Building a consumer data platform to enhance interdisciplinary research on **food**, **nutrition**, and **health** in Europe

RICHFIELDS – Research infrastructure on consumer health and food intake using e-science with linked data

in partnership with

FNH-RI – Food, Nutrition and Health Research Infrastructure

Richfields

FNH-RI

www.richfields.eu

www.wur.eu/fnhri

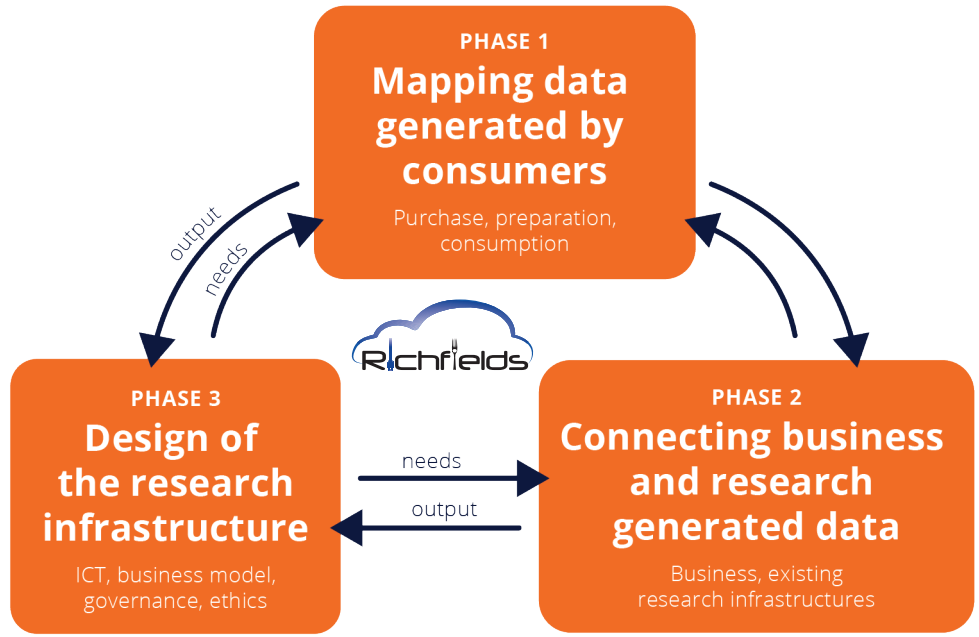
ABOUT RICHFIELDS

WHAT? RICHFIELDS is a three-year project that aimed to design a **data platform** for scientists, businesses, policy makers and people to connect and share information about **consumers' food behaviours**. This leaflet illustrates the outcomes of the project and its role in the building of the first **Research Infrastructure** on **Food, Nutrition** and **Health** (FNH-RI) in Europe.

WHY? Every day, consumers, researchers and businesses generate "big data" that offer detailed descriptions of people's behaviours. By linking and analysing these data-rich sources, researchers may be able to explain **societal challenges** regarding food and health, like **obesity**, cardiovascular disease and **sustainability**.

HOW? New **ICT technologies** bring opportunities for researchers to monitor and collect information on consumers' behaviours. If these data-rich sources could be all linked and stored in one place, they would enable researchers to collect different types of **information** such as:

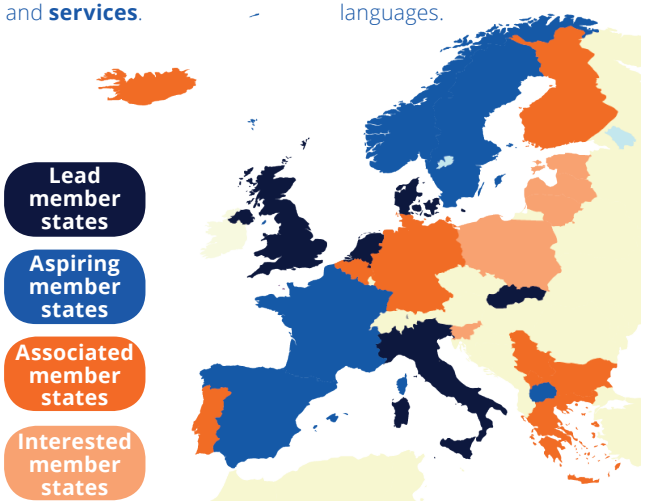
How consumers **purchase** / **prepare** / **consume** food



ABOUT FNH-RI

WHAT? The **Food, Nutrition** and **Health Research Infrastructure** is a joint initiative involving 10 EU Members States who work closely together in the food and health domain to collect and assemble **data, tools** and **services**.

WHY? It has become increasingly difficult for researchers to obtain **data**, **tools**, and **services** on food, nutrition and health. Resources are scattered across the globe in different formats and different languages.



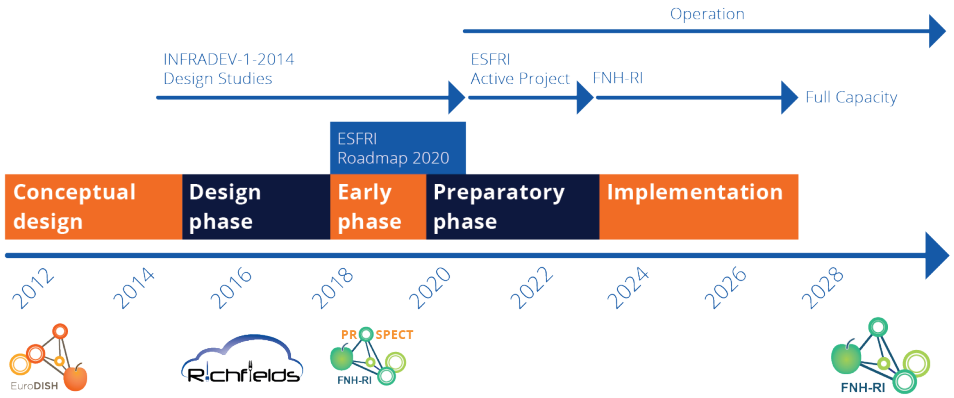
HOW? The **FNH-RI** builds on the roadmap developed by the EU project **EuroDISH** and the recommendations of the **European Strategy Forum on Research Infrastructures** for a food and health research infrastructure (ESFRI).
By 2024, FNH-RI plans to be fully operational and will bring together several RIs resulting from **previous EU projects** like EuroFIR, NuGO, GloboDiet, ISEKI-Food, Food4me, Quisper and **ongoing EU-funded projects** like iFAAM, REFRESH, SUSFANS and **RICHFIELDS**.
FNH-RI will enable top-level research, breakthroughs and innovations to make diets healthier and more sustainable. One of the building blocks of FNH-RI will be the Consumer Data Platform, designed in RICHFIELDS.

WHAT ARE RESEARCH INFRASTRUCTURES (RI)?

RIs are **facilities, resources** or **services** which support the scientific community to conduct top-level research. Examples of RIs are CERN, the Hubble telescope, and the European clinical research infrastructure network (ECRIN). RIs facilitate **harmonisation** of data and help researchers to:

- **Build** bridges between national research communities and scientific disciplines.
- **Connect** research, education and innovation.
- **Shape** scientific communities.
- **Attract** young people to science.

TIME LINE OF THE FNH-RI



THE PLATFORM'S INFORMATION ARCHITECTURE

To support the design, RICHFIELDS has developed a 'Core Offering' summarising the content of the platform, and has mapped the development of the platform to maturity.

RICHFIELDS PROJECT FINDINGS

PHASE 1: HOW TO MAP AND STORE DATA

An inventory management system (RIMS) has been created for storage and assessment of online tools (e.g., mobile phone applications), which produce consumer generated food and beverage purchase, preparation or consumption data. It contains two parts:

- A typology categorising the purpose of the tools.
- Metadata to enable assessment of data quality, either related to a scientific case or whether the data are FAIR - Findable, Accessible, Inter-operable or Re-useable (e.g. legal, governance or technical management constraints of the data).

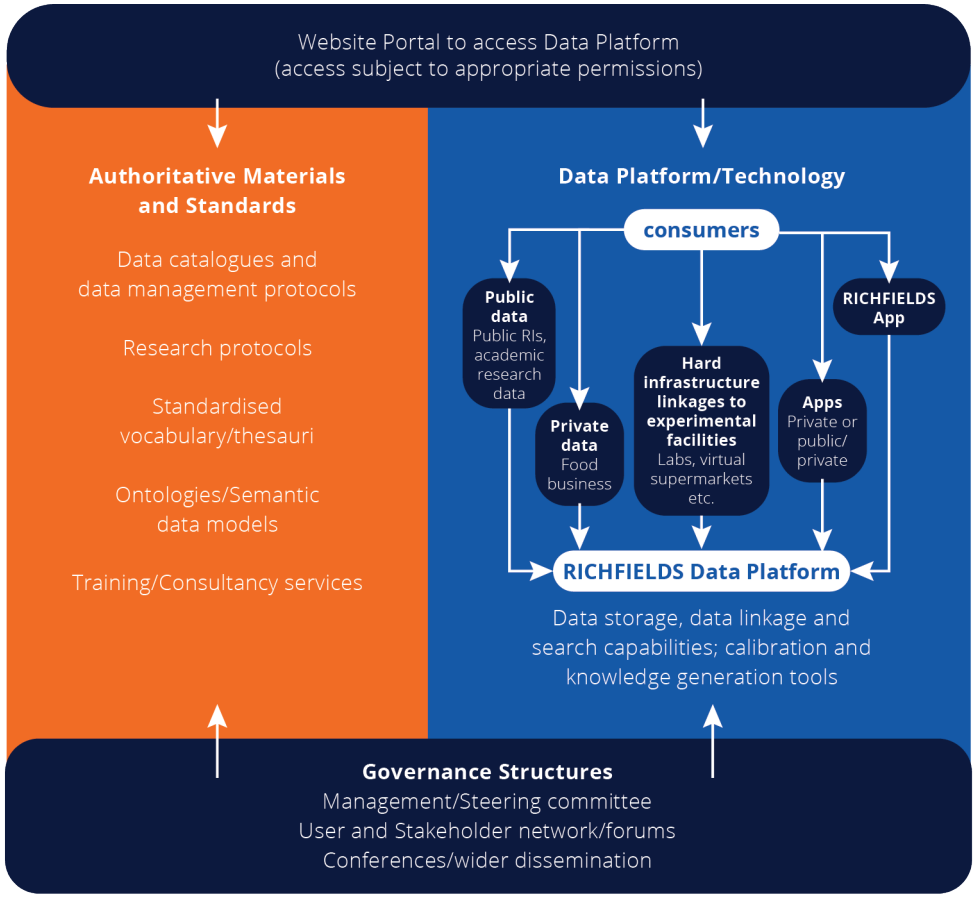
PHASE 2: HOW TO LINK DATA

Researchers conducted 10 case studies to investigate the technical components, interfaces and services necessary for data to be linked through the platform.

- Business generated data on purchase and procurement. (3 case studies)
- Existing or future resources regarding food composition and intake surveys, clinical interventions, consumer diet, health and lifestyle. (4 case studies)
- Laboratories and facilities that undertake consumer research on food choice, purchase, and consumption. (3 case studies)

PHASE 3: DESIGNING THE PLATFORM

The needs of the research data platform have been designed to explore and exploit consumer generated data. The design includes the technical backbone, a business model and the internal and external governance.



THREE STEPS TO DESIGN THE PLATFORM

Data combination and management focuses on the physical infrastructure, software, and potential data access and exchange. Hence concepts such as open and big data, and standards to link data from different sources are addressed.

Sustainable business models allow the data platform to be self-sustaining, ensuring value for all stakeholders as well as defining the services that would be provided, the supply chain, and the revenue model.

The needs of users and data providers as well Intellectual Property Rights (IPR) and ethical constraints are core elements of the governance framework, which must consider privacy, ownership, (inter-)national regulations, standardisation, and quality management.

WHO WILL USE THE PLATFORM ?

- Researchers
- Policy makers
- Businesses
- Consumers

FNH-RI WILL UNDERPIN THE DESIGN OF OUR PLATE OF THE FUTURE

THREE ELEMENTS OF THE FINAL PLATFORM DESIGN

SEMANTIC MODEL
– to encode data and information to enable sharing of data with end-users or information systems. RICHFIELDS has also generated an ontology to aid re-use and integration of data, information, and knowledge.

BUSINESS MODELS
– potential business models, depending on the value proposition, supply chain configuration and revenue system, have been explored for future implementation.

GOVERNANCE MODEL
– includes issues related to FAIR data, such as data ownership, privacy, IPR, and ethics, all of which have been considered in the design.

ULTIMATE GOALS OF THE RI

- **INCREASE THE SUSTAINABILITY OF FOOD PRODUCTION**
- **HELP PEOPLE EAT HEALTHY DIETS**

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IJS

EuroFIR
European Food Information Resource

Designed at EUFIC

Richfields

FNH-RI

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