MAKE IT OPEN

Content framework with defined requirements and parameters

Deliverable 3.1

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Executive Summary

Make it Open is a project which prioritises widening participation through bringing maker culture, citizen science and open schooling cultures to science education. In this context work package 3 develops an online platform to enhance the sharing and creation of Open Schooling learning material created in the project. This online platform is called the Open Schooling Navigator.

This deliverable is a content framework of the Open Schooling Navigator and includes its parameters and requirements. As the Open Schooling Navigator both derives from work conducted in the project (mainly work from package 1, 2, 5 and 6) and serves the delivery of work within the project (mainly in work package 1, 4 and 6) there are a lot of interdependencies. Therefore an iterative creation process is at the core of this content framework, in other words the fact that the Open Schooling Navigator will grow and change over time is at the heart of what it is, over the course of the project. This will lead to a final product at 2/3 of the project's runtime. The description of this process can be found in chapter 2, preceded by five core principles that describe what the Open Schooling Navigator is and does.

In chapter 3 you will find a description of the work that was done leading up to this document, giving background information to understand where the choices made to define principles and the iterative creation process derived from.
The fourth part of the document goes on to describe several parameters for the Open Schooling Navigator. These are its users, its functionality, its design, and the content characteristics in chapters 4 to 7.

This is followed by the final part of the document, which goes on to explain accessibility - and technical requirements, as well as information on data privacy, hosting and maintenance, etc. in chapters 8 - 12.

List of abbreviations

In alphabetical order:

CMS	Content Management System
LS	Learning Scenario
LU	Learning Unit
OS	Open Schooling
OSN	Open Schooling Navigator
RTL language	‘right-to-left’ language, e.g: Hebrew and Arabic
SEO	Search Engine Optimisation
UI	User Interface
WYSIWYG	What You See Is What You Get

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1. Introduction

Make it Open is developing a mix of actions, tools and resources that will be open for the education community to join, use or attend. Work package 3, led by Waag, develops the Open Schooling Navigator: an interactive online platform to support teachers and educators in navigating the open schooling world.

Waag worked in close collaboration with Forth (Fixperts previously) to develop a content framework for the Open Schooling Navigator (OSN). This document provides this content framework, the principles and an iterative creation process for the OSN, as well as all parameters the OSN depends on and the requirements we have defined so far. This work encompasses task 3.1 *developing the navigator's content framework*.
This document is structured as follows:
Chapter 2 describes what the OSN is and what the main principles are that we work from in developing it. It then continues to describe the iterative development process that has been defined to create the OSN. Functionality of the OSN will grow as Make it Open progresses, and we learn by doing.
Chapter 3 explains which work has been done between M3-M9 that has led to the principles and the iterative development process on the one hand, and parameters and requirements which have so far been defined on the other. From chapter 4 onwards we go into parameters and requirements for the OSN.
Chapter 4 describes the potential users of the OSN and the personas we created to think as users, while we design.
Chapter 5 sums up the functionality of the OSN, to the extent that we can foresee it at this point in time.
Chapter 6 describes the characteristics of the content that will be in the OSN.
Chapter 7 describes the design of the OSN, which builds on the visual identity of Make it Open.
Chapter 8 sums up the accessibility requirements we give ourselves, in order for the OSN to be as open and inclusive as possible.

Chapter 9 contains all the technical requirements for the OSN that we can assume with a reasonable level of certainty at this stage in the iterative development process.
Chapter 10 describes how we plan to manage data, in accordance with GDPR regulations and Waag's standards in this regard.
Chapter 11 is a brief description of technical hosting and maintenance
Chapter 12 is a brief description of how Waag will share code and content with the public domain.

2. Open Schooling Navigator

The Open Schooling Navigator (OSN) is an interactive online platform aimed at teachers and other educators. The OSN explains open schooling, it inspires to try and/or make open schooling projects and encourages to share experiences and knowledge. In short, the OSN:

- provides inspiration and information on Open Schooling
- provides (information about) Learning Scenarios that were created in Make it Open.
- helps to design one's own Learning Scenario.
- helps to design an Open Schooling strategy.
- facilitates sharing ideas with peers, to support a growing Open Schooling European community of practitioners.

2.1 Core principles

These are the core principles for the creation of the OSN. How we derived these principles can be read in chapter 3 *Summary of the work conducted.*

- The OSN is a tool for skilled professionals in both tone of voice and content.
- The OSN is ambitious: it invites the user to explore deeper, learn more, think bigger, it aims to move the user from finding inspiration for projects to designing an open schooling strategy.
- The OSN comes across as a toolkit: it inspires an active attitude ("try! do!") over a passive attitude (consume) in the user.
- Working with the OSN feels open and safe at the same time: it guides the user, without restricting her.

2.2 Towards a complete platform in an iterative process

In the process of designing and building the OSN we keep a constant focus on adding most value for the users of the tool. To get to a final product that offers the most value for the users, an iterative process will be followed. Instead of thinking through

all the functionalities, then design, build, test and launch the OSN, it will be designed and built in smaller increments. Each increment will be an improvement and extension of the previous version, based on feedback gained by tests with users. This iterative process is the prefered way of working in a research and innovation project such as Make it Open, in which a lot of work with interdependencies is done simultaneously.
In this specific project the Learning Scenarios (LSs) are the starting point for the concept of the OSN. Yet teachers creating LSs are the best testers, because they are doing the work the OSN is supposed to support.
It is important to realise that working in an iterative process means accepting that not all functionalities and requirements are clear at this stage.

2.2.1 Sprints to build versions related to services provided

With today's knowledge, we plan four main 'sprints' in this iterative process, all resulting in a version of the OSN that can be tested with potential users. These versions relate to the different services the OSN will offer:

- **Version 1** focuses on **offering information and inspiration**.
- **Version 2** will improve the first version, and functionalities that focus on **helping users to design their own open schooling** will be added.
- **Version 3** will improve the second version, and functionalities focussing on **facilitating sharing ideas and building a community** will be added.
- **Version final** is the final version of the OSN, in which all three services are offered in the most valuable way.

As the core principles state, we aim to create a tool that is more than a website that shows LSs, we will also take time during the sprints to learn to understand from users. We will research what other functionalities are valuable for them to make The OSN a platform that facilitates Open Schooling.

2.2.2 Sprint planning

Waag has identified four sprints of development of the OSN between M10 and M24. Sprint 1 will be finished in M12, to align with the timing of the second pilot phase in work package 2. In this sprint we offer the following functionality to users:

- present basic information about OS and Make it Open
- present the first eight Learning Scenarios in an easily accessible and valuable way
- allow users to freely browse the first eight Learning Scenarios
- enable users to select a fitting Learning Scenario.

The users of the first version of the OSN will be (mainly) the teachers executing the 2nd pilot phase. The development of functionality delivered in sprint 2 depends on input from them, while they are executing the Learning Scenarios.
We want to learn about the first functionalities:

- do you understand what OS is from what the OSN offers?
- do you understand what OSN offers? What current functionality should be improved?
- do you consider the current presentation of the 8 LSs from pilot phase 1 accessible and valuable? What about the way they are presented should be approved?
- does the filter option supply sufficient guidance? What can be improved?

We want to learn about the functionality of sprint 2, by asking them:

- How can we trigger users to explore deeper? What information in and around the Learning Scenarios would be relevant to share?
- Which parts of the Learning Scenarios should be adaptable, to make them your own? What level of freedom/ restriction is desirable?
- Which elements of a Learning Scenario are subject to context and/ or culture?

The way we will gather this input from the teachers will be designed in M10, in collaboration with work package 2 and 5. If there will be a live consortium meeting with teachers possible between M13 and M15 Waag would like to host a co-creation session for this purpose.

Sprint 2 will be finished in M19, this is the end of the duration of *task 3.3 developing the open schooling navigator*, which ends in the launch of the OSN on April 30th 2022, a project milestone. The majority of the functionality will be in place, the navigator will meet the description of task 3.3 in the *Description of Action*.
In addition to the improved functionality of version 1 it will:

- contain all 16 Learning Scenarios developed in both pilot phases combined
- trigger and help users to explore the Learning Scenarios deeper
- help users to adapt the Learning Scenario to their own context
- invite users to make new Learning Scenarios
- have yet undefined functionality to help users start Open Schooling (the strategic use case)

The potential users of version 2 of the navigator, are all teachers and educators interested in Open Schooling, as it will be a public launch. To develop Sprint 3 Waag will work with the following users: the teachers in the pilots and teachers and educators involved in work package 4 Open Schooling Hubs (via Ecsite and Third parties) .

Sprint 3 and 4 will be planned by M18 at the latest.

The figure below is a visual overview of the fours sprints, the functionality offered in each sprint and the questions for users to test current and future functionality.

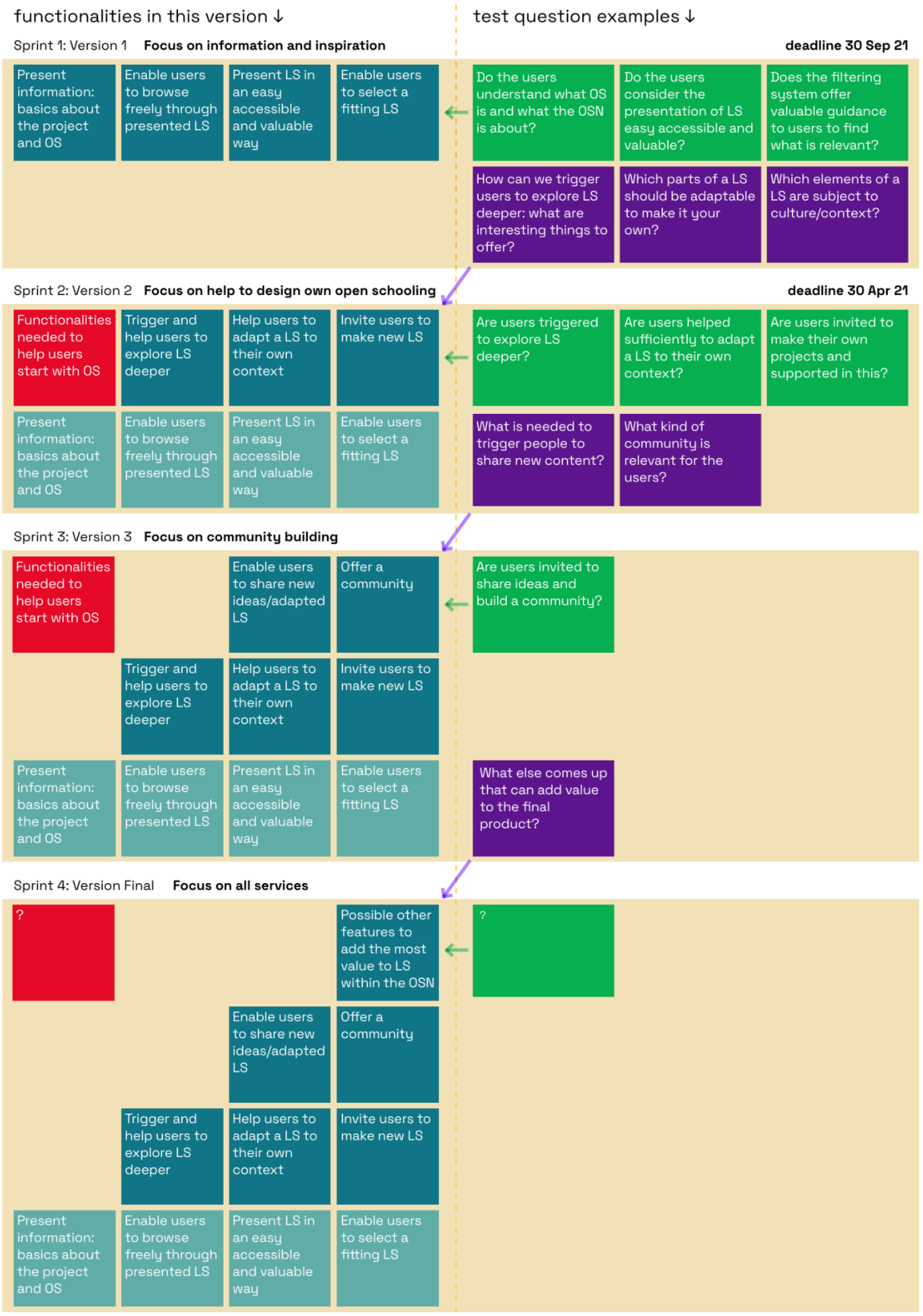


Figure 1: Process overview of the creation of the OSN in sprints

3. Summary of the work conducted

In the following chapters we will go into various parameters and requirements of the OSN we have defined up until this point. In order to understand how we have arrived at the parameters and requirements this chapter will give an overview of the work we have conducted between M3 and M9.

3.1 Concept direction and functionality overview

Understanding what the OSN should facilitate, for whom and how, depended on:

- Insights described in *D1.1 Set of user centred delivery templates*,
- Criteria for Open Schooling activities described in *D2.1 Criteria for Open Schooling activities*,
- Information about the practical execution of the pilots: the development of the Learning Scenarios by pilot partners and teachers and the testing thereof.

Waag and Forth gathered and analysed these and facilitated an (online) session with all consortium partners to collect ideas and ideals for the OSN from the consortium partners.

Based on these four inputs Waag and Forth developed an initial loose concept of what the OSN should be, whom it should facilitate and how, as well as a first overview of functionalities. From there Waag developed user stories, based on the use case types Forth developed in D1.1. The types of use cases in D1.1. are:

- Opportunistic use case: educator has an opportunity (e.g. funding) to work with the school's community, and wants input to start a project.
- Strategic use case: school director wants to raise the profile of her school and sess Open schooling as a way to do so.
- Content/experience driven use case: Make it Open offers learning opportunities for different topics in the curriculum.

3.2 User stories

The user stories were based on three imaginary school teachers and a school manager, each driven by a different use case. The Waag team created a very first attempt at what all of these imaginary teachers would need with regards to initiating and executing an Open Schooling project/starting Open Schooling in their school in multiple collective brainstorms in the interdisciplinary group writing this deliverable. In multiple iterations, in collaboration with Forth, it became evident that the user stories (deriving from the use cases) could be mapped along 2 axes:

- level of experience with Open Schooling of the teacher/school director
- intrinsic vs. external motivation of the teacher/school director thereby deriving at four types (see Figure 2)

All the use cases defined in D1.1 would fit at least one story (one quadrant). This was a confirmation that we were on the right track.
The third step we took after the user stories were divided in quadrants and use cases mapped was a break-through in terms of defining our key user.
The OSN should be more than a tool to create a learning scenario. If we translate that principle into needs of a user: the intrinsically motivated teacher with little OS experience can make the steepest learning curve in working with Make it Open and or using the OSN, because (s)he has the potential to go from the content/experience driven content to the strategically motivated use case. And so ideally the OSN will focus to attract these users and by working with the OSN (s)he will develop from intrinsic motivation to strategic desire to spread Open Schooling, by becoming more and more experienced in OS, (facilitated/helped) by the OSN.
More on how the user stories became personas in chapter *4. Users.*

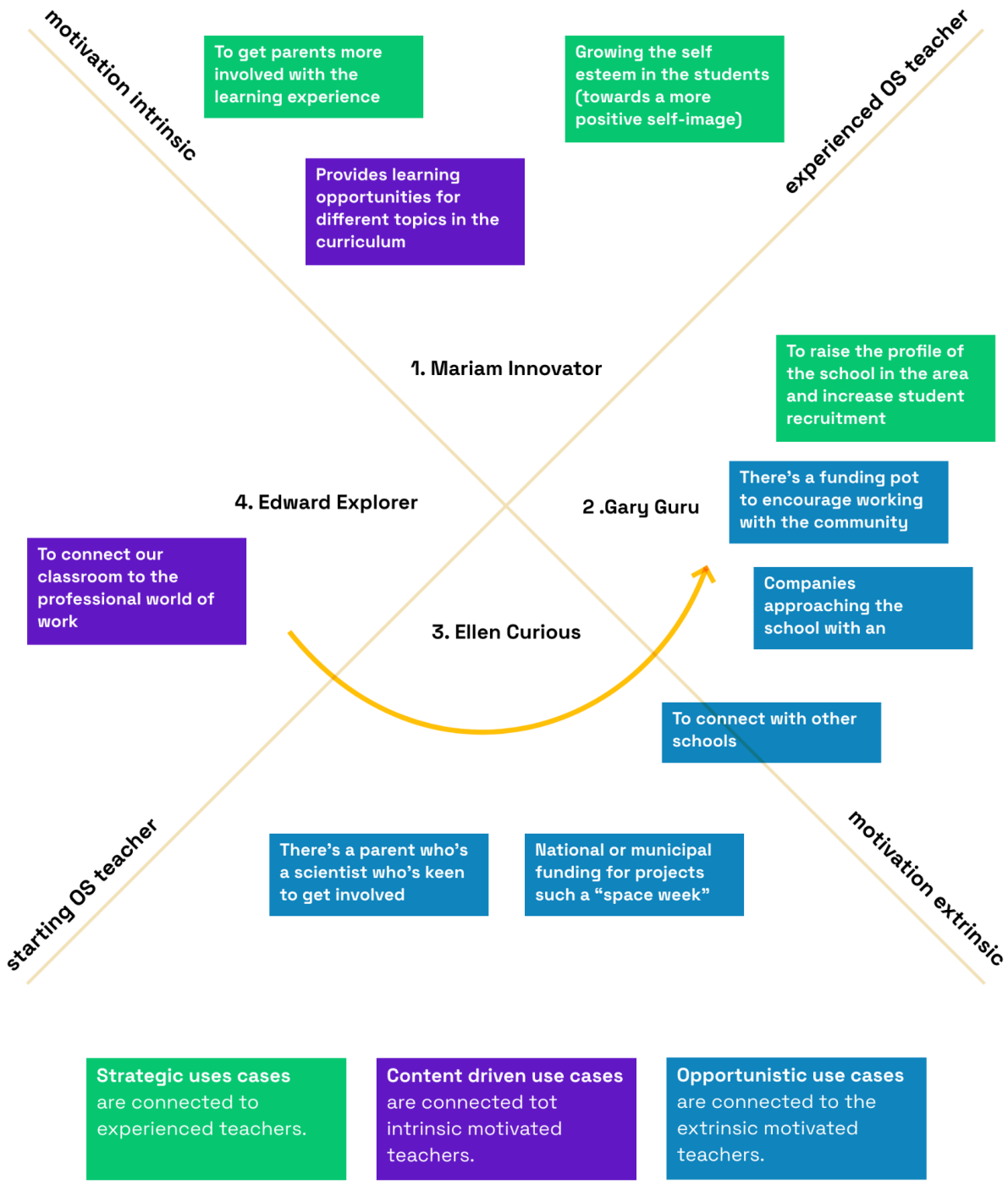


Figure 2: Use cases mapped on the axes experience level and motivation and the intended move from content driven to strategic

A copy of the online brainstorm outcome in Miro can be found as appendix 1 to this document.

3.3 Survey

Now that the user stories and user groups were clearer we wanted to learn more about specific needs of our potential user to prioritize functionality.
Waag created an online survey to be filled-out by teachers in the pilots, as well as teachers and educators in the combined networks of the consortium partners and third parties. Waag spreaded the survey across the consortium, Ecsite shared it with third parties and EUN shared it with their European network. To lower the threshold the survey was available in English, as well as in Polish and Hebrew for the teachers in the Polish and Israeli pilots. We received feedback from 139 participants across 32 countries. The list of respondents can be found as appendix 2 to this document.

3.3.2 Summary of the survey results

Overall impression:

- Users value their autonomy
- Every school/class/teacher/situation is different.
- striking the right balance between flexibility and structure is key.

Important to keep in mind:

- Time (to read, prepare, ...) is limited.
- Examples from other schools are valuable .
- Connection to the rest of the programme (curriculum) is important.

The complete results of the survey can be found as appendix 3 to this document.

3.3.3 Focus group

In the survey we asked respondents if they would like to be contacted by us again to continue to help us answer questions from the perspective of the teacher/educator intrinsically motivated to work on OS. 101 people indicated they'd be happy to receive questions again, in a survey or directly in an e-mail and supplied their e-mail address to this end.

We are happy to have this international focus group involved for the development during the sprints that will follow.

3.4 Functionality, content, design and requirements

From there we proceeded to create the rest of the concept creation process in sprints and defined the sprints, as you have read in chapter 2.
Simultaneously we moved on to create and/or define functionalities, content, design, and requirements with regards to accessibility, privacy, hosting and maintenance and technical requirements, which we will go into in the following chapters. All of these parameters and requirements are defined as far as we can anticipate now. Some will only be final in the final stages of the concept development after future sprints.

4. Users

The primary users of the OSN are teachers in primary and secondary formal education in the ten countries in which the ten Make it Open Schooling Hubs will be operating. They are the primary user group, because Make it Open activities are conducted during school hours, and our primary education and learning partners are schools. The secondary users of the OSN are educators in non-formal education who are also involved in activities in the Make it Open Schooling Hubs.

Beyond the project the OSN is aiming at teachers and educators in (a selection of the) countries where Make it Open Schooling Hubs are initiated, depending on which Open Schooling Hubs will stay active and on who wishes to continue to host and moderate the OSN after the project finishes.

In order to develop a relevant tool we need a more specific kind of potential user. An imaginary 'someone' who can represent that teacher to bear in mind while creating. This is what we call a 'persona'.

4.1 Personas

As a follow up of the user stories Waag created based on the use cases described in D1.1 we defined four personas (as described previously in *3.2 User Stories*). Each persona corresponds to a place in the four quadrants:

1. is externally motivated and has little OS experience
2. is intrinsically motivated and has little OS experience
3. is externally motivated and has much OS experience
4. is intrinsically motivated and has much OS experience

The four personas are:

1. Ellen Curious

New to open schooling, strategic goals

Says	'How will our students experience OS in our school? (How) will we/they like it?'
Does	Looks for information
Thinks	I need to really get what this is about
Feels	Pressure, overwhelmed, curious
Blockage/pain	Time pressure: already so busy, perception of complexity
Goals	- See clear benefits - See examples that provide proof and inspiration

2. Edward Explorer, the priority user

new to open schooling, personal goals

Says	'I'd love to try these new ideas on education!'
Does	Educates him/herself on the possibilities
Thinks	I don't really oversee it all, but it seems great!
Feels	Overwhelmed, curious
Blockage/pain	Time pressure: already so busy, perception of complexity, how to choose (of the many cool things to do in school)
Goals	- Wants an easy try-out and clear footholds in this new area - Get more how to - inspiration - Explain, inspire, convince colleagues

3. Gary Guru

Experienced in open schooling, strategic goals

Says	'How is OS different from what we are doing already?'
Does	Goes looking for ways to connect it to the vision of the school, checks with colleagues
Thinks	I don't really oversee it all, but it seems great!
Feels	Overwhelmed, Curious

Blockage/pain	Time pressure: already so busy, perception of complexity, how to choose (of the many cool things to do in school)
Goals	- Strategic understanding - Understanding balance effort-outcome - Connect to school-goals

4. Mariam Innovator

Experienced in open schooling, personal goals

Says	'I see so much potential to stimulate our students in a much broader way, to connect them to the world!'
Does	Educates herself on the possibilities, educates herself on the positive effects, talks to colleagues to get them enthusiastic.
Thinks	This is really cool. I need to sell this to my team.
Feels	Energized
Blockage/pain	Time pressure: already so busy, will this work?
Goals	- Explain, inspire, convince colleagues - Understanding balance effort-outcome - To make it work in her/his school

We will service all personas, however our priority user is Edward Explorer. Edward is our priority user, because he benefits most from the support the OSN can offer: it will help him in understanding and trying out OS and inspiring his colleagues, thus creating fertile ground for open schooling. 'Edward explorer' has a steep learning curve, through the OSN and Make it Open he can move from content driven motivation (intrinsic), to strategically motivated (external) for Open Schooling. *3.2 User Stories* provides an extensive explanation. In figure 3 below you see the personas mapped according to OS experience and kind of motivation, as well as how each persona can influence the other.

Figure 3: User personas for the OSN

5. Functionality

This is the functionality of the OSN that we anticipate at this point:

- Easily accessible editorial content: webpages, movies, and more
- Easily accessible tools: online and/or downloadable as pdf
- The possibility to browse existing learning scenarios: easy to select and explore, with links to relevant (contextualised) further reading/exploring/thinking/tooling
- The possibility to customize learning scenarios: make alterations to fit them to your local needs
- The possibility to create learning scenarios: building OS and learning scenarios from scratch.

6. Content

The OSN content will be created by, derive from:

- the 16 Learning Scenarios created in the pilots,
- the work done in task 1.3 *Content for downloadable material*,

and to a lesser extent from:

- insights gathered in work package 5, as well as
- desires from work package 4 with regards to the Make it Open Schooling Hubs

Therefore content development, perhaps more than anything, will be done iteratively.

At this point in time we anticipate three content categories and two perceived senders of information.

6.1 Content categories

Building on what the OSN is going to be, and the core principles we keep in mind while creating it; we do anticipate three main categories of content.

1. **Background information** on open schooling, i.e: what is it? What are the benefits for students, teachers, the school, the neighbourhood and other stakeholders?
2. **Strategic content** for teachers and school management on why and how to implement open schooling, i.e: why is it important? How can it connect to the vision and needs of the school?
3. **Hands-on content** for teachers, e.g: inspiring examples from other schools, example learning scenarios, tools for adapting or building your own open schooling or learning scenarios, useful checklists and other tooling.

6.2 Senders of information

We also anticipate two so-called 'perceived senders of the information'. To the user, the content in the OSN comes across as if there are two different senders of information:

6.2.1 the editor(s)

The editor(s) offers tools and informative content (together: editorial content): we call this **the information**. The information is

- neutral: offers information
- knowledgeable: knows the field and knows the life of teachers
- serious: to the point
- hopeful: motivating, future oriented

6.2.2 fellow teachers

Fellow teachers share genuine experiences and learnings (such as learning scenarios and testimonials). This content may or may not actually be created by the teacher community. If it is, it will likely be curated, and maybe user generated. We call this **the stories**. The stories are:

- enthusiastic: keen to share
- honest: share real stories
- knowledgeable: know the field and know the life of teachers
- personal: the sender is a real person
- solidary: focused on sharing and collaboration

6.3 Content types

Focusing on the priority user (Edward Explorer), Forth explored what information Edward would need to develop his own open schooling projects. They also researched ways this information could be displayed to the user, in other words the 'types' of content that could be used within the OSN, these are (but not limited to):

- Worksheets

- How tos
- Checklists
- Requirements
- Case studies
- Guidelines
- Templates
- Lists (catalogue/editorial/curated selections)

7. (Visual) design

The design matches the personality of the site: an effective and inspiring tool for professional teachers. A design consists of a visual design, an information design and ux design. The main principles are:

- **Clean and clear**: you never get lost and are not bothered with unnecessary decoration or distracting items. Everything is relevant. This does not mean it will be boring, it means everything is there for a reason.
- **Inspiring**: to inspire users we aspire to take them into Open Schooling starting from a context that is familiar to them and then invite them to try something new.
- **Hands-on**: the OSN invites users to think, discuss, adapt to their own situation.

7.1 Visual design

The visual design will be an iteration of the already existing visual identity for the project and is inspired by the visual work from D1.1.

Figure 4: the colour palette of the design

It can be described as having a feel of craft and maker culture, and a warm and accessible palette. There is a clear reference to analogue design materials, such as brown paper.

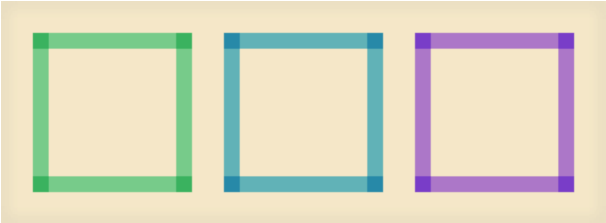


Figure 5: Example of overlapping colours in the design

Overlapping colors bring an association of overlapping washi tape, illustrating sharing and reusing: remix culture.

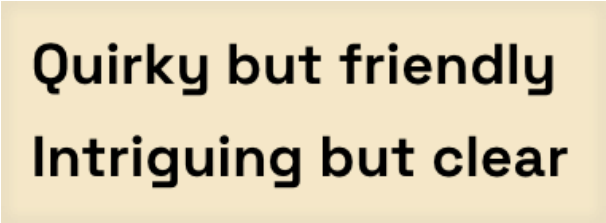


Figure 6: Header font used for the OSN

Typography that has a quirkiness and is intriguing, but is still friendly and very clear.

7.2 Content translated into design

- **The information** is honest and to the point: info and tools are clean and clear *(this content is from the editors).* There is a clear menu structure and a visual hierarchy in the content.
- **The stories** are inspiring, they show how great OS can be, they are rich in photos, films, testimonials and tips *(this content is from fellow teachers or shows school examples. Curated, and maybe user generated).* The stories allow users to be touched on a deeper level by story rich images (featuring people) and texts (real stories you can relate to).

These two types of content look different: the user sees what (type) it is before reading/watching or using it. This helps in the effective use of the site. These are two examples:

7.2.1 Design of *The information* content

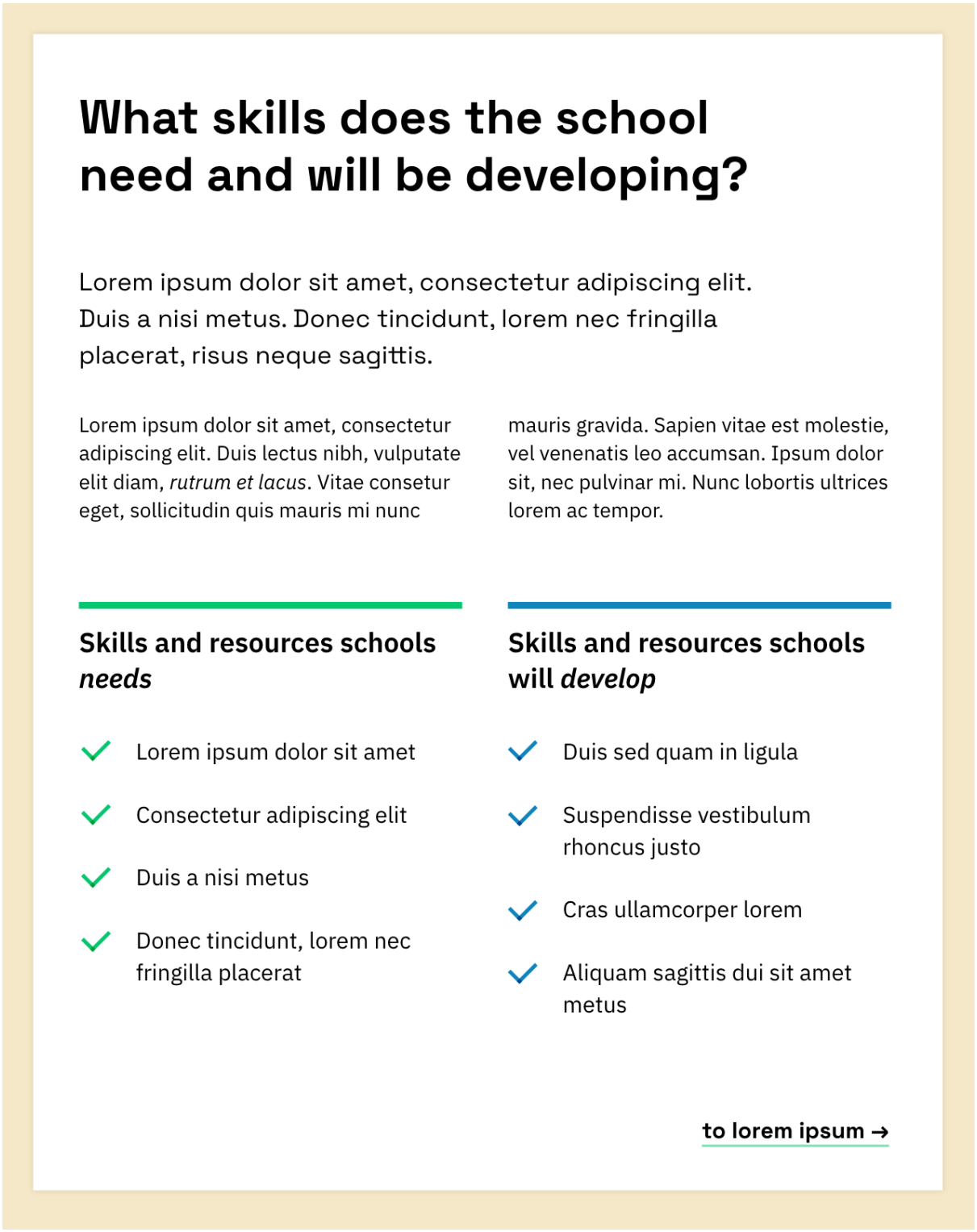


Figure 7: Example of 'Information' *content perceived as coming from the editor*

The visual design is focused on *getting it*: it has a clear visual hierarchy, images only appear when they enhance the understanding of the content. Use of headers and text design (like 'quote', **bold**, *italic*) is always functional and consequent.

The texts are well structured and easy to scan. They are as short as possible.

7.2.2 Design of *The stories* content

Figure 8: Example of how 'stories' information is presented. On the left (attractive and active), vs. what we do not want (distant and formal) on the right.

The images show people (and emotions) in an active situation: at work in some way. Faces are visible, action is comprehensible. Images act as triggers. Photographs of objects are secondary in a page, to explain but never to lead a story.
The text explains what you see, while also covering emotion. The headers/titles cause curiosity. The text contains phrases such as: having fun, being focused, struggling, ... The experience of the people in the images is the base for the story. Perspective is personal.
The design is centered around the images, they are the heroes of the stories. Exceptions are quotes: these can be heroes too.
These principles make accessible, interesting stories.

7.3 The interface

All content is accessed from a relevant context: this can be the menu for *fast access*, but the same content can be reached from the example learning scenarios or other locations for *contextual access,* expected ("read more, look at this") or surprising (stumble upon).

The visual design of the interface has a strong 'feed-forward': before clicking something, you understand what will happen. Icons are clear and menus are well structured. We aim to avoid a steep learning curve: you get it immediately. The focus is more on functional and less on an adventurous experience (in other words: the adventure will be in the content).
The texts of the interface follow these rules to amplify the 'feed-forward' visual design:

- Copy of menu buttons is as short and clear as possible, avoiding jargon: '*What is OS?'* or *'Ideas and examples'.* When a button requires or inspires an action, it can be more descriptive and towards the desired action: *'Make an account'* or *'Plan a project'* etc.
- Copy of links that are presented in a content context is more engaging and active: *'How can this fit your school?*' or *'Find out more about xyz'.*

8. Accessibility requirements

The OSN should be easy to browse by anyone. Accessibility, then, will be a core aspect during the design and development instead of something which is checked and fixed in the very last stages. This section will explain, firstly, how this plays out for internationalisation and, secondly, being accessible for visual or hearing impaired visitors.

8.1 Internationalisation

Since the OSN has to be easy to use for all teachers and educators located in the countries that will set up Make it Open Schooling Hubs, the following measures for internationalisation will be taken.

8.1.1 Multilingual

The Open Schooling Navigator and its Content Management System (CMS) will be set up so that any text appearing on the website will be translatable and that different alphabets and both right-to-left and left-to-right writing directions are supported (e.g. Greek, Hebrew and Arabic). The default language of the OSN will be English. In which subsequent languages the OSN will be available depends on further research on users' needs in each of the countries as well as the willingness of the local project partner to take up the editorial role that is needed for a language version.
Making the OSN available for a particular language requires a continuous effort as the content will be developed in phases and subject to continuous improvements.
Whether or not partners in the ten countries the consortium covers want to make material available in their local language is a decision that will be made at the end of 2021, when the second pilot phase is finalised and WP 4 Open Schooling Hubs has commenced.

8.1.2 Regional content

Internationalisation will not only be achieved by offering different language versions of the OSN, but also by localising certain content, making the content relevant for teachers in a certain country or culture.
Whenever icons are used within the visual design to convey meaning or assist in fast comprehension, the symbols used should be tested in different countries and cultures. This may result in different icon sets.

8.2 Accessibility for visually or hearing impaired

Making the OSN accessible for everyone means we cannot assume perfect eyesight, perception of color or hearing abilities. This has implications on the visual design, underlying code and the functionalities that are offered.

First of all the website should have clear contrasts. The visual design will not rely on the perception of subtle differences in darkness or color tone. The perception of color (differences) will never be required for comprehension of the content. The design should also work without colour. Legibility of texts will be ensured by providing large enough font sizes. Equally important is that the browser functionality of zooming in or a larger default font size should be adhered to and should not break the design.

To make the OSN browsable by visitors without vision it should be browsable by screen readers (assistive technology that renders text and image content as speech or braille output). This means that the underlying code should be well structured and uses the appropriate HTML tags. Whenever the appropriate html tags are not possible ARIA (Accessible Rich Internet Applications) attributes in HTML should be used. Image and video content should have text alternatives that can be picked up by screen readers.
To make all content fully available for visitors without hearing any video content should be accompanied with subtitles.

8.3 Accessibility for all systems, devices and connections

Making the Open Schooling Navigator accessible for everyone also means we cannot expect the latest hardware and/or software to be used by all visitors. Within limits, the OSN should work well on older devices and browsers and should also not be dependent on a fast internet connection. Here we try to adhere to the concept of progressive enhancement; there will be a basic version (of the design) that works for everyone with extras for browsers that are capable.

8.4 Accessibility for media files and attachments

Whenever files can be uploaded to the OSN it will only allow file types that are in ‘open formats’ for which viewers/editors are publicly and freely available. Uploading proprietary formats - like those from Adobe - will be disallowed. When this is applicable background information - for example on how to convert a file to an ‘open format’ - will be referenced.

9. Technical requirements

9.1 Technology strategy

The OSN will be a combination of a website with content offered in static pages and a web application offering interactive elements. As a big part of the functionality required by the Navigator corresponds with functionality that can be found in a web content management framework, an industry standard CMS will be used as a basis. The web application part of the OSN will be built on top of the CMS using a Javascript based front-end framework, that allows for making more interactive user interface elements. This part of the OSN will be referred to as 'the frontend' and will be publicly accessible. Moderators and administrators of the OSN will be presented with a different UI with more advanced features and different skinning, that can be referred to as 'the backend of the website'.

9.2 User roles

User roles will be defined here from a technical point of view, not to be confused with stakeholder types. Various user types have access to various functionality regulated by a permission system. User permissions generally only increment with role hierarchy, i.e. *moderator* can do everything *authenticated user* can do and more.
The user roles and corresponding permissions will globally match the roles as defined below. Their definitions will be finalised with more detail as the concept of the OSN develops. The user roles and their respective permission:

Anonymous user

- view all published content
- filter content
- fill in public forms
- use interactive content with limited "user state" persistence
- access profile pages
- create account

Authenticated user	• log in to account • fill in/access profile • persist user state and preferences with account • add comments
Moderator	• create/edit/delete content • organize content • categorize/tag content
Administrator	• create/modify content types • modify site structure • create categories/tags

9.3 Account

Authenticated users include all users that have an account. Their identities get authenticated when they log in using an username and password. The first version of the OSN will not offer accounts for target users, since the first version lacks personal features for target users. From version 2 on, with the introduction of personal features, account related features will become available for this group.

Account related features might include

- Password retrieval via email
- Modifying personal profile page
- Persisting application state data (e.g. filter settings, favorited content, personal notes)
- A publicly available account creation form

9.4 Content types

A content type is the structure or blueprint of a page or a section that the OSN will display. Each content type consists of a combination of fields and properties.

9.4.1 Field types

text field	• single line • limited length • plain unformatted text
formatted text area	• unlimited amount of characters • limited formatting for highlighting text • simple WYSIWYG editor • inline links (both internal and external) to content and tags
content reference field	• reference to another content item • allows for restrictions to certain type
select field	• select one or multiple from a set of options
checklist field	• list of text items • variable number of items
data field	• storage of web application data
tag field	• add unlimited amount of predefined tags within a category
video embed field	• embedding externally hosted video content
image upload field	• limited to common image formats
video upload field	• limited by file size and file type
file attachments field	• limited by file size and file type

9.4.2 Content types

The finalisation of the content types awaits the finalisation of the concept. However, at this point there is a global estimation content structure of the OSN. The content types listed below give some insight.

Learning scenario (LS)

A content shell referencing a collection of learning units.

Field name	Field type	Field props
title	text field	
description	formatted text area	
image	image upload field	
video	video embed field	optional
checklist	checklist field	
learning units	content reference field	multiple
tags	tag field	multiple of [LS the
more	content reference field	multiple

Table 1: Learning Scenario as content type

Learning Unit (LU)

A defined part of a Learning Scenario.

Field name	Field type	Field props
title	text field	
description	formatted text area	
type	tag field	multiple of [LU type]
image	image upload field	
video	video embed field	optional
tags	tag field	multiple
more	content reference field	multiple

Table 2: Learning Unit as content type

Page

Content type for information in a conventional page-like format.

Glossary item

Content type for description of open schooling jargon.

User profile page

Content type bound to the user account for sharing personal user (photo, biography) on a public page.

9.5 Content overviews

The web application should be able to display overviews of content based on filter parameters, such as content type and tags assigned to the content. The final set of content overviews and their exact specification awaits the finalisation of the concept.

9.5.1 Learning scenarios

All learning scenarios are available in an overview page.

9.5.2 Glossary

An open schooling dictionary. Content can refer to glossary items that can be listed in an overview with alphabetical order.

9.6 Content moderation

Content can be created, edited and deleted by users depending on their role. By default users only have control over the content they have created themselves.

9.6.1 Collaboration

Users with the role ‘moderator’ can edit any content. With every modification of a piece of content a new revision will be stored, keeping the older versions of the content. Users will be able to submit notes with each revision. The final definition of collaboration within the context of the OSN still has to be concluded. Collaboration for the target users might be implemented by offering the ability to reference each other’s, submit comments and by offering the ability to share rather than by offering the ability to edit each other’s work.

9.6.2 Draft

Content can have a ‘draft’ status. Draft content can be revisioned and edited in a collaborative manner and won’t be visible to users with a lower role until the content gets published.

9.7 Content categorisation and tagging

A tag is a special content type that - like any other content type - can have fields, and can be displayed. However, their purpose is to provide meta information on the content.

Content can be tagged by referencing tags. Tags are organised in vocabularies, which are sets of tags in the same category. Unlimited number of tags can be assigned to content items by the content creators. Vocabularies can be modified by administrators.

Examples of vocabularies and tags:

Age group	● 4 - 8 ● 8 - 12 ● 12 - 16
LU type	● excursion ● guest speaker ● research
LS theme	● Water ● Robots

9.8 Multi-language support

Every piece of text that is visible to end-users (having either the role of ‘anonymous user’ or ‘authenticated user’) should be translatable. This implies that all content, tags and vocabularies have to be translatable. As well as parts of the user interface

(menu's, buttons and other UI elements).
Support for RTL (right-to-left) languages (Hebrew, Arabic) is provisioned. Text that is not translated will be shown in the default language (English).

9.9 (Media) File handling/hosting/referencing

Limited file upload will be supported by the navigator. Only for image types file conversion will be implemented for the purpose of optimizing content (page formatting and download size).

Image content	• optimized (cropped/scaled, recompressed) on upload • formats: jpg, png
Video content	• files stay unmodified (should be optimized before upload) • maximum size: 100MB • format MP4 (H264, AAC)
Attachments	• common open format file types
External content	In cases where it is decided that it is desirable to host content on external platforms such as social networks, platforms of choice should be selected that match the following criteria: • guarantee privacy • do not sell data • allow presenting content without ads • allow not to show the logo/name/watermark of the platform

Waag will initiate decision making with partners BSMJ and Ecsite on how we can use social media, reach communication targets as planned in *D6.1 Communication, dissemination and sustainability plan*; and at the same time protect the privacy of the users of the OSN.

9.10 Responsive design

The content will be optimized for screen (mobile, tablet, desktop). Browsers compatibility and optimization will be divided in two groups

1. backend: any common desktop browser
2. frontend: any common mobile and desktop browser

9.11 Print

The front-end pages of the OSN should be suitable for print, rather than that it offers content for print as file downloads.

9.12 Search Engine Optimisation (SEO)

To make the OSN content well interpretable for search engines the following will be taken into account:

- URLs to the content should contain meaningful text
- Content will have appropriate HTML <meta> tags to support machine interpretation
- URLs will be translatable when applicable
- URLs should be preserved when the corresponding content changes

9.13 Forms

To stay in close contact with users the OSN should be able to offer publicly accessible forms, for example a ‘contact’ form. It will be inevitable to implement some kind of CAPTCHA, however this should not rely on third party services (such as Google).

10. Data privacy of users

The OSN will fully respect the EU General Data Protection Regulation and protect the privacy of the user to a maximum extent. The OSN will rather not store any cookies at all than ask for consent and will not try to trick visitors into accepting cookies.

10.1 Cookies

The OSN will work without cookies for anonymous users. Any application data that needs to persist for users that are not logged in will remain in the browser's local storage. Social media buttons that store cookies will not be embedded in the website, not even after consent.
Media from external websites that store cookies will be linked to or embedded behind a 'content blocker', which only loads the specific piece of external content after consent.
Authenticated users (users that have an account and can log in) will receive cookies only for maintaining session data to keep the user logged in till the moment the user logs out or cookies are deleted. Application data from authenticated users is stored in local storage and in the database on the server.

10.2 Statistics

To improve the quality of the navigator visitor information will be analyzed in an anonymized way. Information that could be of interest includes:

- country of visitor
- exit page
- referrer url
- time spent on a page
- user flow (click through behaviour)

For collecting statistics 'Matomo analytics' will be used on a self hosted server. Matomo can be configured to function without cookies:

https://matomo.org/faq/new-to-piwik/how-do-i-use-matomo-analytics-without-consent-or-cookie-banner/.

The analytics server will be configured to use anonymised ip addresses thereby impeding linking statistics to individual users.

10.3 Personal data

Authenticated users can have a profile page, but will only be required to register using an email address. The email address will be stored in the database until account deletion, solely because it is needed for the password recovery service. Parts of the user profile that are public (nickname, photo) remain optional. The user will be informed whenever submitting public profile information.

10.4 Forms and surveys

Webforms that are embedded in the OSN will not ask for personal information, unless there is a reason for it. When there is a reason (contact form), only an email address will be asked for. Surveys will be put out anonymously to the greatest extent.

11. Hosting and maintenance

The OSN will be hosted on a VPS (virtual private server) that physically resides in the EU. The application will fully rely on common open source technology, such as:

- Linux (Ubuntu) operating system
- Nginx or Apache web server
- MariaDB SQL database
- PHP or Ruby on Rails application

11.1 Maintenance

The server will be maintained remotely using one account shared by system administrators. Security updates will be performed on a regular basis.

11.2 Internet domain name

The domain name for the OSN (openschoolingnavigator.eu) is registered using a registrar located in the EU. For domain validation the application will make use of Let's Encrypt (https://letsencrypt.org).

11.3 Test server

Application updates will become available for testing before release on a test server. Allowing a limited number of users to approve the working of new versions. The test server will be an exact copy of the production server.

11.4 Backups

The production server will perform backups on a daily basis. A backup consists of the content and configuration of the OSN (i.e. everything that is not in the source code) gathered into a compressed archive file containing database files and media files. This ‘snapshot’ will allow a full restore of the application to the state it had at the time the snapshot was taken.

Backups will be stored on an external server and can be used to spin up copies of the production server for testing and development purposes. Backups will be stored for a limited amount of time but at least seven days.

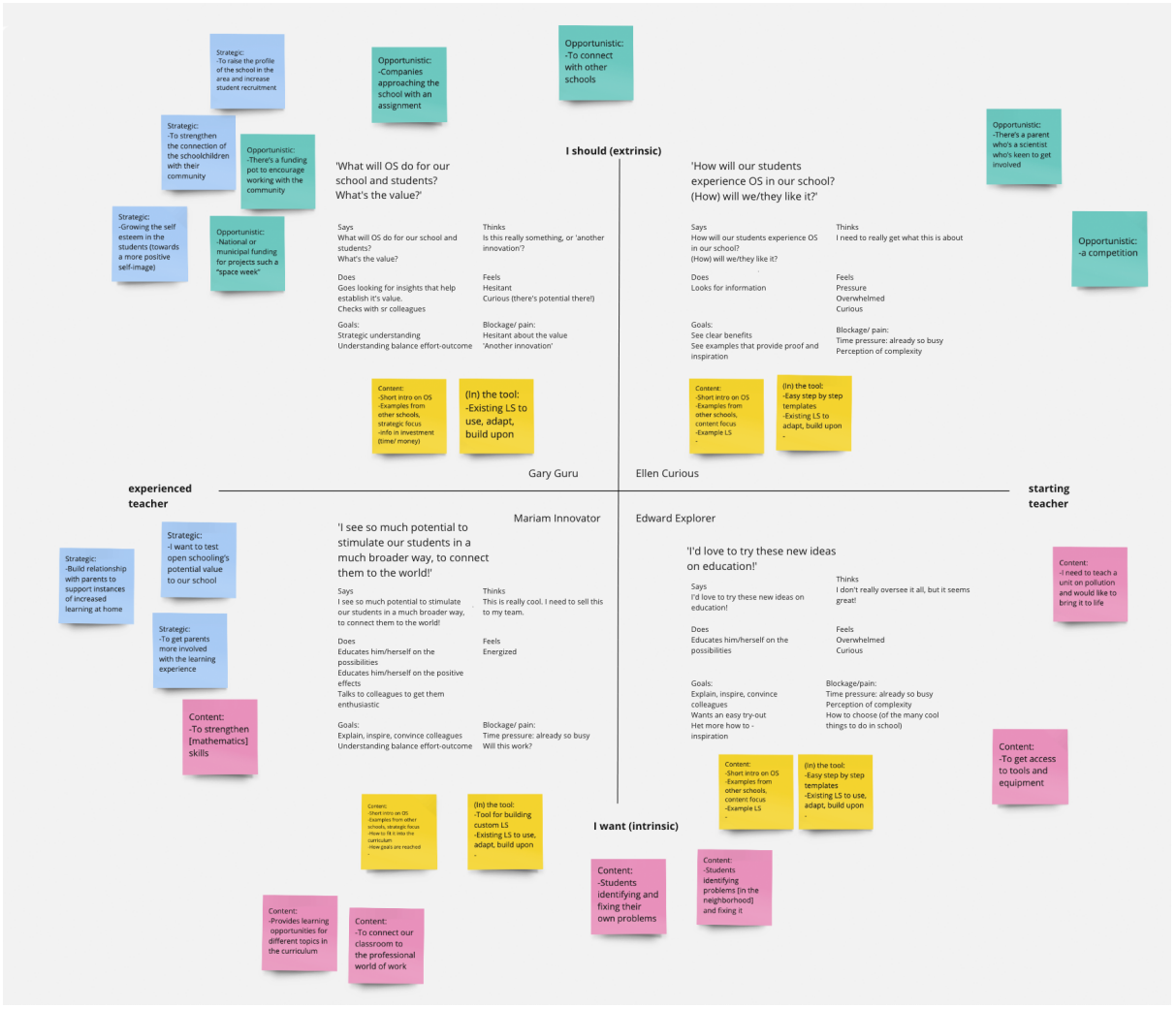
12. Source code and content licence

The source code of the application will be publicly available on Waag IT's Gitlab server under a common open source license (MIT or AGPL).

Content (i.e. Learning Scenarios and Learning Units) will be licensed with a Creative Commons license suitable for education needs.

Appendices

Appendix 1: Online user stories brainstorm



Appendix 2: Survey respondents by location

#	Country	City
1	Albania	Tirana
2	Azerbaijan	Corat
3	Bahrain	Manama
4	Belgium	Etterbeek
5	Bosnia and Herzegovina	Mostar
6	Bosnia and Herzegovina	Sarajevo
7	Bulgaria	Plovdiv
8	Croatia	Zagreb
9	Croatia	Split
10	Croatia	Zagreb
11	Croatia	Zagreb
12	Croatia	Zagreb
13	France	Martigues
14	Germany	Garmisch-Partenkirchen
15	Greece	Athens
16	Greece	Athens
17	Greece	Athens
18	Greece	Athens
19	Greece	Athens
20	Greece	Thessaloniki
21	Greece	Thessaloniki
22	Greece	Athens
23	Greece	Athens
24	Greece	Athens
25	Greece	Messini
26	Greece	Heraklion
27	Greece	Athens
28	Greece	Tripoli
29	Greece	Serres
30	Greece	Athens
31	Greece	Athens
32	Hungary	Bajna
33	India	Pune
34	India	Mumbai
35	India	Mumbai
36	Ireland	Tralee
37	Israel	Tel Aviv
38	Italy	Mestre
39	Italy	Torre Annunziata
40	Italy	Torre Annunziata
41	Italy	Genoa
42	Italy	Rome
43	Italy	Rome
44	Italy	Magliano Romano
45	Italy	Palazzolo sull'Oglio
46	Italy	Sassari
47	Italy	Ancona
48	Italy	San Giorgio a Cremano
49	Italy	Reggio Emilia
50	Italy	Florence
51	Italy	Torre Annunziata
52	Italy	Desenzano del Garda
53	Italy	Rome
54	Italy	Brescia
55	Latvia	Jelgava
56	Lithuania	Alytus
57	Malta	Gzira
58	Netherlands	Venlo
59	Netherlands	De Rijp
60	Netherlands	Amsterdam
61	Netherlands	Amsterdam
62	North Macedonia	Skopje
63	North Macedonia	Skopje
64	Palestinian Territory	Gaza
65	Poland	Warsaw
66	Poland	Warsaw
67	Poland	Leszno
68	Portugal	Sao Joao da Talha
69	Portugal	Braga
70	Portugal	Vila Nova de Gaia
71	Portugal	Maia
72	Portugal	Lisbon
73	Portugal	Redondo
74	Romania	Constanța
75	Romania	Bucharest
76	Romania	Alba Iulia
77	Romania	Gherla
78	Romania	Bucharest
79	Romania	Bucharest
80	Romania	Bucharest
81	Romania	Buzău
82	Romania	Bucharest
83	Romania	Bucharest
84	Romania	Brasov
85	Romania	Galati
86	Romania	Bucharest
87	Romania	Bucharest
88	Romania	Bucharest
89	Romania	Bucharest
90	Serbia	Aleksinac
91	Serbia	Belgrade
92	Serbia	Niš
93	Slovakia	Poprad
94	Spain	Madrid
95	Spain	Barcelona
96	Spain	Madrid
97	Spain	Javea
98	Spain	Madrid
99	Spain	Barcelona
100	Spain	Madrid
101	Spain	Gijón
102	Spain	Madrid
103	Spain	Écija
104	Spain	Valencia
105	Spain	Ávila
106	Spain	Calafell
107	Sweden	Johanneshov
108	Sweden	Bromma
109	Tunisia	Tunis
110	Turkey	Antakya
111	Turkey	Konya
112	Turkey	Adıyaman
113	Turkey	Bursa
114	Turkey	Adana
115	Turkey	Istanbul
116	Turkey	Istanbul
117	Turkey	Izmir
118	Turkey	Istanbul
119	Turkey	Istanbul
120	Turkey	Mugla
121	Turkey	Antalya
122	Turkey	Antakya
123	Turkey	Konya
124	Turkey	Adana
125	Turkey	Istanbul
126	Turkey	Istanbul
127	Turkey	Mersin
128	Turkey	Istanbul
129	Turkey	Konya
130	Turkey	Istanbul
131	Turkey	Konya
132	Turkey	Tekirdağ
133	Turkey	Istanbul
134	Turkey	Ankara
135	Turkey	Izmir
136	Turkey	Osmaniye
137	Turkey	Istanbul
138	Ukraine	Kharkiv
139	United Kingdom	Portchester

Appendix 3: Survey results

1. To know if Open Schooling fits my school, I want...	
ordered by normalized score per option (higher score is more favorable option)	*score*
To see a short intro (text, film or illustration) on what Open Schooling is.	41
To see great examples of Open Schooling projects in other schools.	33
To take a little test to check how Open Schooling will fit my school.	26
percentage of times answer was given highest favorability, ordered	*percentage*
To see a short intro (text, film or illustration) on what Open Schooling is.	57 %
To see great examples of Open Schooling projects in other schools.	30 %
To take a little test to check how Open Schooling will fit my school.	13 %
percentage of times answer was given lowest favorability, ordered	*percentage*
To take a little test to check how Open Schooling will fit my school.	57 %
To see great examples of Open Schooling projects in other schools.	32 %
To see a short intro (text, film or illustration) on what Open Schooling is.	11 %
2. To decide if we will start with Open Schooling I want	
ordered by normalized score per option (higher score is more favorable option)	*score*
To see great examples of Open Schooling projects in other schools.	41
To read/see testimonials from other schools their experiences and learnings.	32
To get in touch with an experienced school.	27
percentage of times answer was given highest favorability, ordered	*percentage*
To see great examples of Open Schooling projects in other schools.	60 %
To get in touch with an experienced school.	22 %
To read/see testimonials from other schools their experiences and learnings.	18 %
percentage of times answer was given lowest favorability, ordered	*percentage*
To get in touch with an experienced school.	60 %
To read/see testimonials from other schools their experiences and learnings.	28 %
To see great examples of Open Schooling projects in other schools.	12 %
3. When thinking about Open Schooling, I want to learn about...	
ordered by normalized score per option (higher score is more favorable option)	*score*
The (proven) effect in the students.	47
The strain on the team (effort).	31
The time and costs.	22
percentage of times answer was given highest favorability, ordered	*percentage*
The (proven) effect in the students.	83 %
The strain on the team (effort).	11 %
The time and costs.	6 %
percentage of times answer was given lowest favorability, ordered	*percentage*
The time and costs.	74 %
The strain on the team (effort).	22 %
The (proven) effect in the students.	4 %

4. When looking at Learning Scenarios, I want to filter on...	
ordered by normalized score per option (higher score is more favorable option)	*score*
Topic (related to curriculum)	36
Year / age	28
(Soft) skills	18
Time it will take	17
percentage of times answer was given highest favorability, ordered	*percentage*
Topic (related to curriculum)	71 %
Year / age	20 %
(Soft) skills	6 %
Time it will take	3 %
percentage of times answer was given lowest favorability, ordered	*percentage*
(Soft) skills	48 %
Time it will take	43 %
Year / age	9 %
Topic (related to curriculum)	1 %
5. In a Learning Scenario, I expect to find...	
content	*percentage*
STEAM goal	84 %
subject / curriculum	82 %
age / year	76 %
(soft) skills	60 %
adaptability	54 %
flexibility (# of Learning Units)	50 %
complexity (level)	48 %
number of students	28 %
time it will take	*percentage*
number of lessons	67 %
preparation (wo)manpower needed	65 %
in school	45 %
complexity (logistics)	35 %
for support	33 %
in number of Learning Units	33 %
expenses	*percentage*
costs	76 %
travel	43 %
6. When looking at Learning Scenarios, I want...	
ordered by normalized score per option (higher score is more favorable option)	*score*
A filtering tool	40
An editorial list: the best Learning Scenarios	34
A search or dropdown	26
percentage of times answer was given highest favorability, ordered	*percentage*

A filtering tool	48 %
An editorial list: the best Learning Scenarios	37 %
A search or dropdown	15 %
percentage of times answer was given lowest favorability, ordered	*percentage*
A search or dropdown	59 %
An editorial list: the best Learning Scenarios	31 %
A filtering tool	10 %
7. To prepare for my own Open Schooling project...	
ordered by normalized score per option (higher score is more favorable option)	*score*
I'd like to get tips and tricks from other teachers.	42
I'd like to have a list of possible local partners.	31
I'd like info in funding, contacting partners, etc.	27
percentage of times answer was given highest favorability, ordered	*percentage*
I'd like to get tips and tricks from other teachers.	66 %
I'd like info in funding, contacting partners, etc.	18 %
I'd like to have a list of possible local partners.	16 %
percentage of times answer was given lowest favorability, ordered	*percentage*
I'd like info in funding, contacting partners, etc.	56 %
I'd like to have a list of possible local partners.	29 %
I'd like to get tips and tricks from other teachers.	15 %
8. To make my own Learning Scenario, I will likely...	
ordered by normalized score per option (higher score is more favorable option)	*score*
Use an existing Learning Scenario and build it into my own.	38
Use an existing Learning Scenario and make minor alterations.	32
Build my own Learning Scenario using an empty template.	31
percentage of times answer was given highest favorability, ordered	*percentage*
Use an existing Learning Scenario and build it into my own.	41 %
Build my own Learning Scenario using an empty template.	33 %
Use an existing Learning Scenario and make minor alterations.	26 %
percentage of times answer was given lowest favorability, ordered	*percentage*
Build my own Learning Scenario using an empty template.	49 %
Use an existing Learning Scenario and make minor alterations.	35 %
Use an existing Learning Scenario and build it into my own.	16 %
9. For making my own Open Schooling project I need...	
ordered by normalized score per option (higher score is more favorable option)	*score*
A template to build my own Learning Scenario.	37
A step by step tool, so I can be sure everything is there.	32
A simple checklist to build my own Learning Scenario.	30
percentage of times answer was given highest favorability, ordered	*percentage*
A template to build my own Learning Scenario.	43 %

A step by step tool, so I can be sure everything is there.	34 %
A simple checklist to build my own Learning Scenario.	23 %
percentage of times answer was given lowest favorability, ordered	*percentage*
A step by step tool, so I can be sure everything is there.	40 %
A simple checklist to build my own Learning Scenario.	40 %
A template to build my own Learning Scenario.	20 %
10. I will be developing my own Open Schooling project...	
ordered by normalized score per option (higher score is more favorable option)	*score*
Using a template to work on my computer locally.	36
In the site and save my work there.	33
In my Google (or other) environment .	31
percentage of times answer was given highest favorability, ordered	*percentage*
Using a template to work on my computer locally.	49 %
In the site and save my work there.	30 %
In my Google (or other) environment .	21 %
percentage of times answer was given lowest favorability, ordered	*percentage*
Using a template to work on my computer locally.	33 %
In my Google (or other) environment .	33 %
In the site and save my work there.	33 %
11. To help develop my Open Schooling project...	
ordered by normalized score per option (higher score is more favorable option)	*score*
I'd like to have a block-editor: to (literally) edit and move Learning Units back and forth.	28
I'd like the site to generate my Learning Scenarios after I filled the online step by step editor.	27
I will download and print the template and work on that.	21
I will look at the examples and use post-its on my office wall.	16
I would rather have a book than a website.	9
percentage of times answer was given highest favorability, ordered	*percentage*
I'd like to have a block-editor: to (literally) edit and move Learning Units back and forth.	44 %
I'd like the site to generate my Learning Scenarios after I filled the online step by step editor.	32 %
I will download and print the template and work on that.	18 %
I will look at the examples and use post-its on my office wall.	4 %
I would rather have a book than a website.	2 %
percentage of times answer was given lowest favorability, ordered	*percentage*
I would rather have a book than a website.	82 %
I will download and print the template and work on that.	8 %
I will look at the examples and use post-its on my office wall.	6 %
I'd like to have a block-editor: to (literally) edit and move Learning Units back and forth.	3 %
I'd like the site to generate my Learning Scenarios after I filled the online step by step editor.	1 %
12. After I am done designing my Open Schooling project, I will...	
ordered by normalized score per option (higher score is more favorable option)	*score*
Share my Learning Scenario with my colleagues through the site digitally (from my account)	48

Download everything and share via e-mail.	34
Print everything.	18
percentage of times answer was given highest favorability, ordered	*percentage*
Share my Learning Scenario with my colleagues through the site digitally (from my account)	88 %
Download everything and share via e-mail.	9 %
Print everything.	4 %
percentage of times answer was given lowest favorability, ordered	*percentage*
Print everything.	95 %
Download everything and share via e-mail.	3 %
Share my Learning Scenario with my colleagues through the site digitally (from my account)	2 %
13. To prepare for doing my Open Schooling project, I need...	
ordered by normalized score per option (higher score is more favorable option)	*score*
A short checklist and slides and materials to use in my class (relevant movies etc.)	37
An elaborate script: detailed planning, list of preparations, checklists, slides for class, etc.	34
A short checklist.	30
percentage of times answer was given highest favorability, ordered	*percentage*
An elaborate script: detailed planning, list of preparations, checklists, slides for class, etc.	44 %
A short checklist and slides and materials to use in my class (relevant movies etc.)	33 %
A short checklist.	23 %
percentage of times answer was given lowest favorability, ordered	*percentage*
A short checklist.	44 %
An elaborate script: detailed planning, list of preparations, checklists, slides for class, etc.	42 %
A short checklist and slides and materials to use in my class (relevant movies etc.)	14 %
14. When I have any kind of question on Open Schooling I would like to contact...	
ordered by normalized score per option (higher score is more favorable option)	*score*
My colleagues and teachers within my own network	29
Other teachers via a forum or chat group	27
An authority on open schooling	26
Other teachers in my own country via a forum or chat group	18
percentage of times answer was given highest favorability, ordered	*percentage*
My colleagues and teachers within my own network	39 %
An authority on open schooling	30 %
Other teachers via a forum or chat group	27 %
Other teachers in my own country via a forum or chat group	4 %
percentage of times answer was given lowest favorability, ordered	*percentage*
Other teachers in my own country via a forum or chat group	52 %
An authority on open schooling	27 %
My colleagues and teachers within my own network	13 %
Other teachers via a forum or chat group	8 %