ROBOTS IN ASSISTED
LIVING ENVIRONMENTS

UNOBTRUSIVE, EFFICIENT, RELIABLE AND MODULAR SOLUTIONS FOR INDEPENDENT AGEING

Research Innovation Action

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DELIVERABLE 5.8

Integrated RADIO Prototype I

Dissemination Level	**Public**
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Task	T5.5: *Integration of the overall RADIO ecosystem*
Lead Beneficiary	S&C
Contributing beneficiaries	NCSR-D
Type	DEM
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Abstract

This deliverable is the overall RADIO prototype.

History and Contributors

Ver	Date	Description	Contributors
00	1 Apr 2017	Document structure	S&C and NCSR-D
02	4 Apr 2017	RASSP demonstration	NCSR-D
03	12 Apr 2017	Cover document preparation	NCSR-D, S&C
04	12 Apr 2017	Internal review comments and corrections	TWG
Fin	13 Apr 2017	Addressing, peer review comments, final preparations 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 first 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 connect multiple RADIO Homes into a system of privacy-preserving mining of health records.

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 connecting RADIO Homes into a system for privacy-preserving mining of health records.

1.3 Relation to other Work Packages and Deliverables

This deliverable integrates the RADIO Home (D4.8) with components developed within WP5 (D5.5 and D5.6). This integrated prototype is used for the first piloting round.

This deliverable will be the starting point for the final prototype, D5.9, due M30.

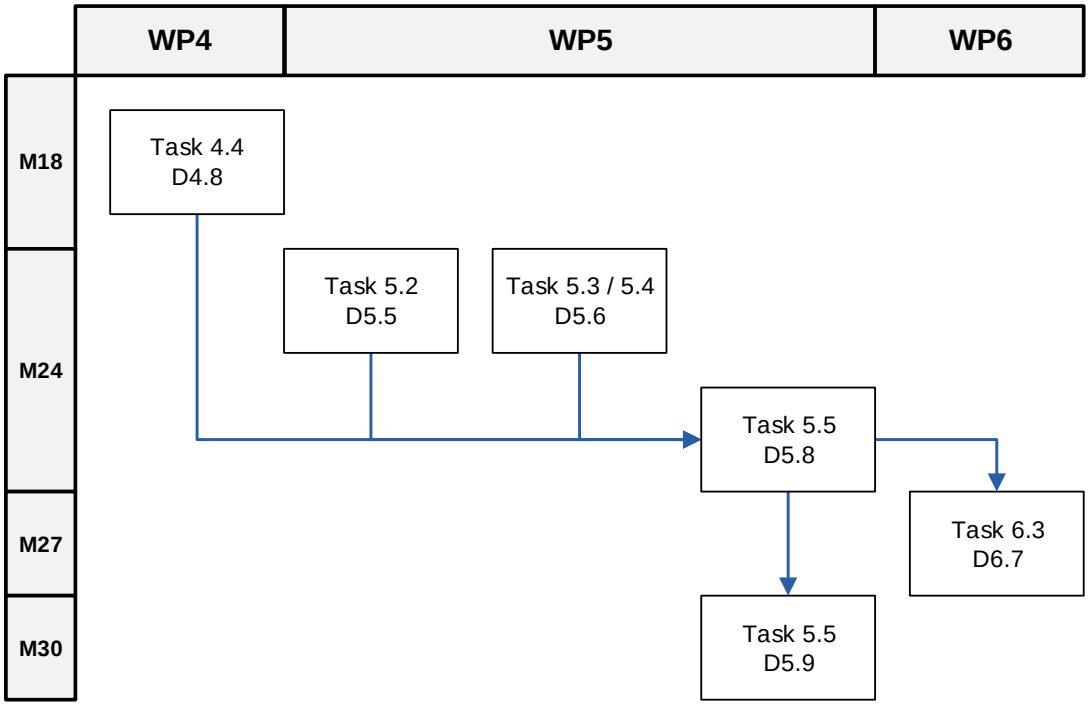

Figure 1: Relation to other Work Packages and Deliverables

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.	D4.2: documentation D4.8: 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.	D5.6, Section 4
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

The ADL recognition stack in this deliverable is demonstrated as a virtual machine in OVA format and can be downloaded at http://hdl.handle.net/21.15101/10

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.

Once the virtual machine boots, login using:

username: root

password: rassp

At the terminal, execute:

./run_rassp.sh

to see the result along with the secret share calculations between the rassp nodes.

The aforementioned command creates 10 RASSP nodes. Each node contains a sample database of a single field “secret” and a corresponding real number that represents the sensitive information. The demonstration then executes a simple “mean” statistics on the “secret” field via the R medical interface.

The terminal, apart from the final result, presents also the log entries containing the RASSP messages between the RASSP nodes. The log messages contain the timestamp, the source and target RASSP node, the type of the message (i.e. sub-share, super-share, result) and the actual payload of the message. The demonstration verifies that the correct mean is calculated without ever exchanging the actual values in the “secret” field.