Call: H2020-PHC-2014-single-stage

Objective: **PHC-19-2014: Advancing active and healthy ageing with ICT: service robotics within assisted living environments**

Type of action: Research and innovation actions

ROBOHOME2.0
Service ROBOt to monitor, assist and evaluate the elder at HOME

Participant no.	Participant organization name	Short name	Country
1 (coordinator)	Università degli Studi di Milano	UMIL	IT
2	Orebro University	ORU	SWE
3	Giraff Technologies AB	GIRAFF	SWE
4	University of Plymouth	UOP	UK
5	SXT Srl - Sistemi per Telemedicina	SXT srl	IT
6	Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico	Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico (PCL)	IT
7	Politecnico di Milano	POLIMI	IT
8	Fundació Privada Barcelona Digital Centre Tecnològic	BDIGITAL	ES
9	Servicio Andaluz de Salud	SAS	ES
10	Korian	KORIAN	FR
11	Signal GeneriX Ltd	SG	Cyprus
12	Unviersity of Malaga	UMA	ES
13	OREBRO Municipality	KOMMUN	SWE

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Section 4 – Members of the consortium

4.1. Participants (applicants)

1. Università degli studi di Milano (University of Milano) – UMIL

Participant Nº	1	Name	Università degli Studi di Milano (UMIL)	Country	Italy
Role in the Project					
Università degli Studi di Milano (UMIL), will actively participate in the Robohome2.0 project acting as project coordinator and coordinator of exploitation and dissemination activities. It will supervise the development of the Activity Center					
Main Skills and Expertise					

UMIL, established in 1924, is one of the largest Italian public teaching and research-intensive university, the only Italian among the 21 members of LERU. EU programmes represent a major source of funding, with 124 FP7 funded projects up to December 2012. In Robohome2.0, UMIL participates with the **Department of Computer Science** (DI), devoted to both theoretical and applied research in ICT, and in particular with the laboratory of Applied Intelligent Systems (AIS-Lab) and with that of Civic Informatics (LIC). DI has a staff of more than 80 researchers and 40 assistants. It has been a member of PASCAL2 network of excellence; in the last five years has participated to 19 EC funded projects and it served as coordinator of REWIRE and FITREHAB. DI participated also to many projects financed by national Institutions as well as by industry.

Main assigned tasks in the project	
❑ **WP4 – Development of the activity center – LEADER** ❑ **WP9 – Dissemination and exploitation – LEADER** ❑ **WP10 – Coordination – LEADER** ❑ **WP5 – Tasks 5.1 and 5.2 on transparent monitoring.**	❑ **Other WPs: WP1 (Task 8.1: Refinement of functional specifications), WP2 (Task 2.3: Identification of the technical specifications of enhanced Giraff and activity center, Task 2.7: Technical testing and functional testing), WP6 (Task 6.7: Self-organization of the community).**
Profiles of key Personnel Involved	

Nunzio Alberto Borghese is is Associate Professor at DI and director of AIS-Lab. He was visiting scholar at the Center for Neural Engineering of USC in 1991, at the Department of Electrical Engineering of Caltech in 1992, and at the Department of Motion Capture of Electronic Arts, Canada in 2000. His research is based on developing methods in the area of computational intelligence, with particular attention to limited processing time. He has coauthored more than 60 refereed journal papers and holds 14 international patents. He has been Project Coordinator of the FITREHAB and the REWIRE projects financed by the EC, responsible of several projects financed by the industry and partner of several projects financed by National agencies. He will bring in his experience in designing and implementing exer-games based on gamification concept. His research will also leverage modeling human behavior through different tools according to domain and the aims: from simple geometrical models to Stochastic Finite State Machines and Bayesian models that will be used in WP5 for transparent monitoring. Lastly the IGER game engine recently developed by his group inside the REWIRE project will be fully exploited inside the RoboHome2.0 project.

Fiorella De Cindio since 1988 she has been associate professor at DI. She has been teaching a class on Virtual Communities since 2002 with special emphasis on civic issues. She also co-teaches a class on Ditigital Citizenship and Civic Hacktivism. Her research (represented by more than one hundred, national and international, scientific publications) is twofold. On the one hand, it focuses on languages and methods for the analysis, design and implementation of distributed systems, paying special attention to user involvement in the system development process (participatory design). On the other hand, her research focuses on the design and implementation of social interactive computer systems as well as their deployment in real life settings.

Chiara Soncini She is patent manager at the Technology Transfer Office of the University of Milano where she coordinates the patenting procedures, actively collaborating with several studies of Intellectual Property, all technical and procedural aspects. Her work has focused on the exploitation of the universities patents and,

more in general, of the research results and therefore she has acquired a significant experience in negotiating with third parties (companies in particular) of the IP rights generated inside the university laboratories. She has a degree in Biological Sciences and she has spent several years doing research, both in Italy and abroad, in public and at a multinational pharmaceutical company. In the last 5 years: 7 UMIL spin offs have been created, and 67 patent applications have been filed for new inventions.

Selected publications:
- M Pirovano, R Mainetti, G Baud-Bovy, PL Lanzi, NA Borghese, (2012) Self-Adaptive Games to Support Rehabilitation at Home, Proc. IEEE CIG 2012, pp. 179-186, Submitted to IEEE Trans. on CIG.
- Mainetti R, Sedda A, Ronchetti M, Bottini G, Borghese NA. (2013) Duckneglect: video-games based neglect rehabilitation. Technology and Health Care 21 97–111 97. DOI 10.3233/THC-120712 IOS Press.
- NA Borghese, M Pirovano, PL Lanzi, S Wuest and ED de Bruin (2013), Computational Intelligence and Game Design for effective home-based stroke at Home Rehabilitation. Games for Health Journal. April 2013, Vol. 2, No. 2: 81-88.
- Cattinelli, N.A. Borghese (2008), Interacting with an artificial partner: modeling the role of emotional aspects, Biol. Cybern., Vol. 99(6), pp. 473-481.
- De Cindio, F. & Peraboni, C., Building digital participation hives: Toward a local public sphere. In M. Foth, L. Forlano, C. Satchell, & M. Gibbs (Eds.), From social butterfly to engaged citizen: Urban informatics, social media, ubiquitous computing, and mobile technology to support citizen engagement. Cambridge, MA: MIT Press, 2011

Other projects related to the topic:
- Rewire 2011-2014 – Project Coordinator, financed by EC – on at home rehabilitation through gamification http:/www.rewire-project.eu.
- Fitrehab 2009-2011 – Project Coordinator, financed by EC – on platforms for rehabilitation http://www.innovation4welfare.eu/287/subprojects/fitrehab.html.
- Robocare 2003-2005 – Project Member – Strategic project financed by MIUR on assistive robotics.
- Duckneglect 2008-2011 – Project Coordinator. System for neglect rehabilitation based on videoistallation(http://borghese.di.unimi.it/Research/LinesResearch/HumanMotion/HumanMotion.html)
- RCM (Milan Civic Network): http://www.retecivica.milano.it/, since 1994 supported by the Foundation "Rete Civica Milanese".

Infrastructure and/or major technical equipment available for this project
DI of the Univerisity of Milano has an administrative staff, including secretaries and an engineer in charge of lab equipment and software. DI has also an administative unit dedicated for supporting research activities and particularly financial management of EU, National and industrial projects. It will made available to the project:
- IGER game engine that allows intelligent supervision modules inside classical gaming functionalities.
- eMotion, motion capture system with 6 cameras and SDK to integrate applications.

Patent: N.A. Borghese, P.L. Lanzi, R. Mainetti. M. Pirovano (2013), Apparatus and method for rehabilitation employing a game engine, US Application number: 13/911577, 6th June 2013.

2. Orebro University - ORU

Participant Nº	2	*Name*	University of Orebro (ORU)	*Country*	Sweden
Role in the Project					

The main role of OrU is to lead the work package on development of the virtual Caregiver.

Main Skills and Expertise	

Örebro University (ORU) is one of the largest universities in Sweden with over 17,000 students and 1,200 staff members, of which 106 are full professors. We have a turnover of over 95 M Euro. The University is taking an active part in the development of the region with strong contacts with industry and the community. Örebro university is represented in AKIN by the Center for Applied Autonomous Sensor Systems (AASS). AASS is one of the university's strong research environments constituting Örebro University's strategic research profile. AASS performs interdisciplinary research on autonomous sensor systems by exploiting the cooperation between three laboratories focusing on: intelligent control, learning systems, and mobile robotics. AASS has currently 12 tenured researchers and 17 PhD students as well as several visiting researchers and post-docs (http://aass.oru.se).

AASS has gained world-wide reputation for its work on cognitive robotics, especially for its pioneering work on perceptual anchoring, on robotic olfaction, and on ecologies of robots in smart environments. AASS is a founding member of Robot-Valley (www.robotdalen.se) – Sweden's largest innovation-in-robotics effort – and has a number of collaborations with industries. AASS has hosted an EC Marie Curie Training Site (2000-2005) on advanced robotics, participated in the EC networks of Excellence PLANET, CLAWAR, EURON, AGENT-LINK and Roberta-EU, the FP6 project DUSTBOT, and the FP7 projects HANDLE and GeRT. Currently, AASS is coordinator of the FP7 project GiraffPlus. AASS is also a member of euRobotics, and a partner in the ongoing FP7 projects RobLog, Spencer, Rubicon, RACE, MOnarCH and Robot-Era. AASS has obtained eight research grants from the Swedish Research Council, which are regarded as highly prestigious in Sweden.

Main assigned tasks in the project	
❑ **WP3 – Virtual Caregiver and service robot – LEADER** ❑ **WP1, WP2 (All tasks)**	❑ **WP5 (Task 5.4 Social behavioural monitoring);** ❑ **WP7 (Task 7.3 Integration of monitoring networks and activity center)**

Profiles of key Personnel Involved	

Amy Loutfi, PhD, is an Associate Professor at the AASS Research Center, Department of Science and Technology, Örebro University, Sweden. She received her Ph.D in Computer Science in Örebro in 2006 in the field of robotic olfaction, and a BSc. in Electrical Engineering from the University of New Brunswick, Canada. From 2008-2010 she was the program coordinator for the International Masters in Robotics and Intelligent Systems at Örebro University. Her general interests include robotics and intelligent systems. More specifically, Machine Olfaction including Mobile Robot Olfaction, Knowledge Representation and Reasoning for Sensor Systems, Human-Robot Interaction and Social Robotic Telepresence.

Andrey Kiselev, PhD is a researcher at the AASS Research Center, Department of Science and Technology, Örebro University, Sweden. He received his PhD in Informatics from Kyoto University in 2011 in the field of human-computer interaction, and an Eng. in Computer Systems from the Moscow Institute of Electronic Technology in 2004. His general research interests are in Human-Robot Interaction and Mobile Robotic Telepresence.

Selected publications:
- Alirezaie, M. & Loutfi, A. (2013). Towards Automatic Ontology Alignmentfor Enriching Sensor Data Analysis. Knowledge Discovery, Knowledge Engineering and Knowledge Management Communications in Computer and Information Science, 415, 179-193.
- Kiselev, A., Kristoffersson, A. & Loutfi, A. (2014). The Effect of Field of View on Social Interaction in Mobile Robotic Telepresence Systems. In: Proceedings of the 9th ACM/IEEE International Conference on Human-Robot Interaction (HRI 2014): . Paper presented at 9th ACM/IEEE International Conference on Human-Robot Interaction (HRI 2014) (pp. 214-215).

- Kristoffersson, A., Coradeschi, S. & Loutfi, A. (2013). A review of mobile robotic telepresence [Review]. Advances in Human-Computer Interaction, 2013, 902316.
- Kristoffersson, A., Severinson Eklundh, K. & Loutfi, A. (2013). Measuring the quality of interaction in mobile robotic telepresence: a pilot's perspective. International Journal of Social Robotics, 5(1), 89-101.
- Hadi Banaee, Mobyen Uddin Ahmed, Amy Loutfi Data mining for wearable sensors in health monitoring systems: a review of recent trends and challenges. Sensors, 13:12, 2013.

Other projects related to the topic:
- Giraffplus FP7 project. GiraffPlus develops a complex system which can monitor activities in the home using a network of sensors, both in and around the home as well as on the body. The sensors can measure e.g. blood pressure or detect e.g. whether somebody falls down. Different services, depending on the individual's needs, can be pre-selected and tailored to the requirements of both the older adults and health care professionals. At the heart of the system is a unique telepresence robot, Giraff, which lends its name to the project. The robot uses a Skype-like interface to allow e.g. relatives or caregivers to virtually visit an elderly person in the home.
- ExCITE AAL project. The main objective of ExCITE (Enabling SoCial Interaction Through Embodiment) is to evaluate user requirements of social interaction that enables embodiment through robotic telepresence. This evaluation is performed in situ, on a Pan-European scale and with a longitudinal perspective. An existing prototype is deployed to the targeted end- users, and is refined by tightly involving the users in the development cycles of the prototype throughout the project.
- Robot-Era. The objective of the Robot-Era project is to develop, implement and demonstrate the general feasibility, scientific/technical effectiveness and social/legal plausibility and acceptability by end-users of a plurality of complete advanced robotic services, integrated in intelligent environments, which will actively work in real conditions and cooperate with real people and between them to favour independent living, improve the quality of life and the efficiency of care for elderly people.

Infrastructure and/or major technical equipment available for this project
In addition to the work commitments within work packages, OrU will provide **Ängen Research** and Innovation facility for technology testing and verification. It is located in a unique building complex as part of an initiative to provide complete care facilities for elder people in Orebro, both elderly and independent seniors. The complex includes apartments both for Senior living and Partially Supported living. Senior apartments are traditionally fully functional apartments between 60m^2 and 90m^2 with several rooms including fully functional kitchen and bathorrom. Residents must be above 55 years old to be eligible to rent the apartments. Eligibility for such living facilities is made based on assessment and application via healthcare services in Sweden.

3. Giraff Technolgies AB – GIRAFF

Participant №	3	Name	Giraff Technologies AB (GIRAFF)	Country	Sweden

Role in the Project	

Giraff Technologies AB (GIRAFF) is a Swedish company that develops and supports a mobile telepresence platform for home care. The company has four years of experience in supporting its service in home and health care environments both commercially and via several multi-national research projects. Giraff is the only mobile telepresence system in the world that is specifically focused on elderly and home care. Giraff Technologies has delivered nearly 100 systems in 9 EU countries. The platform consists of several three basic technical components: *Giraff* is a remotely controlled mobile, human-height physical avatar integrated with a videoconferencing system (including a camera, touch-screen display, speaker and microphone). It is powered by four motors that can propel the device in any direction, tilt the display section up and down and adjust the avatar's height to a standing or sitting position. *Pilot* is a computer application that allows users/visitors to access and control the Giraff over a standard Internet connection. From a remote location a person with no prior computer training can "visit" a home or other care location and intuitively navigate the Giraff down hallways, through doorways and around tables and chairs. *Sentry* is a call management and administration system that manages Giraffs and Pilot visitors, and allows administrators to configure Giraffs, alarms and communications options.

Main Skills and Expertise	

Giraff Technologies will provide and support the base robotic platform and its associated systems, and support the integration of other hardware and software components according to the project goals. The company has extensive operational experience in supporting system integration and field trials. It has a code repository system, a project development management system and an online user support system. The company has also developed a complete set of user documentation for all aspects of the Giraff platform and its support components.

Main assigned tasks in the project	
❑ **WP7 – Integration – LEADER**	❑ **WP3 Infrastructure technical specifications (Task 3.1); Enhanced navigation (Task 3.2)** ❑ **WP4: Desgin and implementation of the activity center (Task 4.1)**

Profiles of key Personnel Involved	

Mårten Scherlund, senior software developer. Mårten has over 15 years of professional experience in software planning, architecture, development and testing. His specific experience includes development of an application suite for mobile phones and real-time image processing at CellaVision AB. His key systems and language experience include Visual Studio, C, C++, C #, Eclipse, Netbeans, Java, J2ME, J2EE, ClearCase, JBoss, CVS, JSP, Tomcat, XML and DbVisualizer. Mårten has a Master of Engineering Physics from Lund University, Sweden in 1997.

Patrik Björkman, hardware and electronics developer. Patrik has 5 years of experience in mechanical design including SolidWorks, electronics design, CE technical certification, Java and C++ programming. He was a founding member of Robyn Robotics AB, a startup company that developed a service robot for use in museums. Patrik is the principal hardware designer of the Giraff device. He has a Master of Science in Robotics Mälardalen University, Sweden in 2010.

Principal Investigator - **Stephen Von Rump**, CEO. Stephen has extensive international experience in product and service development, business planning, marketing and sales, manufacturing, customer support, intellectual property and patents, and fund raising for grants and venture capital. He is also a veteran of multi-national projects in both the EU Framework Seven Programme (FP7) and the EU Ambient Assisted Living Joint Programme (AAL). He has extensive user experience in technology for elderly care at all levels including elderly residents, caregivers and care organizations. Stephen holds an M.S. Electrical Engineering degree from Washington University in the U.S.

Selected publications:

▪ Combining social interaction and long term monitoring for promoting independent living Silvia Coradeschi, Amedeo Cesta, Gabriella Cortellessa, Luca Coraci, Javier Gonzalez, Lars Karlsson, Francesco Furfari, Amy Loutfi, Andrea Orlandini, Filippo Palumbo, Federico Pecora, Stephen von Rump, Ales Štimec, Jonas Ullberg and Britt Ötslund. 6th International Conference on Human System Interaction (HSI), Gdansk, Poland, 2013

▪ Ecological Long-term Evaluation of a Telepresence Robot for the Elderly: Methodology and Experiments Amedeo Cesta, Gabriella Cortellessa, Andrea Orlandini, Lorenza Tiberio Knowledge Based Systems, Elsevier, January 2014

▪ Towards Measuring Quality of Interaction in Mobile Robotic Telepresence Using Sociometric Badges A. Kristoffersson, S. Coradeschi, K. Severinson-Eklundh and A. Loutfi Paladyn Journal of Behavioral Robotics, 2013

▪ Long-term deployment of a telepresence robot at elderly homes Silvia Coradeschi, Amedeo Cesta, Gabriella Cortellessa, Cipriano Galindo, Javier Gonzalez, Andrey Kiselev, Annica Kristoffersson, Amy Loutfi, Andrea Orlandini, Stephen von Rump, Lorenza Tiberio AAL Joint Programme, "ExCITE" Project Summary, 2013

▪ Psychophysiological Methods to Evaluate User's Response in Human Robot Interaction: A Review and Feasibility Study Lorenza Tiberio, Amedeo Cesta, Marta Olivetti Belardinelli Robotics 2(2): 92-121, 2013

Other projects related to the topic:

▪ ExCITE – Enabling Social Interaction Through Embodiment Evaluate user requirements of social interaction through mobile telepresence AAL Joint Programme Call 2, 2010-2013 Winner of AAL Forum's 2011 "Most Promising Innovation" Award

▪ GiraffPlus Develop smart home architecture that increases capabilities as elderly's needs grow FP7 ICT Challenge 5: ICT for Health, Ageing Well, Inclusion and Governance, 2012-2014

▪ VictoryaHome Develop tools for a care network around an individual living independently at home AAL Joint Programme Call 5, 2013-2016

▪ TERESA Develop a socially intelligent remote telepresence device for home care FP7 ICT-10-2.1, 2013-2016

Infrastructure and/or major technical equipment available for this project:

Giraff Technologies will develop, build and support the base robotic platform required for the project. This requires systems for acquisition of parts, production facilities and professional assemblers, all of which are part of Giraff's capabilities. Systems for development management, code repository, user support and documentation are also required, all of which are part of Giraff's current infrastructure.

4. University of Plymouth - UOP

Participant Nº	4	Name	University of Plymouth (UOP)	Country	United Kingdom
Role in the Project					

University of Plymouth (UOP) brings expertise in human-computer interaction, multimodal and natural language interfaces, cognitive and learning robotics for robot companion with elderly and robotics and ICT technologies for the elderly and rural communities.

Main Skills and Expertise

The Centre for Robotics and Neural Systems (CRNS) of Plymouth University is one of the leading international groups in the area of human-robot interaction, cognitive systems, developmental robotics, and computational neuroscience. The CRNS currently hosts over 30 PhD students and 10 postdoctoral researchers. It also has a Master programme in robotics. CRNS staff have an outstanding track record of coordination and participation in numerous FP7, UK EPSRC and US projects for a total of over €20m in the last five years, including the coordination of two Marie Curie training networks and of 3 FP7 Cognitive Systems and Robotics projects.

Main assigned tasks in the project

❑ **WP2 – Implementation requirements – LEADER**
❑ **: WP8 (Task 8.1: Behavioural analysis).**

❑ **WP4 (Task 4.4 Automatic narration).**
❑ **WP6 (Task 6.4 Applications for Virtual Community management).**

Profiles of key Personnel Involved

Angelo Cangelosi is Angelo Cangelosi if Professor of Artificial Intelligence and Cognition and Director of the Centre for Robotics and Neural Systems at the University of Plymouth. Cangelosi's research expertise is on cognitive developmental robotics, human-robot interaction and artificial intelligence. He has produced over 250 publications. He has coordinated two FP7 projects (ITALK IP and RobotDoc ITN) and two large UK projects (VALUE and BABEL). Cangelosi has recently chaired the leading IEEE international conference on cognitive developmental robotics (IEEE ICDL-EpiRob 2011 Frankfurt and 2013 Osaka) and in 2012-13 was Chair of the IEEE CIS Technical Committee on Autonomous Mental Development. Cangelosi will specifically provide expertise in cognitive robot learning architectures for human-robot interaction and communication. This directly builds on his current role as principal investigator of the FP7 Robot-Era project on robot companions for the elderly.

Ray Jones is Professor of Heath Informatics within the Faculty of Health & Human Sciences. Jones also is an associate member of the Centre for Robotics and Neural Systems. His main area of expertise is the use of robotic and ICT systems for eheatlh and social care, especially for active ageing, social inclusion and ICT access in rural communities. Jones will provide complementary expertise eon the use of robotics and ICT technologies for health and social care in rural communities and elderly groups.

Alessandro Di Nuovo is Postdoctoral Research Fellow at the Centre for Robotics and Neural Systems and also holds and Assistant Professor position with the University of Enna Kore (Italy). He specialises in autonomous motor control in robot companions via mental imagery, human-robot interaction and multimodal interfaces for the elderly, computer aided assessment of intellectual disabilities, embedded systems design, and computational intelligence techniques. In this project he will be responsible for the technical and scientific work on the design of HRI and natural language interfaces for the Robohome 2.0 integrated system.

Selected publications:
▪ Cangelosi A., Schlesinger M. (to appear – 2014). Developmental Robotics: From Babies to Robots. Cambridge, MA: MIT Press, Bradford Books
▪ Di Nuovo Al., Marocco D., Di Nuovo S., Cangelosi A (2013). Autonomous learning in humanoid robotics through mental imagery. Neural Networks, 41, 147-155
▪ Broz F., Di Nuovo A., Belpaeme T., Cangelosi A. (2013). Multimodal Robot Feedback for Eldercare. Workshop at IEEE RO-MAN IEEE International Symposium on Robots and Human Interactive Communications
▪ Boulos MNK, Wheeler S., Tavares C., Jones R. (2011). How smartphones are changing the face of mobile and participatory healthcare: an overview, with example from eCAALYX. Biomedical Engineering Online, 10 (1), 24

- Jones R., Smithson J., Hennessy C. (2013). Failures and success in using webcasts, discussion forums, Twitter, and email to engage older people and other stakeholders in rural ageing. Journal of Community Informatics, 10 (1)

Other projects related to the topic:
- Marie Curie ITN - ROBOT-DOC ITN as coordinator
- FP 7 ROBOT-ERA on robot companions for the elderly
- FP7 POETICON++ on language learning in robots
- EPSRC-BBSRC project BABEL on neurorobotics
- FP7 ITALK project on robots skill acquisition through individual and social learning.

Infrastructure and/or major technical equipment available for this project:
- Human-Robot Interaction Lab with Scitos G5 and 6 NAO, a Gypsy VI full-body motion capture suit, and Microsoft Sandpit interaction table;
- the iCub Cognitive Robotics Lab for access to the €250K iCub humanoid robot;
- the Baxter Compliant Robotics Lab for access to the humanoid Baxter platform for human-robot joint manipulation experiments;
- Apple P-ARTS for NVIDIA GPU Labs with cluster of 4 X-servers for robot training and the NVIDIA's sponsored GPU Centre.

5. SXT Srl - Sistemi per Telemedicina

Participant Nº	5	Name	SXT srl (SXT)	Country	Italy
Role in the Project		SXT, will actively participate in the Robohome2.0 project acting as designer and developer of the smart sensors for physical monitoring and assisted daily living. It will also cooperate in the definition of the technical specification			

Main Skills and Expertise	

SXT srl (SXT) was born in 2006 as a Spin-Off of the Politecnico di Milano University, SXT S.r.l. develops advanced technologies and solutions mainly focused on HealthCare, Telemedicine and tele-rehabilitation. By combining high-level R&D professionals and widespread competencies in the complete manufacturing process, SXT s.r.l. is able to turn research discovery into successful new business thus providing state of the art hardware and software solutions for medicine and healthcare. In recent years SXT has developed and produced products and prototypes targeted at different applications with particular attention to quality, customer satisfaction, safety and continual improvement. In 2011 SXT obtained ISO 9001 and ISO 13485 certification thus demonstrating to meet all the requirements for a comprehensive management system for the design and manufacture of medical devices including the production line of a patented cardiac home monitoring device.

Main assigned tasks in the project	
❑ **WP2 (Task 2.1: Identification of the technical functions for transparent cognitive-physical monitoring and assistance)** ❑ **WP3 (Task 3.7: Development of a cooperative smart drug dispenser, Task 3.8: Development of an assistance system based on instrumented objects of everyday life)** ❑ **WP5 (Task 5.1: Design of the micro-architecture for transparent monitoring and implementation inside objects)**	❑ **WP2 (Task 2.1: Identification of the technical functions for transparent cognitive-physical monitoring and assistance)**

Profiles of key Personnel Involved	

Luca Maggi after PhD studies, was a research fellow at the University Politecnico until 2009. His research was focused on Brain Computer Interface and computer aids for disabled people. In 2006 co-founded SXT Srl where he works as a technical director, software and firmware developer and analyst.

Luca Piccini after PhD studies, was a research fellow at the University Politecnico until 2009. His research interests were wearable sensors, biomedical technologies and devices and communication technologies applied to telemedicine. In 2006 co-founded SXT Srl in which still works. Since 2010 has worked as an electronic engineer, project manager and CEO. He has an important experience in electronic system design and production and wireless communication, especially Bluetooth®. His expertise covers also the design, the production and the certification of the electro medical devices and the ISO13485 standards.

Sergio Parini after PhD studies, was a research fellow at the Politecnico di Milano University until 2009 in the field of Brain Computer Interface, data mining and signal processing. Co-founder of SXT Srl where he works as an R&D engineer and as an ISO 9001/13485 quality manager , his expertise ranges from multi-platform software development to mechanical design and signal processing.

Selected publications:
- Giuseppe Andreoni, Marco Mazzola, Paolo Perego, Carlo Emilio Standoli, Simone Manzoni, Luca Piccini, Franco Molteni. *Wearable monitoring devices for assistive technology: case studies in post-polio syndrome.* Sensors 01/2014; 14(2):2012-27.
- L. Piccini, O. Ciani, and G. Andreoni: "New emerging biomedical technologies for home-care and telemedicine applications: the Sensorwear project". Recent Advances in Biomedical Engineering. ISBN 978-953-7619-57-2. 2010.

- Giuseppe Andreoni, Massimo Barbieri and Luca Piccini. *A review of the intellectual property rights in the field of wearable sensors and systems.* International Journal of Computer Research Volume 18, Number 3-4 ISSN 1535-6698.
- Patent: Giuseppe Andreoni, Luca Piccini e Luca Maggi. WO2007085383: "Signal Conditioning Circuits".

Other projects related to the topic:
- Sensorwear Project: design and creation of a low-cost, industrial solution, for smart home-monitoring and hospitals application, 2008-2009. granted by Regione Lombardia. Total budget 1.3M€
- "Per Vivere Giocando": a system to assist and monitor children at home or in kindergarten. 2010-2011, granted by Regione Lombardia. Total budget: 880k€.

Infrastructure and/or major technical equipment available for this project:
None

6. Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico

Participant Nº	6	Name	Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico (PCL)	Country	Italy
Role in the Project					
Fondazione IRCFS Cè Granda Ospedale Maggiore Policlinico (PCL) will carry out tests on elders in the Lombardia Region, that is one of the largest and most populated in Italy (9,939 millions 2011). It will provide multi-disciplinary competences that address elders needs: geriatry, physiotherapy, neurology and psychology. It will lead WP1 on gathering functional specifications.					
Main Skills and Expertise					

PCL will participate with the Geriatric department who follows 1000 new out patients/year of elderly subjects (age > 75 years) and 2644 in follow-up out patients (2011). Patients are routinely visited at least once a year, and are collected at each visit informations regarding the health status, drug use, clinical history, arising of adverse events, e.g., hospitalizations, development of comorbidities, and life-style. Moreover, tests to assess cognitive ability (MMSE), self-sufficiency and autonomy (ADL, IADL), physical ability (Chair Stand test) Muscular strength (Hand-Grip test), Geriatric Depression Scale (GDS) will be administered; arterial blood pressure measurement, weight and height measurement for the Body Mass Index (BMI) calculation are also performed.

Main assigned tasks in the project	
❑ **WP1 – Functional specifications – LEADER**	❑ **Other WPs: WP4 (Task 4.8: Functional and usability tests), WP8 (Task 8.5: Analysis and assessment on the improvement in therapy adherence and elder-doctor communication, Task 8.6: Platform deployment modalities)**
Profiles of key Personnel Involved	

Maura Marcucci (female). She is an Assistant Professor in Internal Medicine at the University of Milan and attending physician at the Geriatric Unit of the Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico of Milan. She has a Master Degree in Health Research Methodology achieved at McMaster University, Hamilton, ON, Canada. She has been carrying out clinical research on topics in the internal medicine, geriatrics, and thrombosis and haemostasis fields, with a specific methodological interest in prognosis and individualized prediction models.

Daniela Mari is from November 2010 –to day: Chief of Geriatric Unit IRCCS Ca'Granda, Milan, Italy and Associated Professor of Geriatrics and Internal Medicine (University of Milan, Department of Clinical Sciences and Community Health). She is the chief also of three Centres of excellence recognized from Regione Lombardia: Geriatric Centre for atherosclerosis, Centre for Research in Medical Bioclimatology, Biotechnologies, and Natural Medicines of Milan University (WHO collaborative centre). Member of Scientific Committee of Italian Multicenter Study on Centenarians and of GIFA (Italian Group of Pharmacoepidemiology of Aging). 2008-2011 member of the Working group on Internal Medicine (Regione Lombardia); from 2010 to date, full member of the Regional Technical Committee for Appropriateness in Medicine (Regione Lombardia). She is leader from many years of the group working in Milan on biochemical and genetic markers of degenerative and cardiovascular diseases age-related in oldest old and centenarians, the results of which are published in international journals. H index 39.38. Prof. Mari is **Member of the European Commission "The Action Plans of The European Innovation Partnership On Active And Healthy Ageing (Eip Aha)". Action-Group A3: Action For Prevention of Functional Decline And Frailty** (2013).

Carlo Abbate (male) is a psychologist, with a post-graduate Master Degree in Neuropsychology achieved at University of Padova, and a PhD in Pathophysiology of Aging achieved at University of Milan. He works as neuropsychologist at the Geriatric Unit of the Fondazione IRCCS Ca' Granda, Ospedale Maggiore Policlinico, specialized in the assessment of normal and pathological cognitive functioning in elderly patients. His research

activity focuses on the cognitive and behavioral markers of neurodegenerative dementias and on the early diagnosis of cognitive decline in the elderly.

Selected publications:
- Franchi C, Nobili A, Mari D, Tettamanti M, Djade CD, Pasina L, Salerno F, Corrao S, Marengoni A, Iorio A, Marcucci M, Mannucci PM; REPOSI Investigators. Risk factors for hospital readmission of elderly patients. Eur J Intern Med. 2013;24(1):45-51.
- Marcucci M. Polypathological patients and prognostic scores. Eur J Intern Med. 2012 Jan;23(1):e36-7.
- Collino S, Montoliu I, Martin FP, Scherer M, Mari D, Salvioli S, Bucci L, Ostan R, Monti D, Biagi E, Brigidi P, Franceschi C, Rezzi S. Metabolic signatures of extreme longevity in northern Italian centenarians reveal a complex remodeling of lipids, amino acids, and gut microbiota metabolism. PLoS One. 2013;8(3):e56564.
- Montoliu I, Scherer M, Beguelin F, DaSilva L, Mari D, Salvioli S, Martin FP, Capri M, Bucci L, Ostan R, Garagnani P, Monti D, Biagi E, Brigidi P, Kussmann M, Rezzi S, Franceschi C, Collino S. Serum profiling of healthy aging identifies phospho- and sphingolipid species as markers of human longevity. Aging (Albany NY). 2014 ;6(1):9-25.
- Abbate C, Trimarchi PD, Inglese S, Viti N, Cantatore A, Deagostini L, Pirri L, Marino L, Bagarolo R, Mari D. Preclinical Polymodal Hallucinations for 13 Years before Dementia with Lewy Bodies. Behav Neurol. 2014;28 (in press).

Other projects related to the topic:
- REPOSI (REgistry POlytherapy Società Italiana medicina interna): a collaborative project for the study of elderly complex patients with polytherapy and multimorbidity hospitalized in internal medicine and geriatrics wards.
- European Commission "The Action Plans of The European Innovation Partnership On Active And Healthy Ageing (Eip Aha). Action-Group A3: Action For Prevention of Functional Decline And Frailty (2013).
- Grant Conto Capitale IRCCS 2012 Ministry of Health - Physical Training and/or Rehabilitation in The Frail Elderly In Hospital And At Home;

Infrastructure and/or major technical equipment available for this project
- PCL can provide a very large number of elders with 1000 new out patients/year of elderly subjects (age > 75 years) and 2644 in follow-up out patients in 2011.
- Geriatric outpatient clinics from where patients will be recruited.
- The hydraulic Hand dynamometer Jamar to measure handgrip strength

7. Politecnico di Milano

Participant Nº	**7**	*Name*	Politecnico di Milano (POLIMI)	*Country*	Italy
Role in the Project					

POLIMI, will actively participate in the Robohome2.0 project acting as project partner. Polimi will coordinate WP5 Monitoring systems and will collaborate in the following activities: design of the activity centre; designing and evaluating the transparent clinical tests; evaluation of the user condition by means of advanced data analyses of all of the collected data.

Main Skills and Expertise

Politecnico di Milano, founded in 1863, is the biggest Engineering and Architecture University in Italy. Research activity is carried out in 12 departments. Two main campuses are located in Milano and five other premises are spread in the Region (Como, Lecco, Mantova, Piacenza, Cremona). They host about 26000 Bachelor and Master students and 900 PhD Students. The turnover is about 400 million Euros of which more than 1/3 self-funding. The Department of Electronics Information and Bioengineering (DEIB - ICT and Bioengineering) hosts almost 250 faculty members, around 100 technical and administrative staff and around 200 PhD students and research fellows. Research is carried out in automation, electronics, computer science, power electrical engineering, telecommunications and biomedical engineering with a huge variety of expertise and laboratories. Spinoffs and startups are fostered as well by the DEIB. Specifically, related expertise to ROBOHOME are: biomimetic engineering, rehabilitation engineering and technology, technologies for therapy, non-invasive diagnostics and Video Game design. Robohome2.0 proposal mainly involves the Neuroengineering and medical Robotics laboratory (NearLab; www.biomed.polimi.it/nearlab0). Several EU funded projects are currently ongoing at the NearLab - as coordinator: ACTIVE (IP); as partner: REALNET (STREP), EUROSURGE (CSA) and EU Ms ART (Erasmus EMCR).

Main assigned tasks in the project

❑ **WP 5 - System Monitoring - LEADER**	❑ **Other WPs: WP3 (Task 3.6: Teleoperated clinical evaluation), WP4 (Task 4.6: Social activities through multiplayer games), WP6 (Task 6.2: Data repository design and implementation), WP7 (Task7.3: Integration of monitoring networks and activity center)**

Profiles of key Personnel Involved

Alessandra Pedrocchi (F). PI. She is assistant professor and research leader of a group of three research fellow, four PhD students and a number of master students that are carrying out their final project research under the supervision of full professor Giancarlo Ferrigno, head of the Nearlab. She has a master degree in Electronic Engineering and a PhD cum laude in Bioengineering. She currently teaches Neuroengineering at the Politecnico di Milano. She is co-author of more than 50 peer-reviewed papers, international conference proceedings and book chapters, she is co-author of a patent on in-vitro neurons optical stimulation technique. Her research interests include: Experimental and simulation studies on motor control and motor learning, design of biomimetic neuroprostheses for the rehabilitation of neurological people. She is Project manager of MUNDUS and PI POLIMI for REALNET and EU Ms ART.

Simona Ferrante (F). She is an assistant professor and teaches medical informatics at Politecnico di Milano. She has a master degree in Biomedical Engineering, and PhD in Bioengineering. She is co-author of about 30 peer-reviewed papers. Her expertise includes: development of novel HW/SW systems for the quantitative assessment of motor relearning due to rehabilitation in neurological patients and elders. Design of HW and SW for motion analysis and neuroprostheses. She is the principal investigator of a national project titled "Fall prevention and locomotion recovery in post-stroke patients: a multimodal training towards a more autonomous daily life" funded by the Italian Ministry of Health 2012–2015.

Pier Luca Lanzi (M) He is an associate professor in Information Engineering. Since 2008 he has been working on the application of computational intelligence methods to video games and specifically on the development of

adaptive and autonomous behavior for non-player characters, on the automatic generation of game content, and on data driven game design. He is co-owner of two patents, one on games for rehabilitation and one on a data mining techniques. He is co-author of about 150 papers including 27 journal papers, 15 book chapters, edited 11 proceedings volumes, and two books.

Selected publications:
- PL Lanzi, D Loiacono, E Parini, F Sannicolo', C Scamporlino & M. Pirovano. Tuning Mobile Game Design Using Data Mining. IGC 2013 conference.
- Galgani F, Sun Y, Lanzi PL, Leigh J. Automatic analysis of eye tracking data for medical diagnosis. CIDM 2009: 195-202.
- Pedrocchi A, Ferrante S, Ambrosini E, et al. MUNDUS project: MUltimodal Neuroprosthesis for daily Upper limb Support. J Neuroeng Rehabil 2013, 10:66.
- Ambrosini E, Ferrante S, Pedrocchi A, Ferrigno G, Molteni F. Cycling induced by electrical stimulation improves motor recovery in post-acute hemiparetic patients: A randomized controlled trial. Stroke, 42:1068-1073.
- Ferrante S, Ambrosini E, Ravelli P, Guanziroli E, Molteni F, Ferrigno G, Pedrocchi A. A biofeedback cycling training to iimprove locomotion: a case series study based on gait pattern classification of 153 chronic stroke patients. J Neuroeng Rehabil 2011, 8:47.

Other projects related to the topic:
- MUNDUS – MUltimodal Neuroprosthesis for Daily Upper limb Support (www.mundus-project.eu); 2010-2013 - Project coordinator - EC founded project
- REALNET – Realistic Real-time Networks: computation dynamics in the cerebellum (www.realnet-fp7.eu); 2011-2014 - Project partner - EC founded project ;
- MSc ART - Advanced Rehabilitation Technologies : developing a trans-disciplinary European MSc (www.rehabtech.soton.ac.uk); 2012-2015 - Project partner - EC founded project.
- Fall risk estimation and prevention in the elderly using a quantitative multifactorial approach; 2013-2015 – Project partner — National Founded Project (PRIN 2010-2011).
- Fall prevention and locomotion recovery in post-stroke patients: a multimodal training towards a more autonomous daily life; 2012-2014 - Project coordinator - National founded project (Ricerca Finalizzata 2010).

Infrastructure and/or major technical equipment available for this project
Technical equipment:
- Optical motion tracking systems (e.g., Vicra, Certus, Smart µg™; BTS)
- Inertial-based systems (e.g., RehaWatch)
- Force sensors (e.g. Tekscan A201 and A401 Force Sensing Resistors, FSR)
- A multi-channel signal amplifier system (Porti™, Twente Medical System International)

8. Fundació Privada Barcelona Digital Centre Tecnològic

Participant Nº	8	Name	Fundació Privada Barcelona Digital Centre Tecnològic (BDIGITAL)	Country	Spain
Role in the Project					
BDIGITAL will lead the WP6 in which virtual community software and services will be implemented. BDIGITAL will also contribute to WP5 where its expertise in the field of environmental monitoring will be provided.					
Main Skills and Expertise					

Barcelona Digital Centre Tecnològic (BDIGITAL) is a non-profit technology centre devoted to research, development and innovation of new information and communication technologies (ICT) applications in different domains as health, security, mobility, energy efficiency, environment and food. It participates in more than 50 research projects with industry and academia at European, national and regional level.

BDIGITAL staff consists of more than 90 professionals with multidisciplinary and complementary backgrounds in different ICT fields. BDIGITAL main eHealth research lines are: Personalized Computational Medicine (PCM), Integrated Continuous Care (ICC) and Active Independent Living (AIL). The eHealth research group aims to explore new technologies to turn them into new services and better products, which will contribute added value to users. BDIGITAL staff consists of 90 professionals with multidisciplinary and complementary backgrounds in different ICT fields.

The eHealth R&D group of BDIGITAL has a strong expertise on: technologies for rehabilitation support and remote therapy; interoperability of medical applications and electronic health records; evidence-based medical decision support systems; medicaloriented social networks; accessible and assistive technologies for the elderly and the disabled; ontologies for representing medical knowledge; and technologies for supporting nutritional research.

Main assigned tasks in the project	
❑ **WP6 – Virtual Community – LEADER**	❑ **Other WPs: WP2 (Task 2.2: Identification of the technical specifications of the environment and lifestyle monitoring), WP5 (Task 5.3: Design and implementation of environment and lifestyle monitoring, Task 5.4: Design and implementation of social behavior monitoring), WP7 (Task 7.1: Communication development and testing, Task 7.2: Integration and testing of the community services).**
Profiles of key Personnel Involved	

Felip Miralles (Computer Science Engineer and MSc. in Information Systems by the New Jersey Institute of Technology - USA) is head of R&D eHealth group in Barcelona Digital. For more than 20 years, he has been involved in ICT projects on eHealth, biomechanics and other related computer science fields, and has managed and implemented applied research projects in the domains of software engineering, content management, machine learning, distributed architectures, sensor networks and virtual environments. He currently coordinates the FP7 projects BackHome and the AAL project SAAPHO.

Eloisa Vargiu (Ph.D. in Electronic and Computer Engineering by the University of Cagliari, Italy). She is currently the manager of the Integrated Continuous Care research line at Barcelona Digital in the Health R&D&I area. She is also the technical coordinator of the European project BackHome and she is working on applying artificial intelligence techniques in the field of health. She has experience in pro-active and adaptive behaviour of agents, hierarchical agent architecture, bioinformatics and information retrieval. She is co-author of more than 50 peer-reviewed publications in international journals and conferences, as well as co-editor of 4 books.

Alexander Steblin (Degree in Telecommunications Engineering by Pompeu Fabra University, Spain) is researcher of eHealth R&D group at Barcelona Digital in the Integrated Continuous Care research line. He has participated in several national and EU research projects. Currently, he is working in the European project REWIRE where he

is coordinating a workpackage which consists in the development and integration of the application for closed loop therapy planning, monitoring and personalization.

Selected publications:

▪	N.A. Borghese, D. Murray, A. Paraschiv-Ionescu, Eling D. de Bruin, M. Bulgheroni, A. Steblin, A. Luft and C. Parra. Rehabilitation at Home: A Comprehensive Technological Approach. In Virtual, Augmented Reality and Serious Games for Healthcare 1, Springer 2014, ISBN:978-3-642-54815-4.

▪	E. Vargiu, J.M. Fernández, and F. Miralles. Context-Aware based Quality of Life Telemonitoring. C. Lai et al. (eds.), Distributed Systems and Applications of Information Filtering and Retrieval, Studies in Computational Intelligence 515, DOI: 10.1007/978-3-642-40621-8_1, © Springer-Verlag Berlin Heidelberg 2014.

▪	E. Vargiu, J.M. Fernández, S. Torrellas, S. Dauwalder, M. Solà, and F. Miralles. A Sensor-based Telemonitoring and Home Support System to Improve Quality of Life through BNCI. In Assistive Technology: From Research to Practice, AAATE 2013. Encarnação, P., Azevedo, L., Gelderblom, G.J., Newell, A., Mathiassen, N.-E. (Eds.), September 2013. ISBN 978-1-61499-303-2.

▪	E. Vargiu, L. Ceccaroni, L. Subirats, S. Martin, and F. Miralles. User Profiling of People with Disabilities - A Proposal to Pervasively Assess Quality of Life. In ICAART 2013 - Proceedings of the 5th International Conference on Agents and Artificial Intelligence, Volume 2, J. Filipe, A. L. N. Fred (Eds.) Barcelona, Spain, 15-18 February, 2013. SciTePress 2013 ISBN 978-989-8565-39-6

Other projects related to the topic:

▪	BRAINABLE 2010-2012 – Project Coordinator, financed by EC – (http://www.brainable.org)

▪	SAAPHO 2011-2014 – Project Coordinator, financed by EC – (http://www.saapho-aal.eu)

▪	BACKHOME 2012-2015 – Project Coordinator, financed by EC – (http://www.backhome-fp7.eu)

▪	REWIRE 2011-2014 – WP7 leader, financed by EC – (http://www.rewire-project.eu)

▪	FITREHAB	2010-2011	–	WP4	leader,	financed	by	EC	– (http://www.innovation4welfare.eu/287/subprojects/fitrehab.html)

Infrastructure and/or major technical equipment available for this project

BDIGITAL will bring previous experience in previous EU research projects, such as REWIRE, BACKHOME and SAAPHO, to coordinate the work related to the implementation of the community services and environment monitoring.

9. Servicio Andaluz de Salud

Participant Nº	9	Name	Servicio Andaluz de Salud (SAS)	Country	Spain
Role in the Project					

SAS brings in the project: "Our strategy to improve the quality of care defines Integrated Care Processes that provides the integration of the state of the art knowledge within flexible organizational models that provide an efficient and effective management of the patient care". Two are the main roles inside the project. The first role is that of Health provider. The second role is of offering a second test site and a living lab through the "Lobilla Clinical Management Unit". .

Main Skills and Expertise	

Servicio Andaluz de Salud (SAS) or Andalusian Health Service (SAS) is an autonomous body attached to the Ministry of Equality, Health and Social Policies of the Regional Government of Andalusia in the South of Spain. Its mission is to provide public quality health care to the citizens, seeking efficiency and optimum use of resources. SAS has a network of integrated care services and it is organized to ensure the accessibility for the 8.5 million of population in Andalusia. There are 1,491 primary care centers, 44 hospitals and 100.706 employees. In this project will be involved one of its Health District, covering the west Coast of Malaga province. It serves a population of over 400.000, including more than 50.000 people over 65 years old. SAS provides various services including:

- Medical consultations, specific clinical care of chronic conditions, home visits.
- Nursing care
- Child and Adolescent care
- Home care for patients discharged form Hospital, and housebound patients.
- Care of the elderly
- Sexual Health Care
- Care of the woman (cancer screening and pregnancy)
- Accidents and emergencies

Main assigned tasks in the project	
❑ **WP8 – Robohome2.0 pilot – LEADER**	❑ **Other WPs: WP1 (Task 1.2: Identification of the Robohome2.0 activities and assistance functions)**
Profiles of key Personnel Involved	

Carlos Gutierrez Castañeda is the head of the Clinical Management Unit La Lobilla in Estepona, Malaga. He is a General Practitioner (Family and Community Medicine) with an interest in Care of the Elderly. He has worked as a General Practitioner in Seville, Spain, and United Kingdom (2005-2009), where he worked in Primary Care, Community and District Hospitals and Residential Homes, with a broad experience in chronic conditions and care of the elderly. He has also collaborated in research in Primary Care,in the area of Diabetes and infectious diseases (Primary Care Research Network). For the last wed years, he has been working in ambient assited living and telemonitoring, from the user field (user requirements, pilot on real homes). He has been collaborating in AAL projects (ExCITE) and currently he is representing SAS in FP7-ICT Giraffplus and LLP LIGHT.GEN.

Ana Isabel Pérez Luna (Ph.D. in Biology by the University of Málaga, Spain) is a postdoctoral researcher currently performing evaluation and dissemination tasks in the european project GiraffPlus (FP7-ICT-2011-7). During this work she has acquired experience in the evaluation methods used for measuring parameters such as the technology acceptance by the users, the perceived usability of the system and the useworthiness of it. She also has been formed in Bioethics in clinical research as a part of a master on Executive Education in Biobanks.

Marina Tirado: Head of the Locomotive Rehabilitation Unit at Hospital Regional in Malaga, Spain

Other projects related to the topic: participates SAS participates in several European Projects:
- **A**AL-EXCITE project :http://www.oru.se/excite;

- FP7-ICT GIRAFF+ Project Combining social interaction and long term monitoring for promoting independent living: www.giraffplus.eu
- FP7-ICT-REWIRE Porject: to develop and test a hierarchical to support the rehabilitation of the elder at home.
- Wise Teacher-Healthy Child- courses for teachers on dietetics and healthy nutrition of children and adolescents (WiTH.CH) Life Long Learning Projects
- Living healthy through generations (LIGHT.GEN) Life Long Learning Projects

Infrastructure and/or major technical equipment available for this project:
SAS provides more than 50.000 of elder population to test the pilot and a space for Innovation facility for technology testing and verification. It is located at the Hospital Regional de Malaga, in the Rehabilitation area, to provide complete care facilities for locomotive rehabilitation with sensors, webcams and internet.

10. Korian

Participant Nº	10	*Name*	Korian (KORIAN)	*Country*	France
Role in the Project					

KORIAN will actively participate in the Robohome2.0 project to explore new fields for assessment in the care for elderly people living at home and needing support for themselves autonomy and help for daily living activity in the rehabilitation and mild-medium cognitive impairment. It is strongly interested in licensing the results of the project to broaden the services offered.

Main Skills and Expertise

KORIAN, established in 2001, is the first and largest European assistance provider for long term care to elderly people living in nursing homes and at home. KORIAN will actively participate in the Robohome2.0 project to explore new fields for assessment in the care for elderly people living at home and needing support for themselves autonomy and help for daily living activity in the rehabilitation and mild-medium cognitive impairment. KORIAN has an important role in the care of elderly people who live in nursing homes or at home. Segesta explores a wide range of possibilities to take care of elderly people with various illness in nursing home and at home: for example people with rehabilitation needs , mild or medium cognitive impairment , in order to improve their capacity to stimulate residual ability for the care of themselves.

Main assigned tasks in the project

- ❑ **WP9 (Task 9.5: Industrial exploitation of results, Task 9.6: Business plan)**
- ❑ **WP1 (Tasks 1.1-1.5: Identification of Robohome2.0 users and functionalities).**
- ❑ **WP3 (Task 3.6: Teleoperated clinical evaluation)**
- ❑ **WP8 (Task 8.3-8.4: evaluation)**

- ❑ **WP5 (Task 5.6 – Design of physiological monitoring network).**
- ❑ **WP6 (Task 6.3- Services design and implementation)**

Profiles of key Personnel Involved

Aladar Ianes: MD in Medicine and Surgery, specialist in Orthopaedics and Traumatology. Post-graduate course for physicians "Organization and Management of Healthcare Systems" by SDA University Luigi Bocconi-Milan. Chief Medical Director and Scientific Coordinator.

Setting up procedures, operating instructions and protocols for all the nursing areas covered by Quality Service. Audits for all the facilities of the Segesta subsidary. Clinical studies and scientific publications. Conference keynote speaker. Project development for different Regions. Development of the safety culture (Risk management) within nursing homes and clinics. Evaluation of all healthcare law disputes shared with the Legal Affairs Department of the Headquarters. Coordination of procurement and technological assessment for Group Kinetika Sardegna. Leader of Council of Clinicians and Clinical Risk Manager. Development of KORIAN clinical research to promote international culture. International cooperation initiatives to investigate "non-pharmacological treatments" of Alzheimer's disease (Colaboration Internacional Gobierno Provincial De Artemisa - Cuba). He has author and co-author for clinical papers and meeting invited speaker than more 107 events.

Anna Lucia Cassani: Executive Master in Management of Health Companies. She is Project Manager in the Home socio-health care: implementation and top-level mangament of interaction with public Health-providers and clients and quality assurance. She is actively involved in the design and development on new socio-health activities on the national territory and to organize the working groups.

Selected publications:

- ▪ Can We Scientifically and Reliably Measure the Level of Consciousness in Vegetative and Minimally Conscious States? Rasch Analysis of the Coma Recovery Scale- Revised. Fabio La Porta, Serena Caselli, Aladar Bruno Ianes,Olivia Cameli, Mario Lino, Roberto Piperno, Antonella Sighinolfi, Francesco Lombardi, Alan Tennant. Archives of Physical Medicine and Rehabilitation . 2013;94:527-35
- ▪ "Il Performance-Oriented Mobility Assessment (Scala di Tinetti) nell'assessment delle cadute: analisi dell'importanza dei singoli item" G. Ricci, M.L. Barrionuevo, S. Bodini, P. Cosso, L. Locati, P. Pagliari, S. Sala, A.B. Ianes. G. Gerontol 2013;61:126-135

- Monitoraggio di cinque anni delle infezioni delle basse vie urinarie (IVU) nell'anziano in R.S.A.: confronto dei patogeni isolati nel soggetto anziano diabetico e non diabetico. G.Ricci, M-L.Barrionuevo, P.Cosso, P.Paglari, A.B.Ianes G Gerontol 2012; 60-:00-00.
- Giorgio Ricci, Lucia Maria Barrionuevo, Paola Cosso, Patrizia Pagliari and Aladar Bruno Ianes (2012). Antibiotic Resistance in Nursing Homes, Antibiotic Resistant Bacteria - A Continuous Challenge in the New Millennium, Dr. Marina Pana (Ed.), ISBN: 978-953-51-0472-8, InTech, Available from http://www.intechopen.com/books/antibiotic-resistant-bacteria a-continuous-challenge-in-the-new-millennium/antibiotic- resistance-in-nursing-home

Infrastructure and/or major technical equipment available for this project:
None

11. Signal Generix

Participant Nº	11	Name	SignalGenerix (SG)	Country	Cyprus
Role in the Project					

Concentrating its efforts on speech signal processing for the design and implementation of a distributed voice command system. The company will also design the relevant smart phone app.

Main Skills and Expertise

Signal GeneriX Ltd
Advanced Signal Solutions

SignalGeneriX Ltd (SG) is a Cypriot R&D company doing cutting edge research and development in the fields of Digital Signal Processing (DSP) and Communications. The company is based in Limassol but operates as expert providers of DSP and Communications technologies realisers both in hardware and software for a wide network of clients and collaborators throughout Europe. SignalGeneriX demonstrates long established experience in developing new products and processes in Digital Signal Processing and Communications. The company is deeply involved in Research and Development and has amassed a broad portfolio of intellectual property rights covering core signal processing algorithms, telecommunication networks wireless sensor applications and medical systems. Our range of products includes among others low powered sensor nodes, smart antennas, intelligent power management, DSP processes and advanced remote monitoring platforms, miniature ECG Data acquisition hardware, wearable sensors, emergency telemedicine systems, patient activity detection systems and hardware for rehabilitation robotics systems.

Main assigned tasks in the project

❑ **WP5 (Task 5.5: Design and implementation of distributed voice command system)** ❑ **WP5 (Task 5.4: Design and implementation of behavioural monitoring**	❑ **WP6 (Task 6.6 – Smart phone applications)** ❑ **WP7 (Task 7.1 – Communication development and testing)**

Profiles of key Personnel Involved

Mr. Kyriacos Michaelides received his BEng in Electrical and Electronic Engineering from Middlesex University England in 1987, and is a Chartered Engineer with the Institute of Enginering and Technology (IET). He was employed in a leading UK government orgainisation for 16 years where he became a technical leader in his domain, and an oversees consultant for the department for a further 2 years. He has gained technical and project management experience in European Research Projects in the last 5 years with SignalGeneriX, where he is now Chief Technical Officer. His expertise includes embedded programming, algorithm development, FPGA firmware development, hardware design and simulation, PCB design, system integration of radar, RF and microwave Systems

Dr. Antonis Kalis is the Head of the Communications R&D at SignalGeneriX Ltd since 2012. In the past he has worked as an Associate Professor in AIT and as an Adjunct Professor at Carnegie Mellon University. Dr. Kalis research interests are in the areas of radio communications, antenna design and wireless networks. He has numerous journal and conference publications, a US patent, and the 2000 Chester Sall Memorial award of the Consumer Electronics Society in the above areas.

Mr. Marios Milis received his Diploma in Electrical and Computer Engineering from Aristotle University of Thessaloniki, Greece, in 2004 and his MSc in Communications and Signal Processing from Imperial College London in 2005. He is currently working as a Senior Research Engineer at SignalGeneriX Ltd and project leader in various National and EU funded projects. Mr Milis is considered an expert in wireless communications with many years experience and also a number of scientific contributions.

Dr. Anastasis Kounoudes received his M.Eng. in Computer Engineering and Informatics from University of Patras, Greece, in 1997 and his PhD in Signal Processing (Speech Processing) from Imperial College in 2000. During the period 2000-2002 he worked as a postdoctoral research associate at the digital signal processing group of Imperial College. He also worked for DERA and Qinetiq as a consultant and researcher in telecommunication contracts. In February 2002 he joined Domain Dynamics Ltd in London as a senior researcher and application engineer. He was responsible for the design, implementation and management of projects with application areas including among others telecommunication signal processing. Since

January 2004, Anastasis was the Chief Technical Officer of SignalGeneriX Ltd and from 2008 the **CEO of the Company**.

Recent Publications:
1. E. Kyriacou, D. Hoplaros, P. Chimonidou, A. Kounoudes, C. Pattichis et al "An mHealth System for Monitoring of Children with Suspected Cardiac Arrhythmias", International Journal of Monitoring and Surveillance Technologies Research (IJMSTR), olume 1, Issue 2. Copyright © 2013
2. Toula Onoufriou, Anthony Constantinides, Anastasis Kounoudes,Antonis Kalis "SmartEN: A Marie Curie Research Framework for Wireless Sensor Networks in Smart Management of the Human Environment", Sensor Applications, Experimentation, and Logistics Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering Volume 29, 2010, pp 88-106
3. A. Kalis, M. Milis, A. Kounoudes, A. G. Constantinides, "Bandwidth efficient localization for sustainable and safe building environments", EUSIPCO 2013, European Signal Processing Conference, September 2013, Marakesh, Maroko
4. Kounoudes A., Milis M., Onoufriou T., Votsis R.A., Kalis A., Tragas P., Constantinides A.G. "Wisespot, a novel approach for wireless localization of damages in bridges", 6th International Conference on Bridge Maintenance, Safety and Management, IABMAS 2012, Stresa, Lake Maggiore, Italy
5. Milis M., Michaelides K., Kounoudes A., Ansaloni G., Atienza D., Giroud F., Ruedi P.-F., Masson F." Highly integrated ultra-low-power SoC solution for unobtrusive and energy efficient wireless cardiac monitoring: Research project for the benefit of specific groups", IEEE 12th International Conference on BioInformatics and BioEngineering, BIBE 2012, Larnaca, Cyprus

Recent EU and National Projects where SG applied its expertise in DSP:
1. "Wear-a-Ban: Unobtrusive wearable human to machine wireless interface", Research for SME Associations, Call FP7-SME-2008-2. Total Budget €2.4M
2. "WiserBAN: Smart miniature low-power wireless microsystem for Body Area Networks", 7th Framework IP project 257454, Total Budget: €9.5M
3. "IcyHeart: "Highly integrated ultra-low-power SoC solution for unobtrusive and energy-efficient wireless cardiac monitoring ", 7th Framework Research for the benefit of SME project 286130, Total Budget: €1.4M
4. "Chameleon: a cost-effective, fast-to-deploy, low-power and flexible video surveillance system. CHAMELEON automatically stitches from multiple cameras with overlapping regions to create a natural seamless panoramic view of the monitored area", 7th Framework Research for SME project 286510, Total Budget:€ 1.2M
5. "EFFINET : Efficient Integrated Real-time Monitoring and Control of Drinking Water Networks" 7th Framework Programme, ICT Project 318556, Total Budget : €3.2M

Infrastructure and/or major technical equipment available for this project:
None

12. Unviersity of Malaga

Participant Nº	12	Name	University of Malaga (UMA)	Country	Spain
Role in the Project					
University of Malaga (UMA), will participate in providing the robot functionalities to move autonomously within the house. Also, there is a strong commitment in the integration, validation and testing of the system as well as in the dissemination activities.					
Main Skills and Expertise					

In the ROBOHOME2.0 project, the participation of UMA is carried out by researchers from the Machine Perception and Intelligent Robotics group (MAPIR: http://mapir.isa.uma.es). The MAPIR group belongs to the System Engineering and Automation Department of the University of Málaga –Spain– (http://www.isa.uma.es). The group has a profound expertise in the tasks allocated within the proposal, including autonomous navigation, robot perception, task planning and robot control architecture.

The MAPIR group is composed of five professors and 10 PhD students and engineers, all having an enthusiastic research spirit which is reflected in results not only in terms of publications (with more than 30 JCR-ISI scientific articles since 2008) but also by the production of OpenSource software and robotic prototypes. The MAPIR group is the promoter and main contributor of one of the most comprehensive and known robotic software libraries: The MRPT (The Mobile Robot Programming Toolkit: http://www.mrpt.org/). Over the years, the group has given rise to some innovative prototypes like the RAM-2 mobile robot, equipped with a robotic arm (patent P200102488), the robotic wheelchair SENA aimed to facilitate the mobility to handicapped people (patent P200602571), the mobile robot SANCHO, conceived for entertainment in fairs and museums, and more recently, Roadbot (Model of Utility 1069405), a manually-guided vehicle to created very precise 3D maps of roads. In the last 10 years, the group has participated in a number of R&D projects funded by both public entities (3 European and 7 national) and private companies (10 projects).

For more information, please refer to http://mapir.isa.uma.es

Main assigned tasks in the project	
❑ **WP3 (Task 3.2: Enhanced navigation, Task 3.3: Motion tracking for transparent monitoring)** ❑ **WP4 (Task 4.2: Silhouette extraction for improved immersion)**	❑ **WP2 (Tak2.3 Identification of technical specifications in enhanced Giraff and activity center)** ❑ WP8 (Task 8.2 Early testing)
Profiles of key Personnel Involved	

Javier Gonzalez-Jimenez is the head of the MAPIR group and full professor at the University of Málaga. Prof. Gonzalez received his B.S. degree in Electrical Engineering from the University of Seville in 1987. He joined the Department of "Ingenieria de Sistemas y Automatica" at the University of Malaga in 1988 and received his Ph.D. from this University in 1993. In 1990-1991 he was at the Field Robotics Center, Robotics Institute, Carnegie Mellon University (USA) working on mobile robots as part of his PhD. Since 1996 he has been heading Spanish and European projects on mobile robotics and perception. In these areas he is (co)author of more than 40 JCR-ISI papers, 120 international conferences and 3 books.

Cipriano Galindo received his M.S degree (2002) and PhD degree (2006) in Computer Science from the University of Malaga, Spain. Since 2005, he has been an associate professor, and from 2009 full time assistant professor at the same University. In 2004-2005 he was at the Applied Autonomous Sensor Systems, Örebro University (Sweden), working on anchoring, semantic maps, and intelligent systems. His research mainly focuses on mobile and service robotics, high-level task-planning and human-robot interaction, being (co)author of 15 JCR_ISI papers, 35 international conferences and 2 books.

Javier G. Monroy received his B.Sc degree in "Ingeniería de Telecomunicaciones" (Electrical Engineering) from the University of Málaga in 2007. In 2009 he joined the MAPIR group to investigate the integration of artificial olfaction and mobile robotics, where he received his Master degree (2010). In 2011 he was a guest researcher at the Applied Autonomous Sensor Systems, Örebro University (Sweden), collaborating with the

Mobile Robotics and Olfaction group. He received his PhD degree (2013) from the University of Malaga, where he continues working as a postdoc researcher.

Selected publications:

- J.L. Blanco, F.A. Moreno, J. Gonzalez-Jimenez, "The Málaga Urban Dataset: High-rate Stereo and Lidars in a realistic urban scenario", International Journal of Robotics Research, vol. 33, no. 2, pp. 207--214, 2014.
Impact Factor 2012: 2.863.
Position 1/21 in the area: Robotics

- J.L. Blanco, J. Gonzalez-Jimenez, J.A. Fernandez-Madrigal, "An alternative to the Mahalanobis distance for determining optimal correspondences in data association", *IEEE Transactions on Robotics (T-RO), vol. 28, no. 4*. 2012.
Impact Factor 2012: 2.571
Position 2/21 in the area: Robotics.

- J.L. Blanco, J. Gonzalez-Jimenez, J.A. Fernandez-Madrigal,"Optimal Filtering for Non-Parametric Observation Models: Applications to Localization and SLAM",*The International Journal of Robotics Research (IJRR),*vol. 29, no. 14. 2010.
Impact Factor: 4.095.
Position 1/17 in the area: Robotics

- J.L. Blanco, J.A. Fernandez-Madrigal, J. Gonzalez-Jimenez,"A Novel Measure of Uncertainty for Mobile Robot SLAM with Rao-Blackwellized Particle Filters", *International Journal of Robotics Research,*vol. 27, no. 1, pp. 73-81, 2008.
Impact Factor 2008: 1.361.
Position 2/14 in the area: Robotics

- C. Galindo, J.A. Fernandez-Madrigal, J. Gonzalez-Jimenez,"Multihierarchical Interactive Task Planning. Application to Mobile Robotics", *IEEE Transactions on Systems, Man, and Cybernetics, part B,*vol. 38, no. 3, pp. 785-798, 2008.
Impact Factor 2008: 2.361.
Position 2/17 in the area: Computer Science, Cybernetics

Other projects related to the topic:

- GIRAF +: Combining social interaction and long term monitoring for promoting independent living. Funder: EU, ICT Call 7 FP7-ICT-2011-7. 2012-2014. IP: Javier Gonzalez-Jimenez

- EXCITE: Enabling SoCial Interaction Through Embodiment. Funder: EU, AAL (Ambient Assisted Living) Program. (Spanish funder: Instituto de Salud Carlos III). 2011-2013. IP: Javier Gonzalez-Jimenez

- AGAVE: AGv nAvigation system based on flexible and innovatiVE UWB positioning. Funder: EU, CRAFT Contract nº COOP-CT-2005-017668. 2006-2007. IP: Javier Gonzalez-Jimenez

- TAROTH: New developments toward a robot at home. Funder: Ministerio de Ciencia e Innovación. DPI2011-25483. 2012-2014. IP: Javier Gonzalez-Jimenez

- Development of a Mobile Robot with Olfactory Capability. National Project: Andalucía Regional Government. 2011-2013- IP: Javier Gonzalez-Jimenez

Infrastructure and/or major technical equipment available for this project:
None

13. Orebro Municipality

Participant №	13	*Name*	Orebro Municipality (KOMMUN)	*Country*	Sweden
Role in the Project					

Orebro Municipality (KOMMUN) will be mainly involved in evaluating the system and developing a business model that will support a continuity care between public and private and the social impact of such platform. It will also support a third pilot with elders directly or indirectly linked to health and social services department.

Main Skills and Expertise

Orebro Municipality (MUNICIP), http://www.orebro.se is the seventh largest municipality in the country in terms of population. 132,277 people live here (as of December 31st 2008), within a land area of 1,380.1 square km. There are residents from around 150 different countries in the municipality. The actual city of Örebro is a little more than 700 years old, and lies in the centre of Sweden, approximately 200 km from Stockholm and 300 km from Gothenburg. Seventy percent of Sweden's population lives within a radius of 300 km. There are just over 12,000 companies registered in Örebro. The five largest private sector employers are Atlas Copco Rock Drills, Distributionstjänst, Busslink, Haldex in Garphyttan and DHL in Örebro. Other significant employers are the Örebro City Council itself, Örebro County Council, Örebro University, Statistics Sweden and the police force. The Örebro City Council is governed by a coalition consisting of the Moderate Party, the Liberal Party, the Christian Democratic Party, the Centre Party and the Green Party. Around 2,500 people work in the care and services organisation of OCC. Their efforts are focused mainly on prevention work, support and service in ordinary homes, day care centres and specialised care homes. In total, there are 1,100 nursing home places, 110 short term places, and 35 rehabilitation places. Around 4,000 people who live in ordinary homes get help with services and nursing. Some of these people just have a safety alarm, but others require extensive services and quite often need qualified healthcare or medical treatment. **Around ninety percent of all users are over 65 years old. Within the next ten years the number of elderly people aged 80 or more will increase dramatically, and the municipality must start to plan now for the increased needs and requirements that will come**. The methods and means of working need to be developed so that the municipality and other care providers are well equipped before 2020. The care and services organisation has several development projects underway, where tests are being carried out to see if new techniques bring improvements in quality and increased efficiency. Cooperation with Örebro University (partner ORU) is important and gives the care and services organisation the possibility to work with research into what new technology can mean for healthcare development. The interplay between the theoretical research and the practical reality creates a win-win situation for both parties. Örebro Kommun has worked together with ORU in ExCITE (evaluation of the Giraff Platform) and other national projects with a focus on evaluating robots in home environments.

Main assigned tasks in the project	
❑ **WP1 (Task 1.4: Identification of the community of users functions)** ❑ **WP8 (Task 8.2: Early testing)**	❑ **WP8 (Task 8.3, 8.4 – Quantitative evaluation)** ❑ **WP9 (Task 9.6 – Buiness plan).**

Profiles of key Personnel Involved

Elisabeth Liljekvist has received a master in Health Management from Orebro University in 2004. Between 2000 and 2005 she has been vice president of the Association of Health Profession in Orebro, and manager of two different territory Health programs for Orebro Council, from 2005 and 2007 and then from 2007 and 2010. She has been working in the Acting Administration for health and social care from 2010 to 2011 and since 2011 she is following special projects for Orebro Municipality of Development.

Camilla Weckström after graduating in Social Care from Orebro University in 1995, she has been Head of Unit at Orebro Municipality from 1996 to 2006 and she is presently Director of Development Department of Orebro Municipality,

Other projects related to the topic:

- Giraffplus FP7 project. GiraffPlus develops a complex system which can monitor activities in the home using a network of sensors, both in and around the home as well as on the body. The sensors can measure e.g. blood pressure or detect e.g. whether somebody falls down. Different services, depending on the individual's needs, can be pre-selected and tailored to the requirements of both the older adults and health care professionals. At the heart of the system is a unique telepresence robot, Giraff, which lends its name to the project. The robot uses a Skype-like interface to allow e.g. relatives or caregivers to virtually visit an elderly person in the home.

- ExCITE AAL project. The main objective of ExCITE (Enabling SoCial Interaction Through Embodiment) is to evaluate user requirements of social interaction that enables embodiment through robotic telepresence. This evaluation is performed in situ, on a Pan-European scale and with a longitudinal perspective. An existing prototype is deployed to the targeted end- users, and is refined by tightly involving the users in the development cycles of the prototype throughout the project.

Infrastructure and/or major technical equipment available for this project:
Department of Health and Social Services and Department of Development.

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

UMIL

Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	Y
External auditing will be required	
Does the participant envisage that part of its work is performed by linked third parties[1]	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N

ORU: No third parties involved

Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	Y
External auditing will be required	
Does the participant envisage that part of its work is performed by linked third parties[2]	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N

GIRAFF: No third parties involved

Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	Y
External auditing will be required	
Does the participant envisage that part of its work is performed by linked third parties[3]	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N

UOP: No third parties involved

Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	Y
External auditing will be required	

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[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] 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).

[3] 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).

Does the participant envisage that part of its work is performed by linked third parties[4]	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N

SXT: No third parties involved

Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
External auditing will be required	
Does the participant envisage that part of its work is performed by linked third parties[5]	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N

PCL: No third parties involved

Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
External auditing will be required	
Does the participant envisage that part of its work is performed by linked third parties[6]	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N

POLIMI: No third parties involved

Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	Y
External auditing will be required	
Does the participant envisage that part of its work is performed by linked third parties[7]	N

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[4] 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).

[5] 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).

[6] 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).

[7] 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).

Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N

BDIGITAL

Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	Y
External auditing will be required	
Does the participant envisage that part of its work is performed by linked third parties[8]	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N

SAS

Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
Does the participant envisage that part of its work is performed by linked third parties[9]	N
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
The Foundation "Fundacion Publica Andaluza para la Investigacion de Malaga en Biomedicina y Salud - FIMABIS", located in Malaga, Spain, should be added for Partner SAS as Third Party Free of Charge providing in-kind contributions: "Third party making their resources available to a beneficiary, in this case , Foundations created in order to handle the administrative/financial tasks of the beneficiary. This foundation is in charge of the financial administration of the beneficiary, but which does not perform scientific/technical work in the action. This third party handles the financial and administrative aspects of the beneficiaries' involvement in RTD actions — including issues related to employment and payment of personnel, purchase of equipment, consumables, etc. — with the aim to improve and rationalise the administrative and financial management of the public body SAS. This Foundation will receive the total budget to the beneficiary to carry out the project in order to manage the beneficiary SAS.	

KORIAN: No third parties involved

Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	Y
External auditing will be required	

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[8] 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).

[9] 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).

Does the participant envisage that part of its work is performed by linked third parties[10]	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N

SG: No third parties involved

Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	Y
External auditing will be required	
Does the participant envisage that part of its work is performed by linked third parties[11]	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N

UMA: No third parties involved

Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	Y
External auditing will be required	
Does the participant envisage that part of its work is performed by linked third parties[12]	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N

MUNICIP: No third parties involved

Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	Y
External auditing will be required	
Does the participant envisage that part of its work is performed by linked third parties[13]	N

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[10] 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).

[11] 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).

[12] 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).

[13] 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).

Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N

Section 5: Ethics and Security

5.1 Ethics

The ethical issues associated with the participation of volunteers in interviews and field trials are addressed through full compliance with the protection of personal data regulations, non-intrusive interview procedures, and maximum care for safety issues during the field trials.

The Consortium of the ROBOHOME2.0 project is fully committed to following the principles depicted in the Charter of fundamental rights of the European Union[14], protection of human dignity and human life, and protection of personal data and privacy. The Consortium confirms full compliance with the Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995[15] on the protection of individuals regarding the processing and free movement of personal data. The project will take into account opinions of the European Group on Ethics in Science and New technologies (EGE)[16] whenever necessary.

The proposed project will include human subjects at three phases of the research process: **identification and characterization of Robohome2.0 users** (WP1), **usability evaluation** (Task 8.3 - WP8) **and quantitative evaluation** (Task 8.4 - WP8).

Through the enrollment procedure, clinical, instrumental and qualitative evaluation will be performed in order to measure physical and mental conditions of the candidates. The evaluation of the candidates will follow the state of the art procedures tailored for the project by PCL, SAS and Munic.

Three streams of research methods have ethical issues as they include volunteers: (i) participation of users in **qualitative interviews,** (ii) participation in **focus groups**, (iii) participation of users **in testing of the ROBOHOME2.0 elderly home care system**.

The survey data acquisition procedure for the project purposes is in the form of qualitative data (verbatim responses) in the case of interviews, focus groups and quantitative data (cardinal, ordinal and nominal responses) to questions relating to user's socio-economic status, living arrangements and behavior.

Each of the three research methods is well known and broadly utilized and has measures established to ensure ethical practice. All work will be undertaken in compatible with national and EU law, and none of the proposed research is foreseen to face any legal obstacles or objections.

In conducting research and deliberations the national legislation of countries in which activity is implemented will be guiding the ethics. In the case of activities under WP1 (Functional Specifications) and WP8 (Robohome2.0 pilot) the national legislation of Italy, Sweden and Spain will be the legal and ethical framework: in all cases the rules and procedures fall under the umbrella of the above cited EU Charter and Directive. All partners within the Consortium will fulfill the ESOMAR Guidelines on tape recording and participants' observation of interviews and group discussions[17], as well as EU Data Protection Directive.

The following specific ethical considerations will be addressed by the proposed project: the rights of the research participants, their sensitivities and privacy will be protected. The details of the proposed research (i.e. what the research objective is, who is undertaking and financing it, and how it is to be disseminated and used) will be explained to participants in detail. Research participants will be asked to give their informed consent for the participation in the proposed research at each phase. The right of research participants to decline participation whenever and for whatever reason they have will be respected. If the participating users are already being treated or monitored by a health institution; users will be informed that refusing to take part in the proposed project will not affect any way their future treatment.

Our relationship with our participants and respondents will be directed by the standard ethical procedures for this type of research:

● *Informed consent* – participants and respondents will be informed about the nature of the project, how and for which purpose it will manage the acquired data, and how they can register any concerns or queries arising from the procedure.

● *Confidentiality* – all respondents and participants will be assigned case identities which will be the basis for all subsequent analysis and will be the only identifying information in the data set; the analysis will be based on

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[14] http://www.europarl.europa.eu/charter/default.en.htm

[15] http://europa.eu/legislation_summaries/information_society/l14012_en.htm

[16] http://ec.europa.eu/european_group_ethics/index_en.htm

[17] http://www.esomar.org/

investigating relationships among general characteristics of the samples and will never try to identify particular respondents; no information on respondents' identity will be passed to any outside body or organisation; all data will be stored securely.

● *Purpose* – acquired data will only be used for the purposes stated in the ROBOHOME2.0 project and will not be used for any other purposes.

● *Selection criteria* – respondents will be selected on the basis of a range of characteristics to reflect the typological selection of characteristics of elderly population as a whole (in the case of trials, interviews and focus groups); in no case are respondents selected on an ad hominem basis.

● *Safety* - the research procedures will not be in any way damaging or distressing to those participating in the proposed research. Safety procedures will be adopted to reduce any risk and discomfort to users, caregivers, clinicians and researchers.

● *Accountability* – all respondents will be informed by the queries and complaints procedure, and provided with contact details for project management at the national and EU level.

● *Monitoring* – monitoring of the conformity of the project to these ethical standards will be undertaken by the Ethical Review Board which will be established by the coordinator under WP10 Management.

Interviews, focus groups and field trials will address samples of elderly, caregivers and clinicians, all being able to give informed consent. The questionnaire for the survey will include sensitive personal data about values in life, quality of life, including health, as well as living arrangements.

The ethical issues regarding the survey data collection will be dealt with as follows:

● All questions will include the options 'no response' enabling the respondents to refuse to answer any of the questions.

● Although sensitive questions regarding values in life, living arrangements, etc. will be asked, they are not of invasive or intimate nature and no emotional distress is expected to be experienced by the respondents.

● Respondents will be informed that they may decline to continue the interview/focus group/deliberation at any stage.

● The sample will include elderly respondents (healthy or part of a treatment program pursued by caregivers/health institutions), their caregivers and clinicians.

● Data will not be used for commercial purposes.

● Audio recordings from focus groups will be destroyed after 3 years.

Users who drop out of the trials and interviews will be replaced whenever possible and practical by people from the reserve list. The people from the reserve list will be contacted only when the need occurs.

The survey data will be anonymized and no connection between individuals who have provided data and the database will be possible. Names will not be recorded. A list of addresses will be established to contact the potential respondents. An anonymized identification number will be added to the address list and this number will be used on the questionnaire. Address lists will be destroyed after the surveys are completed.

Interview data containing anonymized personal data will be coded and stored on SPSS file and analyzed in such a way that identification of individual cases is impossible. Except from the supervising interview researcher and the interviewer, no other personnel in the project will have the possibility to link the personal addresses and the completed questionnaires.

The retention procedure of data will be as follows: the completed surveys will be kept in storage either in paper or electronic format for three years in all participant countries and they will be destroyed afterwards.

During the project period, large amount of health data regarding lifestyle activities, cognitive performances and health variables such as heart rate and heart pressure will be collected. The ethical issues regarding the health data collection will be dealt with as follows:

• Appropriate technical and organizational measures will be implemented to protect data against accidental destruction, accidental loss or unauthorized access.

• Transmission of the data acquired at home of the elderly over research network will be done via security protocols.

• As in the survey data collection, anonymization procedure will be applied and all the data will be referred by an anonymous identification number. Names will not be recorded.

Acquired data will be accessible only to the researchers of the ROBOHOME2.0 Consortium. All staff – researchers as well as assistant and administrative personnel – is bound by the deontological rules of confidentiality in treating personal data.

Particular care will be put on active evaluation of the results. Indeed effective assistance at home raises a lot of hopes on elders and their caregivers and the consortium feels very much the responsibility of correctly managing these expectations. Although plenty data to support possible exploitation of such platform will be gathered, the project itself considers a small pilot study. Robohome2.0 will not rise frustrating hopes. The technology developed, the experimentation results and real possibilities will be honestly discussed with the different stakeholders, without any hype, but with a realistic shared evaluation. One modality is through a continous active evaluation of the pilot results.

5.2 Security[18]

Please indicate if your project will involve:

- activities or results raising security issues: NO
- 'EU-classified information' as background or results: NO
- Providing living lab YES

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[18]   Article 37.1 of Model Grant Agreement. *Before disclosing results of activities raising security issues to a third party (including affiliated entities), a beneficiary must inform the coordinator — which must request written approval from the Commission/Agency;* Article 37. *Activities related to 'classified deliverables' must comply with the 'security requirements' until they are declassified; Action tasks related to classified deliverables may not be subcontracted without prior explicit written approval from the Commission/Agency.; The beneficiaries must inform the coordinator — which must immediately inform the Commission/Agency — of any changes in the security context and — if necessary —request for Annex 1 to be amended (see Article 55)*

Appendix A – Endorsement of Lombardia Region

RegioneLombardia

General Director

Giunta Regionale
Famiglia, Solidarietà Sociale e Volontariato

| Palazzo Lombardia Piazza Città di Lombardia 1 20124 Milano | tel 02 6765.2145 fax 02 6765.3537 | www.famiglia.regione.lombardia.it PEC famiglia@pec.regione.lombardia. |

RegioneLombardia   Giunta
DG FAMIGLIA
Partenza 15/04/2014 15:19

G1.2014.0005766   15/04/2014 15:19

Milan, 15 April 2014

European Commission
To whom it may concern

Endorsement letter for "ROBOHOME2.0" project

The General Department Famiglia, Solidarietà Sociale e Volontariato of Regione Lombardia hereby wish to endorse the proposal presented by Università degli Studi di Milano and Ca' Granda Ospedale Maggiore Policlinico: **"Robohome2.0 – service ROBOT to monitor, assist and evaluate the elder at HOME"**, within Horizon 2020, Societal Challenges – call H2020-PHC-2014.

Our Region is one of the most important Italian region for what concerns ICT industry, research and innovation. It invests 1.4 % of its GDP (largely of private matrix) in these sectors, which bring it to number one placing in Italy for investment in scientific research.

We do believe this project can comply with one of Our Department fulfillment: to monitor and prevent frailty and social exclusion of elder people.

We are also very interested in the output of this project because it represents a good example *Collaboration* between european Public Institutions (Universities, Foundations, Municipalities) and Private Sector by encouraging an exchange of technologies and fostering the alliance of knowledge, learning and intelligence.

Finally, this project is fully adherent with the principles and rules fixed in PRS (Programma Regionale di Sviluppo), the document that defines strategies, goals and politics of Regione Lombardia.

Best regard

General Director
Giovanni Daverio