Project acronym	INCARE
Project number	AAL-2017-059-INCARE
Project full name	Integrated Solution for Innovative Elderly Care
Dissemination level	Public
Type of deliverable	Report
Contractual Date of Delivery	M39
Actual Date of Delivery	M39
Deliverable Number	D3.2b
Deliverable Name	Regular reports on stakeholder concerns and demonstrator sessions
Workpackage / Task	WP3 / Task 3.2
Work package responsible / Task responsible	EXYS / EXYS
Number of Pages	12
Contributors	CITST, EXYS, UPB, IZRIIS, **WUT, STOCZNIA**, BZN, SOFTIC
Version	4

Abstract

The aim of this report is to present the communication and demonstrator sessions which have been organized or which have been used for the presentation and demonstration of the INCARE project and the INCARE solution. These events have been kept updated both on the INCARE webpage at www.aal-incare.eu and on the Linkedin page.[1] A total of 29 events were organized during the last 20 months of the project and a total of 227 users were testing INCARE in four end-user organization countries. Direct discussions with various stakeholders from the economic, legal, social and IT sector have revealed both the interest in platforms such as INCARE but also barriers which need to be overcome.

[1] https://www.linkedin.com/showcase/incare-project/

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ABBREVIATIONS

AAL	Active Assisted Living
INCARE	Integrated Solution for Innovative Elderly Care
ADIV	Association of the directors of long term care institutions for elderly

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1 Introduction

This document is presenting two aspects of stakeholder involvement:

- The first part reports on the work done during the second half of the project (M19 - M39) to reach relevant different tertiary stakeholders that are involved in the area of elderly care, business, providers of relevant technologies (including robotics), service providers, insurance and banking, etc. Their continuous involvement is fundamental to the success of the project.
- The second part focuses on involvement of primary and secondary users in the development of the INCARE solution and the INCARE exploitation plan.

All partners have participated in networking and dissemination activities with tertiary stakeholders while the involvement of the primary and secondary users has been mainly coordinated by the end-user organizations.

Scientific dissemination via scientific publications is presented in D3.3.

2 Project overview

Motivated by the aging European population and by the need to support elderly through integrate the technological solutions the "Integrated Solution for Innovative Elderly Care" – INCARE project is building upon two successful platforms (AAL-NITICS and FP7-RAPP) a new readily available AAL product. Its seamless operability and modularity will be demonstrated in multinational end-user pilots designed to help its fast uptake by the market:

- NITICS (Networked InfrasTructure for Innovative home Care Solutions) funded within the AAL 2012 call (NITICS webpage)
- RAPP (Robotic Applications for Delivering Smart User Empowering Applications) funded 2013-2016 by the EC through the 7th Framework Programme FP7 (RAPP on cordis)

The selected platforms offer complementary functionalities and services to elderly and their caregivers. However, the fully integrated solution, *i.e.* the INCARE platform, will go beyond concatenation of functionalities by providing a seamless access of its users to interconnected services with added functionality. INCARE functionalities and associated services will be flexible, scalable and autonomous (*i.e.* without continuous human intervention).

Motivated by the excellent outcome of the NITICS project which was selected as one of the AAL success stories, we propose to exploit NITICS innovation and extend the platform with new technologies and services for both indoor and outdoor support. In addition, integration with RAPP will confer autonomous, intelligent and adaptable features along with support from robotic platforms. In particular, the TIAGO robot developed by Pal Robotics will be used for the integration in the INCARE platform and subsequent testing with target users. Two test sites, one in Poland and one in Romania, will evaluate the acceptance of elderly and informal caregivers towards a robotic assistant. Following RAPPs positive results, we expect that the INCARE pilots will be able to prove that older people are willing and able to adopt modern technologies and applications through the interaction of assistive robots.

T**he AAL NITICS platform** offers fully integrated and validated solutions for health monitoring, home automation, indoor fall detection, personal agenda with reminders, alerts, caregiver administrative tools (e.g. administrative tools for several users, sensor settings, user profiles).

Modular and based on a classic client-server architecture supporting several communication protocols (see section 2.1), NITICS is easy expandable and adaptable.

The **RAPP platform** has been designed aiming towards a cloud-based integrated approach that enables developers to seamlessly deploy robotic applications. While suitable to run on different kinds of robots, these applications can be deployed on any platform (even a PC) installed with the Robotic Operating System (ROS). In addition, RAPP brings along various interaction capabilities through speech recognition and human/gesture detection along with a series of RApps offered through a web-based store (see Figure 1).

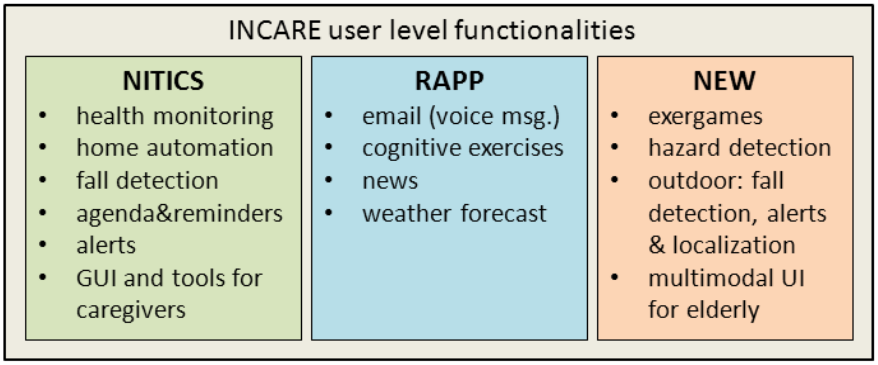

Figure 1. INCARE user level functionalities.

We will extend the integrated platform by adding functionalities that help elderly remain physically active and socially connected. These are (a) multimodal and seamless interface tuned to elderly users; (b) indoor hazard detection RAPP; (c) machine supervised and personalized exergames; (d) fall detection, alerts, localization in outdoor environment (see **Error! Reference source not found.**). The latter will confer elderly increased confidence for outdoor activities (including socializing), thus improving their sense of confidence and autonomy.

The resulting INCARE platform will be **modular, highly configurable and adaptable**. A multimodal interface (touch, voice, gesture) developed within the project will allow a seamless access of the user to all INCARE functionalities and associated services. The development will be based on a co-creation approach which will involve different categories of users in all phases of project planning, project implementation and, very importantly, in the business modeling and market uptake.

3 Tertiary stakeholder involvement

3.2 Networking and dissemination events

Table 1 is presenting the networking and dissemination events which took place either through individual discussions or in larger events.

Table 1. Dissemination and networking towards tertiary stakeholders.

	Partners	Activity	Date	Medium and reference	Indicative coverage
1	STOCZNIA	Stakeholder consultation	October-November 2021	**Medium:** product presentation along with an individual interview.	4 representatives

				Reference: four representatives of nursing homes and medical clinics with experience in the area of implementing telecare and telemedical solutions.	in 4 separate meetings
2	STOCZNIA	Stakeholder consultation	October-November 2021	**Medium:** product presentation along with an individual interview. **Reference**: doctor and researcher of telemedicine and telecare applications	
3	STOCZNIA	Stakeholder consultation	October-November 2021	**Medium:** product presentation along with an individual interview. **Reference:** a member of the working group in charge of Telemedicine at the Supreme Medical Council and the Academic Council of the Minister of Health	
4	STOCZNIA	Stakeholder consultation	October-November 2021	**Medium:** product presentation along with an individual interview. **Reference:** an attorney working in healthcare, expert in the telemedicine team at the Board of the Supreme Medical Council	
5	STOCZNIA	Stakeholder consultation	October-November 2021	**Medium:** product presentation along with an individual interview. **Reference:** business development manager in the healthcare sector in one of Poland's telecom companies, responsible for the development and implementation of a telemedicine project	
6	STOCZNIA	Stakeholder consultation	October-November 2021	**Medium:** product presentation along with an individual interview. **Reference:** product manager in a company conducting an e-Care for Warsaw project	
7	STOCZNIA	Stakeholder consultation	May 2021	**Medium:** product presentation along with an individual interview. **Reference:** director of social research 8department in the Senior Hub - Senior Policy Institute	
8	STOCZNIA	First Prize in the Best Social Solution category	March 2021	**Medium:** receiving an award and participating in a radio broadcast **Reference:** "Innovation 2021" Polish Radio competition	
9	STOCZNIA	Presentation OBS: not reported in D3.2a	31 May/1 June 2019	**Medium:** presentation **Reference:** Social Zone of the Festival of Freedom and Solidarity (organized in Gdańsk	

				as part of the 30th anniversary of the 1989 elections).	
10	WUT	Presentation and practical laboratory for students about Tiago robot and the INCARE project	2021	**Medium:** lecture **Reference:** Introduction to automation, electronics and telecommunication Class 2021	about 100 participants
11	WUT	Presentation and practical laboratory for students about Tiago robot and the INCARE project	2021	**Medium:** lecture **Reference:** Anatomy of Robots Class 2021	about 40 participants
12	WUT	The laboratory for students about Tiago robot and INCARE project	2021	**Medium:** lecture **Reference:** Control and Simulation of Robots Class 2021	about 40 participants
13	WUT	Robotic hackaton with Tiago robot simulator and INCARE scenario	Dec 2021 to Jan 2022	**Medium:** presentation and session **Reference:** Bionikalia 2021	about 20 attenders
14	WUT	Several movies with INCARE robots scenarios execution	Continuous	**Medium:** social media **Reference:** INCARE movies publication on LinkedIn and Facebook	about 1000
15	EXYS	Presentation of INCARE objectives and expected outcomes	2 February 2021	**Medium:** presentation **Reference:** Meeting with emergency services of Southern Switzerland, Locarno, Switzerland	< 10
16	EXYS	Feedback from professionals on the field on how they may see a pilot once the project is successfully finished	23 March 2021	**Medium:** presentation **Reference:** Meeting with elderly home association and presented the INCARE project and expected outcomes, Lugano, Switzerland	4
17	BZN	Stakeholder consultation	February 9, 2021	**Medium:** discussions **Reference:** Face-to-face consultation on the needs of the	6

				professional caregivers and their institutions	
18	BZN	Roadshow	Jun 24, 2021	**Medium:** presentation and discussions **Reference:** Regional roadshow of development projects in Central Hungary region	< 50
19	BZN	Stakeholder consultation	July 28, 2021	**Medium:** discussions **Reference:** Face-to-face discussions about the project with a Social Care Services of the 11th District Municipality of Budapest	~15
20	BZN	Cross visit	September 30, 2021	**Medium:** discussions **Reference:** Virtual forum discussion about development projects of similar nature	6
21	IZRIIS	Presentation	May, 2021	**Medium:** presentation and subsequent discussions **Reference:** Presentation to Secondary school of Nursing Ljubljana	20 teachers, 150 Students
22	IZRIIS	Setting up a project lab at the Public School	June, 2021	**Medium:** presentation and subsequent discussions **Reference:** Presentation to Secondary school of Nursing Ljubljana	30 teachers, 250 Students
23	UBP, CITST	Presentation	October 2020	**Medium:** presentation and subsequent discussions **Reference:** How Assisted Living can Improve Quality of Life, Security for Healthy Ageing (The Hospital from Home), within BeHEALTH 2020: International Online Event in Healthcare (27-29 October 2020).	~60
24	UBP, CITST	Presentation	October 2021	**Medium:** presentation and subsequent discussions **Reference:** Integrated innovative care for AAL: body-, mental- and oral-care, panel 6 "SHAFE | NET4Age- Friendly; UN recognition for pressure relieve on Health and Care Systems during and after the COVID-19 pandemic".	~60
25	UBP, CITST	Presentation	October 2021	**Medium:** presentation and subsequent discussions **Reference:** Presentation of the ACESO Project, European Online Week of Active & Healthy Ageing The second edition of the European Week of Active and Healthy Ageing 2021 took place between 18 and 22 October 2021 online.	~80

26	CITST	Presentation	October 2020	**Medium:** presentation and subsequent discussions **Reference:** Webinar during the Erasmus+ Days during which ACESO was presented along with several projects related to ICT and elderly	20
27	CITST	Presentation	November 2021	**Medium:** lecture to students from 4 countries **Reference:** FIT Europe Seminar "SEMINAR 3 - PRESERVING PRIVACY AND TRUST IN IOT" within an ERASMUS+ event https://fit-europe.eu/seminars/seminar3.html (presentation)	36 students from 4 European Universities, 10 researchers and professors
28	CITST	Consultations	September - November 2021	**Medium:** Guided discussions **Reference:** insurance representative, 2 telecom representative, director of ADIV	3
29	ALL	Virtual booth and discussions	October 2021	**Medium**: Virtual booth **Reference**: The European Online Week of Active & Healthy Ageing	~ 100

3.1 Feedback from individual discussions

Individual discussions with tertiary stakeholders took place in Poland and Romania. The following questions were used to guide the discussions:

- How do the stakeholders perceive the usefulness of the solution in their country?
    - Is there a need for this kind of solution? What are its advantages and what are the disadvantages?
    - What can be the benefits for users? What role can it play in the care of the elderly?
    - Do they know any other such solutions similar to INCARE? How do they perceive their usefulness?

What is, in their opinion, the target group for such a solution?

    - Is there a space for such solutions in the institutional care field?
- How can such a solution be marketed?
    - What are the opportunities and the barriers in introducing such a system to the market?
    - What factors should be taken into account when introducing such a product to the market?
    - How to address the issue of payment (e.g., one-time payment for a product, subscription)
- Opinion regarding robots in AAL. Do they see robots as being useful in for the society and if yes, for which tasks?
- Do they foresee AAL platforms as accepted or even encouraged by insurance companies?
- Do they see possibilities of association with the INCARE product or complementarity with one of their offers?
- How would they introduce the INCARE product in their geographical area? To whom in priority?
- Do you know/offer support/incentives to help accelerate the launch of this type of product?

The following tertiary users were involved in Poland (Table 1): four representatives of nursing homes and medical clinics with experience in the area of implementing telecare and telemedical solutions; a doctor and researcher of telemedicine and telecare applications; a member of the working group in charge of Telemedicine at the Supreme Medical Council and the Academic Council of the Minister of Health; an attorney working in healthcare, expert in the telemedicine team at the Board of the Supreme Medical Council; a business development manager in the healthcare sector in one of Poland's telecom companies, responsible for the development and implementation of a telemedicine project; a product manager in a company conducting an e-Care for Warsaw project; a director of social research 8department in the Senior Hub - Senior Policy Institute.

The tertiary stakeholders involved in Romania were: one insurance broker having connection with the insurance companies active in Romania; two telecom representatives in the middle and upper management layer in Ericsson and Orange; director of ADIV which is an association of the directors of long-term care facilities for elderly.

- Respondents view the app and the devices connected to it as a single product, in which they see potential for modifying/ expanding on the features depending on the needs (specific condition or prophylaxis).
- The system as a whole was overly well received as it fits well with the trend of older people becoming more technologically aware and as their need for being independent and social activity increases so does the room for such devices
- Stakeholders identified INCARE advantage in being an integrated solution. They noted there already are systems associated with telemedicine, e-health on the market but they are dispersed and incomplete.
- The respondents emphasized that telecare solutions should constitute a system that is compatible with other solutions used in healthcare. This means, that in the case of public institutions, the solution should be connected to the Patient's Online Account (an individual patient profile under public healthcare), or, in the case of the private sector, it should be implemented as part of a system for managing an institution as a whole. Our respondents stressed that the app will not be useful if it cannot be connected to the already existing healthcare systems, otherwise it will only be a patient "gadget", instead of being a real solution for implementing in care institutions.
    - Employees working in nursing homes are the most interested in using ready-made, complete solutions for managing care in their institution. They are less interested in systems, whose functionality is limited (and that is how they view the presented INCARE app).
    - Healthcare representatives – doctors, point out that a system like INCARE is useful only when it can be integrated with existing, larger telecare or telemedicine systems: in the systems of private clinics or, in the end, on a Poland-wide level, just like the Individual Patient Account.
- The respondents and in particular the insurance representative pointed out that an additional obstacle to introducing solutions such as INCARE to institutions is the lack of regulations and standards for telecare solutions and the lack of action standards in this area.
- Respondents were mixed in their opinions about who would be the target of the INCARE application:

  - According to the nursing home workers, in its present form, it can be used only by the able-bodied individuals, and they will most likely be the least willing to use such solutions.
  - According to the directors of the nursing homes, the future lies in solutions like INCARE and funds are needed to introduce them into regular practice. This will also determine workers and inhabitants to use and accept them.
  - Another interesting group are people with chronic conditions, in all ages, as well residents of rural areas, where there is limited access to medical and care services.
- Respondents were divided with respect to their opinion on the potential for reimbursing a solution such as INCARE. According to the doctor, it could be reimbursed by the National Health Fund as an element completing the teleconsultation, whereas people evaluating the market potential of the app, at best indicate the possibility for partial reimbursement of such solutions, because the cost of the service would be assessed as too low for anyone to choose such a benefit model.
- People evaluating the market potential of the app point to the local governments as the possible recipients of this service, under the condition that a care telecenter dedicated to the system is created/ that they are helped in the creation of such a center.
- Telecom representatives have seen a potential business in the data transfer part which is needed for the INCARE applications to function. They were confident that agreements can be reached for providing also auxiliary functionalities along with mobile data transfer.

4 Primary and secondary stakeholder involvement

Primary and secondary stakeholders were mainly involved during the INCARE pilots which were organized in Poland, Romania, Hungary and Slovenia. Four types of users were involved for approximately six months:

- **Individual primary end-users** - elderly (seniors) living in an independent apartment (alone or with their caregiver and/or other family members). They are testing the solution at home (in-home pilot studies).
- **Institutional primary end-users** - elderly (seniors) living or visiting on a regular basis a care facility. They are engaged in pilot study in the care institutions. Facilities are nursing homes (providing long term 24/7 care) or day care institution (where seniors spend up to several hours a day). Facilities are public or non-public (private).
- **Secondary end-users** (caregivers of the elderly participating in the pilot study):
  - informal (mostly family members) - engaged in and in-home pilot study
  - formal (employees in facilities) - engaged in a pilot study in a long-term or in a day-care institution.

Table 2. Primary and secondary users who participated in the INCARE pilots.

COUNTRY	**USERS' # and TYPE** (primary/secondary, individual/institutional)	**NUMBER OF USERS** (All types)	**Type of the INCARE functionalities** taking part in the pilot studies
POLAND	61 users: primary at home, informal caregivers, institutional	15 seniors at home, 15 informal caregivers, 10 seniors in nursing home, 1 formal caregiver, 12 seniors and 8 caregivers taking part in the digital evaluation of the robotic platform assessment	Health monitoring, cognitive games, robotic platform, voice commands, shared calendar
ROMANIA	22 users: primary at home, informal caregivers, formal caregivers invited for the assessment of the robotic platform	10 seniors at home, 4 informal caregivers, 8 formal caregivers for the robotic platform	Health monitoring, cognitive games, activity monitoring, robotic platform, voice commands, shared calendar
HUNGARY	137 users: primary at home, informal caregivers, seniors in institution and formal caregivers	100 seniors living at home and testing in daycare centers mainly health monitoring; 30 seniors in nursing home; 5 formal caregivers; 2 informal caregivers	Health monitoring, games, calendar, voice commands, robotic platform

SLOVENIA	7 users primary at home, informal caregiver	5 seniors living at home, 2 informal caregivers	Health monitoring, cognitive games, activity monitoring, voice commands, shared calendar

The detailed methodology and results from primary and secondary stakeholders' consultation are described in reports: D1.2a, D1.2b, D1.3a, D1.3b as well as was used to create the business plan described in report D3.1a, D3.1b, D3.1c.

5 Conclusions and future work

Both tertiary as well as secondary and primary users have been involved in networking, dissemination and testing of the INCARE platform. A total of 29 events were organized during the last 20 months of the project and a total of 227 users were testing INCARE in four end-user organization countries. Direct discussions with various stakeholders from the economic, legal, social and IT sector have revealed both the interest in platforms such as INCARE but also barriers which need to be overcome.

6 Document history

Date	Changes	Version	Author
August 2021	ToC initiated	1	EXYS
August - December 2021	Input from all partners was gathered	2	EXYS
December 2021	Integration of all input	3	EXYS
December 2021	Revision and submission	4	CITST