overview resources and space availability within the facility
- Plan infrastructure needs from the facility
  - Low background satellite meeting

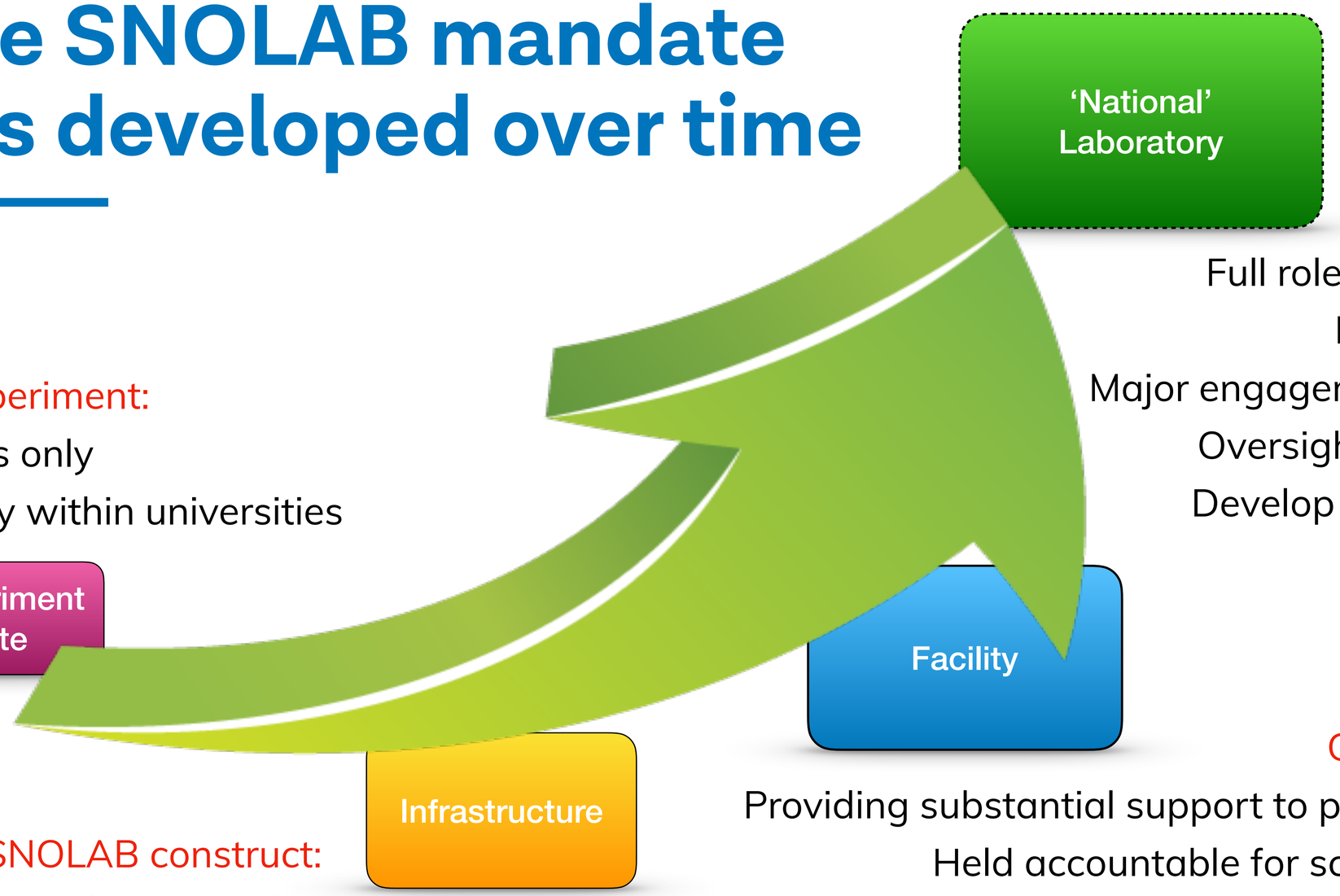
Strategic plan
2017 - 2022

Implementation plan
2017 - 2022

Our Vision

To be an internationally recognized laboratory and partner of choice for deep underground science, delivering world-class research, scientific discovery and benefit to Canada, and her global partners, by enabling national and international access to our unique capabilities, facilities and expertise.

The SNOLAB mandate has developed over time



Initial SNO experiment:

Site operations only

Project delivery within universities

Initial SNOLAB construct:

Develop multi-use facility

Project delivery within universities

Long range objective:

Full role in research ecosystem

Role in science delivery

Major engagement in project delivery

Oversight with all stakeholders

Develop international networks

Current status:

Providing substantial support to project delivery

Held accountable for science delivery

Developing project oversight

What do we do for our community?

Project management support
Expt. operational support
International connections
Research Scientists
Construction support
Future scanning

Inspire new generation of scientists
Diversity, equity, inclusivity
Public and stakeholder return

Maintain the environment for support
Develop new capabilities that the community needs

Risk “legatee”
Support project lifecycle
EH&S and project reviews

SNOLAB Projects and Lifecycle

Proj #	Project	GW Status	Initiation	GW-0	Definition	GW-1	Proposal	GW-1A	Development	GW-2	Implementation	GW-3	Operation	GW-4	Closure	End
025	PUPS	5														
19	COUPP-4	5														
012	PICASSO	5														
018	DEAP-1	5														
007	HALO	3											Running			
030	DAMIC	3											Running			
019	PICO-60	5														
033	PICO-2L	5														
041	REPAIR	3											Running			
042	Flys in a Mine	3											Running			
020	DEAP-3600	3											Running			
023	MiniCLEAN	3														
013	SNO+	3											WaterRun			
013-A	SNO+ TeA	2														
013-B	SNO+ TeDiol	2														
001	SuperCDMS-SNOLAB	1														
038	NEWS-G	1														
040	DMTPC	0														
044	CUTE	2														
045	PICO-500	0														
046	DUST	0														
037	Ge-1T?	x														
032	nEXO	0														
019A	PICO 40	2														
47	Sensei	0														
48	NEWS-DM	0														
49	SBC	0														

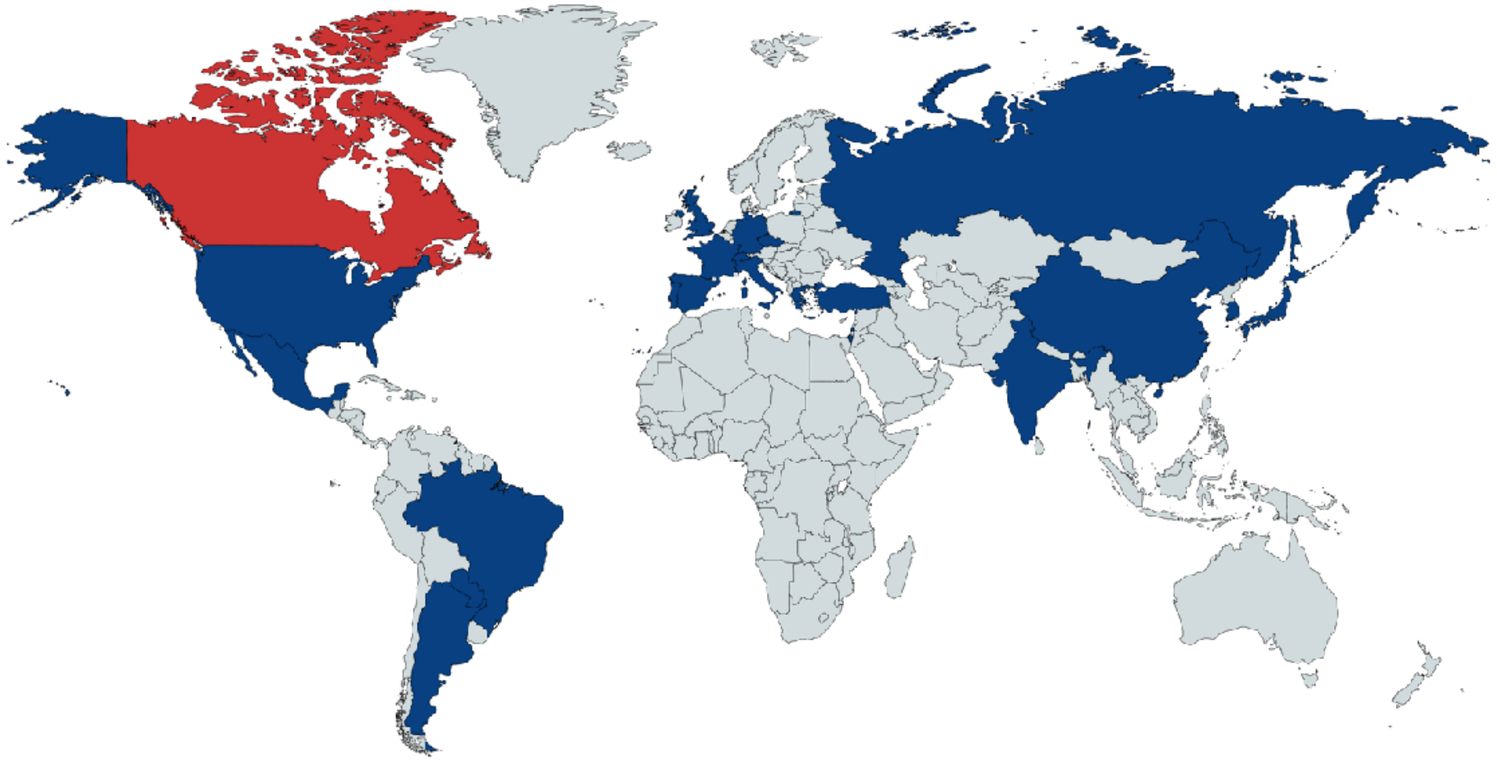
Text

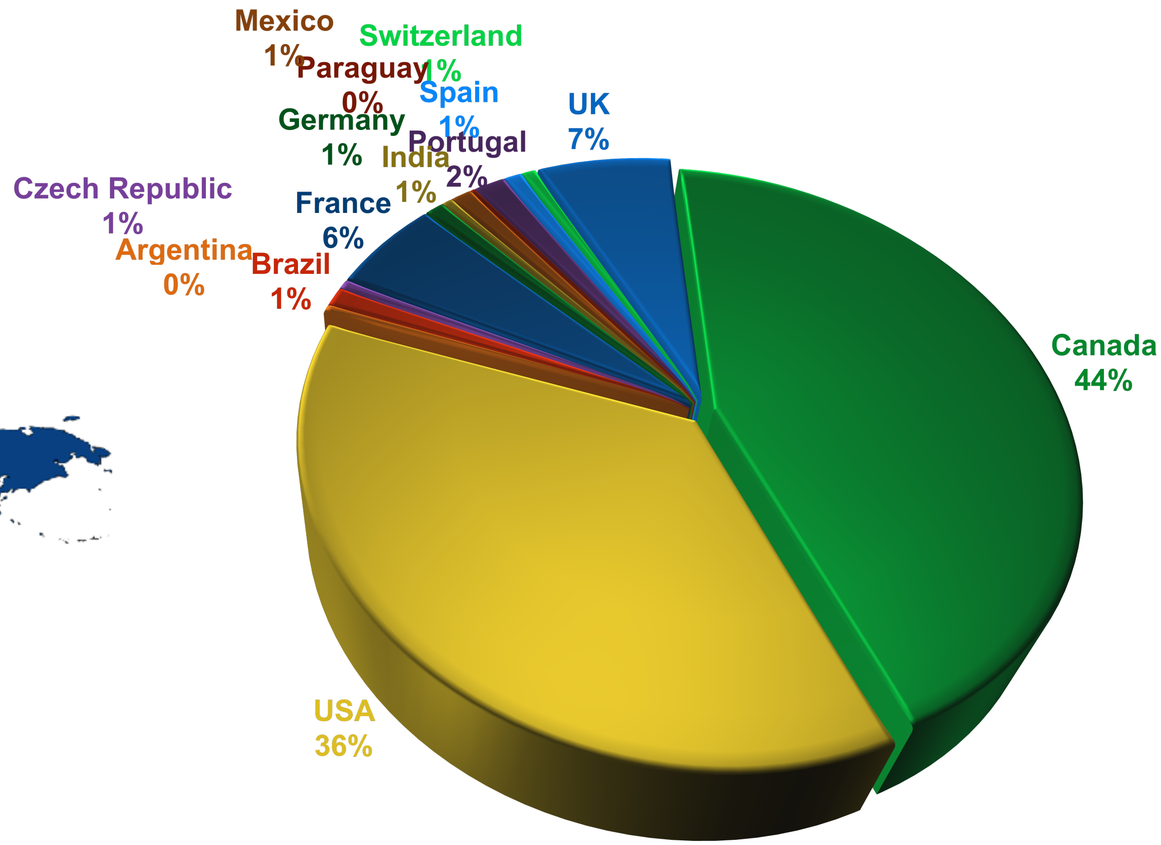
Completed
In Progress
Run'g Running
Required but not starte
Deferred
Not Applicable

User-base by Country

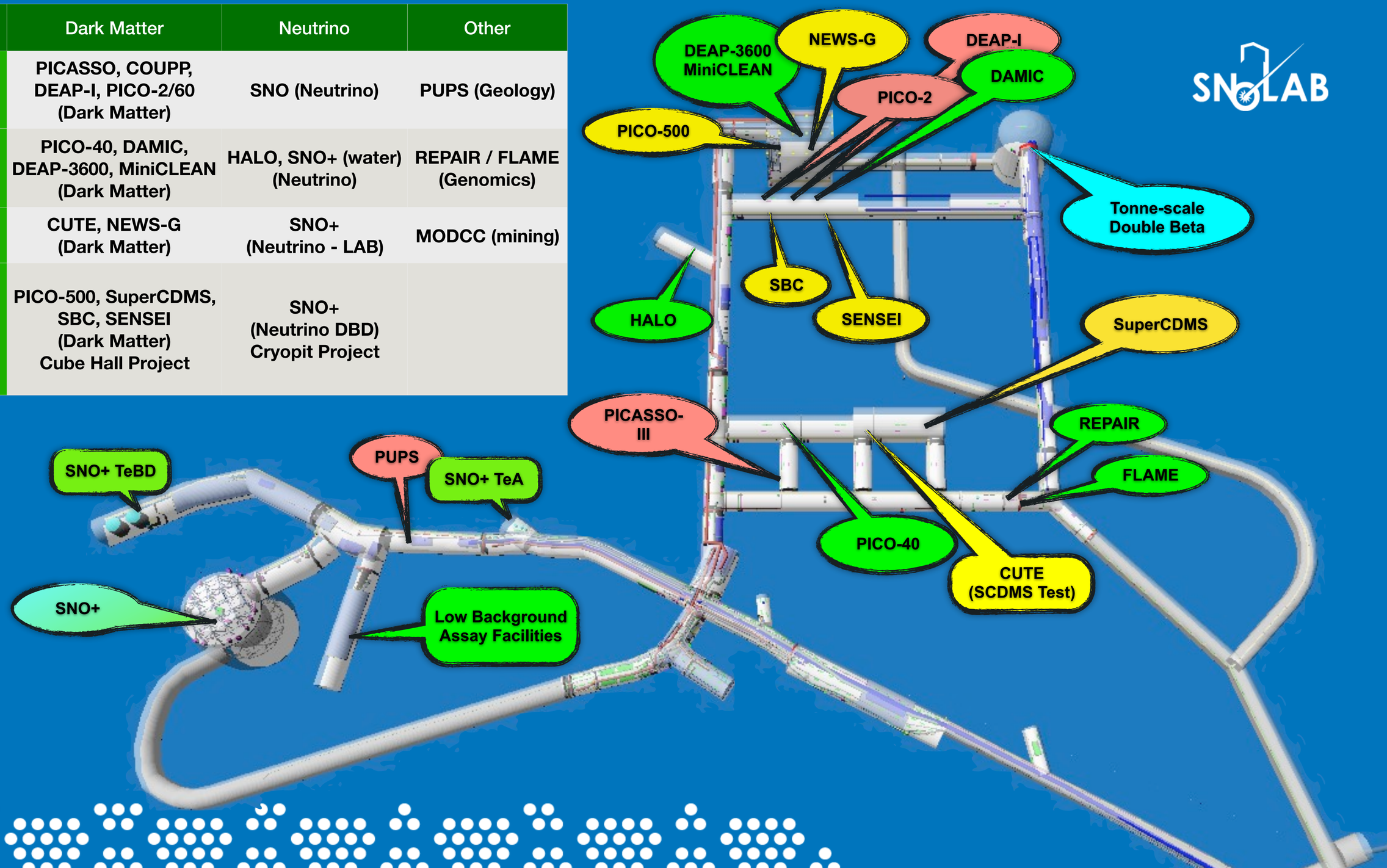
>850 users, ~100 staff

128 Institutes from 22 countries



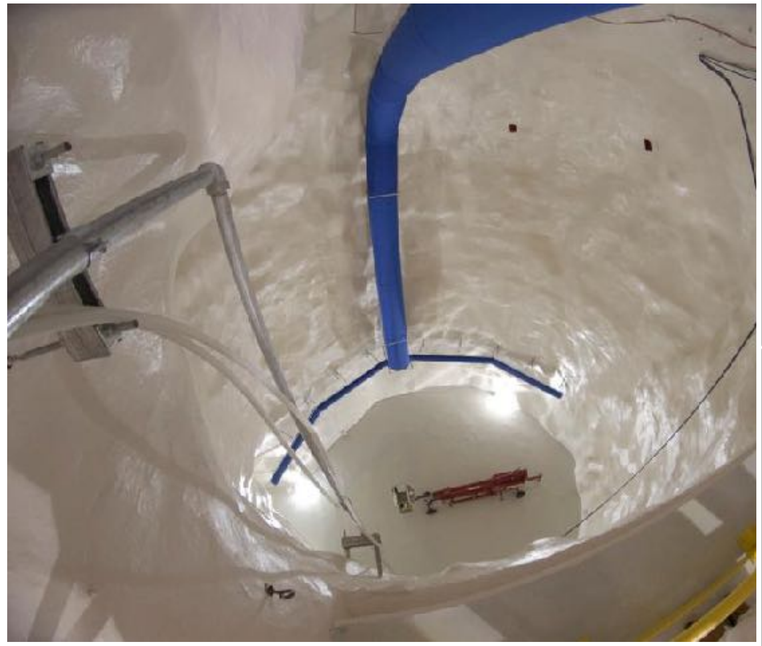


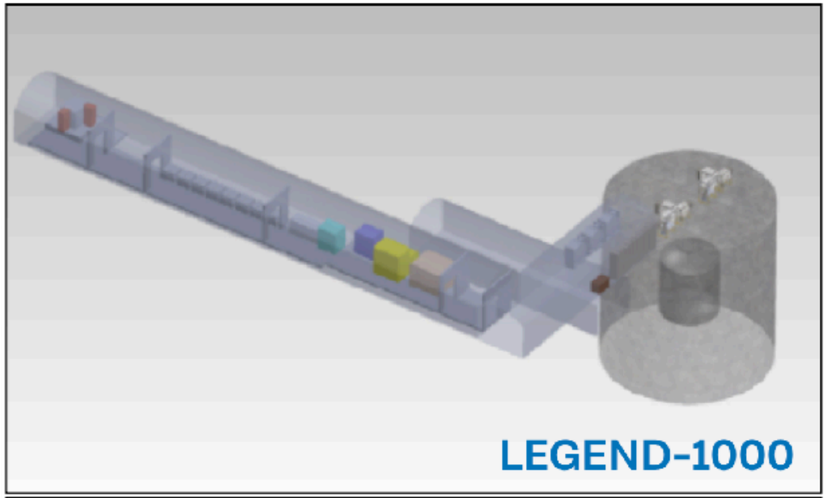
	Dark Matter	Neutrino	Other
Completed	PICASSO, COUPP, DEAP-I, PICO-2/60 (Dark Matter)	SNO (Neutrino)	PUPS (Geology)
Current	PICO-40, DAMIC, DEAP-3600, MiniCLEAN (Dark Matter)	HALO, SNO+ (water) (Neutrino)	REPAIR / FLAME (Genomics)
2019 Start	CUTE, NEWS-G (Dark Matter)	SNO+ (Neutrino - LAB)	MODCC (mining)
2019+	PICO-500, SuperCDMS, SBC, SENSEI (Dark Matter) Cube Hall Project	SNO+ (Neutrino DBD) Cryopit Project	

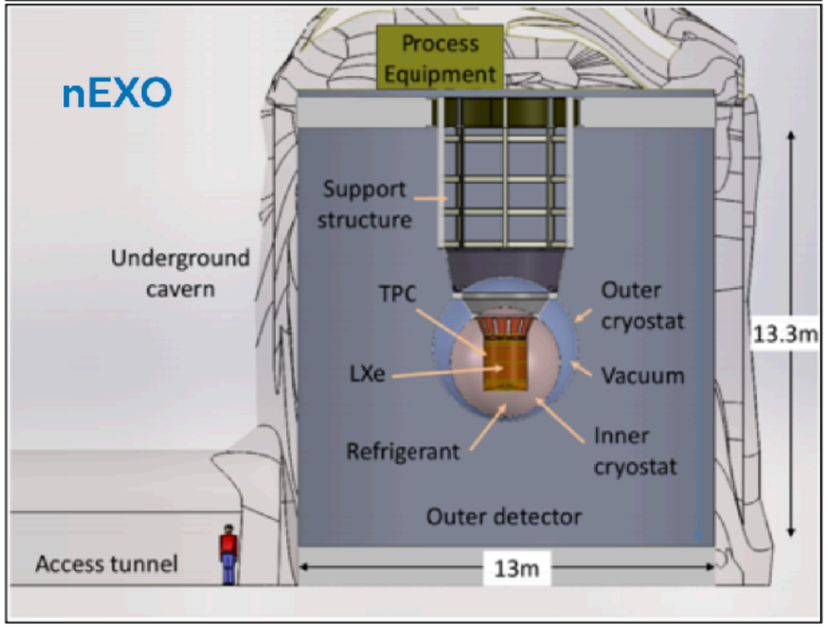


US DOE CD-0: Tonne-Scale 0νββ

- DOE Nuclear Physics released CD-0 for tonne-scale double-beta decay programme end of December 2018
- Provides ‘mission-need’: i.e. it will happen
  - Caveats on funding, timescale, etc.
  - Likely projects are nEXO and LEGEND-1000 for major US investment
  - SNOLAB Cryopit targeted to this programme







MSI Programme and staff evolution

- CFI Change in eligibility for MSI to 60:40 ratio as proposed in the Naylor review (big deal!)
- MSI programme now six years, submission in for April 2020 extension (September review, November decision)
- Expanded eligibility - students/trainees on eligible MSI O&M activities can be included from 2018/19
- R&D for ‘improving services’, strategic planning, incorporation
- Ineligible - direct research costs, real or leased property, science internships and exchanges, stipends
- Plant operations are currently deemed eligible, but science operations are not (cf NSERC support)

Planning for CFI IF round

- 2020 January submission for next IF Round
- We are aware of nEXO, DarkSide
- SNOLAB anticipated projects require substantial SNOLAB investment and potentially new spaces
- Working with projects to conclude “GW-1A” reviews (Cost evaluation for CFI)

To: Canadian SNOLAB Research Community

From: Richard Ford, Director Program Development, SNOLAB

SNOLAB Project Proposals to next CFI IF Competition

This note is to clarify the timeline and requirements for any potential SNOLAB based applications to the anticipated 2019 Canada Foundation for Innovation (CFI) Innovation Fund (IF) competition. Following the most recent federal budget allocation to CFI, we now anticipate an Innovation Fund competition launching in late 2018, with probable submission deadline being the summer of 2019.

Applications for CFI IF funds for SNOLAB based projects are required to undergo a top-level review by SNOLAB (the gateway GW-1A review) and then be supported by a letter from SNOLAB to CFI. Progression to this point in the project lifecycle process is required and will ensure a strengthened CFI application, including a reviewed conceptual design, agreement on scope and deliverables, a work breakdown structure, a preliminary resource-loaded schedule, and cost-estimated budget.

Future Project Development

- Planning for future programme underway with community
- With McDonald Institute leading ‘Snowmass’ type review to develop community plan
  - Need to dovetail with NSERC, EU, US, …
- Community discussion identifies several potential infrastructure needs at SNOLAB
  - Liquid noble plant, storage, purification;
  - Additional drift space, surface facility refurb., independent power feed
  - Some are achievable…

Surface generator plant operational 2019

The next few years

- Science and Infrastructure Goals
  - Deliver science from existing programme
  - Complete deployment of approved projects
  - Open new research lines
  - Plan for next generation large-scale projects
  - Develop world-class low background counting facility
- Community Goals
  - Engagement in development of Canadian community proposals and programme (M.I.)
  - Continue international engagement (US/EU double beta process, EU DM cryogenic community). Act as broker/interface where possible
- What do you need from SNOLAB?

Questions?

Executive Director recruitment

- Process is still underway
- Expected completion time clearly pushed back from initial tenure
- Incumbent extended to end of calendar year to provide some headroom (NExit delayed?)
  - Also helps with CFI MSI proposal reviews