Pharaon

Pilots for Healthy and Active Ageing

Università degli Studi di Firenze – Dipartimento di Ingegneria Industriale

Erika Rovini - Project Manager

4° WEBINAR – PILOT ITALIANO

Online, 27 Gennaio 2022

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 857188

Pharaon – Pilots for Healthy and Active Ageing

CALL: Societal Challenges – Health, demographic change and wellbeing
Trusted digital solutions and Cybersecurity in Health and Care
Focus Area on Digitising and transforming European Industry and services

Internet of Things
Horizon 2020 call:
DT-TDS-01-2019:
Smart and healthy living at home

Intelligent and personalised digital solutions for sustaining and extending healthy and independent living.

Project Coordinator: **Prof. Filippo Cavallo** (University of Florence)

[Dec 2019 – Nov 2023 → May 2024]

Total Budget: **21.3 M€** (funding budget 18.8M€)

This research has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement **No 857188**

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Facebook: fb.me/pharaon.project
Twitter: @PharaonProject;
LinkedIn: Pharaon - Pilots for Healthy and Active Ageing
https://www.linkedin.com/groups/12335464/

The Pharaon Consortium

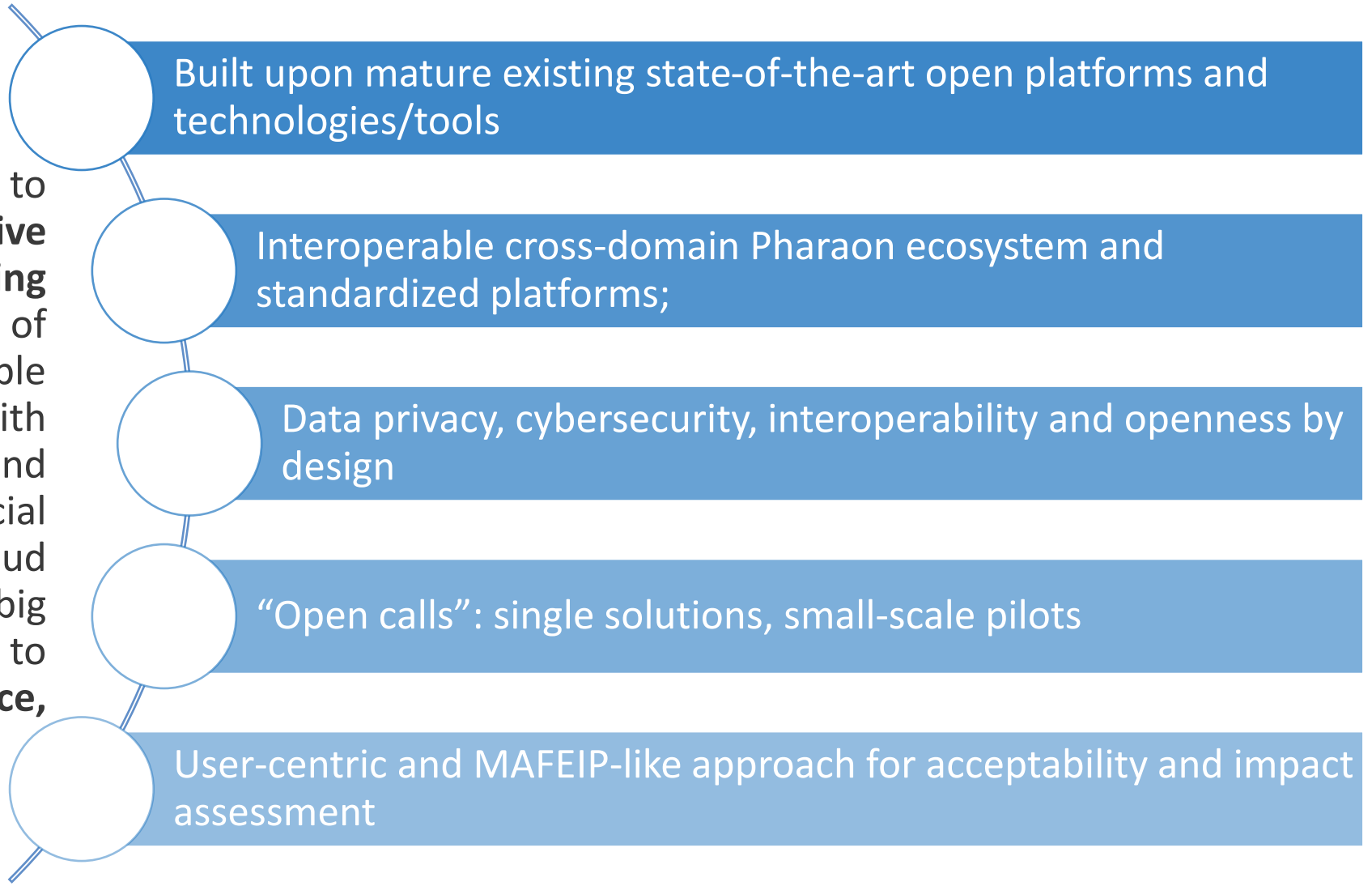
40 PARTNERS:

- 9 Research Centres
- 17 Industry
- 8 User's representative / health and care providers
- 4 Public Body
- 2 Standardisation Body

- 1 France
- 1 UK
- 1 Belgium
- 1 Austria
- 2 Estonia
- 1 Croatia
- 7 Italy
- 9 Spain
- 5 Portugal
- 5 The Netherlands
- 4 Slovenia
- 3 Germany

Pharaon – Overall Objective

Pharaon's overall objective is to make a reality **smart and active living for Europe's ageing population** by creating a set of integrated and highly customizable interoperable open platforms with advanced services, devices, and tools including IoT, artificial intelligence, robotics, cloud computing, smart wearables, big data, and intelligent analytics to enhance their **independence, safety, and capabilities**.



Pharaon Pilot Sites

3’400 users including older adults, professionals, volunteers, informal caregivers over **6 pilot sites** in **5 EU countries**

MULTIDOMAIN

Pharaon - Challenges

	Pilot Sites					
	Italy	Spain-Murcia	Spain-Andalusia	Portugal	The Netherlands	Slovenia
PCH1 - The behaviour and the approach of elderly to friendly technological devices						
PCH2 - Heath status definition and its progress over time						
PCH3 - Non-Intrusive Monitoring and Alarm Triggering						
PCH4 - Promote social cohesion						
PCH5 - Define specific personalized care plan on the basis of user´s needs						
PCH6 Reduce isolation and loneliness, enhancing the autonomy through connectivity and digital tools						
PCH7 - Promote accessibility and the provision of proximity services through the use of IT platforms						
PCH8 - Promote capacity building and awareness on green economy, citizenship and cultural traditions						
PCH9 - Indoor Environmental Quality						
PCH10 - Support to caregivers towards more efficient and personalized care services						

Pharaon Methodology

- **Co-Creation Agile Methodology,** all the stakeholders are involved in designing and products and services

- **Two-stages validation**: pre-validation and large-scale pilots

- **Open calls** to involve new stakeholders and their tech and services (M26, M36) → **3M€**

Pharaon – Requirement analysis in pilots

 # 40 (older adults, tech and service providers, pilot partners). Workshops, Virtual Workshops, Newspaper

 # 250 (patients, relatives or caretakers, health care professionals). Online Survey, Virtual Workshop, Teleconferences

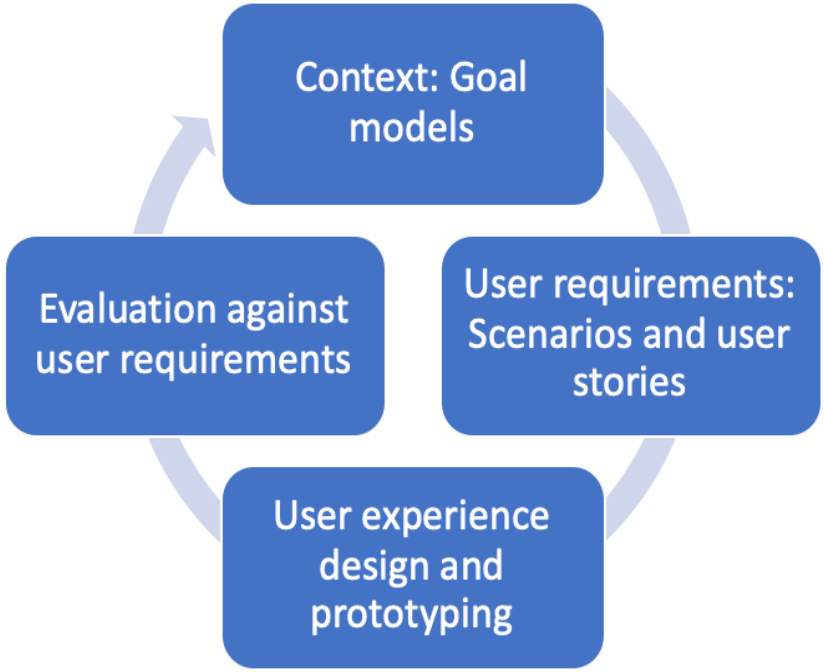
 # 43 (older adults and professionals). Literature Review, Co-design Workshops

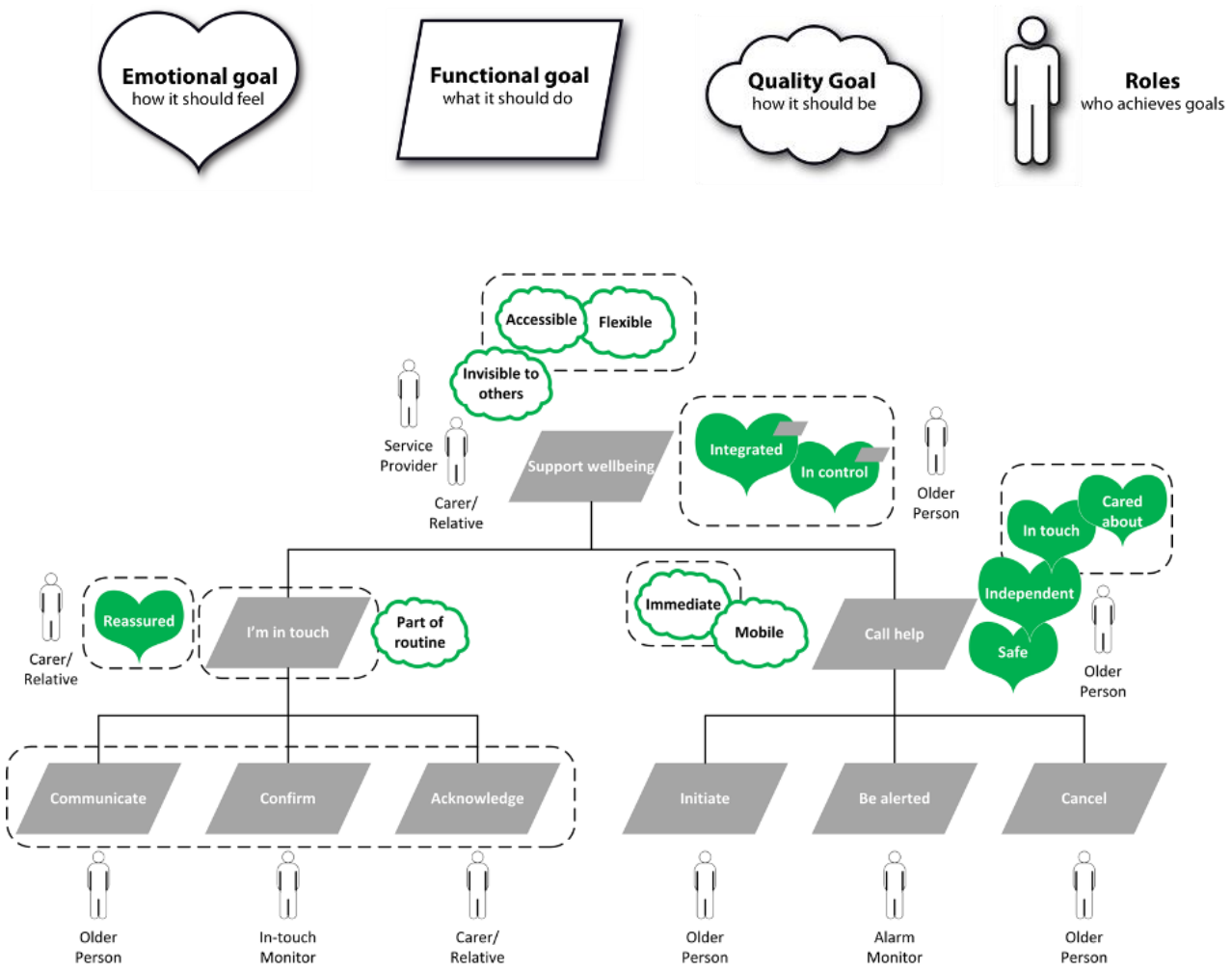
 # 35 (older adults and professionals) Literature Review, Interviews, Virtual Workshops

 # 24 (older adults and professionals). Interviews

 # 73 (older adults, informal and formal caregivers, professionals). Interviews, Virtual Workshops

Pharaon – Goal Models and Scenario definitions





The goal model of supporting wellbeing of an older adult. Source: (Miller et al. 2015).

Overview of Use Cases and most important needs

5/6

- Monitor Health
- Receive tailored advice
- Receive information about activities/courses/ initiatives

4/6

- Receive supportive services
- Monitor environment
- Socialize with friend and family

3/6

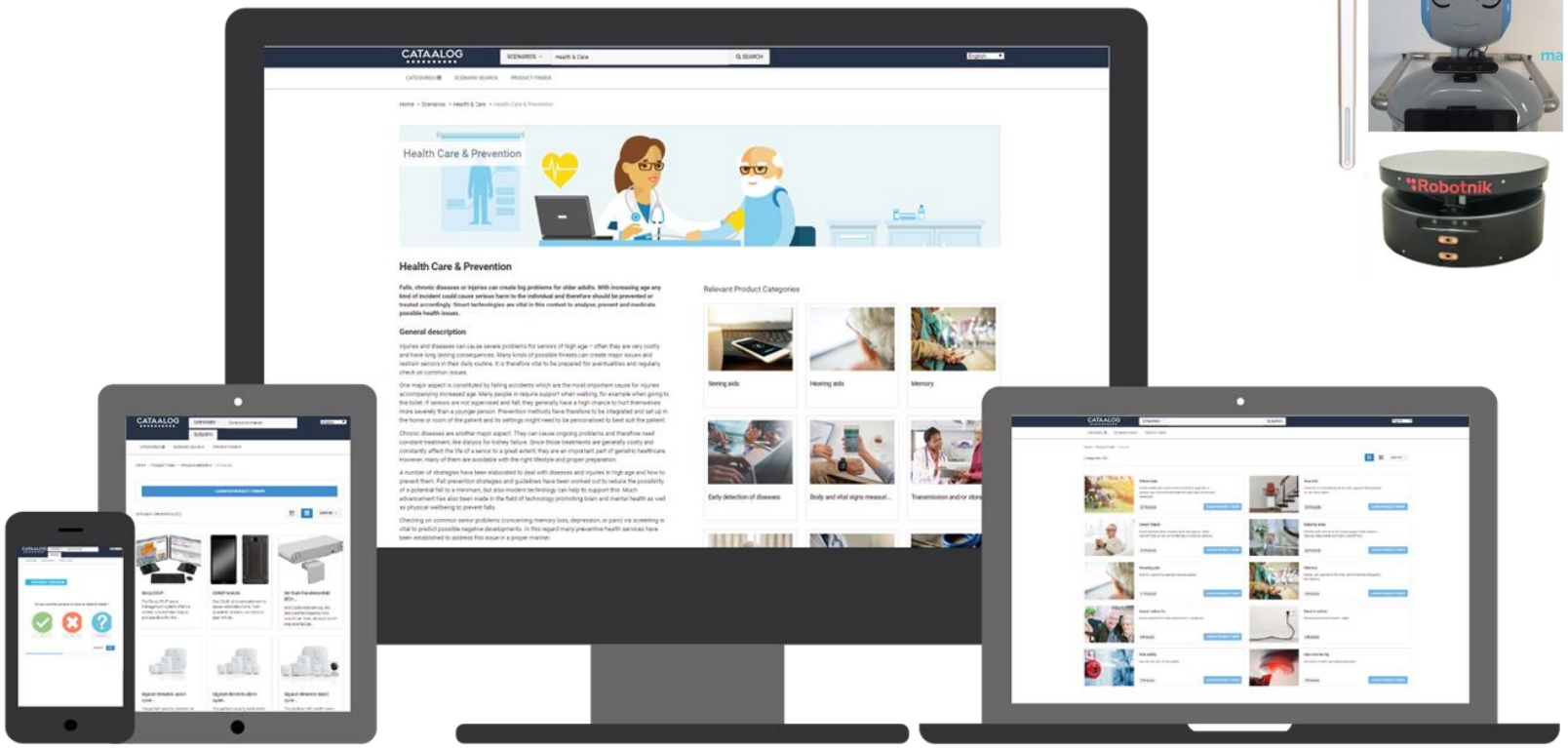
- Make emergency call

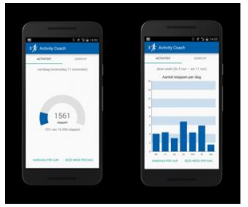
Distribution of Pharaon technologies among pilots

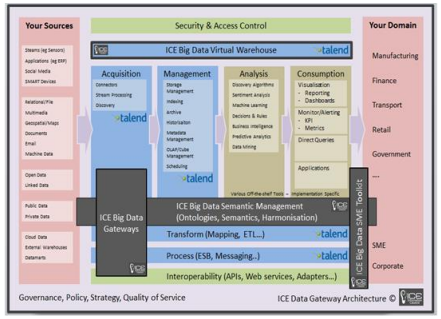
								Platforms
ITALY	Sentab	IoTool	IoChat	Otago	Ohmni®	Smartbands		SmartHabits, ThingsBoard
NETHERLANDS	Regicare	Paco	MISS Activity					C3PO
SLOVENIA	IoTool	IoChat	Sentab	Discovery				SmartHabits, ThingsBoard
PORTUGAL	Sentab							HS. Helios, Globalcare
ANDALUSIA	Sentab							Onesait
MURCIA	Amicare	MIW+/uGRID	RB1-Base	Smart devices	Smartbands			OHC / MyHealth app

CATAALOG.COM: Solution Catalogue for Active Ageing & Ambient Assisted Living

Minds&Sparks, Austria







The Priority Gaps within the pilots

PG1_SI : to encourage increased physical activity to improve the overall wellbeing of residents.

PG2_SI : to reduce loneliness residents experience by simplifying and enabling participation in community events and activities

PG1_IT: A software solution to provide personalised cognitive stimulation, activity and progress tracking, and coaching

PG2_IT: To provide personalised coaching on physical activity to improve the health and wellbeing of older adults.

PG1_PT: A digital application that promotes the engagement in nature preservation within cities, and the mental and physical activity of older citizens, but not exclusively.

PG2_PT: A domotic system to monitor and, ideally, prevent falls as well as detect early signs of illness

PG1_NL: Virtual travel. To join the road trip from the comfort of their home interacting with the group.

PG2_NL: Sharing memories. To extract the memories older adults share in our software system and translate it into a shareable format

PG3_NL: Motivating and personalized coaching system

PG1_ES_A: A software solution that provides personalized cognitive stimulation, activity and progress monitoring, and coaching

PG2_ES_A: An e-learning platform with digital content for older people

PG3_ES_A: Development of an algorithm to match people (for the social network Sentab) with similar tastes and hobbies.

PG4_ES_A: A virtual assistant that responds to voice commands in addition to a touch interface (for the social network Sentab)

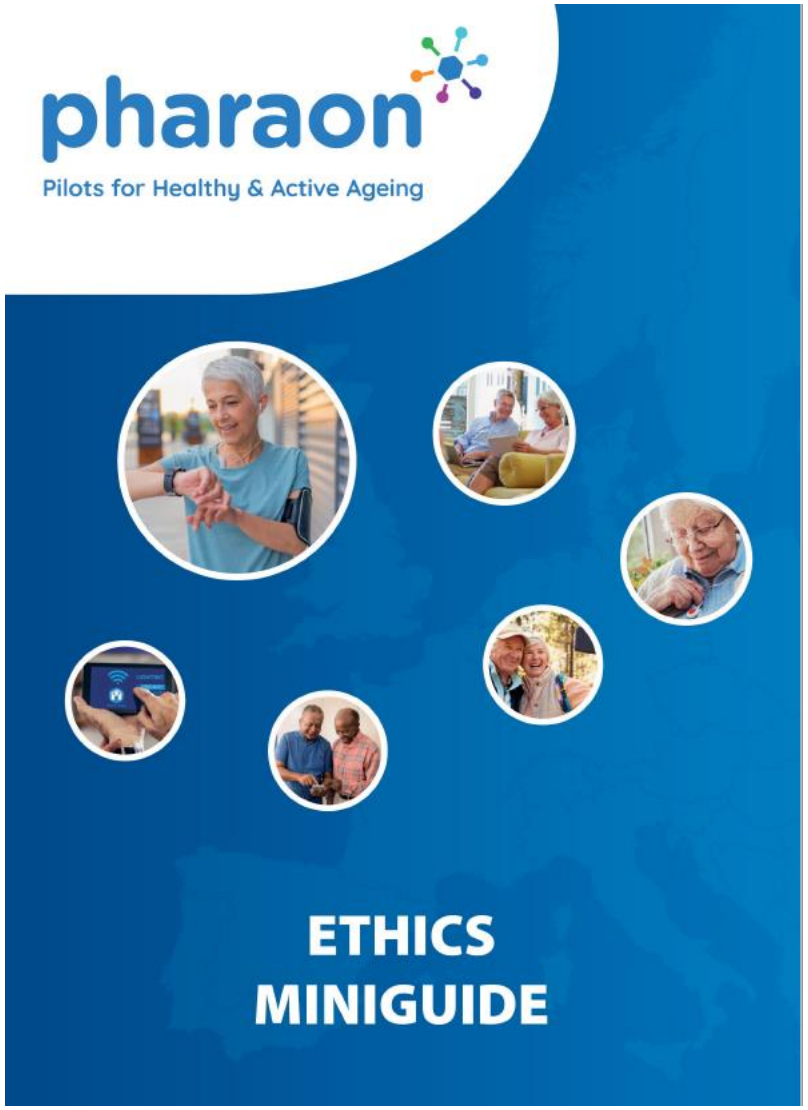
PG1_ES_M: Solutions for non-intrusive cardiac monitoring, including at least blood pressure; easy-to-use ECG recording will be hi

PG2_ES_M: Systems for tracking and detecting changes of common measures, such as body weight, and recording that information to a Pharaon system

PG3_ES_M: Voice-based interaction system, that doesn’t necessarily wait for users to initiate the system.

Ethical and legal supervision & management

Caritas Diocesana de Coimbra, Portugal



A Miniguide that defines the **ethical, legal and data protection principles**, most notably from the EU GDPR, European Charter and Member State legislation, that should be **respected by the software developers** and supervise the services developed throughout the entire project. This will include **accessibility, gender and safety** aspects. It also intends to assure that **ethical clearance/approvals** for the requirements collection and pilots is required, when necessary, to all national authorities in due time.

Pharaon – Where are we going?

Current Activities

- Definition of Pharaon ecosystem architecture
- Selection of the winners from the first Open Call

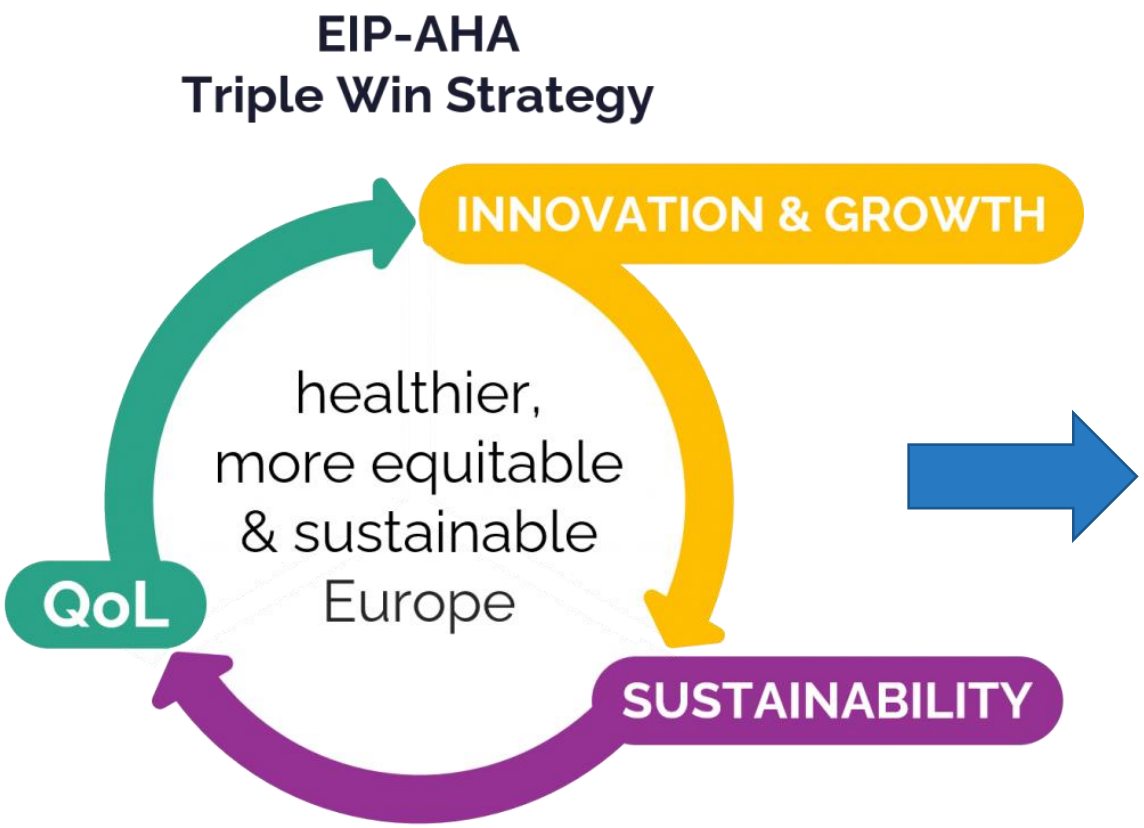
Next Steps

- Deployment in the pilots (starting Mar 2021)

Open Tasks

Next Steps

Evidence Creation and Evaluation



EVALUATION FRAMEWORK

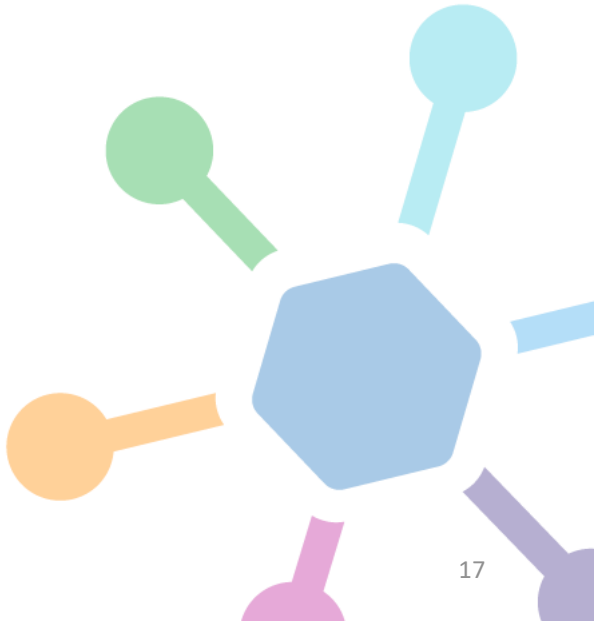
OUTCOMES

- Digital technologies' impact on QoL
- Technology Acceptance
- Costs-effectiveness

The Italian Pilot

Pilot Coordinator: Dr. Laura Fiorini, University of Florence

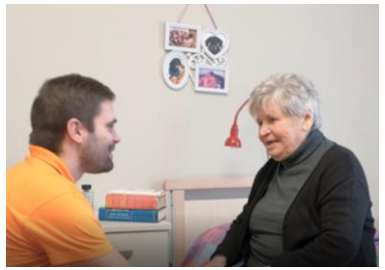
Main Goal: To propose personalized Integrated care for frail older adults



The Italian Pilot: two Pilot sites

TUSCANY
Network of Social Cooperative

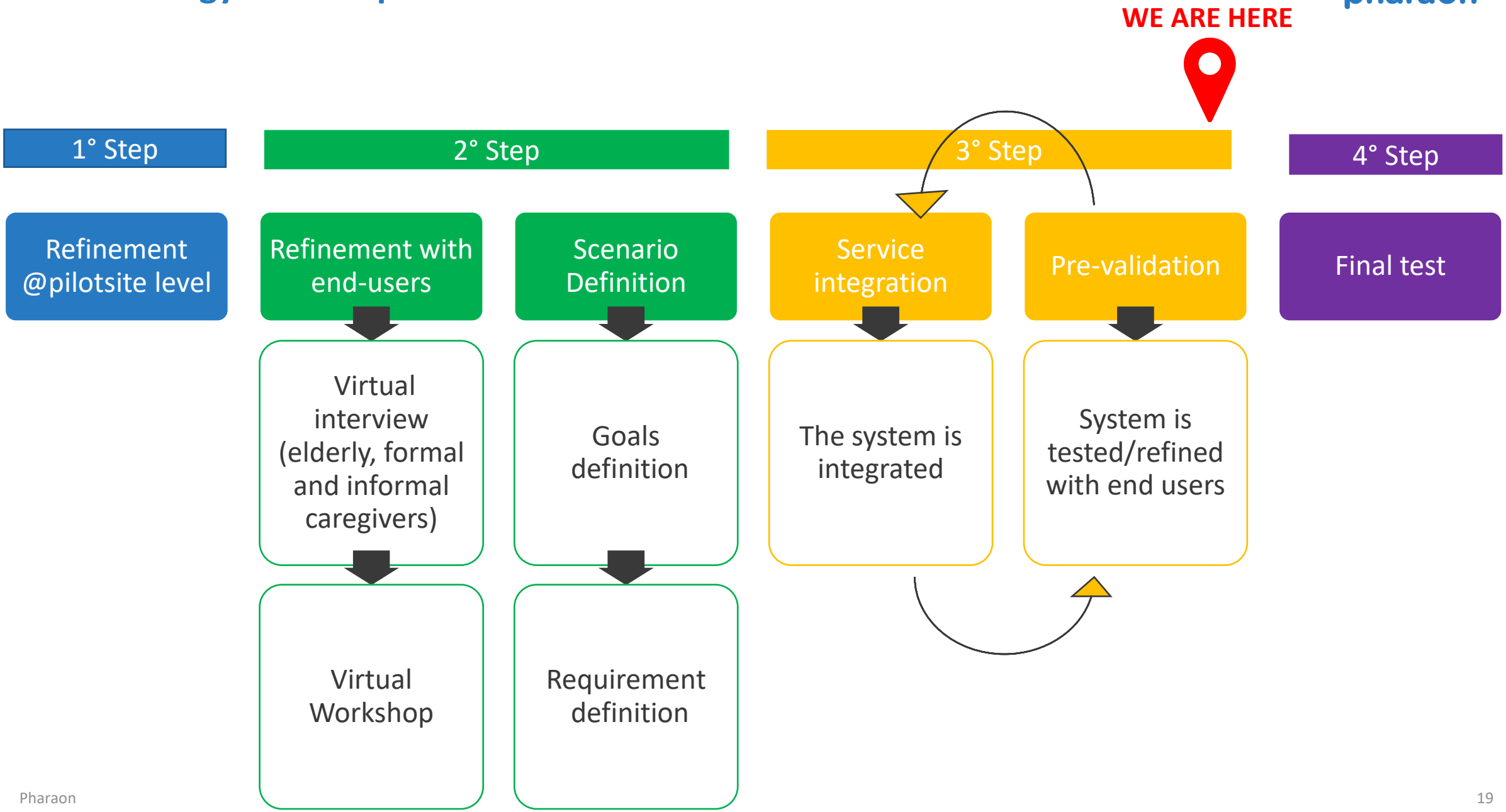
UMANA PERSONE
IMPRESA SOCIALE RICERCA E SVILUPPO



Sites to be deployed	Target groups	#
Tuscany Apulia	Older adults	300
	Informal caregivers	300
	Formal caregivers	100

APULIA
Research Hospital

Methodology Roadmap



The selected services: Needs Analysis

48 Toscana - UP

25 Puglia - CSS

22 Older Adults

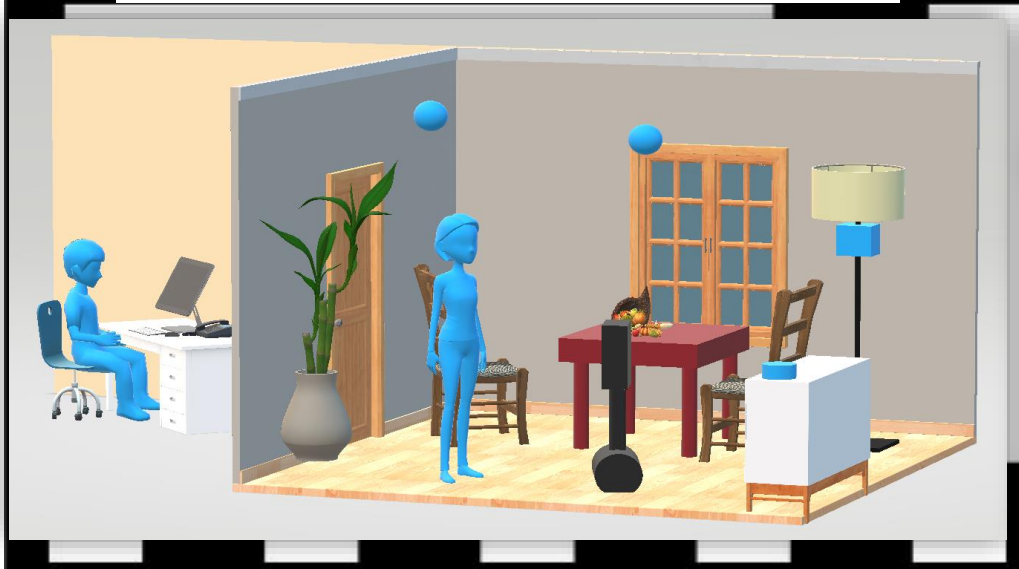
22 Informa caregivers

29 Professionals

61 – Interviewed

12 – virtual workshop

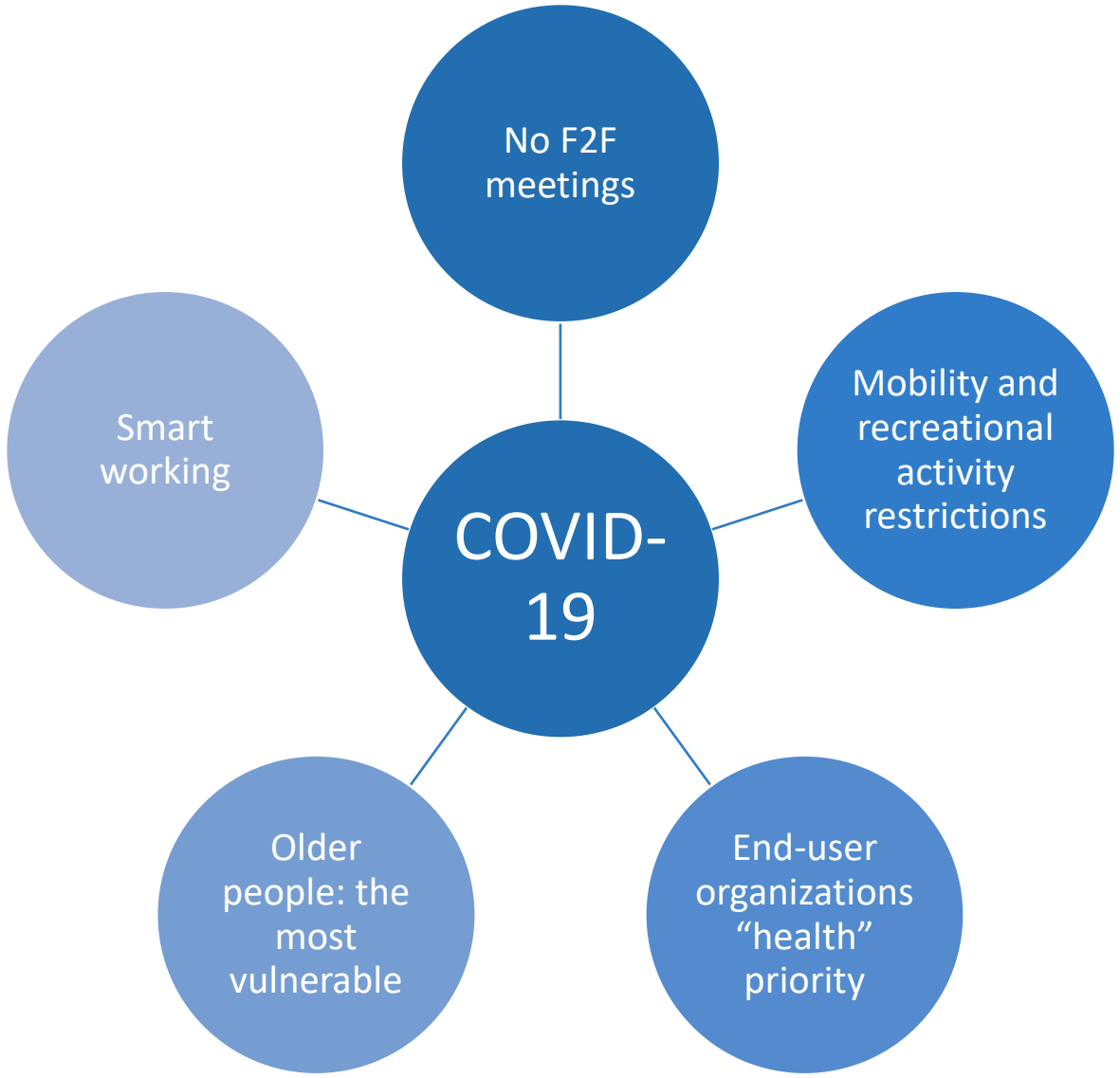
Monitoring Health



Stimulation

Socialization

COVID-19 Emergency



FAST PILOTS:

how to address urgent needs coming from the Covid-19 emergency!

Pre- and post- covid-19 emergency: barrier and limitation on the use of the technology

How the covid-19 shapes our needs, expectations and experiences about thechnology

BEFORE COVID-19

November 2019 – February 2020

Online questionnaire

30 SOCIAL PROFESSIONALS

Use and attitude toward assistive technology

DURING COVID-19

April 2020 – May 2020

Online questionnaire

32 SOCIAL PROFESSIONALS

Use, attitude toward and barrier of assistive technology usage

June 2020

First round of analysis

July 2020

Deep Interviews

10 SOCIAL PROFESSIONALS

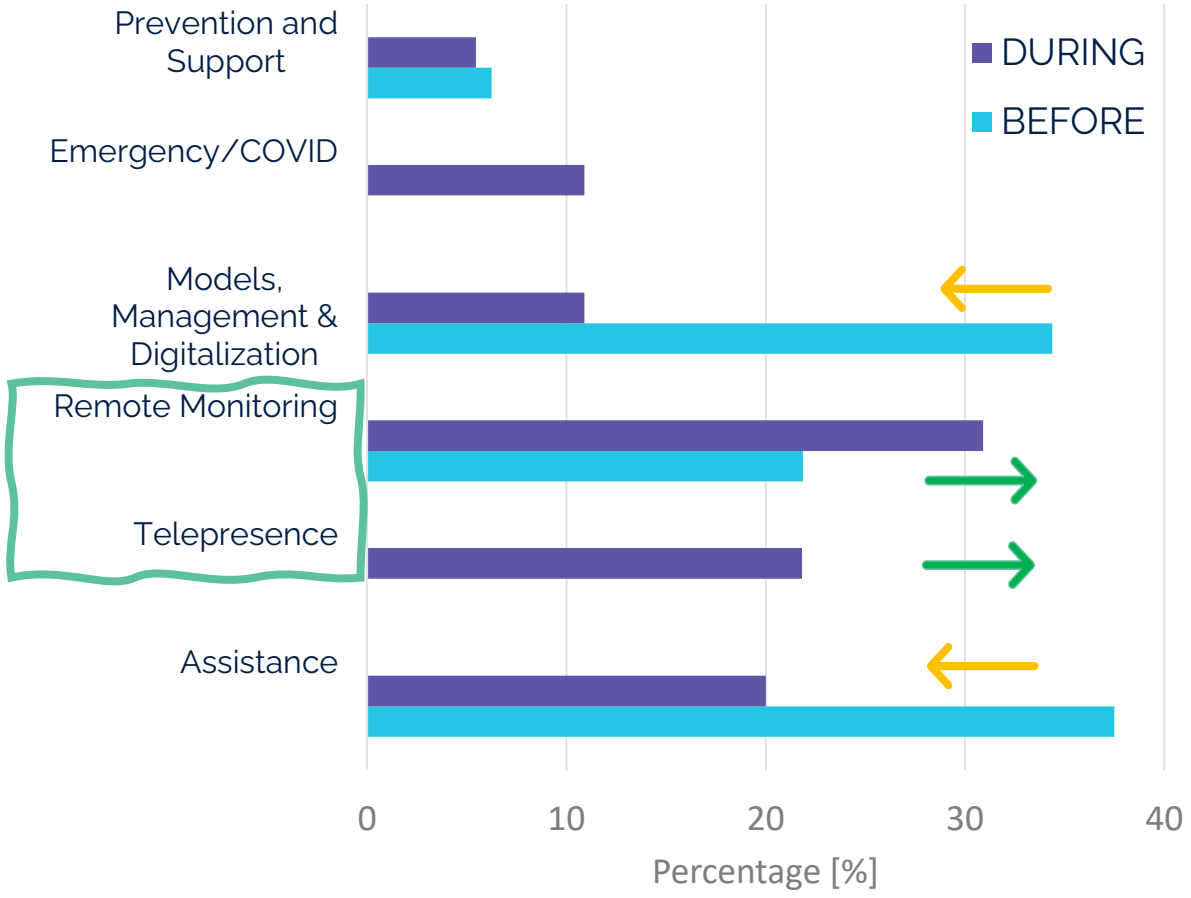
Barrier and opportunities of assistive technology usage

Second round of analysis

L.Fiorini et al. (2021) «Technology, a support to social services during covid-19 emergency: barriers and opportunity. Journal of Interactive Design and Manufactoring, Accepted

Pre- and post- covid-19 emergency: barrier and limitation on technology

EXPECTATION & NEED



- Technology has achieved a **high level of acceptability**, despite the initial doubts of using it;
- **Caregivers remarked utility** to use the robot to check the user at night to improve the surveillance;
- **At home**, the older adults enjoy more than expected using the technology;
- The older adults rated the robot higher than the tablet after the trial in terms of Ease of use;
- Before **COVID telepresence** was not at all considered, now it is a fundamental solution;
- **Disinfection in few minutes** could be integrated in the current cleaning procedures.

L.Fiorini et al (2021). «Technology, a support to social services during covid-19 emergency: barriers and opportunity. Journal of Interactive Design and Manufactoring, Accepted

The final remark: an action is requested

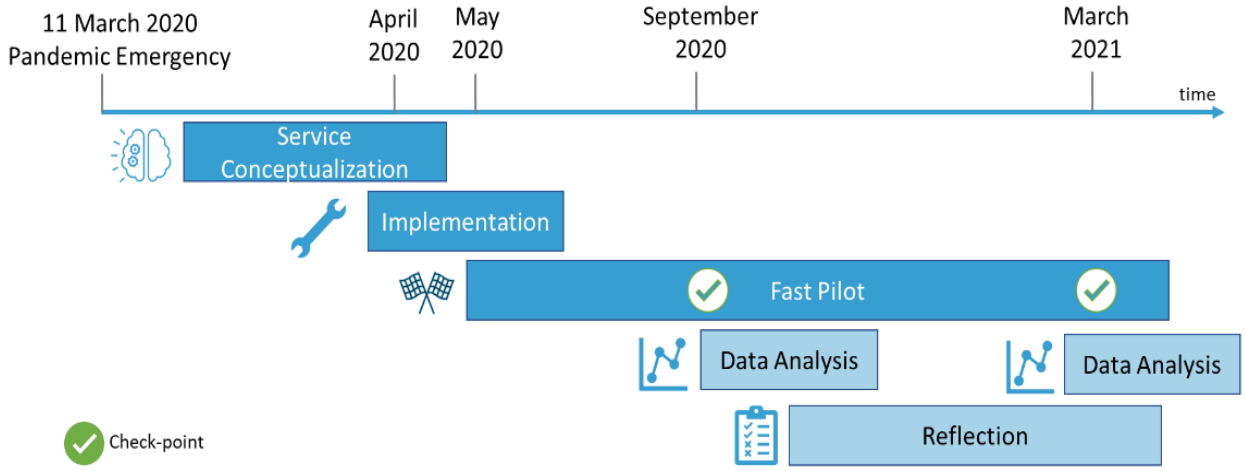
What do social operators think about the future?

Do you think that we can come back to an assistance situation which is the same of the one before the emergency or it is necessary to include some changes in the way we model the services

9.52% YES **90.48% NO**

Reaction at all costs

- R&D and projects were affected by COVID emergency
- Italian positive reaction with donations and pro-active initiatives
- Synergy between stakolders and projects



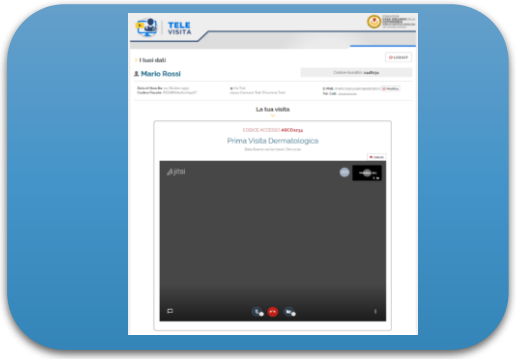
Pharaon project (H2020-SC1-FA-DTS-2018-2)
MONATTO 4.0 (ARTES4 Competence center cascade call)
Samaritan (Fondazione Marmo donation)
Pronto Badante (Tuscany Region)
CloudIA project (Tuscany, POR CREO FESR 2014-2020)
SI-ROBOTICS project (Italian M.I.U.R., PON G.A. ARS01 01120)

THE UNMET NEEDS

- Guarantee the high-quality service for older citizens (home/care facility/ hospital)
- Avoid isolation and guarantee social relationship
- Reduction of virus transmission – Cleaning & Disinfection

Telepresence

Tuscany Pilot (UP, UNIFI)



Virtual Visit

Apulia Pilot (CSS)

Telemonitorning

Apulia Pilot (CSS)

Disinfection

CORO, SSSA, Massa Hospital

Lessons Learnt

Telepresence

- Highly accepted service
- Robot more usable than the tablet
- Extended service to promote social contact
- Improved at-night surveillance
- Reduced use of PPE

Monitoring

- Low adherence to the service
- Re-hospitalization is very rare
- Different use case can be planned

Virtual Visit

- Developed to be included in the current clinical practice
- Compliance with GDPR
- Waiting for Italian Telemedicine Guidelines

Sanification

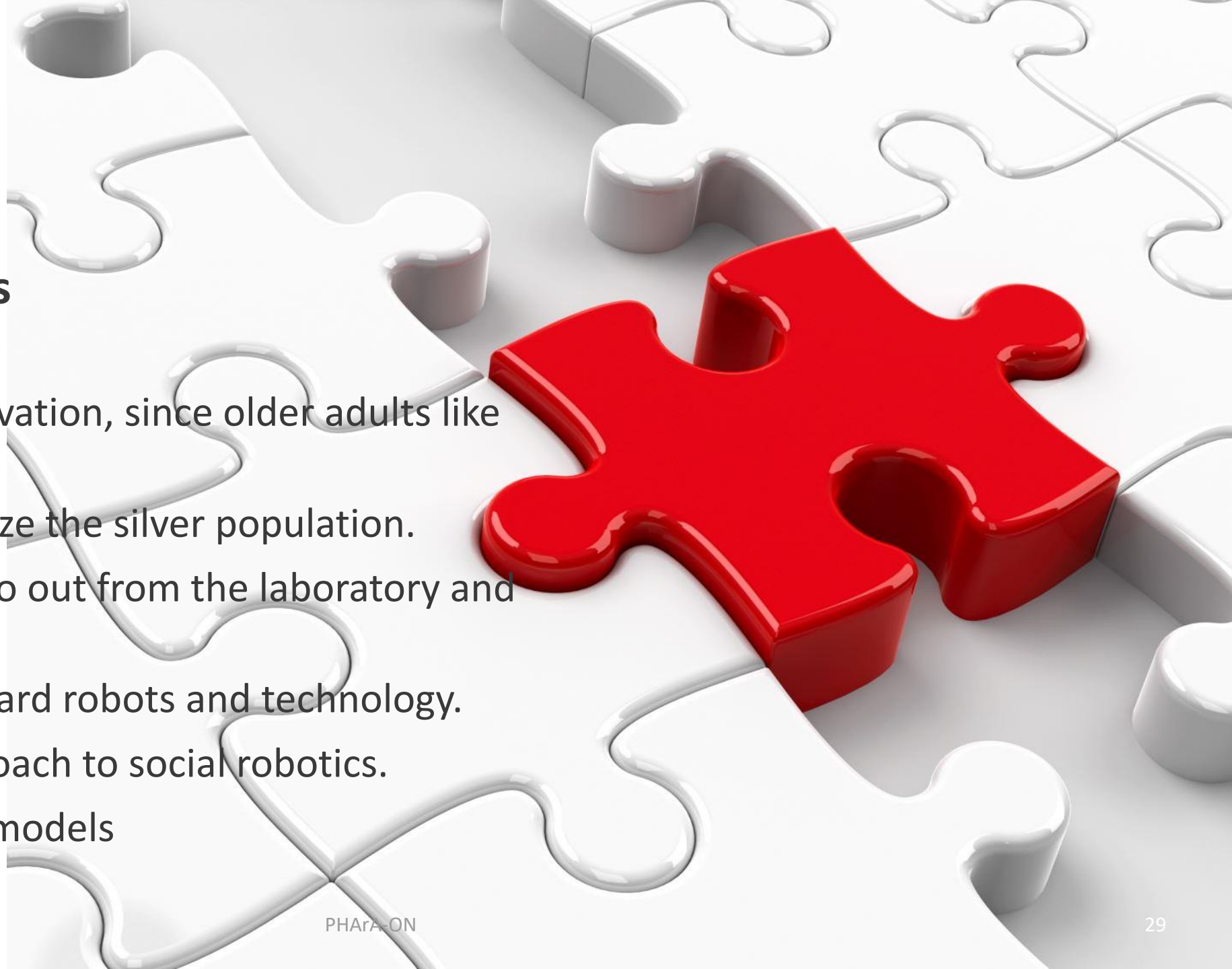
- Obtained certification
- Demonstrated cleaning efficiency
- Mobile robot is better than static UV-C lamp
- Well-accepted service

Users

Technology

Take home messages

- There is room for innovation, since older adults like robots and technology.
- Urgent need to digitalize the silver population.
- Technology needs to go out from the laboratory and meet the people
- High expectations toward robots and technology.
- Multidisciplinary approach to social robotics.
- Sustainable financing models



Beyond Pharaon – OPENDEI and the Health and Care Cluster Initiative

pharaon

OPENDEI

Aligning Reference Architectures, Open Platforms and Large-Scale Pilots in Digitising European Industry

Aligning Reference Architectures, Open Platforms and Large-Scale Pilots in Digitising European Industry

Manufacturing | Agriculture | Energy | Healthcare

Jun 2019 – May 2022
EU contribution € 2 M€
Coordinator: IDC ITALIA SRL

Platform building

Comparing reference architectures and open source reference implementations, enabling a unified industrial data platform

Data ecosystem building

Enabling an innovation and collaboration platform, forging a European network of DIHs, contributing to industrial skills catalogue and observatory

Large scale piloting

Contributing to a digital maturity model, creating a set of assessment methods and a migration journey benchmarking tool

Standardisation

Conducting cross-domain surveys, performing promotion and implementation, building alliances with existing EU and standard developing organisations

https://cordis.europa.eu/project/id/857065

http://www.opendei.eu/

The Health and Care Cluster Projects

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Pilots for Active and Healthy Ageing

12.2019-11.2023, 21.4M€,
https://www.pharaon.eu/

SHAPES

Smart and Healthy Ageing through People Engaging in supportive Systems

11.2019-10.2023, 21M€
https://shapes2020.eu/

Smart4Health

Citizen-centred EU-EHR exchange for personalized health

2.2019-1.2023, 21.8M€,
https://www.smart4health.eu/

InteropEHRate

EHR in people's hands across Europe

1.2019-6.2022, 7.2M€
https://www.interopehrate.eu/

GATEKEEPER

Smart Living Homes - Whole Interventions Demonstrator For People At Health And Social Risks

10.2019-3.2023, 22.6M€,
https://www.gatekeeper-project.eu/

SMARTBEAR

Smart Big Data Platform to Offer Evidence-based Personalised Support for Healthy and Independent Living at Home

9.2019-8.2023, 22.4M€,
https://www.smart-bear.eu/

ADLIFE

Integrated personalized care for advanced chronic patients

1.2020-12.2023, 7.4M€,
https://adlifeproject.com/

FAITH

intelligent post-cancer support

Federated Artificial Intelligence solution for moniToring mental Health status after cancer treatment

1.2020-12.2022, 4.8M€,
https://tssg.org/projects/faith/

The Health and Care Cluster – Working Groups

WG1 — DISSEMINATION

WG2 — USE CASES

WG3 — KPI

WG4 — ARCHITECTURE, STANDARDS AND REUSABLE COMPONENTS

WG5 — GDPR

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Open Questions