Blockchain based cyber supply chain provenance

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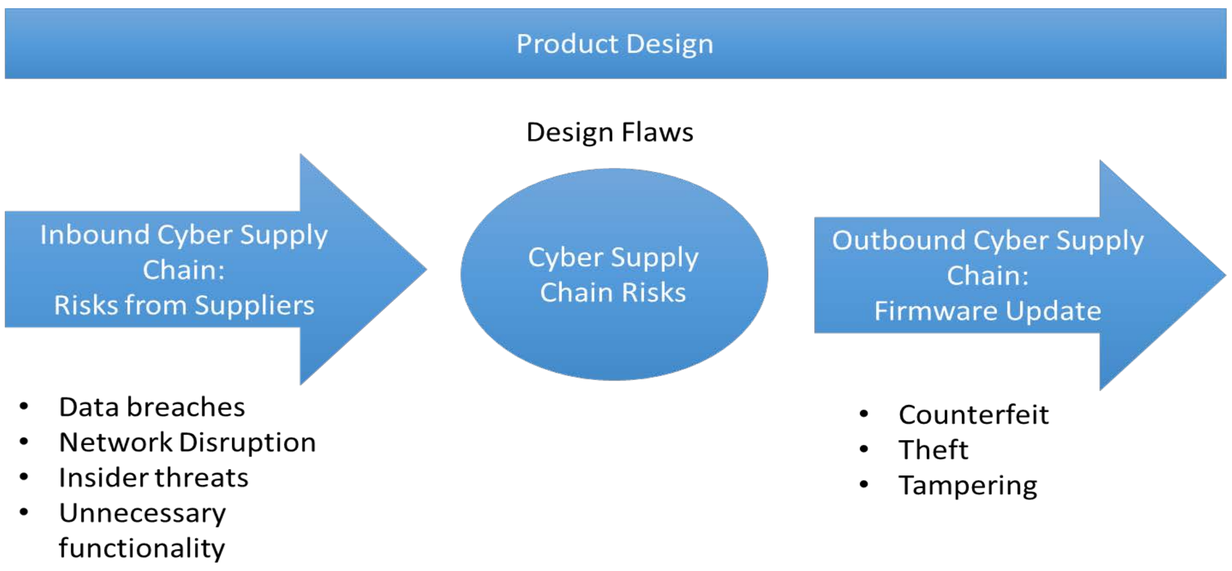
LACK OF TRUSTED THIRD PARTY

- Globalization of cyber supply chain has resulted in software and firmware developed by sub contractors who use third party software or IT systems that can be difficult to audit

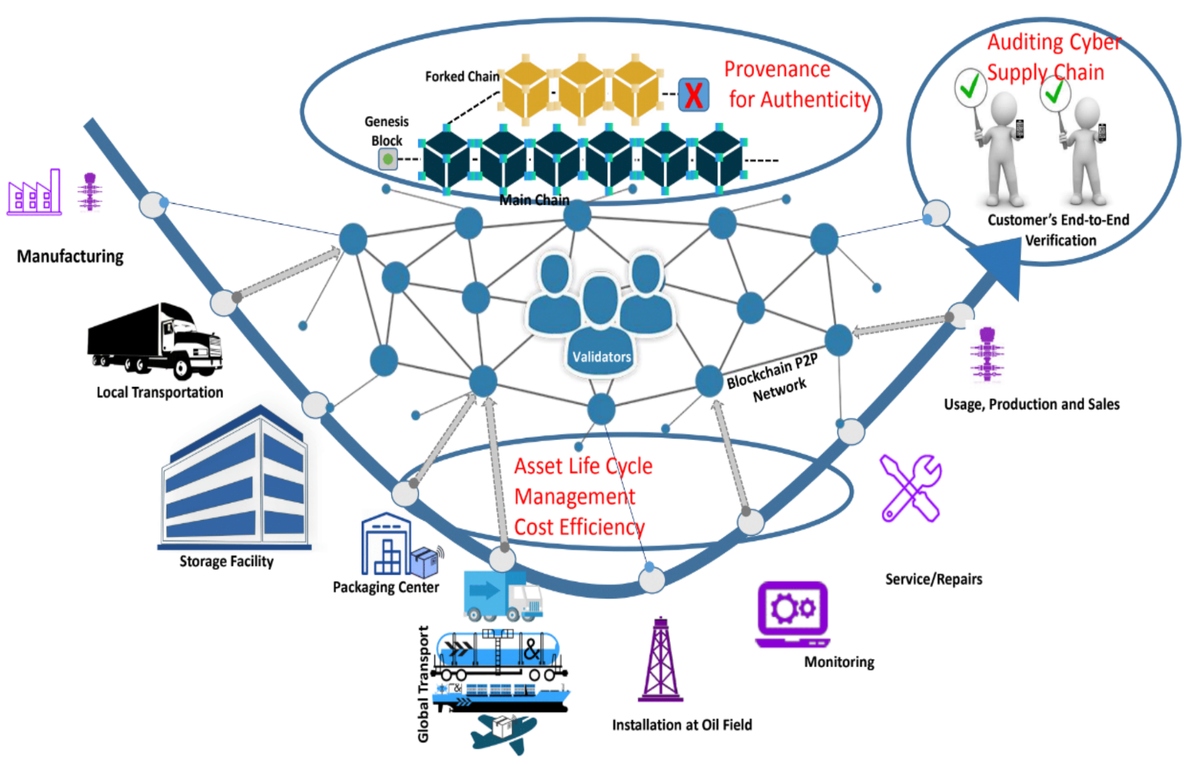


RESEARCH VISION

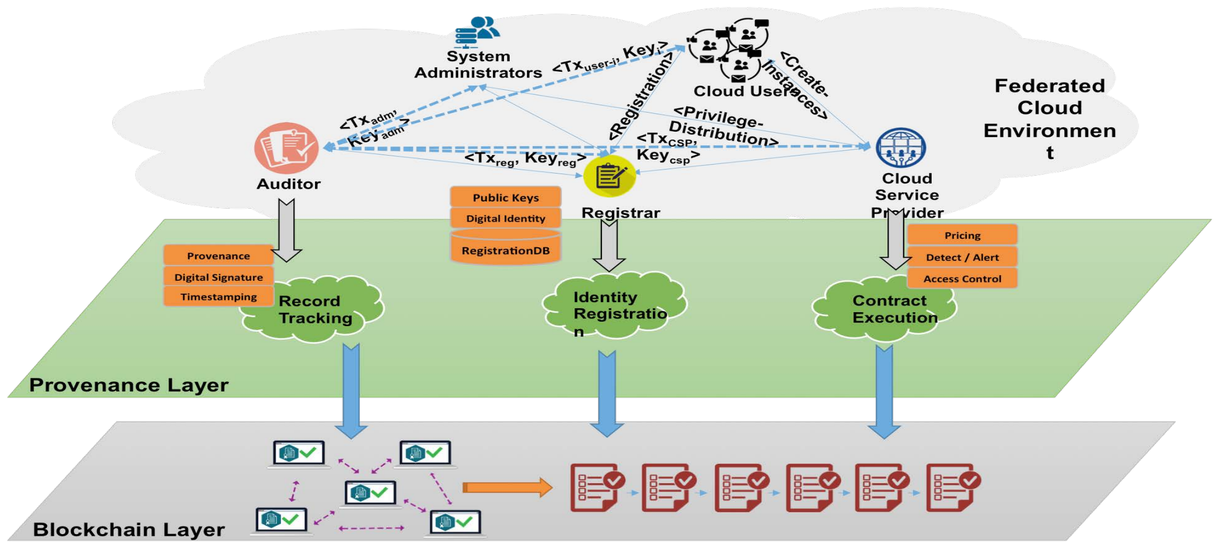
- **A Blockchain Empowered Provenance of Cyber Supply Chain** tool that will record the provenance for software and firmware at all stages of a cyber-supply chain to ensure authenticity and quality control.

RESEARCH APPROACH

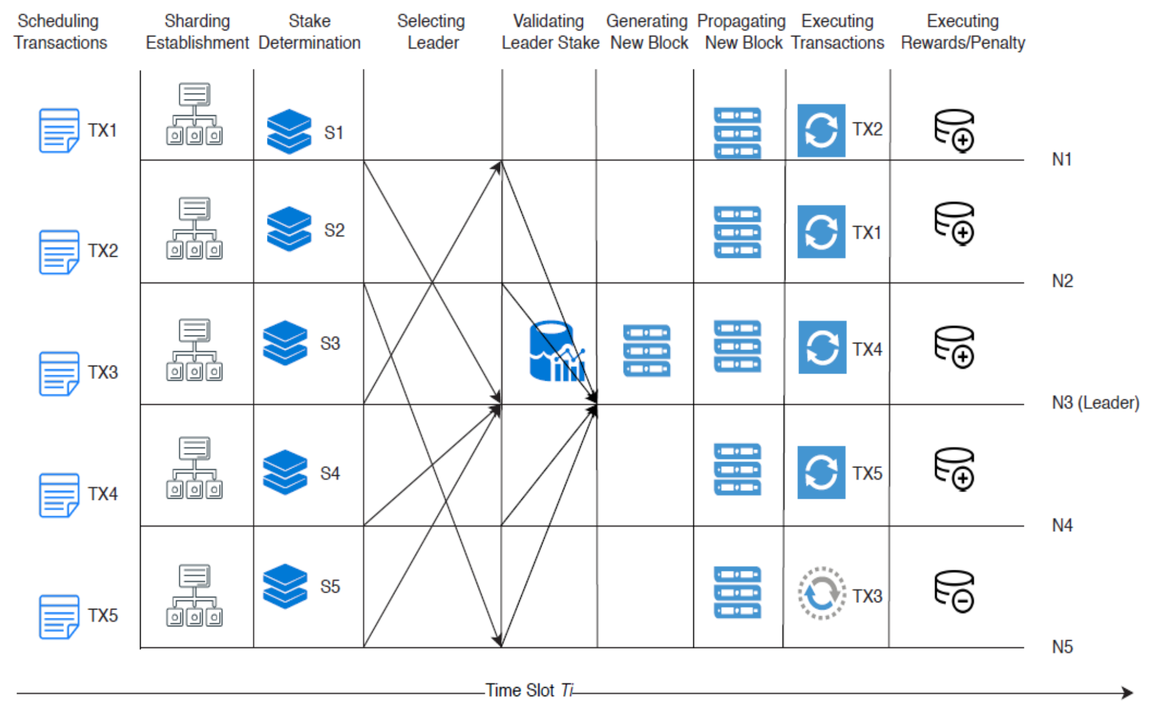
- Identify the **software and firmware design** in the cyber supply chain which will be tracked and encoded in the blockchain transaction
- Develop a methodology for **encoding** of the **supply chain operations** into transactions while balancing tradeoff between validation accuracy and latency.
- Develop **customized consensus engine** which balances tradeoff between **scalability** and security rules encoded by participators.
- Develop a **security** mechanism for blockchain transactions based on **threshold encryption**.
- Develop game theoretic based **incentive** mechanism to ensure maximum **participation** by cyber supply chain stakeholders



BLOCKCHAIN BASED CYBER SUPPLY CHAIN



PROOF OF STAKE CONSENSUS WITH SHARIDNG



BENEFITS

- **Auditing Cyber Supply Chain** - Provides an auditable record of software and firmware products.
- **Automating Management of Asset Life Cycle** - Track all changes to software and firmware and assets and share records among cyber supply chain participators.
- **Provenance for Authenticity** - Detect counterfeit software by tracking all changes to software and ensuring all design changes are in accordance to specifications
- **Cost-Efficiency** - Tracking of performance of the software and firmware that will help identify inefficient processes and unnecessary functionality. This will result in reducing costs associated with maintenance, operation, patching, uptime, downtime, etc.

COLLABORATION OPPORTUNITIES

Seeking collaborative opportunities from industry partners:

- Inputs on developing taxonomy for Blockchain based cyber supply chain
- Insights into incentivizing participation of stakeholders in Blockchain network

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✓ Activity webpage: https://cred-c.org/researchactivity/assured-cyber-supply-chain-provenance-using-permissioned-blockchain

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