

Advanced Photon Source Upgrade

Status Update

Mohan Ramanathan

July 21, 2010

Current Status

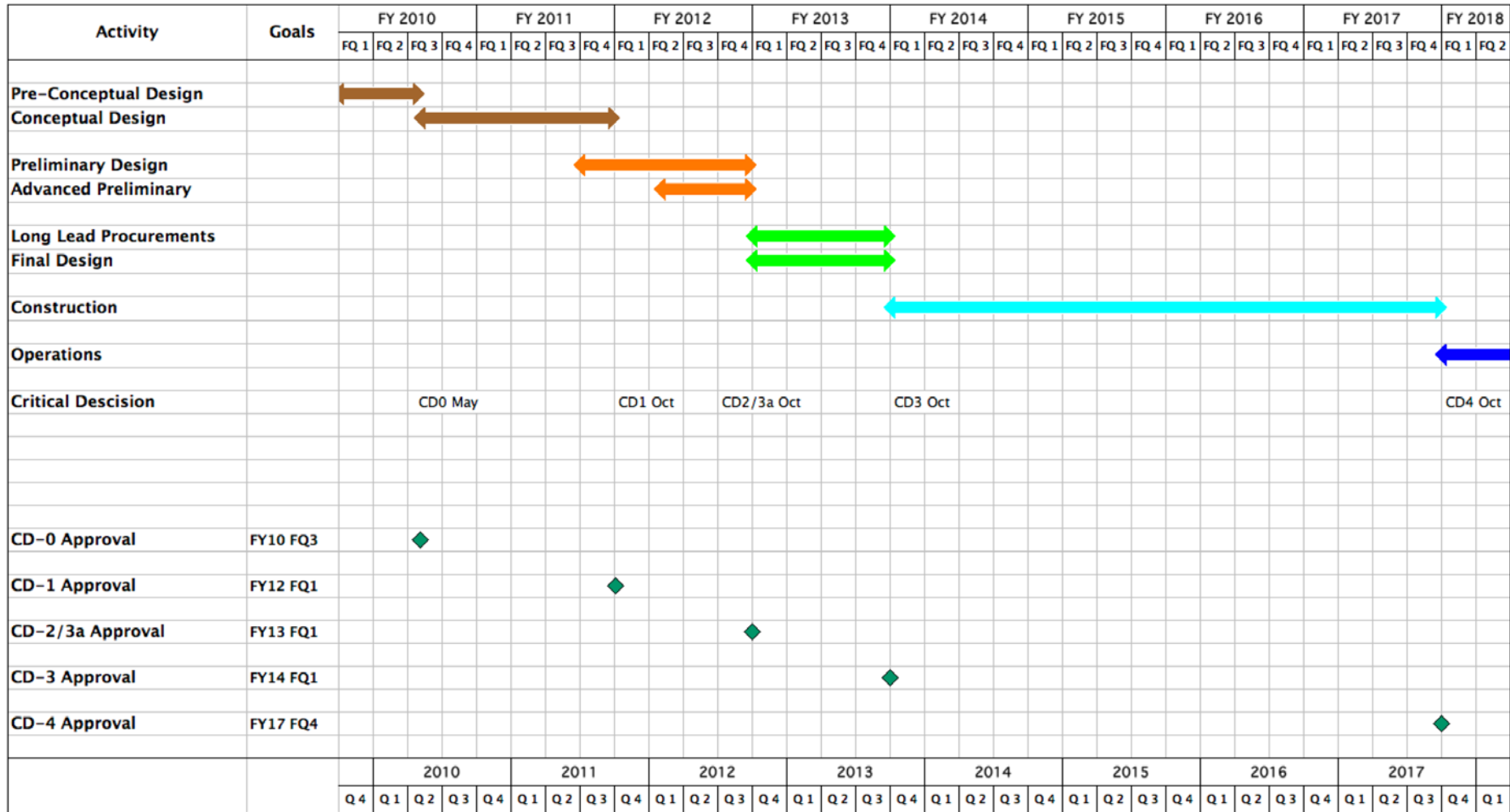
- CD0 - Mission Need Statement for APS Upgrade approved in April 2010
- As of July 5, 2010 early draft of the Conceptual Design Report is complete
- CDR is one portion of the whole process for the next step – CD1
- Project team is working on fulfilling the rest of the CD1 requirements by December 2010

Thanks to all the authors for
their exceptional effort in
reaching this milestone!!



APS Upgrade Anticipated Timeline

APS Upgrade Expected Timeline and Milestones



CDR Process - Next Steps

- Early draft of the CDR completed by July 5, 2010
- Editing by chapter managers and coordinators in progress
- APS U steering committee is reviewing the draft CDR and are providing comments to D. Mills
- CDR Advisory Committees are reviewing the draft CDR content and are providing input to the respective chairs of the committees
- Preliminary costing for the various parts of the project is complete



Engineering methodology for Costing

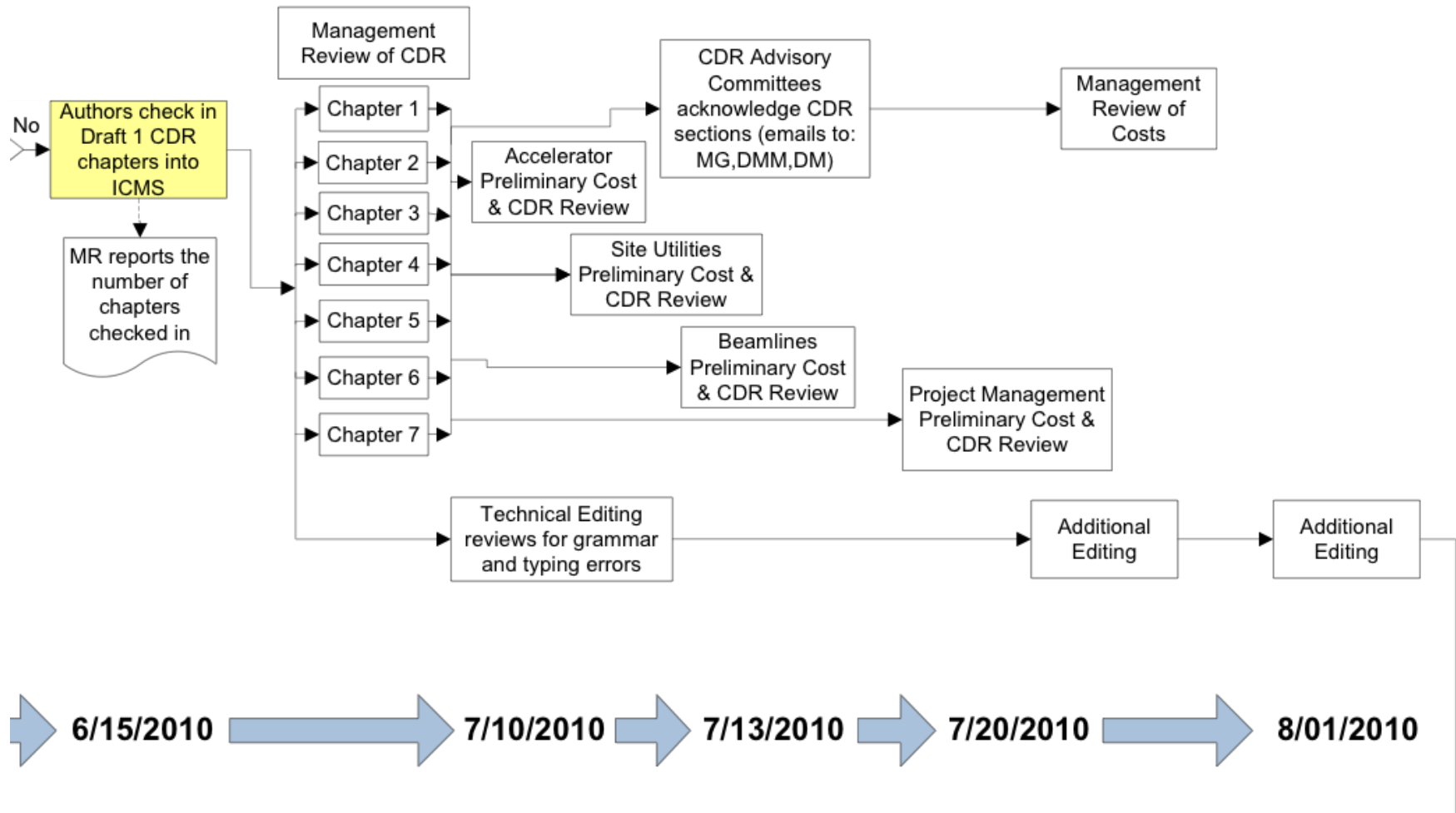
- Detailed bottom-up estimating will produce credible estimates. Estimates can be later improved/revised if some individual component costs or effort predictions have larger error bars.
- Beamline scientists provided Beamline Component Lists for Beamline Upgrade scenarios
 - Individual engineers were assigned to the beamline scenarios and other accelerator projects to estimate
- For each scenario, a beamline layout was created
- Components from the BCL were added along with standard hardware and RSS components
- Estimates for utilities, PSS and EPS, and Controls and Computers were collected from cognizant engineers
- The components common to multiple beamlines were identified
 - Design time for common components will only be counted once and included in a separate "Common Designs" section
 - The cost of customization of common designs is accrued to the individual scenario

Management Reviews

- APS management will perform preliminary CDR content and Cost review starting July 26, 2010.
- There will be 4 teams to cover the 7 chapters of the CDR
- Further details in the flow chart....



CDR Process – Next Steps

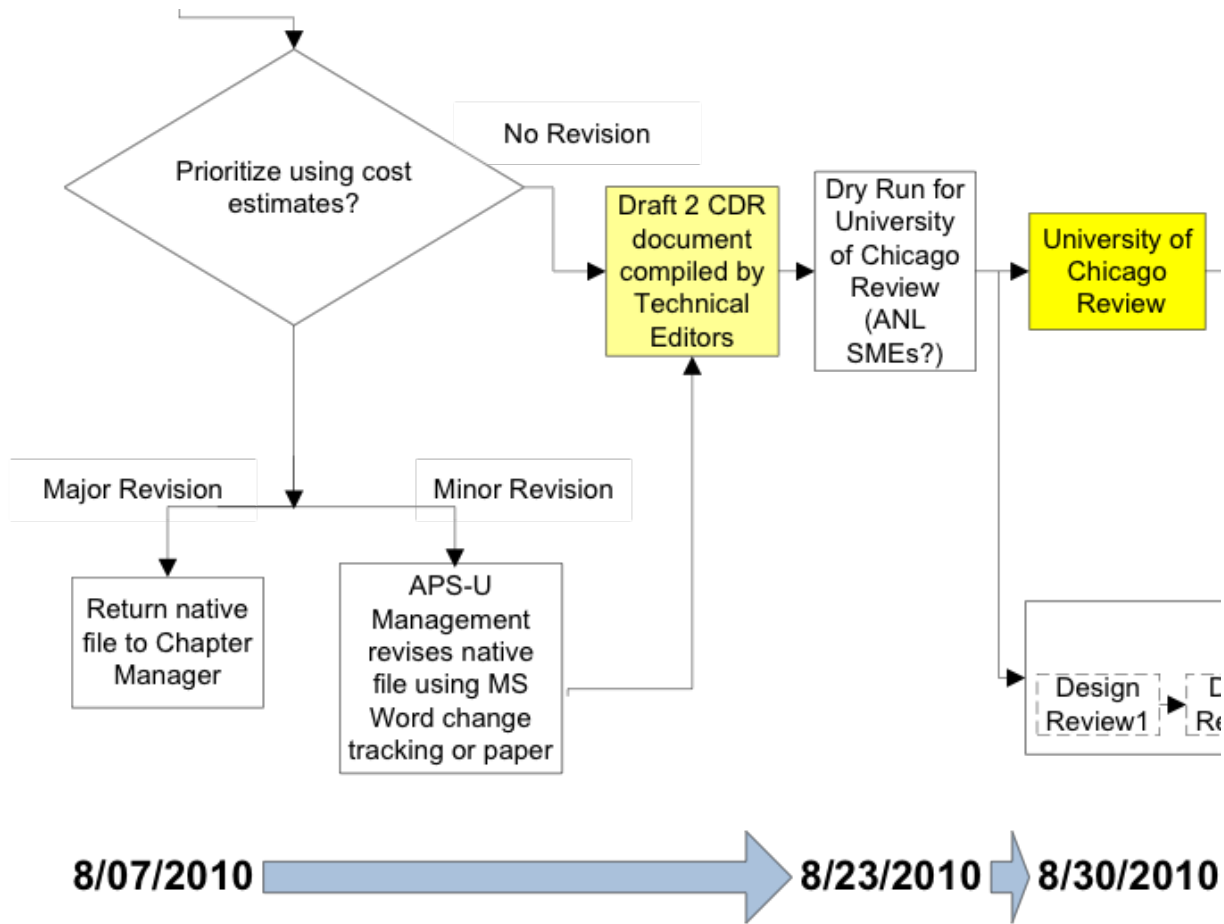


Example Charge for a Management Review

- Please review the relevant section of the CDR draft document and advisory committee comments prior to your discussion meeting.
- Review the scope of each proposed beamline including the scientific program and how it is addressed by the beamline design and parameters.
- Review the cost estimate for each beamline. Provide a prioritized list based on a cost-benefit analysis for the entire list of proposed beamlines. If a beamline proposal is highly desirable, but can only be afforded at a reduced cost corresponding to a reduced scope, provide a suggested modification or path forward including a target position in the prioritized list of the reduced scope beamline.
- The administrative assistant shall generate a brief report documenting the results of the deliberations with input and approval of the committee Chair.



CDR Process – Next Steps

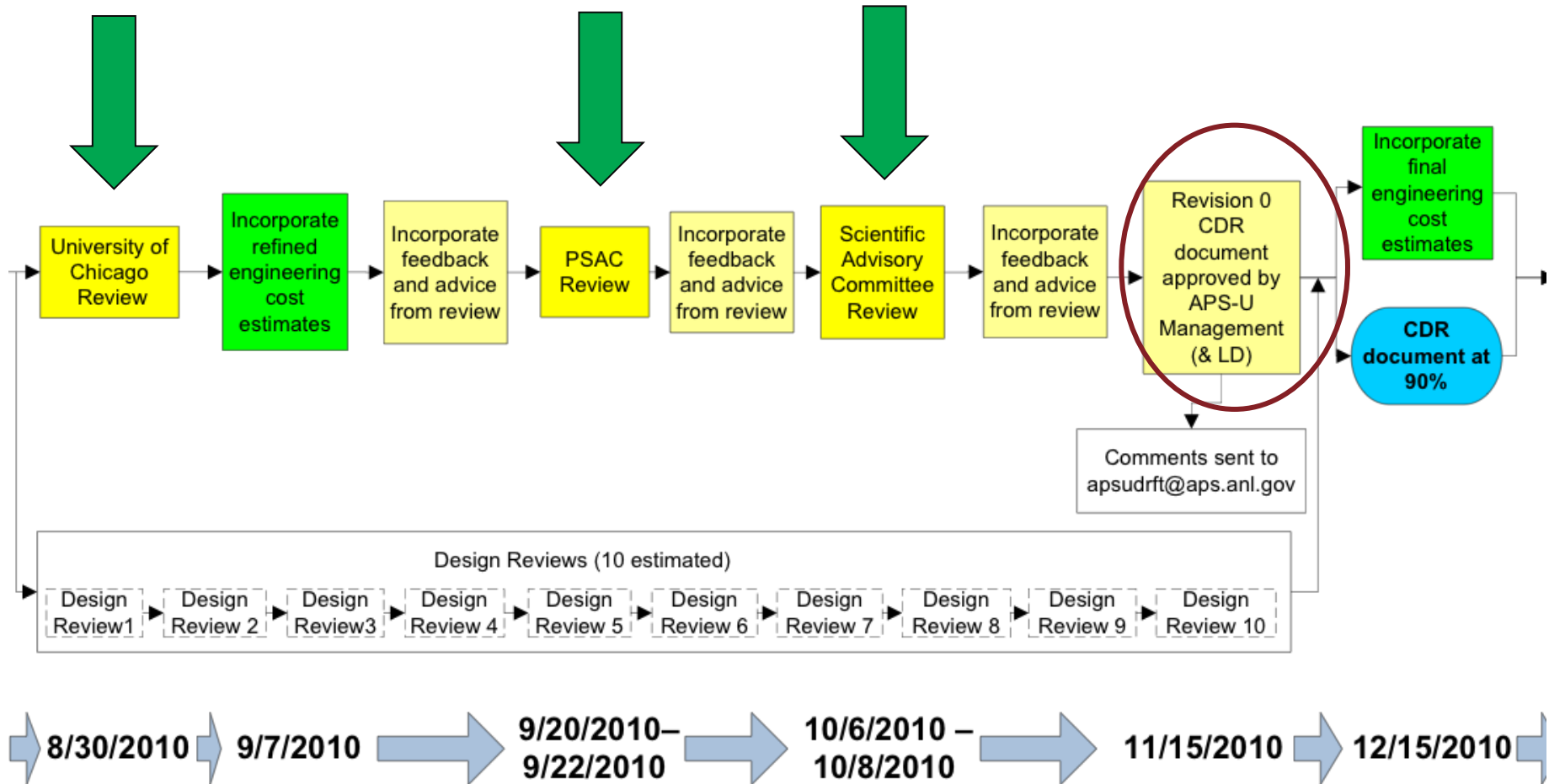


Various Project Reviews – Next Steps

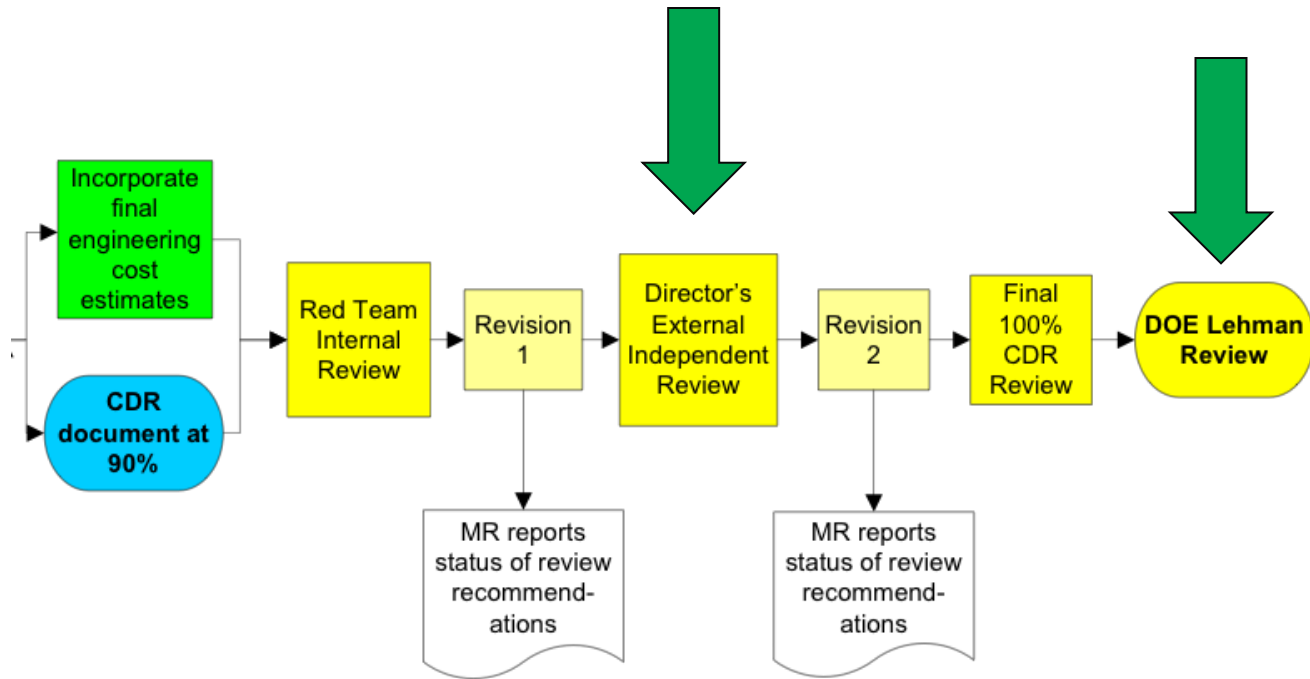
- University of Chicago Review of APS August 30-31, 2010
 - Focus on APS Upgrade
 - The management reviews of draft CDR will be incorporated into the content for the U of C review
- Project Scientific Advisory Committee ~ late September 2010
 - Committee convened and reports to the Laboratory Director
 - Members mainly external to the laboratory
 - Focus on the scientific content of the draft CDR
- APS Science Advisory Committee October 6-8, 2010
 - Results of the various reviews along with the revised draft CDR will be presented



CDR Process – Next Steps



CDR Process – Next Steps



Questions and Discussion



Management Review Teams

- **Project Overview (including ES&H, QA, WBS) (1/2-day discussions) (30 July 2010)**
 - D. Mancini*, Y. Amer**, L. E. Temple, G. Pile, R. Gerig, K. Hellman (OPM), J. Sims (OPM), M. Ramanathan
- **Accelerator Upgrades (1 day) (2 August 2010)**
 - R. Gerig*, G. Pile**, D. Mancini, J. M. Gibson, D. M. Mills, A. Zholents, M. Borland, J. P. Quintana, M. Beno
- **Experimental Facilities Upgrades (1 day) (27 July 2010)**
 - D. Mancini*, D. Haeffner**, J. M. Gibson, D. M. Mills, M. Borland, M. Beno, L. Young, G. Srajer, C. Jacobsen, J. P. Quintana, M. Ramanathan
- **Infrastructure Support (1/2 day) (26 July 2010)**
 - D. Mancini*, M. Ramanathan**, J. F. Maclean, W. Ruzicka, J. P. Quintana, M. Beno, M. Borland, G. Pile, (CIS & OPM)



Design Review Requirements

- From DOE Order 413.3A

“Conduct a Design Review of the conceptual design. Design Reviews are performed to determine if a product (drawings, analyses, or specifications) is correct and will perform its intended functions and meet requirements.”

Areas of Design Reviews

- ~ 10 Reviews over 2+ month period
- Accelerator Upgrades
 - Storage Ring Configuration
 - Short Pulse X-rays
 - Superconducting Undulator
- Beamlines– Science Themes
 - ~ 6 teams one for each area
- Infrastructure Support

Design Review Process

- Reviews of the “Design Concept” set forth in the Conceptual Design Report
- Design Review Committee Composition
 - 3 – 5 Scientists / Engineers per review
 - One or more non-Argonne persons
 - An engineer chairs the review
 - Provide a prompt and maybe a short report as output