





FITARA Roadmap for Sustainable IT Reform

A decision analytics maturity model for measuring business value and risk of commercial IT





ICH and IT-AAC



Public/Private Partnership Used on the Risk Assessment



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IT-AAC Knowledge Exchange

Leveraging commercial IT standards of practices

IT -AAC Partners	Agile Methods	IT/Cloud Standards	Innovation Access	IT Risk Mgt	Industry Best Practices	Pilots & Contracts	IT Policy & Governance	IT Training & Mentoring
Aerospace Industry Association			<u> </u>		1			
(AIA)					•		· ·	
Center for American Progress					✓			
(CAP)								
Cloud Security Alliance (CSA)		 ✓ 	 ✓ 		 ✓ 	 ✓ 		×
Cloud Standards Customer Council (CSCC)	×	~			~			
Interoperability Clearinghouse (ICH)	×		×	×	✓			×
Intern'l Information Systems								~
Security Certification		✓			✓			
Consortium (ISC2)								
Security Group (ISSA)		1			✓		×	
Object Management Group (OMG)	~	×	~	*	×		~	~
University of Maryland (UofMD)			*	~	✓	~	~	~
University of Tennessee (UofTN)					~		~	
Consortium for IT SW Quality (CISQ)			×	×	✓	✓		
Telecommunication Industry Association (TIA)		~	×		✓		~	×
Financial Services Technology Consortium (FSTC)	~		~	~	~	~	~	~

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Acquisition Assurance Method

Using Decision Analytics to Frame Risk/Value trade offs



Risk Assessments Capability Assessments Economic Assessment Management Assessment



Acquisition Assurance Method (AAM)

a FITARA Agile Maturity Model for IT Acquisition Risk





AAM Tools	Problem	Capability	Solution	Capability	Feasibility	Economic	Roadmap	Risk Dashboard
	Statement	Analysis	Determination	Prioritization	Assessment	Analysis		Assessment
						-		







Value to Stake Holders

The Acquisition Assurance Method process is an enterprise approach for assessing technology Risk and Value as it applies to mission/business capabilities' improvements.

AAM is a methodology for achieving:

- Efficiency of solution assessments and reduce redundant pre-acquisition operational activities
- <u>Compliance</u> with the Title 40 Clinger Cohen, DoD 5000.02 (JCIDS) and FITARA
- Alignment with the Agency Methods. Reduce <u>the discovery time for business/technology</u> <u>artifacts</u> while providing configuration management of those documents through the creation of knowledge libraries
- <u>Streamline</u> the technology assessment workflow process through standardized processes and methodology templates that will provide a clear understanding of the results and options of the assessment
- <u>Standardize</u> the capability assessment process of solution sets, including managerial processes to create an executable, measurable and sustainable process



Mission

Capability 2

1

1

4

1

2

1

No

1

2

3

4

6

7

8

9

Product1

Product1

Product2

Product3

Product4

Product5

Product6

client).

Product1

AAM Process Risk Based Decision Analytics

Repeatable, Executable, Measurable



Problem Statement - Risks

Reduce infrastructure cost

Improve Reliability, Availability

Provide support for AF Use Cases

Support Infrastructure Requirements

Provide the same user experience (irrespective of client; rich or thin

Work within current Security

Support SBC storage strategy

Reduce time to deploy infrastructure

High level Capability

Survivability (RAS)

Management Posture

Improved Manageability

Solution Determination

Risk Capability Risks

	96	Provide support for client type – Remote	
	5f	Provide support for client type – Unmanaged	
125	6	Support SBC storage strategy	
	6a	Provide server-side storage of System data and/or system images	
	6b	Provide server-side storage of enterprise data	
	6c	Provide server-side storage of user data and/or system images	
	6d	Provide server-side storage of user application	
	6e	Provide server-side storage of enterprise data application	
125	7	Support Infrastructure Requirements	
	7a	Maintain current bandwidth/network loads (min 10 GB to max 100GB user profiles, 100 MB to the desktop)	
llds n	7b	Provide consistent capability, whether rich or thin, with differing capabilities bas on Active Directory rights/groups	uile On
7	7d	Provide support for the Common Access Card (CAC)/DOD Public Key Infrastructure (PKI) logon	
150	8	Improved Manageability	
	8a	Provide for remote manageability of desktop	
	8b	Provide support for all business and mission applications, including bandwidth sensitive applications	
	8c	Provide for a client computing environment solution that scales over the AF enterprise	
	8d	Allow use of a diverse mix of hardware end devices in a heterogeneous environment	
	8e	Increase IT service availability to the mobile/pervasive user	
150	9	Provide the same user experience (irrespective of client; rich or thin client)	

Risk Prioritization

	5e	Provide support for client type – Remote	3
	5f	Provide support for client type – Unmanaged	5
125	6	Support SBC storage strategy	
	6a	Provide server-side storage of System data and/or system images	1
	6b	Provide server-side storage of enterprise data	1
	6c	Provide server-side storage of user data and/or system images	1
	6d	Provide server-side storage of user application	1
	6e	Provide server-side storage of enterprise data application	1
125	7	Support Infrastructure Requirements	
	7a	Maintain current bandwidth/network loads (min 10 GB to max 100GB user profiles, 100 MB to the desktop)	1
	7b	Provide consistent capability, whether rich or thin, with differing capabilities based on Active Directory rights/groups	1
	7d	Provide support for the Common Access Card (CAC)/DOD Public Key Infrastructure (PKI) logon	1
150	8	Improved Manageability	
	8a	Provide for remote manageability of desktop	1
	8b	Provide support for all business and mission applications, including bandwidth sensitive applications	4
	8c	Provide for a client computing environment solution that scales over the AF enterprise	1
	8d	Allow use of a diverse mix of hardware end devices in a heterogeneous environment	1
	8e	Increase IT service availability to the mobile/pervasive user	2
150	9	Provide the same user experience (irrespective of client; rich or thin client).	1

Risk Feasibility Mitigation Assessments



ROI

UIIIS		250,000						
	1	Jumanaged PC	Managed PC		Thin Client			
Direct Cost - 1 Unit	\$	500	\$ 504	\$	3670			
Direct cost - 250K Uni	\$	125,000,000	\$ 126,000,000	\$	96,278,583			
In-Direct cost - 250K I	\$	125,000,000	\$ 69,300,000	\$	24,568,626			
Migration Costs	\$		\$ 3	\$	24,568,626	1.0000000000000000000000000000000000000		
4 yr TCO	\$	4317,500,000	\$ 299,250,000	\$	164,272,193	Investmen	t	
4 yr TCO per SBC						Return		
Client	ş	2,500	\$ 1,613	\$	885			
							1	
SBC		Year 1 (25%)	Year 2 (25%)		Year 3 (25%)	Year 4 (25%)	T	CO
Direct Cost	\$	24,569,626	\$ 24,569,626	\$	24,568,626	\$ 24,568,626 \$		\$8,278,503
In-Direct Cost	\$	6,142,406	\$ 12,284,813	\$	18,427,219	\$ 24,509,626 \$		61,424,064
Migration Cost	\$	24,569,626				1		24,589,626
Annual Costs	\$	55,281,658	\$ 36,854,439	\$	42,996,845	\$ 49,139,251 \$	1	184,272,193
Unmanaged PC								
Unmgd PC Annual	\$	62,500,000	\$ \$3,750,000	\$	125,000,000	\$ 156,250,000 \$		437,500,000
SBC Saving	\$	7,218,342	\$ 56,895,561	\$	82,003,155	\$ 107,110,749 \$		253,727,807
Managed PC							1	
Managed PC Annual	\$	48,825,000	\$ 66,150,000	\$	83,475,000	\$ 100,000 \$		259,250,000
SBC Saving	\$	(6,456,658)	\$ 29,295,561	\$	40,478,155	\$ 51,660,749 \$		114,977,907
Breakeven Year is 2nd	l ye	ar						
ROI		468%		ber	elit/investment			







DISA's CAAP Program

- Single Security Architecture
- Unified Capability
- Secure Mobility
- Cloud Strategies
- MINIS ICD





AAM

CONDUCTING THE RISK MANAGEMENT ASSESSMENT







- Risk Determination (RD)— is the process in the AAM, which defines <u>"what" capability</u> risks are to be evaluated as by <u>"what" technologies</u>/ solutions.
- The RD process breaks the capabilities into one or more solution sets to conduct an analytical technology assessment
 - This is a process that <u>creates groupings</u> (tables) of capability and technologies that satisfy the capabilities gaps that may be under risk.
 - All capabilities may not be solved by a single technology/product. This
 process breaks up the capability to classes of COTS products as "routers"
 while other capabilities may be solved by "mail systems".
 - CD is the process of turning a set of capability risks into a canonical form referred to as an <u>Analysis Model</u>

Risk Categories

Example – AF DCGS

From AF ISR Risk Assessment Project

Lack of:

□ An Enterprise Methodology for AF DCGS.

□ An Implementation Plan for Agility at AFISRA.

□ A Management Plan for oversight of AF/A2 Staff through Metric.

- □ Technology Plan focused on Commercial Innovation.
- □ An Implementation Plan for a SPO.
- A Management Plan for oversight of AFISRA/SPO through a Dashboard

□ Create an Agile Acquisition Strategy and Methodology.

- Design and Implementation of an AF/A2 and SAF/AQ Staffing Plan.
- □ Management Plan for Acquisition Approach. Shifting AF/A2/ SAF/AQ to an Agile
- □ Implementation Plan for Shifting SPO/PEP-EIS to an Agile Acquisition Approach.

Change Management Plan.

Root-cause analyses of over 20 AF, congressional and oversight organizations documents and dozens of interviews.

Note: these Problems are common to most IT Programs



(2) Capability Risk Analysis



Capability Risk Analysis¹

Risk Assessments require <u>a specification of the risks</u> required by the Program providing the Scope under which to operate:

- This may be determined in a formal requirements process within the agency or efforts internal to the Program.
- To start a Risk Assessment, a formal "trigger" must occur.
- A request must come from a sponsoring organization to assess a product, technology, process, or even a technical information enterprise solution.

¹An ICH AAM Product not currently in the AFCA User Manual



Example: DCGS PROGRAM



(6) RISK AREAS Identified

Governance Organization Architecture Technical Process & Methodology Return on Investment





Risks Assessment – 6 Major Risk Area Example – AF DCGS

(5) Process & Methodology

- Modification process being used ("1067 process") to address both urgent operational needs and functional requiements for critical ISR system
- Cost, schedule and technical performance requirements (baseline) for each program not established

- (1) Governance
 - Sustainment procedures for IT-centri used to support modernization of ISF
 - Authorities an program mar evaluation nc
- (2) Organization
 - Managing de discrete prog
 - Managing AF sub-optimal f future increm

- (3) Architecture
- Unclear and limited ar external system) -- nee
- The "To Be" architectu
- Enterprise Architectur
 Systems) oriented proj
 - information architectu Allo
- Lack of sensor integrat

- Process for managing (validating, verifying and prioritizing) capability-based requirements and functional/system level requirements not being used
- Limited application of formal configuration review and control process and lack of integration of CM into program management activities

(6) Return On Investment

- No metrics in place for measuring performance of portfolio/programs in terms of reducing infrastructure cost or delivering enhanced capability
- Weapon system sustainment funding authority and planning process being used for modernizing SoS IT enterprise
- Funding planning is conducted without direct traceability to verified and validated (capability needsbased) requirements
- Allocation of funds are not planned or tracked in terms of reduction of cost or greater capability

(4) Technical

- The ability for AF DCGS portfolio programs to meet peek load requirements not verified
- Portfolio programs have not been fully vetted via application of cyber security Red Team or external denial of service and intrusion testing
- Reliability and availability performance requirements are incomplete for the programs within the portfolio
- Interface (I/F) artifacts do not support rapid (open) integration of sensor feeds and dissemination technology to meet interoperability (information sharing) requirements

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Example – AF DCGS

RA4 RE4.1 RE4.2 RE4.3 RE4.4 RE4.5 RE4.6 RA5 RE5.1 RE5.2 RE5.3 RE5.4 RE5.5 RE5.6 RE5.7 RE5.8 RE5.9 RE5.10 RE5.11 RE5.12 RE5.13 RA6 RE6.1 RE6.2 RE6.3 RE6.4 RE6.5 RE6.6 RE6.7 RE6.8

			Risk Element	Miti	gation					Gover	n Acqu	istion	ROI-based	Risk based	Sensor Svcs	Increment
		RA4	Technical													
		RE4.1	Sensor Integration	Servio	ce-Oriented Se	nsor Integration	Method								~	
		RE4.2	Implementation Technology	Comm	non Presentatio	on Layer & Platfo	orm								~	
		RE4.3	Cybersecurity	Cyber	security Test S	Scenarios and Co	onditions								~	
		RE4.4	Measures of Effectiveness	Techn Identif	ical Performan ied	ce Goals Based	on MOE (Meas	ure of Effectiver	ess)						~	
		RE4.5	Modernization Strategy	SW (S	oftware) Matur	ity Assessment									~	
		RE4.6	Measure of Effectiveness	Techn Identif	ical Performan ied	ce Goals Based	on MOE (Meas	ure of Effectiver	ess)						~	
		RA5	Processes & Methodology											•		•
		RE5.1	Configuration Management	Integra	ated CM (Config	guration Manage	ement) Process									~
Risk Element	Mitigation				Govern	Acquistion	ROI-based	Risk based	Sensor :	ovcs Incl	emental					~
Technical																•
Sensor Integration	Service-Oriented Sens	sor Integration M	lethod						>							<
Implementation Technology	Common Presentation	Layer & Platfor	m						~							~
Cybersecurity	Cybersecurity Test Sc	enarios and Cor	ditions						~				-			•
Measures of Effectiveness	Technical Performance Identified	e Goals Based o	n MOE (Measure of Effectivenes	s)					~							~
Modernization Strategy	SW (Software) Maturity	y Assessment							>					-		~
Measure of Effectiveness	Technical Performance Identified	e Goals Based o	n MOE (Measure of Effectivenes	s)					>							~
Processes & Methodology																~
Configuration Management	Integrated CM (Configu								~					~		
Migration Strategy	"To Be" SoS and Migra	ation Strategy									~					~
Sensor Integration	Service-Oriented Sensor Integration Method										~					~
Modernization Strategy	PM Process for Risk M Development	lanagement, Bas	seline Management & I2 Capabili	ly							~					~
SoS Management	l2 (Incremental & Iterati	ive) Capability D	evelopment Process								~			r		
Modernization Strategy	MS (Integrated Master	Schedule) with	Critical Path								~		~		-	
Modernization Strategy	Functionality to Capabi	ility Trace Analy	sis								~		>	-		
Requirements Management	Requirements Identifie	cation, Validatior	n and Prioritization Process								~		~		-	
Systems Engineering	Systems Engineering I	Plan									~		>			
IV&V	Formal IV&V (Independ	dent Verification	& Validation) process								~		>			
Baseline Management	Baseline Establishme	nt & Managemer	nt Method								~		~			
Joint Interoperability	Implementing an Inform	mation Support F	Plan (ISP)								~		~			
Program Management	PM Process for Risk M Development	lanagement, Bas	eline Management & I2 Capabili	ly							~		~			
Return-On-Investment (ROI)																
Modernization Strategy	Enterprise Portfolio Ma	anagement Plan					~									
Migration Strategy	Migration Funding Rec	quirements					>									
Capability Traceability	Capability-based Requ	uirements to Cos	st Tracing				>									
Funding Allocation	Sustainment and New	Capability Fund	ling Allocation & Ratio				~									
Capability Traceability	Baseline Performance	e Requirements t	o Cost Tracing				~									
Funding Allocation							~									
Capability Traceability	Sustainment and New	Capability Fund	ding Allocation & Trend Analysis				~									
Performance Metrics	Funding Execution Me	etrics & Performa	ance Monitoring			~										





- All risks are not equal
- Each must be assessed as to its overall contribution or value to the solution being assessed
- Conducted with the key stake-holder to create an analytical measure of the value of the risk to the enterprise/program/project
- CRP is an input tool in assessing how a capability can be met based on the availability of existing (COTS/GOTS) technology
- Goal is to look at the value of each capability/objective in the environment and assign numerical priorities representing the importance of each individual capability
- The outcome is an agreed-upon prioritization of the risk values
- Prioritization can be reused as weighted evaluation factors in other acquisitions





(4) Solution Determination (SD)

Multiple Strategies to Solve Risk Elements

- The SD process, first, produces a capability description and an analysis plan which breaks the capability risks into one or more course of action sets:
 - A simple solution set is a set of capabilities evaluated by a technology assessment (TA) referred to as an analysis group
 - A complex solution set may require several analysis groups which can be constructed by use-cases or by subsets of capabilities defined by a set of products
- Second the SD produces the Risk AoA options
 - AoA's for the same problem statement
 - AoA's for a segments of problem statement (e.g., evolutionary)
 - AoA's that are product oriented
 - AoA's that are Architectural
 - AoA's the are process and operationally oriented



Scoring the Risk Calculating the Risk



- In this example, capabilities are rated on a scale of one to five in which a value of 1 indicates almost no risk to satisfy while a 5 represents a high risk
- The team members use a group jury-style approach discussing why particular scores are assigned, defending their position until there is a convergence of the entire team (group normalization)
- If multiple groups are used, they will have to go through the normalization process among each other

CAPABILITY	VALUE
No Risk	1
Moderate Risk	2
Manageable Risk	3
Significant Risk	4
High Risk	5





(5) Risks Assessment – Scoring the Risk

Under AAM Feasibility Assessment

SAMPLE – AF DCGS

Processes & Methodology

DCGS PRA Dashboard

Portfolio View



					D	escript	ors		
ments	Processes &		cal Pat	Ļ	edule	hnical	act	oability	rall
Ele	Methodology	Description	Criti	Cos	Sch	Tec	lmp	Prot	Ove
RE5.1	Configuration Management	Limited application of formal configuration review and control process and lack of integration of CM into program management activities	No	No	Yes	Yes	HM	H	Η
RE5.2	Migration Strategy	Modernization activities are being conducted without an AF DCGS modernization migration strategy and defined "To Be" SoS.	No	Yes	Yes	No	HM	Н	Η
RE5.3	Sensor Integration	Attempting to integrate new ISR sensors without a formal integration and engineering process for new sensors	No	Yes	Yes	No	HM	HM	HM
RE5.4	Modernization Strategy (3)	Program management process employed from AF DCGS program management directive (PMD) not applicable to management and modernization of SoS IT enterprise	Yes	No	Yes	Yes	М	М	М
RE5.5	SoS Management	Block release methodology used for SoS IT enterprise instead of Iterative & Incremental capability delivery process	Yes	No	Yes	Yes	HM	ΗM	ΗM
RE5.6	Modernization Strategy (4)	System modernization and development activities being conducted without use of program IMS (Integrated Master Schedule)	Yes	No	Yes	Yes	М	ΗM	ΗM
RE5.7	Modernization Strategy (5)	Modification process being used ("1067 process") to address both urgent operational needs and functional requirements for critical ISR system	No	Yes	Yes	Yes	Н	Н	Т
RE5.8	Requirements Management	Process for managing (validating, verifiying and prioritizing) capability-based requirements and functional/system level requirements not being used	No	No	Yes	Yes	HM	Н	Η
RE5.9	Systems Engineering	No apparent process for developing and approving SEP (Systems Engineering Plan) for planned enhancements	No	No	Yes	No	HM	HM	ΗM
RE5.10	IV&V	IV&V (Independent Verfiication & Validation) process not being used	No	Yes	Yes	Yes	Н	HM	Η
RE5.11	Baseline Management	Cost, schedule and technical performance requirements for each program not established	Yes	Yes	Yes	Yes	Н	Н	Η
RE5.12	Joint Interoperability	Level of joint interoperability not easily decerned - lack of artifact or docuemented planning (e.g. Information Support Plan)	No	Yes	Yes	Yes	Н	ΗM	Η
RE5.13	Program Management	Critical path needs to be established for all programs in the portfolio	No	Yes	Yes	Yes	Н	Н	





Sample Consumer Report

For Analysis of Alternative

	Reduce time to deploy infrastructure	Reduce infrastructure cost	Improve Reliability, Availability Survivability (RAS)	Work within current Security Management Posture	Provide support for AF Use Cases	Support SBC storage strategy	Support Infrastructure Requirements	Improved Manageability	Provide the same user experience (irrespective of client; rich or thin client).	Score
Value Factors	15%	15%	5%	5%	5%	13%	13%	15%	15%	
Softgrid	1.67	3.00	3.40	1.50	0.73	1.40	1.00	1.56	1.00	1.67
Ardent	2.33	3.15	3.40	3.00	1.53	1.40	1.33	2.11	2.00	2.23
ClearCube	1.67	2.23	1.30	2.50	2.07	1.40	2.00	2.78	4.00	2.48
Wyse	1.00	1.92	1.30	1.50	2.80	1.00	2.33	4.22	5.00	2.67
CCI/HP	1.67	2.23	1.30	2.50	2.07	1.40	2.00	2.78	4.00	2.83
Citrix	1.00	1.92	1.30	1.50	2.80	1.00	2.33	4.22	5.00	3.03

This process may not be a selection but shows sufficient COTS/GOTS products availability for a Procurement rather than development – FAR Compliance

Blue = Essential	1 - 1.99
Green = Desirable	2 - 2.99
Yellow = Less Desirable	3 - 3.99
Red = Undesirable	4 - 5.00



Risk Assessment Alternative

Example Function Point Analysis







Risks Assessment – Recommendations Sample – AF DCGS (1 of 6)

Recommendation 1 - Apply a governance structure and process that provides a clear delineation of portfolio and program-level functions and unambiguous responsibilities for key activities and resources.

DECRIPTION: Currently, AF DCGS shares many of the executive, management, engineering and support responsibilities across disparate organizations within the enterprise. This has the effect of limiting agility for making decisions and committing resources in support of requirements validation, systems integration, quality control, testing, and other management functions. This also impacts the ability to respond to high-priority or changing operational requirements. To achieve maximum agility, prime responsibilities are assigned for requirements management, program management, solution and technical development, test and evaluation, operations support and executive oversight for each program in the portfolio. In addition, responsibility for key management and engineering processes and tools are aligned within each functional area. These include program baseline development, system configurations and CMB (Configuration Management Board), requirements prioritization, transition planning and risk management.

DESIRED OUTCOME

By identifying and specifying executive and management roles and responsibilities, programmatic decisions will be made in a responsive manner in support of critical and short-suspense warfighter requirements. Published artifacts allow management and support personnel to unambiguously understand AF DCGS governance methodology and supporting process.

ACTIONS

1. Develop and promulgate an integrated management process for AF DCGS that reflects key events and flow of information in support of the governance structure. This includes the processes, inputs, outflows and artifacts needed to manage requirements, program baselines, functional verification and validation and executive oversight at the portfolio-level.

2. Develop policy and implementation plans that establish roles and responsibilities for AF DCGS management COI (Community of Interest). Specified executive oversight responsibilities include approving program baseline, setting entrance and exit criteria for development phases, and acceptable risk standards for fielding decisions.

3. Develop a management matrix that aligns program milestones, events, processes and artifacts and documentation with the responsible agent within the AF DCGS management COI.



Past Performance = Assured Outcomes



Where AAM eliminated critical architecture decision risks

Navy: Assessment of AFLOAT Program – CANES SOA & Security Strategy Contact Value: \$350k Eliminated hi-risk Requirements by 23%, \$100Ms in potential savings

USMC: Solution Architecture, AoA and BBA for Cross Domain, Thin Client Contract Value: \$300k Greatly Exceeded Forecasted Saving in both analysis and acquisition

BTA: Apply AAM to complete AoA and BCA for DoD SOA Project Contract Value: \$250k Reduced pre-acquisition cycle time and cost of Analysis by 80% (4 months vs 18) USAF: Streamlined COTS Acquisition Process. Applied to Server Virtualization. Contract Value: \$500k Established optimal arch with ROI of 450% & \$458 million savings

GSA: Financial Mgt System consolidation using AAM. Contract Value: \$500k Moved FMS from OMB "red" to "green". Eliminated duplicative investments that saved \$200M

GPO: Developed Acquisition Strategy for Future Digital System FDSys Contract Value: \$150k Led to successful acquisition and implementation on time, on budget and 80% cheaper than NARA RMS NRO: NRO ISP Transformation Roadmap Contract Value: \$450K Comprehensive benchmark of industry best practices in just 4 months.

BTA: Build out of AAM to create BTA's Agile Requirements and BCA Method, with two completed Pilots Contract Value: \$500k Reduced IT Requirements, EoA, BCA and Metrics development by 70%

AF ISR Agency: Portfolio Risk Assessment and Risk Mgt Dashboard (DCGS) Contract Value: \$450k Identified 6 major Risk Areas and 50 risk incidences with Dashboard for tracking remediation and metrics