2021/11/08

Project Management @ SNOLAB

2021 PM Conference

Mitch Seguin
Manager, Project Management Office

Outline

Introduction to SNOLAB

Project Management Framework

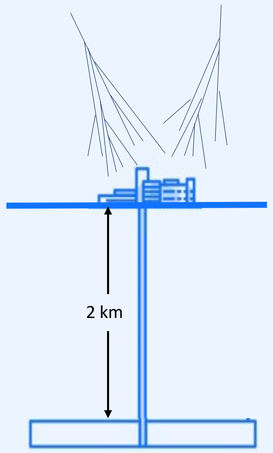
- PM Methodology, Governance, Delivery

Future Plans

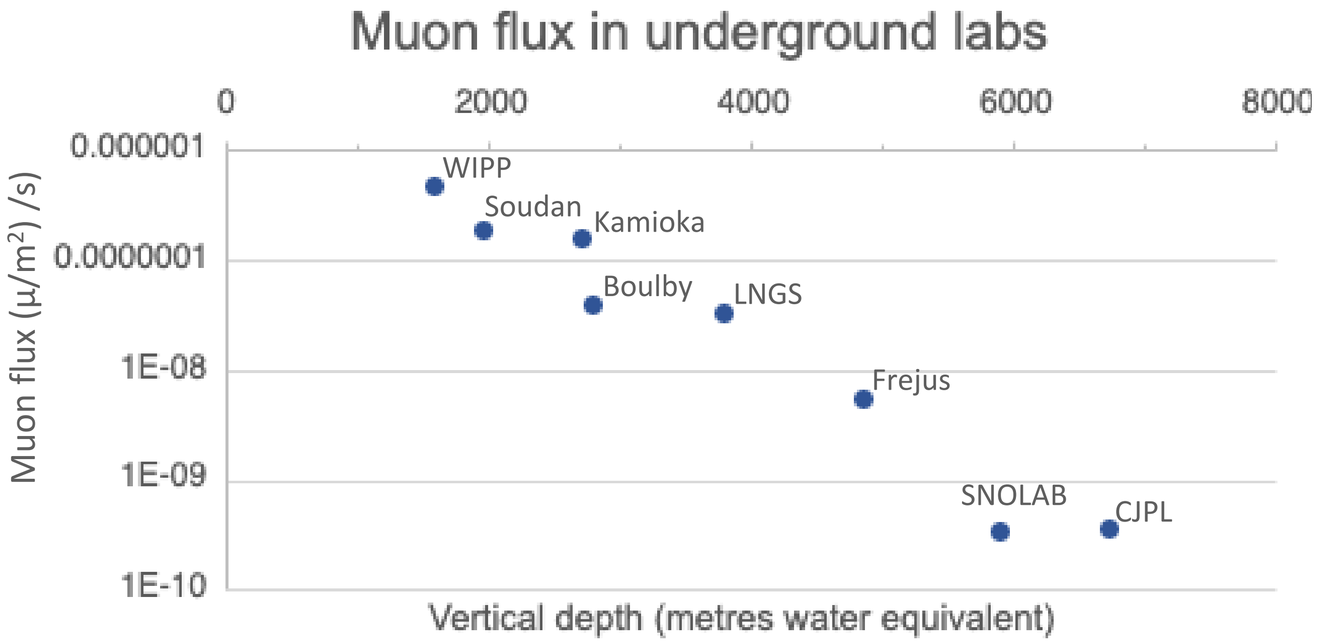
About SNOLAB

SNOLAB is a science laboratory specializing in neutrino and dark matter physics. It’s located 2 km underground in the active Vale Creighton nickel mine near Sudbury, Ontario, Canada.

Underground science



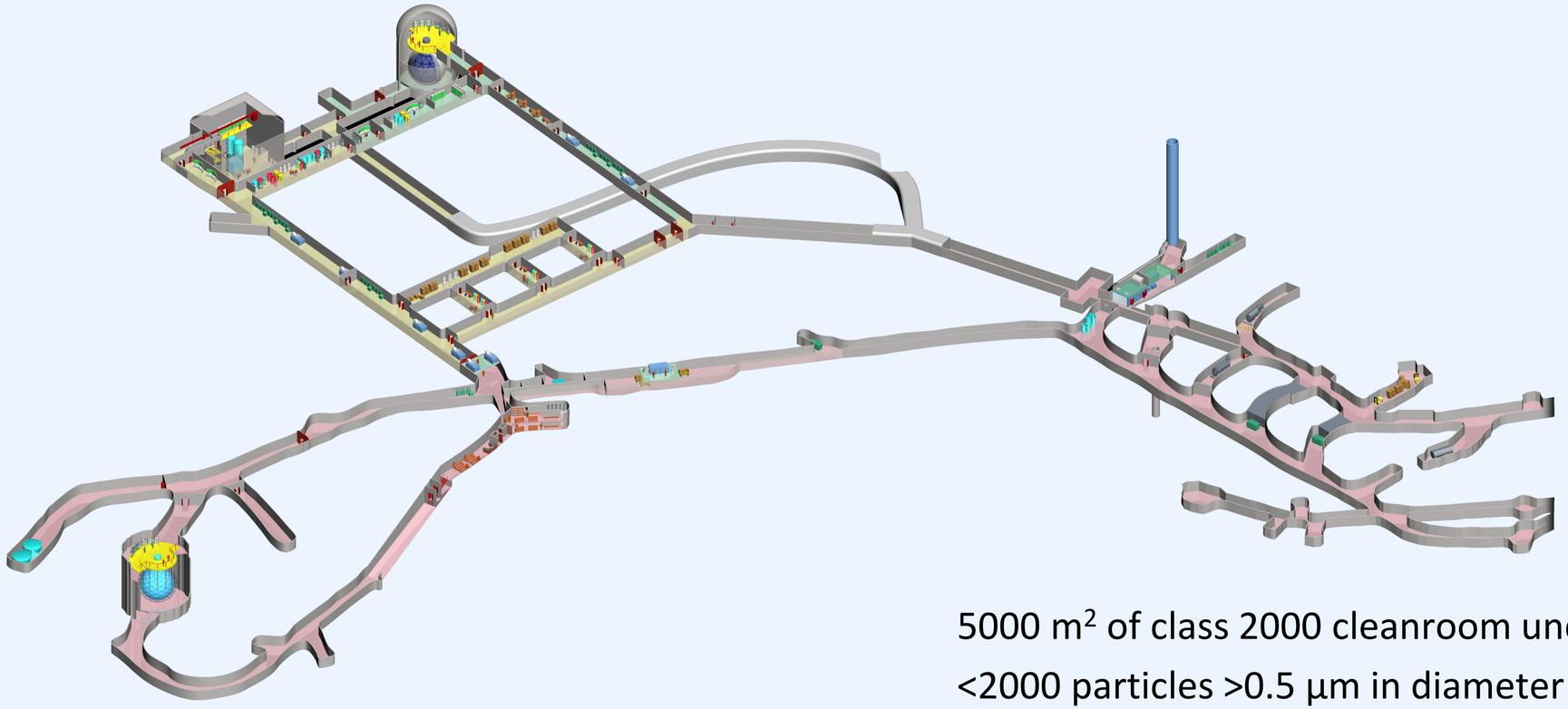
2 km of rock reduces the cosmic radiation by a factor of ~50 million!



SNOLAB layout

Virtual Tour:
https://www.snolab.ca/facility/virtual-tour/

Video: A Day at SNOLAB:
https://youtu.be/sZPLcv-ASwc



5000 m^2 of class 2000 cleanroom underground.
<2000 particles >0.5 µm in diameter per ft^3

The SNOLAB network

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

148 institutions

24 countries

~150 full time employees

+1000 Users

Partners

Laurentian University
Université Laurentienne

Queen's University

Carleton University

Université de Montréal

University of Alberta

Vale

SNOLAB Organizational Diagram
SL-MCS-LED-10-001-P Rev 99 (September 2021)

Functional and line management organisational chart, job titles descriptive.

Governance

SNOLABI Committees:
Audit/Finance
Governance
Science/Technical

SNOLAB Institute Council
Chair: N. Ross

SNOLAB Institute Board
Chair: Dr. K. Strong

Advisory

SNOLAB Committees:
Experiment Advisory
SNOLAB Experiment

Directorate

Interim Executive Director
C. Virtue
M.L. Lamarche

Director of Research
J. Hall
E. Brunelle
B. Morissette (Advisor)

Director of Projects
R. Ford
L. Yasinowski

Director of Operations
A. Barr
O. Lobban

Chief Business Officer
Samantha Kuula

Research Division

Research Group

Research Scientists
A. Bialek
E. Caden
B. Cleveland
J. Farine
P.Giampa
P. Gorel
C. Jillings
C. Kraus
A. Kubik
I. Lawson
C. Licciardi
S. Linden
S. Manecki
S. Scorza
U. Wichoski

Post-Docs / Students
S. Daugherty
D. Doshi
C. Lin
D. Patel
K. Usmanov

Scientific Support
L. Anselmo

Laboratory Technologist
D. Fabris
F. Lafleur
S. Larose
S. Read

Scientific Staff
D. Chauhan
N. Fatemi-Ghomi
S. Hall
S. Luoma
S.Maguire
T. Sonley

Projects Division

Engineering Office
M. Hodak

Design Engineers
G. Berardi
N. Boyd
R. Hupping
O. Li
P. Liimatainen
I. Rajput

Designers
E. Archer
D. Barton
S. Stankiewicz

Project Management Office
M. Seguin

Project Managers
M.Bertels
D. Hawkins
G. Howard
P. Larochelle
M. Stoddart

Project Engineers
J. Gauthier
P. Grylls
A. Mathewson
M. St-Amant
S. Tacchino

Project Coordinators
R. Castilloux
M. Hood
E. Poulin
S. Rogers-Brown

Operations Division

Operations
D. Bailey

Engineer/Planner/ Supervisors
S. Back
G. Bellehumeur
T. Carrier
R. Deguire
J. Hawkins
B. Laurin

System Operators
A. Campbell
S. Clark
L. Herechuk
D. Jones
C. Paquette
A. Stripay

Operators
K. Archer
A. Grylls
K. Kean
J. Montpellier

Warehouse
L. Bonany

Mechanical Maintainers
G. Bisaillon
C. Jibb
A. Moss
C. Pugliese

E.I.T.s
V. Albanese
D. Byrnes
T. Hillier
I. Ritchie

Cleaner Maintainers
J. Charbonneau
M. Charbonneau
J. Flowers
S. McBride
B. Mines
M. Niro
C. Ockenden
J. Pilon
A. Sagle
L. Tomassini

Integration
M. Obaid

Planners / Supervisors
R.Desjardins
K. Risto

Instrumentation
C. Beaudoin
M. Blinn
A. Hesketh

Industrial Technologists
M. Aubrey
S. Brunelle
J. Cooper
K. Guba
A. Lane
A. Larocque
R. Maki
R. Michaud
L. Whipple
B. Zalan

Corporate Services Division

Finance
S. Moskal

Accounts Payable Specialist
E. Gareau

Finance Support Specialist
K. Linklater

Procurement Specialist
J. Young

E.H.S.
S.Thakre

Training Coordinator
N.Brown

H & S Technician
T. Lahnalampi
R. Picotte
S.Riutta

H. R.
B. Donnelly

HR Advisors
L. Christie
A. Savard

HR Assistants
K. Joshi
N. Di Gioseffo

Education & Outreach
B. Flynn

Ed. & Outreach Coordinator
C. Pike
J. Saffin

I.T.
I. Winsor

Computer Technologists
D. Lessard
J. Reynolds
J. Roberts

Documentation Coordinator
A. Sokoloskie

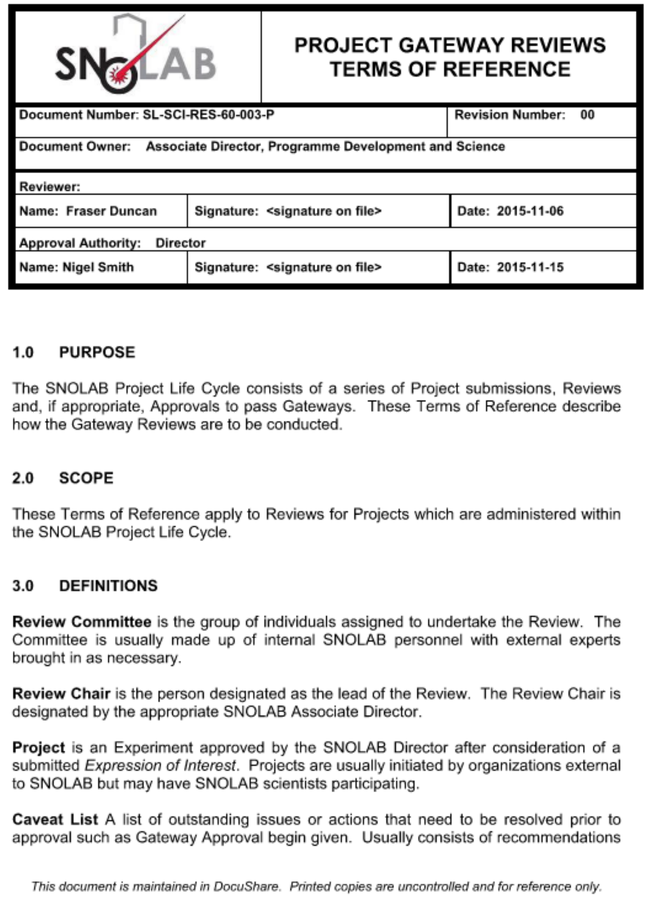
SNOLAB PM Framework

PM Methodology - Project Lifecycle Management

- Existing Policy level document which establishes the project management requirements for SNOLAB
- Defines project phases, gateways and review requirements
- Prescribes project plans and documentation requirements for each gateway review
- Associated records and supporting documents include project road map, project review terms of reference, MOUs and agreements, and project templates (quality plan, risk management plan, risk register, hazard register, etc)
- Although different, has equivalent gateways to TRIUMF and DOE

PM Methodology – Gateway Reviews

- Director of Project issues a charge letter and appoints a Review Chair
- The Projects Division and the Review Chair determine an appropriate committee membership
- Review chair and committee issue a report 2 weeks from the review and decides to recommend gateway approval
- Director of Projects provides final approval (exception for GW0 Project Initiation and GW1 Space Allocation, by Executive Director)



SNOLAB

PROJECT GATEWAY REVIEWS TERMS OF REFERENCE

Document Number: SL-SCI-RES-60-003-P		Revision Number: 00
Document Owner: Associate Director, Programme Development and Science		
Reviewer:		
Name: Fraser Duncan	Signature: <signature on file>	Date: 2015-11-06
Approval Authority: Director		
Name: Nigel Smith	Signature: <signature on file>	Date: 2015-11-15

1.0 PURPOSE

The SNOLAB Project Life Cycle consists of a series of Project submissions, Reviews and, if appropriate, Approvals to pass Gateways. These Terms of Reference describe how the Gateway Reviews are to be conducted.

2.0 SCOPE

These Terms of Reference apply to Reviews for Projects which are administered within the SNOLAB Project Life Cycle.

3.0 DEFINITIONS

Review Committee is the group of individuals assigned to undertake the Review. The Committee is usually made up of internal SNOLAB personnel with external experts brought in as necessary.

Review Chair is the person designated as the lead of the Review. The Review Chair is designated by the appropriate SNOLAB Associate Director.

Project is an Experiment approved by the SNOLAB Director after consideration of a submitted *Expression of Interest*. Projects are usually initiated by organizations external to SNOLAB but may have SNOLAB scientists participating.

Caveat List A list of outstanding issues or actions that need to be resolved prior to approval such as Gateway Approval begin given. Usually consists of recommendations

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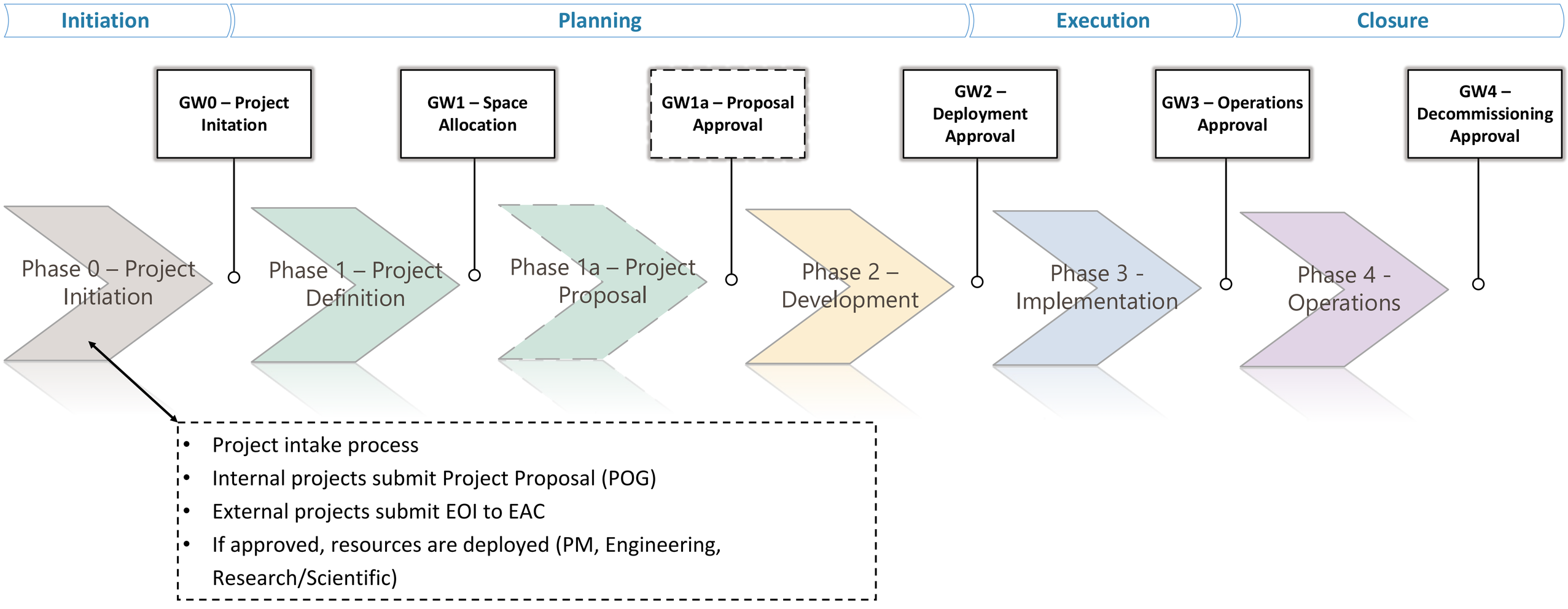
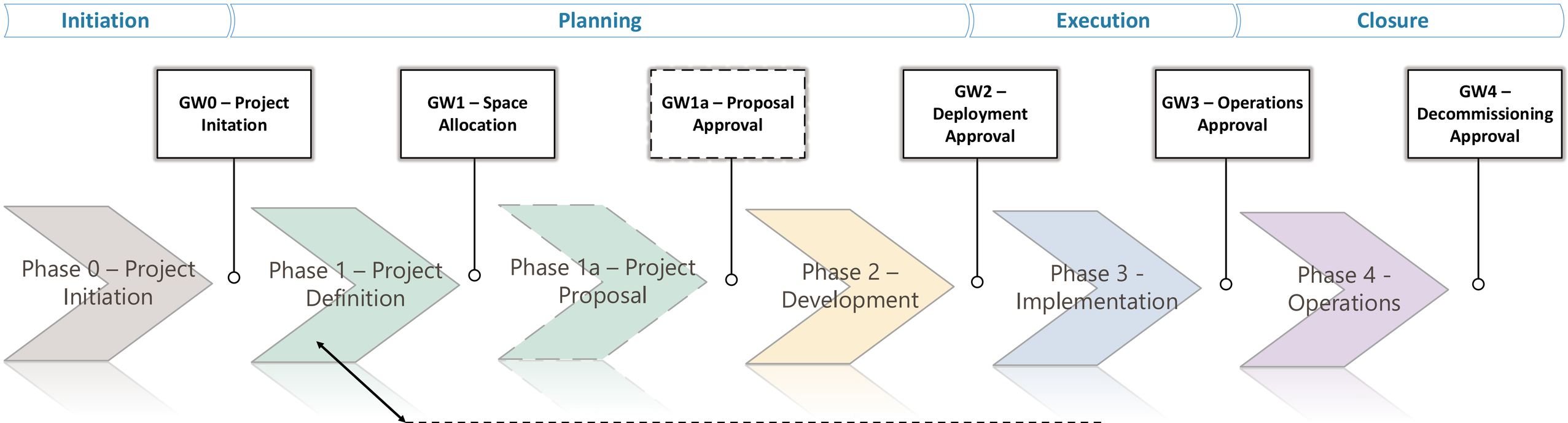
SNOLAB PROJECT LIFECYCLE

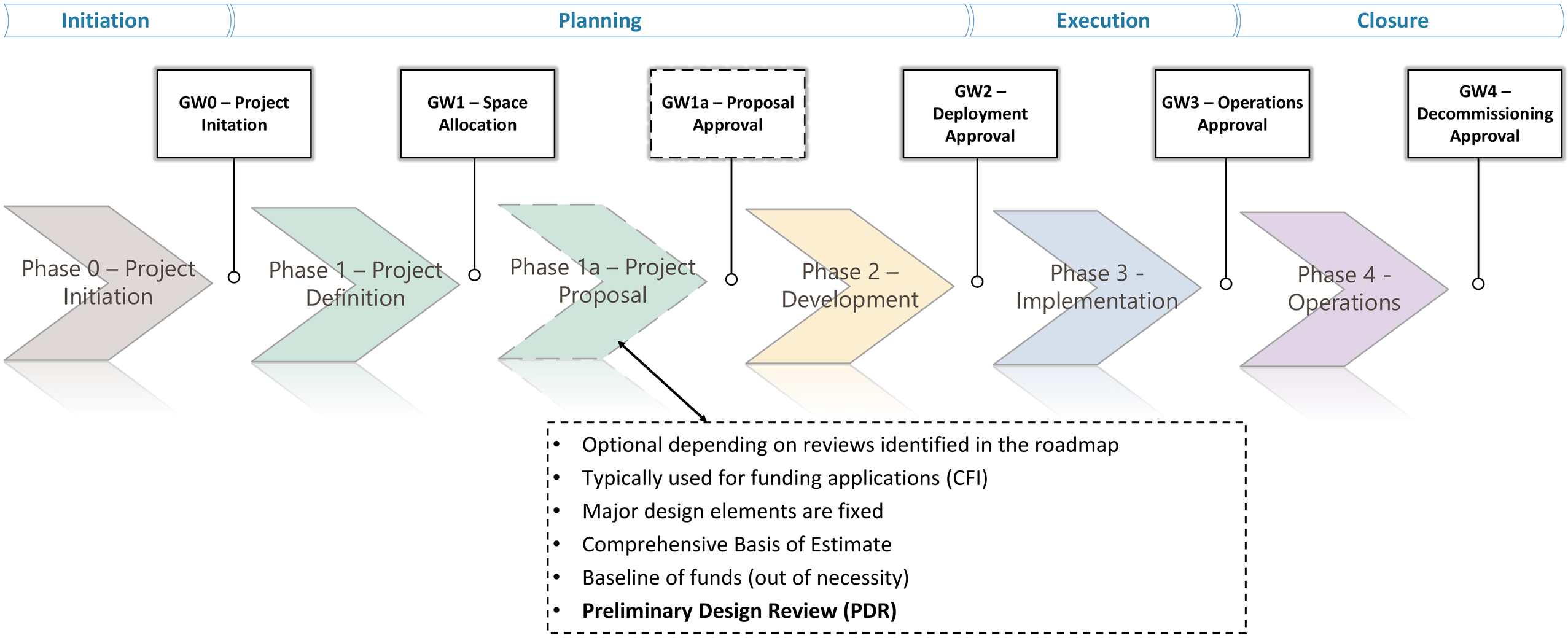


SNOLAB PROJECT LIFECYCLE

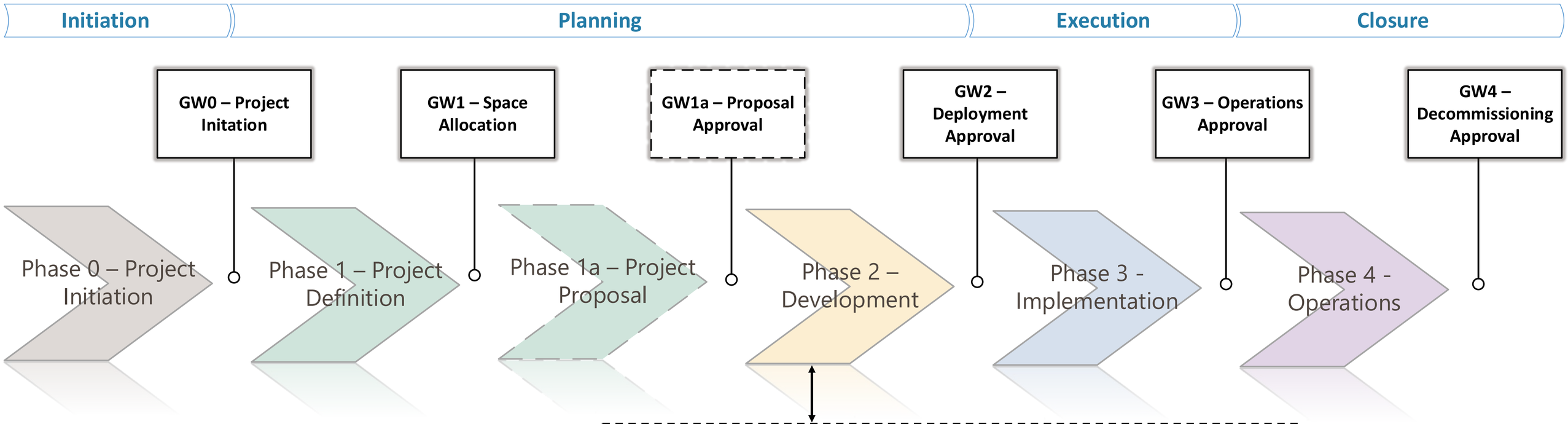


- Development of Conceptual Design
- Preliminary project management plans are created
- General arrangement drawing noting space allocation
- **Conceptual Deign Review (CDR)**
- Hazard review requirements are identified and development of Project Review Roadmap

SNOLAB PROJECT LIFECYCLE

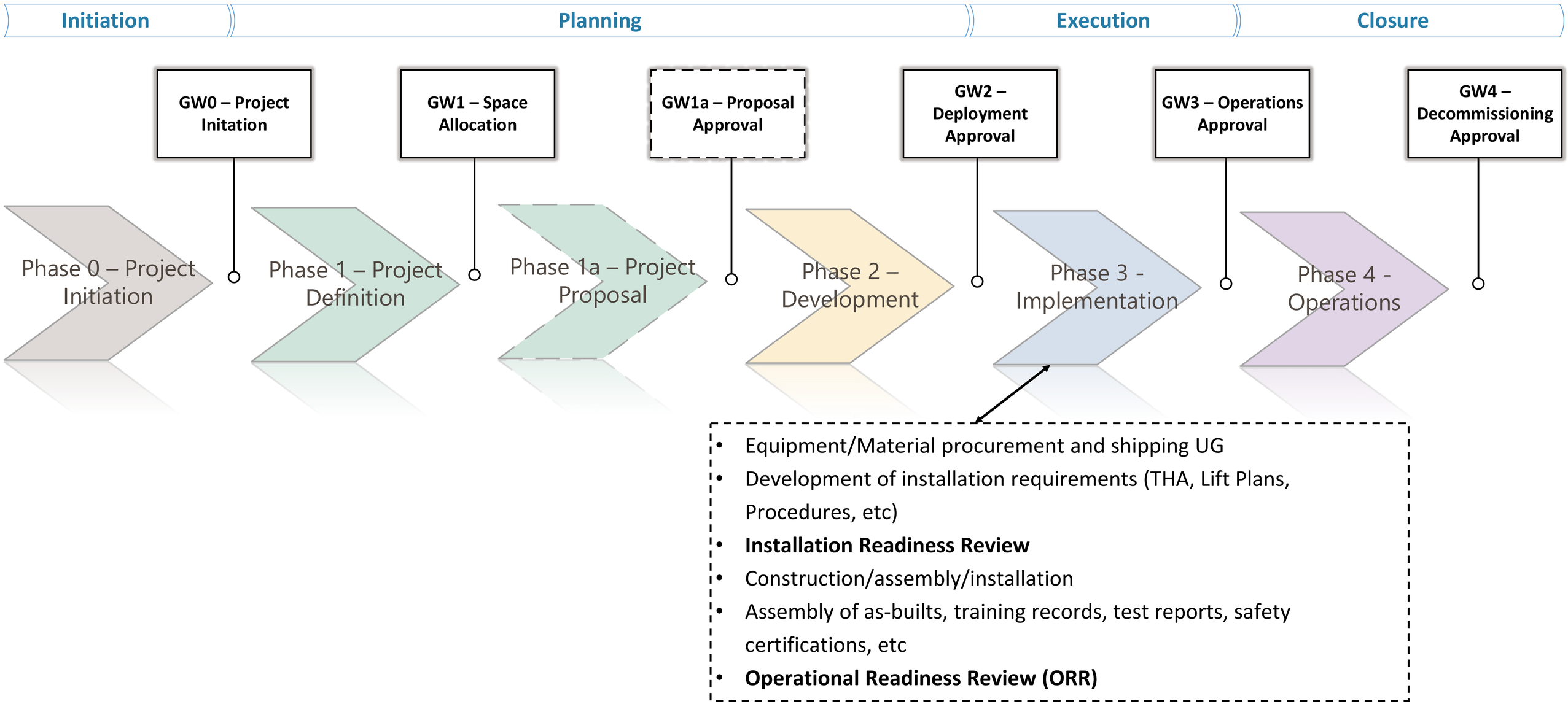


SNOLAB PROJECT LIFECYCLE

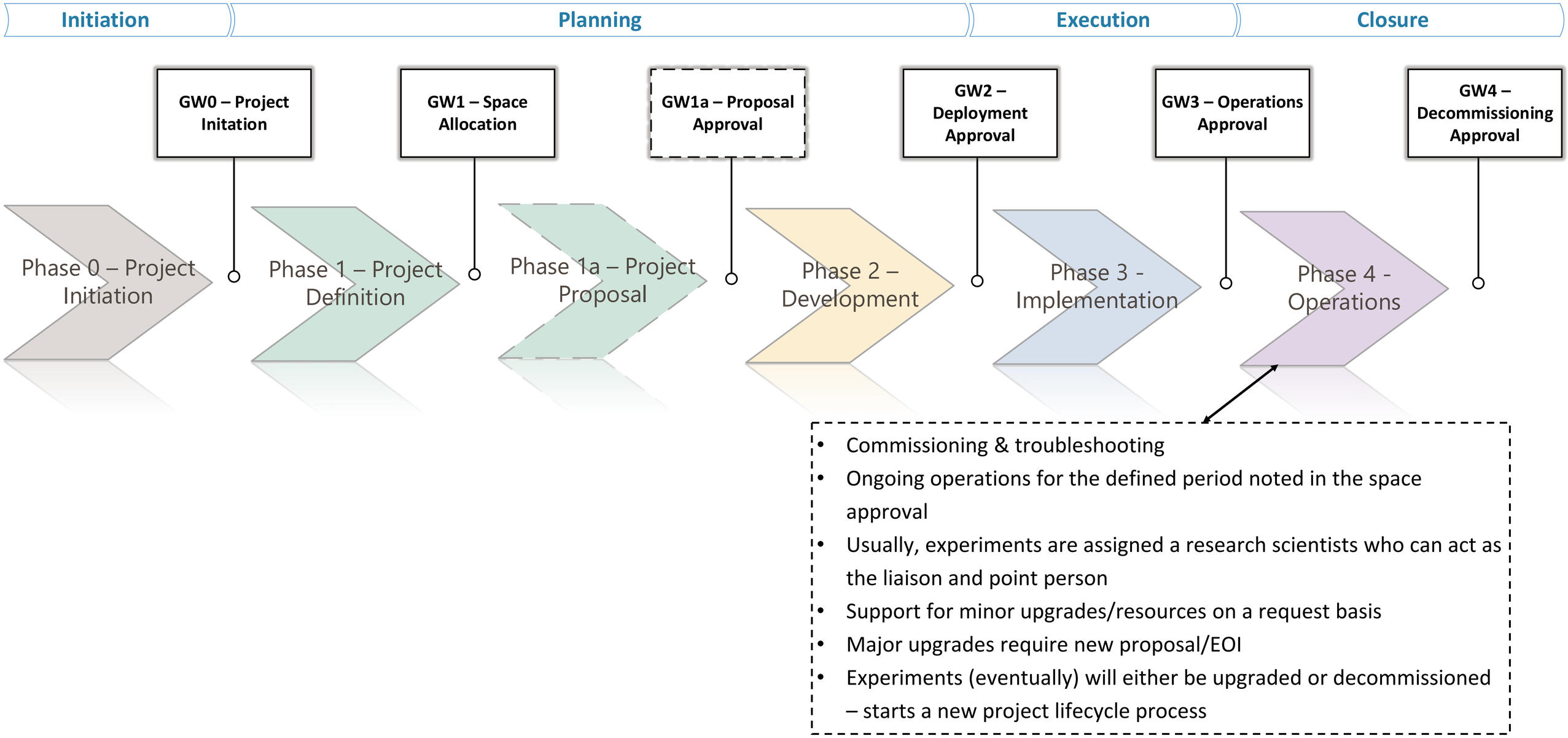


- Engineering design and specifications should be ~100% complete
- Finalize hazard mitigation plans and implement PHA and previous recommendations
- “Final” iteration of the Project Management Plans (while in planning phase)
- **Technical Design Review (TDR)**
- Resources deployed: PM, Engineering, Research/Scientific, Logistics, Operations, Integrations

SNOLAB PROJECT LIFECYCLE



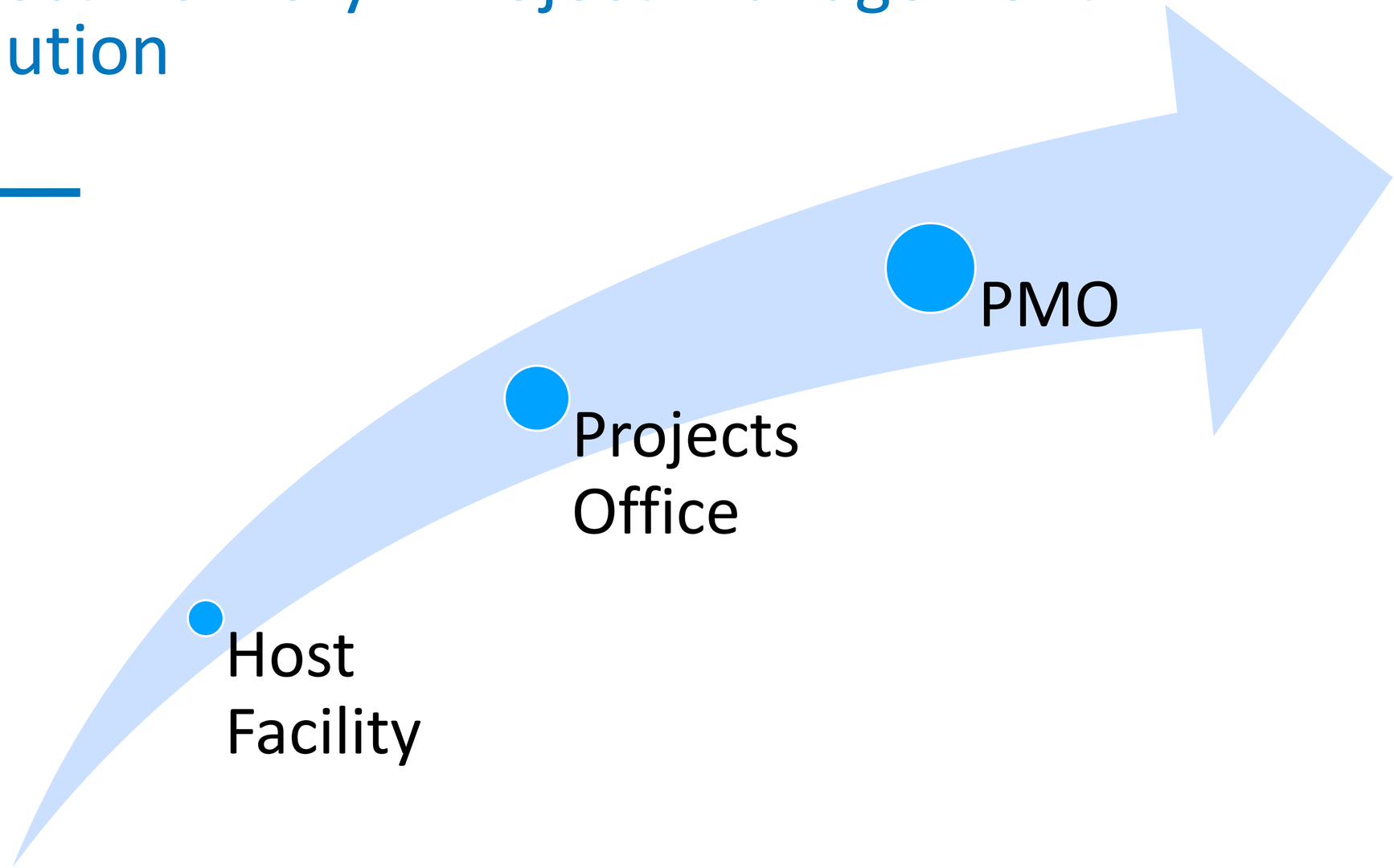
SNOLAB PROJECT LIFECYCLE



Project Governance – Program Oversight Group

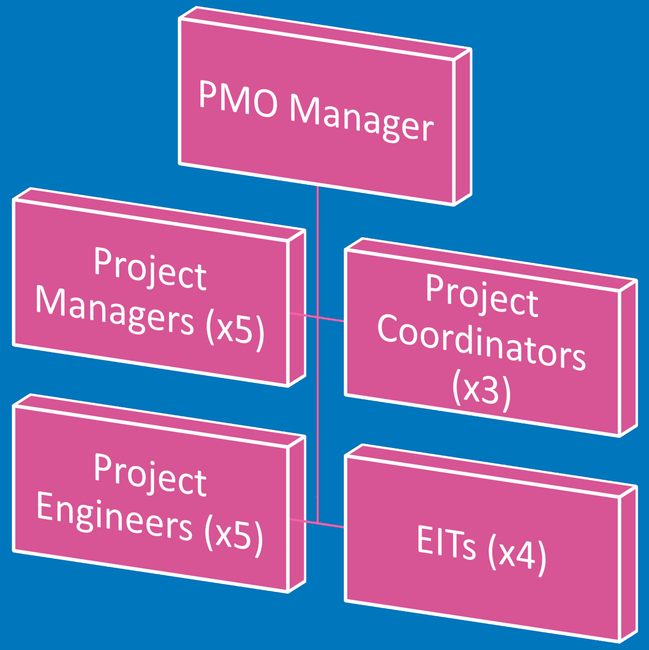
- Provides approval and oversight to projects
- Represented by each division of SNOLAB and chaired by the Executive Director
- Manages the Resource Conflict Matrix of Priorities (RCMP)
- Monitors progress, ensures project agreements are in place, and reviews project change requests
- POG Chair (ED) retains authority and shall manage decisions and approvals
- Monthly Meetings (once with PLG, once with POG)

Project Delivery - Project Management Evolution



Project Delivery - SNOLAB Project Management Office

The SNOLAB PMO shall provide exemplary project management services to support the SNOLAB mission of delivering world class science, in world-class facilities, using innovative solutions all while ensuring quality standards are met throughout the SNOLAB project lifecycle.



Project Delivery - SNOLAB Project Management Office

Project Delivery – UG Science and Unique Challenges

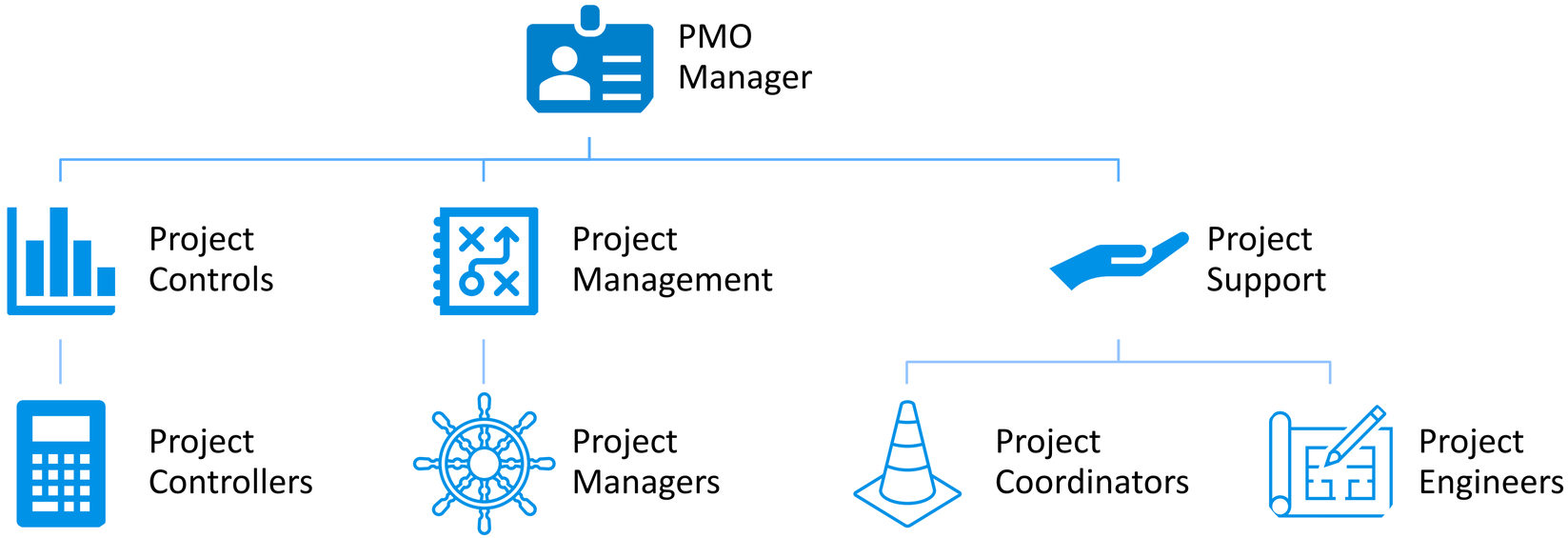
Many considerations and engineering challenges when planning projects deep underground @ SNOLAB:

- All experiments @ SNOLAB have extremely sensitive instrumentation
- Many operate at cryogenic temperatures
- Active mine (mine in full production, shutdowns, work stoppages, power interruptions)
- Electrical power supply and stability
- Maintaining clean room UG
- Cooling requirements (rock temperature 40 deg C)
- Water treatment (source and disposal)
- Logistics (access, safety, training, UG cage travel, shaft travel, size restrictions)
- Seismicity

Project Delivery – PMO Growing

- Unique facility and expert staff have led to the growth and evolution of the laboratory attracting more and more projects every year
- Future large international projects will also require more complex project baselining and risk management in alignment with DOE Order 413.3B standards, and the establishment of earned value management.
- In response to this, the PMO is growing

Project Delivery – PMO Growing



Project Delivery – Current Projects

- 42 projects (50/50)

Internal Projects

- Strategic Plan
- Surface Generator Plant
- Chilled Piping Upgrades
- MPC Breaker Upgrades
- Primary RO Replacement
- LN2 Plant
- UG Combustibles Storage
- BAR/TAD Air Locks
- Surface Facility Renovations
- Card Access Project
- UG Facility Modernization
- Seismic Monitoring System
- Cosmic Ray Demonstrator Units
- Liquid Noble Gases Cryogenic Testing Facility
- Surface Workshop Refurbishment
- Facility Expansion Study
- Mobile Etching/Cleaning Cart
- CSD: IT (2), Finance (1), EHS (1)

External Projects

- HALO
- CUTE
- DAMIC
- FLAME
- REPAIR
- Xe-Still
- SNO+
- NEWS-G
- SuperCDMS
- LEGEND-1000
- nEXO
- SENSEI
- PICO-40
- ARGUS
- DEAP
- ECuME
- CTBT Counter
- SBC
- PICO-500
- OSCURA
- MiniCLEAN

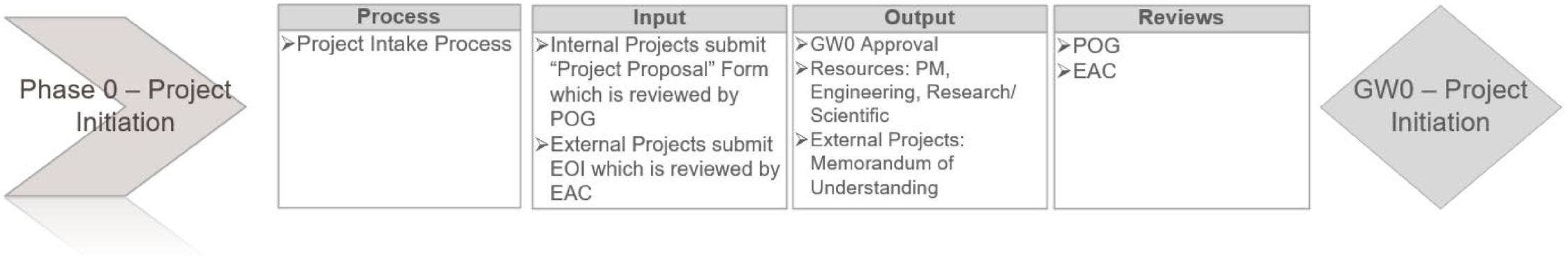
Future Plans

- Update and modernization of our Project Lifecycle Management Policy
  - Project definition and sizing/categorization
  - Introduce scalability
  - Link to recent updates (ie: governance, project agreements)
  - Introduce baselining
- Create Terms of Reference for our Governance Committee (POG)
- Major overhaul of Document Templates
- Organizational PM supports: handbook / toolkit, estimating guidelines, education/outreach
- PMO web portal and electronic workflows

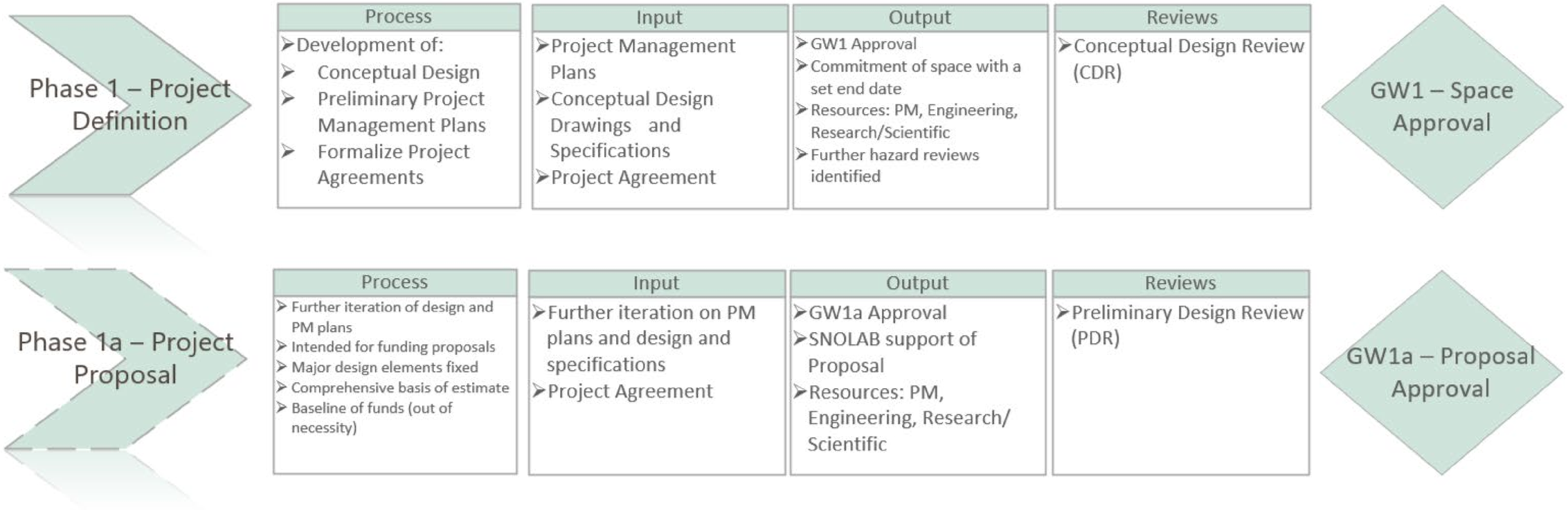
Questions?

Backup/Extra Slides

PM Methodology - Project Lifecycle Management



PM Methodology - Project Lifecycle Management



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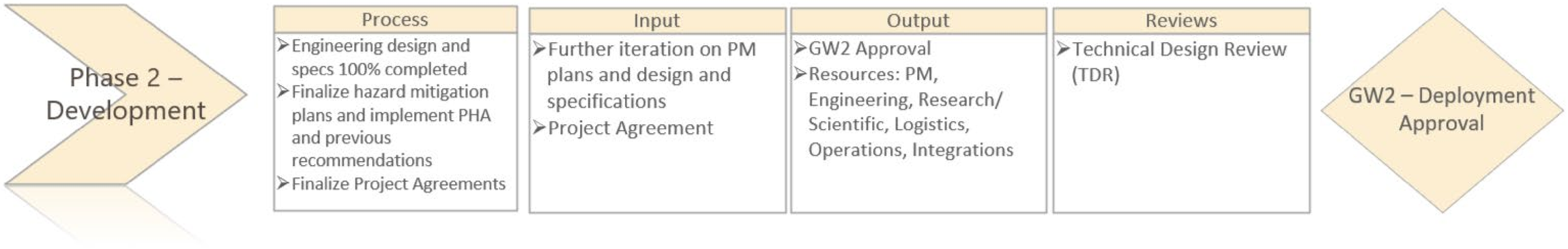
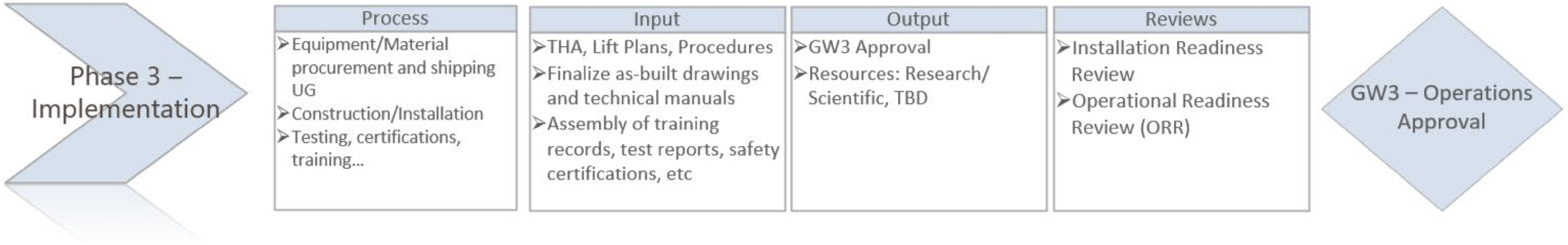


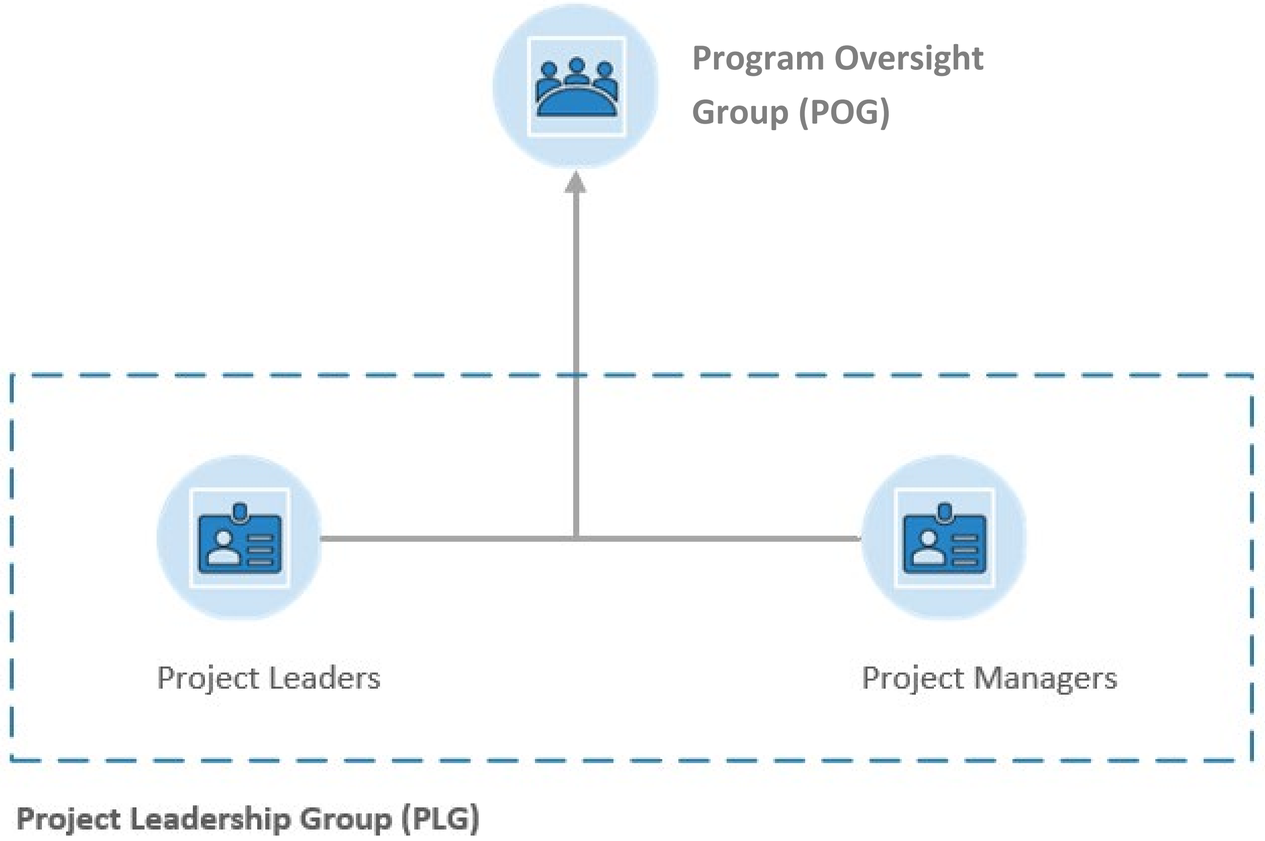
PM Methodology - Project Lifecycle Management



PM Methodology - Project Lifecycle Management

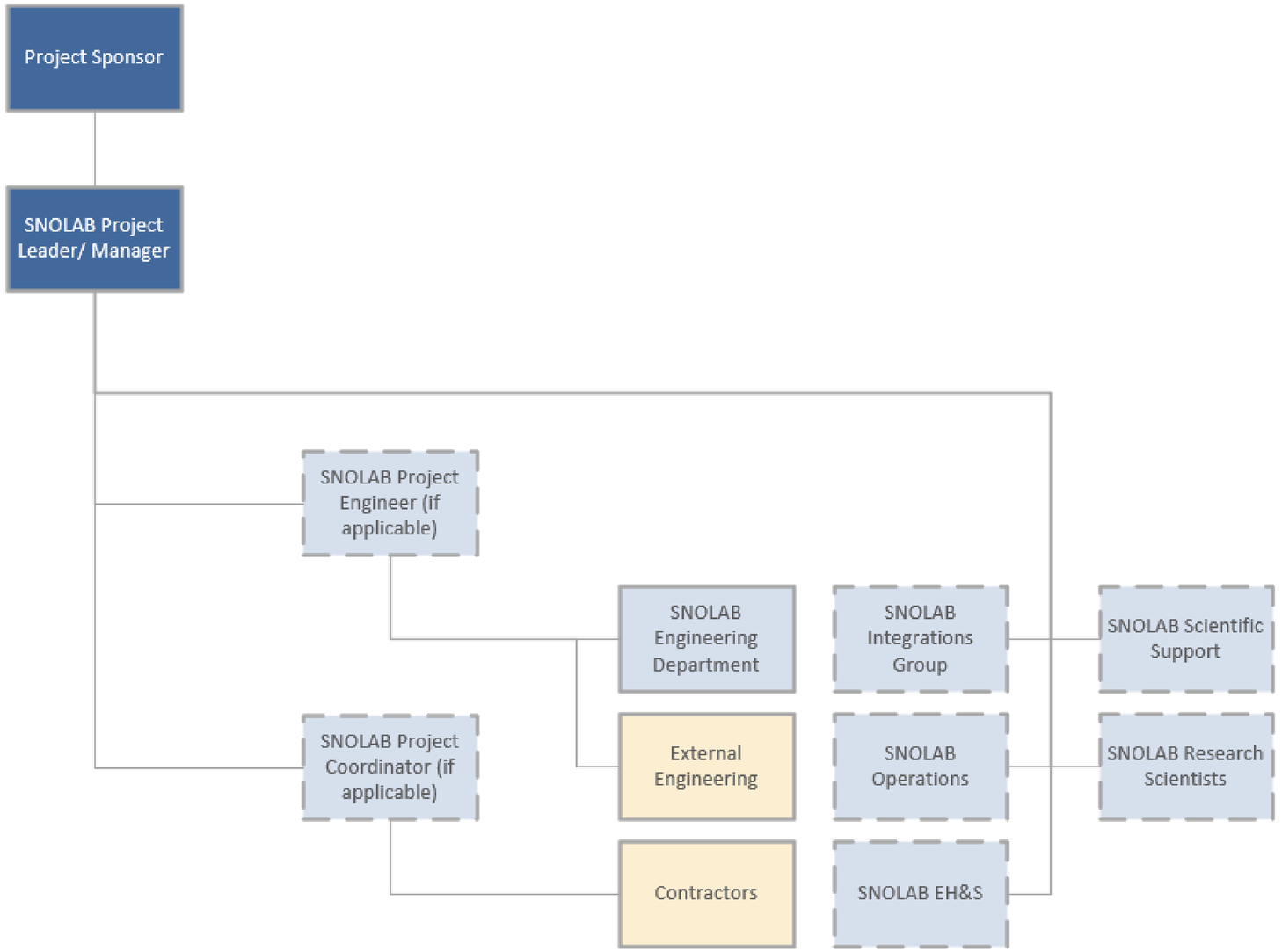
Project Governance - Project Leadership Group

- Anyone leading and/or managing POG approved project
- Provides project leadership for the effective implementation of SNOLAB projects
- Must report status & forecasts monthly
- Also submits project proposals or agreements, and project change requests (as req'd)



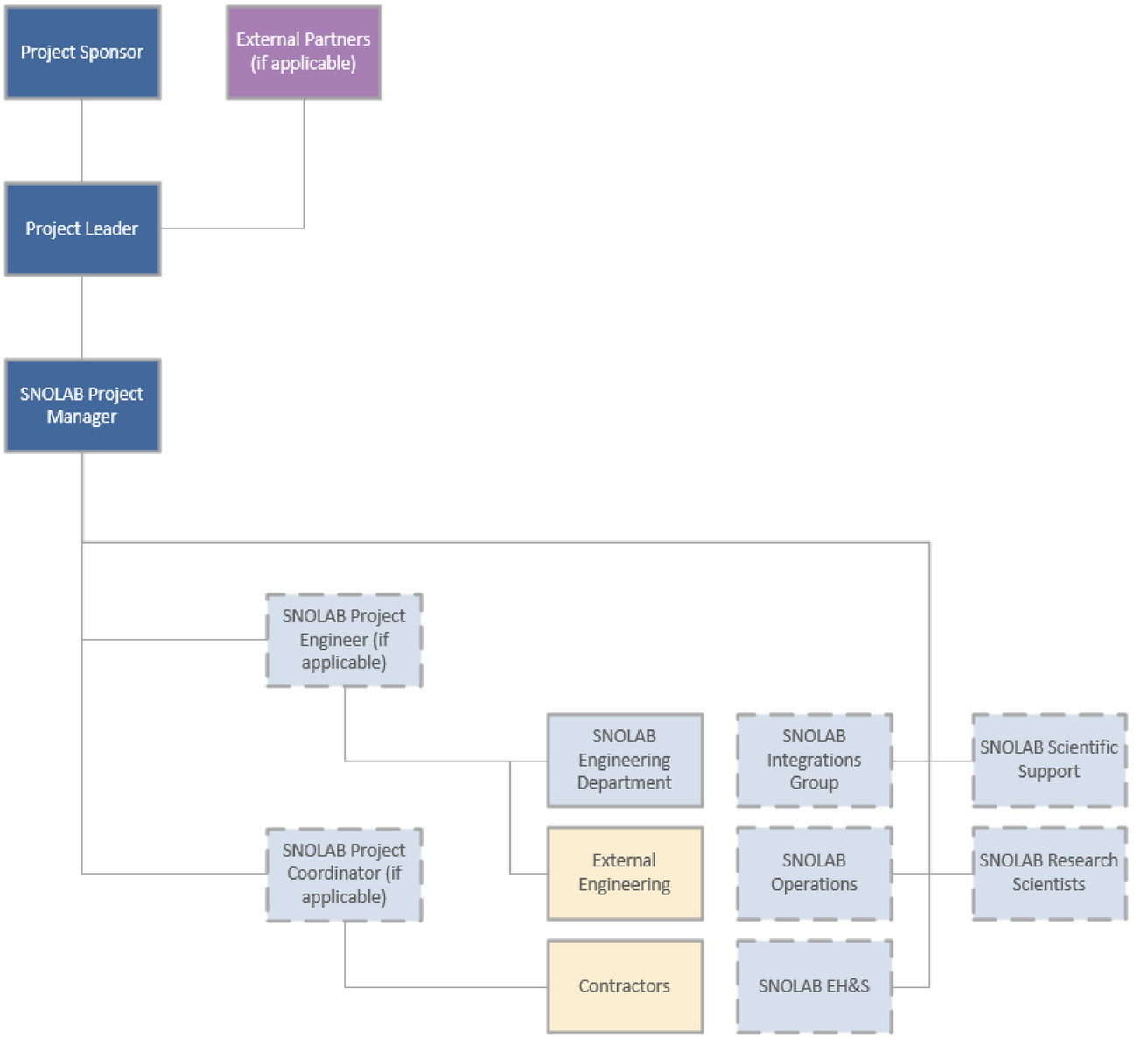
SMALL PROJECT

EXAMPLE: SEISMIC MONITORING SYSTEM



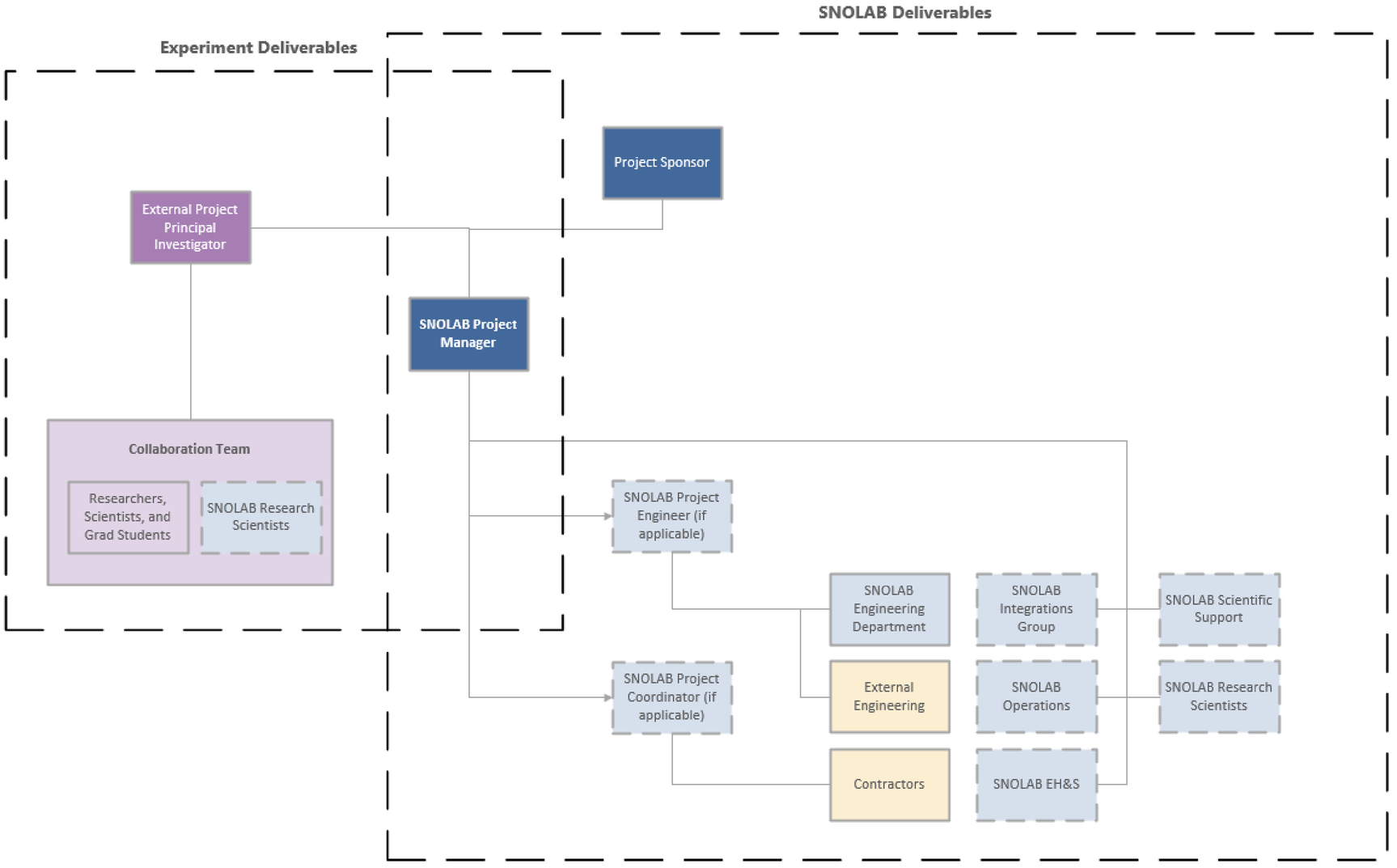
MEDIUM PROJECT

EXAMPLE: CTBT, LN2, SBC



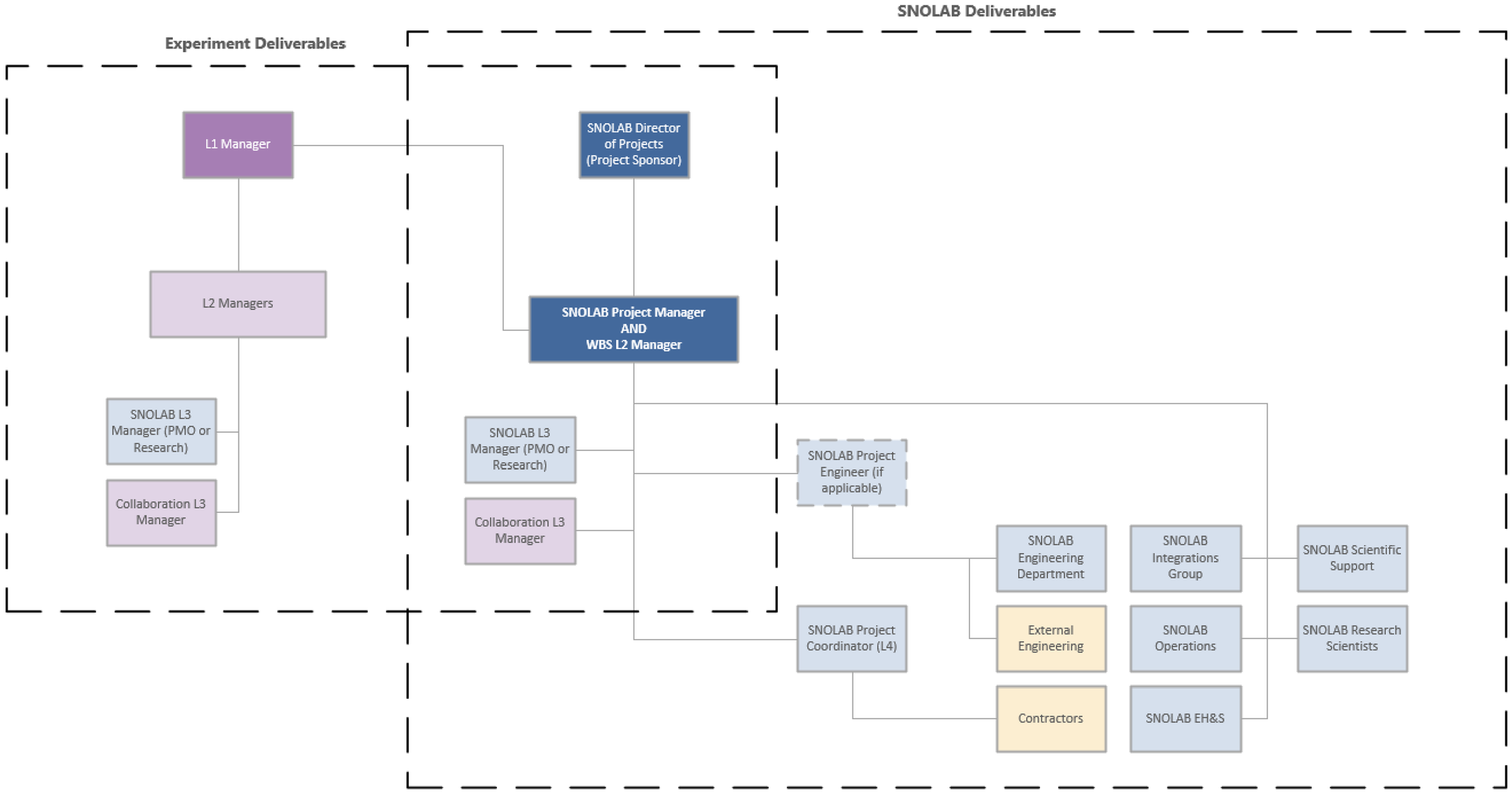
LARGE PROJECT

EXAMPLE: SNO+, PICO



DOE PROJECT

EXAMPLE: SCDMS



Project Delivery - SNOLAB Project Management Office

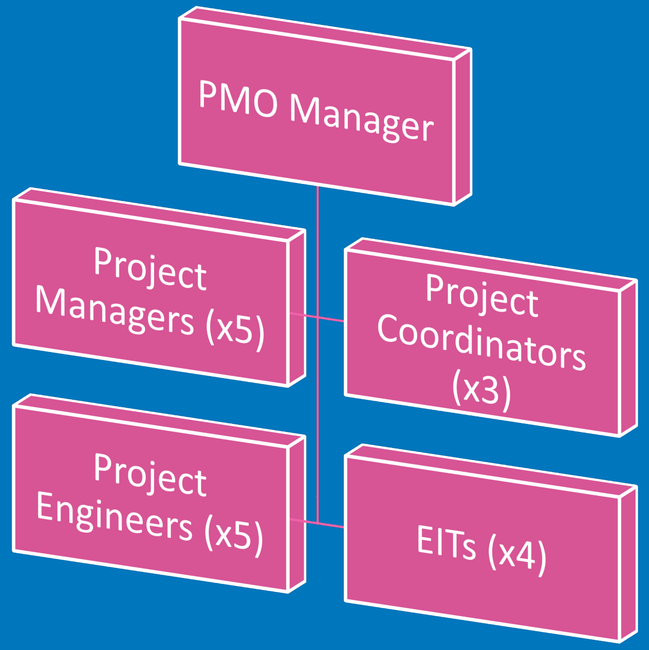
PMO Projects include:

Internal Projects (Infrastructure/Facility Upgrades)

- Examples: Surface Building Renovation (construction), BAR/TAD Drift Reconditioning and Construction (mining)

External Projects

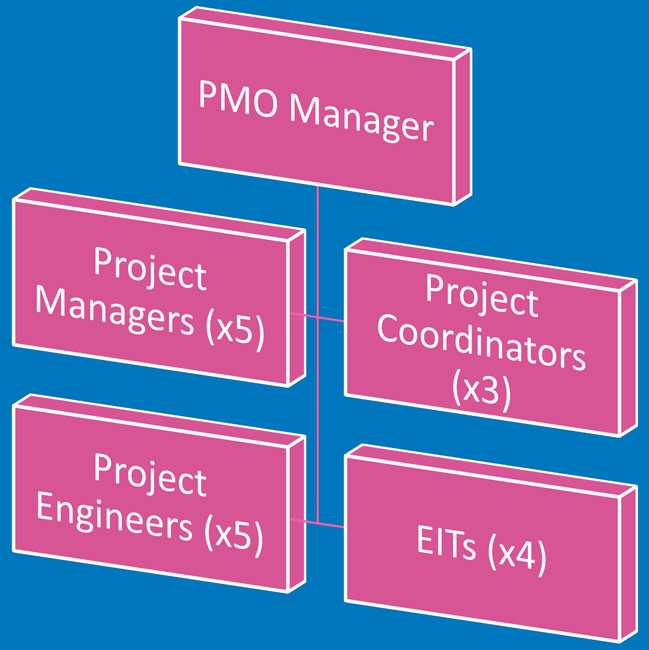
- Experiments
- SNOLAB deliverables (PM, Design, infrastructure/services, installation)
- PMO often embedded into the collaborations



Project Delivery - SNOLAB Project Management Office

Project Managers:

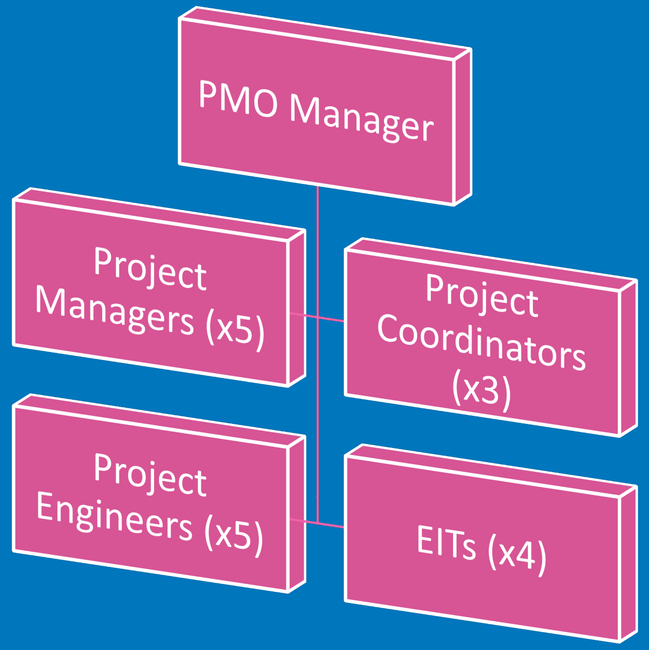
- Overall responsible for project delivery (on time, on budget, safely, within scope and quality parameters all while following SNOLAB standards, policies, and procedures).
- Responsible for large internal or external projects.
- Often embedded in collaborations as WBS Level 2 or Level 3 Managers.



Project Delivery - SNOLAB Project Management Office

Project Coordinators:

- Supports Project Managers with the coordination of project activities and delivery of work packages.
- Typically, experts in logistics, construction and/or contract management.
- Can manage smaller internal or external projects.
- Can also be considered Level 3 or Level 4 WBS Managers.



Project Delivery - SNOLAB Project Management Office

Project Engineers:

- Support Projects by leading and/or coordinating technical elements of projects (ie: design, hazard analysis, assembly, commissioning, upgrades during operations).
- Support Project Managers with the coordination of project activities and delivery of work packages.
- Typically, P.Eng (process, mechanical).
- Can manage smaller internal or external projects.
- Can also be considered Level 3 or Level 4 WBS Managers.