

Materiali di Riferimento per l'Agroalimentare: stato attuale e prospettive

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Misure per l'Agroalimentare

Product lifecycle management

Economia Circolare

Sostenibilità delle produzioni



Competitività Industriale



Innovazione



Sostenibilità dei consumi

Produzione e consumo di alimenti

Food security



Autenticità degli Alimenti

Food Integrity



Sicurezza Alimentare

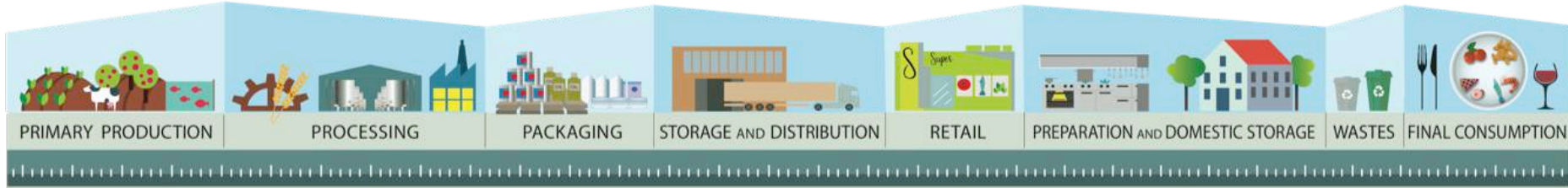
Salute



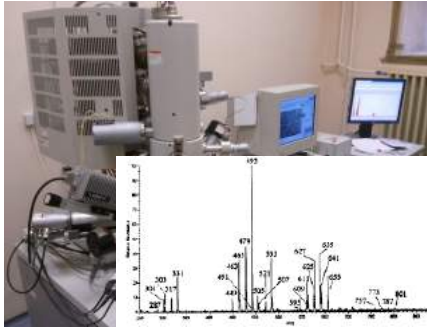
Food safety

Qualità degli Alimenti

Misure per l'Agroalimentare

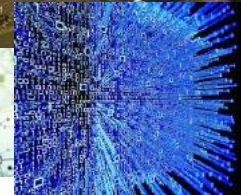


Sistemi & Dispositivi Analitici



Sistemi per la early detection

Analisi in-situ e in-line



Digital revolution & Big Data

Analisi chimiche, fisiche, (micro)biologiche
Analisi sensoriali

RM per l'Agroalimentare

MATRICI

- Matrici ambientali
- Alimenti di origine animale
- Alimenti di origine vegetale
- Bevande
- Estratti e oli essenziali
- Preparazioni & Dieta totale
- Mangimi
- Additivi e supplementi
- Scarti e sotto-prodotti
- Prodotti agricoli non-food
- Packaging e materiali a contatto
- ...



PARAMETRI

- Nutrienti
- Sostanze nutraceutiche
- Contaminanti organici e inorganici
- Residui di fitofarmaci e farmaci veterinari
- Lieviti e muffe
- Metaboliti
- Proprietà fisiche (pH, viscosità, conducibilità, dimensione particelle)
- Identità e sequenze
- ...

RM per l'Agroalimentare

Produzione attuale di RMs: ca. 10400 RM tot,
di cui ca. 600 Matrix-RM per il settore agroalimentare



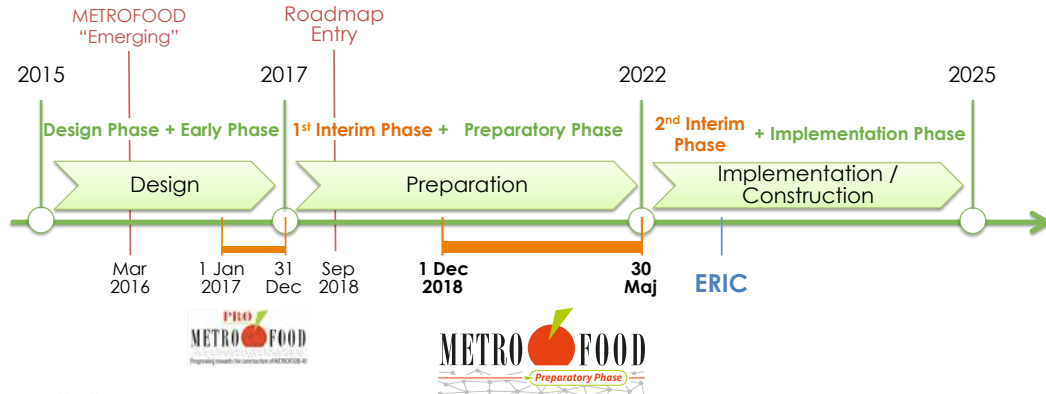
NECESSITÀ EMERGENTI



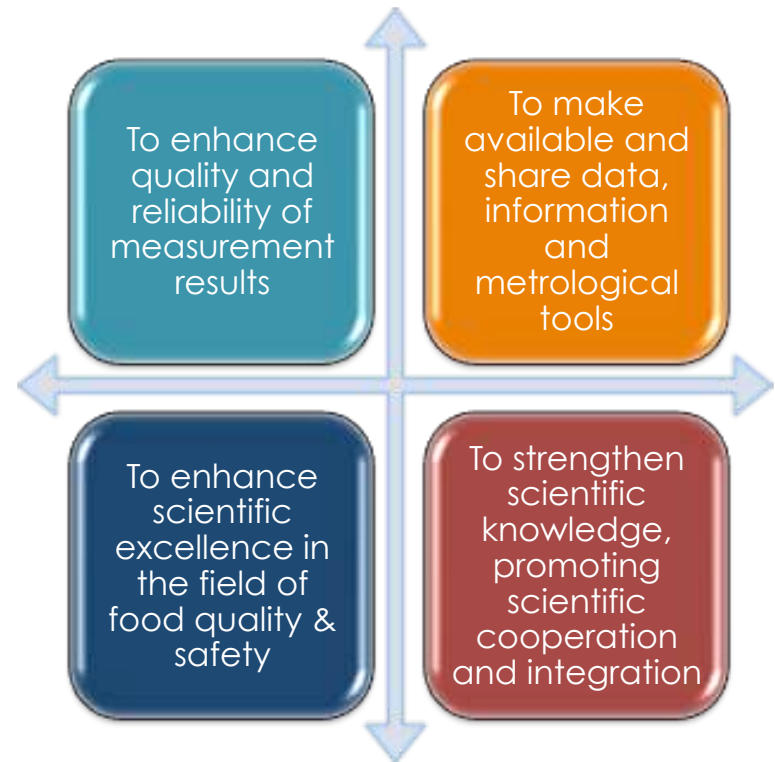
- ✧ Contaminanti emergenti
- ✧ Micotossine
- ✧ Nanoparticelle
- ✧ Microplastiche
- ✧ OGM, DNA
- ✧ Analisi sensoriali, panel tests
- ✧ Autenticità e rintracciabilità di materie prime e prodotti
- ✧ Sottoprodotti
- ✧ Novel foods

Domain Health & Food

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



MISSION



Current Partnership and Cooperation



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

Support from International Organisations

JRC EUROPEAN COMMISSION European Commission, JRC, Directorate F - Health, Consumers and Reference Materials	IMEKO	EURAMET	efsa European Food Safety Authority
Eurachem A Focus for Analytical Chemistry in Europe	ICAR	EMPHASIS	FNH-RI
EuroFIR European Food Information Resource	MoniQA Association	SAFE the consortium	
Oleum		NMKL	SPES GENE

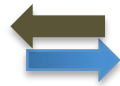
Cooperating with:
FoodAuthenticity
 A Virtual Network for Food Authenticity Analysis

Cooperation at a Global level

Brazil	INMETRO		
Argentina	Lamprosa	CONICET	
South Africa	tnmisa		
Australia	THE UNIVERSITY OF QUEENSLA AUSTRALIA	UNSW SYDNEY	
China	CICMHS		



Physical-RI



e-RI

Metro

Plants and Labs for RM development

- RM Preparation
- Stability and homogeneity studies

Analytical Labs.

- 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



Food

Experimental fields/farms

- Crop production
- Animal breedings
- Fish farms

Facilities for food processing and storage

- Industrial processing
- Packaging
- Supply chain and storage
- Food preparation



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



Impianti per lo sviluppo e produzione di RM



16 facilities specializzate distribuite

- ✧ Italy (ENEA, CREA, ISS)
- ✧ Belgium (Sciensano)
- ✧ Czech Republic (CZU)
- ✧ France (UPPA, UT2A, LNE)
- ✧ Greece (IAPR)
- ✧ Hungary (USZ)
- ✧ Portugal (INSA)
- ✧ Turkey (TUBITAK)

RM preparation

Bottling

Sealing

Labelling

Packaging

Areas for storage

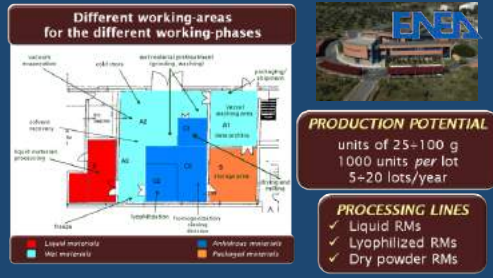
Homogenization (at a wet and at a dry stage), milling and grinding, sieving, dehydration, partitioning, dosing

for raw materials and RMs;
different T and lighting conditions

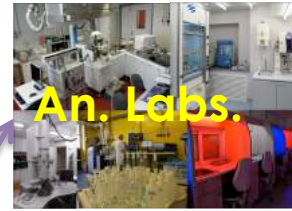
Distinctive features

- ✓ Different technologies for dehydration (lyophilisation, spray-drying, etc.)
- ✓ Industrial rotary evaporator systems and conical mixers at different volume scales to apply different homogenisation steps at both the wet and the dry stage.
- ✓ Control of the environmental process conditions (T, RH)
- ✓ Possibility to work under inert atmosphere (N₂) or under vacuum
- ✓ Radiosterilisation at the bulk and bottled stage to enhance RM shelf life
- ✓ anti-contamination inert contact materials are always used

Agrofood RM Plant c/o Trisaia Research Center



Valore aggiunto derivante dai link tra le facilities



Caratterizzazione per parametri chimici, chimico-fisici e (micro)biologici



Produzione "in-house" delle materie prime (origine nota, driven-RM)

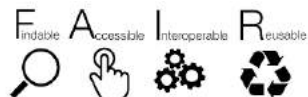


Analisi statistica, elaborazione dati, organizzazione e gestione di PT

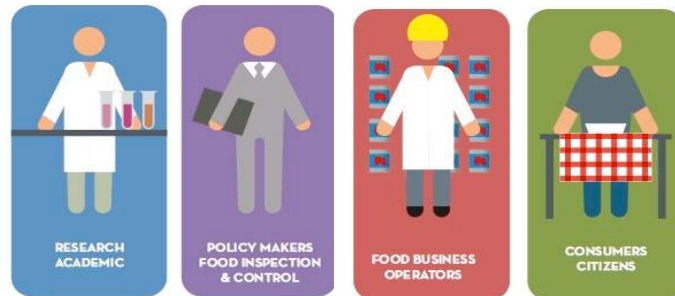


Sviluppo e integrazione di dataBase (RM, PT & metodi ufficiali di analisi per agrofood + data su food & nutrition

METROFOOD-RI - in full harmony with the RRI principles - will provide distributed services, acting on the real plan of measurement reliability and procedure harmonization and adopting the FAIR approach on data management



POTENTIAL USERS



SERVICES

Metrological & Standardisation Services

Agro-ecosystem characterisation, Food analysis, Food Packaging testing & characterisation

Services related to the improvement of Food Production & Consumption

e-Services

Integrated Services

ACCESS



Physical



Remote



Virtual

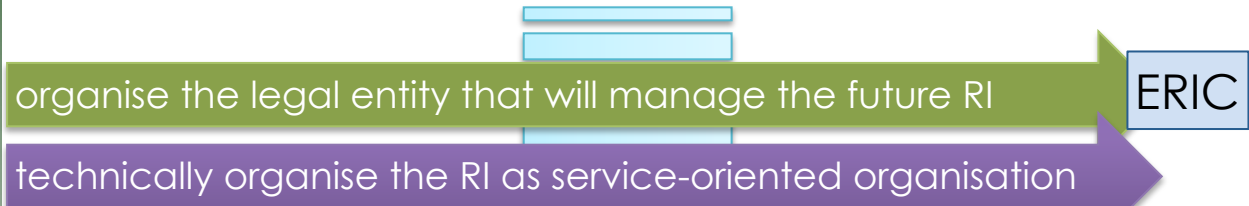


Excellence-driven access

Market-driven access

Wide access

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



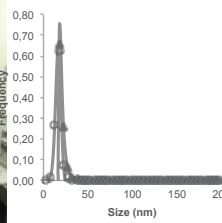
TRANSNATIONAL ACCESS

- Physical access
- Remote access
- Wide/virtual access

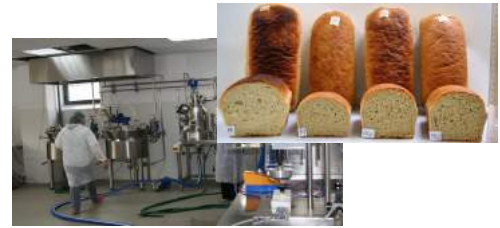
RMs (feasibility studies/ preparation)



OPEN LAB for PHYSICO-CHEMICAL CHARACTERIZATION of NANOPARTICLES in FOOD



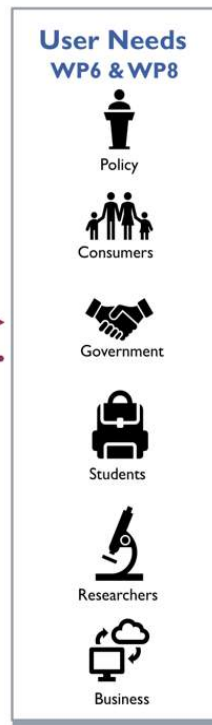
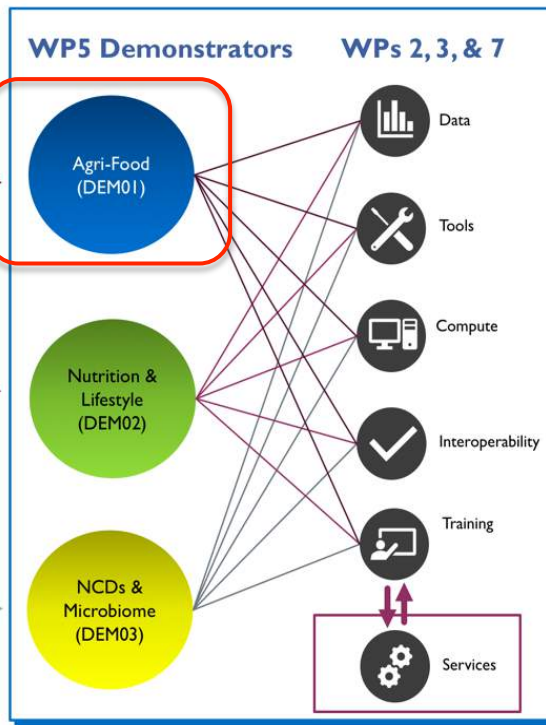
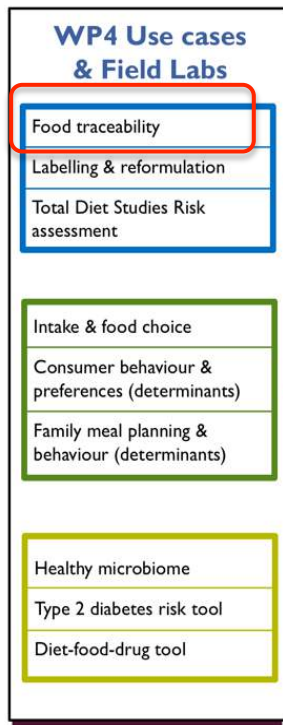
OPEN PLANTS for FOOD PROCESSING and ADDED VALUE PRODUCTIONS





DT-SFS26-2019 IA
 GA 863059
 1 Ott. 2019 –30 Set. 2023

Sviluppo Food Traceability search engine
 (supporto a METROFOOD e-component)



Grazie per l'attenzione!



Contacts

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