X Modal
X Cultural
X Lingual
X Domain
X Site
Global OER Network

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABSTRACT

Through collaboration with both internal partner organisations and external potential customers, we created a set of value-add metrics and produced a report detailing our reasoning. For each iteration, of which M12 and M24 were internal, our M36 report shows the progress of the project as being assessed against the criteria, and the feedback distributed to all X5GON partners and internal and external participants.

This document outlines the evaluation framework of the X5GON project. The evaluation framework is designed to evaluate the X5GON four main objectives, this means (1) to evaluate (i) the sustainability of the results and platform, (ii) convergence of content, (iii) technical scalability of convergence platform, (iv) usability and accessibility of convergent content (2) and assess the established impact of the platform on a selected set of levels (i) social, (ii) economic, and (iii) political in different X5GON stakeholders' communities.

The methodology used for the impact assessment is a framework developed in the FP7 project IA4SI - Impact Assessment for Social Innovation, which developed a structured methodology to evaluate the potential socio-political and economic impacts of social innovation initiatives on society and to map key characteristics able to determine a wider uptake of the initiatives at social level. We have evaluated the methodology and applied it to the X5GON project and additionally extended the methodology to include also the technological impact.

The deliverable is structured in four Chapters and a set of Appendixes. In Chapter 1 we present the processes and introduce the context of the assessment. In Chapter 2 we focus on the four objectives and identify for each one the list of corresponding indicators, introduce the evaluations tools and mechanisms including a time plan to achieve these evaluations. In Chapter 3 we repeat the procedures for impact, we focus on the impact assessment of the project, introduce the methodology, identify the social, economic, political and technological impact indicators, evaluation tools and mechanisms with a time plan for the X5GON project. Chapter 4 presents the results of our testing and in Chapter 5 we present our final conclusions and future steps.

1. INTRODUCTION

This report outlines the assessment of the impact and target outcomes of the X5GON project, based on an evaluation framework with the following objectives to evaluate (i) the Sustainability of the results and platform, (ii) Convergence of content, (iii) Technical Scalability of convergence platform, (iv) Usability and Accessibility of convergent content (2) and the established impact of the platform on a selected set of criteria. These initial objectives were already defined in the DoW.

This deliverable is part of Task 8.2 Impact assessment, in which the scope and setup of the impact assessment framework is defined (D8.2). This document is the first in a series of two internal reports and this one, with the updates and the work done reported to the consortium yearly in D8.2. Based on the defined metrics, regular yearly impact assessment of X5GON is being measured and compiled. The assessment and evaluation framework will also include user feedback from diverse end-user and target groups, focus groups and the implementation periods of the case studies at pilot sites and platform creation. This will result in a final impact assessment deliverable (led by PO, D8.2, M36).

PO is leading the Exploitation activities in WP8, and therefore is also the lead on the development and coordination of the evaluation and impact assessment framework. Different partners are taking responsibilities for each objective, JSI coordinates the gathering of technical and platform indicators and assessment via piloting with target groups, UCL is coordinating the usability and accessibility aspects of the framework. For the execution of the assessment framework different partners will have to take up responsibilities.

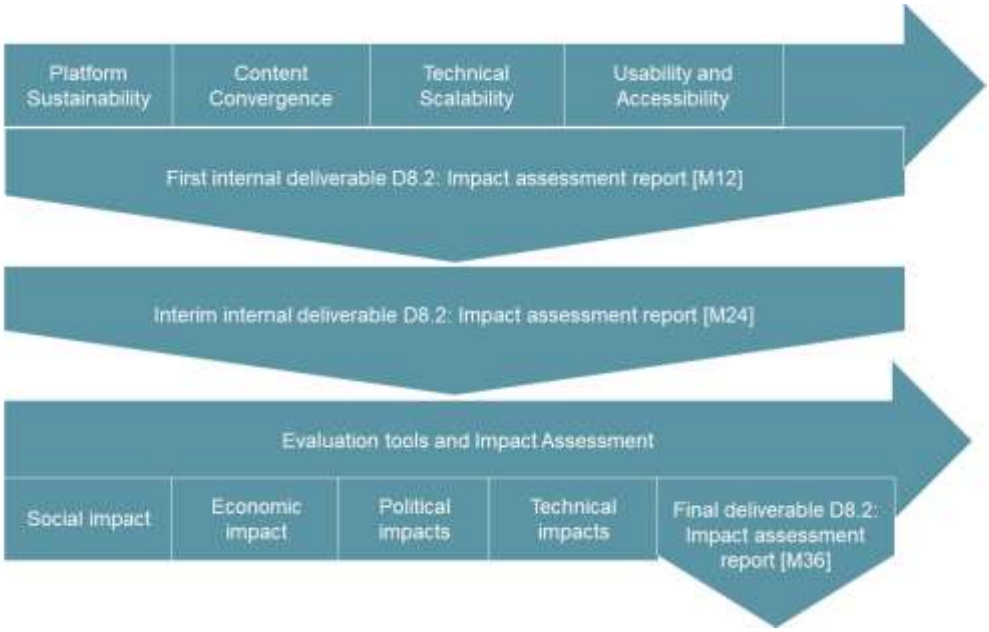

Figure 1: *Evaluation Framework timeline*

2. EVALUATION

2.1 LIST OF INDICATORS

2.1.1 Sustainability Indicators

In Table 1 we list the sustainability performance indicators that will be monitored and analysed by X5GON, with special focus on the sustainability of the platform after projects end, and in line with the WP7 dissemination strategy and plans described in D7.2 First real-world and online learning community engagement plan. This is based on the contributions of both other exploitation and dissemination partners (K4A, MIZS). The indicators focus on the outreach towards adding new OER repositories and enterprise actions:

Target outcome	Indicator	Target
Service use	The number of learners at OER repositories in Y1	>= 30.000 per day
	The number of learners at OER repositories in Y2	>= 50.000 per day
	The number of learners at OER repositories in Y3	>= 100.000 per day
Repositories added	The number of OER repositories processed and added in the period leading to M24	>=10
	The number of OER repositories processed and added in the period leading to M36	>=20
Contracts signed	The number of contracts signed with the OER repository owners or exploitation businesses by the end of the project	>=5
Promotional activities	The number of promotional and marketing activities in Y1	>=10
	The number of promotional and marketing activities in Y2	>=20
	The number of promotional and marketing activities in Y3	>=30

Table 1: *X5GON objective 1: Sustainability*

2.1.2 Content Convergence Indicators

Table 2 present the list of indicators for the content convergence, reflecting the X5GON platform and its services and products. These indicators describe the

convergence of data and content and are in line with the WP8 market analysis described in D8.1 Market Analysis. The indicators especially focus on the two main services X5analytics and X5recommend:

Target outcome	Indicator	Target
General aspects	International and National scientific papers published	• >=15
Cross-site real-time user modelling and analytics	Monitoring and analyse learners in real-time.	Methods improving X% over basic Matterhorn platform as of Y1 of the project: • X < 5: unsatisfactory • 5 ≤ X < 10: satisfactory • X ≥ 10: very satisfactory
	Prediction of learning plans and construction of learning.	Methods improving X% over state-of-the-art as of Y1 of the project: • X < 5: unsatisfactory • 5 ≤ X < 10: satisfactory • X ≥ 10: very satisfactory
Multilingual support for multimodal content	Processing and understanding the media content that appears in multilingual and multimodal forms.	Methods improving X% over state-of-the-art as of y2 of the project: • X < 3: unsatisfactory • 3 ≤ X < 15: satisfactory • X ≥ 15: very satisfactory
	Accuracy and quality of translated (formal, non-formal) texts and accuracy in linking of cross-lingual contents.	Methods improving X% over state-of-the-art as of Y2 of the project: • X < 10: unsatisfactory • 10 ≤ X < 30: satisfactory • X ≥ 30: very satisfactory
Number of languages being supported	Cross lingual search and linkage	≥ 100 Wikipedia languages by M24
Information diffusion	Modelling of users, learning social network	Methods improving X% over state-of-the-art as of Y2 of the project: • X < 3: unsatisfactory • 3 ≤ X < 15: satisfactory • X ≥ 15: very satisfactory

Table 2: *X5GON objective 2: Convergence of content*

2.1.3 Technical Scalability of Platform Indicators

In Table 3 we list the technical performance indicators that will be monitored and analysed by X5GON, especially focusing on scalability of the platform and its building blocks. This was compiled with the contribution of other exploitation (K4A, MIZS) and

technical (UCL, UPV) partners and we believe to be the most important and tested of all indicators groups. The indicators focus both on the X5GON planned system and platform, and other modules:

Target outcome	Indicator	Target
General aspects	Scientific papers published	>=5
Pipeline-based scaling	Amount of OER media elements and users in the X5GON pipeline	Measured in amount of user recommendations, modelling and processing per millisecond using 1 processing core and 4 GB of memory. • < 5: unsatisfactory • < 10: satisfactory • more: very satisfactory
Platform-based scaling	Increase of performance by using different computing platforms	Linearity of scaling pipeline processing with respect to processing resources based on the features provided by the platform (e.g. cloud based processing).

Table 3: *X5GON objective 3: Technical Scalability of convergence platform*

2.1.4 Usability and Accessibility of Content Indicators

Table 4 presents the list of indicators for the usability and accessibility of the X5GON platform, services, modules, and pre-processing pipeline. These indicators describe the usability and effectiveness, focusing on user satisfaction and user performance.

Target outcome	Indicator	Target
Usefulness and effectiveness of the X5GON system	Analytics, Network and snippet use	Feedback from the pilot site managers and additional sites.
	OER content use	Feedback from the learners at pilot sites
	Recommendation reliability	Feedback from the learners at pilot sites
	API pipeline use	Feedback from special use cases – libraries, publishers
User satisfaction	User satisfaction measured in the scale from 1 (low) to 5 (high) in Y1 first prototype M12	• X < 2: unsatisfactory • 2 ≤ X < 3: satisfactory • X ≥ 3: very satisfactory

	User satisfaction measured in the scale from 1 (low) to 5 (high) in Y1 first prototype M24	• X < 2: unsatisfactory • 2 ≤ X < 3: satisfactory • X ≥ 3: very satisfactory
	User satisfaction measured in the scale from 1 (low) to 5 (high) in final installation	• X < 2: unsatisfactory • 2 ≤ X < 4: satisfactory • X ≥ 4: very satisfactory

Table 4: *X5GON objective 4: Usability and Accessibility of convergent content*

2.2 PLANNING AND MILESTONES

In the following table an overview of each objective and the evaluation activities to be set up:

	Evaluation tool	User group	Evaluation measures
Phase 1: M12-M24	All evaluation tools focus at this stage on **qualitative** input	All end-user groups (policymakers, consortium, ML, OER and teachers' communities)	All evaluation measures are implied, with a focus on **content convergence** and **technical scalability**
M24	Internal deliverable D8.2: Impact assessment report [24] – Iteration of developed metrics created through collaboration with both internal partner organisations and external potential customers		
Phase 2: M25-M28	All evaluation tools focus at this stage on **quantitative** input (more live data from pilot sites)	All end-user groups	All evaluation measures are implied, with a focus on **usability and accessibility**
Phase 3: M29-M36	All evaluation tools focus at this stage on **quantitative** and **qualitative** input	All end-user groups	All evaluation measures are implied, with a focus on **sustainability**
M36	Final deliverable D8.2: Impact assessment report [36] - Final metric with results on assessment of objectives and impact created		

Table 5: *X5GON evaluation plan*

2.3 QUANTITATIVE AND QUALITATIVE EVALUATION TOOLS

The tools that we will use for the evaluation of all the four objectives (i) the Sustainability of the results and platform, (ii) Convergence of content, (iii) Technical Scalability of convergence platform, (iv) Usability and Accessibility of convergent content, will be threefold:

- **Questionnaires** will be used during pilots in-the-wild and implementation into case studies scenarios and pilot testing with target groups to ask about user experience and acceptance of the process, e.g. introduction of the snippet into an OER repository, interface functionalities, etc. The structure of the questionnaire will be based on a Likert scale and additional questions of an open nature will be added.

- A **think-a-loud protocol** will be used to help participants verbalize what they are doing and thinking as they complete a predefined or ad-hock

task, to understand the thought process of a subject as they use the X5GON services and solution (e.g. finding OER materials, giving feedback on content quality, translations, recommendations, etc.) revealing aspects of the interface that delight, confuse or frustrate.

- **Data framework** will track user and content activities when using the X5GON services by analysing the data with statistical tools. Data and specifically logs are necessary to provide appropriate insights into critical user activity, also for the purpose of debugging, scalability, and performance monitoring.

3. IMPACT ASESSMENT

The main focus of the impact assessment methodology for X5GON is designed according to the EU impact assessment guidelines [1] and will focus on planning and evaluating:

- **Social impacts**, i.e. the social consequences that are likely to happen from using the X5GON platform to measure the usage within educational settings and from the way the educational, machine learning and openness communities are empowered by the technology and convergence of content.

- **Economic impacts**, i.e. the economic consequences that are likely to happen from using the X5GON services to measure and understand the entrepreneurial potential of the partners, individuals and communities to create commercial and value-added models.

- **Technological impacts**, i.e. the technological underpinnings of how the technology developed can be reused and repurposed and built upon in terms of a scalable and sustainable infrastructure.

- **Political or Policy impacts,** i.e. the policy consequences that are likely to happen from using the platform to showcase the governmental interest in OER and from the way the policymaking communities are empowered to take direct action to mainstream OER via the X5GON technologies and how disabilities communities are benefitting from the projects results.

The described evaluation format will be put in place, thus enabling the project to reflect on and assess its benefits and final results as a digital social and open innovation. Furthermore, the impact assessment methodology includes the involved actors who will experience a change in their lives from the project results, therefore we will engage the individuals and communities in the assessments.

3.1 METHODOLOGY

The project will use a robust methodology developed by the IA4SI project which is designed to help projects and the European Commission to understand how the performed R&D activities and the technologies developed are able to respond to societal and economic needs [2]. The impact assessment methodology will include several stages with indicators being developed and refined as the project continues to evolve.

The IA4SI approach is based on a quantitative model that links the assessment of technological innovation for social innovation and sustainability to the exploitation of practices pursued by researchers and users, understanding of how innovation is managed into different social, economic and cultural contexts.

The impact assessment methodology for X5GON includes several components of the IA4SI matched with redeveloped and redefined specific indicators. Therefore, we used the IA4SI impact assessment methodology as a starting point to understand impact assessment, and remixed and reused it with our set of impact indicators.

The developed indicators will allow an evaluation of all three groups of social, economic and political indicators. Below (Table 6) we outline the first set of devised project impact indicators. In annex 2, we present a draft self-assessment survey for each impact indicator.

3.2 INDICATORS

As described above, in Table 6 we present and list the first set of chosen impact indicators for the X5GON project.

Impact area	Sub-categories	Variables	X5GON expected impact
Social impact	**Impact on community building and empowerment**	Online community building	• Number of platform users at the beginning and end of the project • Amount of time spent by users at the beginning and end of the project • Number of OER repositories added to the platform
		Online community empowerment	• Capacity to enlarge national and institutional ML and OER communities in UK, SI, DE, ES, FR • Number services provided to the community (also open source software)
		Impact on social innovation CAPS community	Number of collaborations: • Projects within the domain • Projects outside the domain • Projects within institutions
	Impact on information	Access to and sharing of information	• Amount of available information about the platform, modules, services, tools • Perceived improvement of access of info to users with disabilities
		Quality of information	(instruments provided to assess the quality of information)

		Data management policies	• Definition of ethical vs. compliance aspects of privacy • Description of the algorithms used for machine learning and their ethical implications, including profiling • Description of lawful bases for data processing, including in case of children • Identified data controllers and processors
	Impact on ways of thinking /opinions and changes in behaviour for individual and collective behaviour and lifestyles	Changes in ways of thinking	• Changes should occur in perception of OER, AI and ML for education • Number of educators, students and general public participating in the usage of OER materials • Number of policy activities performed to achieve the expected change
		Change in behaviour	Topics where changes in behaviours are expected: usage of OER, access to content, usage of AI tools in education
	Impact on education and human capital	Training provided by the project	• Number of training events provided • Selection of topics covered by training activities • Tools for education developed by the project
		Impact on human capital	(impact on users e-skills, number of activities supporting the acquisition of digital competences, digital literacy, reduction of digital device, the self-assessment to improve skills of people employed in the consortium and of its users)
		Impact on change in training curricula, educational policies	• Number of policy actions • Number of teachers using project results (OER convergence rate) • Number of institutional, national and global actions

	Impact on science and academia	Knowledge production	Scientific impact: • Number of researchers (including outside the project) • Number of articles published • Number of patent applications • Number of IPRs • Level of TL readiness
		Knowledge sharing	• Use of open access • Sharing through social media • Dissemination through project website • Sharing through events
		Impact on research processes	Novel methodologies in recommendations, quality assurance and cross-linguality
	Impact on employment	• Number of spin-offers created by the project	
Economic impact	**Impact on user's economic empowerment**	• Impact on entrepreneurship - project's capability to support enterprises, and creation of new activities – conversion of OER users across repositories	
	Economic value generation by the project	• Definition of new market opportunities • Number of identified new business models • Assurance of competitiveness of the project	
	Impact on ICT driven innovation	• Product innovation (e.g. increasing the efficiency of existing technologies, technology readiness level of the outputs) • Process innovation, organizational innovation, user-driven and open innovation	
Political and Policy impacts	**Impact on civic and political / policy participation**	• List of instruments and services, platforms, models developed by the project offering new channels for civic participation in online and open education	
	Impact on citizens/user's political / policy awareness	• Time spent by users to be informed about political issues on "openness" and open content • Time spent by users in persuading others about the political issues on "openness" and open content • Changes in the political topics addressed by users such as transparency on top of open	
	Impact on policies and institutions	• Project's capacity to influence policies and institutions • Project's capacity to influence users impact on policies and institutions • Project's capacity to increase users' sensitivity towards the issue of openness and AI in education	

Table 6: *X5GON impact indicators*

Additionally, we list contributions to specifically addressed impacts (also included in Table 6) in the projects broader actions reflecting the EC funding requirements.

Specific impact	X5GON contribution
To develop new services as a consequence of the convergence of broadband, broadcast and social media.	The X5GON will develop three new products/services: X5oerfeed, X5analytics and X5recommend.
To move closer to a fully personalised and interactive user experience.	X5GON will enable personalised education in OER format. It will build on the massive quantities of data and content and funnel them to each user's individual needs.
To increase the use of ICT technologies in the Media industry.	The educational media industry in ICT is underfed in terms of smart and innovative technologies, thus it's not capitalising on its content and exploitation potential. X5GON will unlock that potential by creating a (sustainable and scalable) network of OER media heavy sites and repositories with smart technologies on top.
Solutions that can clear barriers for the success of the Digital Single Market from the content and media perspective.	X5GON envisions an online EU internal market free of content, culture, social and language barriers, delivering automated personalisation and high-quality educational content, in most relevant use situations and for at least 90% of the EU official OER repositories.

Table 7: *Impact to the objectives listed in the call*

Additional impact	X5GON contribution
Enhance the development of digital learning and teaching resources, including for children and adults with mental or physical disabilities.	X5GON will support learners with disabilities/special needs through personalisation of OER content, specially customized interfaces and providing the media industry with a platform feeding OER on which new services for impaired can be developed.
Reinforce European leadership in learning technologies for the personalisation of learning experiences.	X5GON is directly addressing the challenge of delivering quality automated learning to the orthogonal use cases that are planning to use developed services for their value-added strategies.
Facilitate the emergence of innovative exploitation and create a convergent digital learning ecosystem in Europe.	X5GON will address this via the case studies. It has an unprecedented potential and will create a base line for a scalable EU educational ecosystem based on convergent OER.
Contribute to the objectives of the "Opening up Education" initiative.	X5GON is being conceptualised within OpeningupSlovenia whose main goal is to follow as closely as possible and go beyond the European Commission's communication "Opening up Education".

Table 8: *Additional impact to the objectives*

3.3 QUANTITATIVE AND QUALITATIVE EVALUATION TOOLS

The tools that we will use for the evaluation of all the four types of impact (i) Social, (ii) Economical, (iii) Technical and (iv) Political, will be threefold and in line with the evaluation tools for the project's challenges:

- **Self-assessment surveys** are similar to questionnaires with the exception being that questionnaires are designed on a question an answer principle, whereas self-assessment participants can take place at organizational (i.e. reflecting on internal project members' capacities), or output levels (i.e. estimating expected outputs or benefits). Participants are required to internally assess and approximate the expected or current impacts of a proposed action.

- **Impact assessment events** such as show-and-tell, sprints, or quick conversations, but especially workshops where we collect information and formulate evaluation agendas and activities. These are necessary and effective in order to develop, define and iterate the impact indicator lists. Therefore, the goal of the workshops is to monitor and validate the variables identified by the WP8 team.

- **Interviews with stakeholders** will be run enabling the process of collecting reflections and reactions or single persons' or focus groups. This will present an opportunity to learn about both planned and unplanned impacts and problems, bottlenecks, pros and cons of specific aspects and actions. In this way we will get feedback connected to specific stakeholders in the project, as well the project as a whole.

3.4 PLANNING AND MILESTONES

In the following table an overview of each objective and the evaluation activities to be set up:

	Evaluation tool	User group	Evaluation measures	Output
Phase 1: M12-M24	Self-assessment surveys	• **Internal partners**: Consortium partners • **External partners:** connected OER sites	Social, Technological	First set of indicators
M24	Internal deliverable D8.2: Impact assessment report [24] – Iteration of developed metrics created through collaboration with both internal partner organisations and external potential customers			

Phase 2: M25-M28	Self-assessment surveys, Impact assessment events	Technical, AI, ML and OER communities	Economic, Technological	Second, iterative set of indicators
Phase 3: M29-M34	Self-assessment surveys, Impact assessment events, Interviews	Disabilities communities, Policymakers and Key actors	Social, Economic, Technological, Political	Final set of indicators leading to impact assessment
Phase 4: M35-M36	Final deliverable D8.2: Impact assessment report [36] - Final metric with results on assessment of objectives and impact created			

Table 9: *X5GON planning for impact assessment*

3.5 EVALUATION SUMMARY

Table 10 lists all selected indicators from all evaluation tracks:

Sustainability of the results and platform	**Indicators**
Service use	The number of learners at OER repositories in Y1-Y3
Repositories added	The number of OER repositories processed and added in the period leading to M24, M36
Contracts signed	The number of contracts signed with the OER repository owners or exploitation businesses by the end of the project
Promotional activities	The number of promotional and marketing activities in Y1-Y3
Convergence of content	**Indicators**
General aspects	International and National scientific papers published
Cross-site real-time user modelling and analytics	• Monitoring and analyse learners in real-time • Prediction of learning plans and construction of learning.
Multilingual support for multimodal content	• Processing and understanding the media content that appears in multilingual and multimodal forms • Accuracy and quality of translated (formal, non-formal) texts and accuracy in linking of cross-lingual contents.
Number of languages being supported	Cross lingual search and linkage
Information diffusion	Modelling of users, learning social network
Technical Scalability of convergence platform	**Indicators**
General aspects	Scientific papers published
Pipeline-based scaling	Amount of OER media elements and users in the X5GON pipeline
Platform-based scaling	Increase of performance by using different computing platforms

Usability and Accessibility of convergent content	Indicators
Usefulness and effectiveness of the X5GON system	• Analytics, Network and snippet use • OER content use • Recommendation reliability • API pipeline use
User satisfaction	User satisfaction measured in the scale from 1 (low) to 5 (high) in Y1 first prototype M12, M36

Table 10: *List of complete indicators*

4. RESULTS

The results of the impact assessment are both quantitative and qualitative. We considered all the aspects and impact indicators listed as well as the objectives listed in the call, including additional ones. We used the methodology and collected a number of valuable impacts that guided us to design better services and products for as much as possible audiences.

At this moment we are confident that our products and services are built for contemporary teachers, learners, policy actors and cover all the 5X in the X5GON project (Cross Modal, Cross Cultural, Cross Lingual, Cross Domain, and Cross Site) that we described in our initial proposal. as previously stated, some quantitative results are detailed covered in other deliverables (D2.4, D2.5., as well as exploitation ones in D8.4).

For qualitative assessment, we used several approaches (IA4Si, Evaluation questionnaire, think aloud protocol, guided interviews and workshop). We used the evaluation process to obtain relevant data from various user groups, for all services and products. A few approaches and results have as well led us to the improvement of already developed services and products. Through the process of building the platform and its services, we encountered many challenges. Some challenges were related to user habits, others to the operation and quality of services. We tested two applications, X5Discovery and X5learn.

Through guided interviews with teachers, we found that they have some common features. They want to find the desired content as quickly as possible, refine it a bit (additional instructions, explanations), change the order of playing the content and share all this content with students easily.

One of the challenges was the unwillingness of users (mostly teachers) to register (Figure 2 - first column). Many users do not want to carry out the registration and login processes to the platform, so for example, we abandoned the idea of user registration for the usual search for materials, which is available on X5 Discovery[1].

In the process of searching for relevant content, teachers mostly found more than one OER content. The next logical step was creating a solution that enables teachers

[1] https://discovery.x5gon.org/

to create a set of links to multiple OER materials that can be easy to share with students. Therefore, the informed decision was taken to develop a playlist feature.

In the next iteration with teachers, we check that idea and get a significant guide to create new functionality. In the next step of development, we were forced to incorporate a registration procedure in X5LEARN[2] (see Figure 3).

When the teacher finds the appropriate content to share with his students, the process of saving playlists (personalization, order…) is solved much more elegantly with the help of a user profile, in which the prepared lists are stored.

We have thus simplified user registration to the smallest possible extent, where we only need an e-mail address and password. The acceptability of this registration procedure was checked in a short survey, where teachers were asked about the simplicity of the procedure (see the graph Ease of use - second column).

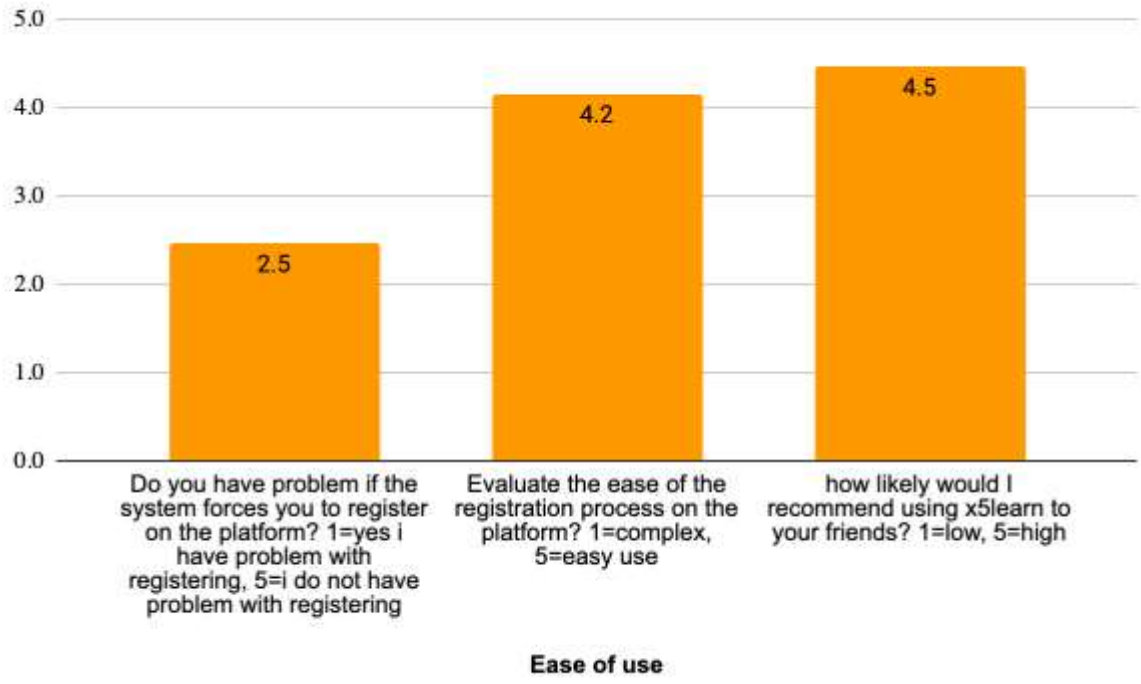

Figure 2: *Ease of use*

[2] https://x5learn.org/

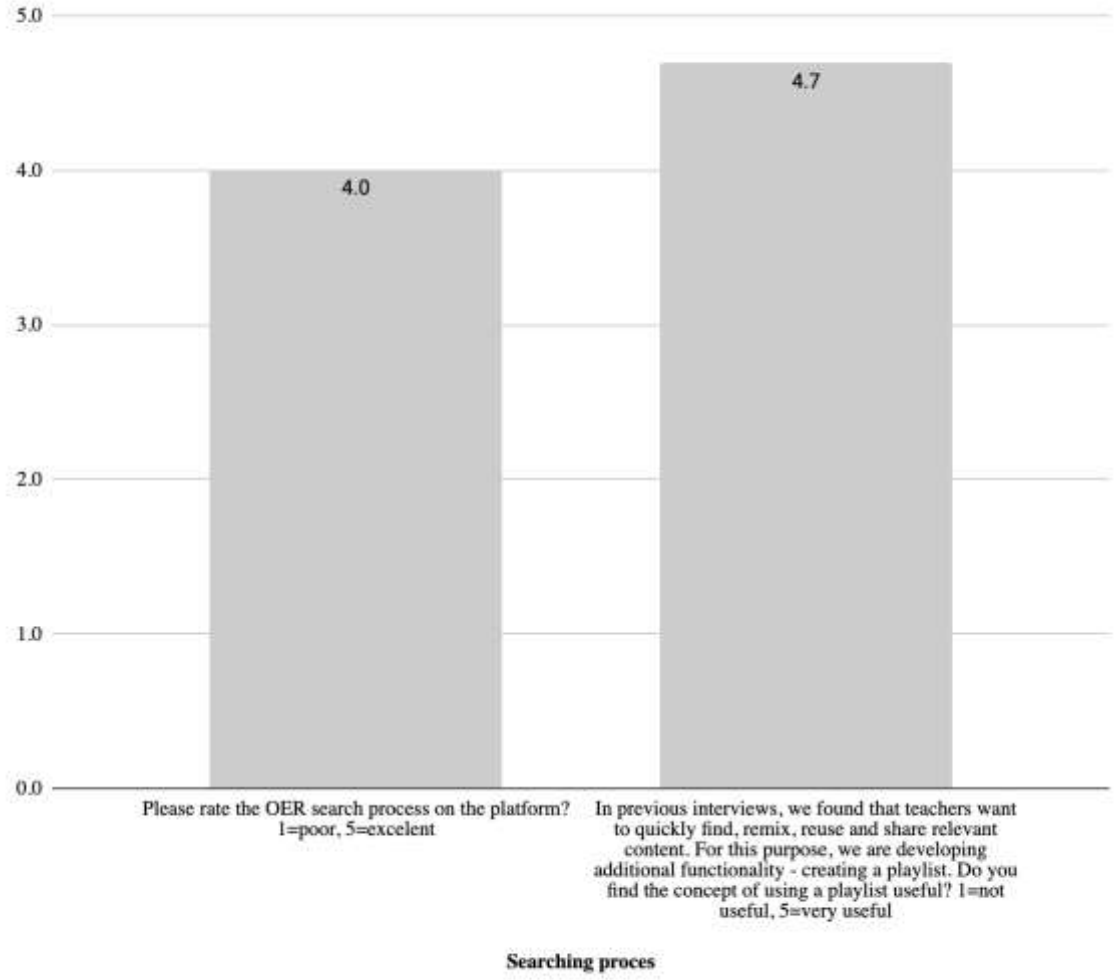

Figure 3: *Searching Process*

We have also performed numerous evaluations of the quality of content, quality of translations, the relevance of recommended content, metadata (extracts). One of the fastest ways of targeting the right OER is a proper content description. The decision was taken to check with teachers the quality of content descriptions that are automatically created as extracts of transcription technology (Figure 4).

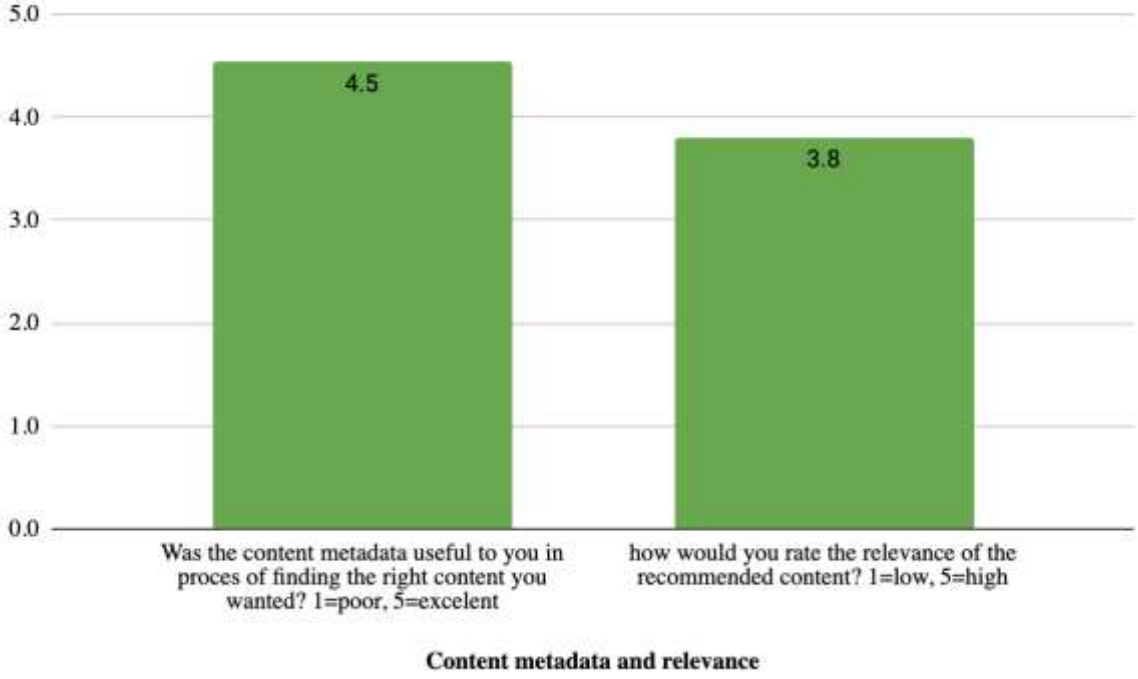

Figure 4: *Content relevance and metadata*

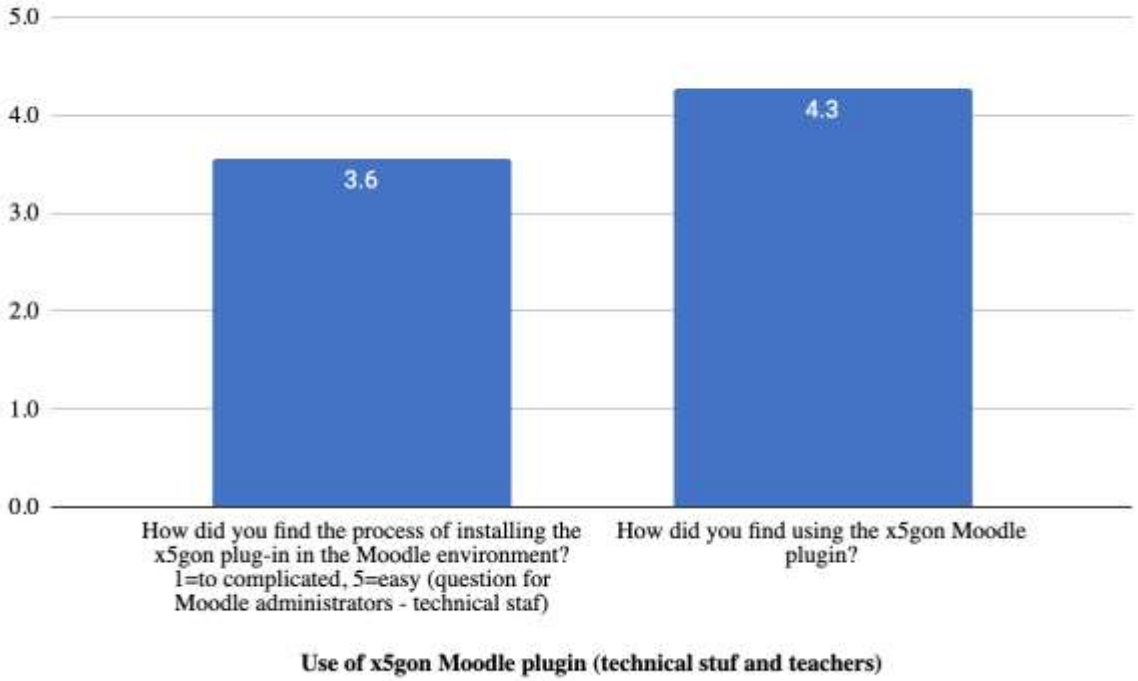

Figure 5: *Moodle Plugin use*

In the next iterations with teachers, we found out that they mostly use LMS - Moodle for teaching purpose. Therefore, the decision was taken to develop Moodle plugin for x5gon features that will allow teachers to import created Playlists into Moodle - environment. Before we implemented this feature to x5gon products we made several evaluations with teachers and Moodle administrators regarding the installation of the plugin and usability of the plugin (see Figure 5).

All the results were then considered when creating the final version of the x5gon plug-in for Moodle. Before we started to develop X5GON Blind we made several interviews with blind student teachers where we get proper guidance for building the X5GON Blind prototype. We found out that Materials must be created under appropriate standards and rules that allow blind students to navigate easier and faster. So we developed a prototype that allows blind students to recommend content that is properly designed for their needs.

5. CONCLUSION

The objective of this deliverable was to present a detailed plan and outline the evaluation framework for the X5GON project with the objective to evaluate (i) the Sustainability of the results and platform, (ii) Convergence of content, (iii) Technical Scalability of convergence platform, (iv) Usability and Accessibility of convergent content (2) and the established impact of the platform at the social, technical, economic and political levels in the X5GON target audiences and communities.

In Chapter 2 we presented the key indicators for all four objectives and evaluation tools ad measures for assessment. In Chapter 3 we chose and present our impact assessment methodology based on the I4ASI framework, we proceed to identify the impact indicators for the social, technical, economic and political levels. Finally, we present for each chapter separately the evaluation tools, time schedules and significant milestones.

Finally, the results of the evaluation framework and impact assessment are reported in the Chapter 4 of the deliverable D8.2 in M36, this gives us our results with the effective implementation of the assessment framework within the case studies locations, platform and the technological framework itself with feedback to the market positioning of the X5GON solution in order to measure and analyse all the indicators. In Chapter 5 we have our conclusions.

6. REFERENCES

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APPENDIX

A1: IA4SI METHODOLOGICAL FRAMEWORK

Impact area	Sub-categories	Variables
Social impact	Impact on community building and empowerment	• **Online community building** (e.g. number of users at the beginning and end of the project; amount of time spent by users at the beginning and end of the project, communication on the platform, network density, etc.) • **Online community empowerment** (e.g. network diversity, number of groups created by users, tools for inclusion, tools for privacy management, etc.) Local community building (e.g. the capacity to enlarge the local community, better self-organisation, reduced power asymmetries) • **Impact on social innovation CAPS community** (e.g. capacity to spread the social innovation, tools for networking among CAPS, number of collaborations with other projects within the domain, and outside the domain, etc.)
	Impact on information	• **Access to and sharing of information** (amount of available information, improvement of access of info for users, capability to influence information asymmetries) • **Quality of information** (instruments provided to assess the quality of information) • **Data management policies** (policy in terms of standardization, content licenses)
	Impact on ways of thinking/opinions and changes in behaviour for individual and collective behaviour and lifestyles	• **Changes in ways of thinking** (topics were opinion change is expected, activities performed to achieve the expected change, opinions and behaviours, number of people participating) • **Change in behaviour (**topics were changes in behaviours are expected)

	Impact on education and human capital	• **Training provided by the project** (hours of training provided, training efficiency, topics covered by training activities, tools for education developed by the project) • **Impact on human capital** (impact on users e-skills, number of activities supporting the acquisition of digital competences, digital literacy, reduction of digital device, the self-assessment to improve skills of people employed in the consortium and of its users) • **Impact on change in training curricula, educational policies**
	Impact on science and academia	• **Knowledge production** (scientific impact: number of researchers, number of articles, number of patent applications, number of IPRs, project level of interdisciplinarity) • **Knowledge sharing** (use of open access, sharing through social media, dissemination through project website, sharing through events) • **Impact on research processes**
	Impact on employment	• **Impact on job creation** • **Impact on European employment and within the social innovation sector** (e.g. number of spin-offers created by the project) • **Impact on working practices and routines**
Environmental impact	The environmental impact of the project itself	CO2 compensation, greenhouse gases production, reduction of air pollution in percentage,
	The impact on user's environmental behaviour	• Project's capacity to provide easier access to low carbon technologies • Number of compensation activities performed by users since their engagement with the project • Project's capability to contribute to the change in users participated to environmental related actions • Project's capacity to increase users' sensitivity towards the issue of air pollution

Economic impact	Impact on user's economic empowerment	• Impact on access to finance (project's capability to increase the access to finance • Impact through crowd funding) • Impact on entrepreneurship (project's capability to support enterprises, and creation of new activities) • Income generation
	Economic value generation by the project	Cost-benefit and return on investments, new market opportunities, new business models, competitiveness of the project
	Impact on ICT driven innovation	• Product innovation (e.g. increasing the efficiency of existing technologies, technology readiness level of the outputs) • Process innovation, organizational innovation, user-driven and open innovation
Political impacts	Impact on civic and political participation	• Instruments developed by the project offering new channels for civic participation • Capacity of the project for increasing citizen participation in civic-society • Increase in number of grassroots organisations • Participation of citizens in (signature) campaigns and boycotts
	Impact on citizens/user's political awareness	• Time spent by users to be informed about political issues • Time spent by users in persuading others about the political issues • Changes in the political topics addressed by users
	Impact on policies and institutions	• Project's capability to influence policies and institutions, CAPS users impact on policies and institutions

Table 11: *IA4Si methodological framework: socio-economic impact assessment*

A2: EVALUATION QUESTIONNAIRE INITIAL DRAFT

This initial draft presents one question as a sample for the testing session [3].

Questions Cognitively tested

NEW1 What is your main activity at this workplace?
INTERVIEWER: WRITE IN: _____
NEW2 Is it to prepare content for a number of different workplaces in the UK *(participants could be from other EU member states or partners countries)* belonging to the same organisation, a single independent workplace or an online workspace portal for the same organisation?

One of a number of different workplaces in the UK
belonging to the same organisation (ASK NEW3)
Single independent workplace (Go to NEW5)
Online workplace for the same organisation (Go to NEW5)

IF PART OF A LARGER ORGANISATION IN THE UK
NEW3 How many workplaces, including this one, are there within your organisation in the UK? INTERVIEWER: WRITE IN: _____
NEW4 Approximately, with how many employees in your organisation you share content and work on content related issues at the workplace?
WRITE IN: _____

ASK ALL
NEW5 And with how many employees at this/your workplace you work on a daily basis on content? INTERVIEWER: WRITE IN: _____
NEW6 When answering these questions please think about your workplace only

INTERVIEWER: READ WORDING BELOW EXACTLY AS WRITTEN
INTRO ASK ALL
I am now going to run through some of the questions you might be asked as part of the X5GON survey about the scheme you took part in. I'd like you to try and answer the questions and as you do so please talk me through any issues they raise. We'll then talk about these issues a bit more.
The first few questions are about the benefits you might have experienced that resulted from your participation in X5GON and whether you would have experienced these regardless of this participation.

Findings:..

Recommendations:..

A3: EVALUATION THINK ALOUD PROTOCOL INITIAL DRAFT

Example of a possible story in the think-a-loud protocol	User story: • Navigate to the X5GON platform • Register and log in on the X5GON platform • Explore and search for materials you need, like or simply interest you • Explore the Recommendation engine • Pay attention to Quality of materials recommended • Download a certain material Reviewer protocol: • Write down notes • Conduct after-scenario assessment • Focus on usability issues, user satisfaction, • Mindful of bottlenecks for task completion • Validate beforehand with consortium

Table 12: *Evaluation Think Aloud Protocol Initial Draft*

A4: IMPACT ASSESSMENT INTERVIEWS STRUCTURE INITIAL DRAFT

Introduction	• Project background • Interview structure • Optional photo • Consent form signed • Any questions
About You	• Background and work history • Current garage - history, typical days • What does their work involve? • What do they like about it? | What could be improved? • What would make their life easier around X5GON testing and their work?
X5GON Service	• How do they find the new system? • What are some of the good things about it? • Is there anything they would change about it?
Technology and Digital Inclusion	• What technology do they use regularly? Tablet, smart phone etc. • How confident are they using technology? • How would they describe their attitude to technology?
Process & Checklist	Please describe the process that you go through from start to finish when interacting with your LMS/CMS, pointing out specific points at which you gather specific pieces of information: • How do you capture information while you are using your LMS/CMS? | Pre-check & during testing • Do you use an existing checklist form? | Own templates? • What do you do with the materials afterwards? • Which form was most useful? | Why?

	Show new X5GON interface and gather feedback: • Could they use this interface? • What's clear / unclear? Anything missing? Anything unnecessary? • Missing features? • Classes, elements, tools they use? • Order of items? | Header layouts? • Location of tester through process? • Most important piece of information? • Help text | Manual • When in process would they print it? | New tab | Which format? • Digital devices instead of paper • Recording results in the system Talk through process in system: • Has anything changed about their process since the new system launched? • Is there anything they'd change about the process to make it quicker and simpler to run X5GON? Close interview: • Is there anything else you'd like us to feedback to the designers of the system? • Thank you for your time

Table 13: *Impact Assessment Interviews Structure Initial Draft*

A5: IMPACT ASSESSMENT WORKSHOP STRUCTURE INITIAL DRAFT

Primary Objective	Key objective of the user testing was to test four different layouts of the starting point of the Return of Document application.
Secondary objective	As participants went through the entire application journey, these objectives were also covered: • Finding and navigating to the service • Understanding labels and terminology • Navigating the mechanics of the service and submitting a request • Expectations of the service before users use it • Expectations and needs around withdrawing the application • Ease of use of the live forms • Identifying any UI or language stumbling blocks • Additional insights
Methodology	Sessions will be held at the Ministry of Education in Ljubljana, Slovenia. Sessions will be conducted face to face using a laptop on which participants will access the application. Each session will last approx. 45 minutes. Techniques used will be task based think aloud protocol, semi-structured interviews and an online survey for gaining insight into users' digital propensity skills and collecting demographic data.

Tasks	• **Task 1 – Teachers, Management, Disabilities community:** Participants will be asked to deliver two actions
	  ○ (i) to imagine they need to structure a new set of materials for a specific course,
	  ○ (ii) they need to study a specific topic,
	and whilst they're waiting for a feedback on their task, they've received news that they
	  ○ (i) need to deliver a teaching session urgently,
	  ○ (ii) they immediately need to reskill for a position.
	What do they think they would do? How would they find information about what to do next?
	• **Task 2 – IT managers:** Participants will be asked to fill in and submit a test version of the Platform online application. Each participant will be presented with two different layouts of the platform showing (i) privacy agreements and (ii) snippet installation details, which will be varied in presenting the Introduction page and branding. Each pair of layouts will include a layout with and without the smart answers section. What do they think they would do? How would they find information about what to do next?
	• **Task 3 – both groups**: Participants were asked to take part in an online survey for the purpose of getting insight into their OER digital propensity skill levels and collecting demographic data.

Table 14: *Assessment Workshop Structure Initial Draft*