

LONG-TERM SUSTAINABILITY ACTION PLAN

DELIVERABLE N.6.5



**OUR SPACE
OUR FUTURE**



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement N° 821871

DELIVERABLE DESCRIPTION

This deliverable describes the different alternatives that have been evaluated for the sustainability of the project including potential funding opportunities as well as suitable governance models for its future operation. The document also looks at the project outcomes and assess their potential to be sustained and updated in the long-term.

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| PU | Public | X |
| CO | Confidential, only for members of the consortium (including the Commission Services) | |
| CI | Classified, as referred to in Commission Decision 2001/844/EC | |

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SUMMARY

The aim of this document is to discuss the long-term sustainability of the Our Space Our Future project. For this purpose, the report is articulated into two main sections investigating the sustainability of the project outcomes and the sustainability of the existing consortium through the analysis of different governance options. This analysis was based on the insights gathered through online interactive sessions, one-on-one interviews and face-to-face discussions with project partners. As a result of this process, a set of best practices and consequent next steps for the sustainability of the project were defined. This work supported the consortium to consider different funding options that would complement the governance scenarios identified through internal interactions and discussions.

1. CONTEXT OF THE DOCUMENT

1.1 Our Space Our Future project

The vision of Our Space Our Future (Our Space) is supporting the formation of a society that enables and empowers all students, regardless of gender, ethnicity, disability or socio-economic background, to consider a career related to space science as a relevant, attainable and exciting aspiration for their future. The space industry in Europe is strong and growing, offering innovative services, and providing huge benefits across science, the economy, government and society. The space industry meets societal challenges, provides jobs, and supports industrial growth, and the standards of excellence within the industry and research reinforces Europe as an autonomous, global leader in the sector.

The Our Space rationale is based on the emphasis on these positive effects of science, technology, engineering, and mathematics (STEM) choices. This is the case not only for employment and the economy, but also the wider benefits of STEM and space science education for technical and intellectual progress, and on the wider skills and knowledge base of the public. The approach developed by Our Space also benefits the space sector in general through the inclusions of a more diverse workforce and wider public acceptance and participation. To this end, the consortium combines a unique breadth of experience and skills in space communication, stakeholder engagement, policy advice and direct experience of working with schools and families.

The activities carried out by the consortium are carefully co-created with a country-specific design and evidence-based methodologies, and range from science workshops, to family challenges, career-based events and planetarium events, as well as training for teachers and educators.

1.2 Objectives of the Work Package: Project

Communication, Dissemination and Exploitation

Work package 6 (WP6) has two main objectives:

1. To maintain, implement and review the Our Space Communication Plan and the Our Space Dissemination and Exploitation Plan. The consortium partners will make the most effective use of the resources available to provide relevant, timely and targeted communication tools. This will include an online presence including

social media channels, newsletters and other forms of communication with, and towards, defined target groups.

2. **To enhance the visibility of the project by linking the website to the Consortium partners' online representations, social media channels, newsletters, publications and events, in order to generate the best possible impacts of the Dissemination and Exploitation Plan.** The effectiveness of the Communication Plan will be monitored through measurable goals, e.g. through the use of web-based tools such as Google Analytics. Social media providers already offer such possibilities, and the possibilities to further refine communication efforts are likely to increase in coming years.

1.3 Objectives of task 6.3: Creation of a long-term sustainability action plan

The Long-Term Sustainability Action plan falls under task 6.3 of the Our Space Our Future project. The plan was developed in parallel to activities in task 6.2, supported by a strategy of outreach to wider stakeholders including industry, academia, society, governments, and policymakers.

The task analyses various scenarios for optimal project legacy, beyond the project life-cycle, including the integration of the project into a future Space-KIC (see **deliverable 2.4**) and through a bespoke business model with external sources of funding. The business models will include exploitation of any foreground IP created in the project (see task 1.5). The report, action plan and recommendations will be discussed and decided upon by consortium members as part of WP1.

1.4 Purpose of the document

The aim of the report is to explore viable options and outline how project results and outcomes (learnings and activities from the project) can be embedded in consortium partners' work beyond the end of the project as well as exploring other mechanisms for its sustainability.

1.5 Methodology

In order to achieve the objective mentioned above, the assets to be considered in the context of sustainability and continuation have been identified and described. The concept of "sustainability" has been considered in relation to each of the project outcomes.

The approach used to better identify the assets developed in Our Space, was initiated by a series of workshops, using interactive tools and the active

participation of all the partners. In addition to the workshops, delivery partners were interviewed regarding their experience during the schools' interventions and their view on the long-term sustainability of the project outcomes. The interviews included questions on resources, costs and future upgrades to the project results. Governance scenarios and alternatives for the regional and national uptake of the approach and the tools developed were also discussed.

The insights collected during the workshops and the interviews provided the foundation for the development of this sustainability plan. Additionally, the information gathered during this process was contrasted with the data collected during a desktop research and informal discussions with beneficiaries of the project and organisations that could potentially provide financial support to future activities of the consortium.

2. SUSTAINABILITY OF THE PROJECT OUTCOMES

The long-term sustainability plan for Our Space will aim to guarantee the legacy of the project outcomes beyond the end of the project. This may take the form of various governance configurations starting from partners collaborating on future projects with a similar scope, to building on existing outcomes and replicating them on different scenarios. Another potential governance option considers that each partner would use and integrate the project outcomes within their longer-term business model, at a level that is most useful for each organisation. Lastly, an option that was welcomed by all partners consisted of maintaining constant internal communication between project partners, to consider and respond to various funding opportunities. This would allow the project partners to engage in regional and national calls and also to collectively pursue pan-European funding options when possible.

In order to assess the feasibility of potentially appropriate governance structures, funding streams and other elements that may feed into a business plan for the continuation of the project or its assets, it was necessary to break down the single outcomes of the project: first individually by defining them and their sustainability potential, and later, by considering their combined value and interconnectivity in the framework of evaluating different governance models.

2.1 Project outcomes and their sustainability potential

It is important to acknowledge that the numerous outcomes of the Our Space project are largely heterogeneous in their nature and thus diverge regarding their value, the measures needed to be taken for their exploitation and continuation, and the relevance of each of them for potential future collaborations.

When we think of project results to be sustained, we consider first and foremost the most tangible of them - those contained in the Our Space toolkit.

Other assets that deserve a mention in the framework of their potential exploitation are some single deliverables of the project - notably the Literature review.

Lastly, we will consider important value created throughout the project, that is represented by the collaborations within the consortium and the parallel partnerships with the schools and external stakeholders. All these assets and their sustainability beyond Our Space will be considered in the following pages.

2.2 The toolkit

2.2.1 Description of the toolkit

The Our Space Our Future toolkit (*hereinafter, The toolkit*) is an online portal containing the main tangible outcomes developed during the Our Space project, such as science shows, workshops, face-to-face activities with scientists and researchers, and others. These are interventions organised and presented by the Our Space delivery partners (SMS, ED, PSC, NUC, PDK) at target schools. Descriptions and guides on how to conduct these activities were subsequently uploaded to the toolkit.

The toolkit is intended to be used by teachers who would like to emulate Our Space activities for students in their classroom, for trainers and science communicators who want to run their own space science activities, or for those who are interested in discovering more about the topics covered by the Our Space Our Future project.

The resources of the toolkit can be largely divided into two main categories: replicable activities and non-replicable activities. The first category is made up of a series of ready-to-use materials, that can be easily up taken and applied by teachers, parents or whoever may be interested in them, without the need of mediation from Our Space and without the need of further assistance. The second category is made up of an archive of activities that have been tailored and performed for specific school projects or science shows and that cannot easily be replicated by an external user without further instructions or materials.

More information about the toolkit can be found in the dedicated deliverable D3.4 **Our Space Our Future Online toolkit**, while a description of the activities therein is contained in **D3.3 toolkit Outline Report**.

2.2.2 Sustainability of the toolkit

Replicable and non-replicable activities differ in their potential to last in time: while the former can be readily up taken, the latter needs an extra step (re-creation and adaptation) in order to facilitate uptake.

To ensure the legacy of the toolkit, it is important to address its usability as well as the overall content. Below is a breakdown of both points into targeted actions that need to be undertaken to ensure the sustainability of the toolkit.

We have made some efforts and maintained discussions with external stakeholders about potential uptake and hosting of the resources. One example of this was the discussions we started with the ESERO community regarding their potential use of our resources.

Improving Usability

The term usability is used to refer to the capacity of the toolkit to provide a condition for its users to perform the tasks safely, effectively, and efficiently, while ensuring impact and learning.

Five different elements have been identified by the consortium, as key to obtain usability:

- **Description of activities:** The first improvement that must be made is the creation of ad-hoc descriptions of the activities and resources connected to the activities. The option of having a dropdown menu was explored, but ultimately disregarded by the web developer. It was therefore suggested to add more video content of the interventions, especially if they are harder to replicate by teachers and educators.
- **Clear list of resources:** In order to maximise the uptake of the activities that are not readily replicable without further instructions, it is important to create a list of links to related activities and organisations. This list should ideally be maintained on the Our Space website in order to prevent it from becoming obsolete. The work on this task has been initiated.
- **Overall accessibility:** A key concern regards the overall accessibility of the website, that may currently be hard to navigate. Therefore, it has been suggested that the repository needs to be formatted in a way that can easily be cross-shared on other resource sites without losing the brand and project source. Moreover, it is important to achieve uniformity, therefore activities should be a set format and easily navigated when visiting one and then another. It was suggested to format the activities following a “recipe-type” description where an activity is described in steps to follow to conduct it.
- **Multilingual translations:** It is important to be able to translate the toolkit in several languages, to make it more accessible to all European Countries. This is a key step, given that the activities are shared with children who may not speak English as a second language. For this purpose, a multilingual plugin has been inserted on the website and tested across the different languages in use within the consortium.
- **Formal correctness and length:** Last but not least, the activities need to look neat, pretty, have a rigorous design, be easy to understand (not overwhelmingly lengthy text wise), and easy to transfer into user's context. For this purpose, it was suggested to also have an impartial copywriter.

Improving the overall content

- **More focused targeting:** After usability, targeting was the most pressing issue to improve, according to the consortium. Indeed, 5 different partners stated the need to increase the relevance of the project according to our

target. This challenge has already been partially addressed through the exchange of best practices and dedicated sessions where partners shared ideas on how to make the content more relevant to their target audiences. It is important to make clear that our main target audiences are teachers, informal science communicators and educators. Moreover, we should include testimonials from students and teachers in the description of the activities, as well as comments raised by the professionals who took part in the activities (e.g., scientists comments on the activities they were involved in).

- **Enhance relevance:** Given the huge public interest for space-related topics, it was suggested to surf the wave, and to strengthen the connection with current space related topics. It is therefore important to stay up-to-date with the current news and trend to make our project more relevant.
- **Better alignment with partners:** The need for more one-on-one conversations between partners to develop concepts and find new synergies was stressed. It was also suggested that each partner could test an activity created by another partner, and provide any insight or comments that could improve the audience experience of the activity.
- **More content:** Finally, it was suggested that more content should be added to the existing toolkit. In this regard, it was suggested to include more generic careers advice, available as a printable pdf for careers teachers with both EU wide and localised advice for each country.

2.3 The Literature Review

2.3.1 Description of the Literature Review

The literature review¹ consists of an examination of published didactic papers and project reports to provide a theoretical background and evidence base that can inform the development, delivery and evaluation of Our Space Our Future.

The study explores the practices and approaches that involve, excite and empower school-aged students to feel that the space sciences are relevant to them. This is achieved by (1) collating and summarising existing programmes into an accessible review and (2) providing clear communication of the successes and challenges of these space science and outreach initiatives and further links to best practice. In doing so, the Literature review developed Our Space Our Future's very own

¹ *What practices truly involve, excite and empower school-aged students to feel space sciences are relevant to them: a systematic review of primary literature for the 'Our Space Our Future' project* (Leverment, S., Pennington, C. and Bartlett, S.; 2019)

methodology, based on a series of practical learnings, summarised in seven key recommendations:

1. **Get hands-on with real science skills**
2. **Not 'design for' or 'do to', but 'work with'**
3. **Celebrate success and bring in the wider family and community**
4. **Keep it careers-focused**
5. **Challenge unconscious bias**
6. **Bring a whole-school approach to our engagement**
7. **Build in legacy.**

More detailed information about the literature review and its recommendations can be found in the dedicated deliverable **D2.1 Literature Review**.

2.3.2 Sustainability of the Literature Review

The Literature review is an asset as it clearly lays out the scope of the activities of Our Space and describes ways to achieve them. Moreover, it clearly states the gaps and best practices identified in the sector.

A way to further maximise the impact of the literature review would be to conduct a wider dissemination campaign of the approach and the work that has been done so far. This would require some enhancement of the content and the lessons learnt through the project. Some of this work has already been conducted under **deliverable 2.5** written with the intention of increasing its likelihood for publication in scientific journals. It is important to mention that regular updates of the literature review would be necessary to maintain its relevance over time.

2.4 The partnership with schools and externals

2.4.1 Description of the partnership with schools and externals

The partnership with schools is deemed to be one of the most important project outcomes according to the partners of the consortium.

Consortium delivery partners (SMS, ED, PSC, NUC, PDK) worked to deliver the full face-to-face programme to students, teachers and public cohorts, using systems developed through their extensive experience of delivering high-quality public engagement activities in their countries using styles, content, and delivery formats established through the literature research.

The delivery of the project took place on 4 different yet interlinked levels:

- **Schools** - Each delivery partner collaborated with a number of schools in their geographic area, previously selected in order to fit criteria of inclusion

(see **D2.3 Audience development plan**). Most of the students ranged from age 9 to 14, and participated in a 'repeated intervention' consisting of four different events. Each intervention, focusing on a different theme and activity in the field of space, focused on fostering communication, collaboration, and problem-solving skills development.

- While the project places high importance on live, in-school and face-to-face activities, this has not been possible to date for most partners. Some in-person activities have been delivered where COVID restrictions allow, but most partners had to explore methods and formats which could help them replicate the experience as closely as possible through remote delivery. Partners have agreed that this aspect of the project's aims remains key and have worked to create materials which can switch from remote to in-person if COVID restrictions allow and schools are agreeable.
- **Community events and festivals:** A series of ad hoc community events were organised by each delivery partner with the purpose to ensure accessibility to families, students, and the wider community linked to the schools. Such events took place in various forms, such as open days, science event days, thematic family workshops and celebratory days at school. It is important to mention that the connection to parents and wider communities in the case of project partners such as Science Made Simple and Explorer Dome was completed digitally by sharing filmed experiences of the students with parents and carers due to COVID restrictions.
- **Teacher CPDs:** The CPDs (Continuing Professional Development) consist of activities targeted to teachers, to help develop and strengthen the skills in the field of space careers. This meant sharing high-level content and demonstrating clear links of space science to careers for different curriculum areas, encouraging connections between industry and school partners. This also entailed organising interactive workshops on inclusive STEM communication, with a particular focus on low science capital children, gender inclusion and students with special educational needs.
- **Online engagement:** Online outreach performed mainly through each delivery partner's social media account and official website.

2.4.2 Sustainability of the partnerships with schools and externals

The 4 types of partnerships described above are tightly linked with the delivery of Our Space activities; for this reason, it is expected that the partnerships will significantly decrease after the end of the project lifetime.

Nevertheless, to maximise the sustainability in this realm, the following actions have been suggested:

- **Schools:** When possible, it is advisable to maintain the relationship with the schools that have been engaged through the interventions. In particular, it is important to nurture the relationship with the teachers that have been involved in the project before. This can be achieved by maintaining online communications, and by sending regular updates on activities that are developed after the lifetime of the project. The goal is to maintain the network of schools and to possibly initiate a new partnership if a new project is initiated.
- **Online engagement:** The most concrete action that can be taken to maintain the relationship with externals is to maintain online engagement.
 - **Social media:** Our Space’s social media accounts, Instagram and Twitter have reached a significant number of followers (approximately 2000 and 1000 respectively), and it is therefore important to maintain these outlets open in order to keep the audience engaged. As the project reaches its end, it is expected that the accounts will be used to share stories about the use of public Our Space materials (e.g. the toolkit) or to share any new and relevant space-related activity of the partners.
 - **Website:** Since the website represents a complete anthology of all the activities that have been carried out within the lifetime of the project, it is important to sustain it after its end. For this reason, it was agreed to keep the website running until 2024.

2.5 The partnership within the consortium

2.5.1 Description of the partnership within the consortium

The partnership with the members of the consortium is deemed to be another important project outcome of Our Space Our Future.

The consortium consists of 8 partners experts in the field of space and/or education, based in different countries in the European region (see table below). Five of them acted as *delivery partners*, meaning that they are in charge of delivering the activities of the project (mentioned in the subsection ‘The partnership with Schools and Externals’).

Table 1 - Consortium partners

| Short name | Country | WP lead | Delivery partner |
|------------|---------|--|------------------|
| CU | UK | Project Management (WP1) Impact Evaluation (WP5) Ethics Requirements (WP7) | |
| SMS | UK | Programme Delivery (WP4) | X |
| ED | UK | Capacity Building (WP2) | X |
| PSC | Italy | Toolkit Development (WP3) | X |

| EUSEA | Austria | Project Communication Dissemination and Exploitation (WP6) | |
|--------|-------------|--|---|
| NUCLIO | Portugal | N/A | X |
| PDK | Denmark | N/A | X |
| C-KIC | Netherlands | N/A | |

In order to coordinate on the work and to strengthen the relationship between the partners, several project meetings were organised together with the management team and the project partners. These meetings helped to monitor progress and tackle challenges that emerged during the delivery of the interventions and other

In spite of the geographical distance and of the ongoing COVID pandemic, the consortium has formed a strong relationship thanks to a strong e-communication system based on monthly virtual meetings, ad-hoc virtual calls and e-mail exchanges.

2.5.2 Sustainability of the partnership within the consortium

Ensuring the sustainability of the partnerships within the consortium is a clear goal of all Our Space partners.

The final meeting of the project held at the Planetarium, in Copenhagen on 5th and 6th May was a good occasion to discuss this matter face-to-face. The members of the consortium showed a clear intension to explore opportunities to work together and build on the capacity and results produced throughout the life span of the project.

It was agreed that an informal partnership based on mutual help would be maintained regardless of the future of the consortium. Nevertheless, more concrete perspectives were also examined to identify the best governance scenario to adopt after the end of the project. An overview of the three scenarios discussed can be found in the next chapter.

3 SUSTAINABILITY AND GOVERNANCE PERSPECTIVES

In order to envision how the collaboration among partners should be sustained after the end of the project lifetime, the expectations of each delivery partner were collected through a face-to-face online interview. The inputs can be consulted under Annex 1.

As a result, three models were defined as possible scenarios for post-project collaboration:

1. **Our Space 2.0 - continuation of the project as is.**
2. **Country-based collaborations- the lead on further activities is taken on country level.**
3. **Thematic collaborations - the activities are continued by groups of partners with similar core activities (e.g., Planetarium subgroup etc.).**

The pros and cons of each of the 3 scenarios are considered below.

3.1 Our Space 2.0

The project Our Space is continued with the same group of partners, in a “2.0 version”.

Pros

- **Relationship within the consortium** - After a project lifetime of almost 4 years, a solid partnership has been formed among the members of the consortium. For this reason, there is a lot of value in maintaining the same group dynamics established during Our Space through the continuation of the project. The continued partnership would represent an excellent opportunity for partners to continue exchanging experience. Assuming that each of the 5 partners has at least 4 different contents, there are 20 valuable activities to be learned from each other and while these are currently public on the toolkit, it would be much more valuable to leverage on the expertise of each partner through mutual cooperation. The collaboration will therefore take place by staying updated with partners’ materials and with the partners themselves.
- **Relationship with schools and teachers** - The relationship with schools, and in particular with individual teachers, should be nurtured. Experience has shown that it is the relationship with the single teacher that ultimately

influences the outcome of each school intervention. Since some teachers have openly expressed that they would want to enrol their classes again, it would be advisable to maintain the partnership with them. It would also be interesting to have the same group of schools, with interventions from different partners of the consortium. This is especially suitable for online engagements

- **Value of the evaluation process** – Consortium partners can build on the learning/evidence of the excellent and rigorous OurSpace evaluation process and the insights obtained from the different interactions with the students, parents and teachers.

Cons

- **Funding** - The main drawback of this approach, is the financial feasibility. Our Space consortium is a heterogeneous group from both a national and thematic point of view. For this reason, it is challenging to find a call for a project that would fit the unique mission and legacy of the project and that would allow to include all the partners of Our Space. Two main reasons for this can be identified: (1) Participation of UK-based partners in EC-funded calls has become more challenging since the departure of the UK from the EU (2) Calls are targeted to new projects and consortia and are less likely to fund an already existing project.
- **Time and resource constraints** - It has also been discussed to extend the project informally, thus continuing the partnership among partners without being supported by an external call. This approach would allow for a mild degree of knowledge sharing, but it would ultimately be hindered by the constraints of each partner, who may not have any more resources to dedicate to the project.

3.2 Country-based

The scope of the project is continued on a national basis, exploiting in parallel local and national initiative and funds.

Pros

- **Easy funding** - The main reason for pursuing a country-based approach is based on the higher likelihood to secure funding for continuing the implementation of the project at a national level. Each partner member could therefore continue its work on a national level, since the Our Space activities can be easily replicated at national scale without major additional costs. Local and national funding streams -such as national space agencies and national education entities- could ensure the financial sustainability of

this approach, especially considering that all the partners are very well positioned and known in their local/national ecosystems.

- **Regional focus** - The growing importance of space economy in certain regions must also be taken into consideration. Adopting a country-based approach would in fact allow partners to fully exploit the potential of prominent regional space economy hubs.
- **No language barrier** - Our Space material has been developed in several different European countries and the material fits the native language of each one. For this reason, the material cannot be immediately transferred from one country to another due to the language barrier (and sometimes, due to differences in the school systems and curricula the material is supposed to be inserted into). In addition, each consortium partner conducted their audience development plan at the start - which looked at diversity and underrepresentation within their specific catchment. Therefore, beyond just language, the activities are ideally geared to the needs of their audiences and relevant to their region.

Cons

- **Funding for a pre-existing project** - Finding funding for a country-based project is easier than for a pan-European project, as stated above. Yet, although several local and national funding streams are available, the problem of being able to obtain funding for a pre-existing project persists. The Our Space project may therefore need to rebrand itself and adapt to a new call, to secure funding. Although this would allow the consortium, or part of it, to achieve financial sustainability, the brand and identity of Our Space risks being erased.
- **Heterogeneity of the materials created** - Contrary to a thematic-based approach, a country-based approach risks not being able to meet specific demands by the national education systems.
- **Disruption of the consortium** - Upon interviewing the delivery partners of Our Space, a clear interest in maintaining the current consortium has emerged. Continuing the project on a country basis would hinder the maintenance of a consortium and clear Our Space identity for at least two reasons (1) Some partners may abandon the project in case they cannot secure funding in the respective countries (2) Coordination activities among different countries would be suboptimal, due to the lack of funding for this specific task.

3.3 Thematic based

The scope of the project is continued on a thematic basis. This implies finding synergies with partners that develop similar types of activities or that work with similar structures. For example, interest was shown for potential partnerships

between two organisations involved in the project, Explorer Dome, in the UK, and the Planetarium at Copenhagen.

Pros

- **Synergies:** This approach would be beneficial for organisations that exhibit similar operational features (eg. Planetariums) as it would facilitate the exchange of know-how and the use each other’s materials, hence optimising their efforts. An example of this, is the synergy between the Planetarium and Explorer dome. They are in a good place to share experiences and collaborate since they use similar educational tools to engage and inspire students. This collaboration could be extended to other planetariums and could serve as a case study to assess the usability of the project outcomes by external organisations.
- **Knowledge sharing:** This approach would facilitate the exchange of knowledge and best practices by project partners working on similar topics and target audiences. Collaboration of this nature would enhance the impact and quality of the interventions as they would be based on the sum of the know-how and capacity of the partners focus on the same theme.

Cons

- **Exclusion of non-delivery partners:** This scenario would entail the same disruption of the consortium that was described for the “country-based” model. On top of this, a thematic-based partnership is at risk of excluding the non-delivery partners, which perform transversal activities and would therefore not fall under any specific theme.
- **Limited thematic funding:** Finding financial support for a potentially narrower thematic-based international consortium is expected to be challenging for a number of reasons such as (1) limited funding is available for this specific type of thematic consortia (2) need to rebrand the project, since the funding to continue a project is unlikely (3) difficulty to include UK based organisations, due to Brexit.

3.4 Overview of the three scenarios

Table 2 - Potential scenarios for the continuation of the project

| | OSOF partnership 2.0 | Country-based | Thematic-based |
|----------------------------|----------------------|---------------|----------------|
| Easy funding opportunities | | | |

| | | | |
|----------------------------------|--|--|--|
| No language barrier | | | |
| Relationship with the consortium | | | |
| Relationship with schools | | | |
| Regional hubs focus | | | |
| Synergy and knowledge sharing | | | |

3.4 Costs for future delivery of the project outcomes

An important element when considering the long-term sustainability of Our Space Our Future is the costs necessary to maintain and upgrade its outcomes. Based on this need, we present a simple analysis of the costs required to deliver different school's activities and the development of new training materials.

It is important to note that the estimated costs of the activities and the community events developed within Our Space vary significantly based on variables such as location of the school and its proximity from the delivery organisation, complexity of the activity and salary rates of the implementing countries just to mention a few.

In the following table we illustrate the average cost to deliver four activities and a community event in one school. The estimate was developed based on the average cost for the implementation of the activities in the five delivery countries.

In this section we will refer to a "school intervention" as the collection of 4 school activities and one community event.

Table 3 – Average cost of delivering one school intervention (4 school activities and one community event)

| Delivery of one school intervention (4 activities + 1 community event) | Cost (€) |
|---|----------|
| | 6,230 |

Another important component of the long-term sustainability of Our Space is the capacity to create new training materials and activities that can be used during the school's interventions. The analysis of the cost for the creation of new activities and training materials showed a significant difference on the cost depending on the setting, complexity, technology and other tools used for the creation and delivery of the intervention.

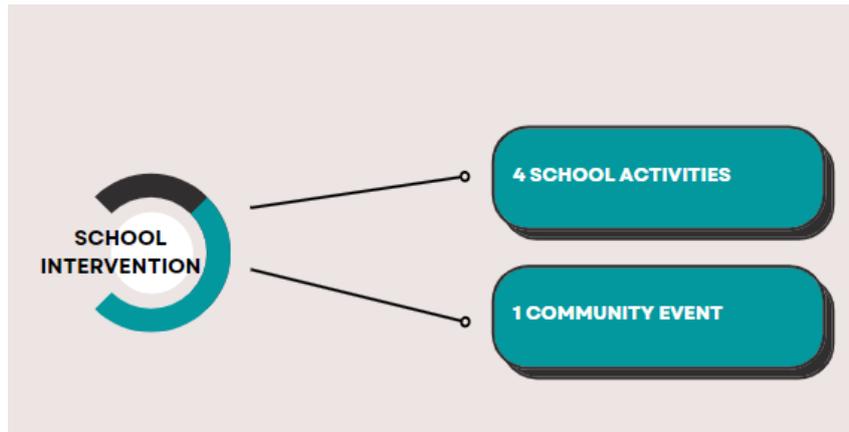


Figure 1 – School intervention

In order to simplify the comparison between the different activities and the costs associated to each one of them, we grouped the interventions into three categories based on their complexity:

1. High
2. Medium
3. Low

The table below illustrates the significant changes in cost for the development of new school activities when assess through their complexity level.

Table 4 - Average cost for the creation of a new school activity

| Complexity level | Description | Cost range (€) (for one activity) |
|------------------|--|--------------------------------------|
| High | Activities that require the use of high quality audio and video or technologies such as lasers (i.e. planetarium sessions) | 100,00 – 150,000 |
| Medium | Activities that might require the renting of equipment or locations and the use of several materials | 10,000 – 15,000 |
| Low | Activities which are easily created with low cost materials and without the need of developing audiovisual resources | 500 – 2,000 |

The following table provides an estimate of the overall costs necessary to run the project for a whole year delivering 1 intervention (4 school activities and one community event) in 10 schools in each of the 5 delivery countries of Our Space Our Future.

In case new activities need to be developed, the estimates provided in table 4 can be used as reference.

Table 5 - Estimate costs for running the project for one year

| Type of activity | Number of interventions (1 intervention = 4 school activities and one community event) | Total cost (€) |
|---|---|----------------|
| Schools interventions | 50 | 311,500 |
| Other costs (transport, website, materials) | n/a | 5,000 |
| Total | | 316,500 |

3.5 Potential funding streams

The table below provide information on potential funding opportunities from European as well as other international calls and tenders which were found to be aligned with the mission of Our Space Our Future. A brief description regarding the strengths of the consortium to apply for the different calls/tenders was also included in the table.

Table 6 - Opportunities for funding

| Type | Name | Description | Where | Strengths of the Our Space consortium |
|---------------|--------------------------|---|-------|--|
| International | EU calls (ex. HorizonEU, | No matching calls yet, but there is some inclusivity in | EU | Well positioned to respond to EU calls due to the experience of all the consortium |

| | | | | |
|--|-----------------------------|---|-------|--|
| | Erasmus + etc.) | education calls (not necessarily about space only) | | members in European calls |
| | Templeton Foundation | A US based foundation, quite “philosophical” about curiosity-led learning with interest in the psychology of curiosity and how children learn. The foundation is supportive of “big picture questions”. They support social equity, but quite a lot of funding seems to be about religion and science | US | Additional works needs to be done to better understand how the Our Space consortium could approach these opportunities |
| | National Science Foundation | The National Science Foundation funds research and education in most fields of science and engineering | US | In this case the consortium would need to find a US partner |
| | Calls for digitalisation | Improved knowledge and experience that partners have developed from lockdown and COVID. | EU/US | Well positioned to respond to this type of calls due to the experience of all the consortium members in European calls |
| | ESERO project from ESA | The content developed could be extended and updated in the longer term. There are unexplored possibilities for the partners of Our Space. In general, we | EU | Our Space could be a very good implementing partner due to the clear synergies between the ESERO programme and the Our Space project |

| | | | | |
|-------|--|---|----|--|
| | | should try to liaise with ESA. | | |
| Other | Novo Nordisk | The foundation runs an annual call for educational programs, both within informal education environment and formal education environment. (Around 3M dkk this spring and 6M dkk in fall), but it mostly needs to be a new project. This means you cannot apply to continue a project; you have to create something new. | DK | In this case the Our Space consortium would need to tailor their offer to better meet the needs of the funder |
| | Wonder Initiative | Has a focus on public engagement to audiences that are usually under represented. They offer mini grants of 2,000, upper 20/30k and then 100k top fund. | UK | Grants could possibly support two partners, eg. England and Wales to complete an extension activity. Science Made Simple and Explorer Dome benefited from this funding scheme in the past. |
| | Institute of Physics (IOP) Challenge Fund | The challenge fund is for national scale projects demonstrating a step change in diversifying and increasing audiences to physics. Projects can be up to £1M if scale is large, | UK | Well positioned to respond to this type of calls due to the experience of all the consortium members. IOP prioritising diversity which matches the goals of OSOF |

| | | | | |
|--|-------------------------------|---|-----------|---|
| | <p>UK Space Agency</p> | <p>The UK Space Agency offers small grants of ~£10,000 which are very competitive and UK specific which are subject relevant with focus on space skills, education and careers.</p> | <p>UK</p> | <p>Well positioned to respond to this type of calls due to the experience of all the consortium members in European calls</p> |
|--|-------------------------------|---|-----------|---|

4 THE WAY FORWARD

The purpose of the previous chapter was to lay out a series of concrete scenarios, in order to be able to eventually create from scratch an ad hoc model which would work with the variations in availabilities and willingness to cooperate from the partners.

The final meeting held in Copenhagen in May 2022 was an occasion to discuss the three governance scenarios described above and to assess the feasibility of each one. Pros and cons were found for each scenario, and a healthy discussion among all partners illustrated that although there is a clear willingness to collaborate in the future, the nature of this future collaboration cannot be decided until clear funding streams and calls for projects are identified. Nevertheless, the following considerations can be made.

4.1 Lessons learnt

In vision of a likely continuation of the project, it is important to keep in mind the lessons learnt during its implementation.

Below is a list of learnings and suggestions that emerged upon discussing with the delivery partners.

- **Set up milestones** - One of the important lessons learnt during the Our Space project was how important it is to set up clear milestones when organising the timeline of a project. Indeed, the Our Space project experienced some challenges when different partners reaching milestones at different times, because synergies were not exploited at their best. A more rigid timeline would have been ideal to prevent this situation.
- **More dialogue** - Communication is always an essential component in this type of project, especially when the members of its consortium are scattered geographically. Ideally, more in-person meetings would have allowed for a better interaction among partners, and ultimately to a more co-developed and co-designed project. Nevertheless, it is also important to stress that the COVID-19 pandemic is to blame for the lack of in-person meetings, and that the increase of use of online communication tools. Ultimately, this online communication benefited the consortium, working mostly digitally has in fact allowed the partners to gain online skills that can be used again for projects that require remote communication.

4.2 The future steps

The sustainability of the project, the legacy and impact of the activities, and different elements developed during the project will be assured by the integration of the tools and materials prepared within the consortium by the project partners.

This will be further complemented by a campaign looking at forging collaborations and synergies for the future exploitation of the project outcomes at national, regional, and pan-European level.

The consortium partners have agreed to maintain regular communication after the official end of the project with the purpose of exploring opportunities for the future use of the approach and the different tools developed within the project.

The future interaction of the consortium partners will therefore be based around the following elements:

- Mapping relevant international calls aligned with the scope of the project
- Engaging space agencies and other European bodies delivering education on space
- Identifying national and regional initiatives that can be further supported by the activities of the project
- Engaging relevant companies from the space sector that could support future school interventions

5 CONCLUSION

As Our Space Our Future approaches the natural end of its lifetime, several considerations about the future sustainability of the project have been made, both in terms of internal and external uptake.

It has been discussed that the different approaches, tools and materials developed by the Our Space Our Future consortium are public, open, and fully accessible through the project website. In addition of having the project outcomes open, the project partners have shared their experiences in the implementation of the tools during the schools' interventions and other events. This has allowed better transfer of knowledge among the implementing partners and the identification of best practices, challenges and areas of improvement which will enhance the future use of the project results.

All these learnings have been condensed into 3 possible governance scenarios (Our Space 2.0, Country-based and Thematic-based). As all 3 scenarios present significant pros and cons, it is expected that the choice of one of them will ultimately depend on the willingness of each partner to continue collaboration, as well as on the revenue streams available to ensure financial sustainability. In this regard, the collaboration with several possible funders was discussed. In particular, relevant funding streams have been identified in bodies from the European Commission; the European Space Agency (ESA), the European Union Agency for the Space Programme (EUSPA), and national space agencies.

In conclusion, a clear willingness to continue the partnership among partners and to sustain the work completed so far has been identified. The next steps to achieve a strong collaboration have been clearly set, but the details of such partnership are still to be defined.

6 ABBREVIATIONS

| Abbreviations | Definition |
|------------------------|--|
| Our Space | Our Space Our Future project |
| EC | European Commission |
| H2020 | Horizon 2020 funding programme |
| CU | Cardiff University |
| ED | Explorer Dome |
| EIT Climate-KIC; C-KIC | European Institute of Technology and Innovation- Climate Knowledge and Innovation Community |
| EUSEA | European Science Engagement Association |
| NUCLIO; NUC | Portuguese Interactive Astronomy Nucleus |
| PDK | Planetarium Denmark |
| PSC | Psiquadro |
| SMS | Science Made Simple Ltd |

7 ANNEXES

Annex I - Definition of the partners

On 11th November 2021, an online workshop was organised to tackle the overall long-term sustainability of Our Space Our Future and discuss in detail the legacy of the toolkit.

The workshop took place on the online collaborative platform Miro, where participants were asked to brainstorm about the sustainability of the project and the toolkit, and to share their ideas either by adding notes on the main Miro board or by taking the floor during plenary and openly discussing their opinion.

In this setting, the partners were asked to explain in their own words what sustainability means to them concerning the Our Space Our Future project. Their answers touched upon several different elements, which can be grouped in the following categories:

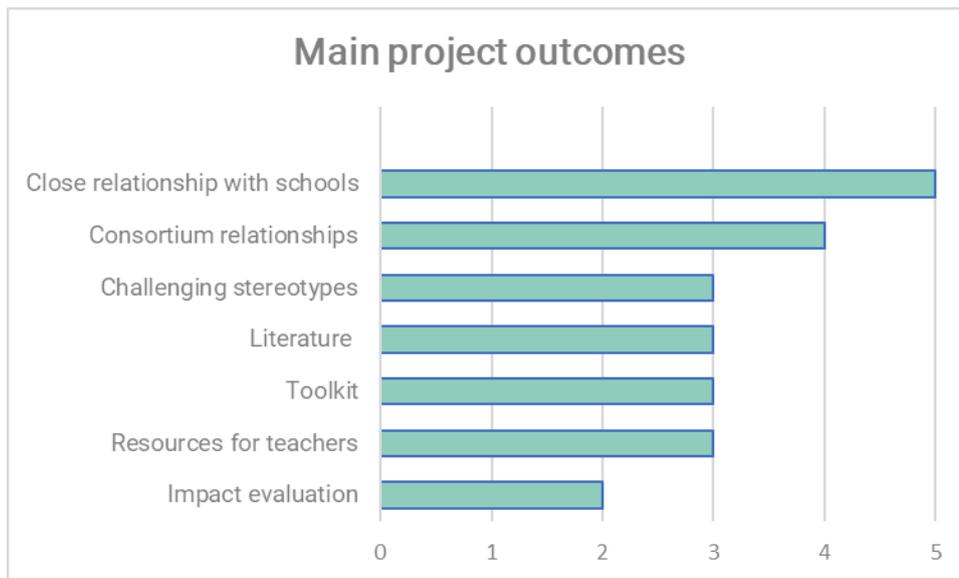
- Partnerships:** According to the OSOF Consortium, the fundamentals of sustainability lie in the relationships that have been built during the project. Out of all the 13 participants, 7 openly mentioned the need to maintain the relationships that have been developed within the consortium and 3 stressed the importance of also maintaining the relationship with the schools that have worked with Our Space Our Future.
 - Consortium: Sustainability implies maintaining and expanding the current network so that future collaboration can be achieved with the consortium partners on new or different projects that fall within the space realm.
 - Schools: The partnerships established with the schools and the respective teachers should be nurtured, to make them last in time. The current partnerships should also be exploited to build relationships with new schools that are part of the same network.
- Ability to last in time:** To be sustainable, the project should last in time. This element fits with the general definition of sustainability, which is “the ability to maintain at a certain rate or level”. In this case, what needs to be maintained can be divided into two main categories, that are described as

"the lessons taught by the project and the resources made available on the website" [Christopher Styles, EUSEA]

- Lessons taught: Refers to the impact and values generated through the project, which implies inspiring and empowering the youth in the field of STEM, as well as tackling the stereotypes about the sector. Sustainability, therefore, is achieved if an impact has been made in the long term, and the legacy of the project will keep inspiring and empowering the youth in the future.
 - Resources: Refers to the availability of all the resources that have been produced so far in relation to the project, so that they can be used in the future. In particular, the learnings from the literature review and evaluation should be used for future projects.
3. **Learnings from the project:** Sustainability also implies using what has been learned through the impact study to build upon the lessons learnt from this project and develop new partnerships and collaborations that can be beneficial for future projects.
 4. **Financial sustainability:** Lastly, the sustainability of a project is reflected in its ability to survive after the principal stream of funding has been cut, so that Our Space Our Future can be used beyond the project in terms of further funding (participation in Our Space Our Future as a blue stamp). This implies developing common strategies for financial sustainability and ensuring that the already existing resources can be used in the future to generate more impact.

During the collaborative workshop held in November, the partners were also asked to elaborate on what are the 3 main project outcomes that should be sustained after the end of the project. Interestingly, all the main outcomes that were mentioned during this brainstorming match with the trends that were previously uncovered during the discussions about long term sustainability of the project.

The graph below shows the project outcomes that the partners mentioned with the number of mentions on the horizontal axis.



Close relationship with schools and Consortium relationships, which obtained 5 and 4 votes respectively from the participants, fall within the Partnership category previously identified. It is thus clear that maintaining the current relationships, both internal and external is a key priority for the project. As far as the internal relationships are concerned, it is suggested to maintain “*meeting opportunities with partners even if outside the project but on the same topics, such as periodical informal meetings on Space Science and STEM education*” [Leonardo Alfonsi, Psiquadro]. As for the external ones, the goal is to “*evidence impact and embed practice that works in a different way for school students targeted by this project e.g. multiple interaction model, co-development with students*” [Shaaron Leverment, Explorer Dome].

Literature review and impact evaluation, which were mentioned as the main project outcomes 3 and 2 times respectively, fall within the category of learnings from the project. It is argued that the learnings stemming from the literature review and impact and evaluation are extremely valuable, since “*not many other projects got the opportunity to do this type of work*” [Wendy Sadler, Cardiff University]. It is therefore of crucial importance to study “*the findings of the literature review and impact evaluation, to frame future work, since this is where the arguments are laid out for future funding proposals*” [Rachel Mason, Science Made Simple].

Challenging stereotypes, which was mentioned by 3 different participants, falls within the Lessons taught category. In order to tackle this problem, it was suggested to keep up the work relative to the “*career stories, that help break the stereotypes*”

which can slot into several other initiatives in the STEM field [Wendy Sadler, Cardiff University].

Resources for teachers, which was mentioned 3 times as a key outcome of the project, falls within the Resources category. The aim is to create a *"set of resources to be improved and extended based on new implementations opportunities, in order to provide a constant resources database for teachers and educators and communicators"* [Leonardo Alfonsi, Psiquadro]. For this purpose, it was suggested to create a *"contact lists for those looking to approach these issues in the future, and a list of willing and able persons who are capable of contributing, advising on these issues"* [Christopher Styles, EUSEA].

The last two project outcomes listed above-challenging stereotypes and resources for teachers- fit in the goal of ensuring that the impact and learnings from the project have the ability to last in time.

End of report



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