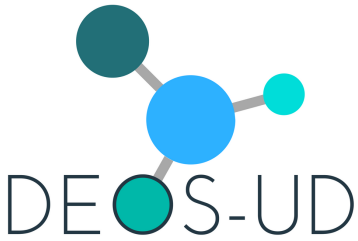

Project DEOS-UD

Disruptive Earth Observation Sensing for Urban Developement

Deliverable 2
Scope, Time and Cost Management

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1 Project scope statement

1.1 Product Scope Description

1.2 Project Deliverables

1.3 Project Acceptance Criteria

1.4 Project Exclusions

There are some facts that are out of the scope of the project which, generally, are designated as exclusions. Hence, in this section, the exclusions of the project are determined and defined.

Item	Description
Satellites design	It is out of the scope of this project to design a new satellite that will use the sensors as payload.
Launching	The objective of the project do not include neither the design of the launch system of the satellites nor the costs and scheduling of launching the satellite using the sensors designed.
Deployment	No deployment mechanism nor strategy of the satellites that integrate this new technologies are going to be developed.
Satellite monitoring	The satellite monitoring system that permits to scan different surfaces and regions of the earth is not included in this project scope.
Data transfer	Neither communication between satellites nor between the satellite and the ground station are part of this project.

Item	Description
Final production	The project will only focus on the development of prototype models in order to test the new technologies implemented. Hence, commercial production of these ones will not be carried out.

Table 1.4.1: Project Exclusions

1.5 Project Constraints

2 Work Breakdown Structure (WBS)

1. PROJECT MANAGEMENT
    - 1.1. Development project management plan
    - 1.2. Monitoring of the project
        - 1.2.1. Meetings
        - 1.2.2. Task tracking and scheduling
    - 1.3. Annual reporting
    - 1.4. Project implementation of risk management
2. QUALITY AND ADMINISTRATION
    - 2.1. Human Resources
        - 2.1.1. Employment of the necessary staff
        - 2.1.2. Human resources management
    - 2.2. Financial Plan
        - 2.2.1. Costs
            - 2.2.1.1. Fix
            - 2.2.1.2. Variable
        - 2.2.2. Funding
        - 2.2.3. Economic feasibility
        - 2.2.4. Evolution monitoring
        - 2.2.5. Additional and follow-up funding seek
    - 2.3. Documentation Management
        - 2.3.1. Guidelines preparation
        - 2.3.2. Document revision
        - 2.3.3. Document rectification

2.1 Activity list

WBS-ID	Activity	Description of Work
1.	Project Management	All activities related with the management of the project fall under this activity.
1.1.	Development of the project management plan	Elaboration of all the documentation that states the strategy of the management and organization of the project through its duration.
1.2.	Monitoring of the project	Control of the progress of each activity of the project.
1.2.1.	Meetings	Gathering of the members of the project to inform each other of the progress.
1.2.2.	Task tracking and scheduling	Tracking of the active tasks and scheduling.
1.3.	Annual reporting	Every year that the project lasts will call for the elaboration of an internal report with the aim of keeping up to date with the progress done.
1.4.	Project implementation of risk management	Study of all the potential risks and how will they be managed so that their affectation to the project stays to a minimum.
2.	Quality and Administration	Activities related to the administrative aspects of the project and to assure the quality of all the documents presented.
2.1.	Human resources	Administration of all the employees needed to fulfil the different tasks of the project.
2.1.1.	Employment of the necessary staff	Definition of the number of employees necessary.
2.1.2.	Human resources management	-.

WBS-ID	Activity	Description of Work
2.2.	Financial plan	Lay down of all the planned costs of the project, the funding expected from the various sources, a study on the economic feasibility of the project and a plan for additional funding search.
2.3.	Documentation management	The quality of the documents that have to be delivered through all the duration of the project is guaranteed in this activity by establishing guidelines for the redaction of all the documents, their revision and posterior rectification and final approval.
2.4.	Periodic monitoring	To ensure the quality of the project, a periodic monitoring of all the activities will be carried out.
3.	State of the Art	Before starting the design and research it is key to have an accurate vision of the actual state of the technology that is going to be developed.
3.1.	Payloads	For each of the sensors that are planned to be improved there is a search of the current space applications, that help defining the requirements for these sensors.
3.2.	Modular system	For the modular system where each sensor will be mounted on there will be a search of current similar systems in space applications and the definition of the requirements for the one developed in this project.
3.3.	Urban development applications	The search for current applications similar to those that want to be implemented with this project has to be carried out, in the weather forecast area, the urban planning area and the greenhouse emissions reduction area, thus defining the requirements for the applications.
4.	Product development	All the phases of the development of the product are included in this activity, from the research up to the final technical specifications.

WBS-ID	Activity	Description of Work
4.1.	Preliminary design	This first phase of the development is meant to include all the research and definition of the initial parameters of the different components.
4.1.1.	Payloads' preliminary design	The research and initial development of each sensor that is intended to improve is carried out in this phase.
4.1.2.	Modular system's preliminary design	Includes the initial development of the physical framework for sensor blocks, of the systems' interaction and applications, of the sensors' data fusion software and the definition of the satellite communications applications domains.
4.1.3.	Interaction platform's preliminary design	Implementation of the web-based servers for sharing sensor's data, of the processing algorithms based on applications and the pre-design of a full services stakeholders platform.
4.2.	Final design	This final phase of the product's development will define the final technical specifications of each part of the product.
4.2.1.	Payloads' final design	The design of each sensor is complete and its final technical specifications are defined.
4.2.2.	Modular system's final design	The design of the modular system and the sensors' data fusion software is complete and their final technical specifications are defined.
4.2.3.	Interaction platform's final design	The design of the interaction platform is complete, including the web based servers for data sharing, the processing algorithms based on applications and the full services stakeholders platform, and their final technical specifications are defined.
5	Simulation, testing, validation and quality	Activities regarding the simulation, testing, validation and quality control of the final product are included in this task.

WBS-ID	Activity	Description of Work
5.1	Technology demonstrator prototype manufacturing	Manufacturing of the prototype of the product, including all its subsystems (payload sensors, modular system and interaction platform), in order to be tested in the following activities.
5.2	Payload validation	Validation of the performance of the sensors mounted on the system.
5.3	Modular system validation	Validation of the modular system performance, of the systems interaction, of the sensors' data fusion software, of the satellite communications applications domains and also of the physical framework for sensor blocks.
5.4	Interaction platform validation	Validation of the interation platform to check if it develops all its functions properly.
5.5	Full system prototype validation	Validation of the whole system using the prototype in order to test its performance.
5.6	Quality of the product	Quality control of all the subsystems of the product and all the methodologies applied on its manufacturing and validation.
6	Business planning and exploitation of results	The activities regarding the final explotation and business planning of the product are included in this task.
6.1	Market approach	Study of stakeholders, procurement conditions negotiation and purchase of the resourses in order to study the feasibility of the project.
6.2	Exploitation and business plans	Includes the business plan of the product to exploit its economic potential.
7	Communication and dissemination strategies	Includes all the activities regarding the dissemination of the product inside the market.
7.1	Dissemination and communication plan	Definition of the strategies planned to the dissemination of the final product.
7.2	On-line dissemination activities	Include activities as the creation of a web site and the social media management.

WBS-ID	Activity	Description of Work
7.3	Off-line dissemination activities	Participation in conferences and meetings about the field of the technology.
7.4	Dissemination materials	Production of all the materials that will help to the dissemination of the product, as technology demonstrators or audio visual productions.

3 Sequence activities

3.1 Dependencies or logical relationship between activities

3.2 Network Diagram (Precedence Diagram Method)

4 Estimate activity resources

4.1 Resource identification

In this section the resources available/needed to perform the project will be exposed. These resources will be classified into three different categories:

- Employees: People needed to achieve the objectives of the project. The employees will be provided by the members of the consortium. As not all employees are in the same point on the learning curve, they will be classified into three sub-groups:
  - Senior: High on the learning curve. Is able to provide guidance on technical and management issues and offers a critical point of view of the actions of the project.
  - Average:Is able to perform activities on its knowledge field and arrive to conclusions without supervision.
  - Junior: Little experience in the field, the work done need to be supervised by an average employee.
- Materials: Hardware and software elements that will be used to achieve the project objectives.
- Facilities: Special places and services (such as the testing room).

The resources are exposed in Table 4.1.1.

Resource ID	Resource Description	Type of resource
PM.M	Project Manager	Employee-Senior
PM.S	Project Manager Secretary	Employee-Average
F.M	Financial Manager	Employee-Senior
F.A	Financial Manager Assessor	Employee-Average
SP.M	Stakeholders and Procurement Manager	Employee-Senior
SP.A	Stakeholders and Procurement Manager Assessor	Employee-Average

ST.M	Scope and Time Manager	Employee-Senior
ST.A	Scope and Time Manager Assessor	Employee-Average
R.M	Risk Manager	Employee-Senior
R.A	Risk Manager Assessor	Employee-Average
QM.M	Quality Manager	Employee-Senior
QM.A	Quality Manager Assessor	Employee-Senior
MC.M	Marketing and Communications Manager	Employee-Senior
MC.A	Marketing and Communications Manager Assessor	Employee-Average
TM	Tecnhical Manager	Employee-Average
RD.A	Research and development assessor	Employee-Average
LB.A	Legal and Business Assessor	Employee-Average
SD.S	System development engineer	Employee-Senior
SD.A	System development engineer	Employee-Average
SD.J	System development engineer	Employee-Junior
ST.S	System testing engineer	Employee-Senior
ST.A	System testing engineer	Employee-Average
ST.J	System testing engineer	Employee-Junior
AD.S	Application development manager	Employee-Senior
AD.A	Application development technician	Employee-Average
AD.J	Application development technician	Employee-Junior

Table 4.1.1: Resources identification

4.2 Activity resource requirement

4.3 Resource Breakdown Structure

5 | Estimate activity duration

6 | Project Schedule

Gantt chart

7 | Activity Attributes (at Work Package level)

Table 7.0.1: Activity X attributes

<table>
<tr><td colspan="2">WBS-ID:
This identifies where this activity can be found in the WBS.</td><td>Activity:
This is the name of the activity from the project activity list.</td></tr>
<tr><td colspan="3">Description of Work:
This information includes a detailed description of the work to be performed for this activity and should be consistent with what is provided in the project activity list.</td></tr>
<tr><td>Predecessors:
This section lists other activities which must occur before this activity.</td><td>Relationship:
This describes if the predecessor has a start-start, start-finish or other type of scheduling relationship.</td><td>Lag:
This section describes any dependencies on predecessor activities like lead times, lag times or other requirements.</td></tr>
<tr><td>Number and Type of Resources Required:
The number and roles of people to complete the work</td><td>Skill Requirements:
The level of skill necessary to complete the work (expert, average, novice or applicable job level)</td><td>Other Required Resources:
Any equipment, supplies, or other type of resources needed to complete the work</td></tr>
<tr><td colspan="3">Type of Effort:
Indicate if the work is fixed duration, fixed amount of work or fixed amount of effort</td></tr>
<tr><td colspan="3">Location of Performance:
If the work is to be completed somewhere other than at the performing organization site, indicate location</td></tr>
<tr><td colspan="3">Constraints:
Indicate any fixed delivery dates, milestones or other constrains</td></tr>
<tr><td colspan="3">Assumptions:
List any assumption about resources availability, skill sets, or other assumptions that impact activity</td></tr>
</table>

8 Cost estimating

8.1 Level of accuracy

8.2 Cost estimation worksheet

8.3 Activity cost estimation

9 Cumulative costs

9.1 Cumulative cost curve

9.2 Budget at completion

10 | Bibliography