



# AMARO: Automated Microelectronics Analysis & Reporting Optimization

A Part-Centric Risk Illumination Solution That Provides Microelectronic Procurement Assurance to the U.S. Department of Defense



# Conquer Supply Chain Risk

The stakes are monumental: The nation is left vulnerable by any breach within the global supply chains for the microelectronic components our strategic weapon systems rely on. Historically, and too often, these supply chains have been compromised because of inefficient manual risk illumination and assessment processes, leaving dangerous vulnerabilities unidentified.

Naval Surface Warfare Center, Crane Division (NSWC Crane) partnered with KSM Consulting to bring exceptional risk illumination to microelectronics procurement within the U.S. Department of Defense.

TOGETHER, WE BUILT THE SOLUTION:



# AMARO





## USE CASE

# Automated Data Ingestion

One of the most rapidly growing threats to our national defense is the ability to secure the complex global supply chain of the microelectronic components integral to the nation's defense systems. Due to technology's rapid development and the evolution of the industry, microelectronic components are now primarily secured through global supply chains instead of through domestic manufacturing. This has significantly changed the risk exposure for the US military, and Crane is leading the nation in the proactive identification and illumination of supply chain risks for these critical microelectronic parts.

While highly effective, Crane's process for risk identification was extremely manual and time-consuming. As a result, KSMC was asked to develop the AMARO solution to bring advanced analytical capabilities to bear in order to help automate and enhance the risk illumination and assessment process, resulting in improved access to more timely and accurate supply chain risk information that enables program managers to make more informed decisions around component usage and to better leverage the appropriate risk remediation capabilities at the disposal of the Department of Defense.

The solution includes automated data ingestion to drastically improve the efficiency of report generation; probabilistic record linkage to connect people, parts, companies, and regions across differentiated supply chains; machine learning techniques to formulate scores for key risk areas and predict future outcomes; and multi-level network mapping to clearly display and track the evolving relationships discovered through the automated ingestion and analysis of thousands of structured and unstructured datasets.



# AMARO Reaches Deeper—and More Broadly—into Supply Chains.

AMARO ingests and analyzes thousands of structured and unstructured data points from within and outside the government to reveal critical nodes in design, production, and distribution when a part or company may be susceptible to malicious insertions, inferior substitutions, supply interruptions, or IP theft.

Through an intuitive web application, users can leverage strategic analytics in pursuit of answers to endless security questions, such as:

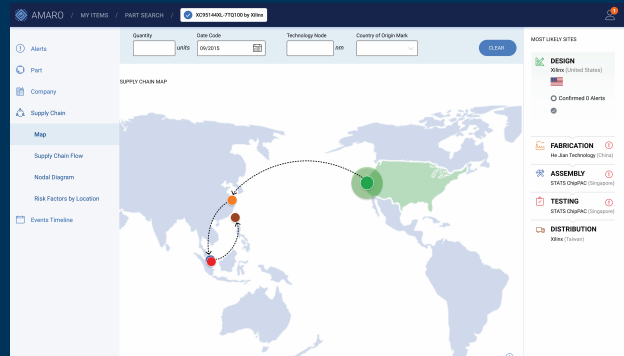
- ✓ What parts are potentially impacted if the operations of specific sites are interrupted due to global events, such as the Coronavirus outbreak?
- ✓ Can we look across thousands of BOMs to identify an overreliance on specific suppliers or sites/locations?
- ✓ Are there suppliers or supply chain sites that are owned or funded by a foreign government?
- ✓ How can I track a threat or vulnerability through the supply chain to determine the impacted weapon systems?
- ✓ Which parts in the DoD supply chain could be impacted if a trade war escalates with a foreign country?



# Greater Transparency from Part-Centric Data Analysis

Analyzing risks associated only with manufacturers leaves too much to chance. AMARO's part-centric approach ingests a bill of materials and presents an aggregate risk profile and detailed risk analysis based on the following risk assessment capabilities:

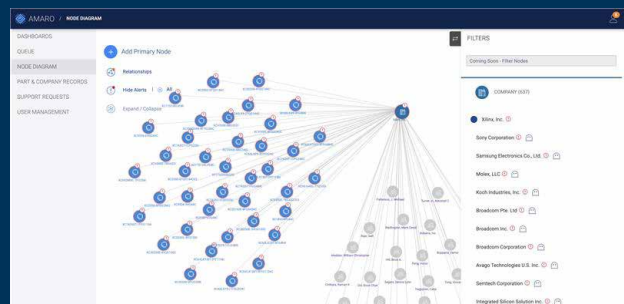
- Part specific supply chain site identification
- Counterfeit risk determination
- Government owned entity relationship identification
- Financial health monitoring for the OEM and critical suppliers
- Replacement part risk comparison
- Mapping key personnel to their educational and business affiliations
- Tracking product change notifications and part transfers
- Interfacing with the supply chain risk management (SCRM) community
- Identification of regional and geographic risks



# Analytical Capabilities

In order to migrate away from the legacy manual document-based process, the AMARO solution incorporates the following cutting-edge analytical capabilities:

- Cloud-native architecture provides performance, scalability, and security
- Probabilistic record linkage connects people, parts, companies, and regions across differentiated supply chains that don't share a common identifier.
- Machine learning techniques formulate scores for key risk areas and predict outcomes.
- Robust risk-rules engine maintains library of risk-based alerts as data is ingested from each source.
- Automated data ingestion and analysis of structured and unstructured datasets drastically improves report-generation efficiency.
- Multi-level network mapping clearly displays and tracks evolving relationships.
- Web-based user interface presents supply chain composition and risk information clearly and intuitively.



# Maximize assurance within complex microelectronics supply chains.

## Talk to us about AMARO.

..... TO LEARN MORE ABOUT AMARO, PLEASE CONTACT: .....

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### 2020 TECHPOINT MIRA AWARD WINNER

KSM Consulting Recognized as TechPoint “Service Partner of the Year” for Collaborating with NSWC Crane to Develop Cutting-edge Risk Illumination Solution for the DoD. KSM Consulting received this award in recognition of the work it has done in partnership with the Naval Surface Warfare Center (NSWC), Crane Division to develop a prototype for an Automated Microelectronics Analysis & Reporting Optimization solution (AMARO) that automates and enhances the current risk illumination and assessment process for the global supply chains of the microelectronic components that are integral to our most strategic weapon systems and warfighting assets.

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“We are excited to roll out this technology to the field. The AMARO tool will allow us to quickly and thoroughly examine the supply chain of commercial microelectronics, as well as identify vulnerabilities and over-reliance in a more strategic manner. This is a capability that will directly lead to improving our supply chain awareness and security.”

**Adam Hauch**

Global Deterrence & Defense Department, NSWC Crane