OPEN SCIENCE HUB

EMPOWERING CITIZENS THROUGH STEAM EDUCATION WITH OPEN SCHOOLING

DELIVERABLE 4.2

# OSHub.Net Blueprint Report


## Authors

Brendan Owens (TCD), Maria Vicente (ULEI), Shaun Ussher (TCD)

## Contributors

Suheli Chroudi (IH), Rosario Sapienza (IH)

## Disclaimer



## Reference

Please cite this work as:
OSHub Consortium, 2020. OSHub: D4.2 OSHub Blueprint Report,
Trinity College Dublin, Dublin

## Copyright Notice



## Acknowledgement

OSHub has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 824581

# Document Identification Sheet

| | |
|---|---|
| **Project Ref. No.** | 824581 |
| **Project acronym** | OSHub |
| **Project Full Name** | Open Science Hub: Empowering Citizens Through STEAM Education with Open Schooling |
| **Document Name** | OSHub.Network_D4.2_OSHub.Net_Blueprint_20201204.pdf |
| **Security** | Public |
| **Contractual Date of Delivery** | Month 10, 30.07.2020 |
| **Actual Date of Delivery** | Month 14, 04.12.2020 |
| **Type** | Report |
| **Deliverable number** | D4.2 |
| **Deliverable name** | Design and Implement Open Schooling Activities |
| **WP / Task** | 4 / Task 4.3 Create and disseminate co-creation guidelines & self-reflection assessment tools for OSHub.Net activities to be included in the OSHub.Net Blueprint |
| **Number of pages** | 35 |
| **Authors** | Brendan Owens (TCD), Maria Vicente (ULEI), Shaun Ussher (TCD) |
| **Contributors** | Suheli Chroudi (IH) |
| **Reviewers** | Suheli Chroudi (IH), Maria Vicente (IH), Rosario Sapienza (IH) |
| **Project Officer** | David Monteiro |
| **Abstract** | Living document of tools and infrastructure for partners regarding community building, co-creation, innovation and technical implementation. |
| **Keywords** | OSHub, Open Schooling, Co-creation, Stakeholder Engagement, Business Model |

# Revision History

| REVISION | DATE | AUTHOR | ORGANISATION | DESCRIPTION |
|---|---|---|---|---|
| 0.1 | 01.12.2020 | Brendan Owens | TCD | Initial Draft |
| 0.2 | 02.12.2020 | Maria Vicente | ULEI | Contributed 2.3, 2.5, 2.6 |
| 0.3 | 03.12.2020 | Shaun Ussher | TCD | Contributed 2.4 |
| 0.4 | 04.12.2020 | Suheli Chroudi | IH | External Review (2.1 and 2.1.1) |
| 0.5 | 04.12.2020 | Maria Vicente | ULEI | External Review |
| 0.6 | 04.12.2020 | Rosario Sapienza | IH | External Review |
| 1.0 | 04.12.2020 | Brendan Owens | TCD | Final Draft |

# List of Acronyms

| ACRONYM | DEFINITION |
|---|---|
| **CC** | Community College |
| **CSA** | Coordination and Support Action |
| **DEI** | Diversity, Equity and Inclusion |
| **GA** | Grant Agreement |
| **H2020** | Horizon 2020 |
| **IH** | Impact Hub |
| **NGO** | Non-Governmental Organization |
| **OSHub.Network** | Open Science Hub Network |
| **OSHub** | Open Science Hub |
| **RRI** | Responsible Research and Innovation |
| **SISCODE** | Society in Innovation and Science through CODEsign |
| **SME** | Small and Medium Enterprise |
| **STEM** | Science,Technology, Engineering and Mathematics |
| **STEAM** | Science,Technology, Engineering Art and Mathematics |
| **SGD** | Science Gallery Dublin |
| **TCD** | Trinity College Dublin |
| **ULEI** | Leiden University |
| **WP** | Work Package |

# Executive Summary

The OSHub.Network OSHub.Net Blueprint Report is Deliverable 4.2 (D4.2) from the coordination and support action (CSA), OSHub.Network, grant agreement (GA) 824581.

The Description of Action for the GA describes the deliverable as report on a:

**"Toolkit and checklist for partners about community building, co-creation, innovation and technical implementation"**

Establishing a sustainable social enterprise while building community networks, co-creating with those communities and technically and financially implementing resulting innovations requires a detailed Blueprint to bring the various connections together. With this in mind, the Blueprint described here and already hosted on the oshub.network website is a living document/platform. WP leads are reacting to the needs of each partner against the backdrop of COVID-19 and its implications. It is expected that throughout the first year of the project (and beyond) new tools and resources will be added to help partners grow their local OSHubs to meet best practice and effect positive change in society through open schooling principles.

The OSHub Blueprint reported here contains frameworks and monitoring tools that will help take partners on a journey together to discover what they're local OSHub needs are and where they want to go with their community partners in terms of values, mission and challenges. These tools include a shared roadmap of OSHub building blocks, a self-assessment tool for monitoring progress and partner competencies, and a business model canvas. Some of these Blueprint elements will be expanded upon in WP 2 (Build an Open Schooling Community) and WP 7 (Legacy and Sustainability), but are introduced in this deliverable.

WP leads are working together closely to manage unified and controlled growth of local OSHubs respecting each partner's local situations, challenges and native expertise. Feedback from partners from research instruments listed later in section 2.4.1 of this document will inform the expansion of the OSHub Blueprint as required.

# Table of Contents

# 1. Introduction

## 1.1 Background of OSHub.Network

The Open Science Hub Network (OSHub.Network), a consortium of nine partners across Europe, engages schools and local stakeholders in research and innovation as a tool for sustainable community development.

More specifically, the OSHub.Network is establishing a European network of community hubs – OSHubs, in communities that traditionally do not engage with research and innovation due to various barriers, geographical location, socio-economic status, or ethnic minority group background. OSHubs inspire, empower and engage citizens – from school children to senior citizens – in STEAM (Science, Technology, Engineering, Arts and Mathematics) learning and research opportunities, grounded on collaboration with societal agents.

As such, local OSHubs work as mediators in their local communities, positioning schools as active agents for collaboration between civil society, enterprises, research institutes, and families. This is performed by promoting an open schooling approach grounded in community-based participatory research practices: throughout this process, schools and communities identify local relevant challenges, which are then transformed into relevant research and innovation projects, led by students and teachers, in collaboration with local stakeholders.

The OSHub.Network is developing a common methodological framework, that allows each OSHub to identify and analyse local needs, issues, opportunities and relevant actors, in order to address socio-economic, geographical, gender equity issues, and untapped growth potential. Inspired by the "Mission-Oriented Research & Innovation in the European Union"[1] approach, developed by Mariana Mazzucato, OSHub.Network will define a set of Open Schooling Missions, aimed at addressing local relevant challenges linked to the Sustainable Development Goals. These Open Schooling Missions will then constitute the basis for the creation and development of the open schooling projects, enabling real collaboration across communities.

Importantly, to ensure diversity, inclusion and sustainability, in each OSHub location, there will be a local management board with representatives from local stakeholder groups – schools (including students), families, research institutes and universities, enterprises, industry, media, local governments, civil society organizations and wider society – which will be involved in all key processes and decisions regarding local OSHub programmes and initiatives.

---

1 Mariana Mazzucato (2018), Mission-Oriented Research and Innovation in the European Union – A problem solving approach to fuel innovation-led growth', European Commission, Retrieved from: https://ec.europa.eu/info/sites/info/files/mazzucato_report_2018.pdf

By supporting local schools and communities with the tools and network to tackle relevant challenges, OSHub.Network aims to create local impact while simultaneously promoting an active global citizenship attitude, thus contributing to community development, innovation and well-being.

To encourage usage and maximise impact in Europe and beyond, all resources, products and solutions developed by OSHub.Network will be fully based on Open Standards, such as open education, open technology, open science, open hardware, open design and open architecture. Also, OSHub.Network will create an online platform to share OSHub expertise, resources, and best practices with all OSHubs, their partners and the communities they serve. To ensure the legacy and reach of the project, all OSHub.Network resources will also be shared on existing large online educational repositories, and relevant national networks and repositories.

Finally, OSHubs will develop a legacy and sustainability plan, and will work closely with local governments, to ensure that each local OSHub has the tools and resources to continue beyond the lifetime of the project, and that the Open Schooling approach is incorporated in the school vision and organizational structure.

By the end of the project, it is expected that the OSHub.Network will have impacted 25 000 students, 1 250 teachers and 4 000 members of the community, through involvement in more than 150 school-university-industry-civil society partnerships in open schooling projects and activities.

In the long-run, we envision OSHubs as education brokers in their local communities, supporting local school networks to incorporate Open Schooling in their vision and organizational structure, leading to sustainable quality of education. Most particularly, OSHubs will facilitate the bridge between the needs and realities of schools and their local context and resources, as well as brokering for implementing national/regional policies, passing along signals from schools when policies are failing and advocating for context-sensitive policies.

## 1.2 Purpose of Report

This report details the current constituents of the OSHub Blueprint whose structure and much of its content is already live on the **oshub.network** website. This report introduces the sections that make up the OSHub Blueprint, which as stated previously will continue to be added to such that the Blueprint can be seen as a living document.

Current tools, research instruments, open assets and other blueprint infrastructure are explained and project website links to the content are included where relevant or alternatively in the case of some tools, their online storage drive is linked.

The report explains the content and use of two frameworks in more detail, namely the OSHub Roadmap self-assessment tool and the OSHub Business Canvas. Granular details of the tools are provided here for early stages of OSHub development with advice on how such tools might be employed by partners.

With long term sustainability in mind, the components listed in this report provide all partners a flexible yet consistent infrastructure for establishing their local OSHubs and communicating best practice with their peers for the benefit of the whole consortium.

# 2. Blueprint to Grow an OSHub

## 2.1 OSHub Roadmap

The OSHub Blueprint is hosted on the **oshub.network** website under the tab of the same name. The Blueprint contents are split across six distinct areas (see Fig 1).

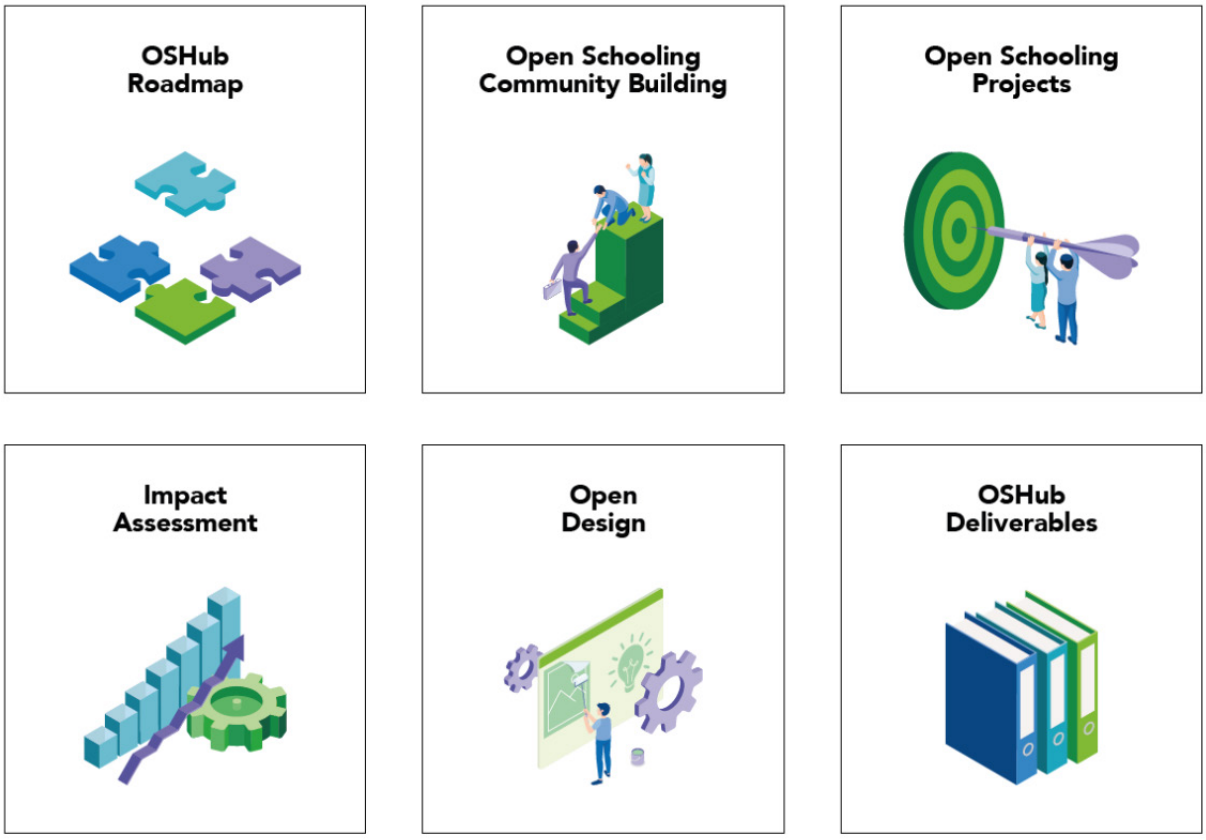



Fig 1: The six areas that make up the OSHub Blueprint

### OSHub Roadmap

The tools and frameworks contained in this section provide a way for the consortium to stay in sync on the journey to developing their local Open Science Hubs. The content in this section will be adjusted and

added to depending on changing circumstances and learnings over the duration of the OSHub.net project.

### Open Schooling Community Building

This section focuses on strategies for building, supporting and strengthening a community around Open Schooling, through the exchange of knowledge, experiences, motivations and challenges, from international to local levels. In the near future this section will also contain a growing repository of recommended relevant literature from case studies and reports related to stakeholder engagement, competencies in lifelong learning, action on Sustainable Development Goals and co-creation in RRI.

### Open Schooling Projects

This section provides a database of planned, ongoing and completed Open Schooling Projects across the consortium, accumulated up to Autumn 2022.

### Impact Assessment

This section describes the various depths of evaluation used to assess all project work packages from local OSHub activity up to the consortium level and will contain relevant research instruments and results.

### Open Design

This section is a repository of design and graphical assets used in the project, both physical and digital. The assets will be made publicly available for free use when appropriate credit is applied.

### OSHub Deliverables

This deliverable and all others created during the project lifetime will be placed in this section and made publicly available in PDF format.

## 2.2 OSHub Roadmap

The OSHub Roadmap provides milestones for each partner to strive for, from beginning their Open Science Hub journey to successfully implementing Open Schooling Projects with stakeholders. Each section of the 'music sheet' seen below (see Fig 2) is a building block needed to create an Open Science Hub[2]. These blocks will be discussed in more detail in the next section.

2 The full resolution version can be found at oshub.network/roadmap.html

This is a self-assessment tool that each partner contributes to in order to track their progress and how confident they feel about each building block topic. To understand when a building block is completed, tasks with tangible outputs must be submitted by each partner to the project coordinator.

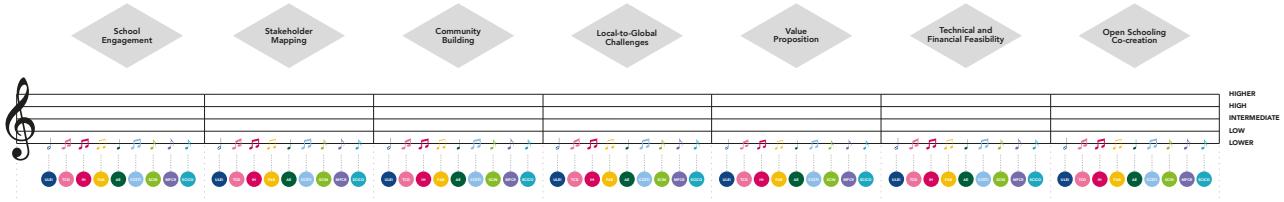



Fig 2: The music sheet self assessment tool

Traffic light indicators (see Fig 3) are in place for each task under each building block to help partners indicate if they are having issues with the task/ not started it yet (red), if they are progressing in the task (orange) or if they have completed the task (green).

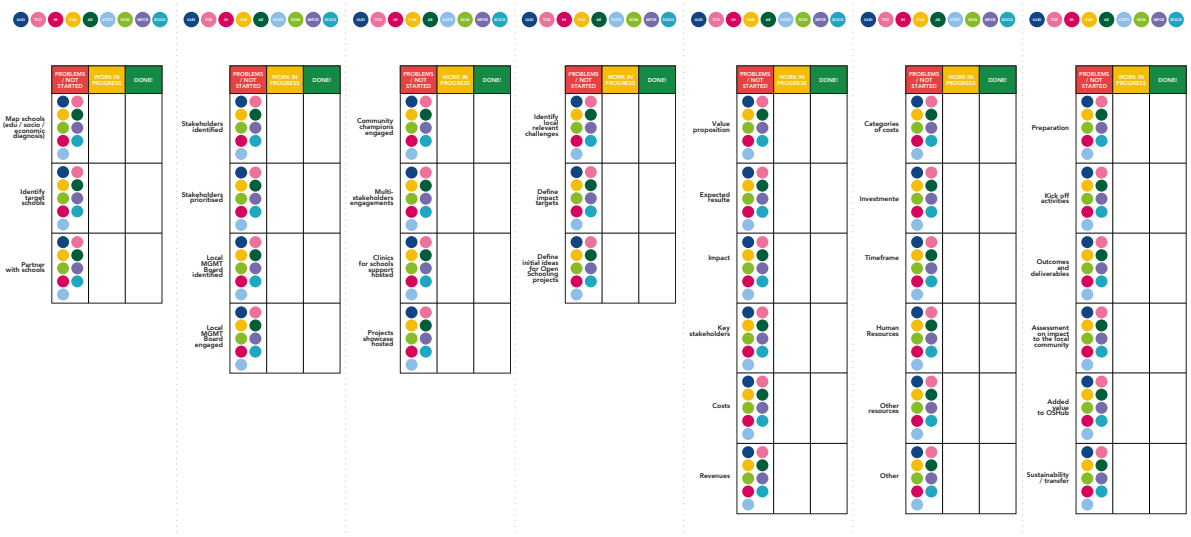



Fig 3: The traffic light progress indicators on outputs for each building block

Snapshots will be captured to show partner progress quarterly and uploaded to the OSHub Roadmap page of the project website. The music sheet and corresponding building blocks are in place to help the consortium share best practice and relevant resources. It also gives each partner the opportunity to reflect on their journey and consult fellow partners who may have the answer to problems they encounter on the way. Partners who have self-assessed their confidence as low in an area can identify and reach out to partners who have self-assessed their confidence in the same area as high for help.

### 2.1.1 OSHub Business Canvas

While the self-assessment tool charts the progress of each partner's Open Science Hub development step by step in a linear way, the OSHub Business Canvas from IH (see Fig 4) steps back to look at each partner's Open Science Hub as a living, breathing social entity with inputs and outputs[3].

Those developing an Open Science Hub for the first time are using iterative design thinking and experimenting with methods best suited to their local and national situations. The exercise is consistent with the requirements expected on the WP7 consisting of the creation of a Legacy and Sustainability for each of the OSHub. As progress is made in each building block, additions will be made by each partner on their own OSHub Business Canvas to create the best engine for sustaining OSHub activity and impact. The building of the canvas will be facilitated by IH under WP7 through a series of webinars addressing one part at a time followed by additional tools or techniques to connect each local hub with their own project management processes.

Each part of the OSHub Business Canvas is colour coded corresponding to each organ that makes up the complete OSHub entity.

**RED: Results, Activities, Resources**

**YELLOW: Actors, Relations and Channels, Key Obstacles**

**VIOLET: Value Proposition, Challenge/Opportunity, Vision/Solution**

**BLUE: Cost Structure and Flow of Revenues**

**GREEN: External Conditions, Impact**

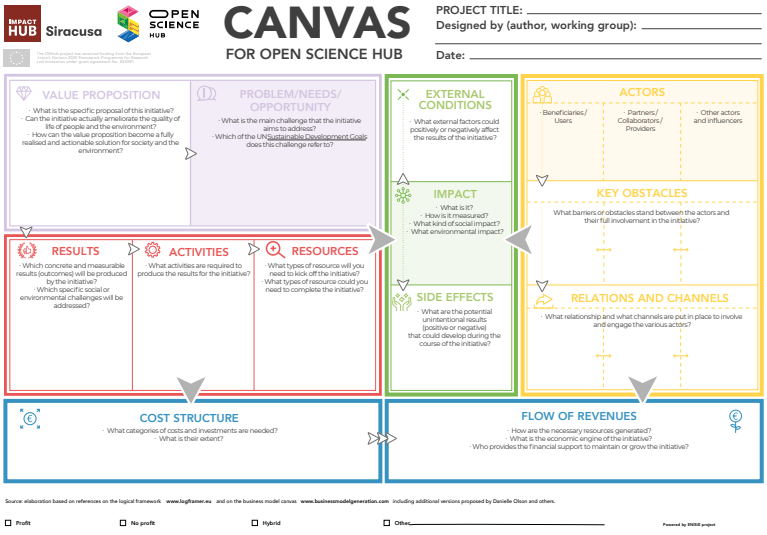



Fig 4: The OSHub Business Canvas

3 The full resolution version can be found at oshub.network/roadmap.html

In order to fill in each section a number of tools detailed in 3.1.4 can be used to feed into this bird's eye view of each OSHub entity. Some tools may only be relevant for working on specific Open Schooling projects, but any that can also be repurposed to contribute to the Open Science Hub Business Canvas will be indicated with the **OSHC** field marked Y. It will also be indicated which coloured part(/s) of the canvas they are useful for.

## 2.1.2 OSHub Building Blocks

The building blocks in Fig 5 can be seen as the ingredients for any Open Science Hub. In this section of the report each building block will be unpacked as a series of objectives and each objective will be accompanied by suggested tools and tips for how to use them to complete each objective. As mentioned in the previous section, 'OSHC' will indicate at a glance if the tool can also be used to feed a part of the Open Science Hub Business Canvas.

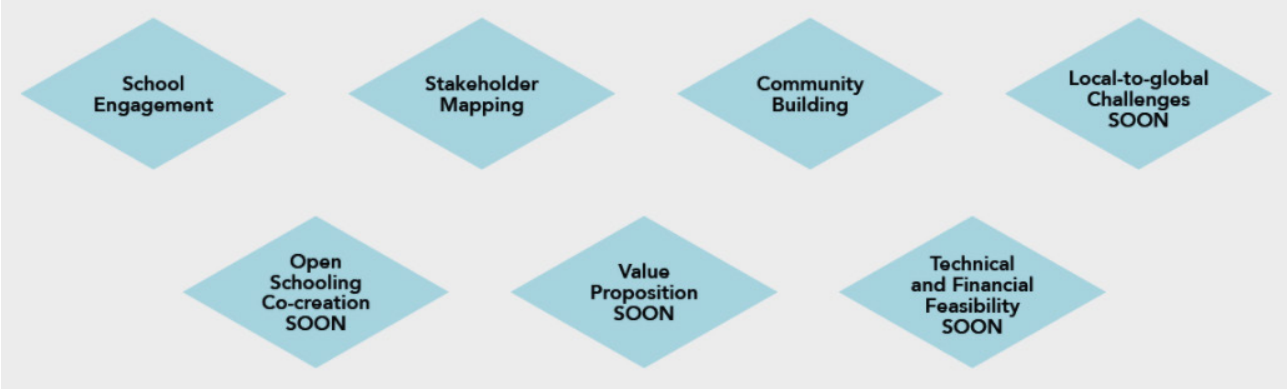



Fig 5: Building blocks for an Open Science Hub

### Objectives and Tools in the Building Blocks:

- Creating the OS Roadmap for the consortium has been an exercise in co-creation in itself. As outlined in the Initiation Events report (D2.2), the global pandemic has led to placing a careful foot forward to make progress by listening and responding to each partner's situation and needs as circumstances change.
- Although the building blocks for School Engagement, Stakeholder Mapping, Community Building and Local-to-global Challenges have been explored and are well on their way to being built, objectives to build the subsequent blocks are a work in progress through ongoing webinars and regular partner feedback.
- Below is a series of steps to bring the concept of a local Open Science Hub from seed to the point at which it has grown enough to contain the partnerships and local context knowledge required to initiate Open Schooling Projects with co-creation and sustainability in sight.
- For each of the steps below a table is presented to explain the objective of each step and suggest tools to use to complete the step, including suggestions for how those tools might best be used. The addition of more steps will be added with all partners input and close collaboration as the consortium builds the

blocks for Open Schooling Co-creation, Value Proposition and Technical & Financial Feasibility.

- **Decide Concepts/Topics (School Engagement/ Local-to-global Challenges/ Value Proposition)**
- **Prepare a Schools Pitch (School Engagement)**
- **Identify Stakeholders (Stakeholder Mapping)**
- **Manage Stakeholder Communications (Stakeholder Mapping)**
- **Prepare Stakeholder Pitches (Stakeholder Mapping)**
- **Manage Participation (Community Building)**
- **Analyse local OSHub Contexts (Local-to-global Challenges)**
- **…followed by future checklists as this living document grows**

The building blocks in Fig 5 can be seen as the ingredients for any Open Science Hub. In this section of the report each building block will be unpacked as a series of objectives and each objective will be accompanied by suggested tools and tips for how to use them to complete each objective. As mentioned in the previous section, 'OSHC' will indicate at a glance if the tool can also be used to feed a part of the Open Science Hub Business Canvas.

| Step Name | Decide Concepts/Topics |
|---|---|
| **Building Block** | #1 School Engagement |
| **Previous Step** | — |
| **Next Step** | Prepare a Schools Pitch |
| **OSHC** | Y – VIOLET |
| **Objective** | Decide an initial concept or topic to pitch to schools as a challenge-based starting point. |

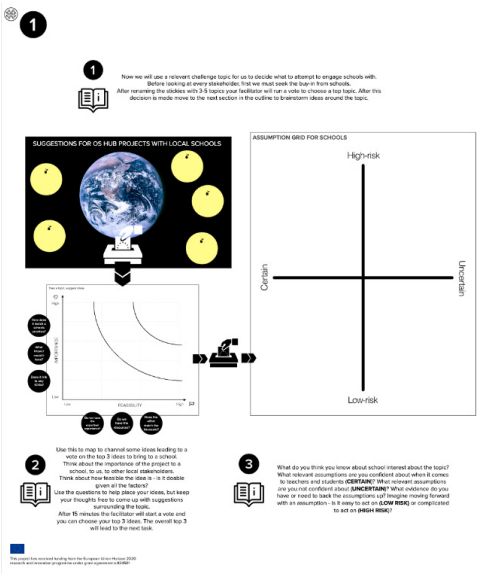
## Prioritising ideas and assumptions maps

### Suggested Tools

- This tool should be used in a session lasting no more than 45 mins.
- The tool is split into three maps.
- The session can be run internally only or together with a limited number of external stakeholders.
- You may want to pose a question like “What issue have you seen that is important to our audiences?” for the first map.
- The second map asks participants to map topics against perceived importance and feasibility.
- Prompts are included on the axes of this map to encourage a focus on Open Schooling.
- The third map encourages participants to think about what assumptions have to be made for the top rated ideas from the previous map before preparing a pitch to schools.
- This may open up questions about the topic where more research is required to confirm or deny assumptions. This may happen in initial discussion with the school(s).
- In the 45 minutes only 5 minutes should be given to adding sticky notes to each map. The rest of the time should be used for open discussion.
- To avoid bias in the second map, participants should copy and complete their own grid individually before deciding to place the ideas on the shared map.

### Suggested Use

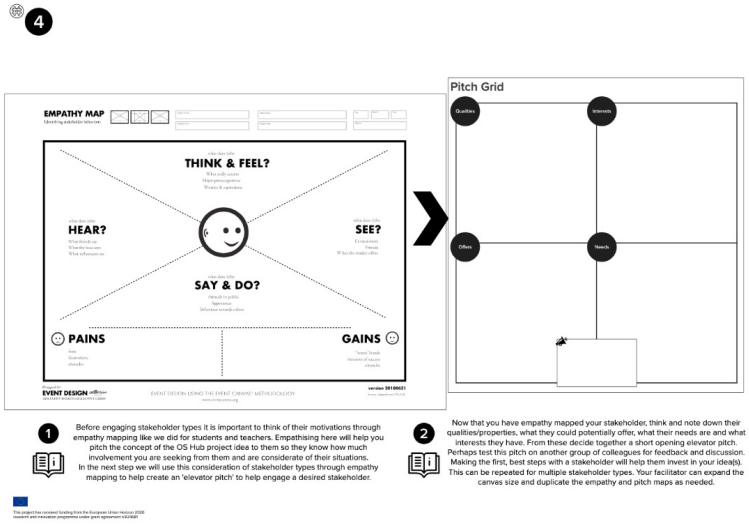
### Tool Preview



| Step Name | Prepare a Schools Pitch |
|---|---|
| **Building Block** | #1 School Engagement |
| **Previous Step** | Decide Concepts/Topics |
| **Next Step** | Identify Stakeholders |
| **OSHC** | Y – YELLOW |
| **Objective** | Understand the needs and motivations of target schools before pitching an initial concept or topic to them. |
| **Suggested Tools** | **School Empathy Map/ Empathy to Pitch Map**<br>— Introducing and completing this exercise should take no more than 20 mins and should be used by those who are going to be engaging with teachers in initial discussion and follow up meetings.<br>— Taking the time to empathise with teachers and students will help understand the constraints and opportunities for deep school collaborations.<br>— It could also provide a strong starting point for new schools relationships.<br>— 5 minutes should be given to adding sticky notes to the empathy map, labelling if it applies to a teacher or a student.<br>— A facilitator may want to do this twice broken up with an empathy exercise or simple scenario to consider to maximise output.<br>— For those who feel they need it, an additional ‚pitch' tool can be used to list qualities, interests, offers and needs that can form the basis of an ‚elevator pitch'. This addition would require 15 minutes extra to build the list and consider a ‚pitch script'.<br>— These tools will be used again for other stakeholders and are useful for facilitators who will be working with teachers and students on projects. |

**Suggested Use**

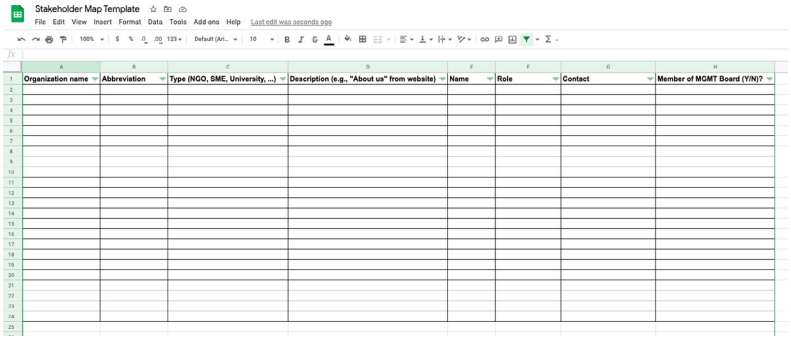
**Tool Preview**




| Step Name | Identify Stakeholders |
|---|---|
| **Building Block** | #2 Stakeholder Mapping |
| **Previous Step** | Prepare a Schools Pitch |
| **Next Step** | Manage Stakeholder Communications |
| **OSHC** | Y – YELLOW |
| **Objective** | Collate a longlist of diverse local stakeholders and identify subsets of key stakeholders for concepts/ topics agreed with schools. Choose key stakeholders to approach for the local OSHub Management Board. |
| **Suggested Tools** | **Stakeholder Map Template**<br>— The suggested spreadsheet template can be expanded to include more information for each stakeholder.<br>— This objective does not necessarily need to be completed as a real time exercise and instead existing internal and external key stakeholders can add to the list.<br>— It is important to recognise any bias to a particular stakeholder type and actively address this in seeking out diversity.<br>— The spreadsheet could be filtered by type, speciality, distance or any other number of properties that might be deemed useful. |

**Suggested Use**

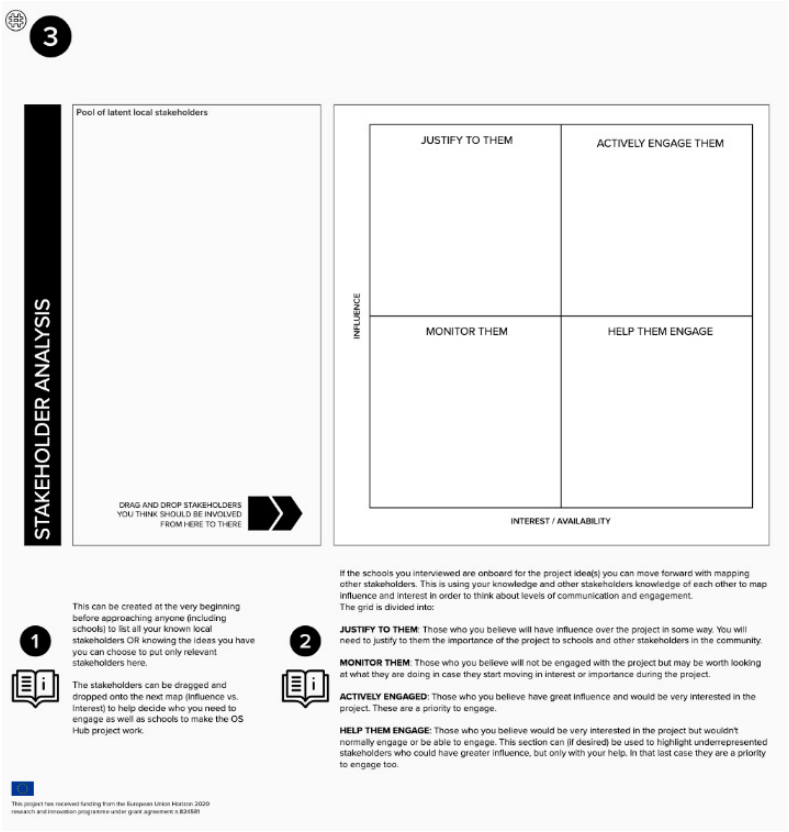
**Tool Preview**




| Step Name | Manage Stakeholder Communications |
|---|---|
| **Building Block** | #2 Stakeholder Mapping |
| **Previous Step** | Identify Stakeholders |
| **Next Step** | Prepare Stakeholder Pitches |
| **OSHC** | Y – YELLOW |
| **Objective** | Prioritise key stakeholders identified in the previous step and decide which to engage for the project or topic. |
| **Suggested Tools** | **Stakeholder Analysis**<br>— For the key stakeholders linked to a particular concept/topic in the last step, place them on the Stakeholder Analysis grid according to influence and interest/availability.<br>— This tool splits communication priority left and right with those on the left seen as a lesser priority and those on the right as higher priorIty.<br>— However a more useful designation in this tool are the four quadrants labelled: 'justify to them', 'actively engage them', 'monitor them', 'help them engage'.<br>— You will have already identified these as key stakeholders so they are all important to communicate with, but particularly in policy making and local community organisations it will be important to have some level of communication. |

**Suggested Use**

**Tool Preview**




| Step Name | Prepare Stakeholder Pitches |
|---|---|
| **Building Block** | #2 Stakeholder Mapping |
| **Previous Step** | Manage Stakeholder Communications |
| **Next Step** | Manage Your Networks |
| **OSHC** | Y – YELLOW |
| **Objective** | Understand the needs and motivations of each prioritised stakeholder before pitching involvement in an initial concept or topic to them. |

## Empathy to Pitch Map

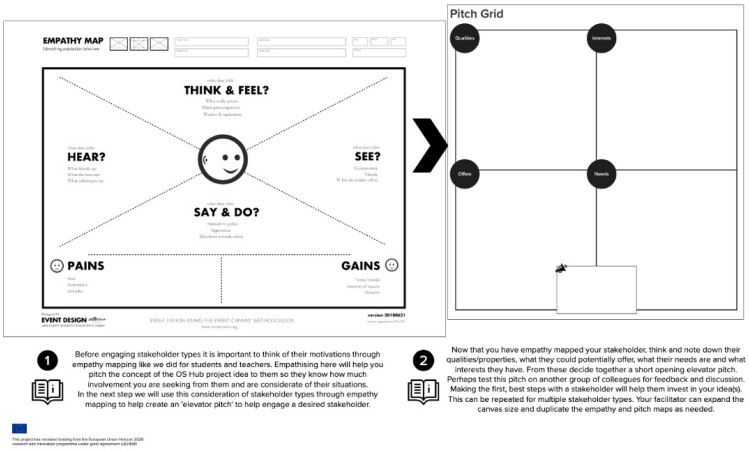
### Suggested Tools

- These tools can be used by OSHub staff preparing to scope out a stakeholder for their involvement with a local OSHub or specific Open Schooling project.
- Each stakeholder preparation should last 30 minutes maximum. 5 minutes should be given to adding sticky notes to the empathy map, this time tailored to a stakeholder type.
- This should help staff recognise that hopes and fear for a representative of a large company that is relatively new to the area is very different from those experienced by a long running community institution in the area.
- A facilitator may want to give time for the map twice, broken up with an empathy exercise or simple scenario to consider to maximise output.
- For those who feel they need it, an additional ‚pitch' tool can be used to list qualities, interests, offers and needs that can form the basis of an ‚elevator pitch'.
- This addition would require 15 minutes extra to build the list and consider a 'pitch script'.
- The tool can repeat as for as many stakeholders as is deemed necessary.

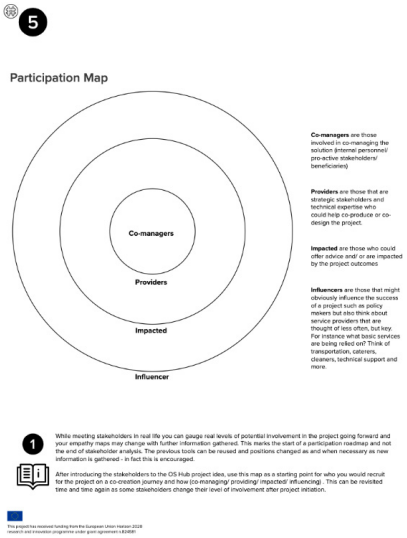
### Suggested Use

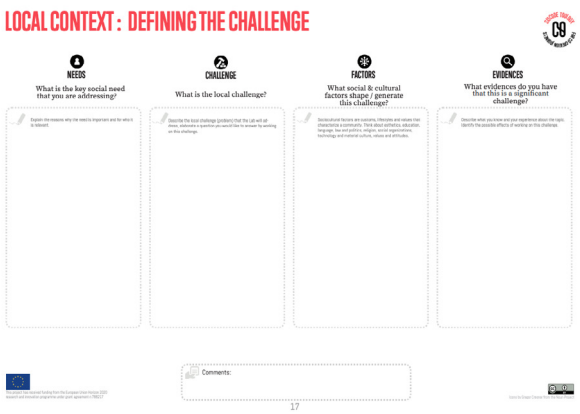
### Tool Preview

4




This project has received funding from the European Union Horizon 2020 research and innovation programme under grant agreement n.621682

| Step Name | Manage Participation |
|---|---|
| **Building Block** | #3 Community Building |
| **Previous Step** | Prepare Stakeholder Pitches |
| **Next Step** | Analyse local OSHub Contexts |
| **OSHC** | Y – YELLOW |
| **Objective** | Based on meeting outcomes, decide what level of participation is required for your key stakeholders (initially). |
| **Suggested Tools** | **Participation Map**<br>— This tool can be used repeatedly in a 30 minute session depending on the number of stakeholders and complexity of topic.<br>— After introducing the stakeholders to the OS Hub project idea, this map can be used as a starting point for who should be recruited for the project on a co--creation journey and how (co-managing/ providing/ impacted/ influencing).<br>— This can and should be revisited time and time again as some stakeholders change their level of involvement after project initiation. |
| **Suggested Use**<br><br>**Tool Preview** |  |

| Step Name | Analyse local OSHub Contexts |
|---|---|
| **Building Block** | #4 Local to Global Challenges |
| **Previous Step** | Manage Participation |
| **Next Step** | . . . |
| **OSHC** | Y – VIOLET |
| **Objective** | Gather information to prepare for wider multi-stakeholder ideation and co-creation in relation to an agreed challenge topic. (An intermediate step before this to ideate the local challenge with schools may be needed if it is not well enough defined) |
| **Suggested Tools** | **SISCODE Toolbox pgs 16-19 (3 canvases)**<br>— One way to use these tools is to explore them over the course of three 30 minute sessions.<br>— The 3 'Local Context' canvases help better define:<br>  — The Challenge<br>  — Lab (i.e. OSHub) Capabilities<br>  — The Policy Environment<br>— These canvases are primarily for OSHub staff and co-managing stakeholders to fill in, guided by the prompts on each.<br>— Having already established a stakeholder network, members of the network could be consulted to answer some of the prompts in the SISCODE canvases if the information cannot be researched by the OSHub alone. |
| **Suggested Use**<br><br>**Tool Preview (1 of 3)** |  |

More tools will be made available to partners within this building block to further refine the local context for challenges and connect them with the UNs Sustainable Development Goals for global impact. Some of the tools in this section will carry through to co-creating Open Schooling projects with relevant stakeholders.

## #5 Value Proposition

The development of the Value Proposition for each OSHub will be carried out through webinar training delivered by IH[4] followed by homework to fill in, feedback and peer-to-peer meetings. The training and mentoring provided by IH will be documented as part of Deliverables D7.1 (Vision and Value Proposition for OSHubs and Business Models, respectively).

The information provided by partners for this building block will help build a picture of what impact each Open Science Hub hopes to achieve for its local community and what issues it will focus on to effect positive change in society. Understanding the core value of each OSHub to its surrounding community of stakeholders will help forge a vision and a primary challenge for each local hub.

## #6 Technical and Financial Feasibility

As in the previous building block, the technical and financial feasibility of each OSHub will be quantified through webinar training from IH and subsequent mentoring including homework and follow up meetings. These actions will help local OSHubs connect the answers to prompts contained in the relevant parts of their OSHub Business Canvas to their own local project management techniques and infrastructure.

The training and mentoring from IH for this block of activity will be documented as part of Deliverable D7.2 (Business Models).

## #7 Open Schooling Co-creation

The contents for this block consist of co-creation tools and techniques for developing and implementing Open Schooling projects. This journey starts with some of the tools contained under 'Local-to--Global Challenges'. Partners have already synthesised initial ideas for their Open Schooling Projects as indicated in Milestone 3 (MS3 OSHub Opening verification), but this is only the beginning.

More tools adapted from the SISCODE project (GA 788217) will be used through multiple iterative phases of co-creation with partner schools and other relevant stakeholders. The number of co-creation phases will be dependent on each local OSHubs capabilities (as identified in a previous block) and complexity of projects.

More detailed information on co-creation journeys will be provided as part of Deliverable 2.3 (D2.3 Participative Road Maps).

---

4 WP7 Business Canvas Mentoring Timeline

## 2.3 Open Schooling Community Building

Open Schooling Community Building is part of the OSHub Blueprint that aims to provide a repository for best practices in open schooling principles, activity ideas, case studies of successful work on local challenges within and outside the project consortium. It also aims to build stronger communication between OSHubs as they progress.

The guiding principles are sharing and learning from one another. This can happen at a local level with opportunities to share community success stories and initiatives that could prove advantageous to the work of a local Open Science Hub. This can happen at the consortium level with each partner bringing strengths in particular areas of science communication, public and school engagement. Finally sharing and learning can happen with other organisations known to partners who have completed or are engaged in similar Open Schooling projects.

At the time of writing, the oshub.network website documents three recorded 'Inspiration Sessions'[5]. These online webinars feature knowledge sharing from experts inside and outside the consortium so that partners can learn from each other and examples of best practice elsewhere.

Wider sharing of best practice under the banner of Open Schooling will soon be possible through the 'OSTogether' dissemination initiative. A number of separate H2020 projects implementing various visions of open schooling principles have banded together to share best practice with one voice. It is hoped this collective effort will be greater than the sum of its parts. Rather than dividing the same audiences across multiple social channels, it will encourage one larger group of subscribers for wider dissemination.

## 2.4 Open Schooling Projects

The Open Schooling projects aim at approaching and contributing to tackling the challenges and mission defined earlier together with local partners ('Local-to-Global Challenges'). These challenges and missions, for each of the OSHubs, can be seen in the OSHub website, in the respective page of the OSHubs (e.g. OSHub-Switzerland[6], OSHub-Portugal[7], OSHub-Greece[8]).

These projects will be based on research and innovation approaches and will be designed and developed in collaboration with community stakeholders throughout the different phases of the process as indicated earlier within the Open Schooling Co-creation building block. The impact of these projects at community and school levels will be evaluated using the tools developed in WP5: Impact Evaluation.

---

5 https://oshub.network/inspiration_session.html

6 https://oshub.network/local_OSHub_CH.html

7 https://oshub.network/local_OSHub_PT.html

8 https://oshub.network/local_OSHub_GR.html

Based on the challenges and mission identified/defined, the OSHubs and their local communities have just started defining the first ideas for the Open Schooling projects, as can be seen in the in the Local OSHubs webpages, in the OSHub Blueprint – Open Schooling Projects[9].

The developed projects will be part of the OSHub Blueprint, in an open format, and will be documented in such a way that other schools and citizens can adapt and use them according to their needs and context.

At the WP leader level, we are currently defining the strategy to guide partners throughout this process of project development through research & innovation and community involvement, as well as designing the tools for documenting and sharing the projects, in an open and systematic way.

As mentioned earlier, the OSHub Blueprint is a living document and these new tools and processes will be included in an updated version of the Blueprint.

## 2.5 Impact Assessment

The impact assessment of Open Science Hub Network will be evaluated across 3 complimentary levels (as seen in figure 6); the European network-wide consortium, the local OSHub community networks and OSHub Open Schooling projects. By centering an evaluation approach on these three levels we aim to obtain an in-depth and holistic view of all work packages in the project.

The first of these levels will examine the European network-wide consortium that consists of the 9 OSHub partner institutions. Partners interact with a variety of audiences and tackle their own regional specific socio-economic, cultural and environmental challenges. The consortium is of particular interest for evaluation due to its managerial perspective. This cohort can provide insight into the progress of the overall project, the development at each stage of the project, project sustainability and insights into resource management and training requirements for future open schooling endeavours.

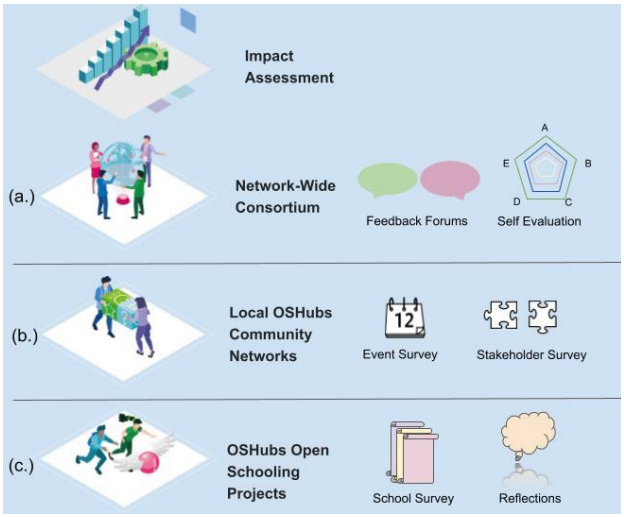



Figure 6: Depicts the 3 complementary levels for which impact assessment will be carried out throughout the OSHub Network, along with the tools that will be implemented at each level to assess impact.

9 https://oshub.network/projects.html

### 2.5.1 Consortium Research Instruments

The European consortium network will be evaluated through two means of assessment.

- **Feedback Forums:** These have been designed to facilitate dialogue and act as self-informative reflection for each partner's experience throughout the OSHub.Network project. Feedback forums happen twice per annum, through a google forum or an interview. The questions proposed in the feedback forums will be subject to change and based on the milestones, deliverables and progress of the overall OSHub. Network consortium on the OSHub Roadmap.
- **Self Evaluation Tool:** As mentioned previously the self evaluation tool was developed for partners to reflect and measure their own progress at milestones of the OSHub project. The self evaluation tool asks partners to measure themselves against the 7 seven building blocks. Each building block is measured on a 7 tier scale from 1 (Lower) to 7 (Higher).

The second level of impact assessment will focus on local OSHub community networks. This level aims to evaluate the relationships brokered between the OSHub and their local stakeholder community of schools, industry, businesses, research institutions etc.

### 2.5.2 Local OSHub Research Instruments

The local OSHub community networks will be evaluated through two means of assessment.

- **Event Surveys:** Every OSHub will have some engagement with the local community through workshops, showcases or projects. The purpose of the event questionnaire is to establish an understanding of which community stakeholders are attending events, what are they gaining from attending these events and are the events accessible for the local OSHub communities. The surveys are available via google form.
- **Stakeholder Surveys:** Stakeholders are an essential part of the local OSHub network. These are key actors in the community and will support our local open schooling projects. It is important to capture the experience of the stakeholders working with open schooling projects. Understanding their experience will allow us to better identity suitable stakeholders and create better partnerships between all community actors. The surveys are available via google form or can also be done via an interview.

The third level of the OSHub impact assessment aims to evaluate the individual OSHub Open Schooling projects. Here, a focus is placed upon investigating the student and teacher experiences of participating in each OSHub program.

### 2.5.3 Open Schooling Project Research Instruments

The OSHub Open Schooling projects will be evaluated through two means of assessment.

— **School Surveys (Pre & Post Program):** The aim of the survey is to capture students' behaviour and perspectives around 'STEAM, digital literacy and active citizenship' and the relationship they each play within their own lives and the lives of those in their community. The survey will be distributed via a Google Forum or can be printed.

— **Reflection Tools:** The aim of the reflection tools are to capture students' experience over the course of their OSHub projects. The reflection tool can be described and implemented in various ways such as zines, journals, diaries or a lab book. These reflection journals will be analysed at the end of the project and coded based on a set of indicators to obtain quantitative and qualitative data.

# 2.6 Open Design

All OSHub.Network plans and guidelines are open access and under a Creative Commons License (Attribution-Noncommercial-Sharealike 4.0 International) and made available in the OSHub.Network website, as part of the OSHub Blueprint – Open Design subpage[10].

This includes the OSHub Visual Identity elements and the furniture blueprints of the OSHub physical spaces, that we describe below in more detail.

## 2.5.1 Visual Identity

The concept underlying the visual identity design, developed by the SME NOSIGNER[11], is grounded on developing a clear and universal visual language to communicate the basic principles of open science (see Logo Identity Idea in Figure 7 and D6.1 Communication and Dissemination Strategy[12]). Importantly, in order to ensure ownership over the identity and legacy of the project, each OSHub selected a national name and created its own logo using the main design elements and respective guidelines (see Figure 8).

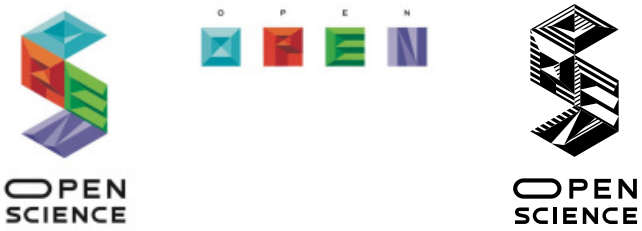



Figure 7: OSHub Logo Identity Idea (designed by NOSIGNER)

10 https://oshub.network/open_design.html

11 https://nosigner.com/

12 D6.1 Communication and Dissemination Strategy: https://drive.google.com/file/d/1CnhbuXOjzLiUZq33aSBbHAcQuUtyQNmZ/view?usp=sharing

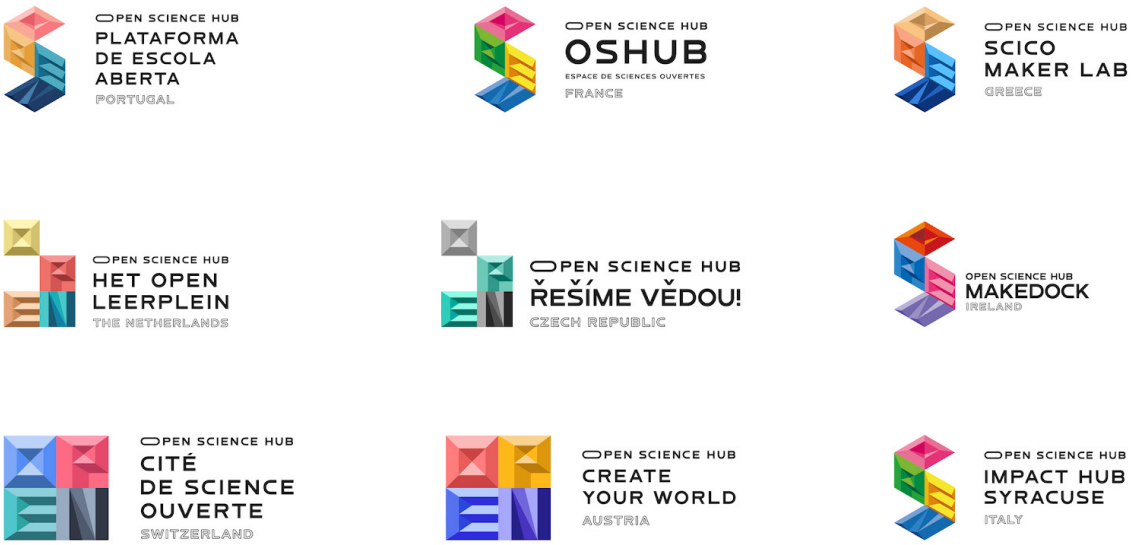



Figure 8: Local OSHub logos and respective national names

The OSHub visual identity elements (guidebook, logo, patterns and font) are available in an open format in the project website, as part of the OSHub Blueprint – Open Design subpage[13] (under a Creative Commons License – Attribution-Noncommercial-Sharealike 4.0 International).

### 2.5.2 Open Furniture

The physical implementation of each OSHub depends on the context and needs of each OSHub location. For example, OSHubs can be based in dedicated permanent physical spaces, and in these cases will be established, where possible, in vacant or unused spaces, or they can also occupy temporary spaces at schools or public spaces (e.g., libraries).

In order to support the physical implementation of the OSHub, together with NOSIGNER (that also developed the OSHub Visual Identity; see section above – 3.5.1 Visual Identity – and D6.1 Communication and Dissemination Strategy[14]) and with Precious Plastic Portugal[15] and Precious Plastic Geneva (Glitter)[16], we have been designing and prototyping a series of furniture pieces that we consider as the basic set to establish an OSHub: stool, table, cupboard and tool board (Figure 9; see D6.3 Promotional Material[17]).

The concept underlying the design and development of the OSHub furniture is based on the principles of circular economy and sustainability, with products made from recycled materials, namely plastic, and that can be produced locally.

---

13 https://oshub.network/open_design.html

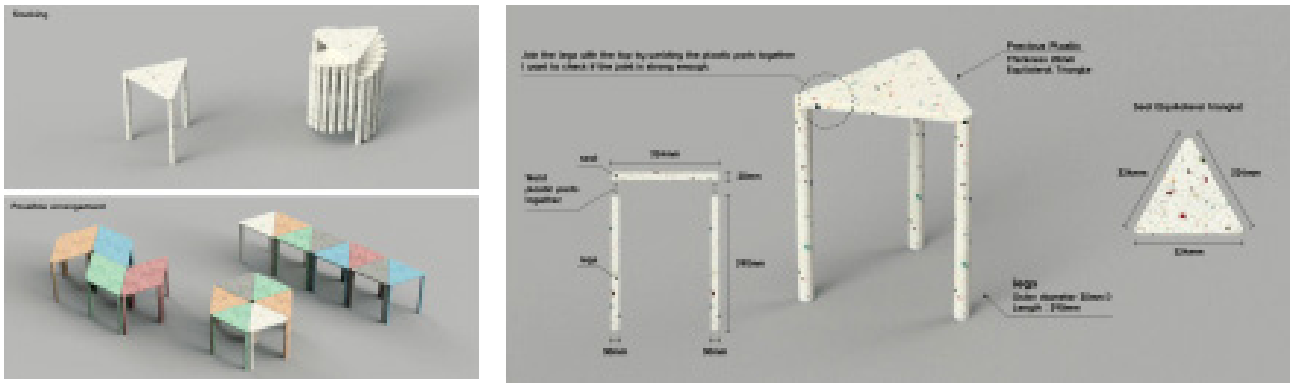
14 D6.1 Communication and Dissemination Strategy: https://drive.google.com/file/d/1CnhbuXOjzLiUZq33aSB-bHAcQuUtyQNmZ/view?usp=sharing

15 https://www.opolab.com/precious-plastic-pt

16 https://www.facebook.com/Glitter.Geneve/

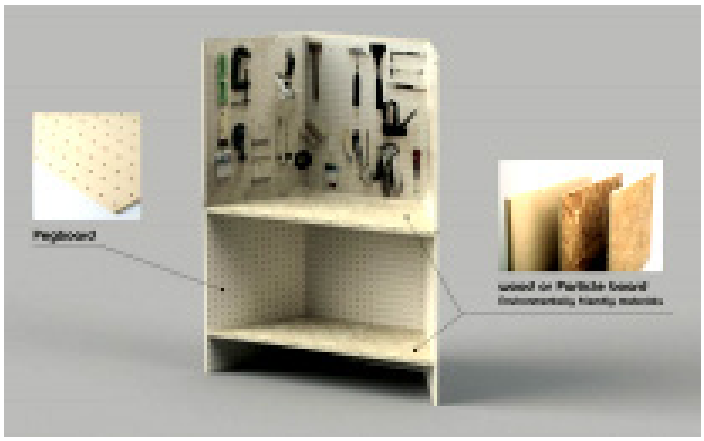
17 D6.3 Promotional Material: https://drive.google.com/file/d/1mOSn8LgwQSrNvBDDyUWiogc3ZVViJdVx/view?usp=sharing

**A.**



**B.**


**C.**




**D.**

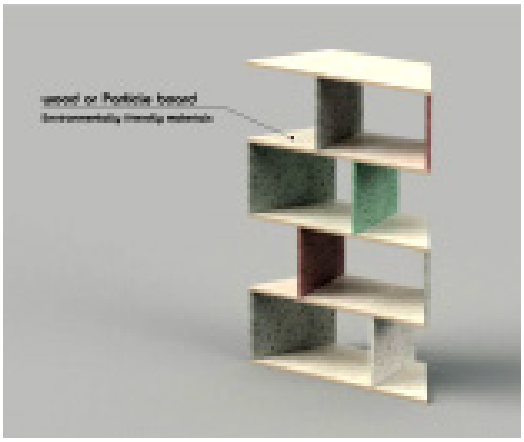



Figure 9: OSHub furniture: A) Stool, B) Table, C) Cupboard, D) Tool board

The technical drawings of the furniture are available in an open format in the project website, as part of the OSHub Blueprint – Open Design subpage[18] (under a Creative Commons License – Attribution-Noncommercial-Sharealike 4.0 International), so that anyone can reproduce, adapt or produce them locally. The technical drawings can also be found in the folder indicated in footnote[19], and the prototyping process in footnote[20].

## 2.7 OSHub Deliverables

The OSHub Deliverables reflect the development process of the OSHub.Network across the several WPs: WP1 – Management, WP2 – Build an Open Schooling Community; WP3 – Establish Open Science Hub Physical Spaces; WP4 – Design and Implement Open Schooling activities; WP5 – Impact Evaluation; WP6 – Communication, Dissemination, Advocacy; WP7 – Legacy and Sustainability; WP8 – Ethics.

The Deliverables with Dissemination Level of Public type are being uploaded to Zenodo[21] – a general-purpose open-access repository developed under the European OpenAIRE program and operated by CERN – and are made available in the project website as part of the OSHub Blueprint – OSHub Deliverables subpage.

18 https://oshub.network/open_design.html

19 Technical drawings: https://drive.google.com/drive/folders/1bCehHRrJQwhTth8nR2YTLkC-7gWXTrbal?usp=sharing

20 Prototyping process: https://drive.google.com/drive/folders/1DaW7eVaHV7vhIsC7lM1PmkS1s1VN-wDq9?usp=sharing

21 https://zenodo.org/

# 3. Concluding Remarks

This document reflects the current status of the OSHub Blueprint. As mentioned on numerous occasions the content contained within each section of the Blueprint will grow to best reflect the careful curation of each partner's journey towards a functioning and sustainable Open Science Hub.

It can be seen in these pages that there is a strong emphasis on giving flexibility to partners to make the best of their local circumstances and institutional expertise. However they will remain supported by WP leads in the areas of stakeholder management, co-creation techniques, evaluation, communication and business acumen.

Through all aspects of the OSHub Blueprint reflection and feedback to WP leads from partners is key and the self-assessment and research tools allow for this to be properly documented and acted on to progress successfully through the OSHub Roadmap outlined in 2.1. Further support for partners in successfully implementing the Blueprint is provided by building an even wider Open Schooling community and sharing best practice through Inspiration Sessions[22] and the OSTogether network.

Finally, it is hoped that the complete OSHub Blueprint will provide legacy opportunities beyond the duration of the project for others to gather the best learnings and replicate good practice in other locations, multiplying the impact of OSHub.network into the future.

22 https://oshub.network/inspiration_session.html

# References

SISCODE Consortium, 2020. SISCODE: **D3.1 Co-creation Journeys**, Institute for Advanced Architecture of Catalonia, GA 788217.

OPEN SCIENCE HUB

EMPOWERING CITIZENS THROUGH STEAM EDUCATION WITH OPEN SCHOOLING



# DELIVERABLE 4.2

## OSHub.Net Blueprint Report