Introducing digital health innovators to evidence-based scaling-up

11 December 2020

Frans Folkvord - ffolkvord@open-evidence.com

Nuria Febrer – nfebrer@open-evidence.com

Agenda

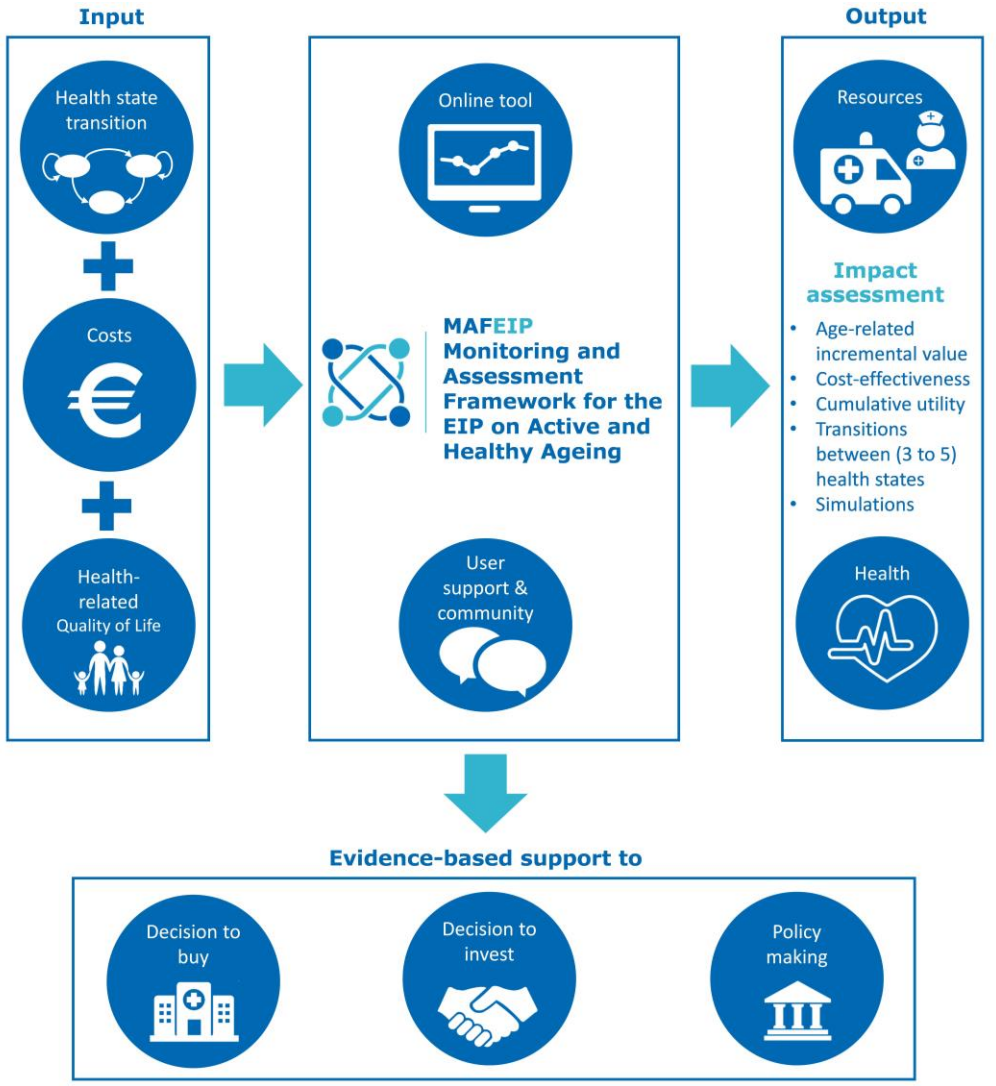
- MAFEIP and its functionalities
  - What is MAFEIP?
  - Who uses MAFEIP?
  - How does MAFEIP work?
- Workshop part I: Experimental design
- Workshop part II: Data collection for intervention costs
- MAFEIP outcomes: examples and exploitation
- Q&A

MAFEIP and its functionalitites

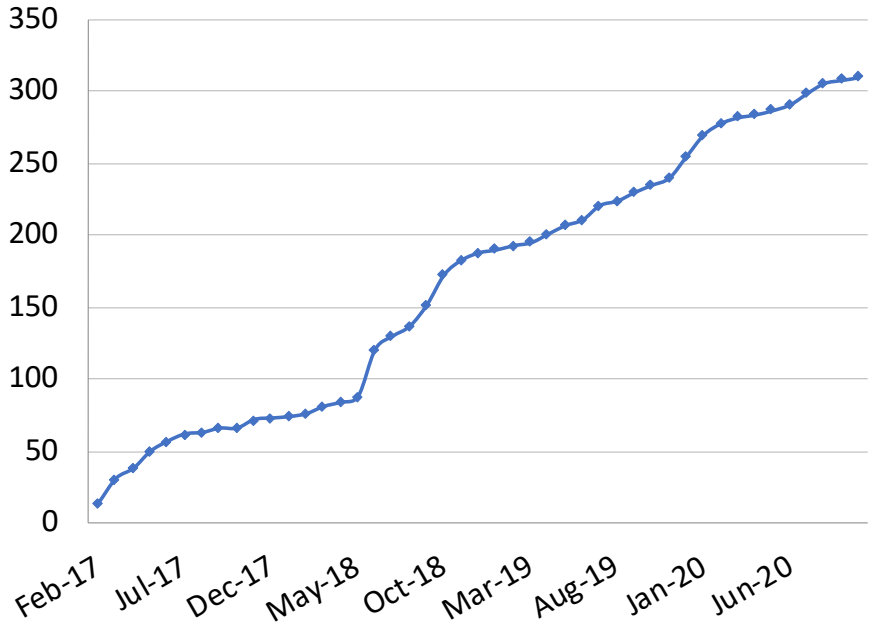
- "Monitoring and Assessment Framework for the European Innovation Partnership on Active and Healthy Ageing" intends **to support evidence-based decision-making.**

- Web-based tool (www.mafeip.eu) which rests on the principles of **Decision Analytic Modelling: Markov model**.

- To estimate the **health and economic outcomes** of a large variety of ICT enabled social and health innovations.



MAFEIP and its functionalities



308 members <100 cases 31 countries (23 within EU)

MAFEIP and its functionalities

- **WE4AHA** (H2020): Widening the support for large scale uptake of Digital Innovation for Active and Healthy Ageing
- **DIGITAL HEALTH EUROPE** (H2020): Support to a Digital Health and Care Innovation initiative in the context of Digital Single Market strategy
- **GATEKEEPER** (H2020): Smart living homes - whole interventions demonstrator for people at health and social risks
- **GRAVITATE HEALTH** (IMI JU2): Empowering and Equipping Europeans with health information for Active Personal Health Management and Adherence to Treatment
- **KATY** (H2020): Knowledge At the Tip of Your fingers: Clinical Knowledge for Humanity
- **PANDEVITA** (H2020): Pandemic Virus Trace Application for the Effective Knowledge Transfer Between Science and Society Inside the Quadruple Helix Collaboration

MAFEIP and its functionalities

EIP ON AHA

OPEN EVIDENCE

If you are a health or social care provider

Health and social care organizations as well as private insurance companies increasingly participate in the co-design of technology-based solutions and use the evidence resulting from real life pilots to assess their effectiveness and utility and take their decision to invest or to buy.

If you are a researcher

MAFEIP has a relevant potential to improve the quality and relevance of future research and to better serve the information needs of patients, clinicians, payers, and other decision makers by helping to identify gaps in evidence.

If you are a policy maker

MAFEIP represents a valuable instrument in Health Technology Assessment to inform policy decision making.

If you are a company

Big companies, SMEs and start-ups can take advantage of MAFEIP utility in assessing the potential impact of new business propositions for healthcare interventions and thus guiding the decision making process for further technology developments.

MAFEIP and its functionalities

EIP ON AHA

OPEN EVIDENCE

iPrognosis Case Study
iPrognosis (Intelligent Parkinson early detection guiding novel supportive interventions) provides technology-based solutions against Parkinson's and raises awareness on the disease and self-health management.
Action Group A2

Smart City Case Study
The Smart City Case Study describes the potential benefits of using the MAFEIP tool to evaluate Smart City projects and interventions, by using a cost-effectiveness analysis.

Do CHANGE project conducted in three different locations
Do CHANGE provides patients with high blood pressure, ischemic heart disease or heart failure chronic conditions with a set of tools and services to optimally monitor and manage in near real-time their health condition and disease. It has been tested in three different locations: Badalona Serveis Assitencials (BSA), the Elisabeth TweeSteden Ziekenhuis (ETZ) and the Buddhist Tzu-Chi Dalin General Hospital (BTCD).

Integrated care for frail elderly patients in the Basque Country – Carewell project
CareWell project has focused on the provision of care and support to older people who have complex health and social care needs. This has been achieved through ICT enabled healthcare services coordination and monitoring, patients' self-management, and informal care givers' involvement.
Action Group B3

CDK Integrated Care
The main aim of the Puglia-project was to address the specific need of reducing the dialysis patient stress in hospital, allowing integrate care empowerment and dialysis treatment at home.
Action Group B3

City4Age Case Study
The main aim of the City4Age-project was to examine an unobtrusive that should be able to discriminate elderly people who are robust from those who are not.
Action groups A1 A3 D4

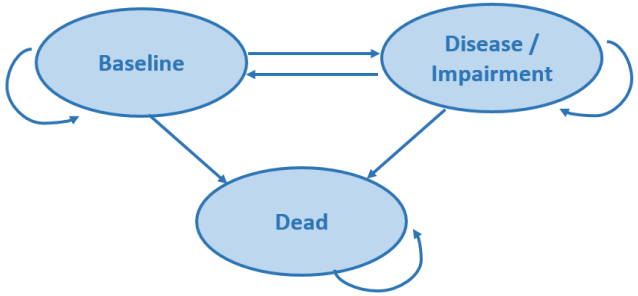
Renewing Health: Telemonitoring for Type 2 Diabetes Patients in Thessaly, Greece
The objective of Renewing Health was to implement telemedicine services in nine European regions for the validation and subsequent evaluation of these services using a patient-centred approach.
Action Group B3

Physical exercise program for reducing the risk of falling among older adults
A physical exercise program composed by balance and strength training was designed with the aim of reducing the prevalence of falls and its related cost.
Action Group A2

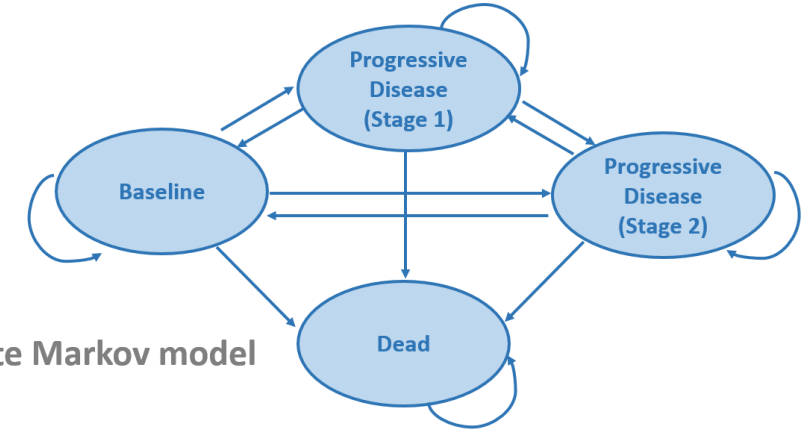
https://www.mafeip.eu/the-mafeip-community

MAFEIP and its functionalities

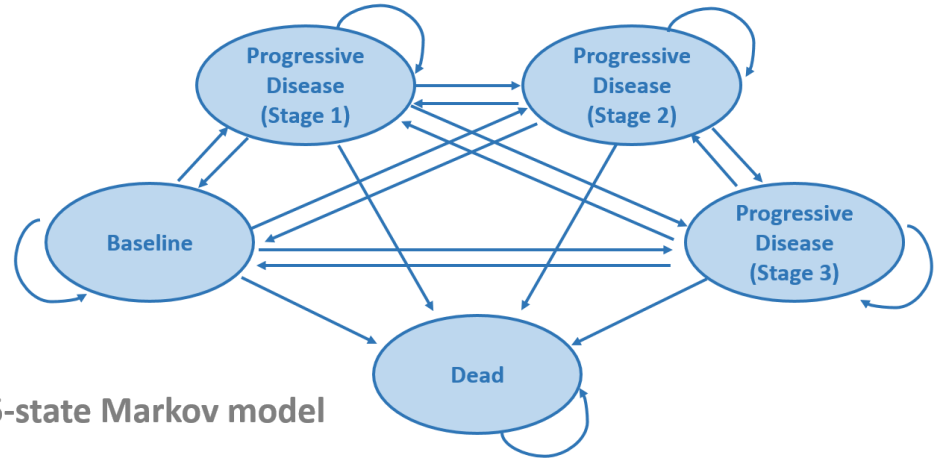
The outcomes for the intervention and the standard care are calculated by **simulating the health status of the target population**. This is done by simulating the transition of the target population between the states defined in the Markov model.



3-state Markov model



4-state Markov model



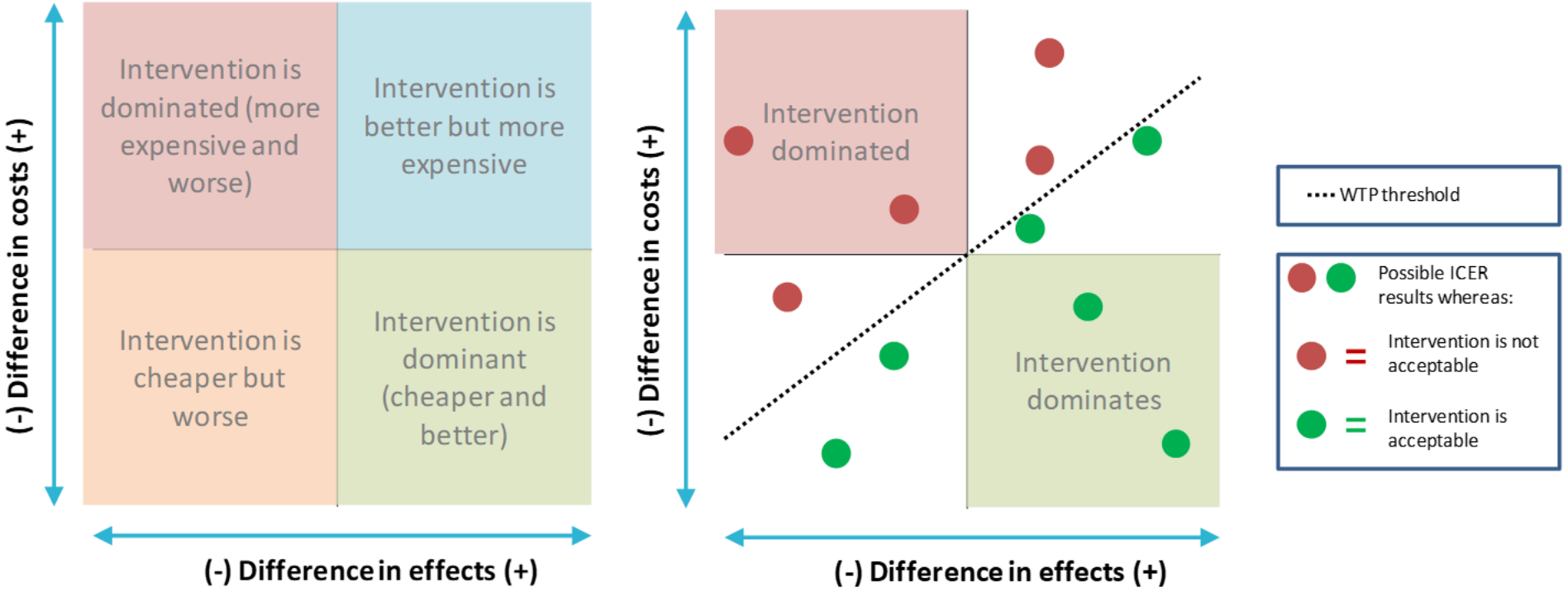
5-state Markov model

Each state of the model is defined by an amount of resource use (**costs**) and quality of life (**utility or health outcomes**). This represents the average resource use and quality of life of a patient in that health state.

A transition from the baseline to the disease/impairment state represents a patient becoming ill (i.e., **the incidence of the health condition**). When a patient experiences an improvement in his/her clinical conditions, as in the case of disease remission, it is defined as the transition from the disease to the baseline state (i.e., **the rate of recovery**).

MAFEIP and its functionalities

In order to easily grasp the evaluation outcome, the overall impact of the intervention is shown using **a cost-effectiveness plane:** the Incremental Cost Effectiveness Ratio (ICER) of the intervention under assessment is displayed in comparison with the Willingness to Pay (WTP) threshold in order to facilitate decision making.



Why using experimental design?

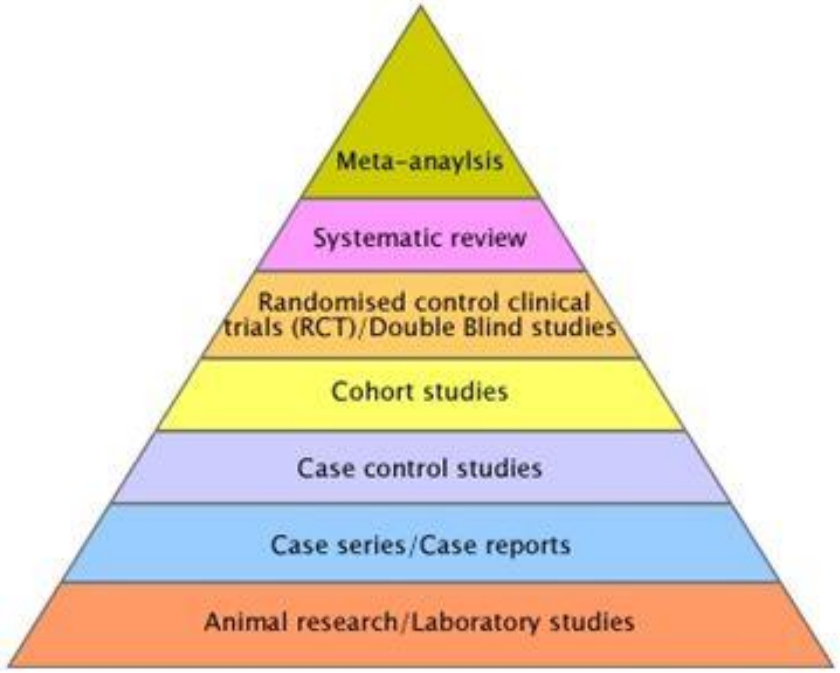
- Types of questions that experiments can address:

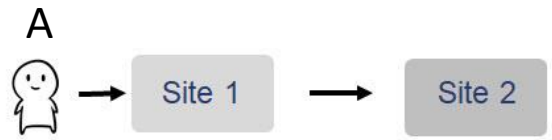
(I) Questions about underlying mechanisms

(II) Questions about causality

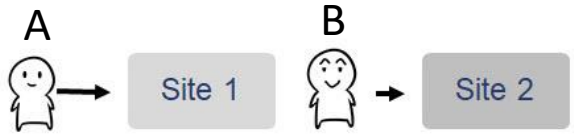
(III) Questions about causes and effects

- There is a close relation between the research question and the design:





Within-subjects design: The same participant tests all conditions corresponding to a variable



Between-subjects design: Different participants are assigned to different conditions corresponding to a variable

Let's think about your projects

Workshop part I: Let's come up with an example of a study that involves two or more comparative groups relating to your projects

- What is the study about?
- What is the dependent variable? (or multiple?) And the independent variable?
- How many factors do you have? Should it be a between or within-subject design?

Data to be collected: costs

- Costs associated with both the intervention and the standard care scenario:

Type of cost	Definition	Example
1. One-off and annual recurrent costs		
1.1 Intervention costs	Cost of the intervention group	
1.1.1 One-off intervention costs	Cost of the intervention before treatment	€ of device
1.1.2 Recurrent annual costs	Cost incurred for delivering the intervention	€ of software license
1.2 Standard care costs	Cost of the control group	
1.2.1 One-off intervention costs	Cost of the intervention before treatment	€ of surgical procedure
1.2.2 Recurrent annual costs	Cost incurred for delivering the intervention	€ of service mgmt
2. Health state cost		
2.1 Healthcare costs	Cost of resources within the healthcare system	€ of medication
2.2 Societal costs	Costs outside the healthcare system	€ of caregivers

Let's think about your projects

Workshop part II: Let's come up with an example of (I) one-off and annual recurrent costs and (II) health state costs relating to your projects

Type of cost	Definition
1. One-off and annual recurrent costs	
1.1 Intervention costs	Cost of the intervention group
1.1.1 One-off intervention costs	Cost of the intervention before treatment
1.1.2 Recurrent annual costs	Cost incurred for delivering the intervention
1.2 Standard care costs	Cost of the control group
1.2.1 One-off intervention costs	Cost of the intervention before treatment
1.2.2 Recurrent annual costs	Cost incurred for delivering the intervention
2. Health state cost	
2.1 Healthcare costs	Cost of resources within the healthcare system
2.2 Societal costs	Costs outside the healthcare system

MAFEIP outcomes: example

- Using evidence from the cost-effectiveness analysis with the MAFEIP-tool different technological interventions can be used to support Nikos in improving his health.

Nikos: a prototype for using MAFEIP-outcomes for personas

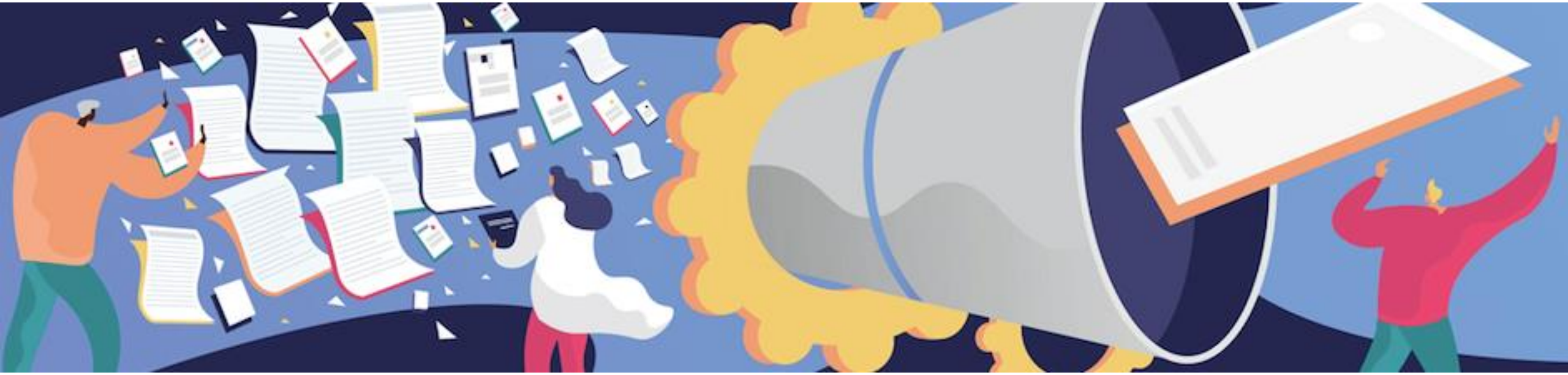
Name: Nikos **Country:** Greece
Age: 50 **Area:** urban
Life course: working age adult
Need: chronic conditions & social care
Connectivity: broadband, mobile device

- Do CHANGE: Monitor and manage in near real-time his health condition and disease
- United4Health: Telemonitoring
- Renewing Health: Telemedicine treatment of chronic patients

→ **+ effective**

- money

MAFEIP outcomes: exploitation



- Test whether your intervention is cost-effective with robust evidence
- Scale-up your idea
- Disseminate your results through a world-wide eHealth network
- Publish your report on the EIPonAHA and scientific journals

MAFEIP

MONITORING AND ASSESSMENT FRAMEWORK FOR THE EUROPEAN INNOVATION PARTNERSHIP ON ACTIVE AND HEALTHY AGEING

WHO CAN BENEFIT FROM MAFEIP?
Health or Social Care Providers | Project Managers | Researchers | Policymakers

DO YOU NEED HELP?
A MAFEIP team of experts provides support through the whole process.

- Measures cost effectiveness and makes impact assessments of ICT health and care solutions.
- A Web-based tool. It makes its calculations using on a Markov model.
- It compares patients at two time-instants.

Why to Apply MAFEIP?

Success Story 1 i-Prognosis

An app that measures the use of games by people with Parkinson's.

Applied MAFEIP / Result: COST EFFECTIVENESS

The adoption of the app could save 400-550 euros per patient a year in healthcare costs

Expected decrease in healthcare costs over a horizon of 20 years:

- 8 million euros in Greece.
- 72 million euros in Germany.
- 98 million euros in the United Kingdom.

Success Story 2 CareWell

A project that measures the care of frail, elderly patients.

Applied MAFEIP / Result: COST EFFECTIVENESS

- The intervention is effective if there is a willingness to pay that is at least €5,667 per quality-adjusted life year for each patient.
- The intervention is more effective than current care.
- The intervention is also more expensive than current care

Success Story 3 Renewing Health

Telemedicine services in all 9 European regions

Result: COST EFFECTIVENESS

- Telemonitoring remains a cost-effective choice for the Greek national health care system even if it is a more expensive intervention than standard care.
- Over a 45-year time period, costs would increase but quality-adjusted life years (QALYs) would improve.

The WE4AHA project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 769705.

Join the MAFEIP community

Contact: info@mafeip.eu Website: www.mafeip.eu Twitter: @mafeip

Q&A

EIP ON AHA

Thank you!
Join us at www.mafeip.eu
info@mafeip.eu

11 December 2020

Frans Folkvord - ffolkvord@open-evidence.com

Nuria Febrer – nfebrer@open-evidence.com