Organization steps towards an international ν collaboration

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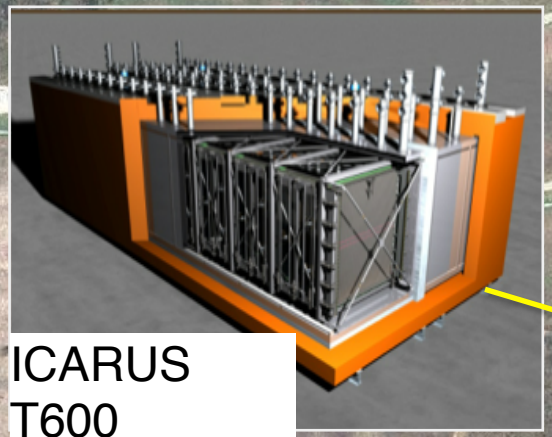
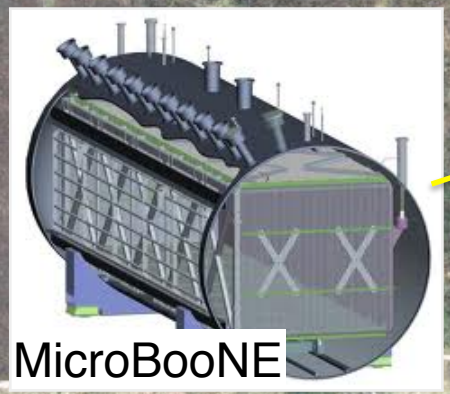
Short Baseline at FNAL ~ 0.7 GeV ν Booster Beam

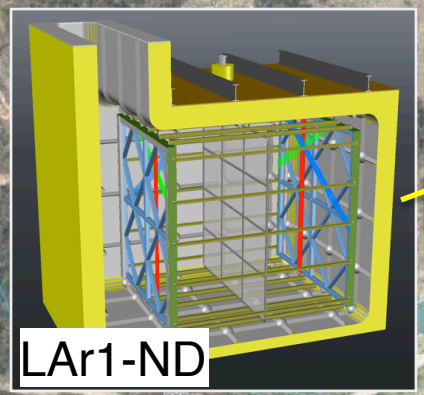
	LAr Mass	
	Total	Active
LAr1-ND	220t	112t
MicroBooNE	170t	89t
T600	760t	476t



ICARUS T600



MicroBooNE



LAr1-ND

– 8 GeV proton beam
– ν flux peaks ~700 MeV !
– Robust target and horn system!
– Neutrino fluxes well understood 10+ years of study by MiniBooNE and SciBooNE!
– Beam near surface (~10m) => modest civil construction cost!

DUNE

A merger of all previous efforts and any other interested parties to **build, operate, exploit**

- a (staged) **40 Kt LAr detector**, at the SURF site, 1300 Km from FNAL
- An high granularity/high precision near detector

exposed to a **1.2 MW, tunable ν beam** produced by the PIP-II upgrade at FNAL by 2024, evolving to a power of 2.3 MW by ~ 2030.

A 25+ years Physics Program

On the beam:

- Perform a comprehensive investigation of neutrino oscillations to:
  - test CP violation in the lepton sector
  - determine the ordering of the neutrino masses
  - test the three-neutrino paradigm
- Perform a broad set of neutrino scattering measurements with the SBN and the near DUNE detector

Exploit the large, high-resolution, underground far detector for non-accelerator physics topics:

- atmospheric neutrino measurements
- searches for nucleon decay
- measurement of astrophysical neutrinos (especially those from a core-collapse supernova).

The organization of the experiments

The question:

- How can we optimize **flexibility, efficiency** and **independence**, while retaining the necessary **scientific, scheduling, budgetary oversight** and **control** of a **large international Collaboration?**

Governance: the basic assumption

- SBN and DUNE will follow a model derived from the CERN LHC, which clearly separates the ownership of the experiment (International Collaboration) from the ownership of the facility (Host Lab)
- A strong Experiment - Facility Interface Group (EFIG) is a key ingredient.

A mixed model….

- Formal agreements (eg CERN/FNAL, FNAL/INDIA, etc.) mainly for the collaboration on the infrastructure
- A flexible organization for the Collaborations, based on **best effort** (through MoUs stipulated among **each and every** Funding Agency and FNAL as Host Lab) to build, run and exploit the detectors. The Host Lab **acts as a record keeper** for **all** the Funding Agencies

Collaborations are **NOT legal entities** and are **NOT owned** by the Host Lab.

Main oversight bodies

- LBNC, a Scientific Committee, which will closely follow all the phases of the Collaboration, scrutinizing physics, technologies, schedule and costs. It will report to the Host Lab Director

- The Resources Review Board (RRB) is the Funding Agency (FA) body responsible for funding and monitoring of the collaboration resources across all the phases of the program.

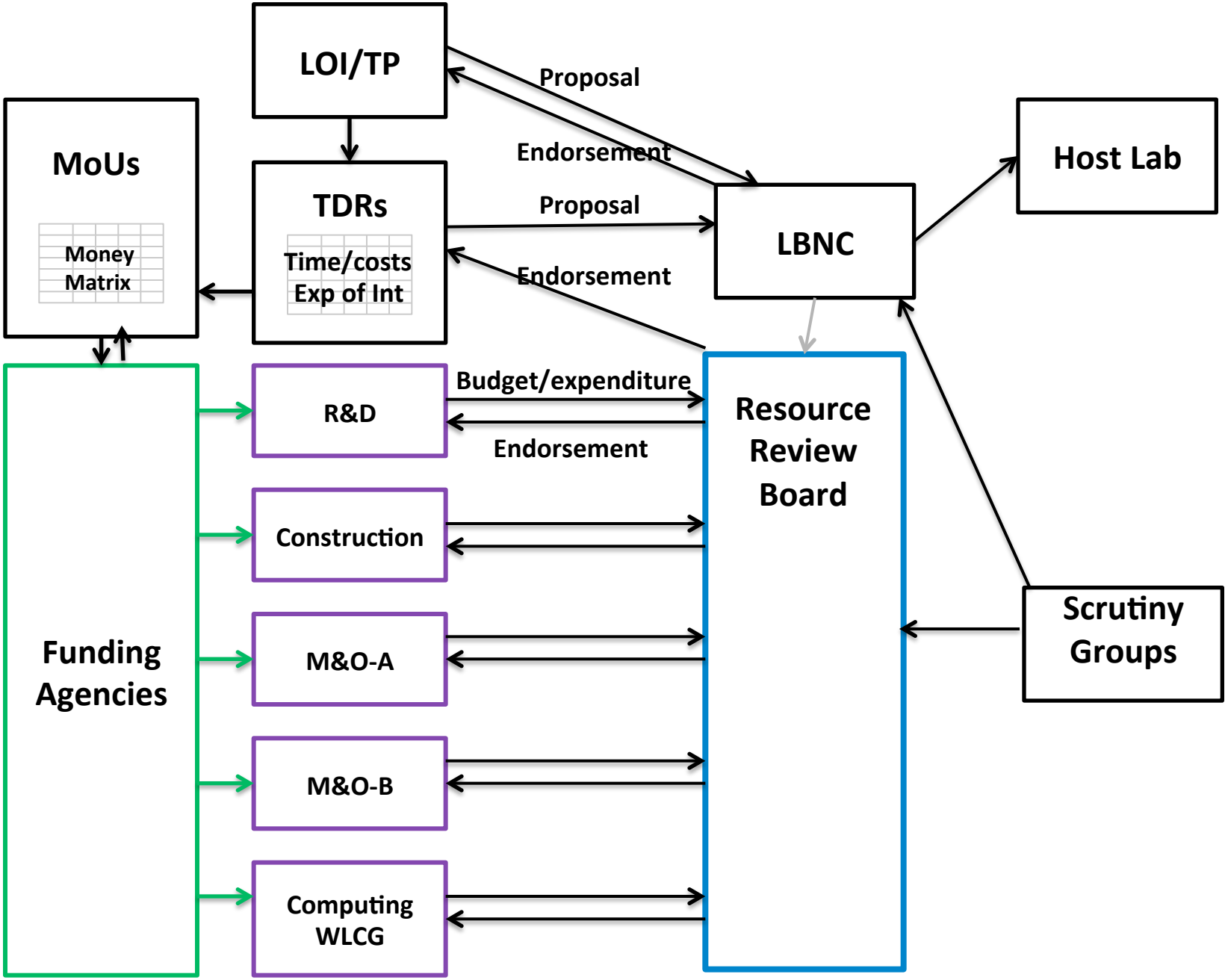
The Resources Review Board

The Resources Review Board (RRB) comprises the representatives of each Experiment's Funding Agencies, of FNAL management and of the Collaborations. It is chaired by a FNAL delegate.

The role of the RRB includes :

- reaching agreement on the Memorandum of Understanding
- monitoring the Common Projects and the use of the Common Funds
- monitoring the general financial and manpower support
- reaching agreement on a maintenance and operation procedure and monitoring its functioning
- endorsing the annual construction and maintenance and operation budgets of the detector.

Experiment approval and follow-up process



Next steps

- CERN/DOE “Cooperation Agreement” signing in May
  - agreement has been approved by CERN Council
- Several layers of agreements in the pipeline
  - After CERN/DOE “cooperation agreement” is signed…
    - Negotiate words for 3 protocols…experiments, machine, neutrinos
    - Three protocols hopefully signed by July
- Process to define detector cost and FA share started by the Collaborations

THANK YOU