

METROFOOD-RI: a new Pan-EU Research Infrastructure for promoting metrology in food and nutrition

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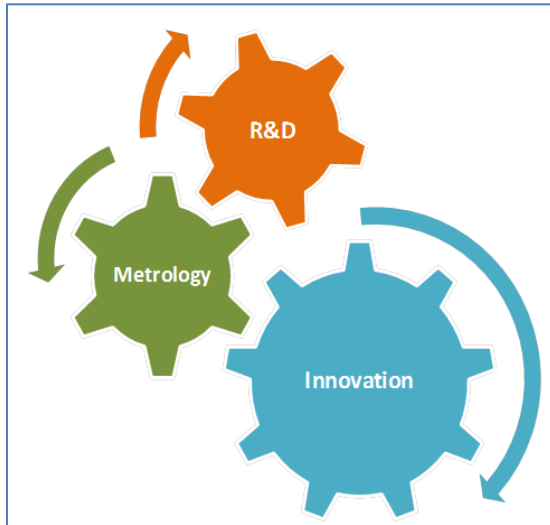
Italian national agency for new technologies,
energy and sustainable economic development

Dept. for Sustainability of Production and Territorial Systems (SSPT) - Biotechnologies and Agroindustry Division (BIOAG)
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MASSTWIN Group Training: Metrology in measurements of stable isotopes of light elements: traceability, uncertainty and comparability - Jožef Stefan Institute – Ljubljana, Slovenia – Dec. 7, 2016

METROLOGY as an INSTRUMENT for HARMONIZATION and INTEGRATION

Metrology as engine of Research and Innovation



- The expenditure for measurements is about 3-5% of GDP
- Harmonized procedures lead to an increase of production
- Measurements support innovation, trade, consumers, health and the Environment

Decision making

Decisions taken on the bases of wrong measurements

Interventions

unnecessary

inappropriate

harmful

Damages to the safety, health, the environment and the economy

METROLOGY FOR FOOD QUALITY & SAFETY



The ROLE of METROLOGY for the AGROFOOD SECTOR



Process optimization by Measurements & Testing

Application of enabling technologies

Innovation

Competitiveness

Sustainability

Added value of foodstuffs

Towards an objective and measurable food quality & safety



EMERGING NEEDS for FOOD METROLOGY

DEVELOPMENT and VALIDATION of NEW METROLOGICAL TOOLS

REFERENCE METHODS

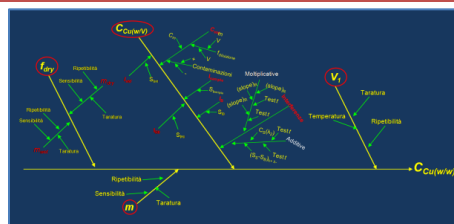
SAMPLING
PROCEDURES

REFERENCE
MATERIALS



SAMPLE PRE-TREATMENT
PROCEDURES

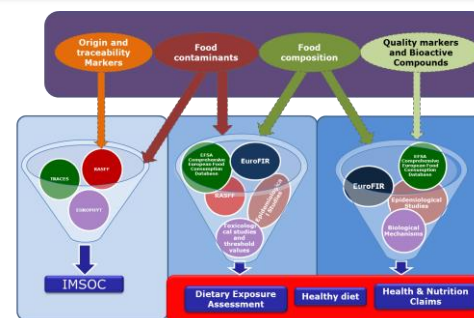
MEASUREMENT
UNCERTAINTY EVALUATION
PROCEDURES



- Contaminants of emerging concerns
- NPs IN FOOD and FCMs
- **Stable isotopes**
- Markers of quality, origin and authenticity
- Bioactive substances

NETWORKING
SHARING, INTEGRATION AND
HARMONIZATION OF DATA and
INFORMATION

Measurements DATA

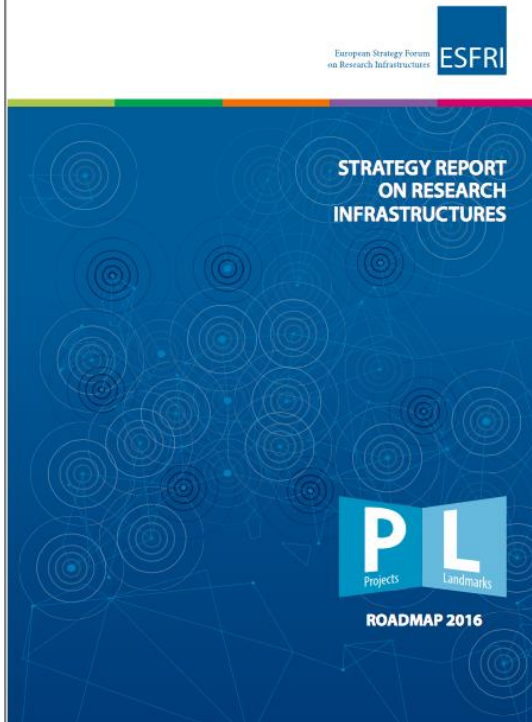


- Food composition
- Food contaminants
- Markers of quality, origin and authenticity
- Bioactive substances

METROFOOD-RI



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

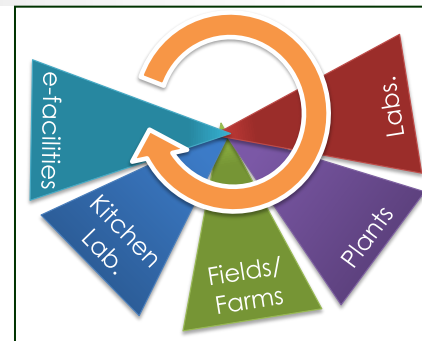


METROFOOD-RI is a new, distributed Research Infrastructure of Global Interest, by means of which it will be possible to carry out different activities supporting data collection and measurement reliability, as well as basic and frontier research in food and nutrition.

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.

The Mission of METROFOOD-RI

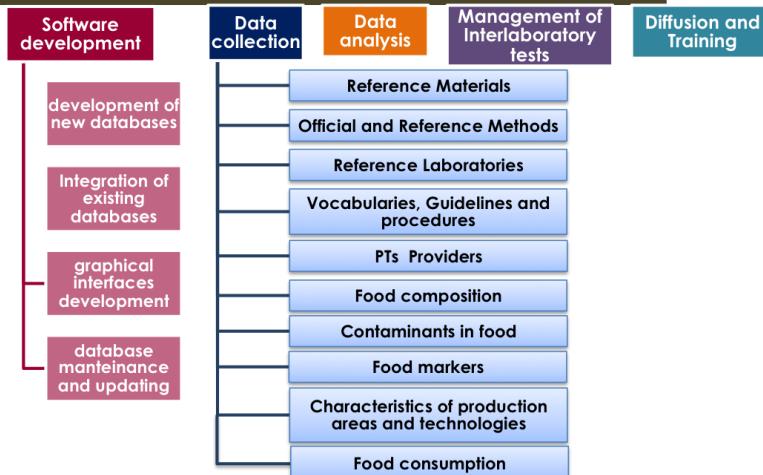
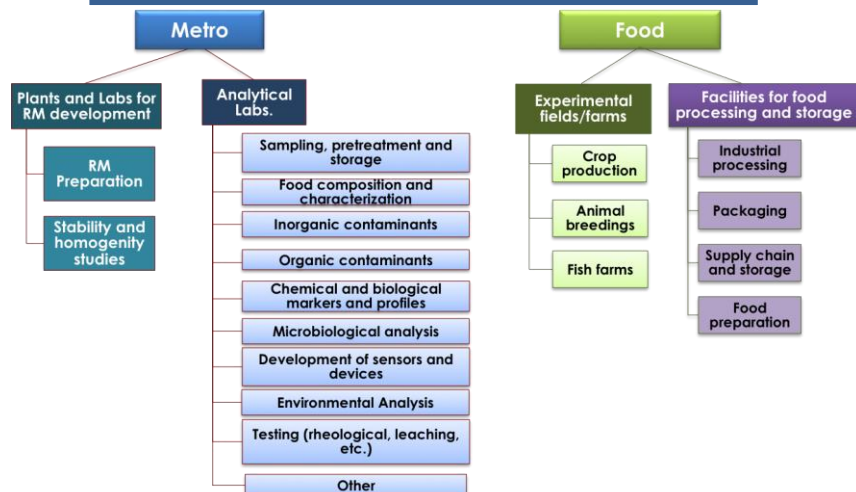




Physical-RI



e-RI

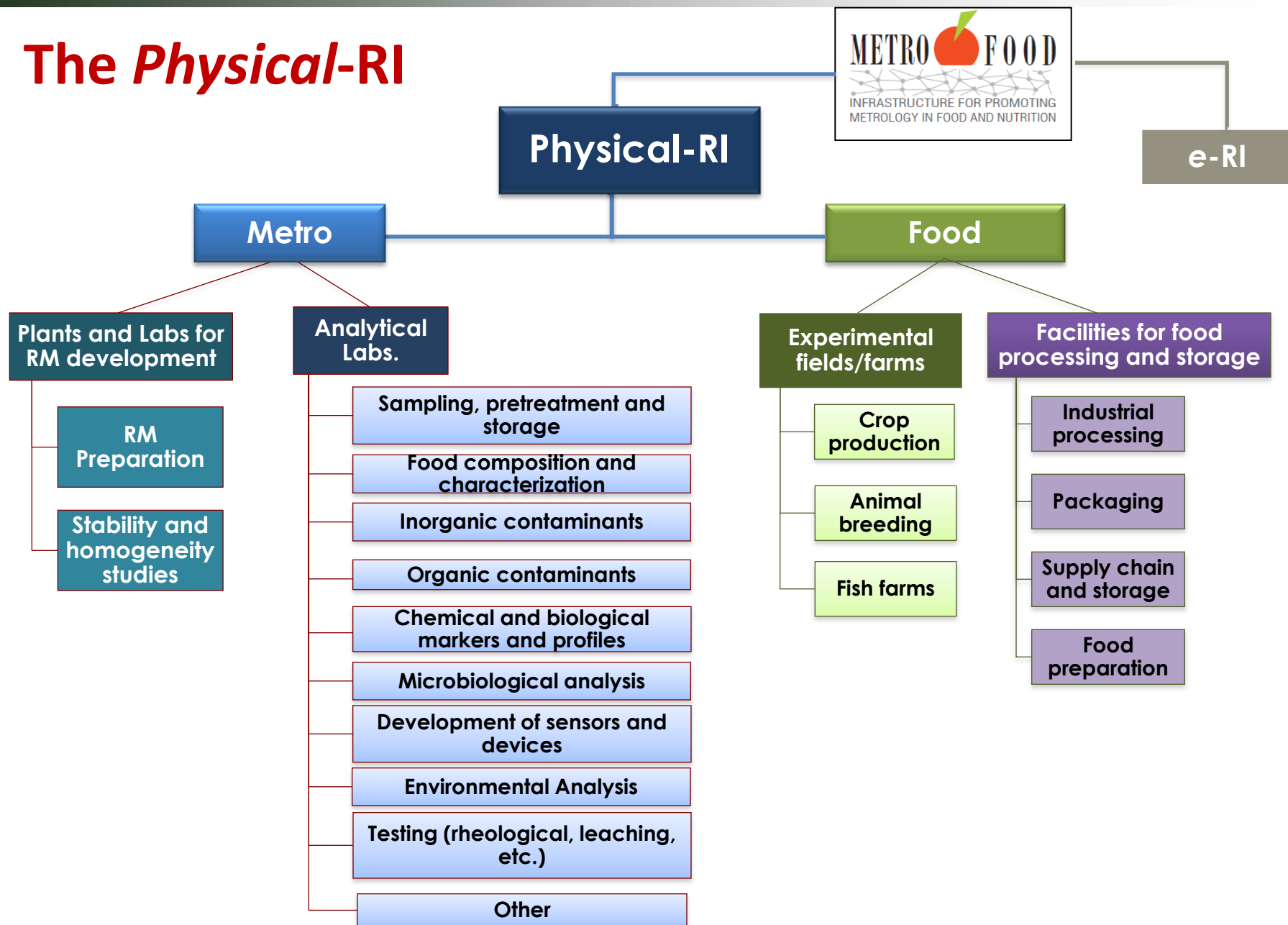


from farm



to fork

The *Physical-RI*



POTENTIAL ACTIVITIES of the *Physical-RI*

Metro

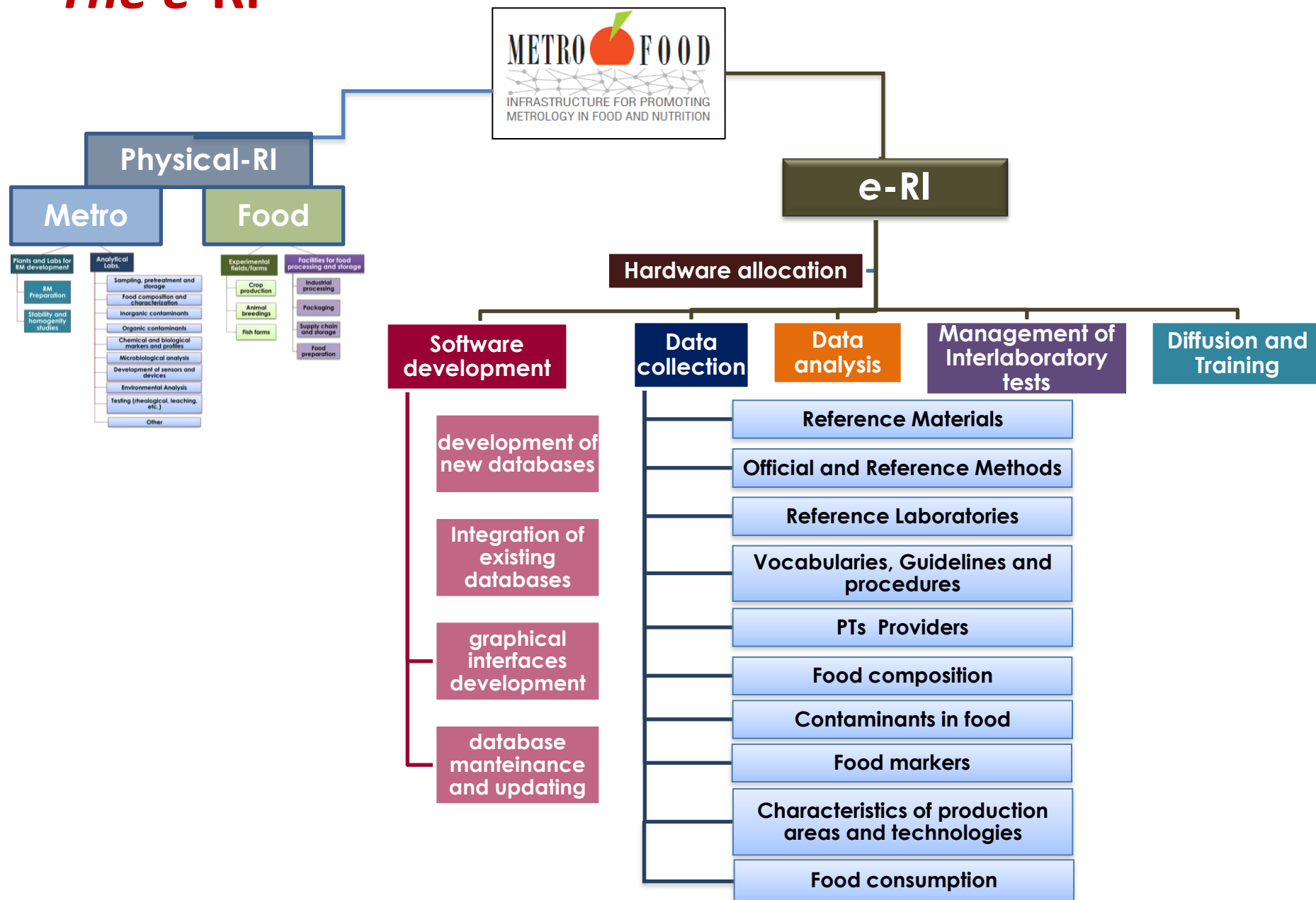
- Development and characterization of **new Reference Materials**
- Development of **new analytical methods and devices**
- **Interlaboratory Testings**
- **Validation** of analytical methods and devices for the agrofood sector
- Identification of chemical and biological **markers and patterns** (of origin, quality, safety)



Food

- Provision of **new data** on food (composition, contaminants, markers, etc.)
- Experimental studies for evaluating the **nutritional value** and **contaminant contents** of foods in relation to different influence parameters (geographic origin, technologies of production/process/ storage/preparation)
- Experimental studies for evaluating **exposure through diet**
- Evaluation of **benefits and risks related to the application of new technologies** (i.e.: nanotechnologies) in food production and packaging
- Development of **best practices**

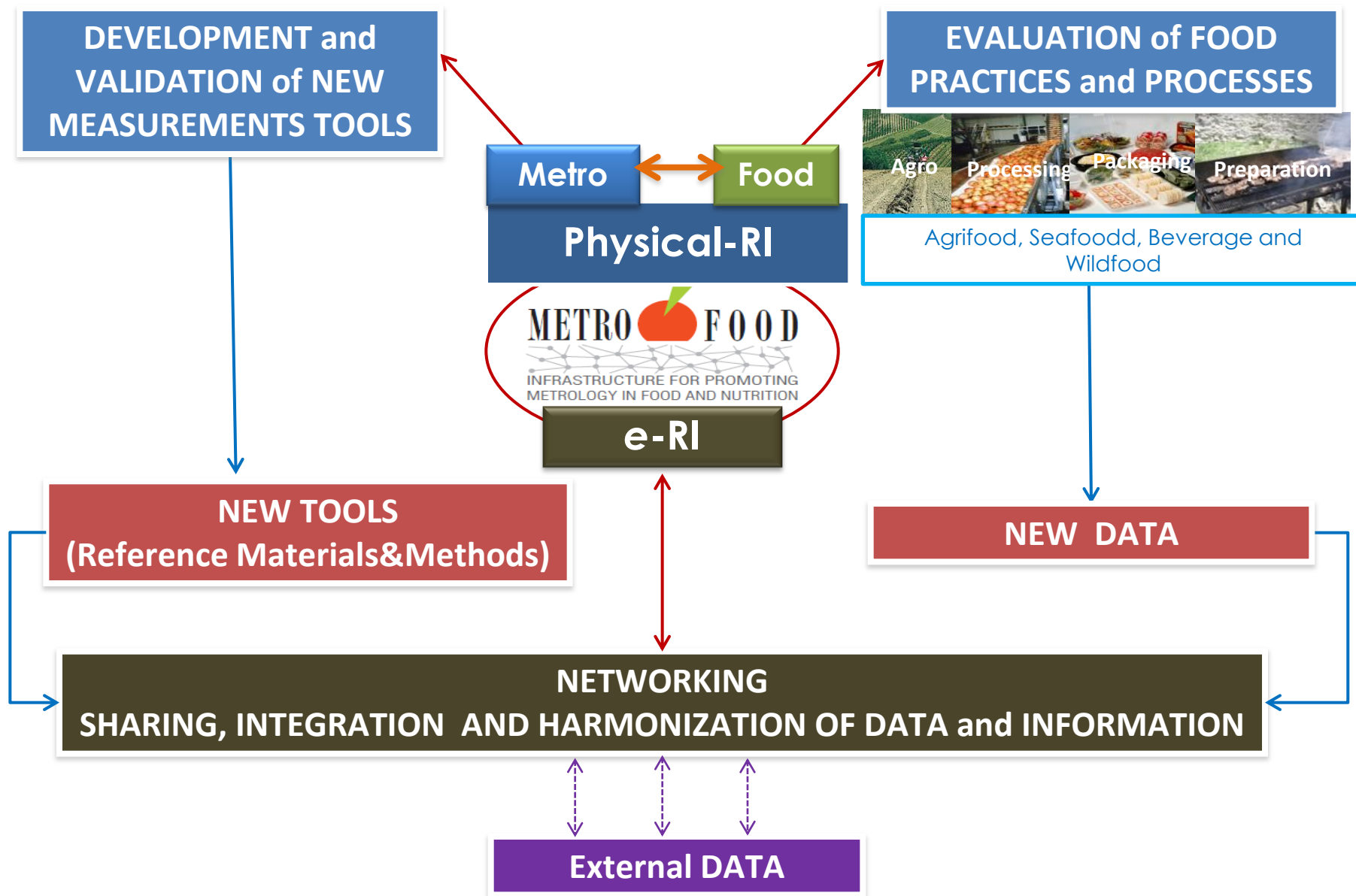
The e-RI



e-RI POTENTIAL ACTIVITIES

- **To find out in a single web-site** - starting from the analyte (measurand) and the matrix all the available information for standardizing and harmonizing food analyses (Reference Materials, Official Methods, Reference or Threshold values, Reference Laboratories, Proficiency Testing Providers; Quality Assurance Strategies)
- **To disseminate information and training** on terminology, metrological tools, principles, and procedure
- To collect information about the **needs in the different Member States** (and Associated Countries) about metrology in food and nutrition
- To collect data on **food composition**, nutritional contents and levels of contaminants and emerging concerns in foods produced in **different geographic regions** and by applying **different technologies**




Links between Physical and electronic Infrastructure







Proposal for the ESFRI Roadmap 2016

Supporting Countries

Economic endorsements:

-  Italy – Ministry of Economic Development
-  Portugal - National Research Council FCT Ministry of Science and Technology
-  Romania - National Authority for Scientific Research and Innovation

Political endorsements:

-  Austria – Ministry of Health
-  Czech Republic – Ministry of Education, Youth and Sports
-  France – Ministry of Agriculture, Agrifood and Forestry
-  Greece – Culture, Education and Religious Affairs
-  Italy – Ministry of Economic Development; Ministry of Health
-  FYROM – Ministry of Health
-  Portugal – National Research Council FCT Ministry of Science and Technology
-  Romania – National Authority for Scientific Research and Innovation
-  Republic of Slovenia – Metrology Institute of the Republic of Slovenia
-  Spain – Ministry of Economy and Competitiveness
-  Moldavia – Academy of Sciences
-  Turkey – Ministry of Development

HEALTH

- Austria
- Italy
- FYROM

EDUCATION AND RESEARCH

- Scientific Research and Innovation - **Romania**
- Academy of Sciences - **Moldavia**
- National Research Council Ministry of Science and Technology - **Portugal**
- Education, Youth and Sports - **Czech Republic**
- Culture, Education and Religious Affairs - **Greece**
- Metrology Institute of **Republic of Slovenia**

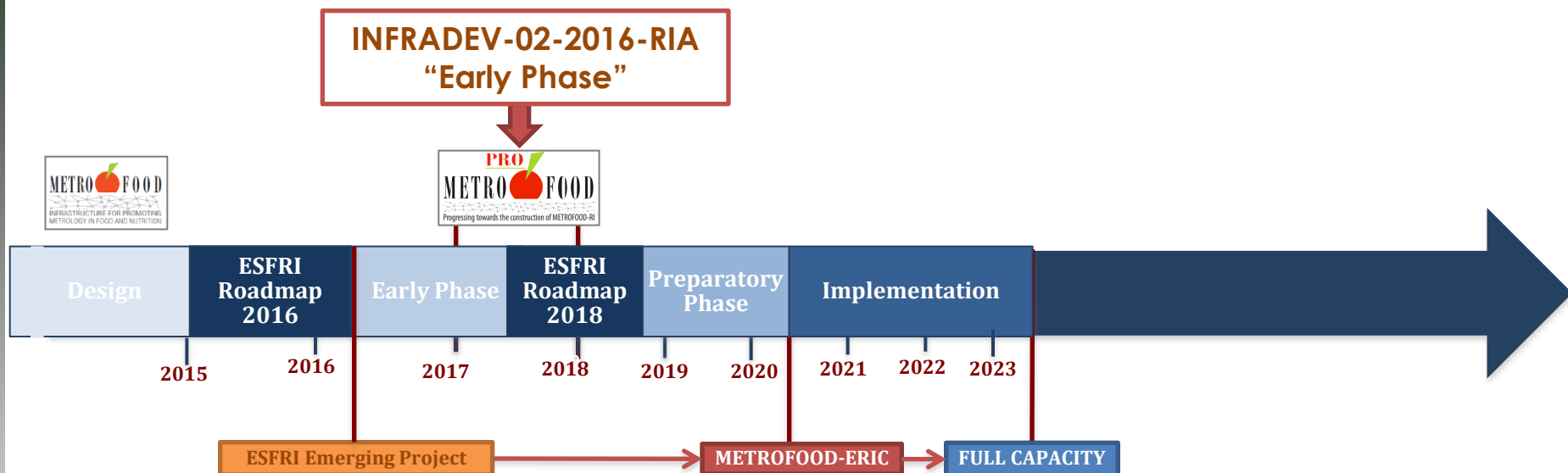
ECONOMY

- Economic development - **Italy**
- Development - **Turkey**
- Economy and Competitiveness - **Spain**

AGRICULTURE

- Agriculture, Agrifood and Forestry – **France**

METROFOOD-RI Timeline

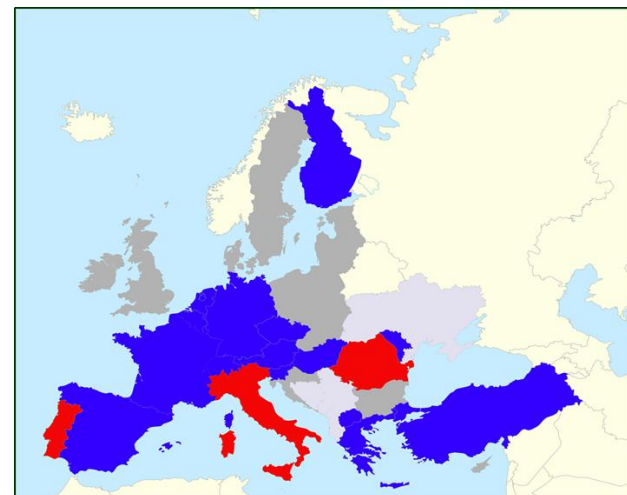


INFRADEV-02-2016-RIA
"Early Phase"

Towards the ESFRI Roadmap 2018

EU Inter-Ministerial Group (EU-IMG)

Country	n° of Ministries involved	Ministry involved in the EU-IMG
Italy	5	Ministry of Research
Portugal	2	National Research Council, FCT Ministry of Science and technology
Romania	1	National Authority for Scientific Research and Innovation
Spain	1	Min. 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 Ministry of Food, Agriculture and Forestry.
Slovenia	2	Min.of Education, Science and Sport
FYROM	1	Min. of Health
Moldova	2	Min. of Agriculture and Food Technologies
France		<i>under examination</i>
Switzerland	1	<i>under examination</i>
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

STAKEHOLDER FORUM

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	The Netherland
EuroFIR	Belgium

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)

Universities

- Udine, Brescia, Fed.II Napoli (IT)
- AUTH (GR)
- CULS (CZ)
- Pau (FR)
- SZU (HU)
- TUM (DE)
- Primorska (SI)
- Skopje (MK)

Institutes for Food Safety and Health Protection

- ISS, IZS, IEO (IT)
- INSA (PT)
- ANSES (FR)
- PHI (MK)
- EVIRA (FI)
- WIV-ISP (BE)
- RIVM (NL)

National Metrology Institutes

- LNE (FR)
- INRIM (IT)
- MIRS(SI)

International Organisations

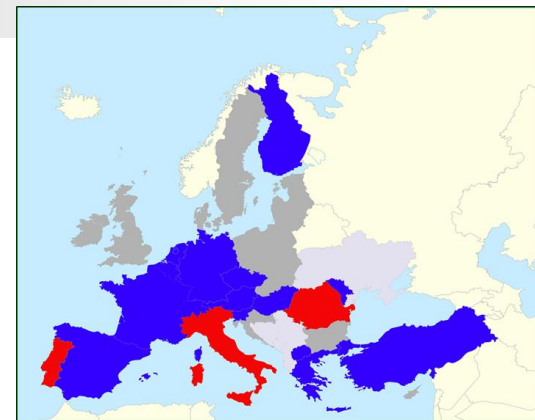
- FAO

Laboratories for Food Analysis

- UT2A (FR)

Private Companies

- Premotech GmbH (SW)



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

JOINT RESEARCH UNITS already established

METROFOOD-IT

ENEA*, CNR, CREA, ISS, INRIM, FEM, Udine Un., Brescia Un., Napoli FedII Un., IEO

METROFOOD-SL

JSI*, NBI, Primoska Un.

METROFOOD-MK

IJZRM*, Skopje Un.

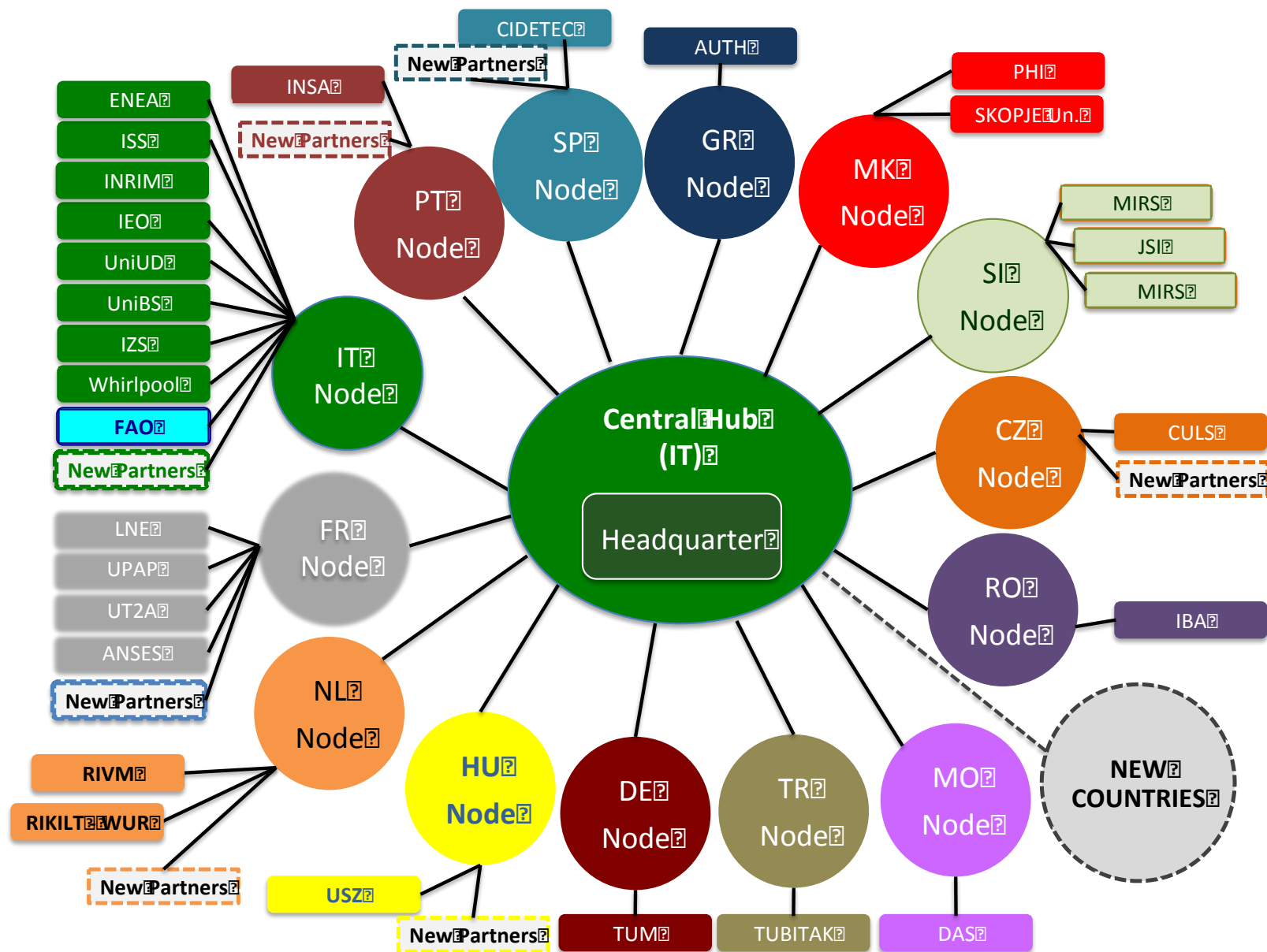
* JRU Coordinator

MoU

French Partners

UPPA, LNE, ANSES, UT2A

METROFOOD-RI: Hub and Nodes model



Endorsements from International Organisations



**International
Measurement
Confederation**



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



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



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



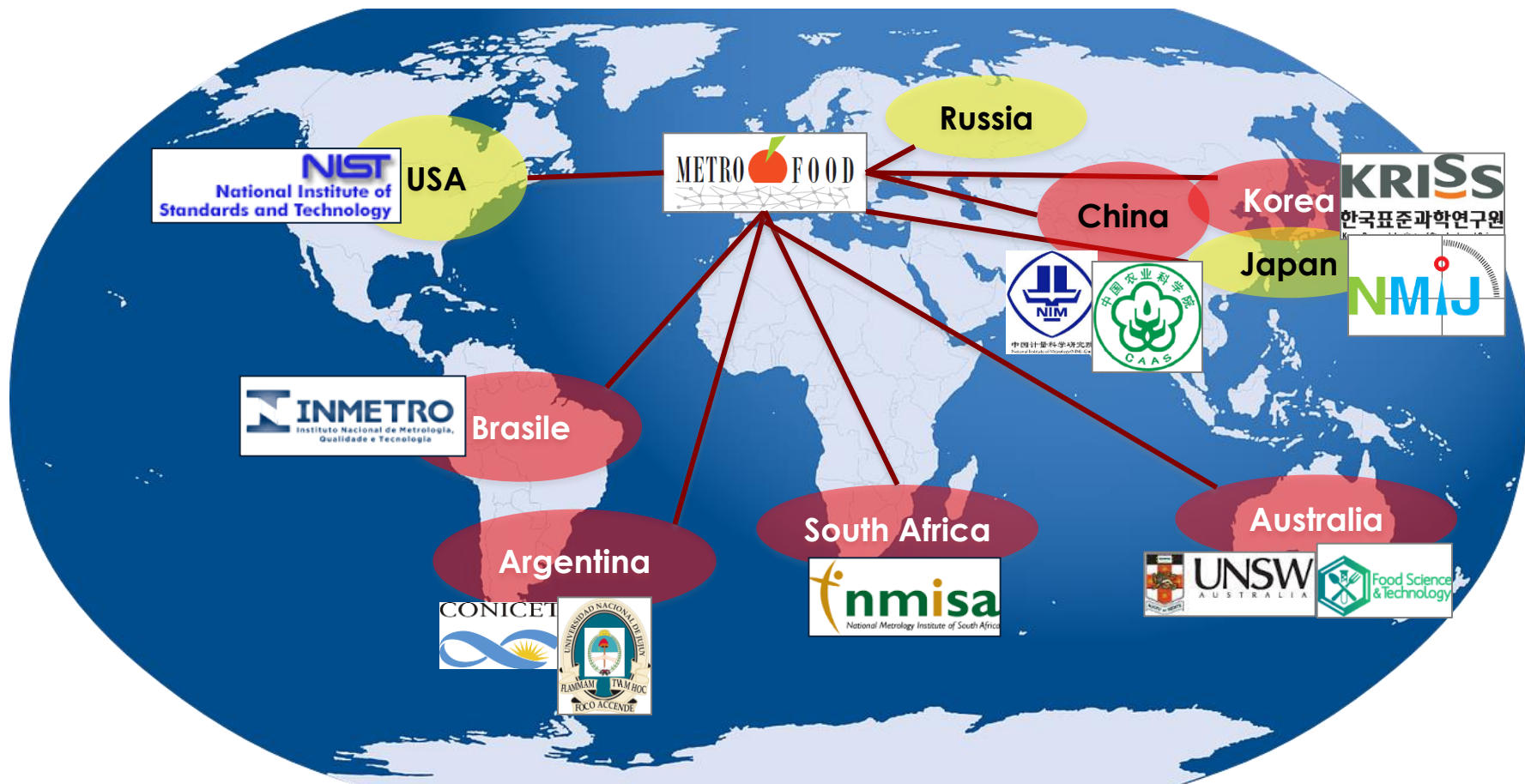
SPread European Safety

**12 Federations of
Food&Beverage Industries**



**Versailles Project on
Advanced Materials
and Standards**

Global level of METROFOOD-RI



METRO FOOD

JPI - HDHL



A roadmap for harmonized and structured research efforts in the area of food, nutrition, health and physical activity.

JPI - FACCE



Research to support sustainable agricultural production and economic growth.

Smart Specialisation Strategies (S3)

(Italy, Portugal, Romania, France, Spain, Greece, The Netherlands, Hungary)



EIP "European Innovation Partnership"
EIP-AGRI

Focus Group "Short Food Supply Chain"



Research Programmes
(FP, H2020)

e.g. KBBE, ERANET, EMPIR

In the field of Food & Nutrition since 2008 there were funded 19 projects with a budget of 96,815,381 €



European Technology Platforms

- Food For Life
- Manufuture
- Suschem

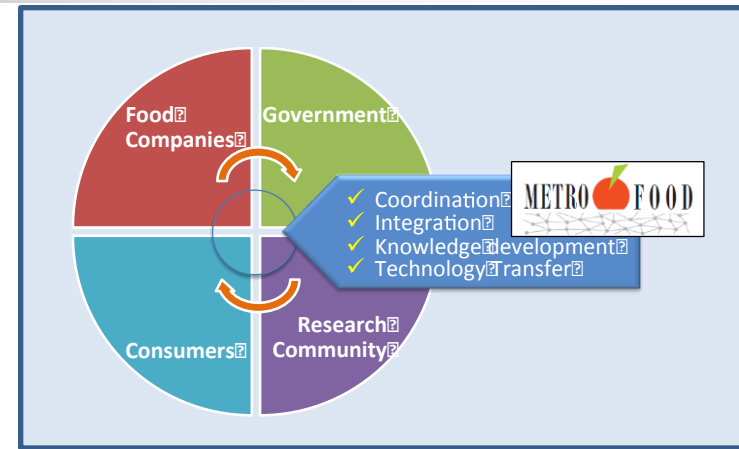
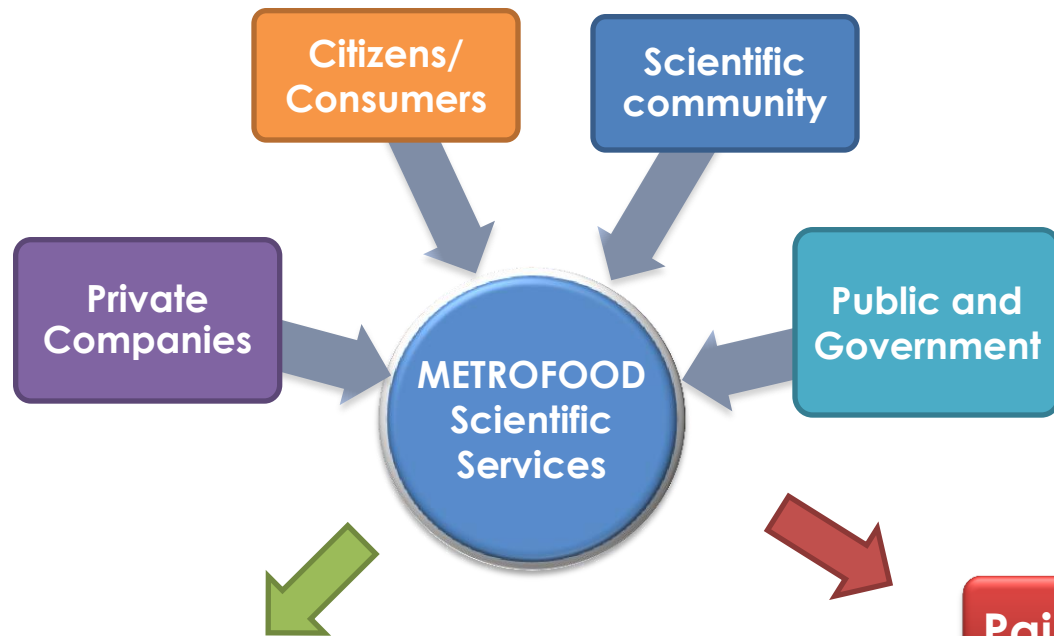


Develop research and innovation agendas and roadmaps for action at EU and national level to be supported by both private and public funding

KIC-FoodNexus

The objective is to ensure a more efficient and effective food supply chain system, while improving the sustainability and traceability in all parts of this chain.

Services from METROFOOD-RI



Free services

- ✓ Information services
- ✓ Database querying
- ✓ Guidelines
- ✓ On line courses
- ✓ Research of partners/Networking

Paid Services

- ◆ Reference Materials supplying (traditional, innovative, custom)
- ◆ PT management
- ◆ Development of new methods and analytical devices
- ◆ Food analysis and agroecosystem characterization
- ◆ Optimization of food processing, storing and preparation
- ◆ Courses and Training services
- ◆ Use of facilities (laboratories, plants, farms)

METROFOOD-RI & isotope analysis for food quality, safety and traceability



**Safety
Quality
Traceability**



Advanced platforms and skills for
isotope analyses networked and made
available in the Physical-RI

Training

- ✓ Development of new Reference Materials specific for such kind of analyses
- ✓ Development and validation of analytical methods
- ✓ Measurement uncertainty assessment

METROFOOD-RI will permit to progress on metrological traceability, reliability and comparability of measurement results

The benefits 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

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

prevent food crises

positive impact on **citizens' health**

positive impact on the **European market**

Thank you for your attention!

Contacts



www.metrofood.eu

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Metrology promoting Standardization and Harmonization in Food and Nutrition

October, 1st - 4th 2017 - Thessaloniki (Greece)

