Open Data Exchange and Observability platform for the Supply Chain

Improving versatility, resilience and circularity 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](#), and [other GS1 standards](#).
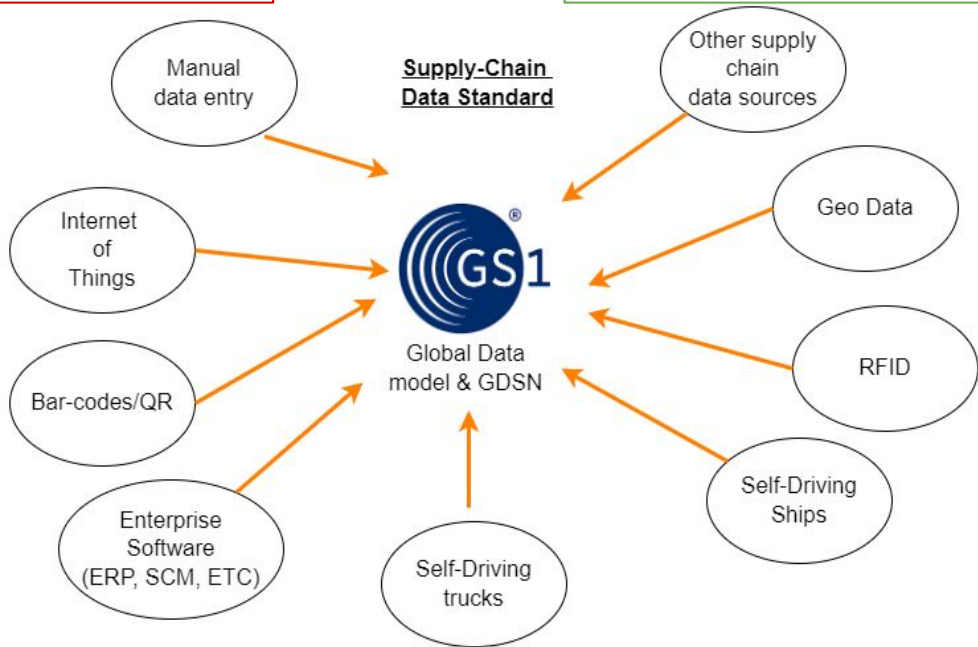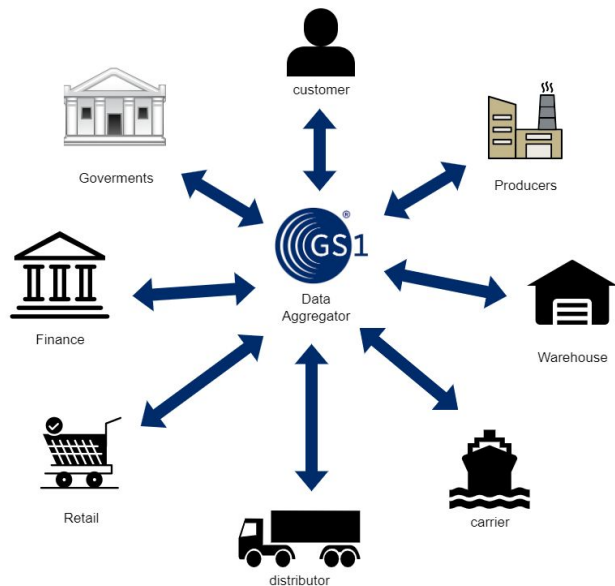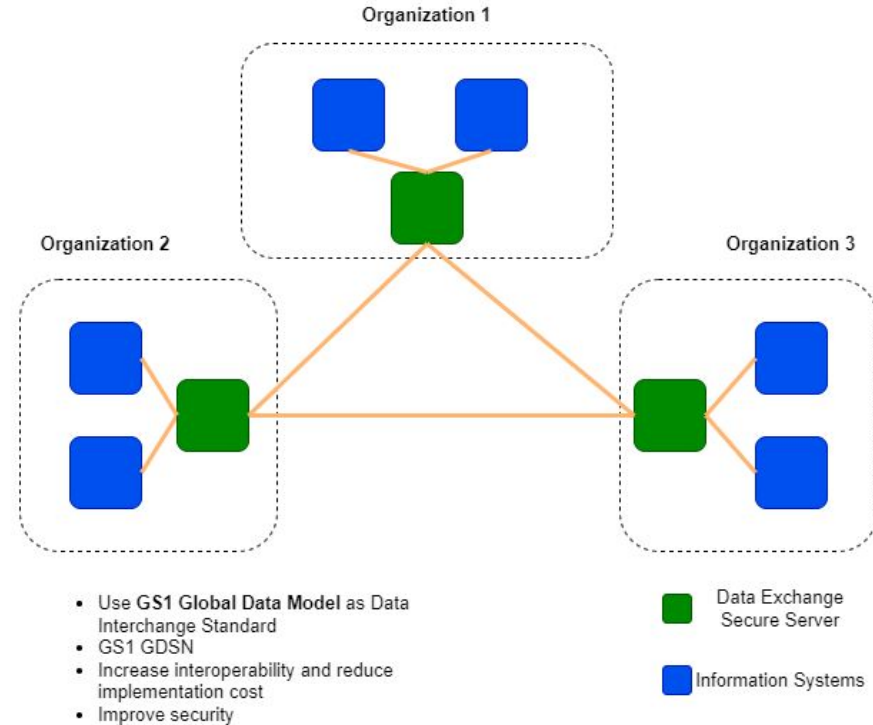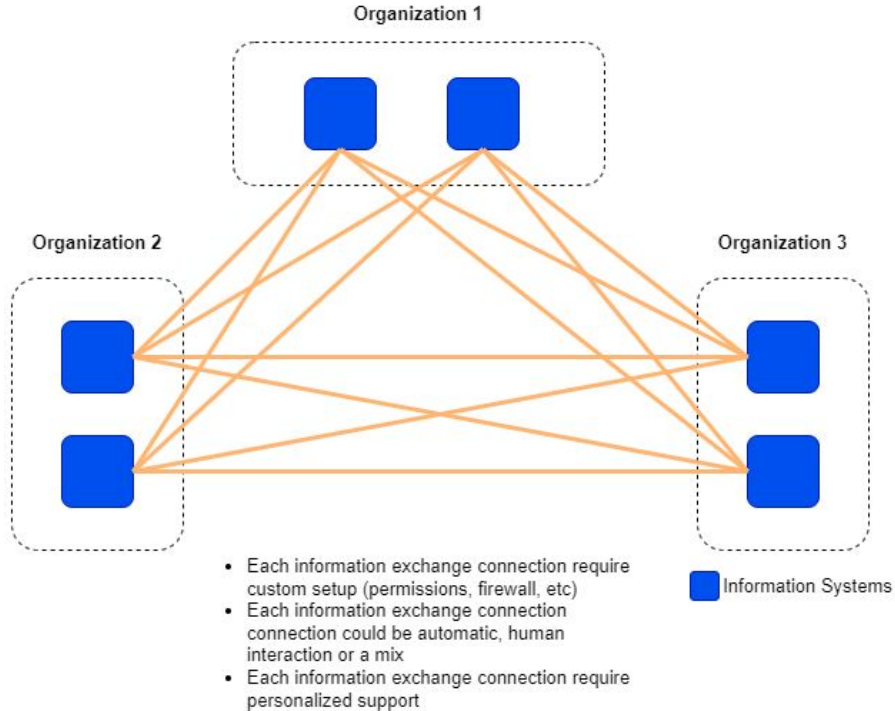
Data Interoperability

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

Data Exchange

Left diagram — Organization 1, Organization 2, Organization 3 with interconnected Information Systems:
- 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

Right diagram — Organization 1, Organization 2, Organization 3 connected through Data Exchange Secure Servers:
- 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
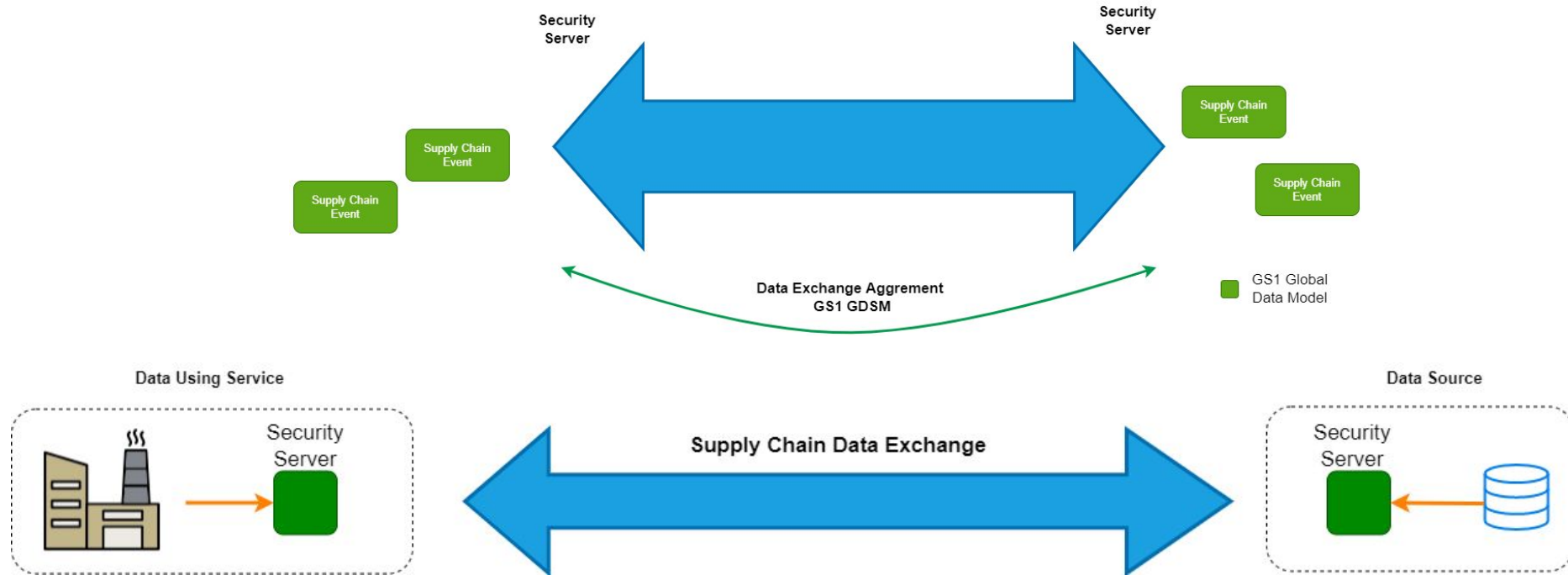
Data Exchange

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 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 in the 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 legacy 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 Security Server
- Use GS1 Global Data Model and GS1 GDSN

Solution - Technical Execution

Available Technologies Use

- [x-road](#) as Data Exchange
- Can be integrated with legacy systems
- 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