Webinar: SetUP2match

Impact of open platforms on the development of open market for digital solutions in the AHA and AAL domains. Benefits and matchmaking potential for all involved stakeholders.





Host: SYNYO GmbH

PlatformUptake.eu





Jožef Stefan



Agenda



Time	Торіс	Presenter
10:00 - 10:10	Introduction to the webinar and expected results	Alexander Nikolov SYNYO GmbH, Austria
10:10 - 10:30	Open platforms in the AHA and AAL domains - ecosystem, stakeholders, main challenges and requirements for uptake	Frederic Lievens Lievens-Lanckman, Belgium
10:30 - 10:50	Secondary end users - needs and requirements for open platforms in the AHA and AAL domains	Natália Paes Leme Machado Cáritas Diocesana de Coimbra, Portugal
10:50 – 11:30	Authorities and facilitators - needs and requirements for digital technology for active and healthy ageing	Sonja Hansen European Project Officer at the Municipality of Aarhus, Denmark Robert Thijssen Innovation manager for digital care and responsible for the SIGRA innovation lab, The Netherlands
11:30 - 11:45	Break	
11:45 – 12:25	Open platforms providers - current state of the art, benefits and uptake potential	Bas Goossen MiBida platform, The Netherlands Serguei Golovanov Pharos Navigator IoT Austria

Agenda

Times are only indicative



Time	Торіс	Presenter
12:25 – 13:05	AAL/AHA solution providers - needs, requerements and best practice in using open platforms' services	Gregor Molan Comtrade 360, Slovenia
		Evelin Krajnc Caretronic, Slovenia
		loanna Drympeta Gatekeeper project
13:05 – 14:00	EU projects in the field of open platforms for AHA and AAL - current developments, objectives and exploitation of results	Prof. Lorenz Granrath eVita project
		Nicholas Vretos TeNDER project
		Ioannis Kouris Smartbear project
14:00 - 14:20	Final remarks	Alexander Nikolov SYNYO GmbH, Austria



All participants are kindly invited to raise questions in the chat.





Open platforms in the AHA and AAL domains - ecosystem, stakeholders, main challenges and requirements for uptake

Frederic Lievens

Lievens-Lanckman, Belgium





This project has received funding from the European Union's Horizon 2020 Research and Innovation Action under Grant Agreement No 875452.



Facts and figures

PlatformUptake.eu

Project Type: Coordination and Support Action

Project duration: 26 months (01/01/2020 – 28/02/2022)

Person months: 172

Partners: 12 from 10 countries

Due to the persisting fragmentation of the active and healthy ageing market; and the lack of interoperability of the various solutions deployed or difficulties with the large scale uptake of the platforms by their targeted users, the aim of the PlatformUptake.eu project is to **observe**, **analyse and understand the whole ecosystem of open service platforms and their related networks**, and depict a picture describing the whole ecosystem with its **achievements and potentials**, targeting all user groups while also **generating synergies among platforms** and their **related projects** in the AHA and IoT domain.



Important

Consortium Map



Objectives

PlatformUptake.eu

IDENTIFY critical success factors of the development, deployment and spread of open platforms in the Active and Healthy Ageing Domain, through a sophisticated tailor-made monitoring methodology.

DEVELOP monitoring and self-evaluation tools to support platform providers and users self-assess their success, uptake, capability gaps and evolution potentials through smart assessment and visualisation tools.

ANALYSE existing platforms based on the created methodology, by assessing the projects and initiatives hosted by them, their further evolution, uptake, sustainability and socioeconomic benefits.

INVOLVE end-user communities and related stakeholders to initiate a knowledge exchange cycle for collecting insights on best practices and challenges of platforms' uptake, evolution and costs etc.

LEVERAGE the platform uptake by their user communities as well as their continuous improvement and expansion, by elaborating and showcasing best-practice models and evaluation guidelines.

DISSEMINATE the acquired knowledge to end-users for increasing their uptake of existing platforms, and promote best practice models and identified benefits to foster future developments.

Ecosystem mapping

PlatformUptake.eu

Identification of the most representative platforms in AAL/AHA domain, first group of 48 of the projects and selection of 18 platforms to be part of the ecosystem map



10

1,4,6,7,9,11, 12,14,16,17,18

1,2,8,11,12, 14,15,16,17,18





Main platforms under consideration and subject of analysis in PlatformUptake.eu

- AIOTES (ACTIVAGE)
- FiWare
- universAAL
- UNCAP
- onesait
- EkoSmart
- sensiNact
- Reach2020



- Onesalt 🖞
- EKOSMART

sensiNact

REACH 2020⊿



Stakeholders





















Measuring successful uptake and evolution





developers/providers

Measuring successful uptake and evolution





Monitoring and Evaluation Methodology





Gaps and challenges for uptake of open platforms in AHA/AAL domains



PlatformUptake.eu

Matchmaking events





12 consortium organisations and connected networks (Universities, SMEs, End user organisations)

10+ Projects events

(Ë

Matchmaking, MOOCs, Open Information Hub Tools, Capability gaps and Innovation needs and more

AHA, ALA, Health care, IoT etc.



(÷ Networks

IEEE, CEN, IN4AHA, IDIH, 50plus Hellas, SHAFE, Nerosubianco, EEN, NET4Age, ECHAlliance etc.

PlatformUptake.eu Matchmaking events



Benefits – Award







Dissemination and Communication





PlatformUptake.eu Social Media



Twitter & YouTube





Secondary end users - needs and requirements for open platforms in the AHA and AAL domains

This project has received funding from the European

Union's Horizon 2020 Research and Innovation Action under Grant Agreement No 875452.

Natália Paes Leme Machado

Cáritas Diocesana de Coimbra, Portugal







Caritas Coimbra is an NGO that supports around 25000 people/year with social, health and education in 5 districts of the Central Region of Portugal. It has nearly 90 centres (with 129 different services), 1040 workers and 450 volunteers.





PROJECTS





Open Platforms | Active and Healthy Aging |Active Assisted Living



Over the past decade, many (open) platforms and solutions have been developed and tested to use innovative technologies to help older citizens live independently in their homes as long as possible.

These technologies aims at enhancing people's overall quality of life (as they get older) by improving areas such as health and long-term care, contributing to the long-term sustainability of health, care, and social service. Also, they create a supportive and inclusive environment that enables older people and persons with disabilities to live independently and stay active longer in society.



What are the advantages of open platforms in health and social services?

- Focus of care is centered on the user allowing a personalized service.
- Could reduce the caregiver burden.
- New sensors and devices provide a large amount of data to the user and caregiver.
- With open platforms they can have multiple applications covering different sectors or domains and are easily interoperable without the need to purchase different applications and devices and/or from different sellers.



PlatformUptake.eu

An open platform with apps meets these requirements and can be much cheaper.

Secondary end-users and the open platforms











HOW WILL WE ADDRESS THE USERS NEEDS?

Participate in the community Life	Ensure a safe and comfortable environment	Lifelong learning
Mobile APP with geolocation that support OLDER ADULTS in:	<u>Assistive tools</u> that supports OLDER ADULTS by:	<u>B-learning tool</u> that allows of OLDER ADULTS and CARERS/RELATIVES to:
 Social networking; Report needed environmental measures; Raise awareness on green and blue areas; Order Goods and services. 	 Provide Multidimensional stimulation; Monitor health status and behaviours; Assist in ADL; Report relevant changes. 	 Improve digital, soft and caring skills; Enroll in initiatives.







Participate in the community Life

Mobile APP with geolocation that support OLDER ADULTS in:

- Social networking;
- Report needed environmental measures;
- Raise awareness on green and blue areas;
- Order Goods and services.

Funding for this research is provided by EU Horizon 2020 Pharaon Project 'Pilots for Healthy and Active Ageing', Grant agreement no. 857188







PROTECT

Monitoring safety of patients 24/7 (e.g. bed-exits, falls, wandering, etc.), automated and anonymized.



PREVENT

Nurses get critical information about e.g. impending falls in time and and in a way that they can react accordingly. Furthermore they are able to adjust the system to the need of their clients and high false alarm rates from currently used sensors are a thing of the past.



ASSIST

Support activities of daily living (e.g. going to the toilet). Clients are guided through certain tasks autonomously by the DIANA virtual assistant. Nursing staff receives on-the-spot info in order to assist when needed.



Observe behavioral trends and provide evidence for later assessment by clinical experts. Support the optimization of living quarters (private and shared rooms) in order to ensure the well being of clients (e.g. water and food intake, dead ends).

DIANA is co-funded by the European AAL Joint Programme (Active Assisted Living – ICT for Ageing, 2019) and, in the portuguese case, by the Fundação para a Ciência e a Tecnologia, I.P.





Smart 3D sensors in private, shared areas and toilet rooms

A central open management platform linked to

the sensors and providing clear visualization

A mobile application and connection to the nursing documentation system.







Questions & Answers







Authorities and facilitators - needs and requirements for digital technology for active and healthy ageing

Sonja Hansen

European Project Officer at the Municipality of Aarhus, Denmark





Diocesana + CDIMBRA





Universitat





This project has received funding from the European Union's Horizon 2020 Research and Innovation Action under Grant Agreement No 875452.


PlatformUptake.eu

KL - Local Government Denmark KL - Local Government Denmark (KL) is the association and interest organization of the 98 Danish municipalities



Assisted Living Technology, Health and Care Department, Aarhus Municipality is using open platforms one is **The Assisted Living Technology Map**

Baground:

Aarhus Municipality is the **second largest city** in Denmark with about **340.000 citizens**, and is cituated in the region Central Denmark. **19 municipalities** are a part of the region.

We are always **looking for new innovative solutions** and ways **to help our citizens to live an independent life** as they want and at home **as long as possible**. Quality of life and wellbeing. For that reason we have to look what exists and what could be of interest for us as municipality and for our citizens.



The department of Health and Care Aarhus



Facts

- 4.934 full times employees
- Budget about 344 million Euro
- 10.200 users for personal care, nursing and home help
- 4.000 units for elderly and handicapped
- 60.000 senior citizens

Challenges in Aarhus

- An increasing number of elderly from 43.337 inhabitants over 67 years in 2018 in Aarhus to 56.327 in 2030
- More people with chronic diseases
- Shorter duration of stays in hospital
- Little vintage in the labor market
- Currently 29 % did not get a candidate for the last advertised post
- Need for 2200 new employees in 2030 and 3100 in 2040 (Rough assumption).
- An increasing demand for treatment in people's own home



KL - Local Government Denmark KL - Local Government Denmark (KL) is the association and interest organization of the 98 Danish municipalities

The primary task of our department is in cooperation with other departments within Health and Care and relevant external partners to seek, test, develop and implement assisted living technological solutions which can give the citizens increased self reliability and independent living, can improve working conditions, increase efficiency and improve economy for the municipality.



In this particular platform we have the possibility to seek for existing solutions in different categories. We will go to the link, and I can shortly show you how it works.

PlatformUptake.eu

velfærdsteknologiske landkort (kl.dk)





KL - Local Government Denmark KL - Local Government Denmark (KL) is the association and interest organization of the 98 Danish municipalities



This is one of our Danish platforms. Another platform we use is the Danish Life Science Cluster <u>Forside - Danish Life Science Cluster</u> Innovation, knowledge sharing, cross sectorial projects, news, conferences etc. Membership is a must.

Challenges in Aarhus

I as European Project Officer use a lot of European platforms to be inspired and to look for new innovative solutions and ideas which can benefit our municipality. In4Aha, AAL, ERRIN, EU Health Policy Platform and more.

Besides this we have ongoing EU-projects where we also are working on new platforms – Osiris is one example





KL - Local Government Denmark KL - Local Government Denmark (KL) is the association and interest organization of the 98 Danish municipalities



Companies requirements and needs The companies have many possibilities for getting help/support in Denmark. They can contact the Business Houses <u>Forside | Erhvervshus</u> <u>Midtjylland</u>. Every region in Denmark has such house. Depends

what the company want they can guide the companies concerning partners, upscaling, target groups, other platforms, Technological Institute etc.

There is also our Innovation Foundation, where you can apply for small funds as Innobooster. The municipality it self has also the possibility to help through a local fund PPI-fund that promotes digital solutions for older citizens, and can of course also give advice. And then we have our <u>DokkX</u> which is an exhibition open for all, and here a company can exhibit there solutions over 3 month. Every 3 month there is a new theme for solutions.







Questions & Answers



Sonja Hansen sonha@aarhus.dk





Authorities and facilitators - needs and requirements for digital technology for active and healthy ageing

Robert Thijssen

Innovation manager for digital care and responsible for the SIGRA innovation lab, The Netherlands





Diocesana









This project has received funding from the European Union's Horizon 2020 Research and Innovation Action under Grant Agreement No 875452.





Active & healthy aging: a regional context on platformization

Agenda

- Introduction
- Organizational requirements for correctly identifying needs
- Platform collaboration plateaus
- An example from practice
- How to relate
- How to connect
- Q&A

PlatformUptake.eu

Active & healthy aging: a regional context on platformization

<u>Robert Thijssen</u> Consultant Digital Care Programme Leader Health Innovation Lab <u>www.sigra.nl</u>



Sigra is a regional partnership of organizations in care and welfare. We are committed to appropriate support and care in the metropolitan area of Amsterdam and a part of the province North Holland. Our partnership has 120 members with a total of more than 130,000 professionals for 1.8 million inhabitants. We focus on target groups and themes that require more than average collaboration, with an eye for the most vulnerable people.





Active & healthy aging: a regional context on platformization

Identifying what we need today



Director / contractor for Healthcare IT services

- Coherent service package
- Market power / purchasing power
- Identify needs and experience
- Contract management
- Monitoring quality of services

Contracted healthcare ICT services

- Message service
- Secure email
- eTransfer / POINT
- XDS Service (including images)
- LSP regional coordination
- Network services (Fiber-optic network MANZA, Amzx, video conferencing, LSP connection)



Active & healthy aging: a regional context on platformization

How to identify future needs

Sigra Health Innovation lab:

The SIGRA Innovation Lab is a sanctuary, a place outside the walls, where people have time and space to explore, learn and do. The lab is the outboard motor for regional innovation. We mainly deal with these matters with a complex cooperation issue for which there is no existing solution yet.



Amsterdam Vital & Healthy:

Amsterdam Vital & Healthy is a partnership between the municipality of Amsterdam, Clients Interest Amsterdam, care and welfare providers united in Sigra and health insurer Zilveren Kruis. We need the whole system in the room to make sustainable impact.





Active & healthy aging: a regional context on platformization





Active & healthy aging: a regional context on platformization



A sustainable route to 2025



Active & healthy aging: a regional context on platformization

Example: Geriatric care system platform



Characteristics of the elderly system

800,000 elderly people aged 75+ appear every year in emergency care, of which 280,000 acute care. The system creates its own care demand. Because 1 in 3 elderly people permanently deteriorate in functioning, 1 in 5 returns to the emergency department within a month and 1 in 3 also dies within a year after admission.

- Bottlenecks mainly occur at transition points between healthcare providers.
- At many transition points there are platforms to improve cooperation, but at the same time they are sometimes counterproductive for the entire population of elderly.
- Supply and demand in the entire domain are not properly matched, quantitative insight is required.
- Too little coordination for integrated planning between providers.
- Choice of healthcare provider mainly based on available capacity.

51



Active & healthy aging: a regional context on platformization

Discover en build from the inside out

The research goals of the DOLCE VITA (Data-driven Optimization for a Vital Elderly Care System)-project are:

 (1) to use state-of-the-art data-analytics techniques to develop a quantitative model that describes the complex dynamics and constraints in the acute geriatric care system in the Netherlands;

(2) to predict on the implications of short-term choices (capacity planning, patients' preferences) and long-term policy decisions (investments, policy changes, and innovations) in the system, by answering what-if questions;

(3) to use these insights to support improved (joint) decision making at macro level that properly deals with conflicts of interest between different stakeholders.



Our ambition is that every vulnerable older person receives the right care, at the right place, at the right time and the best results at affordable costs.



Active & healthy aging: a regional context on platformization

How to relate ...



Active & healthy aging: a regional context on platformization

... and connect

Health inequalities in society

Profits must be returned to society

Good employership

. . .

Digital rights

Solidarity

Citizens have a say

Fair market competition







Questions & Answers









Coffee Break



Open platforms providers - current state of the art, benefits and uptake potential

Bas Goossen

MiBida platform, The Netherlands





This project has received funding from the European Union's Horizon 2020 Research and Innovation Action under Grant Agreement No 875452.



The MiBida journey

MiBida: "My Life"

- Education: University of Applied Sciences Utrecht
- ProjectManager: "The Smartest Home of the Netherlands"
- European Projects: Soprano, Netcarity*, CompanionAble, UniversAAL, ReAAL, I-Stay@Home, SmartCare*.
- Austria, Alpbach 2010
- How do we get it out there!?





The MiBida journey

The MiBida platform

- Zero Trust Security trough Personal Key Encryption
- Redundancy & Scalability: MiChord
- Services and Modules
- Interoperability
- Flexibility

Connectability (API's: REST and WebSocket)

MICURE MICONNECT MICARE

The MiBida journey

Common features

- Communication: Contacts, Chat, Video, Conference
- FileStorage: Secure storage, WebDAV(II)
- CarePath: Annamnesis, Assessments, Information
- MiSense: Sensors, Alerts, Statistics
- Calendar: Scheduling, planning, overview
- Forms: Digital Signatures, Signature requests
- Control, Finance, Logging, Backups, ...

The MiBida journey

Open Platform

Services (Backend): Plugin SDK Hotplugging for testing Modules: MiCli, Module checker and packe **Test Environment** Build upon and extend **Open-Source!?**



The MiBida journey

Getting it out there

- Why use an open platform?
- Time to market
- Build together
- Security
- Reliability
- Years and years development



The MiBida journey

Getting it out there

- A solid base
- Security: Zero Trust, Encryption, KEx, Backups, Spreading
- Scalability, Modularity and Performance
- Using existing Services and Modules
- Hotplugging for zero downtime development
- Exponential growth

The MiBida journey

Example: RPM

E

2	∃ Dossier ≻ Pat	ientenoverzicht		fl²w				¢:
② Dashboard			Ov	verzicht patië	nten			
Contacten								
🗠 CareOn Dashboard	1	S	electeer program	nma	6.05			
ဝ Chats			iartraien ins	tablel	•			
		patient		geboren	laaste gegevens	status		
🔯 Doelen				-1936	22-09-2021	🜡 😌 ଶିବ୍ଦ ଓ	60	
赤 LifeStyle				-1960	13-09-2021	ତ ତ କୁ (5	
🖨 Documenten				-1958	20-09-2021	ବ୍ଦ ବ୍ୟ 🕻	5	
EMDR			Sensor w	vaarden		≥	8 👳 49 69	
Assessment			meetwaa	rden: Bloeddruk (mbp1)			•	
🖻 Dossier	~		1/0	×				
🖸 Afspraken			150			*		
🖻 Patientenc Sens	or waarden	₩ 8 8	<u>4</u> 14 6 ⁴ 8					
🖻 M. Demo 🛛 💏	etwaarden: Temperatuur ^(mtem1)	meetwaarden: Bloeddruk ^(mbp1)	۲				Dagelijkse vragen hartfalen	
Q Zoeken 40		160		Wee	t u zeker dat u de open alarmen en irschuringen voor deze sensor wilt		bent u kortademigr	Ja
A Consult 38		140 system. 15 minung 120			markeren als afgehandeld?		Zijn deze kortademigheidsklachten erger dan gister Nee, even	en? veel als gisteren
📽 Beheer 34		100		o vr za	zo ma di wo	do vr za	Wordt u kortademig als u gaat liggen?	Ja
32 30		60		tijd bovendruk	(mmHg) onderdruk (mmHg)	Afgehandeld	Had u dit voorgaande dagen ook?	Ja
	wo do vr za zo ma di	wo wo do vr za zo ma	i di wo	08:54 152	78	(a) (Anguik Sariar)	Heeft u last van hoestbulen?	Ja
mee	etwaarden: Gewicht ^(mw1)	meetwaarden: Saturatie ^(msat1)	۲	08:06 151	71	 (Roy Nathoe) 	Zijn deze hoestbuien erger dan gisteren?	18
81 78		102 96		09:21 143	66		Hoe ernstig zijn uw hoestbulen?	ja
75 72		90 84		08:08 146	73	⊛ (Dianne Visser - Ste	Haaft u maar diim dan dan distaran?	8
69 66	Y	78 72		08:52 140	68		rieeri o meer aigin oon oon oon gangoseeni	Ja
63 60		66 60		1943	21-09-2021	I 💬 🐴	Welke kleur heeft uw slijm?	Geel
	wo do vr za zo ma di	wo wo do vr za zo ma	di wo	1933	21-09-2021	ଙ୍କ ଙ୍କ ଶ୍ରହ	Is de taaiheid van uw slijm toegenomen ten opzicht Nee, hetze	e van gisteren? Ifde als gisteren
		and the second of		1951	21-09-2021	ତ୍ତ କ୍ <u>ତ</u> କ୍ର	Heeft u last van opgezwollen voeten of benen?	Nee
INI BIGG	ausoste angen			1936	20-09-2021	ତ ତ ଦା ୮	3	







Tijd

PlatformUptake.eu

The MiBida journey

Example: CarePlan (EcoSystem)

Test



PlatformUptake.eu

The MiBida journey



Formulieren

Test



		NIEUW OPGESLAGE	N		
	ZICHTOP CG	ZICHTOP @G Automagformalier		ZICHTOP Cod	
		Machtiging Zorgverzekering (VGZ)			
Sugaran prior	lagoos anege hineis bidarrarror		Gaganers perform	Gageway privat	
alma hdarummer		Tageres readers	alea Isteurne	alsa häsunte	
prairofa	potesta plan	ana hanna	parinda nacepiante	pratonia neropiania	
ken pilenste lature telaforenummer	Expenses despendent	portode vomplants	kar pakanta latum talainanuman	lan pilanta latun bidriannumar	
televante figurate	O.a O.tu	and and	argunaleue pite-eree	argunalmur pilaserur	
initialia/astialing	Report resources provides are fee of per simal Prinagi insulant	Mananhauma. Bapouarquena D. Jama	infrata/aanlaiteg	Individual auxiliability	
C cluster serve	havener real	ver velgener meg	C cluster serve	C minutany	
O glastase visupit sald	Factorphysics	ingangadaum ainddaum	C glastas /kopizali	O glastan visuplinasis	
O plastar arbain 210		Ferreral grading-ing	O classifier aufhaire 202	O plastae ashara-110	
U marga spanfala hanlaing	provide normality	Desnedata kij	U surgespecties heriting	o marga spenihala hendaling	
Newson and Astronom .	airlus and	sonhiptoskhipvenhip	Married and Antonio and	Nerver self-states	
tylatoren / houwrite	tes piere teun O Ver	o idg/opene O ne verintpeaks	Tubecon / Incurren	tylesten / hyuette	
	C Trans	samilishardeligan samiljar vesk ingargatava			
ana da ata anto das	larga gyaan	Expension	e a fa spe a for pe	ana da sharayo dar	
uppriselle uppriselle	hint	In the sales that would also	execution execution	operada operada	
nom neam	radult · rapidity ·	is (p. and/off) metral metallism on micropagement and an polymetral statemetal metallism on micropagement metallism on micropagement meta	noom raam	nom ream	
Depairing and Depairing	products spatially v	arganista.	Béglal égralum Béglal égralum	Béglei égyelve Béglei égyelve	
Diëtist verwijzing Holterdiagnostiek		Machtiging VG7	Melding Sociaal Team	Netwerk Artrose Evsio Ve	
Dietiet ferfing	Toneralagnootien	indentiging to 2	including occuration for		
v1.0	v1.0	v1.0	v1.0	v1.0	
ZICHTOP	ZICHTOP 2016 Ubveringsverzeek	ZICHTOP		ZICHTOP 200 Uboveringoverzoak	
•			•		
sage and prior	Cogenera parten	Cagestra patient	Gage-and perform	Cage and particular	
aina hiarannar	alsa hdaumar	alaa haannaa	alea Isteuroa	alaa haawaa	
prateofa norsylaata	praimela menglaata	preime interplante	perinda mengiasta	pratonia normjania	
ker påserte lator bårisersorne	kar palansta datum talahannuman	han palancia datum balarinansuman	ko planta kiuw kialawawa	las planta latos blatamente	
page and a second secon	argunaleus pilaseres	angenaleme princeres	solanayaan hijaroosa	angenalener pilasaren	
Indirada / autabling	Indicate / wetailing	Indicates / sectabling	Industry and a second sec	Infrata / actuality	
Manhaling Charles and Charles	Sentiling .	Service and Servic	Samfaing	Mandaling	
C glastar (reginal)	O glastas dagibashi	C plantar (applicable)	O giana gang	O giatan Angibash	
O teadaran injanian O giantan métalan Isl	O taud aran bjærian O glastaar sebata 200	O teadaran injerias O giantar advato 210	teal are ripertae o glastae refererae	O tandiaran hjerias O glastaar ashtata 200	
C marga spanfala hantaing	O marga oper faile herdeling	O marga spanfala herdaling	C marga spanfala hantaing	O marga spaniala handaing	
Nerree	Narraa	Nerrae	Tarran	Nervar	
slatifston pildgisision +	startistum pridiplaiteitum +	startistum pilipisiaium =	abetiston philipholinico +	startistum philyistiatur +	
10910041/190Jente	12012041/190Jente	totrorer / trauente	facetooen / feauerte	tomore checkme	
en dye symalityper	ene fige specificage:	eradge specificage:	wa ipi upi ali upi	enelge speedinger	
Outerstanty	Ordendanty	Outerstanting	Ondertalisating	Subsidiarity	
rganizativ vyanizativ 1027 řezn	room room	room recom	regenizativ seganizativ noom nam	room reprised	
Beginingenes Beginingenes	Begini signature Begini signature	Beginingenten Beginingenten	Beglei styreture Depai styreture	California California California (California)	

Δ:

5

67

The MiBida journey

Challenges

- Being small (policies) and getting known
- Regulations
- Outdated finance schemes
- Sharing knowledge (prevent wheels being reinvented)



Questions & Answers





Open platforms providers - current state of the art, benefits and uptake potential

This project has received funding from the European

Union's Horizon 2020 Research and Innovation Action under Grant Agreement No 875452.

Serguei Golovanov

Pharos Navigator IoT, Austria





Introduction: The company GOLEM.AT and its manager Serguei Golovanov PlatformUptake.eu

Serguei Golovanov, PhD, Dipl.Eng. CEO researcher, developer and system arcitect in numerios hi-tech projects from spacecraft design to modelling of complex cyber-bio-physical systems, brinding solid scienctific expertise to practial digital solutions that adress some of the major chalalnges of time – sustainability of life, societies, economies, ecosphere, bisphere and industrial developments.

GOLEM is an Austrian SME with experienced multidisciplinary team of 20 professionals having beside its trade business, radical future-oriented digital technology innovations and R&D. We implement Intelligent **Digital Twins of Big Systems of Systems (BSS)** that can assist managers and governing administrations in sustainable management of their operations that influence lives, societies, ecosystems existing now in the interlinked physical and virtual worlds.

GOLEM runs its business called "Digitalen Zwilling Werkstatt" in Vienna, Austria providing partners and customers with new generation of unique intelligent digital solutions and services that are tailored to their needs, requirements and daily routines.

The company mission is to provide practical cutting-edge AI/Bidata/IoT/Blockchain/Chatbot technology solutions that help to Monitor, Manage and Control the complex BSS processes in real time and in future making them sustainable, resource efficient, resilient, high performing.
Company developments and results



Digital Twins and Intelligent Conversational Assistants for individuals, managers, citizens in increasingly complex world

Key enabling Intelligent Digital Twin applications available now include:

- Ambient Assisted Living, Remote health monitoring and diagnostics, Smart Hospitals,
- Smart manufacturing, Agri & Food enterprises,
- Smart Homes-Buildings-Campuses, Sustainable Green Cities-Regions-Countries,
- Environment, Energy, Circular Economy, Quality & Safety
- Continuing auditing of the compliance with the key standards and regulations

Main focus after 2020:

- Personal conversational Virtual Health Assistants for continuous monitoring of health & living conditions of individuals at home (AHA/AAL, chronic diseases, post-COVID, health conscious)
- Automatic collection of data, its analysis and interpretation aimed at keeping & improving health & wellbeing homeostasis, longevity, quality of life,
- Provision of care recommendations and advisory using generic medical knowledgebases,
- Efficient management of individual life events scheduling and reminders,
- Multimodal video and health analytics sessions with informal & formal caregivers facilitating both personal and remote diagnostics and care.

GOLEM received EC Seal of Excellence and recommendations for strong funding & investments

Intelligent Digital Heath and Wellbeing support ecosystem of the future

PlatformUptake.eu

Radical change in the social psychological and legal perceptions in transition to new digital future



74

Our technology platform Pharos Navigator[©] (PharosN)



What is the main concept idea behind your platform? Use Case

As an individual willing to keep the quality of life, longevity, best possible heath I need to monitor my health, activity, living conditions continuously and undertake corrective timely actions recommended by the medical studies

It requires continuous collection of multiple biometric and heath data in real time and its interpretation based on vast medical and bioinformatics knowledge

I do not have time and capacity to do it manually and continuously each day as there are many other things I need to do during my life and work

Personal caregiver could have helped me but humans cannot run continuous automatic measurements all the time over many years of my life

There is no way to have personal care professional for everyone at each home (lack of qualified HR, costs, psychological, infrastructure and other issues)

Number of people who need assistance in care and relevant costs increased dramatically (aging, post-COVID, chronic) changing socioeconomic perspectives

SARS-2 era changed the conditions of living and access to medical services

Our technology Platform Pharos Navigator® (PharosN)



AI Digital Twin has open cyber-biophysical model of the system "Smart Human & Smart Home – SH@SH"

Runs Open Cyber-biophysical system model and knowledgebase in cloud Collects biometric, health and living conditions data at home in real time Continuously learns & analyses each data stream, identifies abnormalities/trends, Interprets multiple heath indicators & vast medical and bioinformatics knowledge Evaluates ongoing & predicted health & wellbeing status of the System SH@SH Informs its master individual and authorized caregivers about any negative & positive trends, provides evidence results and monitoring analytics any time Communicates with humans in conversational & sessions in natural language using mobile apps and smart speakers supporting remote diagnostics & telecare Wireless noninvasive / invasive wearables, activity, home air & security sensors Uses major open source software components (Linux, PostgreSQL, Kafka, etc.) and machine learning libraries R, TensorFlow, PyTorch, MLPack, RASA

Intelligent intimate personal virtual assistant for everyone



Radical change in the social psychological and legal perceptions in transition to new digital future

Wanth manipality and the second strategy of the





PharosN Virtual Health Assistant: Main components structure (©GOLEM.AT)



Radical change in the social psychological and legal perceptions in transition to new digital future



Practical solutions: Smart Hospital with optional care extension to homes



AI Digital Twin has open cyber-biophysical model of the system "Smart Human & Smart Home – SH@SH"

-Each patient in post-operational ward obtains own Digital Twin linked to diverse heterogeneous wireless IoT devices and diagnostic systems in an open hospital environment

- Patient health model example includes 39 data sources, 55 indicators and 51 object statuses.

- Hospital microdata center support 100 patients and 40 tables; Diagnosis table with 95 unique instances for 100 patients; prescription table; therapy table; vital signs table.

- After discharge from the hospital, patient health monitoring can be easily extended to home and support multiple patients remotely

- Digital Twins have IoT interoperability and linkages to hospital ICT



Cyber-Bio-Physical System Model "Smart Human at Smart Home" demo



Demonstration of the Intelligent Digital Twin prototype by GOLEM.AT

🗘 Main Menu 🔰 Mobile Even	ts Log Tools	PortalCentral	1	lavigate Help Type your search	here					
Wizard Events Navigate Prefer	re Help Admi	in Map	Depen Tags Braine Enviro Health Default Equip	5 Smart						
Monitor Smart Human @ Smart Home ~										
Object Name	Status 🚱		Tags	Calculated by engine 🔻	Updated on monitor Info					
Smart Human @ Smart Home	\odot		Health, eHealth, Patient, Activity, Sequrity	2021-11-11T18:49:17	2021-11-11T18:49:19					
Health@Person	\odot		Health, eHealth	2021-11-11T18:49:16	2021-11-11T18:49:19					
Sensors @ System	\odot		Equipment	2021-11-11T18:49:16	2021-11-11T18:49:19					
Activity	\odot		Patient, Number of steps, Number of calories	2021-11-11T18:49:15	2021-11-11T18:49:19					
Environmemt @Home	\odot			2021-11-11T18:40:33	2021-11-11T18:49:19					
Bathroom & Toillet	\odot			2021-11-11T18:40:32	2021-11-11T18:49:19					
Heart	0		Health, eHealth, Patient, Heart rate, Oxygen content, Stress level	2021-11-11T18:40:30	2021-11-11T18:49:19					
Body	\odot		Health, eHealth, Body	2021-11-11T18:40:30	2021-11-11T18:49:19					
			Tags for the obje	ect						

Events L	og				l 🎽 🔣 🗙
Flag	Event Description	Source	Time	Date	Updated on monitor
Ø	Calculating new states of the object "Digital Health Twin Braine". Last state: Excellent	Server_1	18:49:19	2021-11-11	2021-11-11T18:49:19
Ø	Calculating new states of the object "Activity". Last state: Optimum	Server_1	18:49:19	2021-11-11	2021-11-11T18:49:19
Ø	Calculating new states of the object "Health@Person". Last state: Excellent	Server_1	18:49:19	2021-11-11	2021-11-11T18:49:19
Ø	Calculating new states of the object "Smart Human @ Smart Home". Last state: Excellent	Server_1	18:49:19	2021-11-11	2021-11-11T18:49:19
Ø	Calculating new states of the object "Heart". Last state: Optimum	Server_1	18:49:19	2021-11-11	2021-11-11T18:49:19
117	Calculating new states of the object "Health@Person". Last state: Excellent	Server 1	18:49:19	2021-11-11	2021-11-11T18:49:19

Challenges



Radical change in the social psychological and legal perceptions in transition to new digital future

Need for radical change in human psychological perception: There were no personal intimate virtual health assistants in the human history

- Difficulties in developing intimate easy and acceptable personalized conversational interactions between human and his/her Digital Twin
- Multiple languages and cultural specifics in conversational languages
- Complexity of the heath and wellbeing knowledgebase
- Inherent inertia and conservatism in medical community
- Need to learn specific health and wellbeing properties of an individual with AI and develop its reliable automatic interpretation using medical knowledgebase
- Organization of the reliable partner networks for home installations, training and maintenance in different regions
- Multiple legal issues, GDPR

Collects biometric, health and living conditions data at home in real time



GOLEM.AT offers project Coordinators & Partners the collaboration in Horizon Europe calls HEALTH, CARE, STAYHEALTH, ENVHEALTH, DISEASE, TOOLS, COMMUNITIES, AI and DIGITALIZATION, MONITORING, ENVIRONMENT, CLIMATE

Our team contributions:

- Development of Intelligent Digital Twins for the target apps
- Prototyping and implementation of Pilots, KPIs, validation
- Leading the relevant Work Package

Contact: info@golem.at Serguei Golovanov





Questions & Answers







AAL/AHA solution providers - needs, requerements and best practice in using open platforms' services

This project has received funding from the European

Union's Horizon 2020 Research and Innovation Action under Grant Agreement No 875452.

Gregor Molan

Comtrade 360, Slovenia





Software development in a Comtrade 360 way

Gregor Molan

Comtrade 360 Letališka cesta 29b 1000 Ljubljana Slovenija



Software development in a Comtrade 360 way

Application of software development model to AHA and ALL domains

1.	From General Software development to AHA and ALL
2.	SPDC Model: Inputs and Functionalities
3.	SDPC Guidelines for vINCI Project
4.	vINCI Backend Development
5.	vINCI Frontend Development
6.	Different Pathways
7.	vINCI Mobile App Development: Graphics
8.	vINCI Mobile App Development: Localization
9.	vINCI: Putting All Together
10.	Support for AHA and ALL Domains
11.	Questions & Answers
12.	Welcome to Meet Again



Who we are – Comtrade 360





1. From General Software development to AHA and ALL

Software development in a Comtrade 360 way

General software development

- 1. Time to market
- 2. Support environment
- 3. Development cost
- 4. Implemented features

5. UI/UX excellence

AHA/AAL software development

1. Time to market

2. Support environment

3. Development cost

4. Implemented features

5. UI/UX excellence



1. From General Software development to AHA and ALL

Software development in a Comtrade 360 way

General software development

1. Time to market

2. Support environment

3. Development cost

4. Implemented features

5. UI/UX excellence

AHA/AAL software development

5. UI/UX excellence

2. Support environment

1. Time to market

4. Implemented features

3. Development cost



1. From General Software development to AHA and ALL

Software development in a Comtrade 360 way

General software development

- 1. Time to market
- 2. Support environment
- 3. Development cost
- 4. Implemented features

5. UI/UX excellence

AHA/AAL software development

1. UI/UX excellence

2. Support environment

3. Time to market

4. Implemented features

5. Development cost



2. SPDC Model: Inputs and Functionalities





3. SDPC Guidelines for vINCI Project





3. SDPC Guidelines for vINCI Project





4. vINCI Backend Development





4. vINCI Backend Development





5. vINCI Frontend Development





6. Different Pathways





6. Different Pathways





7. vINCI Mobile App Development: Graphics





8. vINCI Mobile App Development: Localization









9. vINCI: Putting All Together







10. Support for AHA and ALL Domains









Questions & Answers

12. Welcome to Meet Again





AAL/AHA solution providers - needs, requerements and best practice in using open platforms' services

Evelin Krajnc

Caretronic, Slovenia





This project has received funding from the European Union's Horizon 2020 Research and Innovation Action under Grant Agreement No 875452.



Caretronic

About the company

• Tradition

0

- Established in 1991 with roots in 1962
- References
 - Solutions installed all over the world in nursing homes, hospitals and other health-care instituteions
- Quality
 - ISO 9001:2015 to enable high quality products and services to our partners and clients
 - Gold creditworthiness AAA- we are among top 6,9% companies in Slovenia
 - Excellent SME. internationally acknowledged credibility of compan, recognized by Chamber of Commerce Slovenia
 - System corresponds to all high security standards for nurse call system



Smart HomeTab system for independent living

HomeTab solutions in the AHA/AAL domains

- HomeTab is an advanced IP touch-screen carephone.
- Waterproof wireless writstband to activate an emergency call from any place
 - Emergency call
 - Fall detection
 - GPS location
 - Mobile connection outside the home






Our solutions in the AHA/AAL domains

- Let technology be a helper not an obstacle
- User interface, specially adapted for elderly
 - Big clear colorful buttons
 - Adjustable volume
 - Easy to use and manage
 - Mobile connection outside the home





Our solutions in the AHA/AAL domains

• Let elderly stay connected with their loved ones





Our solutions in the AHA/AAL domains

• Let no event be forgotten





Our solutions in the AHA/AAL domains

• Let elderly live independent for a longer time





Our solutions in the AHA/AAL domains

• Let everyday be fun and motivational





Our solutions in the AHA/AAL domains

- Monitoring vital signs.
 - Blood pressure and heart rate
 - Blood sugar
 - Body temperature
 - spO2





Our solutions in the AHA/AAL domains

• Let service documentation be fast, easy and well organized





Our solutions in the AHA/AAL domains

• Short movie with our solution.



The platforms we use

- NurseLog Management software
- Integrated system

$\leftarrow \rightarrow C$ A Not Secure 52.187.226.28:8096/NurseLogReports/Admin/PersonOverview.aspx								F 👧 E						
NurseLog	Managemen	t												
🔀 Services	s & Messaging	9	Reports	ء 🕑	Diets 🙁	Caretaker	-	Manag	gement	🚓 Monito	oring	-i/	Floor	r Plans
Residents												istrato	or Admin	Logou
HealthCare Status	+ Add 💉 Edit / D	etails	ū Delete C F	Refresh	Clear Filters									
Observations	Surname	Ŧ	Name	T	Departm T	Floor T	Room T	Bed	NHI	Care Type	A T	A. T	I T	S I T
	Koper2		Hometab		Hometab Koper	Hometab	Koper2	1		Caretype 1			2379	
Service History	Koper1		Hometab		Hometab Koper	Hometab	Koper1	1		Caretype 1			2378	
	Walsh		Patrick		2B	1	2	2		Caretype 4			1378	
Employees	Ryan		John		2B	1	2	1		Caretype 1			1377	
Employees												1 of	1 pages ((4 items)
Settings														



The steps of the solution development

- We have NurseCare solution
 - Development of HomeTab from one existing product: NurseTab
- Further development with support of the EU research projects such as AAL, EIT health, EUREKA, etc.
- Development of customized solutions for specific customers







Questions & Answers







EU projects in the field of open platforms for AHA and AAL - current developments, objectives and exploitation of results

Ioanna Drympeta

GATEKEEPER Project





This project has received funding from the European Union's Horizon 2020 Research and Innovation Action under Grant Agreement No 875452.



GATEKEEPER PROJECT



The flagship project of the EU to foster large-scale deployment of integrated digital solutions, mainly AI and Big Data, in the Health Care domain





The four pillars of







Community Outreach

The two arches of



GATEKEEPER PROJECT

Objectives and goal



CALL: "SMART AND HEALTHY LIVING AT HOME". TRUSTED DIGITAL SOLUTIONS AND CYBERSECURITY IN HEALTH AND CARE NECESSITY: The large-scale deployment of integrated digital solutions which will bring improved quality of life to citizens while demonstrating significant efficiency gains in health and care delivery across Europe. See also: https://www.mdpi.com/2079_ 9292/10/14/1616/htm



GATEKEEPER will be a highly innovative platform to the creation of personalized solutions for risk detection and early intervention on chronic diseases, guaranteeing data protection and providing interoperability

VISION

Build a trust and secure platform to foster large-scale deployment of integrated digital solutions for early detection and intervention in different regions across Europe and worldwide enabling novel business models

How we build it?



4

GATEKEEPER AS AN OPEN PLATFORM

Being an open platform was a requirement from the beginning.

Use of open standards for data description and for services, e.g.:



Components are open-source or free to use.

Secured Data Sharing and Trusted Transactions

Smart-contract-based auditing:

Actions logged in immutable way (Hyperledger Fabric as core) Transparency and auditability for conflict resolutions and allowing for billing during Things exchange

Dynamic Consent Mechanism:

Trusted Things Sharing

International Data Spaces Association (IDSA) Compliance:

Things Action Tracking: IDSA Clearing House Trusted Things Sharing: IDSA Dynamic Attribute Provisioning Service

GATEKEEPER Trust Authority



Things Validation

Moderating and publishing content only if compliant with international standards and European regulations (WoT, GDPR, MDR, Web Accessibility Directive, ...)

Things Certification

Certification only after successful validation Blockchain-based (Hyperledger Fabric), Public Key Infrastructure Organizations in network run own Certificate Authorities

User Management

Authentication for security

GATEKEEPER Trust Authority



Ensuring Data Sovereignty:

A decentralized solution that gives the user full control over their data at any time

Value-based Healthcare Ecosystem:

Full support to the transaction flows in the GATEKEEPER Spaces

Dynamic Consent:

IDSA compliance

Compliance with Standards:

WoT, FHIR, ISO, Web Accessibility, ...



GATEKEEPER Marketplace

Devices, Apps, Services and Datasets

Workbench Testing:

Of both Things/Services and Datasets

Datathon Support:

Facilitated organization and participation

Intelligent Discovery:

Hybrid similarity method to find the best matches and suggest alternatives

GATEKEEPER Marketplace

Devices, Apps, Services and Datasets



Gatekeeper aims at building services for early detection and intervention through AI technologies.

Gatekeeper includes **Big Data service and infrastructure** in order to:

- reduce time spending in cleaning and processing data (usually the 80% of time spent in an AI pipeline¹)
- grant data owners that their data are kept private
- enable collaborative environment for AI training and service validation
- optimize data sharing among GK pilots

Early detection and intervention



¹https://<u>www.forbes.com/sites/gilpress/2016/03/23/data-preparation-most-time-</u>consuming-least-enjoyable-data-science-task-survey-says/?sh=5c0fb4ca6f63

- FHIR is used to build a **common logical data model** across all the platform components and pilots applications
- Through a Gatekeeper FHIR implementation guide Gatekeeper aims at providing a semantic context for what we call the "Gatekeeper Healthcare Data Space"
- FHIR extensions will be used to bring novel data within the Gatekeeper healthcare data space that have not a native representation in FHIR such as surveys, wearable device data, IoT devices for medication tracking, etc..
- FHIR terminology servers will be used in order to **include standard vocabularies and terminologies** commonly used in the healthcare domain such as **SNOMED-CT**, **LOINC** into the Gatekeeper healthcare space



Web of Things is used in Gatekeeper for the description of service interfaces by using the **Thing Description Information model** and **JSON-LD** contexts

With JSON-LD contexts Gatekeeper is able to check the compliances of Thing Description and specific semantic contexts of interest such as:

- FHIR, SNOMED-CT and other standards for healthcare
- HTTP, European Data Space compliance and IDSA policy management protocol and other standards related to communication and data
- Medical device regulation compliance, data integrity and other contexts that will be defined within the project

TD information model extended with other desired

contexts will be the Gatekeeper Thing Description

information model





GATEKEEPER ARCHITECTURE



SOLUTIONS ABLE TO BE BUILT ON GATEKEEPER

e.g. Al



SOLUTIONS ABLE TO BE BUILT ON GATEKEEPER

e.g. Integration of a pilot



CHALLENGES FOR UPTAKE

Customization/Harmonization needs

- Sometimes assets could need customization (e. g. apps & dashboards)
- Sometimes assets could need harmonization (e. g. data transformation engines)

Some assets are better supported than other ones (e.g. catalog assets)

 For instance Samsung/Medisante/Biobeat/etc.. device mapping on Gatekeeper FHIR profiles is done at platform level while FitBit/AppleWatch/Xiaomi is at integrator level

Some assets need to be integrated and personalized to match the needs of the integrator

• For instance user management

Easy-to-use platform:

Developer portal

as entry point for accessibility of the resources

contains all necessary information (videos, documentation) for developers

NEXT STEPS / PLANNED ACTIONS



Focus on Al system building

Open caller integration

Creation of network effect: gatekeeper-project.eu contact us at: coordinator@gatekeeper -project.eu





Questions & Answers







EU projects in the field of open platforms for AHA and AAL - current developments, objectives and exploitation of results

Prof. Lorenz Granrath

eVita Project





This project has received funding from the European Union's Horizon 2020 Research and Innovation Action under Grant Agreement No 875452.



Tohoku University



Established in 1907

Ranked 1st for Education in Japan

The Times Higher Education University Rankings, Japan, 2020

79th in QS Global World Ranking of Universities

Designated National University

One of only 3 in Japan, together with the University of Tokyo and Kyoto University



Administrative staff	5,756		
Undergraduates	11,094		
Postgraduates	7,704		
International students	1,346		
10 Faculties, 15 Graduate Schools,6 Research Institutes			



Notable Alumni

- Tanaka Koichi Nobel Prize in Chemistry 2002
- Toyoda Kiichiro Founder of Toyota Motor
- Corporation

Tohoku University Hospital, Medical Megabank Organization / Katahira Campus





Institute of Development, Aging and Cancer IDAC (&SARC)



Highlights through IDAC's history			
1941	Established at Tohoku Imperial Universit, with a research focus on TB		
1993	Became the Institute of Aging Medicine		
2006	Pursuing the research goal of " Smart Aging "		
2010	Certified as an "Aging Medicine Research Center" by Ministry of Education, Culture, Sports and Technology		
2011	Completion of the Smart Aging Research Center Building		
2017	Creation of Smart <u>Aging</u> <u>Research Center</u> <u>(SAIRC)</u> within IDAC		

"One of the most distinguished research institutes in the world for brain imaging, with advanced imaging facilities and large-scale brain databases"

Major Research Divis	ions and Centers				
Aging Science	Cancer Science				
Brain Science	Cognitive Science				
Cell Resource Center Research	for Biological				
Pre-Clinical Research	Center				
Environmental Response Center					
>> 27 departments					
	Processing Stream Overview				



SARC competence: human brain study, fight dementia



We have revealed how the human brain ages and **what factors affect brain** aging.

Correlation between gray matter volume and **body mass index**



Taki et al., Obesity, 2008

Correlation between gray matter volume and *intellectual curiosity*



Taki, et al, Human Brain Mapping, 2012e

e-VITA EU-Japan Virtual Coach for Smart Aging


Project Objectives







- **Objective 1:** Develop a <u>set of standards and norms for interoperability</u> of advanced IoT, NLP and AI based smart living technology in Europe and Japan
- **Objective 2:** Develop an <u>advanced intercultural virtual coach</u> with seamless integration of smart living technologies, advanced AI and tailored dialogue interaction
- **Objective 3:** Enable smart living support and <u>tailored AHA interventions</u> for physical, cognitive, emotional, and social wellbeing of older adults in real-life settings in Europe & Japan
- **Objective 4:** Propose and design <u>practice-based ICT tools</u> to empower older adults to experience ageing as a positive process and meaningful period of life
- **Objective 5:** Conduct a proof of concept study to assess user acceptance in real-life environments from different countries and cultural backgrounds (EU/JP)
- **Objective 6:** Explore the feasibility of a <u>new ecosystem for disruptive innovations</u> of AHA coaching and incubation of SMEs and NGOs in Europe and Japan

System Overview

USER, AGENTS & ACTORS

Socio-Informatics System







FUNCTIONALITY (AREAS OF SUPPORT)



Technical Architecture

Knowledge graphs, Conversational AI & Machine Learning







Smart Living and Wellbeing in Later Life Culture-specific Relatedness Stimulation ompentence Physicalness Popularity Autonomy and individual user practices conductive to wellbeing (WP6-8) Social, Social Physical, Physical Emotion Physical, Cogntive Emotion, ADLs Emotion Cognition ADLs Social ADLs Cognition ADLs ****** Culture-specific and individual sensors & actuators (WP3-4) Holograms Robot/Android AAL Objects Smart Devices Sensors Device Use case connection and APIs & tools (Application interoperability) interoperability (WP4) Common device interfaces (Device interoperability) Data privacy and security Security and API (WP7) Data fusion & Dialog system Social computing AI techniques analytics and data analytics AHA Coaching Machine learning (WP5) computing Common Data Management APIs (Data interoperability) Data Data harmonisation Common data models management/ pre-processing (WP7) Context Data Broker **Data Connectors** External Third party **Open Data** apps/ systems

	Legend Social Subsystem				
	Human needs	Life Practices	АНА		

Legend Technical Platform					
Data related	Device related	Existent/external			
components	components	components			
Data analytics and	Pata analytics and				
AI components	Al components				

Smart and Natural Interaction





Knowledge graphs, Conversational AI & Machine Learning



Intelligent Devices







Shape of the assistant



Social Engagement







Local actors and communities







Societies, science, industry and health

- Independent living, and <u>improved quality of life</u> of older persons compared to the current State of the Art
- Usefulness and effectiveness of personalized recommendations and follow-up in terms of goals of preserving physical, cognitive, mental and social wellbeing for as long as possible
- Evidence of <u>user-centred design and innovation</u>, effective ways of human computer interaction, and user acceptance
- Fostering social participation and reducing social exclusion's risks of older adults
- Validation of non-obtrusive technology for physical, cognitive, social and mental wellbeing
- Strengthened international cooperation in research and innovation on Smart Living for AHA





Questions & Answers







EU projects in the field of open platforms for AHA and AAL - current developments, objectives and exploitation of results

Nicholas Vretos

TeNDER Project





This project has received funding from the European Union's Horizon 2020 Research and Innovation Action under Grant Agreement No 875452.



TeNDER: Affective Based Integrated Care for Better Quality of Life



Affective Based Integrated Care for Better Quality of Life

Nicholas Vretos, PhD., Technical coordinator

TeNDER: Affective Based Integrated Care for Better Quality of Life TeNDER concept

TeNDER creates an **integrated care ecosystem** for assisting people with

chronic diseases of Alzheimer's, Parkinson's and comorbidity with Cardiovascular Diseases

through the use of affect based micro tools that will be able to recognize the mood

of a person and thus adapt the system's probes to the person's needs via a

multi-sensorial system.



TeNDER: Affective Based Integrated Care for Better Quality of Life TeNDER tools

TeNDER creates a platform able to: 1) **EMPOWEI** citizens with tools that will increase

their health condition **Protection** by the detection and reporting of anomalies using

multi-sensorial services 2) analyse, relate and support professionals in their **decision**

making process via AI-based experience analysis, AI-based needs matching tool and Advanced Data analysis from multiple sources 3) detect and interpret patients'

emotions in order to personalise the interaction and assistance to the patient



TeNDER: Affective Based Integrated Care for Better Quality of Life

- **Open Platform**: it uses open software and open development principles
- **Modularity**: customizable services that can target both general variables to all diseases as well as specific disease needs
- Scalability: Validation at large scale will certificate viability of the proposed solution
- Usability: multiple roles included, as well as the participation in the focus groups and co-design stage will guarantee the easiness of use
- Accessibility: will facilitate the use of all partners with adaptable interfaces that will fit the criteria regardless of the digital-knowledge level.



TeNDER: Affective Based Integrated Care for Better Quality of Life

TeNDER sensors and solutions already built on the platform

Sensors

- Kinect 2
- Kinect Azure
- Inter Realsense
- Sleep Tracker
- Localization sensor
- Wristband (Fitbit)
- Microphone
- Binary sensors
- Environmental sensors

Reminders and alerts

- HR values continuously higher than usual
- Punctual unusual HR values
- Several fall detection
- Low activity time for several days
- Irregular sleep time for a few days
- Several festination detection
- Room temperature too high/low for a few days
- Patient out of the house



TeNDER: Affective Based Integrated Care for Better Quality of Life TeNDER Use Cases

- 3 Chronic diseases: Alzheimer's, Parkinson's and Cardiovascular diseases
- **5 Scenarios**: Home Set, DayCare Center, Rehabilitation rooms, Hospitals
- 5 pilots: SERMAS (Madrid region, Spain), APM (Madrid city, Spain), UNITOV (Rome, Italy), SKBA (Bavaria, Germany), SPO (Ljubljana, Slovenia)
- First wave of pilots <u>already completed</u>
- Second wave will start this month



TeNDER: Affective Based Integrated Care for Better Quality of Life Challenges

- Adoption of technologies and sensors from patients and caregivers
- Installation and testing of the platform in the patient's homes in COVID era.
- Overcome organizational barriers
- Fit into different needs
- The uneven (asymmetrical) availability of ICT infrastructures and tools, including connectivity, across Member States
- The absence of open interoperability standards and the issue of unclear business models for health.







Questions & Answers







EU projects in the field of open platforms for AHA and AAL - current developments, objectives and exploitation of results

This project has received funding from the European

Union's Horizon 2020 Research and Innovation Action under Grant Agreement No 875452.

Ioannis Kouris

SmartBear Project







THE INTEGRATED TECHNOLOGICAL SOLUTION SUPPORTING MULTI-MORBID SENIOR CITIZENS





This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 857172 (SMARTBEAR).

SMARTBEAR

Vulnerability and Ageing

- A complex social phenomenon that both influences, and is influenced by, a range of processes and risk factors that can lead to or result from poor health:
 - Personal factors (e.g. biological, inborn or acquired)
 - External factors (e.g. the social determinants of health).
- The more personal resources (good mental and physical health, good coping skills, etc.) and the more environmental support a person has, the less likely that person is to be at risk of vulnerability (Rogers, 1997).



Source: Giuseppe Costa, 8th November 2017- vulnerABLE conference "Addressing the social determinants of health", [PowerPoint presentation]

EU funded Big Data Research Project SMART BEAR

- 5000 seniors > 67 years old
- With at least 2 of the following conditions:
 - CVDs

SMARTBEAR

- Hearing loss
- Frailty
- Mild cognitive disorders
- Mild depression
- Balance disorders
- Low back pain
- Covid-19
- Will receive at least 5 smart devices which will communicate and interoperate through SMART BEAR platform and App

٠.





SMART BEAR Objectives





SMART BEAR Methods summary



SMARTBEAR

SMART BEAR Methods summary









Synergies

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

Citizen-centred EU-EHR exchange for personalized health enabling users to collect, manage, share and donate their health-related data throughout the EU.

HOLOgrams for personalized virtual coaching and motivation in an ageing population with BALANCE disorders.

- Inclusion of 2 more conditions and rehabilitation programs
- Amplification of impact
- Economy of resources



Next steps Pilot of Pilot Initiatives

• Objectives:

• Identification of the key points to scale the initiative up to the target, vulnerable, population (Figure 2).



Figure 2. Targets of SMART BEAR according to Intrinsic Capacity model (WHO, Healthy Ageing clinical consortium 2017). Patients over 67 years old with comorbidities (**hearing loss, cardio vascular diseases, cognitive impairments, balance disorders and mental health** + COVID19 impact.

- Demonstration of technical and clinical solutions and identify possible conflicts at the earliest possible.
- Preparation of the full scale project starting in 2022

PILOT OF PILOTS INITIATIVE





Acknowledgments

SMART BEAR CONSORTIUM

SPECIAL THANKS TO :

This was a presentation of the collective work of SMART BEAR consortium



THANK YOU





This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 857172 (SMARTBEAR).





Questions & Answers







View this email in your browser

Thank you for your participation!

Contact us, get involved, stay updated:



┟┚

EXPLORE main platforms

PlatformUptake.eu

itate of the Art and Supporting used Uptake and Evolution of forms in the Active and



money the El orted several ICT projects over the pas

s, creating "open source" platforms for the solutions in the field of

nd healthy ageing (AHA) and active living (AAL)

latformUntake eu will assess the societa

y and define guidelines for

of the existing platforms, collect

ssful user stories and best practices

scale untake of these platforms.

ook forward to engaging with you and to hea

ut your AAL and AHA needs or solutions and use of open service platforms. Drop us a line

••••) (🖸) (Q*



office@platformuptake.eu

www.platformuptake.eu

= 🖸 YouTube

A Start

O Entdecken a Abos

Mediathei

S Verlauf Meine Vider Später ansehe

ABOS

Musik

O Sport

O Garring

O Filme

E Filme Saming

0+0 Live

Sport Sport

MEHR VON YOUTUR

YouTube Premiu

Platform Videos
ALLE WIEDERGEBEN

w Videos, die ich m

@PlatformUptake

