

Conducting Program Reviews

Scheduled Reviews ensure continuous involvement throughout the program.

Reviews must be planned, managed and followed-up.



The Big Picture

Program Reviews and Audits

- There are many potential reviews and audits for a program
- Some reviews are mostly technical in nature, others are not
- Design reviews are a subset of technical reviews
- Successful design review practices are applicable to other program reviews

Most reviews and audits, all technical reviews, and absolutely all the design reviews should be closely linked to IMP/IMS and EVM

IMP Integrated Master Plan
IMS Integrated Master Schedule
EVM Earned Value Management



Typical Space System Contract Reviews

● Reviews

- Program Management Reviews (PMR)
- Integrated Baseline Review (IBR)*
- System Requirements Review (SRR)*
- System Design Review (SDR)*
- Preliminary Design Review (PDR)*
- Software Specification Review (SSR)*
- Critical Design Review (CDR)*
- Test Readiness Review (TRR)*
- Formal Qualification Review (FQR)*
- Production Readiness Review (PRR)*
- System Verification Review (SVR)

*Descriptions in MIL-STD-1521

Audits

- Functional Configuration Audit (FCA)*
- Physical Configuration Audit (PCA)*

Readiness

- Mission Readiness Review (MRR)
- Flight Readiness Review (FRR)
- Independent Review Team (IRT)
- Installation Readiness Review (IRR)

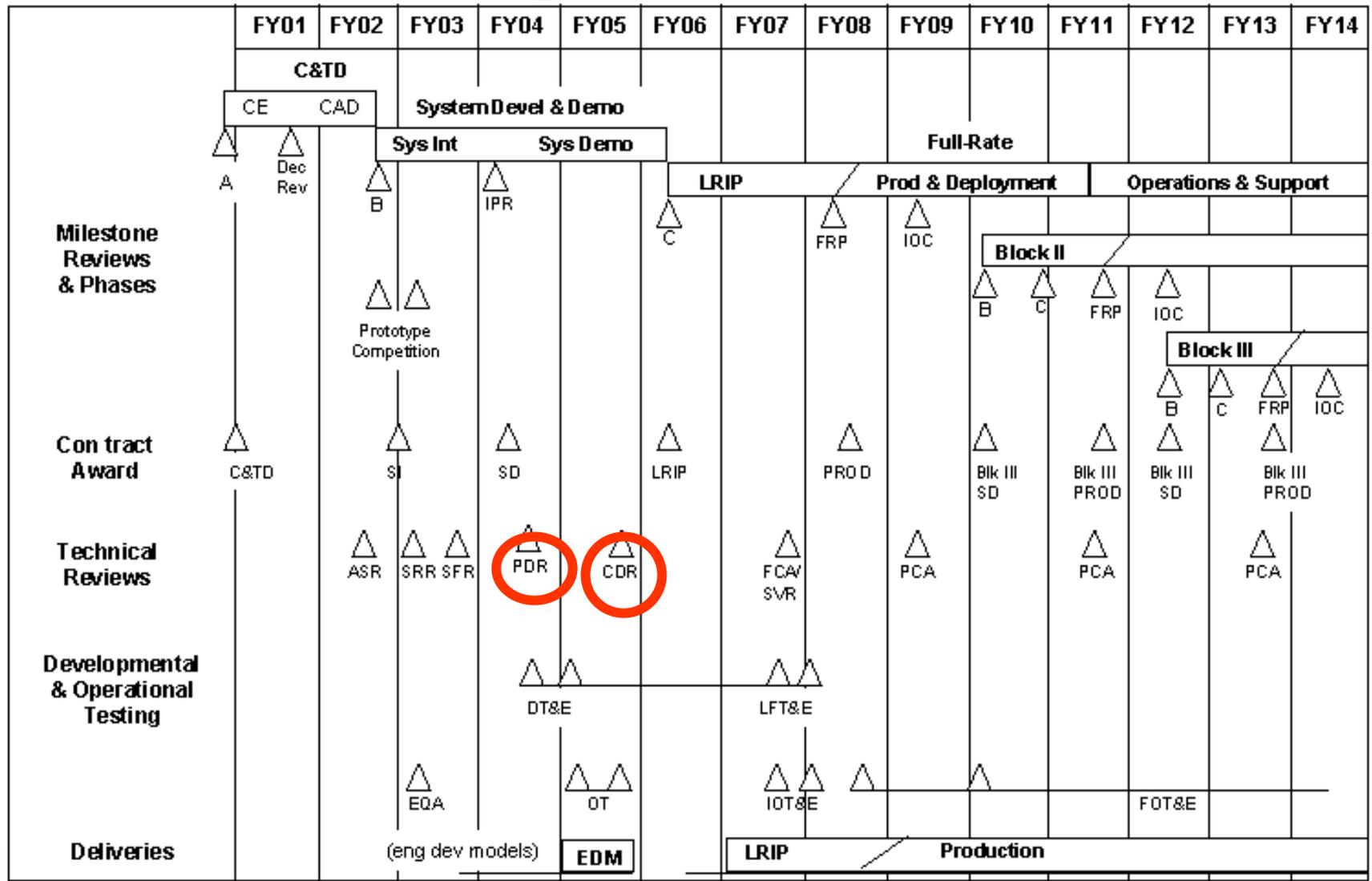
Post-Flight

- Post Flight Review (PFR)

“Overall program planning shall include reviews to demonstrate, confirm, and coordinate progress” (DoD 5000.2-R, C5.2.3.4.10)



Reviews are Program Milestones during all Program Phases



Evolution of Program Reviews

- **Pre-acquisition reform**

- MIL-STD-1521B defined program reviews
- Other MIL-STD's provided details for specific disciplines

- **Acquisition reform**

- Each program defined its own reviews
 - Contractor proposed review and government involvement
 - Government typically had less insight ... driven by SPO manning
- Issues
 - How to objectively measure progress
 - What reviews for government (SPO, DCMA, staff) to participate in – what level of participation
 - What reviews do Aerospace/SETA's participate in – how to maintain independence

- **Today - hybrid environment**

- Increased Government involvement and checks from Acquisition reform levels



Who & Why Reviews?

- **Conducted by the Government and supported by contractor**
 - IRR, MRR, FRR
- **Conducted by the contractor for the Government**
 - SDR, SRR, PDR, CDR, PMR, IBR
- **Required by Regulations**
 - IBR, TRR
- **Required by OSS&E policy**
 - IRR, MRR, FRR, PFR
- **Best practices**
 - SDR, SRR, PDR, CDR, PMRs, FCA, PCA

“Contractors shall be challenged during requirements and design reviews ...” (DoD 5000.2-R, C2.9.1.3.2.4)

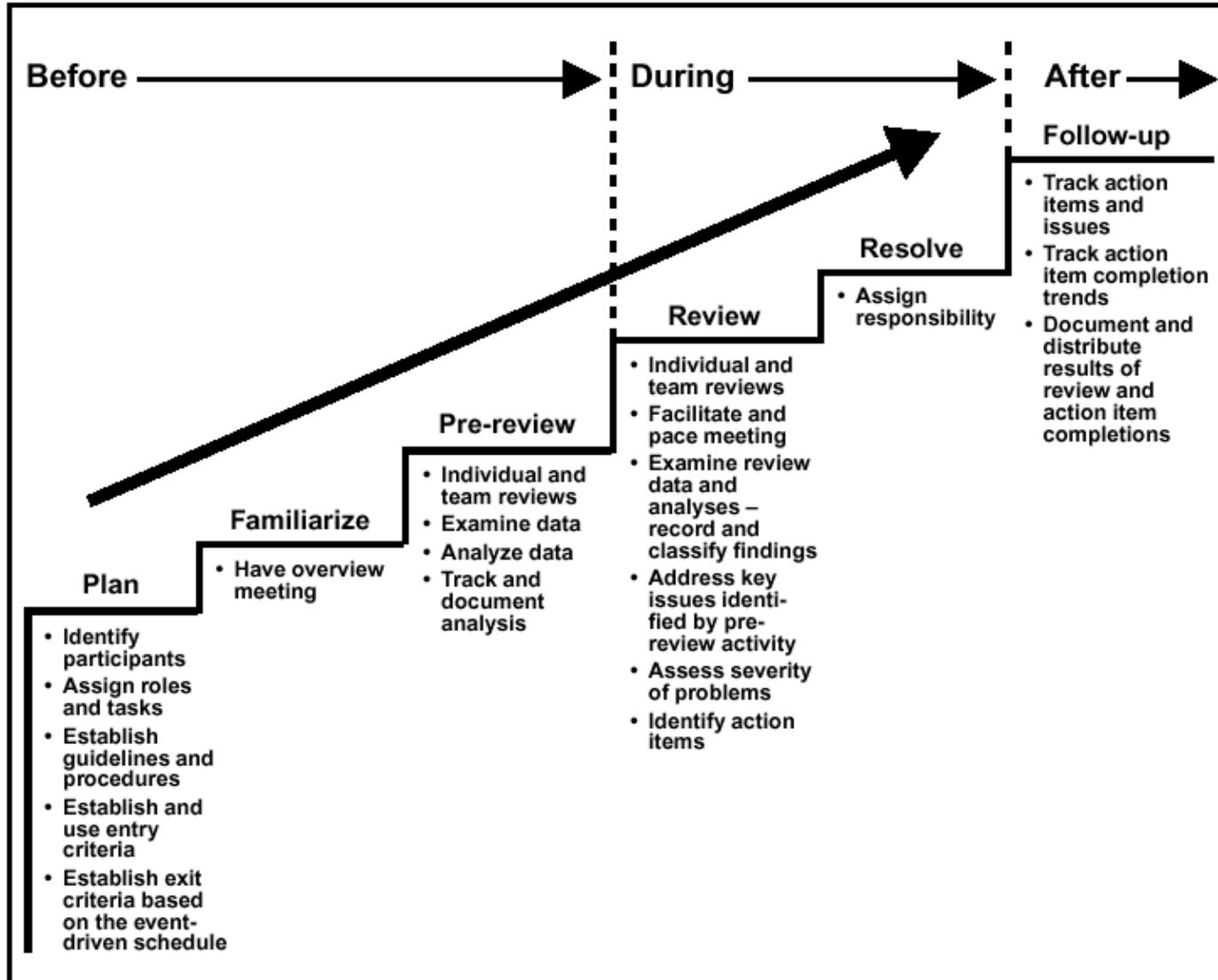


Who Participates?

	Participants							
Review	PM	User	Financial	Engineer	Test	Logistics	Contracts	Quality
PMR	Lead	<input checked="" type="checkbox"/>						
IBR	Lead		<input checked="" type="checkbox"/>					
SRR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Lead	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
SDR	<input checked="" type="checkbox"/>			Lead	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
PDR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Lead	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
CDR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Lead	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
TRR		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	Lead		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FCA				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	Lead
PCA		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	Lead



Checklist for Participating in Reviews



DSMC, Systems Engineering Fundamentals Guide, 2001

Example CDR

- **Critical Design Review (CDR) is conducted to demonstrate that the detailed design is complete, meets requirements, and the total system is ready for manufacturing and coding**



Source: Defense Acquisition Deskbook, <http://deskbooktransition.dau.mil>

Critical Design Review (CDR)

- **Technical items to be reviewed**
 - Parts, materials, processes selected
 - Development tests completed
 - Inspection points/criteria completed
 - Component level FMECA completed
 - Repair level analysis completed
 - Facility requirements defined
 - Software test descriptions completed
 - Hardware and software hazard analysis completed
 - Firmware spt completed
 - Software programmers manual completed
 - Durability test completed
 - Maintainability analyses completed
 - Qualification test procedures approved
 - Producibility analyses completed
 - Weight budget
 - Requirements growth

Source: Defense Acquisition Deskbook, <http://deskbooktransition.dau.mil>



CDR Inputs

- **System architecture updates**
- **Update of functional baseline**
- **All Configuration Item (CI) architecture**
- **Update of allocated baseline**
- **All Interface Control Drawings**
- **All CI product/process specifications**

Source: Defense Acquisition Deskbook, <http://deskbooktransition.dau.mil>



CDR Outputs

- **Verification the functional and performance requirements and the detailed design of each Configuration Item satisfy the functional baseline**
- **Update of allocated baseline**
- **Assessment confirms Configuration Items and the system are satisfied by design**
- **Ready to fabricate/code artifacts for qualification/verification**
- **Decision to implement the design to provide products and processes for verification of functional and performance requirements**

Source: Defense Acquisition Deskbook, <http://deskbooktransition.dau.mil>



Establish Government Expectations for the Review

- All parties agreed that entrance criteria for review have been met
- Contractor cover only relevant topics
- Participants are familiar with topics and ask relevant questions
- Have an amicable meeting - strive for constructive comments about the design
- Contractor to discuss risk, technical, schedule and cost
- Achieve concurrence that the exit criteria have been satisfied

Will it meet requirements?

Can we build it?



Stepping Into a Review

- **Understand what is on contract and the interrelationship**
 - SOW, CLIN, data, IMP, IMS, IPTs, requirements documents
 - May not define full list of items that need to be passed (or what it takes to pass them)
 - IMP may identify accomplishments and terse description of accomplishment criteria for the event
 - IMS may show when the activity is scheduled
- **Appreciate the SPO management style with the contractor**
 - Degree of trust; IPT involvement; Performance incentives
- **Be sensitive to cost/schedule/performance issues**
 - Great pressure to meet schedule and stay within cost
- **Coordinate your personal expectations for the review with government team lead**

Will it meet requirements?

Can we build it?



Government Team Participation

● Pre-Review Planning

- Receive contractor documentation several weeks before meeting
- Visit contractors for “wall-walks” (prior to formal review)
- Distribute documents to technical POC’s and request analysis comments prior to the review
- Perform analysis necessary to determine approach viability, risks, and test out potential alternatives if risk handling becomes necessary
- Government Team review and consolidate comments and submit questions to contractor
- Invite the proper technical experts to the review and be prepared to listen to them

● At the Review

- Listen to technical experts
- Collect/Document action items
- Have a close-out meeting
 - Document close-out action items



Understand Contractor Objectives for the Review

- **Must complete this milestone**
- **Top-level briefing/presentation**
- **Establish formal actions with the appropriate government point of contact responsible**
- **Provide sufficient information to minimize action items**
- **Provide concise answers to questions**



Lessons Learned on Reviews

- **Constructive comments are important**
 - Do your homework and don't ambush the contractor (or your team)
 - Don't drill down just for curiosity – does it matter to the review?
- **Engineer/project officer must be persuasive – provided objective information**
- **Reviews without clear invitation/agenda/objectives often are less productive**
- **Clearly establish who/what/when for Action Items (AI)**
 - Know who is responsible to track follow-up
- **Make sure everyone is ready for the review**
 - Assemble comments before the review; share with contractor
 - Seriously consider “pre-meeting” for government team
- **Honor proprietary information, especially competitive situations**



Education Opportunities

● References

- “Systems Engineering Fundamentals”, Department of Defense Systems Management College, Dec. 2000.
- Military Standard 1521, Technical Reviews and Audits for Systems, Equipments, and Computer Software, June 1986.
- SMC Instruction 63-1201, Assurance of OSS&E, June 2001.
- Defense Acquisition Deskbook, <http://deskbooktransition.dau.mil> (formerly <https://deskbook.afmc.wpafb.af.mil/>)

● Training

- Acquisition 201, Intermediate Systems Acquisition Course, DoD Systems Management College.
- Aerospace Institute course S3010, Introduction to Program Office Roles and Processes.
- Aerospace Institute course S3020, Introduction to Program Office Data and Controls.

