DELIVERABLE 2.4

Self Assessment & Monitoring

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Abstract	This deliverable corresponds to D2.4 Self Assessment and Monitoring Report and describes the variety of assessment methods used throughout the course of the Open Science Hub project for 2019-2022.
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List of Acronyms

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ACRONYM	DEFINITION
IH	Impact Hub
OSHub	Open Science Hub
OSHub.Network	Open Science Hub Network
STEAM	Science, Technology, Engineering, Art, and Mathematics
ULEI	Leiden University
MFCR	Municipality of Figueira de Castelo Rodrigo
WP	Work Package

Executive Summary

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This deliverable highlights the contribution of each of the OSHub partners, and work package leaders in the continuous monitoring of the project.

It is divided into two distinct parts: the first one is a self assessment of the project from the bottom up approach, which includes the audience of the local OSHub networks such as students, teachers and local stakeholders; the second is the self assessment of the project from a top down approach, which includes monitoring at the global level of the OSHub consortium and the international network.

Both approaches bottom-up and top-down, are equally important to monitor as they provide an overall picture of what Open Science Hub is and can be.

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1. INTRODUCTION

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1.1   Background: About 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 nnovation 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.

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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   Objectives of the Self Assessment and Monitoring Report

The objective of this report D2.4 Self Assessment and Monitoring is to highlight the contribution of each of the OSHub partners, and work package leaders in the continuous monitoring of the project.

This report will be divided into two distinct parts. The first will be a self assessment of the project from the bottom up approach, which will include the audience of the local OSHub networks such as students, teachers and local stakeholders. These assessments were captured from various activities throughout the OSHub project.

The second is the self assessment of the project from a top down approach, which includes monitoring at the global level of the OSHub consortium and the international network.

Finally we will conclude by looking at the different perspectives each of the levels provide.

Table 1: Activities of Self Assessment and Monitoring throughout Open Science Hub.

NAME OF MONITORING	STAKEHOLDERS	DESCRIPTION	DATE / FREQUENCY
Teacher Evaluation	Teachers	Formal Monitoring as part of WP5 – Evaluation and Impact Assessment. Teachers completed interviews / qualitative surveys.	End of academic year may / june 2021 and 2022.
Teacher – Sustainability Workshop	Teachers, Project Partners, OSHub Coordinators	Workshop activities using reflection and forward planning for OSHub. Facilitated by Impact Hub	One time activity in July 2022.
Informal Monitoring	Teachers, OSHub coordinators	Over the course of the year teachers provide feedback as part of teacher training, after workshops and showcases.	All year round.

Teacher Networking Workshops	Teachers, OSHub coordinators	Formal workshop with teachers and coordinators facilitated by MFCR over Zoom. Teachers had the opportunity to work through an Open Schooling Project Canvas, and learn from one another.	One time activity 24.03.2021.
Consortium Evaluation	OSHub Coordinators	Formal Monitoring as part of WP5 – Evaluation and Impact Assessment. Consortium completed online semi-structured interviews.	Once every year, – May – July 2020, 2021 and 2022.
Stakeholder Network Analysis	OSHub Coordinators & Local Stakehlders	Assessment of local stakeholder networks for each OSHub, conducted as part of a master thesis by ULEI.	January – August 2022.
Self Assessment Tool	OSHub Coordinators	Self-Assessment tool developed by Impact Hug that was use to measure each OSHub development on the main pillars of an OSHub.	Several times over the course of the project from 2020 – 2022.
Social Business Canvas	OSHub Coordinators	The Social Business Canvas developed by Impact Hub, was a monitoring tool for developing OSHubs focused on challenges, impacts, stakeholders and resources.	Throughout the project form 2019-2022.

2. Bottom Up Monitoring – Teachers / Partners

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The Open Science Hub Network has enacted several methods of self-assessment over the course of the project. These methods consist of a mix of formal assessments such as interviews for impact evaluation, and also more non-formal assessments such as informal feedback meetings, workshops or local and international activities. In this section we will look at those methods that focus on our local stakeholders, such as students, teachers and OSHub coordinators on the ground.

2.1   Teacher Statements

Teachers have been contributing to monitoring since the inception of the OSHub project. Many of the final OSHub programmes were informed by the teachers input over the 3 years of the project. Teachers have been formally contributing to the assessment of the project through the project impact and evaluation (WP5).

Teachers have completed a yearly reflection of the programme in the form of an open survey or an interview.

In the reflections form year one teachers were asked two sets of questions, one from how the teachers viewed open science hub from the learners perspective and one from their own perspective as teachers. The questions can be found in this google form here: Teacher Evaluation Year 1. An summary of the teacher responses was completed in 2021, these can be found here: WP5.

Teachers were surveyed once again at the end of the second year of the programme. The questions can be found here OSHub – Teacher Reflection / Interview. The questions the teachers were asked can be found in annex 1 at the bottom of the report. **At the time of writing several key themes have emerged from the teachers responses they are as followed:**

- —   Introduction to novel content
- —   Workshop and Facilitation style
- —   Access to school trips

- Accessible and inclusive activities
- Key skills – scientific skills, collaborative skills, research skills
- Use of technology
- Involvement in a positive community change
- Activating an important student issues
- Links to sustainable development goals
- Links to future thinking and further education
- Assistance to the schools

2.2   Activity at OSHub.Network Summit – Teacher Sustainability

The input of teachers that have been used throughout the year were captured during the network commit (see deliverable 5.5 OSHub.Network Summit[2]), whereby teachers and other partners could contribute their thoughts regarding the sustainability of OSHubs. Partners were asked 2 main questions, below are the questions followed by a summary of their answers.

"What were the biggest impacts the OSHub project had on schools/teachers?"

- Opportunities to access resources
- Students actively contributing to the community through their projects
- Co-working encouraged for students and teachers
- Novel approaches to learning
- New skill development for students and teachers
- Improved relationships between schools, universities and stakeholders
- Students exposed to new perspectivesModel 1 – Sustainability of the hub as an agency or physical space

"What didn't work as expected"

- Difficulty for teachers to engage due to school restrictions
- Issues with technology
- Engaging with online work due to COVID-19
- Poor student engagement
- Little access to some equipment in school

2   https://opensciencehub.net/download/D_5.5.pdf

— Communication in the beginning
— Lack of resources around the local community

Teachers were also asked to position themselves physically on a 3 dimensional graph to represent their ownership over. Teachers positioned themselves based on their perception on how ownership they had over the Activities, Networks and Space of the OSHub they worked with. Each member of the OSHub coordinators had the opportunity to speak with their linked partners/teachers and discuss where they would like to move to and how they would like to get there. A full description of the activities at the OSHub summit can be found here: OSHub.NetSummit.

Fig. 1: Teacher activity on ownership at the OSHub.Network Summit, in Barca De Alva (Portugal). Teachers plotted themselves on a 3-D graph with the parameters of Ownership of Activities, Ownership of Space, Ownership of Network.

2.3   Teacher Open Schooling Network

As outlined in Deliverable 4.4 Report on Educator Training & Professional Development Activities[3], each OSHub conducted training for their associated teachers and relevant partners. Each of these training sessions has a level of informal assessment for the OSHub and their teachers. The exchan-

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3   https://oshub.network/download/D_4.4.pdf

ge that happens during each of these training sessions allow the hubs to alter their programmes and improve their practices accordingly. Many tools produced during the project (D2.1 – Training workshop report[4]) may have been used in some of these sessions. These allow local OSHub and partners to map out their own stakeholder systems, school empathy maps, and co-creation techniques. These are just as valuable for the teachers' contributing feedback to what and how the OSHub delivered each of their work.

Teachers from all OSHubs had the opportunity to come together for an online workshop hosted by MFCR over Zoom in March 2021. Over the course of the workshops teachers and OSHub coordinators completed an Open Schooling Project Canvas that was developed by the team at MFCR. This workshop introduced teachers to the wider OSHub network, where they could listen and learn from other teachers, their challenges and experiences of working with OSHub.
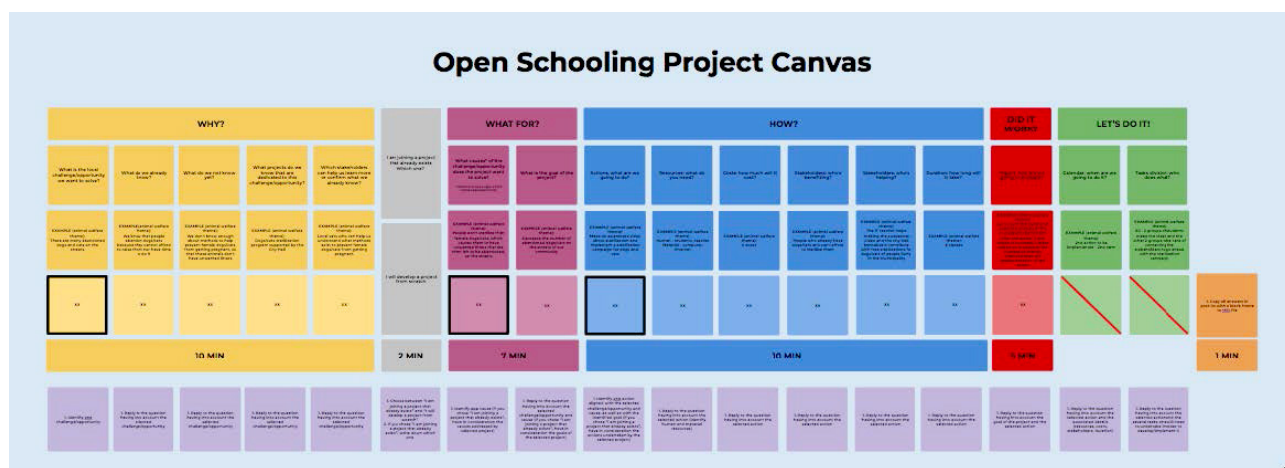

Fig. 2: Open Schooling Project Canvas developed by MFCR for an inspiration workshop with teachers in March 2021[5].

3. Top Down Monitoring – Consortium

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As mentioned in section 2-Bottom Up, Open Science Hub has implemented several ways of self assessment and monitoring of the project. This section we will look at those methods that focus on Top Down approaches, here we focus at the level of the consortium and each of the OSHub coordinators. The monitoring of the project has been spread across a number of work packages such as WP1, WP2, WP5 and WP7.

3.1   Consortium Interviews

The consortium has been continuously assessed over the course of the project, as a part of WP5 – Impact and Evaluation and WP7-Legacy and Sustainability. As part of WP5 each OSHub has been interviewed each year of the project. In the first two years, the consortium were surveyed on the following indicators:

— Consortium collaboration

— Stakeholder engagement

— Local network development

— School engagement (relationships / collaboration / progression)

— Workshop development and engagement

— Local OSHub development (Physical space / program resources)

Results of the first year can be seen in the milestone report MS5 (OSHub.Net INterim Report on Project Effectiveness).

Currently at the time of writing the project the consortium are being surveyed on:

— Local network development

— Support / Training and tools form the consortium,
and implementation of tools locally

— Satisfaction of impact, outputs and outcomes

— Sustainability of the local OSHub
— Perspectives of Open Schooling

Results of this will be published in the final report.

3.2   Stakeholder Network Analysis

A valuable aspect of self assessment and monitoring that has taken place over the course of OSHub is the number of sub-projects that it has interacted with i.e. case studies for master students. One such project has been undertaken by a student at Leiden University. Their work investigates the "knowledge broker" framework of OSHub, they are studying the connections established between Hubs and partners and the rolles each Hub plays.

The research is conducted through a semi-structured interview process whereby interviewees have to answer questions and conduct a task set out by the researcher that involves using post-its to build an overview of the ecosystem.

The interview is broken up into 6 sections of questions they are as follows:

1. **Introductory Questions: e.g.** *"What is your role and primary tasks of OSHub XX?"*

2. **Networking Capacity – Types of relationships with OSHub partners: e.g.** *"Which stakeholders would you identify as relevant for the work of your OSHub?"*

3. **Corona Issues: e.g.** *"Did you find challenges in the establishment and maintenance of relationships during the corona period?"*

4. **Skills and Personality Traits: e.g.** *"From the list below and considering your personality traits, please select two of them with which you identify the most"*

5. **Roles and activities a knowledge broker should perform?: e.g.** *"Do you consider that you perform KB functions within your work for the OSHub?"*

6. **Looking forward and conclusions: e.g.** *"Which are the biggest challenges you encountered during the development of the project?"*

The results of this research has led to extremely beneficial stakeholder maps for each of the Hubs interviewed. The stakeholder maps for OSHub Switzerland, Greece, Portugal and The Netherlands are as follows.
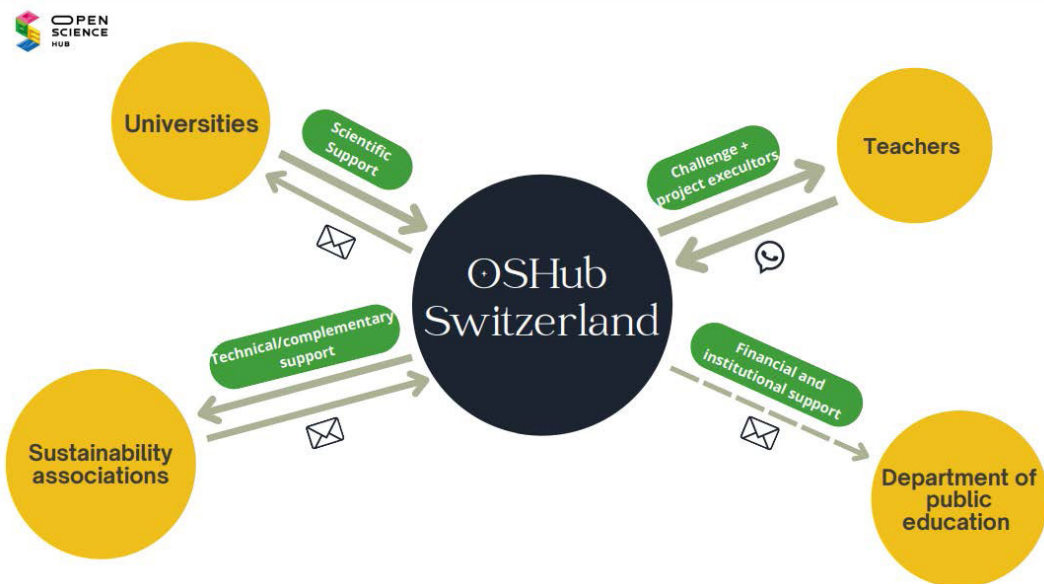

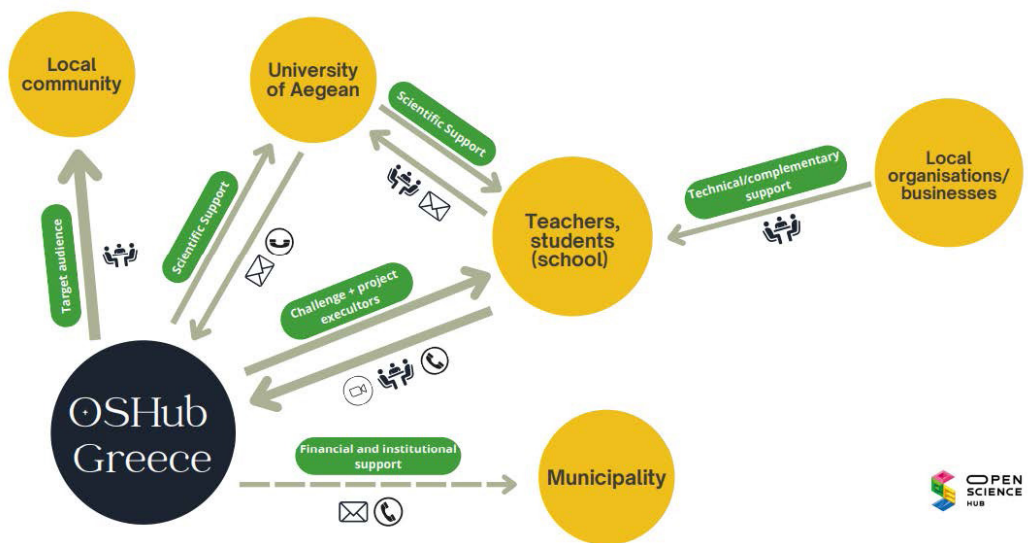Fig. 3: Stakeholder Network Map for OSHub Switzerland.

Fig. 4: Stakeholder Network Map for OSHub Greece.

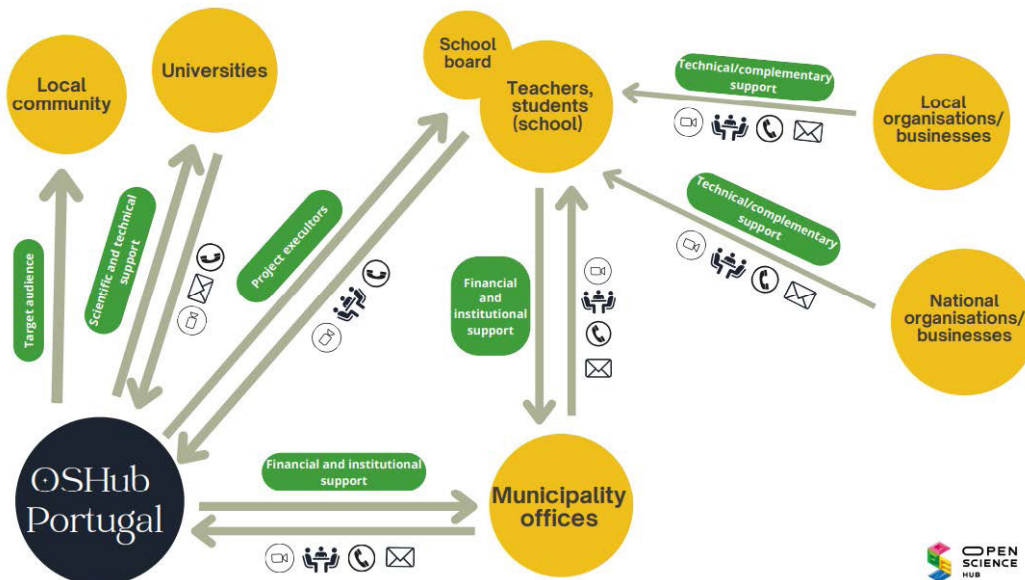Fig.5: Stakeholder Network Map for OSHub Netherlands.

Fig. 6: Stakeholder Network Map for OSHub Portugal.

3.3 Project monitoring from tasks from IH & TCD

As part of WP2: Build an Open Schooling Community, each of the OSHubs were asked to assess and map each of their local ecosystems. As detailed in deliverable 2.3: Participative Roadmaps, each hub was tasked with monitoring their local area and identifying each of the following:

1. **Participation Ecosystems:** The information presented here explains the local OSHubs reasoning behind the choice of schools/ communities to work with for open schooling projects.

2. **Participation Stories:** The information here is as a table of current experiences that build a clear picture of what action at the local level looks like, including insights into decision-making, enablers, blockers, sustainability, and inspiration for peer-to-peer Learning.

3. **Participation Activity:** The information presented here explains collaborative activity taking place within the local ecosystem, with particular emphasis on the depth and involvement of stakeholders in co-design and co-creation activity.

Continuous monitoring of each OSHub was carried out throughout the whole project led by the Impact Hub as part of WP7. The consortium used 2 main methods of self assessment, along with a sustainability analysis. These were recurring methods of self assessment that were shown to be extremely beneficial to the consortium.

The Self Assessment Tool is found on the OSHub.Network website: https://opensciencehub.net/download/SA_Tool_canvas.pdf. The self evaluation tool asked partners to measure themselves against 7 categories. These categories represent the pillars of an Open Science Hub. Each pillar was measured on a 5 tier scale from 1 (Lower) to 5 (Higher). Each category had several indicators which allowed partners to assess their progress. Each indicator had 3 tiers of completion, which included "Not started, work in progress or completed". Partners first assessed their progress using each indicator, the results of which allowed them to estimate their progress on each of the pillars.
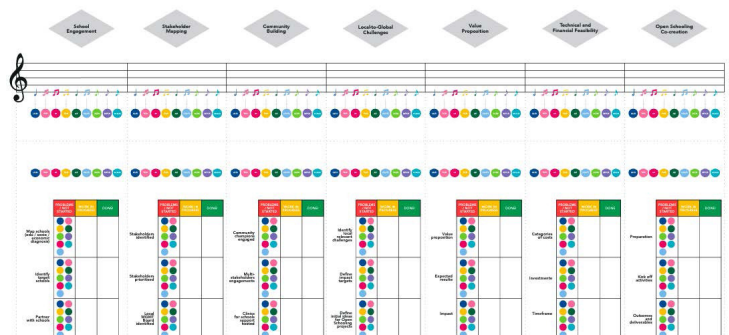

Fig.7: Self Assessment Tool – OSHub coordinators measured their progress against several 'pillars of OSHub'.

The Social Business Canvas developed by IH, was used several times to develop a business model for each of the hubs. This allowed the hubs to track their development over the 2 years and to help them develop as a business model based on a number of headings.

A detailed description of the matrix can be found in Deliverable 7.2. In short the business canvas is broken into multiple steps, represented by individual colour. They are as follows: The Value Proposition; Results, Activities, Resources; Actors, Key Obstacles, Relations & Channels; Impact; Cost Structure & Revenues.

Sustainability Analysis carried out by Impact Hub was another extremely effective methodology for periodic monitoring of the project. It allowed each Hub to reflect on various aspects of their practice and successfully plan for the future. Each partner-hub could reflect the sustainability of their OSHub Activities, their local OSHub itself, and their ability to be a member of the network. Each partner could rate themselves on a scale of 1-5 for their potential ability sustainable on the following categories: Replicability; Transferability; Scalability; Capitalisation.

3.4   Activities at OSHub.Network Summit

Each member of the (extended) OSHub network – members of the consortium, OSHub coordinators, teachers and external participants had opportunities to reflect on the progress of the project recently. This was the pinnacle of the assessment and feedback we have collected over the previous 2 and half years. As detailed in Deliverabl 5.5 OSHub Network Summit, one session facilitated by IH was focused on how to keep this network alive in a functional and meaningful way. Participants were divided in groups and asked to think about the following dimensions: Scope, Content, Channels, Organization, Governance, Formalization. Detailed results of the session can be found here: Report Co-creation session International Network.

4. Conclusion of Self Assessment and Monitoring

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Open Science Hub has implemented a number of initiatives to maintain ongoing self-assessment and monitoring throughout their project. In this report we highlighted this from 2 main perspectives, a bottom-up approach and a top-down approach.

The bottom-up approach focused on stakeholders who were involved in Open Science Hub activities, such as coordinators, facilitiators local aspects and most importantly teachers – arguably the main beneficiary of OSHub. The bottom up approach methodologies focus on formal evaluation form survey and interviews, reflective workshop activities and informal feedback. The areas of interest from monitoring the project from bottom-up approach were focused on what the hubs can produce and how. These include activities, workshops, facilitations material, accessible technology, skills that are benign thought, resource available and external operations with stakeholder.

The top-down approach focused mainly on stakeholders who coordinated and maintained the local OSHubs and the international OSHub Network. Methodologies for maintaining assessments and monitoring were structured and semi-structured interviews and workshop based assessments. The main areas of interest from the top-down approach were focused on internal operations of each Hub (content produced and physical space), the stakeholder networks for each Hub,and the sustainability for each and their contribution to the international network.

Both approaches bottom-up and top-down, are equally important to monitor as they provide an overall picture of what Open Science Hub is and can be.

DELIVERABLE 2.4

Self Assessment & Monitoring