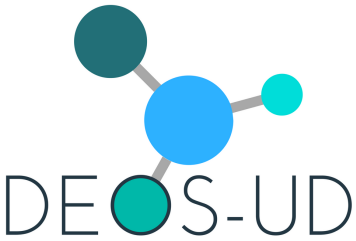

Project DEOS-UD

Disruptive Earth Observation Sensing for Urban Developement

Deliverable 6
European Comission Template

Authors:

Calderón Rosario, Borja
De Benedicto Barba, Maria
Escartín Vivancos, Guillermo
Fontanes Molina, Pol
Franch I Ruiz, Sergi
González García, Sílvia
Herrando Moraira, Albert
Lopezbarrena Arenas, Santiago
Nachett, Hamza
Pérez Sánchez, David
Pla Olea, Laura
Pons Daza, Marina
Ramón Costa, Fernando
Sellart Combalia, Ana Maria
Serra Moncunill, Josep Maria
Urbano González, Eva María

National Contact Point: Pérez Llera, Luís Manuel

Group: G3-220310-PM-P2018 **Delivery date:** 07-06-2018

Contents

List of Tables

List of Figures

0 List of Participants

Participant No.	Participant organisation name	Country

Table 0.0.1: List of Participants

1 Excellence

1.1 Objectives

Describe the overall and specific objectives for the project1, which should be clear, measurable, realistic and achievable within the duration of the project. Objectives should be consistent with the expected exploitation and impact of the project (see section 2).

The key objectives for this project are:

1. Improve EO sensor's technologies in terms of reliability, size, resolution, efficiency and accuracy.
2. Manufacture a technology demonstrator prototype.
3. Simulate, test and validate the demonstrator prototype manufactured in relevant environment.
4. Develop a data processing software with machine learning algorithms focused on urban sustainable development applications.
5. Develop a web based server for data sharing.
6. Provide a technology that helps urban sustainable development, improving the European society.

1.2 Relation to the work programme

Indicate the work programme topic to which your proposal relates, and explain how your proposal addresses the specific challenge and scope of that topic, as set out in the work programme.

The current proposal relates to the topic "Earth Observation technologies" whose identifier is: LC-SPACE-14-TEC-2018-2019. More specifically it adresses the subtopic "Disruptive technologies for remote sensing".

Hence, this project aims to research and improve the existing EO technologies for remote sensing, develop a data processing software along with it containing machine learning algorithms focused on urban sustainable developments such as pollution and gas emission control, traffic monitoring, weather prediction, management of urban areas, regional and local planning, tourism development and cityscapes designs, and develop a web based for data sharing.

The accomplishment of the project will demonstrate significant knowledge and enhancements concerning reliability, size, resolution, efficiency and accuracy among others of the current remote sensing technologies that will not only allow to gather better and more specific EO data, improving the results on their application fields but it will also represent a step forward in all those areas involving remote sensing from which the European society will benefit.

Also, the implemented data processor will provide information sets about sustainable development issues such as geospatial indicators, pollution levels or gas emissions that will benefit companies and initiatives from world-wide and local organisations to carry out social and green actions, and will support the United Nation projects: UN 2030 Agenda for Sustainable Development and The Paris Agreement on Climate Change. Furthermore the project sharing web will allow the public to interact enriching and contributing in the integration of space in economy and society.

Additionally, the attainment of the improved sensors and data processing software is expected to help process the data gathered by the Sentinels' satellites in order to benefit the current on-going Copernicus programme missions so as to equip them with better remote sensing technologies in the near future.

1.3 Concept and methodology

(a) Concept

Describe and explain the overall concept underpinning the project. Describe the main ideas, models or assumptions involved. Identify any inter-disciplinary considerations and, where relevant, use of stakeholder knowledge. Where relevant, include measures taken for public/societal engagement on issues related to the project. Describe the positioning of the project e.g. where it is situated in the spectrum from 'idea to application', or from 'lab to

market'. Refer to Technology Readiness Levels where relevant.

Describe any national or international research and innovation activities which will be linked with the project, especially where the outputs from these will feed into the project;

(b) Methodology

Describe and explain the overall methodology, distinguishing, as appropriate, activities indicated in the relevant section of the work programme, e.g. for research, demonstration, piloting, first market replication, etc.

Where relevant, describe how the gender dimension, i.e. sex and/or gender analysis is taken into account in the project's content.

1.4 Ambition

Describe the advance your proposal would provide beyond the state-of-the-art, and the extent the proposed work is ambitious.

Describe the innovation potential (e.g. ground-breaking objectives, novel concepts and approaches, new products, services or business and organisational models) which the proposal represents. Where relevant, refer to products and services already available on the market. Please refer to the results of any patent search carried out.

As stated earlier, the main objective of the project is to enhance the performance of the EO systems so as to use the information derived from data to build a greener future. More specifically, the focus is on the improvement of both optical and radar systems and how can they contribute to the sustainable development of cities.

To begin with, a research on the current technologies is carried out. This study makes it possible to determine which systems are more susceptible to further improvement. In order to demonstrate the advances in the aforementioned systems a prototype has to be manufactured and tested.

Moreover, in the scope of this project, it has been included the development of a software that, once the data has been collected and received, treats the data in order to enable a more user-friendly data treatment on the final application and a web-based server for data sharing.

The project is grounded in initiatives such as the Copernicus programme. The Copernicus services aim at delivering nearly real-time data on a global level. This information allows

us to better understand the planet we live in and secure a sustainable management of the environment. In fact, in context of the Copernicus, one of the previous H2020 calls has been involved in identifying possible potential evolutions of its space observation capabilities in order to build a climate resilient future. This call was focused on monitoring either the Polar Regions, agriculture or forests.

Among other things, Copernicus obtains data thanks to a set of dedicated satellites named Sentinel. Each of them has been developed for a specific need to provide accurate observation in each case. Nowadays, there is a total of six families of Sentinel. Hence, the idea is to take them a further step forward by equipping them with better remote sensing technologies.

2 Impact

2.1 Expected Impacts

Describe how your project will contribute to: - each of the expected impacts mentioned in the work programme, under the relevant topic; - any substantial impacts not mentioned in the work programme, that would enhance innovation capacity; create new market opportunities, strengthen competitiveness and growth of companies, address issues related to climate change or the environment, or bring other important benefits for society

Describe any barriers/obstacles, and any framework conditions (such as regulation, standards, public acceptance, workforce considerations, financing of follow-up steps, cooperation of other links in the value chain), that may determine whether and to what extent the expected impacts will be achieved. (This should not include any risk factors concerning implementation, as covered in section 3.2.)

2.2 Measures to maximise impact

a) Dissemination and exploitation2 of results

Provide a draft 'plan for the dissemination and exploitation of the project's results'. Please note that such a draft plan is an admissibility condition, unless the work programme topic explicitly states that such a plan is not required.

Show how the proposed measures will help to achieve the expected impact of the project.

The plan, should be proportionate to the scale of the project, and should contain measures to be implemented both during and after the end of the project. For innovation actions, in particular, please describe a credible path to deliver these innovations to the market.

Include a business plan where relevant.

As relevant, include information on how the participants will manage the research data generated and/or collected during the project, in particular addressing the following issues: o What types of data will the project generate/collect? o What standards will be used? oHow will this data be exploited and/or shared/made accessible for verification and re-use? If data cannot be made available, explain why. o How will this data be curated and preserved? o How will the costs for data curation and preservation be covered?

Outline the strategy for knowledge management and protection. Include measures to provide open access (free on-line access, such as the 'green' or 'gold' model) to peer- reviewed scientific publications which might result from the project.

b) Communication activities

Describe the proposed communication measures for promoting the project and its findings during the period of the grant. Measures should be proportionate to the scale of the project, with clear objectives. They should be tailored to the needs of different target audiences, including groups beyond the project's own community.

3 Implementation

3.1 Work plan — Work packages, deliverables

Brief description of the section

3.1.1 Overall Structure

The DEOS-UD project is composed by 7 different work packages which are interrelated as shown in Figure 3.1.1. WP1 deals with project management and will ensure the proper coordination of project activities and the achievement of project objectives. WP2 is related to the quality and the administration of the project in terms of human resources, documentation management and quality, periodic monitoring and will also establish the financial plan of the project. WP3 will study the current baseline designs for the studied technologies (payload, modular system and urban development application) in the sector and will establish the potential areas of improvement and the requirements needed to achieve the new technologies proposed. WP4 is in charge of designing the output products of the project. This WP is strongly related to WP5 which is in charge of manufacturing and validating the prototype. Good intercommunication between these WPs is needed in order to obtain a final product that meets the requirements imposed by WP3. WP6 aims to create a methodology to enable the future use of the new technologies developed during the project, assuring their continuity. Finally, WP7 will ensure the project results are communicated and disseminated to the appropriate audiences, establishing new knowledge into society.

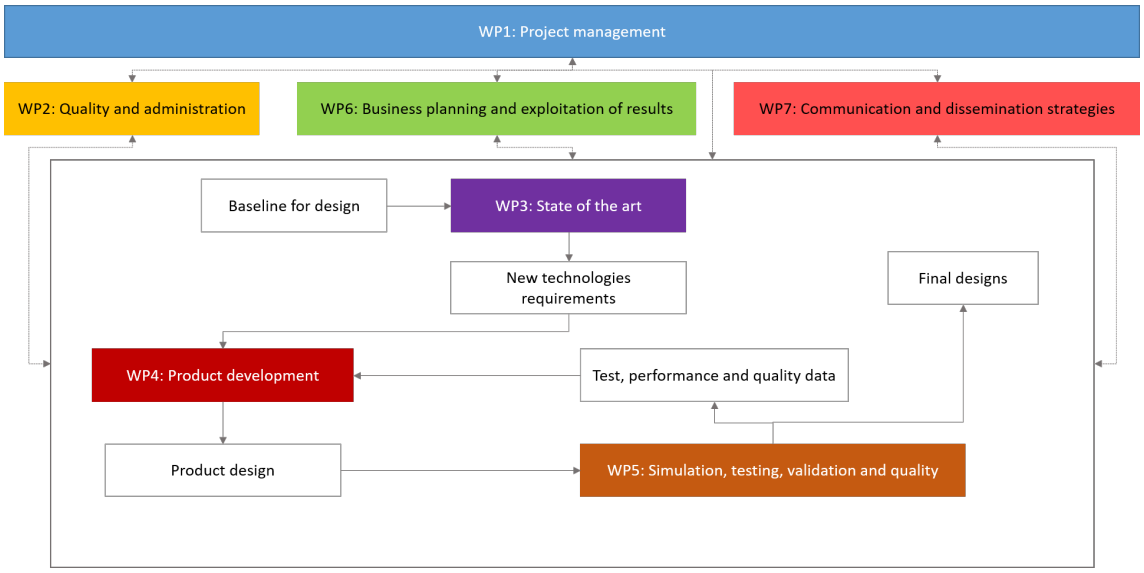

Figure 3.1.1: DEOS-UD overall structure diagram.

3.1.2 Timing of the Work Plan

Timing of the different WP: **Gantt chart. D2 Apartado 6**

3.1.3 Description of Work Packages

- List of WP. **D2 Apartado 2.1 Poner solo WP, no todas las activities. Extraer del D2 también Start Month i End Month**
- Description of each WP. **Extraer información de D2 sección 2 (Número de participantes, líder, objetivos, etc.) Hay que poner las diferentes tareas dentro de cada WP y quienes participan en cada tarea. Importante: Falta calcular PM por participante. Deliverables asociados a cada WP (también a extraer del D2).**

Work Package No.	Work Package Title	Lead Participant No.	Lead Participant Short Name	Person Months	Start Month	End Month

Work Package No.	Work Package Title	Lead Participant No.	Lead Participant Short Name	Person Months	Start Month	End Month

Table 3.1.1: List of work packages

3.1.4 Deliverables

List of deliverables and milstones. **D2 sección 1.2**

KEY: Deliverable numbers in order of delivery dates. Please use the numbering convention <WP number>.<number of deliverable within that WP>.

For example, deliverable 4.2 would be the second deliverable from work package 4.

Type: Use one of the following codes:

- R: Document, report (excluding the periodic and final reports)
- DEM: Demonstrator, pilot, prototype, plan designs
- DEC: Websites, patents filing, press i media actions, videos, etc.
- OTHER: Software, technical diagram, etc.

Dissemination level: Use one of the following codes:

- PU = Public, fully open, e.g. web
- CO = Confidential, restricted under conditions set out in Model Grant Agreement
- CI = Classified, information as referred to in Commission Decision 2001/844/EC.

Deliverable Date: Measured in months from the project start date (month 1)

Deliverable No.	Deliverable Name	Work Package No.	Lead Participant Short Name	Type	Disemination Level	Deliverable Date

Table 3.1.2: List of Deliverables

3.1.5 Inter-relation between components

Graphical presentation of the components showing how they inter-relate (Per chart or similar)
Algo más sencillo que el network diagram. Podría ser el network diagram.

3.2 Management structure, milstones and procedures

3.2.1 Organisational Structure

A complex organizational structure has been established given the complexity and scale of the project. On top of the organizational chain, a steering committee has been created and it will provide DEOS-UD with strategic command and solutions to problems that affect a significant part of the stakeholders in order to ensure a correct and efficient development of the project. Hand-to-hand with the steering committee, the advisory committee will provide the project leaders with tailored assistance in order to assure time and cost-efficient decisions are taken. There is also a business project team which will be in charge of assuring an economical resources correct management by providing careful tracing in the use of the budget along with a proper staff training in means of economic performance; the team is also ought to keep the steering committee updated with the latest information on earned value management parameters so that appropriate decisions are taken. Reinforcing the organizational structure of the project, a technical project team has been created as well in order to provide control over technical decisions in the project. An organizational structure directed by a steering committee is specifically designed to fit such a large-scale and long-term project as this one is. The experience, capacities and diversity of the members it is composed by will

play a key role in the outcome of the project while maintaining an efficient use of time and resources. The steering committee will take major decisions involving a significant fraction of the stakeholders. The business project team will be in charge of assessing the decisions involving budget modification or inter-department budget redistribution. Finally, decisions involving a modification or significant change in the technologies used during DEOS-UD progress will be in hands of the technical project team. Smaller affairs along with local inconveniences will be solved by the specific group affected by them. By having such a decision making distribution, DEOS-UD ensures a correct importance of the decision to experience ratio and thus assuring a more efficient time usage by providing every person within DEOS-UD with fitted responsibilities. The milestones to accomplish are detailed in the following section; extracted from the third deliverable.

3.2.2 Acceptance Criteria and Milstones

Milestones: D2 apartado 1.3. Acceptance Criteria: D2 apartado 1.4 Poner toda la tabla.

Based on the previous deliverables, the following criteria when stating a specific work package is established:

- **WP1**: Management
- **WP2**: Quality and administration
- **WP3**: State of the art
- **WP4**: Product development
- **WP5**: Simulation, testing and validation
- **WP6**: Business planning
- **WP7**: Communication and dissemination
- **WPx**: All Work Packages

The following table summarizes the milestones, including the work packages to which they are related, their due date and means of verification.

Milstone No.	Milstone Name	Related WP	Due Date	Means of Verification
1	Kick off meeting	WPx	10/09/2018	Agenda and Meeting Minutes

Milstone No.	Milstone Name	Related WP	Due Date	Means of Verification
2	Project management plan	WP1	05/10/2018	Archived soft copy and management team e
3	Business plan	WP6	05/10/2018	Archived soft copy and business team evalu
4	Communication plan	WP7	05/10/2018	Archived soft copy and marketing and comr
5	State of the art completion	WP3	28/12/2018	Archived soft copy and management and te
6	Payload preliminary design	WP4	14/06/2019	Technical documents review and technical t
7	Modular system preliminary design	WP4	06/09/2019	Technical documents review and technical t
8	Interaction platform preliminary design	WP4	29/11/2019	Technical documents review and technical t
9	Payload final design	WP4, WP2	12/06/2020	Technical documents review and technical t
10	Modular system final design	WP4, WP2	04/09/2020	Technical documents review and technical t
11	Interaction platform final design	WP4, WP2	27/11/2020	Technical documents review and technical t
12	Prototype manufacturing	WP4	16/04/2021	Prototype testing
13	Individual systems testing	WP5	09/07/2021	Systems testing
14	Full system testing	WP5	29/10/2021	Full system testing
15	Project completion	WPx	21/01/2022	Evaluation of all technical and non-technica

Milstone No.	Milstone Name	Related WP	Due Date	Means of Verification

Table 3.2.1: List of milstones

3.2.3 Quality Management

The Quality management Plan defines the quality levels that must be achieved in order to accept the final product developed and the methods to ensure these levels. In this section the quality management plan is defined together with methods and tools to assure, control and improve it.

3.2.3.1 Quality Assurance Approach

One of the most important parts of the project is to ensure high quality levels in all its sections in order to provide a final product that meets the expectations of the possible future customers. In this section, the procedures and methods to ensure this high quality are detailed.

At this point, it is important to recall high-level technical requirements defined previously in the Project Charter:

Item	Description
T1	Ensure the endurance of the overall system.
T2	Readiness for operational services.
T3	Ability to detect greenhouse gases.
T4	Ability to detect weather patterns for proper weather forecasting applications.
T5	Ability to perform a high precision terrain mapping for urban applications.
T6	The system must have a program for automatic updates and self-revision of possible issues.
T7	Availability of real-time information with a maximum delay of 1 second.
T8	15% increase in the reliability and precision of the results compared to current technologies.

Table 3.2.2: Technical requirements

The quality assurance will be applied in the different steps of the project in order to obtain the desired results. These steps are:

- Before manufacturing the prototype. Quality procedures must be applied over the final design to ensure it meets the requirements of the project.
- During the manufacture. The procedures executed in the manufacture of the prototype must be validated to guarantee that they are suitable for the manufacture of the product.
- Final product validation. The final product must be revised to ensure it fulfils the expected specifications. These validations will contain methods to check the quality of the software and the hardware of the project.

Now that the quality needed has been specified, in the following sections the methods to control the quality and to improve the quality plan will be described.

3.2.3.2 Quality Control Approach

The quality control approach of the project is divided in three main areas:

- Documentation quality plan
- Technical quality plan
- Software quality plan

Documentation quality plan

All the documentation of the project has to follow a strict quality plan in order to ensure that no information is lost. To do so, there is a series of steps that have to be followed:

1. Definition of the document
    - Define the type of document and its content as well as the standards that it has to follow.
    - Define the responsible of the document, the team that is going to work on it and the team that is going to verify it.
    - Define the deadline for the document as well as any milestone that may be related to it.
2. Redaction of the document: There may be some periodic quality controls while the document is in progress to ensure that the quality plan is met.

3. Review and approval: Once the document is finished, the responsible of that deliverable should perform the following tasks regarding the document:

   - Spell check.
   - Consistency.
   - References up to date.
   - Check that the deliverable follows the acceptance criteria.

   Then, the document can be delivered to the quality department. It will verify that the documentation follows the quality standards defined by the company. With the aim of guaranteeing a complete and trustful review, there should be at least two independent reviewers and they should not have been involved in the making of that document. If there is any review comment, it should be communicated to the deliverable responsible, since they have the final responsibility that the document meets the acceptance criteria.

This documentation quality plan refers to the deliverables but also to the internal documents of the company.

Technical quality plan

Since part of the project consists of the design and construction of a prototype, it is necessary to ensure that it meets all the quality requirements to guarantee its proper operation. In order to do that, the following steps are defined:

1. Definition of the quality plan: Before beginning with the design, a quality plan has to be done in order to define the acceptance criteria.

2. Design: Once the plan is finished and the design phase starts, some quality controls have to be done periodically to guarantee that the design complies the requirements and follows the quality plan previously defined.

3. Prototype and validation: During the construction of the prototype all the components and the production stages have to meet the acceptance criteria defined in the quality plan. Then, when the prototype is ready, a validation must be done in order to check that it fulfills all the requirements of the project as well as to verify that it complies the quality plan. This validation process has to follow the standards given by the industry.

Software quality plan

The project not only consists of a prototype that should be constructed, but it also has a software that has to be verified. The following steps are defined to guarantee a satisfactory design of the implementation platform:

1. Definition of the quality plan: Before starting with the coding, a software quality plan has to be defined. This document will set some standards that will have to be followed in the making of the interaction platform, such as coding and comment standards, to ensure a correct flow of information between the people who work on it as well as to avoid possible errors. It will also define the acceptance criteria that have to be met by the interaction platform.
2. Coding phase: During the design phase, every modification of the code will have to be registered indicating the date and a description of the changes. Then, a review of the latest modifications should be done before making them definitive. If an error is detected, it has to be immediately reported to the responsible of the software development. Then, an engineer will be assigned to solve it, and he/she will report it once the problem is solved.
3. Implementation and validation: Once the interaction platform is operative, a validation has to be performed in order to ensure that it fulfils all the requirements of the project as well as to verify that it complies the software quality plan. This validation process has to follow the standards given by the industry.

3.2.3.3 Quality Improvement Approach

Quality improvement (QI) is a formal analysis of practice performance and efforts done in order to improve the performance of the project with the main objective of increasing its efficiency. The information shown about QI models and tools has been extracted from [**?**] and [**?**]. A proper QI process requires some basics to succeed. These basics are the following ones:

- Establish a culture of quality in the project: Creation of QI teams, QI meetings, and QI goals.
- Determine and prioritize potential areas of improvement: Define, according to the acceptance criteria of the project, the main areas of improvement.
- Collect and analyse data: Determine the type of data to be collected and analyse it properly according to the project objectives.
- Communication of results: Quality improvements should be transparent to the stakeholders in order to keep them satisfied.

In this project, the six-sigma working philosophy will be implemented in order to improve quality. The objective of this philosophy is to adjust the existing processes in order to improve the quality and minimize the variability by reducing defects and irregularities. The model related to six-sigma philosophy that will be used is DMAIC. This model includes the following steps:

- Define: Set the objective of the problem or the existent defect. In this project, this definition will be done according to the acceptance criteria. The improvement of the quality plan is one of the objectives that will need to be taken into account.
- Measurement: Measures are needed in order to have values for the problem or defect. In this project the measurements according to the effectiveness of the quality plan are:
  - Number of iterations of a document/design to be approved.
  - Stakeholders satisfaction
  - Time needed to approve a document/design.
  - Number of defects detected by the quality department
- Analyse: Figure out the causes of the problem or defect and propose solutions.
- Improve: Implement the approved solution.
- Control: Control the implementation of the improvement, assure continuity and success.

3.2.3.4 Quality Roles and Responsibilities

In the following table, the quality roles for this project will be stated and its responsibilities defined. These roles are important so they will be the ones to control the implementation of the quality assurance, control, and improvement.

Role	Responsibilities
Project Manager	Final responsible for the quality of the project. Schedules meetings with the Quality Department in order to discuss the quality aspects of the project. Approves the quality plans of the project.
Project Manager Secretary	Helps the Project Manager in the tasks that he/she delegates.
Quality Manager	Main quality responsible of the project. Fixes the quality standards that all documents are required to fulfil. Reviews all the deliverables to make sure they fulfil the required quality. The same documents are also reviewed by the Quality Manager Assessor.

Role	Responsibilities
Quality Manager Assessor	Helps the Quality Manager in the tasks that he/she delegates. Reviews all the deliverables to make sure they fulfil the required quality. The same documents are also reviewed by the Quality Manager.
Technical Manager	Coordinates the work done by the engineers and technicians. Defines the technical quality plan and the software quality plan. Performs periodic quality controls on the design of the product. Reviews the technical aspects of the deliverables before approving them. Monitors the quality control procedures of both the prototype and the final product. Monitors the quality control procedures of the interaction platform.
Engineers and technicians	Make sure that the design of the product follows the technical quality plan. Perform quality control procedures over the prototype and over the final product. Make sure that the design of the interaction platform follows the software quality plan. Validate that the interaction platform fulfils the quality standards.

Table 3.2.3: List of quality roles and responsibilities

3.2.4 Risk Management Plan

Describe any critical risks, relating to project implementation, that the stated project's objectives may not be achieved. Detail any risk mitigation measures. Please provide a table

with critical risks identified and mitigation actions. **D3 Apartado 3**

Description of risk	Work package(s) involved	Proposed risk-mitigation measure

Table 3.2.4: Critical risks for implementation

3.2.5 Communication Management

Communication management has been effectively synthesized in a table where each and every type of communication process inside DEOS-UD is concisely described. This section will set an expanded overview regarding communication during the project, and will be helpful for all departments seeking for standardized guidance when trying to communicate results, problems or suggestions to other departments or to the general public.

Communication Type	Objective of Communication	Medium	Frequency	Audience	Owner	Deliverable	Format
Internal Business Status Meetings	Discuss assignments, activities and sharing information	Face to Face	Weekly	Business Team	Financial Manager	Agenda, Meeting Minutes	Soft copy archived on SharePoint site and project website
Technical and Business Status Meetings and Reports	Discuss assignments, activities, sharing information and reporting the project status	Face to Face	Weekly	Project Manager, Business Team, Technical Team, Project Secretary	Project Manager	Agenda, Meeting Minutes, Status Reports	Soft copy archived on SharePoint site and project website
Advisory Committee Meetings	Review progress, risks and issues	Face to Face	Monthly	Advisory Committee, Project Stakeholders, Project Manager, Project Secretary	Project Manager	Agenda, Meeting Minutes	Soft copy archived on SharePoint site and project website

Communication Type	Objective of Communication	Medium	Frequency	Audience	Owner	Deliverable	Format
Steering Committee Status Meetings	Enhance communication and coordination of the project	Face to Face	Monthly	Steering Committee, Project Manager, Project Secretary	Project Manager	Agenda, Meeting Minutes	Soft copy archived on SharePoint site and project website
Status Meetings and Reports to Stakeholders	Report the status of the project including activities, progress, costs and issues	Face to Face or Video Conference	Monthly	Stakeholders, Project Manager, Project Secretary	Project Manager	Agenda, Meeting Minutes, Status Reports	Soft copy archived on SharePoint site and project website
Project Status Reports	Provide Stakeholders information on the status and progress of the project	Email	Monthly	Project Stakeholders, Stakeholder and Procurement Manager, Project Manager	Stakeholder and Procurement Manager	Project status, schedule, budget and cost tracking, status of issues and risks, health status, status of action items, future or planned activities	Soft copy archived on SharePoint site and project website

Communication Type	Objective of Communication	Medium	Frequency	Audience	Owner	Deliverable	Format
Social Networking	Share any updates on the project	Facebook, Twitter, Instagram	Weekly	General Public	Marketing and Communication Manager	Online Posts	Online
Website	Contain varied information about the project	Website	Updated with any change	General Public	Marketing and Communication Manager	Online Posts	Online
Trade Shows	Face to face contact with potential customers as well as finding new prospects, nurture client relationships and stay up to date with latest developments	Onsite stands	Scheduled	Potential Customers, Genera Public and Industry Professionals	Marketing and Communication Manager	None	Face to Face
Conferences	Sharing achievements with industry specialists	Conferences	Scheduled	Industry Professionals	Project Manager	Presentation	Face to Face

Communication Type	Objective of Communication	Medium	Frequency	Audience	Owner	Deliverable	Format
Journal Articles	Promoting project ideas, concepts and results in scientific and applied research communities and getting feedback from relevant stakeholders	Digital and Written platforms	When Available	Potential Customers, General Public and Industry Professionals	Project Manager	Journal Article	Hard Copy

Table 3.2.5: Communication management plan matrix

3.3 Consortium as a whole

The consortium in charge of developing the DEOS-UD project has been chosen accurately in order to assure the capability of developing the project properly. The consortium is made up of 8 different partners distributed in 5 different countries as shown in Figure 3.3.1. The members of the consortium have a wide knowhow and expertise in the areas covered in the project:

- Research in space technology and innovative design: HIRO, Aribus Defence and Space, ICUBE-SERTIT.
- Development, testing and validation of space systems: Airbus Defence and Space, Deimos Space, Thales Alenia Space.
- Data application for urban development: ReSAC and VITO.

Apart from the technical aspects of the project, there are also partners with high expertise in project management, intellectual property management, data protection and exploitation and business plan specialized in space systems and applications (HIRO and BHO Legal Rechtsanwälte).
The consortium is well-structured and balanced among different experimented organisation and people who will bring the best expertise for each of the project objectives development.
During the project each partner has a well-defined role to play and no overlapping of activities will happen. However, the consortium is strong and would be capable of achieving the project expectations in case one partner leaves the project because another partner might perfectly be in charge of the remaining tasks. The consortium is characterised by a major presence of industrial organisation (3 large and 1 SME) guarantees the succes of the DEOS-UD project development and the presence of research specialized organization (ICUBE-SERTIT, ReSAC, HIRO and VITO) assure the innovation needed will be achieved. The balance between different organisations with different complementary knowledge areas is the most suitable for the development of the purpose of the project.

Figure 3.3.1: Consortium partners.

3.4 Resources to be committed

Mezcla del Budget del D2 apartado 8.2 (coste por WP) con los PM puestos en la descripción de cada WP en este mismo entregable.

4 Members of the consortium

4.1 Participants

#	Participant legal name	Short name	Country	Type
1	Airbus Defence and Space GmbH		Germany	
2	BHO Legal Rechtsanwälte Partnership		Germany	
3	Deimos Space S.L.U.		Spain	
4	High Innovative Remote Observation	HIRO	Spain	
5	ICUBE-SERTIT		France	
6	Remote Sensing Application Center	ReSAC	Bulgaria	
7	Thales Alenia Space SAS		France	
8	VITO nv		Belgium	

Table 4.1.1: List of participants

N°1	AIRBUS DEFENCE & SPACE	**Organisation name:** Airbus Defence and Space GmbH **Website:** http://www.geo-airbusds.com	Type:
Overall description			

Role within the project
Previous R&D Experience relevant to the project
Key persons assigned to the project
Matthew Perren. Head of Future Programmes, Earth Observation Navigation and Science Div. at Airbus Defence and Space.
Selected publications or products/services relevant to the project
Participation in relevant National or European research projects
Equipment involved

Table 4.1.2: Participant N°1

N°2		**Organisation name:** BHO Legal Rechtsanwälte Partnership **Website:** http://www.bho-legal.com	Type:
Overall description			
Role within the project			
Previous R&D Experience relevant to the project			
Key persons assigned to the project			
Oliver Heinrich. Oliver Heinrich specialises in the legal management of large projects. He also advises on questions concerning national, European and international procurement law. Among Oliver's clients are international and medium-sized companies mainly from the Aerospace, Telecommunications and Navigation Industry. Furthermore, he advises large research institutions. Oliver is Member of the Board of Directors of UVS International, Member of the Extended Board of UAV DACH head of the association's expert group "Air Law and Insurance" and head of its legal working group.			
Selected publications or products/services relevant to the project			
Participation in relevant National or European research projects			

Prior to working as a fulltime attorney, Oliver was a project manager for the European Satellite Navigation System Galileo at the German Aerospace Centre DLR. As authorised officer of TeleOp GmbH and legal advisor to the international consortium for the Galileo concession he gathered extensive practical experience in large international projects.
Equipment involved

Table 4.1.3: Participant N°2

N°3		**Organisation name:** Deimos Space S.L.U. **Website:** http://www.deimos-space.com/en/	Type:
Overall description			
Role within the project			
Previous R&D Experience relevant to the project			
Key persons assigned to the project			
Ismael López			
Selected publications or products/services relevant to the project			
Participation in relevant National or European research projects			
Equipment involved			

Table 4.1.4: Participant N°3

N°4		**Organisation name:** High Innovative Remote Observation **Website:** -	Type:
Overall description			

Role within the project
Previous R&D Experience relevant to the project
Key persons assigned to the project
Selected publications or products/services relevant to the project
Participation in relevant National or European research projects
Equipment involved

Table 4.1.5: Participant N°4

N°5		**Organisation name:** ICUBE-SERTIT **Website:** http://sertit.u-strasbg.fr/	Type:
Overall description			
Role within the project			
Previous R&D Experience relevant to the project			
Key persons assigned to the project			
Jean-François Rapp. Quality Manager of ICube, Research Engineer in a research team dedicated to methods and tools adapted to Innovative Design and Business Developer.			
Selected publications or products/services relevant to the project			
Participation in relevant National or European research projects			
Equipment involved			

Table 4.1.6: Participant N°5

N°6	ReSAC	**Organisation name:** Remote Sensing Application Center **Website:** http://www.resac-bg.org/	Type:
Overall description			
Role within the project			
Previous R&D Experience relevant to the project			
Key persons assigned to the project			
Vessela Samoungi			
Selected publications or products/services relevant to the project			
• Monitoring of the risk of farmland abandonment as an efficient tool to assess the environmental and socio-economic impact of the Common Agriculture Policy • High Nature Value farmland identification from satellite imagery, a comparison of two methodological approaches.			
Participation in relevant National or European research projects			
Equipment involved			

Table 4.1.7: Participant N°6

N°7	ThalesAlenia Space	**Organisation name:** Thales Alenia Space SAS **Website:** http://www.thalesgroup.com	Type:
Overall description			
Role within the project			
Previous R&D Experience relevant to the project			

Key persons assigned to the project
Philippe Keryer. As President of Networks group, leads a global, 20,000 people, multi-billion dollar telecoms organization and negociates with service providers, start-ups, and telecom leaders worldwide on products, services and intellectual property.
Selected publications or products/services relevant to the project
Participation in relevant National or European research projects
Equipment involved

Table 4.1.8: Participant N°7

N°8	vito vision on technology	**Organisation name:** VITO nv **Website:** https://vito.be/en/land-use	Type:
Overall description			
Role within the project			
Previous R&D Experience relevant to the project			
Key persons assigned to the project			
Steven Krekels. Steven Krekels has been the manager of VITO's Remote Sensing unit since November 2014. VITO Remote Sensing develops and operates space- and airborne-based earth observation systems that translate raw data into consumable information about population, growth, urban development, agriculture and vegetation, natural disasters, and more.			
Selected publications or products/services relevant to the project			
Participation in relevant National or European research projects			
Equipment involved			

Table 4.1.9: Participant N°8

4.2 Third parties involved in the project

Airbus Defence and Space GmbH	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
Does the participant envisage that part of its work is performed by linked third parties	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)	N

Table 4.2.1: Third parties involved with Airbus Defence and Space GmbH

BHO Legal Rechtsanwälte Partnership	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
Does the participant envisage that part of its work is performed by linked third parties	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)	N

Table 4.2.2: Third parties involved with BHO Legal Rechtsanwälte Partnership

Deimos Space S.L.U.	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
Does the participant envisage that part of its work is performed by linked third parties	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)	N

Table 4.2.3: Third parties involved with Deimos Space S.L.U.

High Innovative Remote Observation (HIRO)	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	Y
If yes, please describe and justify the tasks to be subcontracted	
Does the participant envisage that part of its work is performed by linked third parties	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)	N

Table 4.2.4: Third parties involved with High Innovative Remote Observation (HIRO)

ICUBE-SERTIT	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
Does the participant envisage that part of its work is performed by linked third parties	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)	N

Table 4.2.5: Third parties involved with ICUBE-SERTIT

Remote Sensing Application Center (ReSAC)	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
Does the participant envisage that part of its work is performed by linked third parties	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)	N

Table 4.2.6: Third parties involved with Remote Sensing Application Center (ReSAC)

Thales Alenia Space SAS	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	Y
If yes, please describe and justify the tasks to be subcontracted	
Does the participant envisage that part of its work is performed by linked third parties	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)	N

Table 4.2.7: Third parties involved with Thales Alenia Space SAS

VITO nv	
Does the participant plan to subcontract certain tasks (please note that core tasks of the project should not be sub-contracted)	N
Does the participant envisage that part of its work is performed by linked third parties	N
Does the participant envisage the use of contributions in kind provided by third parties (Articles 11 and 12 of the General Model Grant Agreement)	N
Does the participant envisage that part of the work is performed by International Partners (Article 14a of the General Model Grant Agreement)	N
s	

Table 4.2.8: Third parties involved with VITO nv

5 Ethics and Security

5.1 Ethics

5.2 Security

6 Bibliography