15

Collaboration Issues and Project Management

The *BaBar* Collaboration had its inaugural meeting at SLAC in December of 1993, soon after the approval of the PEP-II accelerator project in October. An Interim Steering Committee was appointed to organize and direct the Collaboration until a permanent organizational structure could be set up.

The Steering Committee, in consultation with the collaboration membership and laboratory management, drafted a governance document for the Collaboration. The governance document was approved by the newly formed Collaboration Council in May of 1994. Following the procedures described in the governance document, the officers and management of the collaboration were selected. These structures are now fully in place.

In this chapter we summarize the collaboration organization as detailed in that document [BAB94] and describe the organization of the project management aspects of the construction and operation of *BaBar*. Figure 15-1 shows a schematic organization chart of the *BaBar* Collaboration.

15.1 Membership

Ph.D. physicists, engineers, and Ph.D. thesis students who contribute significantly to the *BaBar* detector, as well as those who contribute significantly to the accelerator and plan to participate in the physics program, are eligible to be members of the collaboration. Through the submission of the Technical Design Report, membership has been open to all individuals who meet these criteria, and their institutions. Henceforth, new groups may apply for membership in the collaboration by submitting an application to the Spokesperson, which will be voted on by the Collaboration Council.

The Technical Design Report has been signed by 77 institutions from 10 countries.

Collaboration Council

Chairman - L. Piemontese
Vice-Chairman - R. Wilson

Institution Representatives

Project Management

Spokesman - D. Hitlin
Deputy Spokesman - R. Aleksan
Technical Coordinator - V. Luth
Project Engineer - R. Bell

Executive Board

Canada - D. MacFarlane
France - G. Wormser
Germany - K. Schubert
Italy - M. Giorgi
UK - J. Fry
US - K. McDonald
US - A. Seiden
US - M. Witherell
SLAC/US - [V. Luth]
LBL/US - M. Pripstein
Spokesman *- D. Hitlin*
Deputy Spokesman *- R. Aleksan*
Technical Coordinator *- V . Luth*
PEP-II *- J. Dorfan*

Technical Board

Technical Coordinator (Chairman) - V. Luth
Project Engineer - R. Bell
Chief Electronic Engineer - G. Haller
Chief Software Engineer - D. Quarrie
Integration Physicist - H. Lynch
PEP-II Representative - J. Dorfan
Safety Officer - F. O'Neill
Spokesman *- D. Hitlin*
Deputy Spokesman *- R. Aleksan*
System Managers:
- **PEP-II/BABAR Interface** - H. DeStaebler
- **Vertex Detector** - F. Forti/N. Roe
- **Drift Chamber** - D. MacFarlane
- **DIRC PID** - G. London/B. Ratcliff
- **Aerogel PID** -
- **CsI Calorimeter** - R. Schindler
- **IFR** - C. Sciacca
- **Magnet** - R. Bell/[T. O'Conner]
- **Electronics** - A. Lankford
- **Computing** - N. Geddes/F. Porter

Figure 15-1. *Organization of the BaBar Collaboration.*

15.2 Collaboration Council

Institutions with three or more collaborating members who are Ph.D. physicists are represented directly on the Collaboration Council. Members of the collaboration from institutions with fewer than three Ph.D. physicists may affiliate with another institution for the purpose of representation on the Collaboration Council. Large institutions have one vote for every ten collaboration members. The Collaboration Council has an elected Chairperson and Vice-Chairperson.

The Collaboration Council deals with issues related to the overall framework of the collaboration. It is responsible for membership policy, publication policy, and the selection of speakers for conferences.

The Council also appoints a Nominating Committee to nominate the Spokesperson every three years, in consultation with SLAC management and with the Collaboration at large. This nominee must be ratified by a two-thirds majority of the Collaboration Council. The Council may vote to remove the Executive Board, also by a two-thirds majority.

15.3 Spokesperson

The Spokesperson is the scientific representative of the collaboration, and is responsible for all scientific, technical, organizational, and financial affairs. On financial matters, the Spokesperson's authority is consistent with the requirements of the various funding agencies. The Spokesperson consults with the Technical Board on technical matters. In addition, the Spokesperson is responsible for keeping SLAC management and the Collaboration Council informed about collaboration affairs.

The Spokesperson, after broad consultation with the collaboration and SLAC management, nominates a Deputy Spokesperson, who must be ratified by the Collaboration Council. The term of appointment for both offices is three years, renewable.

15.4 Executive Board

The Executive Board advises the Spokesperson on all scientific, financial, and organizational matters. It consists of members distinguished by their scientific judgment, technical expertise, and commitment to the experiment. The Executive Board may remove the Spokesperson with a two-thirds majority vote. The membership will reflect the national composition of the collaboration: initially, the Executive Board consists of one representative each from Canada, France, Germany, Italy, and the U.K., and five representatives from the US. This composition may change as the collaboration grows. The Spokesperson, Deputy Spokesperson, Technical Coordinator, and a PEP-II representative serve as non-voting *ex-officio* members.

The Executive Board meets eight times per year. Several of these meetings are held jointly with the Technical Board.

15.5 Technical Board

The Technical Board advises the Spokesperson on technical and financial matters. It consists of the Technical Coordinator as chairperson, the Project Engineer, a PEP-II representative, the Collaboration Safety Officer, the Spokesperson *ex-officio*, and the managers of the detector subsystems. In cases in which there are co-system managers, one of the co-managers sits on the Technical Board. The Spokesperson nominates the subsystem managers in consultation with the Executive Board and may nominate additional members of the Technical Board.

The Technical Board meets monthly to review the progress of the project. Several of these meetings are held jointly with the Executive Board.

15.6 Finance Review Committee

The Finance Review Committee monitors the financial aspects of the experiment as set forth in the management plan for the detector and agreed upon between SLAC and the collaboration. This will be detailed in Memoranda of Understanding between SLAC and each participating institution. The committee will be chaired by the SLAC Director of Research, and will include representatives of each of the funding agencies. The Spokesperson will normally also attend meetings of the committee.

15.7 Communications

Collaboration Meetings are held four times per year, typically in March, June, September and December. At least one meeting each year will be held outside the United States.

The international nature of the *BaBar* collaboration requires the use of up-to-date communications techniques to facilitate communication. Frequent use of video and telephone conferences promotes communication with the collaboration.

The *BaBar* World Wide Web Home Page, located at

http://www.slac.stanford.edu/BFROOT/

and reachable from the SLAC home page and from the home pages of many collaborating institutions, is a major center of communication. Weekly event calendars, netnews groups, and *BaBar* Notes are posted there, as are announcements of special interest.

15.8 Construction Responsibilities

The design of the *BaBar* detector described herein has been arrived at through an extended process of optimizing the design of individual subsystems and the detector as a whole against the required physics performance, the interests and technical capabilities of the collaborating institutions, and available financial resources.

In cases in which there were competing technologies, the process of arriving at a single susbsystem design has been managed by a series of *ad hoc* task forces charged with evaluating alternatives and recommending choices. In making these technology choices, the task forces have considered physics performance, cost, maturity of technology, schedule implications, and the integration of a given system into the overall detector context. Task forces have been employed in arriving at final designs for the vertex detector, particle identification, electromagnetic calorimeter and instrumented flux return systems. The reports of these task forces are available as *BaBar* notes.

Responsibilities for design and construction of the various detector subsystems have been assigned through the traditional process of matching interests, capabilities, and resources. Final responsibilities will be detailed in the Memoranda of Understanding. The following tables provide a brief synopsis of the expressed interest of many of the participating institutions in detector construction responsibilities. In the case of computing, the institutions listed are those that have been involved in the ongoing effort to plan the computing infrastructure. It is expected that responsibilities for the generation of simulation, reconstruction, and analysis code will be distributed more broadly throughout the Collaboration.

It has been agreed by the Collaboration that certain detector items will be financed through a Common Fund. These include, but are not limited to, the magnet and its supporting hardware, certain utilities, online computing hardware, and certain aspects of the software development project. Details are under discussion.

Subsystem		Institutions
Vertex Detector	Italy:	Milano, Pavia, Pisa, Torino, Trieste
	US:	UC Santa Barbara, UC Santa Cruz, LBL, Stanford
Main Tracking Chamber	Canada:	UBC, Carleton, CRPP, McGill, Montreal, TRIUMF, Victoria, York
	US:	Colorado, Colorado State, MIT, SLAC
DIRC PID	France:	Ecole Polytechnique, Orsay, Paris 6/7, Saclay
	US:	UC Santa Barbara, Cincinnati, Colorado State, LBL, Rutgers, SLAC
Aerogel PID	France:	LAPP Annecy
	Italy:	Ferrara, Milano, Padova, Roma
	Russia:	BINP
	US:	UCLA, Caltech, Maryland
CsI Calorimeter	China:	Beijing, BGRI, SIC
	Germany:	Dresden
	Russia:	BINP
	UK:	Bristol, Brunel, Edinburgh, Lancaster, Liverpool, Manchester, ICSTM, QMW, RHBNC, RAL
	US:	UCIIRPA, UC Irvine, Caltech, Iowa, LLNL, UMass Amherst, Mississippi, Mt. Holyoke, Notre Dame, SLAC
Instrumented Flux Return	China:	Beijing
	Italy:	Bari, Frascati, Genova, Napoli
	US:	LLNL, Vanderbilt, Wisconsin

Table 15-1. *Institutions interested in construction of BaBar detector systems.*

Subsystem	Institutions	
Magnet	China:	Beijing
	Italy:	Genova
	Russia:	Dubna, BINP
	UK:	RAL
	US:	LLNL, ORNL/Y12, SLAC
Electronics	Canada:	Montreal
	France:	Ecole Polytechnique, Orsay, Paris 6/7
	Germany:	Dresden
	Italy:	Genova, Napoli, Milano, Pavia, Pisa, Torino
	Taiwan:	Academia Sinica
	UK:	Bristol, Edinburgh, Lancaster, ICSTM, QMW, RHBNC, RAL
	US:	UCIIRPA, UC Irvine, UC Santa Cruz, Caltech, Colorado, Iowa, Iowa State, LBL, Penn, SLAC
Computing	Canada:	McGill
	France:	LAPP, Orsay, Saclay
	Germany:	Dresden
	Italy:	Padova
	UK:	Manchester, RAL,
	US:	Caltech, UC Davis, UC Irvine, UC Santa Cruz, LBL, LLNL, Mississippi, Pennsylvania, SLAC, Prairie View

Table 15-2. *Institutions interested in construction of BaBardetector systems (continued).*

References

[BAB94] PEP-II Detector Collaboration Governance (1994).