ARIEL-II:

Overview and Project Management Approach

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Project Manager

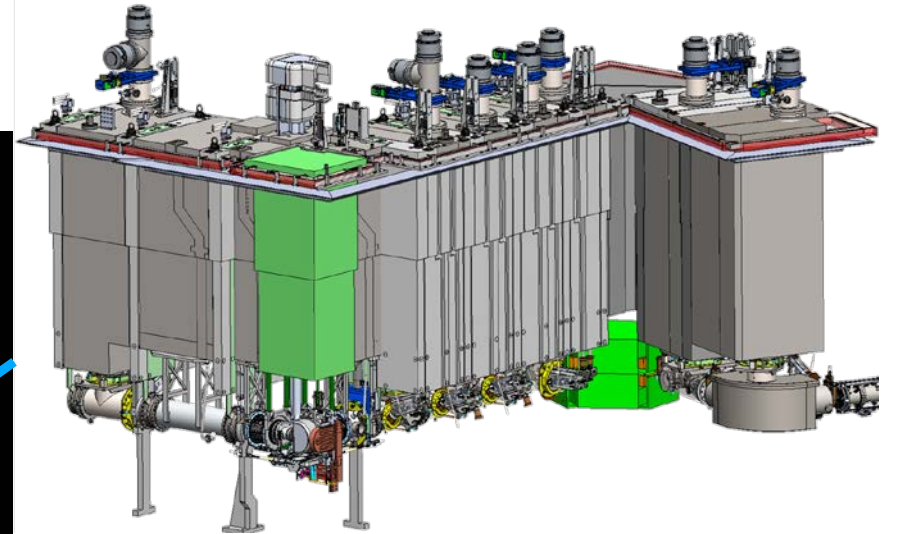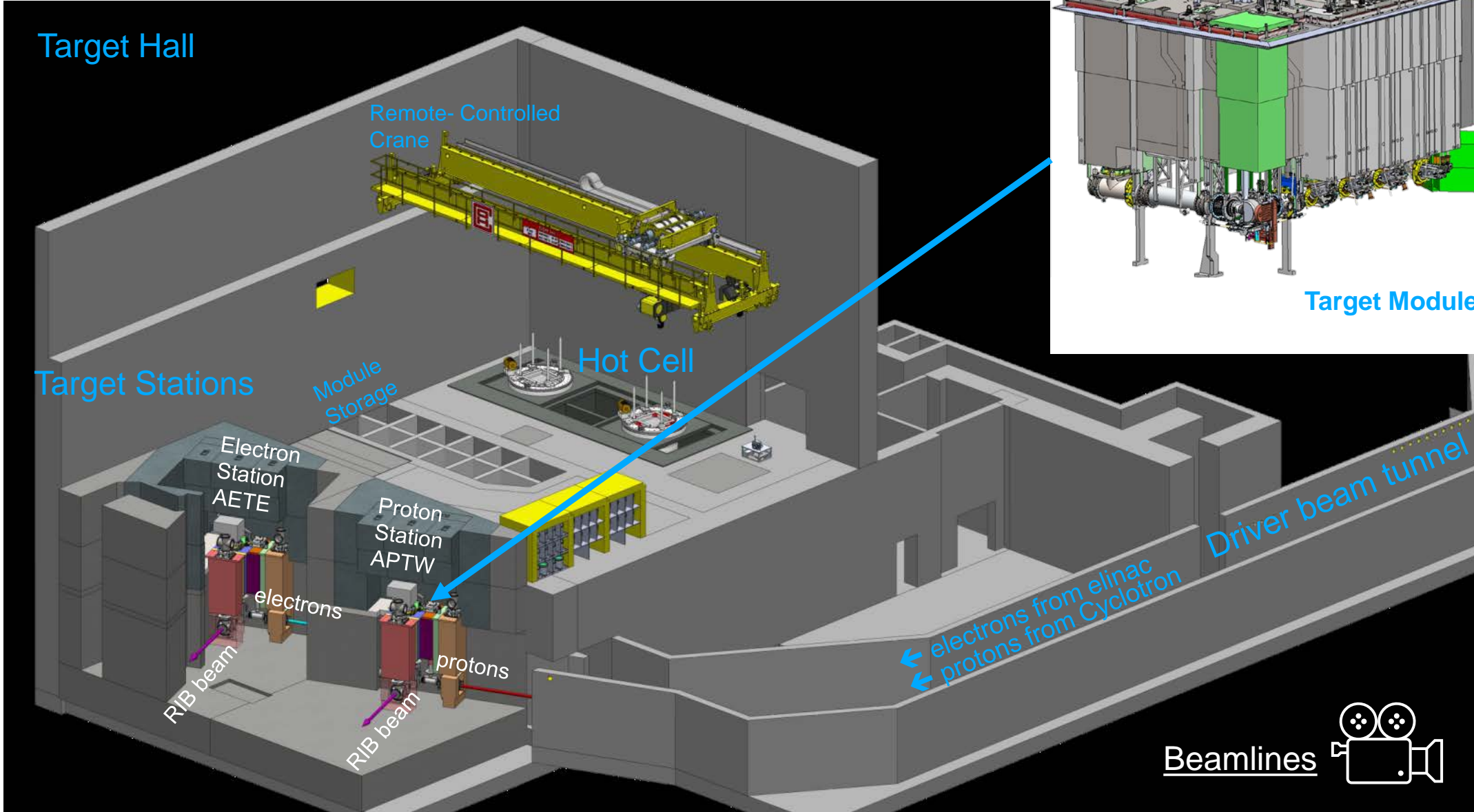2021-11-08

Discovery, accelerated

- What is ARIEL-II?
- Who is the ARIEL-II team?
- How is the project managed?
- Successes and areas for improvement

What is ARIEL?

- **ARIEL**: The Advanced Rare Isotope Laboratory is TRIUMF's flagship multidisciplinary research facility

- [The Advanced Rare Isotope Laboratory](#)

- **ARIEL-I** - Building completed in 2013

- **ARIEL-II**
  - Commenced in 2017
  - Design, assembly & commissioning, incl
    - Target Stations, and
    - Proton & Electron Beamlines
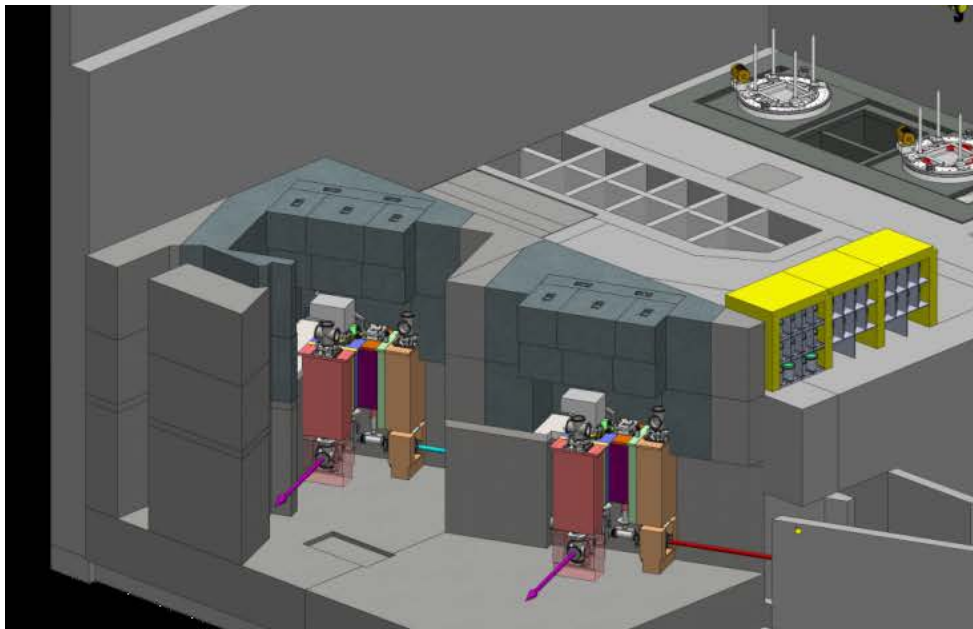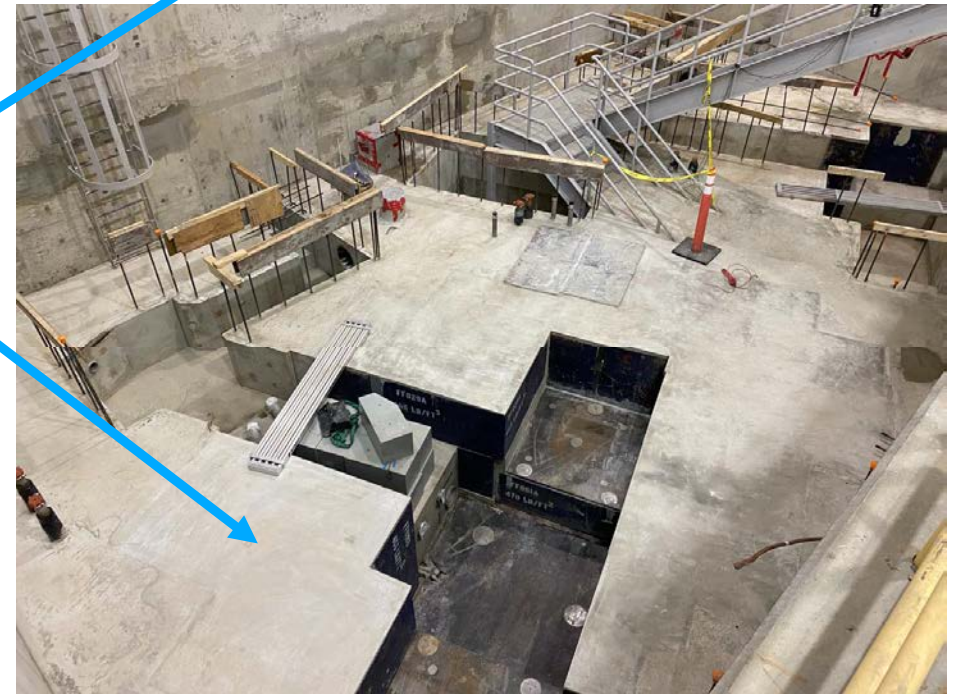   - Hot Cell

Target Hall and Target Stations
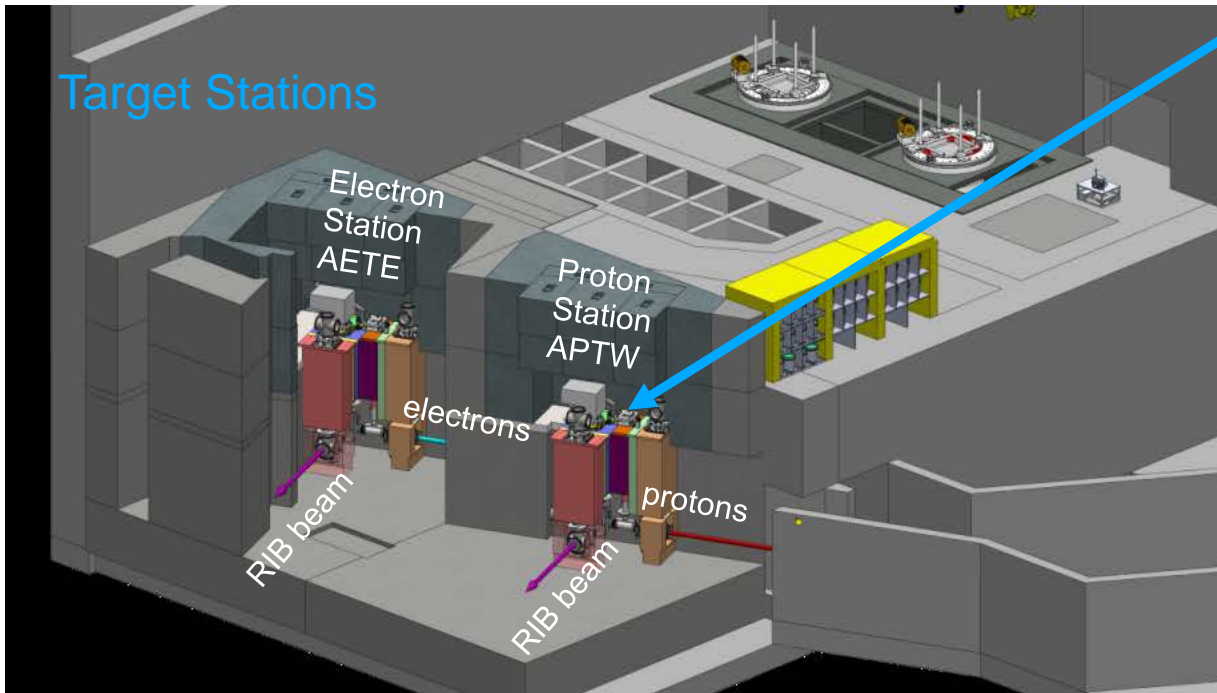
Target Module Assembly

Target Hall

Remote- Controlled Crane

Target Stations

Module Storage

Hot Cell

Electron Station AETE

Proton Station APTW

electrons

protons

RIB beam

RIB beam

Driver beam tunnel

electrons from elinac
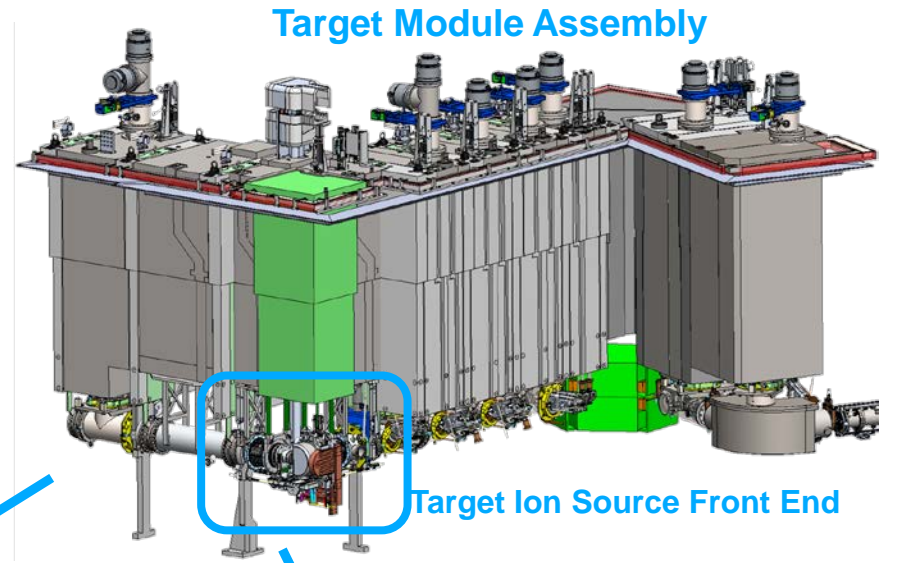protons from Cyclotron

Beamlines

Target Hall Construction

8m of steel and concrete shielding validated by simulations.

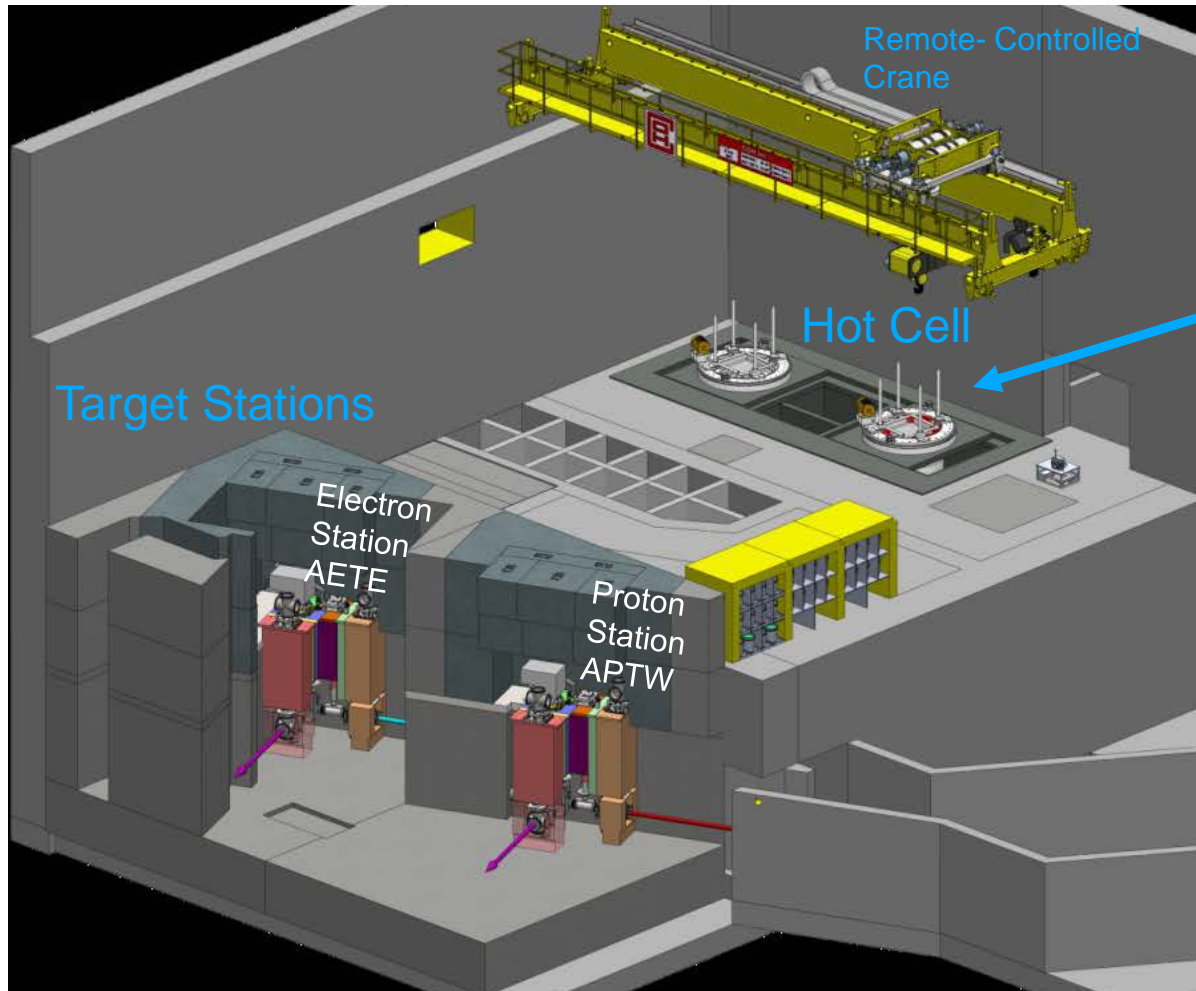2m of construction complete to date

Target Station Assembly

Target Module Assembly

Target Ion Source Front End

- TISA - Target and Ion Source Acceptance Test Stand
- Prototype of Front End
- Testing in progress

Prototype under test

Target Stations

Electron Station AETE

Proton Station APTW

electrons

protons

RIB beam

RIB beam

Front End installed at TISA

Hot Cell Installation

- Hot Cell –
- Contractor has completed Factory Acceptance Test
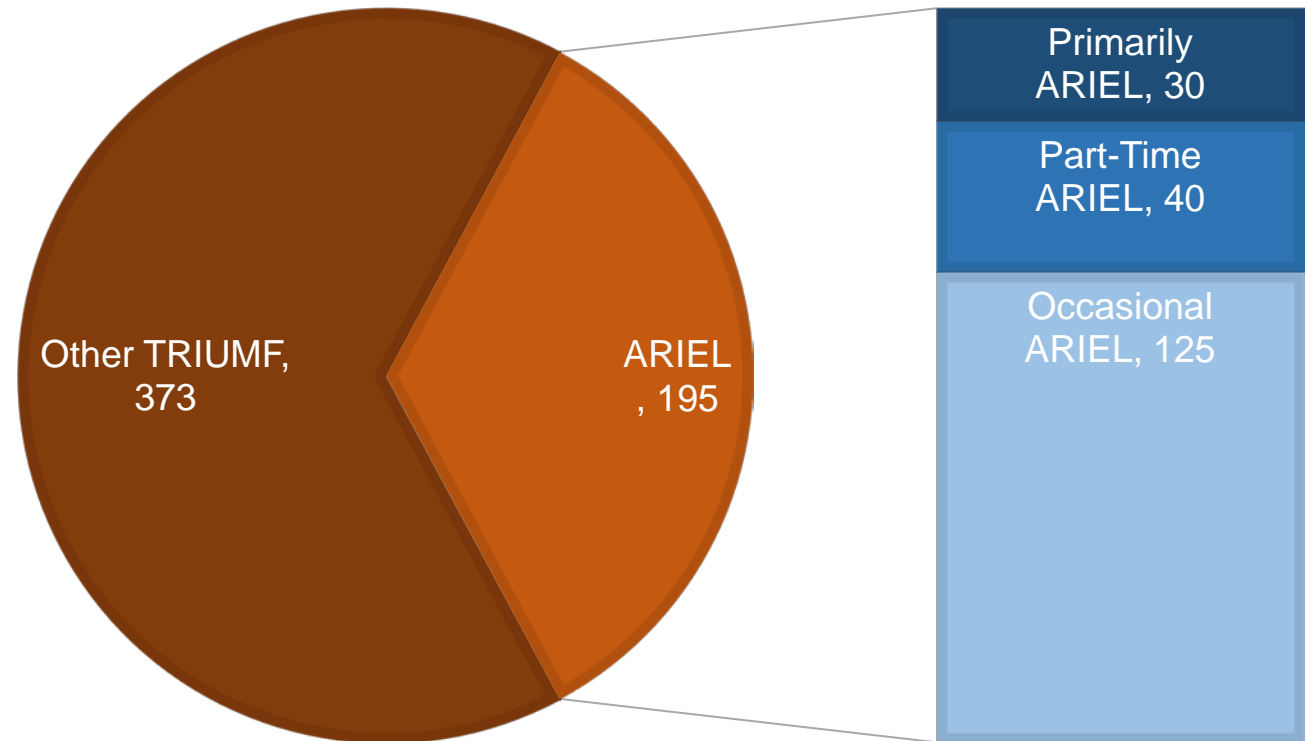- Installation starting February 2022

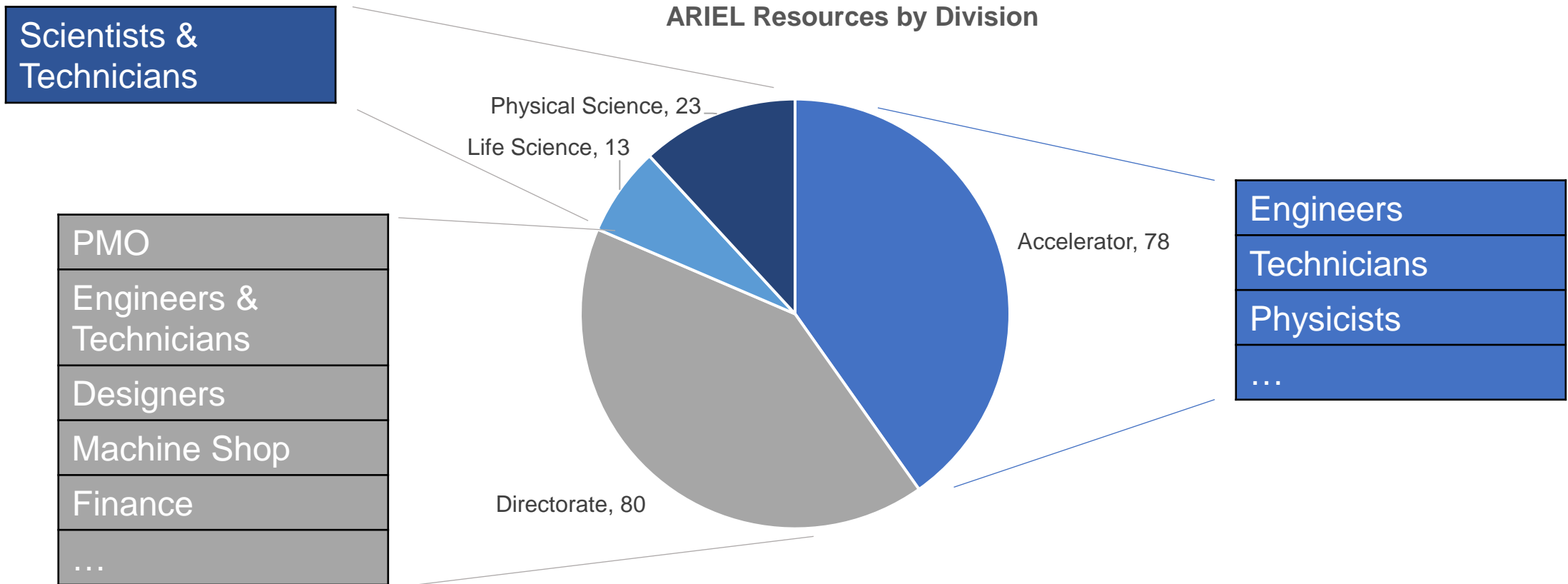# Who is the ARIEL-II team?

Who is the ARIEL-II team?

- Loosely matrixed organisation

- Core project team supported by many other TRIUMF groups and personnel

- about one third of the TRIUMF staff have contributed in 2021


TRIUMF & ARIEL STAFF IN 2021

Other TRIUMF, 373

ARIEL, 195

Primarily ARIEL, 30

Part-Time ARIEL, 40

Occasional ARIEL, 125

ARIEL-II by Division

- ARIEL is made up of people from all TRIUMF divisions, which also support other projects and Operations

ARIEL Resources by Division

Scientists & Technicians

Engineers
Technicians
Physicists
…

PMO
Engineers & Technicians
Designers
Machine Shop
Finance
…

Physical Science, 23
Life Science, 13
Accelerator, 78
Directorate, 80

TRIUMF Groups

- TRIUMF divisions are organised by *Groups*

- Group Leaders …
  - Manage employees' work assignments
  - Have to balance projects with Operations
  - Some group leaders are also ARIEL leaders
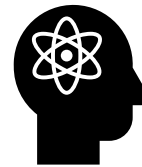 - Others are not closely involved with the ARIEL project
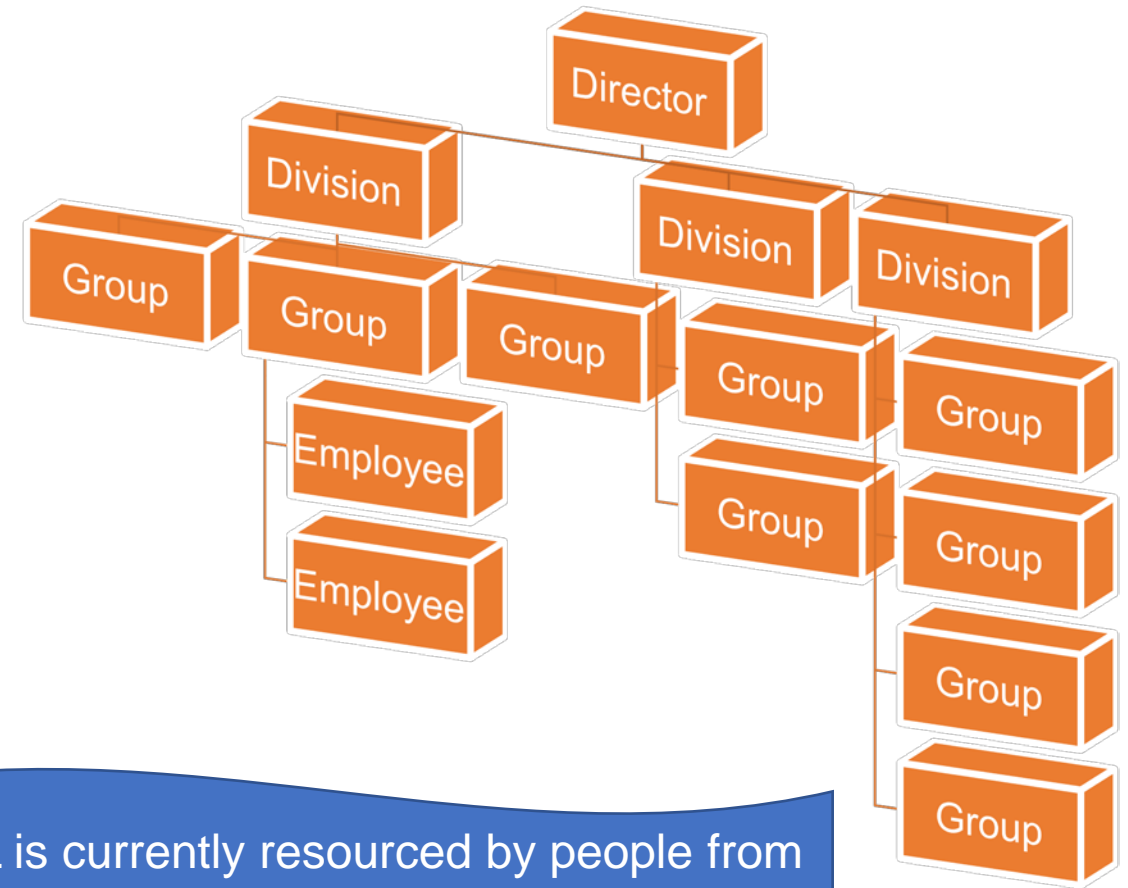
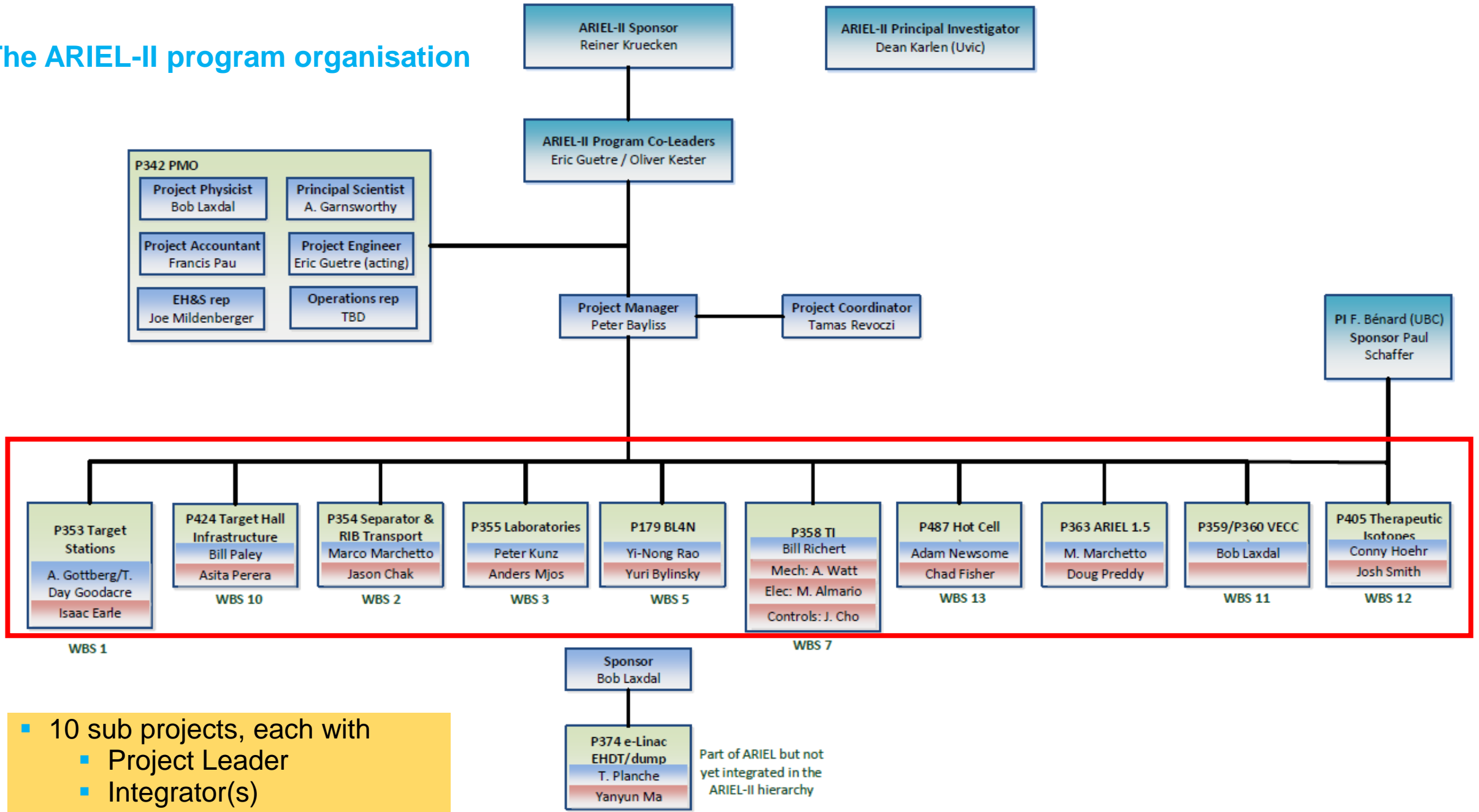ARIEL is currently resourced by people from
30 different Groups

Groups may provide people to tasks
or
be assigned a work package as a Group

How is the Project Managed?

How to effectively manage a large, complex project with a very loosely matrixed project team?
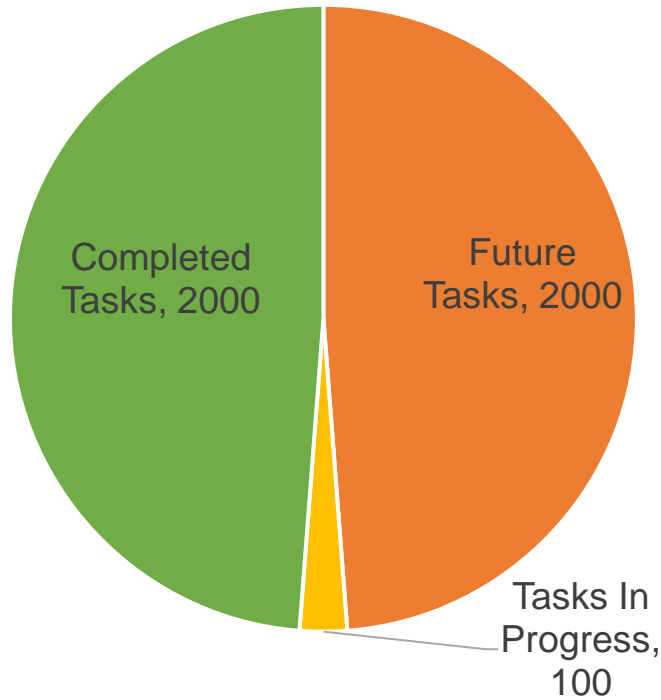
The ARIEL-II program organisation

Integrated Project Schedule

The 10 sub-projects are tightly coupled and planned in one MS Project master schedule

ARIEL-II Tasks in MS Project

- Completed Tasks, 2000
- Future Tasks, 2000
- Tasks In Progress, 100

- Typically about 100 tasks in progress
- Led by 40 Task Owners
- Staffed by about 100 resources

- Commissioning
  - AETE - mid 2025
  - APTW – late 2026

How is the schedule maintained?

In Excel online, exported from project

- Task owners update the live sheet
  - % complete
  - Changes to planned finish

- Excel Comments:
  - can direct a question to a specific cell via @email

Weekly Metrics: all tasks updated every 2 weeks

- Easier to use, more flexible than MS Project online timesheets
- *Becoming* established in the project culture

How to manage resources from 30 different groups and engage group leaders?

- The *4 Month Lookahead* was developed to get buy-in and commitment to ARIEL-II project from the Group Leaders

  - Shows ARIEL tasks and days of work for all employees, by Group

  - Group Leaders review and comment on schedule and resource availability

  - Also Includes Milestones to be completed in the 4 month period
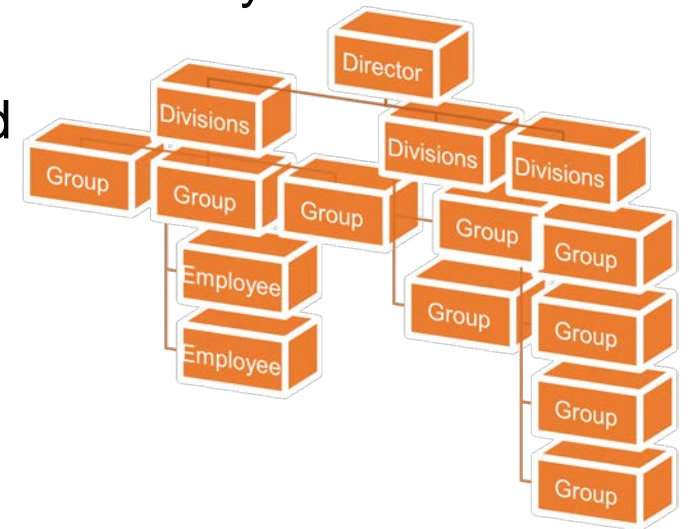
Monitoring & review of resource loading

- Monthly review of workload for all resources
- Compares scheduled work on ARIEL-II against their availability for the project
- ARIEL project maintains a log availability for all resources, taking into account:
    - Other projects and operations
    - Training, Vacation, etc
    - Maximum 80% loading

Metrics

- Has our approach been successful?

Keeping on Schedule for CFI goals?

Prior to April 2021 re-baseline, the Commissioning of AETE (Electron Target Station) had slipped by about 14 months

Since April we are on track no slippages

Measuring progress against the plan

- Trending up, but still needs improvement

- Report pending on causes and suggestions for improvements

% of Milestones Completed by Lookahead Period
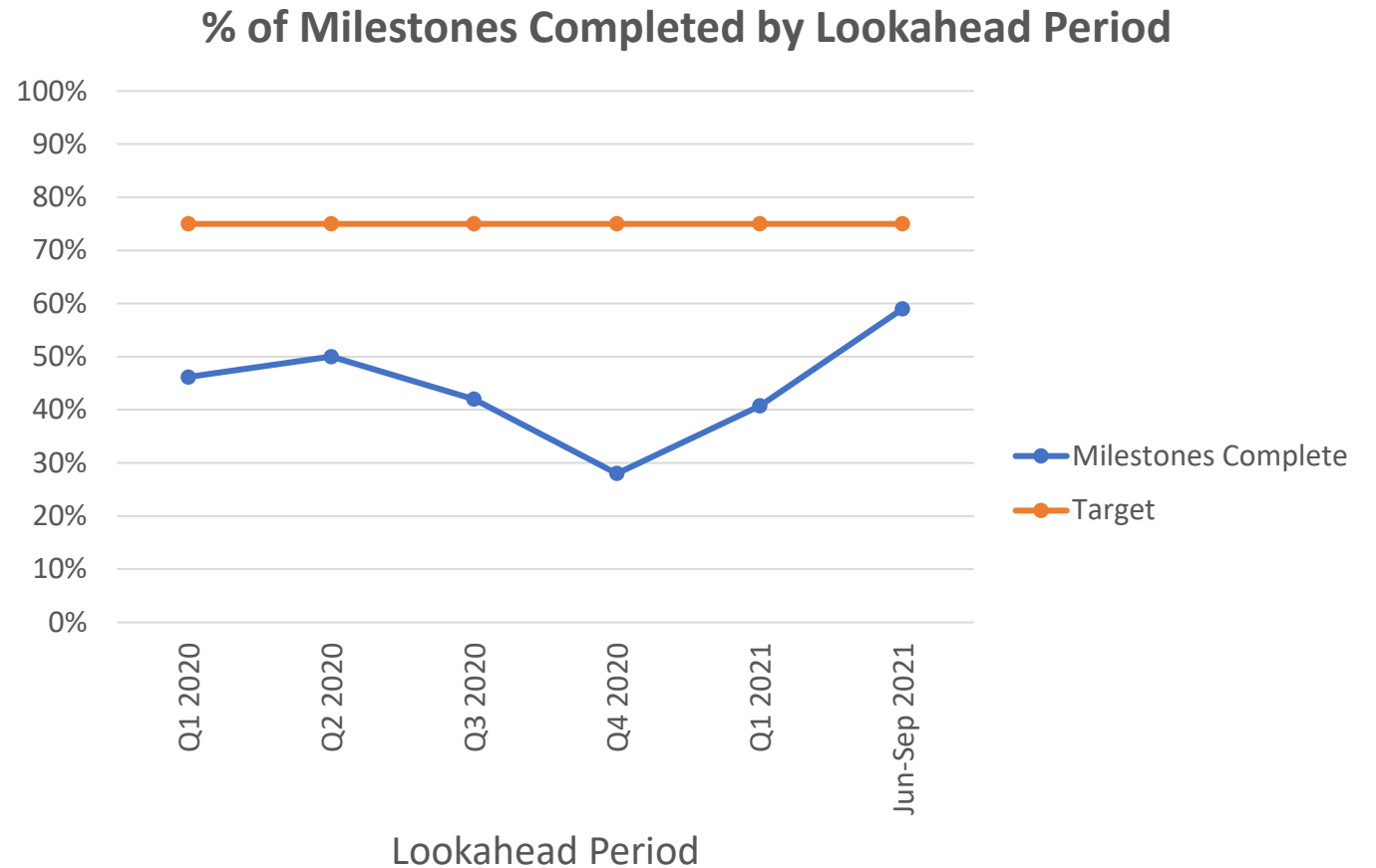
Schedule Metrics – Out of Date Tasks

Key indicator of schedule accuracy and engagement with the teams

Started metrics

Launch of Excel Updaters

Out of Date Tasks in the ARIEL-II Phase 1-2 schedule
Out of date tasks defined as those with Start date before today yet still 0%, or those with Finish before today and <100%
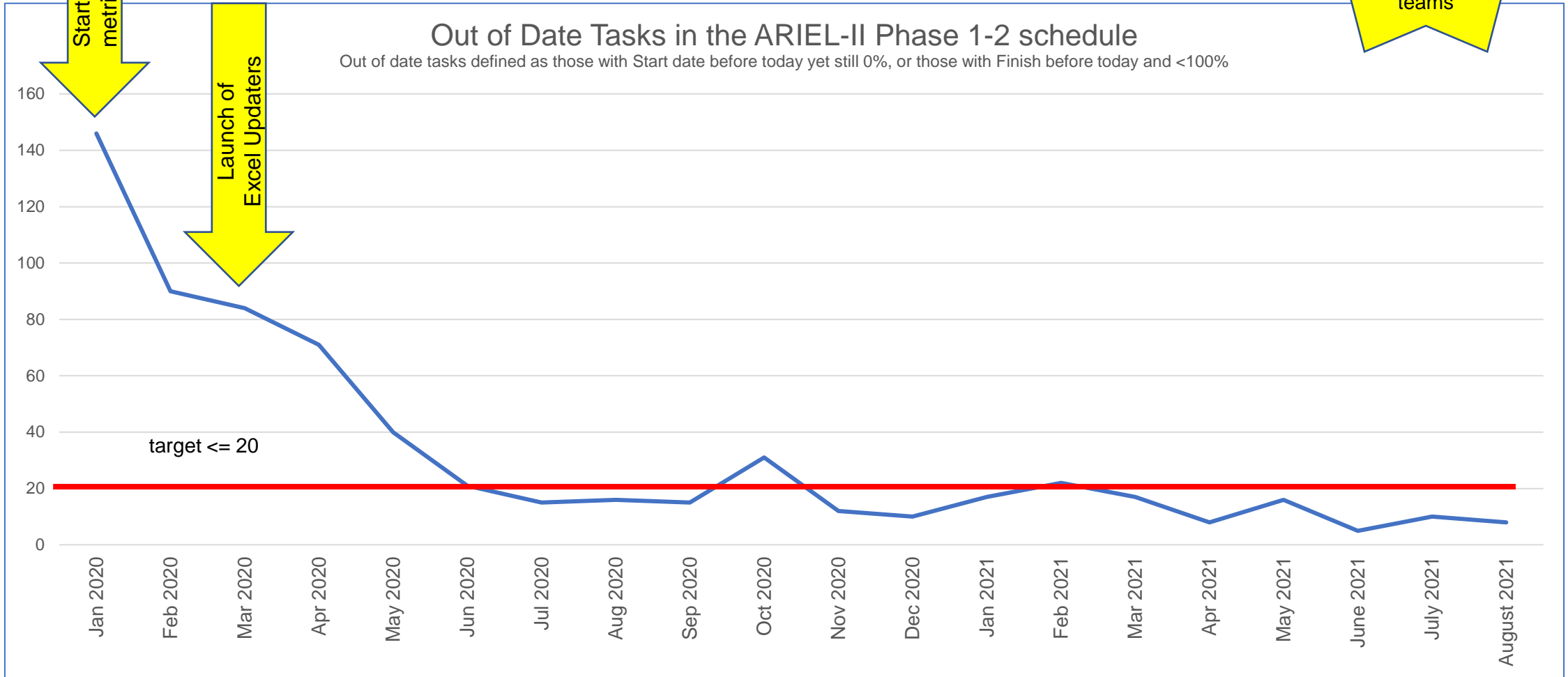
target <= 20

Schedule Metrics – Over loaded Resources

Key indicator of schedule achievability

Number of Overloaded Resources
Maximum number of overloaded personnel situations in the 3 months from this month

Started re-baselining

Re-baseline Completed
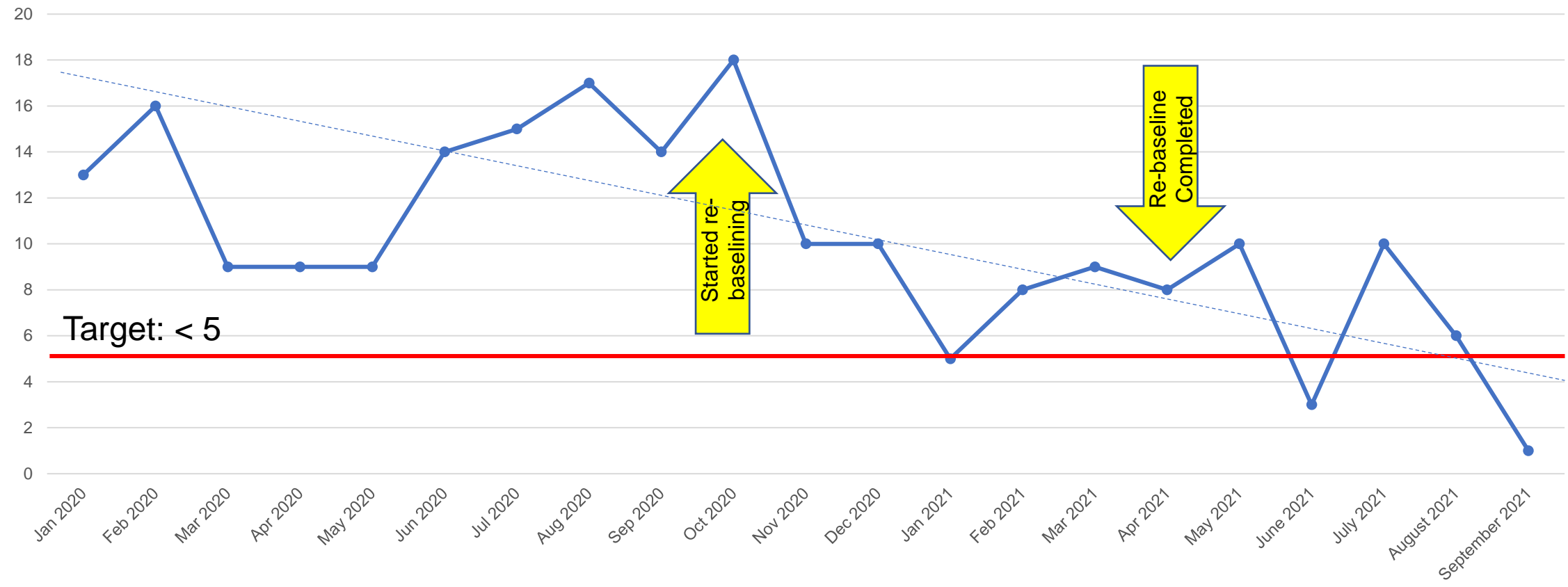
Target: < 5

Challenges and Solutions

- Summary

| Challenge	Solutions Applied
Slipping Milestones	• Focus on significant milestones • Added milestones in 4 month Lookahead (Measured by sub-project) • Weekly milestone meeting with sub project leaders • ARIEL-II Dashboard
Resources not committing to ARIEL tasks	• 4 month lookahead to engage Group Leaders … ensures that ARIEL is a part of their conversation with group members
Insufficient or Overloaded resources	• Better Resource balancing in master schedule • Registry of individual's % availability for ARIEL
Lack of awareness of / or visibility to assigned work and schedule	• Updater sheets • Task Finder tool
Schedule inaccuracy	• Updater sheets to collect status by task • Monthly metrics to measure schedule quality
Low Morale	• Employee Survey ➜ Improvement Committee

Tools & Communication

www.triumf.ca/ quick-links

Dashboard

Task Finder
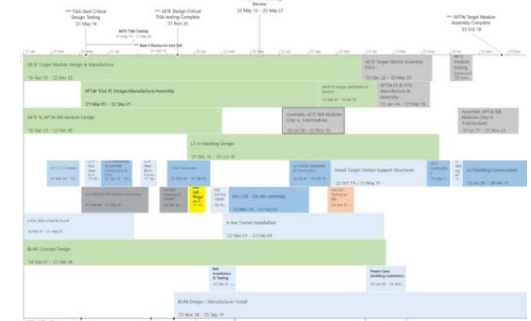
Timeline view

News!

Risks & Issues
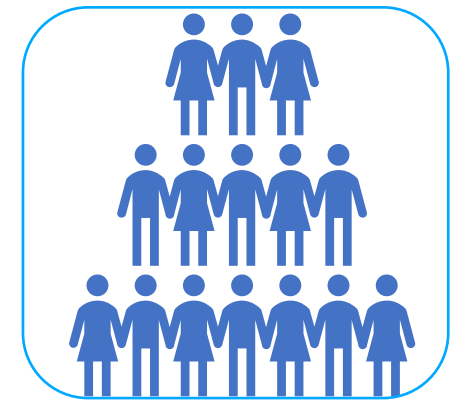
All Hands Meetings

TRIUMF

Questions?

Thank you
Merci

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Discovery, accelerated