Open Data Exchange and Observability platform for the Supply Chain

Improving versatility and resilience in the Supply chain using GS1 standards

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Problem Statement

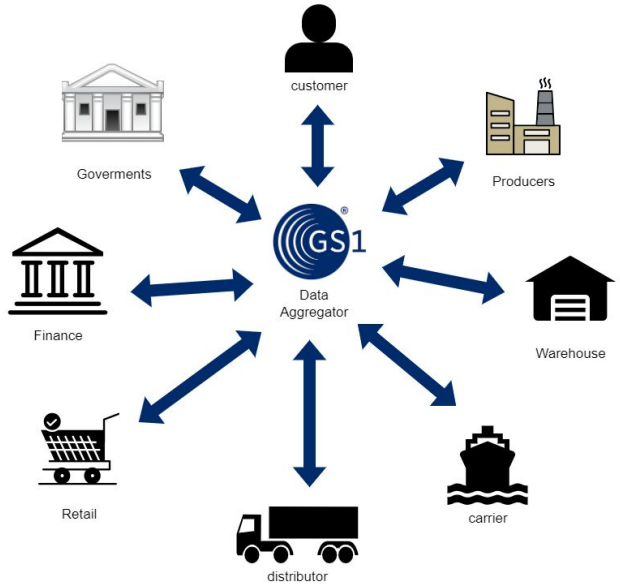
Modern supply chains depend on the **effective** and **precise orchestration** between producers, distributors, retailers, customers, insurance companies, banks, and other actors.

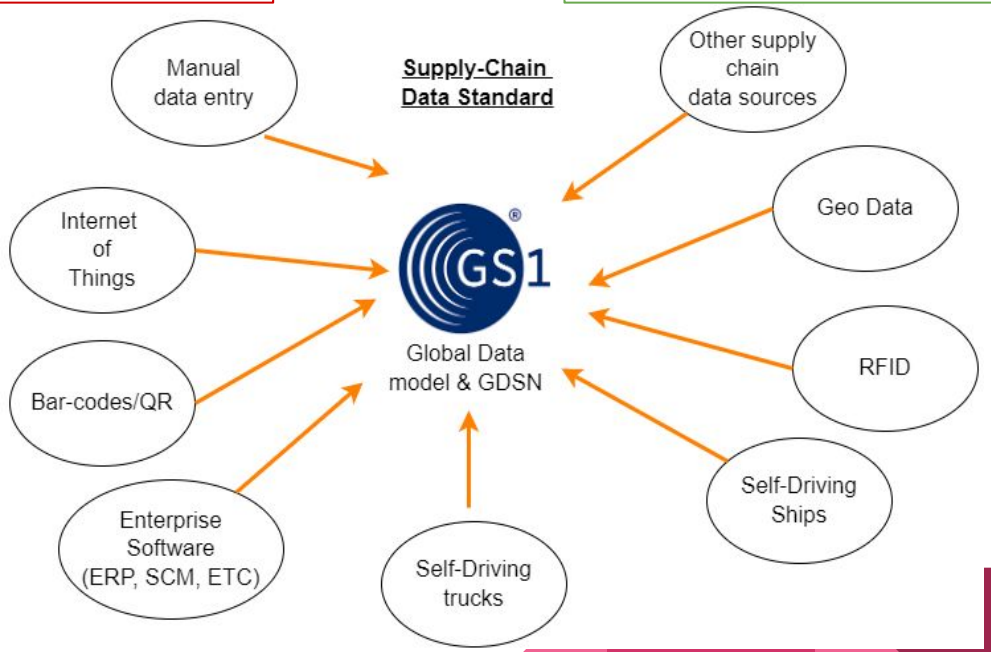
Moreover, these actors are distributed across **different geographies and legalizations**.

This diversity creates a **data interoperability problem** that makes the task of getting **a holistic supply-chain Observability** an impossible task without a common language. To solve this problem, we propose the creation of an **Open Data Exchange and Observability platform** based on GS1 Global Data Model, GS1 GDSN, X-ROAD Data Exchange, and other GS1 standards.

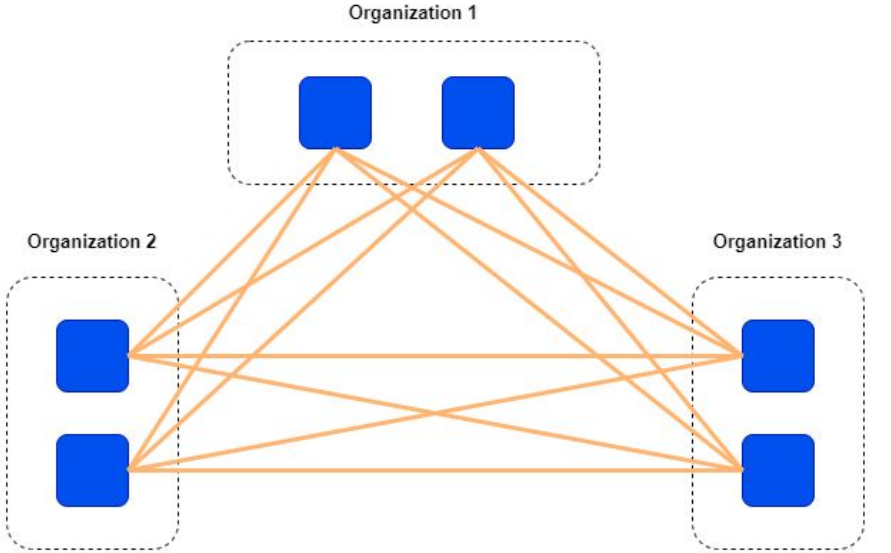
Data Interoperability

Data as an asset → **Product historical trace** → **Circular Supply Chain**



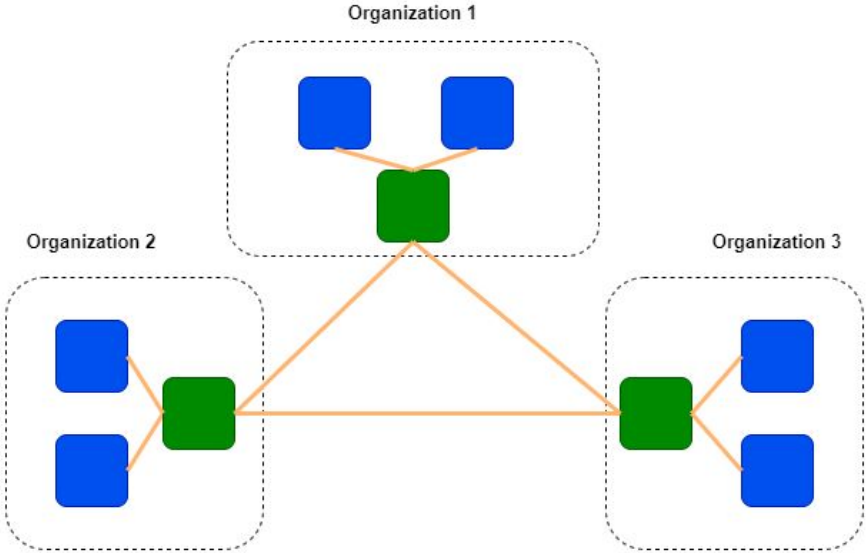


Data Exchange



- Each information exchange connection require custom setup (permissions, firewall, etc)
- Each information exchange connection connection could be automatic, human interaction or a mix
- Each information exchange connection require personalized support

Information Systems

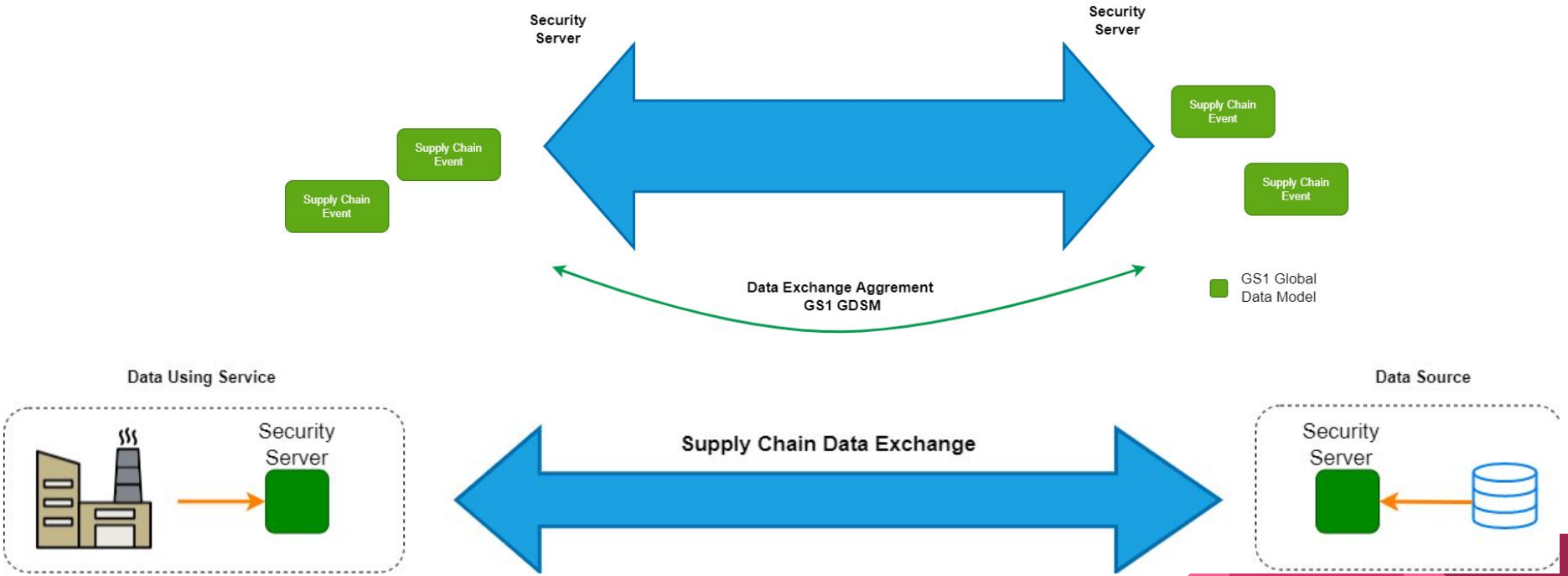


- Use **GS1 Global Data Model** as Data Interchange Standard
- GS1 GDSN
- Increase interoperability and reduce implementation cost
- Improve security

Data Exchange Secure Server

Information Systems

Data Exchange



Benefits/Incentives

Observability

- Allow **circular supply** chain by allowing complete **historical product traceability**
- More precise/real-time supply chain state and delivery times
- Faster supply chain **bottleneck diagnosis**
- Supply chain **cost optimization** by faster diagnosis
- Supply **Impact analysis**
- Faster supply chain Simulation
- Faster supply chain observability could lead to **cheaper finance and lower insurance**
- Allow further **innovation** (low cost insurance, faster liquidity access, open finance , etc)

Data Exchange Standard

- Use X-ROAD Data Exchange message routing, access rights management, organization-level authentication, machine-level authentication, transport-level encryption, digital signature of messages, logging, error handling, and etc .
- **Data Standard Interoperability** between internal organization departments .
- Data Standard Interoperability between organization .
- Faster and cheaper **software integration** and implementations .
- Allow further **innovation** (low cost insurance, faster liquidity access, open finance , etc) .

Solution Summary

Solution - Potential Impact

Market Potential

- Create **data Ecosystem** over which new solution can be build
- Can be adopted by all the **different actors** in the supply chain
- Can be customized to each actor needs
- **Can be customized** to each actor technology maturity level
- Keep **data ownership** of each actor
- **Incentivise data sharing without data centralization**

Sustainability Potential

- There is an **economic incentive** to **share the data** without losing data ownership
- A data owner that share their data can **get benefits** at the supply-chain operations time
- The data owner **can charge** for the **data sharing**
- **Government actors** can access the data if they are allowed
- Support **custom data access levels**

Solution - Implementation Potential

Adoption

- Can be **customized** to each organizacion needs
- Can work with l**egacy systems**
- Can be integrated with **legacy systems** and **new systems**
- Each organization **keeps the ownership** of their data
- Can be added to any organization by implementing an X-ROAD Data Exchange Security Server
- Use GS1 Global Data Model and GS1 GDSN

Solution - Technical Execution

Available Technologies Use

- X-ROAD as Data Exchange Layer
- Can be **integrated** with **legacy systems**
- **Can support new technologies as self-driving trucks**
- Requires GS1 Global Data Model and GS1 GDSN

GS1 Global Data Model

- GS1 as **Data Aggregator**
- Custom **Reports** and **Analysis**
- Data Standard

Solution Implementation Complexity

- Requires GS1 Global Data Model and GS1 GDSN
- Requires expertise with x-road Data Exchange