Demand Sensing for Supply Chain

U.S. Department *of* Defense

To continue its standing as a world leader in technological innovation, the United States Department of Defense aims to engage with policymakers, the private sector, and academia to promote the research and development of blockchain technology. In 2020, a required briefing by the DoD to Congress on how blockchain technology can be utilized was added to the National Defense Authorization Act.

Challenge

After successfully completing Phase I of the Authenticity Ledger for Auditable Military Enclaved Data Access (ALAMEDA) project in 2021, SIMBA entered the Phase II Option Period. In this phase, the company was tasked with providing a "single source of truth" on a distributed ledger (blockchain) to support the U.S. Navy and the Defense Logistics Agency (DLA). The ALAMEDA system used the SIMBA Blocks platform to address two challenges of In-Transit Visibility (ITV):

1. Tracking Material In Transit
2. Providing Answers to Customers (Where's My Stuff?)

Solution

The DLA stated the need for an enterprise-wide ITV solution that could operate throughout its four shipping channels using a standard data format that incorporated various inputs into the shipment process. These inputs included the order status, delivery confirmation, exceptions, and anticipated delivery dates. The DLA's four distinct shipping channels are:

1. **Direct Vendor Delivery (DVD) & Customer Direct (CD):**
2. **DLA Direct (DD)**
3. **Warehouse Outbound To Fill Customer Requisition**
4. **Stock Redistribution & Stock Transport Order (STO)**

The SIMBA solution needed to address a lack of visibility across these four channels to improve accountability at distribution receiving areas, reduce labor hours in sorting material, and eliminate warehouse space

constraints. The solution also needed to ensure the DLA could provide material visibility to customers like the Navy, Army, Air Force, and Marine Corps, mainly when the material at the receiving area is not accounted for.

Recommendations

After the Phase II Option Period, SIMBA recommended that the DLA ensure tracking numbers are correlated to the Transportation Control Number within the Vendor Shipment Module or its backend system known as the DSS mainframe.

By correlating the tracking number and Transportation Control Number, DLA input data for material in transit to the ALAMEDA application fully addresses the problems resulting from lack of visibility. Ultimately, with adequate data inputs, the ALAMEDA solution prevents delays in customer logistics response time.

In addition, SIMBA recommended utilizing the University of Notre Dame's Center for Research Computing's robust framework and pipeline for running predictive analytics. Given adequate data, the framework can be easily applied.

In 2020, SIMBA Chain was awarded a $1.2 million Small Business Innovation Research (SBIR) Phase I grant from the DoD, kickstarting the Authenticity Ledger for Auditable Military Enclaved Data Access (ALAMEDA) project. The University of Notre Dame joined SIMBA Chain on the project as a subcontractor, with work taking place at the Fleet Readiness Center Southeast (FRCSE) at the Naval Air Station in Jacksonville, Florida.

The initial proof of concept outlined a demand-sensing solution capable of ensuring the availability of replacement parts for weaponry. Specifically, SIMBA worked with the U.S. Marine Corps to "define a use case for a blockchain-based prototype to monitor the inventory and movement of physical assets at its Albany, Georgia Depot."

After successfully completing Phase I in 2021, the U.S. Office of Navy Research awarded SIMBA a $1.5 million SBIR Phase II grant to begin building the initial prototype. Notably, the initial scope of work was amended during the Phase II Option Period, pivoting to provide a "single source of truth" on a distributed ledger (blockchain) to support the U.S. Navy and the DLA.

> "We are very honored to work with NESTT and the FRCSE on one of the most pressing issues facing the nation today, managing and securing military supply chains and ensuring readiness to thwart cyber and physical threats."
>
> – **Bryan Ritchie**
> CEO – SIMBA Chain

About SIMBA

Incubated at the University of Notre Dame in 2017, SIMBA Chain (short for Simple Blockchain Applications) provides a scalable enterprise platform that simplifies blockchain development. With fewer barriers to entry, companies can build secure, scalable, enterprise-grade solutions that integrate seamlessly with existing data systems. SIMBA implementations generate value for major government organizations, enterprises, and blockchain companies as a production-grade platform that enables public, private, or hybrid deployments.