

APS Beamline Proposal Guide

16 January 2012

This document summarizes the requirements for a full proposal at the APS (see appended flowchart).

The initial step for a group seeking to establish an APS Collaborative Access Team (CAT) or Collaborative Development Team (CDT) and build a beamline (or beamlines) at the APS is the submission of a Letter of Intent (LOI). The LOI provides a brief description of the group's scientific objectives and organizational plans. If a LOI is favorably reviewed, the APS Director will contact the spokesperson and invite the submission of a full proposal. A full proposal includes:

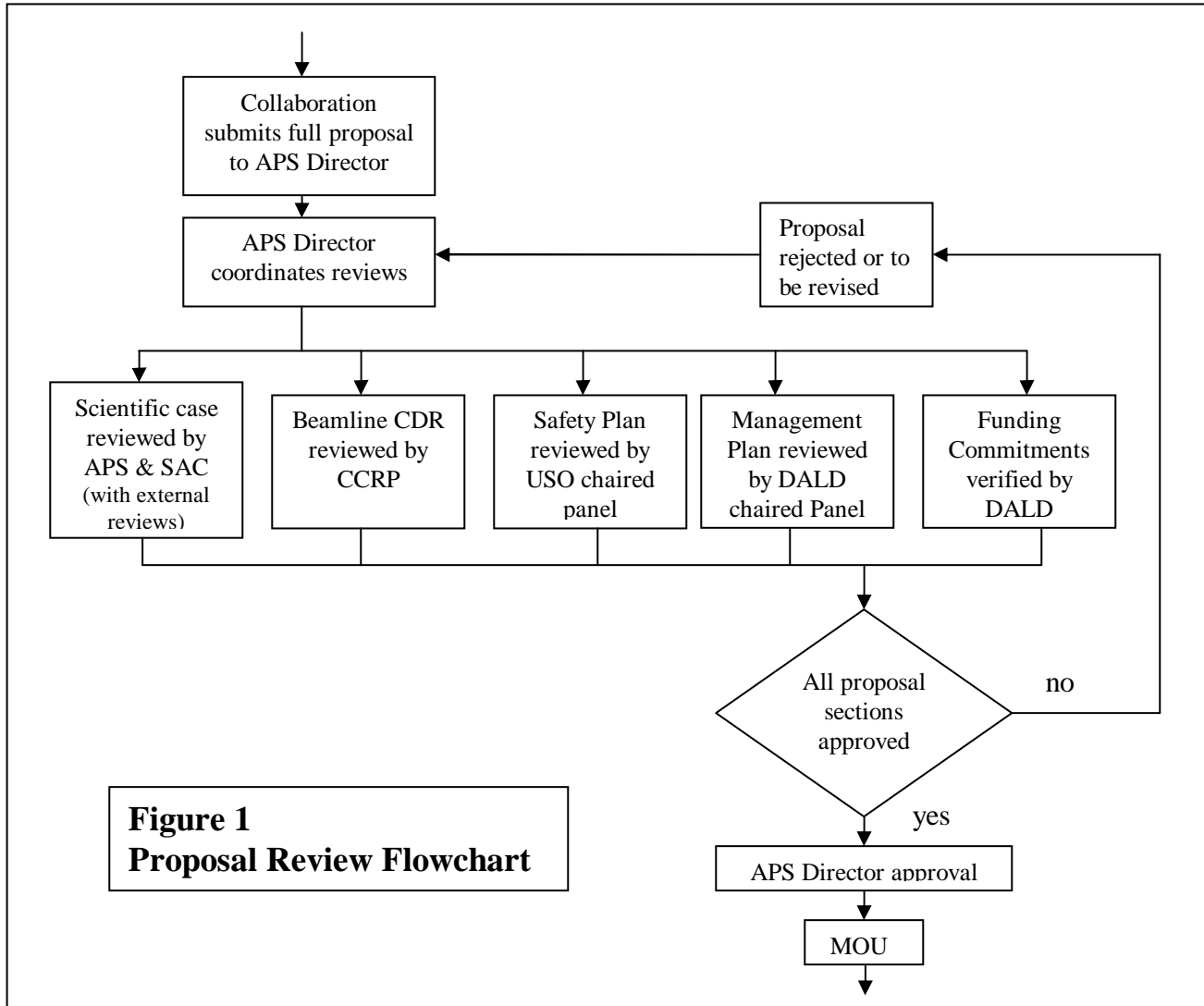
- Scientific Justification,
- Beamline Conceptual Design Report,
- Management Plan,
- ESH Plan, and
- Funding Commitments.

A beamline or sector may be allocated to the proposing group only after each of these parts has been reviewed and approved. Typically the scientific justification is developed first (figure 1). The design report and the management plan are prepared early in the process and may be developed and submitted concurrently with the scientific case. The submission of the safety plan and funding commitments completes the full proposal.

The full proposal is submitted to the APS Director via the APS User Administration & Support Office. The APS Director

- Coordinates proposal reviews,
- Notifies the proposal spokesperson of the status of the reviews, and
- Advises the spokesperson of proposal approval, need for resubmission, or rejection.

The assignment of the sector is formalized through a Memorandum of Understanding (MOU) between the CAT/CDT member institutions and the APS. The APS Director prepares the MOU and makes the arrangements for its sign-off by the member institutions.



Proposal Section	Reviewer	Notes
1. Scientific Justification	Peer review and APS-Science Advisory Committee (SAC)	External reviews invited by the APS and available to the SAC
2. Beamline Conceptual Design Report (CDR)	Construction and Commissioning Review Panel (CCRP)	Review considers instrumentation feasibility and baseline cost and schedule
3. Management Plan	Panel chaired by APS-Deputy ALD, X-ray Science (DALD)	Plan includes resources sought from the APS
4. Safety Plan	Panel Chaired by the User Safety Officer (USO)	Template available from the APS User Safety Officer
5. Funding Commitment	APS-Deputy ALD	Commitment letters from funding agencies

1. Scientific Justification

The Scientific Justification includes the following three sections:

Executive Summary (2 page maximum)

The executive summary describes the overall direction of the research to be performed by the CAT/CDT, the need for unique capabilities of the APS, and a description of the types of beamlines required. The summary should include any essential research and development needed for the successful construction of the beamline.

Scientific Program

This description should define the overall thrust and feasibility of the research to be performed by the CAT/CDT, with strong emphasis on the innovative nature or value of the research itself and the need for the unique capabilities of the APS. The description should provide relevant background information, including references if necessary. For each separate project, the program description should include broad, long-term objectives and describe the approaches to be taken in reaching them, as well as the specific, shorter-term aims and how these aims can be realized. The individuals responsible for each of the research projects should be identified.

Key Personnel

Identify all key scientific, technical, or managerial team members. For each, provide the following information:

- 1) name,
- 2) title,
- 3) affiliation,
- 4) the amount of time to be spent on this project (in person-months),
- 5) educational background,
- 6) role in the design and construction of the beamlines, and
- 7) research and professional experience.

One page of selected publication for each individual may be attached if desired.

2. Beamline Conceptual Design Report

A conceptual design report (CDR) describes the functional requirements of the beamlines in a sector. Along with the scientific case, the CDR defines the scope of facilities that may be constructed at the APS and will be used as a baseline in benchmarking progress in the construction of the sector. The CDR includes the following:

- a. A description of the beamlines, including any special requirements or R&D that will be critical to the success of the project.
- b. A layout of the components of the beamline on an APS sector. The layout is to aid in assessing the feasibility of constructing the beamline and associated instrumentation.
- c. Work breakdown structure (WBS). The WBS identifies the significant tasks and items included in the project. A detailed breakdown is not expected at the CDR level (see Appendix B for an example). The WBS and associated cost and schedule are at a

- preliminary stage of development but are intended to provide a solid basis for early planning, for both the beamline developers and the APS, and securing the needed funding.
- d. Cost estimates for the beamline design and construction.
 - e. Schedule.

3. Management Plan

The management plan should include the following:

- a. An introduction that
 - Defines the mission, technical scope, and user community and
 - Identifies member institutions.
- b. A description of the CAT/CDT organization including:
 - The roles the institutional members are expected to play (e.g., financial, procurement, personnel, fabrication functions, etc.);
 - The responsibilities/authorities of key positions (e.g., CAT/CDT Director, Safety Representative, etc.) and reporting relationships;
 - A CAT/CDT organization chart; and
 - A list of advisory committees and advisory boards and their members.
- c. A year-by-year funding plan for the CAT/CDT for each source of funding - including resources and services that are being requested from the APS. The plan is for the design, procurement, fabrication, assembly, and operation of the beamline(s).
- d. Plans for: cost, schedule, and performance control; contingency (i.e., budget/scope set aside to provide for uncertainties in the project); and how nonconformance will be managed.
- e. A change control process that indicates where decision-making authority/responsibility resides within the CAT/CDT.
- f. A plan for document management and records retention.

At a later time, the management plan can be updated to reflect beamline operations and, prior to operations, a General User access plan.

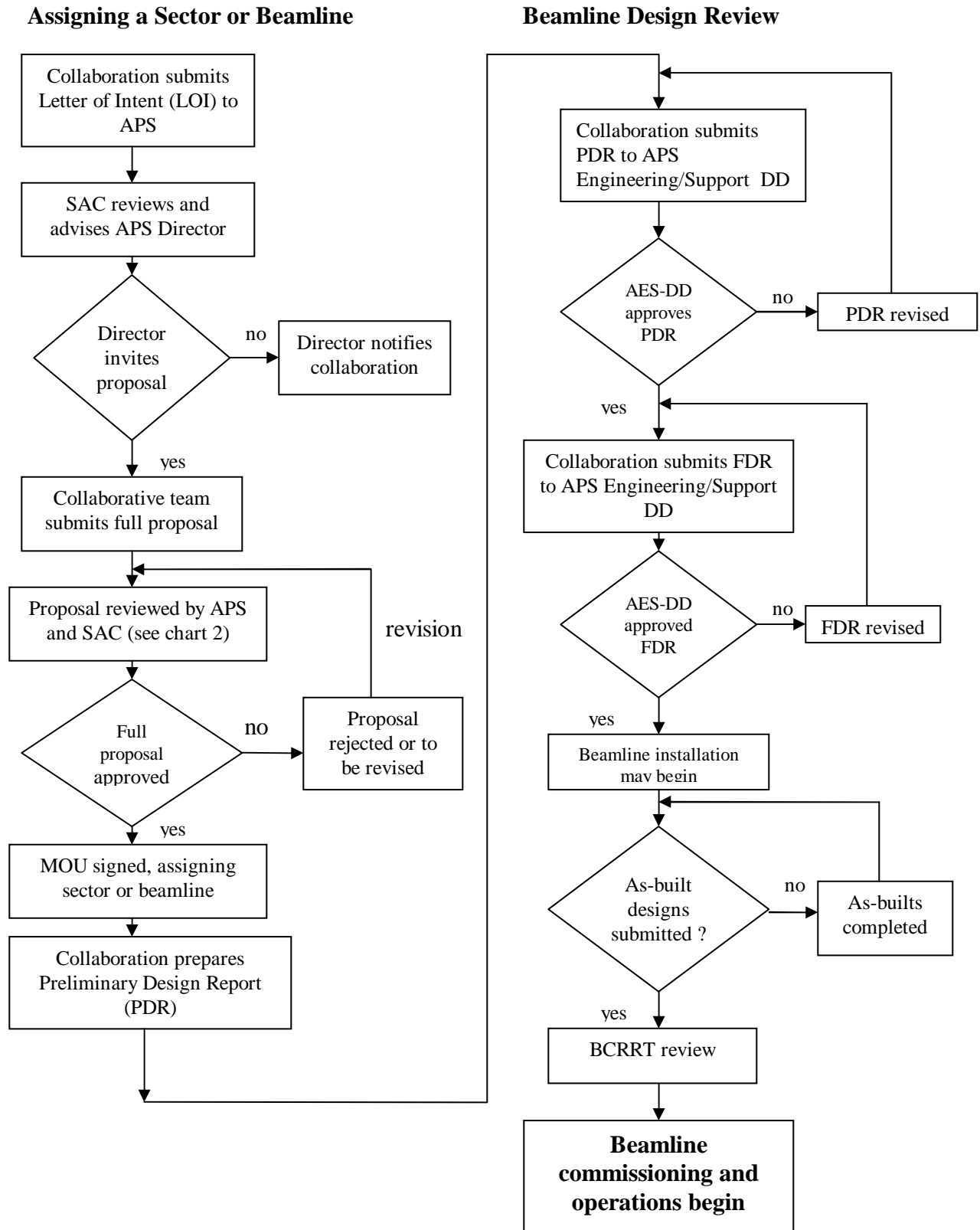
4. Safety Plan

A model safety plan is available from the APS User Safety Officer (see Safety and Training link on the APS home page for contact information).

5. Funding Commitment

The agencies funding the CAT/CDT need to submit letters committing the funds to build and operate the facilities. The committed funds must be adequate to construct and operate the beamlines as described in the scientific case and the conceptual design report.

Appendix A - Beamline Development Concept to Operations Flow Chart



Appendix B – Sample WBS

WBS No.	Description
1.1	Project Planning
1.1.1	Project Management
1.1.2	Safety Plan
1.1.3	Cost & Schedule Plan
1.1.4	Conceptual Design Report
1.1.6	Preliminary Design Report
1.1.7	Final Design Report
1.1.8	Contingency
1.2	Commissioning
1.3	Insertion Devices Beamlines
1.3.1	Insertion Device and Dual-canted undulator front end
1.3.2	Radiation Enclosures
1.3.2.1	First Optics Enclosure
1.3.2.2	Experimental station B
1.3.2.3	Experimental station C
1.3.3	Personnel Safety System
1.3.4	Beamline Utilities - electrical, water, LN2, and networking
1.3.5	ID beamlines and Components
1.3.5.1	Commissioning Window/Differential Pump Assembly
1.3.5.2	White Beam Slit
1.3.5.3	Double Crystal Monochromator
1.3.5.4	Integral Beam Stop
1.3.5.5	Fixed Slits
1.3.5.6	Horizontal Deflecting Mirror 1
1.3.5.7	Horizontal Deflecting Mirror 2
1.3.5.8	Monochromatic Beam Shutter
...	...
1.3.6	Material and Services, General
1.3.7	Equipment Protection System
1.3.8	Vacuum Hardware
1.4	Bending magnet beamline
...	...

1.5	Experimental station instrumentation
1.5.1	Guard slits / Monitor / Be Window
1.5.2	Goniometer
1.5.3	CCD Detector
1.5.4	Detector Support
1.5.5	Experimental Table
1.5.6	...
1.6	Computers
1.7	Experiment Equipment
1.7.1	Beamline Control, Racks and VME hardware
1.7.2	End Station Electronics
1.7.3	Equipment Protection Hardware
1.7.4	Safety Equipment
1.8	Survey and Alignment
1.9	Laboratory and Office Module (LOM), equipping/building-out
1.9.1	Buildout of CAT/CDT facilities in LOM
1.9.2	LOM lab equipment & instrumentation