

International Workshop on Nuclear Technologies for Agriculture 4.0 18 December 2020

**“From Environment to Agriculture: a round trip
within the Italian National Program for Aerospace Research”**

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C4E Project Manager C4E Dissemination Program Manager



Luca Cicala (CIRA)

C4E Sub-Topic Chairman



Mario De Cesare (CIRA)

Workshop Speakers



Luca Brocca (CNR)



Gabriele Baroni (Univ. of Bologna)



Virginia Stati (Univ. of Ferrara)

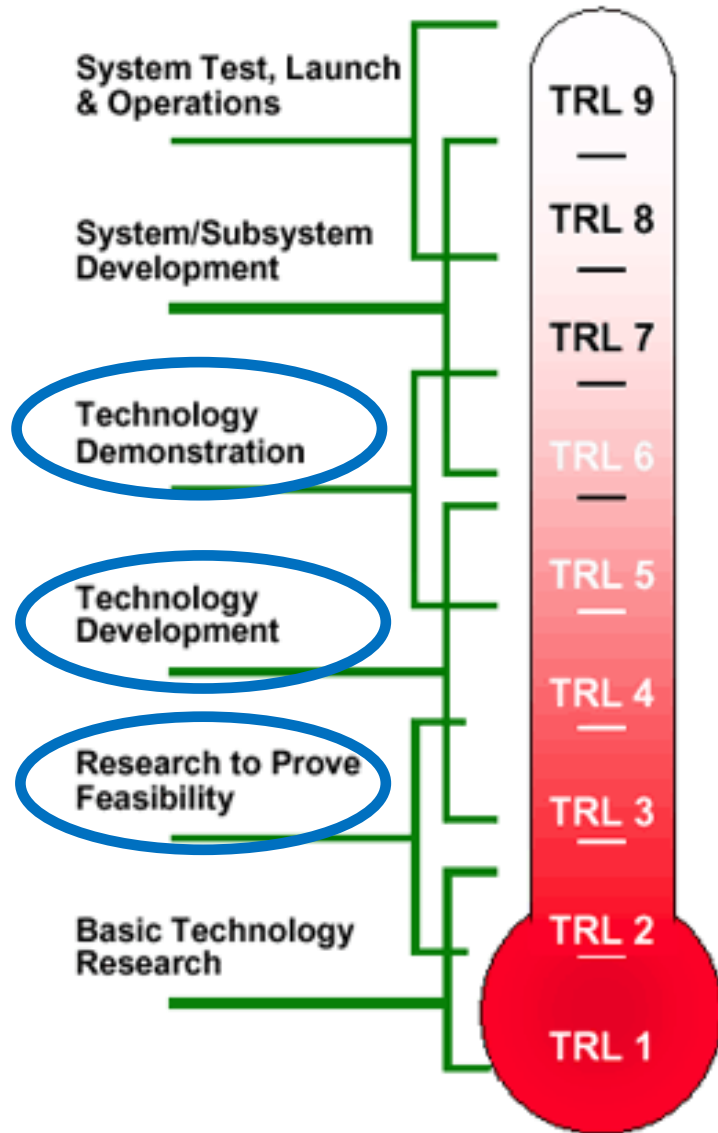


Andrea Serafini (Univ. of Ferrara)

Workshop Moderator



Fabio Mantovani (Univ. of Ferrara)



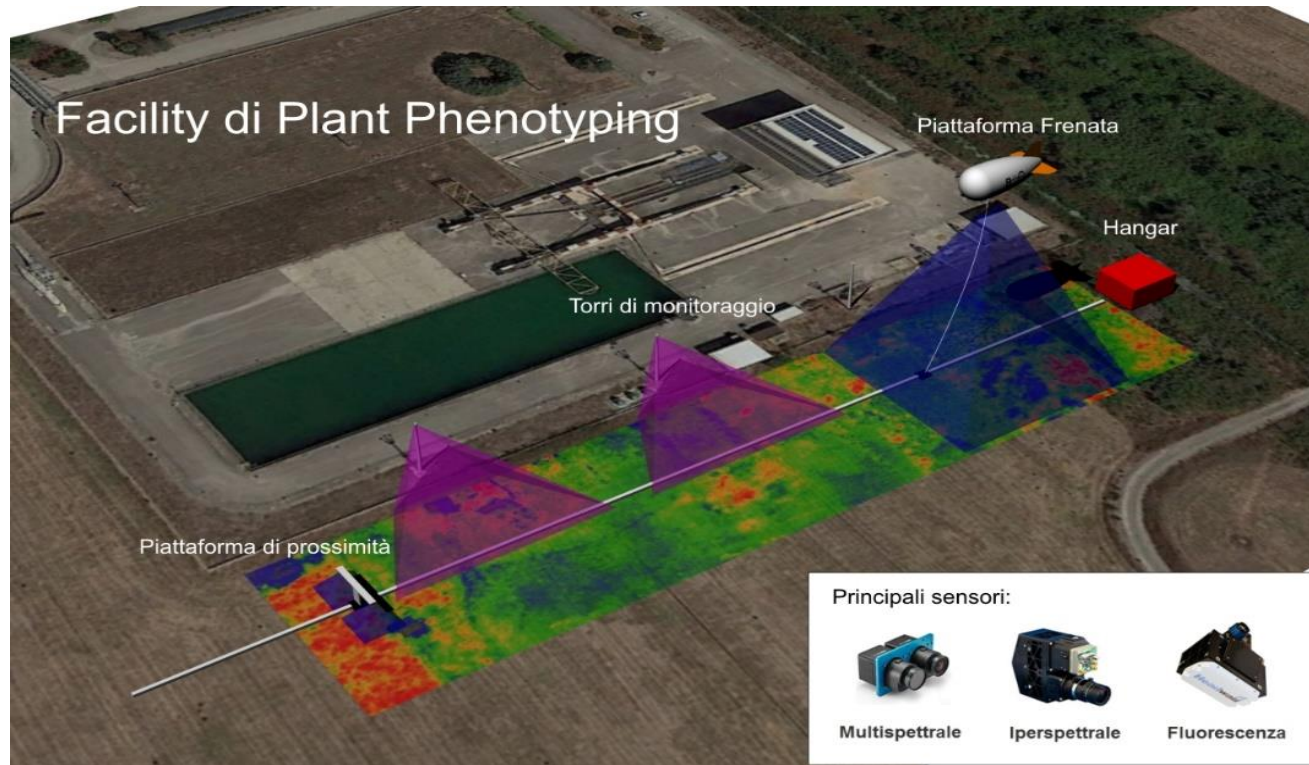


**PRISMA, Hyperspectral, GSD 30m
since October 2019**



**FLEX, Fluorescence, GSD 300m
since 2024**

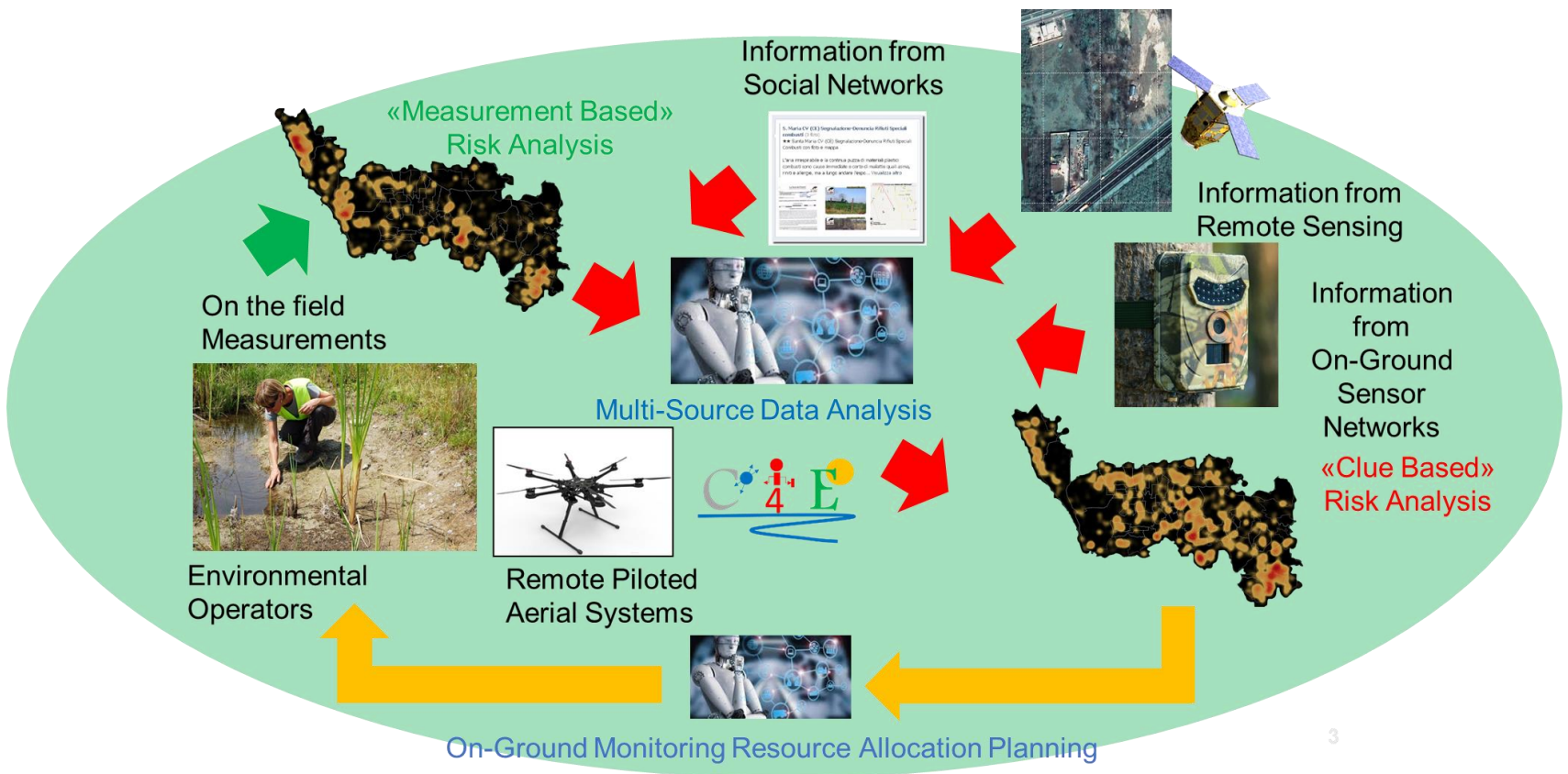




Facility planned by
the new Italian national Program for Aerospace Research
that will be built in the CIRA main site

Scientific Point of Contact: **Sara Parrilli** (CIRA), s.parrilli@cira.it
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The C4E Project

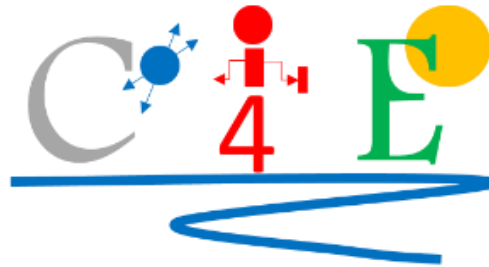


Main Project Goal: integration of heterogeneous, even **unconventional, monitoring systems** in existing and novel monitoring processes

- 1. automatic extraction of information from optical remote sensing images** in order to identify abusive micro-dumps, monitoring the whole region of interest with a specific revisit time (for example three months), reaching even areas that are difficult to access;
- 2. mathematical models for estimating environmental risk** including the use of indirect information sources (satellite observations, natural language) and statistical models for evaluating the monitoring priority;
- 3. ICT and geomatic technologies for the optimization of the use of human and instrumental resources** (vehicles, drones) to be deployed on the territory;
- 4. characterization of hazardous sites** through equipped drones capable of carrying out missions with a high level of autonomy, even in fleet configurations, and to provide preliminary information already during the overflight.

C4E Project Partners and Official End Users

Project Partners



End Users



Drones



On Board Sensors



On Board Computer



Project Engineer: **Franecsko Tufano** (CIRA), f.tufano@cira.it



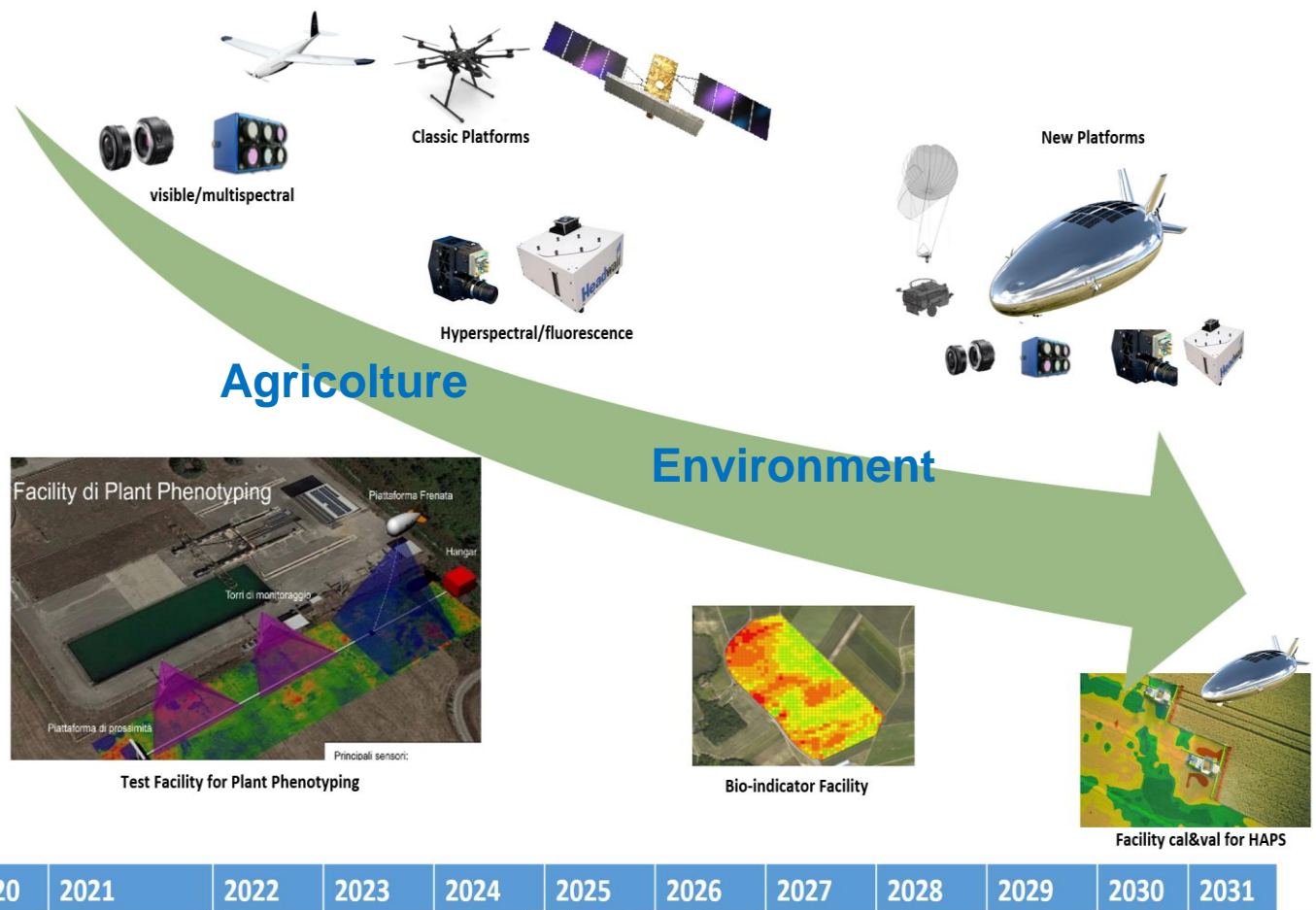
Gamma Spectrometer



CFR Team Leader: **Fabio Mantovani**, fabio.mantovani@unife.it

CIRA Team Leader: **Mario De Cesare**, m.decesare@cira.it

From Agriculture to Environmental Protection



Earth Observation Program Manager:
Giuseppe Persechino (CIRA), g.persechino@cira.it

9:30 - 9:45 -- Welcome ([Luca Cicala](#))

9:45 - 10:00 -- Introduction ([Fabio Mantovani](#))

10:00 - 10:35 -- Observing soil moisture and irrigations from space ([Luca Brocca](#))

10:35 - 10:40 -- Discussion

10.40 - 11.20 -- Cosmic-ray neutron sensing: from an inconvenient noise to a worldwide method for soil moisture estimation (and not only) ([Gabriele Baroni](#))

11.20 - 11.25 -- Discussion

11.25 - 11.35 -- Virtual coffee break

11.35 - 12.05 -- Measuring Soil Water Content with Proximal Gamma Ray Spectroscopy ([Virginia Strati](#))

12.05 - 12.10 -- Discussion

12.10 - 12.40 -- Discriminating irrigation and rainfall with proximal gamma-ray spectroscopy ([Andrea Serafini](#))

12.40 - 13.00 -- Discussion