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Programma Mattone Internazionale Salute

mHealthHUB European

A WHO/ITU/Andalusian Regional Ministry of Health initiative

Ministero della Salute

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ATTIVITA' ONLINE

ProMIS 2021

«European mHealth Hub: tools, models and practices for the development and implementation of mHealth programmes»

16 June 2021

Maddalena Illario – Federco II University & Hospital

Presentation title

Knowledge Tool-2 Diabetes: come sviluppare un programma di mHealth per il diabete mellito di tipo 2?

Knowledge Tools

KT1: Assessment frameworks

- Evaluation domains and criteria
- Health apps repositories
- Qualitative insights

KT2: Developing a mHealth tool for Diabetes

- mHealth solutions available addressing Diabetes type 2
- guidance for large-scale or national mHealth programs on Diabetes type 2

KT3: Integrating & scaling up mHealth solutions within health systems

- KT3 initiatives bank
- Interviews
- Knowedee xchange

KT2 OBJECTIVES

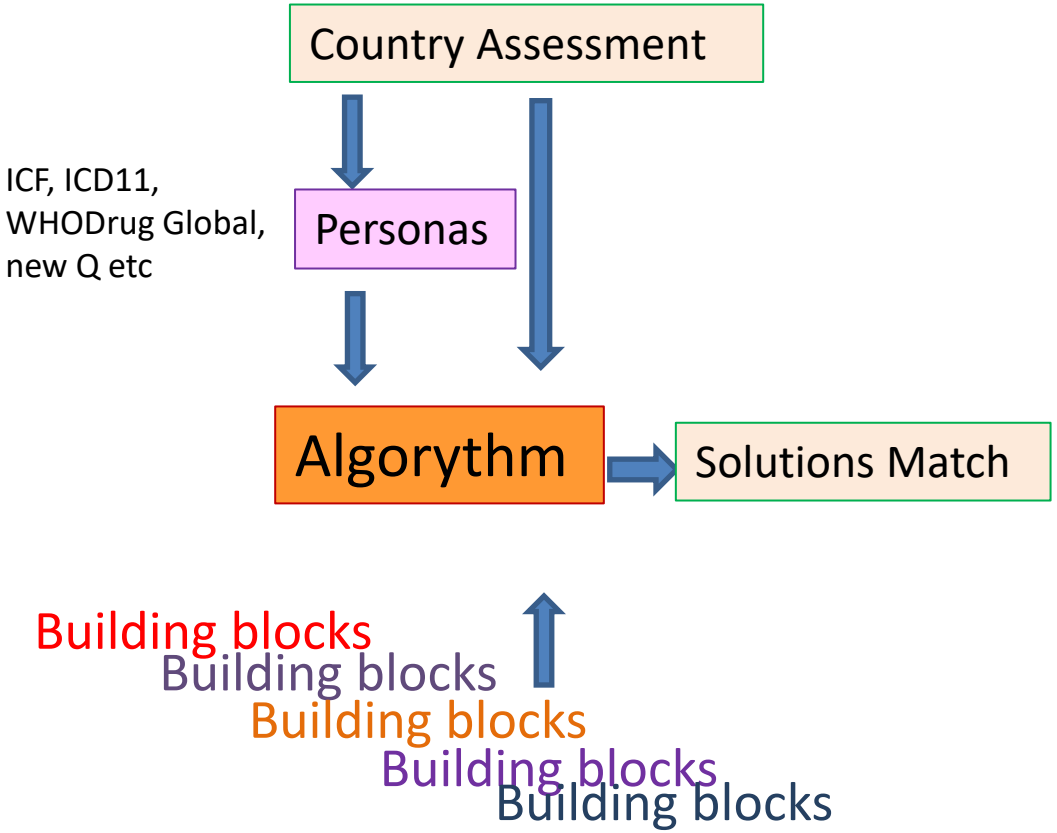
Set up an easy to use and navigate Knowledge Tool for Diabetes Type 2 in mHealth:

1. To provide a catalogue of mHealth solutions available addressing Diabetes type 2
2. To provide guidance for selecting, adapting and deploying large-scale or national mHealth programs on Diabetes type 2

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Grant Agreement No 737427

Methodology

- **Country specification**: a multi-dimensional situation and needs analysis (needs assessment, interview, SWOT)
- Development or adaptation of **persona use cases** & service scenario
- **Solutions Building Blocks**



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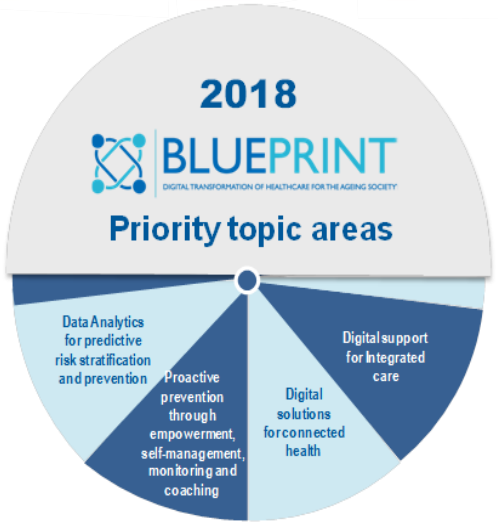
Development/ adaptation of Use cases & service scenarios

Life course / Needs	Children/ Young adults	Working age adults	Retired persons below 80	Persons aged 80+
Generally well/ good wellbeing	 Rose, 10	 Leila, 51	 Randolph, 65	 Teresa, 83
Chronic conditions and/or social needs	 Millie, 18	 Nikos, 50	 Eleni, 73	 Maria, 84
Complex needs	 Ben, 9	 Antonio, 33	 Procolo, 79	 Jacqueline, 87



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BLUEPRINT

DIGITAL TRANSFORMATION OF HEALTHCARE FOR THE AGEING SOCIETY

Web: https://ec.europa.eu/eip/ageing/blueprint_en
Contact: WE4AHA@empirica.com

Meet Gennaro

Name: Gennaro **Country:** Italy
Age: 65 **Area:** Internal area
Life course: working age older adult
Need: chronic conditions & social care
Connectivity: broadband & smart phone

Internet usage	Low	High
Mobile device skills	Low	High
Affinity to new tech	Low	High
Digital Health Literacy	Low	High
Assistance (ICT use)	No	Yes

Gennaro suffers from obesity, hypertension and diabetes since the age of 50. His diabetes cannot be controlled by drugs alone, and his glycated haemoglobin parameters are always above target. Although afraid of losing independency, Gennaro is unable to change his lifestyle, especially as diet and exercise are no-gos. Despite the assistance of his younger wife, Gennaro feels depressed. Due to diabetes, his right carotid artery is chronically concluded and his left is sub-occluded, which has resulted in a stroke. To avoid a new stroke, Gennaro has had surgery on the left carotid, which left him unable to raise his arm, making him retire at the age of 62. Gennaro seeks help from friends and family to be more active and feel less alone and useless.

What's important to Gennaro

- ✓ Being socially included, although too lazy to get involved.
- ✓ Not feeling the disease without dietary limits.
- ✓ Participating in family activities.
- ✓ Taking care of himself, being independent and able to drive.

Daily living

- ✓ Gennaro is less able to move around and do things.
- ✓ As he is afraid of falling, he does not go out much, has his shopping delivered or eats ready meals.
- ✓ Since the stroke, Gennaro has difficulties to get dressed or bath by himself.

Own resources & assets / support

- ✓ Mostly, his wife assists him, and his daughters support him in special activities.
- ✓ He lives in his own apartment, the monthly pension being enough for him and his wife.
- ✓ Gennaro goes to church on holidays, but does not attend community activities.
- ✓ He is depressed, food is his biggest passion.

Events, issues & personal concerns

- ✓ Poor sleep, feeling depressed, "useless", and "up and down".
- ✓ Taking various medicines.
- ✓ Poor use of left hand, needing a stick to move around.

Health concerns

- ✓ CKD stage 3.
- ✓ PAD.
- ✓ Falls.
- ✓ Osteoarthritis.
- ✓ Attends cardiology clinic since heart disease diagnosis 3 years ago.

Health tests

- ✓ Diabetes visits.
- ✓ Blood pressure and blood tests (LFT, U & E, FBC, TFT, glucose).
- ✓ Cholesterol.
- ✓ Depression screening.
- ✓ MRC scale.
- ✓ MUST/FRAT scores.
- ✓ Frailty index.
- ✓ ECG and stress ECG.
- ✓ Chest examination.
- ✓ Cardiac/vascular ultrasounds.

Treatment: medications, therapies, etc.

- ✓ 12 different medications: (1) six pills for heart, (2) three inhalers, (3) two pain killers for diabetic neuropathy, (4) allopurinol for CKD/therapy.

Care professionals' / carers' concerns

- ✓ Unable to control diabetes, HbA1c never at target.
- ✓ Diabetes-related atherosclerotic complications.
- ✓ Previous stroke, limited autonomy in walking.

Needs

(1) Gennaro highly depends on his family in daily activities and social life. With the assistance of a carer, a platform for diabetes management which incorporates medication reminders can support him in becoming more independent.
(2) Although his relationship with food and his increasingly sedentary lifestyle cause most of his health problems, Gennaro refuses to exercise and change his diet. Innovative solutions offering educational games for diet and exercise are pivotal to prevent further complications, disease progression and unpredicted health events, which Gennaro and his wife cannot afford.
(3) To feel more socially included, more engagement with peers is crucial.

This persona was developed by Guido Iaccarino and Maddalena Illario, Federico II University Med School with the kind support of the WE4AHA Blueprint and expert team.

The Blueprint's further development is led by empirica GmbH as part of the EU project WE4AHA co-ordinated by Funka Nu AB. The project receives funding from the EU's Horizon 2020 research and innovation programme under the Grant Agreement No. 769705.

World Health Organization

Junta de Andalucía
Consejería de Salud y Familias

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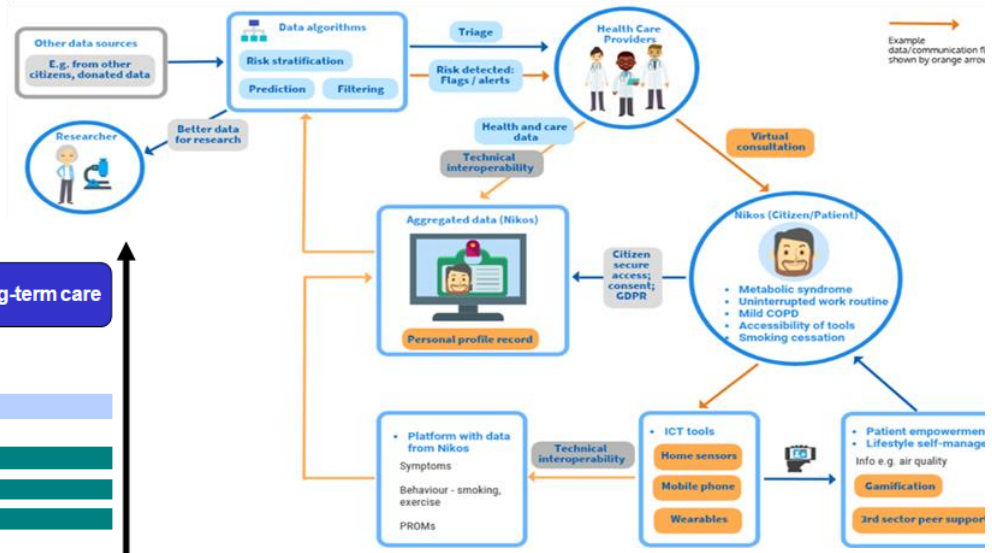
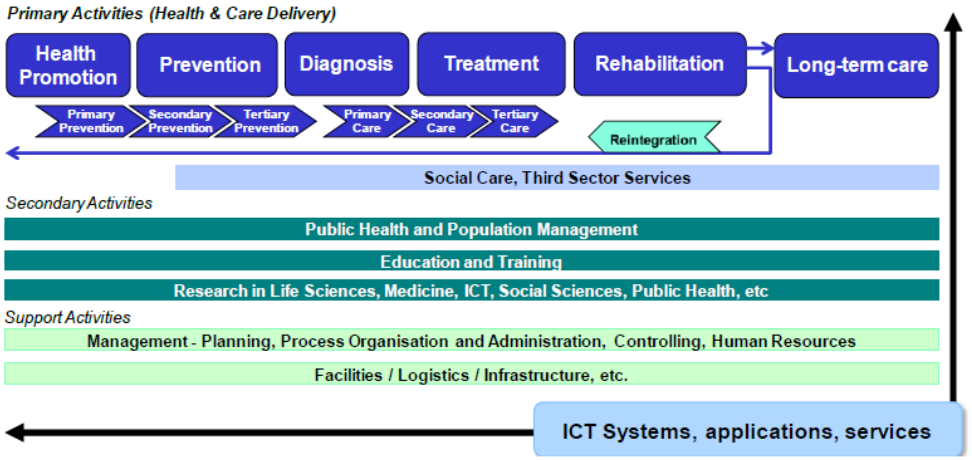
Person centered service scenario





Source: © empirica, WE4AHA 2018

Figure 2. Draft of a health and care value chain

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

Internet usage	Low	High
Mobile device skills	Low	High
Affinity to new tech	Low	High
Digital Health Literacy	Low	High
Assistance (ICT use)	No	Yes

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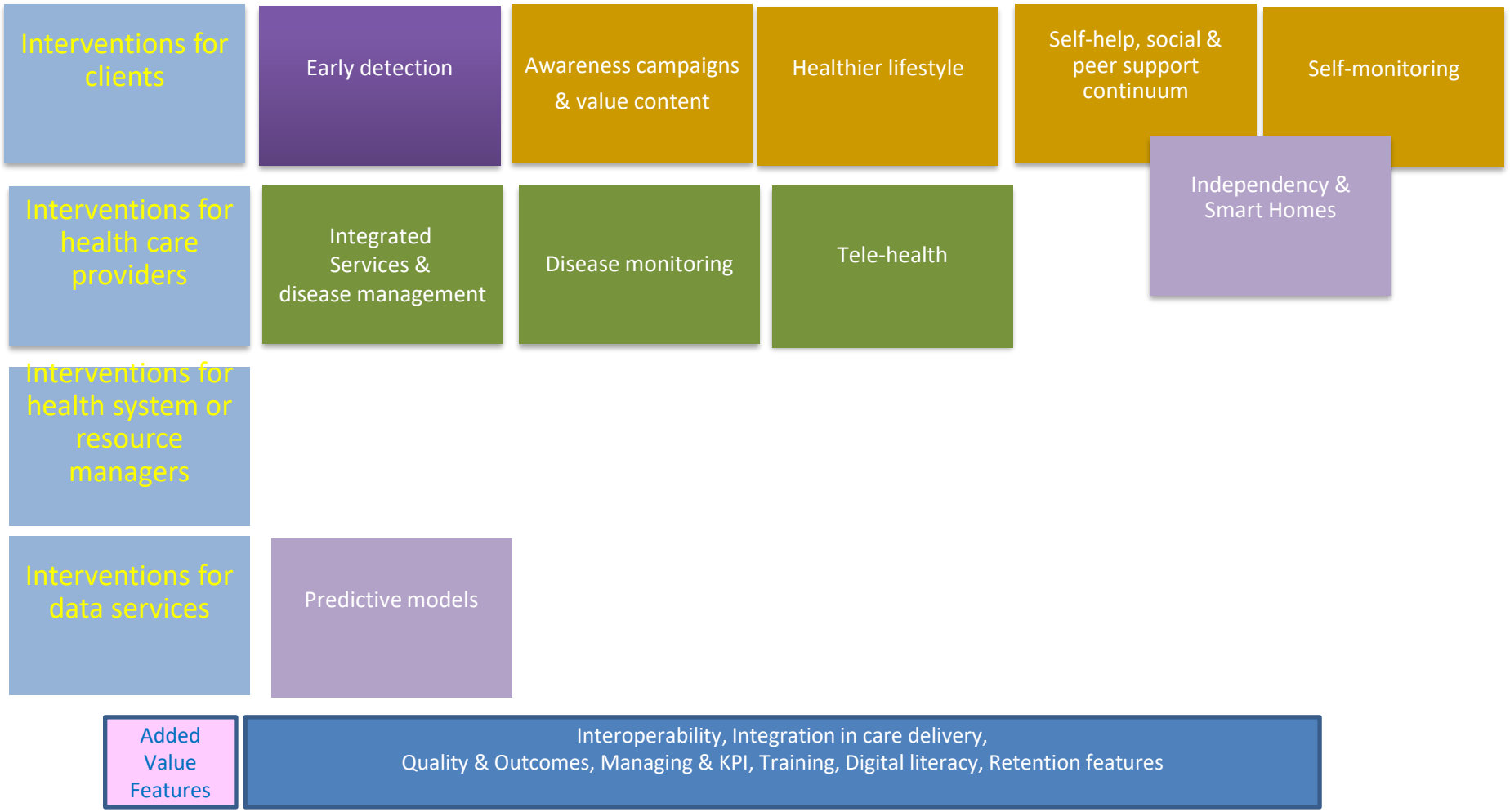
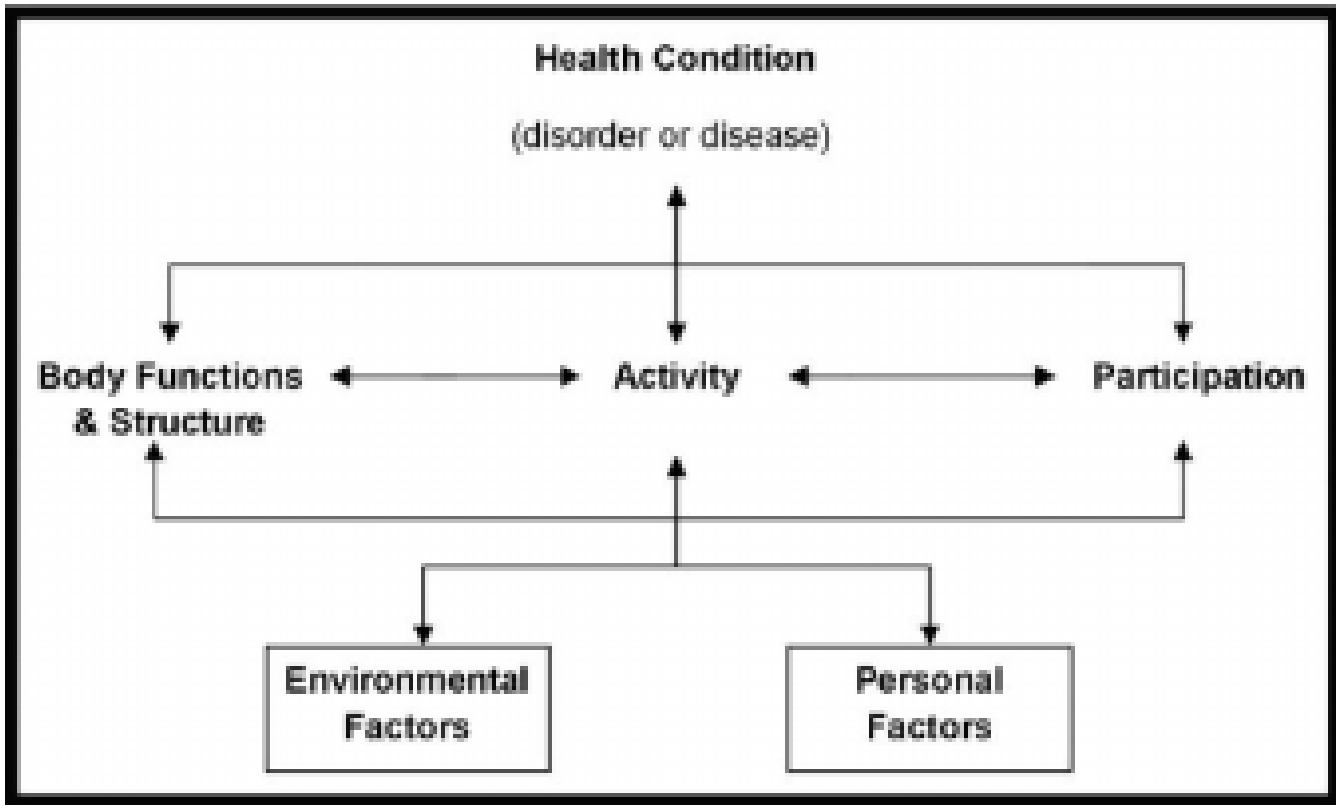
Solutions building blocks



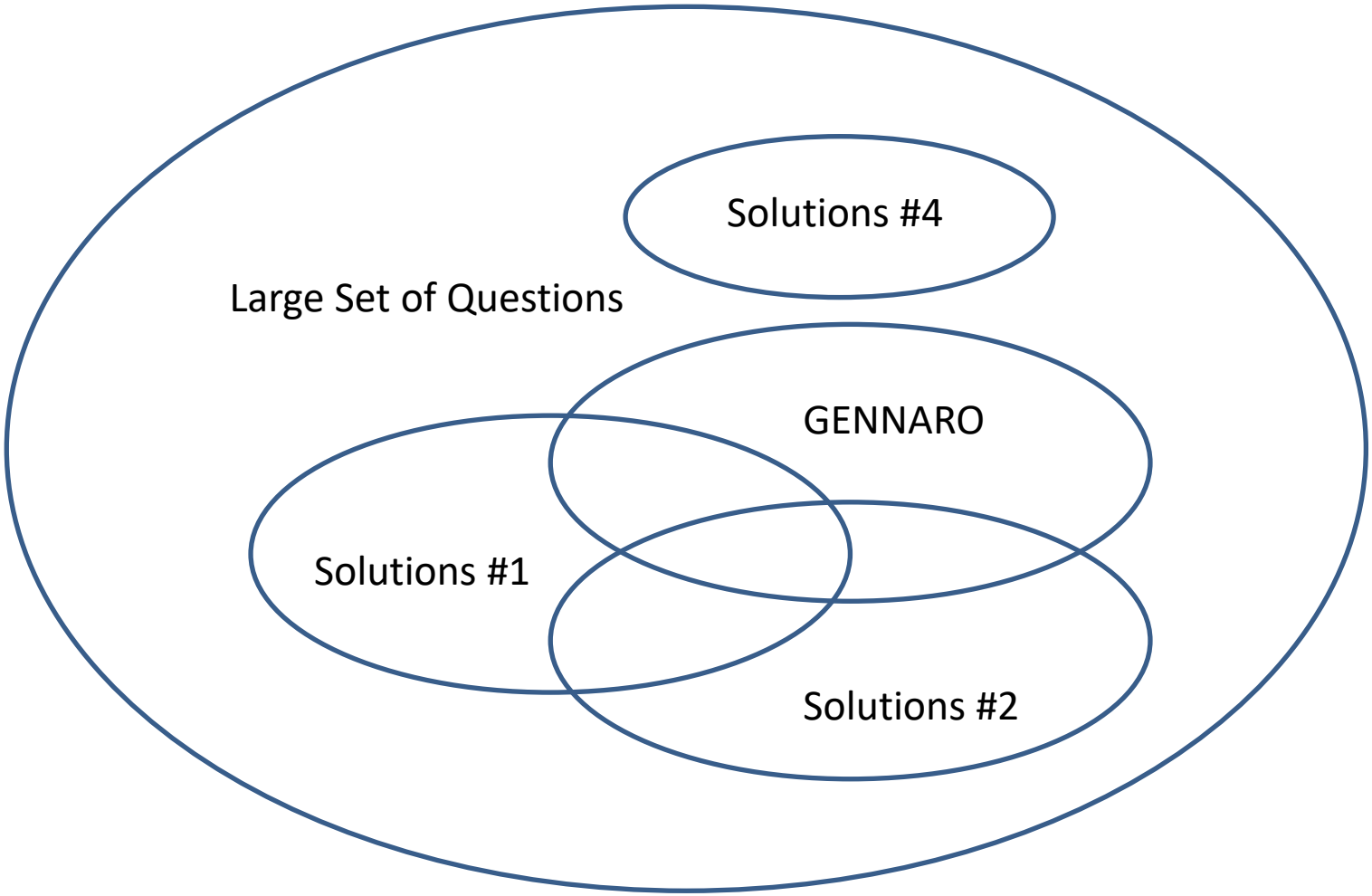
WHO Classification of Digital Health Interventions, 2018
file:///C:/Users/Pc/Dropbox/Il%20mio%20PC%20(DESKTOPK5QM73U)/Downloads/WHO-RHR-18.06-eng.pdf

International Classification of Function Model (ICF)

Functioning is included in personas description so the golden opportunity is to **annotate those functioning according to the disease codes (ICF codes)** so that it is unquestionable the way they are identified.

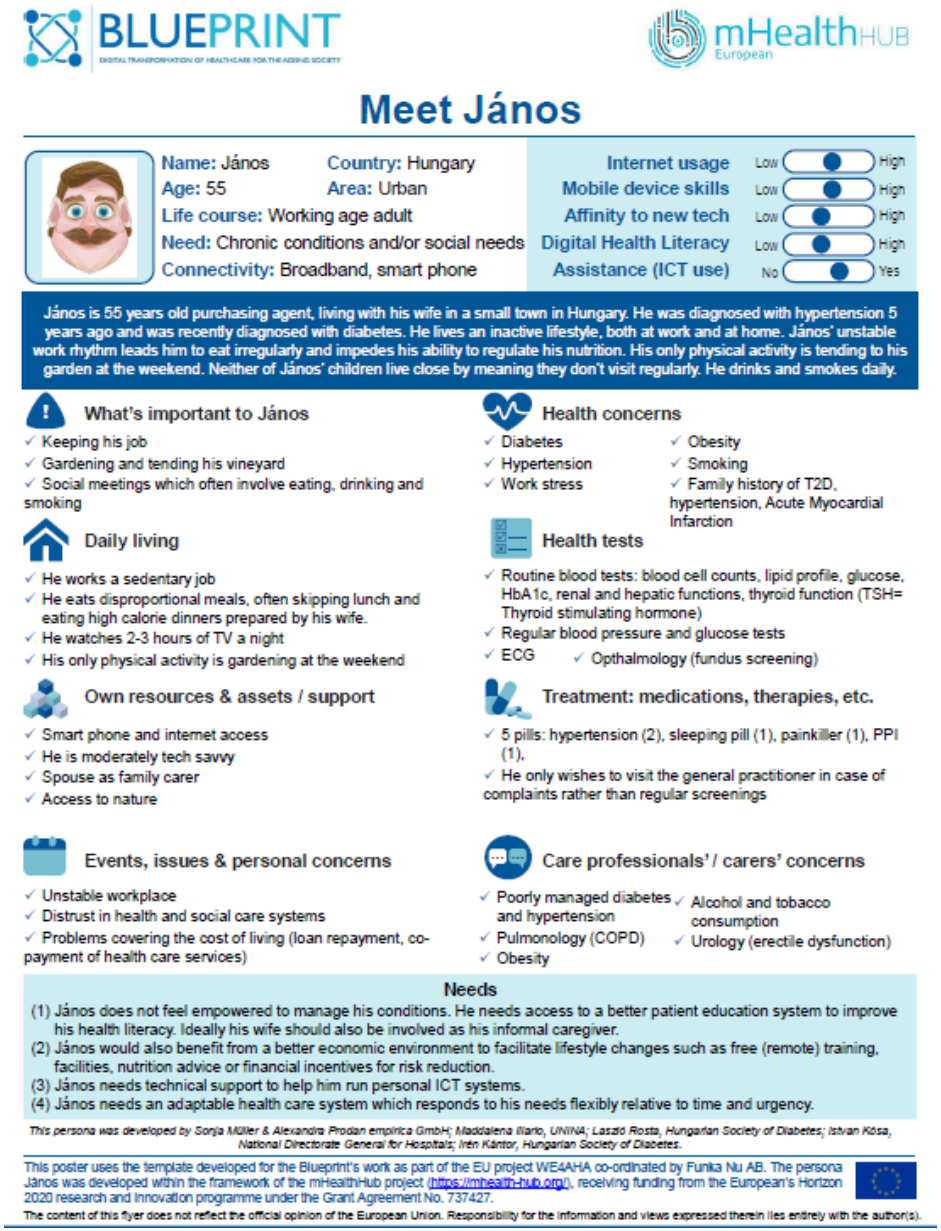


https://www.icf-research-branch.org/icf-core-sets-projects2/cardiovascular-and-respiratory-conditions/icf-core-set-for-diabetes-mellitus


Solutions #4
Large Set of Questions
GENNARO
Solutions #1
Solutions #2

Tailored approach

1. Collaborate with Hungary multidisciplinary team for a multi-dimensional situation analysis
2. Adapt or develop persona use cases & service scenario
3. Identify suitable solutions for preferred purpose



BLUEPRINT — DIGITAL TRANSFORMATION OF HEALTHCARE FOR THE AGEING SOCIETY

mHealthHUB European

Meet János

Name: János **Country:** Hungary
Age: 55 **Area:** Urban
Life course: Working age adult
Need: Chronic conditions and/or social needs
Connectivity: Broadband, smart phone

Internet usage	Low	High
Mobile device skills	Low	High
Affinity to new tech	Low	High
Digital Health Literacy	Low	High
Assistance (ICT use)	No	Yes

János is 55 years old purchasing agent, living with his wife in a small town in Hungary. He was diagnosed with hypertension 5 years ago and was recently diagnosed with diabetes. He lives an inactive lifestyle, both at work and at home. János' unstable work rhythm leads him to eat irregularly and impedes his ability to regulate his nutrition. His only physical activity is tending to his garden at the weekend. Neither of János' children live close by meaning they don't visit regularly. He drinks and smokes daily.

What's important to János
- ✓ Keeping his job
- ✓ Gardening and tending his vineyard
- ✓ Social meetings which often involve eating, drinking and smoking

Health concerns
- ✓ Diabetes
- ✓ Hypertension
- ✓ Work stress
- ✓ Obesity
- ✓ Smoking
- ✓ Family history of T2D, hypertension, Acute Myocardial Infarction

Daily living
- ✓ He works a sedentary job
- ✓ He eats disproportional meals, often skipping lunch and eating high calorie dinners prepared by his wife.
- ✓ He watches 2-3 hours of TV a night
- ✓ His only physical activity is gardening at the weekend

Health tests
- ✓ Routine blood tests: blood cell counts, lipid profile, glucose, HbA1c, renal and hepatic functions, thyroid function (TSH= Thyroid stimulating hormone)
- ✓ Regular blood pressure and glucose tests
- ✓ ECG
- ✓ Opthalmology (fundus screening)

Own resources & assets / support
- ✓ Smart phone and internet access
- ✓ He is moderately tech savvy
- ✓ Spouse as family carer
- ✓ Access to nature

Treatment: medications, therapies, etc.
- ✓ 5 pills: hypertension (2), sleeping pill (1), painkiller (1), PPI (1).
- ✓ He only wishes to visit the general practitioner in case of complaints rather than regular screenings

Events, issues & personal concerns
- ✓ Unstable workplace
- ✓ Distrust in health and social care systems
- ✓ Problems covering the cost of living (loan repayment, co-payment of health care services)

Care professionals' / carers' concerns
- ✓ Poorly managed diabetes and hypertension
- ✓ Pulmonology (COPD)
- ✓ Obesity
- ✓ Alcohol and tobacco consumption
- ✓ Urology (erectile dysfunction)

Needs
(1) János does not feel empowered to manage his conditions. He needs access to a better patient education system to improve his health literacy. Ideally his wife should also be involved as his informal caregiver.
(2) János would also benefit from a better economic environment to facilitate lifestyle changes such as free (remote) training, facilities, nutrition advice or financial incentives for risk reduction.
(3) János needs technical support to help him run personal ICT systems.
(4) János needs an adaptable health care system which responds to his needs flexibly relative to time and urgency.

This persona was developed by Sonja Möller & Alexandra Prodan empirica GmbH; Maddalena Illario, UNINA; László Rosta, Hungarian Society of Diabetes; István Kósa, National Directorate General for Hospitals; Irén Kántor, Hungarian Society of Diabetes.

This poster uses the template developed for the Blueprint's work as part of the EU project WE4AHA co-ordinated by Funka Nu AB. The persona János was developed within the framework of the mHealthHub project (https://mhealth-hub.org/), receiving funding from the European's Horizon 2020 research and innovation programme under the Grant Agreement No. 737427.

The content of this flyer does not reflect the official opinion of the European Union. Responsibility for the information and views expressed therein lies entirely with the author(s).

ITU

World Health Organization

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Focusing on ICF codes sets

ICF Categories for DM
Body Functions
Body Structures
Activities & participation: community life
Environmental factors: products and technologies for communication

Janus

ICF Core Sets	Function (category title)	ICF code	ICF Categories for diabetes course	ICF code for obesity course

The ambition of the Hub can be focused only on specific ICF

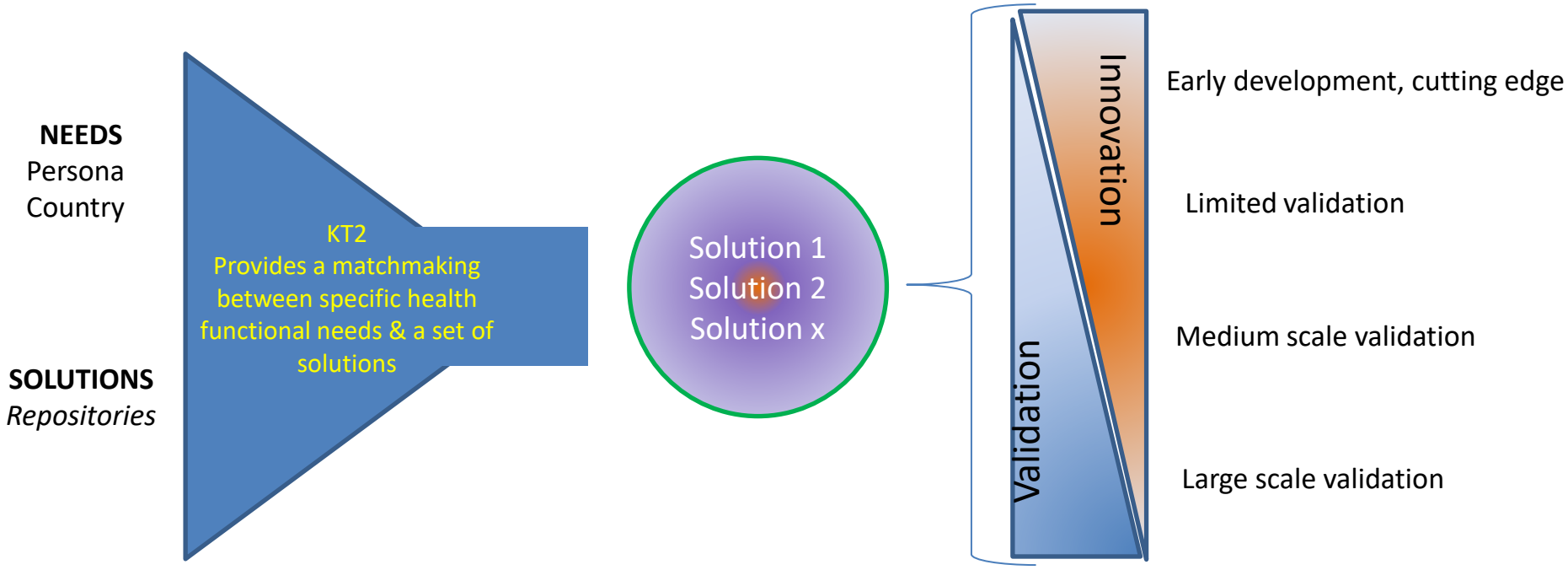
Multimorbidity appearing: Janos is also obese

Possible future developments providing further insights

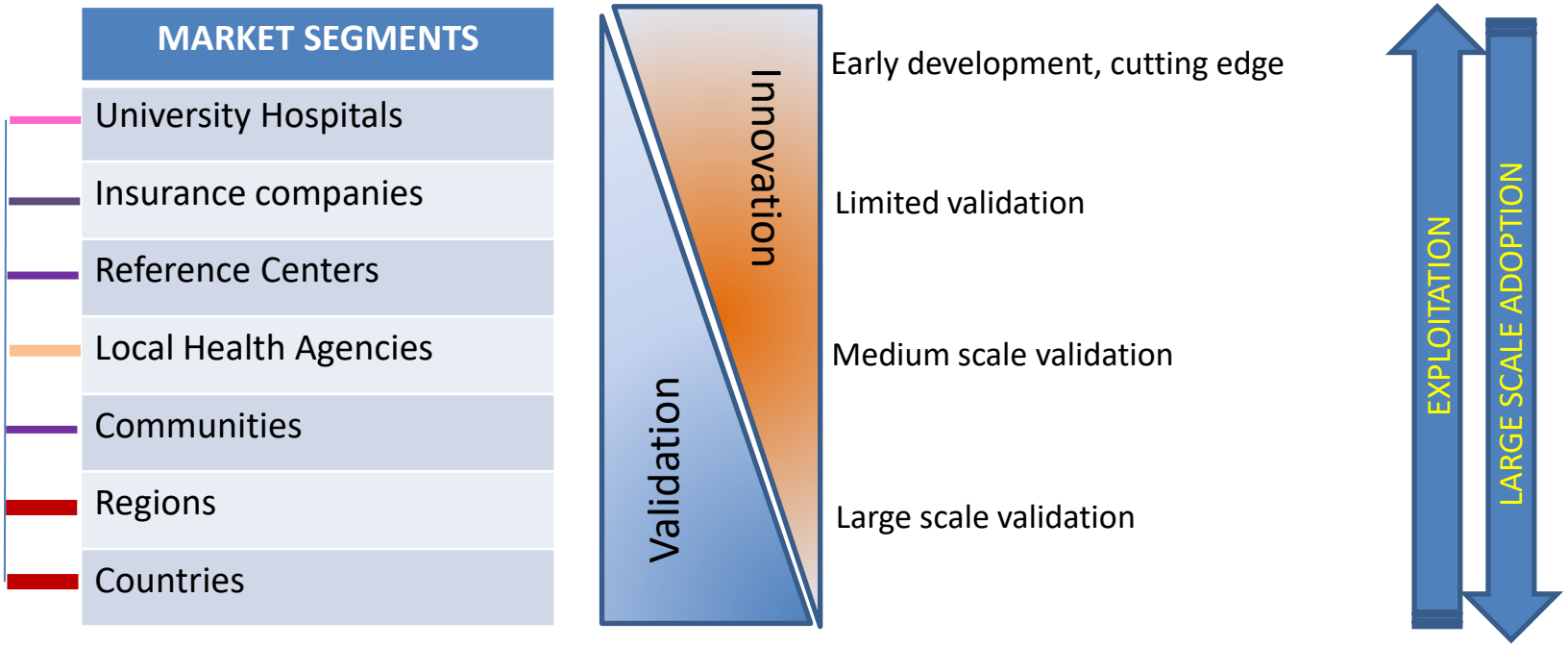
Available solutions: a sample

Solution	Coverage	Building Blocks	Maturity
MySugar	Global	• Healthier lifestyle & self-monitoring; • Self-help, social & peer-support continuum; • Disease monitoring.	Large scale
Medisantè	Global	• Disease monitoring; • Tele-health.	Not declared
DiabMemory	Austria	• Healthier lifestyle & self-monitoring; • Self-help, social & peer-support continuum; • Disease monitoring; • Tele-health; • Integrated services & disease management.	Large scale
Diawatch	EU	• Healthier lifestyle & self-monitoring; • Self-help, social & peer-support continuum; • Disease monitoring; • Tele-health; • Integrated services & disease management.	Pilot
DM4All	EU	• Healthier lifestyle & self-monitoring; • Predictive model; • Disease monitoring; • Integrated services & disease management.	Pilot
DIAMONDS	EU	• Healthier lifestyle & self-monitoring; • Disease monitoring; • Tele-health.	Pilot
Tele-monitoring of patients with Acute Myocardial Infarction (AMI) and newly diagnosed diabetes (GP2)	Olomuc	• Disease monitoring; • Tele-health.	Small Scale
PEPPER	EU	• Healthier lifestyle & self-monitoring; • Integrated services & disease management; • Self-help, social & peer-support continuum.	Pilot
C3Cloud	EU	• Healthier lifestyle & self-monitoring; • Disease monitoring; • Tele-health.	Pilot
Personal Assistant for healthy Lifestyle (PAL)	EU	• Healthier lifestyle & self-monitoring • Disease monitoring; • Integrated services & disease management; • Self-help, social & peer-support continuum.	Pilot

Hypothesis of the service process for KT2



Adoption according to Perspectives & Objectives of Hub «clients»

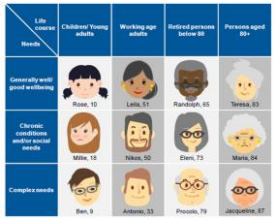


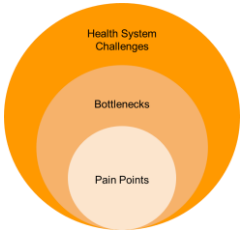
Interdependencies with other Activities/Work Packages

KT1: Assessment frameworks of mHealth solutions

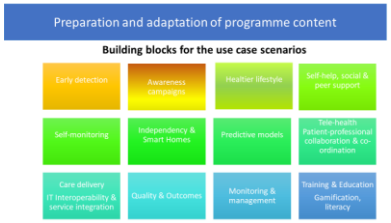
KT2: Intervention-specific mHealth programme

KT3: Integrating innovations into healthcare systems





WP4: Capacity building & operationalization



Person-centered approach: by the graded needs in the codes, the spectrum of conditions, and a ranked list of solutions may be identified.

Key Features of the Algorythm

1. Needs are identified according to selected ICF codes for specific diseases (Janos for example)
2. Solutions are self-assessed, and companies take responsability for what they claim about functionalities
3. The Algorythm provides a match between needs and one or more solutions
4. The details describing the functionalities of the solutions include a clear reference to the evidences behind the claims, that are a responsability of the solution provider.

The prototype of the Algorythm is based upon our ICF list of 9 subgrouping for Janos (diabetes and obesity)

Semantic of the stars: it is subjective, no fixed rules, based upon self-assessment

O no match, not applicable

*low match: restricted suitability

** medium match: acceptable suitability

*** perfect match with at least 2 or 3 of the key-words. It is not only the number of the key-words match but also the quality of the match

State of the art for KT2

- The **needs** of the **persona** are now identified according to the ICF standards for Janus courses (Diabetes & Obesity)
- The list of **services** that are locally available has been retrieved from the scenario to define the «service process» in the Country interaction
- The **solutions** group (*to run the prototype*) is linked to the Janus persona based on the "promis" of the solution: how were the solutions categorised based on functionalities

Highlights

- The results will be provided in a graded way by the algorythm that will blend in selected ICF codes that can be addressed by digital solutions.

- The suitability degree of the solutions will be based upon the grading of the ICF scale, for each course

- “Clients” may choose also taking into account additional information

- Three folded added value of the mHealth Hub:

For countries, Regions & stakeholders of the Health & Social Care System
For companies
For research

Thank you

- Patrik Eklund
- Guido Iaccarino
- Vincenzo De Luca
- Strahil Birov & Sonja Muller
- Zoi Kolitsi

- István Kósa & Hungary colleagues

- All Hub partners

- Belen Sotillos Gonzales, Simona Pestina and Violeta Perez Nueno

- Birgit Morlion