



# D7.4

# Exploitation and Sustainability plan





## The colMOOC: Integrating Conversational Agents and Learning Analytics in MOOCs

### D7.4 - Exploitation and Sustainability plan

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Abstract:	The exploitation plan will report the consortium's strategy towards exploiting the project's results. It will include an analysis of the relevant market and current conditions, existing competitors versus own positioning, potential

<p>Keywords:</p>	<p>users and collaborators as well as opportunities and barriers at EU level and Member State level.</p> <p>The exploitation and sustainability plan will be constructed and documented in two phases. This initial report will provide a preliminary outline of the exploitation and sustainability plan for after project end including relevant exploitation/sustainability models, partners' involvement in future exploitation activities, plans for promotion and valorisation, solutions to potential financial or IPR/licensing issues encountered, etc.</p> <p>Exploitation, Sustainability, valorization, IPR, licensing</p>
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<p>Dissemination level:</p>	<p>Restricted to other programme participants (including Commission services and project reviewers)</p>
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## Document Change Log

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0.1	03/04/2019	See author list	ALL
0.2	01/06/2019	See author list	ALL
1.0	30/06/2019	See author list	ALL

## Executive Summary

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This document provides a preliminary outline of the exploitation and sustainability plan which is intended for implementation after the project has formally concluded. This document includes a general overview of the *Massive Open Online Course* (MOOC) industry and summarizes the main exploitation/sustainability models which each partner proposes in order to continue benefiting from the projects' results and outcomes.

As a reference point for M18 of the project, all partners continue to assess and debate further ways of either developing their current exploitation models or find new ways to take advantage of the **conversation and learning analytics components** as the project enters into the second half of its existence.

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## List of Acronyms

Acronym	Description
AUTH	Aristotle University of Thessaloniki (partner consortium)
CA	Conversational Agent
CERTH	Centre for Research & Technology Hellas (partner consortium)
GU	GUNET, Greek Universities Network (partner consortium)
HEIs	Higher Education Institutions
ICT	Information and Communications Technology
IPR	Intellectual Property Rights
LA	Learning Analytics
LW	LearnWorlds (partner consortium)
NGO	Non Governmental Organisation
OERs	Open Educational Resources
PfnP	Programming for non-Programmers
SMEs	Small Medium Enterprises
TED	Telefónica Educación Digital (partner consortium)

## **1 Introduction**

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### **1.1 Purpose of this document**

This document contains key information and preliminary models contributed by colMOOC partners with the intention to propose, deliberate over and identify a viable strategy to effectively exploit the results of the project and ensure the sustainability of colMOOC after the end of the funding stage.

The document outlines how the partners propose to exploit the project outcomes in terms of sources of revenue and the level of involvement of each partner in incorporating the project outcomes in their wider activities. As a first interim report, the Consortium is aware that further opportunities will arise during the remainder of the project and beyond and so this document serves as a first blueprint to organize ideas and set clear objectives in order to take full advantage of the project outcomes.

### **1.2 Document structure**

The present deliverable is split into 4 sections:

- Introduction
- Overview of the colMOOC Project
- Exploitation
- Sustainability

### **1.3 Audience**

This document is internal to colMOOC project consortium, EACEA and Commission services and project reviewers.

## 2 Overview of the colMOOC Project

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The colMOOC project aims to deliver a highly innovative MOOC model and implementation with the integration of services based on Conversational Agents (CA) and Learning Analytics (LA).

Typically, conversational pedagogical agents guide and support student dialogue using natural language both in individual and collaborative settings. The colMOOC project will deliver a type of agent that can operate as “teacher-group mediator”, that is, as an onscreen agent configured by the teacher that mediates to the student group the teacher designed interventions in the form of constructive questions posed during online peer discussion (chat).

Integrating this type of conversational agents into MOOCs to trigger peer interaction in discussion groups is expected to:

1. Provide an open tool as a teacher-student mediator to advance student learning through challenging peer interactions.
2. Increase the engagement and the commitment of online students by promoting the interactive and collaborative aspects of learning. Consequently, this is expected to increase learners’ satisfaction from the overall learning experience and reduce MOOCs dropout rate (this, however, remains to be explored).
3. Moreover, colMOOC will use learning analytics techniques, as a method to support teachers’ orchestration and students’ learning in MOOCs by providing useful metrics and feedback relevant to students' interaction and participation.

The colMOOC consortium believes that MOOCs is one of the key tools to address the problem of digital illiteracy and equal access to education. MOOCs have shown to not only provide expert and up-to-date knowledge to anyone with internet access but have also repositioned Universities as beacons of knowledge with impact on society at large.

New innovative MOOCs will be offered, with varying topics and the usual dissemination channels will have an immediate effect on the associated audience, firstly regional, and afterwards, national. Also, due to the nature of MOOCs, the audience is not restricted to students and employees in only one or two countries. MOOCs are intended to be offered on a global scale, reaching international audiences and generated further interested in the work of colMOOC. They we’ll also provide the opportunity to implement and explore “in the wild” (that is, in real MOOC scenarios) the impact of the CA and the LA components embedded in the pilot MOOCs.

The colMOOC partners will develop three MOOCs that are expected to help learners develop transversal digital competencies in specific fields highly relevant to digital literacy skills. More specifically, the consortium aims to develop the following pilot MOOCs (detailed information about the MOOCs of the project is presented in deliverable D5.1):

1. Programming for Non-Programmers (in Greek language)
2. Computational Thinking (in English)
3. Educational Technologies in the Classroom (in Spanish)
4. The Orchestrated Classroom (in German)

We expect that the agent-enhanced chat activities offered by the project MOOCs will contribute to a challenging and engaging learning experience that advances peer interaction and learners’ productive dialogue. We also anticipate that the innovative features of the project will contribute to the creation of a European alternative to other successful international non-European MOOC platforms, giving users an enhanced MOOC experience, which differentiates colMOOC courses to

other offerings on the market. Three of the partners (GU, TED, LW) have advanced learning systems that already offer meaningful learning experiences and with the addition of the CA and LA components, we expect to attract more users and subsequently more interest from institutions and corporations who will wish to adopt this technology to improve their own learner outcomes.

## 2.1 Target audience

As outlined in the Workplan colMOOC will target three groups:

- Academic community
- Training community
- Technology providers

The project will target these audiences through three networks. The first network is made up of project partners (e.g., researchers, educators, administrative staff, management of partner organizations); the second by the immediate networks of each of the project partners (e.g., municipalities, school/university networks, enterprises, associations), and the third by all other interested actors in MOOCs that will be reached through both online and offline activities. Expected benefits for all these audiences are as follows:

### 2.1.1 Academic community

- *University students:* Students enrolled in pilot MOOCs will be offered a more interactive and collaborative learning experience when engaged in colMOOC agent-enhanced chat activities. Cognitive and metacognitive benefits are expected to emerge by triggering peers' interactions through the CA interventions. Also, the LA component is expected to help students self-regulate their learning activity in a flexible and efficient way.
- *University teachers:* As MOOC elements and online pedagogies are integrated into university curricula, the use of innovative techniques and services, such as teacher-configured online agents and learning analytics components would be valuable for the teachers, in their effort to increase the quality of learning in their courses. University instructors will be offered the opportunity of embedding new innovative tools in their MOOCs (or, more generally, their online teaching design) exploring the impact of teacher-configured agent and learning analytics component. Moreover, data from teachers' experience when setting up a colMOOC agent and/or attending the pilot MOOCs are expected to shed light on how the project developed tools will be accepted by the teachers' community.
- *Academic institutions:* The integration of conversational agents and learning analytics into MOOCs would allow the universities to offer more flexible and engaging ways of learning in their online learning modules. This would allow the universities to gain experience on how to efficiently use these innovative tools in online learning, aiming eventually to increase the quality of online learning, attract the interest of wider demographic learners' population (based on age, occupation, etc.) and, hopefully, address in a more efficient way the challenge of high drop-out rates of MOOC learners.
- *Researchers:* Significant research opportunities on human-agent interactions are expected to emerge for researchers when studying the development, deployment and offering of online courses where the colMOOC CA and LA components will be integrated.

### 2.1.2 Training community

- *Learners*: As for university students, similarly for all levels of online learners a more interactive learning experience will be offered to them expecting to result to cognitive and metacognitive benefits through their engagement in interactive agent-intervened peer discussions.
- *Trainers*: Trainers need innovative, engaging and motivational learning methods in order to attract the attention of the employees of any sector during training sessions. In addition, trainers should be able to a) easily design courses and material, and b) monitor their trainees' progress during sessions. The colMOOC project will support them in both these objectives offering them the opportunity to explore the impact of configuring onscreen agents to support social interaction among trainees and using learning analytics tools as a mean to improve the quality of training, monitor the progress of their trainees and result to an overall more satisfactory training experience.
- *SMEs*: European SMEs continuously need to train their employees to improve the competitive advantage of the enterprise. SMEs can be benefited by adopting a colMOOC training approach thus being able to provide more interactive and collaborative training sessions to their employees and being able to monitor their progress through LA component.

### 2.1.3 Technology providers

- *Tool developers*: Learning tool developers (e.g., MOOC plug-in developers) need to provide high quality personalized software products to their customers. Tool developers will be productively challenged by the products of the colMOOC project, as they will be offered new tools in the form of MOOC plugins (CA/LA components) and relevant solutions for integrating these tools in existing MOOC platforms. Opportunities for extending and improving the flexibility and functionality of these tools will also become an interesting challenge for developers.
- *Content providers*: Learning content providers (e.g. MOOC providers) aim at making their content easily accessible to a great number of users. It is expected that content providers will be productively challenged by the colMOOC tools (CA/LA components) when exploring fruitful ways of agent configuration, so that the value of their developed learning content is further highlighted by engaging students in online discussions using the agent-enhanced chat tool.



### 3 Exploitation

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#### 3.1 Analysis of the relevant market and current conditions

MOOCs are freely accessible courses that able to educate many learners in a flexible and collaborative manner, and which meet the needs of today’s learners. Worldwide, the amount of investment by universities and institutions and the growing demand of MOOCs is increasing significantly. Class Central<sup>1</sup> reported that by the end of 2018, 100 million students registered to approximately 12,000 courses developed by over 900 universities. With a growing number of MOOC platforms and courses being published in many languages, it is apparent that MOOCs are here to stay and that they are more than ever an important part of our educational system. Many people now consider that MOOCs are a genuinely viable option in their ongoing learning process.

European Higher Education Institutions (HEIs) are strongly involved in MOOCs and are using MOOCs to innovate their education offering to flexible learning opportunities next to increase their institutional visibility. The main competitive advantage of MOOC’s is their ability flexibility to deliver a “just-in-time” learning impact at very little or no cost to the student.

Based on the research that partners systematically conduct in the field we can confirm the following:

- a) “Teacher-configured conversational agent” is a highly innovative approach and no other similar software service exists currently in the field. Although CAs have a long history and several studies report on their impact on student learning there is not until now any agent software like the colMOOC software component. All known agent design approaches typically follow the “pre-set agent design”, that is, the agent software is pre-set in its domain model and interactive capabilities by software developers and not by instructors themselves as end-users of the software agent.
- b) “Embedding conversational agent in MOOCs” is also an innovative approach as MOOCs do not currently offer conversational agent services. Studies that explore the impact of embedding conversational agents in MOOCs have already appeared in the literature (for example, Aguirre et al., 2018) but still the agent model they propose is the typical pre-configured and domain-dependent agent design.
- c) Regarding also the “chatbot market” (that is, chatbots as software products available for the end user such as Siri, Cortana, Google Assistant and Alexa) it should be clear that: a) these ‘bots’ have not been developed to help users in learning tasks, and b) although this type of chatbots can perform in a variety of tasks they generally are not capable of sustaining long conversations, thus imposing known limitations to human-agent interaction and the end user experience (for a relevant discussion, see for example, Anand, 2017). Whether, however, there is a potential market for chatbots or CAs as learning assistants remains to be explored and the colMOOC project aims to provide some relevant evidence through research based on the integration of the project CA software component in pilot MOOCs.

##### 3.1.1 Existing competitors

There are several large players in the MOOC environment, including Coursera, EdX, MiriadaX and FutureLearn, with several of the European providers now collaborating as a joint effort to increase awareness and the uptake of MOOCs in Europe (European MOOC Consortium).<sup>2</sup>

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<sup>1</sup> <https://www.classcentral.com/report/mooc-providers-list/>

<sup>2</sup> <https://emc.eadtu.eu/>

The European MOOC Consortium represents organisations taking a lead in massive open online courses in Europe and is made up of the following founding partners:

- FutureLearn
- France Université Numérique (GIP FUN-MOOC)
- OpenupEd
- Miriada X
- EduOpen

These partners represent most of the MOOC development work in Europe in terms of learners and number of MOOCs, by offering together almost a 1000 MOOCs. Together, they represent a large network of 250 higher education institutions (HEIs) and companies working in a variety of European languages, including English, France, Spanish and Italian. The creation of the European MOOC Consortium (EMC) is intended to accelerate the collaboration between the major European MOOC players and developing a common position on the future direction of this methodology.

On a more international level, Coursera, EdX and Swayam are also extremely strong in terms of scope and reach, increasingly competing with other platforms by offering courses in multiple languages and with a variety of options such as freemium and nano degrees (see <https://www.classcentral.com/report/mooc-providers-list/>)

### 3.1.2 Potential users and collaborators

MOOCs are taken by a wide range of people of all ages and nationalities and because of their flexibility and immediacy, they offer an attractive methodology for school children to widen their subject knowledge, to University students to deepen their knowledge, to workforces to continue their professional development / reskill, to employers to specialize or focus training programmes and to the population as a whole to offer life long learning for all.

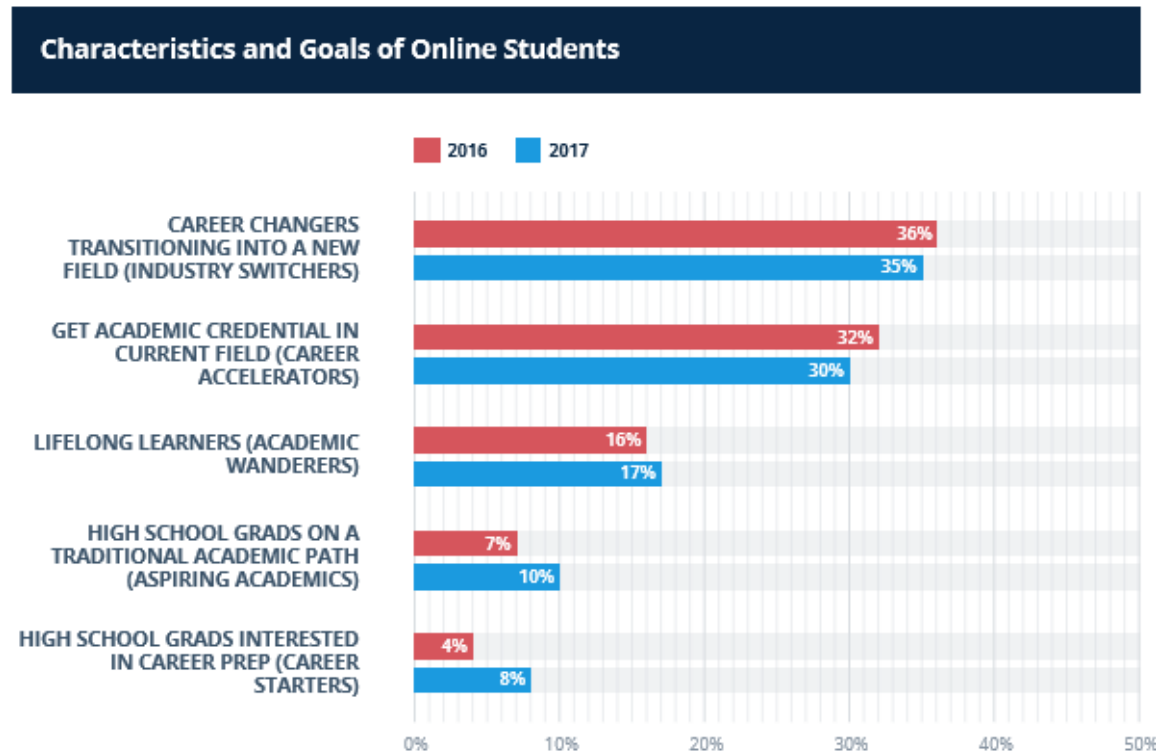
There exist other key collectives who are able to also benefit from MOOCs in how knowledge is transferred. Teachers are now able to use MOOCs to provide more dynamic, relevant and up-to-date content which in turn, offers a more realistic and motivational environment for learners. Employers for example are now able to also update training impacts faster and offer courses and knowledge sharing at lower costs and with more flexibility with respect to when and where an employee receives their training.

### 3.1.3 Opportunities and barriers

The potential of MOOCs does not appear to have been fully realised yet, due to a lack of common arrangements for the recognition and quality assessment of MOOCs in Europe and elsewhere. In order to do this, it will be necessary to develop a framework for the recognition of micro-credentials and of (formal) MOOC-credits as part of online programmes and degrees, and to work towards the adoption of such framework by stakeholders across Europe. This is however a key objective of the European MOOC Consortium which is also part of a Erasmus+ funded programme focusing on MOOCs and the labour market (<https://emc.eadtu.eu/emc-lm>).

### 3.1.4 Further information on the MOOC sector

During 2018, the main universities and business schools have increased their online training offer based on the MOOC model, making their offer compatible with their own platforms and third parties such as Miriadax. 80% of Miriadax universities recognize the need to digitize their offer of courses with academic accreditation.



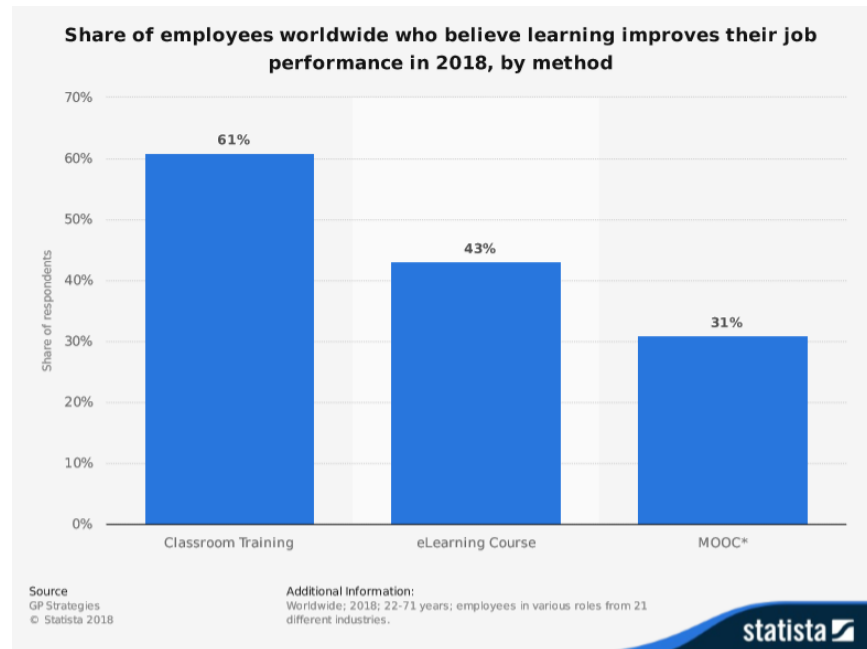
**Figure 1. User motivation to use MOOCs**

Graphic source: Best College .com. 2018 online Trends in Education Report

- *Career – driven:* 73% of online students recognise employability and retraining as the main motivation for an MOOC (35%). 30% acknowledge that they wish to obtain academic credentials to strengthen their position in the market.
- *Online vs face to face:* 79% of students equate online and face-to-face training. 40% foresee an increase in their investment in online training.
- *Digitization of academic offerings:* 73% of universities and business schools have equated their face-to-face offer with online. According to the latest report by UniversiTIC (CRUE), in Spain it rises to 78%.

### 3.1.5 Corporate Market

During 2018, Miriadax's main competing platforms have evolved their business model, firmly betting on the corporate market, together with an offer of courses with academic accreditation (online degrees and masters, as well as micro-credentials).



**Figure 2. Employees and Preferred Learning Methodology**

- *MOOCs for business:* All MOOC platforms have incorporated services aimed at companies. Either through the creation of an environment from which to monitor the activity of their employees with an annual fee per employee-course, or through the marketing of coupons for the acquisition of certifications or access to courses.
- *SMEs and Corporate:* Coursera and Udacity lead the corporate offering with a clear business model differentiated between SMEs and Corporations with more than 1000 corporate customers and an annual growth of 300% (Coursera) in 2018. Focus on 60 Fortune 500 companies.
- *What you don't know Will hurt you!:* MOOCs represent a 60% reduction in training costs and allow immediate access to the knowledge needed for business development and increased sense of belonging. The time to market is key to stay within the digital ecosystem, hence corporations see in MOOCs an optimal way to train their employees immediately on issues directly related to their business.

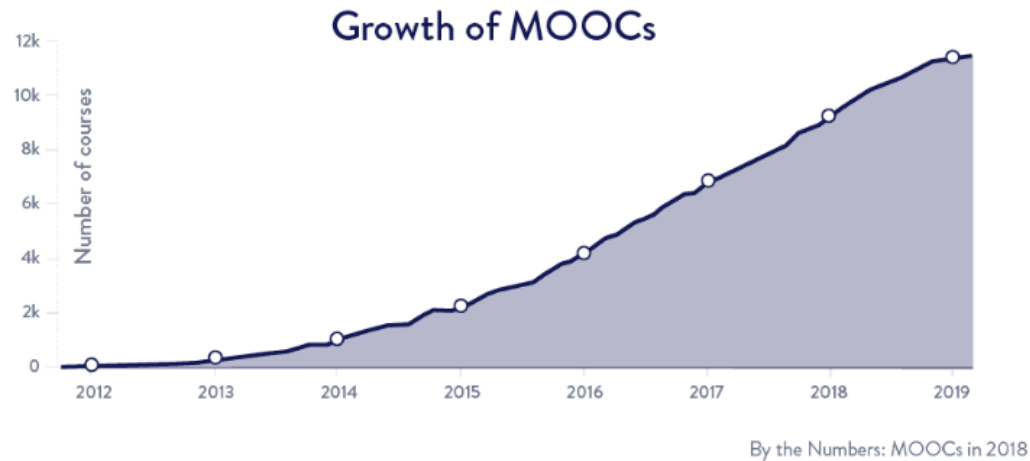
### 3.1.6 MOOC 2018 Platforms

The MOOC movement crossed 100 million learners and 20 million learners signed up for at least one MOOC in 2018.

*By the end of 2018, over 900 universities had announced or launched a MOOC:*

- 11.4 k MOOC courses
- 20M new registrations (+600 microcredentials)

CLASS CENTRAL



**Figure 3. Evolution of MOOCs per year**

The main MOOC providers by registered users share +86% total share of the offer

Here is a list of the top MOOC platforms:

- *Coursera*: Coursera was born in October 2011 developed by academics from Stanford University. In February 2015 it signed an alliance with Google and Instagram to broadcast "microdegrees", which include an internship in the final project at major universities and high-tech companies. It offers courses in English, Spanish, French, Chinese and Italian (181 universities from 27 countries).
- *edX*: edX began in 2012 as a non-profit organization with a capital of \$60 million, money invested by Harvard and MIT. Its profits come from users who purchase certificates or register with Micromasters and from contracts with partners. In 2018 it has 113 courses in Spanish.
- *Miríadax*: is among the top five MOOC platforms worldwide with clear recognition of its value proposition to Hispanic society. Its growth potential lies in reaching 10% of the more than 650M of Spanish speakers with internet access and aged between 18-45, as well as the activation of the recognition of this training by companies and governments.

**Table 1: Statistical Summary of Main MOOC Providers**

	<b>Coursera</b>	<b>EDX</b>	<b>Udacity</b>	<b>FutureLearn</b>	<b>Miríadax</b>
REGISTRATIONS	81M	52M	10M	8.7M	5.7M
UNIQUE USERS	37M	18M	160K	8.7M	2.5M
COURSES	3800	1900	233	900	1025
UNIVERSITIES	800	200	120	130	160
COMPLETION RATIO	10%	5%	12%	8%	27%
NUMBER OF EMPLOYEES	1400	184	330	208	10
INVESTMENT MADE	210M	no info	155M	49M	3.5M
INCOME YEAR	\$140M	\$14.2M	\$70M	€8,2M	€800k

### 3.1.7 Estimated Project Incomes

Revenue streams required to maintain the project and make it viable are expected from the following sources:

- *Partner Platforms*: Each partner platform can exploit the outcomes of this projects through the inclusion of the CA and LA tools in courses run on their platforms
- *Dissemination & Communication*: All partners may support these activities using their internal resources and or linking the project to other relevant projects.
- *Funds from 3<sup>rd</sup> parties* interested in promoting their resources and materials through the platform. These funds can support the annual events. These events are expected to be coordinated in association with relevant players.
- *Advertising* of companies and organisations: companies interested in advertising their organisations will be contributing to events/activities with sponsorships.

### 3.1.8 Instruments

To specifically address the aforementioned target groups and align with the dissemination directions, we have identified the following instruments:

a) *Project communication kit*, consisting of the project web-site, poster, leaflet, roll up and a video demonstrating the project's vision and goal, as well as frequent updates of the project's social media accounts (i.e. Twitter and Facebook). This instrument is aligned with the direction of raising awareness about the project and covers mostly the groups of general public;

b) *Direct communication with stakeholders* (via e-mail, social media or other e-groups, or in person in events and conferences), where we will try to get in touch with the organizations that are active in inclusive vocational training, as well as companies that offer innovative and personalized educational solutions.

c) *Demonstration kit* that will incorporate the technology-enhanced versions of educational platforms but will also include a lightweight installation of the necessary sensors that will be easily portable and appropriate for demonstrating the platform in organizations (or other potential buyers).

d) *Impact indicators*: Depending on the nature of the action, there are certain indicators that can actually imply the achieved impact, such as visits/views of the project website or social channels that are intended to provide the viewer with information around a certain topic.

## 3.2 Business Models

### 3.2.1 Introduction

The current D7.4 deliverable is an initial report and, as such, it aims to provide a preliminary outline of the exploitation and sustainability plan including partners exploitation/sustainability models, and also partners' initial ideas about their involvement in future exploitation activities, plans for promotion and valorisation, solutions to potential financial or IPR/licensing issues encountered, etc.

In this section, partners provide an initial description of their ideas regarding the project exploitation and sustainability plan and relevant business models. This does not mean that all partners agree and commit themselves on the actions described in exploitation models included in this document. Thus, the information included herein is not binding for partners but rather indicative of various ideas that could help all partners converge and agree on specific plans and future actions.

### 3.2.2 Potential clients

Key stakeholders who will be interested in acquiring colMOOC services will mainly be educational organizations and corporations that see a value and wish to exploit our CA and LA solutions for their own purposes.

The Consortium is currently building interest among the commercial and research communities of the target groups addressed by the project and by the end of the project, colMOOC aims to have generated enough interest via a forum for the exchange of information, feedback and remarks between end users/commercial communities and the colMOOC consortium. In the final year and in the follow-up activities, the consortium will commercially and technically exploit the project results. Based on this framework, software licensing or subscription offers will be worked out to bundle and integrate colMOOC technologies into existing successful systems.

As part of its mandate in finding effective ways to ensure the legacy of colMOOC, all Partners will be in charge of seeking additional financial and intellectual support through strategic partnerships (including advertising models) to ensure that the outcomes continue to function once the grant period is over.

Support to maintain the platform and web portal will come primarily from the partners. A supportive and cooperative colMOOC consortium, together with established partnerships with surrounding networks and collaborating institutions, will help ensure the sustainability of the project. The colMOOC project's key outputs will be attractive to potential partners and customers and each partner has proposals / models on how to exploit the results for their own purposes or through further collaboration with one or more of the Consortium.

Royalty sharing could be the initial scheme for pushing forward joint exploitation. In addition, depending on future market situation and needs, the consortium (or specific groups of partners) can set up new companies either in the more general or relevant domains identified through business plans.

Another way to exploit the results is by establishing partnerships with companies outside the consortium that are already active in relevant markets and, thus, gain from the already established customer base.

Finally, apart from the joint exploitation directions, the individual partners (especially the commercial companies) can still exploit the technologies developed in the project through their already established marketing channels.

Furthermore, all the projects outcomes (modules, platform, courses) will be available to anyone interest after the project is finished.

Following is a set of potential business models proposed by the consortium for the purpose of exploiting the outputs of the colMOOC project.

### 3.2.3 Business Model A – Proposed by TED

TED though its MiriadaX platform, has been offering a range of MOOCs over the past few years and although our courses often surpass the industry average completion rate, the nature of some of the more technical courses causes students to drop out earlier and so eliminates the possibility of them paying for a certificate. By introducing the CA and LA components in a selection of MiriadaX courses, we hope to;

1. Increase the number of students completing more technical courses.
2. Improve the feedback and rating of these courses
3. Increase the number of certificates being sold

More analytically:

**Table 2: colMOOC business model A – Proposed by TED**

Value Proposition	Improve UX and learning impacts for course participants. Increase number of users finishing courses and paying for certification.
Partners	All partners (universities and other entities on Miriadax platform). Offer new dynamic features to MOOCs
Activities	Integration and support of CA and LA tools in partner organization MOOCs and training on how to programme tools and monitor.
Resources	Miriadax platform, Miriadax team
Cost Structure	Optional paid final certification – 50/50 share TED/University
Customer Relationships	Increase user participation in MOOCs and improve user experience. Customer loyalty.
Customer Strategy	Positioning TED and participating Universities as leading players in innovation in MOOCs. Leading the way in tackling low completion rates.
Customer Segments	B2C (MOOC users) / B2B – new partners and paying corporates who see added value in partnering with TED and Miriadax to achieve their objectives.
Channels	Miriadax platform, MOOC newsletter, TED and TEF communication channels/social media
Revenue Streams	Increase number of users paying for final certification.

### 3.2.4 Business Model B – Proposed by TED

As an additional proposed model for the MiriadaX platform, TED is interested in charging a higher price to students who wish to take a specialized MOOCs which has both the CA and LA components integrated. This model would also be of interest to participating universities who share in the revenue generated by the sale of the certificates. As an additional service, TED could also produce MOOCs to its clients offering the possibility of integrating the CA and LA components at an extra cost.

More analytically:

**Table 3: colMOOC business model B – Proposed by TED**

Value Proposition	TED MOOC production service for clients which includes new CA & LA at extra cost
Partners	Corporate clients and Universities which require the support of TED to develop their MOOCs.
Activities	Integrate the CA and LA tools into the production process which TED currently uses to create MOOCs for clients.
Resources	Content production team TED
Cost Structure	TED would charge an appropriate fee for the inclusion of the CA and LA tools in newly produced MOOCs



Customer Relationships	Add a new service to our MOOC production offer, adding value and an attractive “extra” for all new courses. Clear value proposition in improving completion rates.
Customer Strategy	Positioning TED as a leading technological and innovation partner in the world of MOOCs
Customer Segments	B2B – mainly corporations and organizations which are interested in developing MOOCs for Miriadax or for their own platforms. Potential to integrate tools into Telefónica internal MOOCs.
Channels	Telefónica sales teams, Client events, MOOC newsletter, TED and TEF communication channels/social media.
Revenue Streams	Increase number of users paying for final certification.

### 3.2.5 Business Model C – Proposed by AUTH

AUTH proposes to implement the typical model commonly encountered in MOOCs, namely: “free access to material and pay for certification”. Based on our experience from offering a MOOC on Python programming (introductory level) for two years to Greek speaking audience we believe that there will be many interested learners who will chose to attain a paid skill certification after the MOOC completion.

The expected benefits from implementing this model are:

1. The core content of the MOOC remains always freely available for all interested learners.
2. The fees (low enough not to discourage interested learners to engage in seeking skill certification) will support the sustained offering of the MOOC and further update and improvement of both the course content and certification material and process.
3. Continual offering of the MOOC will provide opportunities for further research and data collection that will help colMOOC partners deepen their understanding about the learning impact of the CA and LA components, publish the results in international journals and conferences and form the basis for further improvement of the CA/LA functionality and new innovative project proposals.
4. In case CA/LA components are well accepted by learners’ and teachers’ population more SMEs active in the field of online education services will be interested to exploit these innovative services. Thus, AUTH and partners will have the opportunity to: a) form new “knowledge alliances” for upcoming project proposals, or, b) financially exploit the current (or improved next versions) of CA/LA components by charging a fee to SMEs interested in embedding these services in their online courses.

More analytically:

**Table 4: colMOOC business model C – Proposed by AUTH**

Value Proposition	Provide free access to the “Programming for non-Programmers” (PfnP) self-paced MOOC (in Greek) and additionally offer the opportunity for interested learners to register for attaining a coding skill certificate for a small fee.
Partners	Initially AUTH will collaborate with technical partners for deploying the “PfnP” MOOC on a MOOC platform and for CA/LA components support and further development.

	All interested partners are welcome to participate provided that each partner's contribution adds further value to the final product and services.
Activities	"PfnP" MOOC material development and improvement; Certification material and process development and testing; Integration and support of CA and LA tools as a service of high quality and reliability; Disseminating and advertising the "PfnP" MOOC.
Resources	Academic and technical partners' MOOC platforms and technical, research and administrative teams.
Cost Structure	Optional paid fee for skills certification. Share among partners to be defined at a later stage.
Customer Relationships	Increase user participation in MOOCs through improved user experience (more socially interactive and CA/LA mediated). Respectively expected increased participation in certification procedures.
Customer Strategy	Positioning AUTH and partners as leading players in innovation in MOOCs. Leading the way in research on the impact of conversational agents as learning assistants in MOOCs.
Customer Segments	B2C: MOOC users interested also in obtaining skills certificate. B2B: new partners and paying corporates who see added value in embedding CA/LA products and services in their online learning environments.
Channels	All engaged partners platforms and communication channels/social media etc.
Revenue Streams	Number of users paying for skills certification.

### 3.2.6 Business Model D – Proposed by CERTH

CERTH is planning to exploit the CA and LA components as standalone applications, through the CERTH's spin off INFALIA.

More analytically:

**Table 5: colMOOC business model D – Proposed by CERTH**

Value Proposition	CA & LA as standalone components
Partners	MOOCs and LMS companies
Activities	Integrate the CA and LA components in external platforms or used stand alone application.
Resources	CERTH and AUTH teams
Cost Structure	Appropriate fee for the usage of the CA and LA tools as a service
Customer Relationships	Clear value of the sustainability of the solution

Customer Strategy	Positioning CERTH and the spin off INFALIA as a leading technological and innovation partner in Europe
Customer Segments	B2B – mainly corporations and organizations.
Channels	Client events, MOOC newsletter, CERTH network
Revenue Streams	Increase number of users paying for the usage of the components.

## **4 Sustainability**

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Sustainability is a key part of the colMOOC project and relevant supportive actions are embedded in the project activities, along with the commitment of the partners and the relevance of the project with their own strategies.

The long- term objectives described in the Grant Agreement underline that partnerships between the universities, the research groups, and the technology-providers will continue after the project through collaborations on MOOCs, bringing together practitioners, researchers and faculty staff and students, as part of a larger EU-wide network.

Additionally, MOOCs and software tools created during the project will remain available after the project has reached the end of the funding phase, where the value of the CA and LA tools will be demonstrable, measurable and package to the identified market audiences.

### **4.1 Networking**

The project will develop a Community of Practice platform, where all stakeholders from different sectors can communicate, exchange knowledge and expertise, provide success stories on colMOOC implementation, request learning resources, provide suggestions on tools / activities, extend the project's results after its lifetime etc. This way, the community will ensure sustainability of the results and long-term effect on the education and training field. These activities will be led by AUTH, due to its extensive network of stakeholders from multiple sectors and countries and its expertise on ICT.

In this way, the researchers will be able to maintain their collaborations with HEI and MOOC instructors to investigate further students' MOOC activities and analyze them to identify the impact of the learning analytics, collaborative learning, and personalize learning strategies. By analyzing the massive data obtained, these strategies will be further refined. The results of these activities will be reported in scientific, policy and practitioner forums, thus maintaining and extending the results of the colMOOC project.

## **5 Conclusions**

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It is clear to the Consortium that Massive Open Online Courses or MOOCs have now become a generally accepted approach to receiving online training. The scope and objectives of the colMOOC project fit harmoniously within this approach and offer a real, tangible solution to the problem of low completion rates which still plague the industry.

With 18 months of project experience with meetings, debates and presentations, project partners have been able to evaluate possible future scenarios whereby the anticipated outcomes of the project, may be used and exploited for financial or non-financial purposes. It is important to underline that the models which are being explored are conceptual and have varying degrees of institutional backing. Some partners are clearer than others on how to better exploit the model for their organization which several still analyzing or waiting for the next phase of the project whereby results can be more effectively measured and user feedback incorporated.

The consortium has highlighted the need for all partners to share possible exploitation models and ideas in order to ensure that there are no potential financial or IPR/licensing issues which may impact either the proposed partner model or the colMOOC project as a whole.

## **6 References**

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