Writing Assignments for XIS Workshop

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Advanced Photon Source

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DOE Projects – APS-U

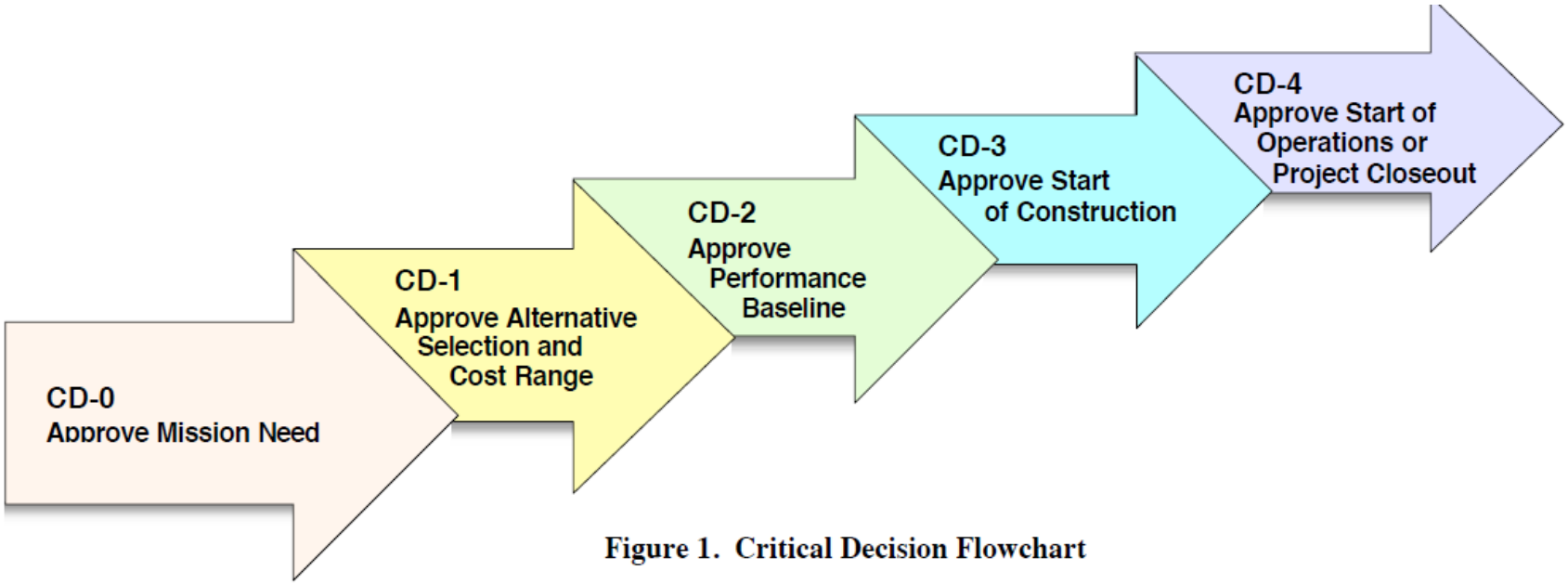

Figure 1. Critical Decision Flowchart

CD-0 Approved
April 22, 2010

CD-1 Approved
September 15, 2011

CD-2 Approval
Fall, 2012

Selected Critical Decision-2 Key Milestones/Activities

- Perform a Preliminary Design Review
- Develop project specifications, drawings, procurement packages, and construction packages
- Approve safety documents (e.g., PSAR)
- Update scope, cost, and schedule (performance) baselines
- Detailed schedules and cost estimates
- Performance metrics
- Staffing plans
- Prepare Critical Decision-2 package
- Budget and Congressional authorization and appropriations enacted

Q1: Does the beam line(s) performance satisfy the Science area & your planned experiments?

- Energy range and bandwidth
- Beam size, divergence
- Photon flux
- How important is focusing to ~10 micron (ie from a secondary source)
- Hutch layout & area within the experimental stations

Q2: Does the fixed-angle beam line approach meet the scientific needs?

- Indicate preferences between 10/30/30 KeV or 19.9/19.9/33.2 KeV scheme
- Discuss areas of compromise
  - 10 KeV branch line may end up with 50 % flux and/or no-coherence preservation
  - Possible flux reduction by half at 30 KeV branch lines
  - Diamond monochromators (30KeV, 19.9 KeV) may produce factor of 2 to 5 flux reduction compared with Si
  - Focusing limitations

Q3: What additional performance is required for planned experiments?

- Coherence
- Energy tunability
- Nano/micro-focusing
- What are the detector requirements?

Q4: What infrastructure and ancillary facilities are required?

- Toxic or flammable gas cabinets and ventilation
- Vibration and temperature stability
- Clean room requirements: (Are class 1000 clean rooms needed?)
- What are the laboratory requirements?
- What instrumentation is needed for sample analysis/preparation labs?

Q5: Other support & development issues

- What level of analysis software support is needed at the beamlines
  - Data normalization, integration
  - Phase retrieval routines such as COBRA
- What new instruments are needed?
- What are the anticipated staffing requirements?
- Are there potential partners? If so, who are the possible partner groups, potential funding strategies, and operational models?
- What are attractive models for interaction with Argonne initiatives?
  - (eg. Materials for Energy & the Materials Synthesis Institute)

Suggested Groups & Approach

Electrochemistry/Geochemistry: Hoydoo You (A1100)

Buried Interfaces: Dillon Fong (E1100)

UHV and exotic phenomena (eg-quantum states): T. C. Chiang (E1200)

Materials Synthesis (Oxide MBE, PLD, MOCVD, ALD, Sputtering) : Paul Fuoss (Auditorium)

Approach: Create a series of bullets as a group and assign individuals to expand each bullet with a few paragraphs.