

TECHNICAL MEETING OF THEMATIC PARTNERSHIP “TRACEABILITY AND BIG DATA”

Smart Specialization Platform S3P Agrifood

Sofia Miceli – ASTER

Stefano Nannetti - Emilia Romagna Region - General Directorate
for Agriculture, Hunting and Fishing

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Seville (E)

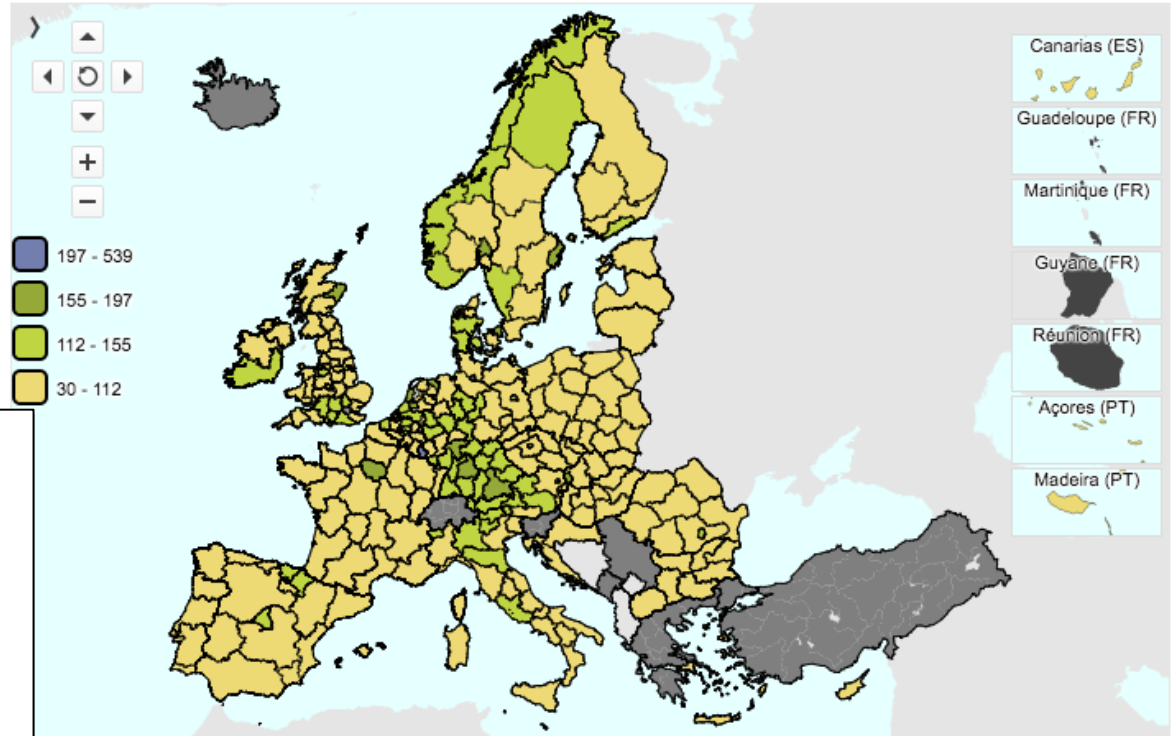
Outline

- Emilia-Romagna Region
- Economy and knowledge in regional agrifood
- Big data community
- Main challenges
- Smart Specialization Strategy
- Investments aiming at digitalization at regional level
- Regional Smartfood partnership

Emilia-Romagna Region



Select an indicator: GDP per capita in PPS, EU28=100



Surface: 22,453 Km²

Inhabitants: 4,454,393

Population density: 200 inhabitants/sq km

Source: ISTAT, 2016

GDP: 144.515 M€

GDP per Capita: 32.487 €

Source: ISTAT, 2011

AGRICULTURE, FOOD AND DRINKS INDUSTRY, AND RELATED SECTORS

Employment level

Agrifood system: considering related sectors upwards and downwards.

More than 300,000 workers (16.7% of regional total).

The Agrifood system in Emilia-Romagna 2011(number of Workers)		
	Workers (number)	% on Italy
Agriculture*	76.000	
Food and drinks industries	53.396	12,7
Agricultural Machinery, food industry equipments..	33,512	36,6
Activities related to agriculture,forestry..	6,885	10,7
Chemistry for agrifood	2,550	15,1
Packaging materials	2,892	12,7
Food distribution (Wholesale)	43,691	9,2
Food retail	21,169	7,0
Restaurants	52,018	9,2
Collective catering services	12,554	10,4
Services for food industries	2,246	11,0
Total number of workers (without agriculture)	230,913	
Total number of workers (with agriculture)	76,000	
Total workers in agrifood and related sectors	306,913	

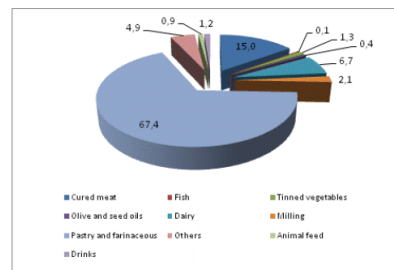
Source: National Census of Industry and services 2011. Regional and innovation strategy for S3.
For the agriculture the units of labor employed was 206,000, including part time workers

FOOD AND DRINKING INDUSTRY DATA (Structural data: Firms and employment)

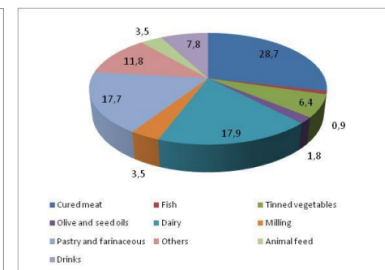
Food-processing firms: 4.922 (2014)

- 8% of food-processing firms in Italy
- 10.8% of manufacturing firms in the region

Share of crafts food-producing firms by sectors (%)



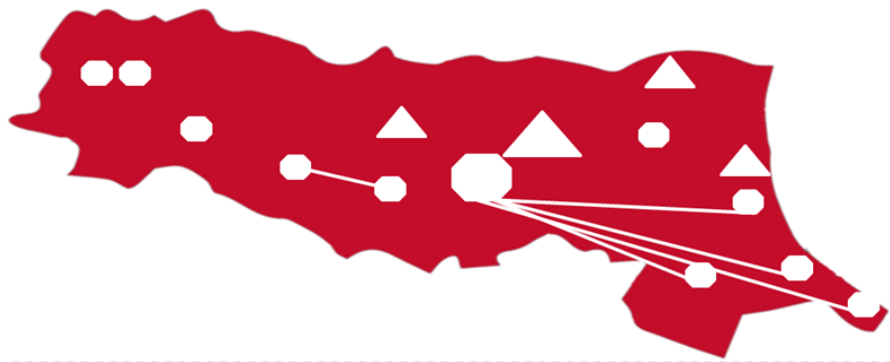
Shares of industrial food-producing firms by sectors (%)



Emilia-Romagna is in the 5th position among EU regions for employees

Source: European Cluster Observatory (2012)

The Research System




AGRIFOOD PLATFORM OF HIGH TECHNOLOGY NETWORK OF EMILIA ROMAGNA REGION

In the Agrifood Platform the E-R Region accredited 10 industrial research laboratories, relevant part of the total research on food technologies in the region (www.aster.it) Main items:

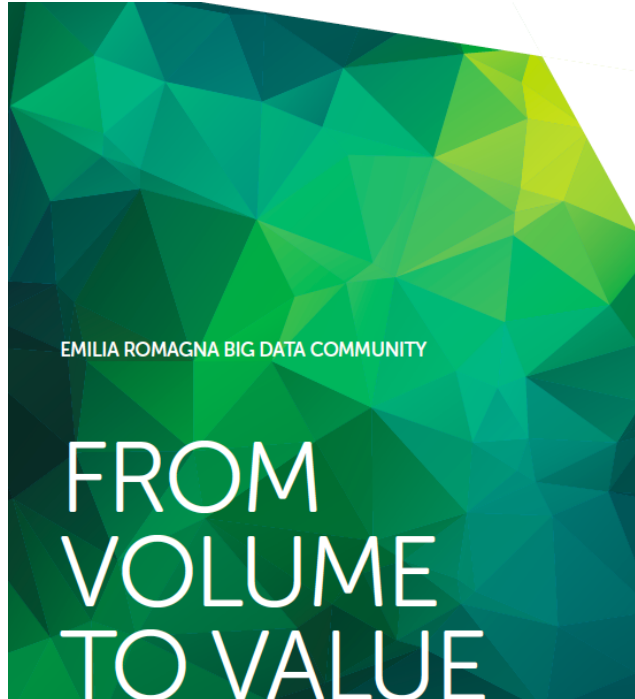
- Genetic improvement
- Precision farming
- Safety, quality, traceability
- Nutrition and Health
- Green chemicals

 **6 Universities** with 11 locations
More than **140.000** students

 **Hosting the most important National Research Centres** CNR, ENEA, INFM, IASF, INGV, CINECA, IOR, CNIT, SSICA, CMR

Big Data Community

- 70% of the Italian computing capacity
- High level of connectivity (100Gbps, 4 PoP)



1791

RESEARCHERS
INVOLVED



230

FOREIGN
RESEARCHERS
HOSTED



94

INTERNATIONAL
EVENTS



60

HIGHER EDUCATION
INITIATIVES
INCLUDING

Big Data Community - Infrastructures

An High Performance Computing facility (HPC) hosting a Tier0 and Tier1 and operating within PRACE (Partnership for Advanced Computing in Europe) at CINECA, in Bologna, with the following capabilities (*):

CPU: ~16 PETAFLUPS / 350.000 COMPUTING CORES

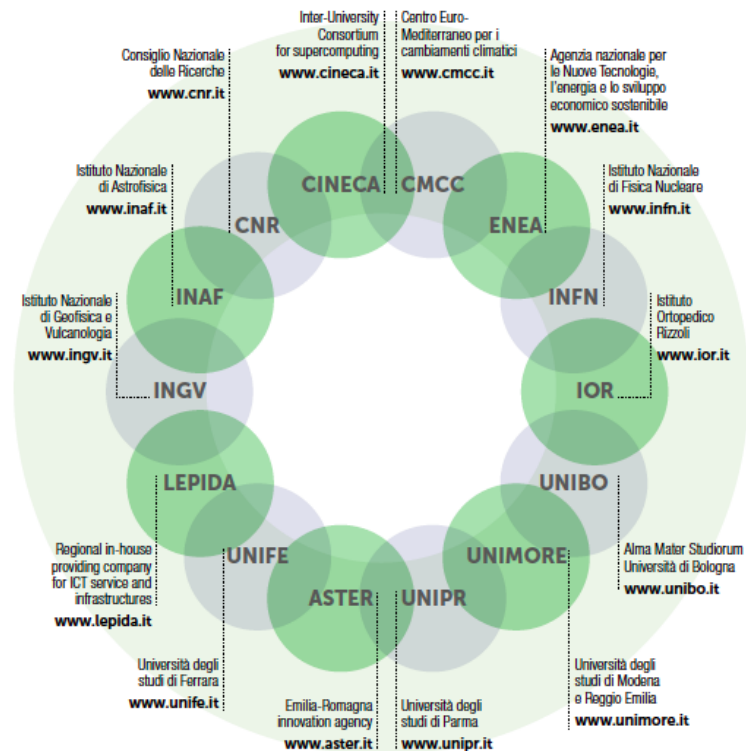
STORAGE: ~20 PB OF NET DISK SPACE

A High Throughput Computing facility (HTC) which hosts the WLCG Tier1 at the CNAF-INFN in Bologna, with the following capabilities:

CPU: ~193 KHS06 / ~15600 COMPUTING CORES

STORAGE: ~17 PB OF NET DISK SPACE

LIBRARY: ~22PB OF TAPE SPACE.



Big Data Community Agrifood domain

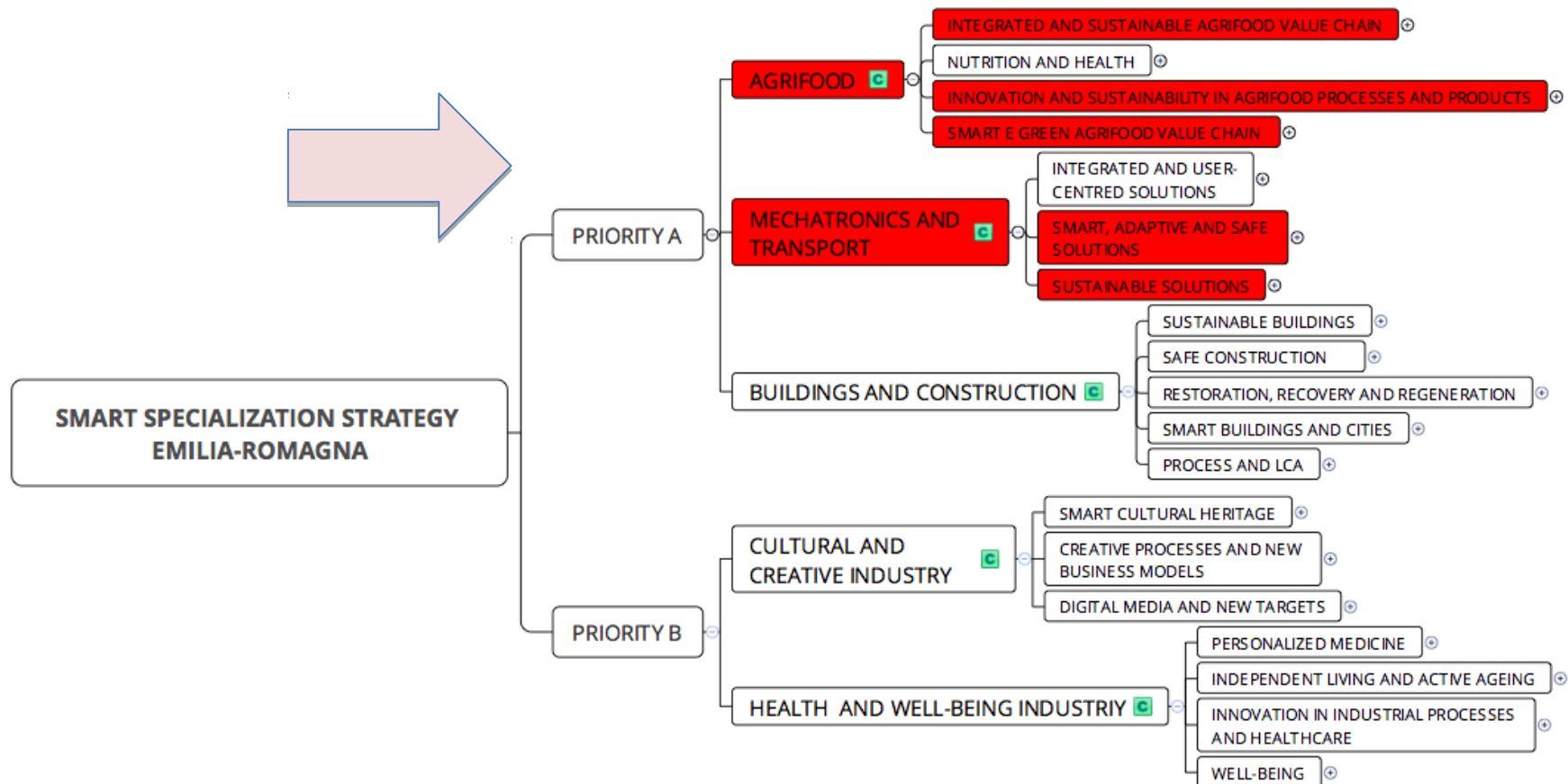
The relevance of Big Data in the agri-food and bio-industry is pivotal, and might become enormous due to the current blooming of innovative technologies and omic tools applied to the most diverse industrial sectors (food production, food safety, agriculture, primary production and animal/ plant breeding, industrial biotech, enzyme and microbial discovery).

- **Improving consumer health by monitoring food-related data** is one of the areas that may benefit most from a radically innovative use of Big Data to provide more personal recommendations, via various technological platforms, which can improve the quality of life. Beyond the typical use of data analysis for food safety, Big Data is also related to predictive analytics, with an impact on economy and logistics, as well as to metagenomics for the characterization of food spoilage.
- A **Public big data infrastructure** is essential to:
 - Develop **quality system based on data collecting in** every aspect of production, monitoring activities, traceability and official control of production quality, smart labeling. **IN EMILIA ROMAGNA WE HAVE A QUALITY ORIENTED STRATEGY IN AGRIFOOD**
 - Support producers ORGANIZATION AND PRODUCTION PLANNING
 - Guarantee **FULL ACCESS TO DATA FOR SCIENTISTS: with satellites data** and precision farming ones, agronomical science will have huge opportunities to develop new techniques and innovations for sector

Main challenges for Smartfood

- Improve European agrifood competitiveness
 - Enlarging quality control from raw materials to table
 - Monitoring global value chains
 - Enlarging sustainability and reducing food waste
 - Connecting food quality and lifestyle

Smart Specialization Strategy



S3 - Agricultural priority – RDF OP

- For agriculture 34 themes have been identified.
- About this platform we can mention:
 - modeling, sensors, warning systems and decision support
 - remote sensing data application to precision farming
 - full mechanization and robotics for agriculture
 - practices for the safety of agricultural productions
 - traceability and documentation, environmental certification
 - Application of principles and tools of artificial intelligence to data that characterize agricultural production

Investments – RDF OP

COMPETITIVENESS

ENVIRONMENT AND CLIMATE

TERRITORIAL DEVELOPMENT

Priority 1 Promote the transfer of **knowledge** and **innovation** in agriculture, forestry and rural areas.

- Stimulate innovation, cooperation and development of the knowledge base in rural areas.
- Strengthen the links between agriculture, food production and forestry, research and innovation, in order to improve the environmental performance and management.
- Encourage life-long learning and vocational training in agriculture and forestry.

Priority 2

Enhance **profitability** of farms and **competitiveness** of agriculture in all its forms, promote innovative farming techniques and forest **sustainable management**.

Priority 3

Promote the food **chain** organization, including processing and marketing of agricultural produce and **risks management** in agriculture.

Priority 4

Preserve, restore and **enhance ecosystems** related to agriculture and forestry.

Priority 5

Encourage the **effective use of resources** and shift to a **low-carbon** and **climate-resilient** economy in agriculture, agri-food and forestry sector.

Priority 6

Work towards **social inclusion**, poverty reduction and **economic development** of rural areas.

RESOURCES

2014-2020 regional budget compared to the 2007-2013 programme:

+131 million of total public spending
+ 100 million of regional co-financing

1.2 billion of public spending

Total leverage effect **42%**

1.719 billion of total expenditure envisaged including private investment

Priority of our Rural Development Program

- Quality production (PDO - PGI Organic)
- Innovation (GOI): 50 millions € dedicated (first successful call will support many innovatin projects in precision agriculture, precision feeding, precision irrigation, antibiotic free etc)
- Investments in value chain
- Young farmers

RDF OP - Financial resources

80,20 M€

cooperation for
innovation

50,02
M€

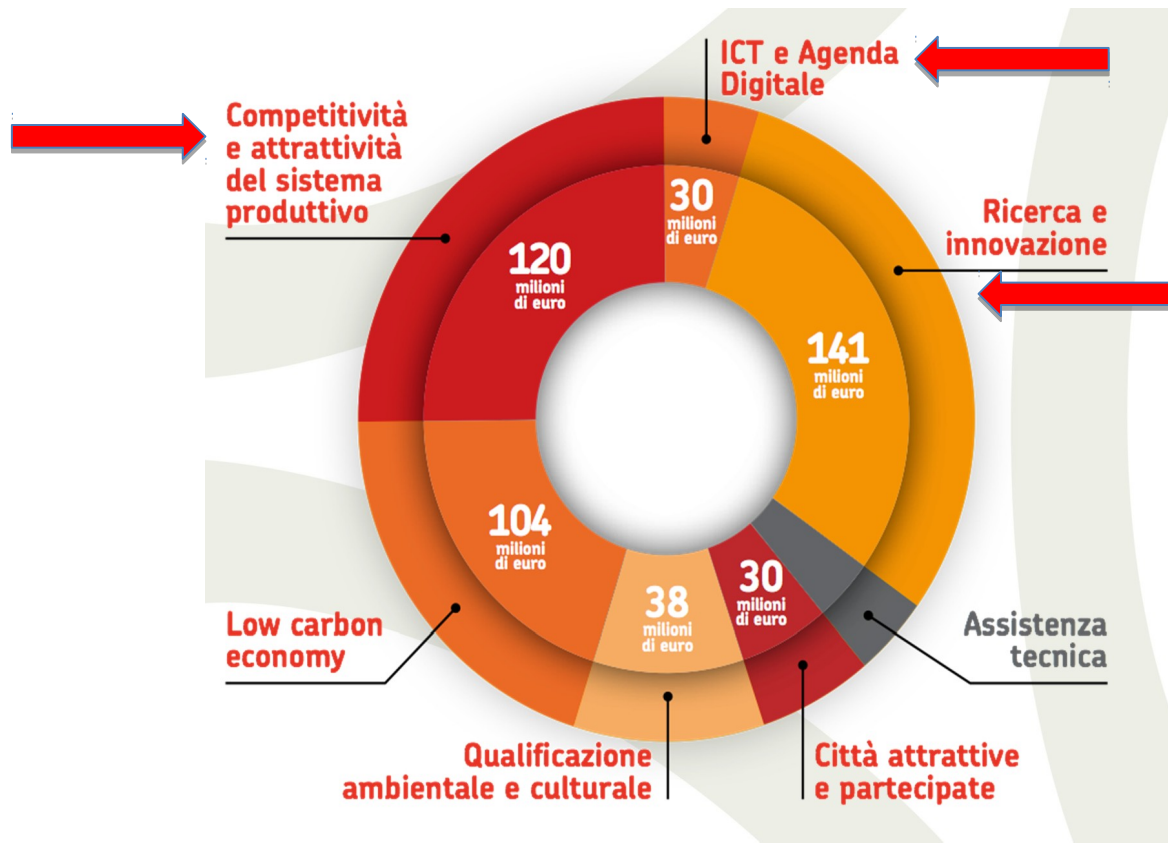
training and
consulting

30,18
M€

FUNDING CALLS

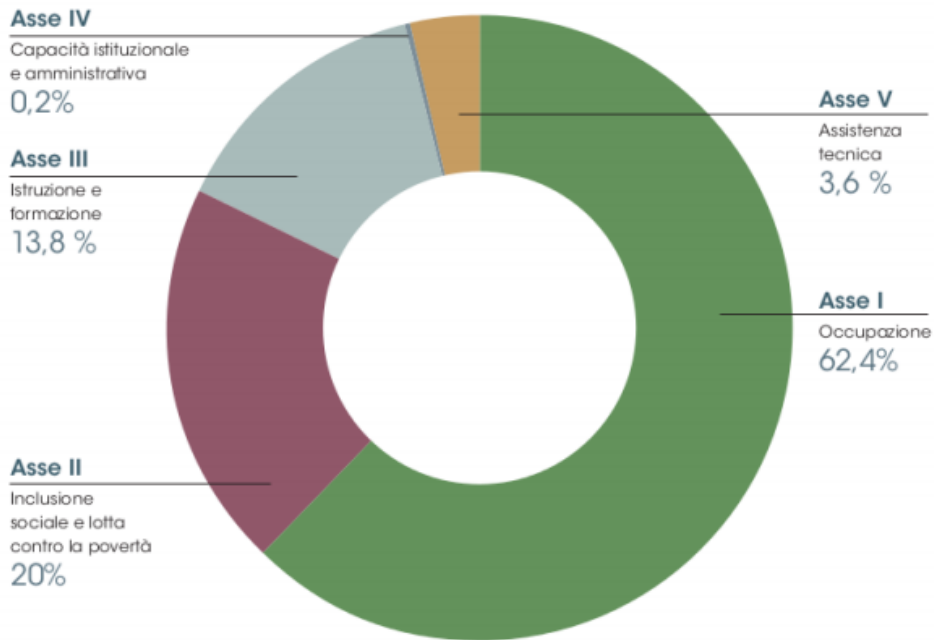
- The innovation priority in PSR of Emilia-Romagna Region is divided into Focus Area (some on competitiveness with 70% financing and some on environment with 90% financing)
- Themes S3 of agriculture are reported in funding calls that grant contributions for projects carried out by operative groups of EIP
- A first call with dead line 31.03.2016 is completed and the projects are being executed: Total costs 14.752.711 € Public support 12.165.873 €
- A second call with dead line 31.03.2017 is in progress - Financial Resources 5.407609 €
- A third call with dead line 14.07.2017 is in progress - Financial Resources 10.000.000 € - Chain projects, not EIP

Investments – ERDF OP



Priority Axis 1: Research and Innovation
Priority axis 2: ICT Development and Digital Agenda
Priority axis 3: Competitiveness and attractiveness of the production system

Investments – ESF OP



In range of Programme for education and job policies

- **PhD courses**

- Manufacturing 4.0 (**4** with 12 fellowship)
- Big data (**5** with 15 fellowship)
- Precision Farming (**2** with 6 fellowship)
- Safety and quality of agrifood chain (**4** with 12 fellowship)

Tot.budget 786,2 mil €



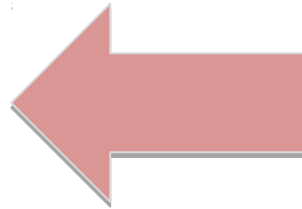
Regione Emilia-Romagna



Research grants

Regional Plan for Research and Innovation Infrastructure

- 7 M€ for Research and Innovation infrastructures
 - Materials and advanced manufacturing
 - Biobanks
 - **Big Data**



The regional partnership SMARTFOOD – State of art

5 Universities

2 National Center

2 Research Laboratories

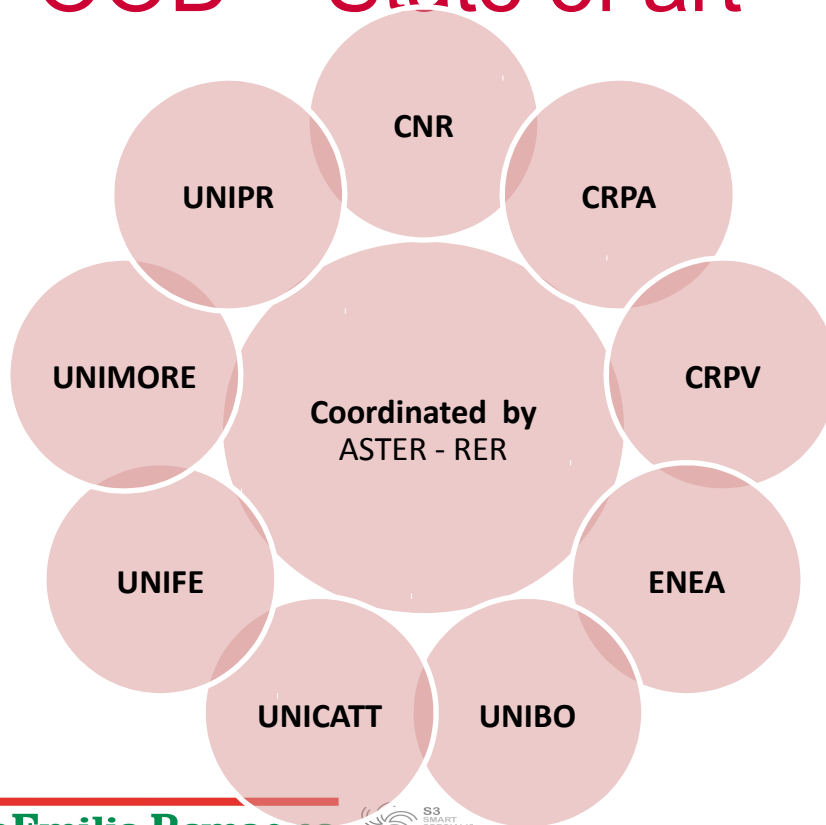
(18 experts)

COORDINATED BY

Emilia Romagna Region - ASTER

The delegation participating in the Technical meeting of today:

- Emilia Romagna Region
- ASTER
- University of Bologna
- University of Ferrara
- ENEA – Research Center



Important regional initiatives

- Relevant Project impacting on SMARTFOOD TOPICS developed in the Region will be presented tomorrow by the delegates of Emilia Romagna Region SMARTFOOD partnership
- OTHER RELEVANT INITIATIVE



**NATIONAL TECHNOLOGY CLUSTER AGRIFOOD CL.A.N.
INVOLVING 15 ITALIAN REGIONS
EMILIA ROMAGNA LEAD REGION**

[http://www.clusteragrifood.it/en/members/
territorial-representatives.html](http://www.clusteragrifood.it/en/members/territorial-representatives.html)

ASTER has the Presidency

ROADMAP FOR RESEARCH&INNOVATION
AGRIFOOD 4.0. Strategy



For more information
Stefano.Nannetti@regione.emilia-romagna.it;
sofia.miceli@aster.it
agri@aster.it