

Health, demographic change and wellbeing Personalising health and care: Advancing active and healthy ageing H2020-PHC-19-2014

Research and Innovation Action



A CyberphysicAl social NeTwOrk using robot friends

Deliverable 9.1

First annual dissemination report

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1 Executive Summary

The present document is the revised version of D9.1 which is a deliverable of ACANTO Task 9.1 - "Dissemination" and Task 9.3 - "Communication activities". These tasks aim to organise a number of targeted dissemination activities to ensure that the project and its outcomes are widely known and project impact will be at its highest. Task 9.1 is mainly focused on scientific results of the project, while Task 9.3 aims at promote the project ideas and results to multiple and well chosen audiences, and together they ensure that the project research and practical outcomes are widely disseminated to the appropriate target communities, via appropriate methods.

The main purpose of this document is to:

- Define the dissemination approach within ACANTO.
- Provide the strategic plan for ACANTO's dissemination.
- Describe dissemination tools and channels.
- Report the dissemination activities executed so far.

This revised version includes a summary table (Table 4) in section 4.2.3 to clarify the aspects raised by the review team in the first year review report. In particular, this table presents the dissemination outcomes in a way that clearly distinguish three important aspects:

- Which contributions come from one partner only
- Which activities have been carried out among two or more partners from the consortium
- Which activities have involved the participation of external entities

Additionally the list of scientific publications, see Figure 7, has been updated including new links to the open access repository. This information is also available in ACANTO website under the publications section: http://www.ict-acanto.eu/publications/

2 Introduction

The document is the detailed dissemination plan for the ACANTO project, produced in the first year of the project according to the Description of Action (DoA). The deliverable describes the concepts and activities for collecting, structuring and presenting the information and results of ACANTO. The content of the dissemination plan includes the key aspects of the dissemination strategy. It gives identification of the target audiences and describes the dissemination methods, which are chosen for ACANTO. Also the dissemination activities, which took place during the first year of the project's implementation, are listed in detail. The materials produced for the purpose of dissemination are described.

2.1 **Project Overview and purpose**

ACANTO project is co-funded by the European Union's Horizon 2020 research and innovation programme - Societal Challenge 1 (DG CONNECT/H) under grant agreement No 643644.

The goal of the ACANTO Project is to develop devices and software infrastructures to stimulate and encourage the mobility of older adults. The project builds on the results of a previous project (DALi). The key idea of the project is to abate some of the most important barriers that hinder older adults in engaging regular physical activity, be them of physical or psychological nature. The result is obtained by a combination of "persuasion" and support strategy. ACANTO uses a robotic walker (FriWalk) to support the user, and to collect information on her preference and requirements. The FriWalk, revisits DALI's c-Walker and evolves it towards an activity vehicle. The FriWalk operates as a personal trainer triggering the user actions and monitoring their impact on the physical and mental well-being by:

a) offering cognitive and emotional support for navigation pinpointing risk situations in the environment and understanding the social context

b) supporting coordinated motion with other FriWalks for group activities.

To support physical activities, the FriWalk has to: acquire sensory information; plan long term motion across the public place and deviations in case an unpredicted event takes place, still obeying to social and group rules; monitor the user motion parameters and gait to satisfy the desired physical activity requirements.

The FriWalk has the ability to collect observations on the user-preferred behaviours, which are consolidated in a user profile and used for recommendation of future activities. The CyberPhysical Social Network (CPSN) is at the basis of a recommendation system in which users' profiles are created, combined into "circles" and matched with the opportunity offered by the environment to generate recommendations for activities to be executed with the FriWalk support. The CPSN creates a community of users, relatives and therapists, who can enter prescriptions on the user and receive information on her/his state. Users are involved in a large number in all the phases of the system development and an extensive validation is carried out at the end. The FriPad, a tablet with a specifically designed user interface, secures the permanent connection between users and CPSN.

The construction of an "ecosystem" of such complexity represents a major scientific and technological challenge tapping several disciplines.

2.2 Structure of the document

This deliverable describes in detail the dissemination strategy of ACANTO. At the same time this document serves as report for the dissemination activities executed during the first year.

The content of the deliverable is divided into two main sections. These are:

- Dissemination strategy: presents the strategic dissemination plan envisioned by the consortium members. Crucial aspects such as target audiences, key messages to be spread out, communication lines, etc. are described in this section 3.
- Dissemination tools: The section 4 is split into two subsections: dissemination materials 4.1 and dissemination activities 4.2. The former subsection is about means and materials that consortium members have created mainly orientated to give support to dissemination and communication activities during year 1. The latter subsection summarises the dissemination activities during the first year such as: presentations of the project to target audiences at conferences, workshops and other events, presentation of the project in online scientific magazines, participation in scientific conferences etc.

2.3 Glossary

- ASP Azienda Pubblica Servizi alla Persona di Siena
- CPSN CyberPhysical Social Network
- DALI Devices for Assisted Living. FP7 project under Grant Agreement n. 288917.
- DoW Description of Work
- FriWalk Friendly Walker
- FriTab Friendly Tablet
- HCI Human Computer Interaction
- HMO Health Maintenance Organization
- ICT Information and Communications Technology
- RAI Radio Televisione Italiana

3 Dissemination strategy

3.1 Dissemination approach

The main steps that constitute the dissemination approach of ACANTO are presented in the following figure.



Figure 1. ACANTO dissemination steps

Dissemination Analysis

- **Goal definition**: In order to establish a successful dissemination plan the definition of the consortium goals must be carried out defining the consortium objectives and the mission.
- Audience identification: After the goals have been defined it is important to identify the audience that should be targeted with dissemination activities. This is highly important since it will guide the selection of the appropriate means to communicate with the audience. There are different types of audience or groups of interest that could be interested in the developments of ACANTO.
- **Message to be communicated**: The messages to be communicated are closely related to the project's goal and objectives. They should be designed taking into account the different groups of interest identified and the phase of the project.
- **Dissemination channels**: Dissemination activities will focus on the use of websites, social media, publication of papers, newsletters, and face-to-face contacts through meetings and targeted dissemination events, conferences and exhibitions. These events should be public and timely advertised to convey a large audience.

Dissemination Plan Definition

Following the first phase of analysis, there is the official plan approval by the consortium of the Dissemination Plan proposed. The approval phase is required for both the initial and revised versions of the plan. The dissemination plan consists of a set of dissemination activities planned for specific dates, target specific audience, communicating some message(s) that contribute to the project objectives.

Dissemination Plan Execution

The execution of the activities implements the activities described in the Dissemination plan. For each dissemination activity a main leader (key-partner) is identified for leading the preparation and execution of the activity. From the beginning of the project dissemination phase and in coordination with the exploitation objectives all project partners must contribute to the execution of the activities depending on their field of expertise and interests.

Dissemination Feedback

The partner(s) that have performed the activity should provide dissemination activity feedback. The success of dissemination activities should be measureable through objective.

Of course, the dissemination elements (goals, audience, messages etc.) that are identified are monitored and updated regularly also by utilizing the feedback from dissemination activities. This ensures that the activities will have a considerable impact.

3.2 Dissemination objectives

Dissemination aims at planning, targeting, developing and executing communication actions. The dissemination of the ACANTO project pursues the following objectives:

- To disseminate the project results to the international research community by publishing scientific and technical papers, but also by the participation in conferences, workshops and by issuing technical and business publications. Thus raising awareness of the potential benefits to Europe from the technology developed in this project.
- To **engage potential users and stakeholders** for capturing needs, assessing potential acceptability of proposed technologies and for **informing** the community of current users of walkers and potential users of assistive-wheeled devices.
- To stimulate technology transfer between consortium members.
- To **seek-out and engage** complementary research initiatives of other Framework Program-funded consortiums and on-going research within the European Union.
- To promote ACANTO's results to the general public and policy makers.
- To ensure that the effects of ACANTO will be sustained after the project by maximizing the exploitation opportunities of the ACANTO solution throughout and beyond its development; and by ensuring the continuation of the consortium establishing close professional links between partners and by creating and maintaining permanent communication channels.

3.3 Target audiences

In order to structure the dissemination activities in the dissemination plan and to be able to analyse the impact of dissemination on a comparable basis a more accurate division of the target audience has been developed in the following table.

Type of audience	Category	Motivation		
End Users:	Older adults	Older adults, in particular, but not only, those under cares of nursing homes, are the main target of the ACANTO project and so ACANTO is specifically designed for them with the aim of promoting independent and healthier living.		
	Older adults suffering from functional decline or rehabilitating after a hip fracture	Older adults can benefit from the realisation of an exercise program using the FriWalk, regaining a proper functional status and improving independent living. Patients will appreciate to be monitored by a health professional.		
Formal Caregivers	Health professionals, both in the Hospital and in Day Centres or nursing homes.	The use of the FriWalk can help health professionals to diagnose and monitor the functional status of patients remotely. With a little training, non-specialists can carry out a diagnosis of the functional status of the patient using the FriWalk.		
Informal caregivers	Family member, friends, neighbours	The use of the FriWalk can enhance the quality of life of their loved ones.		
Institutions	PublicHospitals.Hospital Managers andHead of Services (i.e.Head of the GeriatricsService)	More robust, independent patients will reduce the number of medical visits and hospitalizations, thus cutting hospital costs. Providing non-specialists – i.e. trained nurses, occupational therapists, etc. – with tools to diagnose the functional status of patients could optimize specialists' (i.e. geriatrician) time, hence saving money for the hospital (the average wage/hour of the specialist is significantly larger than the average wage/hour of nurses or occupational therapists).		
		improving their brand as a state-of-the-art hospital.		
	Nursing homes, Day Centres, Gyms, carers organizations, charities (e.g., Hospice Siena c/o Ospedale di Comunità Campansi)	Nursing homes and Day Centres can improve the health status of their clients, hence reducing medical visits and hospitalization, providing their patients with exercise programs using the FriWalk.		
Facilitators	Policy makers: Regional Health Ministry, e.g. Municipality of Siena, Azienda Pubblica Servizi alla Persona di	Policy makers can see an opportunity to provide older adults with better care, hence reducing hospitalization costs. As an example, the Municipality of Siena and the "ASP - Azienda Pubblica Servizi alla Persona di Siena" (Public company for human services of Siena) are strongly		

	Siena (http://www.asp.siena.it)	interested in caring of the people of Siena (and it surroundings) and in maintaining a high standard of life for the city inhabitants, which is already one of the highest among all the major cities of Italy. For this reason, outputs of the ACANTO project are envisioned as very valuable adds to the long term well-being preservation plan of the Municipality and the ASP.
Relevant industries involved:	Engineering firms, Sensor manufacturers, SW designers, Companies involved in bringing ICT to healthcare	Many industries could have an interest in the results of our work. Most of them could be in the area of health care and include manufacturers of support devices, or biomedical devices. The same level of interest could be met also in other and apparently unrelated market segment. To name a few, our results in dynamic motion planning have application to autonomous vehicles, such as drones and self-driving cars, being developed by many companies at the present time. Likewise, our results on emotion monitoring could ring some bells also in other markets, such as safety in driving or management of malls and shopping centres.
Academics and Scientific Community		The ability of the FriWalk to accurately assess the functional status of older adults can be presented in journals and conferences in the field of geriatrics. We are advancing the state of the art in applications of formal verification and dynamic motion planning to cyber-physical systems and assisted living. Our results are therefore of interest to academics working in these fields (researchers, project leaders and policy makers in universities and ICT institutions).

Table 1. Target Audiences

3.4 Key messages

The key dissemination messages are aimed at communicating the more important potential results and derived benefits for society, industry and research community. The messages are adapted to the different target audiences and to the dissemination means. More specifically:

- ACANTO scope, and objectives
- ACANTO use cases description (excluding confidential information)
- Overall ACANTO approach
- ACANTO technology relevance and contribution to the advance of the state of the art
- ACANTO technology impact to society regarding of Active Ageing

In

Table 2 below ACANTO key messages are presented along with information regarding channels and target audience. Key messages table will be a living document that will change as the project advances, an update of the specific messages to be disseminated will be provided in following versions of Dissemination Deliverable.

N°	Message/Subject	Description/Abstract	Channels	Target Audience
1	The ACANTO project can improve your everyday life activities.	The Friwalk, together with its social network, represents the main outcome of the ACANTO project. It can improve the everyday life activities of older adults, by giving them back independency and freedom, and by increasing the overall health of the person. It is well-known that life expectancy and well-being increase if the physical and mental condition of a person are trained and maintained. The aim of the project is to develop and increase such training, keeping alive social connections and interactions.	In person demonstration and dissemination, twitter, website	Older adults in nursing homes
2	The ACANTO project can improve your everyday life activities.	The ACANTO project output is envisioned as a very valuable addition to the long term well-being preservation plan of different Municipalities and local and national health care organisation (e.g, ASP). By increasing the independency, the mobility, and, in general, the well- being of older adults iwe also improve the overall welfare and comfort of the whole population, for which the caring of the old adults represents sometimes a discomfort or a hitch.	Website, academic, and event dissemination	Public administrations
3	Formal verification applied to a cyber- physical system	We are developing efficient statistical techniques to verify properties of highly complex cyber-physical systems, i.e., the activity of groups of pedestrians in crowded public spaces. The complexity arises from the scale (numbers of pedestrians and size of environment) and the non- determinism created by the arbitrary behaviour of humans.	Publications Seminars Conferences	Academics
4	Efficient, intelligent, adaptive dynamic motion planning for assisted living	We are developing dynamic motion planning algorithms for assisted living applications, able to work in known and partially	Publications Seminars Conferences Websites	Academics Engineers

		known environments. Free space is partitioned using an efficient graph data structure, while the algorithms adapt to unforeseen circumstances and other people by means of intelligence encoded in logic, coupled with statistical learning.		
5	ACANTO team is collaborating in the development of innovative solutions for improving the care of older adults	The Geriatrics Service of the HUG is working on designing and validating the clinical application of state- of-the-art technologies aimed to improve the life of older adults.	Media (Radio, Press releases, etc.), Web, Social Networks	General public
6	The use of the FriWalk can ease the work of professionals in the area of geriatrics	Using the FriWalk, health professionals can diagnose and keep track of the status of patients in an easy way	Specialized publications, Specialized forums	Health professionals
7	The use of the FriWalk can help HMOs save money	Using the FriWalk, more patients can regain a good functional level, hence reducing the number of hospitalizations. The FriWalk can give similar information to much more expensive equipment. Non- specialists can perform operations that had to be carried out before by specialists, costing much more money.	Meetings, Specialized publications, web	Health professionals – i.e. research foundations, Policy makers
8	ACANTO provides Premium care for patients in Day Centre and nursing homes	Nursing homes and day centres can benefit from being perceived as innovative, and can	Web, Meetings, Dissemination material (i.e. brochures, newsletter)	Nursing homes
9	Using a robotic walker to perform gait analysis	The FriWalk uses state-of- the-art, affordable technologies to perform a comprehensive analysis of the gait of older adults	Conferences, Journals	Scientific Community
10	ACANTO develops a Recommendation System based on Social Network information	A social network-based recommendation system that uses data from user profiles or events in user town/city	Peer-reviewed papers, leaflets, workshop presentations.	Researcher, industry, event promotors, museums, local authorities, senior citizens associations.

Table 2. ACANTO key messages

3.5 Main communication lines

The following are considered as suitable communication sources:

- Deliverables
- Project progress information
- Workshop results, conferences and journals
- Event information and presentations
- Information related to other relevant projects/initiatives.

Table 3 gives an overview of communication channels used for ACANTO.

Communication channel/media	Characteristics
E-mail	The project coordinator's e-mail address is available at the website: palopoli@disi.unitn.it
Web	ACANTO home page (www.ict-acanto.eu)
Twitter	@AcantoProject (www.twitter.com/AcantoProject). A twitter account has been created to communicate up-to-date information on the project achievements, news and open discussions with the community.
Facebook	Acanto Project page in Facebook has been created with the same goal as out Twitter account.
YouTube Channel	Acanto Project YouTube channel has been created in order to publish videos and demos showing the community the project achievements.
Brochure	A flyer has been created in order to give information in workshops, events or fairs. See: Appendix C: Project Leaflet.
Poster	Posters will be available on the ACANTO web site
Specific presentations	Adhoc presentations will be prepared for specific workshops. They will also be available on the DALi web site.
News and Events	The website includes a regular update on news and events
ACANTO workshops	ACANTO will organize a number of workshops throughout the project.
Other workshops and conferences	ACANTO will participate in a number of workshops and conferences.
Online web seminars	During the second half of the project, web seminars will be held with topics including user needs and human machine interfaces (for the target group composed of older adults experiencing a natural cognitive and physical decline); sensors, and design architectures and system integration for assisted living devices.

Table 3. ACANTO communication channels

3.6 Dissemination feedback and evaluation

In ACANTO there will be a mechanism to evaluate the success of dissemination so as to continuously improve the effectiveness of the activities. Three mechanisms will be setup in order to enhance the dissemination effectiveness:

- A list of measurable objectives and the associated metrics will be setup to monitor success of different dissemination activities.
- Reports generated after each dissemination activity detailing its real and/or perceived effectiveness and feedback received from the targeted audience.
- Periodic evaluation meetings by the consortium in order to share views on the dissemination work being undertaken.

The following table defines a list of measurable objectives and the associated metrics to the success of several dissemination activities.

Activity	Measurable objective
Publications	 The number of scientific publications prepared by ACANTO partners. The target according to the DoA is: - 80 papers in top conferences - 25 high impact journals - 5 invited papers on thematic magazines
Events and seminars	Number of events and stated in DoA: >70
	Percentage of audience that has shown interest to the project after the event.
	 Size of audience attending events where ACANTO will be as speaker.
	 Feedback obtained from audience (can be measured by emails received or follow-up activities).
	- Number of ACANTO leaflets distributed.
Social Media	Twitter Number of twits (messages) from/to ACANTO Number of followers: > 1000
	Linkedin
	 Number of contacts: > 100 contacts Number of discussions
	YouTube Channel
	Number of videos Number of views
Web Portal	Number of visitors and unique visitors to the portal. - Number of page views to the portal. - Demographics of portal visitors (countries).
Clustering (collaboration	Number of involvements in the organization/participation in

with other projects)	joint research forums with other national/international projects
Presence in the media	Number of articles in the press, interviews in the radio, TV,
Number of people asking for feedback or more information	Number of email, phone calls, private messages in social media, etc. asking for additional information

4 Description of the dissemination tools

The figure below presents an overview of ACANTO foreseen supports and channels for dissemination, most of them are described in detail in the following sections.



Figure 2. ACANTO Dissemination tools and channels

4.1 Dissemination material

4.1.1 Project logo

A distinctive logo or slogan tells people at a glance what the project is about. By investing some time to 'brand' the project, we believe we earn a lot of interest on our work. We believe a nice branding brings the project and consortium some benefits such as earning instant recognition, building project team spirit and even having fun inside the consortium by designing our own brand identity.

ACANTO has created the following logo, see also Appendix A: Project Logo:



Figure 3. ACANTO logo

This logo is to be used with the following standard documents:

- Press release
- Fact sheet
- Presentation
- Templates.

4.1.2 Leaflet

The ACANTO brochure is designed in a way to capture the attention of the different target groups and increase awareness of the project. It explains the rationale behind the project - its objectives and the activities as well as the expected results (See Appendix C: Project Leaflet). The brochure first version has been created to give support for awareness rising at events. The idea behind the leaflet is to reflect the conceptual design of the project and was a subject to multiple online and personal discussions; indeed a new and improved version of the brochure is envisaged by the consortium.

4.2 Dissemination activities carried out in Year 1

4.2.1 Website implementation

ACANTO public website (http://www.ict-acanto.eu/about/, see also Appendix B: Project Website) is designed to act as an information hub about the project's aims, goals, activities and results. The website is aimed to serve as a prime public dissemination tool making available the project deliverables and published materials. The events organized by ACANTO or of relevance to the project are also announced through the website.

Here are some strategies we have used when designing the website:

1. Be simple: The design is very intuitive for every user.

2. Visual engaging: As a picture can say a thousand words we have incorporated relevant pictures to make it more interesting and easy to fall through. When a user sees a picture rich web page he tends to spend more time there and can't wait to click on the next picture.

3. Smart choice of colours: Colour schemes are the soul of a website, we have selected a simple colour scheme that makes it look attractive.

4. Integration with social media: We have integrated twitter into the website to dynamically share our latest news, insights, research advances, etc. with our visitors.

4.2.2 Establishing a Social Media Presence

ACANTO's Social Media accounts, Twitter; Facebook and YouTube channel were set up in order to enable a two-way communication with the active Web2.0 community. In this context, the presence of the project on major social networking platforms has been established from the early stages. Successful distribution of messages and absorption by the community will be shown by the number of followers, citations and Retweets of messages. Our goal is to continue and expand our presence in social media channels and work towards community engagement.



Figure 4. Snapshot of twitter account



Figure 5. Snapshot of facebook account

4.2.3 Article and press releases

There has been a significant effort during the first year related to Academic Dissemination. Main dissemination activities in the scientific community have been through publications in high impact journals and international conferences specialized in topics related to the ACANTO project. The summarized list of articles and publication is presented in "Figure 7. List of scientific publications." while a more detailed description per partner is provided below.

SIEMENS

Siemens presented the paper "Gait Analysis on the move: The Infinite Gait Walkway" by S. Wakolbinger, J.A. Birchbauer and S. Küberl as oral at the **IET International Conference on Technologies for Active and Assisted Living** (TechAAL2015), November 5th, 2015, London, UK.

UNISI

- The results of the research brought forward by the UNISI unit have been presented at the 2015 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Hamburg, Germany. The research paper "Evaluation of a predictive approach in steering the human locomotion via haptic feedback" (Aggravi et. al) has been presented as accepted contribution and it is accessible here (https://usiena-air.unisi.it/handle/11365/980703).
- 2) The results of the research brought forward by the UNISI unit together with UNITN will be presented at the 54th IEEE Conference on Decision and Control (CDC),

Osaka, Japan. The research paper "A Passive Guidance System for a Robotic Walking Assistant Using Brakes" (Fontanelli et. al) will be presented as accepted contribution.

3) F. Chinello, C. Pacchierotti, N. G. Tsagarakis, D. Prattichizzo, Design of a Wearable Skin Stretch Cutaneous Device for the Upper Limb, Proc. IEEE Haptics Symposium (HAPTICS). In Press. 2016 has been accepted for publication at the IEEE Haptics Symposium 2016 on Jan 14. The document has been put in our institution open access repository (https://usiena-air.unisi.it/handle/11365/986299#.VrSUdZv5MZw).

UNITN

A first group of dissemination initiatives was toward a scientific audience. The list of journal papers, conference papers and technical reports is offered next:

- The results of the research brought forward by the UNITN unit as improvements of the FP7 DALi research project have been published in the Journal of Ambient Intelligence and Smart Environments, with the title "Efficient customisable dynamic motion planning for assistive robots in complex human environments" (Colombo et. al) and in the IEEE Transactions on Parallel and Distributed Systems, with the title "An Analytical Solution for Probabilistic Guarantees of Reservation Based Soft Real--Time Systems" (Palopoli et. al).
- 2) The results of the research brought forward by the UNITN together with UNISI unit have been presented at the 54th IEEE Conference on Decision and Control (CDC), Osaka, Japan. The research paper "A Passive Guidance System for a Robotic Walking Assistant Using Brakes" (Fontanelli et. al) has been presented as accepted contribution.
- 3) The results of the research brought forward by the UNITN unit have been presented at:
 - a) The National Congress of the "Gruppo Misure Elettriche ed Elettroniche (GMEE)", Milano, Italy, with the research paper "Indoor Localisation System for Smart Walkers: the ACANTO approach" (Fontanelli et. al).
 - b) The 23rd ACM International Conference on Multimedia (ACM Multimedia'15), Brisbane, October 2015. The research paper "Analyzing Free-standing Conversational Groups: A Multimodal Approach" (Alameda-Pineda et. al) has been presented as accepted contribution and it is openly accessible1. The article received the Best Paper Award at the conference.
 - c) The 2nd Workshop on Computer Vision for Affective Computing (CV4AC), in conjunction with International Conference of Computer Vision (ICCV'15), Santiago, Chile, December 2015. The research paper "FaceCept3D: Real Time 3D Face Tracking and Analysis" (Tulyakov et. al) has been presented as accepted contribution and it is openly accessible2.
- 4) The results of the research brought forward by the UNITN unit have been accepted for publication in Personal & Ubiquitous Computing, special Issue on "Histories of Ubicomp", with the title "Ubiquitous Technologies for Older People" (Cozza et. al).

http://vintage.winklerbros.net/Publications/acmmm2015groups.pdf

²http://www.cvfoundation.org/openaccess/content_iccv_2015_workshops/w2/papers/Tulyakov_FaceCept3D_Real_Time_ICCV_2015_paper.pdf

5) The results of a study that proposes different solutions to guide an older adult along a safe path using a robotic walking assistant is available to the public through ArXiv Moro F, Fontanelli D, Passerone R, Prattichizzo D, Rizzon L, Scheggi S, Targher S, De Angeli A, Palopoli L "Follow, listen, feel and go: alternative guidance systems for a walking assistance device." arXiv:1601.03915[cs.RO] available at http://arxiv.org/abs/1601.03915v1

In addition a few dissemination initiatives have been undertaken towards a general audience (members of the public, charities, policy makers).

We can list the following:

- News Report at Euronews. In April 2015 UNITN received a visit from the Euronews broadcaster. The troupe was guided by Dr. Julian Lopèz and prepared a report for the Futuris show on the outcome of DALi and on ACANTO planned work. The report is still visible on youtube: <u>https://www.youtube.com/watch?v=0qMsQ7DZqJk</u>
- Prof. Luigi Palopoli prepared a post on the prestigious EC Digital Agenda Blog, which is visible on the website of the European Commission: https://ec.europa.eu/digital-agenda/en/blog/dali-new-vision-robot-assistance-activeageing. The post condenses the ACANTO team's view on the future of robotic assistance.
- The DALi and the ACANTO project were mentioned in an article in the CORDIS website: <u>https://ec.europa.eu/digital-agenda/en/news/dali-robot-walker-elderly-people-public-spaces</u>
- Prof. Palopoli was interviewed during a scientific TV show on the Italian National broadcaster (RAI) (Campus Italia). The link is: http://www.rai.tv/dl/RaiTV/programmi/media/ContentItem-1b7187ae-8628-4699-9bc6-66c587fb2a85.html

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- The results of the user research on design requirements were presented at the 2015 HCI International Conference Workshop on Human Aspects of IT for the Aged Population. McNeill, A., & Coventry, L. (2015). An Appraisal-Based Approach to the Stigma of Walker-Use. In Human Aspects of IT for the Aged Population. Design for Aging (pp. 250-261). Lecture Notes in Computer Science vol 9193, Springer Interationnal Publishing.
- 2) User research exploring what protection motivation theory tells us about older adults willingness to use technology to support their socializing and exercise has been accepted for presentation at the **2016 HCI International Conference** and will be presented in July. Coventry, L., Briggs, P. and McNeill, A. (2016) Mobile Technology for Older Adults: Protector, Motivator or Threat?. HCI International Conference.

SERMAS

Additionally, the project has been presented to the citizens of Europe who are the ultimate beneficiaries of the research by press releases and interviews in the media:

- 1) Interviews with Dr. Elena Villalba Mora in two radio stations discussing the ACANTO project.
 - a. Cadena SER Madrid Sur, Regional radio station (April 8, 2015): http://www.sermadridsur.com/noticias/el-hospital-de-getafe-desarrolla-unandador-robot-para-ancianos-que-mejora-la-movilidad-e-incluye-un-chatdigital_48937/

b. Cadena COPE, National radio station (April 13, 2015): http://www.cope.es/player/LA-MANANA-13-ABRIL-&id=2015041314260001&activo=10

2) Press releases:

- http://www.madrid.org/cs/Satellite?cid=1354423944697&language=es&pagei d=1159444389315&pagename=PortalSalud%2FCM_Actualidad_FA%2FPTS A_pintarActualidad&vest=1159444389315 (Story in the official Health Portal of the Region of Madrid, April 4 2015)
- b. http://www.lavanguardia.com/local/madrid/20150408/54429757001/elhospital-de-getafe-desarrolla-un-andador-con-un-sistema-de-chat.html (La Vanguardia, national-level newspaper, April 8 2015)
- c. http://www.ceafa.es/es/actualidad/noticias/hospital-getafe-desarrollaandador-con-sistema-chat?imprimir=ok (CEAFA, Spanish Alliance of Associations of People with Alzheimer)
- 3) Short story about ACANTO by SERMAS in **the newsletter** "**Getafe Investiga**", distributed to all staff in the University Hospital of Getafe.



Figure 6. Getafe Investiga Newsletter

4) Announcement about the ACANTO Plenary Meeting, including short description of the objectives of the project, in the Private Network in the Hospital of Getafe.

No	Title	Main author(s)	Title of the journal or the conference	Number, date	Place of publication	Permanent identifiers (if available) ³	Is open access provided to this publicati on ⁴⁵
1	Gait Analysis on the move: The Infinite Gait Walkway	S. Wakolbinger, J.A. Birchbauer and S. Küberl.	IET International Conference on Technologies for Active and Assisted Living (TechAAL2015), Link: http://www.techaal.org/	November 5th, 2015	London, UK	https://zenodo.org /record/45591#.Vx ogiybAM_t	Yes
2	Evaluation of a predictive approach in steering the human locomotion via haptic feedback	Aggravi et. al.	2015 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS),	September 29 th , 2015	Hamburg, Germany	https://usiena- air.unisi.it/handle/ 11365/980703	Yes
3	A Passive Guidance System for a Robotic Walking Assistant Using Brakes	Fontanelli et. al	54th IEEE Conference on Decision and Control (CDC)	December 15 th , 2015	Osaka, Japan	http://ieeexplore.ie ee.org/xpl/articleD etails.jsp?arnumb er=7402332	Yes
4	Follow, listen, feel and go: alternative guidance systems for a walking assistance device	Moro F, Fontanelli D, Passerone R, Prattichizzo D, Rizzon L, Scheggi S, Targher S, De Angeli A, Palopoli L		January 15 th , 2016		http://arxiv.org/abs /1601.03915v1 (arXiv:1601.03915)	Yes

³ A permanent identifier should be a persistent link to the published version full text or to the final manuscript accepted for publication (link to article in repository)

⁴ Open Access is defined as free of charge access for anyone via Internet.

⁵ In the clinical environment a subset of the functionality of our smart walker, in particular the gait analysis shows potential to be an innovative solution reducing the costs of traditional scales used in the clinical environment like gait walkways while at the same time boosting the quality and quantity of data available. For this reasons we are acting carefully in our external communication and have initiated a process of protecting IP's. This process is currently undergoing and will soon be finalized, so for some articles we expect to publish on the project work prior to the start of the clinical evaluation in May 2016 in Getafe.

5	Efficient customisable dynamic motion planning for assistive robots in complex human environments	Colombo et. al	Journal of Ambient Intelligence and Smart Environments, with the title			http://content.iospr ess.com/articles/jo urnal-of-ambient- intelligence-and- smart- environments/ais3 38	Yes
6	An Analytical Solution for Probabilistic Guarantees of Reservation Based Soft RealTime Systems	Palopoli et. al	IEEE Transactions on Parallel and Distributed Systems, with the title			http://ieeexplore.ie ee.org/xpl/articleD etails.jsp?arnumb er=7070759	Yes
7	Indoor Localisation System for Smart Walkers: the ACANTO approach	Fontanelli et. al	National Congress of the "Gruppo Misure Elettriche ed Elettroniche (GMEE)"		Milano, Italy		Not yet ⁶
8	Analyzing Free-standing Conversational Groups: A Multimodal Approach	Alameda-Pineda et. al	23rd ACM International Conference on Multimedia (ACM Multimedia'15). The article received the Best Paper Award at the conference.	October 2015	Brisbane, Australia	http://vintage.winkl erbros.net/Publica tions/acmmm2015 groups.pdf	Yes
9	FaceCept3D: Real Time 3D Face Tracking and Analysis	Tulyakov et. al	2nd Workshop on Computer Vision for Affective Computing (CV4AC), in conjunction with International Conference of Computer Vision (ICCV'15).	December 2015	Santiago, Chile, Chile	http://www.cvfoun dation.org/openac cess/content_iccv _2015_workshops /w2/papers/Tulyak ov_FaceCept3D_ Real_Time_ICCV _2015_paper.pdf	Yes
10	Ubiquitous Technologies for Older People	Cozza et. al	Personal & Ubiquitous Computing, special Issue on "Histories of Ubicomp".				Not yet
11	An Appraisal-Based Approach to the Stigma of Walker-Use	McNeill, A., & Coventry, L.	2015 HCI International Conference Workshop on Human Aspects of IT for the Aged Population.	In Human Aspects of IT for the Aged Population.		https://www.resea rchgate.net/public ation/280836507_ An_Appraisal-	Yes

⁶ Some Scientific papers that are not open access yet but they will be within the following period, the link will be made public in ACANTO website: http://www.ict-acanto.eu/publications/

				Design for Aging (pp. 250-261). Lecture Notes in Computer Science vol 9193, Springer International Publishing.2015	Based_Approach_ to_the_Stigma_of _Walker-Use	
12	Design of a Wearable Skin Stretch Cutaneous Device for the Upper Limb.	F. Chinello, C. Pacchierotti, N. G. Tsagarakis, D. Prattichizzo,	IEEE Haptics Symposium 2016 on Jan 14.	Proc. IEEE Haptics Symposium (HAPTICS). In Press. 2016	(https://usiena- air.unisi.it/handle/ 11365/986299#. VrSUdZv5MZw).	Yes
13	Mobile Technology for Older Adults: Protector, Motivator or Threat?.	Coventry, L., Briggs, P. and McNeill, A.	2016 HCI International Conference and will be presented in July.	To be presented in July 2016		

Figure 7. List of scientific publications

PARTNER	Dissemination activities	Dissemination activities involving other partners inside the consortium	Dissemination activities in which external entities have been involved
UNITN	 Journal paper: Palopoli <i>et. al.</i>, "An Analytical Solution for Probabilistic Guarantees of Reservation Based Soft RealTime Systems", IEEE Transactions on Parallel and Distributed Systems. Short workshop paper: Fontanelli <i>et. al.</i>, "Indoor Localisation System for Smart Walkers: the ACANTO approach", National Congress of the "Gruppo Misure Elettriche ed Elettroniche 	 Joint journal paper UNITN-INRIA: Colombo <i>et.</i> <i>al.</i>, "Efficient customisable dynamic motion planning for assistive robots in complex human environments", Journal of Ambient Intelligence and Smart Environments. Joint conference paper UNITN-UNISI: Fontanelli <i>et. al.</i>, "A Passive Guidance System for a Robotic Walking Assistant Using Brakes", 54th IEEE Conference on Decision and Control (CDC), Osaka, Japan. 	 Participation to the National Congress of the "Gruppo Misure Elettriche ed Elettroniche (GMEE)", September 9-12, 2015, Lecco, Milano, Italy The work "Ubiquitous Technologies for Older People" (Cozza et. al), accepted in Personal & Ubiquitous Computing, special Issue on

	 (GMEE)", Milano, Italy. 3. Conference paper: Alameda-Pineda et. al, "Analyzing Free-standing Conversational Groups: A Multimodal Approach", 23rd ACM International Conference on Multimedia (ACM Multimedia'15), Brisbane, October 2015. Conference Best Paper Award. Openly accessible at: http://vintage.winklerbros.net/Publicatio ns/acmmm2015groups.pdf 4. Conference paper: Tulyakov et. al., "FaceCept3D: Real Time 3D Face Tracking and Analysis", 2nd Workshop on Computer Vision for Affective Computing (CV4AC), in conjunction with International Conference of Computer Vision (ICCV'15), Santiago, Chile, December 2015. Openly accessible at: http://www.cvfoundation.org/openacces s/content iccv_2015 workshops/w2/pa pers/Tulyakov_FaceCept3D Real_Tim e_ICCV_2015_paper.pdf 5. Conference paper: Cozza et. al., "Ubiquitous Technologies for Older People", Personal & Ubiquitous Computing, special Issue on "Histories of Ubicomp". 		 "Histories of Ubicomp" (listed previously), has been used as teaching material for the HCI course of European Institute of Technology Master of Science in HCI, and for two thesis (BSc and MSc). Organization of the 2nd Workshop on Computer Vision for Affective Computing (CV4AC), in conjunction with International Conference of Computer Vision (ICCV'15), Santiago, Chile, December 2015 - Link: https://sites.google.com/site/wcv 4ac2015/
ENVT	 Coordination of social media publishable material (tweets, videos, pictures, etc.) Participation and co-sponsored the V annual conference Protecturi. Participation in the II Port Security Sector Conference. Participated in the Annual Axis Solution Conference. 	1. SERMAS and ENVITEL have been in contact with different stakeholders and potential users explaining ACANTO concept, making sure of the understanding of the whole project idea and acquiring users requirements, though two main channels; by having individual problem interviews with geriatricians and occupational therapists and by observing and presenting ACANTO approach to older adults with different profiles in terms of age, gender and disabilities.	 Exchange of ideas and contact for future meeting with the dissemination leader of RAPP project (funded by FP7 of EC).
FORTH			 Demonstration of ACANTO related research at Researchers' night 2015,

			 FORTH buildings, Heraklion, Crete, Greece. Event open to the general public, September 25, 2015. Invited talk on "Physically plausible 3D tracking of hands and hand-object interactions", at the IEEE workshop on "Vision meets Cognition: Functionality, Physics, Intentionality and Causality", in conjunction with IEEE CVPR 2015, Boston, USA, https://dx.com/page/19/10/10
			 June 11, 2015 Keynote talk by Antonis Argyros on "Visual Perception of Human Motion and Human-Object Interaction", International Conference on Man-Machine Interactions (ICMMI 2015), Beskids, Poland, September 6, 2015
			 Keynote talk by Antonis Argyros on "Visual Perception of Human Motion and Human-Object Interaction", 8th ACM International Conference on Pervasive Technologies Related to Assistive Environments" (PETRA 2015), July 1-3, 2015.
			 Invited talk by Antonis Argyros on "Observing hands in action", Imperial College London, EEE Department, London, UK, December 10, 2015.
			 Invited talk, by Antonis Argyros on "Observing hands in action", University of Cambridge, Engineering Department, Cambridge, UK, December 9, 2015.
UNAN	1. The results of the user research on	During this year we have worked with over 50 older	1. The work done during this first

	 design requirements were presented at the 2015 HCI International Conference Workshop on Human Aspects of IT for the Aged Population. McNeill, A., & Coventry, L. (2015). An Appraisal- Based Approach to the Stigma of Walker-Use. In Human Aspects of IT for the Aged Population. Design for Aging (pp. 250-261). Lecture Notes in Computer Science vol 9193, Springer Interationnal Publishing. User research exploring what protection motivation theory tells us about older adults willingness to use technology to support their socializing and exercise has been accepted for presentation at the 2016 HCI International Conference and will be presented in July. Coventry, L., Briggs, P. and McNeill, A. (2016) Mobile Technology for Older Adults: Protector, Motivator or Threat?. HCI International Conference. 	adults in both Trento and Northumbria. This has provided exposure of the project to the intended user community.	 year has been used by UNITN and UNAN as teaching material for the HCI course of European Institute of Technology Master of Science in HCI, and for two thesis (BSc and MSc). 2. The British Society of Gerontology Annual Conference (2015) was held at Newcastle. The Northumbria team were an active part of this conference, with Lynn Mcinnes on the program committee and her PHD student presenting a poster on why older adults wont exercise any more. Andrew McNeill presented work which over laps between Dali and Acanto on whether or not the design of artifacts can remove the stigma of using assistive walking technology. Coventry, L. & McNeill, A. (2015) Stigma and assistive walking devices. British Gerontology Conference, July 2015 3. Representatives of external groups formed the Advisory Board which met on 3/3/16. The ACANTO Project work was presented to this group who then offered feedback on the project.
UNISI	 Conference Paper: M. Aggravi, S. Scheggi, D. Prattichizzo "Evaluation of a predictive approach in steering the human locomotion via haptic feedback", IEEE/RSJ IROS 2015. <u>https://usiena- air.unisi.it/handle/11365/980703</u> Conference Paper: F. Chinello, C. Pacchierotti, N. G. Tsagarakis, D. Prattichizzo, "Design of a Wearable Skin Stretch Cutaneous Device for the 	 Joint conference paper UNITN-UNISI: Fontanelli <i>et. al.</i>, "A Passive Guidance System for a Robotic Walking Assistant Using Brakes", 54th IEEE Conference on Decision and Control (CDC), Osaka, Japan. 	 Demonstration of ACANTO related research at Researchers' night 2015, Piazza Indipendenza, Siena, Italy. Event open to the general public, September 25, 2015. Domenico Prattichizzo was invited speaker on Robotics at the cultural event "BIT CHIP WEB – La rivoluzione digitale"

	Upper Limb", IEEE Haptics Symposium (HAPTICS) 2016.		(the digital revolution) organised by the Italian Cultural Foundation "Niels Stensen" during the event "Novembre Stenseniano 2015", October 24, 2015, Florence, Italy.
INRIA		 Joint journal paper UNITN-INRIA: Colombo et. al., "Efficient customisable dynamic motion planning for assistive robots in complex human environments", Journal of Ambient Intelligence and Smart Environments. 	 As part of the habilitation (HDR) presentation of Axel Legay, held at Inria Rennes - Bretagne Atlantique on 18/11/2015, we presented the ACANTO reactive planner.
SERMAS	 Interviews with Dr. Elena Villalba Mora in two radio stations discussing the ACANTO project. Press releases in online newspapers. Short story about ACANTO by SERMAS in the newsletter "Getafe Investiga", distributed to all staff in the University Hospital of Getafe. Presentation about ACANTO to all the staff of the Biomedical Research Foundation of the University Hospital of Getafe 	 SERMAS and ENVITEL have been in contact with different stakeholders and potential users explaining ACANTO concept, making sure of the understanding of the whole project idea and acquiring users requirements, though two main channels; by having individual problem interviews with geriatricians and occupational therapists and by observing and presenting ACANTO approach to older adults with different profiles in terms of age, gender and disabilities. 	
SIEMENS	 Conference Paper: S. Wakolbinger ; J.A. Birchbauer ; S. Küberl "Gait analysis on the move: the infinite gait walkway ", TechAAL 2015. http://digital- library.theiet.org/content/conferences/2 015/15741 		

Table 4. Summary of dissemination activities (individual, in cooperation and involving external entities)