

**Horizon Europe Programme**

**Specific Application Form (HE CSA)**

**HORIZON-WIDERA-2023-ACCESS-02**

**Project proposal – Technical description (Part B)**

**Version 1.0**

**14 February 2023**

**Structure of the Proposal**

The proposal contains two parts:

• **Part A** of the proposal **is generated by the IT system. It is based on the information entered by the participants through the submission system in the Funding & Tenders Portal.** The participants can update the information in the submission system at any time before final submission.

• **Part B** of the proposal is the narrative part that includes three sections that each correspond to an evaluation criterion. Part B needs to be uploaded as a PDF document following the templates downloaded by the applicants in the submission system for the specific call or topic. The templates for a specific call may slightly differ from the example provided in this document.

The electronic submission system is an online wizard that guides you step-by-step through the preparation of your proposal. The submission process consists of 6 steps:

- Step 1: Logging in the Portal

- Step 2: Select the call, topic and type of action in the Portal

- Step 3: Create a draft proposal: Title, acronym, summary, main organisation and contact details

- Step 4: Manage your parties and contact details: add your partner organisations and contact details.

- Step 5: Edit and complete web forms for proposal part A and upload proposal part B

- Step 6: Submit the proposal

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| **HISTORY OF CHANGES** | | |
| **Version** | **Publication date** | **Changes** |
| 1.0 | 14.02.2023 | * Initial version |

**Proposal template Part B: technical description**

***(for full proposals: single stage submission procedure and 2nd stage of a two-stage submission procedure)***

This template is to be used in a single-stage submission procedure or at the 2nd stage of a two-stage submission procedure.

The structure of this template must be followed when preparing your proposal. It has been designed to ensure that the important aspects of your planned work are presented in a way that will enable the experts to make an effective assessment against the evaluation criteria. Sections 1, 2 and 3 each correspond to an evaluation criterion.

Please be aware that proposals will be evaluated as they were submitted, rather than on their potential if certain changes were to be made. This means that only proposals that successfully address all the required aspects will have a chance of being funded. There will be no possibility for significant changes to content, budget and consortium composition during grant preparation.

 **Page limit**: The title, list of participants and sections 1, 2 and 3, together, should not be longer than 30 pages. For topics using lump sum funding, the limit is 33 pages All tables, figures, references and any other element pertaining to these sections must be included as an integral part of these sections and are thus counted against this page limit. The number of pages included in each section of this template is only **indicative.**

The page limit will be applied automatically. **At the end of the document you can see the structure of the actual proposal that you need to submit, please remove all instruction pages that are watermarked.**

If you attempt to upload a proposal longer than the specified limit before the deadline, you will receive an automatic warning and will be advised to shorten and re-upload the proposal. After the deadline, excess pages (in over-long proposals/applications) will be automatically made invisible, and will not be taken into consideration by the experts. The proposal is a self-contained document. Experts will be instructed to ignore hyperlinks to information that is specifically designed to expand the proposal, thus circumventing the page limit.

Please, do not consider the page limit as a target! It is in your interest to keep your text as concise as possible, since experts rarely view unnecessarily long proposals in a positive light.

 The following formatting conditions apply.

The reference font for the body text of proposals is Times New Roman (Windows platforms), Times/Times New Roman (Apple platforms) or Nimbus Roman No. 9 L (Linux distributions).

The use of a different font for the body text is not advised and is subject to the cumulative conditions that the font is legible and that its use does not significantly shorten the representation of the proposal in number of pages compared to using the reference font (for example with a view to bypass the page limit).

The minimum font size allowed is 11 points. Standard character spacing and a minimum of single line spacing is to be used. This applies to the body text, including text in tables.

Text elements other than the body text, such as headers, foot/end notes, captions, formula's, may deviate, but must be legible.

The page size is A4, and all margins (top, bottom, left, right) should be at least 15 mm (not including any footers or headers).

This document is tagged. Be careful not to delete the tags; they are needed for processing.

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| --- | --- |
| **DEFINITIONS** | |
| **Critical risk** | A critical risk is a plausible event or issue that could have a high adverse impact on the ability of the project to achieve its objectives.  Level of likelihood to occur (Low/medium/high): The likelihood is the estimated probability that the risk will materialise even after taking account of the mitigating measures put in place.  Level of severity (Low/medium/high): The relative seriousness of the risk and the significance of its effect. |
| **Deliverable** | A report that is sent to the Commission or Agency providing information to ensure effective monitoring of the project. There are different types of deliverables (e.g. a report on specific activities or results, data management plans, ethics or security requirements). |
| **Impacts** | Wider long term effects on society (including the environment), the economy and science, enabled by the outcomes of R&I investments (long term). It refers to the specific contribution of the project to the work programme expected impacts described in the destination. Impacts generally occur some time after the end of the project.  Example: *The deployment of the advanced forecasting system enables each airport to increase maximum passenger capacity by 15% and passenger average throughput by 10%, leading to a 28% reduction in infrastructure expansion costs.* |
| **Milestone** | Control points in the project that help to chart progress. Milestones may correspond to the achievement of a key result, allowing the next phase of the work to begin. They may also be needed at intermediary points so that, if problems have arisen, corrective measures can be taken. A milestone may be a critical decision point in the project where, for example, the consortium must decide which of several technologies to adopt for further development.The achievement of a milestone should be verifiable. |
| **Objectives** | The goals of the work performed within the project, in terms of its research and innovation content. This will be translated into the project’s results. These may range from tackling specific research questions, demonstrating the feasibility of an innovation, sharing knowledge among stakeholders on specific issues. The nature of the objectives will depend on the type of action, and the scope of the topic. |
| **Outcomes** | The expected effects, over the medium term, of projects supported under a given topic. The results of a project should contribute to these outcomes, fostered in particular by the dissemination and exploitation measures. This may include the uptake, diffusion, deployment, and/or use of the project’s results by direct target groups. Outcomes generally occur shortly after the end of the project.  Example: *9 European airports adopt the advanced forecasting system demonstrated during the project.* |
| **Pathway to impact** | Logical steps towards the achievement of the expected impacts of the project over time, in particular beyond the duration of a project. A pathway begins with the projects’ results, to their dissemination, exploitation and communication, contributing to the expected outcomes in the work programme topic, and ultimately to the wider scientific, economic and societal impacts of the work programme destination. |
| **Research output** | Results generated by the action to which access can be given in the form of scientific publications, data or other engineered outcomes and processes such as software, algorithms, protocols and electronic notebooks. |
| ntions, scientific works, etc.) are ‘Intellectual Property’, which may, if appropriate, be protected by formal Intellectual Property Rights.  Example: *Successful large-scale demonstrator: trial with 3 airports of an advanced forecasting system for proactive airport passenger flow management.* | |
| **Technology Readiness Level** | See Work Programme General Annexes B |

**NTUA Space Geodesy Centre of excellence**

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**List of participants**

|  |  |  |
| --- | --- | --- |
| **Participant No. \*** | **Participant organisation name** | **Country** |
| 1 NTUA |  |  |
| 2 CLS |  |  |
| 3 IPGP |  |  |
| 4 GFZ |  |  |
| 5 OSO |  |  |

\* Please use the same participant numbering and name as that used in the administrative proposal forms.

**1. Excellence** #@REL-EVA-RE@#

**1.1 Objectives** #@PRJ-OBJ-PO@#

Since the introduction of Earth orbiting satellites, Space Geodesy has played a crucial role in our understanding of the complex Earth system. An ever increasing number of space-based applications, including but not limited to climate change, positioning, space exploration, security and awareness, Earth kinematics and reference frames maintenance, geodynamics, etc, are heavily dependent on results and products derived by methods of Space Geodesy, and hence correlated with advances and progress within this scientific field. Observing the Earth system through space, is in essence an exercise of Space Geodesy.

Space Geodesy is an ever evolving multidisciplinary scientific field, playing a significant role in a series of space-based and earth-oriented applications. It lays the fundamental groundwork for the exploitation of data collected from Earth orbiting satellites via its unique ability to provide precise modeling of satellite trajectories (i.e. precise orbit determination), accurate observations and models for the Earth’s rotation and orientation as well as spatial reference frames of the utmost quality.

The ever-increasing number of earth orbiting satellite missions accompanied with an ever increasing need for improved accuracy demanded by a series of applications (e.g. climate change studies), have upgraded Space Geodesy’s role, placing it at the core of Geoscienses. In 2020, the geoscience community has fixed an objective of 1mm accuracy and 0.1mm/yr stability for the terrestrial reference frame (TRF) realization, a goal still to be reached. Exciting new missions, such as the ESA GENESIS mission (accepted in November 2022) utilizing multiple space geodetic techniques (“space-ties”), are evident of the exciting future and renovated importance and expectations of the field.

The Project Coordinator (NTUA), via its School of Rural, Surveying and Geoinformatics Engineering, is the oldest and most prestigious institution in Greece providing a curriculum in the field of Geodesy. It has a twofold role in Greece; on the one hand educating and training the next generation of geodesy experts and on the other hand, being involved in relevant research, both to support its academic expertise and also to push scientific frontiers.

In the dawn of the Space Geodesy era, NTUA via its Dionysos Satellite Observatory (DSO) laboratory, had played a significant role in expanding knowledge, involved in a series of novel and invaluable observational techniques, including astrometric data and laser ranging measurements. However, in recent decades, NTUA’s contribution and involvement in the field has lagged behind, while on the same time Space Geodesy has moved forward on a rapid pace. This string of events, have caused NTUA’s academic and research capacity to fall behind currently leading institutes in the field. In turn, this capacity gap between NTUA and prestigious European institutes in the field, severely undermines its ability to successfully apply for research proposals and secure funding for its research activities. Unfortunately, NTUA’s international standing has been impaired, and currently does not constitute an appealing destination for young, talented scientists and engineers that want to thrive in the field of Space Geodesy.

The lack of a dedicated excellence center in the field of Space Geodesy, is also reflected in the limited involvement of Greece in one of the currently fastest blooming markets internationally, that of Space. Lack of expertise and a modern knowledge hub in the field are definitely factors that should be swiftly addressed to reverse the current situation.

ACRONYM aims at creating a center of excellence for Space Geodesy, hosted by the Project Coordinator (NTUA), with the crucial contribution of leading experts in the field. Within this framework, NTUA will enhance its academic and scientific footprint, increase its technology and research capacity and promote innovation and the involvement of Greece (both of the public and private sector) in Space.

Consortium partners (other than the host), are hand-picked prestigious internationally leading experts in a series of Space Geodetic techniques, collectively constituting the fundamental observational techniques of Space Geodesy. Through the synergy with these institutes, NTUA will be able to:

* Significantly enhance its research capacity, gain knowledge and expertise from world-leading scientists in the field and build its own state-of-the-art software tools that will allow it to establish a key role for the future of Space Geodesy on an international level.
* Mitigate the technological/scientific gap between the host institute and its partners, transforming it to an attractive center of excellence for new scientists, a center of innovation for Greece in the field of space-based geosciences.
* Significantly increase its international standing and visibility in the research community.
* Create a dedicated task force trained in research project claiming, submission and management and boost its success rate in research funding bids.
* Create a network of international collaborators, get involved in high-calibre international consortia and establish synergies with distinguished research institutions, severely enhancing its international prestige. Such strategic networking will assist NTUA in maintaining a long-term role as a center of excellence in Space Geodesy, and a long-term involvement in the research frontiers of the field.
* Modernize and enhance its academic curriculum, especially targeting graduate level studies, via the knowledge and expertise gained by leading experts and further educate its research and teaching personnel in recent advancements, methods and techniques, as well as modern instrumentation.
* Increase financial support for its research activities (both in the long-run and for the duration of ACRONYM) and its ability and capacity to attract talented young scientists.
* Enhance the host's capacity in partnership-building, preparation and carrying out of research proposals funded by national authorities, the European Commission (EC) and the European Space Agency (ESA)

#§PRJ-OBJ-PO§#

**1.2 Coordination and/or support measures and methodology** #@CON-MET-CM@# #@COM-PLE-CP@#

Modern Space Geodesy input is based on four fundamental observational pillars, namely Global Navigation Satellite Systems (GNSS), Doppler Orbitography and Radiopositioning Integrated by Satellite (DORIS), Satellite Laser Ranging (SLR) and Very Long Baseline Interferometry (VLBI). These four techniques provide the crucial dataset to study the Earth system and in turn provide the prerequisite products for a wide range of space-based applications and study fields.

International Services have been established for all the above techniques, namely International DORIS Service (IDS), International Laser Ranging Service (ILRS) and International VLBI Service for Geodesy and Astrometry (IVS), comprised by world leading experts in the respective fields. These consortia play a key role in the shaping, growth and progress of the techniques themselves and are hence of fundamental importance for Space Geodesy, setting quality standards and enabling dissemination of its products in the scientific community. Such products (e.g. precise satellite orbits) constitute nowadays essential, mandatory input for Earth observation studies.

While NTUA has a well established expertise in the field of GNSS, verifiable by its contribution in international consortia (e.g. EUREF) and its long list of relevant publications in scientific journals, its lacks knowledge, involvement and expertise in the other three techniques that lay at the core of Space Geodesy. This severely weakens both its academic and research capabilities at the field, as well as its ability to drive innovation for the country in a fast growing market related to Space.

Within the framework of ACRONYM, synergies are proposed with leading experts in the techniques of DORIS, SLR and VLBI with the aim of closing the knowledge and technological gap and thus significantly strengthening NTUA's academic and research capacity and potential. Each member of the consortium will act as a knowledge transfer node for one of the techniques involved.

IGN and CLS will act as the DORIS expertise nodes. Both institutes are leading experts in the field, heavily involved in the technique since its introduction. Their role and contribution is underpinned by their status as Analysis Centers, and involvement in the IDS. The two institutes will take up the task of transferring relevant knowledge to NTUA.

NTUA has, in recent years, started an effort to take up the technique and build a software package to process DORIS data. The assistance of IGN and CLS will prove to be invaluable for the stepping up of this effort, and the consolidation of NTUA's contribution in the technique. Additionally, the two institutes are long contributors of the IDS and can introduce NTUA in the service, a fact that can lead to a solid, long lasting technical involvement and further networking capacity with high esteem institutions.

Despite SLR's prominent role in Space Geodesy, NTUA's involvement in the technique has been minimum in the last few decades. Besides core geodetic results (e.g. Earth Orientation Parameters (EOP)) SLR provides the most accurate observations for precise orbit determination, a problem inherently coupled with all space geodetic applications. Laser Ranging Reflectors (LRR) are part of the payload of a large number of satellites, especially missions where precise knowledge of the trajectory is required.

GFZ will act as the SLR expertise node, since it has a longstanding contribution in the technique, evident by its involvement in the ILRS as an Analysis Center and a long list of relevant scientific publications.

OSO/Chalmers will act as the VLBI knowledge node. OSO hosts one of the few VLBI sites in Europe and is a prominent member of the IVS. OSO will undertake the task of transferring technique-specific knowledge and expertise to the host institute.

By means of a specialized, technique-based contribution of each member of the consortium to the host (NTUA), knowledge transfer can be better achieved, managed, digested and verified. The host institution will be the sole recipient of this one-way flow of expertise, attributing dedicated personnel to each of the techniques described, thus creating a pool of experts. This highly-skilled work force will in turn disperse the knowledge gained, via NTUA's academic capacity, to the future Space- and Geo-scientists of Greece, significantly boosting innovation and the country's involvement in the growing satellite-based application market.

Capacity building activities within ACRONYM are split into two distinct phases, to allow for a more efficient and robust scheme. The first phase (WP2), places focus on establishing a solid networking and knowledge exchange pattern per technique and twinning pair. Personnel visits from NTUA to the partners, will solidify the networking activities and allow for further one-on-one communication and intercourse. This phase will also include exchange of knowledge between the twinning partners, specifically targeting the internals and details of the techniques themselves, methods and methodologies used, models, error sources and mitigation, application range, and recent trends and research frontiers. Expert nodes will also present their own, home-grown data analysis pipelines to NTUA, identifying best practices, strengths, weaknesses and limitations.

To further allow for potent capacity building, the twining partners will decide on and draw up a work plan for the second phase of capacity building, to be implemented in WP3. The target here will be the severe strengthening of NTUA’s research capacity via the designing and building of a space geodetic software tools-box, to perform robust analysis of satellite data, incorporating state-of-the-art methodologies. Under the (per-technique) guidance of the expert partners and the work-plan established (in WP2), NTUA will undertake the task of gaining knowledge and expertise and in parallel applying lessons learned in its own, in-house software package, thus adopting a “hands-on” approach. This collection of tools will allow the analysis of space geodetic data (both DORIS and SLR) to perform precise orbit determination, positioning, and estimation of a series of geodetic parameters of interest. Focus will be placed on problem solving skills, algorithmic approaches, numerical methodologies, program design and adoption of state-of-the-art models. During the last couple of years, DSO has already ignited an effort to develop such software tools, a fact that is expected to significantly assist the effort and outcome of ACRONYM.

This second phase of capacity building, will also include dedicated webinars and venture labs on specific technical issues (e.g. modeling approaches) that will be carried out by personnel of the expert nodes, while one-on-one consulting will be performed to assist in or validate problem treatment. Short term visits from the host institute to the expert nodes and vice-verse will assist on-line training, further strengthening of synergies and provide a framework for teamwork and enhance collective problem solving.

In order to further enhance NTUA’s research capacity and funding capabilities and resources, knowledge and expertise transfer will expand beyond technical matters, to include coaching on research proposal preparation/writing, submission and management (WP2). A dedicated task force will be established at NTUA, that will be targeting funding bids on a national and European level, with the aim of enhancing its ability to claim funding bids. As is the case for technical skills, a twofold approach will also be adopted here. Expert nodes will share their proposal management skills via dedicated online training of their peers in NTUA. The consortium will also prepare and submit two research proposals, building upon ACRONYM, that will be submitted within the duration of the current project, to national or European authorities. This is expected to both strengthen the host’s research project management skills and also to pursue the long-term involvement of NTUA with state-of-the-art challenges in Space Geodesy and related fields.

Through the consortium synergy and in the framework of ACRONYM, at least three papers will be published in high impact, peer-reviewed scientific journals. These publications will target specific issues of the three respective Space Geodetic techniques tackled in ACRONYM. This goal is expected to strengthen the commitment and engagement of the twinning partners. Additionally, it will raise the host institute’s international prestige and its capacity in scientific publishing. Further strengthening of the host’s networking activities and prominence will be seeked through the consortium’s presence in at least three international conferences, where outcomes of ACRONYM will be presented. If possible, the host will specifically pursue its presence in technique-specific conferences/workshops, organized by the respective international services (i.e. IDS, ILRS and IVS), which will ensure the introduction of the host institute in an ecosystem of top-class, high-prestige experts in the field.

**1.2.1 Open Science**

ACRONYM will adhere to an open-science policy, a fact reflected through a series of its outcomes. All publications described above, both the ones to be published in peer-reviewed journals and the ones to be presented in international conferences/workshops, will be open-access.

Additionally, the software to be designed and implemented (described above) will be developed using a free and open-source policy, using a license agreement that will adhere to this property (e.g. MIT License). The development phase, will be performed in the public domain, using one or more public repositories (e.g. via the gitlab platform). Hence, the scientific community and any interested parties will be able to browse, download/clone and use the software or specific components of it and even modify, expand and repurpose it to fit their needs.

#§CON-MET-CM§# #§COM-PLE-CP§#

**2. Impact** #@IMP-ACT-IA@#

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| ***Impact – aspects to be taken into account.***   * Credibility of the pathways to achieve the expected outcomes and impacts specified in the work programme, and the likely scale and significance of the contributions due to the project. * Suitability and quality of the measures to maximise expected outcomes and impacts, as set out in the dissemination and exploitation plan, including communication activities. |

*The results of your project should make a contribution to the expected outcomes set out for the work programme topic over the medium term, and to the wider expected impacts set out in the ‘destination’ over the longer term.*

*In this section you should show how your project could contribute to the outcomes and impacts described in the work programme, the likely scale and significance of this contribution, and the measures to maximise these impacts.*

**2.1 Project’s pathways towards impact** *[e.g. 4 pages]*

Through the coarse of ACRONYM, NTUA will be enhancing its strategic networking and by project’s end, it will have established a number of important international synergies with top class institutes in the field of Space Geodesy and be involved in high prestige consortia which shape the field’s future. Building on this new network, NTUA will be able to seek further collaboration and networking possibilities with important international institutes, strengthening its standing and role within the scientific community.

By the end of ACRONYM, NTUA with the crucial assistance of its project collaborators, will have at its disposal a software toolbox able to perform state-of-the-art analysis of space geodetic data (DORIS and SLR). To place this result into perspective, it is worth noting that for the most recent realization of ITRF, the ILRS contributed data from 7 Analysis Centers (Pavlis et al. 2023) including GFZ, while at the same time the IDS’s contribution was derived from only 4 Analysis Centers (Moreaux et al. 2022) including CLS. The European Space Agency (ESA) was involved in both contributions, and so was NASA’s Goddard Space Flight Center. This shortage of dedicated analysis centers, is indicative of the limited availability of dedicated software solutions designed to handle such data in a precise manner and the challenges such a task poses. Hence, the aforementioned institutions hold a high level of expertise, international prestige and research capacity. The software tools used by these centers however, are neither free nor open-source.

It is thus evident, that the expected software package to be designed and implemented in the framework of ACRONYM will have a sizable impact for the scientific community. Stakeholders include not only the users of the software, but also the international services that will be able to include further contributions (produced via the software) thus strengthening their products. Especially precise satellite orbits and reference frame maintenance (which is based on analysis of the four core Space Geodetic techniques) are nowadays prerequisites for numerous applications and studies extending through the whole Geosciences spectrum.

The consortium will adopt a number of measures to allow for the efficient sharing of the software package to be created with the scientific community. Firstly, the development will be performed using a public repository, meaning that access will be free to any interested party. Both intermediate steps (i.e. beta versions) as well as the final product will be freely accessible and strictly adhering to an open-source policy. Licensing of the software will legally guarantee the “free and open-source” policy both for scientific and commercial usage.

Via the adoption of such a policy, ACRONYM aims at creating a vivid scientific community of software users, ranging from post-graduate students, to highly skilled scientists/researchers and professionals in the Space and Earth Observation industry. With their expertise, specific needs and individual application demands, they will be able to drive the constant development of the package and provide means for continuous validation, creating high-quality new knowledge along the way and fostering its diffusion. Paired with its newly found expertise gained through ACRONYM and thus an enhanced and modernized academic capacity, NTUA will be established as an attractive excellence center for Space Geodesy, strengthening human capital in research and boosting innovation in a rapidly evolving new market.

Additionally, a Digital Object Identifier (DOI) will be attributed to the software enabling its citation and thus allow for proper credit attribution. This is expected to have a measurable and sizable effect in the long term, since relevant citations will enhance NTUA’s international research standing.

Outcomes of ACRONYM will also include the fulfillement of three PhD and one Post-Doctoral dissertations. The specific research targets of these studies will be co-decided among the consortium partners and the supervision will be shared between NTUA and one expert node (per technique). The defending of these Thesis are expected after the end of ACRONYM and will significantly enhance NTUA’s research man power, extending past ACRONYM’s end. Currently, due mainly to limited funding capabilities and expertise/capacity limitations, dissertations in the field of Space Geodesy are scarce (currently only two PhD students and no Post-Doc students).

Although public development and release of the software is expected to attract a scientific audience, the consortium will also try to communicate and disseminate its relevant activities via a number of means including: usage of social media, presence and publications in international conferences (preferably technique-related workshops), example usage and presentation both in a seminar (to be organized in Greece in the framework of ACRONYM, see WP4) and in the Summer Schools (see WP4).

**Bibliography**

Pavlis, E., V. Luceri, A. Basoni, D. Sarrocco, M. Kuzmicz-Cieslak, K. Evans, and G. Bianco (Jan. 2023). “ITRF2020: The ILRS Contribution and Operational Implementation”. In: doi: 10.22541/essoar.167327866.67198225/v1. Url: <https://doi.org/10.22541%2Fessoar.167327866.67198225%2Fv1>.

Moreaux, G., F. G. Lemoine, H. Capdeville, M. Otten, P. Štěpánek, J. Saunier, and P. Ferrage (2022). “The international DORIS service contribution to ITRF2020”. In: Advances in Space Research. issn: 0273-1177. doi: https : / / doi . Org / 10.1016/j.asr.2022.07.012. url: https://www.sciencedirect.com/

science/article/pii/S0273117722005865.

* Provide a **narrative** explaining how the project’s results are expected to make a difference in terms of impact, beyond the immediate scope and duration of the project. The narrative should include the components below, tailored to your project.

1. Describe the unique contribution your project results would make towards (1) the **outcomes** specified in this topic, and (2) the **wider impacts**, in the longer term, specified in the respective destinations in the work programme.

* *Be specific, referring to the effects of your project, and not R&I in general in this field.*
* *State the target groups that would benefit. Even if target groups are mentioned in general terms in the work programme, you should be specific here, breaking target groups into particular interest groups or segments of society relevant to this project.*
* *The outcomes and impacts of your project may be:*
  + - * + *Scientific, e.g. contributing to specific scientific advances, across and within disciplines, creating new knowledge, reinforcing scientific equipment and instruments, computing systems (i.e. research infrastructures);*
        + *Economic/technological, e.g. bringing new products, services, business processes to the market, increasing efficiency, decreasing costs, increasing profits, contributing to standards’ setting, etc.*
        + *Societal , e.g. decreasing CO2 emissions, decreasing avoidable mortality, improving policies and decision making, raising consumer awareness.*

*Only include such outcomes and impacts where your project would make a significant and direct contribution. Avoid describing very tenuous links to wider impacts. However, include any potential negative environmental outcome or impact of the project. Where relevant, explain how the potential harm can be managed.*

1. Give an indication of the scale and significance of the project’s contribution to the expected outcomes and impacts, should the project be successful. Provide quantified estimates where possible and meaningful.

* ‘*Scale’ refers to how widespread the outcomes and impacts are likely to be. For example, in terms of the size of the target group, or the proportion of that group, that should benefit over time; ‘Significance’ refers to the importance, or value, of those benefits. For example, number of additional healthy life years; efficiency savings in energy supply.*
* *Explain your baselines, benchmarks and assumptions used for those estimates. Wherever possible, quantify your estimation of the effects that you expect from your project. Explain assumptions that you make, referring for example to any relevant studies or statistics. Where appropriate, try to use only one methodology for calculating your estimates: not different methodologies for each partner, region or country (the extrapolation should preferably be prepared by one partner).*
* *Your estimate must relate to this project only - the effect of other initiatives should not be taken into account.*

1. Describe any requirements and potential barriers - arising from factors beyond the scope and duration of the project - that may determine whether the desired outcomes and impacts are achieved. These may include, for example, other R&I work within and beyond Horizon Europe; regulatory environment; targeted markets; user behaviour. Indicate if these factors might evolve over time. Describe any mitigating measures you propose, within or beyond your project, that could be needed should your assumptions prove to be wrong, or to address identified barriers.

* *Note that this does not include the critical risks inherent to the management of the project itself , which should be described below under ‘Implementation’.*

**2.2 Measures to maximise impact - Dissemination, exploitation and communication** #@COM-DIS-VIS-CDV@# *[e.g. 5 pages, including section 2.3]*

* Describe the planned measures to maximise the impact of your project by providing a first version of your ‘plan for the dissemination and exploitation including communication activities’. Describe the dissemination, exploitation and communication measures that are planned, and the target group(s) addressed (e.g. scientific community, end users, financial actors, public at large).
* *Please remember that this plan is an admissibility condition, unless the work programme topic explicitly states otherwise. In case your proposal is selected for funding, a more detailed ‘plan for dissemination and exploitation including communication activities’ will need to be provided as a mandatory project deliverable within 6 months after signature date. This plan shall be periodically updated in alignment with the project’s progress.*
* *Communication[[1]](#footnote-2), measures should promote the project throughout the full lifespan of the project. The aim is to inform and reach out to society and show the activities performed, and the use and the benefits the project will have for citizens. Activities must be strategically planned, with clear objectives, start at the outset and continue through the lifetime of the project. The description of the communication activities needs to state the main messages as well as the tools and channels that will be used to reach out to each of the chosen target groups.*
* *All measures should be proportionate to the scale of the project, and should contain concrete actions to be implemented both during and after the end of the project, e.g. standardisation activities. Your plan should give due consideration to the possible follow-up of your project, once it is finished. In the justification, explain why each measure chosen is best suited to reach the target group addressed. Where relevant, and for innovation actions, in particular, describe the measures for a plausible path to commercialise the innovations.*
* *If exploitation is expected primarily in non-associated third countries, justify by explaining how that exploitation is still in the Union’s interest.*
* *Describe possible feedback to policy measures generated by the project that will contribute to designing, monitoring, reviewing and rectifying (if necessary) existing policy and programmatic measures or shaping and supporting the implementation of new policy initiatives and decisions.*
* Outline your strategy for the management of intellectual property, foreseen protection measures, , such as patents, design rights, copyrights, trade secrets, etc., and how these would be used to support exploitation.
* *If your project is selected, you will need an appropriate consortium agreement to manage (amongst other things) the ownership and access to key knowledge (IPR, research data etc.). Where relevant, these will allow you, collectively and individually, to pursue market opportunities arising from the project.*
* *If your project is selected, you must indicate the owner(s) of the results (results ownership list) in the final periodic report.*

#§COM-DIS-VIS-CDV§#

**2.3 Summary**

Provide a summary of this section by presenting in the canvas below the key elements of your project impact pathway and of the measures to maximise its impact.

**KEY ELEMENT OF THE IMPACT SECTION**

|  |
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| **SPECIFIC NEEDS** |
| Closing of the scientific gap between top class European institutes and Greece in the field of Space Geodesy.  Enhancement of research capacity of NTUA (on a technical level).  Improve prestige and international standing of the host institute.  Establish a network of top-class collaborators and boost involvement in high-esteem consortia.  Boost Greece’s involvement and innovation in the wider field of Space studies and Geosciences.  Increase funding capabilities and resources for research (project claiming). |

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| **D & E & C MEASURES** |
| **Exploitation:** Release of DORIS analysis software package attributing a citeable and trackable DOI (e.g. via zenodo).  **Exploitation:** Release of SLR analysis software package attributing a citeable and trackable DOI (e.g. via zenodo).  **Exploitation:** Use of capacity built in ACRONYM (software, expertise, network and management skills) to apply for further grants/projects in a national and/or European level.  **Dissemination towards the scientific community**: Scientific publication (both in peer-reviewed journals and in international conference) with results obtained through software usage.  **Dissemination towards the scientific community and Space Industry**: Software release using a public domain software repository/development platform (e.g. gitlab) using MIT license.  **Dissemination towards the academic community in Greece**: Include usage of parts of the software in the graduate-level academic curriculum of the School of Rural Surveying and Geoinformatics Engineering of NTUA (to perform data analysis).  **Communication towards the scientific community and Space Industry:** Use of social media (e.g. LinkedIn) to promote and advertise the software tools built in ACRONYM. Usage and application range will also be presented in a conference/workshop organized by NTUA in Greece. |

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| **EXPECTED RESULTS** |
| **Software Tools:** Brand new software tools to perform analysis of Space Geodetic data, using state-of-the-art modeling.  **Successful large-scale demonstrator:** Trial with 3 satellite missions of POD and precise positioning using DORIS data.  **Successful large-scale demonstrator:** Trial with 3 satellite missions of POD and precise positioning using SLR data.  **Publications:** Three scientific papers in peer-reviewed journals and three publication in international conferences.  **Expertise:** Three PhD students trained and one Post-Doc trained. NTUA personnel will have gained extended expertise.  **Further Grants and Long Term Plan:** At least two grant proposals submitted to secure further, long term involvement in state-of-the-art Space Geodesy.  **Involvement: I**nvolvement in international, high-prestige consortia such as IDS and IRLS, which shape the future of Space Geodesy. |

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| **TARGET GROUPS** |
| **Scientific community** (Space Geodesy and Geosciences).  **End users/industry** related to Space applications (e.g. Space Security and Awareness, observing the Earth system, etc).  **Graduate and PhD students**.  **Young Scientists and Engineers** in the wider field of Geoscienses. |

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| **OUTCOMES** |
| Usage of software tools by the scientific community (measured by their attributed DOIs).  Involvement in high prestige international consortia as Associate Analysis Center (for NTUA).  High use of the scientific papers published (measured with the relative rate of citation index of publications).  Increased visibility and international standing of NTUA in the field of Space Geodesy and Geosciences.  Creation of a highly experienced and skilled task force in the host institute.  Establishment of a task force in the host institute, with extended networking capabilities and international reach (in a European and international level). |

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| **IMPACTS** |
| ***S*ocietal:** Quenching of the crowding-out effect of young scientists experienced in Greece.  **Technological:** Creation of a centre of excellence for Space Geodesy in Greece, with elevated international standing.  **Technological:** Boost involvement, innovation and expertise for Space studies in Greece.  **Economic/Scientific:** Boost host institute’s success rate in research funding bids.  **Scientific:** Sustainable synergies with prestigious, top-level institutes and consortia. Establish and secure the host institute’s role as a key player in the field of Space Geodesy in the long run. |

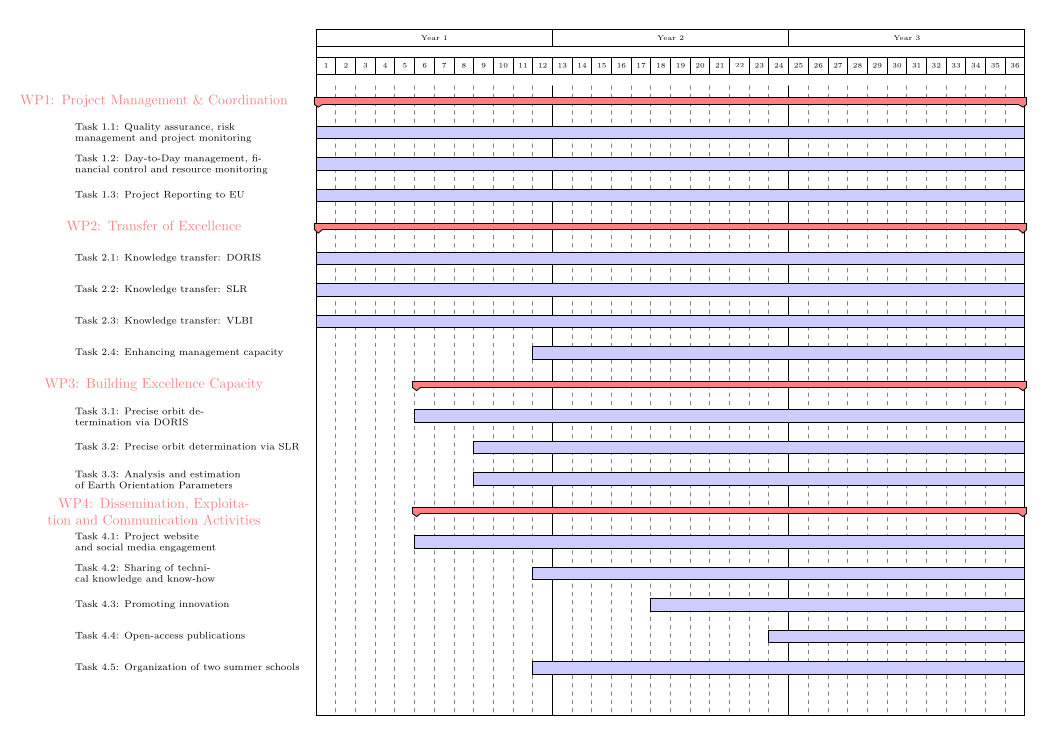
#§IMP-ACT-IA§#

1. **Quality and efficiency of the implementation** #@QUA-LIT-QL@# #@WRK-PLA-WP@#

|  |
| --- |
| ***Quality and efficiency of the implementation – aspects to be taken into account***   * *Quality and effectiveness of the work plan, assessment of risks, and appropriateness of the effort assigned to work packages, and the resources overall.* * *Capacity and role of each participant, and extent to which the consortium as a whole brings together the necessary expertise.* |

**3.1 Work plan and resources**

The work plan for ACRONYM is heavily focused on an seamless, one-way transfer of excellence between the top-class consortium partners and NTUA. Project administration activities are placed in an individual Working Package to allow for its efficient management, coordination and progress checking. Capacity building is split into two Working Packages, each with its own focus and goals; WP2 targets the establishment of networking channels, task forces and technique-specific synergies, introductory level coaching on the respective techniques, and the establishment of a detailed work-plan and goal setting for the transfer of excellence and capacity building to follow. WP3 aims at a more hands-on approach, where the top-class partners will assist NTUA in enhancing its research capacity and prestige via the refinement of its scientific arsenal, specifically aimed at implementing state-of-the-art software tools. An additional Working Package is aimed at dissemination activities through e.g. the sharing of outcomes and results via open-access scientific publications and promoting innovation, especially in Greece. The work plan is described in detail in the following.

Figure 1: Gantt Chart of ACRONYM

**3.2 Capacity of participants and consortium as a whole** #@CON-SOR-CS@# #@PRJ-MGT-PM@# *[e.g. 3 pages]*



#§CON-SOR-CS§# #§PRJ-MGT-PM§#

**Tables for section 3.1**

**Table 3.1a: List of work packages**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Work package No** | **Work Package Title** | **Lead Participant No** | **Lead Participant Short Name** | **Person-Months** | **Start Month** | **End month** |
| WP1 | Project Management and Coordination | 1 | NTUA |  | 1 | 36 |
| WP2 | Networking and Preparing Capacity Building | 1 | NTUA |  | 1 | 24 |
| WP3 | Building Excellence Capacity | 1 | NTUA |  | 12 | 36 |
| WP4 | Dissemination, Exploitation and Communication Activities | 1 | NTUA |  | 6 | 36 |

**Table 3.1b: Work package description**

|  |  |
| --- | --- |
| **Work package number** | WP1 |
| **Work package title** | Project Management & Coordination |
| **Objectives**  The objectives of this WP are to: (1) Establish a strong project management scheme; (2) Establish the appropriate communication and reporting channels to the European Commission; (3) Ensure successful achievement of the project objectives on time and within budget; (4) Establish an efficient electronic service for communications, and document exchanging; (5) Realize synergies among the project members and effective exploitation of the project’s’ results; (6) Conduct continuous quality assurance activities for the operation of the project and the production of its scientific and technical results within its lifespan; (7) Ensure continuous monitoring of the project’s progress and timely initiation of corrective actions (if needed); (8) Coordinate the organization and execution of the various project meetings, and/or participation of the project in various external or self-organized events; (9) Perform risk analysis and ethical and legal framework analysis to ensure successful and continuous compliance with ethical and legal standards concerning the project objectives. | |
| **Task 1.1: Quality assurance, risk management and technical monitoring (M1 – M36); Lead: NTUA**.  Quality procedures include: control actions planned; time schedules; scientific and technical requirement specifications and quality objectives; agreed definitions of procedures for acceptance and quality control; appropriate tools for planning, monitoring and progress reporting; identify risk items and minimise these ;legal and ethical aspects within the project.  **Task 1.2: Day-to-Day management of the project, financial control and resource monitoring (M1 – M36);**  **Lead: NTUA**.  Project management plan for the administration, financial control and resource monitoring, communication with the EU and the consortium, preparation of all project management documentation, including the required financial reports, consortium internal communication strategy.  **Task 1.3: Project Reporting to EU (M1 – M36); Lead: NTUA**  Semi-annual reporting of achievements and status for each phase. The project reports are used to report the progress of work carried out from the beginning of the project or the previous project report, while making deviations and major risks and counter measures explicit. | |

|  |  |
| --- | --- |
| **Work package number** | WP2 |
| **Work package title** | Networking and Preparing Capacity Building |
| **Objectives**  The objective of this WP is to establish efficient, solid, seamless communication and networking channels between the host and the twining partners. Through these channels, the expert nodes will introduce the host institute to their respective fields of expertise, and lay the groundwork and work-schedule for research capacity building.  Additionally, a task force will be established in the host institute and trained by the expert partners with the aim of boosting its success rate in research funding bids. | |
| The transferring of scientific knowledge from the partners to the host, will involve experienced personnel from the respective knowledge nodes on the one hand, and personnel, NTUA Professors and PhD/post-doc students on the other endpoint. Each of the consortium partners, will undertake the task of transferring knowledge, via:   * A series of on-line, remote presentations and classes in a one-to-many sense, where different members of the top-level institute's personnel will teach a targeted subgroup of the host's staff, technique-specific details * A seamless communication channel, via which the host's staff will be able to request assistance in technique-specific matters * A number of short term visits from the host's staff to the partners. During these visits, there will be a transfer of knowledge and expertise based on a hands-on approach. Host institute's personnel will be able to inspect and be taught and informed on the specialized software tools used by the top-level partners for each technique of interest. Crucial scientific output will be generated and the host can incorporate lessons learned using a best-practices approach. * A number of short term visits from the partners to the host institute. These visits are expected to consolidate a sound, solid communication channel between the parties. Additionally, the expert partners will perform lectures and seminars on technical matters as well as inspect progress of WP3 * Via the established communication channels, transfer of administrative knowledge and skills from the partners to the host institution, will also take place, aiming at increasing the host's capacity in claiming and managing research-intensive projects   **Task 2.1 Networking and preparing research capacity for DORIS (M1-M12); Lead IPGP**  The host institute along with IPGP and CLS will establish a task force (with members of all three involved institutes) and the (online) means through which this force will maintain a long-term sound communication and collaboration, at least for the duration of ACRONYM. The expert partners will introduce the DORIS technique to their peers in the host institute via online webinars, venture labs and one short term encounter of all three involved partners. This encounter will be hosted by IPGP and will include the schooling of the host’s personnel and its training on software tools used by the expert nodes in their respective institutes. Knowledge exchange in this phase will include data curation, analysis pipelines, identification of technique specific error-budget and its treatment and mitigation, instrumentation and technique specific results, applications and future prospects.  The partners will also decide on a technique-specific PhD thesis and one Post-Doc Thesis, which they will co-supervise, thus strengthening ties and synergies. Both thesis will be carried out in NTUA, in close cooperation with the expert nodes, and written/defended in English.  Exploiting the expertise of the top-class institutes (IPGP and CLS), the partners will lay out a detailed plan on significantly enhancing the host’s research capacity, through designing and implementing a DORIS data analysis toolbox. This plan will include state-of-the-art standards and models to be used, as well as testing and validation cases. Tasks will be hierarchically ordered in a precision ordered fashion, eventually leading to achieving an Analysis Center processing quality. Furthermore, this three-part consortium will decide on a technique-related subject to work on, aiming at a scientific publication in a peer-reviewed scientific journal.  Expert nodes will introduce the host to the IDS consortium, facilitating its further networking with prestigious international top-class institutes.  **Task 2.2 Networking and preparing research capacity for SLR (M1-M12); Lead GFZ**  GFZ and NTUA will establish a task force (with members of both involved institutes) and the (online) means through which this force will maintain a long-term, solid communication channel, at least for the duration of ACRONYM. The expert partner will introduce the SLR technique to its peers in the host institute via online webinars, venture labs and one short term encounter, hosted by GFZ. During this visit, NTUA personnel will make a guided in-situ visit to the SLR station in Potsdam (operated by GFZ), where they will be introduced to the instrumentation and operational aspects of the site. Additionally, the visit will include the schooling of the host’s personnel in software tools developed and used by the expert node to process SLR data for precise orbit determination and estimation of geodetic parameters. Knowledge exchange in this phase will include data curation, analysis pipelines, identification of technique specific error-budget and its treatment and mitigation, instrumentation and technique specific results, applications and future prospects.  The partners will also decide on a technique-specific PhD thesis which they will co-supervise. The thesis will be carried out in NTUA, in close cooperation with the expert node, and written/defended in English.  Exploiting the expertise of GFZ, the partners will lay out a detailed plan on significantly enhancing the host’s research capacity, through designing and implementing an SLR data analysis toolbox. This plan will include state-of-the-art standards and models to be used, as well as testing and validation cases. Tasks will be hierarchically ordered in a precision ordered fashion, eventually leading to achieving an Analysis Center processing quality. Furthermore, the two partners will decide on a technique-related subject to work on, aiming at a scientific publication in a peer-reviewed scientific journal.  GFZ will introduce the host to the ILRS consortium, facilitating its further networking with prestigious international top-class institutes.  **Task 2.3 Networking and preparing research capacity for VLBI (M1-M12); Lead OSO**  OSO and NTUA will establish a task force (with members of both involved institutes) and the (online) means through which this force will maintain a long-term, sound communication channel, at least for the duration of ACRONYM. The expert partner will introduce the VLBI technique to its peers in the host institute via online webinars, venture labs and one short term encounter, hosted by OSO. During this visit, NTUA personnel will make a guided in-situ visit to the VLBI site in Onsala (operated by OSO), where they will be introduced to the instrumentation and operational aspects of the site. Additionally, the visit will include the schooling and training of the host’s personnel in software tools developed and used by the expert node to process VLBI data for the estimation of Earth orientation parameters. Knowledge exchange in this phase will include data curation, analysis pipelines, identification of technique specific error-budget and its treatment and mitigation, instrumentation and technique specific results, applications and future prospects.  The partners will also decide on a technique-specific PhD thesis which they will co-supervise. The thesis will be carried out in NTUA, in close cooperation with the expert node, and written/defended in English.  Exploiting the expertise of OSO, the partners will lay out a detailed plan on significantly enhancing the host’s research capacity, through designing and implementing a geodetic toolbox, specifically aiming an efficient and accurate handling of Earth orientation parameters, celestial and terrestrial reference frame transformations and tidal phenomena. This plan will include state-of-the-art standards and models to be used, as well as testing and validation cases. Tasks will be hierarchically ordered in a precision ordered fashion, eventually leading to achieving utmost quality. Furthermore, the two partners will decide on a technique-related subject to work on, aiming at a scientific publication in a peer-reviewed scientific journal.  OSO will introduce the host to the IVS consortium, facilitating its further networking with prestigious international top-class institutes.  **Task 2.4 Enhancing Research Funding Capacity (M1-M24); Lead CLS**  The host institute will establish a task force, made up of NTUA employees, which will be trained in project funding seeking, proposal submission and research project management. The consortium partners (CLS, IPGP, GFZ and OSO) will transfer technical knowledge, know-how and expertise to NTUA, concerning the writing and submitting of research proposals, as well as the efficient administration of research intensive scientific projects. The expert nodes will introduce the host task force to European research funding pools (e.g. EU, ESA, etc) and the means to significantly enhance its successful proposal submission rate. The task force along with the partners will decide on a strategic plan for two further research proposals to be submitted within the duration of ACRONYM. | |

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| **Work package number** | WP3 |
| **Work package title** | Building Excellence Capacity |
| **Objectives**  The objective of this WP is for the host institute to build its own scientific software toolset, to perform state-of-the-art data analysis for observations collected by both DORIS and SLR techniques. Additionally, the package will be able to efficiently incorporate recent advances and high-quality products from VLBI analysis. Such a toolbox will is expected to significantly enhance the host's capacity to perform state-of-the-art research on a wide range of geoscience-related topics. Furthermore, it will enable NTUA's involvement in international, high-prestige consortia (such as the IDS and ILRS) significantly enhancing its international status and networking capabilities.  The consortium will adhere to a free and open-source policy for all software tools to be built within the framework of this WP. Software implementation will be carried out on the public domain via dedicated repositories (hosted e.g. on gitlab) so at to enable a rigorous development platform for the consortium partners, easy and efficient progress monitoring (including the Commission) and instantaneous sharing with the scientific community.  Dissemination will also aim in improving capacity and involvement of the Widening country in Space Geodesy and the wider field of Space studies in general, via promoting know-how, innovation and familiarization with trending and future applications relevant to field. Target audience will be both the public and the private sector. | |
| **Task 3.1 Building research capacity via DORIS (M12-M36); Lead CLS**  CLS and IPGP will provide assistance to NTUA aiming at the upgrade and refinement of its own DORIS analysis software, to perform precise orbit determination and estimation of geodetic parameters. Both expert nodes will assist NTUA’s personnel via online webinars, one-on-one and one-to-many training, exploiting the networking capacity already established in Task 2.1. Additionally, NTUA’s staff will visit CLS and both CLS and IPGP personnel will make short visits to NTUA’s facilities, in an effort to further consolidate networking and expertise transfer.  Software development will adopt the work plan established in Task 2.1, enabling step-by-step validation. Focus will be placed in exchange of best practices, state-of-the-art analysis and modeling, recent trends in the field and the application of efficient and and robust design principles. Expert nodes will also introduce aspects of currently active intense research as well as IDS specific needs and ongoing and/or future plans, through which the host institute can play a significant role in the field in the long term.  **Task 3.2 Building research capacity via SLR (M12-M36); Lead GFZ**  GFZ will provide assistance to NTUA aiming at the development of its own SLR analysis software, to perform precise orbit determination and estimation of geodetic parameters. The expert node will assist NTUA’s personnel via online webinars, one-on-one and one-to-many schooling, exploiting the networking capacity already established in Task 2.2. Additionally, NTUA’s staff will visit GFZ and GFZ personnel will make a short visit to NTUA’s facilities, in an effort to further consolidate networking and expertise transfer.  Software development will adopt the work plan established in Task 2.2, enabling step-by-step validation. Focus will be placed in exchange of best practices, state-of-the-art analysis and modeling, recent trends in the field and the application of efficient and and robust design principles. Expert nodes will also introduce aspects of currently active intense research as well as ILRS specific needs and ongoing and/or future plans, through which the host institute can play a significant role in the field in the long term.  **Task 3.3 Building research capacity via VLBI (M12-M36); Lead OSO**  VLBI is known for its importance in the observation of the Earth's orientation parameters and fluctuations in the length of day. Such observations are of significance importance in Space Geodesy, since they enable e.g. the permanent tie between Celestial and Terrestrial Reference Frames. OSO will assist NTUA in incorporating a state-of-the-art handling of Earth Orientation Parameters and consequently reference frame transformation schema in its own software toolset. The expert node will assist NTUA’s personnel via online webinars, one-on-one and one-to-many schooling, exploiting the networking capacity already established in Task 2.3. Additionally, NTUA’s staff will visit OSO and OSO personnel will make a short visit to NTUA’s facilities, in an effort to further consolidate networking and expertise transfer.  **Task 3.4 Long term plan for centre of excellence (M30-36); Lead NTUA**  The consortium will establish a work plan for all remaining steps required for NTUA to reach either an Analysis Center status or an Associate Analysis Center status, for the DORIS and SLR techniques, depending on each international service’s needs (i.e. IDS and ILRS) and prerequisites. Additionally, the consortium will identify weak points in the research capacity built and propose means to mitigate them. | |

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| **Work package number** | WP4 |
| **Work package title** | Dissemination, Exploitation and Communication Activities |
| **Objectives**  The objective of this WP is the significant enhancement of the host institute’s international standing and prestige via dissemination and communication activities. Publications in top-tier scientific journals and conferences will further increase NTUA’s visibility and prominence in the scientific community and strengthen the potential for future collaborations nationally and beyond borders. Communication and exploitation activities will help in boosting innovation in the Space and Geosciences fields in Greece, and appeal to young scientists. Focus will be placed in endorsing and promoting the achievements of ACRONYM and the newly established center of excellence. | |
| **Task 4.1 Project Website and Social Media Engagement (M1-M36); Lead NTUA**  Th host institute will design and implement a dedicated web site for the project, assisting networking capabilities, promotion and communication of activities taking place in the framework of the project and, dissemination of ACRONYM outcomes and results and in general outreach material. Promotion, communication and endorsement activities will also be performed via social media (e.g. LinkedIn) on a timely manner, throughout the duration of ACRONYM.  **Task 4.2 Sharing of technical knowledge and know-how (M1-M36); Lead NTUA**  Lectures and presentations prepared by the consortium experts (see WP2) will be made available (on-line, free access) to any interested parties, on demand. Users will be able to browse content and watch video-lectures, shared on the project’s web site (Task 4.1). Such actions are expected to increase visibility of the project and promote awareness in the field, especially targeting Greek institutions (both public and private).  **Task 4.3 Promoting Innovation (M1-M36); Lead NTUA**  The host institute will organize one on-line webinar and one seminar/workshop in NTUA’s facilities, for the endorsement of ACRONYM, dissemination of its scientific output and results and promotion of innovation in the field of Space Geodesy, Orbit Determination, Space Studies and Geosciences in general. The expert partners will introduce and present novelties and current and future trends and applications that can have an effect in the related market. Both seminars will be open to any interested parties and especially targeted towards Greece's public research organizations as well as the private sector.  **Task 4.4 Open-Access Publications (M12-M36); Lead NTUA**  Each of the expert partners will collaborate with the host institution in the co-authorship of one scientific paper (in their respective fields of expertise), to be published in peer-reviewed journal. Hence, by the end of ACRONYM, three high impact factor publications will have been produced, adhering to an open-access policy.  Additionally, members of the consortium will present relevant publications in at least three international conferences, targeting when possible technique-related workshops (e.g. Analysis Centre Workshops organized by IDS and/or ILRS). | |

**Table 3.1c: List of Deliverables[[2]](#footnote-3)**

Need to sort these by delivery date

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Number** | **Deliverable name** | **Short description** | **Work package number** | **Short name of lead participant** | **Type** | **Dissemination level** | **Delivery date**  **(in months)** |
| D1.1 | Technical Quality Assurance Plan |  | WP1 | NTUA | R | PU | 6 |
| D1.2 | Coordination & Project Management Report |  | WP1 | NTUA | R | PU | 6, 24, 36 |
| D1.3 | Interim & Final Report |  | WP1 | NTUA | R | PU | 22,36 |
| D2.1 | Standards specification for DORIS analysis |  | WP2 | IPGP | R | PU | 12 |
| D2.2 | Standards specification for SLR analysis |  | WP2 | GFZ | R | PU | 12 |
| D2.3 | Standards specification for EOP and tidal analysis |  | WP2 | OSO | R | PU | 12 |
| D3.1 | Software toolbox for analysis of DORIS observations |  | WP3 | IPGP | R+O | PU | 36 |
| D3.2 | Software toolbox for analysis of SLR observations |  | WP3 | SLR | R+O | PU | 36 |
| D3.3 | Validation tests for EOP precise handling |  | WP3 | OSO | R+O | PU | 36 |
| D 3.4 | Long term plan for center of excellence |  | WP3 | NTUA | R | PU | 36 |
| D4.1 | Project Website and Social Media Engagement |  | WP4 | NTUA | DEC | PU | 12 |
| D4.2 | Sharing of technical knowledge and know-how |  | WP4 | NTUA | DEC | PU | 30 |
| D4.3 | Promoting Innovation |  | WP4 | NTUA | DEC | PU | 32 |
| D4.4 | Open-Access Publications |  | WP4 | NTUA | DEC | PU | 36 |
| D4.5 | Summer School I and Summer School II |  | WP4 | NTUA | DEC | PU | 24,36 |

**Table 3.1d: List of milestones**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Milestone number** | **Milestone name** | **Related work package(s)** | **Due date (in month)** | **Means of verification** |
| MS1 | Agreement on PhD/Post-Doc co-supervision | WP2 | 8 | Official certification by NTUA and the respective partner involved |
| MS2 | ACRONYM website | WP4 | 8 | ACRONYM website publicly accessible |
| MS | Standards and specifications for software development | WP2 | 12 | Document reports |
| MS | Orbit determination via SLR and DORIS | WP3 | 20 | Software tests validated by expert nodes; publicly available via software repository (version 1.0) |
| MS | Precise orbit determination via SLR and DORIS for one satellite | WP3 | 28 | Software tests validated by expert nodes; publicly available via software repository (version 2.0) |
| MS | Estimation of parameters of geodetic interest | WP3 | 34 | Software tests validated by expert nodes; publicly available via software repository (version 3.0) |

**Table 3.1e: Critical risks for implementation** #@RSK-MGT-RM@#

|  |  |  |
| --- | --- | --- |
| **Description of risk (indicate level of (i) likelihood, and (ii) severity: Low/Medium/High)** | **Work package(s) involved** | **Proposed risk-mitigation measures** |
| Inability to travel e.g. due to pandemic security measures (l:medium,s:low) | WP2 and WP3 | If such a situation shall arise, then the partners will perform the required tasks via online platforms, utilizing experience gained throughout the last few years of security measures. |
| Failure to fully implement the Space Geodesy software (l:low,s:high) | WP3 | Due to the partner's expertise in such tasks, and the availability of a relevant package that can act as a fundamental building block, such a risk is considered extremely small. If however such a situation arises at some minimal extent, then the consortium will limit the number of involved satellites (e.g. from three to two or one).  If the software build does not reach state-of-the-art standards (upon project completion), the host institute will have already gained the knowledge and know-how to further refine it and will have already submitted proposals to extend its funding and support via relevant research projects. The network of collaborators that will have been established, will guarantee its on-going support in technical matters. The Long term plan for centre of excellence (established in Task 3.4) will act as a roadmap for eventually reaching state-of-the-art quality. |
|  |  |  |
|  |  |  |

#§RSK-MGT-RM§#

**Table 3.1f: Summary of staff effort**

*Please indicate the number of person/months over the whole duration of the planned work, for each work package, for each participant. Identify the work-package leader for each WP by showing the relevant person-month figure in bold.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **WPn** | **WPn+1** | **WPn+2** | **Total Person-**  **Months per Participant** |
| **Participant Number/Short Name** |  |  |  |  |
| **Participant Number/**  **Short Name** |  |  |  |  |
| **Participant Number/**  **Short Name** |  |  |  |  |
| **Total Person Months** |  |  |  |  |

**Table 3.1g: ‘Subcontracting costs’ items**

For each participant describe and justify the tasks to be subcontracted (please note that core tasks of the project should not be sub-contracted).

|  |  |  |
| --- | --- | --- |
| **Participant Number/Short Name** | | |
|  | **Cost (€)** | **Description of tasks and justification** |
| **Subcontracting** |  |  |

**Table 3.1h: ‘Purchase costs’ items (travel and subsistence, equipment and other goods, works and services)**

Please complete the table below for each participant if the purchase costs (i.e. the sum of the costs for ’travel and subsistence’, ‘equipment’, and ‘other goods, works and services’) exceeds 15% of the personnel costs for that participant (according to the budget table in proposal part A). The record must list cost items in order of costs and starting with the largest cost item, up to the level that the remaining costs are below 15% of personnel costs.

|  |  |  |
| --- | --- | --- |
| **Participant Number/Short Name** | | |
|  | **Cost (€)** | **Justification** |
| **Travel and subsistence** |  |  |
| **Equipment** |  |  |
| **Other goods, works and services** |  |  |
| **Remaining purchase costs (<15% of pers. Costs)** |  |  |
| **Total** |  |  |

**Table 3.1i: ‘Other costs categories’ items (e.g. internally invoiced goods and services)**

Please complete the table below for each participant that would like to declare costs under other costs categories (e.g. internally invoiced goods and services), irrespective of the percentage of personnel costs.

|  |  |  |
| --- | --- | --- |
| **Participant Number/Short Name** | | |
|  | **Cost (€)** | **Justification** |
| **Internally invoiced goods and services** |  |  |
| Instructions, please remove**…** | | |

**Table 3.1j: ‘In-kind contributions’ provided by third parties**

Please complete the table below for each participant that will make use of in-kind contributions (non-financial resources made available free of charge by third parties). In kind contributions provided by third parties free of charge are declared by the participants as eligible direct costs in the corresponding cost category (e.g. personnel costs or purchase costs for equipment).

|  |  |  |  |
| --- | --- | --- | --- |
| **Participant Number/Short Name** | | | |
| **Third party name** | **Category** | **Cost (€)** | **Justification** |
|  | **Select between**  Seconded personnel  Travel and subsistence  Equipment  Other goods, works and services  Internally invoiced goods and services |  |  |
|  |  |  |  |

#§QUA-LIT-QL§# #§WRK-PLA-WP§#

**Table 3.1k: Research Component**

|  |  |
| --- | --- |
| Have you included a research component in your project? | Yes/No |
| If YES |  |
| Please indicate the WP and/or tasks which will be dedicated to research |  |
| Please confirm that the research component does not exceed 30% of the total Horizon Europe grant amount | Yes/No |
| Please confirm that at least 50% of the research component is allocated to the coordinator | Yes/No |
| Please indicate the total amount of budget allocated to the research activities | EUR |
| Please indicate the amount of the research budget which will go to the coordinator | EUR |
| For each Beneficiary, please indicate the amount of budget allocated to research: |  |
| Beneficiary 1 | EUR |
| Beneficiary 2 | EUR |
| Beneficiary 3 | EUR |
| Beneficiary 4 | EUR |
| Beneficiary 5 | EUR |
| Beneficiary 6 | EUR |
| Beneficiary 7 | EUR |
| … | EUR |

**ANNEXES TO PROPOSAL PART B**

Some calls may ask to upload annexes to proposal part B. The annexes must be uploaded as separate documents in the submission system. The most common annexes to be uploaded in Horizon Europe are (standard templates are published in the Funding & Tenders portal):

* **FINANCIAL SUPPORT TO THIRD PARTIES:** Annex with information on financial support to third parties.
* **CALLS FLAGGED AS SECURITY SENSITIVE:** Annex with information on security aspects.
* **ETHICS:** ethics self-assessment should be included in proposal part A. However, in calls where several serious ethics issues are expected, the character limited in this section of proposal part A may not be sufficient for participants to give all necessary information. In those cases, participants may include additional information in an annex to proposal part B.

**Proposal template Part B: technical description**

**Title of the Proposal**

[This document is tagged. Do not delete the tags; they are needed for processing.] #@APP-FORM-HECSA@#

**List of participants**

|  |  |  |
| --- | --- | --- |
| **Participant No. \*** | **Participant organisation name** | **Country** |
| 1 (Coordinator) |  |  |
| 2 |  |  |
| 3 |  |  |
| … |  |  |

**1. Excellence** #@REL-EVA-RE@#

**1.1 Objectives** #@PRJ-OBJ-PO@#

Insert here text for your proposal

#§PRJ-OBJ-PO§#

**1.2 Coordination and/or support measures and methodology** #@CON-MET-CM@# #@COM-PLE-CP@#

Insert here text for your proposal

#§CON-MET-CM§# #§COM-PLE-CP§# #§REL-EVA-RE§#

**2. Impact**

**2.1 Project’s pathways towards impact**

Insert here text for your proposal

**2.2 Measures to maximise impact - Dissemination, exploitation and communication** #@COM-DIS-VIS-CDV@#

Insert here text for your proposal

#§COM-DIS-VIS-CDV§#

**2.3 Summary**

**KEY ELEMENT OF THE IMPACT SECTION**

|  |
| --- |
| **SPECIFIC NEEDS** |
| *What are the specific needs that triggered this project?*  Insert here text for your proposal |

|  |
| --- |
| **D & E & C MEASURES** |
| What dissemination, exploitation and communication measures will you apply to the results?  Insert here text for your proposal |

|  |
| --- |
| **EXPECTED RESULTS** |
| What do you expect to generate by the end of the project?  Insert here text for your proposal |

|  |
| --- |
| **TARGET GROUPS** |
| *Who will use or further up-take the results of the project? Who will benefit from the results of the project?*  Insert here text for your proposal |

|  |
| --- |
| **OUTCOMES** |
| *What change do you expect to see after successful dissemination and exploitation of project results to the target group(s)?*  Insert here text for your proposal |

|  |
| --- |
| **IMPACTS** |
| *What are the expected wider scientific, economic and societal effects of the project contributing to the expected impacts outlined in the respective destination in the work programme?*  Insert here text for your proposal |

#§IMP-ACT-IA§#

**3. Quality and efficiency of the implementation** #@QUA-LIT-QL@# #@WRK-PLA-WP@#

**3.1 Work plan and resources**

Insert here text for your proposal

**3.2 Capacity of participants and consortium as a whole** #@CON-SOR-CS@# #@PRJ-MGT-PM@#

Insert here text for your proposal

#§CON-SOR-CS§# #§PRJ-MGT-PM§#

**Tables for section 3.1**

**Table 3.1a: List of work packages**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Work package No** | **Work Package Title** | **Lead Participant No** | **Lead Participant Short Name** | **Person-Months** | **Start Month** | **End month** |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

**Table 3.1b: Work package description**

**For each work package:**

|  |  |
| --- | --- |
| **Work package number** |  |
| **Work package title** |  |

|  |
| --- |
| **Objectives** |

|  |
| --- |
| **Description of work** |

**Table 3.1c: List of Deliverables**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Deliverable (number)** | **Deliverable name** | **Work package number** | **Short name of lead participant** | **Type** | **Dissemination level** | **Delivery date**  **(in months)** |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

**Table 3.1d: List of milestones**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Milestone number** | **Milestone name** | **Related work package(s)** | **Due date (in month)** | **Means of verification** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**Table 3.1e: Critical risks for implementation** #@RSK-MGT-RM@#

|  |  |  |
| --- | --- | --- |
| **Description of risk (indicate level of (i) likelihood, and (ii) severity: Low/Medium/High)** | **Work package(s) involved** | **Proposed risk-mitigation measures** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

#§RSK-MGT-RM§#

**Table 3.1f: Summary of staff effort**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **WPn** | **WPn+1** | **WPn+2** | **Total Person-**  **Months per Participant** |
| **Participant Number/Short Name** |  |  |  |  |
| **Participant Number/**  **Short Name** |  |  |  |  |
| **Participant Number/**  **Short Name** |  |  |  |  |
| **Total Person Months** |  |  |  |  |

**Table 3.1g: ‘Subcontracting costs’ items**

|  |  |  |
| --- | --- | --- |
| **Participant Number/Short Name** | | |
|  | **Cost (€)** | **Description of tasks and justification** |
| **Subcontracting** |  |  |

**Table 3.1h: ‘Purchase costs’ items (travel and subsistence, equipment and other goods, works and services)**

|  |  |  |
| --- | --- | --- |
| **Participant Number/Short Name** | | |
|  | **Cost (€)** | **Justification** |
| **Travel and subsistence** |  |  |
| **Equipment** |  |  |
| **Other goods, works and services** |  |  |
| **Remaining purchase costs (<15% of pers. Costs)** |  |  |
| **Total** |  |  |

**Table 3.1i: ‘Other costs categories’ items (e.g. internally invoiced goods and services)**

|  |  |  |
| --- | --- | --- |
| **Participant Number/Short Name** | | |
|  | **Cost (€)** | **Justification** |
| **Internally invoiced goods and services** |  |  |
| **…** |  |  |

**Table 3.1j: ‘In-kind contributions’ provided by third parties**

|  |  |  |  |
| --- | --- | --- | --- |
| **Participant Number/Short Name** | | | |
| **Third party name** | **Category** | **Cost (€)** | **Justification** |
|  | **Select between**  Seconded personnel  Travel and subsistence  Equipment  Other goods, works and services  Internally invoiced goods and services |  |  |
|  |  |  |  |

#§QUA-LIT-QL§# #§WRK-PLA-WP§#

**Table 3.1k: Research Component**

|  |  |
| --- | --- |
| Have you included a research component in your project? | Yes/No |
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| Please confirm that the research component does not exceed 30% of the total Horizon Europe grant amount | Yes/No |
| Please confirm that at least 50% of the research component is allocated to the coordinator | Yes/No |
| Please indicate the total amount of budget allocated to the research activities | EUR |
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| For each Beneficiary, please indicate the amount of budget allocated to research: |  |
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| Beneficiary 3 | EUR |
| Beneficiary 4 | EUR |
| Beneficiary 5 | EUR |
| Beneficiary 6 | EUR |
| Beneficiary 7 | EUR |
| … | EUR |

1. *For further guidance on communicating EU research and innovation for project participants, please refer to the Online Manual on the Funding & Tenders Portal* [↑](#footnote-ref-2)
2. You must include a data management plan (DMP) and a ‘plan for dissemination and exploitation including communication activities as distinct deliverables within the first 6 months of the project. The DMP will evolve during the lifetime of the project in order to present the status of the project's reflections on data management. A template for such a plan is available in the [Online Manual](https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/guidance/om_en.pdf) on the Funding & Tenders Portal. [↑](#footnote-ref-3)