



ICARUS and SBN at Fermilab

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SBN Board

- Charged by Nigel
 - The SBN Board is charged with defining the process and timeline by which a single organization is formed to commission, operate, and analyze the ICARUS and SBND detectors. This organization is expected to be formed from the current MicroBooNE, SBND, and ICARUS collaborations in a way to be determined by the SBN Board.
- Membership
 - Sergio Bertolucci (chair)
 - Antonio Masiero
 - Marzio Nessi
 - Steve Brice
 - Bonnie Fleming
 - Sam Zeller
 - Sandro Centro
 - Carlo Rubbia
 - Dave Schmitz
 - Ornella Palamara
- Meeting held 30 October 2017

SBN Board Outcomes

- An SBN Organization Document
 - Ratified on March 14 by both the ICARUS and SBND Collaborations
- A set of organizational structures defined to...
 - oversee the completion of the ICARUS and SBND detectors,
 - develop plans and procedures for commissioning and operation
 - coordinate efforts toward combined physics analyses in the future.
 1. SBN Oversight Board (SBN-OB)
 2. SBN Institutional Board (SBN-IB)
 3. SBN Joint Working Groups

SBN Board Outcome #1

SBN Oversight Board (SBN-OB)

- **Purpose:** The SBN-OB is internal to SBN and will provide a key forum for cross-collaboration communication or agreement development on issues relevant to construction, commissioning, operations, data management, and analysis.
- **Membership:** The group will consist of
 - ICARUS and SBND spokespersons
 - SBN collaborators selected to provide good representation of the international groups making major contributions to the ICARUS and SBND detectors,
 - Italy-INFN
 - US-DOE and NSF
 - UK-STFC
 - Switzerland
 - CERN
 - As Host Lab, the initial Chair of the board will be the head of Fermilab Neutrino Division
- **Timeline:**
 - International representatives are in the process of being selected by their constituents.
 - First meeting scheduled for the 2nd week of May

SBN Board Outcome #2

SBN Institutional Board (SBN-IB)

- **Purpose:** The SBN-IB will provide a forum for program-wide communication on issues relevant to the Program. Procedures, policies, and bylaws covering joint aspects of operation, data sharing, data analysis, publications, etc. can be brought to this body for deliberation or developed from within the group. Agreements developed within the SBN-IB will need to return to the individual collaborations for final ratification.
- **Membership:** The SBN-IB will consist of one member from each institution participating in the SBN Program. Each institution's representative is selected by that institution and communicated to the IB chairperson who will maintain the official list of membership and mailing list. The chairperson will be elected by the members of the IB from within its membership.
- **Timeline:** An interim SBN-IB chair is in the process of being selected. Their first task will be to run an election for SBN-IB chair. The SBN-IB signals the formal start of collaboration

SBN Board Outcome #3

SBN Joint Working Groups

- **Purpose:** A set of SBN Joint Working Groups are needed to co-develop many key aspects of SBN operations and physics analysis. Several joint working groups already exist making extensive use of the experience running MicroBooNE and ICARUS
 - **SBN Analysis:** Explore how combined SBN physics analysis for sterile neutrino oscillation searches can be most effectively performed. Work focuses on implementing a three detector simulation, building reconstruction and analysis tools within a common framework, and developing an end-to-end common analysis scheme in preparation for real data exploitation.
 - **SBN DAQ and Data Pre-processing:** Prepare the infrastructure for the efficient collection of high quality data with ICARUS and SBND using common strategies whenever possible.
 - **SBN Slow Controls:** Compare Slow Controls needs and designs and identify common hardware and software solutions for ICARUS and SBND.
 - New SBN Working Groups shall be set up as needed by the SBN-OB with the intent of spanning all detector subsystems
- **Membership:** The Working Groups are open to all participants in the SBN Program. For each Working Group the SBN-OB will identify a set of conveners to lead the activities of the group and report progress to the SBN-OB and the collaborations.

Next Governance Steps

- SBN-OB needs to complete and ratify the SBN Framework document describing the institutional responsibilities within the SBN Program
- Data sharing and joint analysis agreements need to be worked on by both SBN-OB and SBN-IB
- A full set of joint working groups needs to be defined and launched
- The SBN-OB and SBN-IB need to be careful to focus on those aspects of the program that are in common between ICARUS and SBND

SBN Director's Review

- The next Director's Review for SBN is scheduled for June 26-28
- The charge and format are very different from the three previous reviews:
 - Focus on schedule elements and integrated schedule
 - Not a review of technical choices or cost
 - Small breakout sessions discussing deliverable tasks with respect to schedule,
- Gina Rameika has agreed to chair the review

Agenda blocks:

Tues 8-9am: Plenary Overview

9-noon: ICARUS Breakouts - installation

SBND Breakouts - assembly

afternoon: committee discussion

Wed 8-9am: answers to questions

9-noon: ICARUS install to commissioning

SBND installation

afternoon: committee work on report

Thurs 9-10:30 Dry Runs

11-noon closeout

Breakout groups:

- ICARUS Front-end electronics
- SBND Front-end electronics
- Common DAQ, slow controls & monitoring
- ICARUS installation
- SBND detector and cryostat
- SBND installation
- ICARUS and SBND Cryogenics
- Integrated schedule

Fermilab – Host Lab Role for ICARUS

- As host laboratory Fermilab has responsibilities to support the operation of the SBN Program including the SBN detectors. These are independent of the contributions of the Fermilab scientists and postdocs who contribute as members of the ICARUS collaboration
- Operation of the accelerator complex and booster neutrino beamline including providing necessary signals from the beamline to experiment for timing etc
- Oversight of activities in regard to Environment, Safety and Health
 - Provide support for carrying out safety reviews and obtaining necessary Operational Readiness Clearances



Fermilab – Host Lab Role for ICARUS

- Operational support through Neutrino Division Technical Support Dept. (ND/TSD)
 - Technical support for installation and maintenance
 - E.g. crane operation and logistics for transport of materials on-site
 - Responsibility for operation of the detector cryogenic systems
 - 24/7 on-call support by cryogenic engineers and technicians
 - necessary periodic maintenance such as pump overhauls
 - supply of LN2 and LAr to maintain operation of the detector
 - Technical support for operation of the Remote Operation Center West (ROC-West)
 - Support of operations by the Experiment Liaison Officer (ELO)
 - responsible for identifying necessary technical resources to solve problems on the experiment
- Computing support provided by the Scientific Computing Division (SCD)
 - Networking, storage and computing to ensure the safe storage and processing of data for physics analysis, Monte Carlo and calibration samples
 - Support for online computing systems, networking, and DAQ
 - Management and support for common software (elog, databases, etc.)

