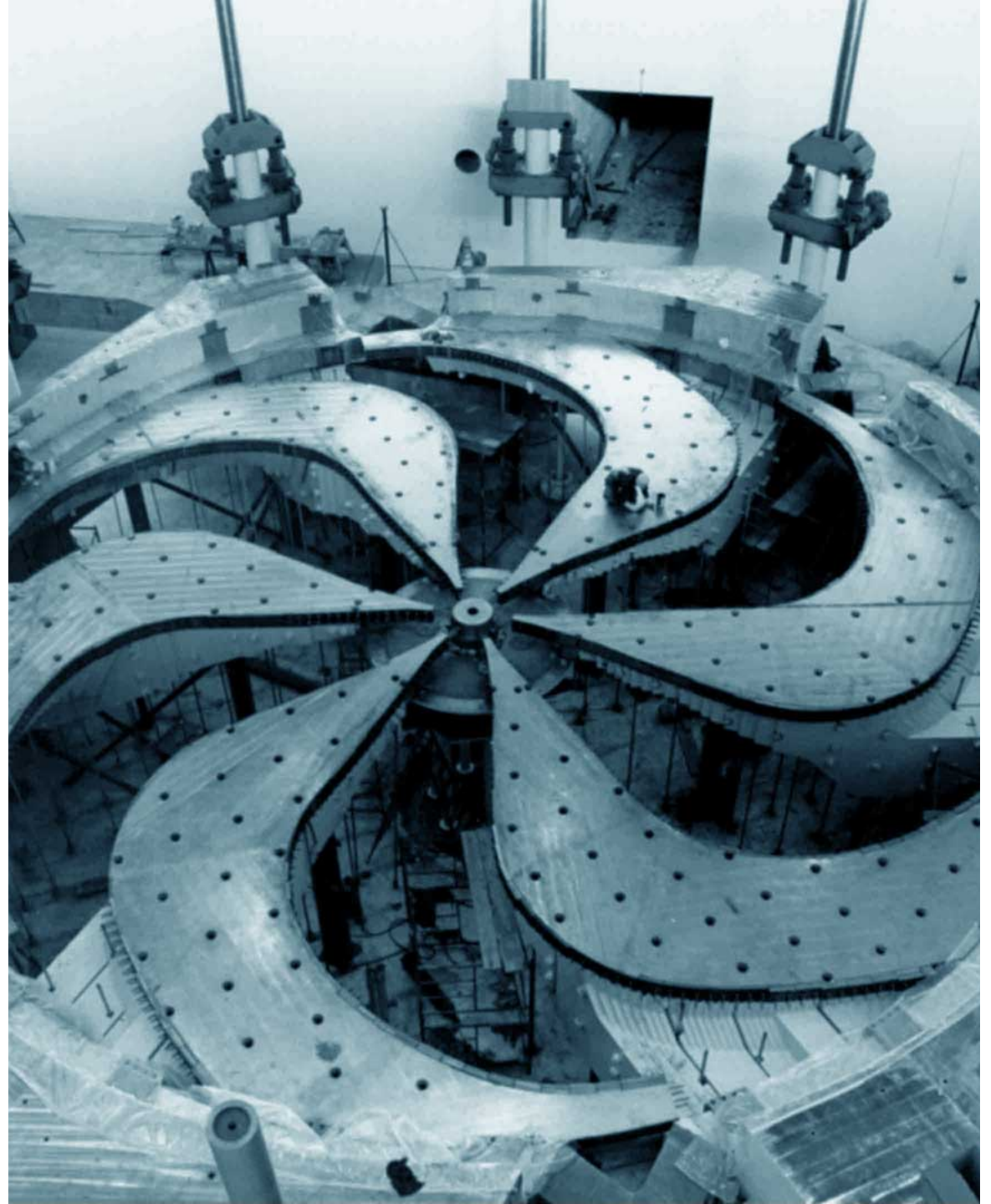


PRECISION PHYSICS and QUANTUM SCIENCE CENTER

Chloé MALBRUNOT

on behalf of the eponymous Task Force

2024-03-11



IDENTIFIED NEEDS

- (1) A stronger link, across different TRIUMF departments and divisions, on Quantum/AMO/precision experiments would benefit the community at TRIUMF working on those experiments.
- (2) Enhanced support personnel, resources and laboratory space: an overarching center would be able to better pool, assign and distribute the resources relevant to the quantum/AMO/precision experiments as well as justify and sustain an overall larger pool of resources at TRIUMF
- (3) Strategy to recruit skilled technicians and engineers in areas relevant to Quantum&Precisions (such as cryogenics, vacuum technology etc) .

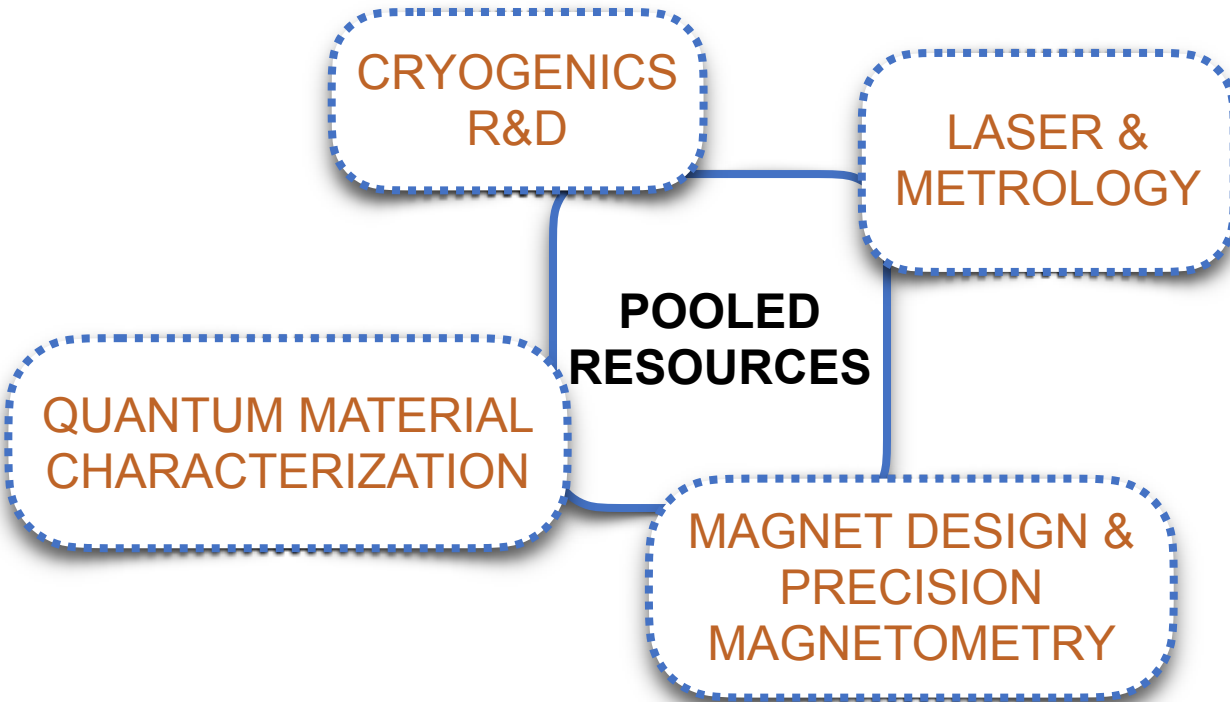
WHY A CENTER?

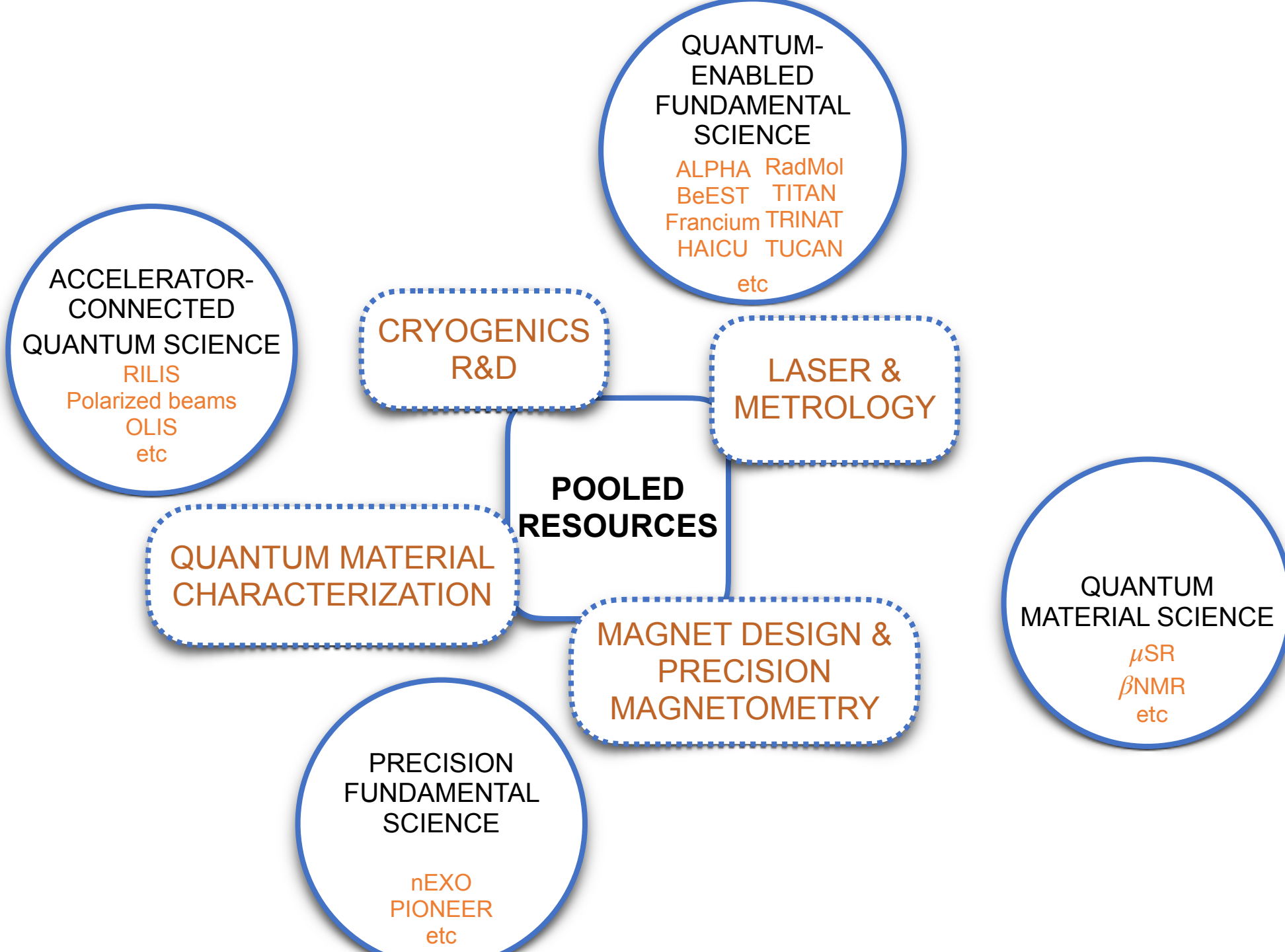
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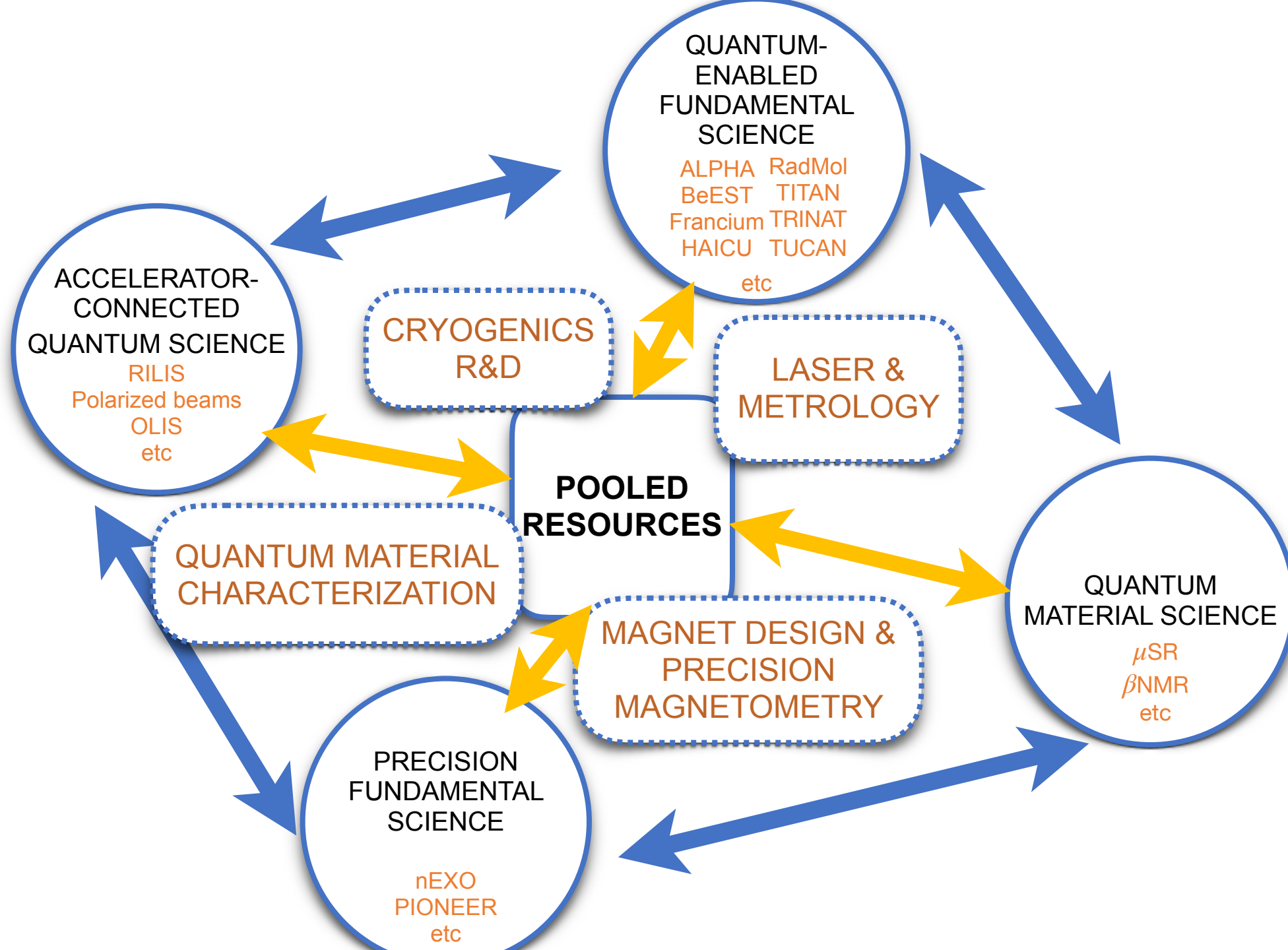
A visible center would be both strengthening existing TRIUMF experiments and seeding exploration of new opportunities. In particular it will enable TRIUMF to stay connected and remain competitive in the fast developing quantum sensing technologies for fundamental physics and societal applications.

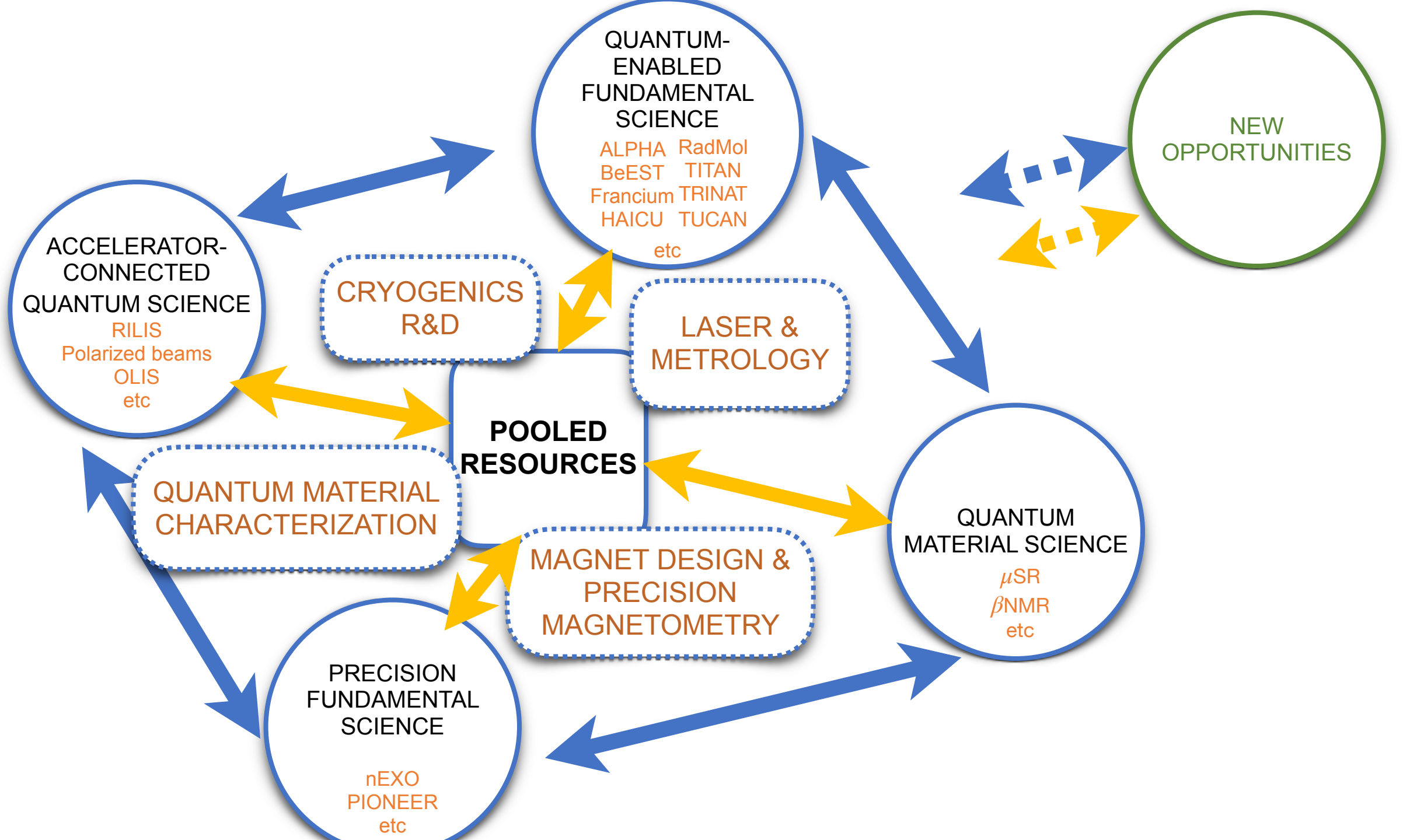
A visible center would provide a structure that supports R&D stage critical to the development of new ideas prior to funding requests.

A visible center would enable to strategize the recruitment of skilled workforce in areas relevant to Quantum & Precision and sustain the expertise in the long-term contributing to building the future talent pool in those areas (cf workforce development strategic plans).







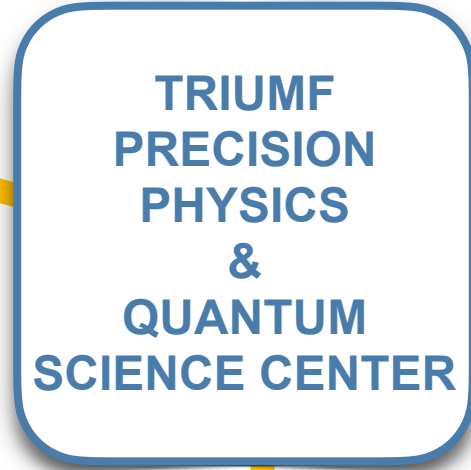


SPECIFICITY

- (1) The **fundamental** aspect of TRIUMF quantum-related science program is relatively **distinct** in the Canadian quantum network ecosystem
- (2) Accelerator-based quantum-related science is certainly **unique** in Canada
- (3) The already existing wide scope (user-inspired/fundamental) of quantum-related research and precision experiments at TRIUMF is a **strength** for future cross-fertilization
- (4) TRIUMF existing quantum-related program extends beyond what was presented here (e.g. **quantum computing for fundamental science** → connects to AI center proposal)

GOALS

- (1) **Pool the resources** and **sustain the expertise** in the long term and allow better cross-fertilization across departments and divisions.
- (2) **Establish & support** new flagship experiments at TRIUMF
- (3) **Span across TRIUMF's** existing divisional structure & **connect to new fields** (e.g. quantum chemistry)
- (4) **Connect** Canadian and international researchers in novel use of quantum and precision experiments in **fundamental and applied science**. The center will develop the existing Quantum forum initiative to the next level, leverage resources and be a **structure that organizes workshops, conferences, and schools** on precision, AMO and quantum physics and their connections to other fields.
- (5) **Act as a wedge for longer-term growth** in quantum & precision physics - strategically important areas for TRIUMF



Thank you
Merci

