



**SMART
AGRI
HUBS**

Italy
& Malta

FIE 24 - Aquaculture 4.0 - Implementation of ICT in aquaculture:
An innovative automated system able to control water quality and operational routines helps this Flagship Innovation Experiment (FIE) to promote sustainable aquaculture.



Università
degli Studi
di Ferrara



FIE #24 Factsheet

Describe your product/service and showcase its core benefits

AquacultuER4.0

Implementation of ICT in aquaculture. An innovative automated system able to control water quality and operational routines for a sustainable aquaculture

Target Groups



Fish farmers
Aquaculture operators



Major Challenge(s)

- ▶ **Tech:** Implementation of an innovative automated system able to control water quality at farming sites, to organize this information in a dedicated server-cloud and to inform in real-time aquaculture operators if and when critical situations are occurring.
- ▶ **Societal:** Promotion and development of sustainable aquaculture through ICT; Mitigating environmental impact of aquaculture activities in coastal ecosystems, reducing energetic costs and GHG emissions; Improving aquaculture productivity to meet the increasing future food demand through the employment of intelligent and technological solutions

Core Product Features

Small-scale (lab) pilot plant demonstration.
Pilot-plant demonstration.
Technology transfer to SMEs
Divulgation and dissemination to potential stakeholders

Here is what we aim to improve (KPIs)

Number of fish farmers informed about ICT solts. for their production  +20%

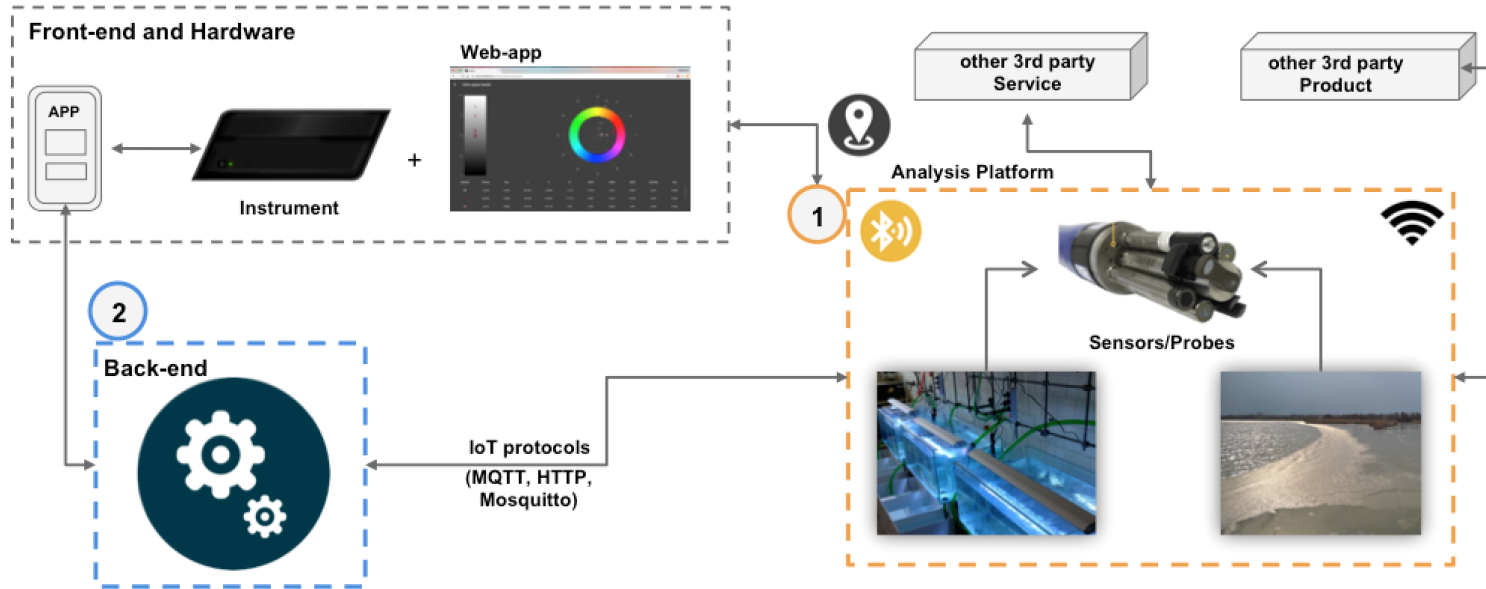
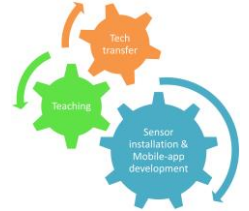
Number of SMEs aware of circular economy concepts  +10%

Reduction of production cost  -10%

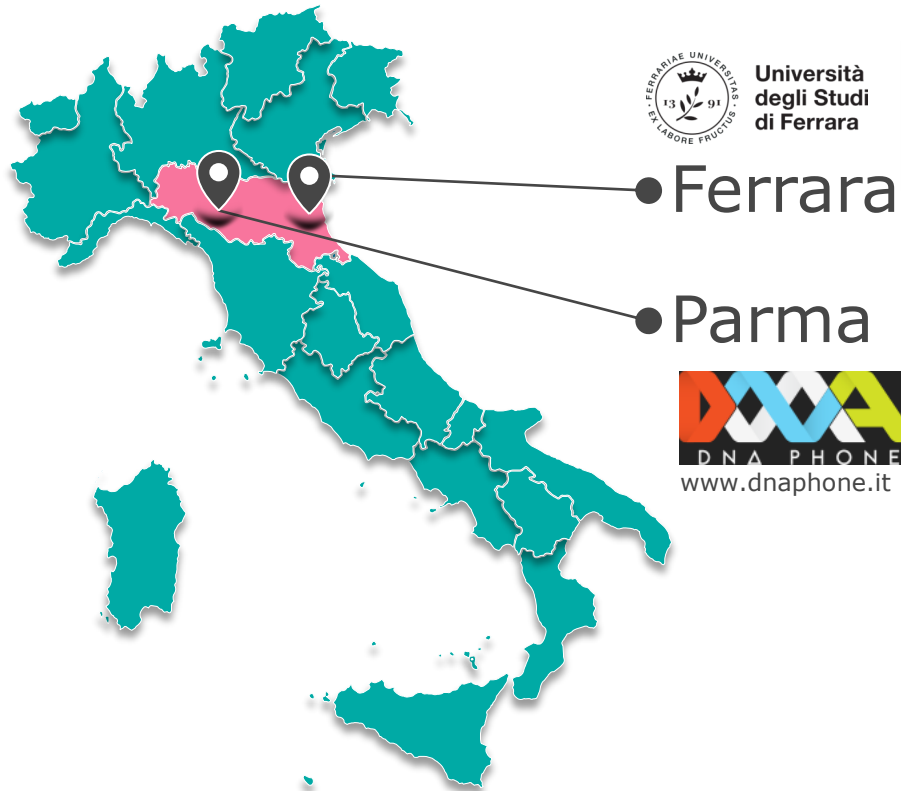
Mitigation of harmful effects to production (algal bloom, dissolved oxygen shortage, salinity increase)  NQ

FIE #24 Product Impressions

Here are some visual impressions of our product/service



Deployment sites (Geographical coverage)



FIE #24 DIHs involved

DIHs that are involved in FIE

DIH name

Clust-ER Agroalimentare

DIH role

To ensure an adequate exploitation of results and access of aquaculture farmers and advisors to the latest knowledge, expertise, technology and finance.

Geographical coverage

Emilia Romagna / Italy

Support services that will be provided to our FIE

- ▶ *Development and dissemination of innovative solutions in agriculture. Decision support to aquaculture operators, mainly small ones, to have easier access to digital technologies systems and precision aquaculture farming tools.*
- ▶ *Link to regional government to promote an effective digital transformation strategy in aquaculture by matching public and private funding, facilitating the leverage of available resources for investments.*

DIH services reusability

The DIH will contribute to operate in strict connection with the network of DIHs within SAH, ensuring an effective reusability of technological solutions, through a number of events planned within the project duration. This will contribute to overcome the barriers to the implementation of precision aquaculture farming on the EU farms. It is also important to create a EU network of DIHs in order to create a DIH observatory for the benefit of aquaculture farmers and technicians.

FIE #24 CCs involved

CCs that are involved in FIE

CC name

*Department of chemistry
and pharmaceutical
sciences – University of
Ferrara (UniFE)*

CC role

Coordinator

Geographical coverage

Emilia Romagna / Italy

Support services that will be provided to our FIE

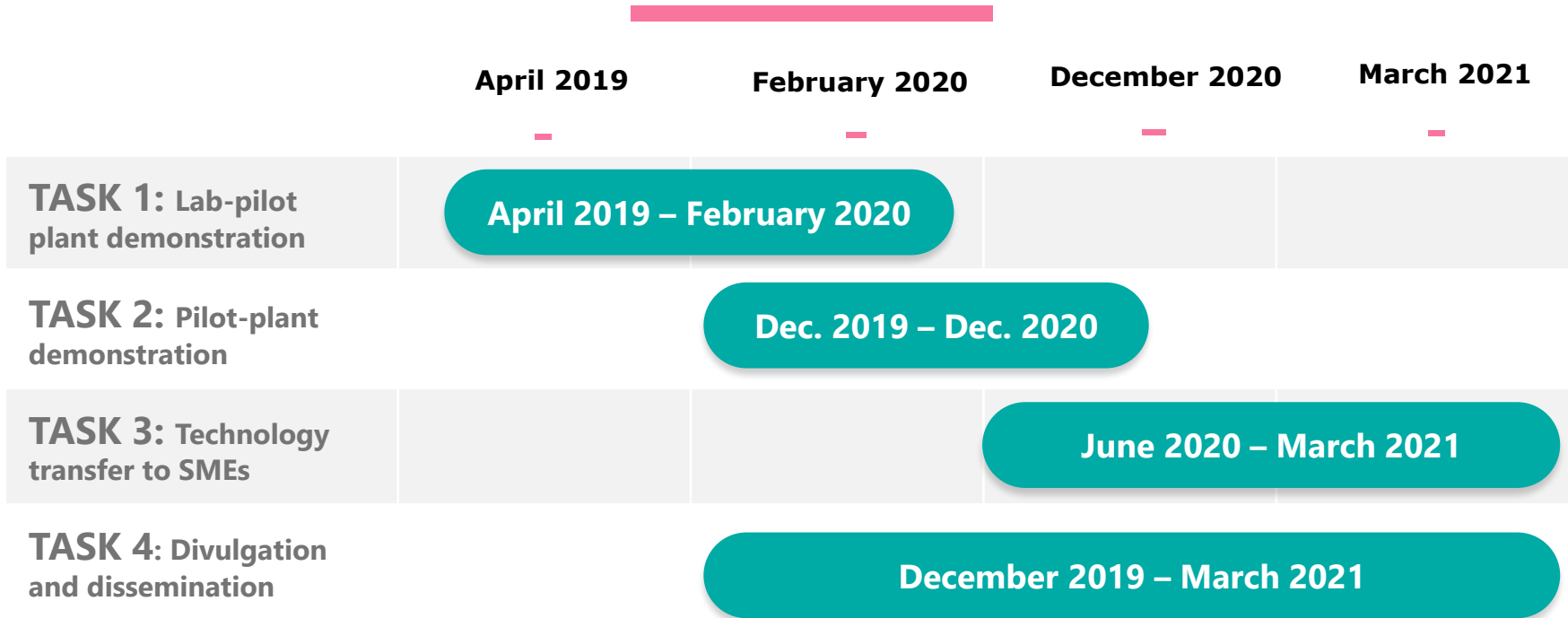
Support to DnaPhone (tech. provider) to set-up and optimize sensor network and technology, through:

- *assessment of the reliability of sensors output based on the comparison with other non-portable devices;*
- *realization of small scale demonstrators to validate sensor performance in different conditions;*
- *demonstrators and results obtained will be made available to the partners involved in actions of diffusion and dissemination to facilitate their activities*

CC services reusability

The results obtained will be made available to other CC through the dissemination and divulgation of project activities, which include the preparation of electronic and paper material (web site, articles in specialized and divulgation journals, meetings).

FIE #24 time plan



FIE #24 planned demonstration activities

Please present briefly what has been planned in relation to DA

Smart Sensor Suite: A dynamic range of sensors for multiparameter applications



Bluetooth Communication



GPS Tagging



DA @ Pilot-scale



Setting-up, calibration, testing



DA @ Production-relevant environment



Setting-up, calibration, functioning

FIE #24 collaboration with other FIEs

Please present briefly the replicability aspect

- Tech1: information & know-how on the operation of sensor network allowing for data storage in cloud and real-time monitoring through mobile technology in environments scarcely covered by wifi and power supply
- Tech2: information on sensor functioning in production relevant environments (such as lagoon, etc.) where extreme conditions can be found (water depth, algal bloom, turbidity, etc.)
- Societal: good practice in aquaculture (precision fish farming, PFF) through employment of ICT (animal wellbeing, reduction of GHG emission, production quality, education of aquaculture operators)

Thank you for your attention