

Supply chain management (SCM) solutions focus on the planning and execution of the chains, integrated with the companies' **enterprise systems (ERP)**.

Its ultimate goal is to make the right amount of products arrive to the destination, in the least time and with the least cost.

The main obstacle to their effectiveness is **outdated and imprecise information**.

High-resolution traceability systems can be built to track goods individually and provide your company more answers:

Where are our goods?

Where have they been?

What is their state?

How many goods are at a location?

TrakChain is an assessment framework that contains a set of tools to **estimate and measure** the computational and communicational effort of operating traceability networks.

With it your company can:
estimate response times,
validate functionalities,
define and test security policies.

References

- M. L. **Pardal**, M. **Harrison**, S. **Sarma**, J. A. **Marques**, "Enforcing RFID Data Visibility Restrictions Using XACML Security Policies" in IEEE International Conf. on RFID Technology and Applications, 2012
- M. L. **Pardal** and M. **Harrison** and J. A. **Marques**, "Assessment of Visibility Restriction Mechanisms for RFID Data Discovery Services," in IEEE International Conf. on RFID, 2012
- M. L. **Pardal** and J. A. **Marques**, "Cost model for RFID-based traceability information systems," in IEEE International Conf. on RFID Technology and Applications, 2011
- K. **Murthy** and C. **Robson**, "A model-based comparative study of traceability systems," in Proceedings of the International Conf. on Information Systems, Logistics and Supply Chain (ILS), 2008.
- R. **Agrawal**, A. Cheung, K. Kailing, and S. Schonauer, "Towards traceability across sovereign, distributed RFID databases," in International Database Engineering and Applications Symp. (IDEAS), 2006.
- K. **Traub**, *The EPCglobal Architecture Framework 1.4*, GS1 Std., 2010
www.epcglobalinc.org/standards/architecture/

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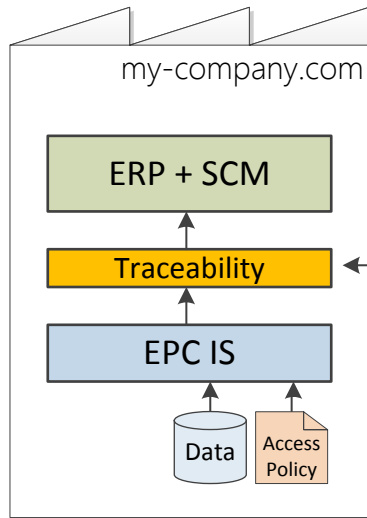
What is your
supply chain hiding
from you?

Traceability Information Systems

Traceability covers wide geographic areas and crosses frontiers

→ “network of networks”
→ **Internet of Things**

With just a few **statistics** we can analyze and compare alternatives to improve your business, follow legal requirements and respond to new opportunities.



Challenges:

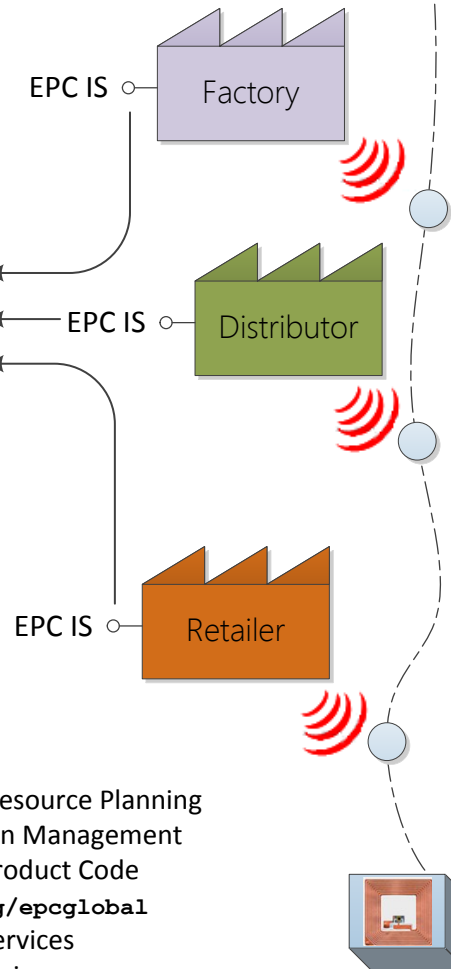
- **Scale** – management of data sets on a regional or world scale
- **Security** – definition and enforcement of highly dynamic data sharing policies

TrakChain

High-resolution traceability

ERP – Enterprise Resource Planning
 SCM – Supply Chain Management
 EPC – Electronic Product Code
www.gs1.org/epcglobal
 IS – Information Services
 DS – Discovery Services

<http://TrakChain.net>



Product

- Distribution of products by category
- Number of items for each type of product
- Time in the chain
- Incoming/outgoing quantities per location per day
- ...

Supplier

- Suppliers by product category
- Middle-men (chain length)
- Transportation
- Frequency and size of orders
- ...

Customer

- Customers by product category
- Rate of consumption and seasonality
- Frequency of orders
- ...

Information systems

- Stock management and update needs
- Production planning and change response needs
- *Recall, pedigree, bill-of-materials, asset management, etc.* – When? How often? With which granularity?
- ...

We can also use **detailed scenario descriptions** for deeper analysis.