



National Aeronautics and
Space Administration



FINANCIAL MANAGEMENT DIVISION | POLICY & GRANTS DIVISION | QUALITY ASSURANCE DIVISION | BUDGET DIVISION | STRATEGIC INVESTMENTS DIVISION | AGENCY FINANCIAL SYSTEMS OFFICE | MISSION SUPPORT OFFICE



OCFO

OFFICE OF THE CHIEF FINANCIAL OFFICER

2022 Cost Schedule Symposium: IBRs – Why are They Needed

Outline

- History of IBRs
- IBR Definition
- 5 Risk Areas
- IBR Database Background
- Findings by Category
- Predominate Findings
- Path Forward
- Lessons Learned
- Word from NASA Program Executive
- Questions



History of IBRs

- First DoD IBR Policy issued in 1994
- Twofold original purpose
 - Reduce number of Subsequent Application Reviews
 - Improve management of DoD contracts
- Mutual understanding between Government and Contractor PMs of the PMB



Photo credit USAF

The IBR Defined

- A risk-based review conducted by Project Management
- A realistic conversation about the achievability of the PMB
- It is not:
 - An EVMS compliance audit
 - A pass/fail event
 - A time to resolve technical issues

It's all about planning!!!

5 Risk Areas



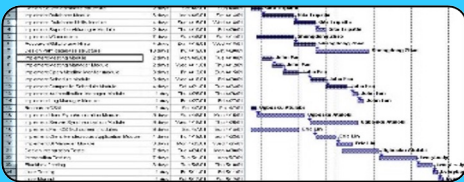
1. TECHNICAL

Ability to achieve the objectives of the scope of work and key performance parameters (effects of available technology, software development capability, design maturity, etc.)



2. COST

Ability to successfully execute the PMB and meet cost objectives (relationship of budget, resources, funding, schedule, and scope; quality of the estimates and underlying assumptions, etc.)



3. SCHEDULE

Adequacy of time allocated for performing the defined tasks to successfully achieve the project's schedule objectives (effects of interdependencies, critical path, etc.)



4. RESOURCES

Availability of personnel, facilities, funding and equipment, when required, for performing the defined tasks needed to execute the project successfully



5. MANAGEMENT PROCESSES

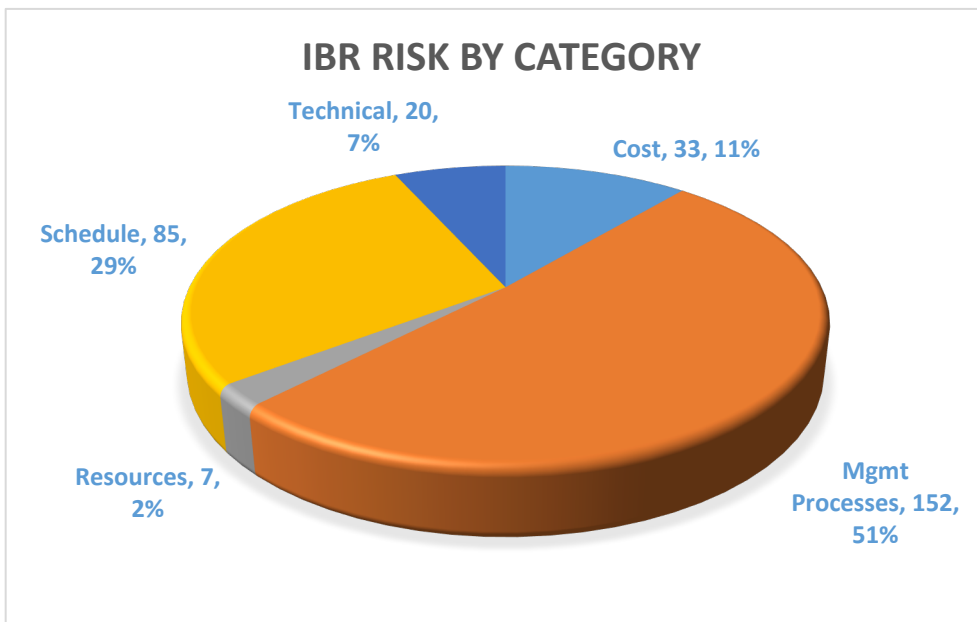
Degree to which the project management processes provide effective and integrated technical/schedule/cost planning and baseline change control, timely and reliable performance data, and early visibility into risks

IBR Database Background

- ✓ OCFO-SID Director asked us to write an article for SID Insights, Volume 8 publication - “A closer look at IBR Findings across NASA Projects”
- ✓ Harvested all available IBR Out-briefs and IBR Logs (30 IBRs over 18 year period)
- ✓ Developed database to summarize findings, including a significant data clean up effort
- ✓ Presented preliminary results to an Agency EVM Working Group session
- ✓ Submitted article for the SID Insights, published 9/21/20
- ✓ Findings from approximately 20 additional IBRs have been added since June 2020

Initial IBR Findings vs All Findings

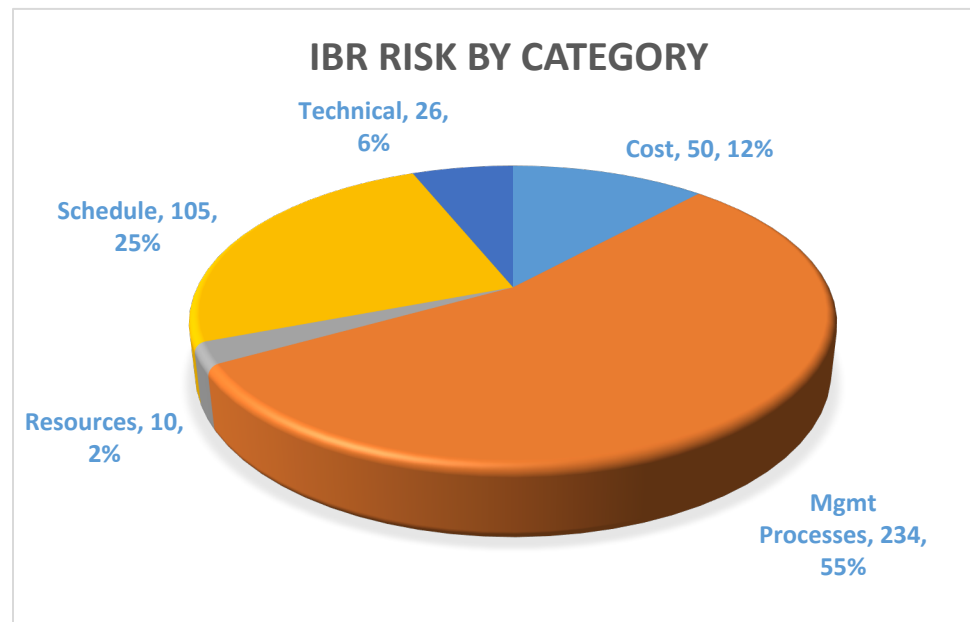
Phase I = SID Insight Article Volume 8



IBR Findings

- IBRs conducted in CY2002 to CY2020
- Reflects Findings from 30 projects
- 297 Total Findings

All IBR Findings

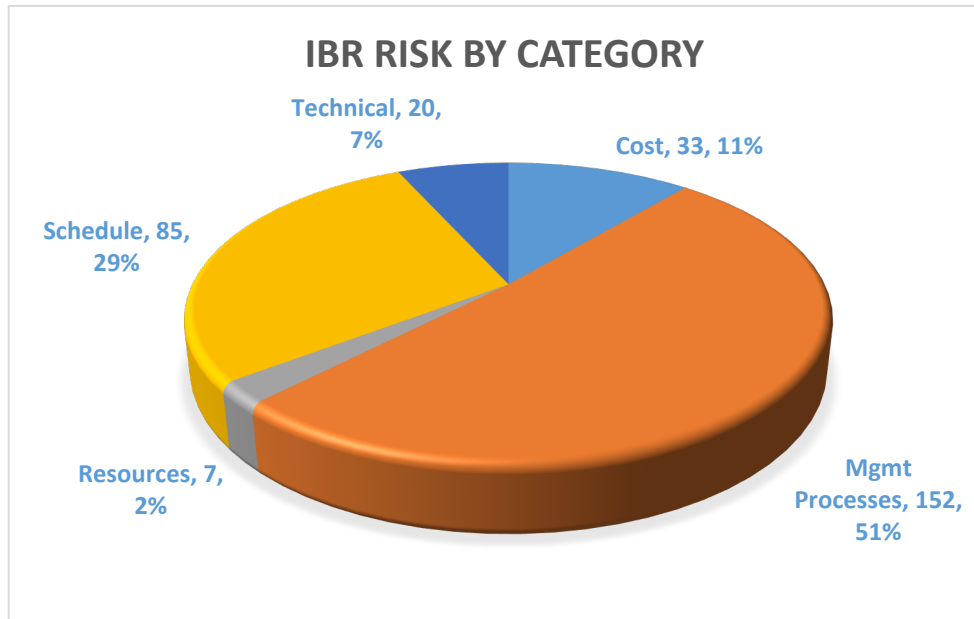


IBR Findings

- IBRs conducted from CY2002 to Feb 2022
- Reflects Findings from 48 projects
- 425 Total Findings

Initial IBR Findings vs Latest Findings

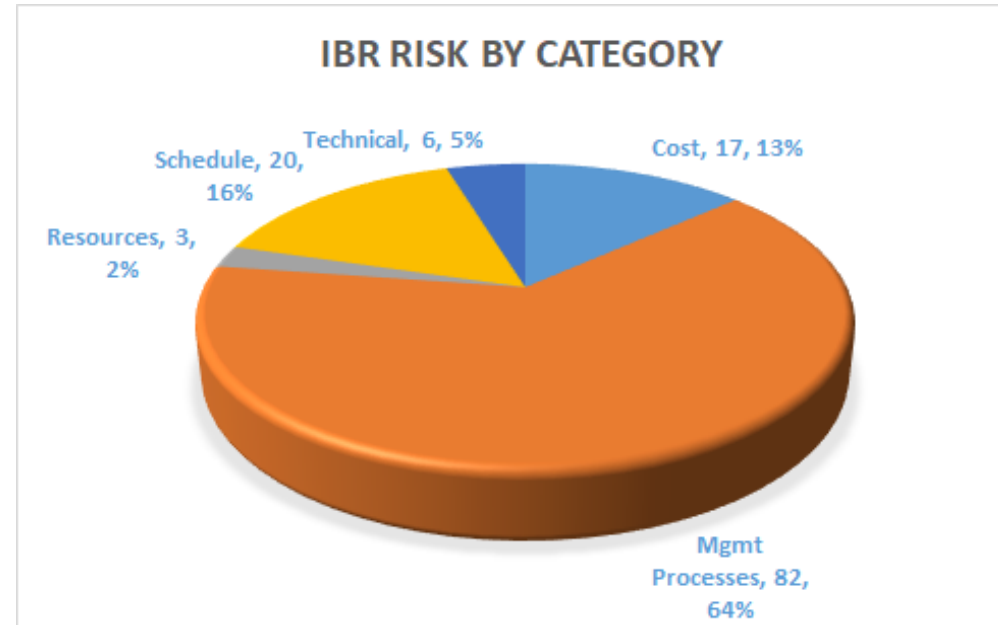
Phase I = SID Insight Article Volume 8



IBR Findings

- IBRs conducted in CY2002 to CY2020
- Reflects Findings from 30 projects
- 297 Total Findings

Phase II – Post SID Findings



IBR Findings

- IBRs conducted after May 2020 through Feb 2022
- Reflects Findings from most recent 18 projects (excluding SLS Core Stage and SPHEREx)
- 128 Total Findings

Predominate Findings

Phase I Projects = SID Insight Article Volume 8 (30 Datasets)

Management Processes

EVM Imp Issues	54
Use of Level of Effort (LOE)	22
Data Inconsistencies	21
Integration	16
Improper PMTs/Lack of QBDs	15
Inadequate Change Control	13
Lack of Training	11

Schedule

Poor Schedule Mechanics	29
Incomplete Logic Networks	19
Unrealistic Critical Path	9
Risk Not Incorporated Into IMS	7
Missing Dates/Unrealistic Durations	7
Margin Not Incorporated Into IMS	5
Lack Of IMS Integration	5
Inadequate Scope Definition	4

All Projects (48 Datasets)

Management Processes

EVM Imp Issues	88
Use of Level of Effort (LOE)	26
Data Inconsistencies	31
Integration	28
Improper PMTs/Lack of QBDs	27
Inadequate Change Control	17
Lack of Training	17

Schedule

Poor Schedule Mechanics	33
Incomplete Logic Networks	24
Unrealistic Critical Path	11
Risk Not Incorporated Into IMS	10
Missing Dates/Unrealistic Durations	7
Margin Not Incorporated Into IMS	6
Lack Of IMS Integration	8
Inadequate Scope Definition	6

Path Forward

- Continue to support IBRs across the Agency with facilitation, training, and data analysis
- Continue promoting the use of the NASA IBR Handbook
- Vetting of Standardized Primary Categories
- Consistency/standardization of findings terminology, Out-briefs, etc.
- Analysis being done to study in-house vs supplier findings as well as to identify opportunities for better IBR training, preparation and general awareness
- Measure the effectiveness of programs and projects improvements in mitigating and/or eliminating the commonly found risks
- Continue to populate database with IBR Findings (please send Findings logs to Brad Richards @ brad.w.richards@nasa.gov & copy Jon Fleming @ jon.f.fleming@nasa.gov)

Agency EVM Contacts

Jon Fleming

Agency EVM Program Executive & MSFC EVM Focal Point

jon.f.fleming@nasa.gov

Kristen Kehrer

Deputy EVM Program Executive & KSC EVM Focal Point

kristen.c.kehrer@nasa.gov



Questions



Back-up



Examples of poorly worded Findings

Finding that are Actions

- Evaluate schedule logic to ensure completeness, consistency, links to other IPTs. Due: Aug 16th
- x.03 SE&I: Evaluate schedule logic to ensure completeness, consistency, links to other IPTs.
- Investigate and Correct WBS 10.2 EVM Data
- Provide an Explanation on the Effects of Phase B Being Included in the University of Arizona's PMB
- Provide Development Phase compliance reports for Avionics & Qual Phase ... for Motor. Due: July 28th
- Update Structure section of IMS with new schedule after Procurement Awarded.

Findings that are Observations

- There appeared to be planning packages in WBS 9.0 that were in the near term.
- The addition of the PaRIS will affect the stress and dynamic models .
- Finishing: No Molykote for EM2 OPT, systems tunnel installation tool fabrication before plate drawings released, mitigation in place

Finding that is Worded like an Observation

- Many interface communication problems between the BRIC and HFSS have been encountered during HSI and testing.
- Prime contracts schedules need to be incorporated into the Integrated Master Schedule (IMS)

Examples of Good Findings

Risk Area (C, MP, R, S, or T)	Finding Type	Issue - Short Description (Try to use list from Fields Tab)	Issue - Long Text (Copy from Finding Log)
Examples			
C	Finding	Risk - Non touch labor costs increase	The greatest risk for the program is cost-related. HHR is the only hardware in the shop beginning in October. This will result in a greatly increased non-"touch labor" cost in the shop. Any slips of the schedule to the right will make it worse.
MP	Finding	LOE - Improper use of LOE	–Thermal Analysis is being treated as a “Level of Effort” task (not entirely clear how earned value is taken). Because of this, there is not a Tier 4 schedule for Thermal Analysis.
R	Finding	CAD software licensing not supported for entire contract	–An additional risk was identified with the current CAD system being used. The current system (Intergraph) is not supported past the DDT&E phase of the contract.
S	Finding	CP - Unrealistic critical path	•The only tasks that are potentially on the project critical path are drawing reviews and final rack walk-down inspection.
T	Finding	Scope - Missing schedule content _ Technical scope missing	–Current CSD schedules do not include post-DD250 data, nor do they include integration activities for the BRP Racks.
T	Observation	FTS Hose issue	–The current FTS Hose issue is a major concern to holding schedule.
S	Action	IMS - Task Description clarification	Need to update Small Solids reference to USMS in all applicable documents/tools. Specifically task descriptions need to be updated for clear/concise descriptions in Boeing ICS to facilitate Boeing/NASA linkage

Can an Action become a Finding?

Background: As part of the IBR data drop in advance of the formal IBR interviews, the project/contractor provides their risk artifacts. The IBR team reviews the documentation prior to the interviews and finds the risk artifacts to be adequate. During a CAM interview discussion, the IBR Team reveals that a major risk (risk cube red zone) has been overlooked.

- Scenario 1 – The CAM explains that this risk was identified post IBR data drop and is able to provide the documentation during the review. The IBR Team requests a copy of updated risk artifact(s) and is provided during the interview. **Result: No IBR Finding or Action.**
- Scenario 2 – The CAM explains that this risk was identified post IBR data drop but can't locate the updated risk artifacts. The IBR Team requests a copy of updated risk artifact(s). **Result: Action recorded for the updated artifact(s) to be provided.** Subsequently, the requested artifact(s) is/are provided, and it is determined that the **risk is adequately addressed and then the action is then closed.**
- Scenario 3 – The CAM explains that this risk was identified post IBR data drop but can't locate the updated risk artifacts. The IBR Team requests a copy of updated risk artifact(s). **Result: Action recorded for the updated artifact(s) to be provided.** Subsequently, the updated artifact(s) are reported to not be available or found to be lacking details of cost and schedule impacts. Adequate time has passed to surmise that the risk process was not followed. **The originally recorded "Action Item" is now updated to a "Finding"**