

The background of the slide features a close-up photograph of several carrots growing in dark, rich soil. The carrots have bright green leafy tops and orange-brown roots. Overlaid on this image is a network diagram consisting of white circular nodes connected by thin white lines. Some nodes are positioned directly on the carrot roots, while others are floating in the air around them. The nodes and lines have a soft blue glow, creating a high-tech, digital feel. The overall composition suggests a connection between physical raw materials and digital data.

Development project

Data model of raw material master data

Common model for the identification and master data of raw materials

The identification of raw materials and the management of their master data form the basis for interoperable traceability and ensuring sustainability across the entire food chain. In order for information to flow consistently through the chain and all the necessary information to be connected to the raw materials, a global identification solution and a common data model are required.

GTIN as a basis for identification

The GTIN (Global Trade Item Number) plays a decisive role in the identification of raw materials. It is an internationally recognised identifier that is already widely used in consumer products. The application of the GTIN to raw materials also enables the unique identification of products regardless of the supplier or the country in which the raw material is produced. This prevents a duplication of identifiers and ensures that the exchange of information between different systems and operators runs smoothly at both national and international levels. GTIN thus provides a sustainable basis for the traceability of raw materials.

The data model of the raw material master data offers companies ways to respond to the tightening requirements of legislation, supports international interoperability and creates the conditions for strengthening the competitiveness and exports of the Finnish food chain.

Master data model as a basis for data exchange

For interoperable traceability, however, an identifier alone is not enough. Therefore, alongside the GTIN, a master data model is needed, which specifies the minimum data content to be transported for all raw materials in the chain. The data included in the model is permanent master data that does not change from batch to batch and is carried along with the raw material throughout the chain. Common information includes, for example, the country of origin, certificates and regulatory information as well as attribute information, such as organic information or suitability for special diets. Information about allergens has also been identified as a critical part of the model, as it must pass unchanged through the entire value chain.

The core idea of the data model is that it provides a common minimum data content for all raw materials, but, at the same time, it is also flexible to meet the needs of different product groups. The model is built so that it allows you to refine, expand and respond to special cases without losing interoperability.

The basis for interoperable traceability of the food chain

When the GTIN and the data model are combined, the basis for interoperable traceability is created. The GTIN enables the unambiguous identification of a raw material, and the associated master data model ensures that consistent and comprehensive master data about the raw material is available, for example, already before shipments. Thanks to this foundation, batch information and events generated along the raw material journey—such as shipments, receipts and processing stages—can be reliably linked to the correct raw material and its master data.

As a whole, the solution reduces the fragmentation of information, enables a more efficient and largely automated information exchange and strengthens the transparency of the entire food chain. This supports companies in meeting regulatory requirements, managing risks and verifying sustainability claims—while providing a competitive advantage in both the domestic and international markets.

Identification is an essential part of raw material master data management. It would be ideal that each raw material and intermediate product has a GTIN, and the producer is responsible for assigning codes to their own products. In practice, however, flexibility and the possibility of parallel operating models are required in the initial phase.

Project presentation

Building interoperable traceability in the food chain requires that raw materials are also reliably identified and related information is shared in a uniform format. This is the only way for information to flow transparently and interoperably throughout the chain, all the way from the field to the consumer.

The data model of the raw material master data development project defined a common operating model for the food chain for the identification of raw materials. The project identified mandatory and

voluntary data points that are essential for identification, based on which the data model for raw material master data was constructed. Concrete use cases were used to examine the suitability of the model for different raw materials.

The project resulted in an industry-wide understanding of how raw materials can be identified and what information must be linked to raw materials from a traceability and regulatory perspective.

We would like to thank the following companies for participating in the development project

