



# Progressing towards the construction of METROFOOD-RI

**Claudia Zoani**

ENEA SSPT-BIOAG

METROFOOD-RI Coordination Office



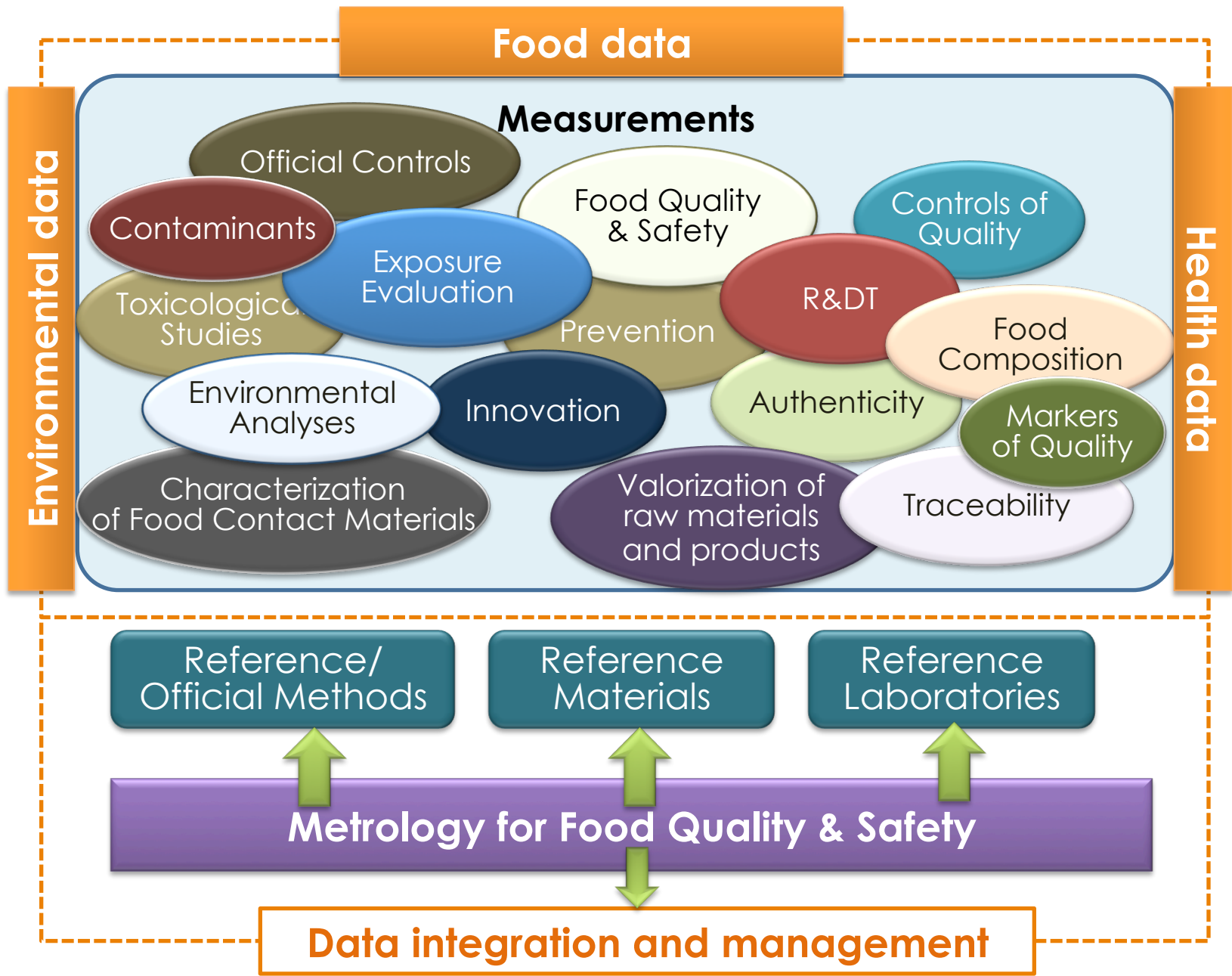
Agenzia nazionale per le nuove tecnologie,  
l'energia e lo sviluppo economico sostenibile

**“EuroFIR Food Symposium 2017:  
Food and Health Research Infrastructure  
– Current Status and Future Landscape”**

5th April 2017 - Brussels



# Metrology for the Agrofood Sector



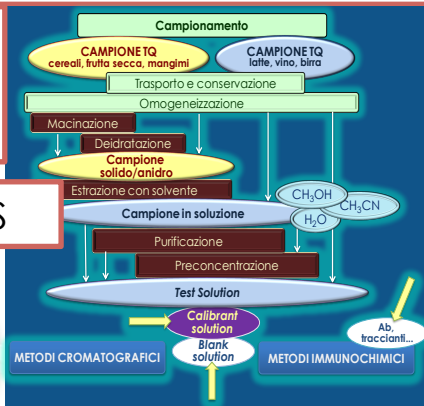
# Metrology in Support to Quality, Safety & Authenticity of Agrifood Production

## DEVELOPMENTS AND VALIDATION OF NEW METROLOGICAL TOOLS

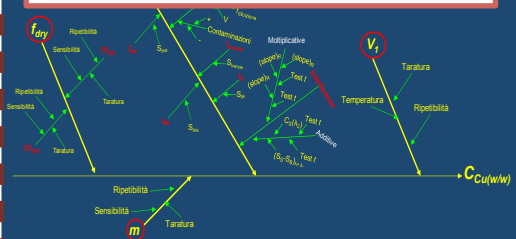
### REFERENCE METHODS

### SAMPLING & SAMPLE PRE-TREATMENT PROCEDURES

### REFERENCE MATERIALS



### MEASUREMENT UNCERTAINTY



### PROFICIENCY TESTINGS

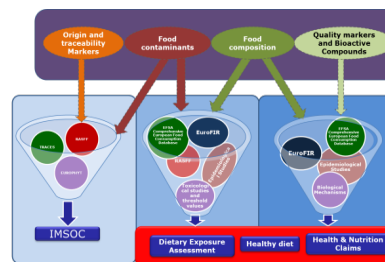


## STANDARDISATION AND HARMONIZATION OF MEASUREMENTS & TESTINGS



## NETWORKING, SHARING, INTERGRATION & HARMONIZATION OF DATA AND INFORMATION

### DATA



- Food composition
- Food contaminants
- Markers of origin & Traceability
- Markers of quality
- Bioactive compounds

# METROFOOD-RI



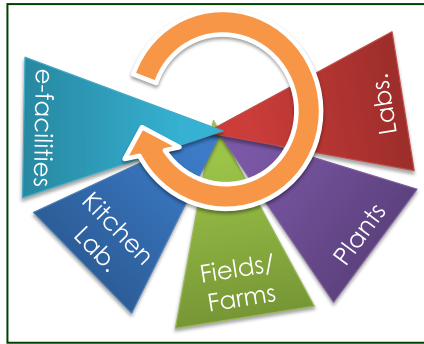
## 2016 ESFRI Roadmap Domain Health & Food “Emerging Project”

**General objective:** 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.



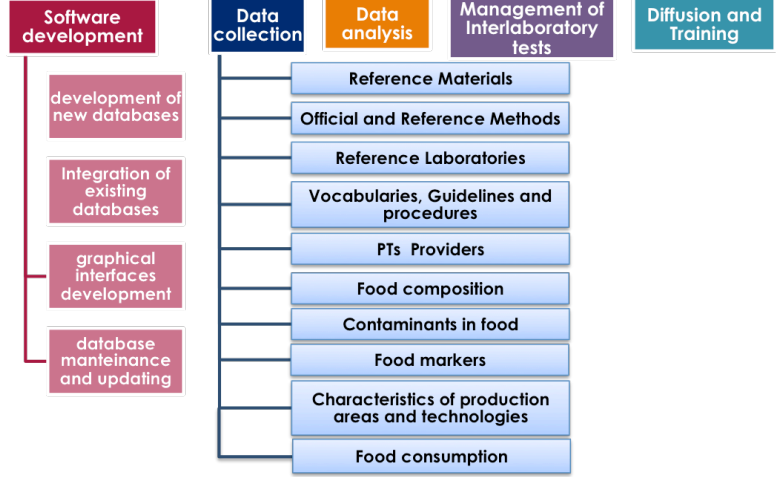
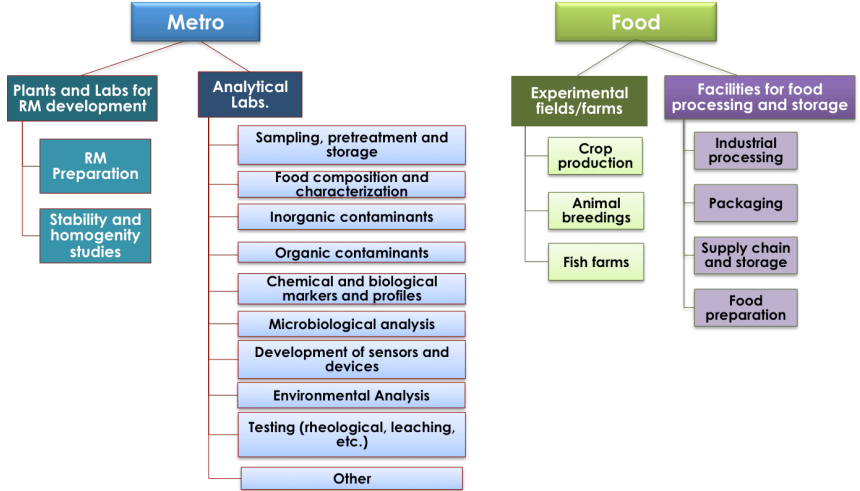
# The Mission of METROFOOD-RI



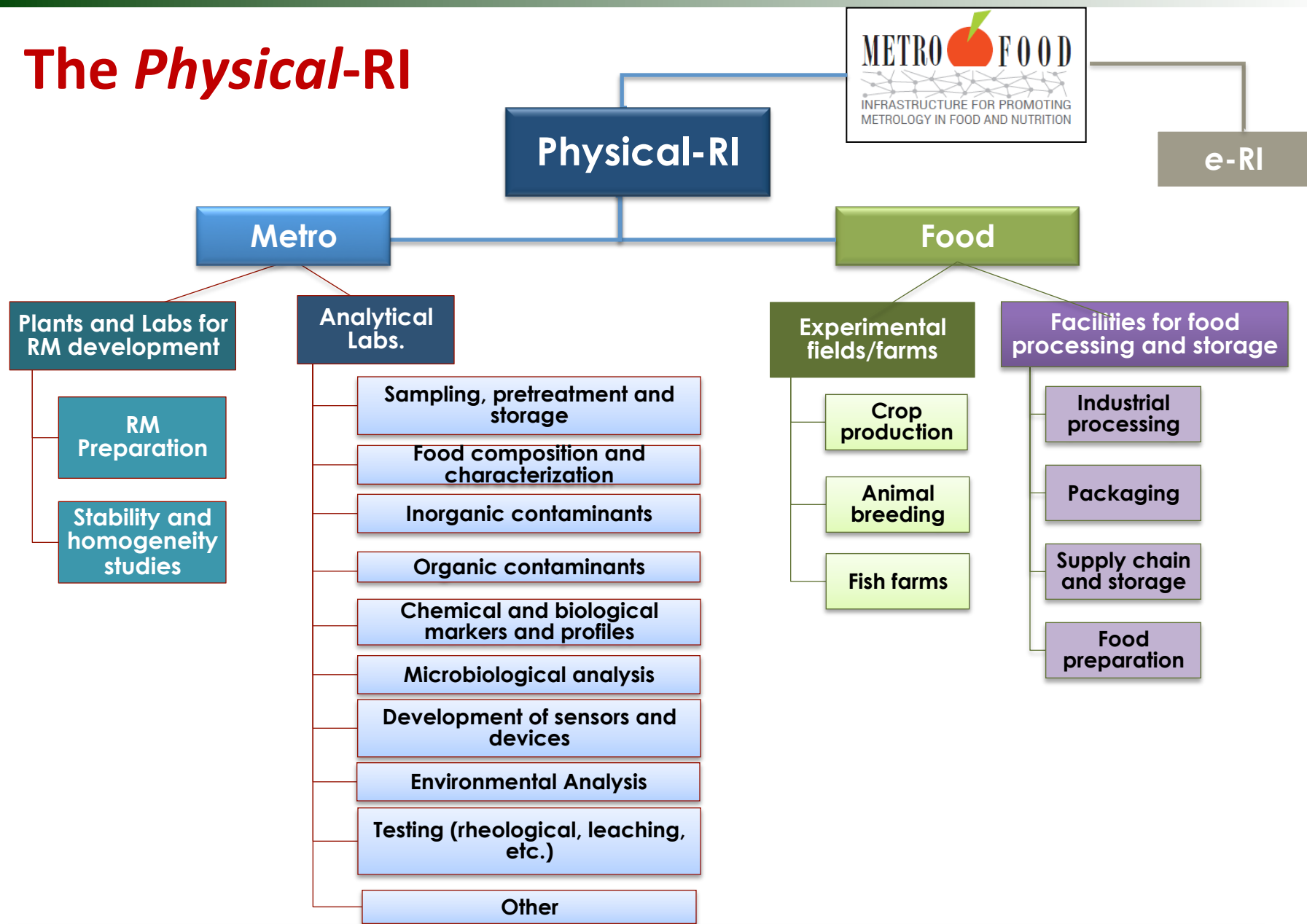


# Physical-RI

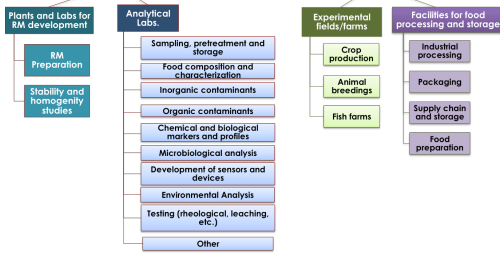
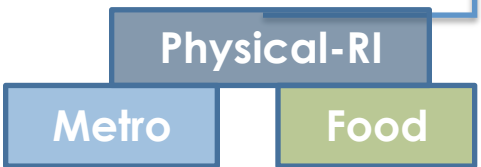
# e-RI



# The *Physical-RI*



# The e-RI



## e-RI

### Hardware allocation

#### Software development

- development of new databases
- Integration of existing databases
- graphical interfaces development
- database maintenance and updating

#### Data collection

#### Data analysis

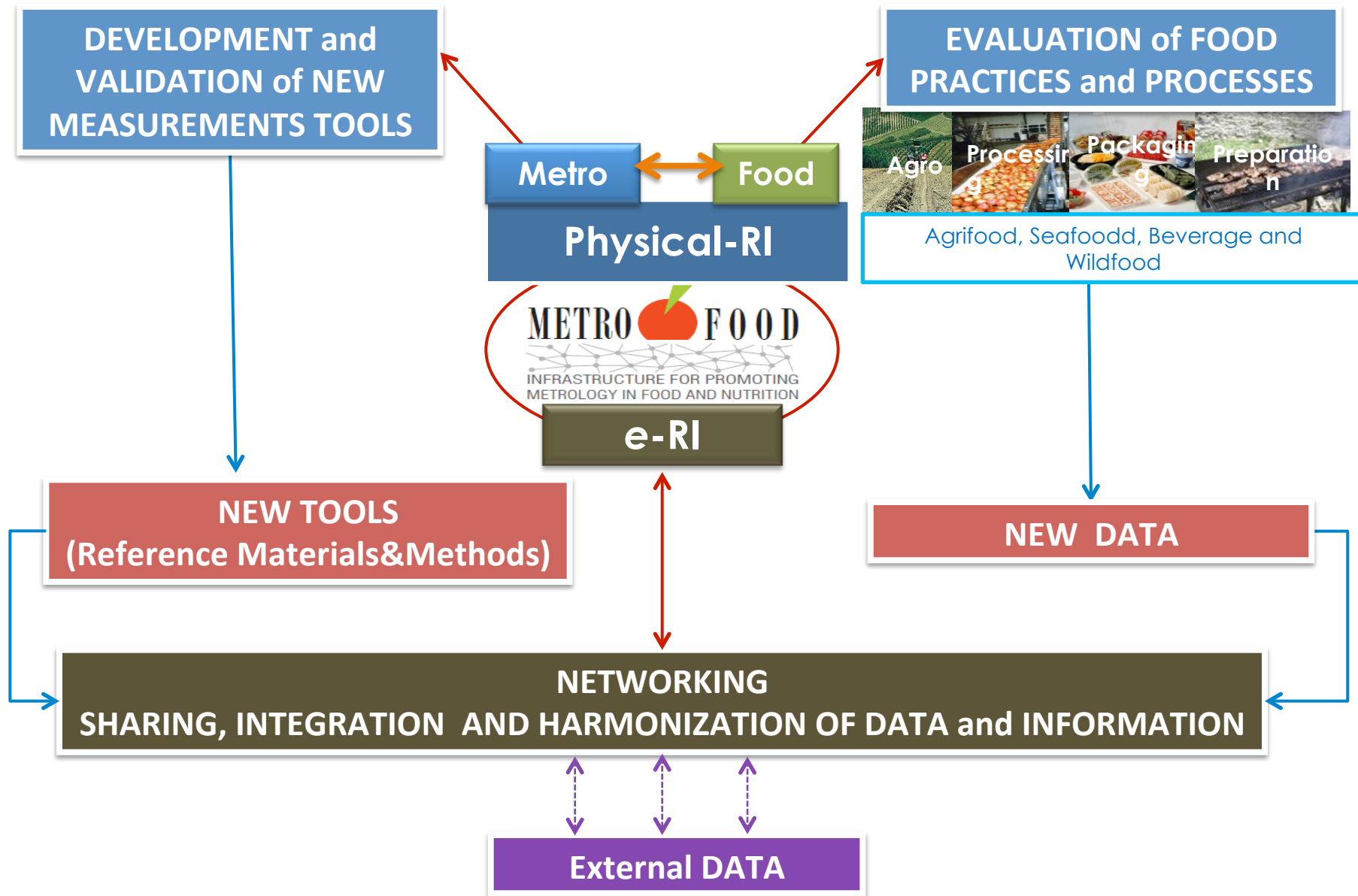
#### Management of Interlaboratory tests

#### Diffusion and Training

- 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

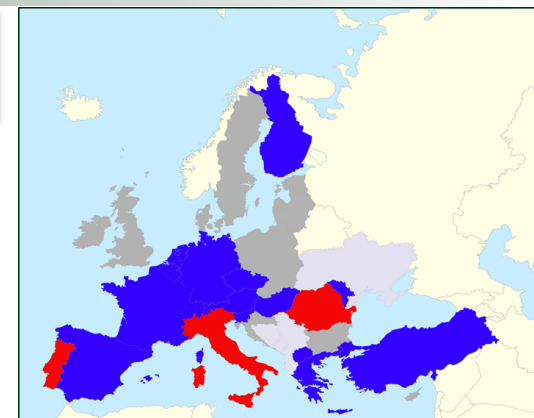


# Links between Physical and electronic Infrastructure



# METROFOOD-RI current partnership

Country	Partner	
IT	<b>ENEA (Coordinator)</b>	Agenzia Nazionale per le Nuove Tecnologie, l'Energia e lo Sviluppo Economico Sostenibile
	ISS	Istituto Superiore di Sanità
	INRIM	Istituto Nazionale di Ricerca Metrologica
	CNR	Consiglio Nazionale per le Ricerche
	CREA	Consiglio per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria
	IEO	Istituto Europeo di Oncologia
	FEM	Fondazione Edmund Mach
	Udine Un.	Università degli Studi di Udine
	Brescia Un.	Università degli Studi di Brescia
	<b>Federico II Napoli Un.</b>	Università degli Studi di Napoli Federico II
PT	INSA	Instituto Nacional de Saúde Dr. Ricardo Jorge
RO	IBA	Institutul National de Cercetare-Dezvoltare pentru Bioresurse Alimentare
ES	IK4-CIDETEC	Fundación CIDETEC
FR	UPPA	Université de Pau - Laboratoire de Chimie Analytique Bio-inorganique et Environnement
	LNE	Laboratoire national de métrologie et d'essais
	ADERA/UTZA	Ultra Traces Analysis Aquitaine
	ANSES	Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail
GR	AUTH	Aristotelio Panepistimio Thessalonikis
CZ	CZU	Ceska Zemedelska Univerzita V Praze
HU	USZ	University of Szeged
FI	EVIRA	Finnish Food Safety Authority
NL	RIVM	Rijksinstituut voor Volksgezondheid en Milieu (National Institute for Public Health and the Environment)
	DLO	Stichting Dienst Landbouwkundig Onderzoek - BLO-B + WUR-DLO
DE	TUM	Technische Universität München
SI	JSI	Jozef Stefan Institute
	Primoska Un.	Primoska University
	NIB	National Institute of Biology
MK	Skopje Un.	Ss. Cyril and Methodius University in Skopje
	PHI	Institute of Public Health of Republic of Macedonia
BE	WIV-ISP	Wetenschappelijk Instituut Volksgezondheid - Scientific Institute of Public Health
TR	TUBITAK	Turkiye Bilimsel Ve Teknolojik Arastirma Kurumu
MD	DAS	DAS foundation "For a Moldova Based on Knowledge"
SW	PREMOTEK	PREMOTEK GmbH
INT	FAO	Food and Agriculture Organization of the United Nations



**39 Partners from 18 Countries  
+ 1 International Partner (FAO)**



- Department of Food Analysis and Nutrition, University of Chemistry and Technology Prague (UCT) -CZ
- Food Research Institute Prague (FRIP) – CZ
- IPMA – PT
- FCT-UNL -PT

# METROFOOD-RI current partnership

## Research Institutes

- ENEA, CNR, CREA, FEM (IT)
- CIDETEC (ES)
- IBA (RO)
- TUBITAK (TR)
- ISPHTA (MD)
- Stichting WR (NL)
- JSI(SI)
- NIB(SI)
- IPMA (PT)

## Institutes for Food Safety and Health Protection

- ISS, IEO (IT)
- INSA (PT)
- ANSES (FR)
- IJZHP (MK)
- EVIRA (FI)
- WIV-ISP (BE)
- RIVM (NL)
- FRIP (CZ)

## Laboratories for Food Analysis

- UT2A (FR)

## Universities

- UniUD, UniBS, UniNAFedII (IT)
- AUTH (GR)
- CZU/CULS, UCT (CZ)
- UPPA (FR)
- USZ (HU)
- TUM (DE)
- Primorska (SI)
- Skopje (MK)
- FCT-UNL (PT)

## National Metrology Institutes

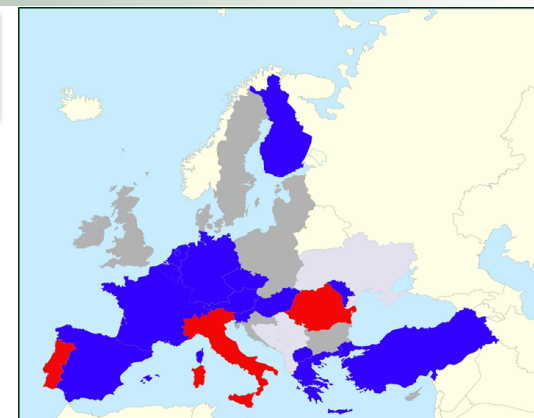
- LNE (FR)
- INRIM (IT)

## International Organisations

- FAO

## Private Companies

- Premotech GmbH (CH)



**39 Partners from 18 Countries  
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# Organization at Country Level

## Joint Research Units



10 Members



2 Members



3 Members (+4)



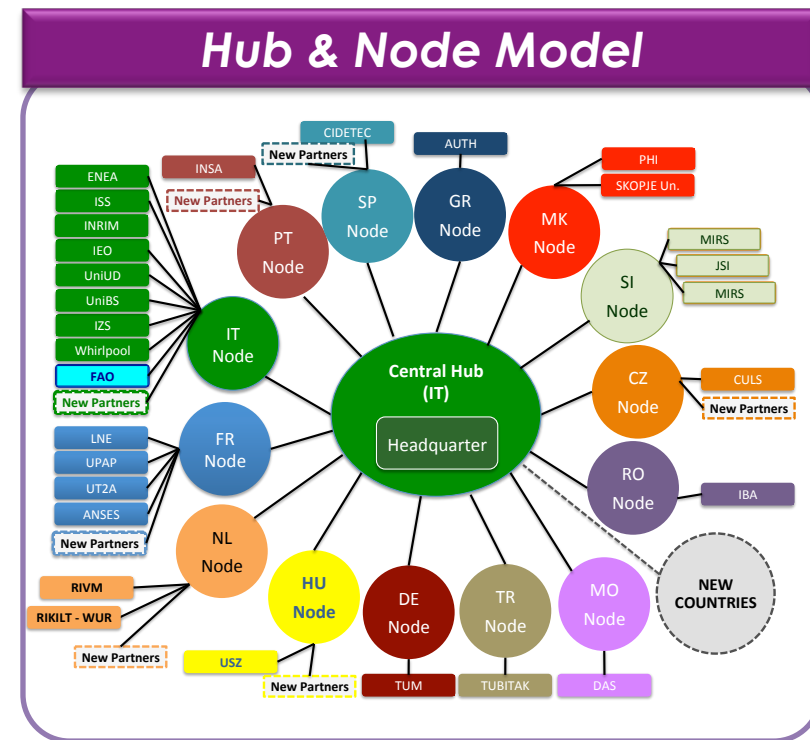
3 Members



3 Members

## Dedicated MoUs

4 Parties



# Joint Research Units: Organization and Integration at National level



# Joint Research Units: Organization and Integration at National level



Sharing of project strategies

Integrating and systematizing resources, expertise and skills

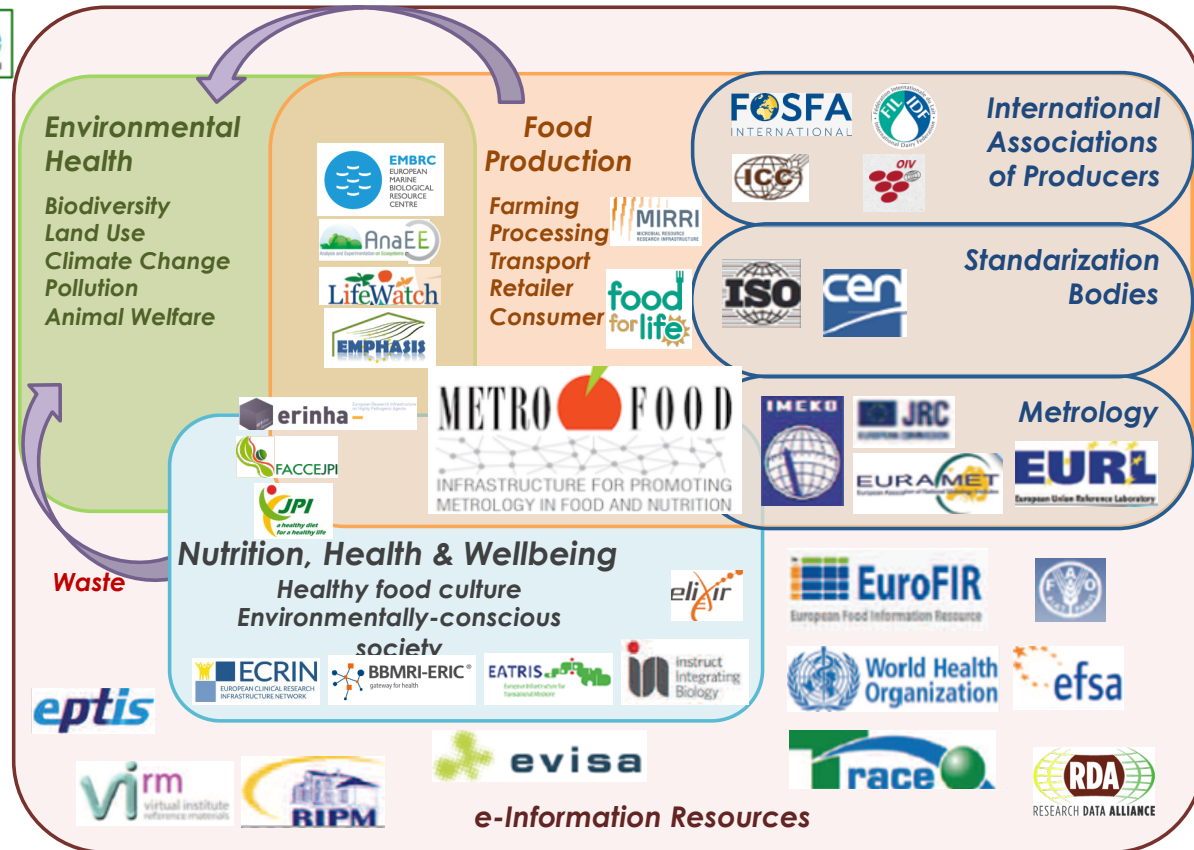
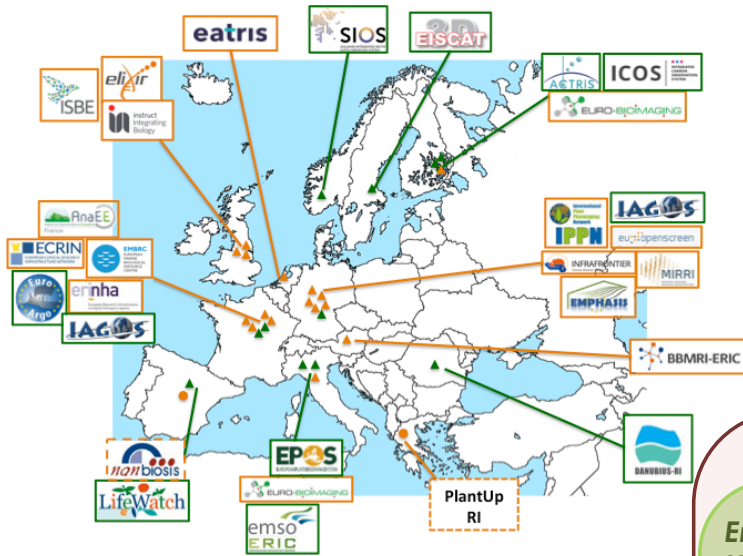
Promoting innovation of products and processes

Aligning research and innovation to the values, the needs and expectations of Society

Bringing science to citizens

Improving efficiency and effectiveness of the control system


# Positioning of METROFOOD-RI in the EU “Health and Food” and “Metrology in Food and Nutrition” landscape



# Endorsements from International Organisations



**International Measurement Confederation**



**EU JRC-Institute for Reference Materials and Measurements**

European Commission, JRC, Directorate F - Health, Consumers and Reference Materials

**EC JRC-Directorate Health, Consumers and Reference Materials**



**Food and Agriculture Organization of the United Nations**



**European Union Reference Laboratory for Chemical Elements in Food of Animal Origin**



**SPread European Safety**

12 Federations of Food&Beverage Industries

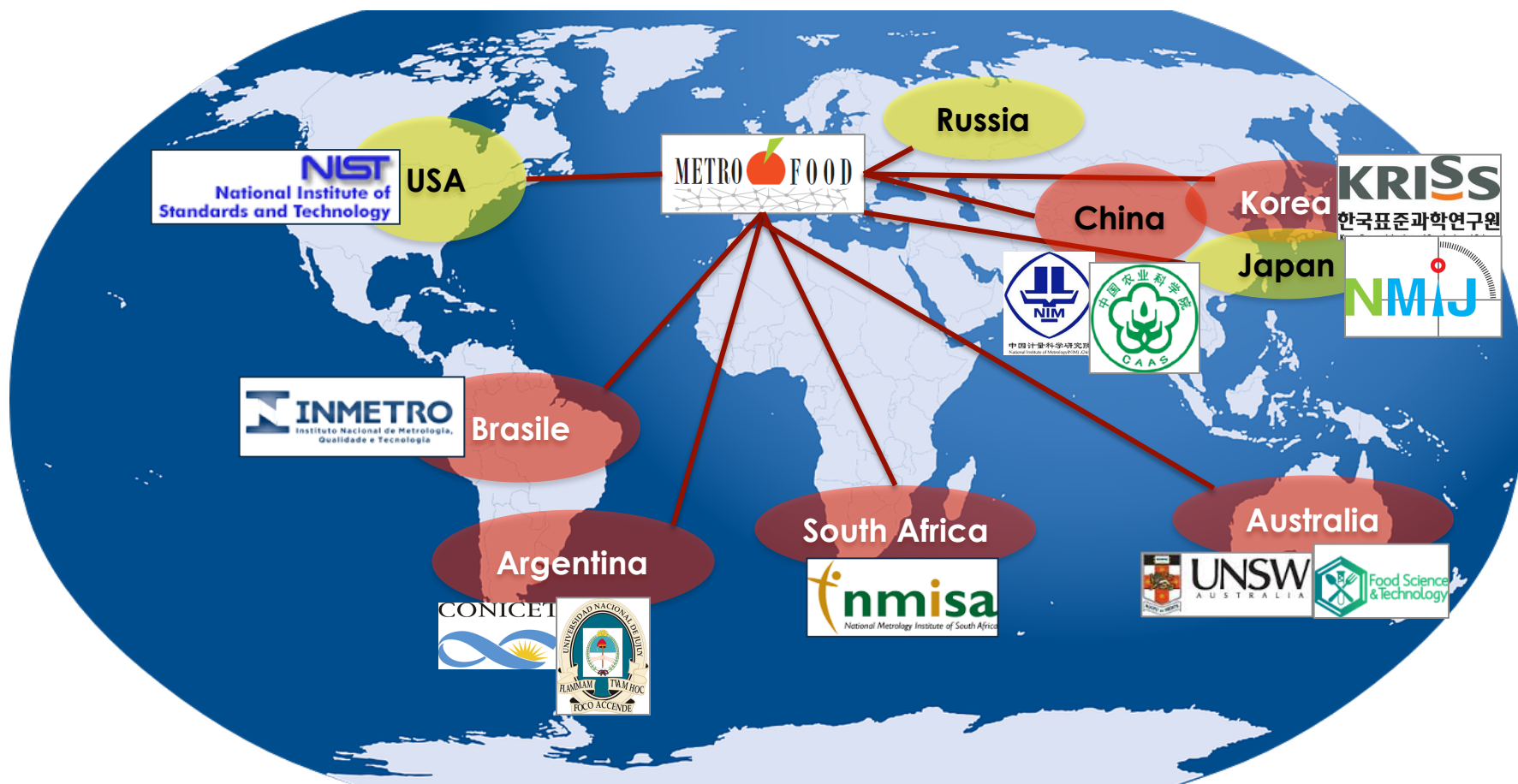



**VAMAS**

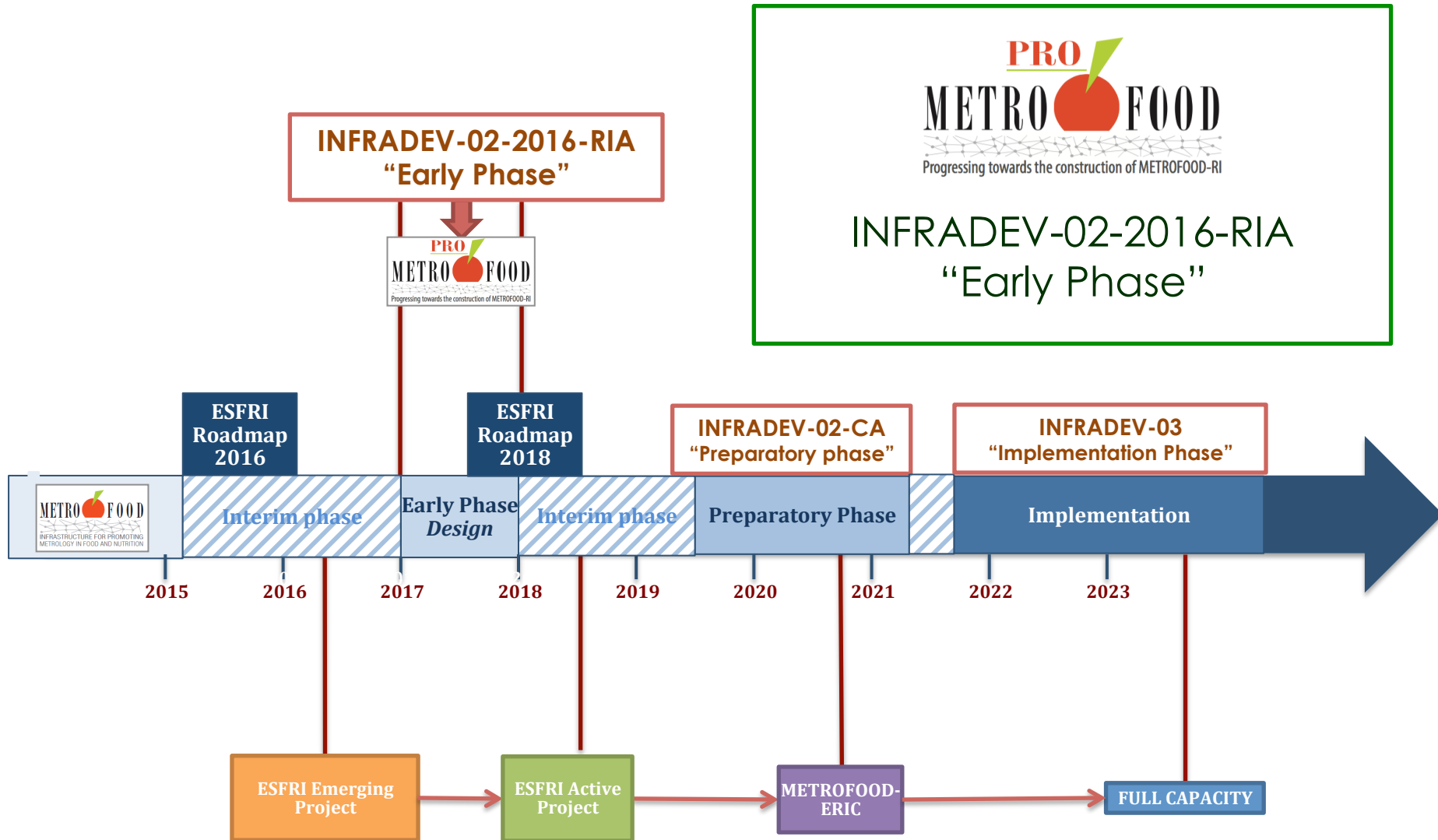
**Versailles Project on Advanced Materials and Standards**



# Global level of METROFOOD-RI



# METROFOOD-RI timeline



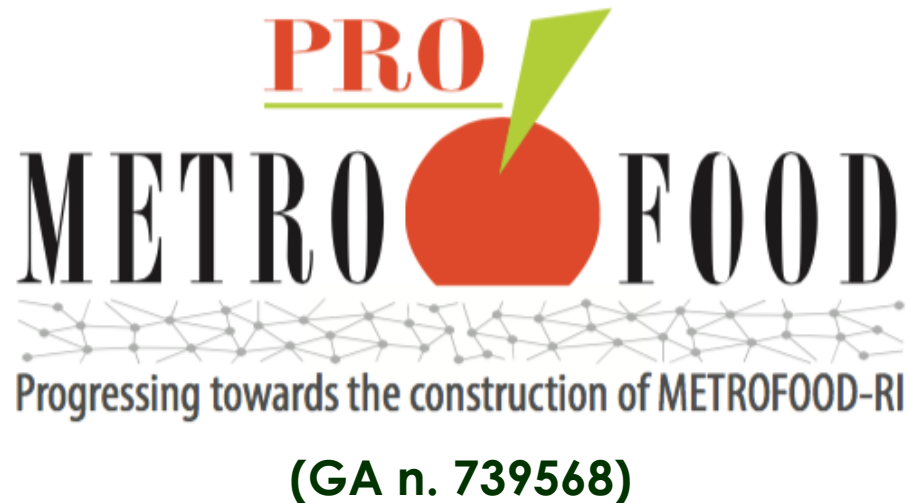


EUROPEAN COMMISSION  
DIRECTORATE-GENERAL FOR RESEARCH & INNOVATION

Open Innovation and Open Science  
**Research Infrastructure**



**H2020-INFRADEV-2016-2017**  
**H2020 INFRADEV-02-2016 “Early Phase”**

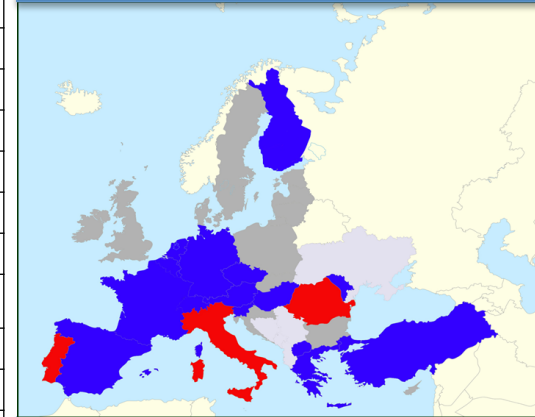


Starting date: 1<sup>st</sup> Jan. 2017  
Duration: 12 Months  
Kick-off Meeting: 10<sup>th</sup> Jan. 2017 (Brussels)

# Partners

n	Country	Partner	
1	<b>IT</b>	<b>ENEA*</b>	Agenzia Nazionale per le Nuove Tecnologie, l'Energia e lo Sviluppo Economico Sostenibile
2	<b>PT</b>	<b>INSA</b>	Instituto Nacional de Saúde Dr. Ricardo Jorge
3	<b>RO</b>	<b>IBA</b>	Institutul National de Cercetare-Dezvoltare pentru Bioresurse Alimentare
4	<b>ES</b>	<b>CIDETEC</b>	Fundación CIDETEC
5	<b>FR</b>	<b>UPPA*</b>	Université de Pau
6	<b>GR</b>	<b>AUTH</b>	Aristotelio Panepistimio Thessalonikis
7	<b>CZ</b>	<b>CZU/CULS</b>	Ceska Zemedelska Univerzita V Praze
8	<b>HU</b>	<b>USZ</b>	University of Szeged
9	<b>FI</b>	<b>EVIRA</b>	Finnish Food Safety Authority
10	<b>NL</b>	<b>RIVM*</b>	National Institute for Public Health and the Environment
11	<b>DE</b>	<b>TUM</b>	Technische Universität München
12	<b>SI</b>	<b>JSI*</b>	Jozef Stefan Institute
13	<b>MK</b>	<b>IJZRM*</b>	J.Z.U. Institut za Javno Zdravje na Republika Makedonija Skopje
14	<b>BE</b>	<b>WIV-ISP</b>	Wetenschappelijk Instituut Volksgezondheid
15	<b>TR</b>	<b>TUBITAK</b>	Turkiye Bilimsel Ve Teknolojik Arastirma Kurumu
16	<b>MD</b>	<b>DAS</b>	DAS foundation
17	<b>SW</b>	<b>PREMOTEC</b>	PREMOTEC GmbH

METROFOOD-RI current partnership



**36 Partners from 17 Countries  
+ 1 International Partner (FAO)**

## JOINT RESEARCH UNITS

### METROFOOD-IT

ENEA\*, CNR, CREA, ISS, INRIM,  
Udine Un., Brescia Un.,  
(IEO, FEM, UniNA Fed. II)

\*JRU Coordinator

METROFOOD-SI  
JSI\*, NIB, UP SRC

METROFOOD-MK  
IJZRM\*, FASF

PT

CZ

**French Partners - MoU**  
UPPA, LNE, ANSES, UT2A

**Netherlands**  
WR – Third Party

# PRO-METROFOOD objectives

**General Objective:** to bring the emerging METROFOOD-RI ESFRI project to the level of maturity required for entering in the active project list (in view of the ESFRI Roadmap 2018), strengthening the Consortium and planning the future phases

## 4 specific objectives:

**OBJ1** – design strategies on the medium and long terms

**OBJ2** – provide the organizational framework of METROFOOD-RI

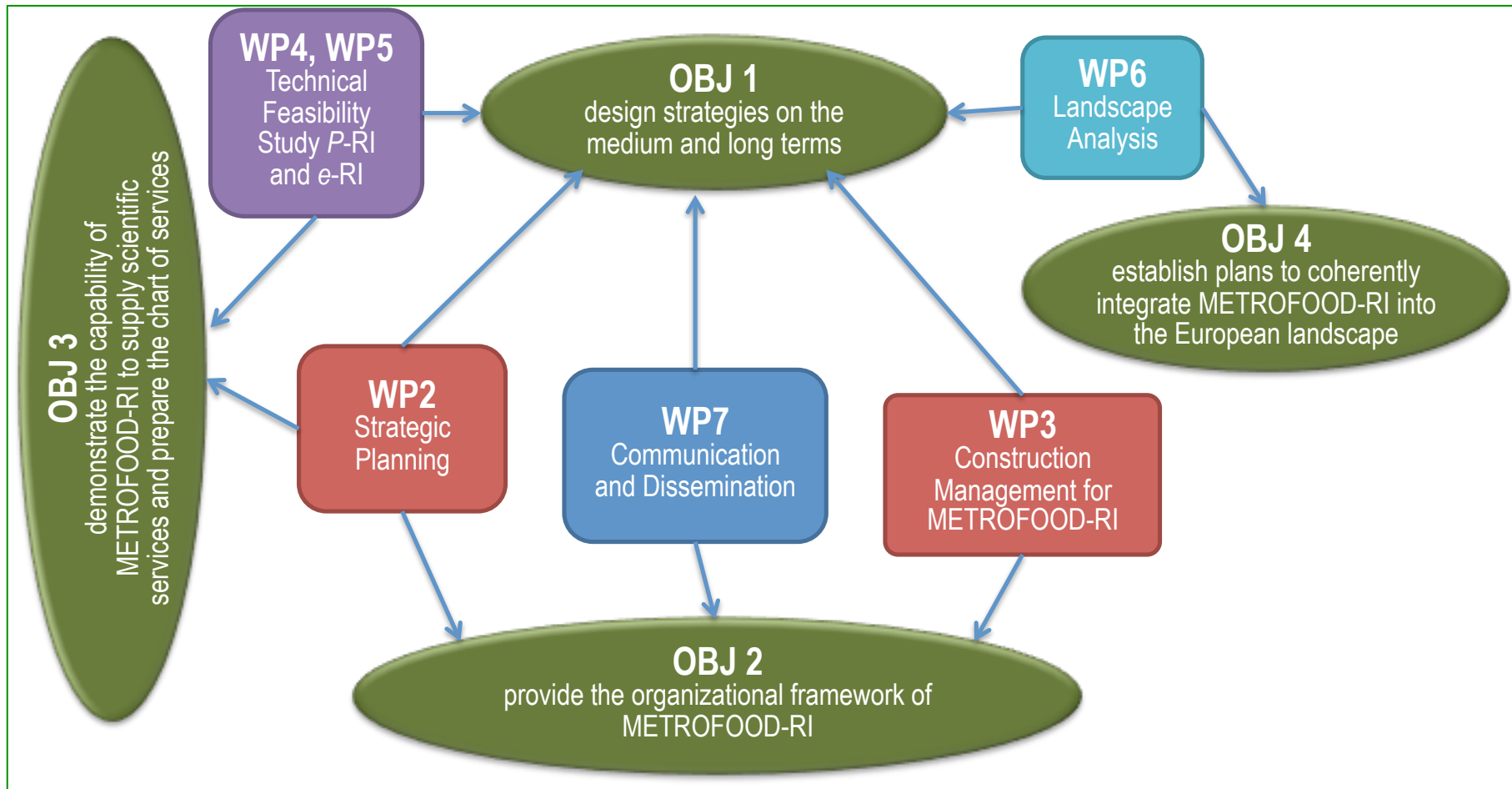
**OBJ3** – demonstrate the capability of METROFOOD-RI to supply scientific services and prepare the chart of services

**OBJ4** – establish plans to coherently integrate METROFOOD-RI into the European landscape, realising coordination with EU and National initiatives and positioning at a global level

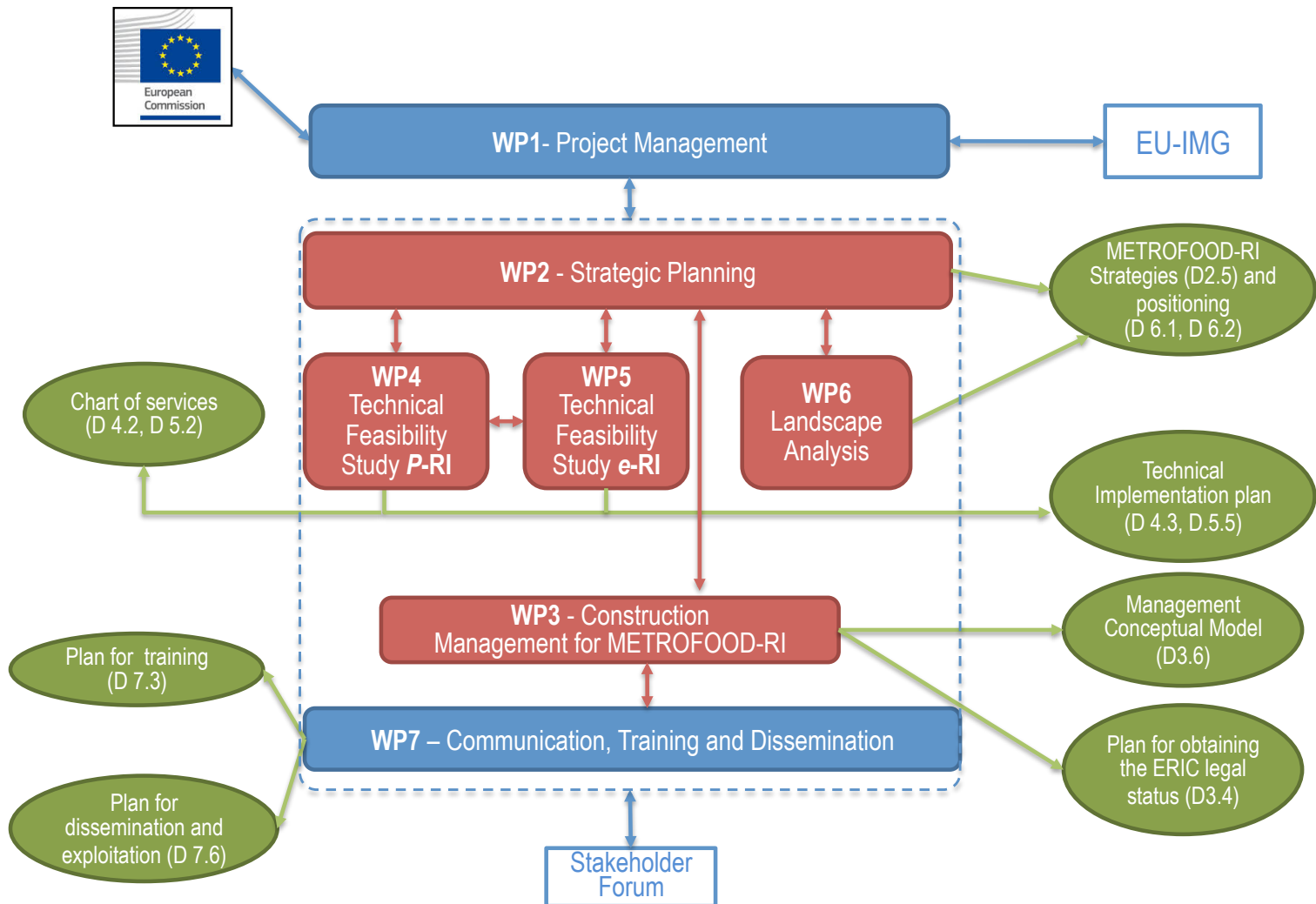
# Working Packages (WPs)

Working Package		WP Leader	Month
<b>WP1</b>	Project Management	ENEA (IT)	01-12
<b>WP2</b>	Strategic Planning	IBA (RO)	01-10
<b>WP3</b>	Construction management for METROFOOD-RI	INSA (PT)	01-10
<b>WP4</b>	Technical Feasibility Study - <i>Physical-RI</i>	UPPA (FR)	01-12
<b>WP5</b>	Technical Feasibility Study - <i>e-RI</i>	RIVM (NL)	01-12
<b>WP6</b>	Integration in the EU landscape and coordination with National initiatives	CIDETEC (ES)	01-10
<b>WP7</b>	Communication, Training and Dissemination	CULS (CZ)	01-12
<b>WP8</b>	Ethics requirement	ENEA (IT)	01-12

# PRO-METROFOOD specific objectives (OBJ) and their relations with the WPs



# PRO-METROFOOD PERT diagram: Components of the work plan and their inter-relations





# METROFOOD-RI & PRO-METROFOOD

INFRADEV-02-2016-RIA  
“Early Phase”



1 Jan. – 31 Dec. 2017



**2016 ESFRI Roadmap**  
**Domain “Health & Food”**

ESFRI Roadmap 2018 Info Day  
January 17th, 2017



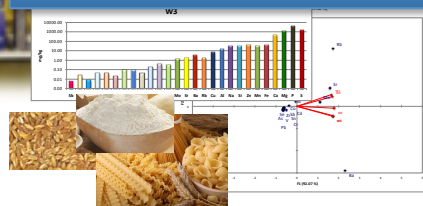
**Deadline:**  
**31 Aug. 2017 (18:00 CET)**

# SERVICES from METROFOOD-RI

## NEW TOOLS FOR OBTAINING RELIABLE MEASUREMENTS



## MARKERS



## EDUCATION & TRAINING



## BEST PRACTICES



**METRO FOOD**  
INFRASTRUCTURE FOR PROMOTING  
METROLOGY IN FOOD AND NUTRITION

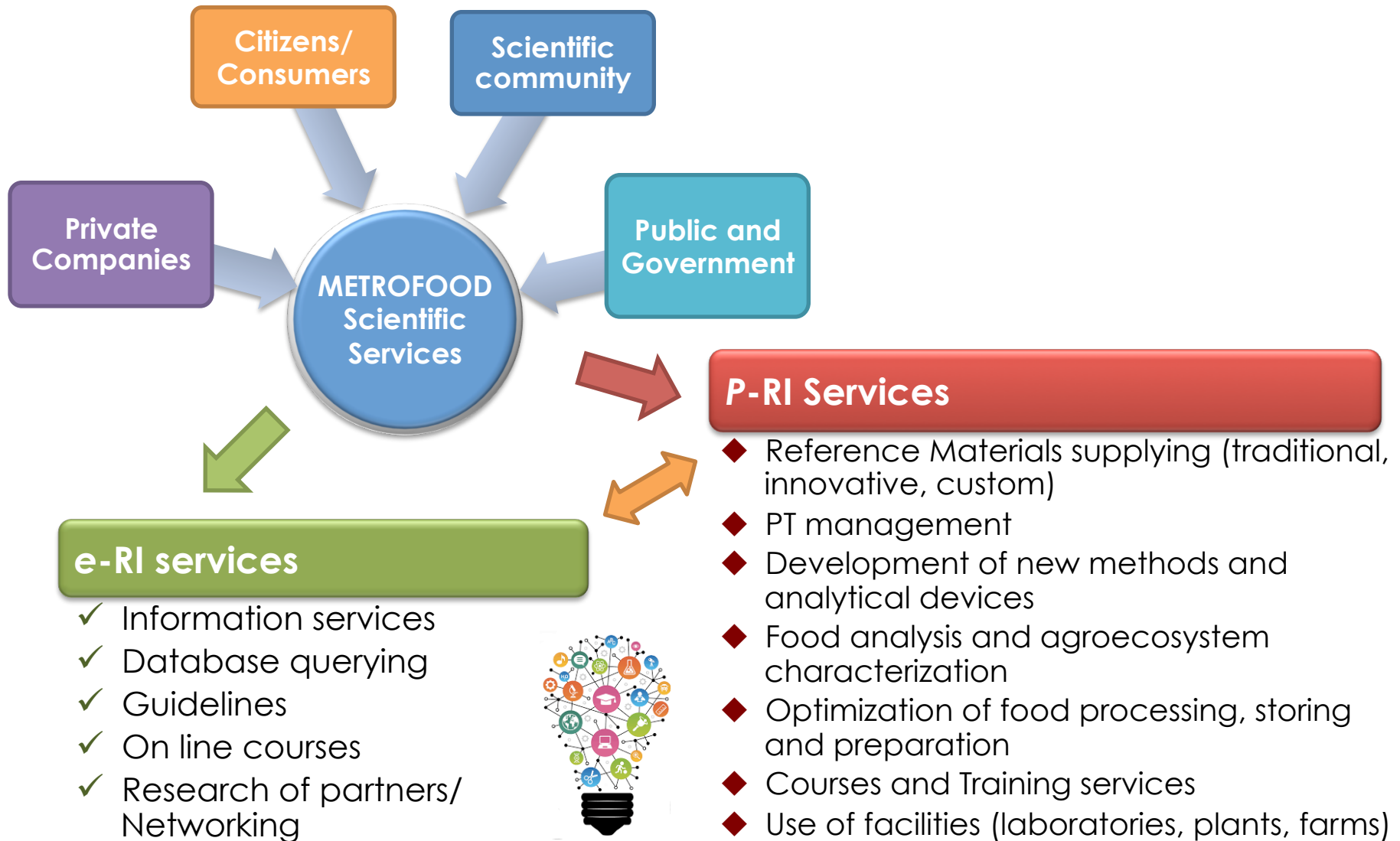
## KNOWLEDGE SHARING & COMMUNICATION



## DATA SHARING & INTEGRATION



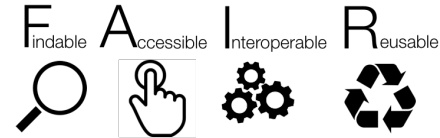
# SERVICES from METROFOOD-RI



# Data Integration: example (1)



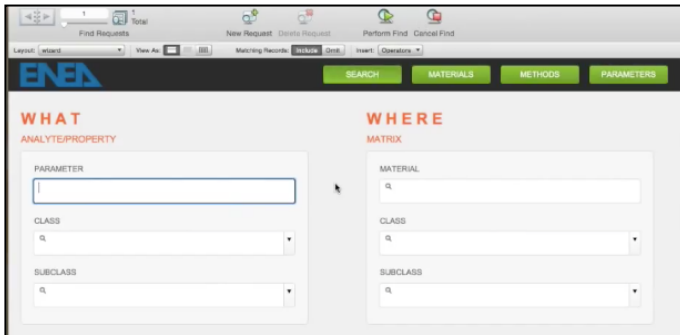
Main sources of data/information on Reference Materials, reference/official, methods, reference laboratories, threshold values for the Agrofood sector:



web services

**Objective:** to provide laboratories with an innovative and unique service, allowing them to obtain – starting from a specific analytical need – all the necessary information about::

- Method performances
- Reference Materials available for evaluating measurement reliability and measurement uncertainty
- limit values or other threshold values
- Interlaboratory tests



Reference Materials

Proficiency Testings

Reference/ Official Methods

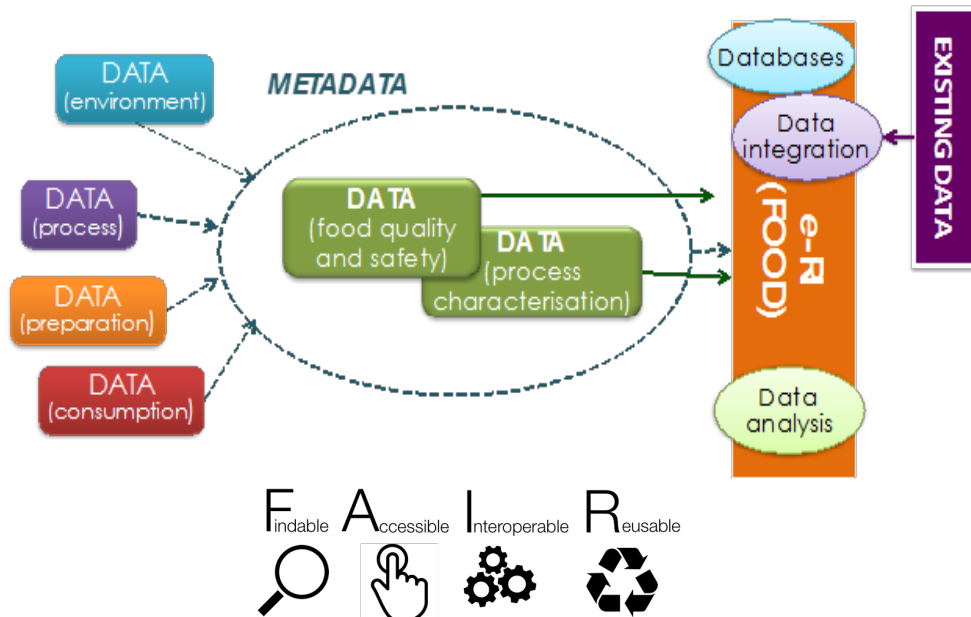
Threshold Values

# Data Integration: example (2)

International and National databases and other information sources on food composition, food contact materials, environmental matrixes:



**Food Contact Materials**



**Objective:** to make available and accesible to the different users a series of organized data and deliver innovative services of data integration and analysis for different purposes:

- development of *best practices* for all the value chain phases (From primary production up to domestic preparation and storage);
- Definition of territorial and environmental attitudes/suitability;
- Innovation of products and processes;
- Sustainability and valorization of productions;
- Risk analysis;
- Definition of prevention and control strategies;
- Development of system for guaranteing authenticity of raw materials and products;
- Development of *smart solution* to support consumers in food choices and domestic procedures.

# Pilot Services in PRO-METROFOOD

## Physical-RI



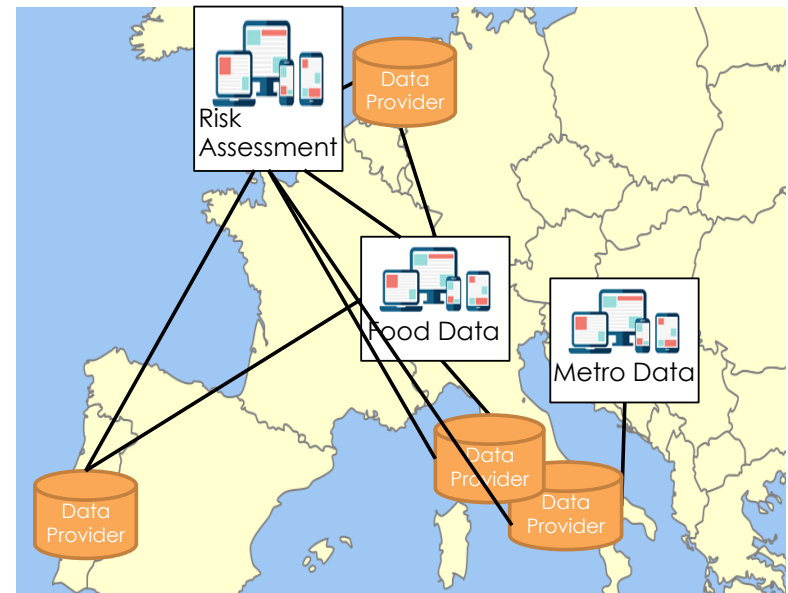
Development  
of *Multipurpose-RMs*

1 lot of rice  
flour -RM

1 lot of  
rice grains-RM

1 lot of  
oyster tissue -RM

## e-RI



Development of at least 2  
“data nodes” and a web  
application (food analysis, RMs,  
PTs, Official methods)

# METROFOOD-RI POTENTIAL USERS

## FOOD BUSINESS OPERATORS



## POLICY MAKERS / FOOD INSPECTIONS & CONTROL



## RESEARCH/ACADEMIC



**METRO FOOD**

INFRASTRUCTURE FOR PROMOTING METROLOGY IN FOOD AND NUTRITION

## CONSUMERS / CITIZENS



# Stakeholder Forum

Update: Jan. 2017

Organisation	Country
SPES-GEIE – European Consortium of Food Industry Federations for Research, Innovation and Training	EU
ACTIA - ASSOCIATION DE COORDINATION TECHNIQUE POUR L'INDUSTRIE AGROALIMENTAIRE	France
EFOSZ _ Federation of Hungarian Food Industries	Hungary
ELIKA – Basque Foundation for Agrofood Safety	Spain
Italian Cluster CLAN Agrifood	Italy
TECHNOLOGICAL PLATFORM FOOD FOR LIFE-SPAIN (PTF4LS)-FIAB	Spain
Technology Platforms: F4LRO - “Food for Life” Technology Platform Association	Romania
FEDERCONSUMATORI, Italian National Consumers Association	Italy
INFOCONS - Asociatia Nationala Pentru Protectia Consumatorilor Si Pronovarea Programelor Si Strategiilor Din Romania	Romania
OIKOS – Cooperação e Desenvolvimento	Portugal
Netherlands Food and Consumer Product Safety Authority	Netherlands
EuroFIR	Belgium



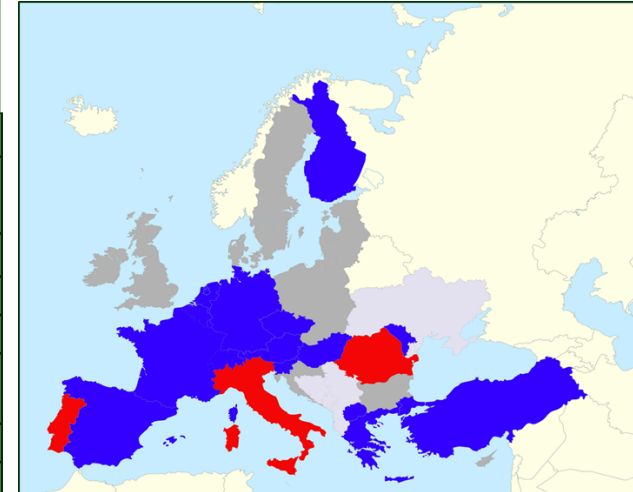
- Research institutes, academics, universities, National Metrology Institutes
- Inspection and Control Agencies, Public Administration, Chambers of Commerce
- Private resources such as food producers, commercial analytical resources and any company related to the food chain production, Producer associations
- Consumers/Citizens, Consumer association



# Towards the ESFRI Roadmap 2018

## EU Inter-Ministerial Group (EU-IMG)

Country	n° of Ministries involved	Ministry in the EU-IMG
Italy	6	Min. of Education, Universities and Research
Portugal	1	National Research Council, FCT Min. of Science and technology
Romania	1	Min. of Research and Innovation
Spain	1	Min. of Economy and competitiveness
Greece	1	Min. of Culture, education and religious affairs
Czech Republic	1	Min. of Education, youth and sport
Finland	1	Min. of Agriculture and forestry
Netherlands	1	Min. of Economic Affairs
Germany	1	Bavarian State Min. of Food, Agriculture and Forestry.
Slovenia	2	Min. of Education, Science and Sport
FYROM	2	Min. of Health
Moldova	2	Min. of Agriculture and Food Technologies
France		<i>under examination</i>
Switzerland	1	Swiss Federal Food Safety and Veterinary Office in the Min. of the Interior (OBSERVER)
Belgium	1	<i>under examination</i>
Hungary		<i>under examination</i>
Turkey	1	<i>under examination</i>



*In the Countries where the governmental support arises from more than one Ministry a National-IMG with a representative from 1 Ministry selected for representing the Country in the EU-IMG has been preliminarily established*

**National and EU synergies**

EDUCATION AND RESEARCH

HEALTH

AGRICULTURE

ENVIRONMENT

ECONOMY

FOREIGN AFFAIRS

# Benefits/Impacts of METROFOOD-RI

- Strengthening internationalization, export and trade
- Building competitiveness on objective bases
- Bringing added value

FBOs

- Enforcement of consumers' trust
- Provision of information and knowledge to make conscious and reliable choices

Consumers

- Development of competences and skills
- Implementation of new technologies
- Risk/benefit analysis
- Definition of best practices
- Promotion of the integration of knowledge

Scientific Community

- Permitting more efficient food control
- Improving safety and healthiness of production
- Supporting environmental Policy and sustainable development

Society

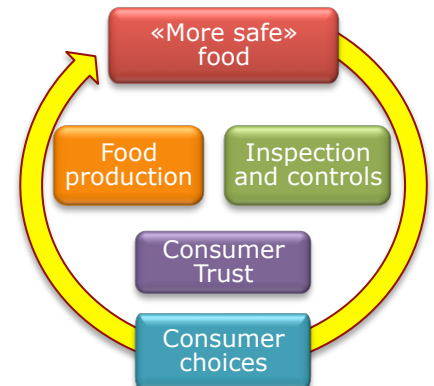


prevent food crises

positive impact on citizens' health

Establishment of a virtuous cycle of demand and supply of increasingly healthier and sustainable food

positive impact on the European market



*Thank you for your attention!*

## Contacts



[www.metrofood.eu](http://www.metrofood.eu)

### **Coordinator**

Giovanna Zappa - [giovanna.zappa@enea.it](mailto:giovanna.zappa@enea.it)

### **METROFOOD-RI Coordination Office**

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