



ROBOTS IN ASSISTED LIVING ENVIRONMENTS

UNOBTRUSIVE, EFFICIENT, RELIABLE AND
MODULAR SOLUTIONS FOR INDEPENDENT AGEING

Research Innovation Action

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DELIVERABLE 5.9

Integrated RADIO Prototype II

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Task	T5.5: <i>Integration of the overall RADIO ecosystem</i>
Lead Beneficiary	S&C
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Abstract

This deliverable is the overall RADIO prototype.

History and Contributors

Ver	Date	Description	Contributors
01	18 May 2017	Updated Section and list of components in Section 2. Demonstrations added.	NCSR-D and S&C.
02	23 May 2018	Internal review	TWG
Fin	25 May 2018	Final preparation and submission	NCSR-D

Abbreviations and Acronyms

NCSR-D	National Centre for Scientific Research “Demokritos”
TWG	Technical Educational Institute of Western Greece
RUB	Ruhr Universitaet Bochum
ROBOTNIK	Robotnik Automation SLL
S&C	Sensing & Control Systems S.L.
AVN	AVN Innovative Technology Solutions Ltd.
FSL	Fondazione Santa Lucia
FHAG	Fundació Hospital Asil de Granollers
FZ	Frontida Zois
ADL	Activities of Daily Life
BLE	Bluetooth Low Energy
CPS	Cyber-Physical Systems
ICT	Information and Communications Technology
ROS	Robot Operating System

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1 INTRODUCTION

1.1 Purpose and Scope

This deliverable demonstrates the final RADIO prototype, integrating multiple RADIO Homes. Within the scope of this deliverable is to publish the source code of the relevant software developed and to demonstrate the ability to present RADIO Home data to authorized medical personnel.

1.2 Approach

This deliverable is prepared within *Task 5.5: Integration of the overall RADIO ecosystem*. This task integrates of the overall RADIO system, develops the components needed to connect RADIO Homes and other elements of the RADIO ecosystem, and develops user interfaces. During this period, work focused on access controls for present RADIO Home data to authorized medical personnel, with some further advancement made to the privacy-preserving statistical analysis protocol developed during the previous period.

1.3 Relation to other Work Packages and Deliverables

This deliverable builds upon the previous integrated prototype to integrate the final RADIO Home prototype (D4.9) and the final prototypes developed within WP5 (D5.7).

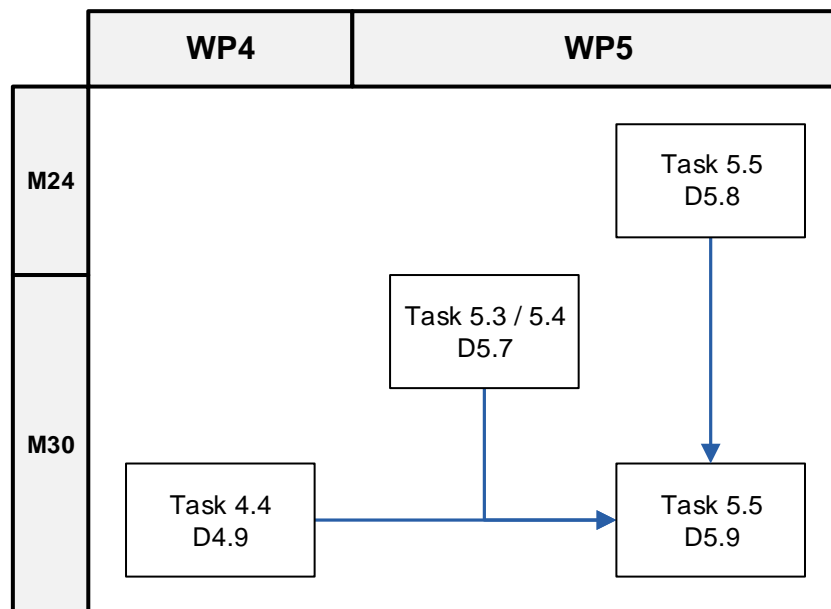


Figure 1: Relation to other Work Packages and Deliverables

2 PROTOTYPE

The components of the complete RADIO prototype are listed below.

Component name and description	Reference
RADIO Home: The RADIO Robot and further hardware devices and the corresponding software.	D4.3: documentation D4.9: prototype demonstration
RADIO Home installation toolkit: The software needed by technicians to configure the RADIO Home system to a new environment.	D5.5, Section 4
RADIO Home end-user interface: The Android app used by the end-user to control the RADIO Home.	D5.5, Sections 2 and 3.5
RASSP client: The R library needed by the experimenter to collect aggregates of the sensitive information in the RADIO Home's internal database.	D5.7
Grafana client: The Grafana front-end for browsing individual primary users' data.	D5.7
Home Automation Rule Engine: The cloud-based rule engine that supports the recognition of complex activities using bottom-up multi-level reasoning, which applies rules to low-level sensor events.	D5.2, Section 6, D3.5, Section 4, and D5.5, Section 2.3

3 DEMONSTRATION

3.1 Data access

The RADIO data access control is demonstrated as a virtual machine in OVA format and can be downloaded from

http://snf-787512.vm.oceanos.grnet.gr:8080/xmlui/bitstream/handle/123456789/19/radio_ova.zip

The downloaded OVA needs to be imported to VirtualBox [<https://www.virtualbox.org>] or similar virtualization software. The OVA appliance includes a full Ubuntu installation and the prototype.

The user credentials are the following, although the virtual machine should login automatically as soon as it boots:

username: user

password: pass

Once logged in, open a terminal and execute:

```
./run_grafana.sh
```

This script will boot up influxdb, grafana, and the rest of the required componends.

Then open a browser and visit localhost:3000.

There are two sets of credentials for the Web interface, and each one only gives to a different subset of the participants in the database. These credentials are:

- username: user1
password: pass1
- username: user2
password: pass2

Login as one of the users. In the next screen click on the "radio" dashboard and the panels for the used metrics will appear.

You can select to view metrics about only some participants by selecting their ID from the "participant" drop-down menu located at the top left of the screen.

You can select the time frame on the top right of the screen. You can focus on one panel by clicking on its title. You can also focus on a time period by selecting the period with the mouse on a panel.

3.2 Home Automation Rule Engine

The video included in this deliverable shows the main functionalities for controlling and managing the RADIO system, including the Home Automation Rule Engine.