

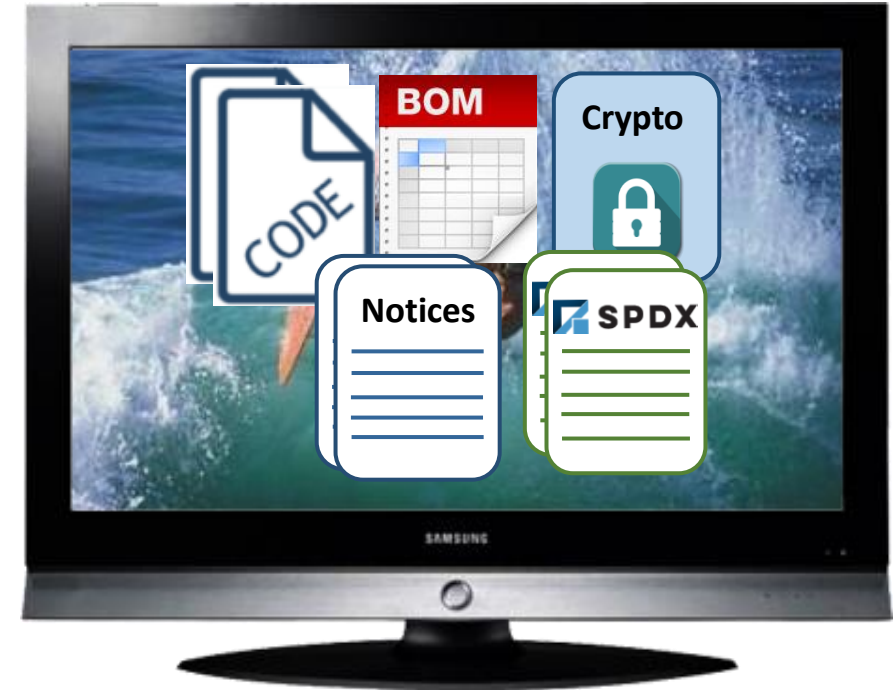
Utilizing the Sawtooth Blockchain Platform to Manage Open Source Across the Supply Chain

The Challenge



IoT/Embedded Device Requirement

- Most modern day devices are constructed from 80%+ open source
- Device Runtime is governed > 100 licenses
- Every shipping device requires open source compliance artifacts:
 - i. Source Code
 - ii. Legal Notices
 - iii. Open Source Bill of Materials
 - iv. Security Vulnerabilities
 - v. Licensing data (SPDX)
 - vi. Cryptography info

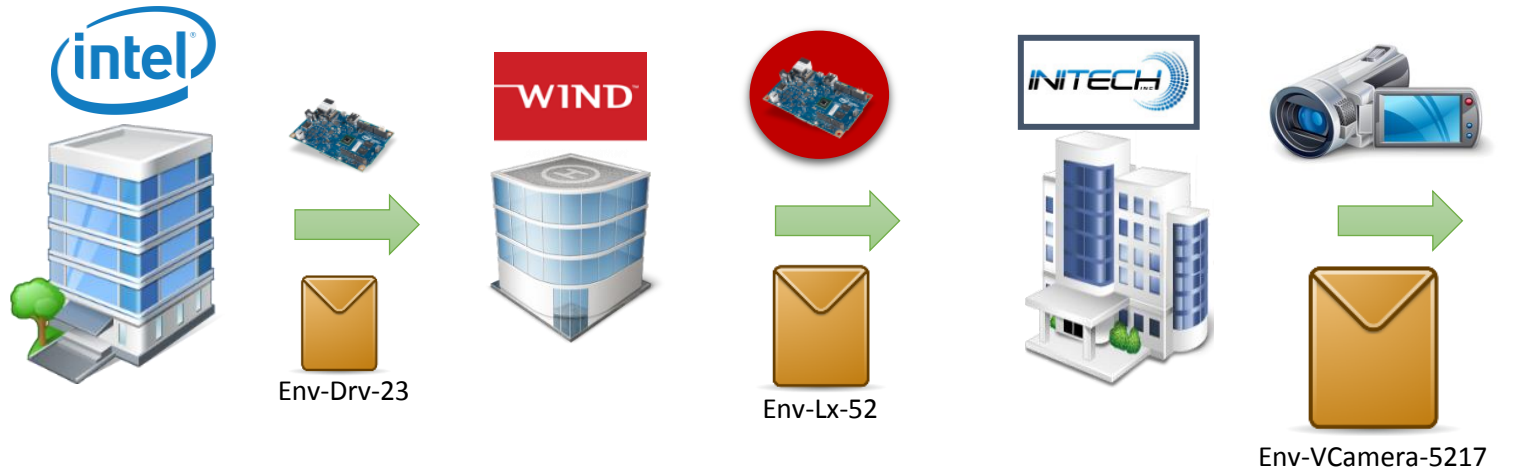
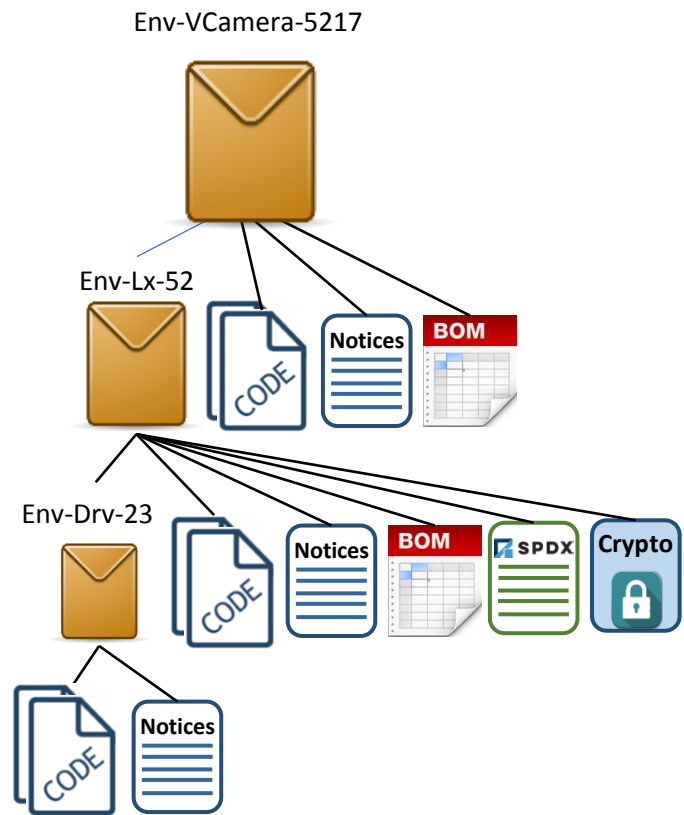


IoT/Embedded Device Requirement



Supply Chain

AviTECH



The Technology

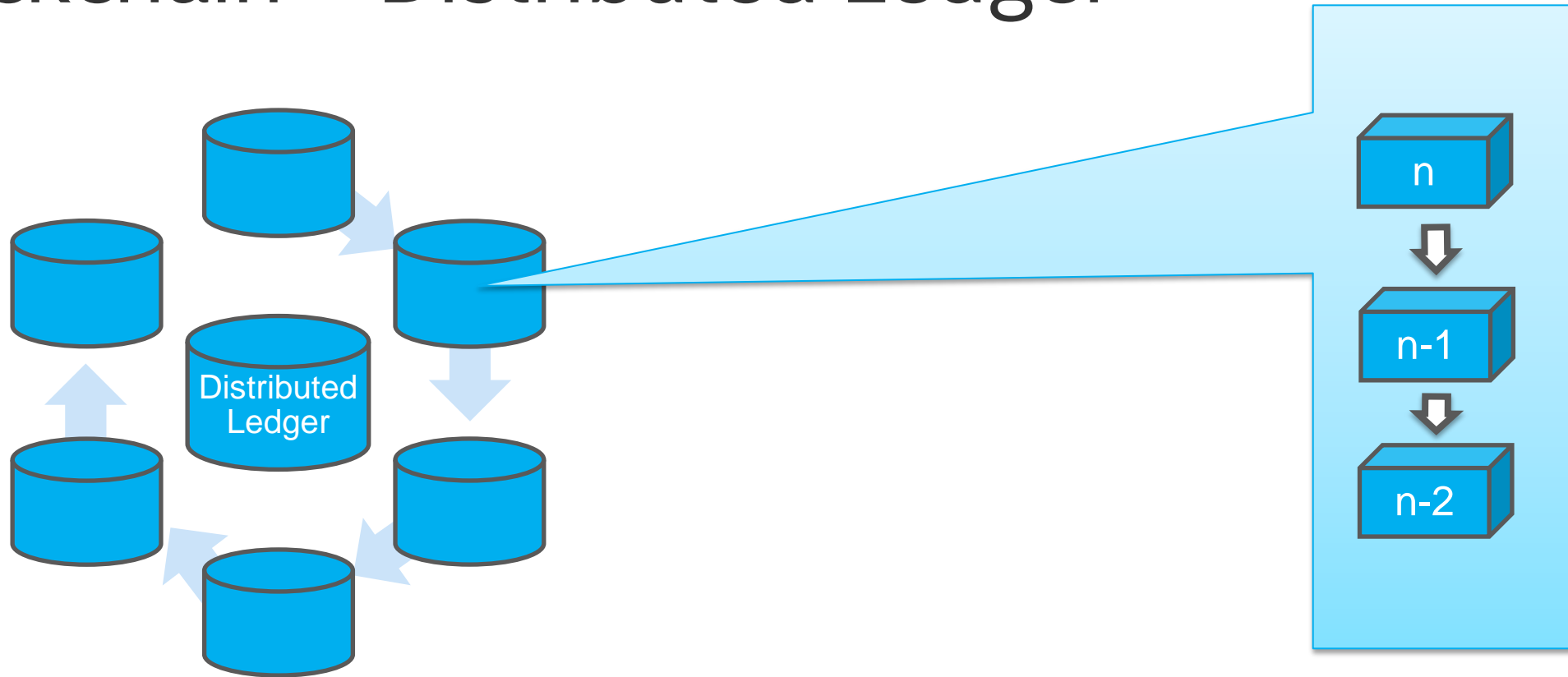




HYPERLEDGER

- A Linux Foundation open source initiative
- Infrastructural support for blockchain-based distributed ledgers
- Plumbing analogous to Linux processes but for distributed ledgers
- Early Stage (almost 2 year old)
- Support for supply chain ledgers
- Intel's Sawtooth Platform

Blockchain = Distributed Ledger



Each node is an instance of a database (ledger) managed by all participants.

Within each database blocks of transactions are cryptographically chained in order.

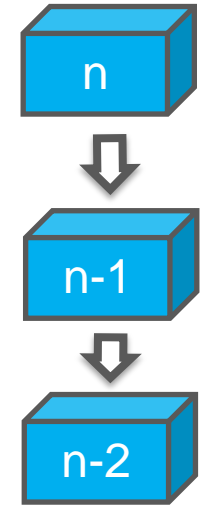
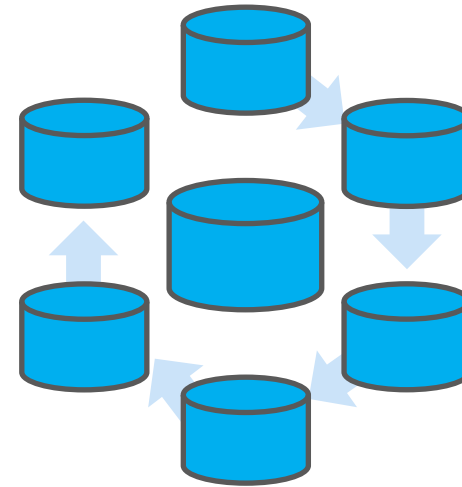
Why Blockchain

Mutually distrusting organizations update the same database.

Immutable transaction history

High availability

- Crash Fault Tolerant
- Byzantine Fault Tolerant
- Liveness



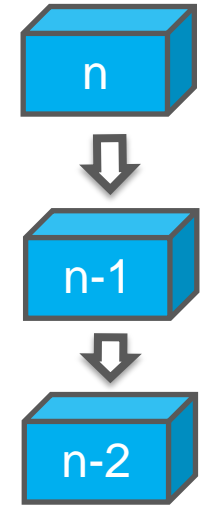
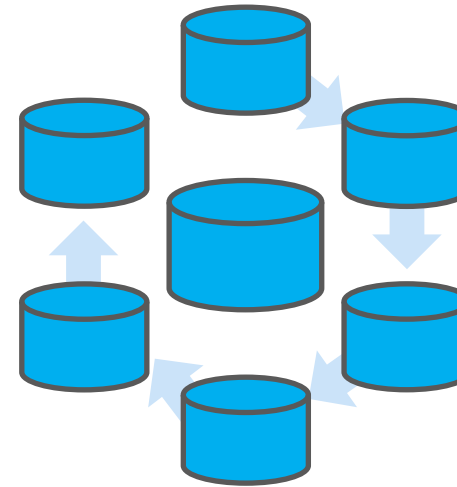
Why Not Blockchain

Active Research Areas:

- Throughput
- “Private Transactions”

Wrong Usage Model:

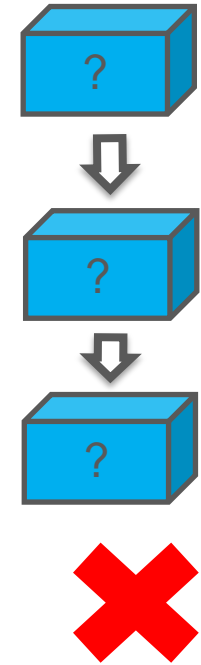
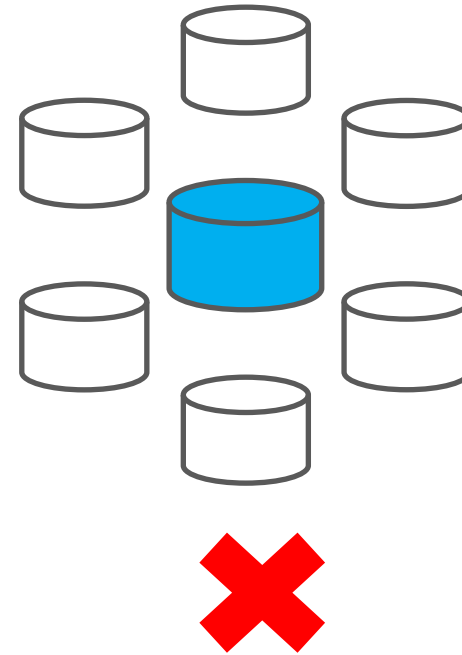
- Internal-only Business Process



Today when people talk about blockchain security, they mostly mean availability and integrity guarantees. Confidentiality is open research.

Bad Enterprise Blockchain Shortcuts

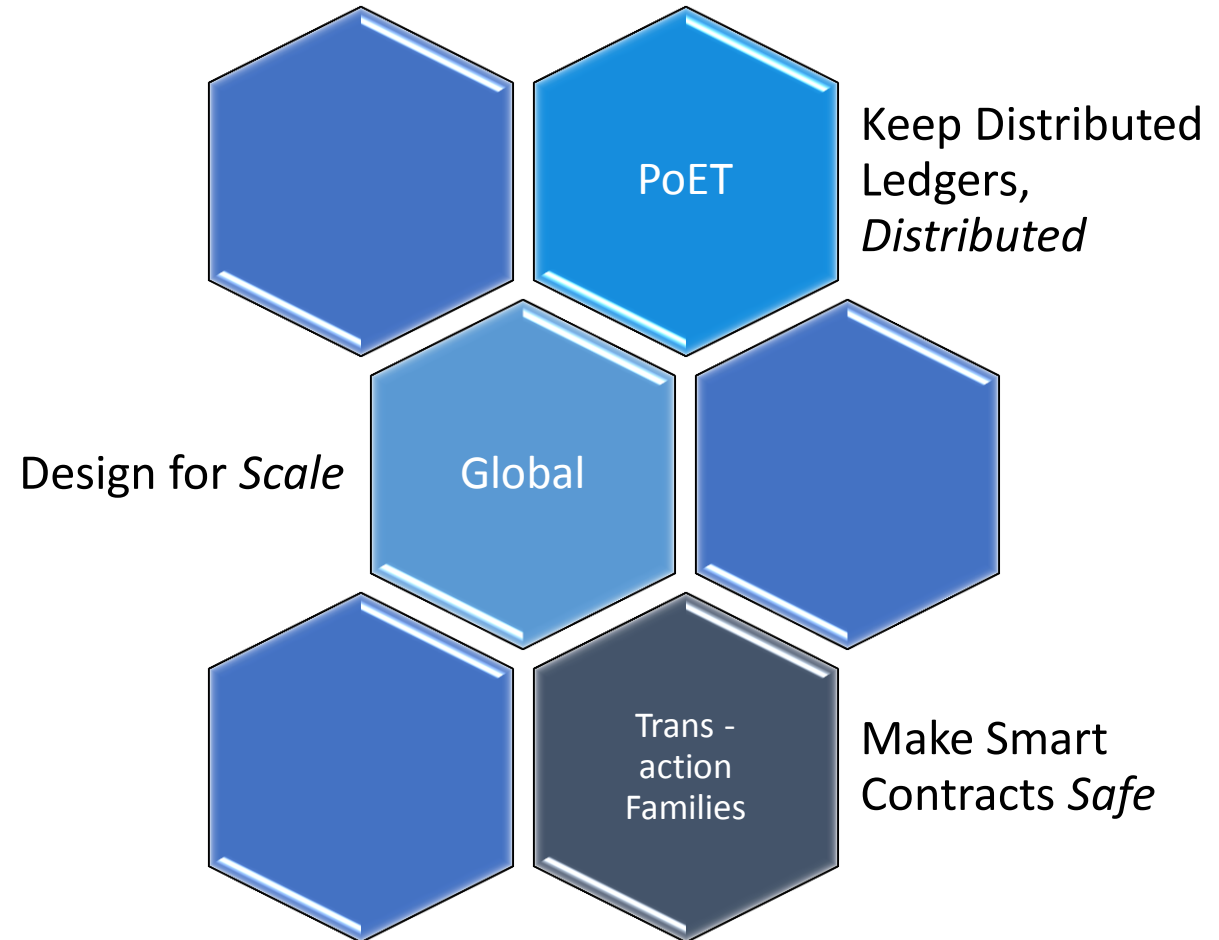
- Centralized Architectures
- No Ledger State (database fields)



A centralized architecture removes the main value of a distributed ledger.
Committing only transaction receipts turns the database into a log of opaque events.

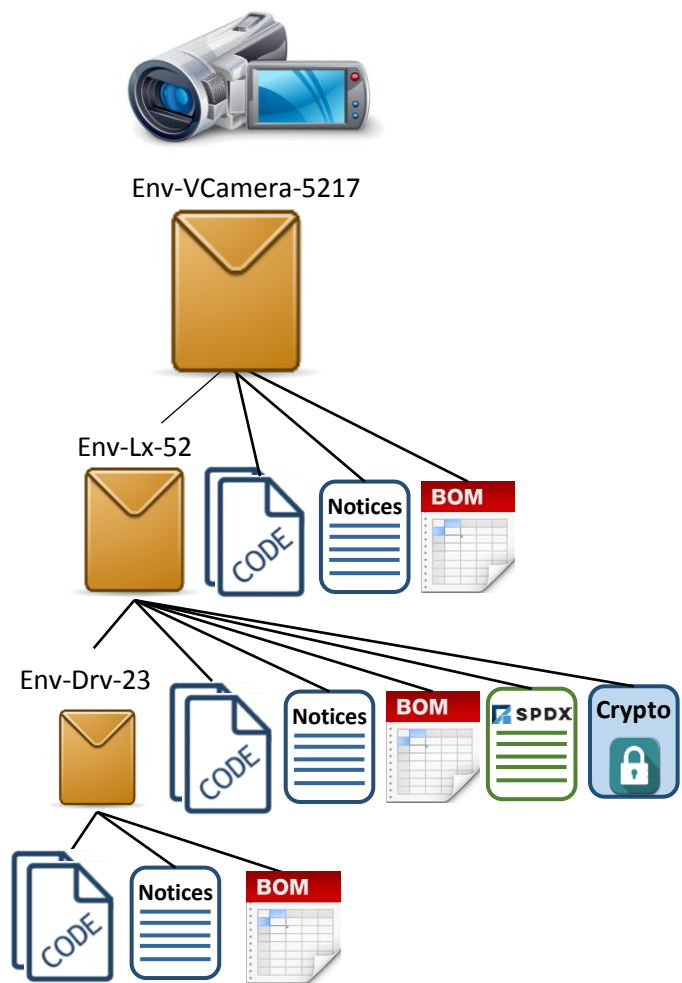
WHY SAWTOOTH

- Distributed
- Consensus of Shared State
- Safe Smart Contracts



The Solution





Env-VCamera-5217

Env-Lx-52



Env-Drv-23



BOM











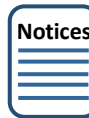


Bill of Materials (BOM) is a hierarchical list of the materials, parts, and assemblies that make up a product. It is used to manage the production process, track inventory, and estimate costs.



Crypto



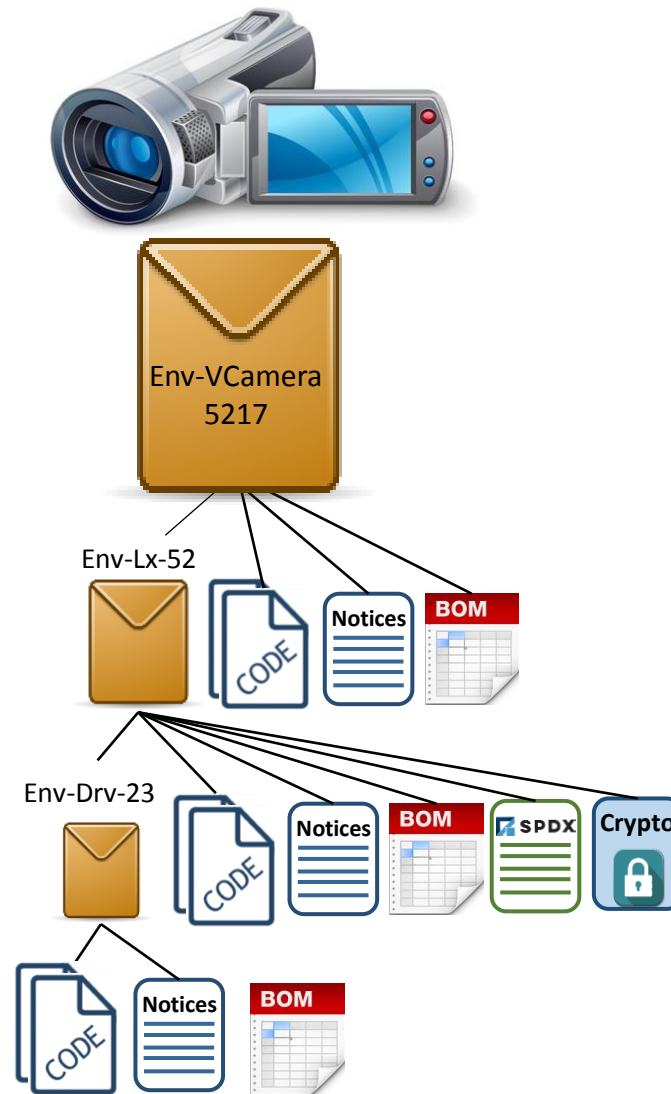
Ledger

Envelope ID	Org	Action	Artifacts
Env-Drv-23	Intel-ID	create	 
Env-Lx-52	WR-ID	create	     
Env-VCam-5217	AvTec-ID	create	   
Env-Drv-23	WR-ID	add	

Video Camera Model 5217



Video Camera Model 5217



The End