

DEPARTMENT OF THE AIR FORCE



DEPUTY ASSISTANT SECRETARY OF THE AIR FORCE FOR SCIENCE, TECHNOLOGY AND ENGINEERING (SAF/AQR)

INDEPENDENT TECHNICAL ASSESSMENT GUIDEBOOK

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WARNING

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OVERVIEW

This Independent Technical Assessment (ITA) Guidebook provides assistance in executing DoDI 5000.88, Engineering of Defense Systems and AFI 63-101, Integrated Life Cycle Management policy as it pertains to aspects of conducting system independent technical reviews, risk assessments, and necessary reporting requirements. This guidebook outlines the roles and responsibilities, the framework and procedures to accomplish Independent Technical Risk Assessments (ITRAs) and independent PDR and CDR assessments supporting key acquisition milestones as part of the development and acquisition of United States Air Force (USAF) and United States Space Force (USSF) systems. This Guidebook also provides references and guidelines for selected team leads and members on planning, execution, and reporting activities required in the conduct of ITRAs.

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1.0 SCOPE

The Independent Technical Assessment Guidebook, hereafter referred to as Guidebook, presents the expectations, structure and execution steps required to conduct an ITRA and post-Preliminary Design Review (PDR)/Critical Design Review (CDR) independent assessments in support of program acquisition milestone certification events. This Guidebook is not totally inclusive of all methods and means available to practitioners, but intends to provide the most relevant information that is consistent with official Department of Defense (DoD) and Department of the Air Force (DAF) policies and directives. This Guidebook outlines the framework for planning, resourcing, and conducting of post-PDR/CDR independent technical assessments and risk assessments for Major Defense Acquisition Programs (MDAPs) or DAF-identified programs to satisfy DoDI 5000.88 policy. ITRA team members will assess technical risks as prescribed in the DoDI 5000.88 through use of this Guidebook as well as other resources such as the USD(R&E) Defense Technical Risk Assessment Methodology (DTRAM), and the DoD ITRA Framework for Risk Categorization. In the case of the post-PDR/CDR assessments, the Independent Review Team (IRT) will use the template provided in Appendix B-1 to assist in the task. These aforementioned resources enable the IRT to tailor the particular assessment based on program phase and/or key focus areas of interest. For example, particular areas of interest that could be part of these independent assessments would encompass Cybersecurity, Open Architecture (OA), Intellectual Property (IP), Human Systems Integration (HSI), Digital Engineering, and Commercial Off-the-Shelf (COTS) pertaining to the system development and acquisition. One final point, information pertaining to conducting systems engineering (SE) technical reviews that are addressed in DoDI 5000.88 and AFI 63-101 are outside the scope of this Guidebook.

APPENDIX B of this Guidebook also provides supporting templates to aid in conducting an ITRA.

2.0 REFERENCES

This Guidebook does not replace active acquisition, SE, and operational policies, instructions, notices, and directives, but is a tool meant to provide a framework from which to assist Program Managers (PMs), Program Lead Engineers, and Technical Directors (TDs), Program Offices, IRTs, and individuals preparing for and conducting independent technical reviews and assessments.

Below are a few of the key references this Guidebook is based upon (the list is not all inclusive):

- a. DOD Directive 5000.01, *The Defense Acquisition System*, 12 May 2003, as amended
- b. DOD Instruction 5000.02, *Operation of the Defense Acquisition System*, January 23, 2020
- c. DOD Instruction 5000.88, *Engineering of Defense Systems*, November 18, 2020
- d. DOD Instruction 5000.85, *Major Capability Acquisitions*, Aug 6 2020

- e. *Defense Acquisition Guidebook (DAG)*, Chapter 3, “Systems Engineering,” current edition
- f. Under Secretary of Defense for Research and Engineering, Manufacturing Technology Program (ManTech), *Manufacturing Readiness Level (MRL) Deskbook*, Version 2020
- g. Office of the Assistant Secretary of Defense for Research and Engineering, *Technology Readiness Assessment (TRA) Guidance*, April 2011, as amended
- h. Office of the Deputy Assistant Secretary of Defense for Systems Engineering, *Department of Defense Risk, Issue, and Opportunity Management Guide for Defense Acquisition Programs*, January 2017
- i. Office of the Under Secretary of Defense for Research and Engineering, *Department of Defense Independent Technical Risk Assessment Framework for Risk Categorization*, June 2018
- j. Office of the Under Secretary of Defense for Research and Engineering, *Defense Technical Risk Assessment Methodology (DTRAM)*, Version 6, 14 Sep 2018
- k. AF Instruction 63-101/20-101, *Integrated Life Cycle Management*, 30 Jun 2020, (Incorporating Change 1, 23 Nov 2021)
- l. SAF/AQ Memorandum, *Independent Technical Risk Assessment Roles and Responsibilities*, 25 Jun 2020
- m. SAF/AQR Memorandum, *Independent Technical Risk Assessment (ITRA) Execution Roles and Responsibilities*, 12 Feb 2021
- n. SAF/AQR Memorandum, *Delegation Authority – Conduct of Post-Preliminary Design /Critical Design Review Assessments*, 8 Dec 2021
- o. SAF/AQE Coordination Matrix, *Latest Version*

3.0 INTRODUCTION

The Department of the Air Force (DAF) risk management process is defined in Air Force Instruction (AFI) 63-101/20-101, Integrated Life Cycle Management. This process is executed continuously throughout the acquisition lifecycle, is applicable to all acquisition pathways defined in Department of Defense Instruction (DoDI) 5000.02, and derives its risk rating criteria from the DoD Risk, Issue, and Opportunity (RIO) Management Guide for Defense Acquisition Programs.

PMs are required to demonstrate that an ITRA has been conducted in support of major acquisition milestone events for all MDAPs, as defined in DoDI 5000.88 per Title 10 USC. ITRAs are conducted in accordance with DoD ITRA guidance and the DoD ITRA Framework for Risk Categorization, both developed and maintained by OUSD(R&E). The ITRA is submitted as part of its respective milestone certification package and is subject to congressional reporting per Title 10 USC 2366b and DoDI 5000.88.

Additionally, PMs are required to demonstrate that post PDR and post CDR assessments, for all MDAPs, have been conducted as part of the respective milestone B and C certification packages. These assessments are conducted by Independent Review Teams (IRTs) that assess

technical risks specific to those reviews. The assessments are subject to the same congressional reporting requirements as acquisition milestone certifications.

3.1 PURPOSE

This Guidebook covers ITRAs and post-PDR/CDR assessments. These activities are independent technical assessments that involve a series of structured tasks and best practice approaches focused on evaluating the technical health and design maturity for a program. These formal assessments should be planned for in programmatic and technical documents. Further specifics on roles and responsibilities and accomplishment of ITRAs and post-review assessments is provided in references (m) and (n), respectively.

3.1.1 INDEPENDENT TECHNICAL RISK ASSESSMENT (ITRA)

DoDI 5000.88 codifies the policy to conduct ITRAs based on NDAA 2017 language contained in USC 2448b. It states that ITRAs shall be conducted on all MDAPs before approval of Milestone A, Milestone B, and any decision to enter into low-rate production or full-rate production. They will assess technical risks for MDAPs as described in this Guidebook and the Department of Defense (DoD) Risk, Issue, and Opportunity (RIO) Management Guide for Defense Acquisition Programs including risks related to critical technologies and manufacturing processes.

In general, technical risks are those events or conditions typically emanating from areas such as mission/requirements, technology, engineering, integration, test, software, manufacturing/quality, logistics, and system security/cybersecurity that may prevent a program from meeting cost, schedule, and/or performance objectives.

ITRAs should leverage ongoing program activities whenever practical, e.g., Technology Readiness Assessments (TRA), Manufacturing Readiness Assessments (MRA), Systems Engineering Technical Reviews, and Industry Days. These assessments and activities will inform the ITRA; however, the team will provide an independent assessment of any risks or maturity concerns identified. As such, there may not be a direct correlation between external assessments or measures, such as technology readiness levels, and the team's assessment.

3.1.2 POST PDR/CDR ASSESSMENT AND REPORTING

Per DoDI 5000.88, the component acquisition executive (CAE) will implement a technical review process which incorporates participation and review by an IRT. Per references (k) and (n), the approval of the IRT members has been delegated to the Center Engineering (EN) office. In the case for space systems, the Chief Engineers Office (SSC/BZE) will be responsible for the engineering oversight and the assembly of the IRTs. These responsible engineering offices will ensure IRT members selected are outside organizational, professional, and relational influences from the program management office. In addition, The IRT will identify and document critical issues that jeopardize achieving program or mission objectives, to include recommended corrective action. Results will be provided directly to the CAE, with coordination but not undue influence from the Program Managers Office. The PM, with support from the Lead Systems

Engineer (LSE), will review, develop, and implement corrective action to the satisfaction of the CAE.

To support this policy, per AFI 63-101, the DAF has designated that the supporting Center engineering functional office and for space systems the Chief Engineers Office (SSC/BZE) serve in the capacity to assemble the respective IRTs for SAF/AQ or SAF/SQ (space systems) Program Offices residing in that Center.

For all ACAT IB/C programs, the supporting Center engineering functional office and SSC/BZE (for space systems) will provide the PM and SAF/AQR or SAF/SQA (for space systems) with assessments of the results of system-level Preliminary Design Reviews and Critical Design Reviews. Additionally, to support the assessments the IRT will use the SAF/AQR provided reporting template as prescribed in reference (n) and included as part of Appendix B-1 of this guidebook, to identify technical risks and maturation of the technical baseline.

The supporting Center engineering functional office and Chief Engineers Office (SSC/BZE) for space systems will coordinate the draft assessments with the PM, but the supporting Center engineering director will sign the final version of the assessment and provide it to the PM and SAF/AQR or SAF/SQA (for space programs).

Finally, the Preliminary Design Review and Critical Design Review assessment report shall be delivered to SAF/AQR or SAF/SQA (for space systems) within 30 days from completion of the event. The PM will include the Preliminary Design Review assessment report in the information provided to support the MDA's 10USC2366b certification. In certain instances, SAF/AQR or SAF/SQA (for space systems) can determine if the ITRA team can accomplish the post-PDR and/or CDR assessment instead of tasking a separate IRT.

3.1.2.1 POST PRELIMINARY DESIGN REVIEW (PDR)/ CRITICAL DESIGN REVIEW (CDR) ASSESSMENT BASICS

System-level PDR assessments, per DoDI 5000.88, 3.5.a.(4), inform the MDA of the technical risks and the program's readiness to proceed into detailed design, supporting the Milestone B decision point and, for MDAPs only, 10 USC 2366b Milestone B certification. In accordance with Section 2366b of Title 10, U.S.C., OUSD(R&E) will conduct PDR assessments for ACAT 1D programs. As stated earlier, for DAF designated programs, per AFI 63-101, the Center EN and for space systems (SSC/BZE) have been designated to perform the post-PDR assessment through use of an Independent Review Team (IRT). This IRT will provide SAF/AQR or SAF/SQA (for space systems) and PMO with the results of the post-PDR assessment for submittal to the MDA using the prescribed template in 3.1.2.2.

Additionally, DoDI 5000.88, 3.5.a.(4), states that OUSD(R&E) will conduct a CDR assessment for ACAT 1D programs. The DoD Component concerned will conduct CDR assessments for all other MDAPs. For DAF designated programs, per AFI 63-101, the Center EN and Chief Engineers Office (SSC/BZE) for space systems will conduct the post-CDR assessment using an IRT. The IRT will identify and document critical issues that jeopardize achieving program or mission objectives, to include recommended corrective action. The IRT

will provide SAF/AQR or SAF/SQA (for space systems) and PMO with the results of the post-CDR assessment for submittal to the MDA using the prescribed template in 3.1.2.2. Subsequently, the PM, with support from the LSE, will review, develop, and implement corrective action to the satisfaction of the MDA.

Finally, in support of the post-PDR/CDR assessments, MDAP PMs are required to invite the OUSD(R&E) and the SAE to their PDRs/CDRs and make the PDR/CDR artifacts available for review.

3.1.2.2 POST PRELIMINARY DESIGN REVIEW (PDR) AND CRITICAL DESIGN REVIEW (CDR) ASSESSMENT SPECIFICS

AFI 63-101, in conjunction with reference (n), defines how the post-PDR/CDR assessments will be conducted within the DAF. To fulfill this requirement, SAF/AQR designates the Center Level Engineering functional offices and the Chief Engineers Office (SSC/BZE) for space systems to fill the role of the assembling the IRT to conduct the assessments. The IRT will document the results using the structured template provided in Appendix B-1 of this guidebook. Specifically, SAF/AQR designates SSC/BZE, AFLCMC/EN, and AFNWC/EN to conduct the post-PDR/CDR assessments for their respective MDAP programs with the following expectations:

- a. Attend the system technical reviews, or equivalent, per reference (k), on behalf of SAF/AQR or SAF/SQA (for space systems). Attendance is only mandatory at the PDR and CDR, or equivalent. The program manager will invite the Center Level Engineering functional office to all systems engineering technical reviews.
- b. Solicit Subject Matter Experts (SMEs) to provide unbiased technical advisement, as required, to complete the assessment.
- c. Focus on program's technical risks, issues and opportunities, corrective actions and mitigation activities. Refer to the Department of Defense (DoD) Risk, Issue, and Opportunity (RIO) Management Guide for Defense Acquisition Programs, reference (h), to aid in the assessment.
- d. Deliver the completed post-PDR/CDR template provided in Appendix B-1 to the PM, PEO, and SAF/AQR or SAF/SQA (for space systems), per reference (n), no later than 30 calendar days following the conclusion of the review.

4.0 ITRA PROCESS

Independent Technical Risk Assessment (ITRA) will assess technical risks for Major Defense Acquisition Programs as described in this framework and the Department of Defense (DoD) Risk, Issue, and Opportunity (RIO) Management Guide for Defense Acquisition Programs (<https://www.acq.osd.mil/se/pg/guidance.html>), including risks related to critical technologies and manufacturing.

In general, technical risks are those events or conditions typically emanating from areas such as mission/requirements, technology, engineering, integration, test, software,

manufacturing/quality, logistics, and system security/cybersecurity that may prevent a program from meeting cost, schedule, and/or performance objectives.

4.1 ITRA PHASES

The core foundation of the DAF ITRA is an independent peer review which translates to being performed by an independent team of knowledgeable individuals (i.e., individuals not under the management of the program office). These risk assessments are conducted and the methodology incorporates forecasting and projection to make predictions about future outcomes. The results of the ITRA are provided to the MDA to inform milestone decisions. The ITRA informs PM risk management. Risk management is a continuous process used to manage uncertainties throughout the life cycle of a system. Risk Management more broadly considers all aspects of a program, such as operational needs, attributes, constraints, performance parameters, threats, technology, design processes, etc. An effective process requires involvement of the entire program team and also requires help from outside experts knowledgeable in critical risk areas. The DoD RIO Management Guide for Defense Acquisition Programs documents the process for PMs, program offices, and integrated product teams to effectively manage program risks throughout the acquisition process.

The DAF ITRA Process Flow is shown in Figure 1. Four major “phases” have been identified which encompass the activities required to accomplish the DAF ITRA process by the designated ITRA Team. These steps are: (1) Team Structure and Planning; (2) Team Preparation and Kickoff; (3) Team Assessment; and (4) Team Reporting. Each of the supporting segments are described further in the following paragraphs of this section. Roles and responsibilities for key stakeholders and participants in the AF ITRA Process are provided in reference (m).

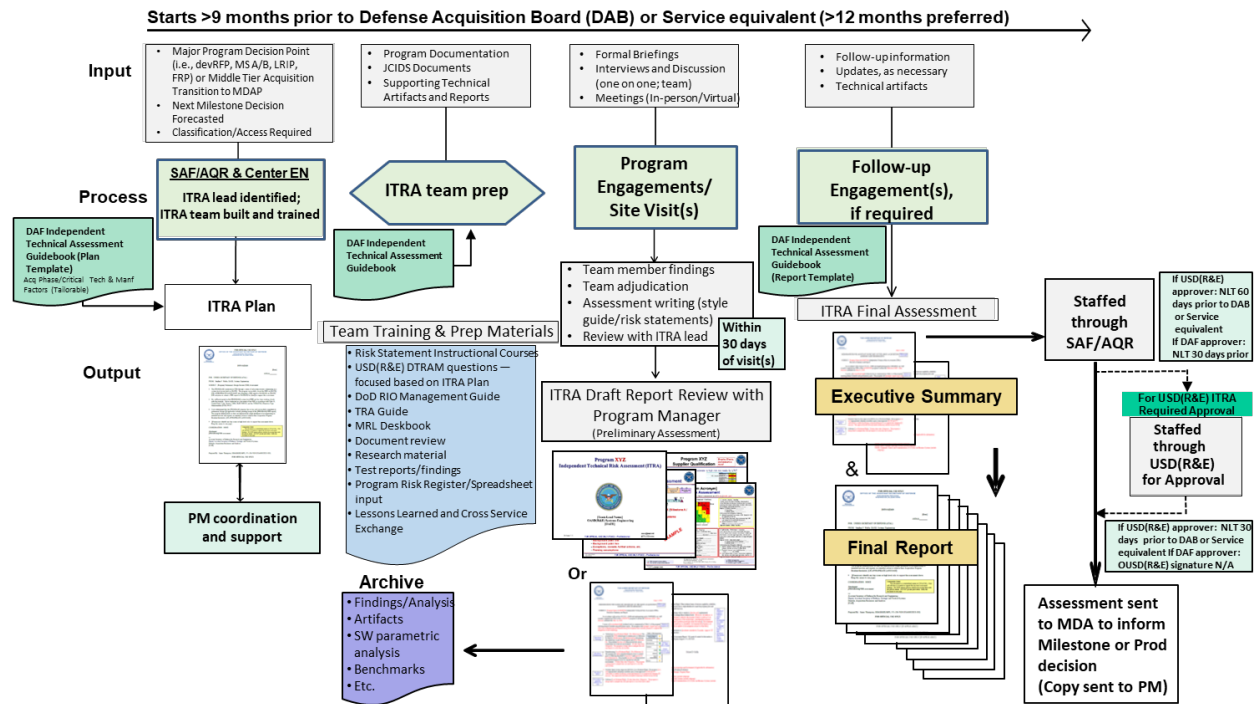


Figure 1 DAF ITRA Process Flow

4.1.1 TEAM STRUCTURE AND PLANNING

This aspect of the ITRA process pertains to the formulation and composition of the team to accomplish the assessment. The top-level steps are provided in Figure 2. The team must possess relevant technical and domain expertise and be selected from appropriate independent, non-sponsor organizations or other qualified sources as deemed necessary. The team members should not be currently or recently employed or obligated to the program under assessment. The key entrance criteria to initiate the ITRA is a milestone decision point for an MDAP or plan to transition from a middle-tier acquisition (MTA) program to an MDAP. The MDA decision is captured in an Acquisition Decision Memorandum (ADM). Entrance criteria and exit criteria for this phase of the ITRA process is captured in Table 1. Another point in ensuring the ITRA is properly identified and forecast is the responsibility of the Program Manager (PM) to notify SAF/AQR, SAF/SQA (for space systems) and MAJCOM/Field Command and Chief Engineering Offices at least twelve (12) months prior to plan/scheduled milestone event that will require an ITRA, see reference (m). This will allow sufficient time to begin the team structure and planning phase of the ITRA process.

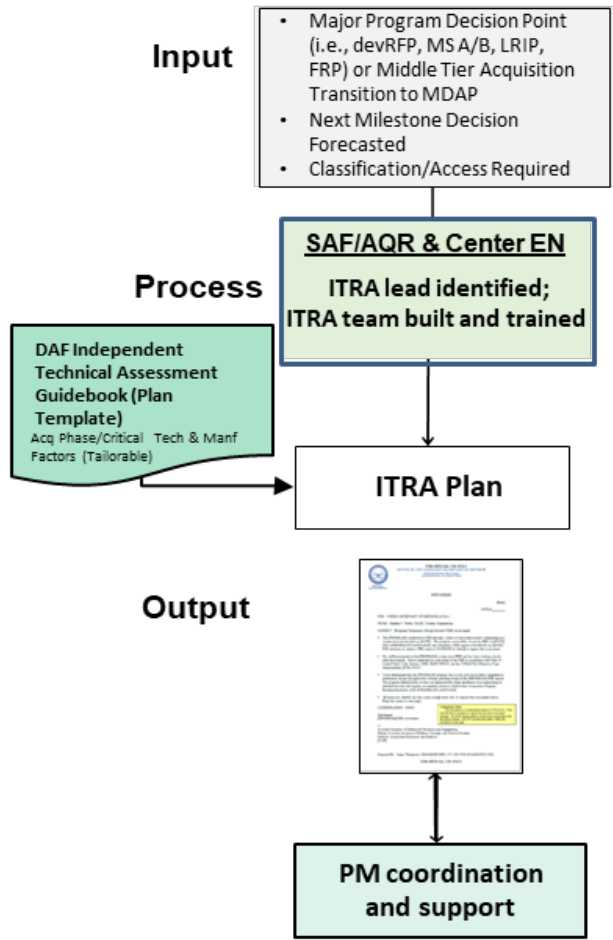


Figure 2 Team Structure and Planning Steps (DAF ITRA Process Flow)

The major sub-steps in the team structure and planning include the establishment of the team participants and designating the ITRA Team Lead as well as the scope and aspects to be considered as part of the risk assessment. The ITRA Team Lead should use the DTRAM as a foundational resource and tailor the topic areas according to the acquisition phase of the program, the current program technical status and risk posture, as well as on-going and recurring design, technical, and manufacturing activities that support successful entry to the upcoming milestone. The majority of the information used by the ITRA Team, as part of the assessment, will come from existing program information, documentation, analysis results, prototyping activities, test and evaluation reports, and other technical artifacts/information deemed as necessary. One exit criteria (listed in Table 1) will be the establishment of the Integrated Product Data Management System (IPDMS) environment where all the relevant technical and program data information will be stored for ITRA Team access. With respect to appropriate data and information access, if the program has special security caveats (such as Special Access Requirements), this will need to be identified up front as part of establishing the team membership to ensure selected members can be approved in sufficient time before the ITRA is executed. In the past, the time allotted to accomplish approval for identified ITRA team individual(s) has taken about three (3) months; however, this might be a bit longer depending on processing, program approval, and read-in requirements.

As described in reference (m), the assigned SAF/AQR action officer (AO) will work with the appropriate MAJCOM/ Field Command Engineering Office to identify an ITRA Team Lead. In the case for space system, SAF/SQA will execute this role with assistance from the Chief Engineers Office (SSC/BZE). Again to reiterate, the ITRA Team Lead shall be independent of the program being assessed. Additionally, the SAF/AQR or SAF/SQA (for space systems) AO will assist the ITRA Team Lead in ensuring the appropriate Subject Matter Experts (SMEs) are selected as part of the ITRA Team and help with drafting and staffing of the ITRA Plan for SAF/AQR or SAF/SQA (for space systems) approval. In the case of the Service run/USD(R&E) approved ITRA, as designated in the OUSD(R&E) Designation/Delegation Memorandum, the SAF/AQR or SAF/SQA (for space systems) AO will be the point of contact (POC) to coordinate with OUSD(R&E), facilitate participation as part of the ITRA Team, and enable synergy with OUSD(R&E) related test and evaluation/program assessment efforts. In addition, this cooperation provides visibility and aids in successful review/approval of the ITRA Report (covered later in this Guidebook) by USD(R&E), when specified.

The identified ITRA Team Lead is responsible to work with the appropriate MAJCOM/Field Command Engineering Office or for space systems the Chief Engineers Office (SSC/BZE) to assemble the ITRA Team and develop the draft ITRA Plan as well as the Plan of Actions and Milestones (POA&M) to execute the assessment. A representative ITRA Plan template is provided as Appendix B-2 of this Guidebook to assist in development of the document. The SAF/AQR or SAF/SQA (for space systems) AO will work with the ITRA Team Lead in refining and finalizing the draft ITRA Plan prior to staffing for SAF/AQR or SAF/SQA (for space systems) approval. This is a key product of the process step shown in Figure 2. Key to success of the ITRA is support from the program manager and access to the needed technical, engineering, and program information along with enabling face-to-face or group discussion

forums between the ITRA Team members with PMO technical/functional leads as they accomplish the assessment. Fact finding is part of the team assessment phase of the ITRA Process and is discussed later in this Guidebook. The coordination with the PMO and on-going program and technical reviews that the ITRA Team can leverage is highly encouraged and should be a factor included in setting up the ITRA Plan and establishing the POA&M.

The culmination of the team structure and planning phase of the ITRA process would be the products listed in Table 1. The primary document would be the approved ITRA plan which details the scope, criteria, team composition, and timeline to accomplish the assessment.

Table 1 Team Structure and Planning Elements

Key Participants	Entrance Criteria	Exit Criteria
<ol style="list-style-type: none"> 1. SAF/AQR or SAF/SQA (space systems) 2. SAF/AQR or SAF/SQA Action Officer 3. MAJCOM Field Engineering Office (Center EN) or Chief Engineers Office (SSC/BZE) for space systems 4. System Program Manager 5. OUSD/R&E (DTE&A), as required 6. ITRA Team Lead 	<ol style="list-style-type: none"> 1. Materiel Development Decision (MDD) /Acquisition Decision Memorandum (ADM) 2. OUSD(R&E) ITRA Designation/Delegation Memo 3. Program Security Classification Guide 4. Program Schedule (key MS and ITRA period established) 5. Current Program Risk Assessment (PM Reported) 6. Last ITRA Report (if available) 7. ITRA SME participants have been identified and coordinated 8. ITRA Funding Identified (i.e., Travel, SME, etc.) 	<ol style="list-style-type: none"> 1. SAF/AQR Action Officer Assigned 2. ITRA Team Lead Designated 3. ITRA SME Participants Assigned 4. ITRA Plan Developed 5. ITRA POA&M Established 6. ITRA Team Access to Program IPDMS (Integrated Product Data Management System) Environment (i.e., artifact/documentation repository, like SharePoint)
	<p>Products:</p> <ol style="list-style-type: none"> 1. ITRA Plan (Approved) 2. ITRA POA&M 3. IPDMS Established 4. SME Special Access Required (SAR) Listing (program unique approval) 5. SAF/AQR ITRA Execution and Team Designation Memo (as needed) 	

4.1.2 TEAM PREPARATION AND KICKOFF

The team preparation and kickoff phase accomplishes the staging steps to ready the ITRA team to conduct the assessment. As shown in Figure 3, the access and availability to program technical information is very important. Additionally, the team should become familiar with the overarching ITRA process, the risk, issue and opportunity (RIO) guidance, and appropriate reference guidebook/handbooks related to technical areas highlighted in the plan. This phase is also important with respect to understanding how to effectively construct risk statement (i.e., “if” and “then”) and appropriate categorization and severity (i.e., consequence and likelihood). Team risk training (as part of exit criteria in Table 2) is included as part of the ITRA Kickoff session conducted by the SAF/AQR or SAF/SQA (for space systems) AO; however, it does not cover the full aspect of the activities involved in identifying risks and mitigation activities. It is highly recommended the individual team members refer back to references (h), (i), and (j) to get a better understanding of the risk process.

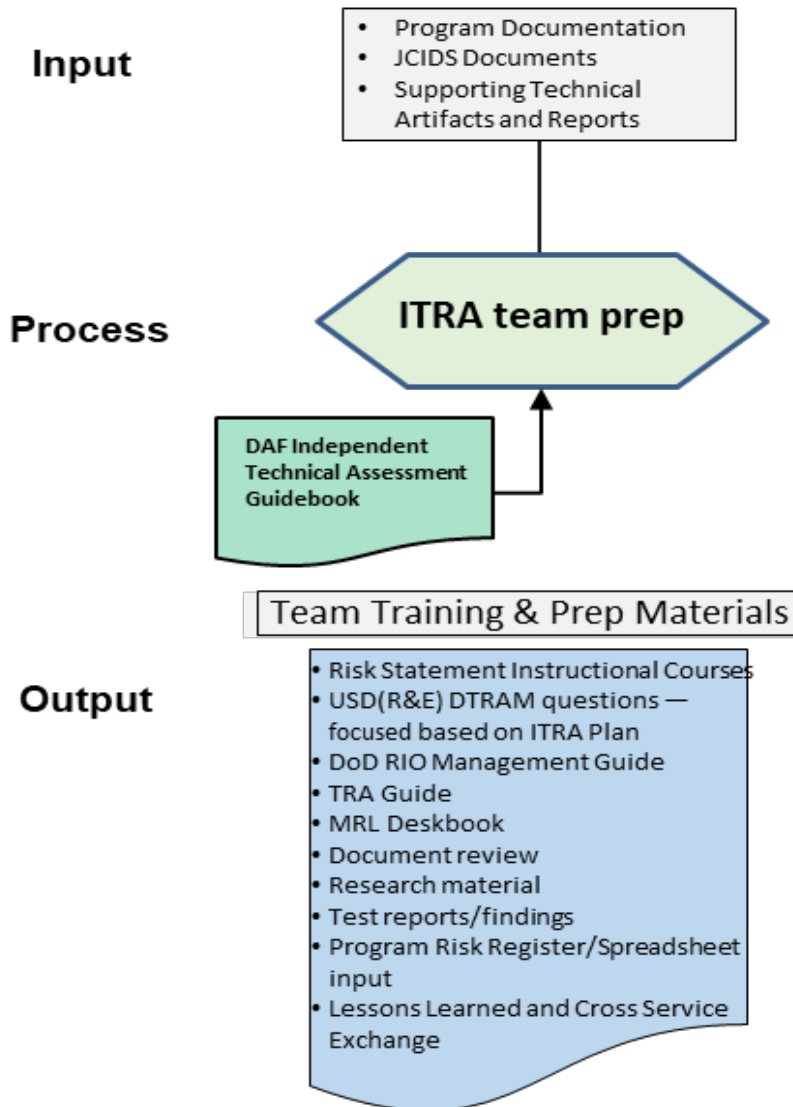


Figure 3 Team Preparation and Kickoff Steps (DAF ITRA Process Flow)

Presented in Table 2 are the key elements that constitute the participants and entrance/exit criteria, and products that constitute the team preparation and kickoff events. The ITRA Kickoff is usually the first event taken by the ITRA Team Lead and SME Team to establish ground-rules, expectations, and go-over the timeline to accomplish the assessment. This forum also serves as a question and answer session to clarify any concerns and topics associated with the ITRA Plan. The ITRA Kickoff supports as mentioned earlier the risk training as well as reviewing the evaluation areas and how to effectively use the RIO findings input spreadsheet (provided in Appendix B-4) that will be used during the assessment phase of the ITRA. Lastly, the ITRA Team Lead will establish the recurring team meeting schedule to facilitate team discussions, track progress and resolve any issues that might occur. It is also recommended an internal collaboration site be established for the ITRA Team to facilitate sharing of information internal

to the team, etc. A thorough team preparation and kickoff are key enablers for success of team assessment and documentation of their findings.

Table 2 Team Preparation and Kickoff Elements

Key Participants	Entrance Criteria	Exit Criteria
<ol style="list-style-type: none"> 1. SAF/AQR or SAF/SQA (for space systems) Action Officer 2. ITRA Team Lead 3. ITRA SME Team Members 4. ITRA PMO POC 	<ol style="list-style-type: none"> 1. ITRA Plan (Approved) 2. Key Program Documentation Available on IPDMS (i.e., SharePoint) 3. ITRA Training and Reference Resources Available 4. ITRA Team Classified Information Access Granted or In-Process (designated individuals) 	<ol style="list-style-type: none"> 1. ITRA Kickoff Accomplished 2. ITRA Team Recurring Meeting Schedule and Collaboration Venue Established 3. ITRA SME Participants Risk Training Accomplished 4. ITRA Team Lead and PMO Communication Established 5. Program IPDMS File Structure and Specified Program Data/Artifacts Generated
<p>Products:</p> <ol style="list-style-type: none"> 1. ITRA Team Schedule 2. ITRA Team Collaboration Site 3. ITRA Training Brief 		

As a “best practice” the ITRA team lead should develop an execution plan that enables the ITRA team to review and comment on draft Request for Proposal (RFP), and provide early insights and support to the PMO for those programs that have a Development RFP (DevRFP) and/or competitive production RFP release decision point as part of their acquisition strategy. This early technical interchange of the ITRA team has proven helpful to the program by ensuring the statement of work (SOW) and supporting tasking is sound, the technical requirements are clearly stated, and necessary contract data items are delivered in order to reduce risk while meeting program development and/or production needs.

4.1.3 TEAM ASSESSMENT

Technical risk is defined as the risk relevant to an Air Force/Space Force Acquisition system is not sufficiently mitigated (i.e., technology matured, integration characterized, and manufacturing processes matured) to meet cost, schedule, and performance (CSP) goals established for the program. Additionally, technical risk is reported at three levels (low, moderate, and high) based on the standard DoD Risk Reporting Matrix contained in the DoD

RIO Management Guide for Defense Acquisition Programs. The risk level is determined by likelihood (probability) and consequence of event occurrence.

Shown in Figure 4 are the key process flow steps involved in the assessment team assessment phase of the ITRA. The team will engage in reviewing, researching, and fact finding related to categorizing the degree of technical and manufacturing risks associated with the program under assessment. See reference (i) for more information regarding the ITRA framework for risk categorization.

The assessment phase involves the functional team members (SMEs) collecting information regarding the identified technical risk areas and assessment factors established in the ITRA Plan. Information collection is accomplished by leveraging program technical reviews, focused one-on-one technical exchanges, and review of program data and technical information. The ITRA purpose is not to serve as an audit, but to provide an “independent” set of eyes to support the program manager. The ITRA identified risks and issues should be considered and mitigated appropriately as part of the program risk management process. The ITRA assessment phase documents and characterizes each risk identified in terms of consequence to the program in meeting cost, schedule, and performance given program plans or established baselines as it reaches its milestone review.

The team individually collects the pertinent information and forms their assessment based on engineering analysis and data. Risks, issues, and opportunities will be identified. Key resources for use by the team members during the assessment are the DoD RIO Management Guide for Defense Acquisition Programs, the DTRAM, and the RIO Risk and Issue Tracking Spreadsheet (available in Appendix B-4).

The ITRA Team Lead should use the ITRA Report Template (Appendix B-3) to structure the assessment findings and draft the preliminary (draft) report. The RIO Risk and Issue Tracking Spreadsheet will be used to fill-in the risk scorecard and summary risk rubric. It is recommended in the report to only to present the top 3-5 risks in the summary risk rubric; however, all other risks should be summarized in the report appendices’ for completeness. Once the ITRA Team Lead and team members have constructed the draft report, it then would undergo a “product integrity review” within the ITRA team before finalization to be presented to the PMO for review/comment. The findings presented to the PMO are usually in the form of the initial draft ITRA report; however, the RIO Risk and Issue Tracking Spreadsheet (Appendix B-4) and/or combination of an ITRA finding brief could be used. This is up to the discretion of the ITRA Team Lead and SAF/AQR or SAF/SQA (for space systems) AO on best approach. Once the PMO comments are received back with respect to the reported findings, the ITRA Report is finalized for submittal to SAF/AQR for coordination and signature. Also, as shown in Figure 4, an archive of the substantiation information and data used to formalize the risk and issue findings shall be accomplished. This can be done by embedding the artifacts in the RIO Risk and Issue Findings Tracking spreadsheet or separately to SAF/AQR or SAF/SQA (for space systems) AO of filing. This step is essential in case follow-on questions arise after the ITRA Team has disbanded and future inquiries are made.

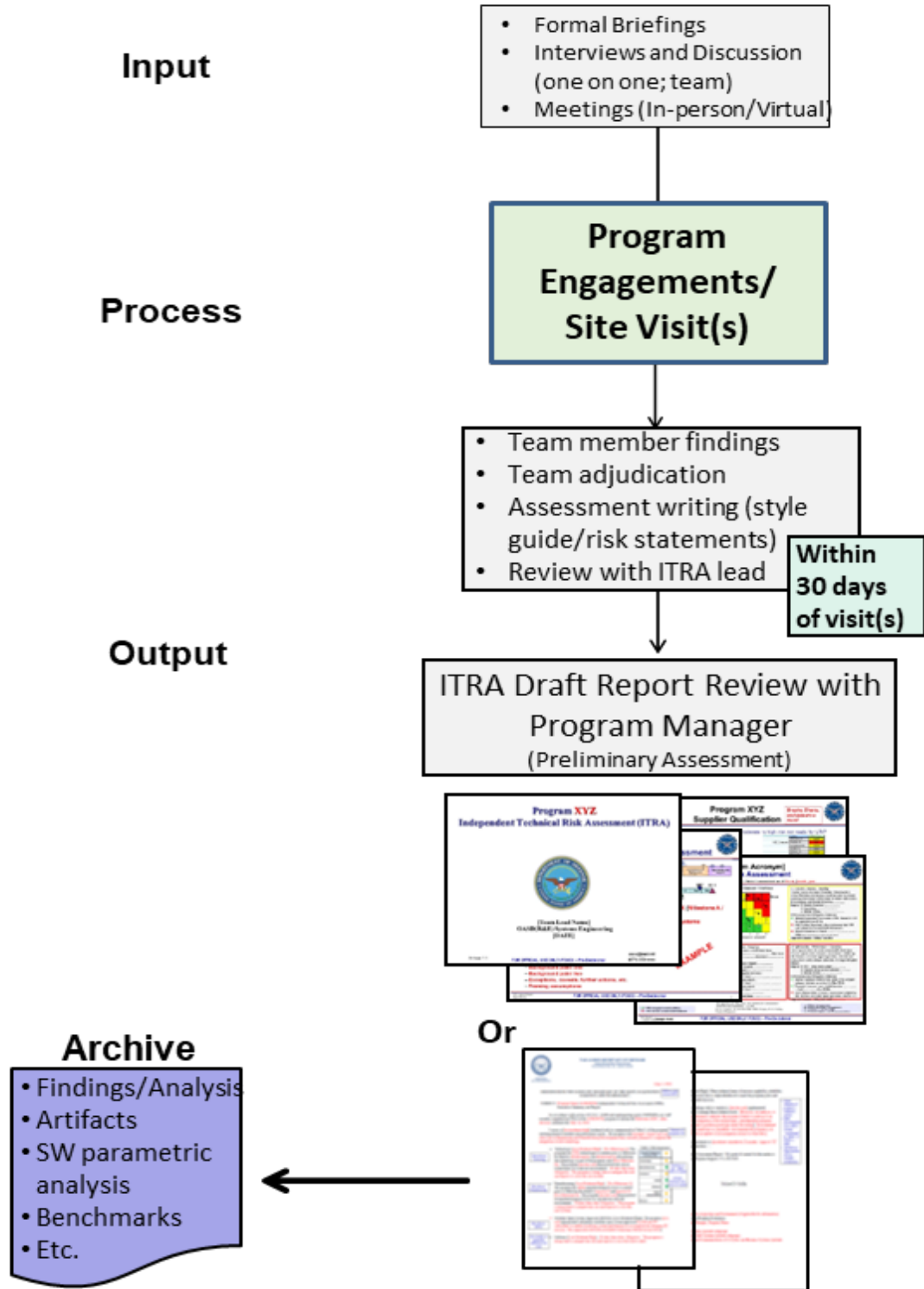


Figure 4 Team Assessment Steps (DAF ITRA Process Flow)

The key stakeholders, entrance/exit criteria, and products that make up the team assessment phase are shown in Table 2. The steps involved in supporting the elements listed in the table have been discussed above. To reiterate, the primary outputs from this phase is the

draft ITRA Report and the ITRA Team RIO Spreadsheet. The draft findings and assessment brief would serve to inform PMO and other stakeholders, as required.

Table 3 Team Assessment Elements

Key Participants	Entrance Criteria	Exit Criteria
<ol style="list-style-type: none"> 1. SAF/AQR or SAF/SQA (for space systems) Action Officer 2. ITRA Team Lead 3. ITRA SME Team Members 4. ITRA PMO POC 5. Industry/Supplier Representatives 	<ol style="list-style-type: none"> 1. ITRA Kickoff Accomplished 2. ITRA Risk Training Completed 3. ITRA Schedule Approved 4. Program IPDMS On-line 5. ITRA Team Collaboration Site On-line 6. Key Technical and Program Documentation/Artifacts Posted on IPDMS 	<ol style="list-style-type: none"> 1. ITRA Team Initial Risks, Issues, and Opportunities Developed 2. Draft ITRA Report Developed 3. Initial Briefing of Findings to PMO
	<p>Products:</p> <ol style="list-style-type: none"> 1. ITRA Draft Report 2. ITRA Team RIO Tracking Spreadsheet 3. Draft Findings and Assessment Brief 	

4.1.4 TEAM REPORTING

The team reporting phase primarily consists of refining and finalizing the ITRA Team final findings and recommendations that result from the assessment phase. The team reporting phase is outlined in Figure 5. The inputs to the reporting phase include any new information not available during the team assessment phase based on program risk status changes or closure and feedback that comes during the coordination and staffing of the final ITRA Report. Key products from this phase are the development of the executive summary which is used as synopsis on the key technical risks and actionable risk mitigation recommendations from the ITRA Team. The “top level” information outlines the analysis and main conclusions and is intended as a decision aid to leadership without having them read the full ITRA Report. The other product as an output from this phase is the final ITRA Report. The final ITRA Report contains all the specific assessment details and supporting data. This details the methodology, assessment framework, risks, issues, opportunities, and their accompanying mitigation recommendations from the team. As mentioned in the team assessment phase, the ITRA Report should follow the example provided in Appendix B-3. Table 4 provides the summary of key participants, entrance/exit criteria and products that support this ITRA phase.

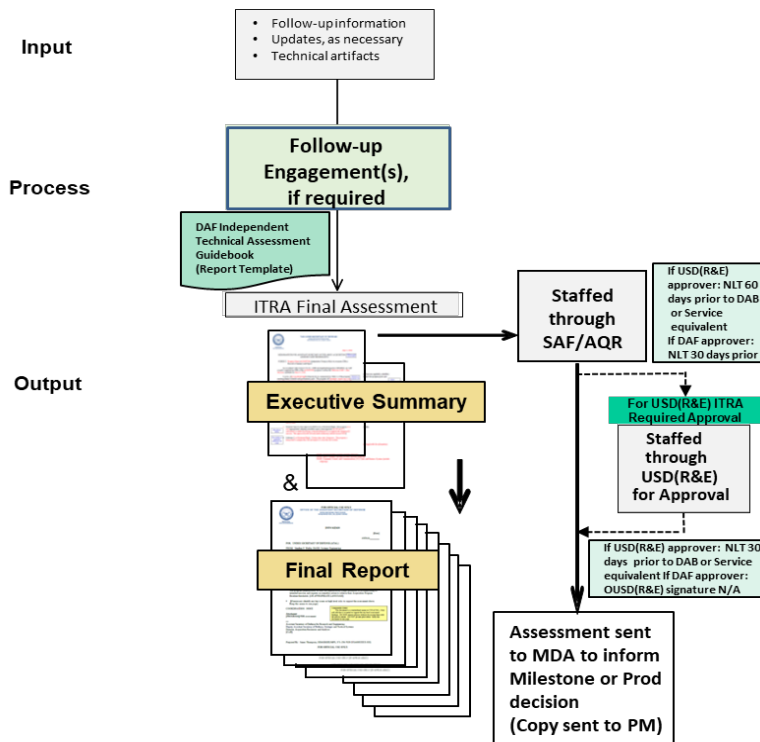


Figure 5 Team Reporting Steps (DAF ITRA Process Flow)

The reporting process is complete once the report is coordinated and approved by the responsible office in accordance with the SAF/AQE coordination matrix (reference (o)). Additionally, for the selected programs that require USD(R&E) approval, the ITRA execution schedule should allow for an additional 30 days to process the final ITRA report and acquire external USD(R&E) signature. The ITRA final report review, coordination, and approval will be supported through the use of a workflow process tool (i.e., TMT) using the established administrative business rules. The SAF/AQR or SAF/SQA (for space systems) AO is responsible for this final step of the ITRA reporting segment.

Table 4 Team Reporting Elements

Key Participants	Entrance Criteria	Exit Criteria
1. SAF/AQR or SAF/SQA (for space systems) 2. SAF/AQR or SAF/SQA Action Officer 3. ITRA Team Lead 4. USD(R&E), as applicable	1. ITRA Draft Report 2. ITRA Draft Executive Summary	1. Final ITRA Report 2. Final Executive Summary
	Products:	
	1. ITRA Final Report 2. ITRA Executive Summary	

APPENDIX A ACRONYMS

Definitions of key acronyms and abbreviations used in the Guidebook are listed below.

TERM	DEFINITIONS
ACAT	Acquisition Category
CAE	Component Acquisition Executive
CDR	Critical Design Review
COTS	Commercial Off-the-Shelf
DAF	Department of the Air Force
DOD	Department of Defense
EN	Engineering
HSI	Human Systems Integration
IMP	Integrated Master Plan
IMS	Integrated Master Schedule
ITRA	Independent Technical Risk Assessment
KPP	Key Performance Parameter
LSE	Lead Systems Engineer
MDA	Milestone Decision Authority
MS	Milestone
PDR	Preliminary Design Review
PEO	Program Executive Officer
PM	Program Manager
PMO	Program Management Office
POA&M	Plan of Action and Milestones
RIO	Risk, Issue, and Opportunity
SAE	Service Acquisition Executive
SEP	Systems Engineering Plan
SME	Subject Matter Expert

TERM	DEFINITIONS
TD	Technical Director
TDP	Technical Data Package
USD	Undersecretary of Defense

APPENDIX B ASSESSMENT TEMPLATES

B-1. POST PDR/CDR ASSESSMENT REPORT TEMPLATE

Independent Review Team (IRT) Assessment Information			
Program Office			
Program Manager			
Program Office Chief Engineer			
Assessment Report Type	Post-PDR <input type="checkbox"/>	Post-CDR <input type="checkbox"/>	
Technical Review Date(s) Conducted			
Name of the Center Engineering Functional Office Lead Conducting Independent Assessment			
Center IRT Lead Representative Office Symbol			
Center IRT Lead Representative Telephone Number			
Center IRT Lead Representative E-mail Address			
Supporting IRT Members	Name	Office Symbol	Subject Matter/Technical Area
Top 3 Liens/Action Items			
<i>(Provide list of open action items identified during PDR/CDR that require specific action to close the review (e.g. resolving a predicted performance shortfall)—attach details as required to report)</i>			
Outstanding Liens/Action Item	Item Number	Closure Criteria and Need Date	
1			
2			
3			
Current Top 3 Program Technical Risks			
<i>(If there are more than 3 high risks, report on all high technical risks identified)</i>			
NOTE: Risks, issues and opportunities identified should be assessed per DoD Risk, Issue, and Opportunity (RIO) Management Guide for Defense Acquisition Programs			
Program Technical Risk 1	Title:		
	<i>Enter title of identified technical risk #1</i>		

Description: <i>Insert description of identified technical risk #1</i>		
Program Risk 1 – Program Office Determined Risk Level	Likelihood Score:	Consequence Score:
Program Risk 1 – Team Evaluation of Program Office’s Risk Assessment		
Program Risk 1 – Team Evaluation of Mitigation Strategy for this Risk		
Program Technical Risk 2	Title: <i>Enter title of identified technical risk #2</i>	
Description: <i>Insert description of identified technical risk #2</i>		
Program Risk 2 – Program Office Determined Risk Level	Likelihood Score:	Consequence Score:
Program Risk 2 – Team Evaluation of Program Office’s Risk Assessment		
Program Risk 2 – Team Evaluation of Mitigation Strategy for this Risk		
Program Technical Risk 3	Title: <i>Enter title of identified technical risk #3</i>	
Description: <i>Insert description of identified technical risk #3</i>		
Program Risk 3 – Program Office Determined Risk Level	Likelihood Score:	Consequence Score:
Program Risk 3 – Team Evaluation of Program Office’s Risk Assessment		
Program Risk 3 – Team Evaluation of Mitigation Strategy for this Risk		

Current Top 3 Program Technical Issues <i>(If there are more than 3 top technical issues, report on all those issues identified that have a high consequence)</i>	
Program Technical Issue 1	Title:
Description:	
Program Issue 1 – Team Assessment of Corrective Action	
Program Technical Issue 2	Title:
Description:	
Program Issue 2 – Team Assessment of Corrective Action	
Program Technical Issue 3	Title:
Description:	
Program Issue 3 – Team Assessment of Corrective Action	
Opportunities <i>(Emphasis areas are defined in the “Digital Building Code” parameters provided as attachment to this template-- future updates will be located at https://ww3.safaq.hq.af.mil/)</i>	
Area 1	Topic: Digital Engineering
Area 1 – Topic addressed in technical review (Yes or No)? If addressed, provide significant efforts of the program in this area.	
Area 1 – Assessment of overall program opportunities in this area.	

Area 2	Topic: Agile Software
Area 2 – Topic addressed in technical review (Yes or No)? If addressed, provide significant efforts of the program in this area.	
Area 2 – Assessment of overall program opportunities in this area.	
Area 3	Topic: Open Architectures
Area 3 – Topic addressed in review (Yes or No)? If addressed, provide significant efforts of the program in this area.	
Area 3 – Assessment of overall program opportunities in this area.	
<i>(Duplicate Fields for Additional Identified Opportunities)</i>	
Overall Assessment of Technical Baseline	
<p><i>(Provide overall assessment of the program’s documented technical baseline, including design specification and systems engineering process maturity. Identify the degree in which the system allocated baseline [PDR only] or initial system product baseline [CDR only] is complete, defined, and under configuration control through the application of DE/MBSE methods and processes. For example, demonstration of full digital traceability of requirements, design, test, and technical information required to manage the product definition across the life-cycle is captured and available from a single authoritative digital engineering source/environment.</i></p>	

General Team Observations and Recommendations

(Summarize the program’s technical management and control, design stability and its ability to meet technical and performance thresholds based on assessed risks, issues and opportunities reviewed as part of the assessment. Include recommended corrective actions)

Overall Conclusions

(Provide overall assessment to inform the Milestone Decision Authority that the PDR/CDR is complete based on the information made available to the IRT. Limit this to no more than one paragraph if possible.)

Relevant Documents and References

(List the sources used as part of the assessment.)

Template Reference Attachment (Digital Building Code Parameters)



Digital Building Code Parameters.pdf

B-2. ITRA PLAN TEMPLATE



ITRA Plan
Template.pdf

B-3. ITRA REPORT TEMPLATE



ITRA Report
Template.pdf

B-4. ITRA RISK AND ISSUES FINDINGS REPORT INPUT SPREADSHEET



ITRA Risk_Issues
Findings Input v2.xls

-----**END OF GUIDEBOOK**-----