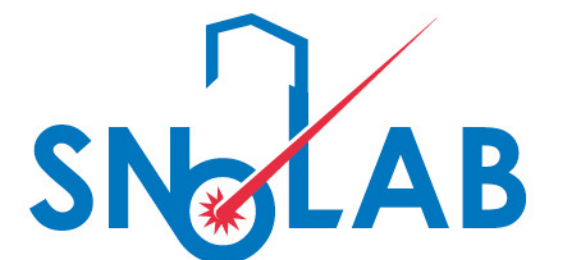


2021/05/10
Future Projects Workshop

SNOLAB Introduction

Jeter Hall
Director of Research



Land Acknowledgment

SNOLAB is located on the traditional territory of the Robinson-Huron Treaty of 1850, shared by the Indigenous people of the surrounding Atikameksheng Anishnawbek First Nation as part of the larger Anishinabek Nation.

We acknowledge those who came before us and honour those who are the caretakers of the land and the waters.

SNOLAB

SNOLAB hosts rare event searches and measurements. It's located 2 km underground in the active Vale Creighton nickel mine near Sudbury, Ontario, Canada.

SNOLAB is operated jointly by University of Alberta, Carleton University, Laurentian University, University of Montreal, and Queen's University

SNOLAB operations are funded by the Province of Ontario, and the Canada Foundation for Innovation



Future Projects Workshop

This workshop is part of our strategic planning process for 2023 – 2029

The workshop has a number of goals:

- Bring together the user community to look at the future
- Get a pulse on the future directions
- Discuss current/future SNOLAB developments for planning
- 5-10 year outlook

SNOLAB Future Projects Workshop 2021

The workshop is **not** part of the project proposal/approval process.

That is the project lifecycle process with the Experimental Advisory Committee.

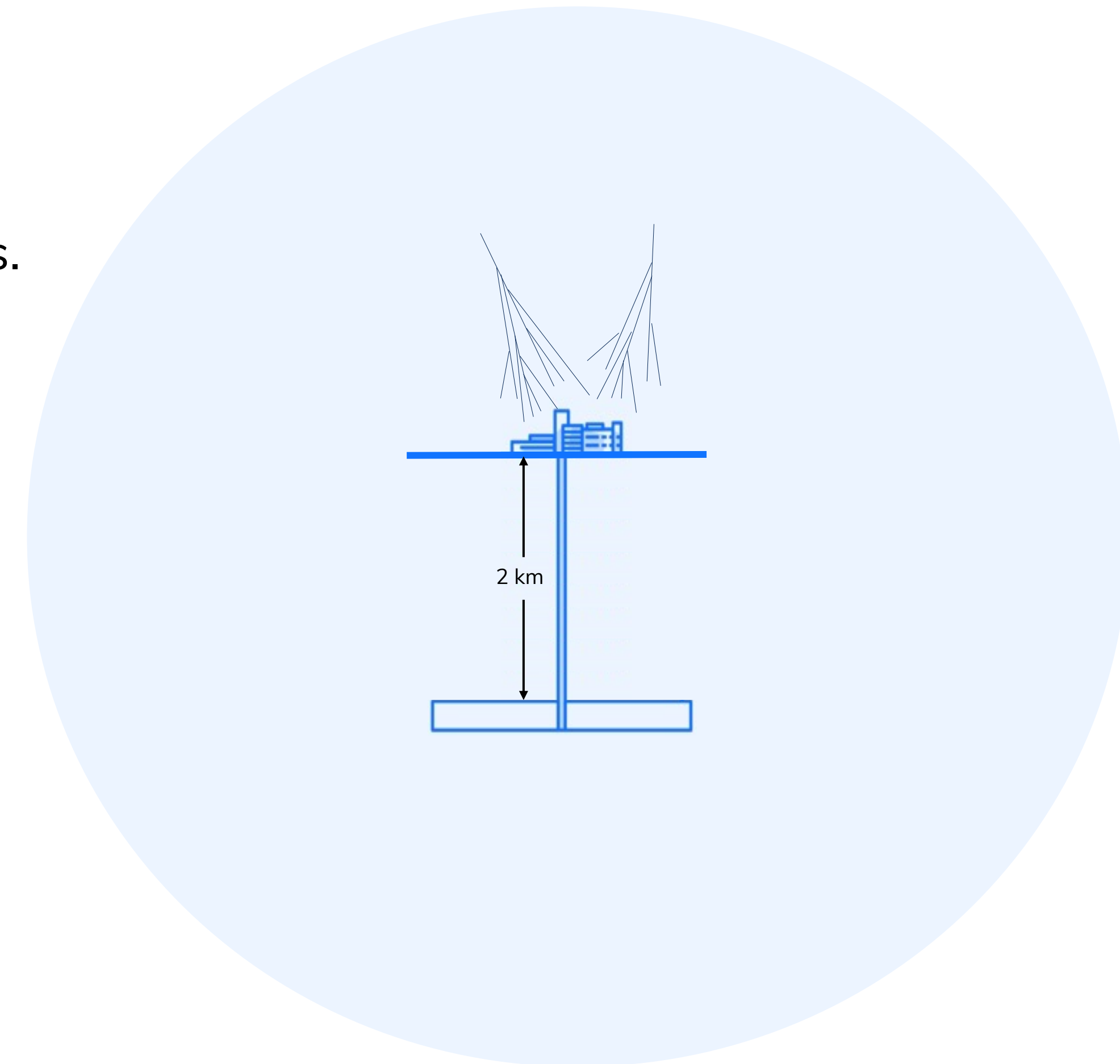
Science Strategy

The science at SNOLAB is currently focused on fundamental particle physics. Primarily looking at further **investigating the nature of matter**. Specifically:

- What is the nature of dark matter?
- What is the nature of the neutrino?

SNOLAB is interested in collaborating on any scientific research that requires deep underground facilities. For example:

- Neutrino observatories (solar, supernovae, geo, reactor, etc.)
- Effects of radiation on biological systems
- Environmental monitoring (nuclear non-proliferation, aquifers, etc.)
- Effects of radiation on quantum technologies



Strategic goals



Enable and spearhead world-class underground science



Develop and maintain world-class facilities and infrastructure



Educate, inspire, and innovate



Develop delivery systems of internationally recognized standard

Core values



Safety

This is the foundation upon which we realize our mission: We are committed, both individually and as a team, to protecting the health and safety of our staff, users, and visitors



Excellence

SNOLAB is committed to fostering a culture in which individuals make full use of their skills and knowledge, and provides opportunities to develop through continual improvement. Our focus is on delivering high-quality research, through driving, supporting, and enabling excellence in research and operations.



Teamwork

Our approach to teamwork is based on the belief that each member brings unique experience and important expertise to the workplace, allowing project challenges to be resolved and creating a work environment that supports cooperation and collaboration in all aspects of work.



Inspiration

We strive to educate and inspire as a core component of our commitment to our public sponsors. To showcase the enthusiasm of our staff and users, and the excitement of the research undertaken, SNOLAB will continue to engage fully in professional and public outreach.



Accountability

SNOLAB is committed to upholding an environment of trust, responsibility, and accountability to our stakeholders. Accountability to internal governance structures, external research communities, funding agencies, and public sponsors is an ongoing goal. Strong governance and effective management will guide our organizational development.

SNOLAB 2023-2029

SNOLAB serves a growing community of scientists, researchers, students, and collaborators from across Canada and around the world.

We see this continuing, but with growing pressure on the underground campus.

128 institutions

23 countries

137 employees

863 Users

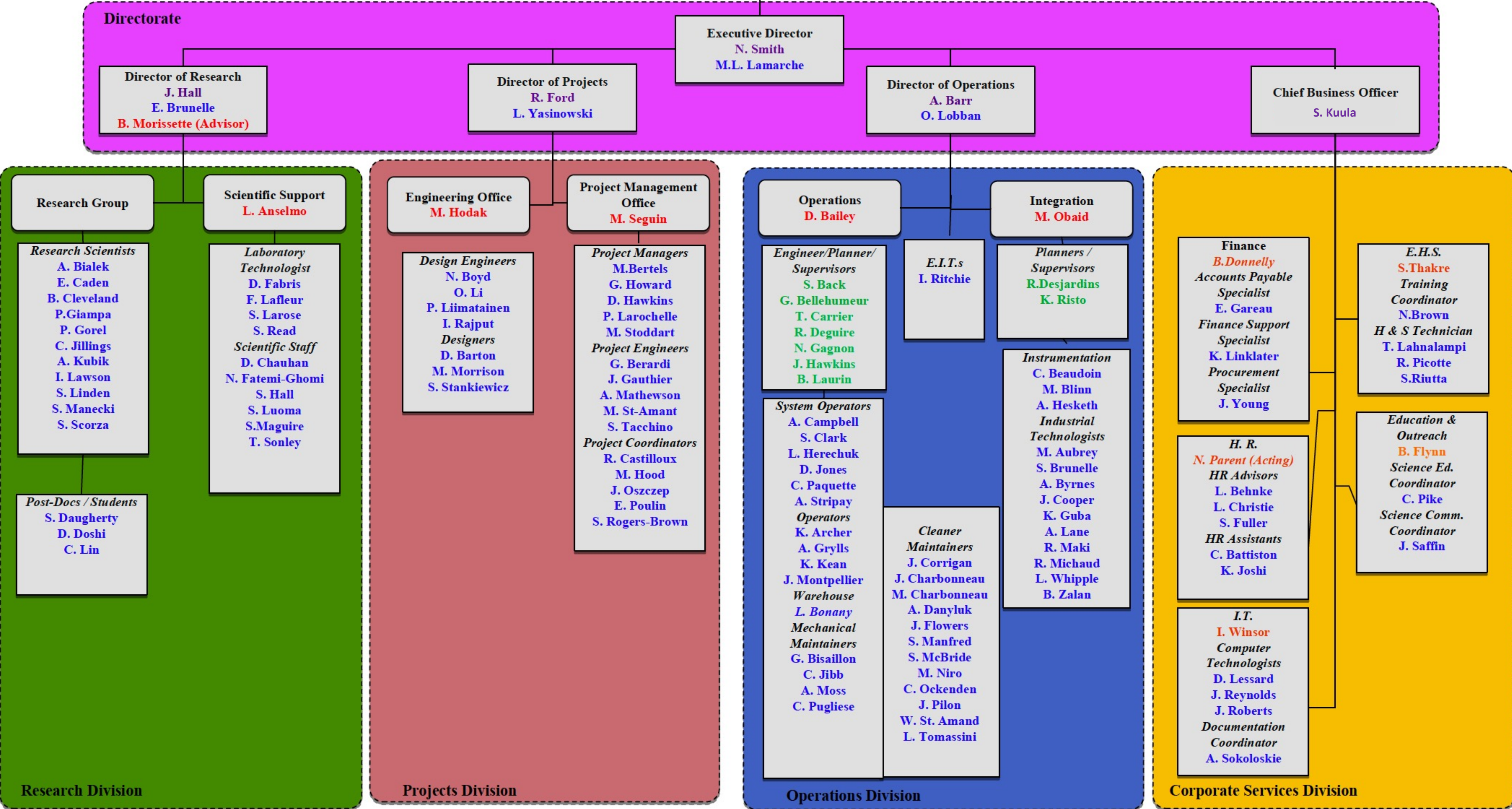
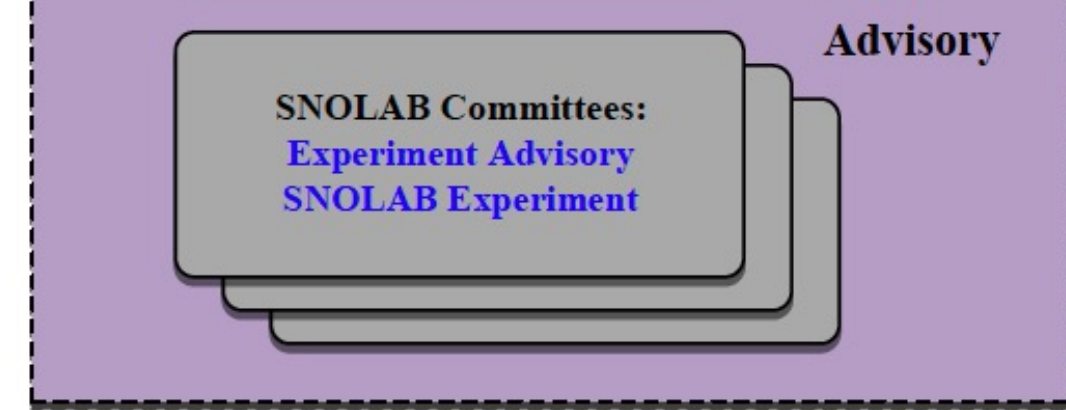
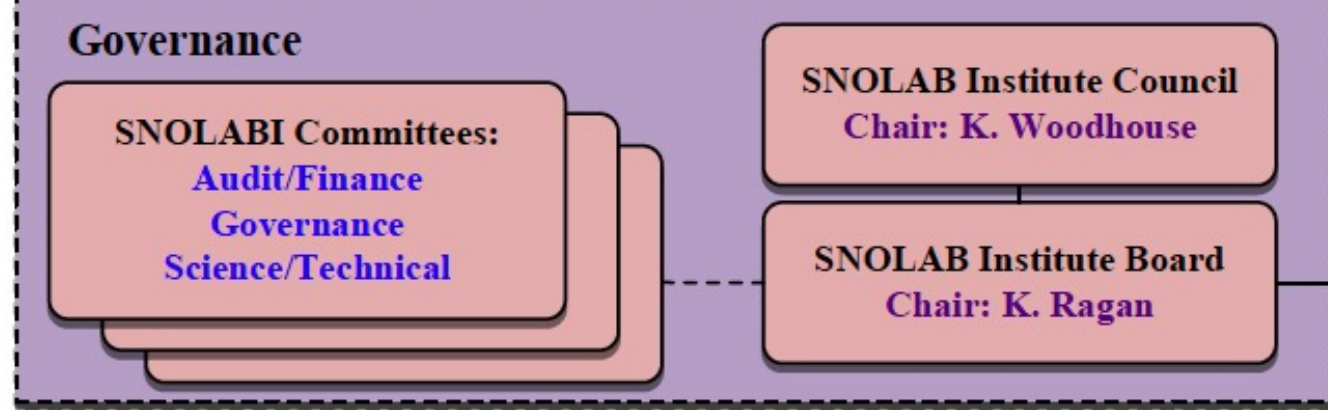




SNOLAB Organisational Diagram

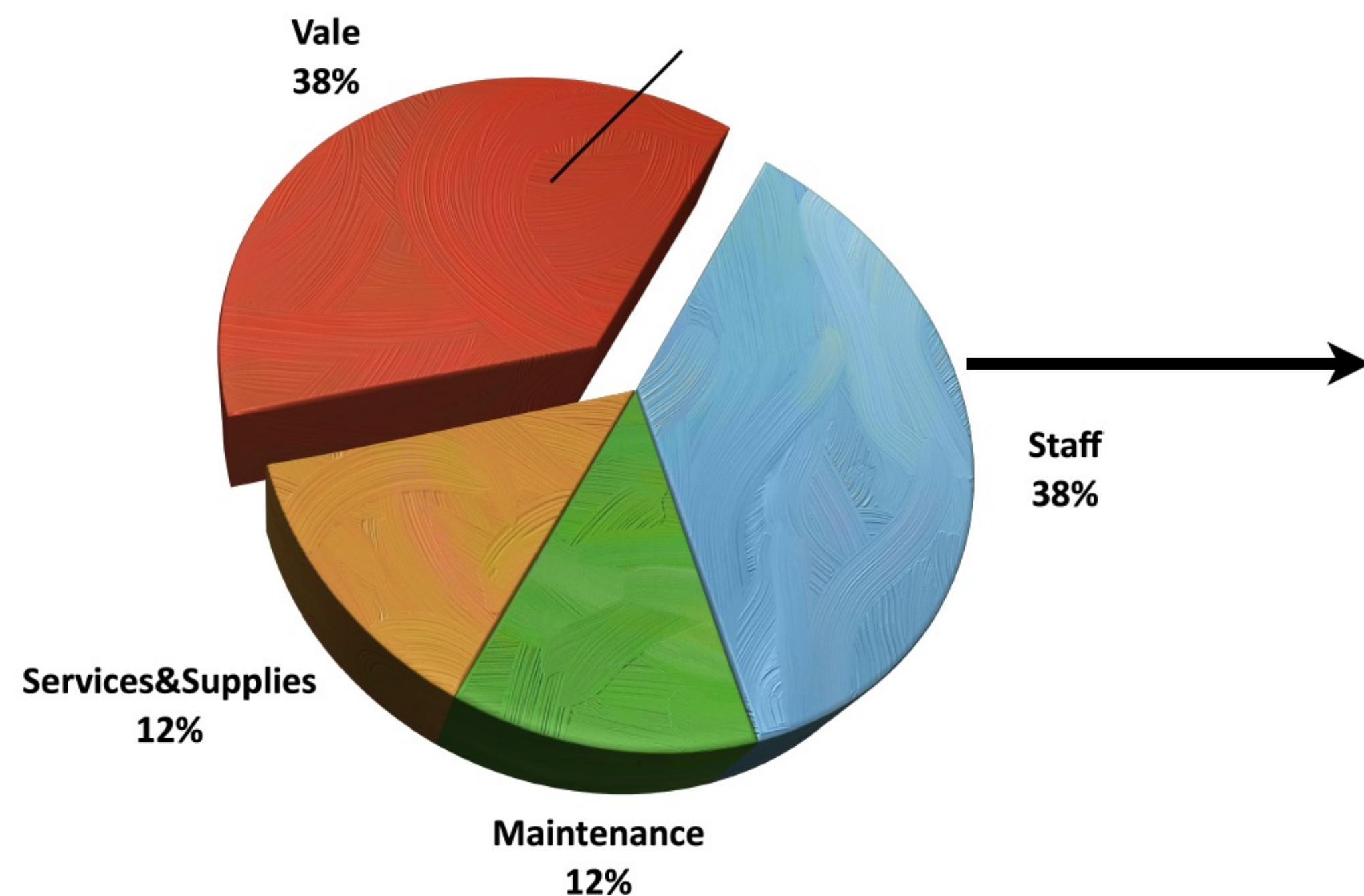
SL-MCS-LED-10-001-P Rev 93 (March 2021)

Functional and line management organisational chart, job titles descriptive.

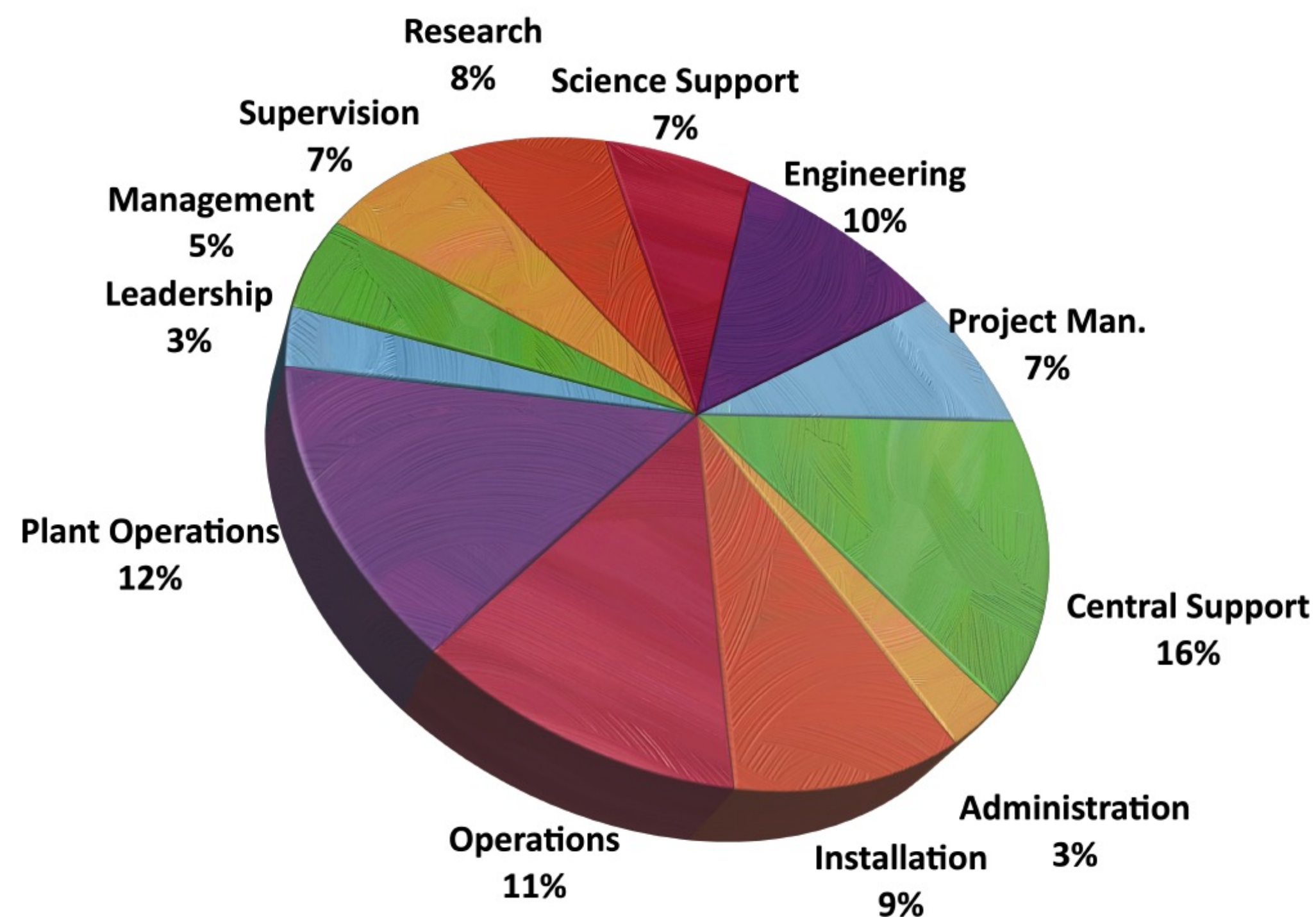


SNOLAB 2023-2029

Vale is in-kind shaft operations

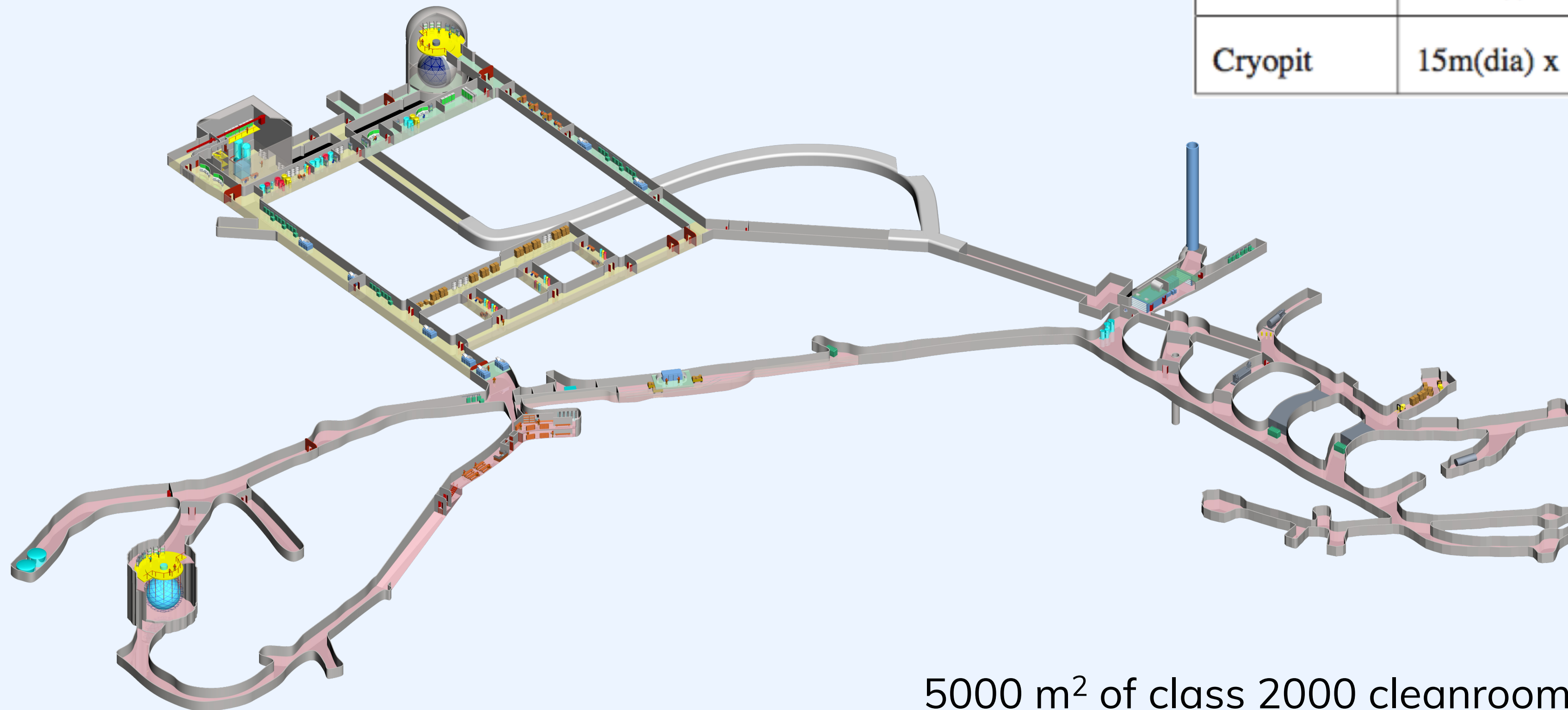


\$30 MCAD/year including Vale in-kind support



2021: 137 staff

SNOLAB layout



Area	Dimensions	Area	Volume
SNO Cavern	24m (dia) x 30m(h)	250m ²	9,400 m ³
Ladder Labs	32m(l)x6m(w)x5.5m(h)	190m ²	960 m ³
	23m(l)x7.5m(w)x7.6m(h)	170m ²	1,100 m ³
Cube Hall	18.3m(l)x15m(w) x 19.7m(h)	280m ²	5,600 m ³
Cryopit	15m(dia) x 19.7m(h)	180m ²	3,900 m ³

5000 m² of class 2000 cleanroom underground.
<2000 particles >0.5 μm in diameter per ft³

Large Cavity Status

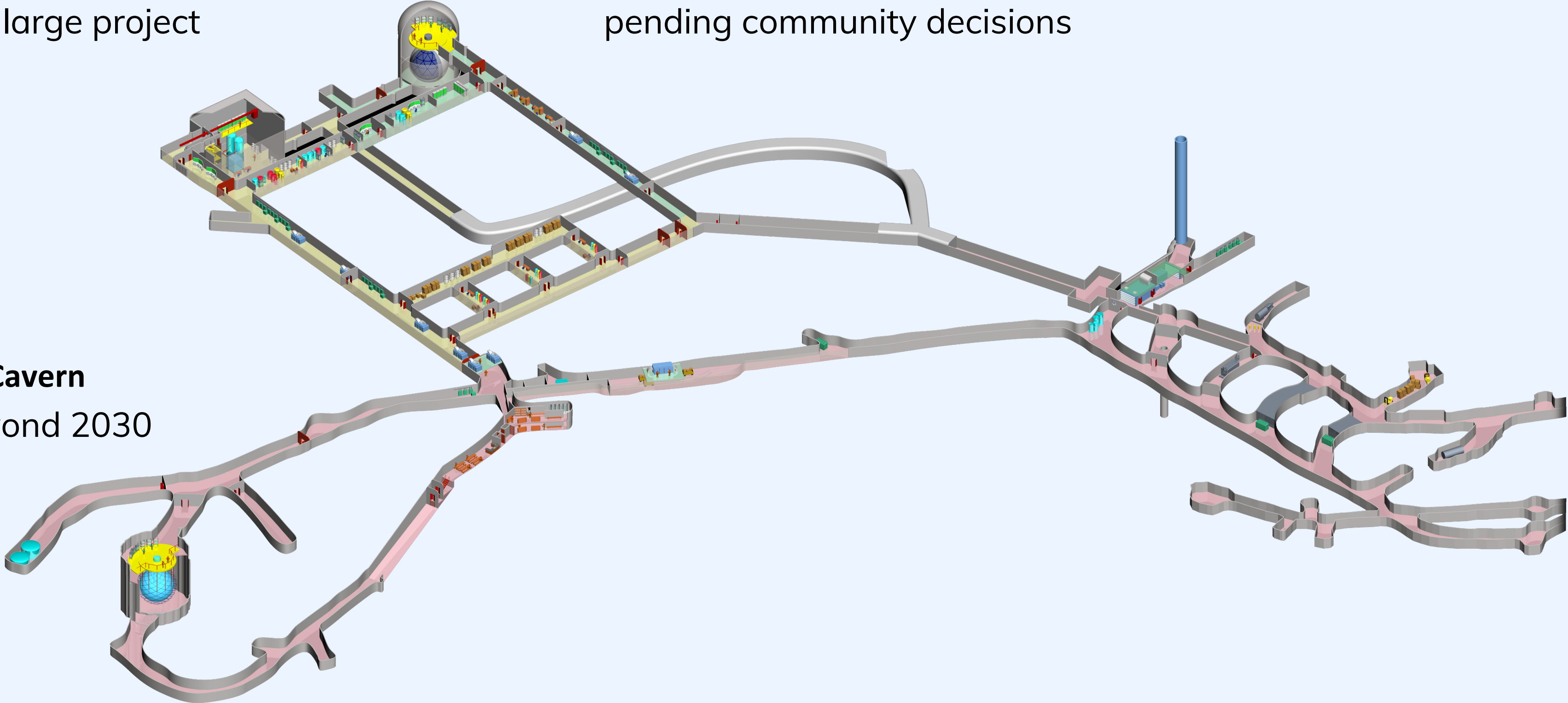
Cube Hall

DEAP-3600, PICO500, NEWS-G
potential for large project

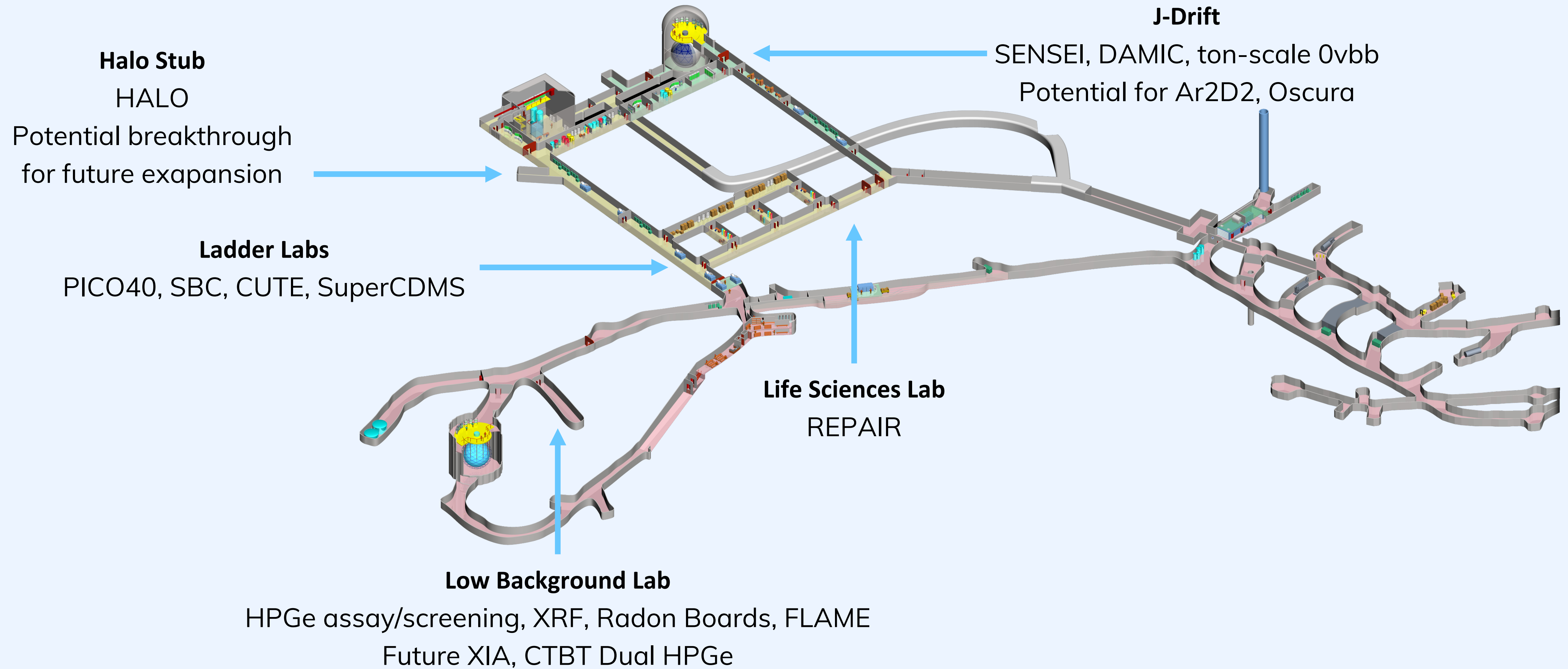
Cryopit

Ton-scale 0vbb beyond 2030
pending community decisions

SNO Cavern
SNO+ beyond 2030



Small Cavity Status



Capability Development

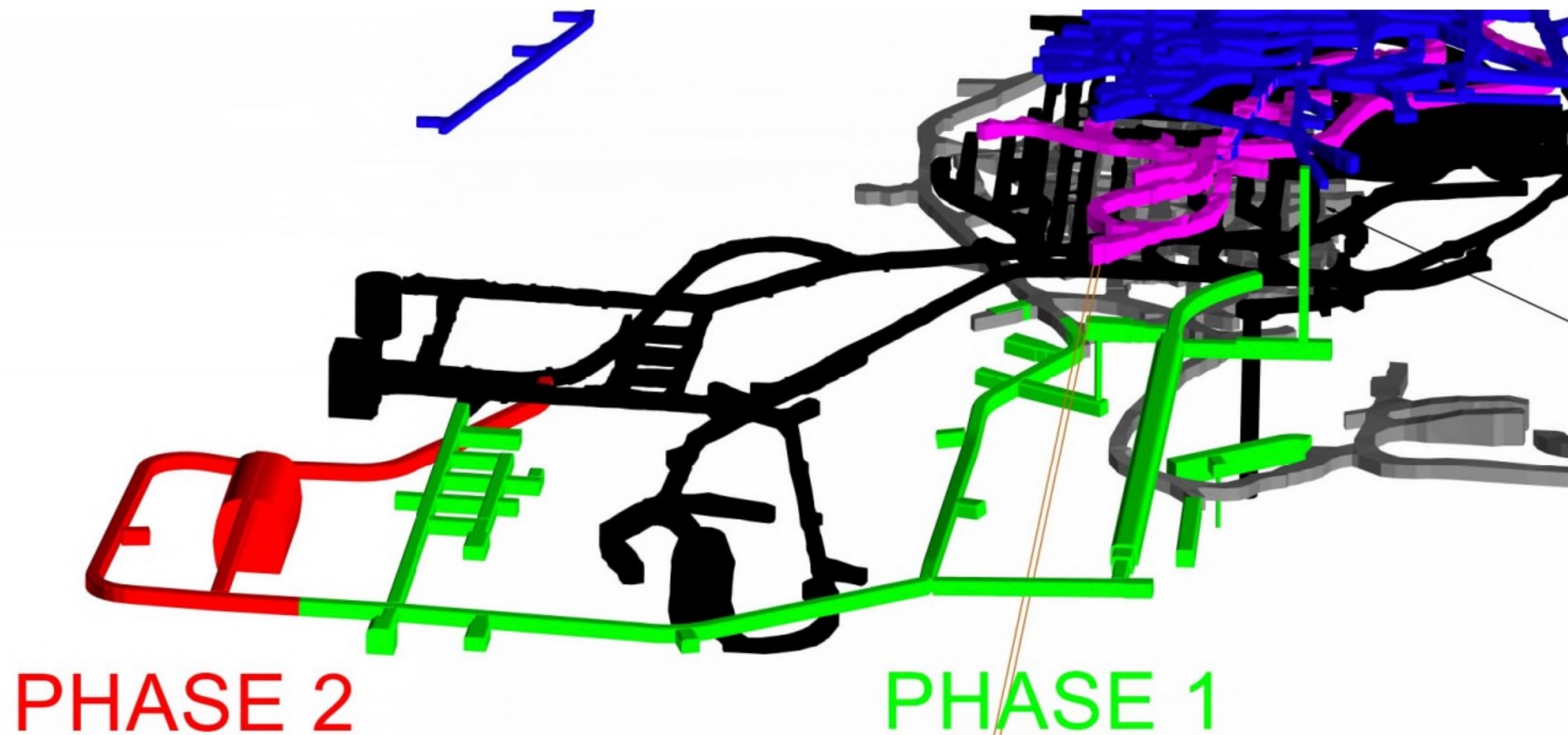


Not complete list!

- **Cryogenics** are in many experiments. The lab plans to target this area for development of expertise.
- **Radon** is a fact of life underground, and a critical background concern for most current experiments. The lab plans to target this area for development of capability and expertise.
- The **project management** office is approaching full staffing, accelerating scientific excellence.
- Community levels of HPGe screening capacity appear sufficient for current and future use. No plans for development.
- The community has asked for an increased focus on **lab environment monitoring**, so we are developing capability in monitoring seismic activity, radon levels, dust levels, temperature, pressure, etc.
- Engineering support continues to develop expertise in requested disciplines including **seismic modeling**.

Expansion Concept

- Expansion study conceptual, phased design complete
- Estimated CAD \$200M, 5 years
- No current path for funding, and would require demand from the research community
- **Expect space to be constrained over the 2023-2029 period, rotating experiments through existing floor space**



PHASE 2

PHASE 1

Questions?

Partners

