Health Assistant in living
ASIL

Small or medium scale focused research project (STREP)
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Work programme topic addressed
Assistant in living

Name of the coordinating person: Ana Vuksic, Gorana Vucic
e-mail: mi13100@alas.matf.bg.ac.rs, mi13181@alas.matf.bg.ac.rs

List of participants

Participant No *	Participant organisation name	Participant short name	Country
1	University of Belgrade School for Mathematics	MATF	Serbia
2	Medical University of Vienna	MUV	Austria
3	Qivicon	QC	Germany
4	Vivo Smart Medical Devices	VIVO	United Kingdom

Proposal acronym

We live in time when technology is evolving very fast and getting integrated in every part of our lives. Our aim is to bring those advance technologies closer to people in our country. People who will benefit from this technology are people with disabilities, elderly people and people who suffer from certain types of illness.

Smart home technology, also known as home automation, provides homeowners security, comfort, convenience and energy efficiency by allowing them to control smart devices, often by a smart home app on their smartphone or other network device. A part of the Internet of Things, smart home systems and devices often operate together, sharing consumer usage data among themselves and automating actions based on the homeowner preferences.

Due to the rapid advancement in wireless communication and information technologies, we are now able to introduce and implement various smart house functionalities. Our smart house is able to intelligently engage in various interactions with its owners in order to provide them with a comfortable and safe life. This project represents the integration of smart home devices, smart medical equipment and certain services through home networking.

With the rapid population ageing that is occurring world-wide, there is increasing interest in "smart home" technologies that can assist older adults to continue living at home with safety and independence and also to help their families have a constant insight into their state of health.

In this project we will show that using smart medical equipment, smart house devices like motions sensors and modern communication and information technologies can enable continuous and remote monitoring of elderly health and wellbeing at a low cost. Smart homes may allow the elderly to stay in their comfortable home environments instead of expensive and limited healthcare facilities. Healthcare personnel can also keep track of the overall health condition of the elderly in real-time and provide feedback and support from distant facilities.

The purpose of this project is:

- Improving the quality of life for people with disabilities and the elderly;
- To enable monitoring people with disabilities, elderly or people who suffer from some certain type of illness that live alone, or have to stay alone at home;

1. Excellence

1.1

The main purpose of this project is to make life easier for people with special needs and the elderly, to give more comfort to life. This project will be able to monitor people who need home care while their family is absent or people who live alone and suffer from a certain type of illness or disabilities.

• Objective 1: Purchase all types of sensors and equipment that are necessary for the development of the project.

Sensors:

- Motion sensors - detects motion and movement in an area;
- Smart thermostat - gives you control over the heating and cooling in your home;
- Video doorbell - this device allows you to see who is at your door from your smartphone;
- Window & door open and close - door and window sensors let you know when people are entering and leaving your house and can even turn lights on and off as doors are opened and closed;
- Fire/CO detector - detect fire;

Equipment:

- Smart light bulbs;
- Smart Wall sockets;

Medical Equipment:

- Pressure devices;
- A blood glucose monitor;
- Thermometer for temperature;
- Oximeters;

• Objective 2: Develop microchip for medical devices.

Design and develop microchip which will be integrated in all kind of medical equipment and will be connected to the main system that will monitor the person.

• Objective 3: Designing an information system which will store and analyzes all the collected data. This system will be able to detect all the resulting changes that occurred to the person. Also this system will be able to send information to a specific person who is responsible for taking care of that person.

- Design front-end to be intuitive to use for several users;
- Design back-end to be able to store a large amount of data;
- Take care of the security of the hacking system;

• Objective 4: Developing the information system to support defined requirements.

• Objective 5: Testing our product.

This would be the big part of our work, since it's aimed for people usage. Not only in a way that it's going to eases out the life of them, but also to assess their health and try to help accordingly. Testing will include testing of medical equipment as well as all existing smart home devices. Also we will test the communication between these devices and the main remote system.

1.2 Relation to the work program

This proposal is related to the work program topic named "Internet of things". The Internet of Things is set to transform and disrupt the way we live. For now, much of this movement has centered in and around the home. Inside our houses lies tremendous opportunity and potential for connected products to make our lives easier, safer, less stressful. Our project is closely related to this work program because we have smart home devices which are controlled from remote system. All data collected by these devices is stored in the cloud system. Our project will use all the existing knowledge and research from this field.

1.3 Concept and methodology; quality of the measures

1. Concept

We conducted a systematic review and critical evaluation of the effectiveness and feasibility of smart-home technologies to assist older adults to live well, safely and independently at home. Improved health and social care over recent years has increased life expectancy worldwide. As a result nearly 7% of the world's population is now over 65 years of age. The proportion of older people is predicted to rise approximately 20% by 2050 worldwide. The increasing number and proportion of older adults requires a greater focus on policies and resources to meet their needs. Smart home technologies encourage and allow elderly people to live longer in their own homes.

Increased longevity is often associated with increased susceptibility to diseases and injury. Chronic diseases such as cancer, diabetes, dementia, Alzheimer's disease, arthritis, heart disease and chronic obstructive pulmonary disease are common in older adults. Falls and injuries are also more common in elderly people. It has been predicted that by 2035, the proportion of people with dementia will double and by 2050, the

number of fulltime carriers will have tripled. With the current trends in population demographics, it is becoming increasingly difficult for governments worldwide to fully support the health and social care systems. The use of smart technologies, including smart-homes could arguably relieve the pressure on aged care health and social support services

The main concepts of this project are:

• To enable older people and people with disabilities to live independently. Considering that the number of elderly people aged over 65 has been rising rapidly, there is a lot of research in terms of how smart homes can help these people continue to live without someone else's care and help. This smart house is able to monitor the supervision of these people, remind them when to take medicines, perform basic daily medical examinations such as measuring blood pressure, blood sugar, blood oxygen, temperature, and to dose drugs . If people are demented, this clever house will take care of the exclusion of inflammable devices such as oven, heating, iron... The smart house has sensors to monitor the movement of a person, and if he finds that a person has fallen or is injured, he automatically informs someone in charge to visit this person or his family.

• In addition to offering the possibility of helping older adults, this smart house is made for the purpose of saving energy consumption.

2. Methodology

Methodology that we are going to use in this project is SCRUM one of the Agile methodologies. We find it most suitable for our situation, because we are going to make adjustment while we are testing and developing our software.

2. Impact

2.1 Expected impacts

Our impact would be spread across the whole country, affecting people with disabilities and their families. Making their lives easier and also aiming to help all the associations that are working with elderly or disabled people. To have overview of them, without physically visiting them. Because we have very small number of people working with them, and a lot of people in need.

Barriers/obstacles that we can encounter are people in need of this system being in very hard to get villages in Serbia, without internet or just far so help could need way more time to get there. For this system to work it's needed to collect some data on users so we have to compile with GDPR.

2.2 Measures to maximize impact

a) Dissemination and exploitation of results

Once the project is accepted in our country, our goal is to present this project to all Ministries of Health in Europe, Organizations of Health Care Services for the Elderly people. We want to expand our awareness that assistance to elderly people is necessary, but the governments themselves are not able to finance all this. So with our project we want to help elderly people to continue to live in their homes instead to be hospitalized or to live in aged care facilities. We think that the European Union would benefit from our project considering that the number of elderly people is growing. The goal is to save money that is being given to health care services for the elderly people. That money than can be redirected to help children and people with severe illness.
Also the purpose of our project is to help families who have a member who suffers from some type of illness while they are absent they have the ability to monitor that member.

b) Communication activities

One of the ways we are planning to promote our services is on social media we would like to make small teaser campaign. That will go during our project. We are going to include different categories. We will have one campaign going for people that are eco-friendly oriented and one for people that have family members in need.
We are also going to apply for all different technology fairs and conferences where we are going to talk about this with aim of raising awareness about this technologies that exist and aren't used in Serbia that much.

3. Implementation

3.1 Work plan – Work packages and deliverables

Tables for section 3.1

Table 3.1 a: List of work packages

Work package No	Work Package Title	Lead Participant No	Lead Participant Short Name	Person-Months	Start Month	End month
WP1	Project management	1, 2, 3, 4	MATF, MUV, QC, VIVO	48	M1	M24
WP2	Get all equipment	2, 3, 4	MUV, QC, VIVO	15	M1	M2
WP3	Design and develop microchip	1, 4	MATF, VIVO	80	M2	M8
WP4	Design information system	1	MATF	60	M3	M5
WP5	Develop information system	1, 3	MATF, QC	144	M5	M18
WP6	Testing the project	1, 3, 4	MATF. QC, VIVO	48	M18	M22
WP7	Exploiting	1, 2	MATF, MUV	30	M22	M24
				425		

Table 3.1 b: Work package description

For each work package:

Work package number	**WP1**	**Lead beneficiary**				
Work package title	**Project management**					
Participant number	**1**	**2**	**3**	**4**		
Short name of participant	**MATF**	**MUV**	**QC**	**VIVO**		
Person months per participant:	**12**	**12**	**12**	**12**		
Start month	**M1**			**End month**	**M24**	

Objectives
Provide the management of the entire project, as well as the coordination of scientific, technical and educational parts of this project.
Ensuring progress in project development.
Provide the coordination and cooperation between all members involved in the development of this project.

Description of work (where appropriate, broken down into tasks), lead partner and role of participants
T1 (MATF, MUV, QC,VIVO): Coordination of the consortium
T2 (MATF): Risk Management
T2 (MATF): Change Management
T3 (MATF, MUV, QC, VIVO): Quality control management
T4 (MATF): Budget management

Deliverables (brief description and month of delivery)
D1.1 (MATF, MUV, QC, VIVO): Cooperation agreement (M1)
D1.2 (MATF, MUV, QC, VIVO): Making reports after each meeting (M1, M4, M8, M12, M16, M20)
D1.3 (MATF, MUV, QC, VIVO): Project Handbook and Management plan (M1)
D1.4 (MATF, MUV, QC, VIVO): Periodic Reports (M1-M23)
D1.5 (MATF, MUV, QC, VIVO): Final Reports at the end of the project (M24)
D1.6 (MATF, MUV, QC, VIVO): Marketing and sales plan (M24)
D1.7 (MATF, MUV, QC, VIVO): Final product (M24)

Work package number	WP2	Lead beneficiary				
Work package title	Get all equipment					
Participant number	2	3	4			
Short name of participant	MUV	QC	VIVO			
Person months per participant:	5	5	5			
Start month	M1			End month	M2	

Objectives

Acquire the existing equipment that already exists from companies we cooperate with.
Medical University of Vienna will help us to choose medical equipment which can be used at home.

Description of work (where appropriate, broken down into tasks), lead partner and role of participants

T2.1 (MUV): Choose appropriate medical equipment which can be used at home (M1)
T2.2 (QC): Choose appropriate existing smart home equipment which will be useful for our project (M1, M2)
T2.3 (VIVO): Establish a contract on the cooperation of development precisely determined medical equipment in which it will be possible to integrate a chip. That chip will be able to send measurement results to the cloud system (M2)

Deliverables (brief description and month of delivery)

D2.1 (MUV): Report about equipment that can be used at home for health care purposes
D2.2 (QC): Report about existing equipment that can be integrated in smart homes for health care purpose
D2.3 (QC): Deliver equipment
D2.2 (VIVO): Design and start develop medical equipment for health care houses

Work package number	WP3	Lead beneficiary				
Work package title	Design and develop microchip					
Participant number	1	4				
Short name of participant	MATF	VIVO				
Person months per participant:	60	20				
Start month	M2		End month	M8		

Objectives

Provide the technical knowledge for microchip design.

Design the microchip which will be integrated in existing medical equipment. That microchip will be able to send measurement results to the cloud system.

Develop and integrate the microchip in medical equipment.

Description of work (where appropriate, broken down into tasks), lead partner and role of participants

T3.1 (MATF): Research the data that will be send from medical equipment to cloud system

T3.2 (MATF, VIVO): Design microchip

T3.3 (MATF): Develop microchip

T3.4 (MATF, VIVO): Integrate microchip in medical equipment

Deliverables (brief description and month of delivery)

D3.1 (MATF): Report of research including data that needs to be collected and send to cloud system.

D3.2 (MATF, VIVO): Suggest the design of microchip

D3.3 (MATF, VIVO): Final design of microchip

D3.4 (MATF): Develop the microchip

D3.5 (MATF, VIVO): Finished products of medical equipment in which is integrated microchip

Work package number	WP4	Lead beneficiary					
Work package title	Design information system						
Participant number	1						
Short name of participant	MATF						
Person months per participant:	60						
Start month	M3			End month	M5		

Objectives

At this stage it is necessary to describe in details the architecture of the system, design the appropriate user interface and define the test that the project will have to satisfy.

Description of work (where appropriate, broken down into tasks), lead partner and role of participants

T4.1 (MATF): Design information system, the architecture that will be used, user interface and define tests for the testing phase

Deliverables (brief description and month of delivery)

D4.1 (MATF): Report about architecture that will be used in this project
D4.2 (MATF): Report about paradigm which will be used in this project
D4.3 (MATF): Create plan of implementation
D4.4 (MATF): Design user interface
D4.5 (MATF): Deliver prototype of user interface
D4.6 (MATF): Deliver tests which have to be satisfied in the last phases of this project

Work package number	WP5	Lead beneficiary				
Work package title	Develop information system					
Participant number	1	3				
Short name of participant	MATF	QC				
Person months per participant:	100	44				
Start month	M5		End month	M18		

Objectives

Create an information system that will be connected to smart house devices and smart medical equipment. This information system will be able to communicate with them, collect data and store them in the cloud system. Also this system will be able to analyze the data and deliver the results to a certain person.

Description of work (where appropriate, broken down into tasks), lead partner and role of participants

T5.1 (MATF, QC): Develop software
T5.1 (MATF, QC): Deliver monthly reports of the progress
T5.1 (MATF, QC): After each implemented unit send the software for testing
T5.1 (MATF, QC): Write documentation
T5.1 (MATF, QC): Create the final version of the software

Deliverables (brief description and month of delivery)

D5.1 (MATF, QC): After each month, it is necessary to deliver an implemented part of the software for review
D5.2 (MATF, QC): After each month, it is necessary to deliver test results from the previous month
D5.3 (MATF, QC): After each month, it is necessary to submit documentation for the part of the software that is implemented
D5.4 (MATF, QC): Final version of the software and documentation

Work package number	WP6	Lead beneficiary				
Work package title	Testing the system					
Participant number	1	3	4			
Short name of participant	MATF	QC	VIVO			
Person months per participant:	16	16	16			
Start month	M18		End month	M22		

Objectives
In this step the final product will be verify.

Description of work (where appropriate, broken down into tasks), lead partner and role of participants
T6.1 (MATF, QC, VIVO):Test the medical equipment and software in lab condition
T6.2 (MATF, QC, VIVO):Test the communication between medical equipment and smart house devices and the cloud system
T6.3 (MATF, QC, VIVO):Write the medical documentation
T6.4 (MATF, QC, VIVO):Write the user documentation
T6.5 (MATF, QC, VIVO):Work with all involved organizations on solving potential problems

Deliverables (brief description and month of delivery)
D6.1 (MATF, QC, VIVO): Report of testing progress of the medical equipment and software.
D6.2 (MATF, QC, VIVO): Report of testing progress of the communication between medical equipment and smart house devices and the cloud system
D6.3 (MATF, QC, VIVO): Deliver the medical documentation
D6.4 (MATF, QC, VIVO): Deliver the user documentation
D6.5 (MATF, QC, VIVO): Verified information system

Work package number	WP7	Lead beneficiary				
Work package title	Exploiting					
Participant number	1	2				
Short name of participant	MATF	MUV				
Person months per participant:	20	15				
Start month	M22		End month	M24		

Objectives
Making good marketing of the implemented system. Showing the system to all potential users.

Description of work (where appropriate, broken down into tasks), lead partner and role of participants
T7.1 (MATF): Present system to pension and disability insurance fund and Ministry of Health
T7.2 (MUV): Present system to medical institutions, health care organizations

Deliverables (brief description and month of delivery)
D7.1 (MATF, MUV): Marketing plan
D7.2 (MATF, MUV): Advertise the product

Table 3.1 c: List of Deliverables

Deliverable (number)	Deliverable name	Work package number	Short name of lead participant	Type	Dissemination level	Delivery date (in months)
D1.1	Cooperation agreement	WP1	MATF, MUV, QC,VIVO	R	CI	M1
D1.2	Making reports after each meeting	WP1	MATF, MUV, QC,VIVO	R	CO	M1, M4, M8, M12, M16, M20
D1.3	Project Handbook and Management plan	WP1	MATF, MUV, QC,VIVO	R	CO	M1
D1.4	Periodic Reports	WP1	MATF, MUV, QC,VIVO	R	PU	M1-M23
D1.5	Final Reports at the end of the project	WP1	MATF, MUV, QC,VIVO	R	PU	M24
D1.6	Marketing and sales plan	WP1	MATF, MUV, QC,VIVO	R	CO	M24
D1.7	Final product	WP1	MATF, MUV, QC,VIVO	R	PU	M24
D2.1	Report about equipment	WP2	MUV	R	PU	M1
D2.2	Report about existing equipment	WP2	QC	R	PU	M1
D2.3	Deliver equipment	WP2	QC	DEM	CO	M2
D2.4	Design and develop medical equipment	WP2	VIVO	DEM	CO	M1, M2
D3.1	Report of research	WP3	MATF	R	CI	M2
D3.2	Suggest the design of microchip	WP3	MATF, VIVO	DEM	CO	M2, M3
D3.3	Final design of	WP3	MATF,	DEM	CO	M3

	microchip		VIVO			
D3.4	Develop the microchip	WP3	MATF	OTHER	CO	M4-M8
D3.5	Finished products of medical equipment	WP3	MATF, VIVO	OTHER	CO	M2-M8
D4.1	Report about architecture	WP4	MATF	R	PU	M3
D4.2	Report about paradigm	WP4	MATF	R	PU	M3
D4.3	Create plan of implementation	WP4	MATF	R	PU	M3
D4.4	Design user interface	WP4	MATF	DEM	CI	M4
D4.5	Deliver prototype of user interface	WP4	MATF	OTHER	CI	M5
D4.6	Deliver tests	WP4	MATF	OTHER	CI	M5
D5.1	Review of implemented part	WP5	MATF,QC	OTHER	CI	M5-M18
D5.2	Test results	WP5	MATF,QC	R	PU	M5-M18
D5.3	Submit documentation	WP5	MATF,QC	R	PU	M5-M18
D5.4	Final version	WP5	MATF,QC	OTHER	CI	M18
D6.1	Report of testing the medical equipment	WP6	MATF,QC, VIVO	R	PU	M18-M22
D6.2	Report of testing the communication	WP6	MATF,QC, VIVO	R	PU	M18-M22
D6.3	Deliver the medical documentation	WP6	MATF,QC, VIVO	OTHER	CO	M22
D6.4	Deliver the user documentation	WP6	MATF,QC, VIVO	OTHER	CO	M22
D6.5	Verified information	WP6	MATF,QC, VIVO	OTHER	CO	M22

	system					
D7.1	Marketing plan	WP7	MATF, MUV	OTHER	CO	M22-M24
D7.2	Advertise the product	WP7	MATF, MUV	OTHER	CO	M22-M24

KEY

Deliverable numbers in order of delivery dates. Please use the numbering convention <WP number>.<number of deliverable within that WP>.
For example, deliverable 4.2 would be the second deliverable from work package 4.

Type:

Use one of the following codes:

R: Document, report (excluding the periodic and final reports)
DEM: Demonstrator, pilot, prototype, plan designs
DEC: Websites, patents filing, press & media actions, videos, etc.
OTHER: Software, technical diagram, etc.

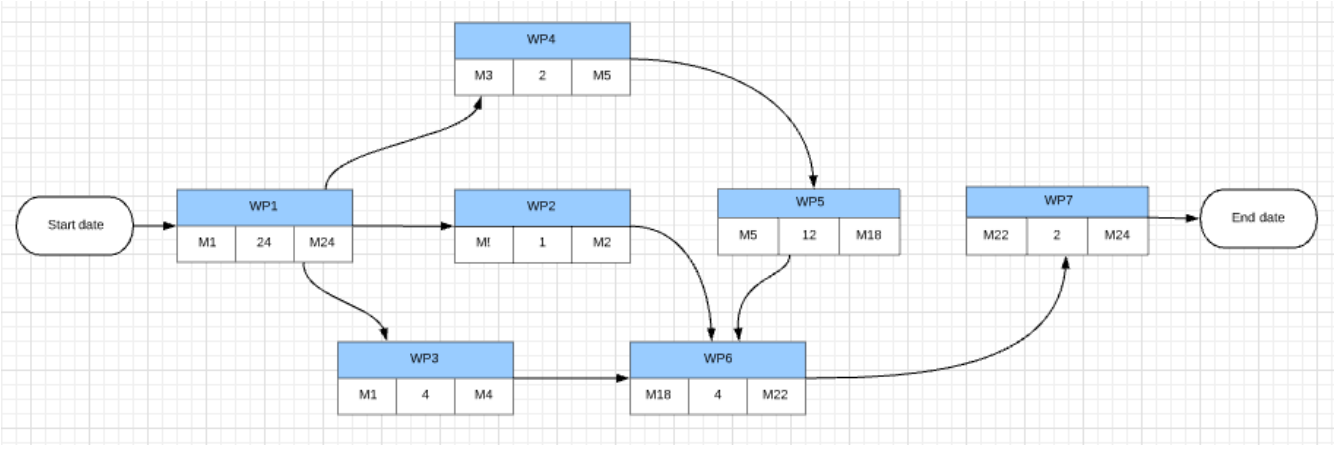
Dissemination level:

Use one of the following codes:

PU = Public, fully open, e.g. web
CO = Confidential, restricted under conditions set out in Model Grant Agreement
CI = Classified, information as referred to in Commission Decision 2001/844/EC.

Delivery date

Measured in months from the project start date (month 1)



PERT diagram is used to show the flow between this work packages.

3.2 Management structure and procedures

This project is an international project which consists of four participants: School for Mathematics (University of Belgrade), Medical University of Vienna, Qivicon and Vivo Smart Medical Devices. Each organization will participate in project management and communicate with each other in order to develop as good a result as possible on this project.
We are going to use Scrum methodology. Every team will have its scrum master. There will be organized a meetings in duration of 30 minutes every day. Every scrum master has ability to track the progress of the project.

Table 3.2 a: List of milestones

Milestone number	Milestone name	Related work package(s)	Due date (in month)	Means of verification
MS1.1	First meeting	WP1	M1	First meeting held and notes are presented
MS1.2	Signed contracts	WP1	M1	All contracts are signed
MS2.1	Research the equipment	WP2	M1	The data is validated
MS2.2	Deliver equipment	WP2	M2	Equipment for work is delivered
MS2.3	Design medical equipment	WP2	M2	The consortium decided on the design
MS3.1	Design of microchip	WP3	M3	The consortium decided on the design
MS3.2	Development of microchip	WP3	M8	The microchip is developed
MS4.1	Research the equipment	WP4	M4	The data is validated
MS4.2	Research the paradigm	WP4	M4	The data is validated
MS4.3	Plan of implementation	WP4	M4	The plan of implementation is ready
MS4.4	Prototype of interface	WP4	M5	The prototype is made
MS5.1	Initial version of IS is developed	WP5	M16	The documentation is provided

MS5.2	Final version of IS is developed	WP5	M18	The documentation is provided
MS6.1	The devices are released from the testing phase	WP6	M22	The devices are validated
MS6.2	The IS is released from the testing phase	WP6	M22	The IS is validated
MS7.1	The product is finished	WP7	M22	The whole documentation is provided

KEY

Due date

Measured in months from the project start date (month 1)

Means of verification

Show how you will confirm that the milestone has been attained. Refer to indicators if appropriate. For example: a laboratory prototype that is 'up and running'; software released and validated by a user group; field survey complete and data quality validated.

Table 3.2b: Critical risks for implementation

Description of risk (indicate level of likelihood: Low/Medium/High)	Work package(s) involved	Proposed risk-mitigation measures
The medical research team was not able to collect the relevant equipment, we are missing some or they can't be adapted (Low)	**WP2**	Choose not just for one, but For different equipment at the same time
Not being able to include our microchip in all the equipment we have and cloud (Low)	**WP3**	Testing right away with first prototypes we have
Prediction is not accurate enough he is setting wrong analyzes of health of a patient (Medium)	**WP4**	Have even more data to analyze until we are satisfied with occurrence

Low/medium/high

The likelihood is the estimated probability that the risk will materialize even after taking account of mitigating measures put in place.

3.3 Consortium as a whole

The consortium is going to be made from universities and tech leaders in this area in today's market. The center of our company will be in Belgrade and most of the work, especially in beginning will be on MATF and people from this faculty. They will set the ground for this project.

MUV is the next one that is needed to work towards the fulfillment of this idea. /it's needed from people there to bring expertise and knowledge in medical area. Specially telling what is he needs on daily level of sick people and how we can help them.
At the end when we know what we need to have to build our project we will contact rest of consortium and QC and VIVO. They have a lot of knowledge on smart home creations. We will use them for knowledge and there existing system but also we will have their marketing support.

We have two partners that are more research oriented. We have one that is going to make everything possible with their medical knowledge and willingness to help.

3.4 Resources to be committed

Table 3.4a: Summary of staff effort

	WP1	**WP2**	**WP3**	**WP4**	**WP5**	**WP6**	**WP7**	**Total Person-Months per Participant**
MATF	12		60	60	100	16	20	268
MUV	12	5					15	32
QC	12	5			44	16		77
VIVO	12	5	20			16		53
Total Person Months	**48**	**15**	**80**	**60**	**144**	**48**	**35**	**430**

Table 3.4 b 'Other direct cost' items (travel, equipment, infrastructure, goods and services, large research infrastructure)

1 / MATF	Cost (€)	Justification
Travel	10000	For the needs of the project it is necessary to go to meetings with other coworkers on project.
Equipment	2000000	PCs, medical equipment for improvement, smart house components.
Other goods and services	1300000	Space for work, licences and taxes.
Total	3310000	

Participant Number/Short Name	Cost (€)	Justification
Large research infrastructure	200000	Design and develop microchip which will be integrated in medical components.

Section 4: Members of the consortium

4.1. Participants (applicants)

Faculty of Mathematics, Serbia

Faculty of Mathematics, University of Belgrade, officially exists as independent science and education institution since 1995.

Through reorganization of the Faculty of Science and Mathematics, in 1990s the Department of Mathematics acquired operative and organizational autonomy. The status of an independent institution within the structure of the University of Belgrade was acquired by the Faculty of Mathematics in 1995, through the constitution of its own management bodies and enactment of the Statute of the Faculty.

Teaching and research activities are performed by more than 100 teachers and assistants with about 2000 students on undergraduate and postgraduate studies today.

Since its founding, the Faculty has graduated out more than 6000 graduate students, 700 holders of M.S. degree and more than 400 holders of doctoral degrees who occupy important positions in various institutions, government offices, research institutions, companies and schools in the country and abroad and these are quality indicators by which the Faculty of Mathematics is most recognizable all around the world Ten members of the Serbian Academy of Sciences and Arts were elected from teaching staff of this Faculty.

Medical University of Vienna, Austria

The Medical University of Vienna is a public university located in Vienna, Austria. It is the direct successor to the faculty of medicine at the University of Vienna, founded in 1365 by Rudolf IV, Duke of Austria. As one of the oldest medical schools in the world, it is the oldest in the German-speaking countries, and was the second medical faculty in the Holy Roman Empire, after the Charles University of Prague.

The Medical University of Vienna is the largest medical organization in Austria, as well as one of the top-level research institutions in Europe and provides Europe's largest hospital, the Vienna General Hospital, with all of their medical staff. It consists of 31 university clinics and clinical institutes, and 12 medical-theoretical departments, which perform around 48,000 operations each year. The Vienna General Hospital has about 100,000 patients treated as inpatients and 605,000 treated as outpatients each year.

There have been seven Nobel Prize laureates affiliated with the medical faculty, and fifteen in total with the University of Vienna. These include Robert Bárány, Julius Wagner-Jauregg and Karl Landsteiner, the discoverer of the ABO blood type system and the Rhesus factor. Sigmund Freud qualified as a doctor at the medical faculty and worked as a doctor and lecturer at the General Hospital, carrying out research into cerebral palsy, aphasia and microscopic neuroanatomy.

In the 2014-15 Times Higher Education Rankings, the Medical University of Vienna is listed among the top 15 medical schools in Europe and 49th in the world.

Qivicon, Germany

Qivicon is an alliance of companies from different industries that was founded in 2011 by Deutsche Telekom. The companies are collaborating on a cross-vendor, wireless-based home automation solution that has been available in the German market since fall 2013. It includes products in the areas of energy, security, and comfort. Qivicon won repeat awards from the international management consulting company Frost & Sullivan's. In 2016, Frost & Sullivan has awarded Qivicon with the European Connected Home New Product Innovation Award. In 2014, the smart home platform has been awarded with the European Visionary Innovation Leadership Award in recognition of what the management consulting company saw as the most innovative Smart Home solution of the year.

Vivo Smart Medical Devices, United Kingdom

ViVO Smart Medical Devices is the UK's leading design-to-manufacturing company converting ideas & clinical needs into innovative medical devices.

Their experts handle your new product development program from start to finish with specialist design, technology, prototyping and manufacturing expertise, creating successful new healthcare products for us. They are focused on solving our clinical needs, improving patient outcomes and creating products that healthcare will buy. They have been responsible for developing and taking to manufacture hundreds of successful products for SMEs and International Companies some of which have been produced in millions of units for global markets.

4.2. Third parties involved in the project (including use of third party resources)

Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	Y/N No
If yes, please describe and justify the tasks to be subcontracted	
Does the participant envisage that part of its work is performed by linked third parties[1]	Y/N No
If yes, please describe the third party, the link of the participant to the third party, and describe and justify the foreseen tasks to be performed by the third party	
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	Y/N No
If yes, please describe the third party and their contributions	
Does the participant envisage that part of the work is performed by International Partners[2] (Article 14a of the General Model Grant Agreement)?	Y/N No
If yes, please describe the International Partner(s) and their contributions	

[1] A third party that is an affiliated entity or has a legal link to a participant implying a collaboration not limited to the action. (Article 14 of the Model Grant Agreement).

[2] 'International Partner' is any legal entity established in a non-associated third country which is not eligible for funding under Article 10 of the Rules for Participation Regulation No 1290/2013.

Section 5: Ethics and Security

5.1 Ethics

	YES/NO	PAGE
Informed Consent		
Does the proposal involve children?	NO	
Does the proposal involve patients or persons not able to give consent?	NO	
Does the proposal involve adult healthy volunteers?	NO	
Does the proposal involve Human Genetic Material?	NO	
Does the proposal involve Human data collection?	YES	
Research on Human embryo/fetus	NO	
Does the proposal involve Human Embryos?	NO	
Does the proposal involve Human Foetal Tissue / Cells?	NO	
Does the proposal involve Human Embryonic Stem Cells?	NO	
Privacy		
Does the proposal involve processing of genetic information or personal data (eg. health, sexual, lifestyle, ethnicity, political opinion, religious or philosophical conviction)	YES	
Does the proposal involve tracking the location or observation of people?	YES	
Research on Animals		
Does the proposal involve research on animals?	NO	
Are those animals transgenic small laboratory animals?	NO	
Are those animals cloned farm animals?	NO	

Are those animals non-human primates?	NO	
Research Involving Developing Countries		
Use of local resources (genetic, animal, plant, etc.)	NO	
Impact on local community	NO	
Dual Use		
Research having direct military application	NO	
Research having the potential for terrorist abuse	NO	
ICT Implants		
Does the proposal involve clinical trials of ICT implants?	NO	
I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	YES	