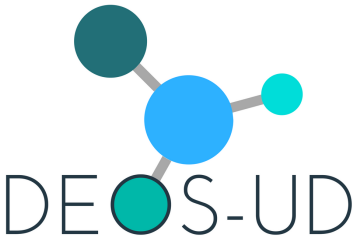

Project DEOS-UD

Disruptive Earth Observation Sensing for Urban Developement

Deliverable 6
European Comission Template

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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).

——————————————— Overall, 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. Accordingly, in order to implement this solution some specific objectives have to be accomplished.

In fact, 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.

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 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.

Earth observation is a field with a great potential that has not been taken into account until the last decade. Important space agencies like the European Space Agency are promoting the enhancement of capabilities with respect to Earth Observation due to the fact the society and the planet itself would benefit from the many application it has. Besides, Earth Observation can have much application, so it is crucial to focus on the enrichment of some of them to guarantee the development of the desired sensor abilities. Indeed, as the goal is to apply EO sensing for Urban Development to integrate space into society, the abilities to enhance are the following ones:

- Detection of greenhouse gases.
- Detection of weather patterns.
- High precision performance of terrain 3D mapping.

On the one hand, systems like LiDAR, which combines technologies like laser and radar, enable to target a wide range of materials including clouds and molecules. Consequently, it is possible to develop a sensor that identifies the composition of the air to secure our environment by

having a monitoring of either the greenhouse gases or the weather patterns for proper weather forecasting applications. On the other hand, 3D mapping of the terrain is useful to control the land and guarantee an optimum growth and development of the city. All in all, one of the most important aspects that have to be taken into account is that the sensors resulting from this project have to ensure at least a 15% increase of the reliability and precision compared to the current ones.

To achieve the project goal and implement much better sensors than the already existing ones, a state-of-the-art of the current space requirements of several optical and radar systems will be done. The limitations and the possibilities of the different technologies such as LiDAR, RADAR, Gravimetry, Hyperspectral, Superspectral and more will be determined, and then a decision will be taken in order to work with the most promising ones. Furthermore, the preliminary design will take into account several criteria to obtain competitive sensors. Launching any payload to space has very high costs, then it is essential to ensure the endurance of the overall systems in order to maintain the payload in space for a long time and avoid any replacements. To accomplish it, the materials used to build the components of the sensor including antennas, photo-detector, optics, laser and, electronics have to be accurately chosen.

In addition, a step that is necessary for this kind of projects is the testing of the product. Once the preliminary design is finished an accomplishes all the requirements of the project, a first prototype will be built and tested in a space simulated environment to make sure that it performs as expected. Notice that the testing is not done in the space itself because launching the prototype to the space is too expensive and out of this project budget; fortunately, there are other methods that are cheaper and simulate properly the space conditions. Finally, once the prototype designed fulfils all the expectations, it is considered that the results are attained and the product design is ready for closure.

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, an improvement of the state-of-the-art technologies used for EO sensing is a key factor to promote and advance in the Earth Observation field. In other words, this project is not in charge of developing new launching systems or designing satellites, its objective is to

provide the existing and the next generation of space technologies with disruptive sensors. In fact, one of the priorities of this project is to ensure the complementarity with other activities or programs such as Copernicus funded.

Hence, 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.

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

2.1.1 Impact on market

The result of this project is intended to play an important role in the performance of potential users belonging to the construction industry. Therefore, the project will be a new way to develop cities. Its impact in various fields is described below:

Item	Description
Innovative	The call H2020 aims that the result of the product is innovative and that it contains an added value in environmental terms. This project will allow cities to grow in a sustainable way.
Industry	This proposal is a novelty in the construction industry and will help cities to develop correctly, this being a concern that has increased in recent years, this project is expected to lead this field.
Growth	The incorporation of the platform to the construction industry will allow cities not to be affected by future environmental restrictions in the field of emissions. In this way, by using the platform, cities will be able to avoid future taxes or limitations that prevent them from developing properly.
Market	Because the construction industry has a relevant weight in the world and cities are constantly growing, it is expected that this platform will be extended by a large number of countries, created new jobs to be able to use the application.
Efficiency	The possibility of being able to control the emissions of the cities and to build new scenarios, will allow the cities to grow in a more efficient way, optimizing their expansion within the allowed limits.
Environment	The use of this application will allow a precise control of emissions in cities, this fact will make as cities continue to grow as they do so far in a way that does not harm the environment while avoiding climate change.

Table 2.1.1: Technical requirements

2.1.2 Barriers and frameworks conditions

Like any other project, it must face a series of barriers or framework conditions that may affect its development or even prevent the project from being carried out. The following are the main barriers that can be found:

Item	Description
Commercial	Because it is an innovative project that has just begun, its relevance will be weak at first, because the construction market is conservative and may take time to understand and accept the product. In this aspect a good commercial management is important, it is necessary that the potential clients see in the product a way to cover a need.
Technology	The project depends on the current state of various technologies, including satellite technology. It can happen that the technological level of the project exceeds the one that currently exists, creating a problem in this aspect. It is important that the engineering department knows how to compensate these limitations and to comply with the requirements with the available technology.
Budget	The project corresponds to the call H2020, for which there is a financial threshold for its realization. It is important to keep in mind that, because the budget is a little exceeded. It is necessary to pay special attention not to exceed it more, taking special care in the part destined for contingencies.
Regulation	The aim of the company's quality department is to study all the regulatory frameworks in which the project operates. It is important to understand that there must be a regulation that can be more or less flexible, so you have to adapt the project to it as much as possible or try to evolve it in the desired direction. However, due to the nature of the project it is not expected that there are too many drawbacks in this field.

Table 2.1.2: Technical requirements

ning 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

The present section accounts for an accurate description of the different steps and milestones needed to be accomplished by DEOS-UD in order to succeed in the development of the project. The reader will find here information related with the overall structure of the project, the different Work Packages and their timings along with the list of deliverables and milestones expected for the project. In addition to the information described, an approach to the interrelation between components will be displayed in order for the reader to better understand the complexity of the project.

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.

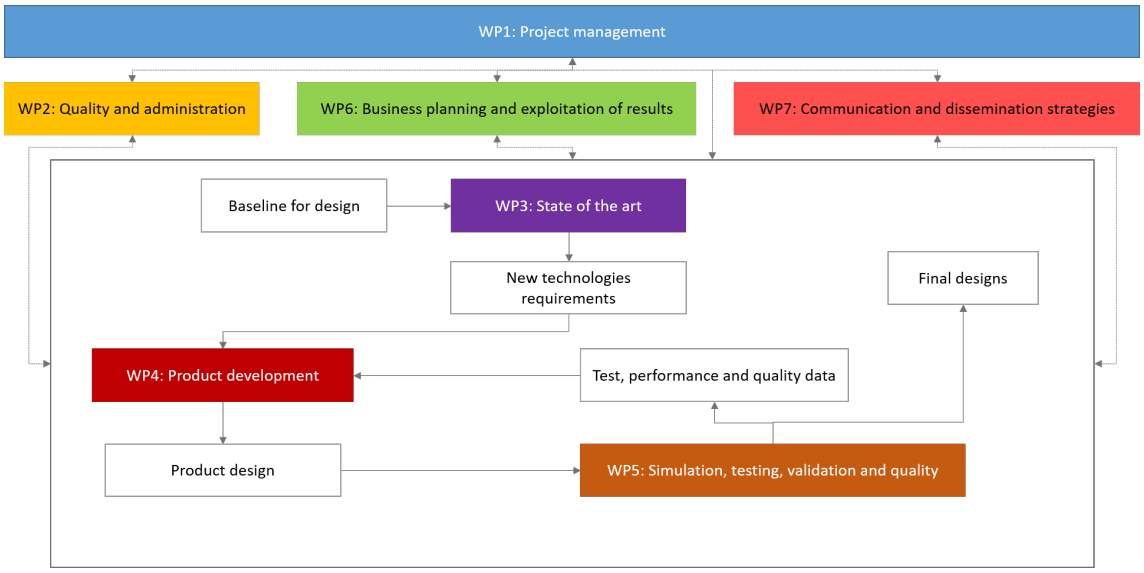

Figure 3.1.1: DEOS-UD overall structure diagram.

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
1	Project management	4	HR	16	M0	M44
2	Quality and administration	4	HR	26	M0	M44

Work Package No.	Work Package Title	Lead Participant No.	Lead Participant Short Name	Person Months	Start Month	End Month
3	State of the art	1	ADS	34	M1	M3
4	Product development	1	ADS	119	M4	M29
5	Simulation, testing, validation and quality	7	TAS	27	M22	M43
6	Business planning and exploitation of results	2	BHO	16	M0	M1
7	Communication and dissemination strategies	4	HR	21	M0	M44

Table 3.1.1: List of work packages

Work Package Number: 1				**Lead beneficiary:** HIRO				
Work Package Title: Project management								
Participant number	1	2	3	4	5	6	7	8
Short name of participant	ADS	BHO	DS	HR	IS	RSAC	TAS	VT
Person Month per Participant	0	0	0	X	0	0	0	0
Start Month M0				**End month:** M44				

Objectives:

The aim of WP1 is to ensure a good coordination and management of the project covering technical, administrative, ethical and financial issues. The specific aims are:

- Coordinate DEOS-UD project providing the partners with the needed organization, supervision and leadership.
- Manage and monitor the project progress.
- Understand the overall project together with its risk and determination of mitigation and contingency plans for the proper development of the project.

Description of work:

Task 1.1: Development of project management plan. *Leadership: HR*. Elaboration of all the documentation that states the strategy of the management and organization of the project through its duration.

Task 1.2: Monitoring of the project. *Leadership: HR*. Gathering of the members of the project to inform each other of the progress. Tracking of the active tasks and scheduling.

Task 1.3: Annual reporting. *Leadership: HR*. 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.

Task 1.4: Project implementation of risk management. *Leadership: HR*. Study of all the potential risks and how will they be managed so that their affectation to the project stays to a minimum.

Deliverables:

D1.1: Project management plan: Document with detailed explanation of the project management strategies, including the Project Charter, stakeholder register, risk, quality and financial plans. Due date: M1

Table 3.1.2: WP1 description

Work Package Number: 2				**Lead beneficiary:** HIRO				
Work Package Title: Quality and administration								
Participant number	1	2	3	4	5	6	7	8
Short name of participant	ADS	BHO	DS	HR	IS	RSAC	TAS	VT
Person Month per Participant	X	X	X	X	X	X	X	X
Start Month M0				**End month:** M44				

Objectives:

The aim of WP2 is to manage the human resources of the project in order to supply the amount of them needed to perform the project. It is also in charge of developing and controlling the financial feasibility study and seek funding to achieve the project objectives. Documentation management and periodic monitoring will also be done in this WP, assuring the quality of the deliverables and other documentation.

Description of work:

Task 2.1: Human resources. *Leadership: HR*. Definition of the number of employees necessary and employment of them. Administration of all the employees needed to fulfill the different tasks of the project.

Task 2.2: Financial plan. *Leadership: HR*. Lay down of all the fix and variable costs of the project and the expected funding. Study on the economic feasibility of the project, monitoring of the evolution of the project finances and search for the additional funding for the project.

Task 2.3: Documentation management. *Leadership: HR*. Establishment of the guidelines for the redaction of all documents, revision of all the documents of the project and rectification of the documents that do not meet the project requirements. Approval of the reviewed and rectified documents.

Task 2.4: Periodic monitoring. *Leadership: HR*. To ensure the quality of the project, a periodic monitoring of all the activities will be carried out.

Deliverables:

NO HAY NINGUN DELIVERABLE DEFINIDO PARA EL WP2, ENTONCES ESTO NO ESTARIA BIEN HECHO. PENSAR QUE HACER

Table 3.1.3: WP2 description

Work Package Number: 3				**Lead beneficiary:**Airbus Defence and Space				
Work Package Title: State of the art								
Participant number	1	2	3	4	5	6	7	8
Short name of participant	ADS	BHO	DS	HR	IS	RSAC	TAS	VT
Person Month per Participant	X	X	X	X	X	X	X	X
Start Month M1				**End month:** M3				

Objectives:

The aim of WP3 is to do a state of the art for the technologies that want to be studied and improved during the project. The final objective is being capable of seeing the possibilities of these technologies and the potential areas of improvement to specify the requirements needed to achieve by the next-generation sensors, systems and applications.

Description of work:

Task 3.1: Payloads. *Leadership: ADS. Participants: DS, TAS and HR.* Search for the current space applications and definition of the requirements for the sensors.

Task 3.2: Modular system. *Leadership: TAS. Participants: DS, ADS and HR.* Search for the current modular systems with space applications and definition of the requirements for the modular system developed in the project.

Task 3.3: Urban development applications with space technologies. *Leadership: IS. Participands: VT, RSAC and HR.* Search for current applications similar to those that want to be implemented in this project in the areas of weather forecast, urban planning and greenhouse emissions reduction. Definition of the requirements of the applications.

Deliverables:

D3.1: Payload state of the art: Report containing the state of the art of current EO remote sensors as well as the sensors to improve selection and the first requirements definition.

D3.2: Modular system state of the art: Report containing the state of the art of current modular systems with space applications and its first requirements definition.

D3.3: Space applications state of the art: Report containing the state of the art of current urban development space applications and first interaction platforms requirements definition.

Table 3.1.4: WP3 description

Work Package Number: 4				**Lead beneficiary:**Airbus Defence and Space				
Work Package Title: Product development								
Participant number	1	2	3	4	5	6	7	8
Short name of participant	ADS	BHO	DS	HR	IS	RSAC	TAS	VT
Person Month per Participant	X	X	X	X	X	X	X	X
Start Month M4				**End month:** M29				

Objectives:

The aim of WP4 is to do the design of the sensors and systems that will be created by the project. This include the three main branches of the project: sensor, modular system and data application for urban development. A preliminary design according to the specified requirements will be done and then, based on simulations and testing, the final design will be created.

Description of work:

Task 4.1: Preliminary design. *Leadership: ADS. Participants: DS, TAS, HR, VT, RSAC, IS*. Research for the payload preliminary design and development of it. Modular system preliminary design, definition of SATCOM application domains and development of: physical framework for sensor block, systems interactions and applications, sensor data fusion software. Preliminary design of the interaction platform and implementation of web-based servers for sharing sensors data and processing algorithms based on applications.

Task 4.2: Final design: *Leadership: ADS. Participants: DS, TAS, HR, VT, RSAC, IS*. Final design and technical specifications of the payload sensors. Final design of the modular system, specifically the sensors data fusion software. Final design and implementation of the interaction platform, including the web servers for data sharing and the processing algorithms.

Deliverables:

Payload preliminary design: Report determining the payload preliminary design. It contains the research, requirements and preliminary performances parameters of each sensor.

Modular system preliminary design: Report detailing the modular system preliminary design. It includes a first review of the sensors blocks physical framework and sensors data fusion software requirements as well as the initial definition of the SATCOM application domains.

Interaction platform preliminary design: Report detailing the interaction platform preliminary design. It includes the predesign of data sharing servers and platforms as well as the definition of the initial implementation of data processing algorithms.

Payload final design: Report detailing the final design and technical specifications of each developed sensor.

Modular system final design: Report detailing the final design and technical specifications of the modular system.

Sensor data fusion software report: Report containing the final sensors data fusion software specifications.

Interaction platform final design: Report containing the final design and technical specifications of the interaction platforms.

Data processing software report: Report containing the final data processing algorithms specifications which will allow processing the acquired satellite data.

Table 3.1.5: WP4 description

Work Package Number: 5				**Lead beneficiary:**Thales Alenia Space S.A.S				
Work Package Title: Simulation, testing, validation and quality								
Participant number	1	2	3	4	5	6	7	8
Short name of participant	ADS	BHO	DS	HR	IS	RSAC	TAS	VT
Person Month per Participant	X	X	X	X	X	X	X	X
Start Month MX				**End month:** MX				

Objectives:

The aim of WP5 .

Description of work:

Task 5.1: Technology Demonstrator Prototype Manufacturing. *Leadership: TAS. Participants: ADS, DS, HR*. Manufacturing of the sensors, the module and the interaction platform of the prototype in order to be tested in the following activities.

Task 5.2: Payload Validation. *Leadership: TAS. Participants: ADS, DS, HR*. Validation of the performance of the sensors mounted on the system.

Task 5.3: Modular System Validation. *Leadership: TAS. Participants: ADS, DS, HR*. 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.

Task 5.4: Interaction Platform Validation. *Leadership: RSAC. Participants: HR, VT, IS*. Validation of the interaction platform to check if it develops all its functions properly.

Task 5.5: Full System Prototype Validation. *Leadership: HR. Participants: ADS, TAS, RSAC*. Validation of the whole system using the prototype in order to test its performance.

Task 5.6: Quality of the Product. *Leadership: HR. Participants: DADS, TAS, RSAC*. Quality control of all the subsystems of the product and all the methodologies applied on its manufacturing and validation.

Deliverables:

Table 3.1.6: WP5 description

Work Package Number: 6				**Lead beneficiary:**BHO Legal Rechtsanwalte Partnership				
Work Package Title: Business planning and exploitation of results								
Participant number	1	2	3	4	5	6	7	8
Short name of participant	ADS	BHO	DS	HR	IS	RSAC	TAS	VT
Person Month per Participant	X	X	X	X	X	X	X	X
Start Month MX				**End month:** MX				
Objectives: The aim of WP6 .								
Description of work: Task 6.1: Market Approach. *Leadership: BHO. Participants: HR*. Perform a study of the possible companies interested in the project as well as negote the conditions of resources procurement and purchase of the resources required for the project. Task 6.2: Exploitation and Business Plan. *Leadership: BHO. Participants: HR*. Implementation of the business plan of the product to exploit its economic potential.								
Deliverables:								

Table 3.1.7: WP6 description

Work Package Number: 7				**Lead beneficiary:**HIRO				
Work Package Title: Communication and dissemination strategies								
Participant number	1	2	3	4	5	6	7	8
Short name of participant	ADS	BHO	DS	HR	IS	RSAC	TAS	VT
Person Month per Participant	X	X	X	X	X	X	X	X
Start Month MX				**End month:** MX				
Objectives: The aim of WP7 .								
Description of work: Task 7.1: Dissemination and Communication Plan. *Leadership: HR. Participants: ADS, BHO, DS, IS, RSAC, TAS, VT*. Definition of the strategies planned for the dissemination of the final product. Task 7.2: On-line Dissemination/Communication Activities. *Leadership: HR. Participants: ADS, BHO, DS, IS, RSAC, TAS, VT*. Development of the web site to promote the product and management of the social media used in the dissemination plan of the project. Task 7.3: Off-line Dissemination/Communication Activities. *Leadership: HR. Participants: ADS, BHO, DS, IS, RSAC, TAS, VT*. Attendance to conferences in order to disseminate the product to possible stakeholders and to meetings to promote the product inside the market. Task 7.4: Production of Dissemination Materials. *Leadership: HR. Participants: ADS, BHO, DS, IS, RSAC, TAS, VT*. Production of technology demonstrators and all the visual material needed for the dissemination and promotion of the product.								
Deliverables:								

Table 3.1.8: WP7 description

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
D1.1	Project Management Plan	WP1	HR	R	CO	month 1
D6.1	Business Plan	WP6	BHO	R	CO	month 1
D7.1	Communication Plan	WP7	HR	R	CO	month 1
D3.1	Payload State of the Art	WP3	ADS	R	CO	month 4
D3.2	Modular System State of the Art	WP3	TAS	R	CO	month 4

Deliverable No.	Deliverable Name	Work Package No.	Lead Participant Short Name	Type	Disemination Level	Deliverable Date
D3,3	Space Applications State of the Art	WP3	IS	R	CO	month 4
D7	Payload Preliminary Design	WP4	ADS	R	CO	month
D8	Modular System Preliminary Design	WP4	ADS	R	CO	month
D9	Interaction Platform Preliminary Design	WP4	ADS	R	CO	month
D10	Payload Final Design	WP4	ADS	R	CO	month
D11	Modular System Final Design	WP4	TAS	R	CO	month
D12	Sensors Data Fusion Software Report	WP4	TAS	R	CO	month
D13	Interaction Platform Final Desing	WP4	IS	DEC	CO	month
D14	Data Processing Software Report	WP4	IS	R	CO	month
D15	Validation Report	WP5	HR	R	CO	month

Deliverable No.	Deliverable Name	Work Package No.	Lead Participant Short Name	Type	Disemination Level	Deliverable Date
D16	Final Report			R	CO	month

Table 3.1.9: 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
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

Milstone No.	Milstone Name	Related WP	Due Date	Means of Verification
4	Communication plan	WP7	05/10/2018	Archived soft copy and marketing and comm
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

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

The present section will identify the risks threatening a project's correct development, the Work Packages that will be involved in such risks and will suggest a mitigation solution for

each and everyone of them. The described information is found in the following table. The previously defined Work Packages apply for this section too.

Description of risk	Work package(s) involved	Proposed risk-mitigation measure
Deliverable delays	WPx	Dedicate more resources than expected.
Inaccurate cost forecast	WP1, WP2	Consider new funding sources and revise the finantial management plan.
Lack of communication	WPx	Periodical meeting and use of collaborative software.
Lack of technology improvement	WP4	Guarantee the development with thorough search of state of the art technologies.
Lack of access to project needed information	WPx	Previous accurate research is needed before the development of the project.
Low team motivation	WPx	Personnel control and team building projects.
Unsuccessful quality control	WPx	Improve or increase quality controls.
Conflicts between members	WPx	Personnel conflict resolution meetings.
Infeasible design	WP4	Periodical reviews with experts and managers.
Techonolgical components with security vulnerabilities	WP3, WP4, WP5	Check for possible security problems during development through specialised companies.
Organization issues	WPx	Demand for external companies specialised advice in project management.

Description of risk	Work package(s) involved	Proposed risk-mitigation measure
Stakeholder dessertion	WPx (Except WP7)	Transfer responsibilities to other stakeholders when possible or contract new ones.
Competitors appearance	WP6, WP7	Improvement of the quality-to-price ratio of the service.
Delay in external deliverables	WPx	Control the delivery schedules and change provider if necessary.
Economical market issues	WPx	Control cost evolution due to external changes throughout the project.
Components or raw material quality	WP4, WP5	Have exhaustive and regular quality controls to avoid problems in components in the final test.

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

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

All the members of the consortium are listed in Table 4.1.1. A more accurate description of each participant as well as their role and experience can be found in the following tables.

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

Airbus Defence and Space is a division of Airbus, the largest aeronautics and space company in Europe. It is the world's second largest space company in the world. Their work comprises different departments: Earth Observation, Telecom Satellites, Human Spaceflight, Launchers, Satellite Navigation, Space Exploration, Space Equipment and Space Data Highway.
Regarding Earth Observation, Airbus Defence and Space has built and delivered almost 50 satellite systems since 1986, accumulating over 300 years of in-orbit operation. None of these missions has ever failed in orbit. Some of their work includes meteorology satellites, sensing satellites and data intelligence services.

Role within the project

The main role of the company in the project is the development, testing and validation of the space systems.

Previous R&D Experience relevant to the project

Airbus Defence and Space has over 25 years of experience of working with the European Space Agency, developing missions such as SMOS, CryoSat-2, GOCE and Swarm.

Key persons assigned to the project

Matthew Perren (male) received his Physics and Electronics degree from the Brunel University in 1986. He then studied a MSc in Satellite Communications at the University of Surrey in 1992. After working several years in other companies, he became head of Future Programmes, Earth Observation Navigation and Science Div. at Airbus Defence and Space in 2014.

Selected publications or products/services relevant to the project

-

Participation in relevant National or European research projects

Airbus is a known supplier of the European Space Agency. They have worked together for over 25 years. It also is a driving force of the project Copernicus, since it has developed and built the Sentinel Satellites and several of their instruments.

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			
BHO Legal is a law firm with focus on aerospace and high-technology projects. Their areas of expertise are international space law, EU regulatory law, procurement, IT, data protection, R&D and contract law. They are currently focused in satellite navigation, earth observation and related R&D projects.			
Role within the project			
Provide legal and business advice to develop a business plan that takes into account intellectual property management, data protection and exploitation of the product.			
Previous R&D Experience relevant to the project			
-			
Key persons assigned to the project			
Oliver Heinrich (male) 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. He got his degree in Anglo-American Law from Trier University in 1997.			
Selected publications or products/services relevant to the project			
-			
Participation in relevant National or European research projects			
Prior to working as a full-time 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			
Deimos Space specialises in the design, engineering and development of solutions and systems integration in the aerospace, satellite systems, remote sensing, information systems and telecommunications network sectors. They are manufacturers, software developers, data providers and data processing experts.			
Role within the project			
Design and development of satellite sensors and systems.			
Previous R&D Experience relevant to the project			
Deimos Space coordinates different projects regarding Earth Observation: SIMOcean, NextGEOSS and EO-ALERT. In June 2014 they launched the Deimos-2, a satellite designed by them. It provides near-real time image tasking, downloading, processing and delivery to the end user.			
Key persons assigned to the project			
Ismael López (male) received his Telecommunications Engineering degree from the University of Sevilla in 2001. After working some years as a Project Engineer, he became Project Manager in Deimos in 2010.			
Selected publications or products/services relevant to the project			
-			
Participation in relevant National or European research projects			
A subdivision of Deimos Space named Deimos Engenharia leads a Horizon 2020 Project called NextGEOSS. It proposes a centralised hub for Earth Observation data, where users can connect to access data and deploy EO-based applications. Deimos also coordinates another H2020 project named EO-ALERT, which aims to achieve very high throughput and very low latency in the delivery of Earth observation images, moving beyond the state of the art. Finally, they also collaborate with the Portuguese government in the SIMOcean project, which provides aims to create a national marine database.			
Equipment involved			

Table 4.1.4: Participant N°3

N°4	HIRO	**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	iCUBE	**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 (male) got both his degree and his master from the University Louis Pasteur in Strasbourg. He works as 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		**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 (female)			
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 (male). 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
Quality of the product: An entity external to the project must do the quality tests. Web site development: Quick launch of the project professional website. Auditing: External company for auditing and supervising	
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
Manufacturing of payload sensors: Create sensors with the designed parameters, using high performance industry standards. Manufacturing of modular system: Use sensor interface specific outsource facilities for manufacturing the modular system.	
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