Concept of Food and Nutrition Research Infrastructure (EuroFIR RI) with Focus on e-RI

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On behalf of the EuroFIR board

Agenda

- Objective of the EuroFIR RI

- Components of the RI

- EuroFIR e-RI

- User groups of e-RI

Objectives of the EuroFIR RI

Integrate **high-quality** national, European and international food- and nutrition-related data and information, tools, facilities and services to support research, industry, food system, public and other stakeholders.

food-related and nutrition-related...

- Knowledge
- Data
- Tools
- Facilities
- Services

Scientific Data and Knowledge

Existing data and knowledge include:

- Food composition
- Bioactive components (food and plant food supplement)
- (Food waste)
- (Food allergy)
- (Food contamination (TDS))
- (Consumer behaviour)
- (Personalised nutrition)

New data and knowledge include:

- Food consumption
- Dietary quality assessment
- Food safety risk assessment
- Food system
- specific PDO Food composition database

Issues

- Format of datasets are not harmonised.
- Food items of the datasets are classified and indexed using different systems (like LanguaL, FoodEx2, GloboDiet etc.).
- Some data is online available for simple queries such as "how much protein has an apple" (Only basic data on user interfaces).
- If more advanced investigations wants to be performed, data needs to be transformed to bring it in a certain format (manual transformation of raw data).
- Simple tools that everybody can use such as data aggregation for food consumption data, data linkage or visual data analyser are missing.

Components of the EuroFIR RI

There are three components that an RI needs:

- Network and central hub

- Physical component

- Electronic component

Components of the EuroFIR RI

- Network and central hub
  - Non-profit organisation
  - Membership
  - Central office and team in Brussels
  - Consortium building for research projects
  - Yearly general assembly meeting
  - Offers trainings
  - Supports conferences and journals

- Physical component
  - National food composition compilation centres
  - National Total Diet Study centres
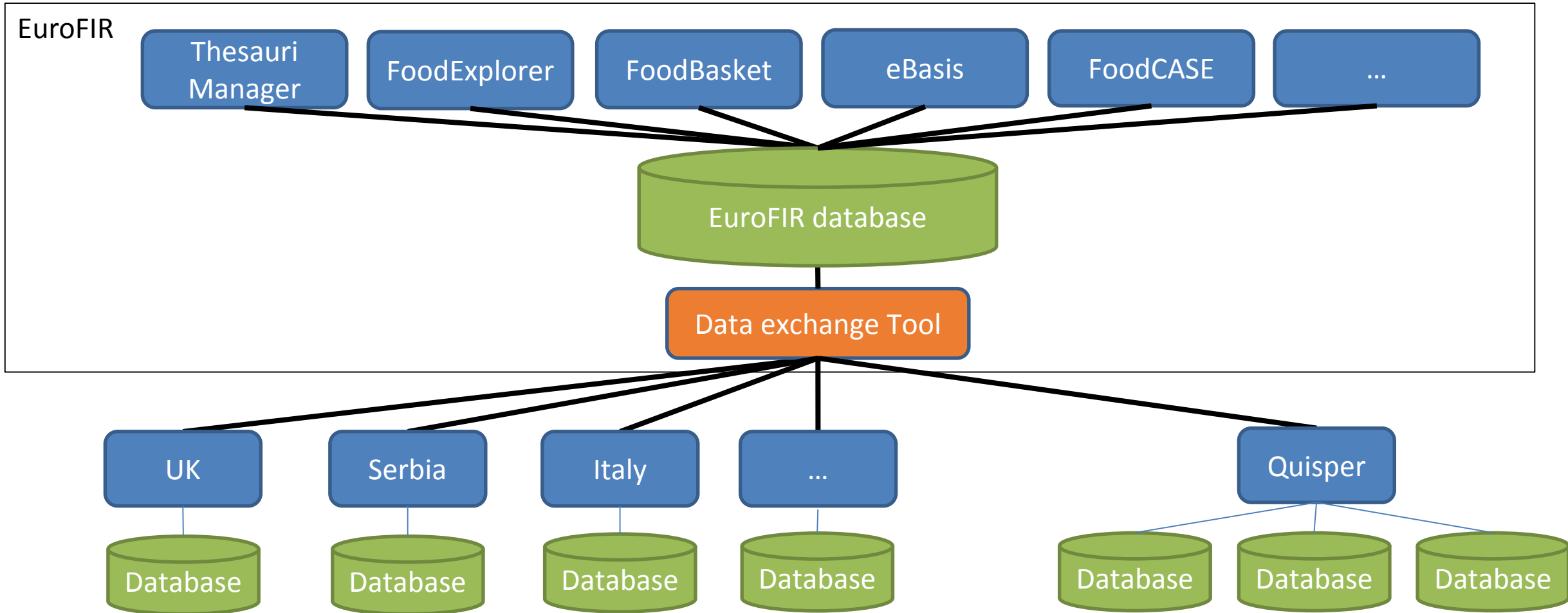 - National food consumption survey centres
  - Other data and knowledge producers

Components of the EuroFIR RI

- Electronic component
  - Data repository
  - Knowledge base
  - Interlinked national and central data repositories
  - Tools to generate and analyse data
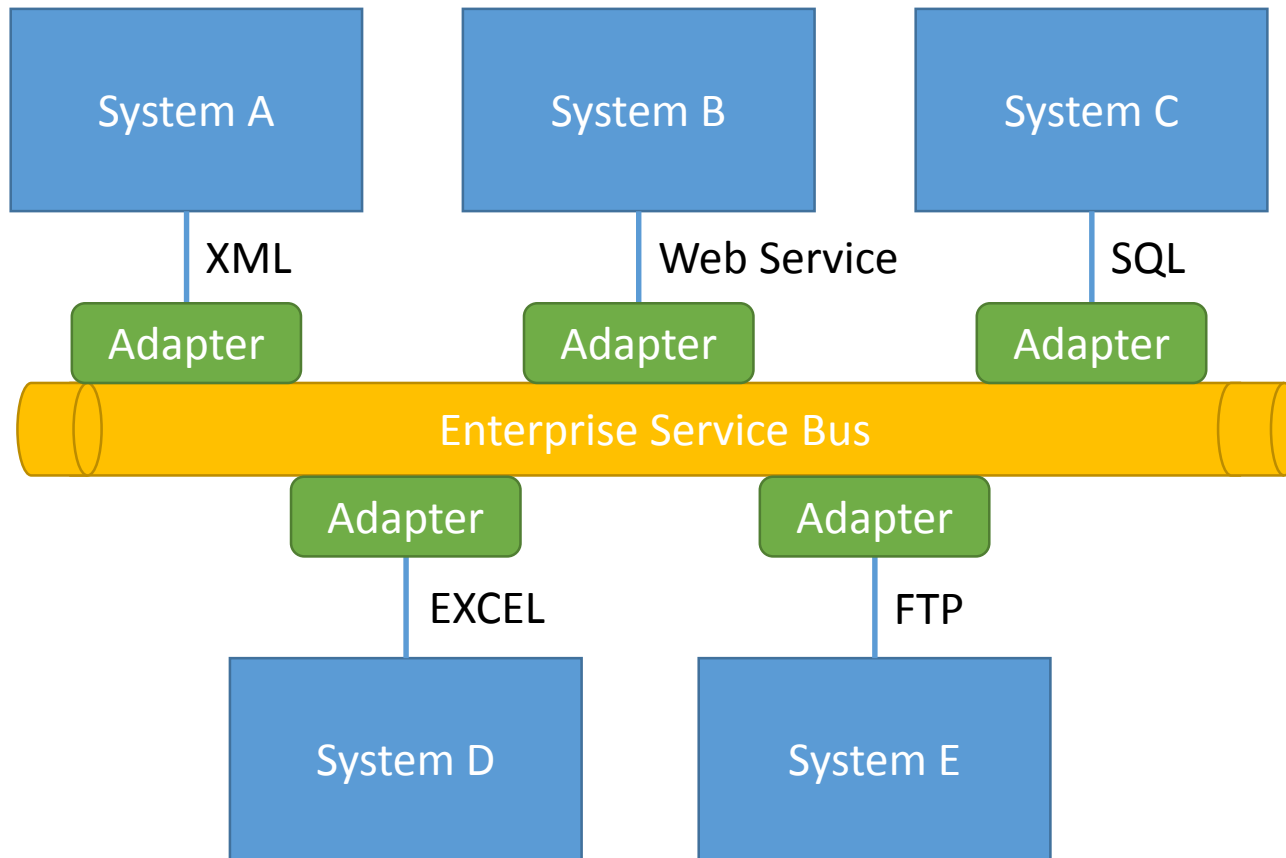 - Documentation and e-learning

e-RI Infrastructure – Current state
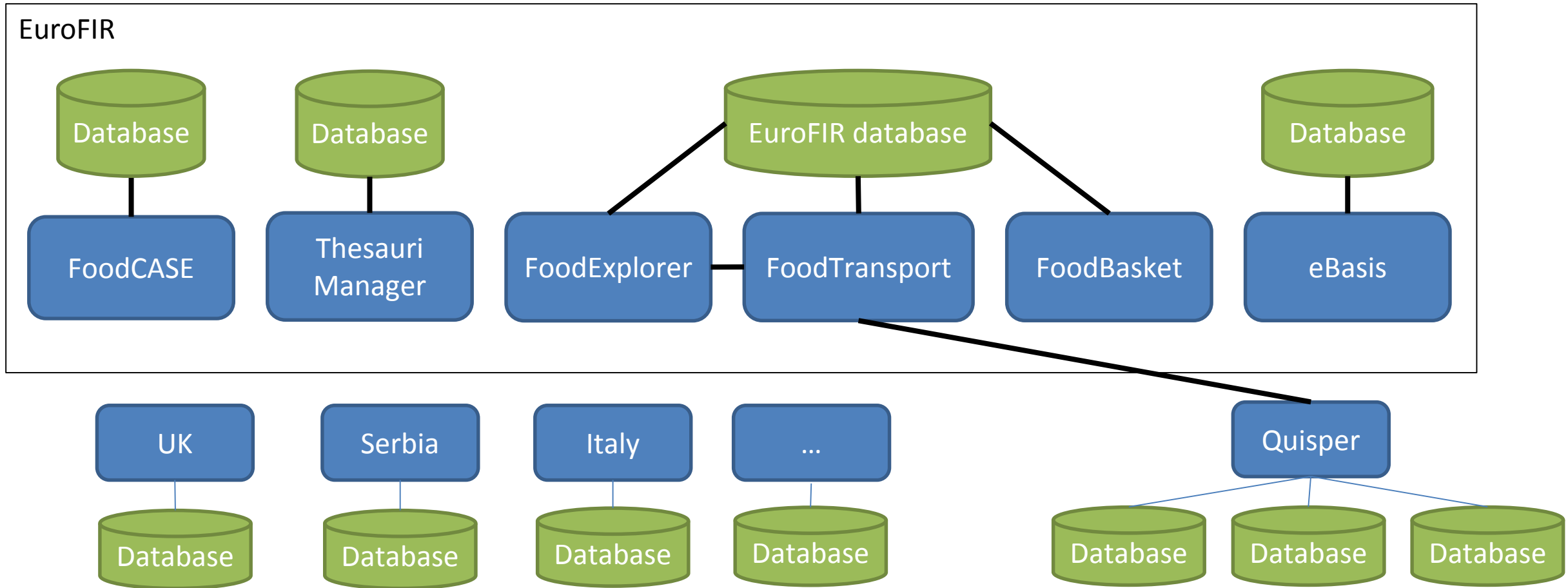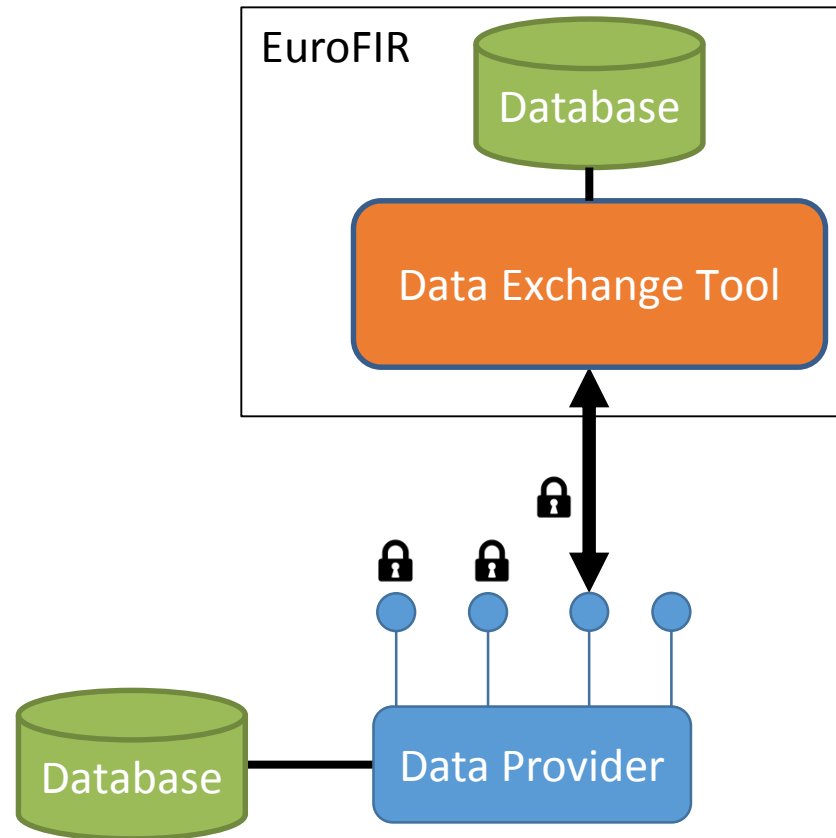
e-RI Infrastructure – Import Tool

Data Exchange Tool

- No direct connection between two systems.
- All communication takes place over ESB.
- Usage of an enterprise message model that defines standard messages (message-driven).
- Adapters are needed to transform a system's format to enterprise message model (using the EuroFIR ontology).

Data Exchange Tool

- Each data providers has interfaces (lollipops) to send or retrieve data.
- It can be simple as EXCEL sheets or sophisticated as web services.
- Access can be restricted.
- Goal: Simplified data submission including incremental upload, automated validation and access to own data.

Data Exchange Tool

EuroFIR

Database

Data Exchange Tool

Data Provider

Database
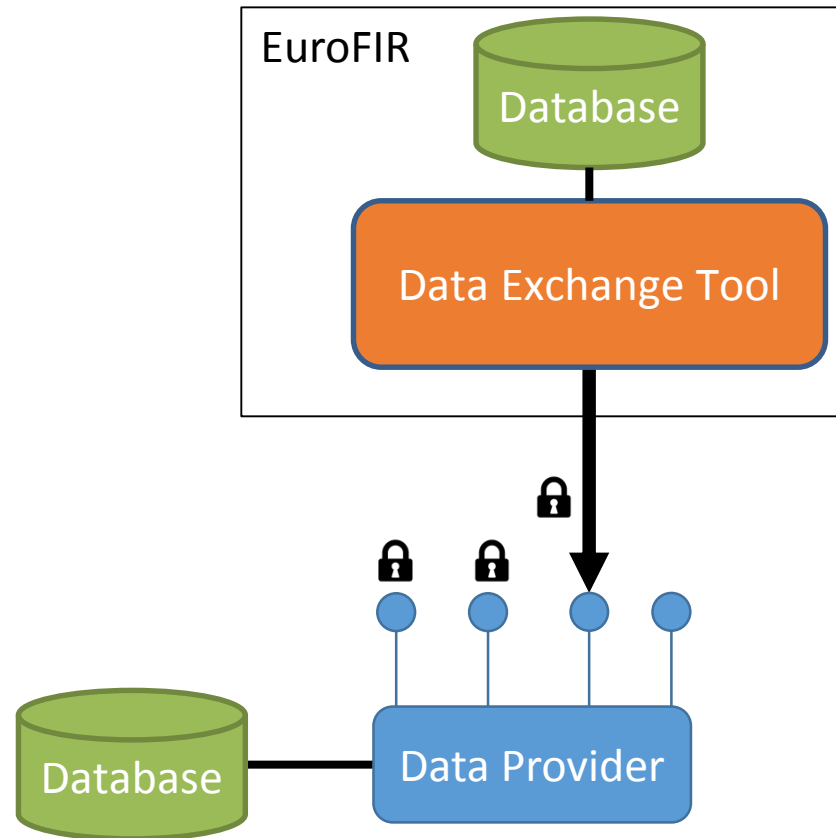
Link between EuroFIR e-RI and data provider is a two way communication. Data that can be exported:

- Source composition data
- thesauri
- Aggregated or calculated data
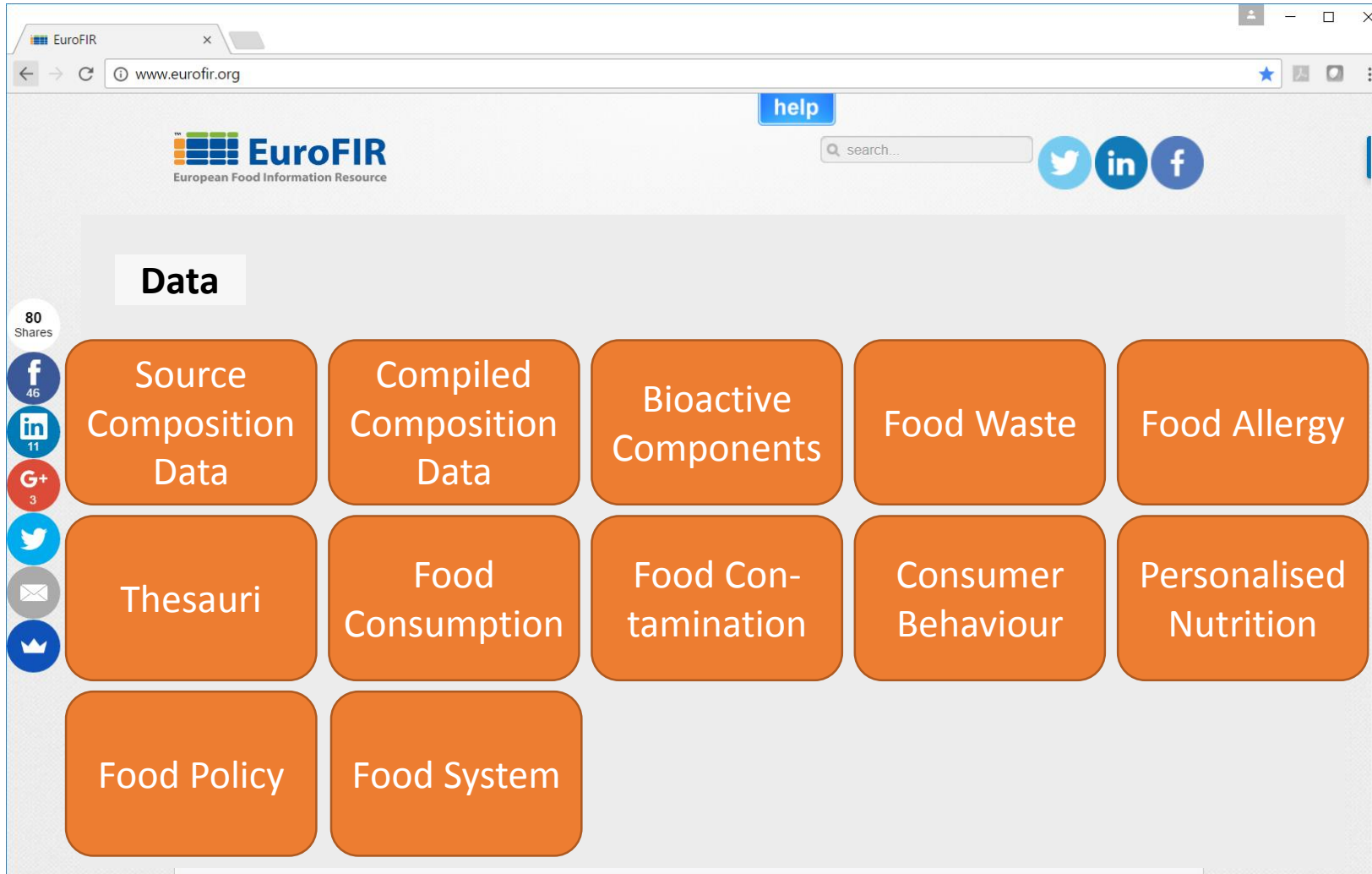
Connect e-RI Infrastructure with Others

Link EuroFIR RI with other network to

- Exchange knowledge
- Exchange data
- Produce more comprehensive datasets
- Make research co-operations

And many more …

EuroFIR Data Platform

The goal is to provide

- all available data about food and nutrition

- comprehensive sets of data

- Up-to-date data

- high quality data
  - e.g. quality assessed source composition data
  - validated data

EuroFIR Platform Tools

- FoodExplorer: Browser for all areas of data
- FoodBasket: Recipe calculation tool
- De-borrowing Tool: Search for original values of borrowed values or get informed about updates.
- Labelling Tool: Produce food label for food products.
- Data comparison Tool: Compare data, part of FoodExplorer
- Consumption Data Aggregator: Tool to aggregate consumption data according to user needs.

EuroFIR Platform Tools

- Food Linkage Tool: Link different dataset over foods.

- Micronutrient Calculator: Calculate micro-nutrients for brands based on their ingredient list.

- Long-term Study Tool: Perform long-term analysis, e.g. to reduce trans-FA, sugars etc.

- Data Importer: Tool to import data automatically and manually.

- Data Issue Analyser: Tool to analyse data issues. E.g. Outliers in comparison to other countries.

- Data Quality Analyser: Tool to analyse data quality.

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Link to Food, Nutrition and Health RI
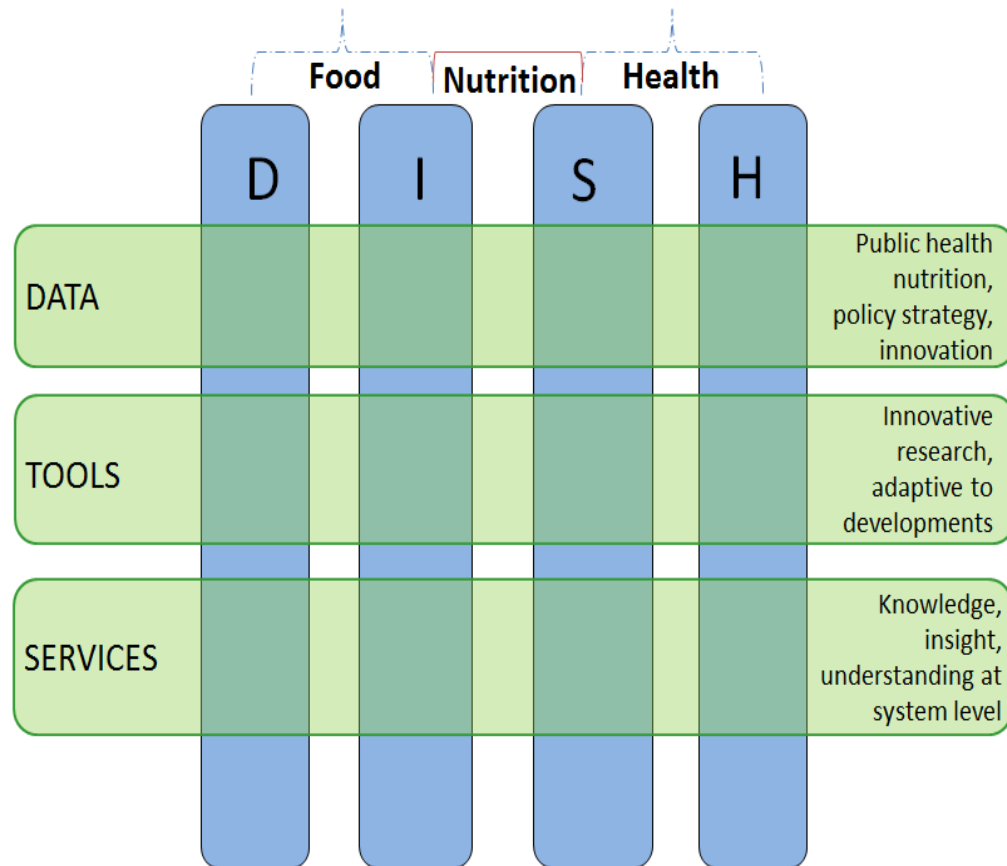
- Blue panels are research areas
- Green panels build the RI
- EuroFIR RI covers most of the green bars

Harmonisation and Standardisation

Harmonisation, next steps

- Data exchange format needs to be extended to not only cover XML but also other format such as JSON.

- Data will be comparable, e.g. by using thesauri and FoodEx2, LanguaL and other standards for food data.

Standardisation

- Data should not only be stored in the same format but also with same units, matrix unit etc.

Level of Data Worker

- First level: Directly produce data (Basis data)

- Second level: Generate data based on first level, e.g. aggregated food or aggregated consumption data.

- Data consumers: Use first level or secondary level data.

-> Need to check how second level data is handled

- Assessment
- Whom data belongs to
- If it can be used by others
- If data is stored

User Groups

- Research
About 100,000 public and private researchers and professionals in the field of food and nutrition
  - Data compilers
  - Food scientists
  - Nutritionists / dietitians

- Government

- Industry
  - Food producers
  - Food suppliers, retailers
  - Software developers

- Public
  - Citizens
  - Public representatives, like NGOs…

Future Work

- Investigate how crowd-sourcing can be used to generate more food data? E.g.
    - Analyse Facebook and twitter data or
    - Provide interactive web application where public can enter food data.

Thank you for your attention