

NCIP VaVal KnowledgeStor Case Study: European Commission (EC) Horizon project proposal management

Using the examples of “PM” (2020) and “R” (2022)

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Content approved in June 2022 by individuals involved in the case study.

Expected audiences: Early career researchers (ECRs) and other researchers organizing and writing their first European-level proposals. Staff working in support services to researchers writing proposals.

Keywords: early career researchers, EU research funding, Horizon Europe project management



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Summary

What?

This document summarizes the Horizon Europe program, at a high level, as well as work on two proposals for European Commission (EC) Horizon grants¹, the *PM* project in two attempts (project coordinator, a Berlin partner, with PI “H” (with the author of this document leading all efforts; PM was submitted twice in 2020, once as a 10-page proposal and later as a full 70-page proposal; second attempt highly-scored [14.5/15) but not selected to be funded) and “R”, just submitted in April 2022, not funded in June 2022 (CTU in Prague, project coordinator/PI). PM was submitted under the HORIZON2020 funding regime, and R was submitted under the successor program,

Horizon Europe, which will run through 2027, is the latest European R&D funding program, It was designed to focus European scientific efforts in this period around several key themes: ***Excellent Science, Global Challenges and European Industrial Competitiveness, and Innovative Europe***. The following few pages provide highlights from the official Horizon Europe documentation. It is important for all those who are interested in applying for European funding to **understand the broader political context** about how funding decision-making happens, because this context is directly **relevant to the writing of the “Impact” and “Dissemination/Communication” parts of research proposals**, with which many researchers struggle, since these sections are evaluated from the perspective of “wise public investments” into science, with the results showing **value to the taxpayers** behind the scenes who, in the end, pay for the research.

https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en

*“Horizon Europe is the **EU’s key funding programme for research and innovation** with a [budget of €95.5 billion](#).”*

¹ Project and other names have been made anonymous in this document.

It tackles climate change, helps to achieve the [UN's Sustainable Development Goals](#) and boosts the EU's competitiveness and growth.

The programme facilitates collaboration and strengthens the impact of research and innovation in developing, supporting and implementing EU policies while tackling global challenges. It supports creating and better dispersing of excellent knowledge and technologies.

It creates jobs, fully engages the EU's talent pool, boosts economic growth, promotes industrial competitiveness and optimises investment impact within a strengthened European Research Area.”

As noted above, Horizon Europe has **three themes/pillars**, which funding mechanisms available for each pillar. Details (i.e., links) to information about each program are available from the main Horizon Europe webpage, which is the link directly above. Below are **important highlights** useful for those learning about European funding for the first time.

Pillar 1: Excellent Science includes:

- The European Research Council (ERC) and its offerings (including grants for researchers at different stages of their careers)
- Marie Skłodowska-Curie Actions (doctoral and postdoctoral training)
- Research Infrastructures (facilities that provide resources and services for the research communities such as major equipment or sets of instruments; knowledge-related facilities such as collections, archives or scientific data infrastructures; computing systems; communication networks)

Pillar 2: Global Challenges and European Industrial Competitiveness includes “research clusters” (with calls for proposals; the R project, for example, was submitted as part of the “Culture, Creativity and Inclusive Society” cluster) in:

- Health
- Culture, Creativity and Inclusive Society
- Civil Security for Society
- Digital, Industry and Space
- Climate, Energy and Mobility
- Food, Bioeconomy, Natural Resources, Agriculture and Environment

- Non-nuclear direct actions of the Joint Research Centre

Pillar 3: Innovative Europe funds are distributed according to this structure:

- European Innovation Council (EIC; promotes breakthrough innovation with scale-up potential at the global level. It focuses mainly on breakthrough, deeptech and disruptive innovation, targeting especially market-creating innovation. Includes Pathfinder, Transition, and Accelerator funding)
- European Innovation Ecosystems (EIE; aims to create more connected and efficient innovation ecosystems to support the scaling of companies, encourage innovation and stimulate cooperation among national, regional and local innovation actors)
- The European Institute of Innovation and Technology (EIT; is an independent EU body. It increases Europe's ability to innovate by nurturing entrepreneurial talent and supporting new ideas)

Pillar 2 is where thematically-based research opportunities for university PIs across Europe will arise over the next few years, with detailed calls for proposals released under the auspices of each cluster.

These clusters were selected for Horizon Europe as part of a strategic planning process outlined in detail at: https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/strategic-plan_en, with primary goals until 2024 being:

- *“promoting an open strategic autonomy by leading the development of key digital, enabling and emerging technologies, sectors and value chains to accelerate and steer the digital and green transitions through human-centred technologies and innovations*
- *restoring Europe's ecosystems and biodiversity, and managing sustainably natural resources to ensure food security and a clean and healthy environment*
- *making Europe the first digitally enabled circular, climate-neutral and sustainable economy through the transformation of its mobility, energy, construction and production systems*

- *creating a more resilient, inclusive and democratic European society, prepared and responsive to threats and disasters, addressing inequalities and providing high-quality health care, and empowering all citizens to act **in the green and digital transitions***

To state once again, it is important to understand that Horizon projects are intended to fit into the context of overarching EU goals. This can be challenging for researchers not familiar with EU goals to wrap their heads around, because these goals are often very different from national and regional goals and can reflect a **different cultural codex** than researchers have encountered before (e.g., in terms of gender inclusion, open science philosophies, ways of viewing and interpreting environmental problematics, ethics, and related issues), sometimes leading to **difficulty formulating a proposal introduction and the very important (in terms of proposal review) impact statement.** However, in the author's experience, once a researcher has, through the process of reading EU proposal requirements and participating in writing a proposal for the first time, seen what this can mean, they can more-easily think about **ways to "frame" their research towards the context of larger societal impact**, though it still may be difficult for them to understand why such impact is so important at the EU level (i.e., how EU-funded projects have a higher set of transparency and other related expectations than national projects) and for them to write the introduction to the project as well as the impact statement and related dissemination/communication sections of a proposal. Oftentimes, in this author's experience, **the scientific parts of the proposal are the easiest parts to conceive of and to write, if the scientific idea is sound. Framing the proposal requires contemplation and additional societal research** (which, in fact, is recommended by the EU in Horizon Europe in the official *Horizon Europe (HORIZON) Programme Guide* from April 2022 (the most recent version at time of writing this report), https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf (starting p. 19, Section 10, Social Sciences and the Humanities [SSH])). The author is mentioning this specifically because **even R&D proposals will be evaluated with SSH components in mind under the Horizon Europe regime:**

“SSH in the R&I chain

Under Horizon Europe, the effective integration of social SSH in all clusters, including all Missions and European partnerships, is a principle throughout the programme. The aim of SSH integration is to improve our assessment of and response to complex societal issues. Thus, SSH are a key constituent of research and innovation, especially regarding the twin green and digital transitions....

Therefore, where relevant, the R&I chain should include contributions from SSH disciplines such as sociology, economics, psychology, political science, history, cultural sciences or/and the arts.

Where relevant, applicants are also encouraged to include contributions from the SSH in a project proposal under any call, even if it is not SSH-flagged.

Evaluation

When evaluating a proposal submitted to a topic that was 'flagged' for SSH contributions, experts will first refer to the topic description to identify what the expected contributions are. With this in mind, they will evaluate the contributions from SSH in the proposal, according to the criteria.

Experts should be mindful that a successful contribution from SSH, depending on the topic, may require collaboration among various SSH disciplines and/or between SSH and non-SSH disciplines.

A proposal without a sufficient contribution/integration of SSH research and competences will receive a lower evaluation score.

Even if proposals do not belong to a topic 'flagged' for SSH contributions, they may contain contributions from the SSH disciplines, which should be evaluated with other relevant aspects of the proposal.”

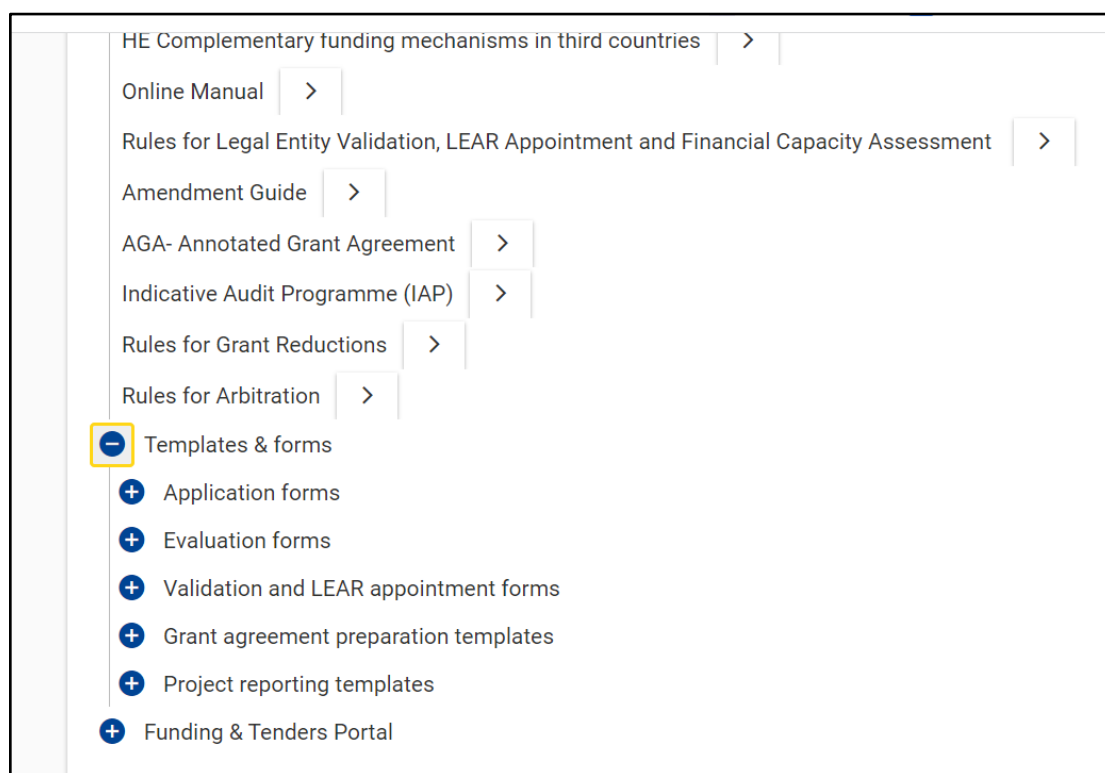
The author recommends that all **potential proposal writers become familiar with the Horizon Europe programme guide** before beginning to write a proposal, and she in fact re-reads these instructions prior to engagement in any potential project (including assisting with Marie-Curie proposals). While various websites and video tutorials exist for assisting with Horizon Europe

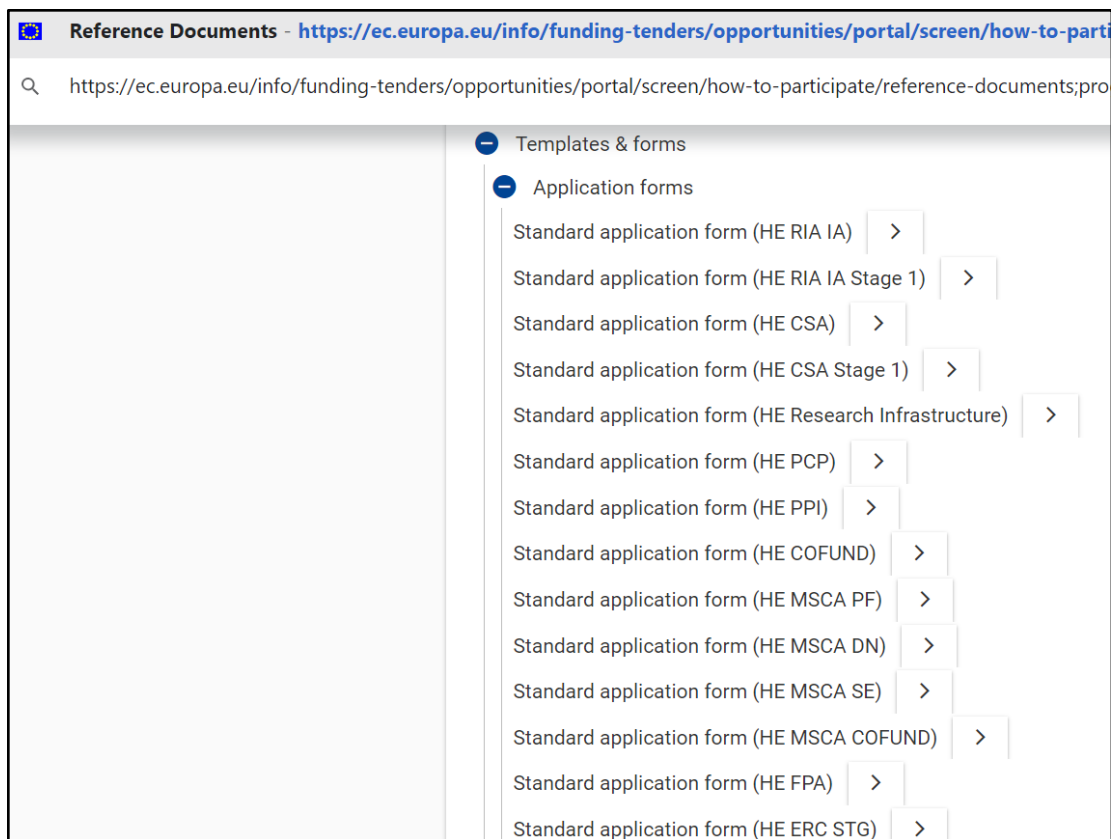
writing, in her opinion, there is **no substitute for familiarizing oneself with all the documentation**, including proposal templates, before leading a proposal writing team.

Here is the official Horizon Europe template, with instructions: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/temp-form/af/af_he-ria-ia_en.pdf

Here is the official Reference Documents page in the Funding & Tenders portal, which includes templates for each specific program in addition to other items, which I will list after the screenshot below:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/how-to-participate/reference-documents;programCode=HORIZON>





Some Research and Innovation Actions (RIA) have **two-stage calls for proposals**, meaning a short proposal is submitted, with then a small group of potential grantees invited to submit a full proposal. This is what is meant in the “Templates & Forms” area of the Reference Documents library with the “Stage 1” template. With PM, we did first apply for a two-stage call, testing our coalition. While we were not called to submit a full proposal, we used a modified version of our initial idea, having formed a coalition that worked well together, for another **one-stage call** (also not funded).

Reference Documents available (follow link above for details and the templates themselves) include:

- Legislation
- Work programmes & call documents
- Grant agreements & contracts (relevant when proposals are funded/successful)
- Simplified cost decisions (descriptions of unit costs for different funding streams)
- Guidance (background information, list of eligible countries, Rules for Legal Entity Verification, special rules)

- Templates & Forms (most commonly used at the proposal stage; see screenshots above)
- Funding & Tenders Portal (just statements about portal privacy and terms)

The following section discusses the “who/where/why/when” of Horizon Europe proposals, as a short, scannable overview for the interested reader.

Who can apply?

Legal entities from the EU and associated countries can participate in Horizon Europe calls.

All entities need to be registered in the EU’s Funding & Tenders system,

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-search;callCode=null;freeTextSearchKeyword=;matchWholeText=true;typeCodes=1;statusCode=s=31094501,31094502;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=sortStatus;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState> (this link points to Horizon Europe calls for proposals currently open and soon to be released as of time of writing this document).

Details for registering an organization are available at: <https://webgate.ec.europa.eu/funding-tenders-opportunities/pages/viewpage.action?pagelId=1867802>

“If you want to submit a proposal, your organisation needs to be registered in the Portal [Participant Register](#) and have a 9-digit Participant Identification Code (PIC).

If your **proposal** is **successful**, you will receive a notification and be asked to:

- provide supporting documents to confirm the administrative and legal information declared during the registration ([legal entity validation](#))
- appoint a Legal Entity Appointed Representative ([LEAR appointment](#))
- provide supporting documents to verify the financial capacity of your organisation ([financial capacity assessment](#), if applicable)
- validate the bank account for payments ([bank account validation](#), only for coordinators).”

For a Horizon project, a **coalition of institutions typically “bands together” to create and submit a proposal**. Coalition sizes vary, depending on the type of project and funding available. Some projects have **advisory boards** (not active in the project, but who attend general assembly meetings) and formalized **“letters of support”** from organizations who voice their support for a particular project. This is particularly helpful for calls requiring very broad “reach”; difficult to prove before starting a project, but an initial “supporter” network can illustrate to review panels that **a stakeholder network has already been created and can be built upon during the course of the project**, if it is funded.

A proposal discussing Horizon Europe is available for download in 22 languages, including Czech, at: https://ec.europa.eu/info/files/horizon-europe-investing-shape-our-future_en

- Slide 35 shows how Horizon Europe fits within the “universe” of other European Union funding programs.

Where to apply?

The **Funding & Tenders portal** is where calls are announced, where proposals are submitted, and where decision letters are delivered to project proposal participants.

Typically, each consortium, while writing their proposal, finds it necessary to **create a supplementary group collaborative space**. Despite its problems with dealing with tables, Google Docs is typically used for collaborative writing, with a proposal being downloaded and edited in Microsoft Word due to its ability to handle tables properly, with a PDF uploaded into the system for calls requiring a Part B (usually the full proposal), with Part A (coalition partner details) being an online form managed directly in the Funding & Tenders portal. While no one appears to be satisfied with the use of both Google Docs and Word, at the time of writing this report, no researcher I know has found a better way to do this, because the collaborative features in Google Docs are (at the time of writing this report) better than in other tools. The author monitors several high-profile researchers on Twitter in order to monitor this situation (i.e., to see if someone finds a better way to manage this process). SK used Basecamp as an additional project management layer for PM; reasons for doing this will be outlined below. Twitter saves time for the author in terms of enabling her to monitor the overall European funding situation and general calls for proposal without having to go to individual program

webpages again and again. The author thus **utilizes Twitter, scanning it once or twice a week (only) as a professional information gathering tool** rather than a traditional social media conversation space. This monitoring also **helps the author in understanding changes in societal trends and topics**.

Useful Twitter resources related to Horizon Europe/European-level research (with one US addition, the National Science Foundation, useful for monitoring trends) with notes about why the author follows them together with screenshots of them for readers to easily see what kind of information is presented by the organizations.

European Research Council (ERC): to monitor ERC trends and calls

https://twitter.com/ERC_Research



European Commission (EC): to “feel the pulse” of the EC

https://twitter.com/EU_Commission



European Commission  

44.5K Tweets





Following

European Commission  

@EU_Commission

News and information from the European Commission. Social media and data protection policy: europa.eu/!MnfFmT

 Brussels, Belgium  ec.europa.eu/eu-stands-with...  Born May 9

 Joined June 2010

654 Following 1.7M Followers

 Followed by Researcher Mental Health Observatory COST Action, Chris Muglia, and 50 others you follow

Tweets

Tweets & replies

Media

Likes

 Pinned Tweet



European Commission   @EU_Commission · 16h

The EU stands in full solidarity with the Afghan people and will provide assistance to those who have lost their loved ones, their homes and need aid.



Horizon Magazine: to monitor what kind of research is funded under Horizon

<https://twitter.com/HorizonMagEU>

stephanie.krueger x | My Drive - Google Drive x | NCIP case study: EC Horiz x | Horizon Magazine (@HorizonMagEU) x

twitter.com/HorizonMagEU

National Libr... NTK Národní technická... ea W Science and Civilisa... a Suchergebnis auf A... M Jan Zeman Calendar

Horizon Magazine
5,663 Tweets Following

Horizon Magazine
@HorizonMagEU

The EU Research & Innovation Magazine.

Sign up for our weekly newsletter here: europa.eu/!YwKVkH

European Union horizon-magazine.eu Joined July 2015

1,843 Following 14.8K Followers

Followed by Chris Muglia, European Fund Management Consulting, and 19 others you follow

Tweets Tweets & replies Media Likes

Pinned Tweet

Horizon Magazine @HorizonMagEU · Jun 6 ...

How will the EU transition to a clean energy system based on renewables and low-emission energy generation by 2050?

Follow June's [#MonthlyFocus](#) to learn everything about Europe's energy future.

Discover more bit.ly/3MnHKvM

EU Science & Innovation: to see funding trends across disciplines

<https://twitter.com/EUScienceInnov>

Twitter browser interface showing the profile of **EUScience&Innovation** (@EUScienceInnov). The profile is verified and has 38.2K Tweets. The bio states: "Official account of DG Research & Innovation @EU_Commission, managing @HorizonEU & implementing Commissioner @GabrielMariya strategy. Follow also @JEPaquetEU". The location is "European Union" with a link to ec.europa.eu/info/research-... and the account was joined in "September 2010". It has 741 Following and 117.1K Followers. A recent tweet from 22m ago reads: "#DYK that about 30-50% of prominent cultural collections in the EU are digitised with standards & methodologies that aren't uniform, traceable & safe? The newly announced Cloud for #CulturalHeritage aims at a better preservation in the digital age! europa.eu/!Prv9PH".

<https://twitter.com/HorizonEU>

The project National Centre for Information Support of Research, Development and Innovation with the identification code MS2101 is implemented with the support of the Ministry of Education, Youth and Sports. **Page 16**

EU Green Research: to better understand what the EU considers to be “green” and to learn about new calls on topics across disciplines, since this is a main theme in Horizon Europe <https://twitter.com/EUgreenresearch>

My Drive - Google | NCIP case study: EC | EU green research | How do I start a n...

ter.com/EUgreenresearch

NTK Národní technická... ea Science and Civilisa... Suchergebnis auf A... Jan Zeman Calendar

← **EU green research** ✓
15.3K Tweets Following

EU green research ✓
@EUgreenresearch

We fund [#H2020](#) [#HorizonEU](#) research & innovation for a greener Europe and a healthy planet 🌍 for all | 🇪🇺 Official account by [@EU_Commission](#) [@REA_research](#)


📍 European Union 🌐 rea.ec.europa.eu 📅 Joined April 2013

872 Following 28.1K Followers

Followed by Chris Muglia, Ruralization_H2020, and 27 others you follow

Tweets Tweets & replies Media Likes

📌 Pinned Tweet

 **EU green research** ✓ @EUgreenresearch · Jun 8 ...

[#HorizonEU](#) is looking for innovative solutions to improve [#SoilHealth](#) with:


- ▼ [#food](#) processing residues
- ▼ methods for decontamination and reuse of [#land](#) in urban and rural areas
- ▼ bio-waste


Do you know how to [#CleanSoilEU](#) ?

📅 Apply by 27/09 europa.eu/!hMndmG

EU Environmental Agency: same as above


<https://twitter.com/EUEnvironment>





EU EnvironmentAgency 

Following

9,267 Tweets



EU EnvironmentAgency  @EUEnvironment · 1h

 **UPDATED** [#EEAIndicator](#) Global mean near-surface [#temperature](#) between 2012 - 2021 was up to 1.14°C warmer than the pre-industrial level, which makes it the warmest decade on record.[#climatechange](#)


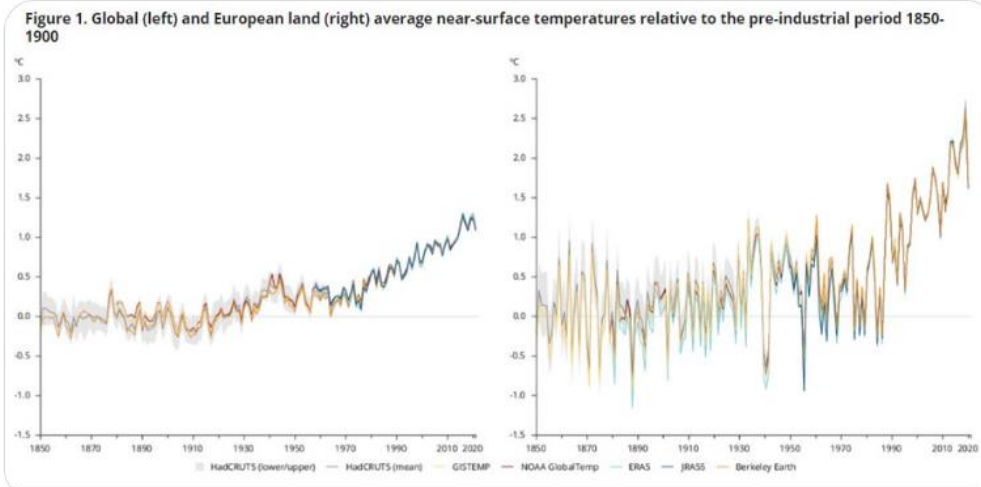


More info here  eea.europa.eu/ims/global-and...


Figure 1. Global (left) and European land (right) average near-surface temperatures relative to the pre-industrial period 1850-1900



1 6 3

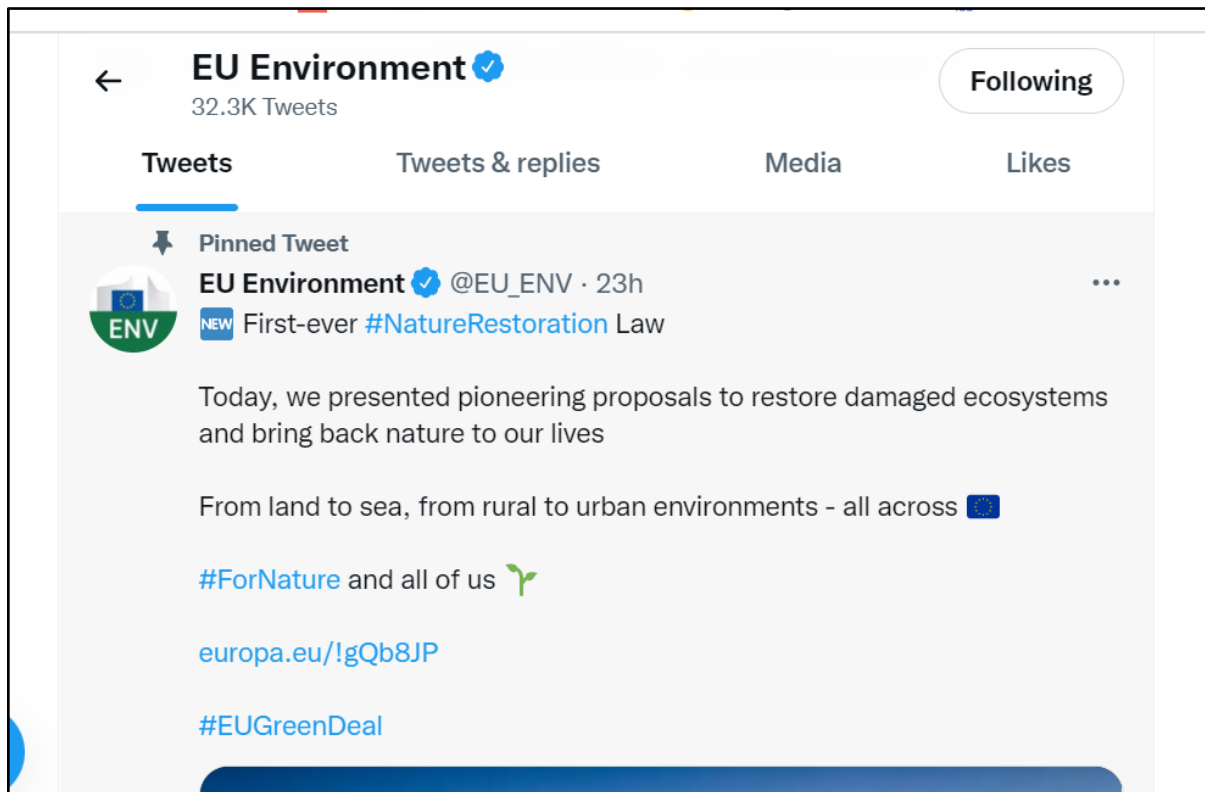


EU EnvironmentAgency  @EUEnvironment · 23h

The  [#NatureRestoration](#) proposals out today are pioneering and aim to restore Europe's nature by 2050 and halve pesticide use by 2020.

EU Environment: to understand the Europe Green Deal

https://twitter.com/EU_ENV



<https://twitter.com/EUClimateAction>



EU Agriculture: to monitor technologies/trends that may require R&D solutions

<https://twitter.com/EUAgri>



EU Agriculture  

12.8K Tweets

Following

EU Agriculture  
@EUAgri

Food, farming and the future of agriculture  Sowing the seeds of EU Agriculture & Rural Development policy  [#NewCAP](#) 

 Public & Social Services  europa.eu/!Gm77XX  Joined October 2014

1,137 Following 89.9K Followers

 Followed by Ruralization_H2020, RURITAGE, and 25 others you follow

Tweets

Tweets & replies

Media

Likes

 Pinned Tweet



EU Agriculture   @EUAgri · Jun 21

Today we publish the results of the latest [#Eurobarometer](#) survey on the CAP.

Almost half of Europeans believe that securing a stable supply of food in the EU at all times should be a main objective of the CAP, +6 percentage points compared to 2020.

More: europa.eu/!JnP9b6



National Science Foundation (NSF/US): to see what NSF is funding

<https://twitter.com/NSF>



National Science Foundation 

21.6K Tweets

Following



@NSF

Explore [#NSFfunded](#) research that is transforming the world. / Social media policy: bit.ly/smpnsf

 Science & Technology

 Alexandria, VA

 nsf.gov

 Joined September 2008

135 Following

1.2M Followers



Followed by Chris Muglia, Mo Eydani, and 22 others you follow

Tweets

Tweets & replies

Media

Likes



National Science Foundation 

@NSF · 17h



[#WeDontTalkAboutBruno](#), but we should!

“Understanding how past changes in climate drove interactions between organisms is critical to predicting how current changes will create new admixtures, increase disease transmission, or impact natural resources or society.” 



UC Santa Cruz 

@ucsc · Jun 21

This is a 100,000-year-old polar bear skull named Bruno. Scientists at UC Santa Cruz analyzed DNA from Bruno's skull and found out some surprising news for brown bears today - they all have some polar bear

Marie Curie Alumni: to monitor former Marie Curie grantee topics

https://twitter.com/Mariecurie_alum



Why apply for EU funding?

Horizon funding is **supranational**; it enables researchers to collaborate with other researchers in their field (and, as was the case in R, researchers outside their areas of expertise), focusing on a problem area identified in the call for proposals. In Horizon Europe, many of these topics are interdisciplinary in nature, and their investigation may be difficult to fund at the national level, since national panels (as is the case in the Czech Republic) are often set up according to discipline.

In committing time to the PM and R proposals, our aims (with the author representing the CTU in Prague's aims loosely here) were to:

- **Find long-term funding** for doctoral students and postdoctoral researchers already engaged in other projects whose funding was running out or was not yet existent. One researcher engaged in the project, for example, will not be funded at the postdoctoral level if a funding stream for their work is not secured
- Learn more about EU-level projects so that CTU in Prague can **become more competitive** in obtaining European funding, having already established a competitive Czech-level funding set of strategies
- Provide the possibility for doctoral students and postdoctoral researchers to establish an **international collaboration network** and to also **illustrate how such networks are created**
- Open up potentially **more “fun” and/or meaningful topical areas** to doctoral students and postdoctoral researchers, with these projects not just focused on applied mathematics and software development (but both proposals did include disciplinary-based components).

When to apply?

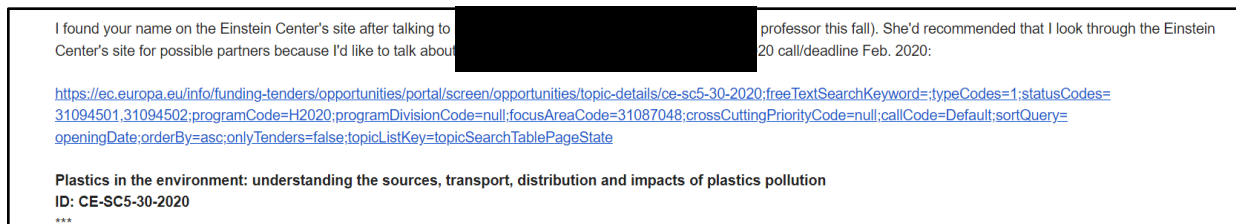
Each call for proposals has a **different deadline**, which is announced in the Funding & Tenders portal.

But: start as soon as possible

Because of the need to form a coalition for most of the research (cluster) kinds of initiatives, the author recommends **working on an initial proposal idea far in advance of trying to build a coalition and rushing to submit a proposal**. For PM, our first attempt was rushed, with the coalition members, identified by the author, being approached by her after, together with a CTU in Prague colleague, drafting a very rough 1-page proposal idea. The author located potential coalition members through her personal network of colleagues and by “cold” emailing prominent researchers in the area of investigation. This work took **approximately one month**, and several video meetings took place throughout this process to discuss the idea with colleagues and to determine our “match” for attempting this kind of project. Ideally, a coalition would be built much

earlier in order to refine the proposal idea, identify the best appropriate coalition partners, and hold budget discussion meetings far in advance of proposal submission. Due to day-to-day working realities, this **advance planning often does not happen, and coalitions are often formed in a rushed manner, leading to stress for the core proposal submission team** in gathering content from potential partners and holding important budget discussions to close to the submission deadline. Additionally, potential partners not experienced with EU grant proposal writing **require training in the midst of proposal writing**, which is not easy (though not impossible) to schedule and perform when proposal submission deadlines are looming.

The following screenshot illustrates a snippet of a “cold” email to a potential partner for PM, cropped to remove identifying information of the email recipient, an early career researcher in Germany (originally from Italy) who ended up playing a key role in writing the first PM proposal attempt with the author:



For brevity, please note that through the rest of this report, the author will be identified by her initials, SK.

Notes on rushed timing, PM Attempt #1

The timeline for PM's attempt #1 was as follows:

- September/October: Discussions with colleague at CTU in Prague (“J”) regarding idea
- November: SK researches potential calls for proposals that fit the idea on the EU portal, identifying a short list for J to review and discuss. SK drafts a story idea and a one-page idea for circulation to potential partners
- December: Having identified a call with J, SK reaches out to potential coalition members and schedules video calls with them. As a follow-up, she creates a project outline based on the discussion. She then, over the end-of-year holidays, she writes a first draft for the proposal idea (10 pages) for the project partners to review and edit
- January: Editing of the 10-page Stage 1 proposal draft in GoogleDocs. Doing this right after the end-of-year holidays (i.e., four weeks of collaborative editing after she

completed the draft before proposal submission) was not ideal. J, at this time, took on creating a project space in the Funding & Tenders portal and assumed the role of PI for purposes of the project. We had a solid idea for the project, but needed to refine the concept to better in this final month in terms of scientific details SK could not create to match the call for proposals. This led to a rush leading up to the submission deadline.

- February: Project proposal submission by J.
- May: Notification about funding decision and scoring.

SK will provide more details about this case below.

To reiterate: **finding appropriate coalition partners (and advisory board members and other supporters, for some proposals) takes time, much longer than many first-time proposal writers think it will.** Some partners are not experienced with EU project proposal writing, so it is good to have time to educate them prior to the rush to meet deadlines. In PM, SK did a lot of this work, together with her senior colleague in Berlin, PI “H”, for the second attempt, and project management, in terms of process and coalition (mostly built already from the prior attempt), went quite smoothly for the second attempt proposal, despite numerous partners and supporters for SK to manage. While the process went well, communication with coalition members was constant and time-consuming for SK. She additionally identified researchers she would like to work with in advance, approaching them with “cold” emails about the initial idea, sometimes being sent to other possible partners, having video calls with them, and so on. This kind of communication, in order to do it professionally and properly, takes time, and there is no way around it. For the R project, the core coalition had difficulties finding one partner for a certain aspect of the call, and also one core coalition partner did not confirm their participation until very late in the proposal writing timeline. This made it unclear, in fact, whether the proposal would be able to be submitted or not on time, right up to two weeks prior to the submission deadline, and this led to difficult conversations with some partners about meeting deadlines and so on. It also made **budget conversations very rushed; these conversations are also very important and can lead to some negotiation because funding amounts can be sensitive to some partners. The way in which Horizon proposal budgets are structured requires a clear definition of work packages and deliverables and well as the final set of partners so that the budget can be calculated in the correct way and included in the proposal. Without this, it is impossible to submit an EU proposal.**

Details, case study projects

(PM, idea created by SK and J, CTU in Prague)

Evolution of the idea

PM was the brainchild of SK and J, both of whom love spending time in the water, swimming or surfing. They noticed that in recent years, the amount of plastic waste encountered both on beaches and in the water (in Italy and Croatia) has notably increased. Funding for one of J's projects, related to images, was coming to an end, and we were exploring options for funding the project in the next stages of its development. We were wondering if there would be a way to track the movement of plastic from land to the sea, including using drones. J asked SK to investigate funding possibilities on the Funding & Tenders portal, and she identified one call, involving plastics-related data, that appeared to be a good match for our idea.

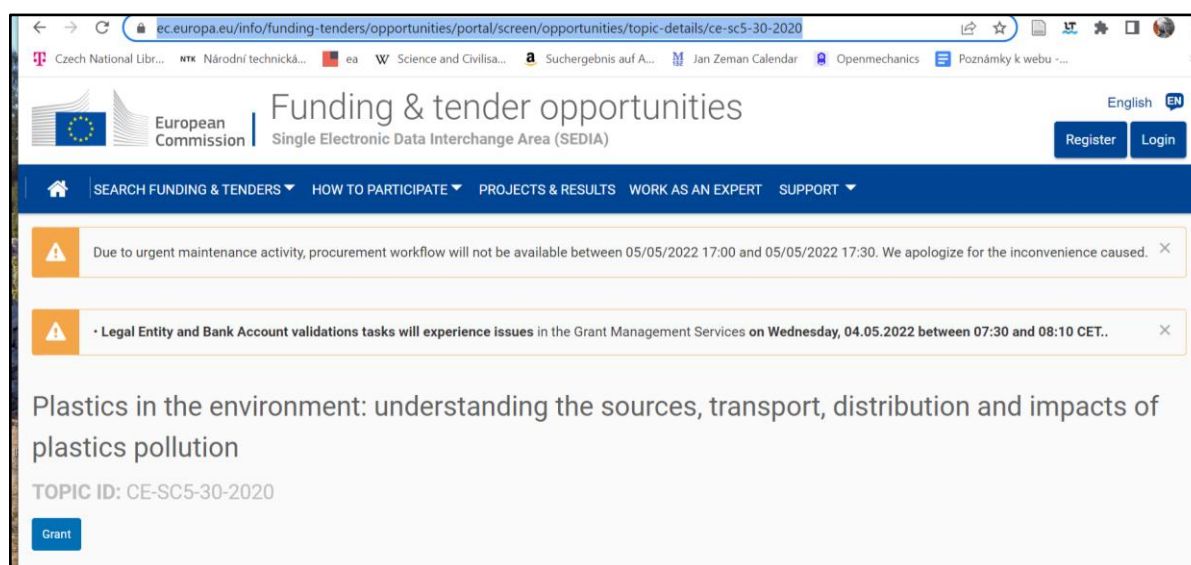
The call SK selected was "Plastics in the environment: understanding the sources, transport, distribution and impacts of plastics pollution TOPIC ID: CE-SC5-30-2020"

(<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/ce-sc5-30-2020>). Below are screenshots of this call so that SK can discuss and analyze for readers the various aspects of a call.

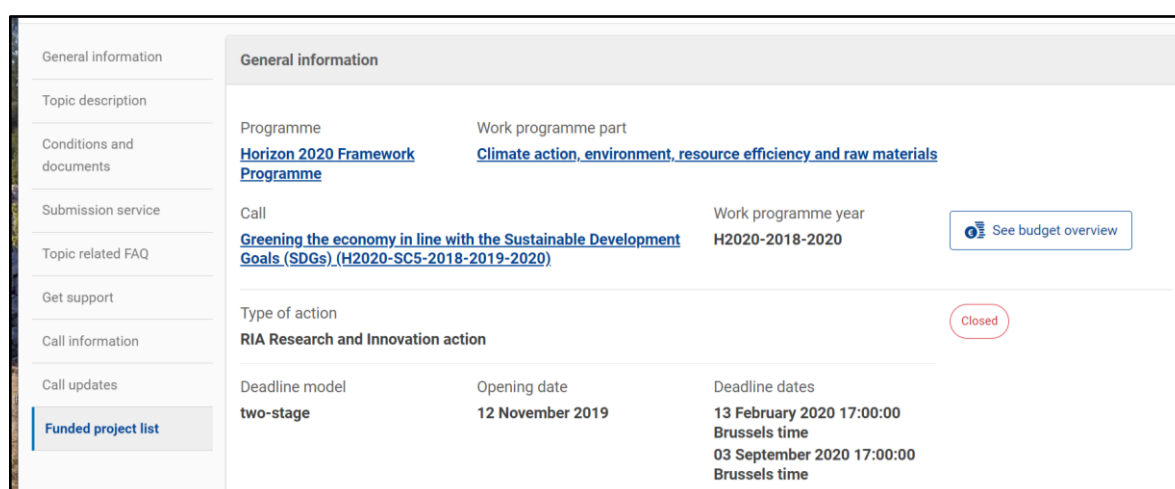
Reading the full call text is crucial to considering the project idea, possible coalition members, and (if the project is not funded), learning about what project(s) actually was(were) funded in the end. While this advice seems obvious, in recent experience, SK has noticed that **many researchers surprisingly neglect reading the call for proposal text in detail, leading to wasted meetings and time in terms of drafting a properly-formed proposal that addresses all aspects of the call** (often because aspects of the call may involve conducting some research beyond the area of expertise of a coalition member).

Screenshots below are followed by their description and SK notes.


Anatomy of a project call using CE-SC5-30-2020 as an example



Here you can see the title of the call. You can also see the topic ID number. This information is used later in the project proposal itself, and it is needed for sharing information about the call with potential coalition partners who wish to read it in full detail.



General information about the call is provided next. Most importantly here is the “deadline model”; in this case, one can see it was a two-stage call, meaning a shorter proposal was used for screening in Stage 1, with only selected projects being asked to submit a detailed Stage 2 proposal. One also sees the date the call opened and its deadlines for Stage 1 and Stage 2.

General information	Topic description
Topic description	Specific Challenge:
Conditions and documents	To date, efforts to understand the sources, transport and distribution of plastic pollution have mainly focused on the marine environmental compartment. However, it is widely acknowledged that the majority of marine plastic litter originates from land-based sources and that plastic litter of all sizes is prevalent in all environmental compartments (freshwater, marine, terrestrial, biological and atmospheric). To develop long-term mitigation solutions, a thorough understanding of the main sources and transport mechanisms of plastics into and through the environment is needed. This needs to be combined with determination of the quantity and composition, an understanding of plastic degradation processes in different environmental compartments and an assessment of plastics impacts on key species and ecosystems. In order to better support the identification of exposed ecosystems and to help decision-makers in reducing exposures, a wider effort bringing together experiences from different disciplines, such as hydrology, oceanography, limnology, monitoring, modelling, chemistry, toxicology, and risk assessments, and from relevant stakeholders, is needed.
Submission service	Scope:
Topic related FAQ	The aim of this action is to gain a better understanding on the sources, transport, distribution and impact of plastic pollution. The main areas for research activities should include:
Get support	a) Sources of plastic pollution to different environmental compartments;
Call information	b) Transport and pathways of plastics into and through different environmental compartments;
Call updates	c) Occurrence and distribution of plastic across all environmental compartments;
Funded project list	d) Accumulation, including in soil and the food chain;
 Go back	

The “specific challenge” is the detailed problem the call for proposals should address. It provides notes about the disciplines to be included in a proposal coalition, and the “scope” provides a list of areas any proposed solution should address.

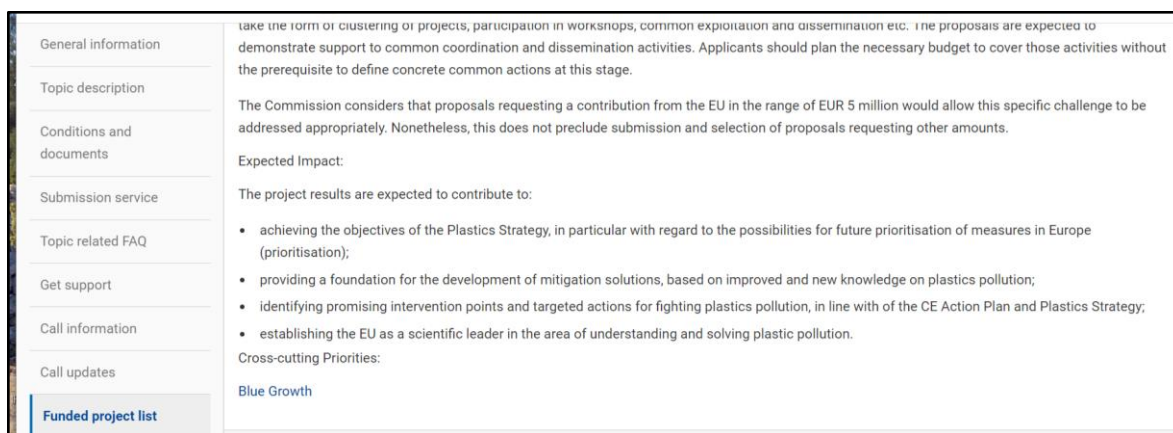
General information	e) Degradation mechanisms for different plastic materials under range of environmentally conditions;
Topic description	f) Physical and chemical effects of plastic pollution on different biotic and abiotic environments.
Conditions and documents	This action should aim to determine of the main entry routes of plastics into the different environmental compartments (e.g. marine, surface and groundwaters, soils and air, as well as potential transfers between these compartments. Furthermore, it should investigate the fate and transport behaviour of plastics with the goal of improving our current understanding of exposure within biotic and abiotic compartments. This should include determination of the spatial distribution and variability of plastics from its sources into rivers, lakes, estuaries and coastal areas and the open oceans. The research should contribute to the identification of the entry pathways, transport and accumulation within the ecosystems, including the potential for actual accumulations in the food chain (beyond presence in digestive systems).
Submission service	Proposals should address different ecosystems, geographical areas and spatial scales, including the main environmental media such as marine, surface and ground-water, soils, air and biota. This would require case studies in selected areas, across Europe considering the marine water column and the seabed as well as surface water and terrestrial ecosystems, and comparative data on the contribution of point and diffuse sources and transport pathways to the scale of plastic pollution. To enhance understanding of the processes that drive the transport and fate of plastics in different ecosystems and on different temporal-spatial scales, computational models validated with empirical data, that predict hotspots and sinks of plastics would be also needed. Proposals should also enhance the current understanding of plastic degradation in the environment, including the characterisation of leaching chemicals and plastic degradation products. When the degradation of plastics under environmental conditions cannot readily be predicted based on information available from material sciences, degradation experiments simulating realistic weathering of plastics will inform about the fragmenting process of plastic debris as well as the release of chemicals. Research could cover nano-, micro-, or macro-plastics.
Topic related FAQ	Cooperation with existing national and EU funded activities, such as the JPI Oceans initiative, is encouraged.
Get support	This topic is in support of the European Strategy for Plastics in a Circular Economy. Selected projects under this topic as well as projects selected under other topics in H2020 supporting the Plastics Strategy are strongly encouraged to participate in joint activities as appropriate. These joint activities could take the form of clustering of projects, participation in workshops, common exploitation and dissemination etc. The proposals are expected to
Call information	
Call updates	
Funded project list	
 Go back	

Additional details are provided, and **proposal writers must take these into account and address every point**. The topic description becomes very important when deciding whether a call is the right fit for a project idea, and later along the road, for making sure the proposal text addresses all aspects of the call and that appropriate coalition partners are identified. It is crucial to read through the call multiple times prior to starting work on the proposal itself, particularly if one is writing the proposal and describing the idea to potential coalition members.

This particular call for proposals mentions **specific initiatives, which should be referenced in the final proposal**. If a researcher is unfamiliar with the terms mentioned, they should look them up and become familiar with them. In this case, things to become familiar with were:

- JPI Oceans initiative: <https://www.jpi-oceans.eu/en>
- European Strategy for Plastics: https://environment.ec.europa.eu/strategy/plastics-strategy_en

A proposal's introduction and impact sections are typically places where such details can be discussed (in, for example, tabular form, with the ties to such initiatives noted, including specific details).



Here, the anticipated budget for the project proposal is outlined together with a guide to the kind of impact the proposal should address. The “impact” section of the proposal must ideally address every aspect mentioned.

An additional priority is also reference here, Blue Growth (<https://s3platform.jrc.ec.europa.eu/blue-growth>). Proposal writers must be familiar with this, at least superficially.



Notable about this screenshot is the specific **high-level emphasis on the United National Sustainable Development Goals (SDGs)**, which are still not readily understood by many researchers and coalition partners, in SK's recent experience.

There are 17 SDGs, and familiarity with them will strengthen proposal competitiveness in the Horizon Europe rounds since they tie into the overarching Horizon Europe themes. Read more at: <https://www.undp.org/sustainable-development-goals>; summary of the purpose of the goals from this website is provided directly below together with a listing of the goals themselves. Visit the website for more details about each goal.

“The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity.

The 17 SDGs are integrated—they recognize that action in one area will affect outcomes in others, and that development must balance social, economic and environmental sustainability.

Countries have committed to prioritize progress for those who're furthest behind. The SDGs are designed to end poverty, hunger, AIDS, and discrimination against women and girls.

The creativity, knowhow, technology and financial resources from all of society is necessary to achieve the SDGs in every context.”

The 17 SDGs:


- No poverty
- Zero hunger
- Good health and well-being
- Quality education
- Gender equality
- Clean water and sanitation
- Affordable and clean energy
- Decent work and economic growth
- Industry, innovation, and infrastructure
- Reduced inequalities
- Sustainable cities and communities
- Responsible consumption and production
- Climate action
- Life below water
- Life on land
- Peace, justice, and strong institutions
- Partnerships for the goals

Furthermore, this section of the call for proposals specifically refers to the EU's Circular Economy Action Plan, and thus, researchers should be at least superficially aware of this plan, since it is mentioned in many Horizon Europe calls for proposals. This link provides a brief summary of the plan, with an additional link to the plan itself:

<https://ellenmacarthurfoundation.org/circular-examples/the-eus-circular-economy-action-plan>

The Habitat III Urban Agenda is also a reference, and those interested in its overarching concepts should refer to: <https://habitat3.org/the-new-urban-agenda/>.

“The New Urban Agenda represents a shared vision for a better and more sustainable future. If well-planned and well-managed, urbanization can be a powerful tool for sustainable development for both developing and developed countries.”

General information	It should be noted that a number of topics (with "CE-" in the topic identifier) in the 'Raw Materials' section of this call also contribute to the circular economy.
Topic description	
Conditions and documents	Raw materials (topics: CE-SC5-06-2018, CE-SC5-07-2018-2019-2020, CE-SC5-08-2018-2019-2020, SC5-09-2018-2019 and SC5-10-2019-2020)
Submission service	The EU is highly dependent on raw materials that are crucial for a strong European industrial base, an essential building block of the EU's growth and competitiveness. The main aim of this part of the call will be on achieving the objectives and meeting the targets of the EIP on Raw Materials. A wide range of actions will cover the entire EU raw materials value chain, from sustainable exploration, extraction, processing to recycling. Actors from the whole EU raw materials innovation chain will be involved, including researchers, industry, end-users, public authorities and civil society.
Topic related FAQ	
Get support	
Call information	<i>In the short to medium term, innovation actions are expected to deliver pilot actions demonstrating sustainable production of primary and secondary raw materials, particularly CRM or other scarce high-tech metals. Breakthrough research concepts, as the basis of tomorrow's innovations, are also tackled through smaller, lower-TRL actions. Actions will also contribute to building the EU knowledge base of primary and secondary raw materials for solid decision making, and particularly to the further development of the EC Raw Materials Information System – RMIS[https://ec.europa.eu/jrc/en/scientific-tool/raw-materials-information-system], responding to the Circular Economy Action Plan and the objectives of the Strategic Implementation Plan of the EIP on Raw Materials. Policy-related actions aim at improving framework conditions for the sustainable development of and investment in innovative solutions in the EU. In the long term, actions should positively impact on: downstream industries' access to raw materials; employment in and competitiveness of the EU raw materials and related manufacturing industries, including SMEs; the environmental and social performance of the raw materials sector; and improved public awareness, acceptance and trust. International co-operation is encouraged in all actions. Ultimately, the actions on raw materials are expected to support Europe's endeavours to implement the Sustainable Development Goals (SDGs), notably SDG 12 'Responsible Consumption and Production'.</i>
Call updates	
Funded project list	
 Go back	

Again, **additional details are provided, which ideally should be addressed in the proposal.**
Proposal writers, prior to beginning writing, should review all the acronyms listed and think about how any of the details could be incorporated into the proposal, even if (as was the case here) ties to the actual challenge are tenuous.

Acronyms listed here can typically be found by using a search engine (e.g., a search for “crm metal” in Google).

TRL

Very important in the context of Horizon Europe proposals is the acronym “TRL”, which stands for “technology readiness level.” TRL levels are typically listed in proposals. This page, <https://enspire.science/trl-scale-horizon-europe-erc-explained/>, provides a concise TRL overview in relation to Horizon Europe:

- TRL 1 – Basic principles observed
- TRL 2 – Technology concept formulated
- TRL 3 – Experimental proof of concept
- TRL 4 – Technology validated in lab
- TRL 5 – Technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)
- TRL 6 – Technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)

- TRL 7 – System prototype demonstration in operational environment
- TRL 8 – System complete and qualified
- TRL 9 – Actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

“Horizon Europe has selected the TRL scale as an indicator to better position the requested projects in the program (as expressed in the Horizon Europe annual work programs). The TRL, as a unified scale, enables applicants and reviewers to align with the expectations of the EC in this context. For example: a higher TRL in the call text clearly means that the EC is looking for a more applicative solution in the scope of the project. Alternatively, a lower TRL in the call text indicates an expectation for a more basic research project, and so on...”

Follow the link above to read more on this crucial topic.

The screenshot shows a web interface for a Horizon Europe call topic. On the left is a vertical navigation menu with the following items: General information, Topic description, Conditions and documents, Submission service, Topic related FAQ, Get support, Call information, Call updates, **Funded project list** (highlighted in blue), and a 'Go back' link with a left-pointing arrow. The main content area on the right contains the following text:

Topics relevant to bio-based materials (e.g. wood) and the bio-economy can be also found in Societal Challenge 2 Food security, sustainable agriculture and forestry, marine, maritime and inland water research, and the bio-economy' and the Joint Undertaking for Bio-Based Industries (BBI). Innovation actions with relevance to raw materials can be found in the calls under the SPIRE PPP.

Topics in this part of the call that contribute to the focus area 'Connecting economic and environmental gains - the circular economy' (prefix 'CE') will contribute to the implementation of the EU Circular Economy Action Plan.


Water for our environment, economy and society (topics: SC5-11-2018 and SC5-12-2018)

Changes in water availability, the frequency of floods and droughts due to climate and other environmental changes, pollution trends, increased competition in water use including for industry, energy, agriculture and food production, land-use changes and increasing urbanisation all require the development and implementation of robust, smart, effective and tailored water management systems, solutions and multi-sectoral governance models in Europe and globally. The transformative potential of digital technologies can play an important role in doing so.

This part of the call supports and aims to accelerate the implementation of EU policies[[http://ec.europa.eu/environment/water/index_en.htm]] and initiatives[[e.g. EIP Water, http://ec.europa.eu/environment/water/innovationpartnership/]] relating to water, resource efficiency and water-dependent industries, while also contributing to policy relating to the Energy Union, climate action and the digital economy. Overall, actions are expected to lead in the medium term to: digital solutions for improved public- and private-sector decision-making on water-related risks, efficiency and resilience; substantial reductions in water and energy consumption; and the development of new markets for water-smart technologies and services. A further action focuses on EU-India cooperation to improve wastewater efficiency and quality of and access to drinking water in India. Ultimately, actions are expected to support Europe's endeavours to implement the Sustainable Development Goals (SDGs), particularly SDG 6 'Clean water and sanitation' and SDG 13 'Climate action'.

This screenshot (above) simply continues the further details and ties to other European initiatives, as does the one below. If you cannot read the screenshot text due to its size, simply zoom in on the text to read on the images.

General information	Innovating cities for sustainability and resilience (topics: SC5-13-2018-2019 and SC5-14-2019)
Topic description	
Conditions and documents	Most of the challenges Europe is facing today, such as climate change, water and waste management, health, social cohesion and immigration, have a strong urban dimension. However cities are also hubs of technological and social innovation, the places where capital investments, high productivity and high-skilled jobs are located. In this sense, cities not only contribute and are exposed to global challenges but they are also key players in providing solutions.
Submission service	
Topic related FAQ	<i>Actions in this part of the call have the medium-term objective of enabling cities to design and implement transition pathways to becoming inclusive, resilient, sustainable, low-carbon and resource efficient by enhancing their innovation capacity and enabling them to act as hubs of innovation. Further actions aim to strengthen the sustainability of urban areas globally, and particularly in China and CELAC countries. Ultimately, they are expected to support Europe's endeavours to implement the Sustainable Development Goals (SDGs), particularly SDG 11 'Sustainable cities and communities' and SDG 3 'Ensure healthy lives and promote well-being for all at all ages', together with the Habitat III New Urban Agenda, and the EU Urban Agenda[https://ec.europa.eu/futurium/en/urban-agenda].</i>
Get support	
Call information	
Call updates	It should be noted that topic CE-SC5-03-2018 'Demonstrating systemic urban development for circular and regenerative cities' in this call also contributes to this priority.
Funded project list	

General information	Protecting and leveraging the value of our natural and cultural assets: Earth observation (topics: SC5-15-2018 and SC5-16-2019)
Topic description	
Conditions and documents	The Commission, together with the European GEO nations, is committed to implementing GEOSS in line with the new GEO Strategic Plan 2016-2025 and to developing an approach towards GEOSS for the European region (supporting the EuroGEOSS initiative of the European GEO caucus[For information on the European GEO caucus, please see the GEO High-Level Working Group at: http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail&groupID=1781&news=1&mod_groups=1&month=09&year=2017]) that facilitates and steers national contributions while accelerating the use of GEOSS resources. At the same time, the capacity to observe the planet is evolving rapidly, leading to higher volumes of and more diverse data flows produced at European and national level by private and public operators (including from citizens).
Submission service	
Topic related FAQ	<i>Actions in this part of the call aim to capitalise on these trends, in collaboration with the Copernicus programme, to develop new mass-market applications for businesses, citizens and public authorities. Overall, actions are expected in the medium term to stimulate growth and jobs in Europe in the context of the digital economy (through open innovation) and to lead to better informed decision-making in environmental policy and management and in disaster management. Actions will also contribute to implementing EU space policy and to international agreements such as the 2030 Agenda for Sustainable Development, particularly Sustainable Development Goals (SDGs) 9 'Industry, innovation and infrastructure', 11 'Sustainable cities and communities', 13 'Climate action', 14 'Life below water' and 15 'Life on land'.</i>
Get support	
Call information	
Call updates	It should be noted that topics addressing Earth observation can also be found in other parts of the Horizon 2020 Work Programme 2018-2020, notably:
Funded project list	<ul style="list-style-type: none"> • in a dedicated part of the call 'Space 2018-2020' (H2020-SPACE-2018-2020) in the Work Programme part 'Leadership in Enabling and Industrial Technologies - Space' • certain topics in the call 'Blue Growth' (H2020-BG-2018-2020) in the Work Programme part 'Food security, sustainable agriculture and forestry, marine, maritime and inland water research and the bioeconomy' • the EIC Prize 'Early Warning for Epidemics' in the Work Programme part 'Towards the next EU Framework Programme for Research and Innovation: European Innovation Council (EIC) Pilot'.
 Go back	

Additional useful details are provided here, with more ties to European initiatives a proposal writer should look up and be aware of, as is the case with the final three detail screenshots below.

General information	Protecting and leveraging the value of our natural and cultural assets: Nature-based solutions, disaster risk reduction and natural capital accounting (topics: SC5-17-2018, SC5-18-2018)
Topic description	
Conditions and documents	Predicting earthquakes reliably and enhancing early warning capacity prior to an earthquake would enable the timely rolling out of emergency plans and actions and prevent the loss of human lives. Similarly, mainstreaming the actual value of nature into our economic transactions would fostered a wiser use and management of our natural capital and sustained biodiversity and ecosystems' productive capacity for our benefit but also for the benefit of the future generations. Actions under this section will help create economic, social and environmental resilience in our societies.
Submission service	
Topic related FAQ	<i>Actions under this section of the call aim to improve decision making, early warning, preparedness and communication among relevant actors to better cope with earthquakes through enhanced forecasting capacity. Furthermore, they aim to enhance the capacity of authorities and the private sector to better assess and value biodiversity, ecosystems and their services to enable them to incorporate and mainstream these values into their accounting and decision making frameworks. Ultimately, they are expected to support Europe's endeavours to implement the Sustainable Development Goals (SDGs), particularly SDG 3 'Ensure healthy lives and promote well-being for all at all ages', SDG 6 'Ensure availability and sustainable management of water and sanitation for all', SDG 8 'Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all', SDG 11 'Make cities and human settlements inclusive, safe, resilient and sustainable', SDG 13 'Take urgent action to combat climate change and its impacts' and SDG 15 'Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss'.</i>
Get support	
Call information	
Call updates	It should be noted that topic LC-CLA-06-2019 'Inter-relations between climate change, biodiversity and ecosystem services' in the call 'Building a low-carbon, climate resilient future: climate action in support of the Paris Agreement' also contributes to this priority.
Funded project list	

Topic description	Protecting and leveraging the value of our natural and cultural assets: Heritage alive (topics: SC5-19-2018 and SC5-20-2019)
Conditions and documents	Cultural heritage is a non-renewable, irreplaceable resource and a common good, but is frequently under threat from environmental challenges and climate change, disaster risks, neglect, decay and under-funding. It can play a crucial and catalytic role in well-being, cultural diversity, sustainable development and social cohesion and as such it needs to be protected and preserved through leveraging its innovation potential.
Submission service	
Topic related FAQ	<i>Actions in this part of the call have the medium-term objective of positioning cultural heritage at the centre of sustainable development and unlocking its potential as a strategic living resource and driver for economic growth and job creation, social cohesion and environmental sustainability. By doing so, they will also contribute to the protection and preservation of cultural and historic heritage in Europe and beyond and will mobilise investments in the sector leading to the emergence of a global market for heritage-led innovative solutions and services. Ultimately, they are expected to support Europe's endeavours to implement the Sustainable Development Goals (SDGs), particularly SDG 11 'Sustainable cities and communities' and its target of strengthening efforts to protect and safeguard the world's cultural and natural heritage.</i>
Get support	
Call information	
Call updates	It should be noted that topic 'LC-CLA-04-2018: Resilience and sustainable reconstruction of historic areas to cope with climate change and hazard events' in the call 'Building a low-carbon, climate resilient future: climate action in support of the Paris Agreement' also contributes to this priority.
Funded project list	

General information

Topic description

Conditions and documents

Submission service

Topic related FAQ

Get support

Call information

Call updates

Funded project list

Sep 25, 2020 3:22:36 PM
CALL UPDATE: PROPOSAL NUMBERS

Call H2020-Sociatal-Challenge-5 has closed on the 03rd September 2020.

show more...

Projects funded under this topic

Results: 1

Q

Search...

TITLE	ACRONYM	PROJECT ID
Land-Based Solutions for Plastics in the Sea	LABPLAS	101003954

Download

1

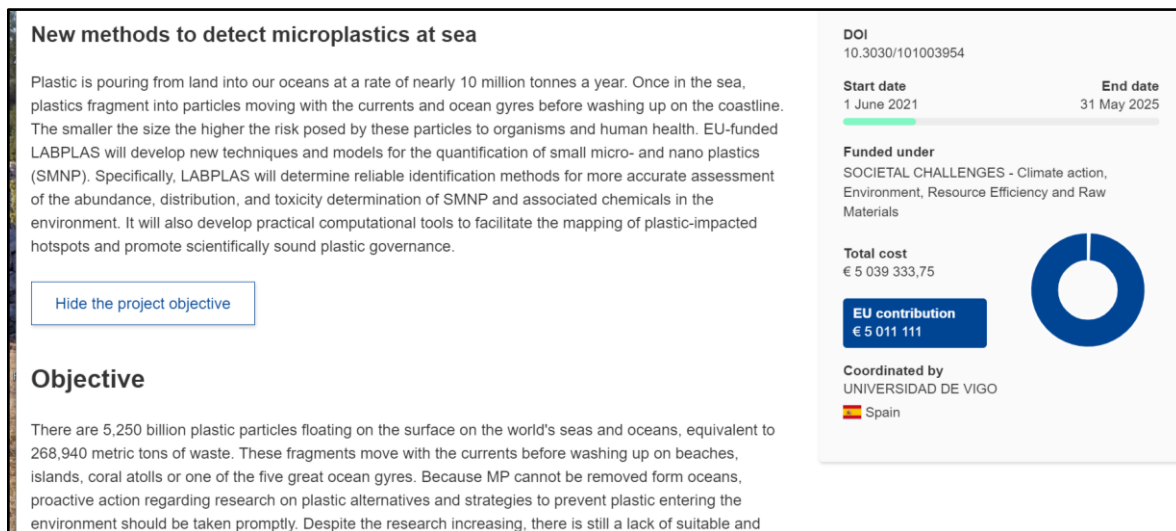
10

PM was not funded in this round (will discuss that below), but following the link to the “Funded Project” list (in this case, one project was funded) takes one to CORDIS, the EU research results database (<https://cordis.europa.eu/>):



The screenshot shows the CORDIS website interface. At the top, there's a header with the European Commission logo, the CORDIS logo, and a search bar. Below the header is a navigation menu with links like HOME, RESULTS PACKS, RESEARCH*EU MAGAZINES, PODCASTS & NEWS, PROJECTS & RESULTS, ABOUT US, and SEARCH. The main content area features a project titled "Land-Based Solutions for Plastics in the Sea" under the HORIZON 2020 banner. There are tabs for "Fact Sheet" and "Results". Below the title, there's a "Project description" section with language options (DE, EN, ES, FR, IT, PL). To the right, a "Project Information" box displays the acronym "LABPLAS", the grant agreement ID "101003954", and the DOI "10.3030/101003954".

You can see the full name of the project funded and its acronym.



This block provides a detailed summary of the project "New methods to detect microplastics at sea". On the left, a paragraph describes the problem: plastic is pouring from land into oceans at nearly 10 million tonnes a year, fragmenting into particles that move with currents and wash up on coastlines. The project, LABPLAS, aims to develop new techniques and models for quantifying small micro- and nano plastics (SMNP) and determining reliable identification methods for more accurate assessment of abundance, distribution, and toxicity. It will also develop practical computational tools for mapping plastic-impacted hotspots and promoting scientifically sound plastic governance. Below this text is a button labeled "Hide the project objective".

The "Objective" section states: "There are 5,250 billion plastic particles floating on the surface on the world's seas and oceans, equivalent to 268,940 metric tons of waste. These fragments move with the currents before washing up on beaches, islands, coral atolls or one of the five great ocean gyres. Because MP cannot be removed from oceans, proactive action regarding research on plastic alternatives and strategies to prevent plastic entering the environment should be taken promptly. Despite the research increasing, there is still a lack of suitable and".

On the right, a "Project Information" box provides key details:

- DOI:** 10.3030/101003954
- Start date:** 1 June 2021
- End date:** 31 May 2025
- Funded under:** SOCIETAL CHALLENGES - Climate action, Environment, Resource Efficiency and Raw Materials
- Total cost:** € 5 039 333,75
- EU contribution:** € 5 011 111 (highlighted in a blue box)
- Coordinated by:** UNIVERSIDAD DE VIGO, Spain (with a Spanish flag icon)

A donut chart is also present, showing the EU contribution as a portion of the total cost.

Here you see the summary of the funded project, its coordinator, and primary objectives.

validated analytical methods for detection and quantification of small micro- and nano plastics (SMNP) evidencing a huge obstacle for large-scale monitoring. There is also a lack of hazard and fate data which would allow their risk assessment.

LABPLAS is a 48-months project whose vision is creating capacities (sampling, analysis and quantification techniques, new materials and new models) to evaluate rapidly and precisely the interactions of plastics with the environmental compartments and natural cycles leading to the development of effective mitigation and elimination measures, as well as, making management decisions. It will assess reliable identification methods for more accurate assessment of the abundance, distribution and toxicity determination of SMNP in the environment, giving the opportunity of new developments of cutting edge technologies. It will also develop practical computational tools that up-scaled should allow European agencies to map plastic-impacted hotspots. The project will have a multi-actor approach, creating scientific knowledge with a partnership of scientists, technicians, research organizations and enterprises, working together towards the recognition at different levels (society, industry, policy) of the main issues (sources, potential biodegradability, ecotoxicology, ingestion, environmental assessment) related to the presence of plastics in ecosystems.

Fields of science

social sciences > economics and business > economics > **sustainable economy**
 natural sciences > biological sciences > **marine biology**
 natural sciences > earth and related environmental sciences > environmental sciences > **pollution**

Finally, you can see what institutions were funded as part of the project coalition, their locations across Europe, and links to additional details for each institution. Note here that several coalition partners are from well-known research organizations such as Helmholtz, the UK's National Oceanographic Center, the Sorbonne, and BASF (a corporate partner).

← → ↺

cordis.europa.eu/project/id/101003954

Czech National Libr...

NTK Národní technická...

ea

W Science and Civilisa...

Suchergebnis auf A...

Jan Zeman Calendar

Leaflet | Map data © OpenStreetMap contributors, Credit: EC-GISCO, © EuroGeographics for the administrative boundaries

Coordinator

UNIVERSIDAD DE VIGO

Net EU contribution

€ 495 687,50

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Activity type

Higher or Secondary
Education Establishments

Non-EU contribution



€ 0,00

Participants (17)			
Sort alphabetically ▾		Sort by Net EU contribution ▴	Expand all
	UNIVERSIDADE DA CORUNA  Spain	Net EU contribution € 450 000,00	▾
	Bundesanstalt fuer Gewaesserkunde  Germany	Net EU contribution € 466 516,25	▾
	LABORATORIO IBERICO INTERNACIONAL DE NANOTECNOLOGIA LIN  Portugal	Net EU contribution € 319 041,25	▾
	KATHOLIEKE UNIVERSITEIT LEUVEN  Belgium	Net EU contribution € 286 000,00	▾
	HELMHOLTZ-ZENTRUM FUR OZEANFORSCHUNG KIEL (GEOMAR)	Net EU contribution € 400 025,00	▾





	HELMHOLTZ-ZENTRUM FUR OZEANFORSCHUNG KIEL (GEOMAR)  Germany	Net EU contribution € 400 025,00	▾
	NATIONAL OCEANOGRAPHY CENTRE  United Kingdom	Net EU contribution € 371 539,75	▾
	SORBONNE UNIVERSITE  France	Net EU contribution € 267 947,50	▾
 THIRD-PARTY 	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS  France	Net EU contribution € 86 896,25	▾
	OPEN UNIVERSITEIT NEDERLAND  Netherlands	Net EU contribution € 77 112,35	▾
	LEIBNIZ-INSTITUT FUR OSTSEEFORSCHUNG WARMEMUNDE	Net EU contribution € 236 510,00	▾

	ASSOCIACAO PARA O DESENVOLVIMENTO DO ATLANTIC INTERNATIONAL RESEARCH CENTRE  Portugal	Net EU contribution € 247 250,00	▾
	UNIVERSIDADE FEDERAL DE SAO PAULO  Brazil	Net EU contribution € 0,00	▾
	BASF SE  Germany	Net EU contribution € 397 600,00	▾
	GOUIN TODD  United Kingdom	Net EU contribution € 146 750,00	▾
	CONTACTICA SL  Spain	Net EU contribution € 274 937,50	▾
	STICHTING EGI  Netherlands	Net EU contribution € 99 000,00	▾



The project National Centre for Information Support of Research, Development and Innovation with the identification code MS2101 is implemented with the support of the Ministry of Education, Youth and Sports. **Page 39**

 STICHTING EGI Netherlands	Net EU contribution € 99 000,00
 STICHTING RADBOUD UNIVERSITEIT Netherlands	Net EU contribution € 396 167,65



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 Record number: 236222

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cordis.europa.eu/project/id/101003954/results

Land-Based Solutions for Plastics in the Sea

Fact Sheet Results

Publications

Peer reviewed articles (2)

The bisphenol A metabolite MBP causes proteome alterations in male Cyprinodon variegatus fish characteristic of estrogenic endocrine disruption

Author(s): Alexandre M.Schönemann, Sandra Isabel Moreno Abril, Angel P. Diz, Ricardo Beiras

Published in: Environmental Pollution, Issue Volume 300, 1 May 2022, 118936, 2022, ISSN 0269-7491

DOI: 10.1016/j.envpol.2022.118936

Assessment of Toxicity and Biodegradability of Poly(vinyl alcohol)-Based Materials in Marine Water

Author(s): Olalla Alonso-López; Sara López-Ibáñez; Ricardo Beiras

Published in: Polymers/ Water-Soluble and Insoluble Polymers and Biopolymers for Biomedical, Environmental, and Biological Applications, Issue Polymers Volume 13 Issue 21 3742, 2021, ISSN 2073-4360

DOI: 10.3390/polym13213742

Project Information

LABPLAS
Grant agreement ID: 101003954

DOI
10.3030/101003954

Start date
1 June 2021

End date
31 May 2025

Funded under
H2020-EU.3.5.
H2020-EU.3.5.4.

Overall budget
€ 5 039 333,75

CORDIS also includes links to the results (in the above case, publications) for the funded projects.

Projects funded in PM's second attempt (one-stage call/full proposal) are listed here: <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/lc-gd-10-3-2020>. In that case, none of the funded projects were, in the end, related to plastics.

Topic updates	Projects funded under this topic		
Topic description	Results: 7	Q	Search..
Conditions and documents	TITLE	ACRONYM	PROJECT ID
Submission service	Achieving a new European Energy Awareness.	AURORA	101036418
Topic related FAQ	Community Observation Measurement & Participation in AIR Science	CompAir	101036563
Get support	A EUROPEAN COMPETENCE FRAMEWORK FOR A LOW CARBON ECONOMY AND SUSTAINABILITY THROUGH EDUCATION	ECF4CLIM	101036505
Call information	Smart Citizen Education for a green fuTure	GreenSCENT	101036480
Call updates	Individual Change of HABits Needed for Green European transition	I-CHANGE	101037193
Funded project list	Co-Creating Positive and Sustainable Lifestyle Tool with and for European Citizens	PSLifestyle	101037342
	Wearables and droneS for City Socio-Environmental Observations and BEhavioral Change	SOCIO-BEE	101037648

Building and managing the PM coalition, first attempt, results

- 13 partners, 6 countries
- Coordinator: CTU in Prague, PI J, Manager SK
- 10-page Stage 1 proposal (no budget details required in this case)
- Not invited to Stage 2, but excellent impact score (4 from 5) and “good feelings” about how we worked together as a coalition

1	Czech Technical University in Prague (Coordinator)	CTU	Czech Republic
2	[REDACTED]		Germany
3	[REDACTED]		Germany
4	Kompetenzzentrum Wasser Berlin	KWB	Germany
5	Berliner Wasserbetriebe	BWB	Germany
6	EcoMole Ltd.	ECOM	United Kingdom
7	Croatian Geological Survey	HGI-CGS	Croatia
8	Brno University of Technology	BUT	Czech Republic
9	Masaryk University	MUNI	Czech Republic
9	Magma Geopark AS/UNESCO Global Geopark	MAGMA	Norway
10	Cabo de Gata-Níjar Natural Park/UNESCO Global Geopark	NIJAR	Spain
12	Geopark Vis Archipelago/UNESCO Global Geopark	VIS	Croatia
13	Vodní zdroje Chudim Ltd.	VZC	Czech Republic

The above is a list of partner countries in our first attempt coalition (institutions not included to maintain privacy). Very important: **Partners should be listed in the order they were entered into the Funding & Tenders portal by the PI.**

Building and managing the PM second attempt coalition, results

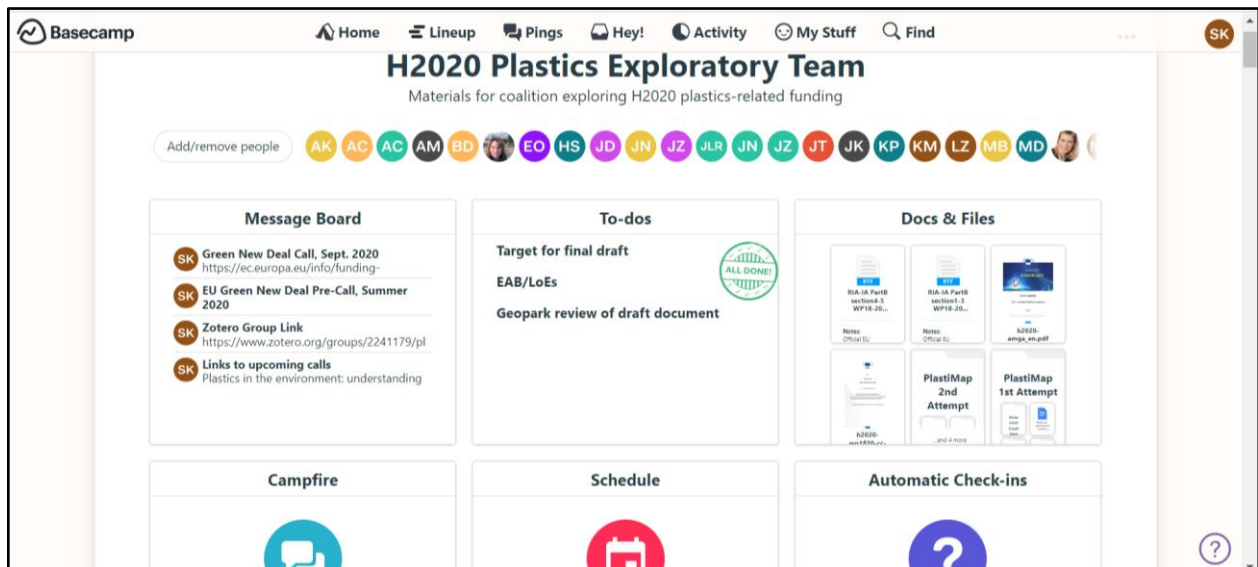
- 19 partners in 7 countries
- Advisory board: 7 members, including a UNESCO representative
- 54 letters of engagement (schools, non-profits, municipalities)
- Coordinator: Berlin partner (including PI), SK co-manager for proposal creation

- 70-page one-stage proposal (longer than Horizon Europe, since this was still an H2020 call) plus
- 14.5 from 15 possible points, but not funded

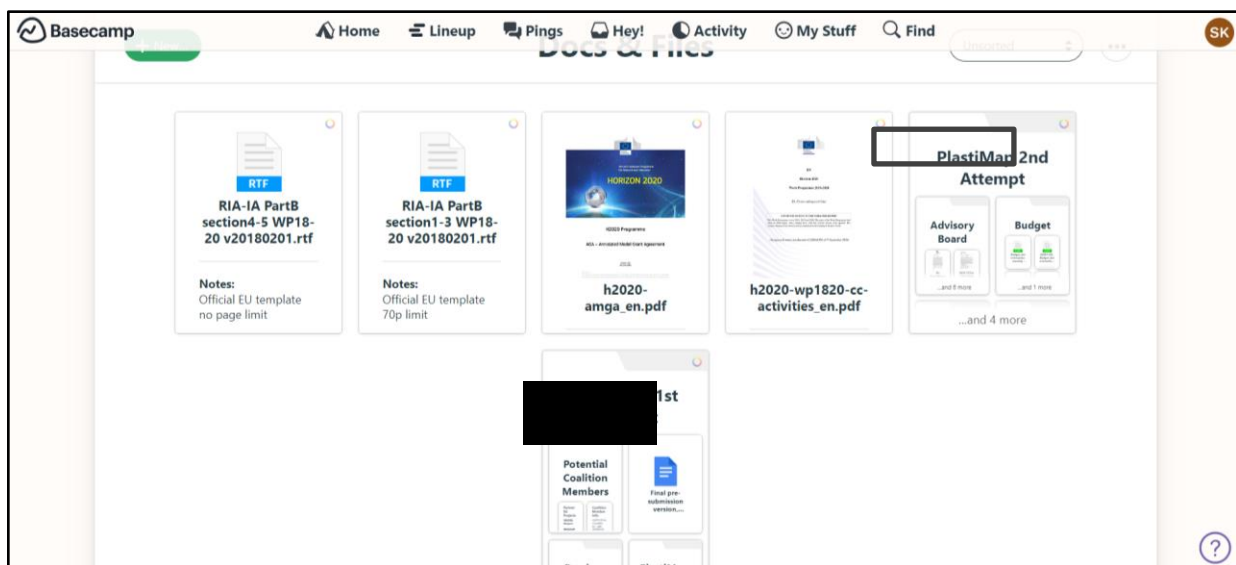
Approaching potential partners, summary in bullet points

- Web search: Identify researchers from the literature who are leaders in their fields.
- “Cold” email with one-page summary of idea: As mentioned above. SK highly encourages this and the worst that can happen is that someone does not respond; typically, other researchers are nice. Very important is to write an email subject line that does not look like spam/something that is substantive.
- Video call: Meeting with researchers about the project idea, the deadline for the proposal, expected engagement in project proposal writing and in the project itself, and (if it’s possible) anticipated budget plans.
- Gather PICs in the Funding & Tenders portal: This is required in order to enter coalition member details into the portal.
- Create project in Funding & Tenders portal: This must be done by the PI using the guidelines from their institution.
- Partners confirm participation: Once the PI/manager enters information about the project into the portal, coalition partners will be notified, and they must confirm their participation in the project proposal.
- Weekly calls prior to proposal deadline to review outstanding issues: Typically related to clarifying WPs, KPIs, milestones supplemented with calls between partners who will be working together in a WP, if needed: this was very important for the three proposals discussed in this case study. Weekly calls may not be needed until the end of the proposal writing stage, if the “core” project team members are organized and efficient, but they can be helpful in the end to remind participants about deadlines and their roles.
- Project management space: Because coalitions cut across institutions, it is helpful to use a collaborative space for storing documents and other materials related to the project on Google Drive, Basecamp, or other similar tools. At present, no tool is perfect for this, but the tools mentioned and illustrated in the screenshots below do work. For both PM attempts, SK used Basecamp to link out to Google and other documents. No one used its collaborative discussion features in Basecamp, but it was helpful to me in making sure we were on track in terms of proposal writing and later as an archive for others

writing European projects at CTU in Prague and for myself in assisting others with their projects. For R, Google Drive (only) was used.

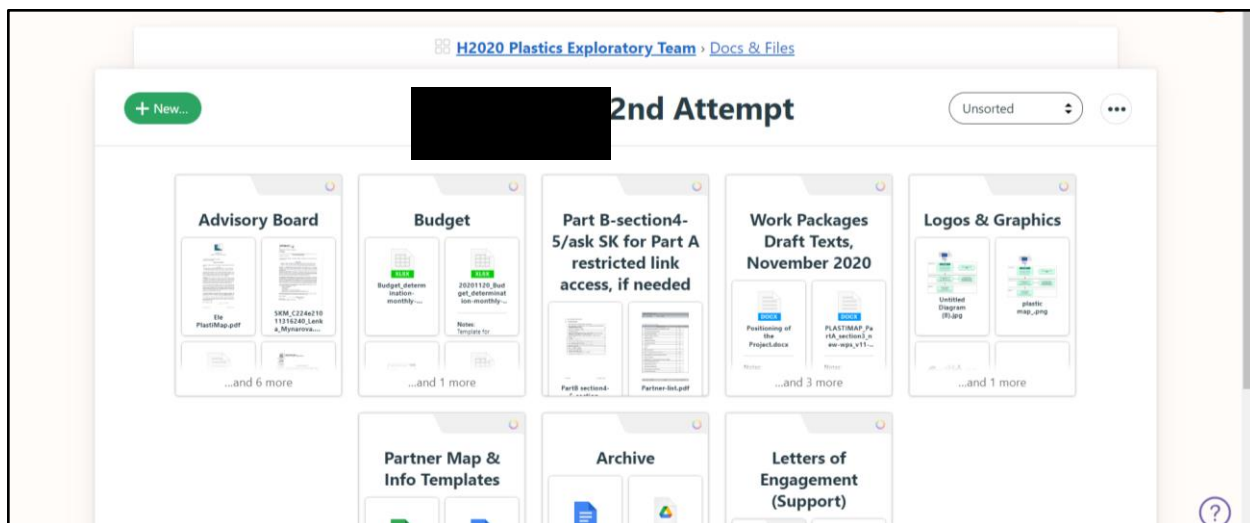


Screenshot: Basecamp landing page

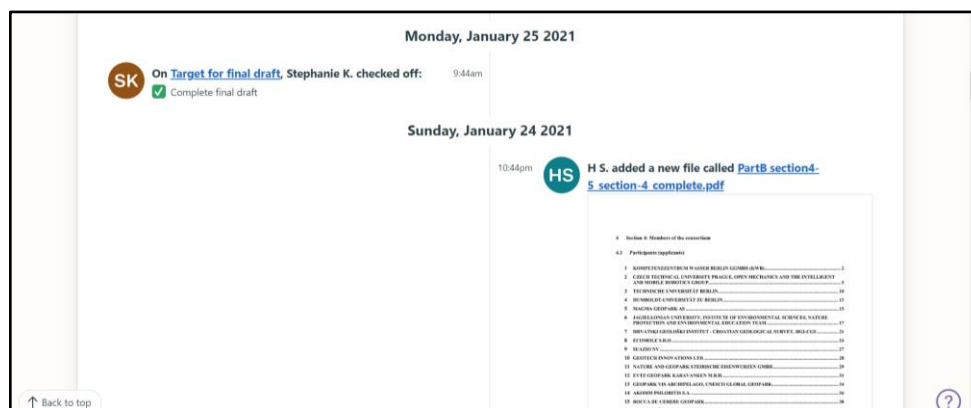


Screenshot: Basecamp folder, "docs & files" (SK's name/not ideal organization or nomenclature, but it worked fine)

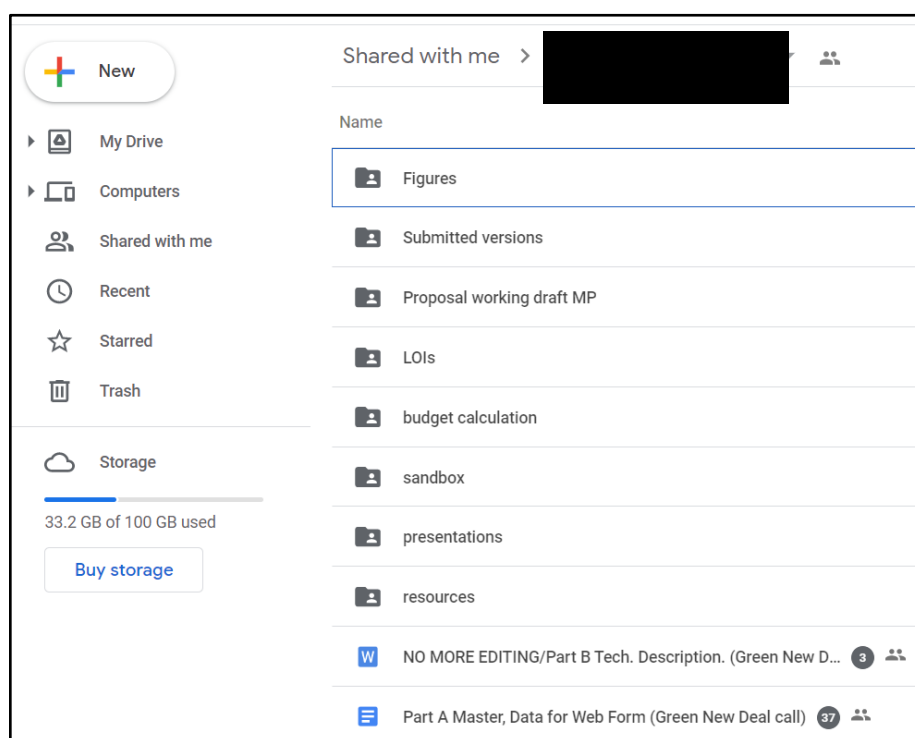
PM 2nd attempt subfolders:



PM 2nd attempt: Sample notifications about uploaded files in Basecamp:



R project: Sample Google Drive space:



- Google Doc collaborative text (set up using appropriate template): Google Docs is currently the best tool to use for collaborative document editing, though it has limitations such as unsophisticated table building and so on (Word and Excel are better than the Google tools at present). Because of this, proposals are often refined together in Google Docs and then downloaded at the end into Word for final clean up and preparation.

Programme:
Horizon Europe Framework Programme (HORIZON)

Title:
[Research and innovation on cultural heritage and CCFs - 2022 \(HORIZON-CL2-2022-HERITAGE-01\)](#)

Type of Action:
HORIZON-RIA HORIZON Research and Innovation Actions

List of participants

No.	Participant organisation name	Organisation type	Partner type	Country
1	[Redacted]	Research Institute	Partner	CZ
2	[Redacted]	Research Institute	Partner	DK
3	Norman Foster Foundation (NFF)	Non-profit organisation	Partner	ES
4	International University of Catalonia (UIC)	Research Institute	Partner	ES

Screenshot: R: Sample collaborative editing document (cropped for privacy)

- Word version at the end: As noted above, Word is currently used for many proposals in preparing the final proposal document, due to its ability to handle tables, margins, and other related document preparation options. PDF versions are typically uploaded into the Funding & Tender portals (i.e., Word file converted into PDF form).

REGUS for the New European Bauhaus

List of participants

No.	Participant organisation name	Organisation type	Partner type	Country
1	[Redacted]	Research Institute	Partner	CZ
2	Federal Institute of Technology, Lausanne (EPFL)	Research Institute	Associated Partner	CH
3	AALBORG UNIVERSITET, Aalborg University, Copenhagen (AAU)	Research Institute	Partner	DK
4	UNIVERSITAT INTERNACIONAL DE CATALUNYA, International University of Catalonia, Barcelona (UIC)	Research Institute	Partner	ES
5	Fundación Norman Foster, Norman Foster Foundation, Madrid (NFF)	Non-profit institution	Partner	ES

I EXCELLENCE

1.1 OBJECTIVES AND AMBITION

1.1.1 Background, Motivation, and Concept

[Redacted] by proposing an **adaptive, re-usable, bio-based modular** **segrity**”, incorporating Green New Deal (GND) precepts with novel advances in sustainable materials and design, from an interdisciplinary research team representing architecture, design, arts, robotics/cybernetics, civil engineering, simulation, and materials research.

All disciplines are united to create a **smart reconfigurable and reusable system**, which will be developed first on a lab-scale then gradually unscaled to be finally validated on a real 1:1 scale in **three artistic, aesthetic**

Screenshot above: R project: Same content as in Google Docs screenshot, just with final polished formatting and so on.

- EU budget tables: Calculation of budgets per the Horizon Europe instructions is a necessary but tedious part of the proposal preparation process. I will go into details

about key terminology regarding EU budgets later in this report. Directly below are several screenshots illustrating budget calculations.

A1	A	B	C	D	E	F	G	H
1								
2	WP/Task	↓ WORK PLAN / MONTH →						TOTAL
3	WP	WP1 Architectural design						73
4	T	Task 1.1 Design preparation	1	13	2	0	1	17
5	T	Task 1.2 Analysis of the three locations	4	8	1	0	0	13
6	T	Task 1.3 Feasibility of design for Upscaling	1	15	3	0	0	19
7	T	Task 1.4 Feedback integration	1	11	1	0	3	16
8	T	Task 1.5 Construction documentation	0	6	2	0	0	8
9	WP	WP2 Tensegrity system development	30	25	0	0	80	135
10	T	Task 2.1 Generative development of deployable active and passive tensegrity units	6	0	0	0	26	32
11	T	Task 2.2 Conceptual design for assembly of modular tensegrity systems	7	0	0	0	20	27
12	T	Task 2.3 Tensegrity nervous system for adaptive reconfigurability	6	6	0	0	29	41
13	T	Task 2.4 Development of active structural biocomposite tensegrity components	11	19	0	0	5	35
14	WP	WP3 Structural system development	123	6	0	0	6	135
15	T	Task 3.1 Computational-experimental validation of the tensegrity units	35	0	0	0	2	37
16	T	Task 3.2 Designing, simulating, and validating inter-unit interfaces	32	0	0	0	2	34
17	T	Task 3.3 Computational-experimental validation at assembly scale	33	0	0	0	2	35

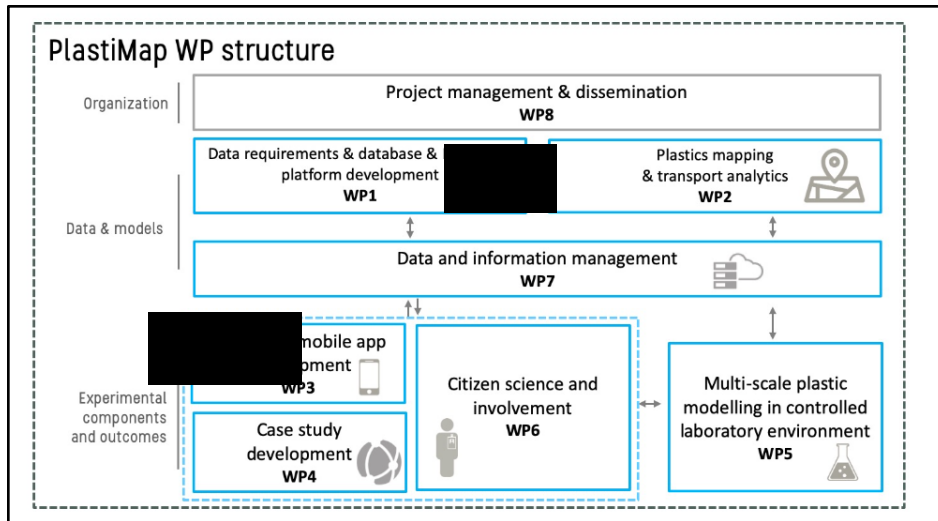
R project: Sample Gantt chart generated from Excel template created by colleague in coalition.

1	A	B	C	D	E	F	G	H
		Employees →						Ph.D. candidate (simulations)
2	WP/Task	Monthly cost for each employee (incl social contributions) →						2000
3	WP	WP1 Architectural design						0
4	T	Task 1.1 Design preparation				1		
5	T	Task 1.2 Analysis of the three locations						
6	T	Task 1.3 Feasibility of design for Upscaling						
7	T	Task 1.4 Feedback integration						
8	T	Task 1.5 Construction documentation						
9	WP	WP2 Tensegrity system development	2		1			11
10	T	Task 2.1 Generative development of deployable active and passive tensegrity units	1			1		
11	T	Task 2.2 Conceptual design for assembly of modular tensegrity systems						
12	T	Task 2.3 Tensegrity nervous system for adaptive reconfigurability						
13	T	Task 2.4 Development of active structural biocomposite tensegrity components		1				
14	WP	WP3 Structural system development	4		5			25
15	T	Task 3.1 Computational-experimental validation of the tensegrity units	1			2		
16	T	Task 3.2 Designing, simulating, and validating inter-unit interfaces		1		1		
17	T	Task 3.3 Computational-experimental validation at assembly scale	1			1		

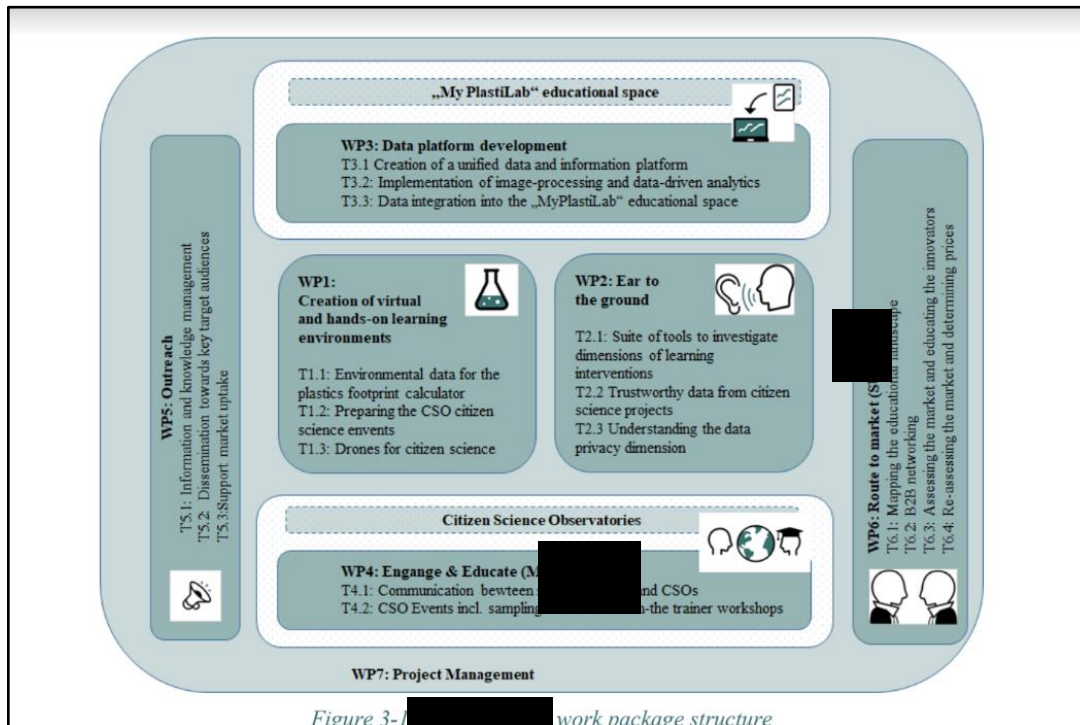
R: Sample spreadsheet used to calculate overall numbers for CTU in Prague.

A note on work packages

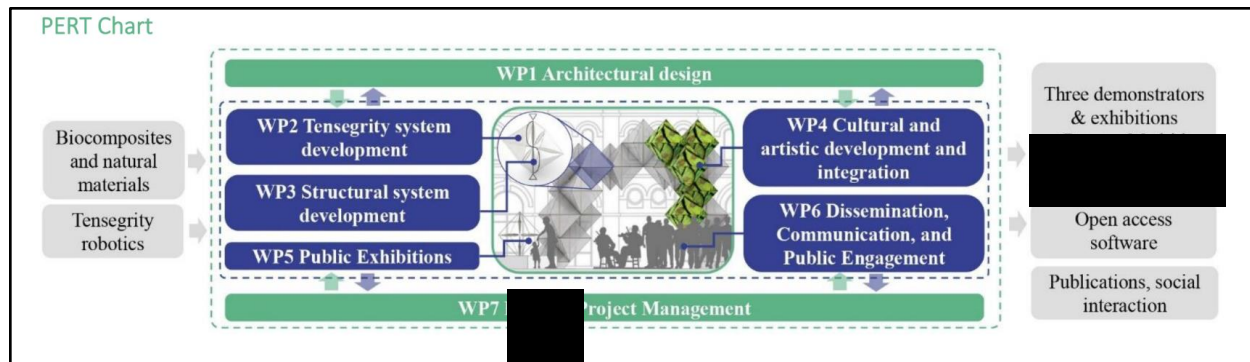
Without clearly-defined work packages, it is impossible to build a proposal budget. Thus, work packages should be clearly defined by project partners as early as possible in the proposal conception and writing process to make all work downstream easier and to avoid endless discussions about work package content. The more clearly the project “core” managers can define the work packages, the better the project proposal preparation process will flow. For PM, both attempts, we had a clear idea of what our work packages should be and SK, in fact, outlined these and found partners based on the initial concept. However, for R, WPs were still being clarified several weeks prior to proposal submission (in fact, two partners did not join the coalition formally until right about that time, very late in the process), and it made final preparation of the proposal more stressful than it had to be.



PM 1st attempt: PERT chart/overview of work packages (WPs) and how they fit together.



PM 2nd attempt: WP structure in "fancier" format.



R project: PERT chart/overview of WPs.

A word on project evaluation...

Below are annotated evaluations for both PM attempts and the R attempt. **Becoming familiar with how projects are typically evaluated is helpful for proposal writers, because one can consider feedback from prior proposals and use this feedback to enhance the next proposals one is engaged in.** Quality of the evaluation comments differs from reviewer to reviewer, but (as in journal article writing), reviewers typically point out relevant points. It is important to note that due to high competition for EU funding in recent years, even very highly-scored proposals may not be funded (as was the case in the PM second attempt/14.5 from 15 possible points but no funding). Decisions about funding beyond scoring are not currently transparent, and it may be possible that some politics are involved at the final stage. For this reason, in SK's experience to date, **one can never know the final outcome for even a well-conceived and well-written proposal.** That said, the learning gained through the process is worth the time investment, at least when attempting one's first few project proposals. SK notes that in many ways, the **proposal writing experiences to date did change her life for the better, in terms of knowledge, the opportunity to work with talented colleagues, and the ability to make it easier for early career researchers to be prepared for the process so that it is easier for them. These rewards cannot be quantified easily.**

Proposal Evaluation Form



EUROPEAN COMMISSION

Horizon 2020 - Research and Innovation Framework Programme

**Evaluation
Summary Report -
Research and
innovation actions**

Call: H2020-SC5-2020-2

Type of action: RIA

Proposal number: [REDACTED]

Proposal acronym: [REDACTED]

Duration (months): [REDACTED]

Proposal title:

Activity: [REDACTED] g plastic flow, engaging stakeholders, and life cycle innovation

N.	Proposer name	Country	Total Cost	%	Grant Requested	%
1	[REDACTED]	CZ	5,000,000	100.00%	5,000,000	100.00%
2	[REDACTED]	DE	0	0.00%	0	0.00%
3	[REDACTED]	HR	0	0.00%	0	0.00%
4	[REDACTED]	DE	0	0.00%	0	0.00%
5	MAGMA GEOPARK AS	NO	0	0.00%	0	0.00%
6	ECOMOLE LTD	UK	0	0.00%	0	0.00%
7	Geopark Vis Archipelago	HR	0	0.00%	0	0.00%
8	Masarykova univerzita	CZ	0	0.00%	0	0.00%
9	CONSEJERIA DE MEDIO AMBIENTE Y ORDENACION DEL TERRITORIO	ES	0	0.00%	0	0.00%
10	Vodní zdroje Chrudim, spol. s r. o.	CZ	0	0.00%	0	0.00%
11	BERLINER WASSERBETRIEBE	DE	0	0.00%	0	0.00%
12	VYSOKÉ UCENÍ TECHNICKÉ V BRNĚ	CZ	0	0.00%	0	0.00%

Note here that no budget was included in the Stage 1 proposal, just an overall budget sum at that stage.

10	Vodní zdroje Chrudim, spol. s r. o.	CZ	0	0.00%	0	0.00%
11	[REDACTED]	DE	0	0.00%	0	0.00%
12	[REDACTED]	CZ	0	0.00%	0	0.00%
13	[REDACTED]	DE	0	0.00%	0	0.00%
Total:			5,000,000		5,000,000	

Abstract

Understanding in detail how plastics move and spread through environmental compartments requires cross-analyzing different geographic, experimental, and laboratory data, gathered from multiple sources and on a scale not-yet achieved in Europe. [REDACTED] at creating (i) a collaborative plastics pollution data platform and (ii) a mobile application ("PlastiSnap") synergizing interdisciplinary [REDACTED] and contributions from citizen scientists to map and model plastic flows in different environmental compartments and geographic [REDACTED] in and rural in five countries, including several [REDACTED] [REDACTED], developed by our interdisciplinary [REDACTED] exploit advanced data analytics and automatic [REDACTED] and real-time data and shall serve as a tool to (i) support the prioritisation of Europe's Plastics [REDACTED] sensitive data, and (iii) help future prevention, interception, and clean-up initiatives. The publicly accessible, user-friendly [REDACTED] app will enable researchers, plastics value chain stakeholders, journalists, politicians, and members of the public across Europe to co [REDACTED] enhance their understanding of plastics life cycle and related health and environmental impact issues as well as act as proactive data [REDACTED] case study data (gathered in part by unmanned air/ground/surface/underwater vehicles) and experimental testing data will feed into the platform. Data analysis and modelling will advance our understanding of how plastics "leak" from the circular economy and enter the environment, and will provide methods for identifying potential "hot spots" for nano-, micro-, and macro-plastics on land, in the air, and in water. [REDACTED] will harness the power of already-existing data platforms and highlight areas for future research in the plastics pollution data space, making [REDACTED] the EU as a world leader in this area.

Evaluation Summary Report

Evaluation Result

Total score: 7.50

Form information

SCORING

Scores must be in the range 0-5.

Interpretation of the score:

0 The proposal fails to address the criterion or cannot be assessed due to missing or incomplete information.

1 Poor. The criterion is inadequately addressed, or there are serious inherent weaknesses.

Here the total score is provided; in this case, 7.5 from a possible 10.0.

Scores must be in the range 0-5.

Interpretation of the score:

0 The proposal fails to address the criterion or cannot be assessed due to missing or incomplete information.

1 Poor. The criterion is inadequately addressed, or there are serious inherent weaknesses.

2 Fair. The proposal broadly addresses the criterion, but there are significant weaknesses.

3 Good. The proposal addresses the criterion well, but a number of shortcomings are present.

4 Very good. The proposal addresses the criterion very well, but a small number of shortcomings are present.

5 Excellent. The proposal successfully addresses all relevant aspects of the criterion. Any shortcomings are minor.

003636-1/PlastiMap-19/05/2020-10:26:04 1 / 2

Associated with document Ref. Ares(2020)2622167 - 19/05/2020

Criterion 1 - Excellence

Score: **3.50** (Threshold: 0/5.00 , Weight: -)

The following aspects will be taken into account, to the extent that the proposed work corresponds to the topic description in the work programme:

Clarity and pertinence of the objectives

The objectives are clearly presented. They answer to the requirements of the call to create a collaborative plastics pollution data platform and a mobile application to allow crowd-based data gathering, covering nano-, micro- and macro-plastic particles in different ecosystems and at different geographical scales. They aim to advance our knowledge regarding the mapping of plastics pollution dynamics and are hence pertinent.

The scoring scale for each section is listed here, together with a description of how reviewers score.

Comments from the reviewer about scientific shortcomings, in their opinion, are listed in text form following the score itself.

However, the marine environment and the potential for accumulation in the food chain are insufficiently addressed and this is a shortcoming.

Soundness of the concept, and credibility of the proposed methodology

The concept is clearly explained and fair. The strategy for achieving a large-scale mapping of plastic flow which relies on a crowd-based platform and image recognition technology is convincing, which renders the project credible.

However, the following shortcomings are identified:

- The validation by the compiled data is questionable considering the important actual gaps of data and knowledge in plastics pollution. Moreover, it remains unclear how the quality of the crowd derived data ("snapshots") can be assured.
- There is insufficient information on the methodologies to be used for example on the design of the [REDACTED] tool or the image recognition technology.
- The proposal does not demonstrate how it can be used for all particle sizes and environmental conditions.

Extent that proposed work is beyond the state of the art, and demonstrates innovation potential (e.g. ground-breaking objectives, novel concepts and approaches, new products, services or business and organisational models)

The proposal considers an innovative collaborative web platform in the plastics pollution domain, that is combined with state-of-the-art aspects in the field by introducing an innovative approach for studying the plastics in the environment based on plastic image recognition analytical tools. The use of the general public both as citizen 'sampling team' and to increase their commitment toward the problems of plastic pollution and the Platform are innovative.

However, the lack of detail on how this will be accomplished limits a full assessment of its innovation potential. The suggested increase for the integrated data/information web platform and [REDACTED] tool in TRL from 1 (partly 3) to 7 is considered far from realistic. This is a shortcoming.

Appropriate consideration of interdisciplinary approaches and, where relevant, use of stakeholder knowledge and gender dimension in research and innovation content

Plans to engage with stakeholders are convincingly described. In particular, the crowd-based platform and mobile apps will allow to efficiently reach a wide range of stakeholders, including the general public through a citizen-based research. The proposal considers a reasonable mix of interdisciplinary research approaches, both academic / non-academic and related to natural and engineering sciences.

However, relevant disciplines such as hydrology, oceanography, limnology or risk assessment are not sufficiently considered in the proposal which represents a shortcoming.

Criterion 2 - Impact

Score: **4.00** (Threshold: 0/5.00 , Weight: -)

The following aspects have been taken into account:

which represents a shortcoming.

Criterion 2 - Impact

Score: **4.00** (Threshold: 0/5.00 , Weight: -)

The following aspects have been taken into account:

The extent to which the outputs of the project would contribute to each of the expected impacts mentioned in the work programme under the relevant topic

The proposal credibly addresses the expected impacts, in terms of development of mitigation measures, identifying promising intervention points and targeted actions for fighting plastics pollution.

Good impact is expected for achieving some objectives of the Plastics Strategy, mainly by engagement with and involvement of the citizens via the implementation of the application and the exploitation of image identification algorithms as a foundation for the development of mitigation solutions.

Prioritisation of measures, in support of the Plastics Strategy, has received limited attention in the proposal. In addition, relevant indicators and metrics to underpin the claims of the expected impacts are insufficiently detailed. These are shortcomings.

Scope of the proposal

Status: **Yes**

Comments (in case the proposal is out of scope)

Not provided


Use of human embryonic stem cells (hESC)

Status: **No**

If yes, please state whether the use of hESC is, or is not, in your opinion, necessary to achieve the scientific objectives of the proposal and the reasons why. Alternatively, please also state if it cannot be assessed whether the use of hESC is necessary or not because of a lack of information.

Not provided

PM 1st attempt: Additional scoring details.



EUROPEAN COMMISSION

Horizon 2020 - Research and Innovation Framework Programme

Evaluation

Summary Report -

Innovation actions

Call:

H2020-LC-GD-2020-3

Type of action:

IA

Proposal number:

Proposal acronym:

Duration (months):

Proposal title:

while improving knowledge transfer by unifying data on plastics in the environment

Activity:

LC-GD-10-3-2020

N.	Proposer name	Country	Total Cost	%	Grant Requested	%
1		DE	606,375	15.74%	606,375	16.49%
2		CZ	595,500	15.46%	595,500	16.19%
3		DE	373,375	9.69%	373,375	10.15%
4	HUMBOLDT-UNIVERSITAET ZU BERLIN	DE	367,250	9.53%	367,250	9.99%
5	MAGMA GEOPARK AS	NO	284,000	7.37%	284,000	7.72%
6	UNIWEITYTET JAGIELLONSKI	PL	326,350	8.47%	326,350	8.87%
7	HRVATSKI GEOLOSKI INSTITUT	HR	134,662.5	3.50%	134,662.5	3.66%
8	EcoMole s.r.o.	CZ	177,312.5	4.60%	124,118.75	3.38%
9	suAzio	BE	135,250	3.51%	94,675	2.57%
10	GeoTech Innovations Ltd	IE	272,312.5	7.07%	190,618.75	5.18%
11	Natur- und Geopark Steirische Eisenwurzen GmbH	AT	69,500	1.80%	69,500	1.89%
12	ARBEITSGEMEINSCHAFT GEOPARK KARAWANKEN-KARAVANKE	AT	97,625	2.53%	97,625	2.65%
13	Geopark Vis Archipelago	HR	25,625	0.67%	25,625	0.70%
14	AKOMM-PSILORITIS S.A DEVELOPMENT AGENCY OF LOCAL COVERNMENT	EL	85,250	2.21%	85,250	2.32%
15	SOCIETA CONSORTILE ROCCA DI CERERE	IT	46,325	1.20%	46,325	1.26%
16	ASSOCIACAO GEOPARK ESTRELA	PT	47,750	1.24%	47,750	1.30%
17	AGA-Associa??o Geoparque Arouca	PT	94,250	2.45%	94,250	2.56%
18	Associa??o Geoparque Terras de Cavaleiros	PT	32,375	0.84%	32,375	0.88%
19	UNIVERSITATEA DIN BUCURESTI	RO	81,875	2.12%	81,875	2.23%
Total:			3,852,962.5		3,677,500	

PM 2nd attempt: List of coalition members with budget percentages.

PM 2nd attempt: total score 14.50/15 possible.

- 3 Good.** The proposal addresses the criterion well, but a number of shortcomings are present.
- 4 Very good.** The proposal addresses the criterion very well, but a small number of shortcomings are present.
- 5 Excellent.** The proposal successfully addresses all relevant aspects of the criterion. Any shortcomings are minor.

Criterion 1 - Excellence

Score: **5.00** (Threshold: 3/5.00 , Weight: -)

The following aspects will be taken into account, to the extent that the proposed work corresponds to the topic description in the work programme:

Clarity and pertinence of the objectives

Soundness of the concept, and credibility of the proposed methodology

Extent that proposed work is beyond the state of the art, and demonstrates innovation potential (e.g. ground-breaking objectives, novel concepts and approaches, new products, services or business and organisational models)

Appropriate consideration of interdisciplinary approaches and, where relevant, use of stakeholder knowledge and gender dimension in research and innovation content

The main goal and the specific objectives of the proposal are clear, specific, measurable, and fully aligned with the scope of the call.

The proposal convincingly demonstrates how the proposed extension of a plastics environmental footprint calculator would enable citizens to monitor their impacts on the environment. The citizens' collection of information to facilitate behavioural change and reduce the environmental footprint is addressed in a novel way (e.g., plastics data, information, and modelling platform, easy sampling techniques, and unmanned aerial sampling vehicles).

The proposed concept, built on the idea of "changing the understanding of the dynamics of plastic pollution flow in the environment", is original and sound. The suggested methodology is pertinent and credible to deliver on the specific objectives of the proposal. Grouping work packages into activity streams to ensure the development of the proposed outcomes is a strength of the proposal.

The approach to data interoperability (including open data, standards, and software) is compelling. A sound data management plan is presented.

The proposal shows credible innovation ambition building on the state-of-the-art and existing citizen science initiatives, including the

and networks. The approach to integrating marine litter data from various sources and establishing new plastic monitoring and monitoring in the environment is highly ambitious and well beyond the state-of-the-art. The approach to data interoperability (including open data, standards, and software) is compelling. A sound data management plan is presented.

The proposal convincingly aims to empower a broad range of citizens and other stakeholders across Europe and beyond in an open, iterative, bottom-up, and transparent decision-making process to observe, monitor, and learn about the environmental impacts of plastic pollution including a compelling component in education.

The proposal is notably well documented scientifically. The consideration of RRI (Responsible Research & Innovation) as a cross-cutting priority is an asset. The aspect of gender balance is particularly well taken into account. The proposal sensibly considers the gender dimension.

PM 2nd attempt: excellence score and comments.

dimension.

Criterion 2 - Impact

Score: **4.50** (Threshold: 3/5.00 , Weight: -)

The following aspects will be taken into account:

The extent to which the outputs of the project would contribute to each of the expected impacts mentioned in the work programme under the relevant topic

Any substantial impacts not mentioned in the work programme, that would enhance innovation capacity, create new market opportunities, strengthen competitiveness and growth of companies, address issues related to climate change or the environment, or bring other important benefits for society

Quality of the proposed measures to:

- exploit and disseminate the project results (including management of IPR), and to manage research data where relevant
- communicate the project activities to different target audiences

The project outcomes will contribute significantly to all of the expected impacts of the call.

The proposal demonstrates the development and strengthening of citizen science initiatives in a convincing way, including collecting environmental and socio-economic data, citizen sampling events, interaction through educational and shareholder networks, and gamification components.

The proposal appropriately envisages better monitoring of the environment by data originating from various platforms. The proposal also plans in a compelling way to expand the role of citizens in collecting data, complemented by independent new scientific observations.

Providing personalized information to citizens and consumers about their environmental impact to allow behavioural change is demonstrated convincingly. Personalized information concerning hidden sources (e.g., in wastewater) is also planned to be provided for the plastic footprint calculation to show the environmental impact from elements that are not visible at first sight. These data will allow citizens to estimate their contribution to plastics pollution and monitor the trends in their plastic footprint.

The proposal appropriately recognizes that knowledge influences behaviour. The project outcomes are expected to contribute to behavioural changes, both directly and with the active support of many associated partners involved in the project. However, how concrete and targeted advice will be given to citizens is not sufficiently elaborated. This is a shortcoming.

A strength of the proposal is the inclusion of additional impacts with key performance indicators (KPI), e.g., broad-scale cooperation with businesses, civil society organizations, public authorities, and existing initiatives. Another positive aspect of the proposal is the desire to increase scientific literacy by involving citizens in data production for the first time through this project.

A missing draft communication plan is a minor shortcoming of the proposal. However, essential elements of a communication plan are given as KPIs, e.g., target numbers for followers on social media and websites, which is positive.

The proposal adequately describes the dissemination strategy and activities with a comprehensive list of target audiences, objectives, channels, and tools. The tailoring of exploitation channels and measures to the identified targets is not sufficiently addressed, which is a minor shortcoming. Dissemination targets including the quantitative information are adequately provided.

PM 2nd attempt: Impact score and comments.

<p>Criterion 3 - Quality and efficiency of the implementation</p> <p>Score: 5.00 (Threshold: 3/5.00 , Weight: -)</p> <p>The following aspects will be taken into account:</p> <p>Quality and effectiveness of the work plan, including extent to which the resources assigned to work packages are in line with their objectives and deliverables</p> <p>Appropriateness of the management structures and procedures, including risk and innovation management</p> <p>Complementarity of the participants and extent to which the consortium as a whole brings together the necessary expertise</p> <p>Appropriateness of the allocation of tasks, ensuring that all participants have a valid role and adequate resources in the project to fulfil that role</p> <p><i>Work is broken down into seven interacting work packages (WP) logically and usefully reflecting the concept of the proposal. The proposal provides an excellent overview of the relation of the WPs to the objectives. Inter-linkages on WP and task levels are clearly explained and illustrated. Dedicated WPs address project management and dissemination, which is positive. The WPs contain clearly described tasks divided into sub-tasks (activities). The connections of (sub)tasks to other (sub)tasks, deliverables, and milestones are clearly described. The planning of resources plausibly corresponds to the effort and outcome of each WP.</i></p> <p><i>The proposal demonstrates an excellent management structure where the various management bodies' roles are identified, and their interaction is explained in sufficient detail. The governance structure is suitable for ensuring success and for adapting to emerging challenges and risks.</i></p> <p><i>Major implementation risks are very well described, and proposed mitigation measures are suitable.</i></p> <p><i>The consortium brings together complementary participants across disciplines of interest, and the proposal well illustrates the details of the expertise the partners bring in. There are no dispensable redundancies.</i></p> <p><i>Resources allocated to the beneficiaries are justified concerning the tasks they plan to perform. No partner without a well-described role or lack of sufficient resources is identified.</i></p> <p>Scope of the proposal</p> <p>Status: Yes</p> <p>Comments (in case the proposal is out of scope)</p> <p><i>Not provided</i></p> <p>Operational Capacity</p> <p>Status: Operational Capacity: Yes</p> <p>If No, please list the concerned partner(s), the reasons for the rejection, and the requested amount.</p> <p><i>Not provided</i></p> <p>Exceptional funding of third country participants/international organisations</p>

PM 2nd attempt: Quality and efficiency score and comments.

R evaluations were made available in August 2022; the project received 11.5 from 15 points possible and was not funded. Here is a note from the PI summarizing the evaluation:

We were the most convincing in the Quality and efficiency of the implementation section (4.5 out of 5), in which the referees only lacked clearly defined ways to ensure an interdisciplinary discussion. The second best criterion was Excellence (4 out of 5), where the main points of critique revolved around the more active participation of citizens, involvement of local artists, and more concrete steps in the gender dimension. Finally, in the Impact criterion, we just passed the three-point threshold, as the referees missed a more concrete description of socially driven and regulatory impacts, scalability toward other EU locations, and dissemination towards the target groups. In addition, the referees pointed out several minor shortcomings.

Structure of Horizon proposals

Program Guide

The Program Guide linked at the beginning of this report is the “bible” for proposal writers. It contains details about what should be in each part of the proposal (typically, for research proposals, there is a Part A and a Part B).

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Table of Contents, Horizon Europe Program Guide

AC	Associated country/countries associated to Horizon Europe
ERA	European Research Area
ERC	European Research Council
ETC	European Innovation Council
EIT	European Institute of Innovation and Technology
FP	HE Framework Programme
FR	EU Financial Regulation
GA	Grant agreement
HE	Horizon Europe Programme
IP(R)	Intellectual property (rights)
JRC	European Commission Joint Research Centre
KIC	Knowledge and innovation community
MFF	EU's Multi-annual financial framework
MS	EU Member State(s)
MSCA	Marie Skłodowska-Curie Actions
OS	Open science
NCP	National contact point
PCP	Pre-commercial procurement
PPI	Public procurement of innovative solutions
RRI	Responsible research and innovation
SMEs	Small and medium-sized enterprises
SP	HE Specific Programme
SSH	Social sciences and humanities
WP	EU work programme

Abbreviations used, Program Guide.

Potential applicants are invited to read the call documentation on the topic page in the Funding & Tenders Portal ('Portal') carefully, and in particular this Horizon Europe Programme Guide, the [General Annexes](#), the [EU Funding & Tenders Portal Online Manual](#) and the [EU Grants AGA — Annotated Grant Agreement](#). These documents provide clarifications and answers to questions relating to preparing the proposal:

- the Programme Guide provides:
 - detailed guidance on the structure, budget and political priorities and other relevant background of the Horizon Europe programme relevant for preparing the proposal
- the General Annexes outline the:
 - admissibility and eligibility conditions, and the criteria for financial and operational capacity and exclusion (Annexes A-C)
 - award criteria, mandatory documents and evaluation procedure (Annexes D-F)
 - legal and financial set-up of the grant agreements (Annex G)
 - specific conditions applying to actions which include pre-commercial procurement or procurement of innovative solutions (Annex H)
- the Online Manual outlines the:
 - procedures to register and submit proposals online via the EU Funding & Tenders Portal and recommendations on preparing the proposal¹
- the AGA — Annotated Grant Agreement contains:
 - detailed annotations on all the provisions in the grant agreement to be

Introduction, Program Guide, with notes about where to find additional helpful resources.

To illustrate how the structure can look like using the three case study examples (PM1, 2, and R), the following lists make the structure of the proposals explicit. **They were based on the program instructions and the official Horizon Europe templates and checked by experienced European grant writers/researchers (in Germany for PM, in Switzerland for R).** Where we as proposal writers, even the experienced ones, had questions, we directed our questions to the **official National Contact Points** for our areas of investigation.

For the Czech Republic, Technology Centre CAS is host to all National Contact Points (NCPs). Check the EU Funding & Tenders portal for information on the latest contacts for different areas and funding schemes; as of writing, here are the NCPs for all areas related to Horizon:

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/support/ncp;sortQuery=country;countryGroups=MS;countries=20000872;functions=All%20Functions,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19>

Sections in PM attempt 1 proposal (total=10 pages):

Title

Summary (abstract)

1 Excellence

1.1 Objectives

1.1.1 Introduction

1.1.2 Motivations

1.1.3 Scientific and technical objectives

1.2 Relation to work programme

1.3 Concept and approach

1.3.1 Overall concept

1.3.2 Positioning the project

1.3.3 Links to other research and innovation activities

1.3.4 Overall approach and methodology

1.4 Ambition

1.4.1 Beyond state-of-the-art and ambitions

2 Impact

2.1 Expected impacts

This outline, and the initial concept, formed the basis of the next “concept document” created for the second attempt. This concept document was edited and circulated to potential partners prior to proposal writing began. Creating this document can save time for project proposal managers and, if it’s clearly written, can save the entire coalition team time in terms of meetings, particularly in defining work packages, which are crucial (as noted above) to defining the project budget and completing the proposal on time and with minimal stress/pain for all involved.

Screenshots of the PM concept document are included directly below.

Information about the call	
<div>+</div>	LC-GD-10-3-2020 Enabling citizens to act on climate change, for sustainable development and environmental protection through education, citizen science, observation initiatives, and civic engagement
	Sub-topic 2: Enabling citizens to act on climate change and for sustainable development through better monitoring and observing of the environment and their environmental impacts
	Important dates
	Innovation Action (non-profit [i.e., NGO/educational] funding rate 100%; commercial partners/SMEs 70%) (Activities directly aiming at producing plans and arrangements or designs for new, altered or improved products, processes or services. For this purpose, they may include prototyping, testing, demonstrating, piloting, large-scale product validation and market replication.) Call – Building a low-carbon, climate resilient future: Research and innovation in support of the European Green Deal 3 to 5 <u>mio.</u> Full proposal (one-stage) Submission: 26 th January 2021 5 pm Brussels time Page limit: 70 p for sections 1 to 3 For same scores & decision for funding: First Impact, then Excellence; Impact weighted with 1.5; else: Budget given to SMEs

Annotation: Initial page lists name of call, kind of action, funding amount recommended as framework for project team, and other important details.

<div> <div> 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 </div> <div> Budget given to SMEs </div> </div>
<div> <div> Scope and Impacts (call text) </div> <div> <p>This last call under Horizon 2020 differs in important respects from previous ones. Given the immediacy of the twin challenges it addresses, it aims for clear, discernible results in the short- to medium-term, embedding them in a perspective of long-term change. Interventions are more targeted, resulting in fewer, but at the same time larger and more visible, actions, with a focus on rapid scalability, dissemination and uptake. [...]</p> <p>As spelled out in further detail just below, the call is broken down into eight principal areas – reflecting the structure of the European Green Deal –, each comprising one to three broad, thematic topics. Alongside these eight core areas, the call features two supporting areas, on knowledge systems and research infrastructures and citizen engagement, respectively.</p> <p><i>Area 10: Empowering citizens for the transition towards a climate-neutral, sustainable Europe</i></p> <p>The European Green Deal communication stresses that the transition towards sustainability must be just and inclusive, put people first and bring together citizens in all their diversity. This calls for citizen engagement and social innovation in all areas of the Green Deal. This also requires ambitious cross-cutting actions to engage and empower people and communities and to support behavioural, social and cultural changes wherever this is most needed for a fair and inclusive transition, leaving no-one behind. Such actions must address change at the collective level through participatory processes and experimental research on behavioural, social and cultural change; and at an individual level by empowering citizens as actors of change, including through the co-creation of R&I contents.</p> <p>The area comprises the following topics:</p> <p>10.1. European capacities for citizen deliberation and participation for the Green Deal</p> </div> </div>

Annotation: Key information from call text so that partners don't have to visit the website as an additional step, as in the following screenshots as well.

10.2. Behavioural, social and cultural change for the Green Deal

10.3. Enabling citizens to act on climate change and environmental protection through education, citizen science, observation initiatives, and civic involvement

Specific challenge

- Active role of citizens and their direct involvement
- Address climate change and human activities harming the environment on land, air and sea
- Changes in citizen's and consumer's behaviours towards more sustainable patterns through **education, awareness raising, citizen science, observation and monitoring of their environmental impacts, civic engagement** and social innovation.
- Strengthening environmental awareness of the young generation
- Citizen science as a tool, covering a range of different levels of participation, from raising public knowledge of science, **encouraging citizens to participate in the scientific process by observing, gathering and processing data**, right up to setting scientific agenda and co-Designing and implementing science-related policies.
- Raise awareness, **provide new tools and data for environmental monitoring, covering a broad European geography.**

Subtopic 2:

- Involve citizens in climate- and environment-related issues and domains, such as biodiversity, **marine and freshwater pollution**, water scarcity and **sustainable transport and food production**
- Broad scale, cooperation with business, civil society organization, public authorities, existing initiatives
- Engage and empower citizens and consumers with **concrete tools to monitor [...] and to reduce their [...] environmental footprint**
- Include **development of devices** (low cost sensors, consumer apps, wearable sensors)
- **Take into account interoperability** and exchange of future and existing data (→ image library)

reduce their [...] environmental footprint

- Include **development of devices** (low cost sensors, consumer apps, wearable sensors)
- **Take into account interoperability** and exchange of future and existing data (→ image library)

Expected Impact

- Development or strengthening of **citizen science initiatives** to engage citizens **in the active collection of environmental and socio-economic data through individual new or improved devices**;
- Provision of **personalized information to citizens and consumers** about their environmental impact;
- **Better monitoring of the environment** (land, sea, air, etc.);
- **Behavioural change processes** on the part of citizens, consumers and communities towards more sustainable patterns in reducing their carbon and environmental footprint, changing their consumption and lifestyle choices to achieve goals of a climate-neutral, sustainable Europe **through concrete and targeted advice.**

Cross-cutting priorities

- RRI (Responsible Research & Innovation)
- Blue Growth
- Open innovation

Establish regional instead of global cycles

- Include **game approach** & sound **communication** strategy / social media concept
 - Overcome gender stereotypes, involve young generation

Core work packages

- (1) Plastics cycle: sources, flowpaths, sinks (= "scientific basis")
- (2) Plastics literacy platform: citizens to map (= initial [redacted])
- (3) Plastics footprint calculator: consumer awareness [redacted]
- (4) Plastics game & changing behaviour (= "adaptation to [redacted])
- (5) Exploitation, Dissemination, Communication (eventually to be split)
- (6) Project coordination & ethics (we need to be prepared to address data protection)

Open questions:

- Do we need a policy & governance wp?
- Should we stretch more the participatory approach and dedicate or rename a wp?
- Where to put the pilots [redacted] specific "demonstration wp"? or linked to cycle, mapping and footprint?

Partner mapping

- Plastics cycle & environmental compartments
 - Sampling & monitoring methods [redacted]
 - ...streets to rain to wastewater [redacted]
 - ...surface water to soil to groundwater [redacted]
 - ...sediments as sink? Other sinks?
 - ...fish & other food as sink: Brno University of Technology?
- Mapping platform
 - Data & information science: HHI Berlin [redacted]

Annotation: Key work packages as envisioned by proposal writing team leaders (in this case, H and SK). Questions for potential coalition partners/key coalition team members. Initial thoughts about potential consortium leaders.

- App creation/ [REDACTED]
- data backend [REDACTED]
- GIS visualization: ??
- Pilots & citizen engagement: [REDACTED]
etc.
- Plastics footprint calculator
 - Calculations & algorithms: [REDACTED]
 - Data backend: ??
 - Data visualization/ front-end: ??
 - Pilots & citizen engagement: ??
- Changing behaviour/ Social innovation:
 - governance part: ??
[REDACTED]
plastic budgets and LCA for governance
 - Citizens/ participatory approach part: ??
(wearables, citizen science events like joint sampling etc – how/ who to organize & coordinate?)
 - Gender part: ??

Issues:

- Balance between countries, regional coverage
- Balance between academia – other non-profit/ public bodies / NGOs – SMES
 - We definitely need SMEs! (good for app development, GIS, game development etc.)
- Link to existing initiatives and organisations (have a look:
<https://www.weobserve.eu/cops/linked-initiatives/>)

Ideas:

- Involve external advisory board (get LOIs)
 - Plastics producers (Nestle, sports textiles),
 - Recycling industry
 - Other?

Annotation: More thoughts about potential coalition/team members as high-level strategic positioning for the project.

- balance between academia – other non-profit/ public bodies / NGOs – SMEs
 - We definitely need SMEs! (good for app development, GIS, game development etc.)
- Link to existing initiatives and organisations (have a look: <https://www.weobserve.eu/cops/linked-initiatives/>)

Ideas:

- Involve external advisory board (get LOIs)
 - Plastics producers (Nestle, sports textiles),
 - Recycling industry
 - Other?
- Get LOIs
 - Covenant of Mayors [REDACTED]
 - Environmental NGOs [REDACTED]
 - other?

Most important (from the Info Day)
<ul style="list-style-type: none"> • Build on existing research • Seek synergies to sister projects • Explain very well progress beyond state-of-the art & TRL at start & end of the project
<ul style="list-style-type: none"> • Impact and budget share among academia & SMEs are most relevant
<ul style="list-style-type: none"> • Develop good graphics to explain concept etc.
<ul style="list-style-type: none"> • Use existing data (Copernicus etc.) • Choose pilots based on representativeness, explain scope and scale

Annotation: Very important notes from lead proposal writing team leaders (HS and SK, in this case).

PM, 2nd attempt, outline and selected screenshots

Summary (abstract)

The summary/abstract is typically bounded by a word/character limit, which one must check in the appropriate call documentation for the Horizon round. The summary/abstract should provide a clear picture of the project accessible to both specialists and non-specialists, if the call is interdisciplinary in nature, and leave an impression on the minds of readers that is clear and which leads the proposal reviewers to be interested in reading more in the proposal itself (i.e., it should stand out from the stack of proposals the project reviewers must go through).

In the example below, we highlighted key points in bold and color to try to “spur the interest” of proposal reviewers and to keep the key aspects of the proposal in their minds.

Summary

The [redacted] coalition of citizens, local governments, and municipalities (under [redacted] organizations, a mixture of local governments/municipalities, nonpro [redacted] [redacted] [redacted] and researchers, will systematically focus on two areas mandated by EU Waste Directive 2018/85 at regional and municipal implementation levels: (i) **plastic waste prevention** through continuous communication and education, ranging from micro- to macroscales, and (ii) monitoring and assessing of local progress in the implementation of “top-down” re-use and recycling directives. To improve continuous **communication and education** at a grassroots level across the EU, the [redacted] team will create citizen science learning environments (“Citizen Science Observatories”, CSO [redacted] [redacted] engage, and facilitate behavioural change. Virtual and practical learning tools employed will include (i) an open source litter mapping mobile application already field-tested by thousands of individuals in 80 countries [redacted], (ii) a **plastics environmental footprint calculator**, and (iii) a virtual, personalized lab book [redacted], extension of Memowl), developed hand-in-hand with citizens, uniting data, the calculator (including quiz components), and educational content for learners of all ages. Open learning content components will be shared with Google Classroom (up to 100 million users), Quizbank from Moodle (240 million users/250 countries), and other online educational tools. Hands-on learning will take many forms, including (iv) **international school, university, and corporate data collection competitions and sampling events** (including use of drones) facilitated by scientists for citizens, who will contribute their sampling data to the [redacted] platform. This consolidated platform will make it easy for citizens and various stakeholders to visit [redacted] use their data and will serve as a model for (v) an effective, broad-scale, technologically-ground-breaking **public educational paradigm** and (vi) an **early warning reporting and citizen engagement tool for municipalities** to remedy problematic locations (e.g. responding to drug-related paraphernalia, illegal dumping, and overflowing bins), thus producing data that can potentially inform and evaluate changes in EU policy. Surveys, interviews, and focus groups will probe the effectiveness of activities, shedding data-driven light onto the particularly thorny questions of (a) if heightened individual awareness about the spatial distribution of plastic pollution leads to substantive behavioural change and collective action and (b) what differences exist across national, local, temporal, and demographic boundaries (particularly useful to policymakers). The initial set of **10 CSOs in 7 countries will facilitate engagement with over 100 schools, >150 governmental bodies, at least half a million [redacted] visitors from over 30 countries** (with global [redacted] dissemination spanning 44 countries) and a [redacted] [redacted] others. A worldwide call for “CSO replication” will take place during the project, where initial CSOs will share best practices with replicators and the wider public, facilitating knowledge sharing around the globe.

[redacted] will serve as a model for developing **agile approaches to citizen science, waste prevention, and behavioural change that are maximally inclusive, firmly rooted in science and developed together with citizens across Europe and beyond its borders.**

1. Excellence

1.1 Objectives including specific objectives measurable with Key Performance Indicators [KPIs])

The “Excellence” section should illustrate how the project will specifically meet the objectives of the call and additionally show that the project team is uniquely qualified to perform the work laid out in the project work packages. The following screenshots illustrate how we tackled this challenge in PM.

First, we created “specific objectives” that tie back to KPIs we introduce later in the text. These specific objectives were created after careful reading of the call instructions.

Objectives (SO) measured against quantifiable Key Performance Indicators (KPIs) to be introduced in section 2.1:

SO1 Develop, demonstrate and ensure transferability of a suite of innovative **virtual learning environments (VLEs)** intended to **raise awareness and change behaviours** for users young and old, facilitated by creation of a consolidated plastics data and information platform with an additional focus on water (including stormwater and wastewater) and soil. Includes developing a missing data collection experience to develop and harness unprecedented human data collection capacity, educating citizens about GDPR, privacy issues related to their contributed data, and related issues. (KPIs 1, 2, 4, 9, 11, 13, 22, 23)

³⁵ Alcock, I., White, M. P., Pahl, S., Duarte-Davidson, R., & Fleming, L. E. (2020). Associations between pro-environmental behaviour and neighbourhood nature, nature visit frequency and nature appreciation: Evidence from a nationally representative survey in England. *Environment international*, 136, 105441. doi: 10.1016/j.envint.2019.105441

³⁶ <http://www.unesco.org/new/en/natural-sciences/environment/earth-sciences/unesco-global-geoparks/>

³⁷ <https://unesdoc.unesco.org/ark:/48223/pf0000247741?posInSet=30&queryId=7ad25c6c-0e14-4e67-8cc4-5b29eef7d7c>

SO2 Facilitate **transfer of knowledge and exchange of best practices** for observing, monitoring, and learning about plastics pollution at Citizen Science Observatories (CSOs), initially 10 [REDACTED] in 7 countries with 10 additional global replicator sites to be recruited worldwide and set up [REDACTED] project, through open educational materials. Includes an “alternatives” guide on how to avoid [REDACTED] guides to deal with common problems, and ways to better-estimate volume/weight considerations. (KPIs 5, 9, 11, 13, 22, 25-35)

SO3 **Map the plastics cycle together with citizen scientists** in a way that is accessible and understandable to citizens, consumers, producers, and other stakeholders using the [REDACTED] platform. The [REDACTED] team will map (i) origins of macro- and microplastics in the environment [REDACTED] and flow paths [REDACTED] different compartments (waste/wastewater, water, soils, food, drinking water), and (ii) where the cycle [REDACTED] (from food to consumer). (KPIs 1, 2, 5, 13-18, 24)

SO4 Engage and education citizen scientists in **hands-on learning by developing simple sampling techniques** which can be used to observe and monitor plastic pollution at CSOs. As society begins to increase its capacity to collect data, these sampling methodologies will evolve. (KPIs 5, 6, 7, 14, 15)

consumer). (KPIs 1, 2, 5, 13-18, 24)

SO4 Engage and education citizen scientists in **hands-on learning by developing simple sampling techniques** which can be used to observe and monitor plastic pollution at CSOs. As society begins to increase its capacity to collect data, these sampling methodologies will evolve. (KPIs 5, 6, 7, 14, 15)

SO5 Empower citizens with the tools to create evidence-based knowledge and communicate with municipalities about **local situations, hotspots, and trouble areas** for plastic waste at CSOs and CSO Replicators, informing necessary requirements for an early warning system about plastics pollution for local municipalities, product developers, and other stakeholders engaged in the plastic waste life cycle. (KPIs 1, 2, 4-7, 11, 13-15, 23)

SO6 **Reduce fragmentation of data** regarding plastic pollution and **bridge the gap** between data gathered by citizen scientists and scientists by integrating data together on one platform, leading towards enhanced interoperability, future standards development, and accelerated open innovation. (KPIs 10, 11, 13, 23, 36-39)

SO7 **Improve our understanding of demographic differences (including age, gender)** in awareness about pollution issues and changes in littering behaviour across local, regional, cultural, and national boundaries, facilitating more nuanced understanding by governments about the complexity of communicating top-down EU directives and meeting goals for some EU member states, regions, or municipalities. (KPIs 11, 12, 13, 22, 24)

SO8 **Foster public involvement and counteract false information campaigns** circulating about science³⁸, scientists, and the Green New Deal by actively, continuously communicating and disseminating information showing citizen scientists across Europe actively engaged in *scientific* activities. Concurrently working to counter gender and other stereotypes (e.g. “cleaning women”, “women in science”). (KPIs 2, 3, 4, 9, 11, 13, 22, 26-34)

SO9 **Create a network for long-term cross-regional, cross-national local municipality collaboration** across Europe for plastics pollution-related issues. (KPIs 3, 12, 25-39)

SO10 **Improve citizen involvement** in plastics (and other kinds of waste) pollution-related governmental decision making by making it possible for them to monitor, report, and communicate with local authorities about local issues and problems via [REDACTED] platform, and developed tools while concurrently **making it easier** for citizen [REDACTED] makers, and other stakeholders to find, access, and reuse trustworthy plastic [REDACTED]. (KPIs 9, 13, 25)

SO11 **Create new research opportunities**. Litter mapping is a relatively new and largely unexplored field of geographic information science, with traditional sampling methods now able to be supplemented by data collected by mobile (and other) devices by anyone, not just trained scientists. Only by empowering citizens to use their existing devices and share data can we transform our understanding of plastic pollution from a largely marine-related issue to a hyper-local one. This will open up an unexcavated source of research topics on sustainable litter management in various local and regional contexts. We will be able to test and iteratively build on society's capacity to produce data. (KPIs 3, 6-8, 10, 12, 13, 16-21, 24, 31-39)

1.2 Relation to the work program (response, via proposed project, to aspects of the call, including “cross-cutting” priorities as mentioned in the call text and EU “open innovation” concepts)

In the following screenshots, you see how we handled responding to these EU priorities, emphasizing innovation because had the project been funded, it would have been in the Innovation category.

Table 1-1: Scopes, challenges and expected impacts of sub-topic 2, cross-cutting priorities and how they address these challenges for plastics pollution issues and domains

Involve citizens in climate- and environment-related issues and domains, such as biodiversity, freshwater pollution, water scarcity and sustainable transport and food production.
<p>Domain: Global plastic pollution</p> <p>Citizen Involvement: Citizen Science Observatories (CSOs), CSO Replicators, Associated Partners, OpenLitterMap community, general public (e.g. tourists visiting Geoparks, includes participatory development of innovations and content open to any interested stakeholders).</p> <p>Citizen involvement and litter mapping: Unlike biodiversity mapping and climate change mitigation, litter mapping has a remarkably low barrier to entry with immediately visible effects. Litter is ubiquitous and easily identifiable, which are important characteristics that enable litter mapping to an important catalyst for the development of citizen science. Litter mapping activities in the [redacted] project will give many people their first introduction to mapping, scientific participation, and data [redacted] which activities can increase society's capacity to collect data, collaborate locally and across borders, and solve urgent problems.</p> <p>Citizen involvement and sampling: While macroplastics are directly visible in many environmental settings and can be spotted and mapped with the naked eye (or smartphone camera), the degradation of microplastics into smaller and smaller fragments puts such plastic waste “out of sight” from plain view. Citizens will be involved in water and soil sampling, making them aware of the amount of microplastics particles spread in our environment but hidden from view. Together with “making the invisible visible again” with easy-to-use sampling methods, citizen scientists will also be educated about the sources of microplastics and how they can be avoided (or at least reduced) by individual daily decisions.</p> <p>Citizen involvement and data platform: Citizens will be able to co-develop and conduct individual (via “MyPlastiLab”) and community monitoring (via co-creation of the early warning report and collaborative development of other solutions) that thus, with contributions from Europe and beyond, have the potential to fundamentally change our understanding of plastic leakage and flows in the environment to date.</p> <p>Related WPs: 1, 2, 4, 5</p>
Development or strengthening of citizen science initiatives to engage citizens in the active collection of environmental and socio-economic data through individual new or improved devices ./Include development of devices (low cost sensors, consumer apps, wearable sensors)
<p>Developing and improving citizen science data collection experience: [redacted] will develop a superior data collection experience necessary for harnessing the largely untapped [redacted] citizen science. Using the</p>

Cross-Cutting Priorities
RRI (Responsible Research & Innovation ³⁹)
<p>██████████ was conceived to embody the tenets of RRI, “Science with and for Society,” via:</p> <p>Management: Virtual and hands-on learning environments (CSOs, CSO Replicators) with a particular emphasis on empowering people to share data for the first time; participatory tool development through iterative online and offline forums; social media engagement and challenges; compelling storytelling about participants, projects, and plastics journey; and various online and offline events including litter picks, litter mapping marathons, local, regional and international community and school data collection competitions (“COVID-resistant”: virtual takes over when in-person events are not possible); production and creation of high-quality information accessible to broad publics.</p> <ul style="list-style-type: none"> • Open access: All scientific publications, data, code, and reports will be published openly with scholarly publishers or under various open source licenses including Open Database, GPL, and Creative Commons licenses⁴⁰. Open educational materials shared broadly at scale. • Gender ██████████ strives to balance teams, to work against gender stereotypes, and to support both men and women to balance issues. Project surveys and interviews will include gender issue components. At the time of writing, the ██████████ leader board has an anecdotal 50/50 male:female split. Non-binary participants or those of other genders are currently unknown to have used the software, indicating a possible area of investigation. • Ethics: Self-check conducted against H2020 ethics guidelines⁴¹ (Part B, Section 5), for work with humans, personal data. Although we want to facilitate as much open data as possible, there are exceptions and limitations. To use OLM as an example, private user information is not included in downloads, and some data types like drug-related paraphernalia have significant ethical implications (due to its relationship with homelessness). Drug-related data is licensed to health authorities who can make a locally informed decision about the openness and availability of this data in a local context.⁴² • Science education: This is a key component of ██████████ with its virtual and hands-on learning environments and emphasis on citizen science activities. ██████████ introduce citizens to data collection for the first time, the scientific method, critical thinking, and sampling and analytical techniques and concepts. <p>Related WPs: 1, 2, 4, 5, 6</p>
Blue Growth ⁴³
<p>██████████ is not specifically focused on maritime development and contributions to the Blue Economy, but is built with contribution to the Blue Economy in mind and incorporates many aspects of Blue Growth initiatives, most notably possible contributions to sustainable aquaculture, coastal tourism, and marine knowledge (maritime spatial planning or integrated maritime surveillance are beyond the scope of ██████████).</p>

1.3 Concept and methodology

This section included the following: the project idea “in a nutshell,” the positioning of the project in terms of future “innovation” outputs, research outposts [“citizen science observatories”], specific/quantifiable outreach targets, partner capacities/expertise, work package division/methodology, barriers to expected outputs, and gender dimensions of the project. SK created the concept of the citizen science observatories, and this idea was embraced warmly by the project coalition.

We had been advised that we should create the “story in a nutshell” as a kind of “elevator pitch” for the project, but I don’t think this is absolutely necessary, though can help project teams in the early stages to understand what everyone is working towards.

The following two screenshots illustrate how we tied project outcomes to specific, concrete forms of innovation.

<p>Positioning of the Project</p> <p>On the “idea to application” spectrum, [REDACTED] will deliver several innovations, both Virtual Learning Environment (VLE) and Hands-On Learning Environment (HLE) innovations: (i) the integrated data and modelling platform, with creation of „MyPlastiLab“ digital lab book (extension of Memowl), and plastics pollution early warning system for governments (extension of Memowl, for some components); (ii) the extension of an open-source mobile pollution image monitoring and classification application (“app”) tied to geographic data [REDACTED] with particular focus on its unique gamification proposition and object detection potential; (iii) a plastics footprint calculator that, unlike other calculators known to the project team, will include [REDACTED] research from the domains of stormwater and wastewater management and their contributions to microplastics in the environment; (iv) an easy-to-use sampling and sample preparation technique yielding the potential to distinguish plastics from other sample content material and to be readily applicable in citizen science, and (v) drones equipped with simple sampling devices.</p> <p>Prototypes shall be demonstrated in relevant environments (TRL6) and tested at CSOs with real end users. [REDACTED] solutions have a broad range of initial maturity (TRL 4-9), thus some innovations have already been [REDACTED] environments or built upon existing solutions while others will have to demonstrate their potential [REDACTED] field conditions. [REDACTED] ambitiously aims to deliver fully qualified systems demonstrated in operational environments and [REDACTED] market (TRL 7 to 9; see Table 2-2 for detailed TRL improvement and section 1.3, Barriers).</p>								
<p><i>Table 1-2: VLE Innovations</i></p>								
#	Virtual Learning Environments (VLE, with TRL at start/at end)	Open Source	Cloud	GIS	BC	AI and ML	Modelling & Visualization	DSS
1	Integrated data and modelling platform, including “MyPlastiLab” and quiz integration with Google Classrooms, Moodle, Wikimedia, other large (hundreds of millions of user) environments (TRL (4/7))	X	X			X		X
2	Plastic mapping and classification app (Littercoin rewards) (TRL7/9)	X	X	X	X	X	X	X
3	Plastics environmental footprint calculator (TRL 6/6)		X					X
4	Early warning system for governments (3/6)	X	X	X			X	X

Table 1-3: HLE Innovations

#	Hands-On Learning Environments (HLE, with TRL at start/at end)	Sensors	Analytical methods	Robotics	AI and ML	Open Source
1	Easy-to-apply sampling and sample preparation methodology targeting citizen scientists, validated by state-of-the-art analytics on sample subsets by the scientific partners (TRL 7/9)		X			X
2	Unmanned aerial vehicle equipped with sampling devices (3/6) a) camera/digital sample taking & image recognition b) physical sample and thermo-sensitive analytics	X	X	X	X	

Legend: BC, blockchain; AI, artificial intelligence; ML, machine learning; DSS, decision support system; GIS, geographic information systems.

Settings (CSOs) at a glance

At least half a million visitors/regional overnight stays annually, >150 municipalities or regions, 44 countries
At least half a million visitors/regional overnight stays annually, >150 municipalities or regions, 44 countries
~4,000 users in 80 countries
Media reach for [redacted] (numbers as of 18 Jan. 2021; does not include European or global UGG network)
Facebook: 76,836 followers
Twitter: 2,432 followers
Instagram: 12,124 followers
YouTube: 474 subscribers

Then we outlined our citizen science observatory concept, having in mind **a part of the call that emphasized the broadest reach possible**. We did our best to reflect Europe in terms of geography and planned inclusiveness of different segments of society, not only scientific researchers. Photos from the partners were included to hammer this message home.

CSO "Day One" Possible Reach Snapshot


- Over 100 schools
- Locations with over a quarter of a million people in 7 countries
- At least half a million visitors/regional overnight stays annually, >150 municipalities or regions, 44 countries
- ~4,000 users in 80 countries
- Media reach for [redacted] (numbers as of 18 Jan. 2021; does not include European or global UGG network)
- Facebook: 76,836 followers
- Twitter: 2,432 followers
- Instagram: 12,124 followers
- YouTube: 474 subscribers

Table 1-4: CSOs Snapshots

[redacted]	different countries. Facebook: 2,443 followers (2,214 likes), Twitter: 1,137 followers, Instagram: 1,897 followers, YouTube: 36 subscribers (12,141 views).
[redacted]	2020, more than 95% were Norwegian.

<p>Nature and UGG Styrian Eisenwurzen (ST-E), N47°04'12", E015°29'27", Central Austria</p> <p>Overnight stays: app. 100,000 per year, Daily visitors in the main attractions: app. 55,000 per year, Main season: May to October, Countries mainly: Austria, Germany, Hungary, Czech Republic. Facebook: 4,917 followers (4,811 likes), YouTube: 18 subscribers (1,882 views)</p>	
<p>Profile Snapshot</p> <p>mountain chain of main rivers Enns a</p>	<p>Plastics (and other waste) Pollution Challenges: Impact along rivers and touristic hotspots, but more litter in 2020 on hiking trails or similar. Main hotspots (but stable in the last years) rivers: Enns, S...ers. More awareness is especially needed: in p...astics. Our main tourism is outdoor sports: w...hiking: here we need more education and good systems to stop littering. Plastic cleaning days with partner organizations and schools annually - awareness raising in schools. We have some clean-up days mainly along the rivers in spring annually.</p>
<p>...ollowers (3,811 likes), ...followers.</p>	
<p>Profile Snapshot</p> <p>same time divid mountains that e</p>	<p>Plastics (and other waste) Pollution Challenges: Involving the topic in programs with our schools.</p>

A required part of these proposals are descriptions of how the project teams will tackle the project challenges appropriately. Here you see narrative descriptions of how the project teams would have worked based on prior expertise.

	<p>keep their old habits. Some of the younger locals do the same out of lack of education. During the COVID pandemic, the tourism patterns have indeed changed, but an impact on waste was not observed.</p>
<p>National or international research and innovation activities with connections to [REDACTED]</p> <p><i>Note: please consult Part B for detailed information about our coalition partners and</i> [REDACTED]</p> <p>[REDACTED] partners will build upon demonstrated experience with research and innovations at the EU and [REDACTED] and the project will bring their interdisciplinary and discipline-specific expertise together to blaze new trails while uniting scientific expertise with the ability to communicate and create content and activities for citizen scientists.</p> <p>[REDACTED] CSOs are staffed by teams well-versed in environmental, educational, and sustainable development and direct work with their local communities, with schools, and with visitors (tourists). Their prior work in this area together with vast experience in <u>INTERREG</u>, <u>ERASMUS</u>, <u>H2020</u>, <u>EEA</u>, <u>LEADER</u>, and <u>national projects</u> focusing on education, makes them ideal locations for promoting and working with citizen scientists as a part of virtual and hands-on learning experience. In particular [REDACTED] will share with the team its experiences under the <u>H2020 ArcticHub</u> project related to aquaculture and [REDACTED] together with its knowledge of the development of a sustainable food brand at the EU level (<u>GEOfood</u>), and together with GPK will transfer knowledge and best practices from the ongoing <u>H2020 RURITAGE</u> project. AGA will share its knowledge about smart geotourism, and EST's participation in EEA's "sharing of good practices across [REDACTED] project" will enable cross-pollination between [REDACTED] and <u>RURITAGE</u> projects. Moreover, EST [REDACTED] contribute to the team its knowledge of sustain [REDACTED] in highlands (<u>HIGHLANDS</u> and <u>HIGHLANDS</u> projects) as well as its low-cost terrain 3D mapping [REDACTED].</p> <p>[REDACTED] will lead the team devoted to creating hands-on sampling techniques and scientific content [REDACTED] calculator, quiz, and other virtual "data gathering", "data analytics and synthesis", and [REDACTED] expertise focused on microplastics will allow the team to build upon prior efforts, including material [REDACTED] from the [REDACTED] the WssT [REDACTED]</p>	

[redacted] particularly marine litter in coastal [redacted] knowledge of waste mapping and [redacted] to the equipping of sampling devices to drones. CIU team members will also contribute to the team its specialized expertise in international project coordination, communication, and the financial sustainability of large-scale academic learning tools based on prior team member experience with American nonprofits and foundations, including the Ford Foundation (India, Pakistan, Sri Lanka; JSTOR⁵⁰ launch, nil to millions of users in one day), the John D. and Catherine T. MacArthur Foundation (Russian Federation and Belarus academic/media literacy and scholarly publishing training), and the Andrew W. Mellon Foundation (Central/Eastern Europe and South Africa academic/media literacy).

The lead for [redacted] highly experienced in extraction and evaluation of scientific data, [redacted] machine learning and proprietary software development. Its involvement [redacted] European Food Safety Authority (EFSA) and the European Chemicals Agency (ECHA) range from comprehensive literature reviews for the risks of nanomaterials as pigments to data extraction from human and animal toxicity studies on Bisphenol A (BPA) to the risk assessment of RNAi-based GM plants to a tool to help its scientists extract data from literature relating to plant and animal health. Work conducted for the EU Science Hub's Joint Research Centre included a review of non-animal methods in use for biomedical research (respiratory tract diseases and breast cancer, immunogenicity testing for advanced therapy medicinal products, autoimmune diseases and immune oncology models).

[redacted] will conduct quantitative and qualitative analysis and guide participatory development and [redacted] (each) activities, transferring knowledge from MINDtheGEPs (developing gender equality plans), COST (citizen science to promote creativity, scientific literacy, and innovation throughout Europe), SERVICES (social-ecological research and technological innovations for improved integration of cultural ecosystem services in participatory planning processes), [redacted] providing insight into national and regional waste- and plastic-related initiatives (interdisciplinary perspectives on circular economy of plastic; linking systems, perspectives and disciplines for active biodiversity governance; improvement of effectiveness of municipal waste management in Jordanow municipality through education and information activities regarding selective waste recycling and risk of incineration of waste and the improvement of effectiveness of municipal waste management in Association of Municipalities of Wisłoka Water Catchment [redacted] will build upon prior experiences in work funded by the US National Science Foundation and the Austrian Academy of Science.

Regarding long-term sustainability planning for solutions developed during [redacted] (not yet involved in EU- or nationally-funded research projects) will apply its market [redacted] services, having completed over a thousand projects with the goal of shaping the future by means of providing useful data and much valued insights – and deploying this information to deliver strategic guidance. Focused on life science and biotechnology markets, [redacted] insight into markets regarding health and safety, beyond start-

As noted above, descriptions of the work packages are crucial and very closely observed by proposal reviewers. They also aid project managers, if the project is funded, in making sure the project develops according to what was promised in the proposal, including on-time delivery.

content and educational materials (including apps, games) developed for and together with citizens for different age groups (Waste4Think, Ur-BAN-WASTE, WeObserve, SCENT). To the best of our knowledge, none of these projects addresses the full combination of these activities proposed as part of the [REDACTED] project.

Overall approach and methodology

P [REDACTED] of Virtual
a [REDACTED] with an eye
to [REDACTED] and micro-
plastics life cycles while concurrently examining the efficacy of behavioural change efforts. The scientific research teams will focus on development of **virtual and hands-on learning environments** (WP1), with the social scientific research teams, in WP2 (“**Ear to the Ground**”), **measuring changes in awareness and behaviour** at CSOs (and replicators) and more broadly across a virtual research setting (e.g. OLM community, surveys for general public).

⁵⁰ <https://www.jstor.org/>

⁵¹ <https://cordis.europa.eu/project/id/688995>

⁵² <https://cordis.europa.eu/project/id/690047>

⁵³ <https://cordis.europa.eu/project/id/776740>

⁵⁴ <https://cordis.europa.eu/project/id/688930>

WP2 will also ensure creation of **appropriate standards and ethical and privacy policies** (essential for the qualitative and quantitative analysis to be conducted in WP2 and creation of the data platform, WP3), WP3 will focus on the development of the **consolidated data platform** (including open researcher API). Being essential to the awareness-building and behavioural change components of this project, communication, dissemination, and exploitation activities will be grouped into three areas of effort: “**Engage & Educate**” (WP4), in which the CSOs will promote project activities and recruit participants for learning events and activities, acting in a “Train-the-Trainer” capacity for some efforts; “**Outreach**” (WP5, including development and maintenance of the project website, social media outlets, in-person or virtual events, and day-to-day “steady stream” communication activities), and “**Route to Market**” will include analyses of how to exploit and commercialise the results of **PLASTIMAP** innovations (WP6). Finally, WP7 is devoted to **project management**.

For each work package, we talked about our goals and our approach to the proposed efforts.

Work packages at a glance

Work package #1: Virtual and Hands-On Learning Environments (VLEs and HLEs)



Goals: [REDACTED] aims to raise awareness of the plastics life cycle leading to drastic changes in littering behaviour. [REDACTED] effort to track microplastics and plastic waste in various environmental compartments (with a focus on water and soils) shall be triggered in playful ways in Virtual and Hands-On Learning Environments. A major goal of the **Virtual Learning Environments (VLEs)** is to bring citizens and other stakeholders together with information about plastics in their environment. [REDACTED] will thus make the link to existing litter mapping approaches—while having the [REDACTED] involved as a partner—and deliver its own imaging and mapping technologies. Data [REDACTED] and own previous projects will feed into the scientific mapping of content regarding flow of plastics from streets to rain to wastewater and surface water bodies, surface water to soil to groundwater, sediments and other potential sinks. The data and models developed will be included in the “MyPlastiLab” educational space to be created in WP3. **Hands-On Learning Environments (HLEs)** will bring together scientists and citizens in sampling events in the Citizen Science Observatories (CSOs, WP4) and cutting-edge drone sampling techniques to quickly and semi-automatically monitor and quantify levels of pollution in hardly accessible regions will be designed and used to trigger citizen’s awareness of anthropogenic behavioural habits on environments normally hidden to their naked eye.

Approach: [REDACTED] will build upon and extend existing **litter mapping** projects and **plastics footprint calculators**. [REDACTED] interaction via the [REDACTED] mobile application will be complemented with images from (i) open data such as web-cameras in [REDACTED] authorities or private entities for touristic purposes or earth observation repositories and (ii) own “digital samples” taken with unmanned aerial vehicles (UAVs). UAVs will be designed in the course of the project **to take digital and physical (water and soil) samples**. Literature and data and experience from previous projects will be used to add behavioural routines to plastics footprint calculators beside classical consumption patterns targeting especially the water cycle. This will include, among others, road transportation, usage of cosmetics, washing of different fibres and will yield mass balances of microplastics released to the environment with stormwater and wastewater. Agile participatory development mechanisms will be implemented and will involve creation of user scenarios (development of user scenarios/ mock-ups for development team) and testing scripts for the CSO co-developers. Scientific and grey literature as well as own reference projects will be further used to identify **sampling methods and techniques involving simple approaches and easy-to-acquire materials** to be used in citizen science sampling events within the CSOs (WP4). Emphasis will be on easy handling of sampling and sample preparation with straight-forward plastics separation from other materials (using simple chemical and physical properties) rather than applying state-of-the-art optical or chromatographic methods to make the topic tangible, easily accessible, and usable also in the manifold projects within the CSOs (involving schools, [REDACTED] visitors, community members, and so on).

Table 1-5: Barriers/obstacles and measures foreseen to achieve the expected impacts

Sampling events

seeks to develop easy-to-apply sampling and analysis methods yet providing trustworthy tracking of plastics at different scales and in water and soil samples, where they are mixed with all kinds of particulate matter. While macroplastics can be addressed by mapping and image recognition technologies, **for microplastics, simple and reliable techniques are still missing** and state-of-the-art methods such as mass spectroscopy or laser detection are beyond scope in citizen science. will thus focus on the spatial distribution, abundance, and diversity of plastics in our environment to account (i) **environmental hotspots and sinks** of plastics waste along rivers, such as e.g. grids, beaches also linking waste problems to sociodemographics and behavioural science, (ii) applicability of **metrics of biodiversity species richness indices** in image recognition and data-driven analysis, and (iii) **building sample separation methodologies on easy-to-grasp physical and chemical properties of plastics compounds** distinguishing them e.g. from organic matter, metals and sediments. Sample separation methods will be key for determining the **order of magnitude**, and microscope examinations will be preferably assessed as they enable to engage with a broad range of citizens and stakeholders and especially the young generation.

Plastic footprint calculator

Complementary to existing plastics footprint calculator as provided eg. by OmniCalculator⁵⁵, PlasticBank⁵⁶, or EarthwatchEurope⁵⁷, considers the **water cycle as a key element** as water bodies (and their inhabitants) are the main source of plastics pollution. Existing calculators emphasize citizens as consumers and plastics wrappings and personal care products. however, recognizes that weathering and decomposition of macroplastics is just one part of the cycle. The **extension** of a footprint calculator

In Horizon Europe, proposal writers must also address the so-called gender dimension of the proposed project. Below is sample text that could be modified by other authors or used as **a model for new original text**. The EU also now provides guidelines about gender equity plans, required if a proposal is funded; see: <https://op.europa.eu/en/publication-detail/-/publication/ffcb06c3-200a-11ec-bd8e-01aa75ed71a1/language-en/format-PDF/source-232129669>

- Concept of distributed swarm behaviour control targeting specific goals of environmental data collection and analysis.

targets a proof-of-concept stage.

Gender dimension

Balance within the team at writing

All project partners for gender balance within the team. Women were crucially-involved in the development of this proposal and, at time of writing this 4 of 7 work packages, 2 of 10 Geoparks, comprise 5 of 7 Advisory Board members, and constitute ~42% of team members identified at the time of writing the project proposal in Part B.

Working against gender (and other) stereotypes

Consideration and inclusion of gender critical issues across project research activities is fundamental for the project. European policy papers and research reports identify gender as a prerequisite for inclusive, sustainable and secure growth. In this regard, the project aims to consider and be inclusive of all genders and other differentiated realities and needs, and the integration of gender specific data and knowledge in how we approach innovation and gender-sensitive topics (e.g. public awareness). The project will equally address all the different kinds of stakeholders in the development and validation of solutions, uptake studies, and creation of learning environments (gender-balanced sampling) and will use gender-sensitive language in the research products and communication tools. Further, the project will further support Article 141(3) of the EC Treaty to protect sensitive gender-related issues of this Code, recognising the rights inherent in motherhood, fatherhood or the combination of professional and family lives. Women's participation is provided through equal access and opportunities.

The consortium is also sensitive to other diversity issues in addition to gender. The project content will address a variety of gender- and diversity-related issues, including review of content and by citizens living in different places across Europe, translations of content into local languages, making sure content (including translated content) is inclusive and culturally diverse (e.g. demonstrating a broad spectrum of people using our software where appropriate), providing website and social media images and video of both scientists and citizens working with data.

1.4 Ambition (beyond the state-of-the-art)

By “ambition”, proposal reviewers would like to see that the project team understands the current state-of-the-art in their work area, thus leading to a clear description of how the project will contribute beyond the current state-of-the-art.

For this proposal, we made two clear designations for each output area promised to be investigated in the work pages, summarizing briefly the state-of-the-art and how the project would propel understanding forward.

Developing a superior data collection experience
<p>State-of-the-Art: All around the world, hundreds of millions of people have access to a mobile device that can collect data. However, society's capacity at producing data and participating in the production of unprecedented global datasets remains significantly underdeveloped and largely unexplored, largely due to a lack of an outstanding data collection experience, though initiatives such as Litterati's are forging new pathways in e.g. AI.⁶¹ Just as popular social media platforms made innovations in how people shared information, OLM and the other solutions included in P will provide a similar catalyst that makes it fun and easy to share data. Taking inspiration from massively multiplayer games and social media platforms, we aspire to empower and excite people with a new way to interact with and think about their devices and the world around them. This will be heavily supported by innovations in computer vision.</p> <p>Innovation and progress beyond the state-of-the-art: Litter mapping is an important catalyst for the development of sourcing data as litter is not only everywhere making it extremely accessible, but everyone already knows what the objects are. Therefore, by introducing potentially large numbers of people to collecting data on litter, we can build up society's capacity to produce local, regional, and global datasets and expand our ability at collecting other types of data as well, such as validating Earth Observation, biodiversity, sub-marine, and other forms of data. Citizen science is missing a data collection experience and P will transform how citizen science is done across several domains, so far largely unsupported across</p>
Pushing the boundaries of plastics/litter image recognition/AI
<p>State-of-the-Art: Deep learning-based techniques are increasingly used to help to solve many real-world problems. These include marketing strategies, public safety, education, public gaming industry, to name a few. AI helps systems be more precise, efficient, and responsive, providing engineers with a unique opportunity for also using the popular technology in the context of highly-anticipated environmental protection developments and their related educational aspects and anticipated behavioural changes. Several studies have improved awareness and provide solutions for systematic management of waste in water and on land, utilizing datasets such as TrashNet or AquaTrash. However, deep learning algorithms using similar existing datasets are capable of reaching, at a maximum, 65% accuracy and are limited to very specific samples, such as bottles, medical trash, and so on. As such, they do not mirror P's goals for micro-to-meso scale debris. Moreover, publicly available datasets have some shortcomings: annotations that are crowdsourced (or missing entirely) and misleading or inaccurate descriptions of images.</p> <p>Innovation and progress beyond the state-of-the-art: A cross-platform deep learning software will be developed</p>

2 Impact

Impact statements are often difficult for the scientific teams to write. **Writing a good impact statement requires a clear understanding of the call itself.**

If possible, impact claims should be backed up by appropriate literature and things that can be quantified, not just general statements, as seen in the screenshots below.

2.1 Expected impacts

Introductory text plus descriptions of the KPIs for the entire project, with links back to the specific objectives (and, if possible, references back to work packages).

2 Impact

2.1 Expected impacts

Contribution to the expected impacts mentioned in the work programme and any substantial impacts not mentioned in the work programme

Table 2-1 shows the impacts generated by the project in relation to the work programme for subtopic 2 of the call and several cross-cutting priorities. The project has realistic, measurable, and time-related Key Performance Indicators (KPIs) has been defined to measure the expected impacts and provide clear measures of the specific targets.

⁸⁴ Alvear, O. et al. (2017). Using UAV-based systems to monitor air pollution in areas with poor accessibility, Journal of Advanced Transportation, 1, 1-15. doi: 10.1155/2017/8204353

⁸⁵ Andriolo, U. et al. (2020). Mapping marine litter on coastal dunes with unmanned aerial systems: A showcase on the Atlantic Coast, Science of The Total Environment, 736, 139632. doi: 10.1016/j.scitotenv.2020.139632

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These target values of the KPIs have been estimated based on preliminary expertise and ambitions of the technology providers and previous projects undertaken by the project partners. Time horizon is mentioned when the impacts will not be reached during or immediately by the end of the project.

Table 2-1: Expected Impacts and KPIs to measure achievement

EI#1: Development and strengthening of citizen science initiatives to engage citizens in the active collection of environmental and socio-economic data through individual new or improved devices.					
Citizens monitor plastic pollution by taking samples and snapshots of plastics (and other) pollution leaked to the environment (OLM). To engage citizens further in the active collection of data, (i) citizen sampling events in 10 UNESCO Global Geoparks providing a variety of natural environments and educational and shareholder networks connect the scientific teams to local communities and tourist visitors, and (ii) the existing OLM will be massively					

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#	KPI	Current	Target		SOs
1	OLM users	~4,000	20,000	+400%	1, 3, 5
2	No. of people producing data for the first time	/	5,000	+5,000	1, 3, 5, 8, 10
3	No. of OLM institutional clients	1	10	+9	8, 9, 11
4	No. of users finishing online introduction to scientific data collection and evaluation at "MyPlastiLab"	/	1,000	+1,000	1, 5, 8, 10
5	No. of citizens reached through CSO sampling events	/	400	+400	2, 3, 4, 5
6	Simple and reliable sample taking and sample preparation method for water (marine/rivers)	/	1	+1	4, 5, 11
7	Simple and reliable sample taking and sample preparation method for soil material (beaches, riverbanks)	/	1	+1	4, 5, 11
8	Real-time object detection capability implemented in OLM	/	1	+100%	10, 11

EI#2: Provision of personalized information to citizens and consumers about their environmental impact.					
Virtual (OLM, image and data contribution, plastic footprint calculator, AI-based data interpretation) and hands-on (sampling of water and soil) learning environments will be developed by scientists for citizens. The plastic footprint calculator will not only include waste from wrappings and personal care products (as in currently available web tools), but will include “hidden” elements of the plastics life cycle such as microplastics in stormwater and wastewater. Based on literature, data from surveys carried out in the project and tools integrated in the central data platform “MyPlastiLab” will present data on plastics used in daily lives of the citizens, allowing them to estimate their contribution to plastics pollution and monitor the trends how this contribution evolves over time. Municipalities will be provided with Early Warning on plastics hotspots.					
#	KPI	Current	Target		SO
9	Number of MyPlastiLab personalized users by end of project	/	>1,000	+1,000	1, 2, 8, 10
10	Number of API calls for results incorporating user provided data	/	100,000	+100,000	6, 11
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11	Number of visitors to online educational materials (best practices, lessons, documents, educational videos) and plastic footprint calculator data	/	>10,000	+10,000	1, 2, 5, 6, 7, 8
12	Number of early warning report users (municipalities, other stakeholders) by the end of the project	/	10	+10	7, 9, 11
EI#3: Better monitoring of the environment (land, sea, air, etc.)					
Citizens monitor plastic pollution by taking samples and snapshots of plastics (and other) pollution leaked to the environment. New devices include proof-of-concept for the application of UAVs taking digital (images) and physical (water) samples from otherwise difficult to access environments.					
#	KPI	Current	Target	PLASTIMAP Impact	SO
13	No. of local, regional, national and international data (images, samples, other) added to OLM and “MyPlastiLab”	currently not evaluated	60,000	+400%	1, 2, 3, 5, 6, 7, 8, 10, 11
14	No. of water samples (marine/river) taken in citizen science events	/	>400	+400	3, 4, 5
15	No. of soil samples (beaches, riverbanks, other) taken in citizen science events	/	>100	+100	3, 4, 5
16	No. of sample sub-sets (water and soil) analysed in CTU laboratory for validation of methods	/	20	+20	3, 11
17	Time needed to explore 1m ² by UAVs vs. conventional approach (hours)	4	0.4	-90%	3, 11
18	Sampled area using image recognition vs manual collection (m ² /hour/ person)	2	20	+90%	3, 11
19	Cost for analysis of a single loci (water/soil) image analysis vs laboratory measurement	200	1	-99%	11
20	Cost for analysis of a single loci (water/soil) UAV on-board smart analytics vs laboratory measurement	200	50	-75%	11
21	Accessibility ⁸⁶ of a remote location (e.g. beach	1-5	1-10		11

EI#4: Behavioural change processes on the part of citizens, consumers and communities towards more sustainable patterns in reducing their carbon and environmental footprint, changing their consumption and lifestyle choices to achieve goals of a climate-neutral, sustainable Europe through concrete and targeted advice.

will include surveys, interviews, focus groups, and workshops (online and in-person) throughout the project. The project will gather data measuring the efficacy of the project in changing waste prevention behaviours. Participation in waste reduction challenges will facilitate calculation of estimated kilograms and volumes of leaked waste recycled by citizens participating in individual challenges, and for calculation of estimated kilograms cleaned at CSO and other cleaning events held throughout the project (such cleaning events are already held at the CSO).

⁸⁶ Scale of 1 (easily by foot) to 10 (unaccessible for humans due to natural obstacles and/or weather conditions)

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#	KPI	Current	Target	[redacted]	SO
22	No. of surveys and interviews conducted at CSO	/	400	+400	1, 2, 7, 8
23	No. of videos created in which citizens discuss behavioural change and best practices for others to emulate	/	10	+10	5, 6, 8
11*	Number of visitors (clicks) to online educational materials (best practices, [redacted])	/	>10,000	+10,000	*

EI#5: Broad scale, cooperation with business, civil society organization, public authorities, existing initiatives.

[redacted] interprets “broad scale” as having multiple layers of outreach and solution spreading through the general environment (cf. section 1.1). While “eyeballs and visits” are included in our KPIs for scale, the [redacted] interprets scale in a nuanced manner having different social capital building (educational) components. The project aims to project outreach and dissemination of evidence-based information generated via the project taking into account data/information transfer to large-scale initiatives such as Google Classrooms and Moodle Quizbook. The behind-the-scenes, evidence-based involvement in the virtual information space is, as illustrated by recent disinformation campaigns surrounding COVID, crucial and represents a new way of understanding scale and reach.

#	KPI	Current	Target	[redacted]	SO
25	No. of stakeholders attending general informational webinars (businesses representatives of civil society organizations, public authorities)	/	100	+100	2, 9, 10
26	No. of Twitter followers	/	> 1,000	+1,000	2, 8, 9
27	No. of Facebook followers	/	> 1,000	+1,000	2, 8, 9
28	No. of Instagram followers	/	> 300	+300	2, 8, 9
29	No. of YouTube followers	/	> 300	+300	2, 8, 9
30	No. of LinkedIn/ ResearchGate followers	/	> 100	+100	2, 8, 9
31	No. of website visits	/	> 30,000	+30,000	2, 8, 9
32	No. of pictures added (OLM/ “MyPlastiLab”)	/	> 50,000	+50,000	2, 8, 9
33	No. of material exports to external platforms (eg. Google classroom, Moodle)	/	> 1,000	+1,000	2, 8, 9
34	Educational material downloads	/	> 5,000	+5,000	2, 8, 9
35	No. of skilled jobs stabilized/ created through [redacted]	42	50	+6	2, 9

EI#6: Take into account interoperability and exchange of future and existing data.

The complete database will contain a huge amount of data. The platform will provide free downloads of meaningful subsets of data in generally used formats (XML, JSON) to make them conveniently available to third-party developers. The [REDACTED] platform will communicate via universally used GraphQL protocol. Relevant standardization [REDACTED] followed and exports in suitable formats will be offered if standardization sufficiently progresses. [REDACTED] visits serve as a proxy for monitoring numbers and activity of third-party developers.

#	KPI	Current	Target	[REDACTED]	SO
36	Number of third-party applications using API calls	/	10	+10	6, 9, 11
37	Number of visits to API documentation	/	1,000	+1,000	6, 9, 11
38	Number of sub-set exports	/	1,000	+1,000	6, 9, 11
39	Number of API checks for data updates	/	100,000	100,000	6, 9, 11

2.2 Measures to maximize impactDissemination and exploitation of results

WP6 ("Road to Market") is dedicated to this end, encompassing both economic viability, long-term sustainability analysis, and IPR issues working in conjunction with the KWB project coordination team, where IPR will officially be managed.

Market solutions & long-term sustainability analysis

To achieve fast and wide market penetration of economically viable [REDACTED] solutions, a detailed plan for exploitation and dissemination of project results (market analysis, see [REDACTED] created between M10 and M12 by SUA, a seasoned consultancy specializing in creating economic value propositions and pricing research. A revision of the initial market analysis, based on project and market developments by M28 (D6.2). For any marketable solutions identified, creation of suggested pricing models will be included, with the updated market analysis completed by M30. The market analysis aims at structuring and conducting the exploitation and dissemination activities. The market analysis will serve as a roadmap for market uptake (i) within the project period for

2.3 Measures to maximize impact

Here, we created a table to summarize specific impact objects with deliverables we identified in the course of creating work packages, as a team.

Table 2-2: **PLASTIMAP Innovations, IPR holders and exploitation route**

#	Key exploitable result	IPR holder	Targeted group	Foreseen IPR mechanism	Exploitation route
1	[REDACTED] mobile app	CTI	Citizens (Crowdsourcing)	Open Source; Open Access;	Digital subscription; consultation SpinOff of new mapping tools, e.g. DrugLitterInfo, KelpMap, CoralMap and more
2	Plastic footprint calculator	ECOM	Citizens of all ages, decision makers	Open Source; Open Access;	Digital subscription; consultation
3	"MyPlastiLab" educational space	ECOM	Citizens of all ages, municipalities/public bodies, decision makers; researchers	Open Source; Open API	Consultation; Integration with other platforms and solutions (e.g. Moodle, Google Classroom)
4	GEOfood brand ⁸⁸ - digital support suite extension with [REDACTED] tools	MAGMA	Local communities, local business (restaurants)	Trademark	Extension of current package (fee for use of the brand – voluntary for EU/ mandatory for outside EU)
5	Early warning system for municipalities	ECOM	Municipalities, public bodies, decision makers	Open Access	Consultation; digital subscription Integration with other platforms and local geo information systems

Business development support for [REDACTED] SMEs

In addition to identifying new possible [REDACTED] market analysis will assist the following [REDACTED] SME partners in 3 countries: [REDACTED] in considering their next phase [REDACTED] and long-term sustainability [REDACTED]

Important areas of support will be citizen participation in the development and testing of solutions as well as localization, translation, of interfaces to the languages spoken in the initial CSOs: German, Romanian, Spanish, Portuguese, Croatian, Greek, Italian, and Norwegian for OLM and ECOM. This initial "proof of concept" will inform

Because the EU currently wants impact measures to be specified for all possible audiences, we created a table of possible stakeholders and how we would reach out to them, referencing specific work packages and tasks.

Table 2-3: Target groups and activities overview (to be refined in project communications plan, WP5)

Target audience	Objective	Channels & tools / task in WP
Local municipalities	Market uptake/replication of [redacted] solutions (information system)	Solution-specific targeted actions (e.g. webinars highlighting functionality)/T4.2.,T5.2.2; website and social media channels/T5.1.3, T5.2.4; invitations to educational webinars (via CSOs, open to all) and in-person events/T4.2.2, T5.2.2; stakeholder video testimonials/T5.2.3, T5.2.4; conferences and events attended (in-person or virtually) by project partners, EAB members, associated partners/T4.2.2, T6.1
Citizens	Raise awareness of leaked plastics into the environment Foster behavioural change Uptake of PL [redacted] solutions	VLE/HLE events/T4.2.2; website and social media channels (including best practices/lessons learned documents)/; webinars/T4.2.3,T5.2.; stakeholder video testimonials/T5.2.3, T5.2.4; digital challenges and awards/T5.2.4; marketing videos/T5.2.3, T5.2.4, T5.3.2; media relations/T5.2.5
European and national policymakers	Implementation of [redacted] results for short-term policy developments in the EU and beyond	Current awareness services/T6.1; website and social media channels (including best practices/lessons learned documents)/T5.1.3, T5.2.4; webinars/T4.2.2, T5.2.2, stakeholder video testimonials/T5.2.3, T5.2.4; survey reports/T2.1.3, T2.1.4, T2.2.2; scientific publications
Scientific community and subcommunities (e.g. geology/GIS research units at universities)	Exploitation of results in further scientific discussions and research	Website and social media channels/T5.1.3, T5.2.4; events and conferences/T4.2.2, T6.1
Influential networked actors	Raise awareness about [redacted] and engage [redacted] in [redacted]	Website and social media channels/T5.1.3, T5.2.4; events and conferences/T4.2.2, T6.1; media relations/T5.2.5; direct contacting, networking, in-bound marketing/T5.3.2, T6.1

Then we summarized intellectual property rights and data management aspects of the project, hearkening back to EU guidelines for these.

Useful links in this regard:

- <https://op.europa.eu/en/publication-detail/-/publication/ffcb06c3-200a-11ec-bd8e-01aa75ed71a1/language-en/format-PDF/source-232129669>
- <https://enspire.science/wp-content/uploads/2021/09/Horizon-Europe-Data-Management-Plan-Template.pdf>

IPR dynamics (knowledge management and protection activities)

IPR management: The Intellectual Property Right (IPR) and Knowledge Management strategy will be defined in the Consortium Agreement (CA), which will follow the DESCA H2020 model and will be signed by the partners prior to signing the grant agreement. For [REDACTED] solutions, the consortium already has a clear view of IPR ownership, types of IPR, and exploitation (see Table 2-2). The CA will set down the basic rules covering the sharing of information and ideas, the role of each partner for exploiting their intellectual property, the ownership of knowledge and the rules for access to IPRs generated during the project. Specific aspects of the CA are:

Ownership of background knowledge is unaffected by the project. Access rights to background knowledge of other project partners might be needed for certain activities. The CA will establish transparent rules for all partners for those cases.

Access rights to knowledge generated within [REDACTED] are agreed under fair and reasonable conditions to ensure exploitability. The IPR manager (see T7.3 [REDACTED]) manages any adaptation of IPR ownerships especially joint ownerships. The final distribution in joint ownerships will be defined in relation to the efforts invested in achieving them and the existing background knowledge at the project start.

As some [REDACTED] innovation results may involve commercially exploitable products or services suitable for direct commercialisation or potential implementation on the market, the IPR manager holds a specific responsibility for fair cooperation. The IPR manager will also screen the project for patentable contents of innovations and support partners in protecting their innovations (see also section 3.2 Management structures and procedures).

Open access: [REDACTED] supports the EU's Open Innovation precepts⁸⁹ and open data/source/coding approaches by giving open access to at least 3 solutions (see Table 2-2). Moreover, [REDACTED] will establish a commitment to the partners via the CA to provide open access to peer-reviewed publications of demonstration and validation results. [REDACTED] will disseminate results via both "open" and "gold" open access. To ensure high scientific quality, [REDACTED] targets for >5 gold access publications. For any open access publication with detailed results, [REDACTED] manager will be consulted to ensure that the intended

A preliminary list of the anticipated types of data/standards to be generated/collected together with initial thoughts for exploitation, sharing, curation and preservation are discussed immediately below.

Anticipated data types

At the time of proposal writing, [REDACTED] consortium members anticipate that, because of several different types of data will be gathered and [REDACTED] tool development, the following types of data will be collected:

Data from citizen scientists

Citizen scientists will collect different kinds of data. [REDACTED] will always make sure that human privacy and ethical standards are respected, including national [REDACTED] participants under the age of 18 and GDPR regulations. A privacy policy matrix will be drafted as part of W1.2 within 6 months after the project begins and will include guidelines for each country in which data will be gathered, with guidelines for young people (under 18) and for adults. This will include creation of online and print disclosure statements for images and videos taken under the auspices of the project.

- Images: Images taken by citizen scientists using their mobile phones (Android, iOS, and others) and images taken during the project (webinars, events). GDPR sign-off and check for under 18 restrictions. Stored at [REDACTED] via AWS; formats include: jpg, jpeg, png.
- Videos: Videos taken during the project (webinars, events, meetings) for project website. GDPR sign-off and check for under 18 restrictions. Researcher or cloud storage locations with formats include: MPG4, AVI, and any other formats.
- Audio recordings: GDPR sign-off and check for under 18 restrictions and stored by researchers with respect to all relevant privacy and other relevant ethics considerations.
- Textual data: All data requiring archival processing on the data platform in specific text structures will be stored in XML and CSV formats.

⁸⁹ <https://www.openinnovation.eu/open-innovation/>

Next, we included additional thoughts, in narrative form, about how we would communicate with stakeholders. **Please note the reviewers for this proposal did not find this description detailed enough, but within the page limits for this project, we could not include more details.** Perhaps others can overcome this challenge by articulating the information in tabular

form or considering the text more legible for/digestible to project reviewers. Perhaps the text, in our case, was not read carefully.

ECOM database data. OpenStreetMap has pre-defined over 120 types of filter that span 10 categories of behaviour (e.g. smoking, alcohol). All of this data including GPS, timestamp, full OpenStreetMap address, and more is available open source in CSV format.

Sharing between partners

We anticipate that partners will house most data on their local data stores. For simple sharing [REDACTED] AP partners will use tools of their choice selected at the beginning of the project to transfer information [REDACTED] with.

For contributing to the unified data platform, partners will send CSV files to ECOM, lead platform developer.

The [REDACTED] team will refine data type, use, and guidelines inventories during the project as part of the Data Management Plan (DMP).

Communication (outreach, engagement, dissemination) activities

The [REDACTED] team, with its participatory approaches, will systematically ensure that project outcomes are clearly communicated and shared with all stakeholders, including the citizen scientists taking part in the project but extending broadly to all plastics value chain stakeholders, including those in the academic and commercial sectors. Communication activities, as well as dissemination and exploitation, are strongly supported within the core structure of the project, involving social science partners, CSOs/CSO Replicators, and the aforementioned networks of stakeholders.

The [REDACTED] team has a clear understanding of initial outreach target audiences; collaboration with the CSOs and other interested parties will further extend our ability to communicate over various channels in an effective manner. We will also incorporate lessons learned by OML in real-time operations as well as best practices from the CleanSeaLIFE project, with a CleanSeaLIFE organiser serving on our EAB. A detailed communications plan will be developed by M6, and the plan will incorporate findings from recent research regarding, to name one example, participatory approaches to support policymakers and other stakeholders from the “bottom up” that has indicated that municipal waste management systems (MWMSs) are part of complex networked systems that have the ability to be mapped and analysed in network form.⁹⁰ [REDACTED] communication and awareness raising activities will thus be carefully designed to take complex networks into account and will aim at creating effective mapping of networked audiences to communication techniques together with rapid, ongoing measurement of the efficacy of communication efforts such as informal evaluations conducted after webinars and in Engage & Educate WP4 discussions. To highlight another aspect to be included in outreach planning: as Falcone & De Rosa (2020)⁹¹, referring to Lo & Liu (2019)⁹² and Mattsson et al. (2019)⁹³ note:

The role of ‘information campaigns’ may be of paramount importance for so-called ‘peer monitoring,’ which seeks to prevent improper waste dumping via two channels. First, citizens may simply persuade others from littering or dumping; and second, citizens may punish those who litter or dump through social sanctions such as exclusion and gossip (Zhang and Zhao, 2019). In terms of policy recommendations, and with the aim of driving positive ‘attitudes toward recycling,’ the aforementioned measures should be coupled with the

counter gender and other stereotypes. PLASTIMAP partners purposefully wish to create content which they hope inspires new generations to pursue careers in science and trust in science-based methodologies.

To encourage fun and creativity, PLASTIMAP engaged a visual filmmaker and artist based in/highly connected with the Berlin and international [REDACTED] EAB member to assist in generating creative, thoughtful ideas for challenges, exhibitions, and other [REDACTED] events, and participatory challenges enabling citizens to vote and choose on project activities will be included in planning.

Internal project communication

PLASTIMAP partners have developed mechanisms for clear and constant internal communication during the course of the project, including creating a clear visual identity (a review of its match to EU guidelines will be completed at project kickoff). The following mechanisms will ensure continued communication and collaboration for the duration of the project:

- Project kick-off meeting with internal communication discussion
- Basecamp or similar, more secure project archival tool; confidentiality, secure storage (mandatory for data involving humans), and other data-related issues (local institutional versus shared storage) will be addressed in the project DMP
- Regular video meetings
- Initial communication strategy (M6)
- Detailed communication strategy (updated in M18 and M24), with activities continuously monitored and assessed through a wide range of suitable indicators (e.g. Google or other web statistics analytics, social media analytics, number of media articles published, number of participants in roadshows and workshops, among other; see KPIs 26-34)

External communication

To add detail to discussions of activities provided earlier in this proposal, it is important to note that planned activities will be grouped around overarching educational themes, taking into account technological developments across the projects, and activities will be supplemented by special challenges (e.g. “Clean-Up COVID” challenge in Year One, “Did you know?” - Makeup, fashion, and microplastics series geared towards young women worldwide, Virtual Image Exhibition and Awards Night curated by Berlin artists for [REDACTED] image contributors, “Consider Your Host” - action for [REDACTED] visitors informing them about the impact of tourism left behind in local communities, thus fostering awareness and contribution to sustainable tourism).

3 Implementation

3.1 Work plan: Work packages, deliverables, and milestones

Below are sample work package descriptions. These follow the EU template and are drafted by the project partners with guidance from the proposal writing managers.

3 Implementation
3.1 Work plan: Work packages, deliverables, and milestones
Overall structure of the work plan

is organised in 7 interacting work packages (Figure 3.1.1) running in parallel over a project duration. The scientific basis for content creation is laid in **WP1**, in which **virtual and hands-on learning environments** will be created. Applications will include (open) litter mapping, development of simple sample taking and sample preparation methods to detect and distinguish plastics from other particles in water and soil as well as the development of new sampling devices building upon UAVs and content development for the plastics footprint calculator. **WP2** will co-create and co-design the VLEs and HLEs with deepened social understanding of educational efforts, the data privacy dimension and trustworthiness of data having an “**ear to the ground**”. The involvement of citizens in data collection, mapping, and sampling efforts will be united in WP3 with the development of a **data platform** interacting with the users via the “MyPlastiLab” educational space yielding personalized data spaces, information, and image libraries, dashboards, and gamification elements such as quizzes and challenges.

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On the scientific content side, AI technologies will be implemented for image recognition and data-driven early warning for municipalities based on (open) litter mapping. **WP4** will finally unite scientists and citizens in **engaging and educating** citizens and involving them in the “Citizen Science Observatories”. The provide a unique networking opportunity for getting in touch with visitors and local including schools/universities and shareholders/owners of the these engagement and activities are strongly supported by intense **outreach** and communication in **WP5**.

Innovators of the solutions and participating SMEs are further supported by market reviews and business development activities paving the **route to market** in **WP6**. **WP7** finally contains all project management activities such as project steering, quality assurance, performance monitoring, IPR management, and in relation to the EU project officers. An Expert Advisory Board (EAB, see Table 3-3) will guide the project partners by providing recommendations to increase the impact of project outcomes, facilitate their uptake, and act as “Project Ambassadors” in targeted communication activities.

These days, most projects include a chart that visualizes how the project work packages fit together into an integrated whole.

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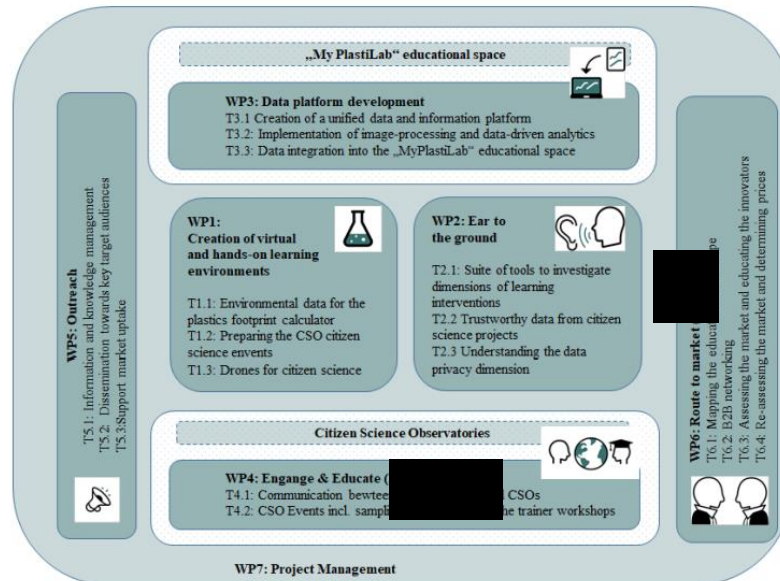
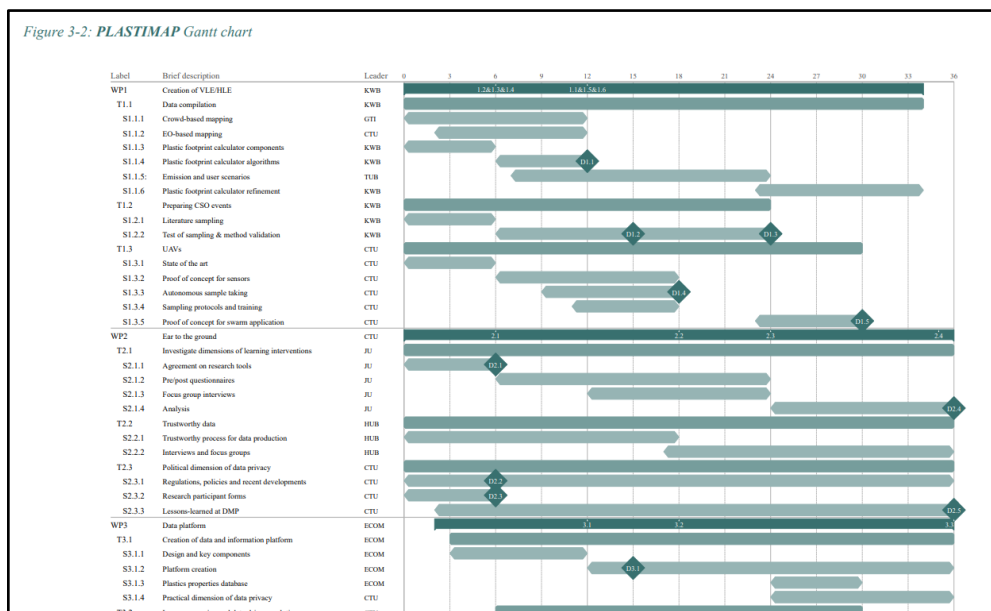
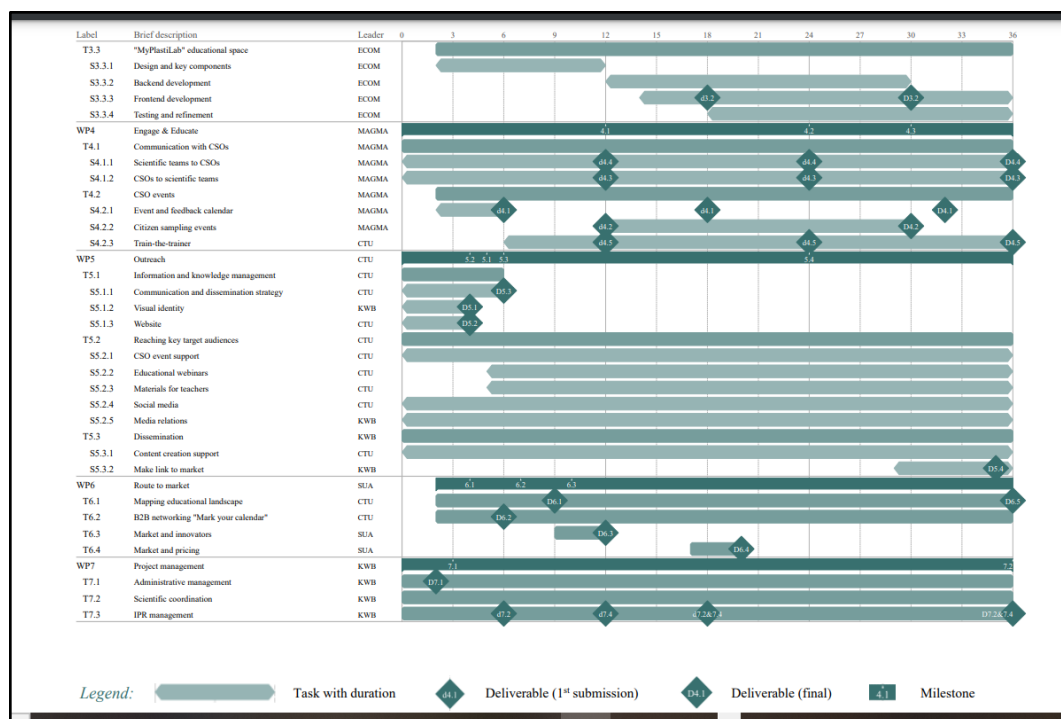


Figure 3-1: PLASTIMAP work package structure

A Gantt chart is also required by the EU, providing a visual overview of planned work with milestones and deliverables, in some cases.

Figure 3-2: PLASTIMAP Gantt chart





Another view of the work packages.

Table 3-1a: List of work packages (WP)

WP#	WP Title	Lead Partner No.	Lead Short Name	Person Months	Start	End
1	Virtual and Hands-On Learning Environments	1		122.0	1	36
2	Ear to the Ground	2	CTU	133.0	1	36
3	Data Platform Development	8	ECOM	99.0	1	36
4	Engage & Educate	5	MAGMA	164.0	1	36
5	Outreach (website, social media channels, newsletter, other communications)	2	CTU	60.0	1	36
6	Route to Market	9	SUA	25.0	1	36
7	Project Management	1	KWB	63.4	1	36
TOTAL:				666.4		

Table 3-1b: Work package description)

Table 5-1b: Work package description											
Work package number	1				Lead beneficiary				KWB		
Start month	1				End month				36		
Work package title	Creation of virtual and hands-on learning environments										
Participant number	1	2	3	4	5	6	7	8	9	10	
Short name of participant	B	I	B	B	GMA		I	DM	AZIO	I	

of sampled data. An alternative approach may utilize UAVs with different sets of equipment and capabilities to increase their performance in terms of both quantity and quality of work. One possible scenario may include two types of UAVs, one carrying heavier sensory equipment (e.g. thermo camera), able to find spots of interest, and another carrying tools for sample extraction.

Deliverables (brief description and month of delivery)

D1.1 Plastic footprint calculator data architecture and algorithms • T1.1.1, linked to T3.1.1 • M12: Report containing data matrix and calculations and technical implementation plan; the app development itself is part of WP3.

D1.2 Training material for sampling, sample preparation, and analytics in the CSO sampling events • T1.2.1 to 1.2.2, linked to T4.2 • M15: Fact sheets and guidelines to provide training to inv [redacted] staff and citizens.

D1.3 Microplastic concentrations in urban and rural settings – documenta [redacted] and analytical results for samples obtained in the [redacted] CSOs • T1.2.2 & WP4 • M24: Technical report of state-of-the-art-analytics of sample subsets from [redacted] ents.

D1.4 A hardware prototype of immaturized particulate, non-cohesive, media (water/soil) sample collector mounted at an UAV including technical documentation. • T1.3.3 & T1.3.4 • M18: Technical report of UAV development.

D1.5 A feasibility and performance study of collective/swarm sampling. • T1.3.5 • M30: Technical report of proof-of-concept

Work package number	2		Lead beneficiary			CTU				
Start month	1		End month			36				
Work package title	Ear to the ground									
Participant number	1	2	3	4	5	6	7	8	9	10
Short name of participant										
Person months per participant	3	18	6	6	2	72	6	7	0	2
Participant number	11	12	13	14	15	16	17	18	19	

For each work package, deliverables are included. These include a brief text description, type of deliverable (per EU guidelines), level of dissemination (PU=public; all our deliverables were public in this case, but they could be private or for the project team members or EU in sensitive cases), and number of months it would take to complete the planned work.

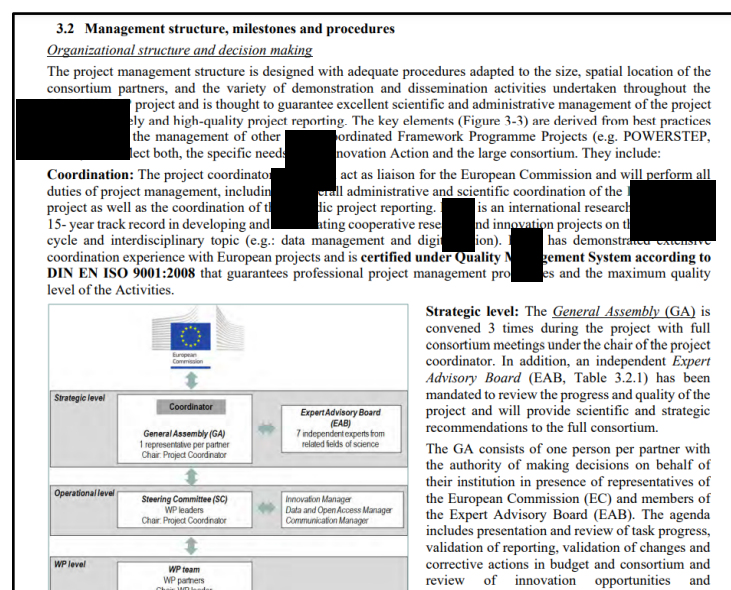
D7.2: Data management plan (M6, updated M18, M36)
D7.3: General Assembly and Steering Committee minutes (periodic)
D7.4: IPR and Innovation Management (M12, updated M18, M36)
D7.5: PLASTIMAP periodic reporting (M18, M36, M42)

Table 3-2c: List of Deliverables

Deliverable (No.)	Deliverable Name	WP No.	Lead participant (short name)	Type	Dissemination Level	Delivery Date (in months)
D1.1	Plastic footprint calculator data architecture and algorithms	1	[REDACTED]	R	PU	12
D1.2	Training material for sampling, sample preparation and analytics in the CSO sampling events	1	[REDACTED]	DEC	PU	15
D1.3	Microplastic concentrations in urban and rural settings – documentation of sampling and analytical results for samples obtained in the [REDACTED] CSOs	1	KWB	R	PU	24
D1.4	A [REDACTED] prototype of miniaturized particulate, non-cohesive, media (water/soil) sample collector mounted at an UAV including technical documentation.	1	CTU	R	PU	18
D1.5	A feasibility and performance study of collective/swarm sampling	1	CTU	R	PU	30
D2.1	Documentation of survey instruments	2	JU	R	PU	6
D2.2	Policy matrix	2	CTU	R	PU	6
D2.3	Informed consent from research participants	2	CTU	R	PU	6

3.2 Management structure, milestones, and procedures

To illustrate to project reviewers that the project will be well-managed, a proposed management structure should be discussed in text form and summarized visual, if this is possible.



In the case of this proposal, we created an Expert Advisory Board that would provide insight and oversight into project activities.

In retrospect, **we should have tried to find a real “superstar” advisory board member.**

These members are respected professionals in their field and are located in different countries, but they were likely not known by project reviewers in our case, unfortunately.

Table 3-3: Members of the Expert Advisory Board

Rut Bízková (F), Consultant, ISFOR, Institut pro Společnost 4.0, Czech Republic
Bízková is a former Minister of Environment of the Czech Republic. Bízková was educated at the University of Chemistry and Technology in Prague (UCT Prague), and began her career at the Nuclear Research Institute in Řež. She spent three months in 1993 working for the International Atomic Energy Agency in Vienna, before being appointed press spokeswoman for coal power plants of ČEZ Group, the Czech Republic's major power generation company. Her first government post was as the Environment Ministry's director of public affairs; she held other posts within the ministry until 2004, when she moved to its subsidiary CENIA (the Czech Environmental Information Agency). In 2006 she moved from CENIA's deputy directorship to the post of deputy environment minister in 2006, where she remained until her full ministerial appointment. She is currently a consultant for ISFOR.
Ertuğrul Çimen (M), Library Director, MEF University in Istanbul, Turkey
Çimen has a BS degree from Hacettepe University Faculty of Literature, LIS Department, and a MA degree from Kadir Has University Social Sciences Institute's Finance & Banking Program. He is the Library Director of MEF University in Istanbul. His professional interests are; academic library management, library consortiums, license agreement for e-resources, library collaboration, and resource sharing & document delivery. He is the former president of Anatolian University Libraries Consortium (ANKOS), coordinator of ANKOS Collaboration Working Group and ANKOS Academy Group, and Board Member of Turkish Librarianship Association. Currently he is the Secretary of the IFLA DDRS Standing Committee and an editorial board member of Information Discovery & Delivery (Emerald Publishing) and International Journal of Knowledge Management & Practices (IJKMP).
Eleonora de Sabata (F), President, MedSharks, Italy
De Sabata is an Italian marine science underwater photo-journalist and the author of articles, books, exhibitions and documentary films published around the world. Fluent in Italian and English, she is a consultant for international media on Mediterranean topics. As the <i>Financial Times'</i> Italian marine expert, she conducted investigative reporting on illegal fishing, deep-sea oil drilling in the Mediterranean, “toxic” ships and the Costa Concordia disaster. Building on her professional skills as a communicator and her first-hand experience of the marine world, she has now focussed her activities on scientific research, education and conservation projects. She manages several research projects on sharks and other endangered species with MedSharks, the Italian NGO she founded in 2001, with a strong citizen-science component. Her wide-ranging knowledge of the Mediterranean environment, the extensive network of contacts among professional and recreational marine stakeholders, and her media and social media experience are skills she brings to NGOs, Marine Protected Areas, Institutions and Universities both as a communication consultant and a partner on conservation projects. A new species of mollusk (<i>Jujubinus eleonorae</i>) was described from samples she collected, and named after her.
Lenka Mynářová (F), NAFIGATE Cooperation, Czech Republic
Mynářová completed her doctorate in sociology at the Faculty of Arts of Charles University in Prague and her entire professional career has been devoted to innovation in various fields: nanotechnology, biotechnology, science and research communication, and popularization of science and research. She was awarded the Manager of the Year 2018 Award for Leading the Hydral Biotechnology Project. In 2015, project Hydral received the Front and Sailing Technology Innovation Award for Best Technology Innovation in Biotechnology. Mynářová has been

The text should include information about what to do in case of disputes and difficult challenges a project might encounter.

Work package teams will be constituted by the project partners active in the WPs and will convene at least four times per year (at least two physical meetings) under the chair of the WP leader. The WP leader oversees the task activities and maintains close communication with the task leaders and the project coordinator.

Decision making procedures

The Consortium Agreement will detail the decision making procedures within the consortium. In general, major project decisions, such as those concerning the work programme, the allocation of specific managerial responsibilities within the work plan, the structure and content of deliverables, budgetary issues, contract termination or addition of partners, will be proposed by the Project Steering Committee and validated in the General Assembly. Decisions regarding the day-to-day research of the individual work packages will be made by the work package partners and be validated within the framework of the project guidance.

Conflict resolution

The management structure and work plan have been set out in such a way as to avoid conflicts within the consortium. However, potential conflicts could arise and therefore a conflict resolution strategy has been initially designed meeting the issue of:

(1) A non-performing partner: It will be the responsibility of the WP leader to inform the SC of a partner that is not performing. The SC will inform the offending partner about its non-performance and will request corrective actions and an improvement in performance through a written letter within a reasonable timeframe.

(2) Disputes of a scientific/innovative nature: If a scientific/innovation conflict arises that cannot be resolved after consultation with the involved partners, the WP leader will prepare a descriptive document outlining the technological and scientific conflict and will send it to the SC. The SC will make a final decision through a majority of 60% of the votes.

If a conflict remains unsettled, Extraordinary Project Committees (EPC) will be convened with the parties in conflict, as well as the related WP leaders and the project coordinator. The meeting will be chaired by an independent person, should it be the project coordinator, the WP leader, one representative of a neutral partner or an external appointed person, and the goal will be to identify an amicable solution acceptable to all.

Internal communication and reporting structure

Mechanisms for internal communication between project partners and reporting will be set out in the Project Management Handbook (D7.1), and achieved through the use of:

- Email and telephone, which will be the main forms of communication
- An internal share-point or repository (e.g. Basecamp, Trello, Nextcloud, or similar), protected by password access, to be used to post information on work in progress, reports, drafts and other material of interest to project partners and to archive work package achievements and meeting minutes.

In addition to deliverables, milestones (as included in the Gantt chart above). Specific, achievable milestones show project reviewers that the project is well-considered and that work will actually be performed on time and on budget.

- Providing feedback on the representativeness of findings and results,
- Ensuring that the project outputs are useful and practicable.

Milestones for progress review

In WP and SC meetings, the progress will be monitored against the planning using the list of milestones (Table 3-4) and list of deliverables (Table 3-2). Contingency measures will be applied immediately in case of deviation.

Table 3-4 List of milestones

Milestone Number	Milestone Name	Related wp	Lead	Due Date (month)	Means of Verification
MS1.1	Image recognition integrated in OLM	1		12	New OLM version available
MS1.2	LitterCoin reward scheme launched	1		6	First competition online
MS1.3	Plastics statistics compiled for plastic footprint calculator	1	KWB	6	Data matrix available
MS1.4	Sampling methods identified from literature	1	KWB	6	Fact sheets available
MS1.5	Sampling methods tested and verified against State-of-art methods	1	KWB	12	Short report and update of fact sheets
MS1.6	UAV beta version available	1	CTU	12	Prototype available
MS2.1	1 st workshop conducted to reach agreement on survey instruments	2	JU	6	Presentations and minutes shared
MS2.2	2 nd work shop conducted to evaluate progress	2	CTU	18	Presentations and minutes shared
MS2.3	All interviews conducted	2	CTU	24	Data compilation finished
MS2.4	Final workshop at ECDF, public event	2	HUB	35	Presentations and minutes shared
MS3.1	Platform architecture and plan for implementation agreed	3	ECOM	12	Implementation plan shared

All European projects require a table or list of possible project risks. These are drafted by the project team and should reflect risks for each work project or project activity stream, when possible. The project writing leads typically review the content of the risks, editing it according to the proposal page limits (note: this is a good place to cut text, if it's not possible elsewhere in the proposal).

Innovation management

Innovation Management will be an essential task of the SC meetings (see Figure 3-3 and T7.3). Latest results from the market study (T6.3 to 6.4) will enable to quickly identify opportunities to improve the concepts developed in [REDACTED] and adapt them best to the market needs. The Innovation and IPR Manager (team member of [REDACTED]) will support the project coordinator and moderate at each SC and GA meeting a session on innovation for the P [REDACTED] partners, taking into account latest know-how generated inside the project. The goal will be to seize all [REDACTED] for innovation within the project, and also to manage any IP issue arising within the project. A process of [REDACTED] management will be established during the entire duration of the [REDACTED] project to ensure that the valuable knowledge and technology developed in the project will be protected [REDACTED] around knowledge can be used freely within the consortium without impairing the commercial and [REDACTED] of any partner. The IPR manager will actively screen the project on possible patents and make sure the patents are established under fair consideration of the P [REDACTED] partner contributions.

Critical risks

The following table (Table 3.2b) shows the analysis of risks for the planned project and how the [REDACTED] team will act to mitigate the risks.

Table 3-5: Critical risks for implementation

Description of risk (indicate level of likelihood: Low/Medium/High)	Work package(s) involved	Proposed risk-mitigation measures
Limited response from CSOs and other stakeholders and missing motivation to engage [REDACTED] activities (High)	2, 3, 4	Identify motivated participants building on the already-extensive stakeholder network. Ensure that the data gathering and participatory methods used are designed for ease of completion, and in the formats most convenient to the participants.
Delay in developing solutions inhibits evaluation by CSOs and other stakeholders (Medium)	1, 2, 3	First deployment, assessment, and educational initiatives can be performed on a limited scale using prototype versions of the solutions and focusing on educating stakeholders on issues (privacy, scientific and other literacies, the differences between science and citizen science)

3.3 Consortium as a whole

Again, this is the location where the capacities of the proposal constituent members, including its strengths and potential weaknesses (include the latter only if there is space, since risks are outlined separately), are emphasized. A visual picture of representation across the EU is often helpful to reviewers.

Sampling of physical samples by means of UAVs fails due to the difficulties in real-world conditions during navigation or sample collection operations. (Low)	1	For problems in navigation, a pilot-aided control will be implemented. As for the data collection obstacles, only the nondestructive optical methods will be considered in situations where other physical sample collection methods fail.
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3.3 Consortium as a Whole

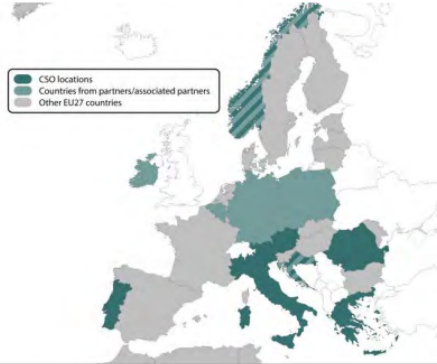


Figure 3-4: Countries involved in the P consortium

will provide several breakthroughs in citizen science and an early warning system which will reduce amounts of plastic (and other) waste leaked into the environment. Its scientific and technological approach is highly innovative as it aims at a complete new platform for consolidated plastics data and information with broad participation from citizens across Europe and beyond. This highlights the necessity to create a European-wide consortium, each partner providing valuable expertise in their domain and contributing a complementary set of skills and knowledge for achieving the highly innovative and complex objectives of this project. The consortium consists of 19 partners (6 research institutions, 3 SMEs, 10 public bodies) from 12 different countries (Figure 3-4). In addition, P attracted over 50 Associated Partners who expressed their specific interests and willingness to cooperate with letters of engagement (see section 4.3). Among the associated partners municipalities, schools, nonprofits, SMEs, and universities.

This partnership of technology providers, research partners, business partners, and UGGs will ensure innovation potential, scalability, visibility, and sustainability of demonstrated solutions.

The consortium will comprise approx. 42 persons of staff of which approx. 42% are women. Female researchers or consultants lead four of the work packages (WP1, 2, 4 and 5).

Specific strengths of the consortium:

- Mixture of R&D, SME, and governmental bodies (the latter represented by the P which are local and regional “umbrella” organizations) across Europe in 7 countries.

Budget requests in the form of work package “person months” are provided in tabular form, per the EU template, with “other costs” clearly identified.

<p>cheminformatics; coastal environments; robotics; image processing; physical and materials engineering; natural conservation; chemistry; marketing; environmental engineering).</p> <ul style="list-style-type: none"> A modern communication and dissemination strategy for [REDACTED] solutions that will maximise the impact. <p>3.4 Resources to be committed</p> <p>The total budget of the [REDACTED] consortium is 3,85 Mio. € and is shared between research partners (61%, SMEs (15%) and public [REDACTED]. The total funded budget is 3.67 Mio. €.</p>																																																																															
<p>PLASTIMAP – Part B section 1-3</p> <p style="text-align: right;">Page 66</p>																																																																															
<p><i>Table 3-6: Summary of staff effort</i></p> <table> <tr> <th>No.</th><th>Partner</th><th>WP1</th><th>WP2</th><th>WP3</th><th>WP4</th><th>WP5</th><th>WP6</th><th>WP7</th><th>Total Person Months per Participant</th></tr> <tr> <td>1</td><td>[REDACTED]</td><td>18</td><td>3</td><td>6</td><td>6</td><td>6</td><td>3</td><td>18</td><td>60</td></tr> <tr> <td>2</td><td>[REDACTED]</td><td>42</td><td>18</td><td>36</td><td>6</td><td>12</td><td>3</td><td>6</td><td>123</td></tr> <tr> <td>3</td><td>TUB</td><td>18</td><td>6</td><td>2</td><td>6</td><td>2</td><td>0</td><td>2</td><td>36</td></tr> <tr> <td>4</td><td>HUB</td><td>0</td><td>6</td><td>18</td><td>6</td><td>2</td><td>2</td><td>2</td><td>36</td></tr> <tr> <td>5</td><td>MAGMA</td><td>2</td><td>2</td><td>2</td><td>18</td><td>6</td><td>2</td><td>4</td><td>36</td></tr> <tr> <td>6</td><td>JU</td><td>0</td><td>72</td><td>0</td><td>4</td><td>4</td><td>3</td><td>3.4</td><td>86.4</td></tr> </table>										No.	Partner	WP1	WP2	WP3	WP4	WP5	WP6	WP7	Total Person Months per Participant	1	[REDACTED]	18	3	6	6	6	3	18	60	2	[REDACTED]	42	18	36	6	12	3	6	123	3	TUB	18	6	2	6	2	0	2	36	4	HUB	0	6	18	6	2	2	2	36	5	MAGMA	2	2	2	18	6	2	4	36	6	JU	0	72	0	4	4	3	3.4	86.4
No.	Partner	WP1	WP2	WP3	WP4	WP5	WP6	WP7	Total Person Months per Participant																																																																						
1	[REDACTED]	18	3	6	6	6	3	18	60																																																																						
2	[REDACTED]	42	18	36	6	12	3	6	123																																																																						
3	TUB	18	6	2	6	2	0	2	36																																																																						
4	HUB	0	6	18	6	2	2	2	36																																																																						
5	MAGMA	2	2	2	18	6	2	4	36																																																																						
6	JU	0	72	0	4	4	3	3.4	86.4																																																																						

Table 3-7: 'Other direct cost' items (travel, equipment, other goods and services, large research infrastructure)

Participant	Category	Cost (€)	Justification
1-B [REDACTED]	Travel	55,100	Travel costs include attendance of GAs and work package meetings, CSO visits, 1 national and 1 international conference (20,100); reimbursement of travel cost for EAB members (3x GA, 7 board members)
	Equipment	6,200	Sieve sets (4,400) and school microscopes (1,000) for CSO sampling events; field tablet (800)
	Other goods and services	27,800	Consumables for CSO test of sampling methods and sampling events (6,000); Health&safety equipment for field work (1,000); Organisation of workshops and final conference (15,000); shared server solution (1,800); Audit costs (4,000)
	Total	89,100	
2-C [REDACTED]	Travel	28,500	Travel costs include attendance of GAs and work package meetings, CSO visits, 2 national and 2 international conference
	Equipment	8,000	Drones
	Other goods and services	34,000	Consumables for drone prototyping including autosampler (30,000); Audit costs (4,000)
	Total	70,500	
4-M [REDACTED]	Travel	19,800	Travel costs include attendance of GAs and work package meetings, CSO visits, 1 national and 1 international conference

R Example

The R outline is similar to that of the PM proposals, but reflects the shorter full proposal required (maximum 45 pages instead of 70 pages in Horizon 2020). SK, together with the PI, edited the main text with a representative from another partner experienced in project management and proposal writing (e.g., she is currently managing a project for her PI).

1 EXCELLENCE

1.1 Objectives and Ambition

1.1.1 Background, Motivation, and Concept



List of participants

Nº	Participant organisation name	Organisation type	Partner type	Country
1	[REDACTED]	Research Institute	Partner	CZ
2	[REDACTED]	Research Institute	Associated Partner	CH
3	AALBORG UNIVERSITY, Aalborg University, Copenhagen (AAU)	Research Institute	Partner	DK
4	UNIVERSITAT INTERNACIONAL DE CATALUNYA, International University of Catalonia, Barcelona (UIC)	Research Institute	Partner	ES
5	Fundación Norman Foster, Norman Foster Foundation, Madrid (NFF)	Non-profit institution	Partner	ES

I EXCELLENCE

1.1 OBJECTIVES AND AMBITION

1.1.1 Background, Motivation, and Concept

[REDACTED] addresses the New European Bauhaus (NEB) by proposing an **adaptive, re-usable, bio-based modular construction system that relies on "tensegrity", incorporating Green New Deal (GND) precepts** and **advances in sustainable materials** and design, from an interdisciplinary research team representing architecture, design, arts, robotics/cybernetics, civil engineering, simulation, and materials research.

All disciplines are united to create a **smart reconfigurable and reusable system**, which will be developed first on a lab-scale then gradually upscaled to be finally validated on a real 1:1 scale in **three artistic, aesthetic**

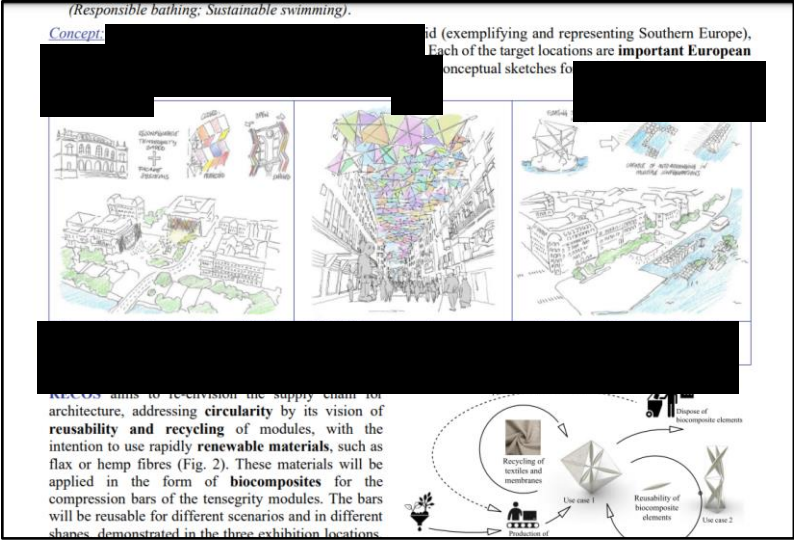
[REDACTED] addresses the New European Bauhaus (NEB) by proposing an **adaptive, re-usable, bio-based modular construction system that relies on "tensegrity", incorporating Green New Deal (GND) precepts** and **advances in sustainable materials** and design, from an interdisciplinary research team representing architecture, design, arts, robotics/cybernetics, civil engineering, simulation, and materials research.

All disciplines are united to create a **smart reconfigurable and reusable system**, which will be developed first on a lab-scale then gradually upscaled to be finally validated on a real 1:1 scale in **three artistic, aesthetic demonstrator-exhibitions in three chosen cities**. [REDACTED] using the same reusable construction modules. In each of the three cities [REDACTED] different context has been selected to highlight the system's smart features. [REDACTED] link to the GND and UN Sustainable Development Goals (UN-SDGs) in diverse terms, including minimisation of resources through reuse practices, cascading biomass utilisation, and integration of circularity. The expression of the chosen construction system in the planned exhibitions are intended to be **inclusive to all community members** through exposure (immersive displays), workshops, and integrated artistic features that will enable all society representatives to easily understand the proposed "smart sustainable theme" and **become connected to each respective heritage site**.

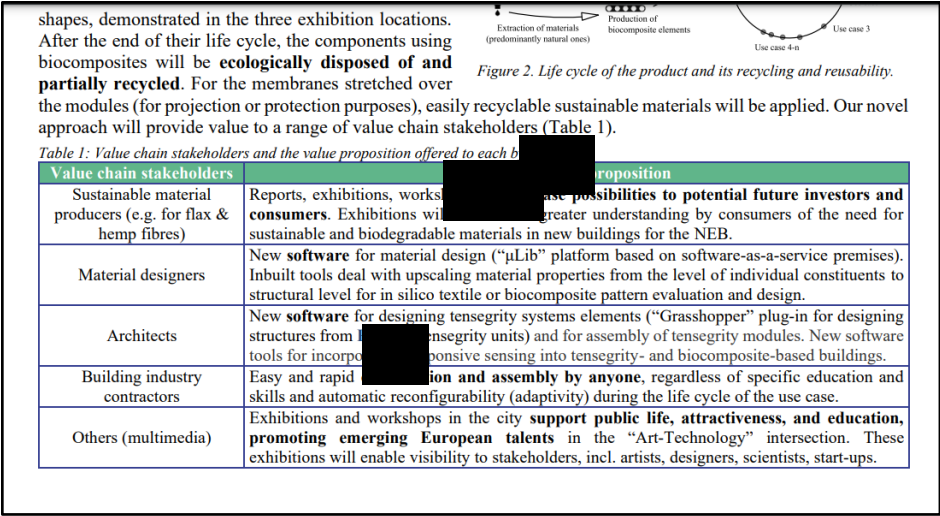
Background and motivation: The proposed modular construction system [REDACTED] will be designed and prototyped in the form of **individual reconfigurable units that are lightweight** and **can be attached, dismantled, then re-connected to suit the different context of each highly-protected historical heritage location**. The surface layers for the proposed modules displayed in the three exhibitions will illustrate, to members of the public from all walks of life (ranging from local individuals of all ages and on the diversity spectrum, to students, artists, or professionals), how **city streets can be transformed into massive galleries for artworks, ideas, sustainable spaces open for all, whilst also supporting commercial activities**. These activities will take place indoors and behind the surfaces and spaces adorned by [REDACTED]. Notable GND objectives include the use of **biocomposite materials and textiles made of the natural** and surface membranes that will contribute to **improved energy efficiency** for buildings/facades [REDACTED] provided by additional, specifically tailored

[REDACTED]ers that impart thermal insulation properties in winter and shading on sunny summer days when solar radiation is undesirable inside, thus reducing the need for environmentally-harmful air conditioning. People with diverse needs (e.g., people with disabilities, elderly, those with visual impairments), may, in the three exhibition locations, experience "augmented/hybrid reality" sightseeing via added content displayed on [REDACTED] pictures. [REDACTED] will thus pave the way for a new architectural design paradigm, shining a light on [REDACTED] a more

Introductory section with key points highlighted (bold and color) with box around key concept, in an attempt to ensure reviewers would understand what work was being proposed.



Because architects in the project writing team say they view the world visually, we **included many visuals in this proposal**, including sketches and diagrams made by two partners to illustrate concepts outlined in the text itself.



Here, we placed a summary table of stakeholders up front, again in an attempt to interest the reviewers and show them we had carefully considered who they might be.

Demonstrator Exhibitions: Inclusive, Artistic, Smart with Visual Messages and Educational Programmes

The demonstrator aims to show how reconfigurable green systems could reinvigorate sterile urban historical cores with a balance from rapid assembly, universality, and adaptability to the environment. Hence, the exhibitions transcend functionality with the social and cultural aims of bringing public spaces to life.

1/1st theme, “Arts between heritage and technologies (textiles)”: The level of protection of historic cities, such as in Southern European countries, is very high not only because of cultural significance but also due to UNESCO requirements. Current regulations work against the natural development of the city. This results in a sterile “museum-like” space characterized by tourist facilities rather than a space reacting to the rhythms of life (cultural trends and local community activities, including raising children). Regulations make it difficult to upgrade historical housing to meet modern living standards and building codes, often leading to the exodus of the indigenous population.

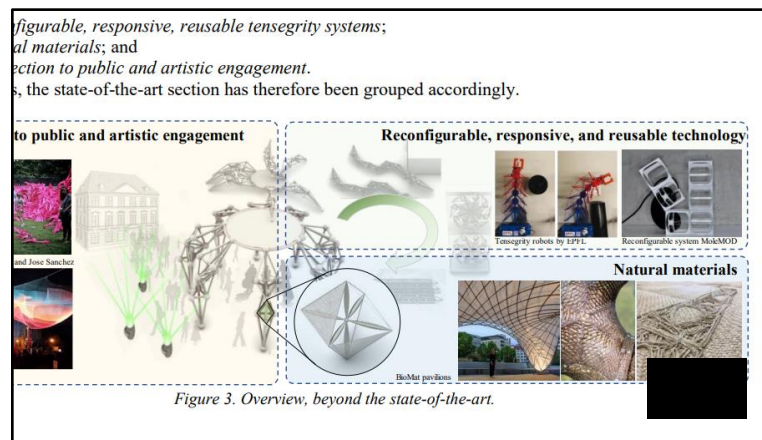
The demonstrator will focus on **the interface between historical facades and requirements of modern living** to create a removable system that could unintrusively address the needs of the local community and thus create a more positive and inclusive environment for all.

2/2nd theme, “Climate challenges and solutions”: The great social and economic value that public spaces and streets in Southern European countries is well known. These places are where people interact, learn, relate, and generate memories. The quality of public spaces determines the quality of urban experiences. However, as the climate continues to heat up, it is becoming increasingly difficult for people to spend time in public spaces during the summer months. As a result, citizens cannot always enjoy these environments, with the consequent loss of opportunities for the city and its inhabitants. This is increasingly the case in a context of climate change, in which extreme climate events are more frequent. The demonstrator proposes a design for the city that will **protect its most iconic streets and public spaces while maximizing the possibility of their use** by citizens.

3/3rd theme, “Responsible social habits (bathing, swimming)”: Bathing is known for prioritizing basic needs, such as inclusion, diversity, and interaction in city planning and urban life. Integration of diverse localities and pedestrian connectivity play significant roles as well as inclusive public spaces where everyone - regardless of their economic situation, age, religion, or gender - has an equal opportunity. Nevertheless, one of the challenges in urban planning is the integration of harbours and waterways into the urban area and public spaces. The demonstrator will contribute to **expanding public spaces towards the water**.




Responding to the particular aim, three “event sites” were developed, and the final section in the introduction introduced reviewers to what would be articulated in detail later in the document.

1.1.2 State-of-the-Art and Beyond



Another visual illustration of how different state-of-the-art areas fit together in this proposal, placed before descriptive text (cropped here to maintain project participant privacy).

Table 2. UN SDGs for Architecture. Legend: BM: Building Material, BE: Building Element, ED: Equipment Design, AD: Architectural Design, CD: Community Design, LD: Landscape Design, TP: Town Planning, PD: Politics Design.


State-of-the-Art Area	Original Bauhaus	Progress beyond the state-of-the-art, as illustrated by the UN SDGs
 1/ Reconfigurable, responsive, reusable tensegrity systems	Static, some modular elements	Developing reconfigurable, environmentally responsive, and reusable technology composed of modular elements will contribute to the UN SDGs for architectural innovations: BM, ED, AD, CD, TP with emphasis on #9 (industry, innovation, infrastructure), #11 (sustainable cities and communities), #12 (responsible consumption and production), #13 (climate action), #15 (life on land), #17 (partnerships for the goals)
 2/ Natural materials	Steel, concrete, outputs of heavy industry with pollution	Incorporating low footprint, natural, biodegradable materials will contribute to the UN SDGs for architecture: BM, ED, AD with eye on #8 (decent work and economic growth), #11 (sustainable cities and communities), #12 (responsible consumption and production), #13 (climate action), #14 (life below water), #15 (life on land), #17 (partnerships for the goals)
 3/ Connection to public and artistic engagement	Craft workshops and educational components, schools	Workshops, interactive exhibitions, and strong educational component leveraging university and non-university contexts (e.g., city governments) will contribute to the UN SDGs for architecture: BM, ED, AD, PD by incorporating #3 (good health and well-being), #4 (quality education), #8 (decent work and economic growth), #9 (industry, innovation, infrastructure), #11 (sustainable cities and communities), #12 (responsible consumption and production), #13 (climate action), #15 (life on land), #17 (partnerships for the goals)

STATE-OF-THE-ART 1/Reconfigurable, responsive, reusable tensegrity systems and their use in architecture
 Reconfigurable systems

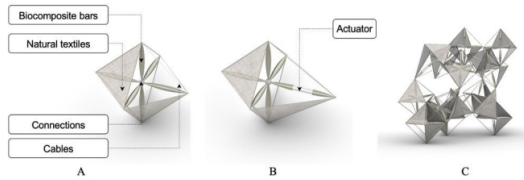
Responding to the call, which referenced the UN SDGs, a summary table was created that discussed the project's response to these goals.

action), #15 (life on land), #17 (partnerships for the goals)

STATE-OF-THE-ART 1/Reconfigurable, responsive, reusable tensegrity systems and their use in architecture
 Reconfigurable systems


 Increasing automatization and digitalization in the 21st century have forged new pathways for material design. New materials and digital design tools together with global sustainability, adaptivity, and reusability goals have spurred architects into conceiving reconfigurable systems. Reconfigurable systems are typically modular; i.e. able to be rearranged in different configurations. Modularity can be provided automatically by self-reconfiguration (a bottom-up approach) or externally by manipulation (a top-down approach).

Within architecture, reconfiguration is mainly provided by external manipulation of modular elements, kinetic or static. One of the first buildings of the modern era, which showed the possibilities of reconfiguration was the Crystal Palace in London, made possible by the design of joints, dismantled and moved to a different place. A few years later, Burton proposed using these elements for a new skyscraper.¹ One of the most well-known reconfigurable spaces was introduced as a part of the Centre Pompidou, and the concept was influenced by the conceptual Fun Palace (Cedric Prize, 1960)² and implementing early cybernetics influenced Von Neuman's game theories.³ Examples of reconfigurability, so-called "design for deconstruction," can additionally be found in various projects, such as Archigram's Plugin city,⁴ Japanese Metabolism,⁵ and Discrete Architecture.⁶ In the past ten years, "self-reconfiguration" concepts have been introduced to architecture, referring to the idea that distributed modular building elements have the ability to rearrange themselves into a variety of forms without external manipulators. Highly visionary concepts have their origins in different fields (e.g., molecular biology). The first investigation of "scaling up" such approaches was with the first reconfigurable robot CEROT.⁷ followed by various investigations



Labels in diagram: Biocomposite bars, Natural textiles, Connections, Cables, Actuator.

Figure 1. Progress beyond the state-of-the-art: (a.) Passive tensegrity module, (b.) Active tensegrity module, (c.) Aggregation of active and passive modules

Detailed text and illustrations about the different state-of-the-art areas, with initial text having been created by the project team specialists and edited/refined by the experienced project manager and SK.

Innovation and progress beyond the state-of-the-art: In order to address the shortcomings described above, we will build on, and extend a method that we have previously proposed for static tensegrity structures,^{48,58} in order to generate modular and reconfigurable tensegrity structures capable of motion for desired reconfigurability. The generative method will be inspired by biological processes of morphogenesis whereby complex (tensegrity) organs grow from the duplication, fusion, and death of simple (tensegrity) cells. This process will result in the first

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generative design method that can produce a stable tensegrity system of a predefined shape. The family of elementary tensegrity cells that will serve as a starting point for the morphogenetic process will also include tensegrity joints that can provide the desired motion and reconfigurability to the tensegrity structure. Furthermore, we will modify the morphogenetic process to enable the co-development of a nervous system, implemented as a neuronal network matching the tensegrity body that will stimulate the tensegrity actuation elements from the sensory stimulation to produce behavioural reconfigurations. In doing so, we will produce the first proof of concept of living reconfigurable structures whose bodies and brains are inspired from the architectural language of biological brains and bodies.

On a practical level, passive and active tensegrity modules of different shapes will be developed and optimized for deployability, weight, and actuation for **real-world construction (architecture) applications, for the first time, using the proposed morphogenetic process (WPs 1, 2, and 3)**. These include: development of a repertoire of passive and active architectural tensegrity modules, through morphogenesis, optimized for deployability, weight, sensing of environmental conditions, and actuation through a co-developed nervous system (WP2); software development designed to assist future architects, construction professionals and engineers with the design process for novel reconfigurable structures and the integration of biocomposites within (WP3); and digital evaluation of structures and material performance under simulated and real environmental challenges, including sun and water protection, prior to installation (WP3 and WP5).

1.1.3 Specific Objectives

1.1.3 Specific Objectives of the RECOS Project

The table below shows the impacts generated by the project in relation to the work programme for the call. A set of specific, realistic, measurable, and time-related Key Performance Indicators (KPIs) has been defined to monitor and quantify the expected impacts and provide clear measures of the specific targets (Table 3).

Table 3. Specific objectives and KPIs of the RECOS Project

Objectives		Key Performance Indicators	
Technical	Develop a repertoire of passive and active tensegrity modules of different shapes optimized for deployability, weight, and actuation.	- Optimized tensegrity modules (1 passive and 1 active) by M12 - Increase the number of identified modules to 10 by M24 (5 passive and 5 active)	EPFL
	Develop plugin in Grasshopper software for the morphogenesis and digital assembly of tensegrity units.	- Alpha version ready by M12 - Beta version ready by M24 - Full release by M36	
	Develop neural growth algorithm that links the sensors and actuators of the tensegrity systems, allowing responsiveness and reactivity to external stimuli.	- Full version of the algorithm tested in simulation by M24 - Control algorithm validated using lab scale prototypes by M42.	
	Construct and validate prototypes for individual types of tensegrity robotic modules resulting from the design software.	- Manufacturing small scale working prototypes by M24 - Reduction of the performance error between first release prototypes and the simulation to less than 5% by M30 - New prototype release by M36	
	Develop digital twin of a tensegrity unit reproducing its mechanical performance	- Predictive, validated computational model on 1 tensegrity module ready by M12 with an error less than 5% with respect to measurements - If needed, accelerate the model to obtain real-time performance by M18 - Increase the number of validated units to 4 (2 active and two passive) by M24	
	Develop and validate module connection system and demonstrate its performance on lab-scale module assemblies	- Identify/design suitable connection systems and test them on centimetre-scale samples by M8 - Demonstrate their feasibility on 3 passive/active module assemblies by M14 - Computational model to reproduce assembly kinematics with an error less than 5% by M20	

Here, you can see how we created SOs for this project, with KPIs (objective item and delivery month).

1.1.4 Positioning the Project

concept is not a stand-alone but is enabled by the collaboration of the project partners via eight main innovations. The TRL advancements of the main innovations are listed in Table 4.

(S). The contribution of the main innovations to the MIs to specific impacts of the project is shown in Section 2.1.

Nº	Main Innovation	TRL	S/T
1	Passive and active tensegrity modules of different shapes developed and optimized for deployability, weight, and actuation for real-world construction applications for the first time.	4	T
2	The first tensegrity design software based on a generative growth process for complex tensegrity systems using form, mobility and deployability as design constraints.	5	T
3	Neural growth algorithm that linked to tensegrity sensors and tensegrity actuators to provide the structure with environmental awareness and reactivity.	4	T
4	µLib software tools for analysis of mechanical material properties of biocomposites and textiles.	5	T
5	Software for generative design of textile patterns and biocomposite fibre layouts implemented as Rhinoceros plug-in and incorporated also as new GUI in µLib platform.	5	T
6	Partial replacement of non-renewable materials by biocomposites within functional construction modules.	4-5	T
7	µLib tools released under software-as-a-service premises with open access.	5	S
8	The concept of integrating sustainability with the world of high-tech construction, architecture, and art understood by society through the three new sustainable solutions proposed in the project.	4-5	S

Very important, once again: showing the TRL of proposed solutions to be developed under the auspices of the project.

1.2 Methodology

1.2.1 Methodology and strength of interdisciplinarity

1.2 METHODOLOGY

1.2.1 Methodology and strength of interdisciplinarity of the

coalition is uniquely qualified to respond to the challenge by providing a “fusion” of cutting-edge civil engineering/materials and simulation (CTU); and creative, inclusive, and sustainable design, taking the European Green Deal objectives to a new level by viewing them through the lens of Architecture (recall section 1.1.2). The project will, importantly, introduce new technologies and composite materials to a broad public for the first time, setting the stage for a paradigm shift in architecture. The team interprets “co-creation” in terms of virtual

software design (spaces where new, innovative software tools for morphogenesis, digital assembly, modular connection, and biocomposite creation) and public exhibition. The project proactively counteracts dystopian views of a technology-based future with positive, inclusive visions for how humans can live, work, interact, and create their built environments, harnessing their creativity in ways they have never imagined before.

Architectural design methodology (WPI)

The methodology for architectural design combines standard architectural procedures from architectural studies to realization with the philosophy “Material as a design tool” where, from the beginning of the design procedure, the applied materials are known and guide the final design. The project considers tensegrity modules

Overviews of methodologies according to the constituent partners from several disciplines in the form of work packages, drafted by each project team and edited and refined by the experienced project manager, SK, and Prof. JZ, for the most part.

reconfigurability, and adaptivity. The testing scale will test the real materials and dimensions of 1-3 modules to obtain data about structural and mechanical performance and durability of biocomposite and other applied materials. The urban scale will exhibit a simplified version of the testing scale in urban space to get feedback from visitors through social interaction and projections on demonstrators.

Table 5. The different scales during development.

Lab scale 1:10 approximate aggregation size: 1×1×1m module size: 10×10×10cm	Testing scale 1:2 Approximate aggregation size: 1×1×1m module size: 50×50×50cm	Urban scale 1:1 approximate aggregation size: 10×10×10m module size: 1×1×1m
Visionary solutions, reconfigurability, mobility, aggregations	Structural and mechanical performance, Biocomposite materials, functional prototype of module	1:1 Simplified version, conventional materials, social interaction, communication, interactivity, public installation

Tensegrity structure design methodology (WP2)

will develop a morphogenetic design process for tensegrity systems that incorporates the intended function of the system (reconfigurable motion) as a design constraint. The process will result in lightweight tensegrity systems with structures optimized for their desired motions along with an optimal actuation strategy. The morphogenetic process will include the placement of proprioceptive and exteroceptive sensors and linear actuators connected to a neural network that will control stiffness change, shape change, mobility, and self-repair by redistributing stiffness and form. This morphogenetic process will enable the design a repertoire of passive and active modules of different forms that will be used by architects and engineers to design reconfigurable more complex tensegrity systems.

The morphogenetic process, which will be applied to the creation of tensegrity structures in the [redacted] project, will start from elementary tensegrity cells (Fig. 7) that have been mathematically proven to be the [redacted] stressed

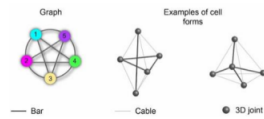


Figure 7. Example of a simple tensegrity cell composed of 5 nodes and two possible self-stressed forms that it can take in 3D.

to minimize weight and match a desired motion capability when actuated. The morphogenesis process can be parametrized through using different combinations of composing tensegrity cells, different adhesion, fusion and apoptosis operations, and different actuation strategies. These parameters can then be optimized within an

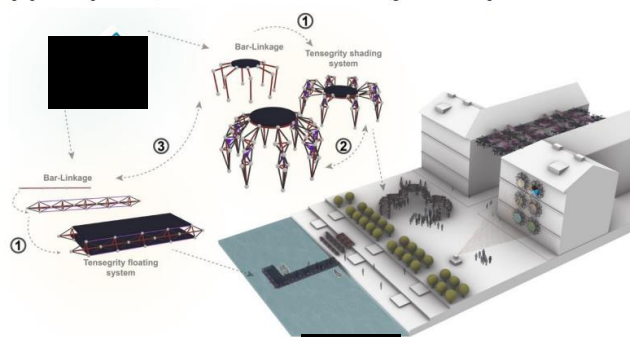
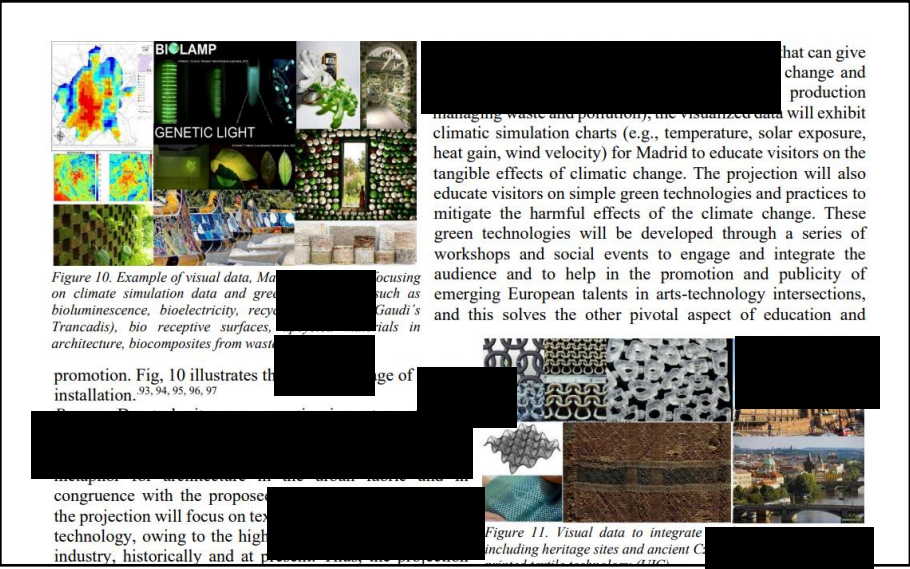


Figure 9. Assembly process and reconfigurability of a tensegrity system: 1) We start from a set of bars connected with joints called a "bar-linkage". 2) The assembly of a tensegrity floating system. 3) The assembly of a tensegrity shading system. The assembled tensegrity system can change shape and react to its environment. The assembled tensegrity system is reconfigurable. Different starting bar linkages result in tensegrity systems with different functionalities.

We will also develop a neural growth algorithm that will link tensegrity sensors and tensegrity actuators to provide the structure with environmental awareness and reactivity. In addition, the tensegrity modules could be reconfigured in different configurations to provide different functionalities, such as adaptive shadings and self-stabilising urban islands (Fig. 9). For example, a shading tensegrity could detect where the sun and wind come from and adapt the shape to provide the best shading while maintaining stability; similarly, an urban island could detect inclinations and

Work package illustration examples (again, for reviewers to be able to scan and grasp concepts more easily).



More work package illustrations.

1. [redacted] (sunshine shading system) in-situ testing at CTU labs	
2. [redacted]: Water surface deployable structure, testing in CTU water engineering testing facilities	
3. [redacted]: Thermal insulation capabilities, in-situ testing at CTU labs	
Table 6. Summary of RECOS in relation to call	
Call objectives	How [redacted] responds
Innovative architectural and design solutions that emphasize the use of new forms and materials in line with the European Green Deal objectives	New [redacted] engineers and architects will create a repertoire of passive and active tensegrity-based structural modules with different shapes optimized for deployability, weight, and actuation, with working physical prototypes and mock-ups validated against digital (virtual) simulations . Public exhibitions will link all those interested with both physical and virtual manifestations of these new forms.
	New materials: Fibre Reinforced Polymers (FRP) based on [redacted] produced in Europe will be investigated for use, introducing, via exhibitions and workshops, large numbers of citizens and other stakeholders to Green Deal, high-tech material solutions they cannot currently purchase.
	European Green Deal: Reduce emissions: Proof-of-concept that biocomposites and natural materials can effectively and efficiently be used in architectural settings instead of steel, concrete, and other materials produced with high emissions.
	Create jobs and growth: Introduce a wide spectrum of investors to promising design and materials avenues, via exhibitions and workshops for reusable, reconfigurable, natural-fibre-based product lines.
	Address energy poverty, reducing external energy dependence: By reducing emissions and enabling architectural solutions to be added to existing infrastructures, illustrates how architecture can be energy “lean” and powered (in terms of plant-based materials) by sunlight .
Improve health and wellbeing: Exhibitions illustrate how dynamic architecture can shield humans from the effects of climate change . [redacted] proposes a water treatment system using useful microalgae to enjoy swimming in [redacted] and use the microalgal cultures for the cost-free production of biomass and food , [redacted] application in industry (pharmaceuticals, cosmetics from biosources [redacted] and can be used to improve thermal insulation for cultural heritage sites ([redacted] effect on the overall heat gain and air quality inside and around the building and [redacted] achieve thermal comfort for the users/visitors. This will enable further control of [redacted] inside the building to reduce the overall used energy	

Description of the call and how the project aimed to respond to it.

Strengths of interdisciplinary approach

The [redacted] team, with this project, is calling for a paradigm shift in how architecture in Europe is conceived and implemented, thus contributing to the NEB (Table 2 above) and beyond. Building on diverse European cultural heritage, [redacted] strong technological dominance, the project idea walks in line with the EU's original conception that it be "beautiful, sustainable, together" by extended dynamic concepts that drive forward the **creation of a consumer architectural and construction marketplace** embracing modular distributed assembly and components sourced from natural, renewable materials grown in Europe. The [redacted] team, coming together for the first time in this proposal, has assembled a **powerful coalition capable of setting the stage for this bold transition and powerful vision**, indeed emulating the conception of the multi-disciplinary original Bauhaus and configuring the 21st century [redacted] in ex [redacted] human [redacted] systems corresponds neatly to **CTC in Prague's Open Mechanics Group (OMG)**, with its background in design and simulation of civil engineering solutions, including software and hardware development, applied here to the architectural, design, artistic and materials space. AAU's (BioMat Research Group/DK) team, whose founder formerly established BioMat at the University of Stuttgart (DE), lends its expertise in design of natural fibre-based materials, prototyping, and exhibition (pavilion) construction to modular development. Outreach and dissemination activities are led by the creative and educational architectural and educational vision of globally-active think tank with a renowned architect at its helm, the **Norman Foster Foundation (NFF/ES)**, while the **Genetic Architectures Research Group/Institute for Biodigital Architecture and Genetics** from the Universitat Internacional de Catalunya, School of Architecture (UIC/ES) will manage the artistic representation, the cultural aspect, and their reflection on possible educational and promotional services that they will provide to the social context.

Overview of team that would execute this project, with identifying information removed.

1.2.2 Methodological challenges

reflection on possible educational and promotional services that they will provide to the social context.

1.2.2 Methodological challenges

The [redacted] project will not carry out activities that cause any significant harm to any of the six environmental objectives of the EU Taxonomy Regulation. This was determined by taking into account the direct and primary impacts of the project throughout its lifecycle. Our methodology has been designed in a way that ensures that we not only do not harm any of these objectives, but we in fact contribute, as described in Table 7 below, which elaborates on our positive contribution as well as prevention and mitigation of any potential negative long-term impact of the project.

Table 7. The neutral (0), negative (-) and positive (+) immediate and long-term impacts of the [redacted] project.

Environmental Objective	Impact of Project Methodology	Potential [redacted] impact
Climate change mitigation	+ According to Annex VI, Methodology for climate tracking, ¹⁰⁹ the [redacted] project contributes to this objective with [redacted] of 100%: Intervention Fields 035/03 [redacted] 15bis: <i>Adaptation to climate change measures and prevention and management of climate related risks</i> (i.e. through our adaptive structures) and <i>Use of recycled materials as raw materials compliant with the efficiency criteria</i> (i.e. through our use of recycled and low-footprint biocomposites). 0/- During the research phase, negligible adverse effects, such as GHG emissions are possible, principally due to the mobility of the exhibition. [redacted]	+ It is widely recognised that the use of natural materials, such as those to be employed [redacted] is a critical component of a circular [redacted] mitigation solution, allowing carbon sequestration [redacted] production and return to raw materials at end of their life, whilst enabling the production of high-value products. ¹¹⁰ + Substantial contribution to objective by promoting switch to the use of sustainably sourced raw materials as well as natural and biodegradable biocomposites (e.g. hemp, flax), through use for the high-tech reconfigurable structures proposed in the [redacted] it.

Discussion of "environmental harm" impacts in relation to the six objectives of the EU Taxonomy Regulation.

- [Description of taxonomy regulation](#), including link to the full text document.

1.2.3 Positioning and links to other R&I activities

1.2.3 Positioning and links to other R&I activities

Partners will build upon demonstrated experience with research and innovations at the EU and national level and the project will bring their interdisciplinary and discipline-specific expertise together to blaze new trails in combining scientific expertise with the ability to communicate and execute the exhibitions and other outreach activities as planned.

Summaries of previous projects executed by project team members followed this text, which has been removed to ensure privacy of participants in this case study. The summaries were similar to the ones in the P project proposals, highlighting previous research funded at each partner institution at the national, regional, or international level.

1.2.5 Gender dimension

1.2.4 Integration of social sciences and humanities (Creative Europe)

As noted in sections 1.1.1 and 1.2.1, three **exhibitions, with related activities and gathering of feedback, will highlight the possibilities** of reconfigurable architecture with a work package led by NFF, with direct and high profile ties to the creative and artistic communities as evidenced by its board members (e.g., Hans Ulrich Obrist, Swiss art curator, critic, and historian of art). Creative Europe (CE) and CCI platform to be used include The European Media Art Platform (EMAP)¹¹⁸ Member Ars Electronica (fast Austria). SHAPE

1.2.5 Gender dimension

Balance within the team at writing: All project partners will seek for gender balance within the team. Women were closely involved in the development of this proposal and, at time of writing, work packages and constitute ~20% of team members identified in Part A.

Working against gender (and other) stereotypes: Consideration and inclusion of gender critical issues across project research activities is fundamental for sustainable growth. In this regard, the project aims to consider and be inclusive of all genders and other differentiated needs, and the integration of gender-specific data and knowledge in how we approach innovation and gender-sensitive topics (e.g. public awareness). We will use gender-sensitive language in the research outputs and communication channels. Furthermore, we will support Article 141(3) of the EC Treaty to protect sensitive gender-related issues of this Consortium, ensuring the rights inherent in motherhood, fatherhood, and the combination of professional and family lives. Participation is provided through equal access and opportunities at the institutions that are part of this consortium. The consortium is also sensitive to other diversity issues in addition to gender, including locally-tailored outreach campaigns to citizens living in the three exhibition countries, making sure content is inclusive and culturally diverse (e.g., demonstrating a broad spectrum of people whenever appropriate), providing website and social media images and video of both scientists and citizens interacting with the exhibitions and related activities, displaying gender- and diversity-related

Sample gender dimension text.

1.2.6 Open science implementation and data management

sensitivity in all publications.

1.2.6 Open science implementation and data management

Open Science (OS) will be at the heart of the [REDACTED] project, which will create the necessary infrastructure to communicate and disseminate all project outcomes to relevant researchers, stakeholders (e.g. industry, public authorities) and users, citizens, and society, throughout its execution. The following specific OS practices will be implemented, guided by the principle 'as open as possible, as closed as necessary':

1. **Open Access (OA) to research outputs, such as publications and data:** Outputs will be published in peer-reviewed OA journals ("gold" OA) or self-archiving manuscripts ("green" OA). Once published, the [REDACTED] project Coordinator will ensure OA, by depositing them in a trusted repository, such as Zenodo, ensuring OA without delay under CC BY or equivalent licence together with the supporting data. The associated metadata will be open under CC 0 or equivalent licence, in line with the FAIR (Findability, Accessibility, Interoperability, and Reusability) principles. Publication authors will retain reasonable Intellectual Property Rights (IPR), whilst striving to meet the OA requirement. A data availability statement will enable the understanding of where and how data associated with a publication are available and accessible. If the data are sensitive for ethical, data protection, or confidentiality reasons, they will be shared following full anonymisation and/or through the use of controlled (e.g. under Confidential Disclosure Agreement) or delayed access. For data that cannot be shared due to ethical, data protection, or confidentiality reasons, a metadata record will be shared instead. Please see below for a full description of outlined data management practices for the [REDACTED] project.
2. **Open peer review participation:** In addition to domain-relevant [REDACTED], *Nat Commun*, *Nat Mach Intell*, *IEEE journals*, *Adv Intell Syst*, *Comput Methods Appl Mech Eng*, [REDACTED], *Autom Constr*, *Archit Des*, *Sustainability*) publishing in Open Research Europe (ORE) will be considered, since it offers a simple, free, high-quality peer-reviewed OA publication platform, in full compliance with the EC's OA policies.
3. **Ensuring reproducibility of results:** [REDACTED] project is committed to transparency and will meticulously record and share as much information about the project as reasonably possible (i.e. taking into account IPR). Raw data will be stored in an ordered and [REDACTED] way and separately from processed data. Laboratory notebooks

Sample open science statement.

A thorough **Data Management Plan (DMP)** will be completed based on the Horizon Europe template and submitted as Deliverable 7.2 at month 6 of the project. The DMP will tackle the main components of the data management policy on datasets generated by the consortium, whilst ensuring compliance with the FAIR principles. The DMP will address the following crucial aspects in detail:

1. **Types of data generated in the [REDACTED] project:** Quantitative and qualitative research data, arising from the following: simulations, observations, surveys, questionnaires, prototype tests and trials, architectural and experimental, as well as photos [REDACTED] data will be stored in digital form, using common data formats). [REDACTED] will use raw data (primary data) from various data streams (as described above). Research data will be [REDACTED] and published as datasets. The [REDACTED] project expects to generate data with a total size of 5-10 TB.
2. **Findability of data:** During the course of the [REDACTED] project the partners will use trusted data repositories, such as Zenodo, compliant with the FAIR data principles. To make data findable, every folder containing published data, shall include a README text file that contains at least the following metadata: title, project description, name of the creator, date of collection, short description of each file, the terms "Horizon Europe" and [REDACTED] persistent identifier (ISBN or DOI), the license. If unique tools or proprietary software were used, the [REDACTED] will contain a reference to this, where appropriate. If possible, the tools or links to the provider of the [REDACTED] will be made publicly available. If code or scripts have been developed in order to generate the relevant dataset, they are also considered as data and should also be referred to in the description. The [REDACTED] project will use a common file naming convention in order to ensure that files and data can be identified [REDACTED].
3. **Accessibility of data:** Data generated by the [REDACTED] project will be placed in a trusted repository, such as Zenodo (maintained by non-profit organisation, which offers a 20-year data availability guarantee). To ensure maximum visibility of the data, every DOI related to data publication will be added to the [REDACTED] community (to be created) on Zenodo. If data is deposited in a directory other than Zenodo, the consortium [REDACTED] will need to ensure its compliance with the FAIR principles and manually communicate the DOI of the [REDACTED] publication to the [REDACTED] Coordinator, who will ensure that all data is visible via the [REDACTED] communication channels. All [REDACTED] outcomes of the [REDACTED] project will be made available to [REDACTED] as soon as possible following publication, with the articles that [REDACTED] becoming publicly accessible no [REDACTED] months after publication.
4. **Interoperability, reusability and [REDACTED] data:** Each project partner will strive to generate high impact research, which is inherently based on the generation of good quality data and will consequently provide the best quality data possible for publication and deposition in open access repositories. By making use of repositories, such as

Sample data management plan text.

2 Impact

2.1 Project's pathways toward impact

2.1.1 Specific impacts of the R project towards the outcomes specified in the description of this topic





2 IMPACT	
2.1 PROJECT'S PATHWAYS TOWARDS IMPACT	
2.1.1 Specific impacts of the RECOS project towards the outcomes specified in the description of this topic	
Table 8 illustrates how the project is unique and intends to contribute to longer-term objectives.	
Research and innovation project on the use of innovative materials and structures for the design of a public and private sustainable, inclusive, functional, accessible, aesthetically attractive and resilient built environment/Leverage the social function of architecture, arts and design, combining functionality and sustainability with aesthetics, arts and culture, with the aim of driving social inclusion and accessibility, as well as strengthening the contribution of culture to sustainability	  
Innovative architectural and design solutions that emphasise the use of new forms and materials in line with the European Green Deal objectives	Architecture: Adaptive reconfigurable solution for various application contributing to a sustainable future and socio-cultural attractiveness of municipalities. Design (aesthetically attractive and resilient): Lightweight design through tensegrity solution, biocomposite bars and surfaces computationally designed following structural performance of applied materials and considering relevant load cases. New forms: Composed by aggregation of discrete tensegrity modules following generative design controlled through structural performance and application scenarios. New materials: Natural fibre reinforced polymers (NFRP) as a replacement of common resource intensive materials (concrete, steel) widely used in architecture.
New applications and new knowledge about the design of a public and private sustainable, inclusive, functional, accessible, aesthetically attractive and resilient built environment/Leverage the social function of architecture, arts and design, combining functionality and sustainability with aesthetics, arts and culture, with the aim of driving social inclusion and accessibility, as well as strengthening the contribution of culture to sustainability	New design applications (private and public): Universal application adaptive to different scenarios, especially for improving public spaces through three main topics culture, heritage, and climate. New design knowledge (private and public): New design knowledge will be provided by developed software targeting architects with interest in aggregations of tensegrity structures and generative design following structural and mechanical performance. Social function (inclusion, accessibility): Demonstrators will be accessible to everyone to support inclusive community life. Educating the cultural sector about sustainability goals: This is an important aspect which will be done through series of workshops and educative projections on the final demonstrators addressing the UN SDGs as
Examine cultural transformations driving sustainability and explore new cooperation paths among relevant stakeholders, including cultural and	

Discussions following the EU template for this section. This entire section was difficult for the project partners to write, and SK assisted in proposing impact areas after careful reading of the Horizon guidelines for Horizon Europe.

2.1.2 Target groups

2.1.2 Target groups of the [redacted] project

Table 9. Target groups and activities [redacted] (to be defined by M6 in the detailed communications plan).

Target group	Objective	Channels, tools
Scientific community (researchers) plus students, Bachelor to PhD	Relate to computational morphology and embodied intelligence and how the optimization of the structure of the robot with respect to the desired task will facilitate and inform the control, actuator and sensor placement in tensegrity robots; broad scientific impact touching many fields (results from the research can be used in addition to robotics for designing tensegrity metamaterials, deployable tensegrity structures such as roof and bridges, aerospace structures). Bachelor, Master or PhD theses related topics, research by doing.	ResearchGate, LinkedIn conferences, university web and social sites including Facebook, Instagram, and Twitter. Lectures, classes, faculty webs, workshops, conferences. 
Architecture community	New possibilities for architects by using self-reconfigurable systems, trigger investigation on the topic of self-reconfigurability with real-scale demonstrators.  	Scientific articles, posts on social networks, exhibitions, and online architectural platforms (e.g., Archdaily, Dezeen), international architectural conferences including ACADIA, FABRICATE and, most importantly, UIA World Congress 2023 in Copenhagen.
Building materials supply community (e.g., distributors, construction contractors)	Visibility of material suppliers in publicly presented projects , promotion of sustainable materials, testing of materials in new applications, more data on robustness, costs, logistics.	Logos and names in scientific articles, posts on social networks, exhibitions, and online architectural platforms (e.g., Archdaily, Dezeen).
Investors in new technologies	Possible applications (planetary explorations, resilient inspection robotics, human-safe industrial robotics), business scalability, market need, feasibility study, proof of principle, business plan. 	Fair trades [redacted] on LinkedIn, cooperative [redacted] start-up hubs and accelerators [redacted] with research transfer programs within universities, investment and business Development Agencies such as [redacted]

More detailed thoughts about impact for the stakeholders identified in the opening of the document.


2.1.3 Broader and longer-term impacts of the [REDACTED] project
Scientific advances in architectural design and materials [REDACTED] forges the pathway for innovative real-world tensegrity structure applications assembled from morphological [REDACTED] units as well as the application of natural

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materials, both textiles and biocomposites [REDACTED] moves the conventional truss-like structures and use of textiles to, up to now, unprecedented level by [REDACTED] morphology and embodied intelligence that as such will perform the optimization of the morphological [REDACTED] tensegrity structures in final applications with respect to the desired tasks (artistic screenplays, shading systems [REDACTED] or thermal insulation properties in conjunction with aesthetic properties). Feedback from other fields as [REDACTED] metamaterial design, tensegrity-based robotics, or extra-terrestrial structures is also foreseen/anticipated. Additionally, we will endow the tensegrity structures, for the first time, with a neural system that will connect tensegrity sensors and actuators to provide environmental awareness and adaptation to changing situations, resulting in a structure with a distributed nervous system able to adapt and react to its surroundings much like a living structure.


Economic advances in architecture and related industries: Besides the new adaptive, modular construction system, [REDACTED] also comes up with a series of software solutions that may develop into a commercial activity. These are [REDACTED] that enable modular systems (not necessarily based on [REDACTED] tensegrity units) to be designed much [REDACTED] by making use of generic CAD systems available on the [REDACTED] this is why [REDACTED] designers' software tools will work the way individual modules are manipulated as [REDACTED] time (e. [REDACTED]) with predefined kinematic constraints at the vertices. This allows for faster and cheaper in-silico [REDACTED] prior to module manufacturing and their aggregation in a large-scale application-specific assembly. [REDACTED] is it, allows for amorphous dynamic shapes, extension of existing building infrastructure, and supplement [REDACTED] variable and adaptive thermal insulation (including sunshine shading) of historical facades in highly protected [REDACTED] heritage sites. The textile basis of the surfaces brings a potential for artistic exhibitions/expression, thus increasing the attractiveness

2.1.4 Scale and significance

Expected outcome/impact, with explanation of estimates used with relevant source	Scale	Significance
<p>Target group #1: "protecting people in urban environments exposed to solar radiation"; protection of the most significant target GMD population susceptible to the adverse effects of solar radiation. The simulation of the impact of the proposed measures on the heat gain on urban scale by simulating solar radiation or air quality as provided in this study on solar radiation simulation and estimation for 17 years in Madrid.¹²¹ Although human skin exposure to sun is essential as for most people, adequate vitamin D levels are reached through regular incidental exposure to the sun. When the UV Index is 3 or above (such as during summer), most people maintain adequate vitamin D levels just by spending a few minutes outdoors on most days of the week.¹²² However, this should be controlled since excessive</p>	<p>population 3.2 more 150k. Sol</p>	<p>expects positive health benefits use of such sunshields but measuring these is beyond the scope of this project. The benefits may include the reductions of, e.g., sunburn, suntan, skin ageing, non- melanoma skin cancers, malignant melanoma. According to¹²⁴, 132,000 melanoma skin cancers occur globally each year; 12 to 15 million people are blinded from cataracts. According to WHO estimates, up to 20% of these cases of blindness may be caused</p> 

The project National Centre for Information Support of Research, Development and Innovation with the identification code MS2101 is implemented with the support of the Ministry of Education, Youth and Sports. **Page 110**

2.1.5 Potential barriers to achieving impact

2.1.5 Potential barriers to achieving impact	
Potential barriers for target groups listed in 2.1.4 (note: other risks are found in Table 3.1e)	Mitigation measures
Barriers: "sun permission to [redacted] street, fire requirements [redacted] buildings, accessibility of weathering data in the location (solar radiance, wind), permission from neighbours.	Structural analysis and calculations provided to municipalities, appropriate fire tests of the components conducted according to local requirements, expected minimal class B1 or B2.
Barriers: "climate change impacted [redacted] to [redacted] 	Floating units carrying the textile membranes are foreseen to cover the water reservoirs surfaces as floating ABS balls do in (semi-)desert areas (US, Australia). These protect water surface from sunlight (esp. UV rays) against toxic photosynthetic species as cyanobacteria and minimize dangerous biological contamination. Unlike ABS covering, [redacted] modules will be fully controllable and better suited to [redacted] reservoirs that need the right amount of sunlight to preserve other live species (e.g. fish, turtles).
Barriers: "enlivening sterile cores"/all three sites include fire requirements when attached to the existing buildings, permission from neighbours, permissions in historical city centres.	Appropriate fire tests of the components conducted according to local requirements, expected minimal class B1 or B2.
2.2 MEASURES TO MAXIMISE IMPACT - DISSEMINATION, EXPLOITATION AND COMMUNICATION	

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Risks table with illustrations included for easier scanning by reviewers, we hoped.

2.2 Measures to maximise impact - dissemination, exploitation and communication

2.2.1 Dissemination and communication plan

Again, this sub-section was difficult for the project team to write, so SK wrote much of the text and asked the specialists who would perform the actual work for review/enhancement of the text (requested as comments in Google Docs from individual partner representatives).

buildings, permission from neighbours, permissions in or B2. historical city centres.

2.2 MEASURES TO MAXIMISE IMPACT - DISSEMINATION, EXPLOITATION AND COMMUNICATION

2.2.1 Dissemination and communication plan

The [redacted] team, with its participatory exhibition/technology showcasing approach, as enumerated above, will ensure that project outcomes are clearly communicated and shared with all stakeholders, including citizens and artists but extending broadly to all value chain stakeholders, including those in the academic and commercial sectors and governmental representatives at the local, regional, national, and EU levels. Through outreach efforts, the potential utility of ideas and solutions will be explored continuously throughout the project, setting the stage for broad scale adoption. Internal project communication: [redacted] partners have developed mechanisms for clear and constant internal communication during the course of this proposal, including creating a clear visual identity (a review of its match to EU guidelines will be conducted after project kickoff). The following mechanisms will ensure continued communication and collaboration for the duration of the project: (a.) project kick-off meeting with internal communication discussion, (b.) Basecamp or similar, more secure project archival tool; (c.) confidentiality, secure storage (mandatory for data involving humans), and other data-related issues (local institutional versus shared storage) will be addressed in the project DMP, (d.) regular video meetings on the monthly basis with the minutes-of-meeting approved by all partner institutions in the project archival tool, (e.) initial, detailed communication strategy (M6); (f.) detailed communication strategy (updated in M18, M24, and M36), with activities continuously monitored and assessed through a wide range of suitable indicators (e.g. Google or other web statistics analytics, social media analytics, number of media articles published, number of participants in roadshows and workshops, among others). Decision-making strategy in the consortium: To ensure smooth project progress and adhesion of the consortium as a whole, we have already established a decision-making strategy (to be cemented in the Consortium Agreement). The consortium will aim to achieve consensus on the different issues that may arise during the project. If consensus is not achieved, decisions will be taken in a democratic way, with the majority (3/4) vote ruling. However, critical strategic decisions related to the evolution of the consortium (e.g. entry/exit of a new partner, change of coordinator) or to the suspension of the project will require a unanimous vote. Changes will only be implemented once all consortium members have consented in writing. Should any matters fail to be resolved within the project management structure, they will be referred to an experienced independent arbitrator. A representative each of the WP leaders will meet virtually on a bimonthly basis and in person on a six-month basis to review project progress alongside delivery of set milestones and deliverables, as well as early identification and

review project progress alongside delivery of set milestones and deliverables, as well as early identification and resolution of potential risks. External communication: [redacted] interprets "broad scale" as having multiple layers of outreach and solutions, with different social capital components (educational) components linked to project outreach/dissemination of information generated taking place with the demonstrators, reports, and traditional scientific dissemination channels.

Table 11. Initial external dissemination and communications estimates.

Channel	Estimates/considerations to date (detailed plan M6 of project)
Web	News following posts on social networks, descriptions by team and institutes (see social networks below)
Social networks (LinkedIn, ResearchGate, Twitter, Facebook)	1 post/every 2 weeks: topics/developments, conference/event participation, other; 1 post/every 4 months: interviews with participants
Architectural online platforms	Min. once per year , one non-scientific article in platforms such as <i>Dezeen</i> , <i>Archdaily</i> , <i>Architonic</i> and in local online platforms: <i>Archweb</i> , <i>Earch</i> , and so on.
Print architecture magazines	Results (each year) presented in architectural magazines such as <i>Domus</i> , <i>Era21</i> , <i>Topos</i> , <i>Detail</i> .
TV/Radio interviews	ČT Art (Czech TV), Radio Wave - Bourání, and so on.
Public lectures	PechaKucha Prague, Ted talks, etc.
Courses/exercises	Software and hardware exercises Master's course on biologically inspired and adaptive robotics
Scientific outputs	arXiv-hosted preprint for journal publication on the design of tensegrity units with 2 related conference presentations , arXiv-hosted preprint on module connections with conference presentation , arXiv-hosted preprint on the design of tensegrity units with 2 conference presentation , conference presentation on µLib material analysis platform, arXiv-hosted preprint on µLib material analysis platform, research report on manufacturing and in-situ construction of mockups (scenario setups 1 and 2), publicly accessible website displaying continuous thermal data aggregation from experimental testing in setups 1 and 2, conference presentation on construction of mockups (setups 1

and 2 application and some data from thermal properties measurement), **Research report + time lapse visual material** on manufacturing and in-silico deployment (setup 3 application scenario).

Table 12. External communications impact (conservative targets; to be re-examined in detailed communications plan).

Nº	KPI	Current	Target	Project impact
1	No. of stakeholders attending general informational workshops (businesses representatives of civil society organizations, public authorities)	[REDACTED] (50/per year)	100	+100
2	No. of Twitter followers	NFF/8,029	> 1,000	+1,000
3	No. of Facebook followers	NFF/16,155; UIC. Barcelona 35,207, Architecture UIC 18,263; Biodigital Architecture Master 12,240+580; iBAG 800; ITKE(BioMat) 9,000	> 1,000 >80,000	+1,000
4	No. of Instagram followers	NFF/113,000; UIC.Barcelona 11.9 K, UIC.Architecture 3, 139; iBAG.arch 1223; Biodigital.arch.Master 1063; ITKE(BioMat) 10,600	> 300 >10,000	+300
5	No. of YouTube, Vimeo followers	NFF/7,500; UIC Barcelona 5000; ITKE(Biomat) Vimeo- 600	> 300	+300
6	No. of LinkedIn/ ResearchGate followers	NFF/ 4,600; UIC 28,706, UIC architecture 244; ITKE – 208	> 100	+100
7	No. of website visits (total)	NFF/72,500	> 30,000	+30,000
8	Educational material downloads	/	>50	+50

2.2.2 IP Management and exploitation

The intellectual property right (IPR) strategy of the [REDACTED] project will ensure the adequate protection and full exploitation of the project results by the project partners. During the course of [REDACTED] project, we will actively monitor innovations and manage the related IPR. All foreground knowledge [REDACTED] generated by the consortium partners, meaning that the IPR will belong to them and therefore ownership will be European. From a preliminary assessment given by the technology developers in this project, Table 13 indicates the foreseen IPR types envisaged for [REDACTED] solutions, namely: (a.) Open Access Solutions and (b.) Open Source Solution (freely available

the preparatory work, each partner will also have the opportunity to declare any relevant background IP.

Table 13. [REDACTED] innovations, IPR holder, targeted group, foreseen IPR mechanism, exploitation route.


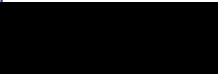


Nº	Targeted group (short- and long-term)	IPR holder	Foreseen IPR mechanism	Exploitation route	
1	Validated computational models of tensegrity module, inter-module connection, and assembly available in an open repository.	[REDACTED]	Scientific and educational community	Open access	Consultations, integration with other platforms
2	Design software µLib. ¹³⁷	CTU	Materials engineering community, both academics and practitioners	Open Access	Software-as-a-service, web interface
3	Design software for generative design of	AAU	Architects, designers,	GNU, Rhinoceros	Standalone plugin + software-as-a-service, web interface

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	biocomposite fabrication/ Natural fibre patterns.		materials Engineering community	plugin + µLib web based GUI	
	Biocomposite-based		Architects, designers,		

IPR summary table, mandatory for such projects.

2.3 Summary

Specific Needs	Expected Results	D & E & C Measures
<p>Architects, citizens, supply chain stakeholders, governments in Europe facing new environmental and legislative challenges related to climate change, lack of land, and cultural heritage renovation regulations</p>  <p>proposes new solutions to the challenges (reusable, reconfigurable architectural modules), demonstrating them with cultural/artistic sector involvement.</p>	<p>+ Active and passive tensegrity modules and connectors, related open software tools capable of reacting to changing environmental conditions.</p> <p>+ Large scale, inclusive</p>  <p>leading architectural innovators with sunshades (Madrid), floating islands (Copenhagen), and thermal insulation aspects (Prague) as well as exhibition, workshops, and other high-profile events (visual projections, water quality testing, and so on) with reports including stakeholder feedback.</p>	<p><u>Exploiting</u>: Open access, open software with some patentable solutions envisioned (see table above) setting the stage for future market development.</p> <p><u>Dissemination</u>: Towards the public, CCIs, scientific community, architects, and other stakeholders leveraging the high-profile global network of leading innovators</p>  <p>high-profile exhibitions and educational workshops in three illustrative European cities with cultural heritage treasures, Inclusive communication towards and feedback from citizens, including artists/CCIs and diverse audiences, which can, in report form, be shared with governmental decisionmakers at local/regional/national/EU levels as well as potential investors and supply chain players.</p>
Target Groups	Outcomes	Impacts
<p>Three urban environments, including governmental representatives and citizens, facing environmental and legislative issues related to (a.) extreme heat/sun exposure (Madrid) (b.) other challenges</p> 	<p>+ High-use of scientific discoveries published in robotics, simulation/civil engineering, architectural journals.</p> <p>+ Uptake of interest in modules following demonstrations to potential investors, leading to new</p>	<p><u>Scientific</u>: New breakthroughs in innovative, real-world tensegrity structure applications assembled from morphogenic assembly units and application of natural materials, both textiles and biocomposites.</p> <p><u>Research/Technological</u>: A new market for reusable, reconfigurable, partially recyclable architectural modules (econ./tech. upscaling).</p>

New summary table required in the Horizon Europe template. Also difficult for team members to conceive and write, so SK drafted initial text and asked partners to review it.

3 Quality and Efficiency of the Implementation

3.1 Work plan and resources

Work package summaries and details, including GANTT and PERT charts.

3 QUALITY AND EFFICIENCY OF THE IMPLEMENTATION

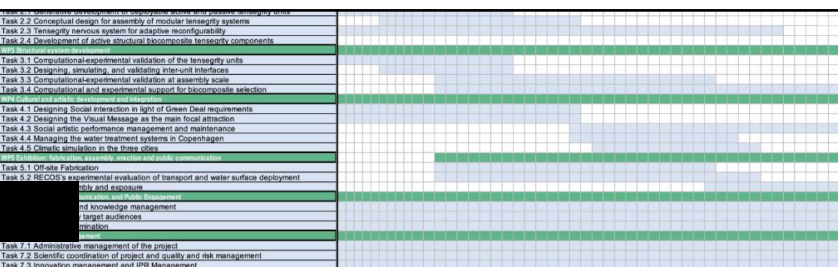
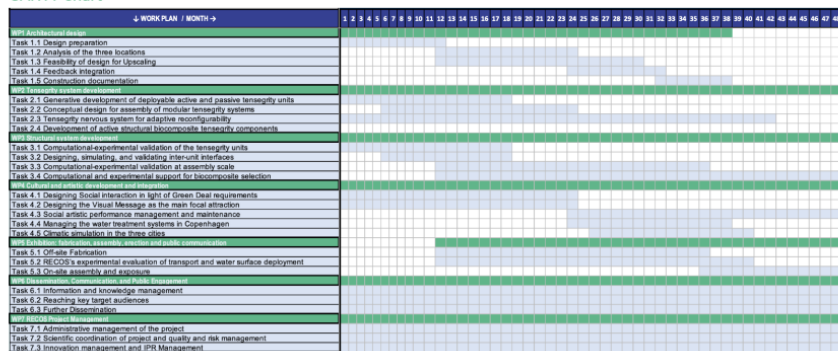
3.1 WORK PLAN AND RESOURCES

We do not expect to subcontract any costs, declare any 'Other Cost Category' items or for any third parties to provide 'in-kind contributions' and have therefore excluded Tables 3.1g, 3.1i, and 3.1j from this document. Should this proposal be successful, the EPFL component of the project budget will be covered by the Swiss government (see the [Financial Guarantee](#)).

Table 3.1a: List of Work Packages

WP N°	Work Package Title	Lead Participant		PMs	Start Month	End Month
		N°	Short Name			
1	Architectural design	3	CTU	73	1	38
2	Tensegrity system development	2	CTU	135	1	48
3	Structural system development	1	CTU	135	1	48
4	Cultural and artistic development and integration	4	CTU	58	1	48
5	Public Exhibition	5	NFF	80	12	48
6	Dissemination, Communication, and Public Engagement	5	NFF	48	1	48
7	Project Management	1	CTU	34	1	48
Total PMs				515		

GANNT Chart



PERT Chart



Table 3.1b: Work Package Description

Work package number	WP1			Lead beneficiary			
Work package title	Architectural design						
Participant number	1	2	3	4	5		
Short name of participant							
Person-months per participant							
Start month	M1		End month		M38		
Objectives: WP1 will involve the design, analysis and architectural implementation of the reconfigurable construction systems for the three locations. The design will be tailored according to specific site restrictions and stakeholder feedback. This WP will operate in parallel with WP2 and WP3.							
Description of work:							
Task 1.1: (M1-M12) Design preparation							
Considering the tensegrity modules as discrete elements, we will define target use cases, which will consider the tensegrity modules as that basic material that is universal, easily transportable, and deployable. We will incorporate the integration of sustainable materials and non-resource intensive materials and fabrication. Within this task, the basic geometry dimensions will be defined as well as a number of elements in the resulting aggregations. Part of the design will be integrating embedded functions e.g. shading textiles. The design will incorporate the actuation for displacement and movement of the resulting aggregations. This will enable their fast response to the changing environment around them. Mostly floating modules will reconfigure accordingly to the number of visitors or demand for public spaces. Scenarios and designs of target aggregations will be planned accordingly for the three locations where they will be exhibited. Different scenarios of application and possible reconfigurations will be presented within the consortium in the form of architectural studies. These studies will be used as a basic document for detailed planning of tensegrity modules and simulation software as well as for communication with authorities within the selected cities.							
Task 1.2 (M12-M24) Analysis of the							
The applications will be situated in the three cities. Each city will represent different applications to the system. The system will be applied in public spaces where it will interact with citizens and visitors through different programs. Hence, the proper analysis will be conducted, including communication with city authorities. Additionally, small-scale exhibitions during the first 24 months of the project will allow us to gain better understanding of the public's needs and wants. This will provide feedback							

Table 3.1c: List of Deliverables

Del. N°	Deliverable Name	WP N°	Lead Participant Short Name	Type	Dissemination Level	Delivery Date
D1.1	Report on architectural study for the three defined locations	WP1		R	CO	12
D1.2	Report on the selection of the final locations in the three cities including feedback from stakeholders	WP1		R	CO	18
D1.3	Report on scale-up methodology including economic and technological aspects	WP1	AAU	R	CO	24
D1.4	Documentation for building permits	WP1	AAU	R	CO	32
D1.5	Report on final activities performed in WP1 including construction documentation	WP1	AAU	R	CO	38
D2.1	Progress report on development of generative methods for deployable active and passive tensegrity units	WP2	EPFL	R	CO	12
D2.2	Progress report on computational conceptual design for assembly of modular tensegrity systems	WP2	EPFL	R	CO	24
D2.3	Final report on the validation of the control algorithm using lab scale prototypes	WP2	EPFL	R	CO	42
D2.4	Final report on development of active structural biocomposite tensegrity components	WP2	AAU	R	CO	48
D3.1	Progress report on the development of computational inter-module connections and their practical realizations	WP3	CTU	R	CO	18
D3.2	Final report on computational-experimental validation at structural scale	WP3	CTU	R	CO	36
D3.3	Final report on the software tools for computational and experimental support for biocomposite selection	WP3	CTU	R	CO	48
D4.1	Visual message report on multimedia projections for the three installations in the three cities	WP4	UIC	R	CO	24
D4.2	Social workshops topics and schedules	WP4	UIC	DEC	PU	24
D4.3	Report on user experience data collection	WP4	UIC	R	CO	48
D4.4	Climate simulation and data analysis report	WP4	UIC	R	CO	40
D5.1	Research report on the lab testing of the proof-of-principle tensegrity	WP5	CTU	R	CO	36

Table 3.1d: List of Milestones

The milestones, defined on technical, dissemination and project management levels for the **RECOS** project, are shown in the below table. The content of each project deliverable will be assessed as a means to evaluate the completion of each defined milestone.

Nº	Milestone Name	Related WPs	Due Date	Means of Verification	
1	Repertoire of passive and active tensegrity modules	WP2	M18	Public version of the research report available online at open repositories. Modules give functionalities required in WP1.	D2.1
2	Grasshopper software plugin launched	WP2	M36	Available online. Morphogenetic designs for three validation scenarios verified with high-fidelity simulations	D2.2
3	Tensegrity nervous system tested and validated	WP2	M42	Public version of the research report available online at open repositories.	D2.3
4	4 validated digital twin units and 100 digital twins of modular robotic prototypes	WP3	M28	Public version of the research report available online at open repositories. Digital twins validated against experimental data.	D3.3
5	3 passive/active module connection assemblies on lab scale	WP3	M18	Public version of the research report available online at open repositories. Digital twins validated against experimental data.	D3.1
6	Biocomposite textiles weaving patterns beta version	WP3	M30	Tool available online, with model prediction validated by material-scale experiments.	D3.3
7		WP1, 2, 3, 4, 5, 6	M38	Public opening and related events following tasks outlined in related WPs.	D1.1-4, D2.1-2, D3.1, D4.1-2, D5.1
8	Madrid exhibition	WP1, 2, 3, 4, 5, 6	M41	Public opening and related events following tasks outlined in related WPs.	Same as No. 1
9	Copenhagen exhibition	WP1, 2, 3, 4, 5, 6	M44	Public opening and related events following tasks outlined in related WPs.	Same as No. 1

10	Website/social media launch	WP6	M4	Available online, with approved visual identity.	D6.1-2
11	Kick-off meeting conducted	WP7	M3	Presentations and minutes online.	D7.1-2
12	Final conference	WP7	M42	Presentations and minutes online.	D7.5

Table 3.1e: Critical Risks for Implementation

A summary of the potential technical, dissemination & communication and management risks encountered during project development is provided in the table below, alongside their mitigation or contingency measures.

Identification of Risk (Likelihood/Impact)	WP	Proposed Risk-Mitigation Measures
Technical		
Permission will not be given in historical heritage locations (Medium/Medium)	WP1	<u>Mitigation:</u> Multiple locations will be selected to mitigate this risk and obtain the best possible integration of the public. <u>Correction:</u> We will also consider locations on the edge of historical heritages sides, if necessary. These will be selected with caution to avoid compromising the impact of the project.
During exhibitions, the modules will be damaged by weathering and unable to be reused (Medium/High)	WP1	<u>Mitigation:</u> Protective coatings and real environment testing before installation, design ready for quick exchange of modules, observation during exposure. <u>Correction:</u> Fabrication of extra modules to deal with such contingencies.
During exhibitions, the modules will be damaged by vandals and unable to be reused (Medium/High)	WP1	<u>Mitigation:</u> Locations with permanent surveillance, design ready for quick exchange of modules, observation during exposure. <u>Correction:</u> Fabrication of extra modules to deal with such contingencies.
Collapsing of structure during exposure and its safety (Low/High)	WP1	<u>Mitigation:</u> Permanent monitoring, visible info boards with rules and conditions especially forbidding climbing on structures. <u>Correction:</u> Design for higher structural reliability, fabrication of extra supports, protection zone around installation, and research into additional safety measures required.
Computational costs of the optimization of modules are too large	WP2	<u>Mitigation:</u> Reduce the number of parameters to optimize and focus on the most influential factors of morphogenesis which reduce the complexity of the problem and consequently the computational costs. <u>Correction:</u> Replace the simulation in a physics engine with form-

Table 3.1f: Summary of Staff Effort

The estimated PMs per participant and per WP for the 48-month [REDACTED] project are shown in the table below:

Partner	WP1	WP2	WP3	WP4	WP5	WP6	WP7	Total PMs
[REDACTED]	7	30	123	4	21	4	25	214
[REDACTED]	4	80	6	2	2	4	2	100
[REDACTED]	53	25	6	10	21	3	2	120
[REDACTED]	0	0	0	36	1	3	3	43
NFF	9	0	0	6	35	34	2	86
Total PMs	73	135	135	58	80	48	34	563
Total PM Costs (€)	329,785	609,877	609,877	262,021	361,408	216,845	153,599	2,543,412
Total PM Costs – EPFL (€)	301,462	43,410	567,392	247,859	347,247	188,522	139,437	1,835,328

Table 3.1h: "Purchase Cost" Items

1. CTU	Cost (€)	Justification
Travel and subsistence	51,000	Participating in conferences (21 k€), long-term research visits at partner institutions (18k€), travel expenses of Advisory Board members (12 k€)
Equipment	11,200	Depreciation costs of equipment for fine metal prototyping
Other Goods, Works, and Services	58,600	Audit costs (10 k€), data management costs (10 k€), hosting Advisory Board meetings (10 k€), notebooks (3 k€), local computing cluster (5 k€), web service hosting fees (4 k€), hardware for prototype fabrication (4 k€), digital microscope (3 k€), camera (3.3 k€), 3D printers (2.8 k€), consumables for sample fabrication (2.5 k€), thermal imager (1 k€)
Total	120,800	
2. [REDACTED]	Cost (€)	Justification
Ret [REDACTED] purchases (<15% of pers. costs)	49,000	Travel, [REDACTED] Secretariat (EU), [REDACTED] State [REDACTED] the [REDACTED]
3. [REDACTED]	Cost (€)	Justification
Travel subsi [REDACTED]	31,670	Participating in conferences (10.5 k€), additional meetings (12.8 k€), travelling to exhibition sites (8.3 k€)
Equipment	70,000	Depreciation costs of tailor fibre placement machine (60 k€) and oven for composites (10 k€)

3.2 Capacity of consortium and participants as a whole

Placed at the end according to the Horizon Europe template highlighting strengths of the project partners and selected individuals (where relevant).

A Note on EU budgets

It is helpful to have an experienced partner who has previously calculated and/or managed EU budgets assist with budget calculations. Such a person can also educate team members unfamiliar with the EU budgeting process. Sometimes a financial expert is available at a partner institution's workplace for review of the budget; some countries have active National Contact Points in disciplinary areas who can additionally review the entire proposal, including the budget, but not limited to this.

In the case studies described here, the majority of the project budget proposed was for personnel, and doctoral students/postdoctoral researchers, in particular. Researchers in these projects were looking for ways to fund talented doctoral students who might assist them in other areas of their work, above all else.

Detailed descriptions of EU budget concepts are found at: https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en (review all of CHAPTER 3 - GRANT if you are unfamiliar with the concepts involved).

Highlights from this document:

EU grants are normally subject to a single funding rate for the entire action — which is fixed and announced in the call conditions. (p. 20)

In order to avoid abuse, the budget flexibility is restricted. (p. 21)

Budget categories and forms of funding (p. 21)

Personnel costs

- Costs for employees (or equivalent)

- Costs for natural persons working under a direct contract

- Costs of personnel seconded by a third party against payment

- Costs for SME owners/beneficiaries that are natural persons without salary (not all Programmes)

- Costs for volunteers' work (not all Programmes)

- Costs for other personnel categories (only SMP ESS, CUST and FISC)

- Subcontracting costs

Purchase costs

- Travel costs, accommodation costs and subsistence costs (not all Programmes)

Equipment costs

- Costs of other goods, works and services

Other cost categories

- Financial support to third parties (all Programmes except RFCS, EUAF, CUST, FISC, CCEI, PERI, TSI, UCPM)

- Internally invoiced goods and services (only HE and DEP)

Notes on personnel costs: “They must be limited to salaries [additional OPTION for programmes with parental leave: (including net payments during parental leave)], social security contributions, taxes and other costs linked to the remuneration, if they arise from national law or the employment contract (or equivalent appointing act) and be calculated on the basis of the costs actually incurred, in accordance with the following method:
{daily rate for the person multiplied by number of day-equivalents worked on the action (rounded up or down to the nearest half-day)}.

The daily rate must be calculated as: {annual personnel costs for the person divided by 215}

The number of day-equivalents declared for a person must be identifiable and verifiable (see Article 20). [additional OPTION for programmes with parental leave: The actual time spent on parental leave by a person assigned to the action may be deducted from the 215 days indicated in the above formula.] The total number of day-equivalents declared in EU grants, for a person for a year, cannot be higher than 215[additional OPTION for programmes with parental leave: minus time spent on parental leave (if any)].” (p. 33)

VIP: Description of how to calculate personnel costs, pp. 36-59 (with various possibilities and permutations)

Travel and subsistence costs, pp. 60-62

Equipment, pp. 63-69

Other goods, works, and services, pp. 70-72

Other cost categories, pp. 73-84

Summary of ineligible costs, 73-88

Please refer to your institution’s financial department for assistance in creating budgets. Online fee-based tools and courses do exist for learning about EU budgets and for simplifying this process; see, for example:

<https://www.emdesk.com/horizon-2020-horizon-europe-basics-guide/horizon-europe-proposal-budget>

<https://enspire.science/horizon-europe-budget-preparation-guide/>

More search engine results with query: “creating a budget for horizon europe”

Final notes

It is SK's hope that this summary will help those learning about EU project writing to better-understand the process, with the three illustrative case study examples. The process, to the surprise of many researchers with background in STEM fields, is surprisingly human and thus often requires more communication than anticipated by proposal partners.

In all three case studies, SK found it helpful to co-manage project management and writing activities, working closely with very experienced EU project managers/writers and limiting writing of initial drafts to a small number of people (1-3 person "core team") and reaching out to specialists in the various disciplines directly, via meetings and Google Docs, to "fill in the gaps" of specific content areas.

As noted above, all this requires time and effort, and proposal writers and those considering projects should not underestimate the time requirements creating a serious proposal involves; in SK's experience, during key conception and writing periods, she was devoting 30-40 hours a week to project-related activities, working even over some weekends (quiet times when many colleagues go away). This may not be an ideal example, but it is realistic.

Management of an EU project is not covered in this document, because SK has not yet managed such a project at time of writing.

Wishing you good luck in your EU proposal journey, and please do not hesitate to reach out to me with specific questions (stephanie.krueger@gmail.com).