



SCREEN
SUPPLY CHAIN RISK EVALUATION ENVIRONMENT

Supply Chain Risk Evaluation Environment (SCREEN)





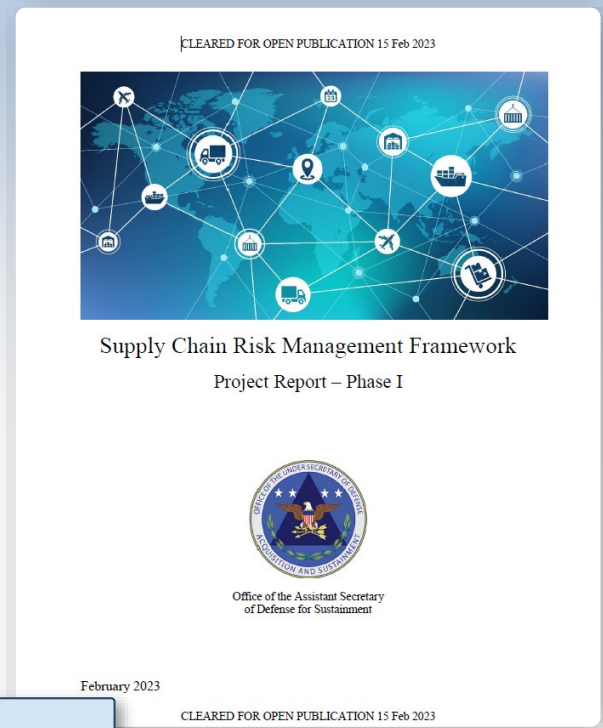
What is enterprise SCRM?

Enterprise SCRM (Supply Chain Risk Management) refers to the strategies and processes an organization uses to identify, assess, mitigate, and manage risks throughout its supply chain.

This management is crucial to protect a company from potential disruptions and losses caused by vulnerabilities in its supply chain, such as supplier issues, logistical problems, economic changes, or natural disasters.

Effective SCRM aims to ensure stability and continuity in supply chain operations, thus safeguarding the enterprise's operational performance and profitability.

-ChatGPT



43 mentions of “enterprise” in SCRM Framework Phase I report

...enterprise-wide synchronization and risk mitigation...

...information sharing across the enterprise and with interagency partners and industry...

...common enterprise perspective...

...support the supply chain enterprise in identifying, managing, and mitigating risk in our defense supply chains...

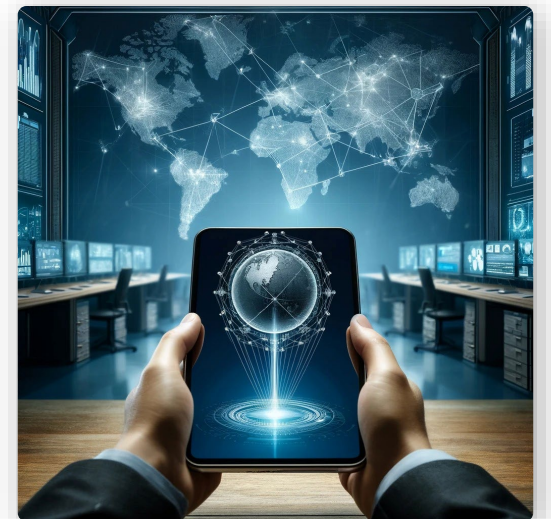
...enable communication and streamline risk mitigation activities across the DoD enterprise...





What enterprise SCRM *is not*

- “One supply chain tool to rule them all...”
- Automating away the requirement for human analysts
- A crystal ball providing full illumination of supply webs – primary materials to complete weapon systems, software connections, logistics connections, etc.
- A final destination.



Why is enterprise SCRM so hard?

Challenges	Solutions	Desired outcomes and capabilities
<p>Data comes in various formats and from various places</p>	<ul style="list-style-type: none"> • Data integration layer with Entity Resolution/Identity Matching • DoD enterprise cloud architecture with cross-domain solutioning 	<ul style="list-style-type: none"> • Quickly and easily ingest data from multiple sources and in various formats to generate insights across levels of classification (NIPR, SIPR, JWICS)
<p>Source data suffers from vastly different interpretations</p>	<ul style="list-style-type: none"> • Framework for automated data categorization and quantification • Common risk COP and data model for risk data sharing • Commonly accepted and tailorable risk prioritization framework 	<ul style="list-style-type: none"> • Timely sharing of data and risk insights across the Department – Program Offices, PEOs, Services, and OSD.
<p>Data capture and availability is generally insufficient across the Department</p>	<ul style="list-style-type: none"> • Risk data quality/value analysis & monitoring • Part/component data quality analysis & monitoring 	<ul style="list-style-type: none"> • Harmonized risk data acquisition • Data-first and platform/vendor agnostic approach to risk evaluation
<p>No easily adoptable tools exist to decrease <i>time to insight</i> across the Department - from the Program Offices to OSD</p>	<ul style="list-style-type: none"> • Risk mitigation modeling – actions matched to outcomes • Cross domain risk COP with common visualizations and data formats across NIPR, SIPR, and JWICS 	<ul style="list-style-type: none"> • Simplified and streamlined approach that leverages data for impactful risk evaluation leading to increased resiliency



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Background

Executive Order 13806 - Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States (Jul 17)

Congressional oversight of F-35 IP theft, USD A&S briefings & RFIs to HCOR Committee (since Jul 20)

Title 10, USC Sec. 4819 (amended via FY20 NDAA)

- *“The Secretary of Defense shall streamline and digitize the Department of Defense approach for identifying and mitigating risks to the defense industrial base... employ digital tools, technologies, and approaches to ensure the accessibility of relevant defense industrial base data to key decision-makers in the Department... Characterization and monitoring of supply chain risks...”*

Executive Order 14017 - Executive Order on America’s Supply Chains (Feb 21)

Project Santa Maria SCRM Pilot Concept of Operations (Jul 21)

Securing Defense Critical Supply Chains (response to EO 14017) (Feb 22)

- *“Conduct data analysis: DoD will continue to build on previous efforts to expand its supply chain visibility... Collecting and organizing key data will position the Department to maximize the use of analytic tools and mitigation strategies to proactively identify and address trends, vulnerabilities, and disruptions.”*

Data-Driven Approaches to Mitigate Defense Industrial Base Vulnerabilities (Feb 23)

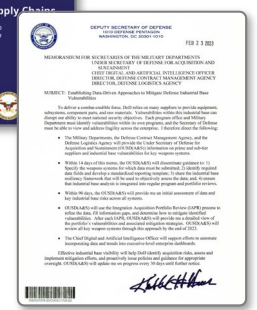
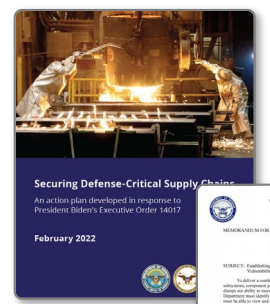
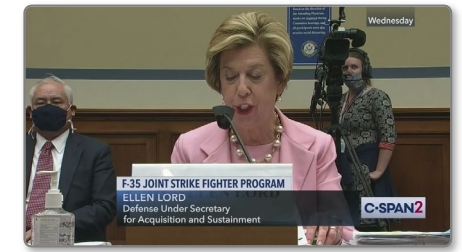
- *“Each program office and Military Department must identify vulnerabilities within its own programs and the Secretary of Defense must be able to view and address fragility across the enterprise...”*
- *“The Chief Digital and Artificial Intelligence Officer will support efforts to automate incorporating data and trends into executive-level enterprise dashboards.”*

F-35 Sustainment Tabletop Exercise Summary of Conclusions (Jul 23)

- *“Continue development of SCREEen decision support tool to illuminate supply chain risk/vulnerabilities and development of risk mitigation courses of action.”*

FY24 NDAA; Sec. 856 - Pilot program to analyze and monitor certain supply chains (Dec 23)

- (a) **IN GENERAL.**— Not later than 90 days after the date of the enactment of this Act, the Under Secretary of Defense for Acquisition and Sustainment shall establish and carry out a pilot program to analyze, map, and monitor supply chains for up to five covered weapons platforms, under which the Under Secretary shall—
 - (1) identify impediments to production and opportunities to expand the production of components of such a covered weapons platform;
 - (2) identify potential risks to and vulnerabilities of suppliers for such covered weapons platforms and ways to mitigate such risks; and
 - (3) identify critical suppliers for such covered weapons platforms.
- (b) **USE OF TOOLS.**—The Under Secretary may use a combination of commercial tools and tools available to the Department of Defense to carry out the program established under this section, including artificial intelligence and machine learning tools to improve data analysis capabilities for such supply chains.

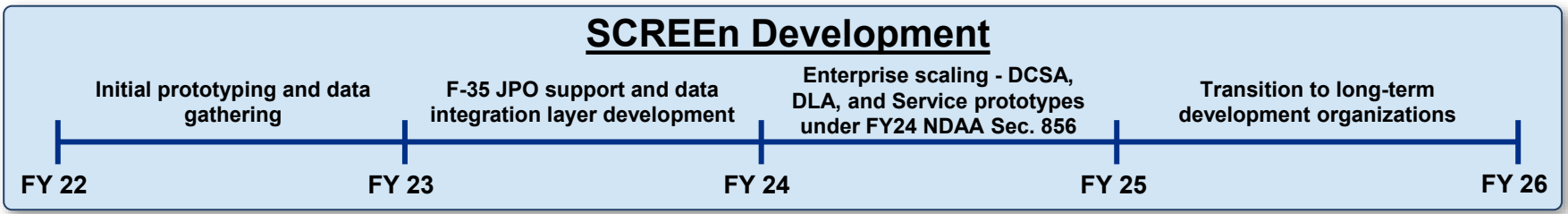
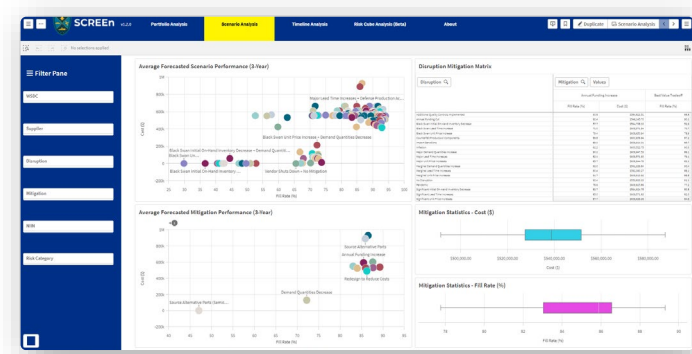
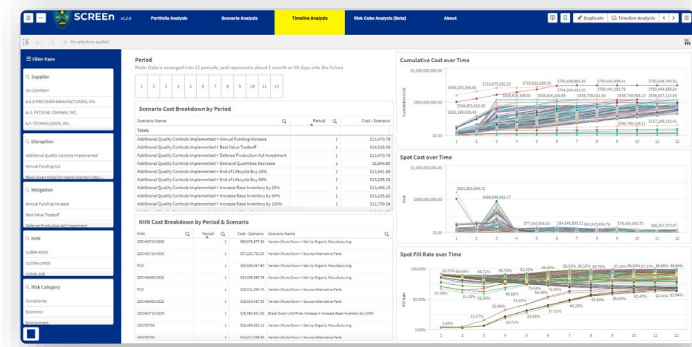
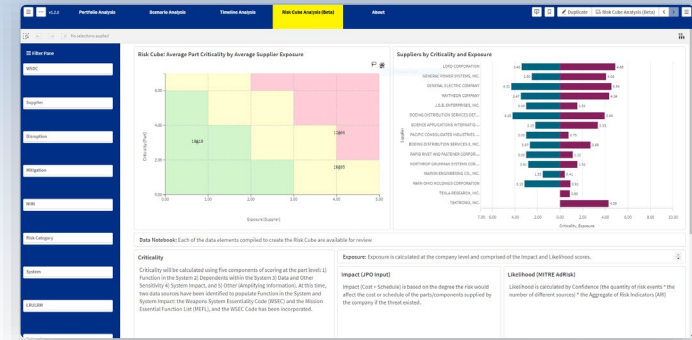




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What is SCREEn?

- An AI-optimized Human-Machine Collaboration (HMC) system for supply chain risk identification, prioritization, and mitigation decision support
- Enterprise risk evaluation capability suitable at all echelons; from Program Offices to OSD
- Cloud-based and built within Advana, with a common interface across NIPR, SIPR, and JWICS
- Data integration layer that seamlessly combines data on both risk and parts/components from a variety of sources and in varied formats
- Robust and flexible risk prioritization framework converts risk data into insights
- Takes advantage of the Advana software stack for data access management, DevSecOps, and MLOps

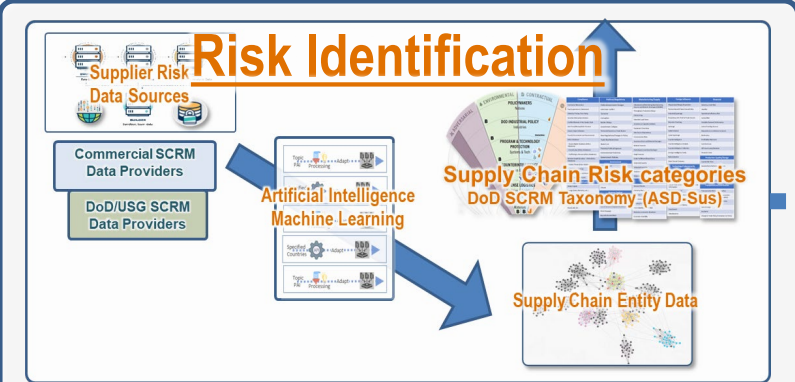




Strategic benefits of adopting enterprise SCRM

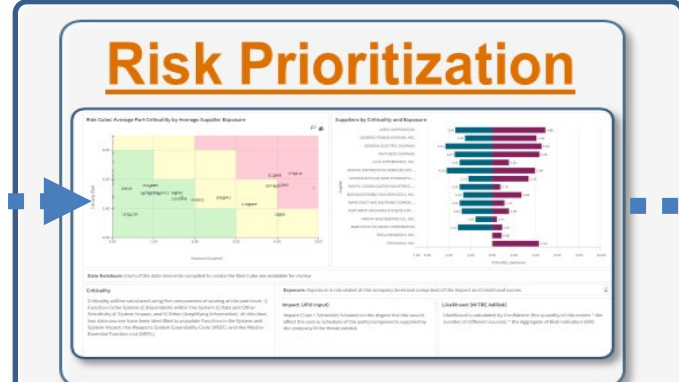
SCREn system benefits

- Foundational, scalable DoD cross-domain risk Common Operating Picture (COP) across NIPR, SIPR, and JWICS
- Scalable and secure cloud architecture built within Advana – OSD’s enterprise data management and analytics platform
- Establishing the foundation for data-driven, AI-optimized, decision ready SCRM



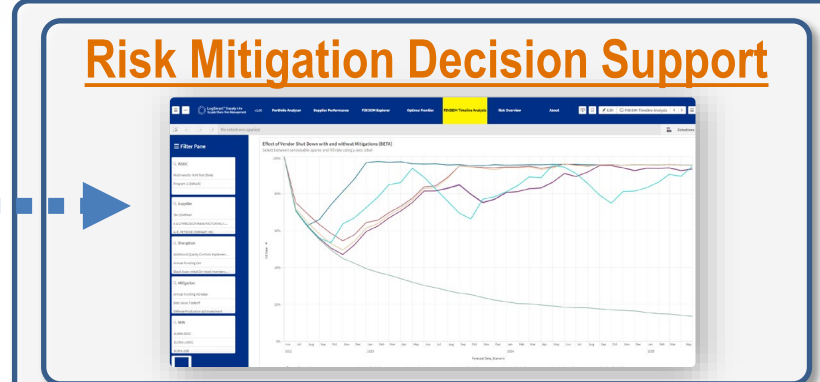
Which Risks Are Associated With Our Parts And Suppliers?

- Integrate both risk and part/component data
- Share risk insights instantly across data sets
- Sharable user notes for visibility of risk responses across the Department
- Continuous Risk and Part data quality monitoring
- DoD common risk data model for broad data access
- Continued support for MITRE Adversarial Risk API development



Where should we focus limited resources to increase resiliency today?

- Flexibly highlights the most important parts and suppliers
- Adjustable based on the level of analysis (Program Office, PEO, SAE, A&S)
- Facilitates a transition to optimized DoD pre-emptive risk mitigation



How Can We Mitigate Risks? What Are The Costs/Benefits of each COA?

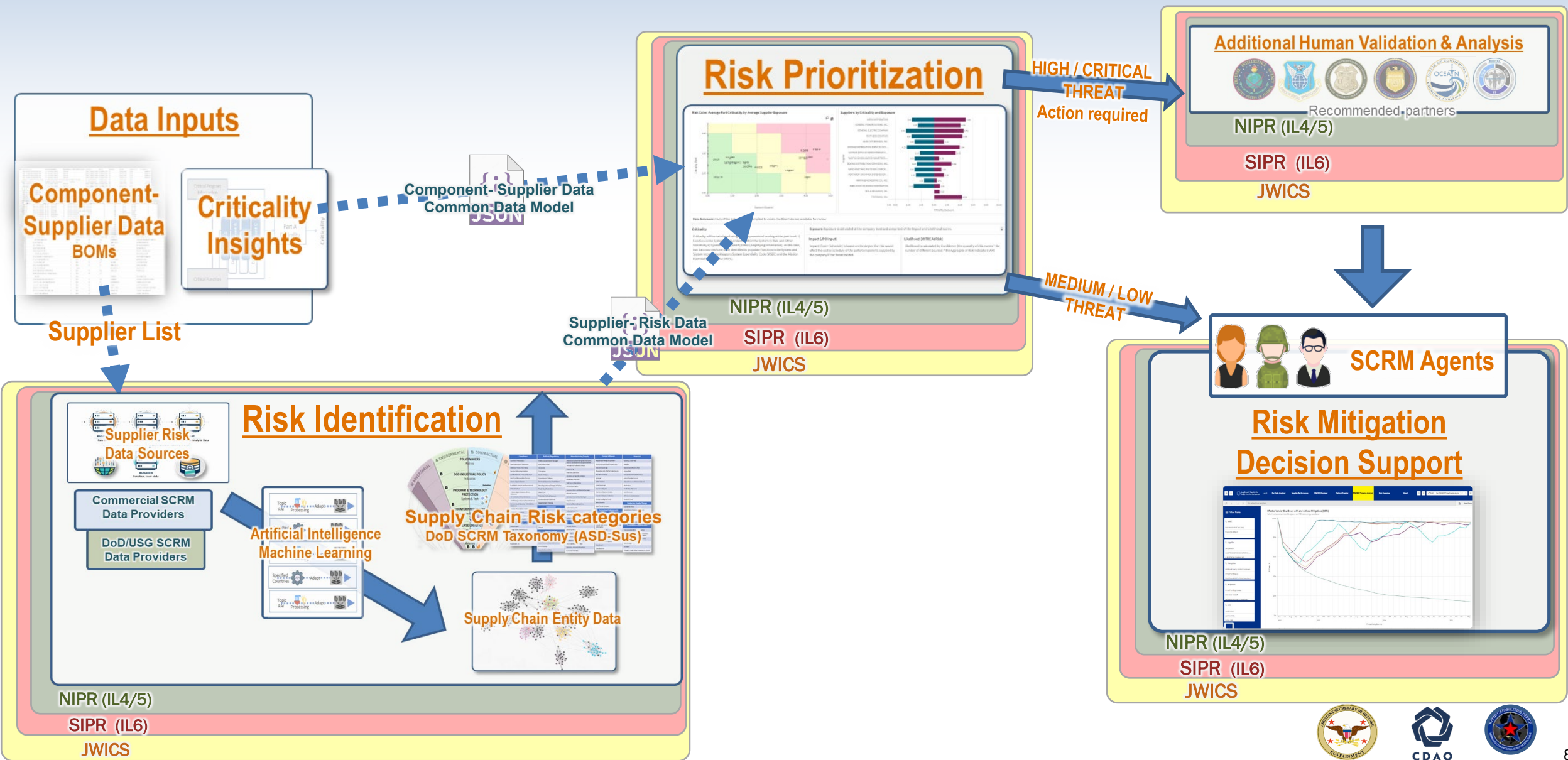
- Risk mitigation modeling runs natively in Advana
- Models downstream costs and readiness impacts of supply chain disruptions





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Analytic Framework





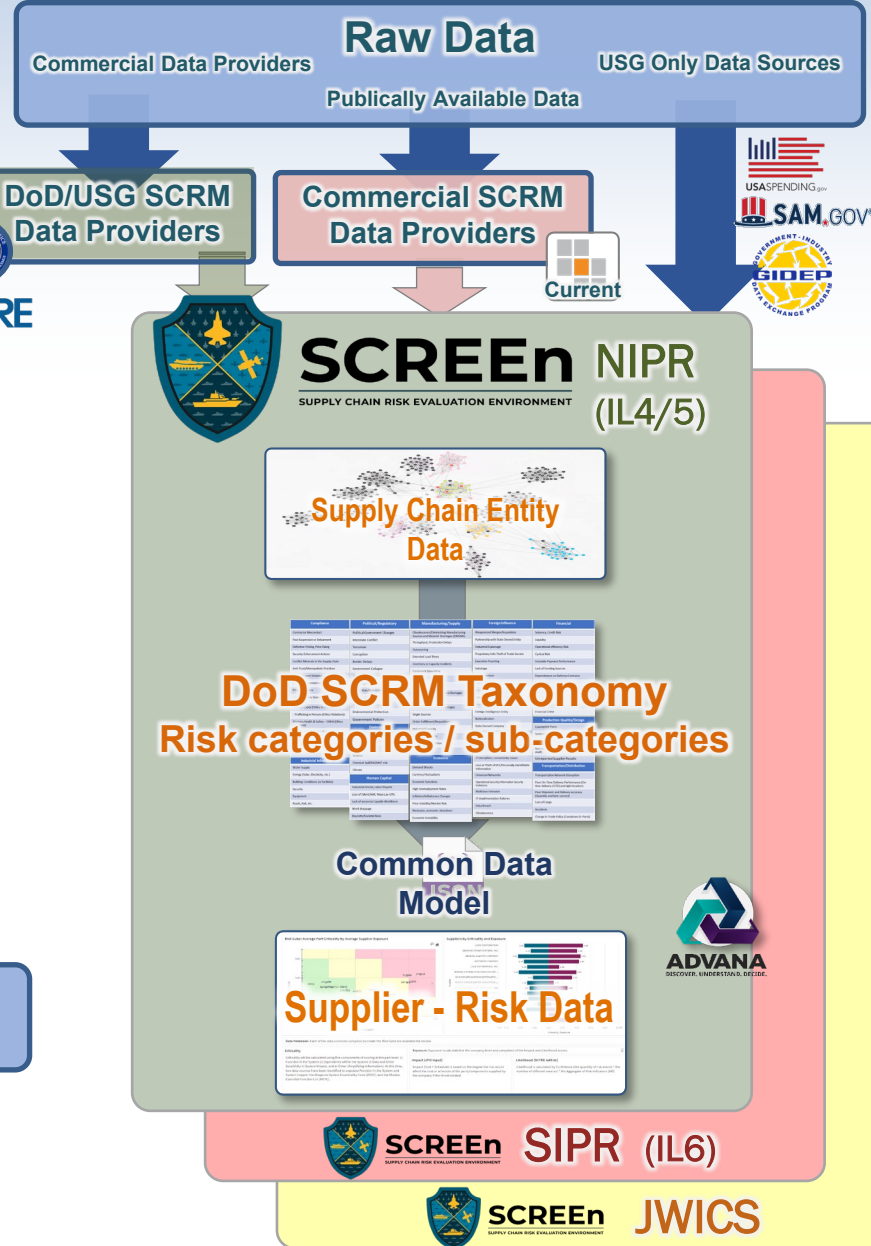
Supply Chain Risk Identification

Which Risks Are Associated With Our Parts And Suppliers?

Comprehensive Risk Identification

- **Supplier-Risk Data:** currently commercial + USG sources with additional sources in future
- **DoD SCRM Taxonomy:** maps risk data to the common DoD risk categories
 - Illuminates 62+ sub-categories of risk with future expansion
- **Enterprise benefits of this approach:**
 - Understand the value of individual data sources
 - Improve risk data quality
 - Immediate and vastly improved risk insight sharing across DoD
 - NIPR, SIPR, and JWICS
 - Novel datasource integration with minimal data engineering requirements

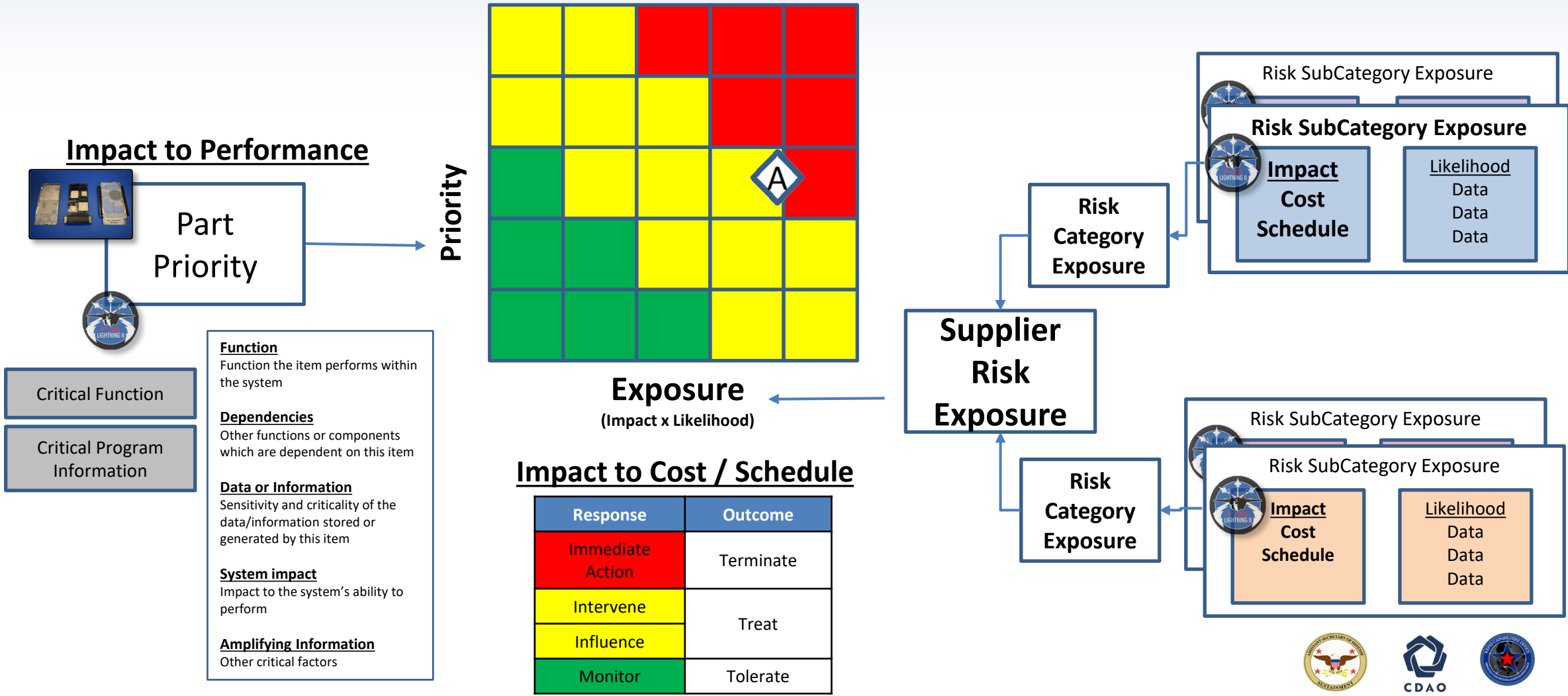
56M+ risk data points. 1.05M+ entities. 360+ GB data.





Supply Chain Risk Prioritization

Where should we focus limited resources to increase resiliency today?





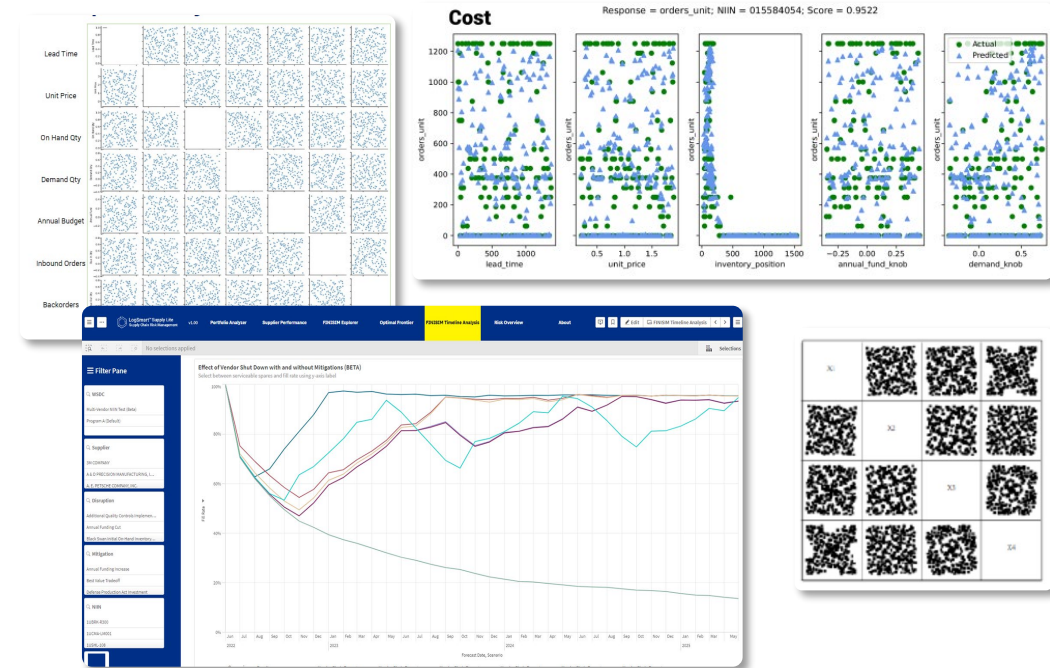
Supply Chain Risk Mitigation Decision Support

How Can We Mitigate Risks? What Are The Costs/Benefits of each COA?

- **Model the effects of risks and mitigations across sustainment**
- **Determines impact of supply chain disruptions and mitigations in terms of Fill Rates/Gross Issue Effectiveness, Customer Wait Times, and Total Cost**
 - Defines scenarios using 11 inputs, or tuning variables, to detail inventory, demand, part costs, procurements, budgets, lead times, and part repairs
 - Models baseline supply chain performance for individual parts
 - Simulates pre-defined disruptions and mitigations
 - Leverages advanced simulation experiment designs to enable meta-modeling for use in rapid, real-time analysis
 - Applies Machine Learning to train precise meta models
 - Identifies optimal solutions for mitigating each disruption

INTEGRATING COMPONENT DATA ACROSS MULTIPLE SOURCES AND FORMATS

- Parts data direct from Program Office (.csv)
- MADW (Advana)
- ESCAPE (Advana)
- EXPRESS (Advana)





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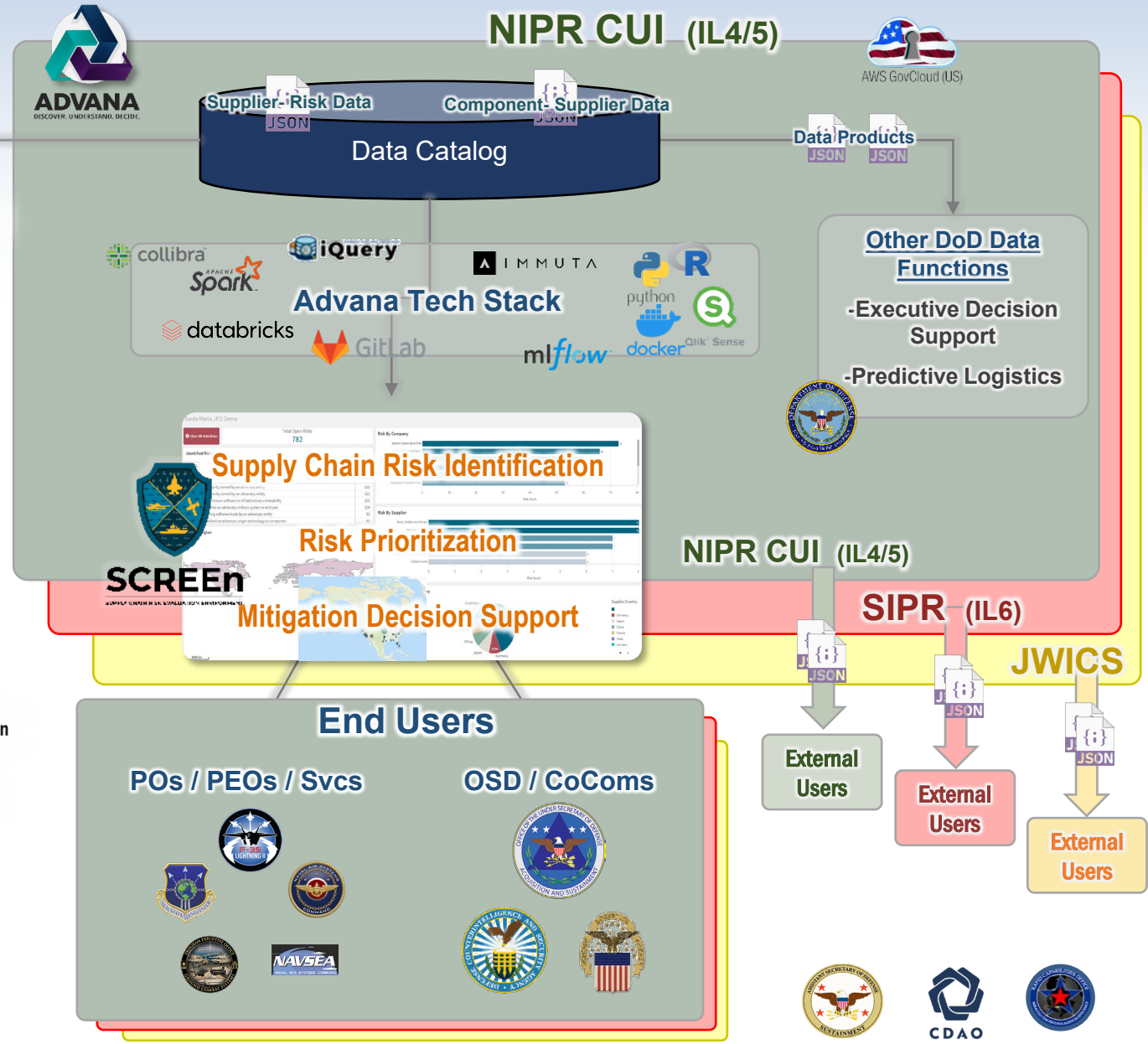
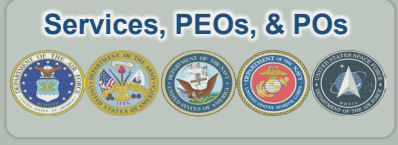
DoD Enterprise SCRM capability: FY24

SCREEN Data Sources

Component-Supplier Data / Priority Insights











Supplier-Risk Data





SCREEN's Strategic Partners

SCREEN benefits from partnerships with leaders across DoD, FFRDCs, and academia.

	OASD-Sus	Primary User Organization Partner during development of SCREEN as a supply chain risk evaluation environment suitable for use by DoD Program Offices and Program Executive Offices.
	F-35 JPO	Primary User Organization Partner during development of SCREEN as a supply chain risk evaluation environment suitable for use by DoD Program Offices and Program Executive Offices.
	MITRE	Development of the <i>Adversarial Risk API</i> , a data-driven approach to identifying specific FOCI and Cyber risks for DoD and USG use cases.
	DAF RCO	Development of the <i>Adversarial Risk API</i> , a data-driven approach to identifying specific FOCI and Cyber risks for DoD and USG use cases.
	DARPA	Teaming with DARPA's Resilient Supply and Demand Networks (RSDN) program to develop approaches to entity resolution/identity matching and systemic network modeling
	DCSA	Subject matter expertise in development of enterprise risk identification capabilities, including direct development on DCSA's National Industrial Security System, Version 2 (NI2).
	DLA	Subject matter expertise for development of DoD enterprise risk prioritization and mitigation decision support capabilities across the breadth of Programs supported by DLA
	Yale University	Prototyping innovative approaches to risk data categorization and summarization using Large Language Models (LLMs)





Questions?

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