



METROFOOD-RI – Infrastructure for promoting metrology in food and nutrition

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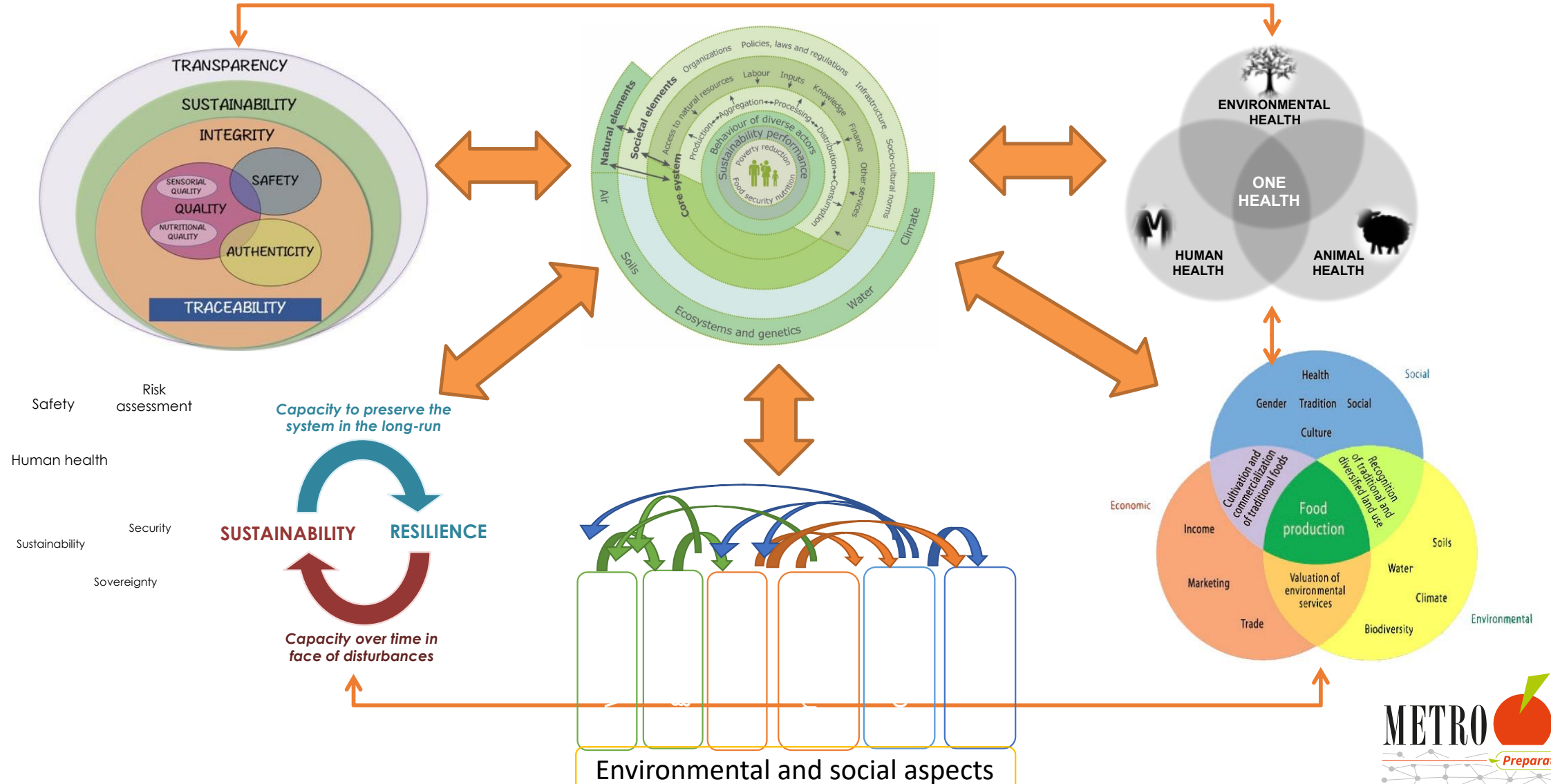
**METROFOOD-RO final Conference
& 23 Years of Activity for IBA Bucharest**

15•11•2023



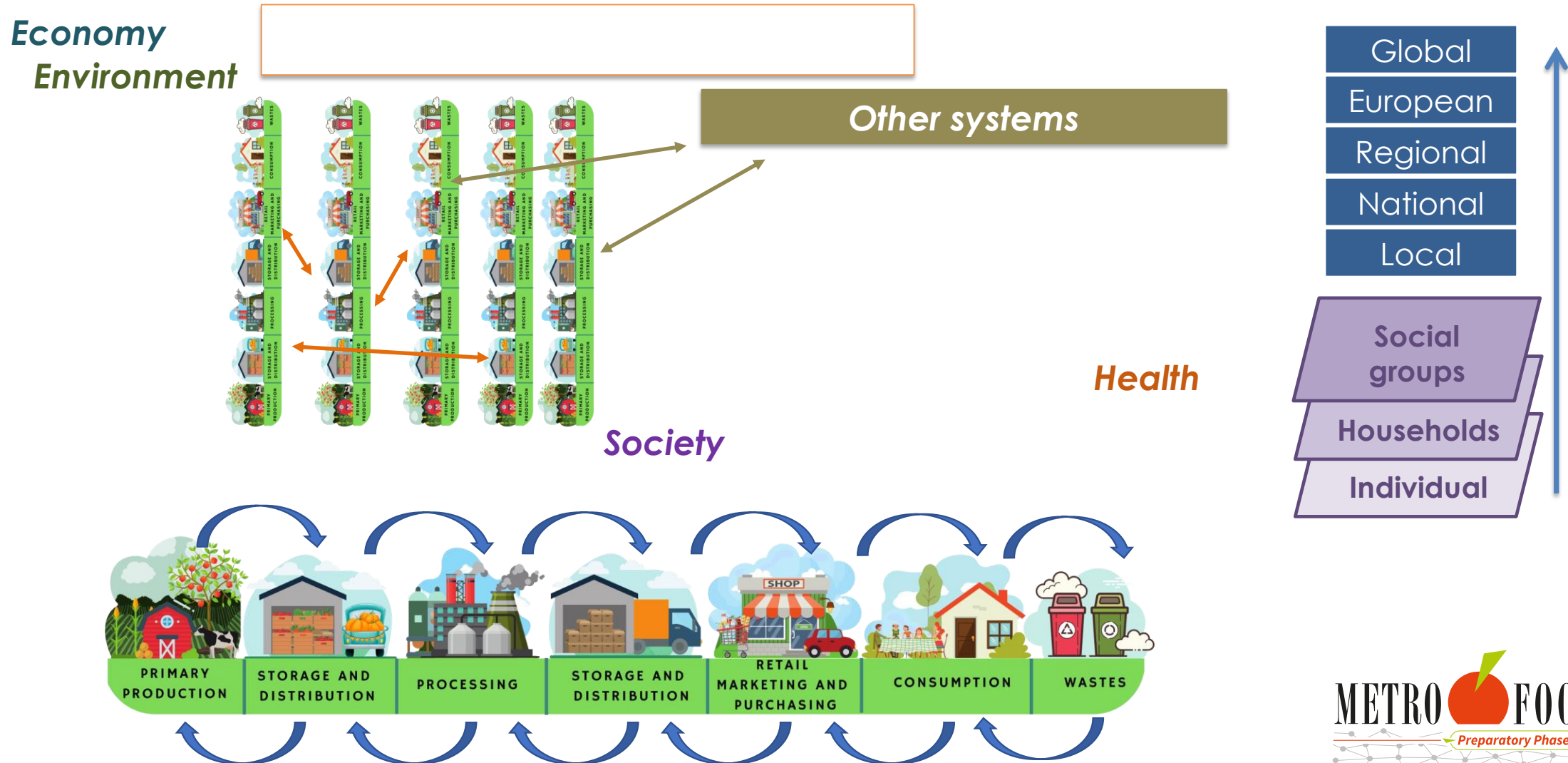
Why METROFOOD-RI

Agrifood system challenges

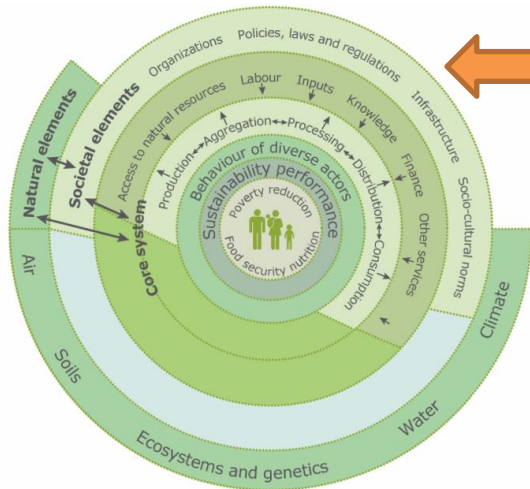


Why METROFOOD-RI

The “multiple” levels of agrifood systems



Why METROFOOD-RI



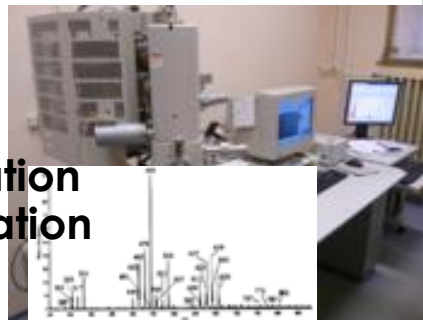
- Development of new analytical methods; systems for early detections, in situ and in line measurements
- Promotion of harmonisation and standardisation
- Digitalisation of agroindustrial systems, **big data** handling & **FAIR approach**, integrated application of **ICT systems** (smart sensors, IoT, Blockchain, AI, 5G, ...)
- Application of **inter- e trans-disciplinary approaches**, **citizen sciences** and **co-creation**



Advanced analytical systems

In-situ & in-line measurements

Harmonisation
Standardisation



early detection

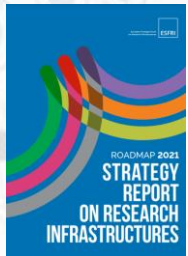


Digital revolution & Big Data

- ✓ Policy makers, ministries and local authorities
- ✓ Inspection & control system
- ✓ Health system
- ✓ Researchers
- ✓ Producers
- ✓ Consumers/Citizens



The role of Research Infrastructures



part of a **connected ecosystem** forming a unique resource for advanced research and interdisciplinary analysis of complex scientific problems

DATA, COMPUTING & DIGITAL RESEARCH INFRASTRUCTURES

ENERGY

ENVIRONMENT

HEALTH & FOOD

PHYSICAL SCIENCES & ENGINEERING

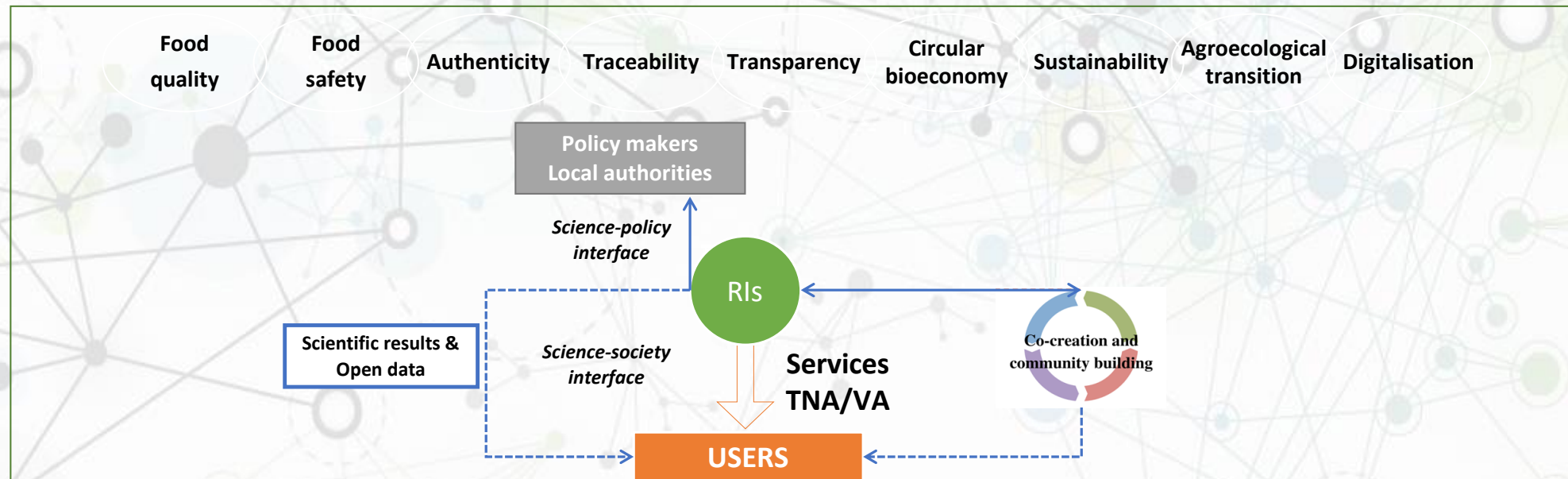
SOCIAL & CULTURAL INNOVATION

Service-oriented organisation

Innovation-oriented approach

Long-Term Sustainability

<https://roadmap2021.esfri.eu/>

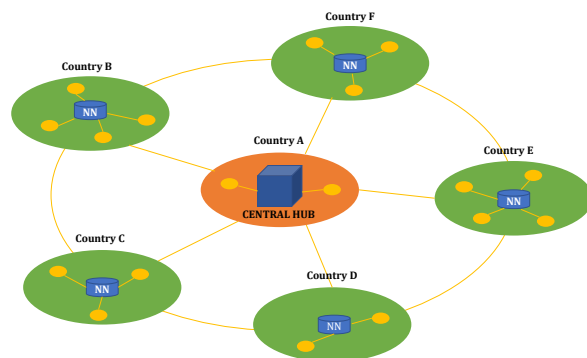


Research Infrastructures (RIs) have the capacity to provide resources and services for research communities on a long-term basis, making the RIs well positioned in addressing societal challenges



HIGH-LEVEL METROLOGY SERVICES IN FOOD AND NUTRITION FOR THE ENHANCEMENT OF FOOD QUALITY AND SAFETY

MISSION



- IT
- BE
- CH
- CZ
- DE
- ES
- FI
- FR
- GR
- HU
- MD
- MK
- NL
- NO
- PT
- RO
- SI
- TR





Physical-RI

e-RI



Metro

Food

Software development

Data collection

Data analysis

Management of Interlaboratory tests

Diffusion and Training

Plants and Labs for RM development

Analytical Labs.

Experimental fields/farms

Facilities for food processing and storage

development of new databases

Integration of existing databases

graphical interfaces development

database maintenance and updating

Reference Materials

Official and Reference Methods

Reference Laboratories

Vocabularies, Guidelines and procedures

PTs Providers

Food composition

Contaminants in food

Food markers

Characteristics of production areas and technologies

Food consumption

RM Preparation

Stability and homogeneity studies

Sampling, pretreatment and storage

Food composition and characterization

Inorganic contaminants

Organic contaminants

Chemical and biological markers and profiles

Microbiological analysis

Development of sensors and devices

Environmental Analysis

Testing (rheological, leaching, etc.)

Other

Crop production

Animal breedings

Fish farms

Industrial processing

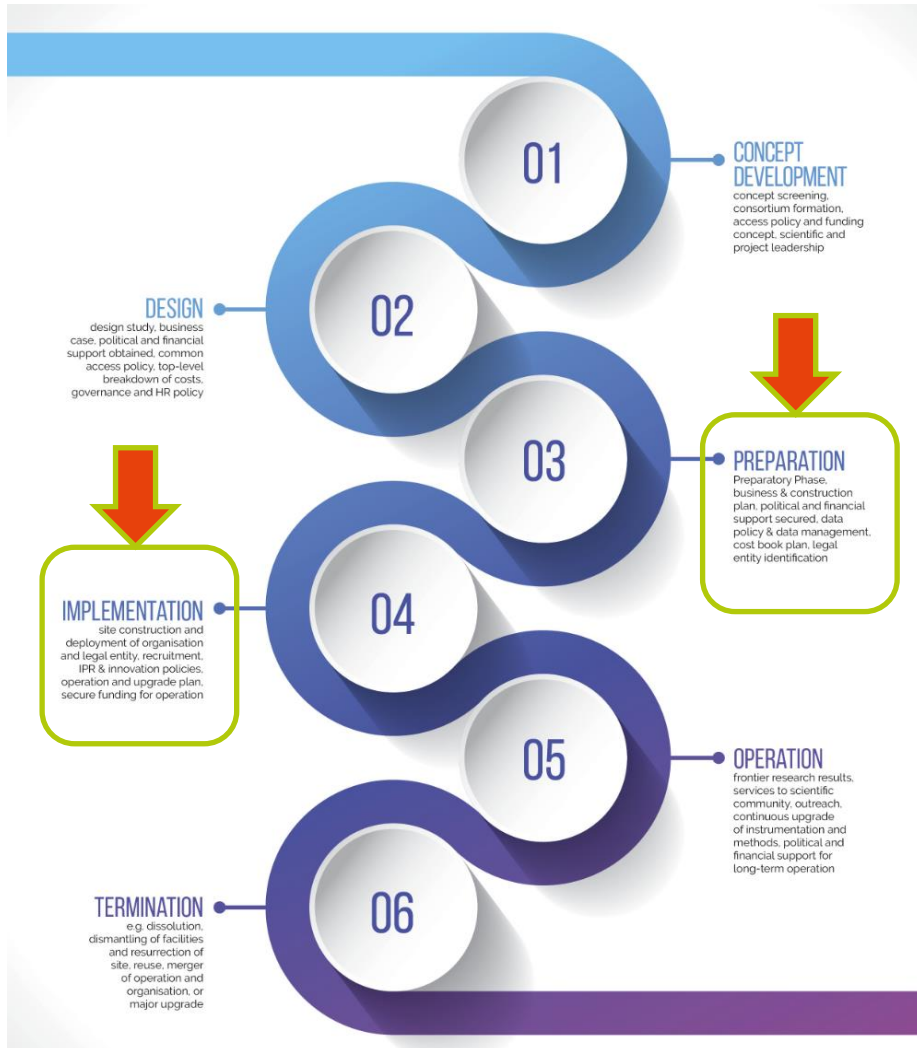
Packaging

Supply chain and storage

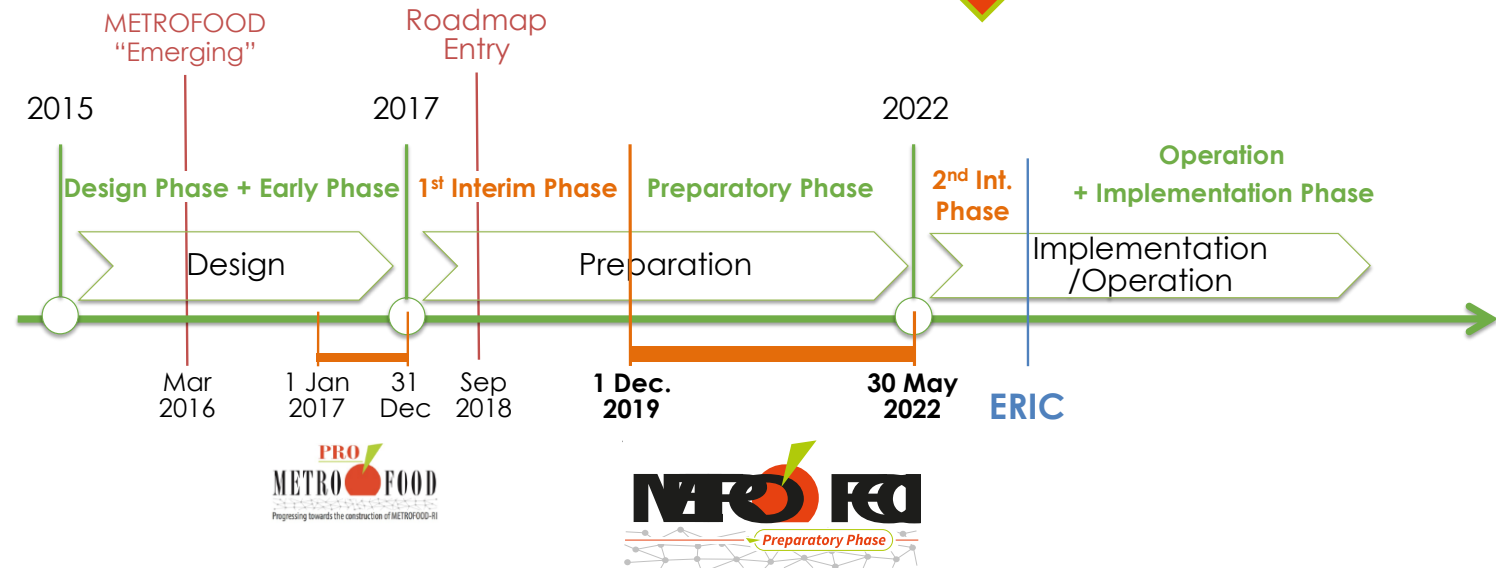
Food preparation



Where we come from...



1 Jan 2024



METROFOOD-PP Project

Bring the METROFOOD-RI ESFRI project to the level of a legally, financially and technically mature pan-European research infrastructure, ready to be implemented and operational

OBJ1

Organise the legal entity that will manage the future RI

OBJ2

Technically organise the RI as service-oriented organisation and define its operational standards

OBJ3

Define the long-term activities (on a strategic basis) for the future RI

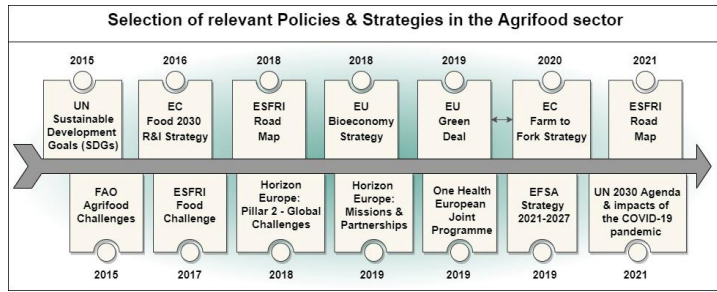
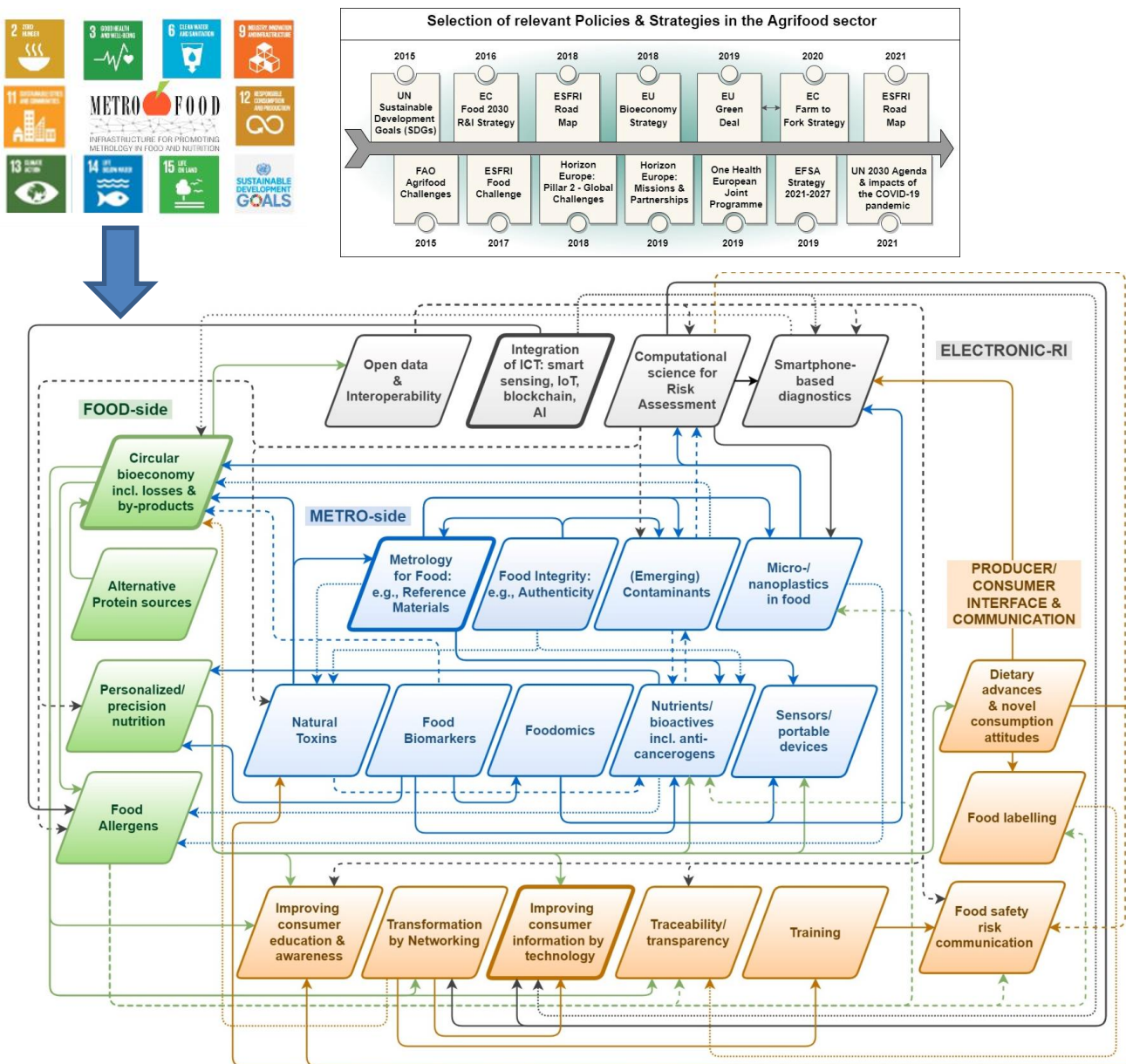
1 Dec. 2019 – 31 May 2022



METROFOOD-PP has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 871083.



Network of Strategic Scientific Topics

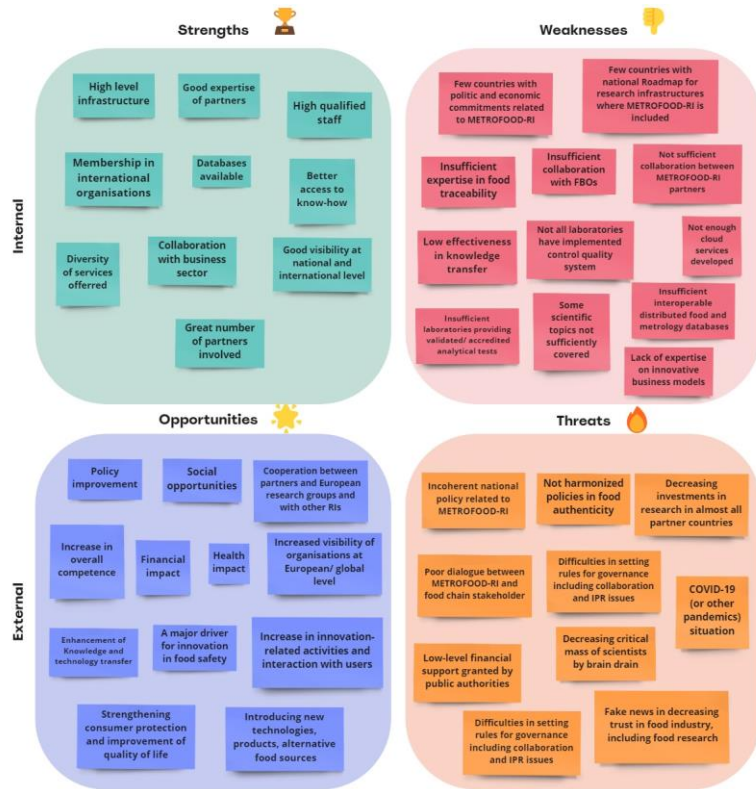


<https://www.metrofood.eu/images/preparatoryphase/SRIApr.pdf>



Business Plan

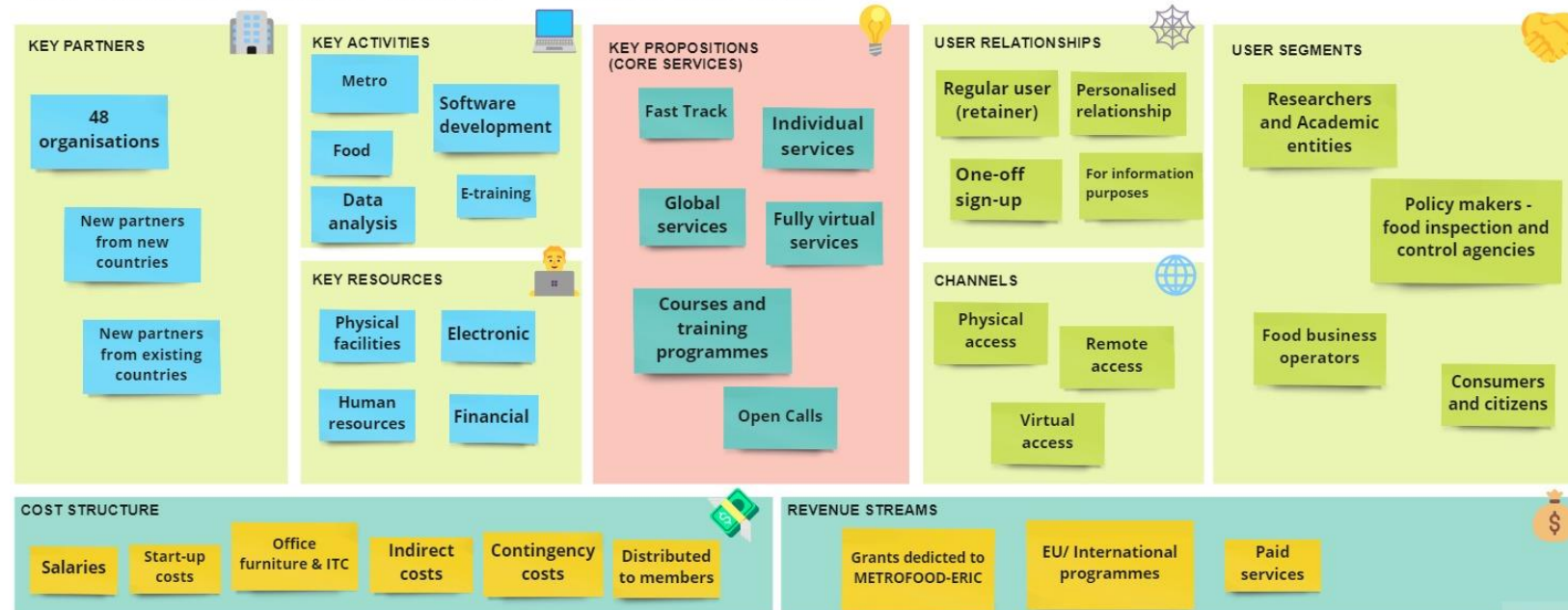
SWOT Analysis



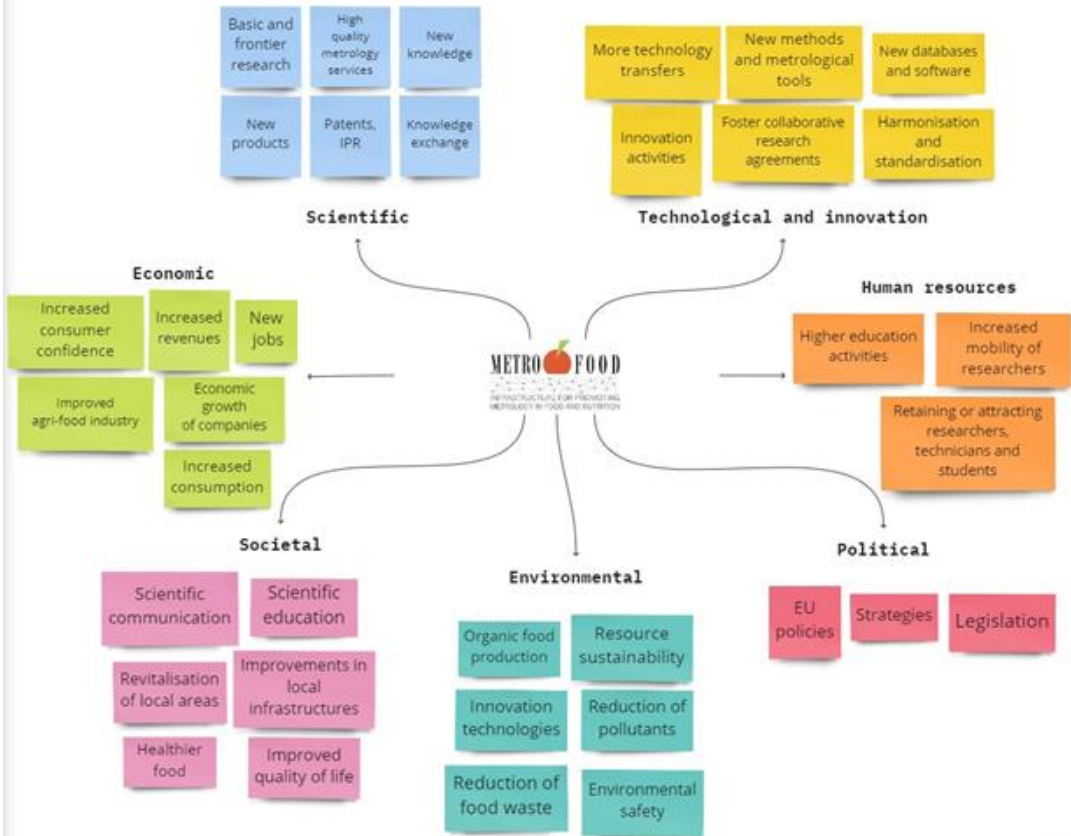
PESTLE Analysis



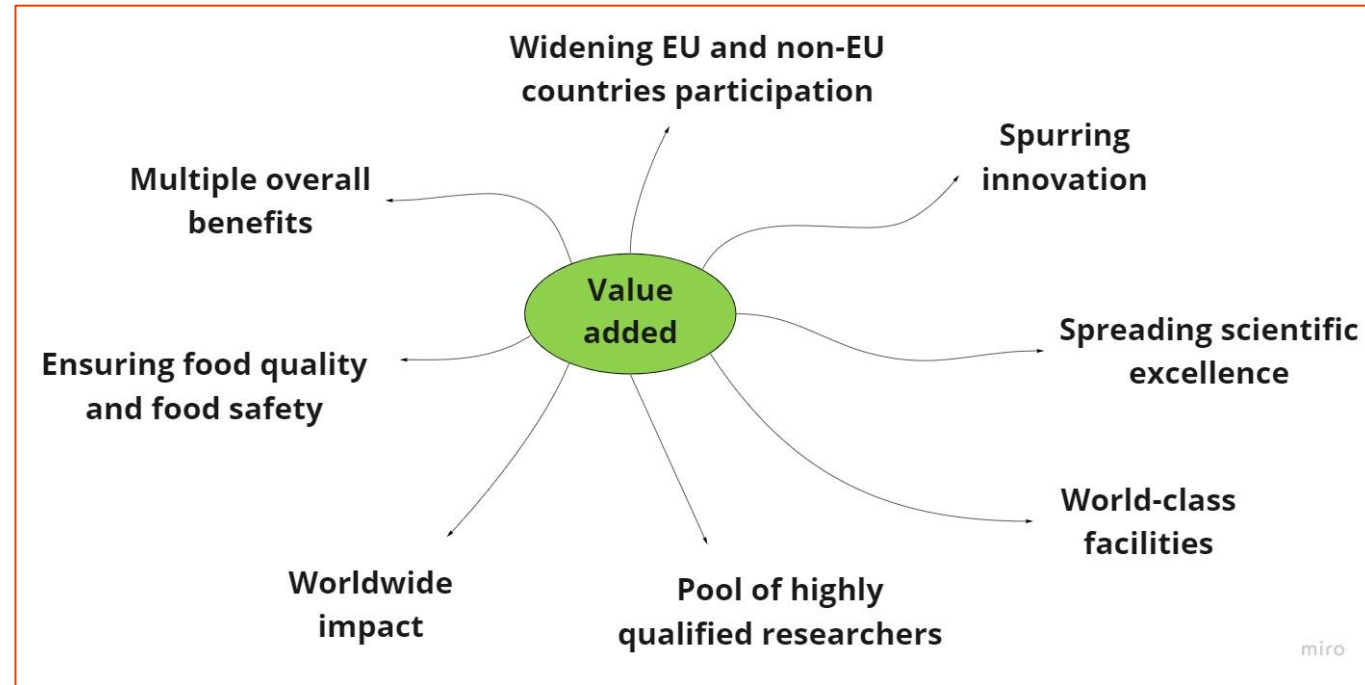
The Business Model Canvas - METROFOOD-ERIC



Impact and added value

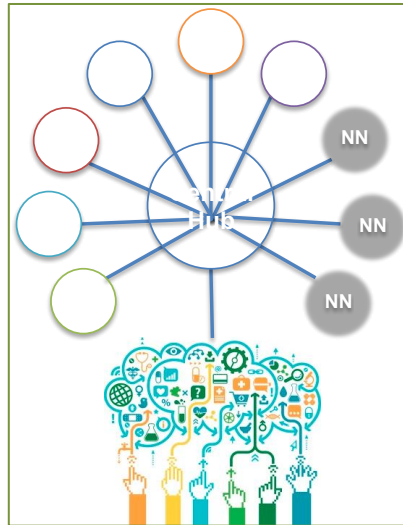
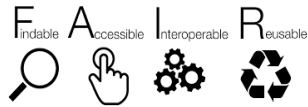
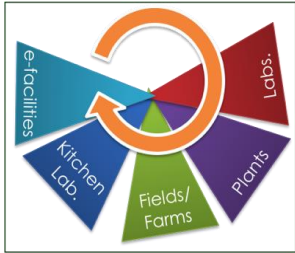


miro

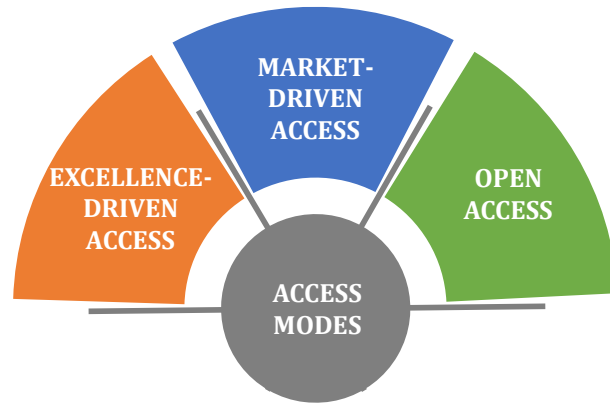
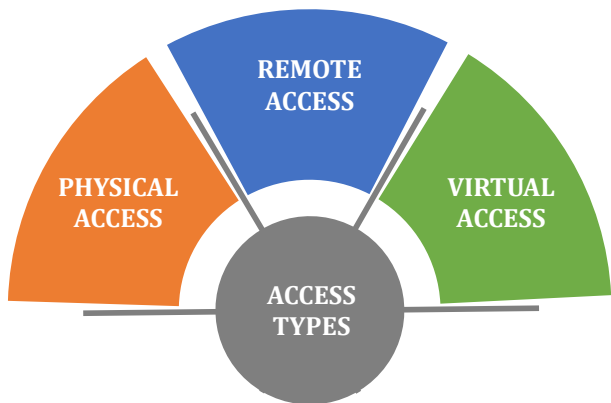


miro

Services and Access



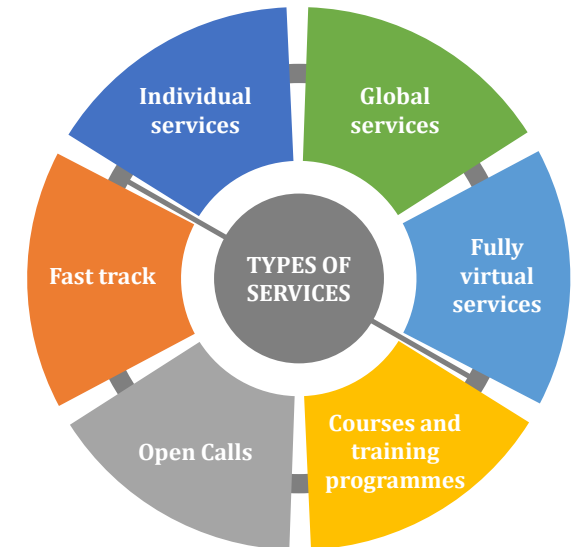
POTENTIAL USERS



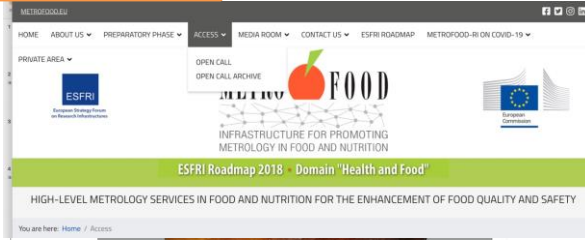
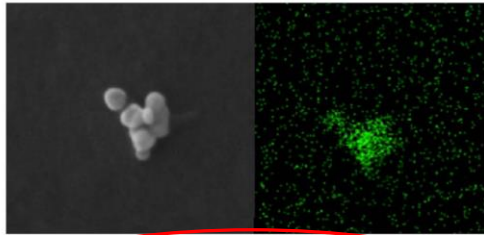
- CORE SERVICES**
 - Primary food production
 - Research on environmental impacts on food production, safety & quality
 - Novel foods & new techniques in food production
 - Food processing & kitchen labs
 - Processing techniques to improve safety & quality
 - Food packaging & preservation
 - Analytical labs
 - Authenticity determination/assessment
 - Omics-based analyses
 - Allergens
 - Mycotoxins (& other natural toxins)
 - Sensorial analyses
 - Organic compounds/contaminants
 - RM Plants
 - Design, development and production of RMs
 - E-services
 - Databases and tools

- USE CASES SERVICES**
 - Food pilot demonstrator
 - Physicochemical characterization of nanoparticles in food
 - RM App and risk assessment tool

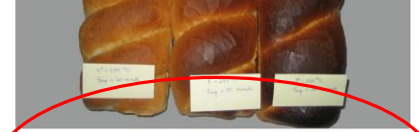
- INTEGRATED SERVICES**
 - Circular Bioeconomy
 - Living Labs
 - Food traceability and transparency
 - Virtual access services



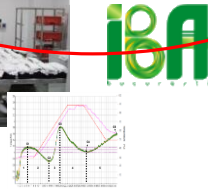
OPEN CALLS



1st OPEN CALL – (25 July – 30 September 2020) - Remote access to transmission electron microscopy facility for physicochemical characterization of nanoparticles in food



2nd OPEN CALL – (25 July – 30 September 2020) - Physical access to food pilot demonstrator: how to minimize acrylamide in bakery products

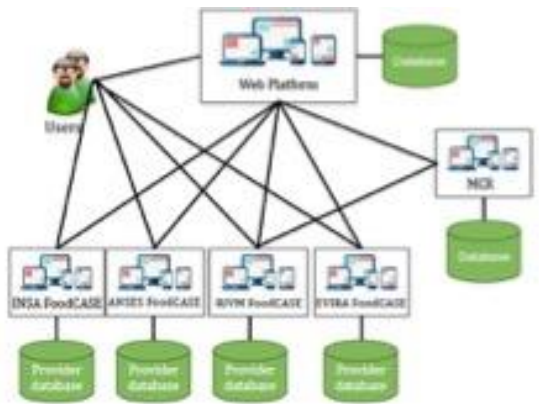


RM-pp

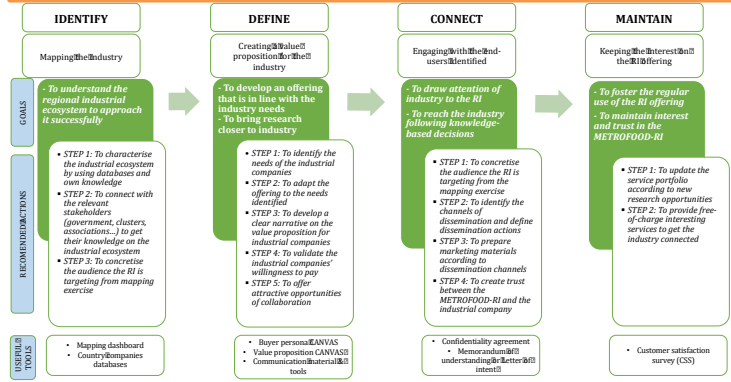
The screenshots show the RM-pp application interface. It includes a 'BASIC SEARCH' form with fields for 'Matrix name', 'Reference material property', and 'Parameter name'. A 'SEARCH' button is present. Below the form, there are search results in a table format. The table has columns for ID/Code, Name, Producer, Country, and Category. The results list various reference materials like flour, maize, and cereals from different producers and countries.

<https://www.metrofood.eu/access/e-services.html>

TOOL TO INTEGRATE TDS SAMPLE DATA WITH MCRA



TECHNOLOGY TRANSFER GUIDELINES



Training & social engagement



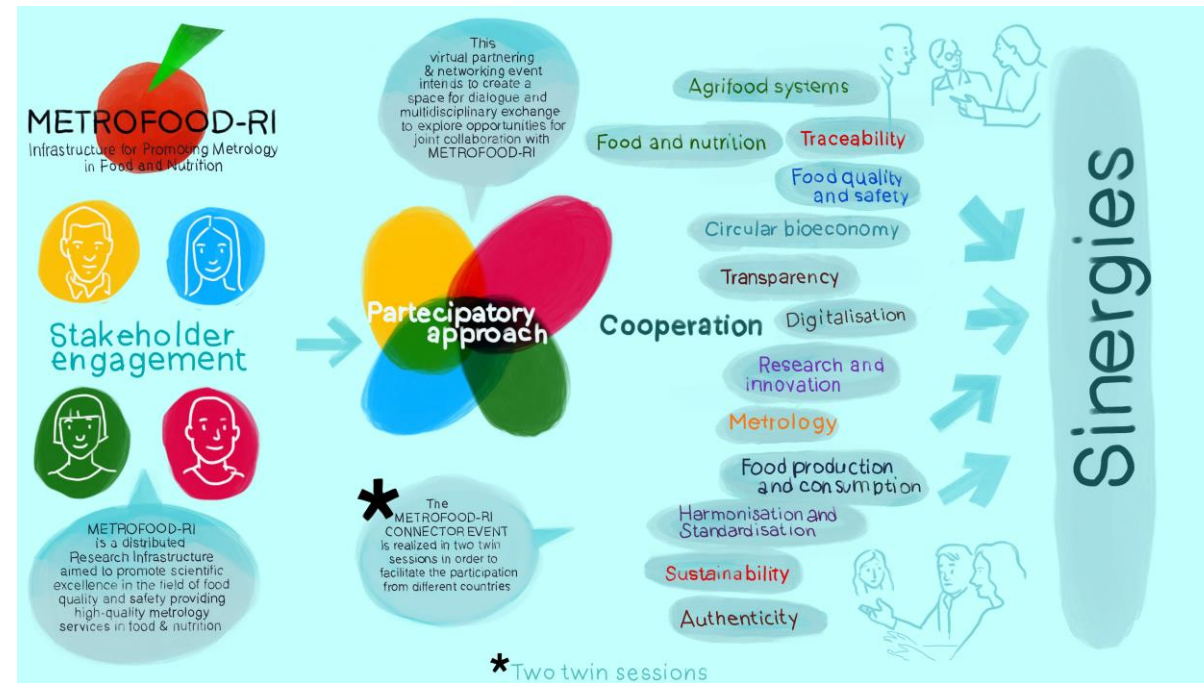
Metrology in Food and Nutrition

METROFOOD-RI: Traceability and comparability of results in food measurements

Parma, 20 – 24 September 2021

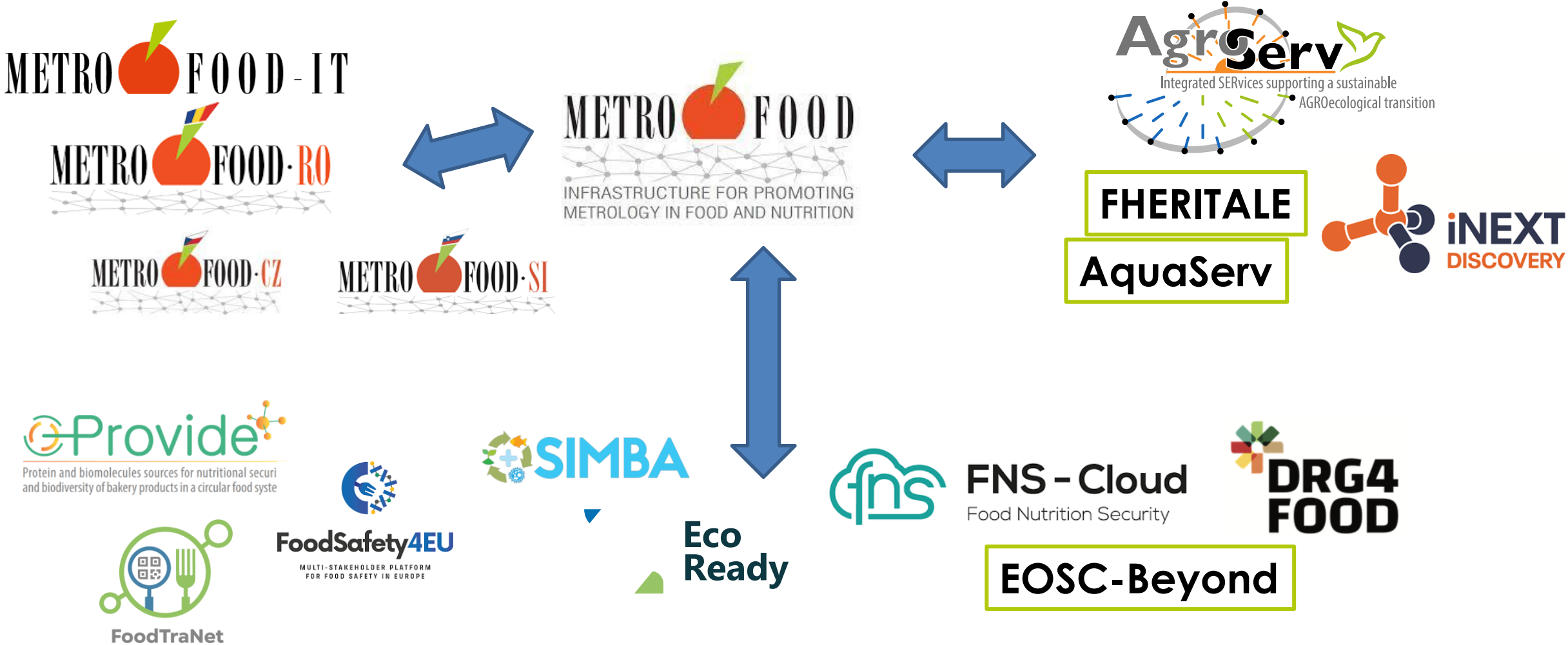
7 Feb.
28 Mar.
2022

**METROFOOD-PP
WEBINAR SERIES**
On-line, open free webinars



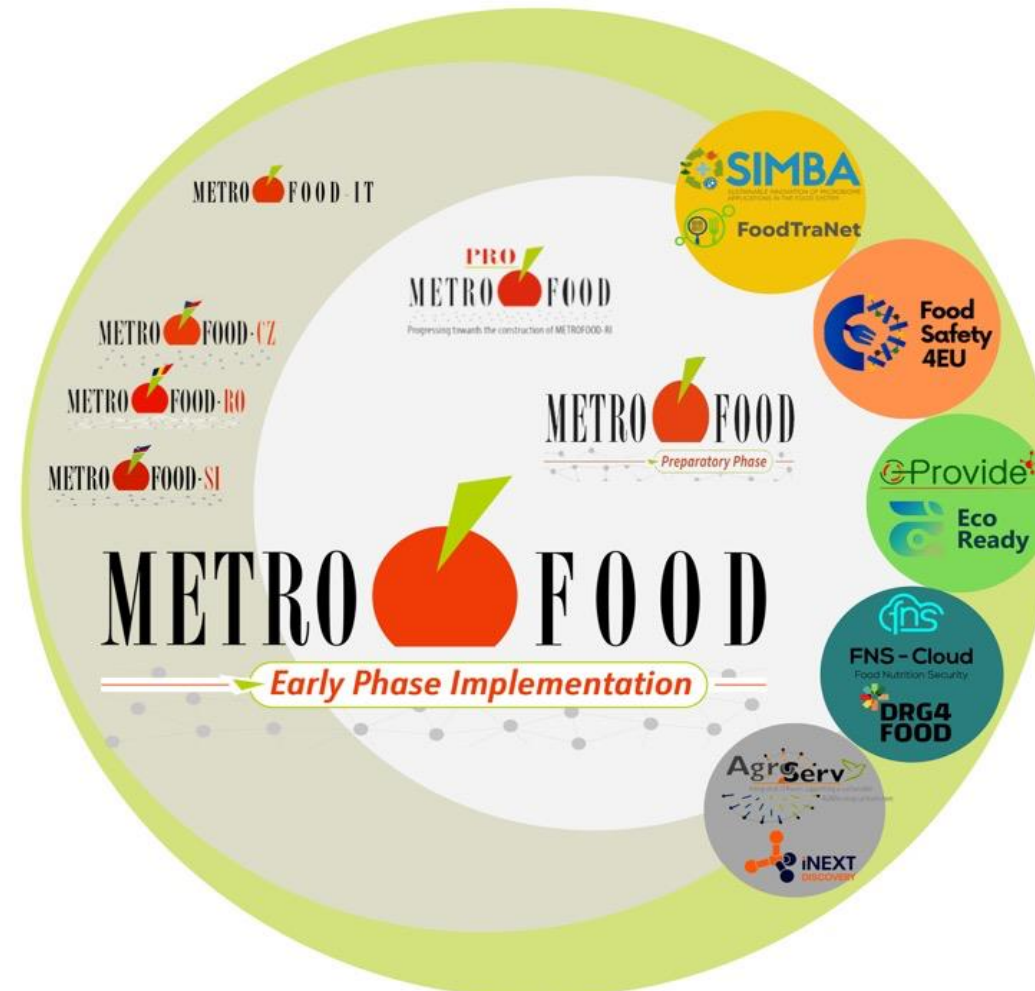
The best opportunities arise from integration

Initiatives focused in integrating RIs knowledge, facilities and services can boost the definition of an integrated and structured landscape, promoting more and more advanced research and highest cooperation with and within the agrifood systems' stakeholders, thus enhancing the social-economic impact



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METRO FOOD

← *Early Phase Implementation* →

HORIZON-INFRA-2023-DEV-01-02 (CSA)
GA 101130162

Duration: 12 months
Starting date: 1 Dec. 2024
Total funding: 1,5 M€ (Lump sum)

Mission

To **advance the building process** of METROFOOD-RI as infrastructure consolidated for its full implementation and **ensure an effective start of the operational phase**.

To address the critical issues identified at the end of the Preparatory Phase that could hinder the fulfilment of the RI's expected/planned timeline.



Objectives, actions and expected results

Objective

SUPPORT THE ESTABLISHMENT OF THE LEGAL ENTITY THAT WILL MANAGE THE RI

MEMBERSHIP

GOVERNANCE

FUNDING

ARCHITECTURE

SPECIFY THE TECHNICAL IMPLEMENTATION OF THE RI AS SERVICE-ORIENTED

E -
COMPONENT

DATA
MANAGEMENT

ACCESS

SERVICES

CONSOLIDATE THE POSITIONING IN THE LANDSCAPE

ERA

COMMUNITY
BUILDING

LIAISE

SECURE THE LONG-TERM SUSTAINABILITY

FINANCES

IMPACT

RISK
MANAGEMENT

USER
ENGAGEMENT

METRO FOOD

Early Phase Implementation

Expected results

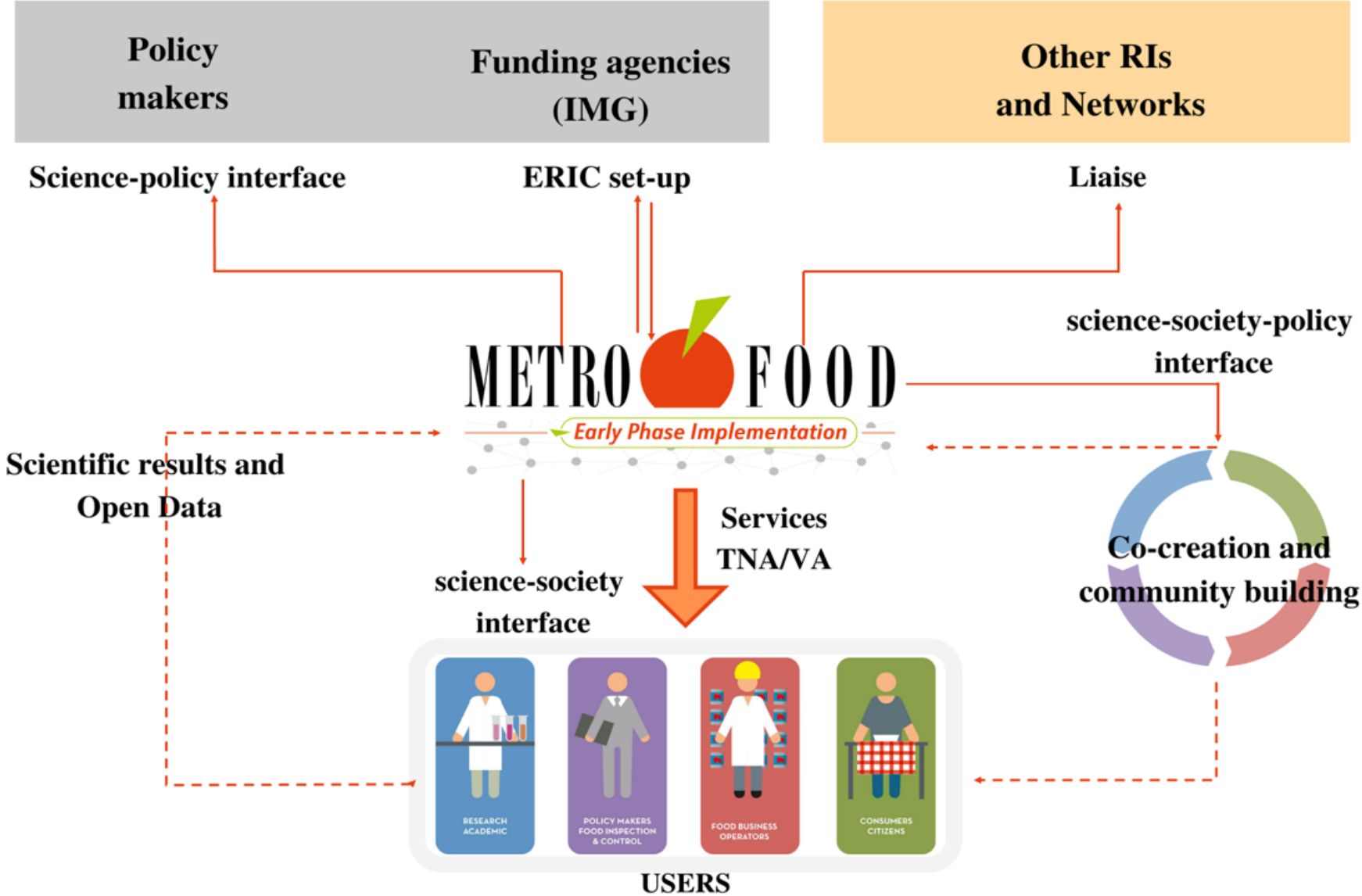
ERIC WORKING PROCEDURES AND DOCUMENTATION

DMP, SPECIFICATIONS ON E-RI CORE COMPONENTS, E-NEEDS IMPLEMENTATION CONCEPT, ACCESS PROCEDURES, TNA, SERVICE CHART

PDER, METROFOOD ERIC CONTRIBUTION TO THE ERA, SYNERGIES WITH OTHER RIs/INITIATIVES

IMPACT ASSESSMENT PROCEDURES, RISK & CONTINGENCY PLANS, FINANCIAL SUSTAINABILITY ROADMAP, PLANS FOR USER ENGAGEMENT

Relations and interactions with external actors



Service 1 - Pilot for the characterisation and safety testing of bio-based materials in food packaging - Use of sustainable and non-polluting alternatives to currently available food processing, including packaging materials → use of fermentations carried out by microorganisms, which act as biofactories.

Characterisation and testing of safety of 'novel' bio-products intended for use in food processing and packaging; microorganism characterisation and the safety, purity, suitability, and sustainability assessments of these bioproducts.

Remote access.

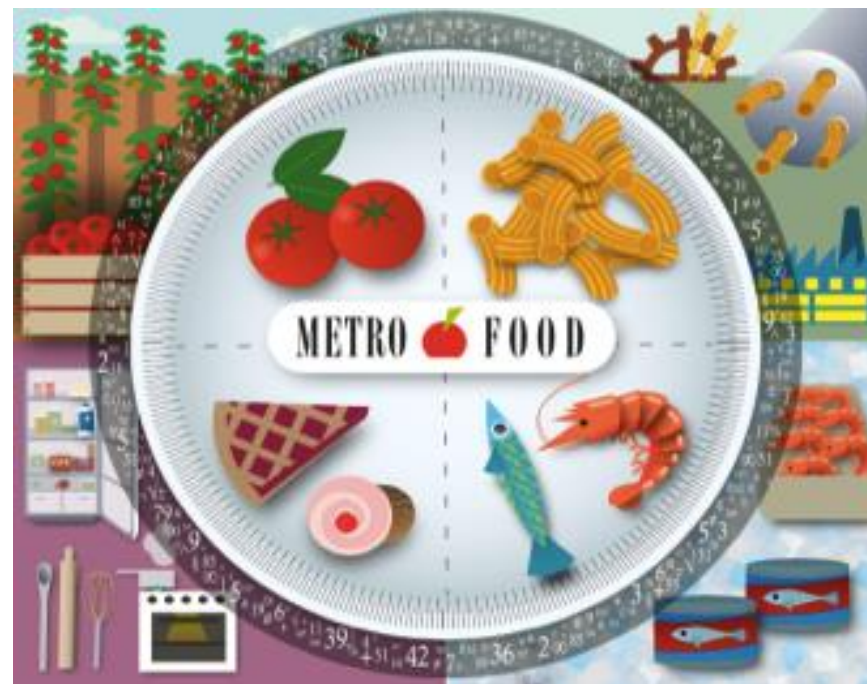
EUT, IJZSRM, INSA and TUBITAK.

Service 2 - Pilots for food production and integrated analytical services - Use of food by-products (e.g., from cereals) and new ingredients (e.g., insects) for preparing new food ingredients and products.

Integrated service, partly in physical (food production) and partly in remote access (food analysis), thus combining the "FOOD" and the "METRO" side of the RI.

CZU, IBA, TUM, ENEA, CZU, IBA, AUTH, JSI.

Thank you!



www.metrofood.eu