

# A novel classification approach to standardise food tracing information in FoodEx2

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## Introduction

A great variety of tracing tools for food products for different purposes and sectors is available. To enable comparisons and statistics across several investigations harmonizing the analyzed information is essential. A standardization would facilitate:

- quicker and clearer identification of food products and contaminants, which have a high potential to cause or to be involved in an incident
- Precondition: harmonized data formats and an appropriate and user-friendly classification system with harmonized terminology for food and for the main data elements for tracing

A comprehensive literature and web search revealed different types of classification systems to manage food tracing data:

- most promising ones were ontology-based classification systems:
  - able to connect food data with semantic relations
  - fined vocabulary which helps avoiding confusion with terminology and description of food
  - beneficial characteristics considering the growing global trade and complexity of food products
  - Disadvantage: not widely used in the EU Member States

## Classification systems

Less abstract  
Less flexible

More abstract  
More flexible

### Term list

Ambiguity control

### Taxonomy

Ambiguity control  
(Synonym control)  
Hierarchical relationships

### Thesaurus

Ambiguity control  
(Synonym control)  
Hierarchical relationships  
Associative relationships

### Ontology

Ambiguity control  
(Synonym control)  
Hierarchical relationships  
Associative relationships  
Semantic relationships

Increasing support for complexity and expressiveness

## Coding strategy

### Stepwise data collection with coding by local inspector (fork to farm)

Inspector at oat milk producer

Drinking water  
Oat grain  
Rape seed oil  
Salt  
Vitamin B12  
Regulator (dipot. phosph.)  
Milling  
Laminate

A03TL  
#F04.A03DK  
#F04.A00DG  
#F04.A036V  
#F04.A042P  
#F04.A0EXP  
#F04.A048C  
#F28.A0C03  
#F19.A07PS

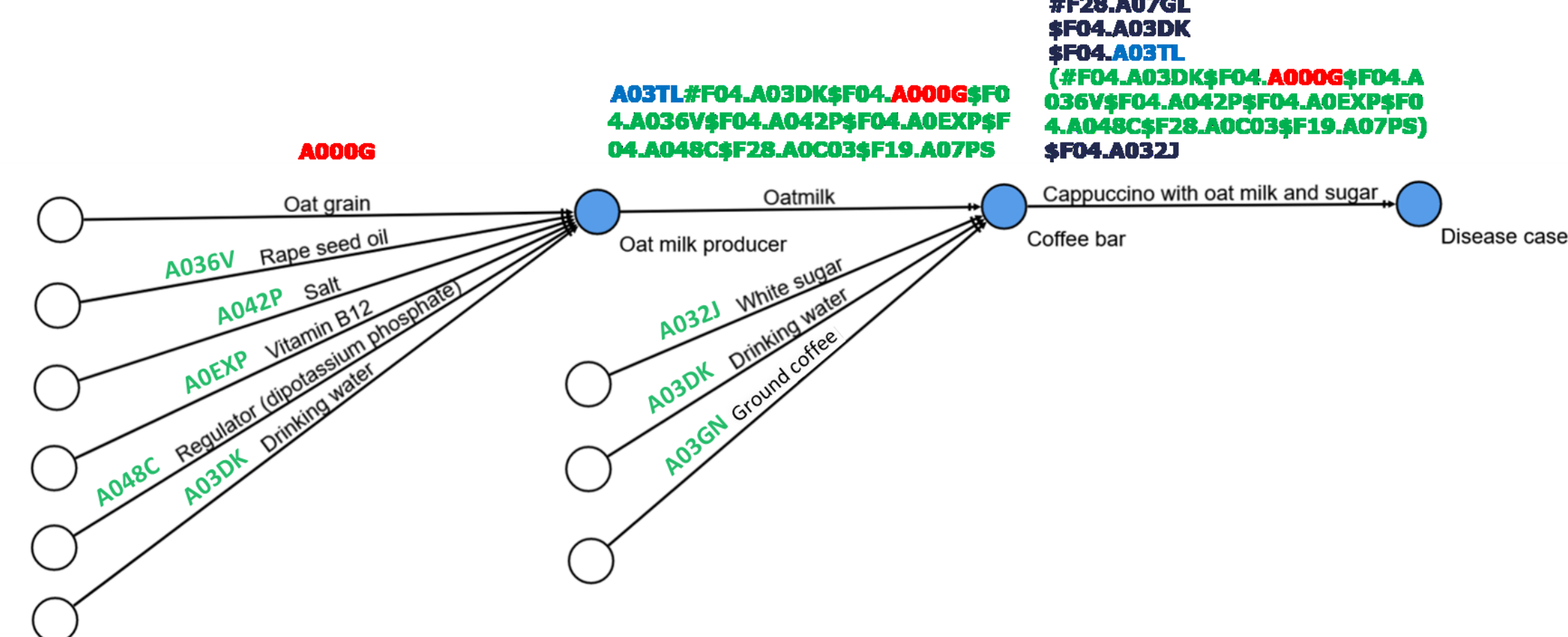
Inspector at coffee bar

Ground coffee  
Boiling  
Drinking water  
Oatmilk  
White sugar

A03GN  
#F28.A07GL  
#F04.A03DK  
#F04.A03TL  
#F04.A032J

Disease case  
Cappuccino with oat milk and sugar

### Software-enabled nesting of food ingredient codes (farm to fork)



## FoodEx2

- comprehensive food classification and description system
- widely used by EFSA and the EU Member States
- designed for particular steps in the supply chain, like processed food or raw material
- So far no linkage between the steps of the whole supply chain

## How to code food tracing data in FoodEx2

To link all steps of the whole supply chain, we developed a coding strategy which enables the representation of the whole supply chain via facets that include and connect different ingredients or steps at the supply chain.

- Ingredients are coded using the FoodEx2 facet F04
- Packaging material can be treated as ingredient of the food item coded using the FoodEx2 ingredient facet F04
- Processes are coded with the facet F28
- coding approach of FoodEx2 is not changed, no extra effort is needed

When importing the tracing data into software tools such as FoodChain-Lab, the codes from the stepwise data collection are then nested into each other along the food chain for whole chain traceability. The strategy and syntax is shown on the left side.

## Aim

- Harmonization of the FoodEx2 classification system for a representation of the whole food domain and food supply chain with focus on tracing.
- A defined and harmonized vocabulary to avoid misunderstanding, false description and categorization of food products and their transformation to enable a basis for food product, process description and coding.
- A coding manual that has the ability to aggregate ingredients belonging to a food product with the valid codes for e.g. ingredients, process.

## Future work

### Harmonized vocabulary

- Implement syntax of the novel food classification approach for tracing within FoodEx2
- Adaption of defined terminology and vocabulary referring to whole food supply chain

### Coding strategy

- Expansion of facets for description and tracing of complex foods
- Testing in case studies