Science Communication Plan of the COST Action CA21126 (NanoSpace)

VERSIONS AND HISTORY OF CHANGES

Version	Date of adoption by MC	Notes (e.g. changes from previous versions)	Lead author(s)*
1	04/10/2023	Free format	Chris Ewels (Science Communication Coordinator), Domingo Aníbal García Hernández (Chair) and the Core Group.

***** *The Science Communication plan is developed, updated and its implementation monitored under the overall supervision of the Science Communication Coordinator, and in close collaboration with other relevant contributors.*

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1. SUMMARY

The objective of this Science Communication Plan for the NanoSpace COST Action CA21126 is to identify and organise the activities to be performed in order to promote the exploitation of the Action's results and a wider sharing of information, knowledge and technologies across research fields and between academia and industry. This document includes the different tools, channels and means of communication that are and will be implemented throughout the project duration. The plan also describes the target groups of the dissemination strategy. It contains the main strategic and operative guide that shall govern the overall Action dissemination and communication activities. These guidelines will help to ensure that relevant information is shared with appropriate audiences on a timely basis by the most effective means. The dissemination activities will be continuously monitored during the Action. The main objective of the communication activities is to raise awareness on the action activities, disseminate information in a consistent and coherent manner about its results, and maximize its impacts. It will formulate criteria for the exploitation strategy. Additionally, this document is a guideline for all involved stakeholders to establish their individual dissemination and exploitation plans within their local context.

2. TARGET AUDIENCES AND POSSIBLE STRATEGIES

2.1 Target Groups and stakeholders

The target groups for the dissemination and exploitation of the NanoSpace results are:

- *A wide scientific audience* - from fundamental and applied sciences.

- *Young Researchers (YRs)* - to attract and foster the next generation of leaders in research and industry, which is key to reinforcing Europe's leading role in this field for decades to come.

- *Industry* – the developers of new techniques and an important link to potential end users.

- *Policy makers and funding agencies* – to keep them up to date with the latest Action advances.

- *The general public* – to attract interest from society and to increase the awareness of the benefits of investing in science.

Reaching out to these groups requires the imaginative use of manifold dissemination channels.

2.2 Possible strategies for dissemination linked to the target groups

The scientific results and technical developments will be communicated to the research communities through leading international peer-reviewed journals, conferences and workshops. At the end of the Action a special volume (Roadmap) with NanoSpace results will be published. The Action members (academia and industry) will be regularly informed about these advances and benefit from the exchange of knowledge and expertise through the Action general meetings, the Working Group (WG) meetings, the holding of smaller meetings specialized on specific WG topics, the webpage, newsletters, and social media.

The involvement of YRs will be very important from the beginning of the Action. The NanoSpace training schools will be an important forum to ensure that the YRs are kept up to date about the latest scientific findings and developments in their own and nearby fields. For the same reason, they will be encouraged for organizing YR forums at the Action meetings and for communicating the results through Action dissemination channels dedicated to YRs (dedicated sections on the Action newsletters, webpage, and social media). The Action website and social media will provide information about the Action, its main aims and its members. The science output will be communicated in transparent ways (popular scientific descriptions) targeting the general public, policy makers, and funding agencies. These will be published on the Action website and communicated through social media, and thereby establish a public library of Action achievements. To reach a wider audience, Action members will be strongly encouraged to participate in public science events at the national and European levels, and to keep their home institution webpages, blogs, and social media up to date with links to the corresponding Action dissemination channels.

Industry beyond the Action members will be targeted by establishing an email list of relevant Small and Medium-sized Enterprises (SMEs) to which information about the Action should be distributed (newsletters, meetings, relevant publications, public events, etc.), and by organising Action meeting sessions and round table discussions dedicated to meet the interests of the industrial partners. Companies not yet involved in the Action will be reached directly through the large network of Action members, national company associations, and through industry conferences and innovation fairs. Furthermore, a section in the NanoSpace newsletter (biannual) will be targeted at topics of interest to the industrial partners. The Short-Term Scientific Missions (STSMs) to/from industry will be strongly encouraged to reinforce collaborations between industrial and academic partners. Industrial researchers will be invited to give lectures and to lead seminars at the Action Training Schools, which will be devoted to commercialisation strategy (the assessment of the commercial value, business care analysis, prototype development, etc.).

Brief technical notes about the Action results will be targeted at policy-makers in ministries and relevant national agencies in all the countries represented in this COST Action. In communication with the EU Commission future call texts could be suggested for the Framework Programme of Research and Innovation.

3. PLAN FOR THE COMMUNICATION OF ACTION RESULTS

One goal of the communication plan is to build an information and communication infrastructure (and therefore dissemination) for NanoSpace COST Action which will provide the opportunity to establish a dialogue and interaction between all stakeholders. This applies equally to internal and external communication since the project is transparent in relation to the Action participants, industry partners as well as external stakeholders with the interest in the subject, objectives and deliverables of the Action. Particularly, online communication includes all channels through which the target groups and stakeholders can reach the project on the Internet. This will be carried out through the project's website, distribution of newsletters (biannual and regular) and dedicated social media.

3.1 NanoSpace website

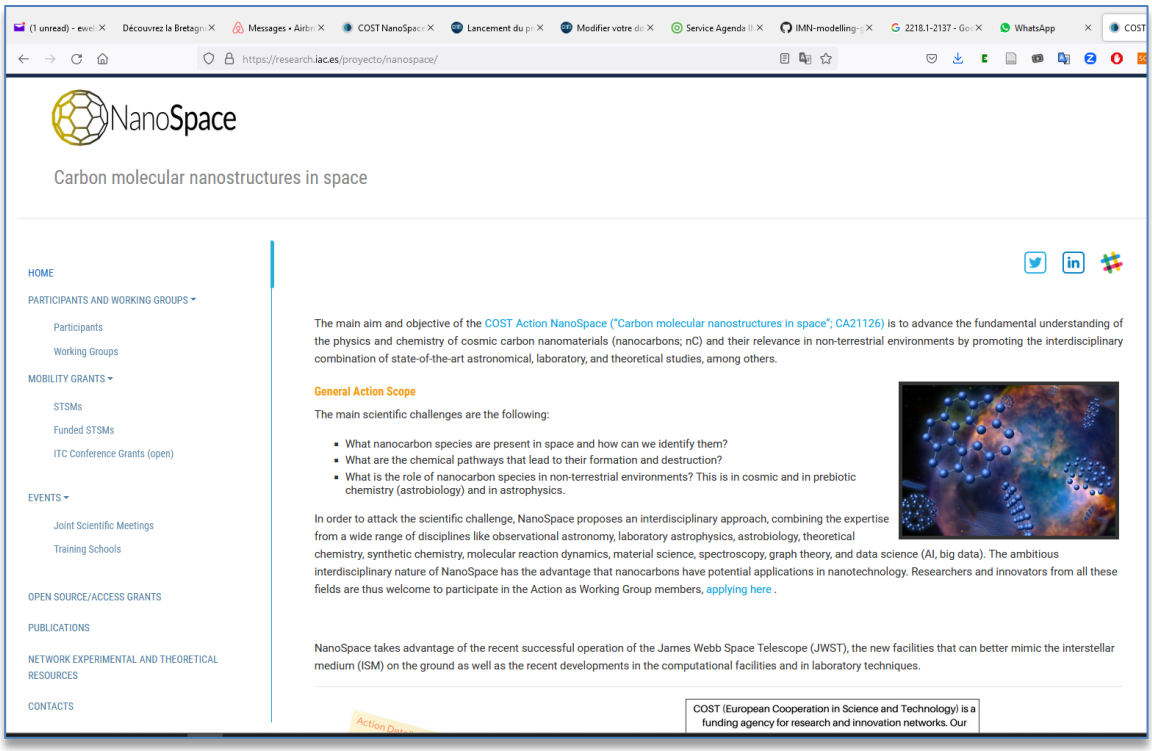
The dedicated website of the NanoSpace Action has been created and will be used throughout the project's implementation as a main tool for storing, organizing and sharing

information since it is accessible from almost all devices. It will serve from the very beginning as the “platform” of knowledge for this Action. Website visitors will find relevant information about the Action activities and results, such as meetings, conferences, publications, STSMs and Inclusiveness Target Country Conference Grants (ITC-CG) as well as information on other relevant issues. In addition, a database will be created and continuously updated to facilitate monitoring and reporting of the Action’s activities, e.g. YRs involvement. Furthermore, the website will have specialized sections with dissemination material tailored for each target audience; e.g. scientific publications, STSM reports, projects, job openings, news, conferences, educational material, logo of the Action, etc. Some of such dissemination materials (STSM reports and ITC-CG reports) are already visible in the Action website.

The Science Communication Team (or the appointed responsible) and Core Group members will update the website with news about the Action’s activities, such as Short-Term Scientific Missions (STSMs), training schools (TS) and announcements of events. A user-friendly website will be developed with the aim of making the Action results publicly available, offering easy access from anywhere in the world and working as a strong dissemination tool addressing all stakeholder groups.

For internal communication among the participants of the Action, the website may also be used as the principal means of distributing administrative, policy, and procedural documents, for example procedure for the application for STSMs, ITC Conference Grants, etc. If necessary, documents and sets of documents might be accommodated on password protected pages and thus made accessible to selected individuals and/or groups. This is used in conjunction with the mailing list as described below.

The website is linked to e-COST and includes the COST features, COST logo, EU emblem and accompanying text as indicated in the Dissemination Guidelines of the programme.

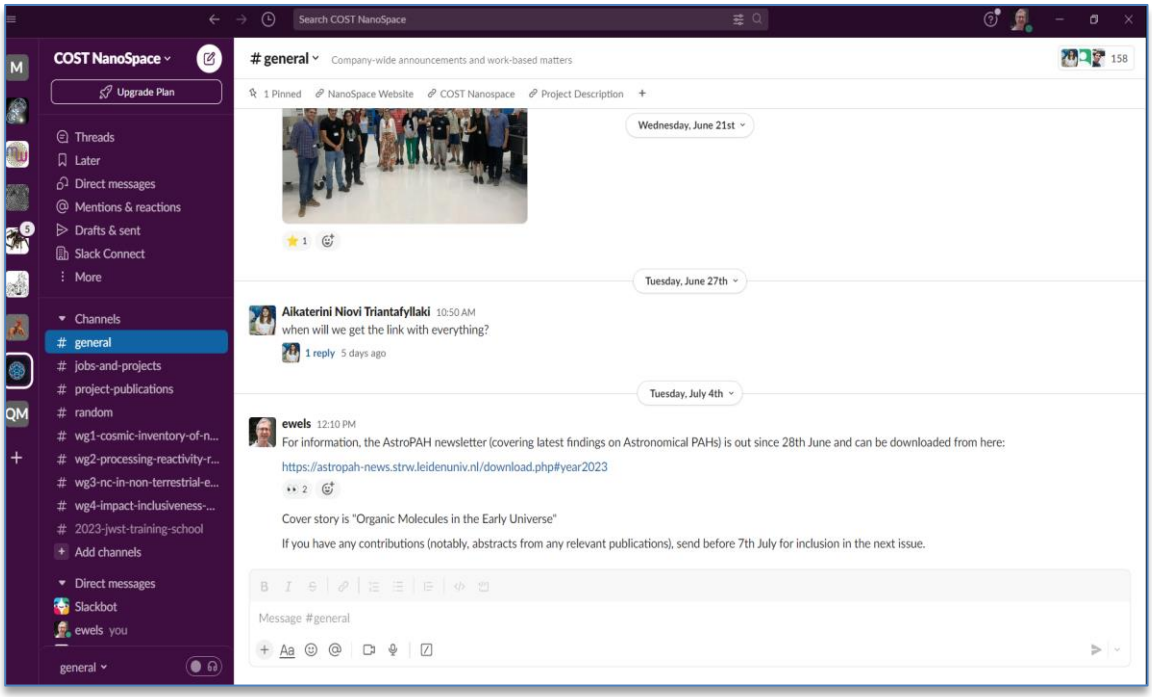


3.2 Mailing list and internal social network

For internal purposes: An electronic mailing list with the domain of identifying the NanoSpace Action, including all Management Committee (MC) members and all Action participants (YR’s, working group and core group members, etc.), has been established for

the NanoSpace Action to provide a mechanism for internal communications and regular newsletters, distributing news and info about any event of activity (conferences, training, schools, webinars, job offers, etc.). This list is monitored and all posts pre-verified by the project Chair to avoid misuse. Separate mailing lists have been established for the Core Group, MC and the whole project. The main mailing list is the primary source of information distribution to the project members, functioning in a 'push' rather than 'pull' mechanism (in contrast and complimentary to the Action website). Indeed, regular email bulletins/newsletters are being used to inform participants of latest news and information concerning NanoSpace, with links to the website to allow user follow-up (avoiding the need for excess length mailing list postings). The mailing list address is: nanospace@iac.es.

In addition, to permit more fluid and proactive discussion between project partners, a NanoSpace Slack group has been established, costnanospace.slack.com. This has separate groups for sharing publications, latest news, links to relevant events, including NanoSpace events. Additionally, we are using this space for all of our workshops, on-line activities and training activities, providing a "one stop shop" and encouraging its use by participants. This has already been used successfully for the first Action Training School organized in June 2023, allowing us to create custom user spaces for different sections of the training school and share course documentation, etc. It also provides a useful bridge in the case of hybrid meetings (as was the case for our first Training School). The Slack NanoSpace group also has relevant links "pinned" for easy access to both the project website and COST webspace for NanoSpace.



At the time of writing, the group has 159 members, of which around half are classified as "active" by Slack.

For external communication: Digital archiving covers many areas and it may be difficult to reach all stakeholders without using several existing lists to communicate to the wider community. We already draw on various community distribution routes to raise the profile of NanoSpace activities, notably the AstroPAH Newsletter, AGB Newsletter, Molecular Dynamics News, Laboratory Astrophysics Division List (LADList) and in future other more specialist outlets such as national Carbon group newsletters and the Astrochemical Newsletter, among others.

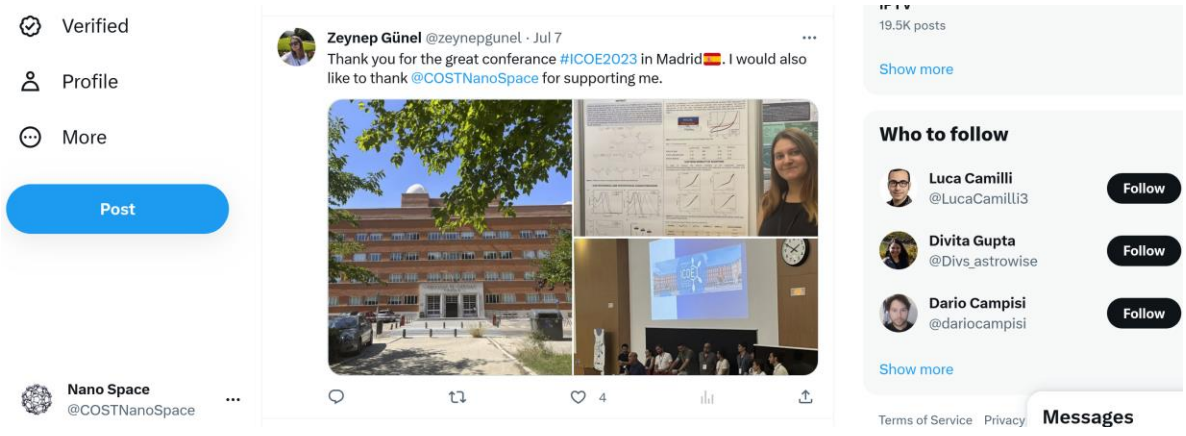
3.3 Regular and biannual newsletters

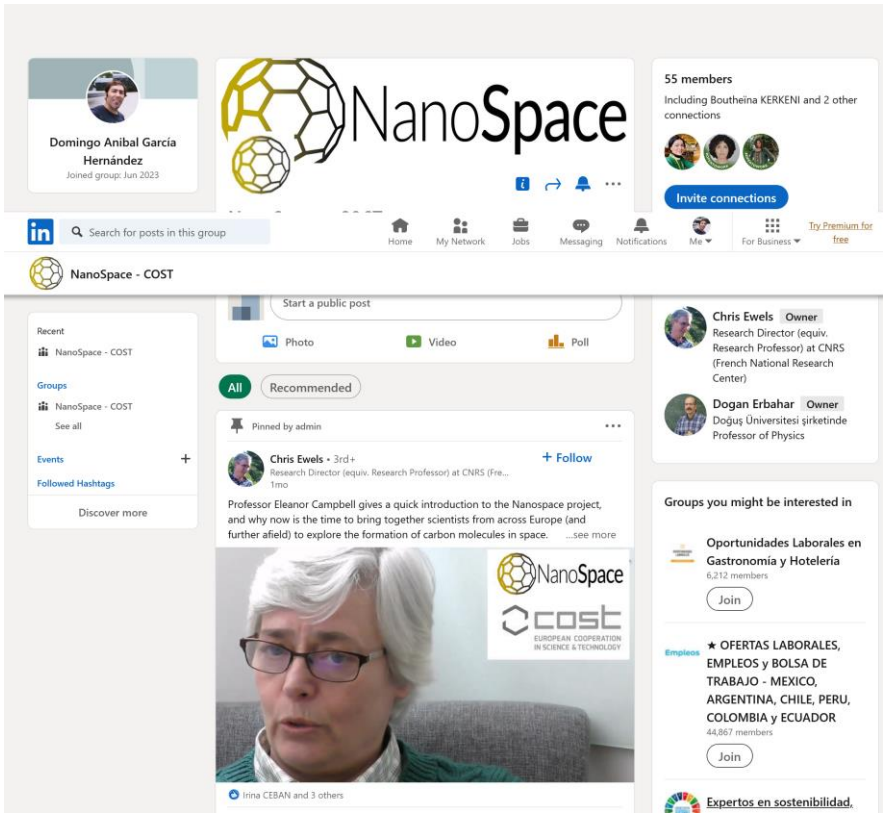
Regular bulletins/newsletters are distributed from the beginning among all Action participants via the NanoSpace mailing list. YRs will be encouraged to participate in the design/production of a biannual newsletter, which will be distributed (at the end of the second and fourth year) by the Action website as well as via the corresponding e-mail aliases to the Action members and other subscribers with information on recent publications, job offers, conferences, workshops and completed STSMs and ITC-CGs. It will also summarize and introduce the Action activities (research and technical highlights, new membership, prizes and awards, especially for YRs and female scientists, news from meetings and conferences, announcements from industry partners, etc.). The newsletter will reach a broader audience, including national and regional level, research centres and universities, technical managers, and other relevant stakeholders. It will be prepared and edited by the Science Communication Team in collaboration with Core Group members and with input from the Action participants. The newsletter will be designed to be easily printed for further distribution. In order to reach more communities, we will explore the inclusion of the biannual NanoSpace NewsLetter in special issues of well-established digital archiving platforms, such as AstroPAH Newsletter, Astrochemical Newsletter, etc.

3.4 Social media

In recent years, there has been an increase in personal communication and in information generated within the network especially among young people. This fact encourages progress towards more collective forms of knowledge sharing, among other things. Public outreach can be enhanced by using social media like Twitter/X, Threads, Facebook and Linkedin to which a direct link from the Action website will be established. The visibility of the NanoSpace COST Action will thus be increased, while members will improve their links with stakeholders and enhance participation in stakeholders' events. Through social networks we aim to provide timely and up to date information about project activities, interacting thus with the target groups involved and concerned by the Action. All the content that will be uploaded on the Action website will also be shared across the Action's social media accounts. By doing so, we will gain more visibility for the project, managing thus, to extend the coverage of the project and improve our classification of the search ranking. The Action members will make use of their own institutional social media accounts (LinkedIn, Twitter/X and Threads) to distribute news on a regular basis. The COST Action now has dedicated social media channels (Twitter/X, Linkedin), managed by the Science Communication Team. The Linkedin and Twitter/X NanoSpace accounts of the social media are https://www.linkedin.com/groups/9310268/ and https://twitter.com/CostNanospace.

At the time of writing, our NanoSpace LinkedIn group has 58 members. Our Twitter/X account @COSTNanospace has 40 followers and already many tweets, notably concerning our first Joint meeting (+ MC meeting) and Training School as well as the funded STSMs and ITC Conference Grants (see some Twitter/X and LinkedIn examples below).





Whenever possible, the news will also be distributed through the official social media channels of the COST Association (i.e. https://twitter.com/COSTprogramme, https://www.linkedin.com/company/cost-office). These accounts will be used as additional distribution channels of the Action results. We will also link to these via appropriate hashtags from our own social media postings, in alignment with the communication strategy of the COST office, allowing the COST office to cross-promote our posts and news where they feel relevant.

3.5 Publications, conferences, meetings, training schools and webinars

The Action will encourage joint-publications by at least two Action members in peer-reviewed international scientific journals, as well as presentation of Action results from such collaborations at conferences that are not organized by the COST Action. At the end of the Action the plan is to publish a special issue dedicated to the results of the Action. In addition, we will develop (preliminary) Roadmap reports associated with the scientific work packages (Action Working Groups), to be developed collectively by the work package members (typically providing two pages per member/group describing the state-of-the-art and appropriate roadmap next steps for their specific speciality within that work package). We will initially release these roadmaps via the Action website (during the second year) and public archive sites such as ArXiv, but it is our intention to publish them once completed and validated by the authors and core-group in relevant international open access journals (i.e. before the end of the second year).

The Action will organize general joint meetings, WG meetings and Training Schools for YRs where travel support will be provided by the Action to promote gender balance and where priority is given to YRs and ITC researchers. The WGs will also be encouraged to organize specialized sessions at recognized international conferences and to apply for additional funding to make this possible. Furthermore, the Action will establish connections with other COST Actions as well encourage additional partners from non-COST country institutions to join and thereby benefit from expertise beyond the European Research Area.

The Science Communication Team (and MC) will also encourage the organization of webinars (and/or on-line Lectures Series) particularly dedicated to specific WGs.

The Short-Term Scientific Missions (STSM), Inclusiveness Target Country Conference Grants (ITC-CG) and Dissemination Conference Grants (DCG) will be provided following submission of an application via e-cost to the corresponding coordinator and accepted by the Core Group. The Action YRs (including the WG co-leaders) will be encouraged to organize a young scientist forum at the WG and the general Joint Scientific Meetings of the Action.

3.6 Science Communication Team

Led by the Science Communication Coordinator, the Science Communication Team including the co-leaders (YRs) will be responsible for the preparation and development of the dissemination as well as for monitoring of the given deliverables. The team will communicate by e-mails and especially created repository platform to share the documents, files, etc. Video meetings by using the online platform of communication (Zoom, Teams, etc.) will be organised.

4. PLAN FOR THE DISSEMINATION OF ACTION RESULTS

The following dissemination materials have been already established or planned during the lifetime of the NanoSpace COST Action.

4.1 Visual identity of the action

The Action logo is as follows:



This will be used as part of our visual identity along with the COST (and EU) logos, the name and number of the Action. All dissemination materials will be prepared in line with the visual identity of the Action to enable effective “branding” of the project. The design of the Action website will also represent the visual identity. The logos will appear on all public documents related to the Action, publications, conference presentations, posters, etc. in order to increase visibility of the Action. For the members and partners the logos are already available for downloading in the NanoSpace website (Publications Section).

4.2 Promotional poster

A poster promoting the Action will be designed (during the second year) including infographics of the Action and posted for downloading on the Action website. This poster will be prepared by an external company (or in-house) and distributed (via dedicated mailing lists, social media, etc.) among the participants of the Action and its partners from industry. This non-technical publication will also be created to communicate the Action objectives and work in an easily accessible way to the general public. The poster will be included on the Action website for free downloading.

4.3 Training materials, tutorials, and promotion of the schools

For the training schools of the Action, the "hands on" practical exercises are planned to be performed by the participants of the school, mostly young researchers (YRs). The instructions and tutorials will be collected from the trainers and made available online through the Action Slack page, mailing list and website. In this way they are available, not just to the school participants, but to all members of the project. This approach has already been successfully applied for our first training school (see the First NanoSpace Training School website), where the materials were stored in the public Cloud space of the Grant Holder institution (see the IAC Cloud First Training School space). When possible, printed versions of the instructions and tutorials will be made available for participants on-site, allowing for easy note taking.

4.4 Press releases

Press releases in relation to the Action events and achieved results as well as initiatives will be prepared by the Science Communication Team in collaboration with Core Group members with input from other Action participants. For example, a first new about the NanoSpace Action was launched by the Grant Holder Institution (IAC) during the first year.

4.5 Promoting dissemination in conferences and workshops

In order to achieve the maximum impact of the Action results and to encourage the involvement of the stakeholders, the members of the Action in collaboration with the Action Core Group will spread information about the NanoSpace network in major relevant conferences and workshops. For example, during the first year three major conferences were targeted: The International Astronomical Union Symposium #384 on Planetary Nebulae, the Carbon Nanoscience and Nanotechnology (NanoteC23) and the 30th general conference of the Condensed Matter Division (CMD) of the European Physical Society (CMD30-FisMat23). Another relevant conferences and workshops will be identified during the Action's lifetime.

4.6 Promoting dissemination in the media

Media is known to be an effective way to reach not only stakeholders, but also the public. The members of the Action will seek opportunities to publish popular science articles about the Action results in local and European journals. Links to these publications will be included both in the Action biannual newsletter as well as on the website.

Also, the Action will encourage and promote the creation of high-visibility on-line videos. Such short NanoSpace videos, as developed (e.g. by external experts with the help of Action members) for different target audiences (scientists, general public, etc.) will be available in the Action website and deposited to YouTube.

4.7 Promoting dissemination through Virtual Reality Tools

The Action will encourage the use of STSM for exchange of best practise and to bring together expertise to develop new interactive activities to engage the public, such as the development of virtual reality approaches to allow children to immerse themselves in the interstellar medium (ISM), or computer games based on computational activities within the Action that can allow children to manipulate molecules and explore their properties with particular reference to astrochemistry.

These tools will be developed and populated with NanoSpace data, results and information, for direct use in museums, science fairs and festivals. Building on existing contacts and experience among the Action members, the Action will also explore the involvements of artists and musicians in bringing the Arts and Sciences together in novel and engaging ways.

NanoSpace is particularly well adapted for public outreach activities since much of the data is visually attractive and space science has an enduring public appeal. WG4 will try to raise additional funds for the Action outreach activities through external sponsorship.

The Action will also explore the exploitation and development of online platforms for such activities, particularly important due to the recent uncertain COVID situation.

5. FINAL REMARKS

Depending on the subject and the opportunity, inter-partners publication or presentation will be encouraged by the MC. Action reports and events are scheduled as outlined in the MoU. The MC will evaluate the progress and scientific reports issued from the WGs and the Science Communication plan will be adapted by the MC if necessary.