

Partnership and Endorsements



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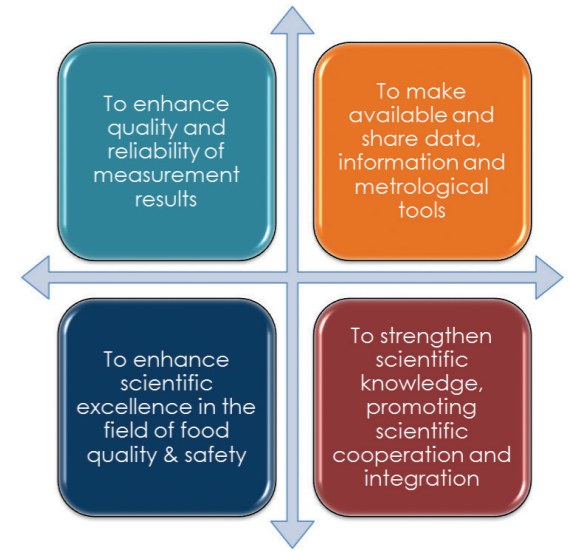
ESFRI Roadmap 2018 • Domain "Health and Food"

High-level metrology services in food and nutrition for the enhancement of food quality and safety New Project

METROFOOD-RI is a new, distributed Research Infrastructure of Global Interest, by means of which it is possible to carry out different activities supporting data collection and measurement reliability, as well as basic and frontier research in food and nutrition. It aims at providing high quality metrology services in food and nutrition, comprising an important cross-section of highly inter-disciplinary and inter-connected fields throughout the food value chain, including agro-food, sustainable development, food safety, quality, traceability and authenticity, environmental safety, and human health.

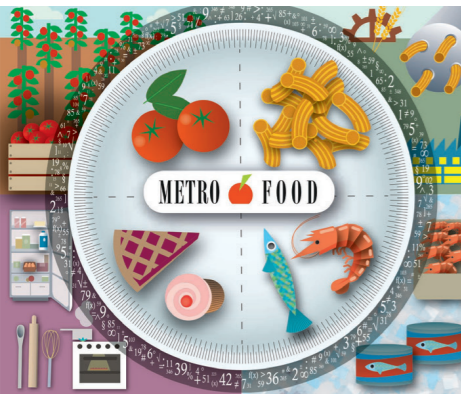
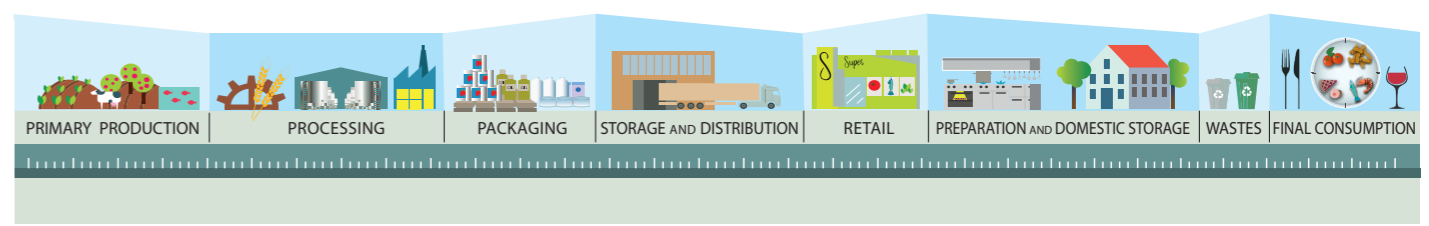
METROFOOD-RI is aimed to strengthen scientific knowledge, promoting scientific cooperation and encouraging the interaction between the various stakeholders, as well as the creation of a common and shared base of data, information and knowledge. It aims at providing high quality metrology services in food and nutrition, comprising an important cross-section of highly interdisciplinary and inter-connected fields throughout the food value chain,

METROFOOD-RI is characterized by a broad multidisciplinary approach with different application fields: agrofood; sustainable development; food quality, safety, traceability and authenticity; environmental safety; consumer sciences; human health.

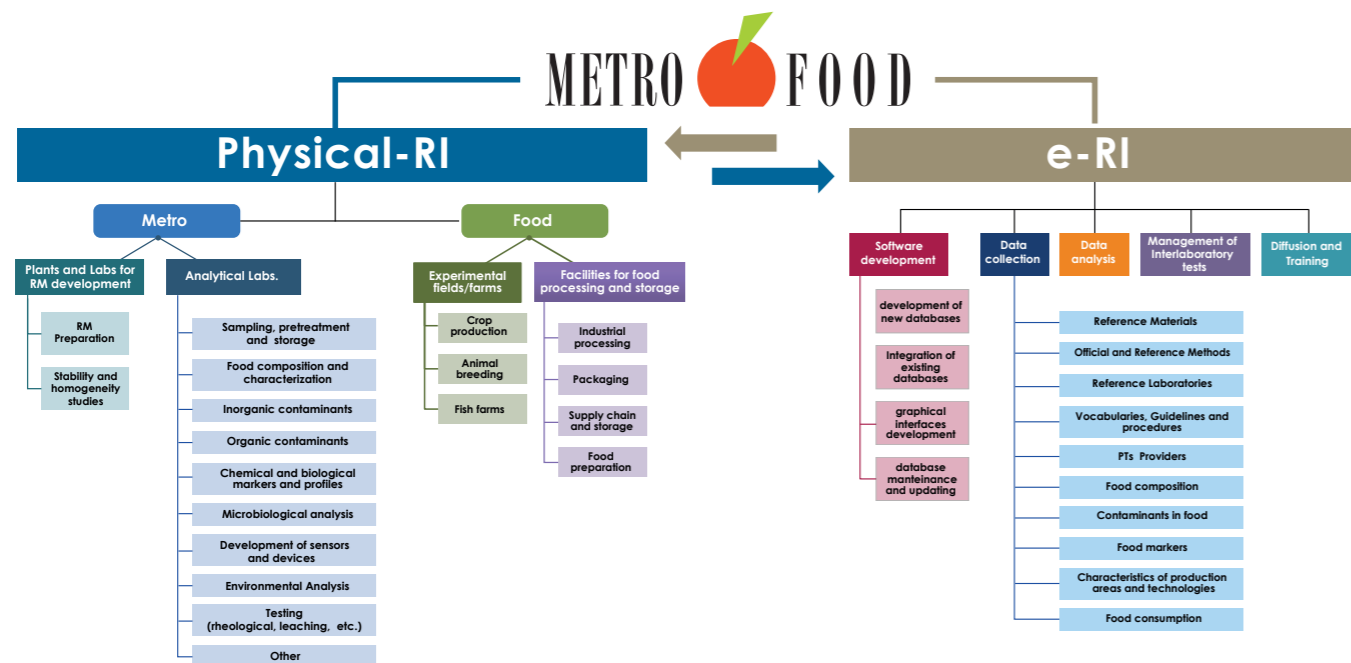


The general objective is to enhance scientific excellence in the field of food quality & safety by promoting metrology in food and nutrition, allowing coordination on a European and increasingly on a Global scale.

Research activities cover the whole food chain and related services, from agrifood primary production up to final consumption, in order to support sustainability of food production and consumption, improve food quality and safety and optimise all the steps *from farm to fork*, with a holistic approach.



Physical - RI & electronic-RI



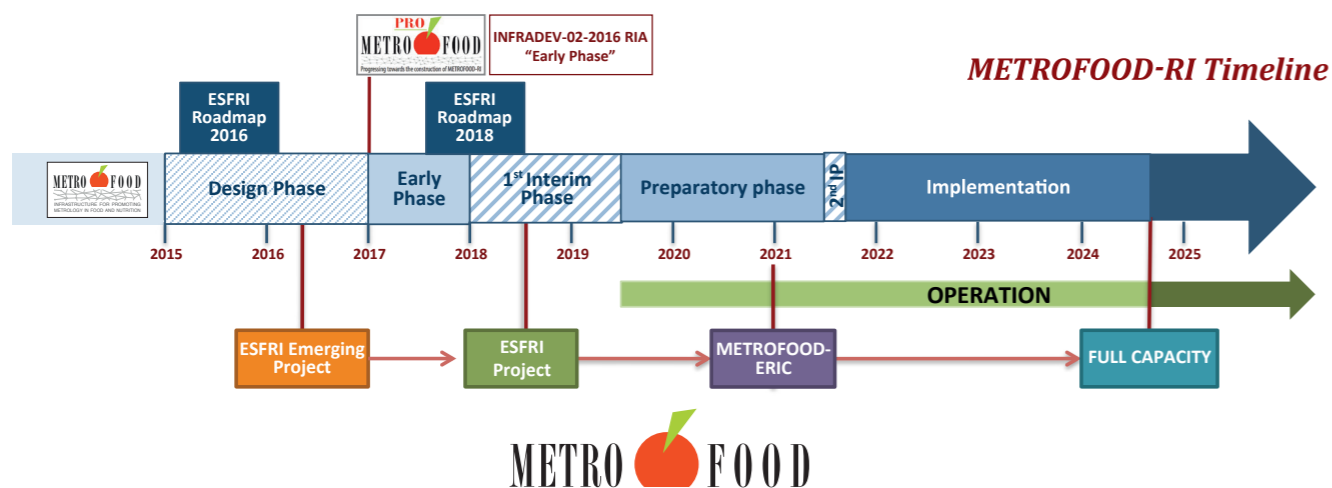
METROFOOD-RI is characterized by several activities: collection, dissemination and sharing of information on principles, terminology, tools and metrological needs in food and nutrition; harmonization and integration of food composition databases; development of new standardized tools for food quality, safety & authenticity. METROFOOD-RI takes advantage of numerous facilities distributed in 18 European Countries that can provide scientific services in an integrated, collaborative and distributed way on the territory. For this purpose, a network of RM plants, laboratories and experimental fields/farms/pants is being realized (*Physical-RI*) and an e-RI is being developed.

The *Physical-RI* enables to carry out different research activities supporting data collection and measurement reliability; quality & safety and traceability of food production, as well as basic and frontier research in food and nutrition. It is composed on the one side (**METRO**) by analytical labs for the development and validation of new methods and devices and plants for the development, production, characterisation and certification of new Reference Materials and, on the other side (**FOOD**), by experimental fields/farms/plants and kitchen labs for studying food quality, safety, authenticity and characterising/valorising products and processes all along the food chain, up to final consumption.

The *e-RI* provides a new useful, free access web platform to share and integrate information and data on availability of metrological tools for food analysis. It will deal with integration of existing database on food, focusing on emerging needs and collection of data on food composition, nutritional contents and levels of contaminants in foods produced in different geographic regions by applying to different technologies.



METROFOOD-RI was cited as Emerging project in the ESFRI Roadmap 2016 (Domain "Health and Food") and on 2017 completed its Early Phase upon the EU-funded project PRO-METROFOOD "Progressing towards the construction of METRO-FOOD-RI" (H2020 INFRADEV-02-2016 , GA n. 739568). It has been included as new Project in the ESFRI Roadmap 2018.



Users and Services

- Excellence-driven access
- Market-driven access
- Wide access

METROFOOD-RI will serve a very wide range of users (starting from researchers and technicians from Universities and Research Institutes, public and private analytical laboratories, up to industrial users, consumer associations and more widely citizens), with different access modes. It will provide also a sustained, high-quality advanced training for academic and professionals, at different education levels and with training programmes developed in agreement with the counterparts (e.g. Universities) and dissemination actions for promoting educational activities addressed to a wide public (consumers/citizens).



Metrological and Standardisation Services

RM development: Matrix-RMs and primary-RMs preparation on a large scale or customized on a specific customer request.

Development of Methods and Devices: development of methods for food characterization, traceability and authenticity; validation and comparison of methods and performance evaluation; set-up of new and/or integrated measurement devices; development of smart sensors for in situ/on line monitoring; application of nanotechnology for sensors development.

Harmonization and standardization: Provision of Proficiency Testing schemes; Interlaboratory and Round Robin testing; Standardization and harmonization of methods and procedures.



Environmental, Food and food packaging analysis



Agro-ecosystem characterization: characterization of environmental matrixes (waters, soils, sediments, air); bio-indicators; bioavailability studies; characterization of aquatic ecosystems; soil microbiota characterisation; air pollutant characterisation; plant pathogen diagnosis; organic matter in recycled biomasses.

Food analysis: analysis of contaminants, microbiological analyses, nutritional properties, technological parameters, authenticity/fraud detection

Food packaging testing and characterisation: characterisation of bulk materials, films and protective coatings, additives, adjuvants, inks, adhesives; nanomaterial testing & nanoparticle analysis; microbiological analysis of food contact materials; active and smart packaging testing.

Improving Food Production and Consumption

Food production: plant growth in controlled conditions; smart field/farms experimental sites; pilot plants for food production optimisation; study of the relationships between agroecosystem management and food composition; development of modelling platforms for testing food production (climatic scenarios & management practices); testing and development of mild technologies in food production.

Food packaging, storage and distribution: facilities for development of bio-based food packaging and smart packaging; evaluation of performances, compliance assessment and optimization of food packaging; development of new sensors for monitoring storage and distribution phases; development and implementation of new and integrated traceability and monitoring systems, development of packaging integrated labels.

Food preparation and use: development of best practices to preserve food quality and safety; improvement of durability and reducing waste in the post-retail phase.



e-services

Tools for measurement standardisation and harmonisation of measurements; Access to food data (composition, contaminants, markers, profiling); Access to data related to food production & processing; Access to data on environmental and health impact; Tools for food production and processing (modelling, best practices); Tools for Food Traceability and Authenticity; Data link - origin, proces technologies, food composition and property values; Data link - food composition, nutrition, risk and benefit analysis; e-platforms for data collection, sharing, analysis and display; e-learning.

