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 PU=Public  
 PP=Restricted to other program participants  
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 CO=Confidential, only for members of the consortium  
 (including Commission Services).

\*\*Nature of Deliverables:  
 R=Report  
 P=Prototype  
 D=Demonstrator  
 O=Other

**List of Beneficiaries**

No	Participant organisation name	Short name	Country	Project entry	Project exit
				month	month
1	Consiglio Nazionale Delle Ricerche	CNR	IT	1	36
2	Università di Pisa	UNIPI	IT	1	36
3	TSB Real Time Location Systems SL	MYSPIERA	ES	1	36
4	AIT Austrian Institute of Technology GmbH	AIT	AT	1	36
5	Fundació per a la Universitat Oberta de Catalunya	UOC	ES	1	36
6	The Extracare Charitable Trust	Extra	UK	1	36
7	Imaginary Srl	IMA	IT	1	36
8	De Montfort University	DMU	UK	1	36
9	Age Platform Europe AISBL	AGE	BE	1	36
10	SI4LIFE – Scienza e impresa insieme per migliorare la qualità della vita srl	SI4LIFE	IT	1	36
11	Accord Housing Association Ltd	Accord	UK	1	36

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## 1. PUBLISHABLE SUMMARY

### 1.1 Summary description of project context and objectives

The DOREMI Project context and Scientific and Technological objectives are:

- Development of an unobtrusive monitoring environment keeping track of the daily activities of the elderly people at risk of malnutrition, sedentariness and cognitive decline according to the “active ageing lifestyle protocol”(MS1, M8) established by the specialist.
- Development of a smart environment for context awareness and service orientation (MS6, M33) for the dynamic analysis of elderly behaviour and compliance to the active ageing lifestyle protocol.
- Development of a gamified environment to engage the elderly and stimulate social interaction and physical activity (MS7, M24).
- Proof the concept and validate (MS8, M28 and MS9, M36) the effectiveness and impact of the proposed solution in a pilot study carried out in Italy (SI4LIFE) and UK (Extra and Accord), involving both elderly users and care providers.

### 1.2 Work performed since the beginning of the project and the main results achieved so far

The work performed in the first six-month project activities has been strategically directed to the achievement of the first two milestones of the project MS1 (Month 8) and MS2 (Month 9).

The progress towards the achievement of these milestones passed through a devised and well-coordinated execution of tasks and sub-tasks under the relevant WPs, namely WP2, WP3, WP4 and WP5.

Considering the relevant dependency of the technical development work packages (WP3, WP4 and WP5) with the main scientific model and target user work package (WP2), the scientific and technical coordinators have agreed to follow a WP interaction approach based on an iterative instead of a sequential method. For this purpose the progress of work in WP2, leading to the main objective of the active healthy ageing protocol definition, has been constantly reported to the dependant technical WP leaders and, in parallel, several technological constraints have been taken into consideration by the clinical partners in the selection of the more appropriate set of protocols. The main result of this constructive interaction is the common definition and design agreed by both clinical and technical partners of the Active Ageing lifestyle protocol of the DOREMI project. The partners agreed that, in order to avoid mismatch between the requirements and the technological implementation, the design of the DOREMI protocol and the selection of the main items from the various protocols taken from the literature, must take in full consideration the opportunities and constraints offered by the gamification environment and monitoring environment that will have to finally automate the process of monitoring and assessment of the target user daily improvements compared to the level of impairments registered at the baseline. As a result, the following figure 1 represents the synthesis of the major phases followed to reach the main objective.

- a) The first phase, discussion and agreements on the main protocols to be selected and studied from the literature in the scientific areas of cognitive (main impairment), nutritional, physical activity, social interaction (from real life and virtual perspective) and useful to provide the main items as well as the evaluation thresholds. All this was reported in the submitted D2.1
- b) The second phase, the discussion and agreements on the DOREMI monitoring environment and the parameters, activities, behaviours and actions to be selected as main representative and useful to monitor the progress and improvements of the target subject. As reported in the submitted D2.1 and to be further detailed in the incoming D2.2 as well as the related technological perspective whose results will be fully reported in the first deliverables of the WP3, WP4 and WP5 and whose progress activities are reported in this Interim report.
- c) The third phase the discussion and study of the DOREMI Active and Healthy ageing protocol/s to be built according to the items selected in the standard protocols (from D2.1) and the monitoring variables and parameters associated in the so called “Structural Elements” of the monitoring environment. The structural elements are the matching areas between possible monitoring parameters available by the use of the technology and the items of the protocols needed to provide the evaluation scales.

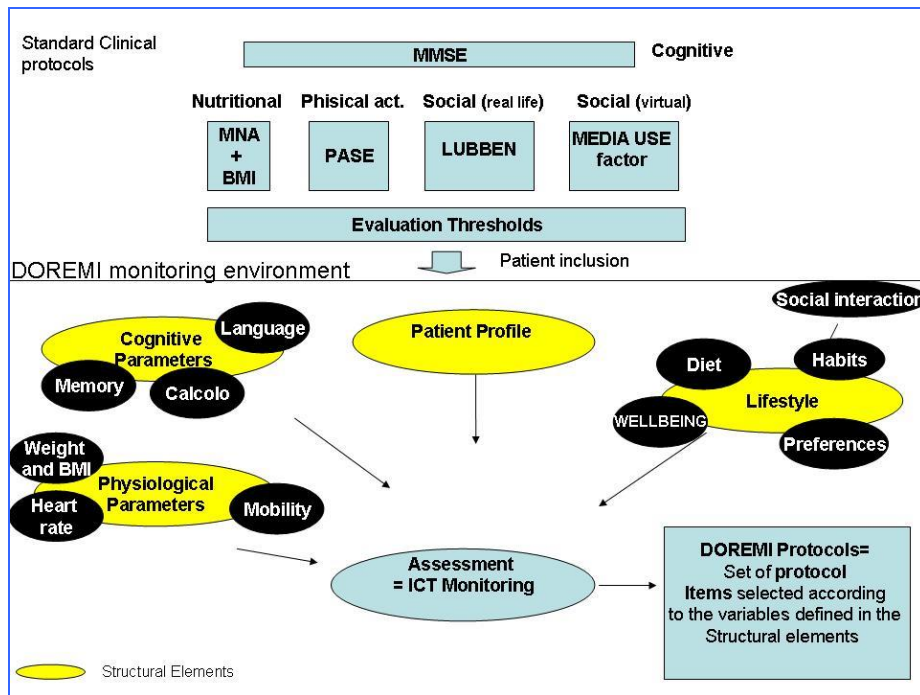


Figure 1: DOREMI users selection and profiling workflow

### 1.3 The expected final results and their potential impact and use (including the socio-economic impact and the wider societal implications of the project so far)

The main challenge of the DOREMI project is to effectively engage the elderly people on pursuing an “active ageing lifestyle”. Being physically and social active, eating a healthy diet can all reduce the risk of chronic diseases in older adults. This holistic approach will lead to the actual improvements in the daily activities of older persons as well as the increased personal independence, prolonging active participation in society and integrated care processes for the ageing population.

Therefore the evaluation of usage of innovative processes and technologies to improve elderly persons’ life style will not consider only the impact on elderly psycho-physical and cognitive capabilities and the implications for health care specialist in their practices. It rather will also explore the changes in caring processes and it will also measure how the new practices will modify the way of caring and assisting elderly by the other stakeholders (e.g. nurses, relatives, third sector voluntaries, etc.).

Examples of variables that will be analysed in order to evaluate the impact of the active ageing protocols and the new way of delivery to elderly life style are as follows:

- Impact variables: life style variables, psycho-physical variables, behavioural variables
- Independent variables: age, gender, diseases characteristics, treatments and caring process, parents and relatives degree of involvement, voluntary degree of engagement in the caring process and assistance, degree of exposure and engagement in the gamification process.

Existing cause-effect relationships amongst the above variables will be detected together with the implication of the new practices and technological support proposed by the project would have on the caring practices as well as on the interaction process amongst elderly and the caring stakeholders impacted. Thus, a clear evaluation of the possible impact of the project on the caring processes of elderly people will be provided per each caring actors involved. This would be beneficial to assess the overall implication of the proposed solutions for further exploitation of the project results.

### 1.4 The address of the project public website

<http://www.doremi-fp7.eu>

## **2. CORE OF THE REPORT FOR THE PERIOD: PROJECT OBJECTIVES, WORK PROGRESS AND ACHIEVEMENTS, PROJECT MANAGEMENT**

### **2.1 Project objectives for the period**

The project objectives achieved in the period will be reported at WP level in the following section 2.3.

- a) The investigation, through literature analysis and knowledge provided by the partners, the target users' needs as fundamental input to both the protocol development and the games scenarios. Initial hypothesis of game scenarios discussed with the scientific partners are the result of interaction among WP2 and WP5
- b) Identification of the exclusion criteria of the elderly people to be enrolled in view of the validation activities. WP2 activities are preparatory to WP6.
- c) Selection of the complete set of parameters needed to be monitored according to the:
  - Selection of the most appropriate group of sensors and devices that will be distributed in the Active Ageing Lifestyle Protocol. As a result of interaction among WP2 and WP3, WP4 preferred environment of the elderly person. These sensors are both off-the-shelf or prototype developed by the partners. As a result of interaction among WP2 and WP3
  - Specification of the activity recognition models based on the requirements from WP2 and WP3
  - Definition of the high level and logical architecture for module identification, dependencies and data flow hypothesis.

### **2.2 Summary of recommendations from previous reviews (in any)**

NOT APPLICABLE

### **2.3 Work progress and achievements during the period**

In the section below a detailed description of work progress and achievements by work package is provided.

#### **2.3.1 WP1 Project Coordination and Management**

Please see section 2.4

### 2.3.2 WP2 End user profile and Active Ageing Lifestyle protocol development

The main goal of WP2 is to define and implement the Active Ageing Lifestyle protocol based on a well target user profile.

Activities were focused on: analysis of literature of most recent and important studies for the three impairments (Sedentariness, Malnutrition, Cognitive decline) in older population and their relation with a series of pathologies (cardiovascular impairments, metabolic alterations, osteoporosis, cancer); inputs for game environment development in WP5 (in collaboration with IMA); definition of set of parameters and scales for impairment evaluation and quantification (MNA, BMI, PASE, MMSE); definition of user selection process, included selection criteria (inclusion and exclusion criteria); procedures for DOREMI user profiling; elaboration of Active Aging Lifestyle protocols focused on nutrition, physical activity and cognitive stimulation; identification of expected improvement levels for each impairment after DOREMI treatment; identification of key performance indicators (clinical, social and technical) for Active Aging Lifestyle Protocol.

#### ▪ Objectives

- Investigate, through literature analysis and knowledge provided by the partners (Task 2.1), the target users' needs as fundamental input to both the protocol development and the games scenarios. For the latter, the identification of lifestyle profiles will allow a selection of generic games scenarios suitable for easy personalization.
- Identify the criteria for the selection of the elderly people sample to be enrolled in view of the validation activities.
- Select the complete set of parameters needed to be monitored according to the Active Ageing Lifestyle protocol
- Define the protocol rules needed for the development of the reasoning system (Task 4.4)
- Develop a validation plan including four sub-set specifically designed for the clinical validation plan of the services, the technical validation plan of the platform and the usability plan of the platform as guideline for the validation to be performed in WP6

#### ▪ Summary of progress towards objectives and details for each task

##### Task 2.1 Target user definition, literature analysis and survey for scenarios of use (CNR-IFC) – M1-M6

CNR-IFC is the task leader. SI4LIFE, UOC, IMA, Extra and Accord are the partners involved in this task.

Activities of Task 2.1 are focused on the elaboration of Deliverable 2.1 (D2.1). This is based on the review and analysis of the most recent and important published studies conducted in Europe addressing the need of a well target user definition, elderly people in risk of cognitive decline, malnutrition and sedentariness. This analysis will help in the preparation of the Active Ageing Lifestyle protocol to be carried out in task 2.2. Primarily, CNR-IFC and SI4LIFE have investigated the influence and possible association of the impairments with pathologies' modulation: cardiovascular impairments, metabolic alterations, osteoporosis and cancer appear as the main disease in strong relation with the objects of the project. UOC have focused its work on: review of scientific and grey literature on motivational aspects and social interactions of young and older adults; identification of metrics and scales for measuring and evaluating of motivational aspects and social interaction of the target users of DOREMI; identification of the implication of motivational aspects and social interactions' scales and metric for the gamification environment of DOREMI.

After, D2.1 describes the chosen set of parameters and scales useful for impairments valuation and quantification. For malnutrition (CNR-IFC), Mini Nutritional Assessment (MNA, under-nutrition), Body Mass Index (BMI, over-nutrition) are the main evaluation criteria of malnutrition levels. For a quantitative measure of body composition, in terms of body water content, body mass (fat, muscle) and metabolic rate, the Bioelectrical Impedance Analysis (BIA) is selected. To this purpose, CNR-IFC met in two occasions (one of them also with CNR-ISTI participation) the managerial staff of Akern Company (Pontassieve, Italy), one of the most accredited firm in the world for hardware and software development of bioelectrical impedance instrumentation. A scientific collaboration has been developed with that Company, to find out the most



reliable parameters and instrumentation to monitor body composition parameters by BIA during the pilot study.

For sedentariness (CNR-IFC), direct and indirect approaches are selected; the first using accelerometer/pedometer, to have a quantified measure of physical activity, the second by the administration of Physical Activity Scale for Elderly (PASE) test, useful for user habits. Linked to physical activity, the user stability assessment is also taken in account by its evaluation with Berg Balance Scale (BBS).

For cognitive decline (SI4LIFE), the impairment reference test is the Mini Mental State Examination (MMSE), which measures five different areas of cognitive functions (orientation, registration, attention/calculation, recall and language/praxis). Other tests, more specific for each cognitive function, are the Token test, Phonemic and Semantic Fluency, and Attentional Matrices. A long discussion has been undertaken among SI4LIFE, DMU and CNR-IFC on the most suitable test for patient selection into the trial. The decision will be taken after DMU visit to CNR on May 20, 2014.

CNR-IFC has worked to the development of diet protocols. These activities require the development of a simplified user interface between user and nutritionist, either to facilitate user dietetic anamnesis, or for development of a dietary game (not foreseen in the DoW). An in-house solution, between Consortium partners, is not available. CNR-IFC has evaluated the possibility to interface DOREMI platform with commercial software: the choice has been the use of METADIETA® software (Me.Te.Da s.r.l, San Benedetto del Tronto, Italy). A meeting between the coordinator and the Company managers has allowed to reach an agreement between the Company and the Consortium, which foresees the METADIETA® database interfacing with DOREMI platform and makes compatible this database with British foods (~1000 foods), in terms of food pictures and bromatological composition. However, this agreement let DOREMI platform to be independent by Me.Te.Da system with possible replacement by other software solutions. One explored solution is to link the dietetic platform of DOREMI with the owner of CARB and CAL database Chris Chayette.

Finally, CNR-IFC have defined the main inclusion and exclusion criteria for DOREMI user selection, as also, in collaboration with IMA, the relevant inputs necessary for game environment development in WP5.

Extra and Accord have contributed to drafting of the document, while DMU and UOC have furnished support for the deliverable revision and analysis of potential critical points.

MYSHERA has furnished pre-release report analysis and feedback, has participated to discussions regarding the scenarios and use cases, from the point of view of the technology provider, furnishing a technological prospection over the different use cases analysed.

### Task 2.2 Active Ageing Lifestyle protocol development (SI4LIFE) – M2-M8

SI4LIFE is the task leader. CNR-(IFC), UOC, Extra and Accord are the partners involved in this task.

Activities of Task 2.2 are focused on the elaboration of Deliverable 2.2 (D2.2). This is based on the selection and integration of clinical protocols (described in D2.1), which will be translated into a complete set of parameters to be monitored by the monitoring environment. The deliverable is organized in three main areas: user selection methodology, user profiling and DOREMI protocols. Indicators of effectiveness of DOREMI interventions and primary key performance indicators have been also identified, and will be described in the final chapters of the report.

CNR-(IFC) and SI4LIFE structure the selection process in three steps: the evaluation of impairments, including the exclusion criteria, followed by MMSE test for cognitive impairments (cut-off values 22) and, finally, tests for malnutrition (MNA, BMI) and physical activity (PASE) assessment. The final result of this process is to provide the user population involved in DOREMI environment. The selected users are subjected to a specific profiling in terms of:

- acquisition of personal and clinical data (CNR-IFC)
- cognitive parameters characterization with specific tests (Token test, Phonemic and Semantic Fluency, and Attentional Matrices) (SI4LIFE)
- lifestyle definition as nutritional habits, motivational aspects, social interactions, wellbeing, preferences (SI4LIFE, UOC, CNR-IFC)
- physiological parameters (e.g., weight, BMI, heart rate, blood pressure, blood oxygenation, glucose, blood lipid profile) (CNR-IFC)

DOREMI protocols have been defined, divided for Sedentariness, Malnutrition and Cognitive Decline. In sedentariness (CNR-IFC), the indoor and outdoor activities to be performed by users have been detailed, according to a selection of physical activities described in international guidelines. In malnutrition (CNR-IFC), the alimentary schemes and the METADIETA software have been described. SI4LIFE has focused on serious games developed to counteract cognitive decline. The main indicators of effectiveness of DOREMI protocol, with relative expected improvements respect to baseline evaluation are under definition by the clinical partners. Finally, the primary key performance indicators of DOREMI protocol effectiveness, divided for clinical, and social indicators have been defined, based on use of parameters previously selected in literature analysis (D2.1). These parameters will give a specific evaluation of effectiveness and user acceptability of DOREMI platform. To the definition of the indicators all the partners collaborated. Extra and Accord are furnishing contribution to drafting the deliverable, DMU and UOC have discussed with CNR-IFC on potential critical points in the choice and application of the proposed protocols.

### Task 2.3 Validation Plan (UOC) – M9-12

To be started at M9

#### Significant results of WP2

- Exhaustive survey of literature and selection of tests for characterization of the three impairments
- Definition of set of parameters and scales for impairment evaluation and quantification.
- On-going drawing up of Active Aging Lifestyle protocol rules and their integration for development of reasoning system.
- D2.1 submitted to European Commission before the DoW deadline (April 30, 2014)

- Deviations from Annex I and their impact on other tasks as well as on available resources and planning (if applicable)

Not applicable

- Reasons for failing to achieve critical objectives and/or not being on schedule and explain the impact on other tasks as well as on available resources and planning (if applicable)

Not applicable

- Explain deviations (if any) between actual and planned person-months (per beneficiary)

Not applicable

- Corrective actions

Not applicable

### 2.3.3 WP3 Development of WSN environment and auto configuration system

The main goal of WP3 is to develop the WSN environment and auto configuration system by a set of coordinated tasks.

During this period, the work on WP3 has been centred in the preparation of the development of the WSN, gathering requirements from the project partners in coordination with WP2. According to the DoW and the first requirements from WP2, the search of suitable OEM sensor and electronic devices has started. Some devices have been selected and some analyses have been done in order to predict the energy consumption and the prototype prize.

The custom devices (wristband and weight-BMI) sensor specification has been especially discussed, as well as the network architecture of the outdoor and indoor scenarios.

#### ▪ Objectives

- Selecting the most appropriate group of sensors and devices that will be distributed in the preferred environment of the elderly person. These sensors and devices will be both off-the-shelf or prototype developed by the partners.
- Design and development of the devices and sensors that will be developed in the project (e.g. bracelet/wristwatch) or integrated by the use of commercially available sensor or devices (as in the case of the
- Intelligent carpet
- Realize a data collecting and retrieval layer that will support the data processing and the interoperability with the smart environment developed in WP4
- Design and develop an auto configuration system
- Integration of the full set of sensors into the WSN monitoring environment

#### ▪ Summary of progress towards objectives and details for each task

##### Task 3.1 Requirements, parameters and sensor selection (MYSPHERA) – M3-M9

This task has started and it is currently at 60% complete. The search of devices has started, based of the early results of WP2 (pre-releases). Some OEM devices has been identified and roughly analysed in order to check their suitability for DOREMI and WP3 objectives. There are some missing extra parameters so that a more extended device search and analysis has to be done.

This task has included the discussion of custom developed sensors specification (wristband and weight sensor) and the network architecture in outdoor and indoor scenarios.

This task will be ongoing in the next 6-month period. The final results of this works will be released in deliverable D3.1 (month 9).

CNR-ISTI participated with MYSPHERA and CNR-IFC to the selection of the wearable sensors. The choice of the bracelet and its characteristics were deeply discussed.

As the bracelet prototype has not been released during the reporting period by MYSPHERA, CNR-ISTI started to collect sample accelerometer data and heartbeat measurement using off-the-shelf components. This activity will help on laying down in the next months a sample set of data that will be used for Activity Recognition processes development.

UNIFI has contributed to the initial definition and selection of the sensors, based on the requirements induced by the activities performed in WP4.

SI4Life team did a first inspection of the apartments located in Seregno (Italy), where the trials will be carried on, in order to have an overview of the environment structure and logistics and study the feasibility of the sensors installations. Maps were thus provided, including sizes and arrangement of the living spaces. We also had a preliminary discussion with the elderly living in these flats, made available by the nursing home, to first assess their willingness to participate to the projects, thus getting a positive feedback.

CNR-IFC has proposed solutions for smart carpet development. This was divided in two: the bioelectrical impedance system and the smart carpet composed by an integrated system for weight and balancing measurement (2 possible solutions are still in evaluation for DOREMI environment integration). This

solution is forced by technical difficulties to assemble the bioelectrical impedance technology in smart carpet. For bioelectrical impedance, CNR-IFC has chosen the BIA<sup>®</sup> system of AKERN Company (Pontassieve, Italy). This instrumentation is an off the shelf solution, charged as “Other costs” (equipment for trial) on SI4LIFE budget.

AIT has produced an analysis of requirements for the middleware and sensor integration with respect to the reasoning module

### Task 3.2 Sensors development and production (MYSPHERA) – M6-M24

Some previous internal work has been done, as planning development, internal resources allocation and adaptation of DOREMI work plan to MYSPHERA development roadmap.

In the next 6-month period, it is projected to develop the integration of accelerometer, and also start the integration of heart rate monitor in the wearable wristband. Data specification and helpers for integration in middleware are expected to be provided.

No activity till now has been done by CNR-ISTI.

### Task 3.3 Sensor Integration and Middleware (CNR-ISTI) – M6-M24

During the first month of the allocated period for task 3.3 CNR-ISTI started defining the architecture for the distributed data collection and retrieval layer (middleware). A draft for the use cases concerning the system was produced in order to specify the main functionalities to be delivered. CNR-ISTI laid out a draft of the system architecture by producing several UML artifacts: class, sequence, component and deployment diagrams. These diagrams describe aspects and interfaces of the middleware to be implemented.

Meanwhile, a study on available platform implementations and scientific bibliography regarding IoT middleware platforms was started in order to define the main functionalities and characteristics that the system could deliver. This activity also helps identifying challenges in developing middleware solutions for the IoT.

In this task, no work has been done by MYSPHERA in the first month.

During the next six months, the work to be done will be the first developments of the integration layer and middleware, in coordination with the task 3.2.

### Task 3.4 Auto configuration system and calibration (AIT) - M9-M24

To be started at M9.

#### ▪ Significant results of WP3

For the moment, there are not significant results to be referenced yet. All the work carried out has preliminary results, but all of them are not enough to be published.

MYSPHERA: WSN architecture draft, OEM accelerometer and heart rate state of art, prerequisites analysis.

CNR-ISTI: Produced a first draft design of the system architecture detailing part of system modules, interactions between them, deployment scenarios.

#### ▪ Deviations from Annex I and their impact on other tasks as well as on available resources and planning (if applicable)

CNR-IFC will be responsible for the development of smart carpet in substitution of MYSPHERA, which will collaborate to its integration in the middleware by Bluetooth solutions.

#### ▪ Reasons for failing to achieve critical objectives and/or not being on schedule and explain the impact on other tasks as well as on available resources and planning (if applicable)

Not applicable

#### ▪ Explain deviations (if any) between actual and planned person-months (per beneficiary)

Not applicable

#### ▪ Corrective actions

Not applicable

### 2.3.4 WP4 Development of a Smart Environment for Context Awareness

The main goal of WP4 is to define and implement activity recognition models.

Over the period of interest, WP4 partners have collaborated with the other partners of the project in the characterization of the high-level requirements and workflow of the DOREMI system. The WP activities have started as planned according to the progress in the definition of the architecture of the system and of the applicative scenarios of the DOREMI project. The focus of the activities was on the identification of the computational tasks for the Activity Recognition and its related requirements in terms of data and models. The progresses of task 4.1 for the elicitation of the requirements in terms of data format and specification and for the machine-learning models constitutes the basis for the developments planned in Task 4.2, 4.3 and 4.4. The results of these design and specification activities will be circulated at M8 with deliverable D4.1. Recruitment activities have progressed as planned: UNIPI is completing the enrolment of 1 Researcher contracted for the duration of the project.

#### ▪ Objectives

This WP will investigate machine-learning solutions for both explorative (Task 4.2) and predictive (Task 4.3) data analysis. Explorative approaches typically rely on unsupervised learning models and are useful both as a preliminary pre-processing step, e.g. to filter, segment and cluster relevant sensor data, as well to discover some informative grouping of the sensor data, when little supervised expert information exists. Predictive approaches, on the other hand, usually rely on supervised learning models, and are tailored to acquire robust predictive models of a process for which there is insufficient background knowledge to set up a procedural algorithmic solution, but a sufficient set of real-life supervised example data is available. These latter models will be used, in Task 4.3, to learn an activity recognition/classification system from expert labeled data that will support a more high level reasoning service in Task 4.4.

#### ▪ Summary of progress towards objectives and details for each task

##### Task 4.1: Data preparation and models assessment specification (UNIPI) – M1-M8

The definition of the requirements on the data has been conducted according to the progress of the elicitation of the computational tasks that are emerging from the DOREMI scenarios and the middleware system. Several technical meeting held by the WP4 coordination team, including members of UNIPI and CNR-ISTI, and the project management to progress design of the integrated DOREMI system and its experimental scenarios, ultimately contributing to the definition of the high level DOREMI architecture.

The UNIPI focus was on the analysis of the application scenarios to identify activity recognition computational tasks and requirements from the other WPs. Further, UNIPI progressed in the specification of the data format for the activity recognition and of the machine learning models.

On the data format side, the task served to define the specification of the central database and its interfaces for the need of the reasoning system under the responsibility of AIT partner, with definition of data exchanged between different system's modules.

In particular, UNIPI contributed through the specification of data format used to record information on the occurrence of the daily user activities, which will be differentiated into 3 flexible record classes referred to as Instantaneous Activity occurrences, Instantaneous Activity measures and Aggregated Activity information.

During the reporting period, CNR-ISTI began a preliminary analysis of the state-of-the-art in sensor characterization models in the context of IoT (Internet of Things) middleware systems. On this subject, two major areas were identified: (i) Sensor description: sensor properties that affect sensor data (e.g.: resolution), sensor properties that do not affect measured data, relationship with features of interest (e.g.: rooms, peoples). (ii) Features of interest description: Features of interest represent entities, either physical or virtual, that are related to the measurements reported by sensor. A model for the representation of those entities is needed in order to enable data querying.

Several approaches were examined during the analysis, such as OGC SWE SensorML, Global Sensor Network, and HomeML.

CNR-ISTI performed an analysis aimed at choosing the most efficient backend for storing sensor data. A performance analysis aimed at addressing most common scenarios of use was performed. As a result of the activity MongoDB was selected as the technology of choice.

On the application requirement side, UNIPI and CNR-ISTI contributed to the design of the smart carpet system and of a preliminary accelerometer and heartbeat data fusion system from the activity recognition perspective.

The short-term plans for the Task 4.1 activities include the development and release of deliverable D4.1, which is planned at month 8. This deliverable will describe the requirements and specification of the activity recognition system, and it will report technical details on data preparation and format as well as on learning models assessment.

Key detailed contributions are expected (by month 7) from UNIPI, as pertains data requirements and learning models validation plans for task 4.3, from CNR-ISTI, as pertains data requirements for task 4.2 and technical requirements from the DOREMI middleware and integration framework, and from AIT, for the requirements concerning the reasoning system. Further, the definition of the computational tasks for activity recognition (i.e. defining type and properties of the activities to be monitored) will require interaction with WP1, WP2, WP3 and WP6. Moreover, WP2 and WP3 are expected to define the set of parameters/information sources (sensors) that will serve to monitor and recognize the user activities.

In task 4.1, CNR-IFC, as project coordinator, have organized 3 meetings (12/11/2013, Milan; 04/03, 03/04 and 30/04/2014, Pisa) to discuss and furnish to technical partners inputs necessary to implement in DOREMI reasoning system, based on users' profiling and their interactions with DOREMI environment. CNR-IFC have suggested the use of set of parameters, indicated in D2.1, which can be monitored for evaluation and assessment of the Malnutrition and Sedentariness, have discussed about the interfacing of METADIETA software in reasoning system (as described in Task 2.1).

SI4life has started to provide information connected to the parameters (concerning cognitive decline and social interaction) that will be monitored within the Lifestyle protocol, to ease the work of technical partners and define which are the requirements needed.

#### Task 4.2: Activity recognition: explorative data analysis (CNR-ISTI) – M6-M30

A preliminary analysis of the state-of-the-art techniques for data filtering and aggregation has been performed. In order to deal with imperfection, correlation, inconsistency, and disparateness of data coming from environmental and motion sensors, a first layer of filtering has been investigated such as median, windowed standard deviation, and low pass filtering. Since different kind of sensors will be used in this task, a preliminary study of data aggregation techniques such as custom decision trees has been done.

#### Task 4.3: Activity recognition: predictive machine learning approach (UNIPI) – M6-M30

The activity is just initiated analyzing the scenarios offered by the DOREMI project in order to delineate the computational task that can fit such objectives and to identify the models that can be used to approach the different activity recognition tasks.

To explore the learning capability of the model for task 4.3, preliminary experimental assessment on human activity recognition have been conducted on general benchmarks available from other Ambient Assisted Living scenarios (from public international competitions) [1]

The activities will proceed in the next semester to fit the development of models with the DOREMI scenarios and tailoring to the available set of information from the sensors selected by the consortium in WP3. Preliminary data are expected from lab pre-phase tests (in WP3).

#### ▪ Significant results of WP4

WP4 has advanced the definition of the system architecture through integrated activities with the project management and the leaders of the other technical work packages, leading to the characterization of the high-level requirements and workflow of the DOREMI system.

To this end, WP4 coordination team has participated to the Kick-off meeting (December 2013) and to the monthly technical meetings held during the reference period.

WP4 contributed to the refinement of the experimental study design, in order to move up the plan for the proper and timely availability of data from labs in WP6.



WP4 tasks activities progressed as planned. Specific progress have been achieved for the definition of the technical requirements in terms of data format, for the identification of the computational tasks for the Activity Recognition, and for the elicitation of the requirements for machine learning models. In particular, the specification of a format for a central database and its interfaces used to exchange system information, including daily user activities information, for the reasoning system have been obtained through partners interactions.

WP4 served to provide an analysis on sensor characterization models in the context of IoT (Internet of Things) middleware systems and an analysis aimed at choosing the most efficient backend for storing sensor data, whereas the MongoDB was selected as the technology of choice.

WP4 contributed to the design of the smart carpet and of a accelerometer and heartbeat data fusion systems from the activity recognition perspective.

A paper has been submitted for journal publications on a preliminary experimental assessment of models over benchmark human activity recognition data [1].

UNIFI is completing the enrolment of 1 Researcher contracted for the duration of the project.

[1] Filippo Palumbo, Claudio Gallicchio, and Alessio Micheli. Human Activity Recognition using Multisensor Data Fusion based on Reservoir Computing. Submitted to Journal of Ambient Intelligence and Smart Environments. IOS Press.

- Deviations from Annex I and their impact on other tasks as well as on available resources and planning (if applicable)

Not applicable

- Reasons for failing to achieve critical objectives and/or not being on schedule and explain the impact on other tasks as well as on available resources and planning (if applicable)

Not applicable

- Explain deviations (if any) between actual and planned person-months (per beneficiary)

During the kick-off meeting it was agreed to switch the end of Tasks 4.2 e 4.3 from M30 to M33.

- Corrective actions

Not applicable

### 2.3.5 WP 5 Development of Social and gamified environment

Work package 5 is dedicated to the aggregation and presentation of the overall gamified active ageing support environment to the different categories of users involved.

The definition of the gamified active ageing protocol that's the main objective of the main task active at the moment in WP5 (T5.1) is an activity going on in parallel with the definition of the medical protocols. For this reason, the main role of WP5 in this first part of DOREMI project is the collaboration with WP2 in the definition of medical protocols, in particular identifying the main structural elements (i.e. physiological data, lifestyle model, inclusion/exclusion criteria). Starting from this structure WP5 started also to design the user profile module.

Furthermore, to design and develop the game-based active ageing environment (Task 5.2), WP5 conducted a market research on cognitive games in order to create an updated state of the art. This analysis also included a study of the technologies and methods usually used to prevent cognitive decline. This analysis is essential for the design and development of a gamified protocol, which must be based on medical data and on latest methodologies.

Next step will be the preliminary user-centered design activities with elderly people to check gamified protocols, and validate them step by step. Furthermore, a preliminary set of cognitive games prototypes will be designed and developed, also thanks to the user-centered design activities with elderly people that will be conducted.

#### ▪ Objectives

- The generation multi-parametric flexible serious games both for physical and cognitive stimulation and motivation
- Dynamic aggregation all the components and services that need to be presented to users, offering elderly people and family members with a coherent and consistent virtual/augmented highly-interactive environment that can be used to access all the available features, providing a guide to both the DOREMI solution usage and the active ageing gamified environment (including training on daily life aspects) also by means of an intelligent virtual companion
- Promote the development of social communities addressing the areas of engagement proposed in DOREMI (e.g. diet, physical activity, leisure etc.) aiming at stimulating real life social interaction through a proper use of selected and developed game-based/networking/communication services.
- Integrate the game platform with the Web 2.0 services developed in task 7.4 and animated by the involvement of ageing communities

#### ▪ Summary of progress towards objectives and details for each task

##### Task 5.1 Gamified active ageing protocol definition (DMU) – M3-M8

The first step to reach this task is the creation of a specific document to model the active ageing and motivational protocol. This protocol should start from the medical protocols, finalized in WP2 (D2.1 and D2.2). For this reason, during the first months IMA participated at the common 'working table' with medical partners (CNR-IFC) and SI4LIFE), trying to generate a unique process (as suggested by CNR-(IFC). This document will be ready by the first part of M7.

Starting from the same common 'working table' IMA started to design the user profile module, which will be developed during next phases of the project. The first draft of the design of this module will be ready by the end of M7.

The determination of the suitability of different gamification devices intended for the DOREMI target population is a challenging task, as all participants will have cognitive impairment, commensurate with the specified MMSE score.

As part of T5.1, proposed gamification mechanisms will need to be evaluated with the active participation of older people. Work on ethics approval for the participatory design activities involving groups of older people in the UK has been undertaken (DMU). University ethics committee approval is sufficient if the work does not involve people under the care of the UK National Health Service (NHS) nor uses NHS premises.



This work must be undertaken prior to the commencement of ethics approval activities required for the full intervention evaluation in WP6.

A framework for the identification and mapping of gamification mechanisms for inclusion in applications and serious games has been developed at DMU. The suitability of this framework will be evaluated in the remainder of Task 5.1 for use with the specific protocols produced from Task 2.2.

#### Task 5.2 Game-based active ageing environment (IMA) – M6-M14

IMA started to design the game-based active ageing module that will be ready by M14 and will be connected to the different atomic games, including social aspects and also the exergames that will be developed at a later stage.

Going on this path SI4Life started a preliminary analysis for providing an in-depth description of the games' characteristics and scenarios needed to assess and improve the elderly's functionalities in 6 outlined domains (memory, language, concentration, computation, orienteering, visual and spatial praxis). This information includes: the kind of data that should be drawn from the games, scores, motivation modes, complexity levels according to functionality levels, sequence of activities to be performed in a time-schedule. Together with IMA these information and descriptions will be discussed, trying to highlight the needed characteristics that cognitive games must have for the outlined domains. By M12 a preliminary set of cognitive games prototypes will be designed and developed.

#### ▪ Significant results of WP5

Presently there are no significant results to report, except the 'active ageing and motivational protocol' (first draft) and the 'design of the user profile module' (first draft).

The other results at this time are provisional and focus on a framework for the gamification process, and on a classification of existing games in the areas of interest for DOREMI.

#### ▪ Deviations from Annex I and their impact on other tasks as well as on available resources and planning (if applicable)

Progress on task 5.1 is 3 months behind schedule. The task should be completed by the end of M8 according to the original project schedule but it will be actually concluded on M 11 (ref. corrective actions §). The impact on the delay on the Task 5.2 timing should be minimized and the risk for a consequent delay is very low.

#### ▪ Reasons for failing to achieve critical objectives and/or not being on schedule and explain the impact on other tasks as well as on available resources and planning (if applicable)

DMU has expertise in the design of serious games, human-computer interaction and gamification within its Faculty of Technology. It has expertise in the psychology of well-being of older people and in evaluating interventions of the type that DOREMI will make within its Faculty of Health and Life Sciences. It was clear from the outset that DMU would provide a multi-disciplinary input to the project. However, it has proven difficult to find an individual who had technical knowledge of games and games programming together with expertise in psychology of aging and well-being and experimental evaluation of interventions. Games programming expertise is needed as part of the research in order to construct early version of games and prototypes to be able to evaluate these with groups of participants representative of the target user group in UK. This expertise is needed in the project team in DMU as the psychologist needs regular and extensive access to games programming knowledge and expertise. This is to enable fast turnaround of prototypes of games to enable different design alternatives to be tested. It would be difficult to make effective progress when programming expertise is geographically remote. It was decided to satisfy these requirements by employing a psychologist as a Research Fellow for 30 months, and a cheaper software engineer for 12 months. The timescales for recruitment of these staff, in particular the psychologist, since the start of the project have been longer than expected. The software engineer joined DMU at the beginning of M5 and the psychologist will join at the beginning of M7.

- **Explain deviations (if any) between actual and planned person-months (per beneficiary)**

According to the budget, DMU would have spent 7 MMs of effort by the end of Month 6 in WP5. However, due to the delayed start in the activities outset, only 2 MM of a software engineer have been accounted. The remaining 5 MMs will be invested in the extended timing (M8-M11) as proposed in the corrective actions.

- **Corrective actions**

From the beginning of May (M7), progress on T5.1 can be accelerated and we predict to have caught up with the DOW work plan by the end of M11. To minimise the delay to other elements of work, DMU proposes a revised schedule of deliverables where a preliminary version of D5.1 is made available at the end of M9 and a final version available at the end of M11. A series of focus groups will be held in the UK where older people will be asked to test different games and early versions of games that embody elements of the gamification guidelines and processes proposed in the preliminary version of D5.1. These will be carried out during M8-M10 and the outcomes will be incorporated in the final version of the deliverable at the end of M11.

### **2.3.6 WP6 Validation driven system integration at lab and pilot site**

To be started at M20

### 2.3.7 WP7 Exploitation, Dissemination and IPR

This Workpackage is aimed at upscaling at EU level the results achieved by the project.

In the first period of project development the WP7 activities were concentrated on the definition of the communication strategy of the project. To this end the main developments have been the design and development of the project web site and the definition of the dissemination and exploitation.

#### ▪ Objectives

- To assess the expected impacts of the project at EU27 level in relation to the emerging trends of the ageing population in EU Member States;
- To disseminate the project outcomes in EU27 at large through social media and targeted actions;
- To design and to set up an exploitation process of the project results in line with the specificity of the DOREMI consortium members and the characteristics of the Ageing Marketplace in EU27.

#### ▪ Summary of progress towards objectives and details for each task

This work package includes the dissemination and exploitation activities of the DOREMI project and will be implemented with the contribution of all project partners under the leadership of CNR, which is in chief of both the dissemination and exploitation tasks. In the reporting period the efforts of the consortium were mainly targeting towards the dissemination of the project. CNR (IFC) has produced the project logo and website, along with the project official presentation template and has issued the first press release.

A list of dissemination events organised or attended by the partners is provided.

#### Task 7.1 - Development of exploitation and dissemination plan (UOC) – M3-M9?

An initial structure of the dissemination and exploitation plan was discussed during the kick off meeting in Pisa. Then the work has been concentrated in the DOREMI project's stakeholders mapping and in the definition and development of the project website that has been provided by CRN-IFC.

At the moment the task is finalizing the individual and general dissemination and exploitation plans, which are expected to be completed at M9, as planned in the project's DOW.

CNR-IFC and UOC will define dissemination and exploitation frameworks for the entire project and ask partners input for their own individual dissemination and exploitation plans.

#### Task 7.4 – Dissemination activities (CNR-IFC) – M3-M36

All involved partners contribute to the dissemination of the project results under the coordination of CNR-IFC. In the section below the work performed by each partner in the reporting period described.

The project video and brochure are currently under preparation and are expected to be ready within one month.

#### Significant results of WP7

Project website publicly available; draft of dissemination and exploitation plan in progress, to be completed on M9.

#### CNR-IFC

- official project logo and project's templates
- Project Management Plan (PMP) including project logo, website and the project's templates. The PMP (Deliverable 1.1) was submitted on 03/01/14.
- set-up of the project website, including web pages design and entry of content. The website is operating since mid April 2014 ([www.doremi-fp7.eu](http://www.doremi-fp7.eu)) and is constantly updated and enriched with new material coming from the consortium partners.
- Facebook and Twitter webpages active and linked to DOREMI website

- Press release
- Initial planning of DOREMI project presentation to be held in the pilot sites (Extracare, ACCORD), organized as workshop during the “Better connected event” West Midlands, June 18, 2014.

#### CNR-ISTI

- No dissemination activity till now has been done by CNR-ISTI.

#### MISPHERA

- MISPHERA: participation in the project Kick off meeting on 03/12/2013.

#### AGE

- Publication of the press release in CoverAGE (AGE Platform monthly newsletter) and ePractice website (AGE Platform)
- Task 7.1: Provision to the Consortium with EU policy insights on DOREMI subjects
- Task 7.4: Presentation of the project in various settings:
  - AGEING WELL newsletter – January issue
  - Presentation of the projects at the INNOVAGE Project Meeting (January 2014)
  - Presentation of the project at the B-DEBATE: Impact of Ageing on Mental Health and Well-Being (January 2014)
  - Presenting the project to AGE Council of Administration (March 2014)
  - Establishment of the Twitter account and comments on the project website

#### ACCORD

- Publication of the press release in the Group news and Our House Newsletter

#### EXTRA

- ExtraLife Magazine
- Deviations from Annex I and their impact on other tasks as well as on available resources and planning (if applicable)  
Not applicable
- Reasons for failing to achieve critical objectives and/or not being on schedule and explain the impact on other tasks as well as on available resources and planning (if applicable)
- Not applicable
- Explain deviations (if any) between actual and planned person-months (per beneficiary)
- Not applicable
- Corrective actions
- Not applicable

## 2.4 Project management during the period

### ▪ Objectives

The WP1 is the Management work package and will last for the whole duration of the project. Its objective is to set a management structure, techniques and procedures aimed at guaranteeing that:

- the research project is carried out according to the settled time schedule and budget;
- the project objectives are efficiently achieved;
- a system to provide a continuous evaluation feedback and constant project monitoring is created;
- an effective co-ordinated structure is created and maintained;
- the project is managed according to the contract between the DOREMI Consortium and the EC, maintaining a continuous link with the EC;
- overall legal, contractual, ethical, financial and administrative management of the project.

### ▪ Consortium management tasks and their achievement

In the first six months of the project, management activities have been intense by both the project coordinator as well as the individual participants. The management activities that have been performed in this period were aiming mainly at establishing all these means and infrastructures that are required for the efficient communication and collaboration among the partners, as well as among the project, the EC and the external community. Highlights of activities that have been performed by the consortium in this reporting period can be summarised as follows:

- Preparation of the Grant Agreement, under the responsibility and coordination of the Project Coordinator, CNR-IFC. The document was finalised and signed on 23<sup>rd</sup> October 2013.
- Organisation of the project's Kick-off meeting that took place in Pisa (Italy), on 02/12/2013. The meeting was organised and hosted by the project coordinator.
- Set-up, maintenance and continuous update of the project's mailing lists ([doremi-fp7@ifc.cnr.it](mailto:doremi-fp7@ifc.cnr.it), [technicalcoordinator@doremi-fp7.eu](mailto:technicalcoordinator@doremi-fp7.eu), [wpleaders@doremi-fp7.eu](mailto:wpleaders@doremi-fp7.eu), [info@doremi-fp7.eu](mailto:info@doremi-fp7.eu))
- Preparation of the Consortium Agreement under the coordination of CNR-IFC. The document was finalised and signed on 19/03/2014.
- Distribution of the pre-financing (€ 1.420.999,00) from the project coordinator to all partners
- Establishment of the project's web-based collaboration tool and repository, operating in the framework of the website as a secure-access private area for consortium members only. The collaboration area is administered with the responsibility of the project coordinator and populated with the contributions of all consortium members.
- Establishment of internal reporting procedures for the more efficient follow-up of the project progress and partners' performance and establishment of all the templates to be used by the consortium for the project's deliverables, documents, reports, presentations and outputs in general (Project Management Plan – D1.1)
- Distribution of FP7 guides related to project management, financial handling and general issues to the consortium.
- Establishment of the general management structure and specification of the management bodies ruling the project.
- Constant communication between the consortium members
- Regular communication and update provided by the project coordinator to the PO.

The table below shows the status of the project tasks.

WP no	WP name/ tasks	Leader	Start month	End month	Status
<b>WP1</b>	<b>Project Coordination and Management</b>	<b>CNR</b>	<b>1</b>	<b>36</b>	
	Task 1.1 Project Management	CNR-IFC	1	36	Active, in progress
	Task 1.2 Administrative Management	CNR-IFC	1	36	Active, in progress
	Task 1.3 Risk Management and Quality assurance	CNR-IFC	1	36	Just started
<b>WP2</b>	<b>End user profile and Active Ageing Lifestyle protocol development</b>	<b>CNR</b>	<b>1</b>	<b>12</b>	
	Task 2.1 Target users definition, literature analysis and survey for scenarios of use	CNR-IFC	1	6	Active, in progress
	Task 2.2 Active Ageing Lifestyle protocol development	SI4LIFE	2	8	Active, in progress
	Task 2.3 Validation Plan	UOC	9	12	
<b>WP3</b>	<b>Development of WSN environment and autoconfiguration system</b>	<b>MYSOPHERA</b>	<b>3</b>	<b>24</b>	
	Task 3.1 Requirements, parameters and sensor selection	MYSOPHERA	3	9	Active, in progress
	Task 3.2 Sensors development and production	MYSOPHERA	6	24	Just started
	Task 3.3 Sensor Integration and Middleware	CNR-ISTI	6	24	Just started
	Task 3.4 Auto configuration system and calibration	AIT	9	24	
<b>WP4</b>	<b>Development of a Smart Environment for Context Awareness</b>	<b>UNIPI</b>	<b>1</b>	<b>33</b>	
	Task 4.1: Data preparation and models assessment specification	UNIPI	1	8	Active, in progress
	Task 4.2: Activity recognition : explorative data analysis	CNR-ISTI	6	30	Just started
	Task 4.3: Activity recognition: predictive machine learning approach	UNIPI	6	30	Just started
	Task 4.4: Reasoning system and Personalization	AIT	20	33	
<b>WP5</b>	<b>Development of Social and gamified environment</b>	<b>IMA</b>	<b>3</b>	<b>24</b>	
	Task 5.1 Gamified active ageing protocol definition	DMU	3	8	Active, in progress
	Task 5.2 Game-based active ageing environment	IMA	6	14	Just started
	Task 5.3 Exergames development	IMA	13	24	
	Task 5.4 Social games development	UOC	13	24	
	Task 5.5 Cognitive games development	IMA	13	24	
<b>WP6</b>	<b>Validation driven system integration at lab and pilot site</b>	<b>SI4LIFE</b>	<b>20</b>	<b>36</b>	
	Task 6.1: Data Collection and pilot site preparation	CNR-IFC	20	30	
	Task 6.2: Living lab validation and integration of WSN and Context aware system	CNR-ISTI	20	30	
	Task 6.3 Validation of Social and gamified environment through behavioral analysis	UOC	20	30	
	Task 6.4 Validation of integrated system and refinement	SI4LIFE	28	36	
<b>WP7</b>	<b>Exploitation, Dissemination and IPR</b>	<b>UOC</b>	<b>3</b>	<b>36</b>	
	Task 7.1 - Development of exploitation and dissemination plan	UOC	3	9	Active, in progress
	Task 7.2 – Market assessment and outline of the business plan	UOC	10	15	
	Task 7.3 – Impact assessment on Health Care system and on society at large	UOC	10	15	
	Task 7.4 – Dissemination activities	CNR-IFC	3	36	Active, in progress

Table 1: Status of the project tasks

- **Problems which have occurred and how they were solved or envisaged solutions**
  - The Metadieta software (Me.Te.Da. s.r.l.) mentioned in WP2 does not include English foods, hence their bromatologic composition. CNR-IFC is buying a large picture database of English foods that will be included in the Metadieta dietary software, making possible the food selection by UK users of the project. This software update will be completed within the first year of the project, and clinically tested in a group of elderly before the clinical trial.
  - As reported in the WP3 description, the smart carpet issue was widely discussed between MYSOPHERA, the project and technical coordinators and an alternative solution was found.
  - As explained in the WP 5 section, one partner of WP5 states a 3-month delay in task 5.1. Corrective actions to catch up with the DOW work plan and to minimise effects on other tasks were elaborated and described in the relevant WP section.
  - In order to provide early information on the parameters to be monitored during the clinical trial (WP6), CNR-IFC prepared an internal document “DOREMI Set of Parameters”, which was forwarded to the technical Partners on February 20, 2014.
- **Changes in the consortium (if any)**  
Not applicable

- **List of project meetings, dates and venues**

A complete list of all project meetings (plenary, technical and cross-partner collaboration meetings) held in the first six months of the project is given below:

Type of Meeting	Date	Venue	Participants
Technical Meeting on WP2, WP4, WP5, WP6	12/11/2013	Milan, Italy	CNR (IFC), CNR (ISTI), UNIPI, IMA, SI4LIFE
Technical Meeting on WP2 (meeting with Akern Company)	22/11/2013	Pontassieve, Italy	CNR (IFC)
Technical Meeting on WP2, WP3, WP4, WP6	26/11/2013	Genova, Italy	CNR (IFC), UNIPI, SI4LIFE
Kick-off Meeting	02/12/2013	Pisa, Italy	All partners involved
Technical Meeting on WP2, WP3	03/12/2013	Pisa, Italy	CNR (IFC), CNR (ISTI), UNIPI, MYSPHERA, UOC, Extra, DMU, SI4LIFE
Skype conference on WP1, WP2, WP3	14/01/2014	N/A	CNR (IFC), CNR (ISTI), MYSPHERA
Skype conference on WP1, WP2, WP5	14/01/2014	N/A	CNR (IFC), CNR (ISTI), IMA
Technical Meeting on WP2 (meeting with Me.Te.Da. Company)	21-22/01/2014	San Benedetto del Tronto, Italy	CNR (IFC)
Technical Meeting on WP2 (meeting with Akern Company)	28/01/2014	Pontassieve, Italy	CNR (IFC), CNR (ISTI)
Technical Meeting on WP2, WP5	04/02/2014	Milan, Italy	CNR (IFC), IMA, SI4LIFE
Technical Meeting on WP2: UK Doremi projects partners	04/02/2014	Birmingham, UK	Extra, Accord
Skype conference on WP1, WP3	24/02/2014	N/A	CNR (IFC), CNR (ISTI), MYSPHERA
Technical Meeting on WP2, WP5	25/02/2014	Milan, Italy	CNR (IFC), IMA, SI4LIFE
Technical Meeting on WP2, WP4	04/03/2014	Pisa, Italy	CNR (IFC), CNR (ISTI), UNIPI
Technical Meeting on WP2, WP4	03/04/2014	Pisa, Italy	CNR (IFC), CNR (ISTI), UNIPI
Technical Meeting on WP2	24/04/2014	Milton Keynes, UK	Extra, Accord
Technical Meeting on WP2, WP4	30/04/2014	Pisa, Italy	CNR (IFC), CNR (ISTI), UNIPI

Table 2: List of project meetings

- **Project planning and status**

The project is progressing in accordance to the specified work plan and timetable as described in the Annex.

A couple of deviations in time occurred:

- Deliverable D7.7 DOREMI website and press release for the EC due at M3 will be submitted in the coming days (M6). To be noted that the press release was issued on time and the website is active.
- In WP7, due to a typo in the DoW, end of task 7.1 is indicated at M5 instead of M9.

Project planning with regard to the overall management and coordination includes the continuation of the regular activities ensuring the smooth implementation of the project, i.e.:

- constant communication and collaboration between project participants
- constant communication with the commission's PO
- maintenance and update of the project mailing list, website and collaboration tool
- regular reporting for the efficient follow-up of the project's progress and partners' performance
- organisation of the next plenary meeting, scheduled to take place in Valencia (Spain) at end of September/early October 2014, hosted by partner MYSPHERA.



Total effort spent in the reporting period corresponds to 11 % of total project effort.

Table 3 below gives a breakdown of the effort spent per work package and per partner in the reporting period and in relation to the total effort in the DoW.

Workpackage	WP1		WP2		WP3		WP4		WP5		WP6		WP7		TOTAL per Beneficiary	
	ACTUAL	PLANNED	ACTUAL	PLANNED	ACTUAL	PLANNED	ACTUAL	PLANNED	ACTUAL	PLANNED	ACTUAL	PLANNED	ACTUAL	PLANNED	ACTUAL	PLANNED
<b>OVERALL USE OF RESOURCES FOR THE FIRST INTERIM REPORTING PERIOD (1/11/2013 - 30/04/2014)</b>																
<b>Coordinator (Beneficiary 1 - CNR-IFC)</b>	2,36	12,20	5,31	9,00	0,20	0,00	0,30	1,00	0,54	1,00			6,00	0,55	3,00	9,26 32,20
<b>(Beneficiary 1 - CNR-ISTI)</b>	0,10	0,50		1,00	2,50	22,50	2,50	17,00					8,00		0,50	5,10 49,50
Beneficiary 2 - UNUPI	0,40	2,00	0,78	1,00	0,40	2,00	4,11	34,00					8,00	0,22	1,20	5,91 48,20
Beneficiary 3 - MYSPHERA	0,31	1,50	0,55	1,00	1,33	41,00							12,00		3,00	2,19 58,50
Beneficiary 4 - AIT	0,05	1,50		1,00	0,13	17,00	0,31	10,00					4,00		2,00	0,49 35,50
Beneficiary 5 - UOC	0,25	1,50	3,24	5,00					1,18	12,00			11,00	1,24	7,60	5,91 37,10
Beneficiary 6 - Extra	0,33	1,50	0,18	7,00	0,00	2,00	0,00	2,00	0,00	3,00			14,00	0,00	1,50	0,51 31,00
Beneficiary 7 - IMA	0,46	2,50	0,47	1,00					1,52	30,00			6,00		3,00	2,45 42,50
Beneficiary 8 - DMU	0,15	1,50	0,32	1,00					2,82	29,00	1,00		8,00	0,01	1,50	3,30 41,00
Beneficiary 9 - AGE	0,30	1,80												0,37	12,30	0,67 14,10
Beneficiary 10 - SI4LIFE	0,32	1,00	7,00	12,00	1,00	2,00	1,20	2,00	2,00	8,00			29,00	0,00	1,50	11,52 55,50
Beneficiary 11 - Accord	0,46	1,50	1,34	4,00	0,00	1,00	0,00		0,00	2,00			7,00	0,03	1,50	1,83 17,00
<b>TOTAL</b>	<b>5,49</b>	<b>29,00</b>	<b>19,19</b>	<b>43,00</b>	<b>5,56</b>	<b>87,50</b>	<b>8,42</b>	<b>66,00</b>	<b>8,06</b>	<b>85,00</b>	<b>0,00</b>	<b>113,00</b>	<b>2,42</b>	<b>38,60</b>	<b>49,14</b>	<b>462,10</b>

Table 3: Breakdown of the effort spent per work package and per partner in the reporting period

Figure 2 shows the effort spent from the beginning of the project in relation to the effort planned in the DoW per WP. Apart from the management work package (WP1), WP2 and WP4 that started at M1 and expected to run until M13 and M33 respectively, are the two work packages that have spent more effort.

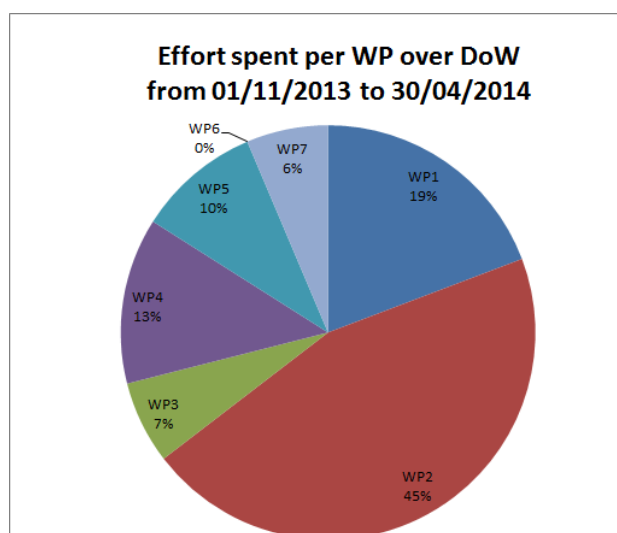


Figure 2: Effort spent and remaining effort per partner

Effort spent per partner is consistent with work activities carried out from the beginning of the project. Table 4 provides an overview of spent and remaining effort per partner: CNR (IFC)-coordinator and SI4LIFE are the two beneficiaries that claimed more effort followed by CNR (ISTI), UNUPI and AIT.



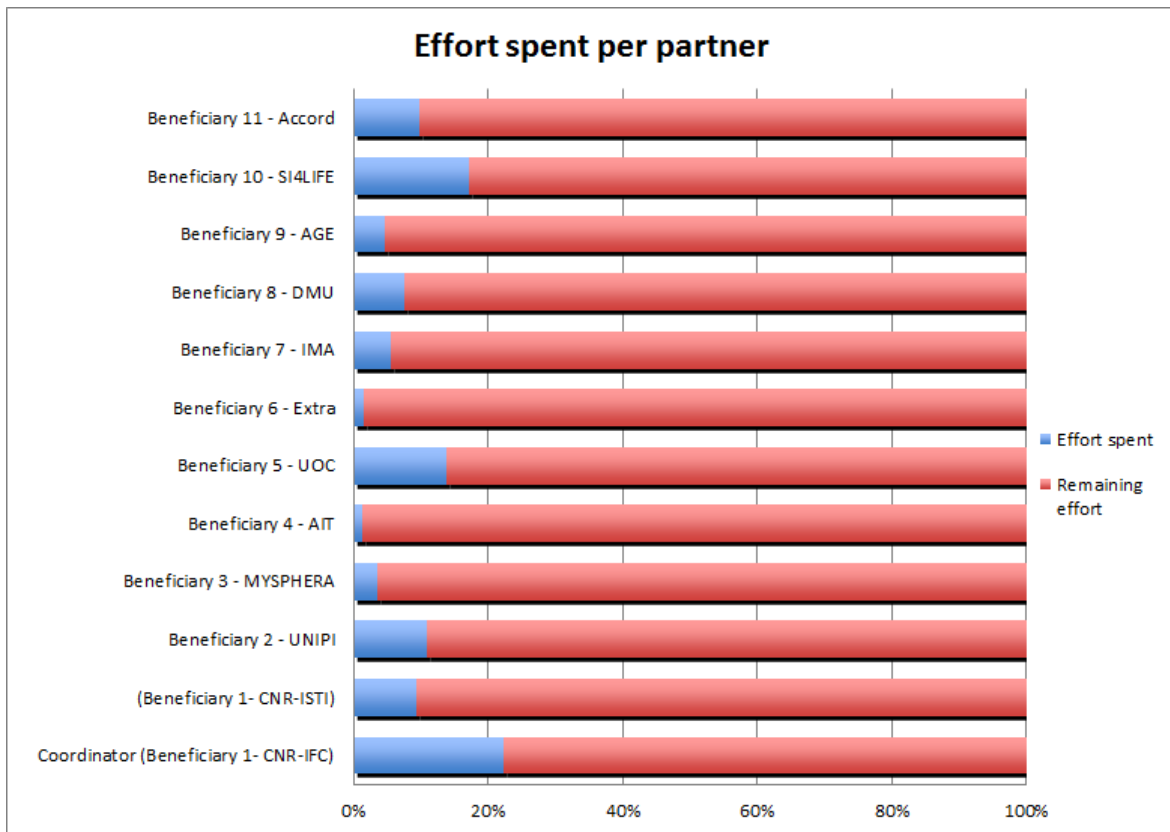


Table 4: Effort spent per partner during the period

Total costs incurred by the consortium in the period under consideration, amounts to 230.132€ that represents 6% of the total project budgeted costs. Breakdown of the costs (listed in Table 5) shows that 10% of the expenditure relates to personnel costs while another 4% refers to other direct costs (travels and other costs).

<b>Personnel, subcontracting and other major Direct cost items</b>						
<b>1<sup>st</sup> interim period (1 November 2013 – 30 April 2014)</b>						
n.	Short name	Personnel costs	Travel costs	Other costs	Subcontracting Costs	Total costs
1	CNR IFC	€ 47.324	€ 1.297	€ 313		€ 48.934
1	CNR ISTI	€ 14.723	€ 0	€ 0		€ 14.723
2	UNIPI	€ 18.135	€ 131	€ 0		€ 18.266
3	MYSPHERA	€ 5.347	€ 1.226	€ 0		€ 6.573
4	AIT	€ 5.610	€ 705	€ 1.428		€ 7.744
5	UOC	€ 27.409	€ 291	€ 0		€ 27.701
6	Extra	€ 3.267	€ 600	€ 0		€ 3.867
7	IMA	€ 12.044	€ 394	€ 0		€ 12.438
8	DMU	€ 14.102	€ 1.491	€ 0		€ 15.593
9	AGE	€ 3.401	€ 262	€ 240		€ 3.903
10	SI4LIFE	€ 56.105	€ 509	€ 0		€ 56.614
11	Accord	€ 12.523	€ 409	€ 845		€ 13.777
	<b>Total</b>	<b>€ 219.990</b>	<b>€ 7.315</b>	<b>€ 2.826</b>	<b>€ 0</b>	<b>€ 230.132</b>

Table 5: Personnel and other major direct costs per partner incurred during the period

▪ **Impact of possible deviations from the planned milestones and deliverables (if any)**

Beneficiary 08-DMU proposes a revised schedule of deliverables where a preliminary version of D5.1 is made available at the end of M9 and a final version available at the end of M11. No deviation of the planned milestones is expected.

- **Changes of the legal status of any of the beneficiaries (if any)**

No changes in the legal status of the partners occurred.

CNR Institute of Clinical Physiology CNR has a new legal representative (Giorgio Iervasi instead of Eugenio Picano) as of 1<sup>st</sup> May 2014 but there was no change of the legal status.

- **Development of the project website (if applicable)**

The DOREMI project has established and operates its official website ([www.doremi-fp7.eu](http://www.doremi-fp7.eu)) since mid-April 2014 under the responsibility of the Coordinator, CNR-IFC. The website is structured in two distinct components, a freely-accessed public area and a securely accessed (password protected) internal space. Therefore, the website serves a two-fold purpose, the internal project collaboration and work management as part of the objectives of WP1, Project Management, along with the external dissemination of the project's objectives and achieved results as part of the objectives of WP7, Dissemination and Exploitation.

The public area of the website provides all the information relative to the project that is publishable and desirable to be exposed to the widest possible audience in order to enhance the project's visibility and its potentials to interact with other relative projects and initiatives. It comprises the main dissemination tool of the project and is constantly updated with all relative information and material as it gradually becomes available.

The internal area can be accessed by the project members only, and operates as a web-based collaboration tool and repository, collecting all project materials and information so that they can be easily retrieved and downloaded by the partners. Additional functionalities may be implemented in the time-course of the project.

- **Co-ordination activities during the period (communication between beneficiaries, possible co-operation with other projects/programmes)**

DOREMI is outward-looking and welcomes expressions of interest in collaboration. Over the first six months of activity several contacts in terms of possible collaborations with other consortia took place.

There are permanent discussions between all members of the Project Coordination Committee.

### 3. DELIVERABLES AND MILESTONES TABLES

#### 3.1 Deliverables

TABLE 1. DELIVERABLES										
Del. no.	Deliverable name	Version	WP no.	Lead beneficiary	Nature	Dissemination level <sup>1</sup>	Delivery date from Annex I (Project month)	Actual/ Forecast delivery date	Status Not submitted/ Submitted	Comments
D1.1	Project Management Plan	1	1	1 - CNR	R	PP	1	03/01/2014	Submitted	
D2.1	Target users and scenarios of use	1	2	1 - CNR	R	PU	6	24/04/2014	Submitted	

<sup>1</sup> **PU** = Public  
**PP** = Restricted to other programme participants (including the Commission Services).  
**RE** = Restricted to a group specified by the consortium (including the Commission Services).  
**CO** = Confidential, only for members of the consortium (including the Commission Services).  
**Make sure that you are using the correct following label when your project has classified deliverables.**  
**EU restricted** = Classified with the mention of the classification level restricted "EU Restricted"  
**EU confidential** = Classified with the mention of the classification level confidential " EU Confidential "  
**EU secret** = Classified with the mention of the classification level secret "EU Secret "

### 3.2 Milestones

No milestone has been scheduled for the period.

The work performed in the first six-month project activities, has been strategically directed to the achievement of the first two milestones of the project MS1 (Month 8) and MS2 (Month 9).

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**END OF DOCUMENT**

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