[Program] (Acronym)
Independent Technical Risk Assessment
[Date]

1 Introduction

1.1 Purpose (one paragraph)

Provide a short paragraph that identifies the program name and the milestone or production decision for which the assessment supports.

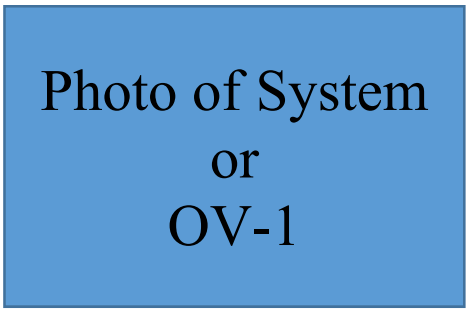

Figure 1. Program Name

1.2 Program Objective and Description (less than one page)

State what the program is trying to achieve (e.g., new capability, improved capability, low procurement cost, reduced maintenance or manning). Briefly describe the program or program approach (not the system) as it relates to cost, schedule or performance impacts. Describe whether the program is providing a new system or is to replace or modify an existing operational system. Discuss if it is a new design, a major system modification, or a modification or repurposing of existing government purpose or commercial off-the-shelf equipment. Address whether it is an evolutionary acquisition program, if applicable, and what increment(s) this assessment examined. Include the program schedule and funding profile if available (Table 1).

Table 1. Program Schedule* and Cost Profile

	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27
Key Events		MS B	CDR		MS C	IOTE		FRP	IOC
Cost Profile($M)									
RDT&E	340.8	327	296.3		19.9	20.4	17.55	15.3	14.5
Procure	56.4	333.9	490.3	689.9	1280.1	1804.5	2304.4	2702.4	3380.3
O&S									

Example

*See program schedule at Appendix --.

Source: [Data source document], Month day, 20xx.

2 Summary of [Program Name] Technical Risks

State ITRA Team's assessment of the overall risk posture. For example "*The program shows moderate technical risk in meeting the program's planned schedule and performance goals as summarized in Table 2. The program will most likely require time beyond the Month, Year schedule threshold to achieve XYZ due to technology and system development risks.*"

Discuss the overall schedule risk and any other DTRAM risk factors such as resources. For example: "*Recent budget cuts have impacted the standup of new system integration labs, potentially delaying the integration of new technologies by XX months."*

Organize table 2 and the technical risk area discussions by impact to the program (e.g. discuss the highest risk area first). Address all eight DTRAM risk areas.

Table 2: Risk Assessment

Overall: Moderate Technical Risk	
Overall: Moderate Schedule Risk	
Mission	
Technology	
System Development	
MOSA	
Software	
Security/ Cybersecurity	
Manufacturing	
R&M / Supportability	

3 Risk by Technical Area

3.1 Mission Capability (Low/Moderate/High Risk)

Identify any aspects of the mission, requirements, CONOPS, or mission profile that may not be met. Discuss significant interoperability or interdependency risks that have an impact on the program's ability to accomplish its intended mission, or meet the initial operational capability date.

Describe whether the established Key Performance Parameters (KPPs), Key System Attributes (KSAs), and additional performance attributes are appropriate, realistic, and achievable. Provide a current status and assessed risk to achieving proposed or established requirements. Consider the program's Technical Performance Measurements (TPM) to assess the risk to meeting requirements.

Consider depicting the status of the program documented requirements in a graphic as shown in Figure 2. If appropriate, include KPP, KSA, and TPM detailed information (e.g. full title, description, threshold and objective values, and program projections over time) in an appendix.

Table 3. Key Requirements

Requirement Description	Threshold	Objective	Current Projection
KPP 1 - Average thrust during mission	100	120	100
KPP 2 - Operational Availability	100	150	75
KPP 3 - XXXXXXXXXXXXX	100	100	120
KSA 1 - Fuel payload	100	100	110
KSA 2 - System X reliability	100	100	50
KSA 3 - XXXXXXXXX	100	100	120

Source: [Data source document], Month day, 20xx

Discuss risks to meeting the mission capability. These may include risks to meeting program requirements, interoperability or interdependency risks with external programs or agencies, or a combination of risks that, when considered as a whole, may impact the system's ability to conduct its mission or meet the program's Initial Operational Capability date. Only include those risks applicable to the narrative for this section.

3.2 Technology (Low/Moderate/High Risk)

Include a statement that addresses the statutory reporting requirements for technology. For Milestone A assess if there are any critical technologies that need to be matured. For Milestone B and subsequent production decisions assess if critical technologies have been successfully demonstrated in a relevant environment. **MANDATORY:** For example: "*The program has demonstrated all critical technologies in a relevant environment*." Or "*The program has three critical technologies, two of which still need to be matured before Milestone B, technology xx and technology yy*." Consider depicting the program's critical technologies status in a table such as Table 3.

Table 4. Critical Technologies

Critical Technologies	Technology Description	Status (For MS B and Beyond)	Notes
Technology #1	Describe the technology, its function, and the environment in which it is expected to operate.	TRL X	
Technology #2		TRL X	*e.g. Laboratory testing results not complete*
Technology #3		TRL X	*e.g. Components not representative of sub-system*

Source: [Data source document], Month day, 20xx

Discuss any technical risks or issues related to critical technologies, status of technology maturity, any problems with reaching needed maturity, or with demonstrating them in a relevant environment. Only include those risks applicable to the narrative for this section.

3.3 Manufacturing (Low/Moderate/High Risk)

MANDATORY: Include a statement that addresses the statutory reporting requirements for manufacturing. For Milestone A assess if there are any manufacturing processes that need to be matured. For Milestone B and subsequent production decisions assess if there are any manufacturing processes that have not been successfully demonstrated in a relevant environment. Consider depicting the status of key manufacturing processes in a table such as Table 4.

Table 5. Manufacturing Process Maturity

Critical Manufacturing Process	Process Description	Status (For MS B and Beyond)	Notes
Process #1	Describe the process		*e.g. Successfully demonstrated on relevant system(s)*
Process #2			*e.g. Demonstrated on pilot line, however has not been demonstrated at required scale*
Process #3			*e.g. Unique/novel approach to manufacturing, likely not feasible in required timeframe*

Source: [Data source document], Month day, 20xx

When conducting ITRAs to support a Milestone A decision, manufacturing should have conducted analysis of manufacturing feasibility or of the industrial base capability. This analysis should include manufacturing processes, required investments in manufacturing technology development, manufacturing resources, and manufacturing risks.

When conducting ITRAs to support a Milestone B decision, manufacturing planning should have progressed to demonstrating manufacturing technologies and processes in a relevant environment. The program should have:

- Established estimates for manufacturing facility space, special tooling, and special test equipment to support EMD.
- Assessed the industrial base to identify potential manufacturing sources and risks, including any single suppliers and their ability to deliver on schedule.
- Identified the long lead and key supply chain elements.
- Have incorporated the manufacturing considerations (e.g., process performance, tolerances, new materials, unique components, special skills, facilities, and developmental articles) into the EMD.

When conducting ITRAs to support a Milestone C and subsequent production decisions, most programs should have some actual production data, though in the case of a Milestone C ITRA that data may be limited. This data, or manufacturing data on a similar program, should be used to assess the contractor's performance to plan and to update the program's schedule. Assess:

- The contractor's demonstrated manufacturing performance's ability to support the LRIP and FRP delivery schedules.
- If manufacturing and quality processes and procedures have been effectively demonstrated in a pilot line environment and are under control and ready for LRIP.

- Manufacturing workforce skills and availability are sufficient to meet planned LRIP and FRP ramp rates.

- The supply chain and industrial capabilities (including: long-lead items, GFE, single sources, foreign suppliers, prime-supplied components) are sufficiently available to meet the LRIP delivery schedule and supplier qualification tests and first article inspection have been completed, or the plan to complete them is understood.

Where necessary consider clarifying a risk by adding substantiating charts, graphs or tables.

3.4 System Development / Integration (Low/Moderate/High Risk)

Discuss key risks associated with design considerations, technical processes, technical management processes, and engineering products not addressed in other areas in this report.

Summarize any design trades made that relate to cost, schedule, or performance risks and drivers. If appropriate, comment on technical trade-off analysis conducted.

Consider integration risks related to interface system elements within systems (internal integration) as well as systems with other systems (external integration). Assess if external programs, that have critical interdependencies and interfaces with the program, are on track to support the program's integration, test, and production.

Discuss significant risks related to test objectives, methods, procedures, test scope, safety, and whether test resources have been properly identified, resourced, and coordinated. Consider risks related to training for test, timing to successfully proceed with tests, and risks to successfully meet the verification requirements in the program.

Assess the risk with other significant engineering area such as survivability, spectrum supportability and Electronic Environmental Effects. Only include those risks applicable to the narrative for this section.

3.5 Modular Open Systems Approach (Low/Moderate/High Risk)

Assess if the system has been appropriately designed to allow evolution of capability. Discuss any Modular Open Systems Approach (MOSA) risks that may hinder an evolution or opportunity for technical upgrades, reduce interoperability, or inhibit significant cost savings in the future.

3.6 Software (Low/Moderate/High Risk)

Assess the software development plan and the program's progress to plan. Only include those risks applicable to the narrative for this section.

The program should establish a Software Development Plan (SDP) to manage the software development effort. Underpinning any successful software program is an effective process for estimating size, effort, and duration. A software estimation process should be used by the program to define the initial scope of the effort and to track progress over time. Metrics

applicable to software development should be used as the basis for the estimation process. The program should identify appropriate metrics.

When conducting ITRAs to support a Milestone A assess the realism of the program's SDP and software estimation. Consider using analogous programs to create a baseline for comparison, enabling the ITRA team to conduct data driven analysis.

Identify recent analogous programs that reflect the assessed system's SW scope, complexity, staffing, and productivity. Analogous programs provide reasonable estimate bounds against a program of interest with respect to software development duration, effort and productivity. Realized program performance and trends may also provide reasonable interim data for comparison.

When conducting ITRAs to support a Milestone B and subsequent decisions, use actual software development data to refine the baseline data. Assess:

- If software development has been executed on schedule. Consider any changes to the content (scope) of the software builds/releases.
- The software quality to include defects, defect aging and defect backlog.
- The software baseline and changes to overall software effort size; addressing new software code, software code reuse, and modified software. Address any changes to the content (scope) of the software releases and impact to software size.
- If planned software staffing and facilities are sufficient to execute the remaining software development schedule and if the metrics tracked by the program are sufficient to manage the software development and test program.

3.7 Security/Cybersecurity (Low/Moderate/High Risk)

Discuss any significant security or cybersecurity risks to include risks related to information assurance and system security. Assess the protection of critical program information, exposure to vulnerabilities, or any other design attributes that may impact the mission. Only include those risks applicable to the narrative for this section.

3.8 Reliability, Availability, and Maintainability/Sustainment (Low/Moderate/High Risk)

Assess the Reliability, Availability, and Maintainability (RAM) growth plan and the program's progress to plan. Assess any risks or issues with meeting the RAM requirements and goals. Include data tables and graphics to support the ITRA team's RAM assessment such as the program's reliability growth curve, annotated with the current system performance. Only include those risks applicable to the narrative for this section.

3.9 Schedule (Low/Moderate/High Risk)

Assess the overall schedule risk as impacted by the eight technical risk areas. Assess the probability of program delays based on the program risks schedule impact and conduct analysis appropriate to the level of program maturity.

When conducting ITRAs to support Milestone A and B decisions conduct analysis of the realism of the government roadmap/schedule, to include external program dependencies. Conduct schedule assessments of any contractor schedules (e.g. DCMA 14-point assessment, Schedule Risk Assessment (SRA)) as applicable.

When conducting ITRAs to support Milestone C and subsequent production decision conduct schedule assessments of the contractor schedules (e.g., DCMA 14-point assessment, SRA) to include external program dependencies. Assess the schedule realism to meet upcoming milestones and technical reviews. Review the program's critical path and near critical path(s).

Consider depicting the program's schedule with planned dates and the ITRA team's assessed likely dates if significantly different from the current program estimates.

Consider using analogous programs to create a baseline for comparison, enabling the ITRA team to conduct data driven analysis. Identify recent analogous programs that reflect the assessed system's SW scope, complexity, staffing, and productivity. Analogous programs provide reasonable estimate bounds against a program of interest with respect to software development duration, effort and productivity. Realized program performance and trends may also provide reasonable interim data for comparison.

4 Risk Matrix

Identify and briefly summarize the key technical risks in a risk matrix such as in Figure 9. Consider only depicting HIGH and MODERATE risks that support the overall risk posture to prevent over-loading the graphic.

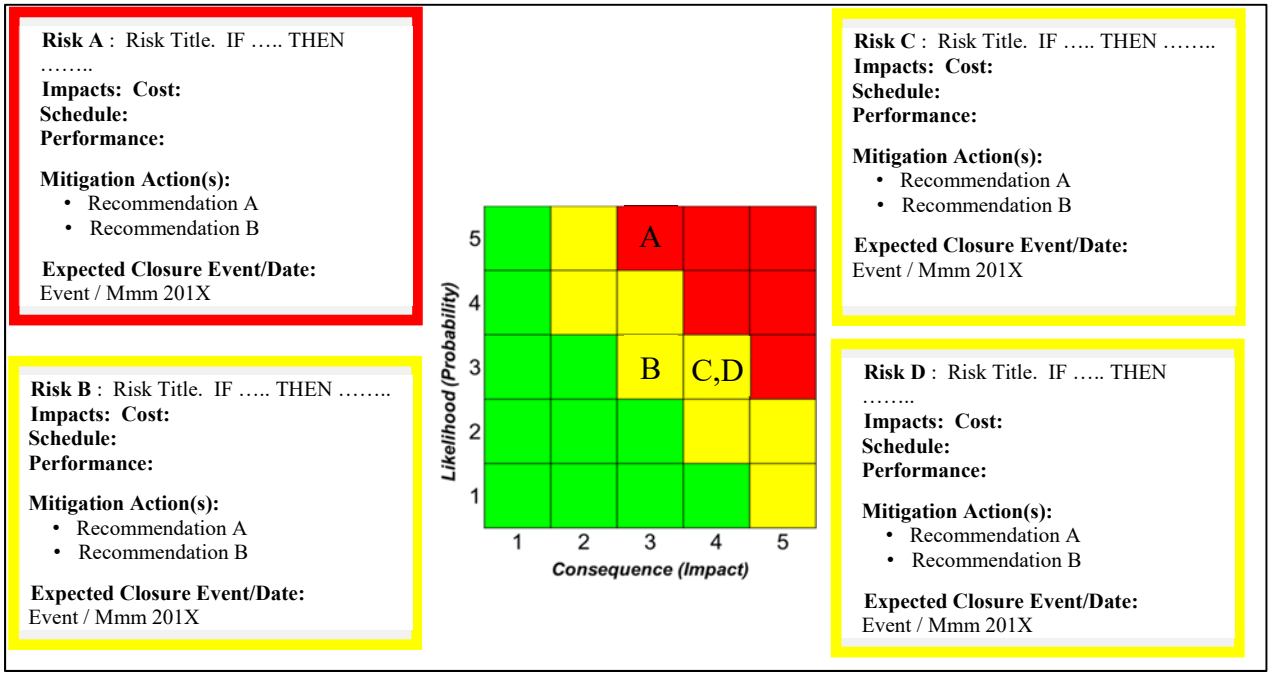

Figure 2. Risk Matrix

5 Conclusion

Provide a concise overview identifying the top items for the Milestone Decision Authority's consideration. This conclusion should align with the overall risk assessment in the ITRA executive summary

6 Recommendation

Identify ITRA team recommendations to reduce risk, accelerate schedule, or reduce cost. These recommendations should be clearly linked to risks, issues, or opportunities discussed in this document.

Attachments: Include the following to substantiate the ITRA team's assessment of program risks and ensure the report can be understood without referencing external documents.

A. Top-Level Schedule, annotated with key ITRA team findings and risks
B. DTRAM Scorecard
C. Key findings and risks detailed analysis