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Glossary

MOOC Massive Open Online Course – any format of guided learning, accessed over the internet, usually with no payment or qualifications required to enrol and no particular cap on student numbers. MOOC content is often seen as Open Educational Resources. MOOCs are often seen as having one of two formats, xMOOCs and cMOOCs, but many MOOCs are a hybrid of the two formats.

iMOOC The first experimental iMOOC was launched on 25th April 2013 in the OpenupEd framework (<u>http://www.openuped.eu</u>), the first pan-European provision of open education. iMOOCs focus on individual responsibility, interaction, interpersonal relationships, innovation and inclusion. They are a synthesis between the connectivist approach of cMOOCs and the more structured one of xMOOCs, enabling bridging between non-formal learning opportunities and formal higher education. iMOOCs build upon the four main pillars of the University of Lisbon's pedagogical model: learner-centeredness, flexibility, interaction and digital inclusion. They are a combination of autonomous and self-directed learning with a strong social dimension. iMOOCs are also flexible, being timed to enable enables students to work at a pace that fits in with their daily lives

cMOOC or connectivist MOOCs, are based on many, if not all, of Siemens' (2005) connectivist learning principles which state that learning rests in diversity of opinions where up-to-date knowledge is the currency. Decision-making forms part of the learning process and more importantly, the choice of what to learn resides with the students.

cMOOCs pre-date xMOOCs and often have the format of collaborative tasks where groups of students learn together, teaching each other. Lessons can include brief introductory videos and even face-to-face meetings if students are in the same geographical area.

xMOOCs or extension MOOCs, typically take the format of a number of video lectures and related assignments, and were first popularised in 2011 when Stanford University acquired 70,000 online students for their free artificial intelligence course. xMOOCs, are characterised by high multimedia content and student-student interactions, but student-teacher interaction is low.

The aim of these MOOCs is to expand higher education beyond universities' physical campuses. As the raison d'être of many xMOOCs was initially as tasters to recruit fee-paying students, many resembled existing university courses with a statement of accomplishment being awarded to students who successfully completed the MOOC.

CAGR¹ stands for Compound Annual Growth Rate and it is the year-over-year growth rate of an investment over a specified period of time.

ECTS stands for European Credit Transfer and Accumulation System, which is a higher education standard for accreditation used by the countries member of the European Higher Education Area according the Bologna Accords from 1999.

LMS stands for Learning Management System, which are platforms used to create, support and manage different online learning activities.

¹ CAGR definition from http://www.investopedia.com/terms/c/cagr.asp

Executive Summary

The EMMA (European Multiple MOOC Aggregator) project is a 30-month pilot project, supported by the European Union, aiming at creating and establishing an online platform that supports institutions across the EU in offering MOOCs (Massive Online Open Courses). Its goals are to showcase excellence in innovative teaching methodologies and learning approaches through the largescale piloting of free, open, online courses in multiple languages from different European universities.

This document reports on the results of the market research conducted in Y1. It offers an initial view of the project's assets and the market structure, identifying the key players and possible competitors. The current Deliverable is a starting point for the rest of exploitation activities through the EMMA lifetime. Some of this report contents must be updated along the project's lifespan considering the evolution of the different EMMA exploitable assets identified during this year

Introductory chapters are divided in two parts: first part provides an overview of the most common key information, in terms of the market place, the market state, and the market environment that are typically required for obtaining sufficient knowledge level of the EMMA market. Meanwhile second part includes a description of the methodical process employed in order to analyse the EMMA target market facilitated by examining and collecting data about the aforementioned market information. The findings of this analysis set the bases to determine a marketing strategy to enter the market that had been previously examined.

As result of the analysis a clear description of the EMMA target market, Lifelong Education market, specifically based on online Higher Education supported by MOOCs, is provided. Through the document we refer to it as EMMA market or MOOC market.

The analysis helps us to determine that EMMA target market is a healthy market with profitability potential and with a clear definition of its primary and secondary target markets. MOOCs' primary target market has an audience composed of two main types of stakeholders: first, higher education students and lifelong learners and second, educational, cultural institutions, and SMEs, corporations providing learning opportunities to the first type. A segmentation of this primary market is proposed to help EMMA consortium to establishing proper mappings between the requirements of the different customer segments' profiles and the facilities offered by EMMA solutions that could satisfy those requirements. In addition, an analysis of the current status of the business made by existing MOOC providers, considered as more relevant competitors, helps us to detect existing barriers and potential opportunities for EMMA to enter the market. Amongst the opportunities, we identified 11 possible means to generate revenues with different forms for establishing key partnerships and 5 different business models. This information will serve as reference for the definition of EMMA business models, which will also consider the peculiarities of European higher education realities, as this is regional market to be initially targeted by EMMA.

The definition of EMMA business models and scenarios based the Business Model canvas methodology, requires a full the asset description and their added value for the set of market segments to be targeted; specification of channels to reach such segments as well as the definition of revenue streams and key partnerships. During this year, we made an identification of set of 12 EMMA potential exploitable assets, which can be grouped in the following sub-sets: EMMA platform components, Methodological approaches and MOOCs. Given the current status of the project as identified assets are not fully developed or are being tested in the pilots, we could not

complete their full description, quality and qualitative assessments. Therefore, we postponed the full definition of exploitation scenarios for next year and we focused on the preparation of the initial version of the SWOT analysis for a global scenario of exploitation and use of EMMA exploitable assets by the consortium as a whole; the outline of channels initially foreseen to reach and evaluate EMMA customer base satisfaction and the first version of the EMMA value proposition.

The SWOT analyses determined two main EMMA strengths: First, its *uniqueness* in the provision of access to inclusive, cross-cultural and multi-disciplinary learning based on MOOCs, and in offering a holistic approach to support monitoring, improvement and enhancement of learning process. And second, its *big public outreach* thanks to the excellent work carried out to increase public awareness as to the existence and operation of EMMA and the learning opportunities it provides. Meanwhile, main weaknesses are the current limited aggregation facilities on EMMA platform and its limited support for several MOOC pedagogical designs. Main opportunities are related to the tremendous growth of interest on MOOCs by non-English native learners, which represents a good chance for ensuring a constant demand of EMMA translation and transcription services and those opportunities detected through the previously described analysis of main competitors.

The initial EMMA exploitation strategy, to be defined at beginning of Y2, will consider the use of current strengths to take advantage of EMMA described opportunities and will proactively address spotted threads by correcting on compensating the effects of existing weakness.

The EMMA value proposition is derived from EMMA goals to expand the concept of the MOOC, making it relevant and accessible to all learners around Europe. EMMA proposes values on innovation and capacities for hosting and full deployment of MOOCs based on a variety of instructional designs; good performance to facilitate the deployment of MOOCs in different language and cultural contexts; effective customization features and scalable capabilities to facilitate massive number of concurrent learners' interactions, linguistic inclusiveness and provision of a pan-European MOOC platform without language barriers. The results of the EMMA pilots will provide tangible evidences to confirm the validity of these values. Thus, the EMMA project still needs to convince its primary market stakeholders with the tangible results of its capacity to make MOOCs relevant and accessible to all learners around Europe.

There is still work to do towards a complete characterisation of the project results to be used in the commercial approach extending the current Value Proposition and conducting the Cost-Benefit Analysis and Cost-Effectiveness Analysis. The exploitation team will also work in the definition of the different Business and sustainability plans. A few additional action points have been identified for the exploitation work in Y2 and special attention will be dedicated to further analyse IPR issues detected in the initial definition of EMMA exploitable assets. The results of such study will determine under which license bundles of components can be released, what the alternatives are for those that cannot be directly released and which are the most suitable applicable clauses or the exceptions and limitation to consider when releasing MOOC under Creative Common licensing to ensure the exploitation of MOOCs in the different exploitation scenarios.

1 Introduction

The intention of MOOCs in general, and the EMMA project in particular, is to provide non-university learners the opportunity to acquire certain knowledge or competences, using learning contents and activities provided by experts in a specific field. EMMA would thus become a useful tool for self-study, resource discovery and professional development, especially for people who would otherwise be unable to access high-level training courses due to linguistic or financial reasons. EMMA aims to provide students with authoritative learning content, the quality of which is guaranteed by university professors and OER authoritative sources. Students can create their own "course books", which are a collection of the most interesting and relevant teaching units they have studied, and these can be shared with other users.

EMMA also includes a facility for automatic translation of content, including subtitling of videos. This facility in addition to EMMA's indexing, collection and sharing features provide an opportunity for students to compare experiences with people from within and outside of their own learning context and also contributes to help preserve Europe's rich cultural, educational and linguistic heritage and to promote real cross-cultural and multi-lingual learning.

Moreover, EMMA includes a learning analytics support that focuses on: a) real-time analytics through learning analytics dashboards for instructors and students; b) retrospective analysis of the digital traces in EMMA platform. First approach aims to support participants' learning activities, raising awareness of their progress and provide meaningful learning activities whereas the second approach is intended for more in-depth analysis of the MOOCs and overall EMMA evaluation.

As EMMA is a MOOC platform, then there is a need to pay attention to dropout and provide information to course designers on how to improve their course. However, EMMA intends to move beyond that and provide personalized feedback to individual learners.

EMMA exploitation refers initially to a group of products/services that will be made available under open source licenses or under a mixture of open source/proprietary licenses.

All participating partners share the goal to actually go as close to "product ready" work as possible, or as many of the project exploitable results as possible to ensure the sustainability of the EMMA concept with expectations to be launched to the market within a period of 6 up to 9 months after the end of the project. Therefore, a distributed approach is followed, according to which each product/service can be exploited independently by one partner (or a small group of partners) or as a set of EMMA products and services to be exploited by all owners (all partners). In this way, multiple services/products derived from EMMA can co-exist in the market under specific licenses and exploitation strategies.

It is important to note the fact that almost all software deliverables produced by the project are made available as open source; it does not mean that the companies involved in the project do not have specific business and exploitation plans related to such open source products.

Of course, it is expected that integrators and other companies within the Consortium, as well as outside, will integrate single services and products in personalized and modular solutions, covering individual user needs and preferences. Therefore, **naturally**, **in the context of the EMMA open source and open architecture outcomes exploitation refers to both exploitation by the project partners**, as well as exploitation of the project's results by 3rd parties.

In the next year emphasis will be given on preparing individual exploitation and sustainability plans and trying to synthesize them into a common **Exploitation Agreement**. Such an agreement will cover the marketable project results of the first 2 years. However, a complete draft of such an agreement (encompassing all marketable project results) is only expected towards the project completion.

Initial exploitation plans will be defined according to a set a business scenarios and adapted according to actual developments, as well as market, business and cost effectiveness data and the feedback from the evaluation tests and pilots/demonstrations.

EMMA's common exploitation vision is based on exploitation of achievements as independent items resulting from each of WP2 through WP5 work, and belonging to a common, open, easily expandable and flexible architectural family, rather than as a rigid and integrated system. In particular, it will be considered the relation to WP3, WP5, in which results are explicit and presented to the users during the pilots.

The objectives of this Market research are to:

- Understand the EMMA market situation analysing information from and about the market (e.g. about consumers, competitors, etc.) in order to increase the chances of entering its target market right. The results of this analysis will serve as guide for the definition of EMMA business models according to the identified business opportunities, technology trends based on methodologies which allow a continuous market and technology watch.
- 2. Identify main key players and potential clients and collaborators.
- 3. Identify competitors and compare their technologies and revenue streams.
- 4. Identify the exploitation potential of EMMA to ensure its sustainability.
- 5. Definition of first version of EMMA value proposition, which will be updated according the actual maturity status of the different EMMA exploitable assets during Y2 when the definition of exploitation and sustainability plans will be carried out.

In order to achieve these objectives, two different activities have been developed:

- (1) Market, Technology Watch, including the methodology to gather, process and analyse the information and future monitoring.
- (2) EMMA Market and SWOT analysis and Initial definition of EMMA value proposition including the methodology to perform such studies and their further updates.

This document reports on the result of the above described activities and it is structured as follows:

Chapter 2 is dedicated to present the scientific foundations for the Market research conducted during Y1. This analysis aimed at analysing the information from the state of EMMA target market and about the current EMMA market environment in order to increase the chances of entering the market. A description of how the Kipling method (5W1H- What, Where, Who, Why, When, How) sets the methodological framework followed to conduct this market research is presented. As well as details about how the process of gathering information was done according to a methodical process defined in European Commission's working document on market and sector monitoring. Moreover, the chapter presents an introduction of the Business Model Canvas and Analysis of Strengths, Weakness, Opportunities and Threats (SWOT) methodologies used to determine the exploitable assets of the project, the potential market, exploitation scenarios and the ways to reach such market.

Chapter 3 provides a description of the EMMA market in terms of its primary and secondary markets, its size, consumer markets and potential segments. Market main players as competitors

and their revenue streams are detailed analysed in order to determine the existing business models and which type of entities are interested in partnering with MOOC providers under those business models. The outcomes of the analysis described in this chapter provide EMMA with valuable information for the definition of a suitable and sustainable business model.

Chapter 4 is dedicated to the SWOT Analysis and firstly focuses on the initial identification and analysis of EMMA potential exploitable results. And secondly, on the assessment of the current EMMA potential for exploitation taking into account that identified exploitable results are either under development or being tested in the pilots.

Chapter 5 presents an overview of the set of channels initially foreseen to reach and evaluate EMMA customer base satisfaction.

Chapter 6 presents a preliminary version of EMMA Value proposition, which takes into account the potential value offered by EMMA solutions to the set of challenges defined in the EMMA D3.2.Pilot-operation plan.

And last, Chapter 7 provides some conclusive remarks about the outcomes of market research activities carried out in WP7 during the first year of EMMA project. And it also describes the following actions to conduct during the next years for the elaboration of the exploitation and sustainability plans for EMMA.

2 Market Analysis foundations

Market analysis is a process that can be applied in any type of market where buyers and sellers are typically involved. But, what are the most common markets within the global economy? To address this question, it is necessary to first look at the following definitions [15]:

Economists define a market as 'a collection of buyers and sellers who transact a particular service or product or product or service class'.

Along the same lines, marketers often use the term market to describe 'various groupings of customers who buy their products or services'.

Building upon the above definitions, the marketing literature [2, 16, 31] further suggests that buyers or customers and sellers are fundamentally grouped into the following two key market types: a) consumer markets, and b) business markets.

In consumer markets, the consumers are individuals or households buying for their own needs and satisfaction [8]. As such, considering the nature of these buyers, the size of this market is significantly enormous. Subsequently, the consumer market is typically made up of companies that aim to address the diverse needs of their individual consumers by marketing products and services that range from Fast Moving Consumer Goods (FMCGs) – food and similar frequent purchases – to media, edutainment, travel and leisure, financial, technology, etc. [8]

Accordingly, within EMMA, the consumers are consisted of individuals or households that are instantiated by persons (no- higher education and higher education learners and lifelong learners) willing to acquire certain knowledge or competences, using MOOC learning contents and activities provided by experts in a specific field. The consumer market in the case of EMMA is similarly made

up industrial players (educational and cultural institutions, corporations; content and platform providers) that market products and services within the fields of Technology Enhanced Learning, and which aim at directly addressing the individual requirements of lifelong learning.

The term business, or business-to-business (B2B) or industrial market focuses on any market where the consumer is an organization i.e. a business [15, 8], as opposed to individuals or household consumers previously discussed. Specifically, within this context the aim is more turned at understanding business buying centres, and at how businesses purchase in different ways to consumers.

As compared to consumer markets where the size of such markets is quite vast, in business markets the number of 'players' may be numbered in only tens, and typically, a small sample of businesses could account for 75% of the market [8].

While the aim of consumer markets is to market products and services tailored to the needs of individuals or households, the products and services in business markets are for 'workplace' use within the business environment. For instance, education-related firms have long focused their products on business markets such as teachers, schools, educational institutions rather than on individual learners (consumers).

In this respect, within EMMA, the business market's consumers are composed of organizations or businesses that are instantiated by leading industry players in the field of Education and Technology Enhanced Learning products. As such, the business market in our particular case is made up of industry players that develop and focus their ICT and non-ICT products and services on other industry players doing business, for instance, within the consumer market (e.g. an Internet provider markets its products to SMEs operating within the consumer market), and which, therefore, aim at indirectly addressing the lifelong learners' needs.

Nevertheless, the twenty-first century is characterized by its globalization nature that has influenced both society and business. To this end, markets, whether consumer or business, are not confined to single countries, and they increasingly grow to also include in their activities non-profit consumers.

Non-profit, Voluntary and Government (NVG) Markets are characterized by non-profit organizations or associations, which they constitute -together with government agencies – the majority of these markets' consumers. There is no agreed definition for the non-profit markets, however, it is widely accepted that they do not operate mainly for financial gain, but rather, for some non-profit objective [15].

In generic terms, the VNG market is therefore made up of companies marketing their products and services to non-profit organizations such as churches, universities, or charities, to name just a few.

Accordingly, within EMMA, the NVG markets' consumers are composed of non-profit organizations and/or associations that play a major role to improving the quality of life in terms of educational opportunities. As such, the NVG market is made up of industry players that market their ICT and non-ICT products and services to NVG markets' consumers, such as cultural institutes/organizations, lifelong learning groups, forums, and relevant associations

For the purpose of this deliverable, the above types of markets will hereafter be referred to as 'market (s)', and their respective consumers as 'consumer (s)' or 'customer (s)'.

Nevertheless, regardless of the market to be entered, the emphasis has always been on first analysing a market for the identification and satisfaction of its consumer needs. In order to determine the EMMA consumers' needs, therefore, and to implement suitable strategies and plans for the purpose of satisfying those needs, a necessary market research requires to be performed.

Market research is defined as 'the systematic design, collection, analysis and reporting of data and findings relevant to a specific marketing situation facing the company' [15]. In particular, these data are typically in the form of information from and about the market (e.g. about consumers, competitors, etc.) that is considered necessary to obtain and analyse, in order to increase the chance of entering a target market right. Although there is a variation in the literature depending on the area of research, the most common and relative to EMMA of this information is summarized in Table 1 below, and discussed in the sections that follow.

State of EMMA Market		State of EMMA Market Environment		
Market Review	Size, segments, growth rate, trends, profitability, key success factors	Microenvironment	Consumers, suppliers, distributors, competitors	
Competition	Performance, image and personality, strategic objectives, culture, cost structure, strengths and weaknesses	Position in Market	Strengths, Weaknesses, Opportunities, Threats (SWOT Analysis)	

Table 1 – Market Information relative to EMMA

Information about the state of the EMMA target market could typically be described in terms of the current status of this market and the market competition.

2.1 Market Review

The review of the market is certainly one of the most fundamental steps and has mainly two primary objectives. Firstly, to determine the attractiveness of the target market (both now and the future), and secondly, to understand the dynamics of the market, so that opportunities and threats will be detected and appropriate strategies to address them will be accordingly implemented. Consequently, the market review will provide information about where the EMMA market presently stands, which will be collected by considering a thorough examination of the following dimensions [1]:

2.1.1 Market Size:

A basic characteristic of a market is the estimation of its size, which refers to the number of consumers (buyers) and businesses (sellers) in a particular market. Irrespective of the market to be analysed, therefore, it is crucial that we are aware of the current size of the EMMA target market. By doing so, the sales values and volumes of current products and services in the market could be calculated, which typically make up the total market size. In addition to current sales, however, the analysis should also consider the market's potential in terms of additional sales that could be

obtained if new consumers were attracted, new uses were found, or existing consumers were enticed to use the EMMA solutions more frequently.

Market Segments: Markets are not uniform by definition, and are subdivided according to the characteristics of their consumer base. Therefore, it is of great importance, in order to successfully market the EMMA solutions, that the various subdivisions or 'segments' that make up the target market are identified and evaluated. That is, instead of creating these segments, the task in this step is to identify them and to decide which one(s) to enter. Hence, a market segment is defined as 'a group of customers who share a similar set of needs and wants'. For instance, consumers from one geographic region may have different product interests than consumers from another. Considering the above example, in the marketing literature market segments may be identified on the bases of the variables [15] described in the following Table 2 and 3:

Geographic	Demographic	Psychographic	Behavioural
Nations	Age	Psychological traits	Purchase occasions
States	Family size	Personality traits	Product benefits
Regions	Family life cycle	Lifestyle	User status (e.g. ex-user)
Counties	Gender	Values	Product usage rate
Cities	Income		Buyer-readiness stage
Neighbourhoods	Occupation		Loyalty status
	Education		Purchase attitude
	Religion		
	Race		
	Generation		
	Nationality		
	Social class		

Table 2– Variables for Segmenting Consumer Markets

Demographic	Operating	Purchasing	Situational	Personal
Industry	Technology to	Purchasing	Lingonov	Buyer-seller
muustry	focus on	organization	orgency	similarity
Company size	User status	Power structure	Specific application of product	Attitude towards risk
Location	Customer Capabilities/needs	Nature of existing relationship	Size of order	Loyalty
		General purchasing		
		policies		
		Purchasing criteria		

Table 3- Variables for Segmenting Business Markets

Although the above variables constitute guidelines for only segmenting any market within the consumer and business market contexts, in practice they could be applied to a variety of markets, including the global and non-profit markets previously discussed. However, for the purpose of EMMA, it has to be made sure that from the above range of variables only the relevant to the project context need to be employed and used while performing the market analysis.

Once the segments have been identified, the focus should be turned on a particular target segment and the analysis should be performed to determine which of its areas account for the greatest share of the market's growth and are more susceptible to change. This information, in turn, helps to identify the most promising opportunities within the overall market and guides the choice of specific marketing decisions.

2.1.2 Growth Rate

In the general marketing practice, growth rate refers to the growth trend and the product life-cycle stage of the market and its segments. It is estimated by examining the increase in sales for a product (MOOCs, educational products provision and associated services in the case of EMMA), typically on an annual base. Within EMMA therefore, if the analysis demonstrates that such an increase exists, then this is considered as an indicator of a healthy market, and the promotion of the EMMA solutions in this market would have more chances of succeeding.

2.1.3 Market Trends

A market trend is characterized as the general movement and changes that occur in a market. Such changes are considered as an important source of information, as they often are indicators of new opportunities and threats. For instance, a market trend nowadays is the consumer shift towards the purchase of mobile applications.

When performing the market trends analysis within EMMA, it is expected that for new markets there might not be much information available considering the novelty of the MOOC phenomenon. However, this is not always the case, as most markets normally already have many market players that have been doing business in them, and as such, they constitute one of the best sources of information for the movement in a market.

2.1.4 Market Profitability

The profitability of the EMMA solutions in a market could be determined by the average profit potential for this market. Michael Porter [29] devised five forces based on which the attractiveness of any market could be evaluated and its profitability could be influenced, namely:

- The number and vigour of existing competitors;
- The threat of substitute products;
- The profit impact of powerful suppliers;
- The power of customers to force price concessions;
- Barriers to entry the market

Addressing all the aforementioned five forces, therefore, could provide valuable insights about the profitability potential of a target market for the EMMA solutions.

2.1.5 Key Success Factors

The last point to consider is the importance of identifying key success factors that the EMMA solutions should have for succeeding in a market. A key success factor is any type of competitive asset that is needed in order to prevail within a market. An example could be the quality of service as in the luxury hotel business, where key success factors could be characteristics that contribute to good image and reputation [1].

2.1.6 Assessing the Competition

Looking at a market for competitor information is another important step in determining how to most successfully enter the market. It is a fact that in any market, new competitors are always appearing. As such, the efficient search for information about EMMA competitors should be an ongoing activity, and it should aim at identifying information about their names and types, their products and services, as well as at finding more particular information about those that share the same characteristics (e.g. size and resources), strengths (e.g. brand name) and strategies (e.g. high quality) [8] with the EMMA solutions.

Specifically, it is important to collect information with regards to the following competitor characteristics [1]:

- Performance: What are the competitor's sales, sales growth, and profitability?
- Image and personality: How is the competitor positioned and perceived within the market?
- Strategic objectives: Is the competitor's aim to increase sales growth?
- Culture: What values are most important within the competitor business e.g. the customer, cost control?
- Cost structure: Does the competitor have a cost advantage?
- Strengths and weaknesses: Is the brand name or the distribution of the competitors' product a strength or a weakness?

In any case, information gathered for the competition could reveal both threats and opportunities for the EMMA solutions. For instance, if a market is found to have a sufficiently big number of competitors then the entry could be avoided in order not to suffer any costly loses. On the other hand, however, it could be considered entering another market segment where the competition is not that fierce, therefore chances of success are bigger.

Dealing with threats and opportunities that might arise is a determining factor in the success of the EMMA solutions, and is typically addressed by a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis of their state (see subsection 2.2.2).

2.2 The State of EMMA Market Environment

In addition to information about the state of the EMMA target market, it is also of considerable importance to collect information about the market environment into which EMMA exists, and to further assess the position of the EMMA solutions within this environment in satisfying the consumer needs and requirements.

2.2.1 Information about the EMMA Microenvironment

The microenvironment typically consists of stakeholder groups that immediately engage with the EMMA solutions. Stakeholders could be considered groups who will be affected by an endeavour and can influence it, but who are not directly involved with doing the work. Getting insights about them, therefore, could affect the overall success of the EMMA solutions. These stakeholder groups are made up of the consumers, the suppliers, the distributors, and the competitors [15, 6].

Consumers: Gathering information about consumers is obviously the way to penetrate a market and subsequently increase the number of sales. In the attempt to be successful in the target market, it is essential that consumer needs and requirements are constantly monitored, so as they could be subsequently met by the EMMA solutions. In order to do so, the generic marketing practice mechanisms such as loyalty cards, email lists, rewards, etc. are often used in the attempt to build a loyal relationship with consumers. Providing similar mechanisms within EMMA could significantly increase the chances of succeeding in the market.

Suppliers: Generally speaking, information about the suppliers can play a strategic role in providing high quality products. As such, issues such as who are the target market's suppliers and which of them could be used to reliably supply EMMA, if they can provide their products at a good price and in the volumes required, are some typical examples of information that often need to be collected.

Distributors: Distributors are the main means of getting the product to the consumers. For example, a supermarket or a pharmacy plays the role of the distributor in selling e.g. a shampoo. As such, the more information is collected for distributors, the better chances of successfully promoting the EMMA solutions to the target market (s). Special attention should be given to the role of the internet as a distributor, which nowadays could offer a significant competitive advantage.

Competitors: The degree of success of the EMMA solutions will depend on the degree of competition in the target market. Getting to know who the main competitors are, what type of products/services they offer, etc. can provide significant information about the most appropriate ways of entering a new market. More details about competition have been discussed in subsection 2.1.6.

The EMMA project DOW^2 gives an overview of the set of stakeholders to be targeted by EMMA final products and services. Accordingly, in the context of EMMA exploitation strategy, the microenvironment consists of the following two stakeholder groups:

Primary Stakeholders are those stakeholders that engage in economic transactions with the business (e.g. distributors, customers, suppliers). EMMA will address:

- Life-long learners (non-university or university learners willing acquire certain knowledge or competences, using learning contents and activities provided by experts in a specific field);
- Universities, research, cultural, other educational institutions, companies willing to improve their training;
- ICT based Educational content providers and MOOC providers (universities, industrial players and SMEs);
- National, local and regional authorities;

² EMMA DOW. Part B Target users and stakeholders, page 59

- Other service providers: hosting infrastructures, mobile services
- Policy makers.

Secondary Stakeholders are those stakeholders who, although they do not engage in direct economic exchange with the business, are affected by or can affect its actions (e.g. the general public, communities, activist groups, competitors, business support groups and the media). EMMA mainly addresses these two categories:

- Designers and developers of TEL infrastructure, applications and services;
- Professors, teaching facilitators, instructional designers, and Education Authorities, Head Teachers' committees, PTAs, teacher training groups, managers within human resources and professional development, community groups and leaders, youth and students organisations.

The aforementioned stakeholder groups play a variable and very important role within the EMMA context, since besides being the main addressees of the EMMA solutions; they can also be used as a source of significant information with regards to analysing the situation of a target market.

2.2.2 Assessing the EMMA Solutions Position in the Market

It is normal that changes in the socio-political macro-environment, as well as the existence of competition in the market could create both opportunities and threats for the EMMA solutions. Whether such changes are an opportunity or threat, however, depends on the current position of the EMMA solutions in the market i.e. the internal position. To address this concern, matching the internal position to the external environment (macro-environment) through a SWOT analysis could provide valuable insights [6].

SWOT analysis is a fundamental tool that is often used to assess a product's position within its competitive environment. It is typically used as an effective way to determine what the product's strengths (S) and weaknesses (W) (internal position) are at the present and compare these with opportunities (O) and threats (T) (external environment) in the market [6].

With respect to EMMA, strengths are the EMMA solutions' assets that could differentiate it from the competition. This could be anything from a strong brand name to well-trained workforce. On the other hand, weaknesses are all these assets that are considered as underdeveloped and EMMA needs to protect itself from them. Typical examples include asset with low level of maturity, limited resources or poor management [15].

Accordingly, opportunities could be areas of consumer need and interest that the EMMA solutions could satisfy by differentiating from the current market situation. Opportunities may include market trends or a change in demographics. On the contrary, threats are challenges in the market that could lead the EMMA solutions to fail, or to lower sales and profit. Such threats could be the competition or an unfavourable trend (e.g. changes in technology) [15].

Overall, to make sure that the position of the EMMA solutions is correctly assessed, their specific internal strengths and weaknesses must be identified, and then compared with the external opportunities and threats that could be identified analysing the competition.

2.3 Methodological approach

Gathering data on information about the EMMA target market could be relatively straightforward, especially if this information has already been identified. Broadly guided by the Kipling or 5W1H (What, Where, Who, Why, When, How) method [3]. Therefore, the discussion up to this point has provided valuable insights to define:

- what this information is;
- where it could be gathered from;
- who the main influenced stakeholders are, and;
- why we need it for the analysis of the market.

In a general context, 5W1H is a popular framework for analysing a problem's dimensions (What, Where, Who, Why, When) systematically, and it enables based on them to facilitate the solution to this problem (How) by proposing a feasible scenario [17]. With regards to EMMA, thus, and by building upon the aforementioned framework description, the remaining of the discussion sets out to accordingly provide an understanding of when data about the EMMA market information should be gathered and how these data can be systematically collected, by employing the methodical processes described in the sections that follow. Table 4 below demonstrates how the overall discussion of Section 2.1 maps to the Kipling method.

What	State of EMMA market, state of EMMA market environment
Where	Consumer, business, global, and NVG markets
Who	Lifelong learners, MOOC providers, ICT providers, etc.
Why	To identify most suitable market for EMMA solutions
When	Market research objectives have first been identified and set
How	By following step by step methodical processes

Table 4– Mapping of 5W1H to section 2.1.

2.3.1 Information gathering

A methodology to continuously monitor the fields of interest has been designed. The entire steps to perform the searches are explained in detail below. This methodology could be modified or extended according to detected/required needs.

A monthly search in the selected sources was carried out from March till January, 2015. The gathered data was processed and analysed. This data was used to feed both market research and EMMA SWOT analysis, and at the same time, was enriched by the feedback of researchers and business developers.

Information to search		
Commercial	Potential clients and competitors. Potential Market.	
Technological	State of the Art, competitors, potential alliances, ideas, etc.	
Environmental	Standards, regulation, ethic issues, fund raising, etc.	

Sources				
Information sources	Aim			
Publication Data Base: SCOPUS,	To know Research and Innovation trer	nds, both to guide the		
Google Scholar, NMC ³	developments and to identify potentia	al collaborators and competitors		
	ightarrow SWOT and Market analysis			
Market Analysis: Gartner,	To know market trends, opportunities	, and needs to facilitate the		
Competitors sites	transformation of research outcomes into commercial products $ ightarrow$			
	Market analysis			
Environmental: European	Fulfilment of the regulatory requireme	ents is essential for the future		
Commission.	commercialisation of the potential products. $ ightarrow$ SWOT and Market			
	analysis.			
Other: CORDIS, Google, DBs,	In order to be really up to date, monitoring more informal sources that			
MOOC related workshops and	allow foreseeing and supporting whether other information sources is			
conferences, etc.	needed> Market analysis			
Potential key words ⁴				
MOOC*	Demographics of MOOC registrants	MOOC providers business		
Massive Courses	MOOC providers	models		
MOOCs Market Analysis	MOOC Revenue streams	MOOC and Learning Analytics		
		MOOC design		

Table 5 – Technology Watch Methodology

After checking several combinations in the chosen sources, a set of equations has been established for the Market and Technology Watch, looking for a balance between the capacity to analyse /process the information, and the need to be rigorous in the covered information. Future modification could be performed according to identified needs.

Source	Equations	Hits
SCOPUS	title:"MOOC"	800
	title:" MOOC and Learning Analytics ->Journal Sources	12
	title:"MOOC" (design+software *) → <u>Journal Sources</u>	15
Google	MOOC [2013-2015]	1200
Scholar	MOOC [AND] "Learning Analytics" [2013-2015]	889
	"MOOCs Market analysis"	0
	MOOC [AND] " Revenue streams"	116
	"MOOC design"	191
Gartner	моос	4
NMC	моос	105
	MOOC and Learning Analytics	100
Google	"MOOCs Market analysis"	36000
	"MOOC providers"	27100
	MOOC [AND] " Revenue streams"	71900
	"MOOC Revenue streams"	3
	MOOC [AND] " business models"	13000
Cordis	МООС	2

Table 6 – Market and Technology Watch: Search Equations

 $^{^3}$ New Media Consortium (NMC) http://horizon.wiki.nmc.org 4 Key words such as they have been use in the research equations

Entering and operating within the EMMA target market (s) should not be the end of the market analysis. On the contrary, further actions to be taken should include the continuous and systematic monitoring of this market, which in the medium-term is expected to improve the already acquired by the data gathering process knowledge and know-how with regards to the situation of this market, as well as to provide the capabilities to target better and more well-suited segments or even markets.

In practice, the review of the relevant literature has shown that there is not a uniform market monitoring method that could be appropriate and suitable to all possible situations. As a result, the necessary monitoring of the EMMA market will be performed in two basic stages: in the first stage, the monitoring will take place based on gaining knowledge about the market, by utilizing the data gathering process described in the previous section. As such, the purpose of the data gathering process is twofold; initially to gather primary data about the EMMA target market information, and secondly, to contribute to the EMMA market monitoring by providing the means to collect additional data that could be used within the second stage of the monitoring.

Accordingly, the second stage builds upon the data gathered during the above first stage, by adapting to the EMMA needs the methodical process defined in the European Commission's working document on market and sector monitoring [4]. As such, in accordance to [4], the EMMA market monitoring consists of the two steps described next:

The first step is to perform a horizontal monitoring –based on the data acquired during the first stage –that will identify the segments of the market or even the whole market (s) that offer the most significant potential and benefits from entering them. The horizontal monitoring approach helps to identify the segments or markets that are, for instance, economically important or those that provide signs of 'malfunctioning' with respect to EMMA solutions.

In the second step the above identified segments or markets should be examined in more detail, for the purpose of identifying the most important reasons of the malfunctioning, and for accordingly defining the most appropriate approaches to address it or even for identifying more suitable alternatives.

With the above second step, the discussion about the EMMA market data gathering and monitoring methodology is concluded. Next section presents the rest of methodologies followed by EMMA to conduct the analysis of EMMA exploitable assets and the potential market for EMMA.

2.3.2 Market and Business Scenarios Methodology

The EMMA consortium is applying two other methodologies to determine the exploitable assets of the project, the potential market, and the ways to reach that market. These are 1) the **Business Model Canvas**, 2) the Analysis of Strengths, Weaknesses, Opportunities and Threats (**SWOT analysis**) methodologies. They are described in the coming sections in order to give a view of the used tools and how they are applied to EMMA.

The procedure will be iterative along the project life time. Thereby, according to the SWOT analysis of each asset, the technology watch, and the evolution of the project developments, the Business and Market Scenarios will be defined and further refined.

The implementation of these methodologies is based on ATOS' previous experiences in building and analysing business approaches and models. Mainly, for the Business Model Canvas, there are parallel steps to be taken in order to fully understand the potential of the exploitable results and business scenarios. The way these steps are being taken and will be executed in the coming two

years is also reflected in this document serving as a guide for future efforts. The use in parallel of these two tools is necessary to cover and complement the whole process of business model creation.

At the end of this first year of the project, we are in the position of continue a full collaborative work with the rest of EMMA partners that will help us to produce at the end of the project lifetime, a complete and exhaustive description of the business scenarios, as well as a complete business model for the produced and exploitable results. As this is a dynamic procedure, it will produce important changes in the results from one version of the business model to the following one. It is important that these changes are produced and adapted to the final outcome to reflect the final picture of the project.

2.3.2.1 Business Model Canvas

The Business Model Canvas⁵ is an intuitive methodology to design Business and Market Scenarios. The Business Model Canvas is a relative recent methodology (2004 - 2014) that graphically supports the building of business models by enabling the use of a poster or canvas where all the aspects that should be taken into account are reflected.

The practical application for complex projects involving at the same time (as it is our case) on-going development, requires different iterations and the completion of the model by parts. This allows the exploitation team to complete the different parts by prioritizing them over the time line.

This methodology is nowadays used fully (or parts of it) for businesses in different areas around the world. Of course, as other methodologies, it has also received criticisms mainly based on the lack of final concrete money flow and also on its implications and integration with other on-going business and business strategy within the same corporation. However, the methodology is used as starting point and complemented with other tools to overcome its potential weaknesses.

The advantage of this methodology is that it does not require previous knowledge in Business Models and the experts in the offered solution (the consortium) can actively participate. Another advantage is that the use of this methodology facilitates the starting point for business building up even from scratch. This methodology makes all partners and individuals willing to participate actively in the business model creation, to have an easy tool for collaborative working.

This methodology divides the Business Model in blocks, translating the main business concepts in understanding language, without oversimplifying the complexity of how business model and market scenarios function. Here, we will use a simplified version of this methodology adapted to the open innovation paradigm characterising FP7/CIP collaborative projects. This first set of blocks will be complemented and refined as the project advances in time. Appendix I: Business Model Canvas template shows the template structure that will be used in EMMA.

2.3.2.1.1 Assets Description and Added Value: Value Proposition

Each asset is a product and/or a service that caters to a specific need. Some assets may be innovative. Others may be similar to existing market offers, but with added features and attributes. The project's assets will be described and classified according to their novelty and advantages.

The definition of these assets is a complex task that will result in the elaboration of a Value Proposition for the project. The Value Proposition⁶ itself integrates the whole set of products and

⁵ <u>http://businessmodelgeneration.com/book</u>

⁶ The 'Value Proposition' is equivalent to the 'Unique Selling Proposition'.

services that could be offered and that will differentiate somehow EMMA from other potential competitors.

The process for defining the assets is composed by the following steps. This procedure could be updated and replayed in any moment according the project outcomes or the market/technology analysis.

- 1. <u>Asset definition</u>: Preliminary definition of the potential exploitable result/service. Part of the activities in terms of exploitation during Y1 was aimed at collecting the first version of EMMA potential exploitable results (assets).
- 2. <u>Asset understanding. Qualitative Assessment</u>: Once the result/service is totally defined, it is required that the development team and the exploitation team work together in making sure that the definition of the asset is accurate (i.e. its functionality, its capacity, working environment, etc.). The first approach is done using structured interviews composed by a set of a priori defined questions, such as the following:

Q1	Description of the asset
Q2	How can this resource be used beyond the project?
Q3	Describe the innovation content of result
Q4	Who will be the potential customer?
Q5	What benefit will it bring to the customers?
Q6	What is the time to market (Month/year)?
Q7	When is the expected date of achievement in the project (Month/year)?
Q8	Restrictions to exploit the Asset
Q9	What are the costs to be incurred after the project and before exploitation?
Q10	Describe some potential routes to market
Q11	What is the approximate price range of this result/price of licences?
Q12	Who are the competitors for this result?
Q13	How fast and in what ways will the competition respond to this result?
Q14	Who are the partners interested in the result (partners, sponsors, etc)?
Q15	Have you protected or will you protect this result? How? When?

Table 7- Qualitative assessment: Questions for interviews

The final goal of this step is to have a clear understanding of all the relevant aspects involved in the exploitation of the results. This phase is vital because it is the pillar for the coming phases and later the value proposition definition. ATOS has designed a three-stage activity regarding these two first steps taking into consideration that many of the EMMA potential exploitable assets are not fully developed during Y1. First stage is related to gathering the initial asset information. Second one focus on refining the initial description considering those questions that can be answered considering the current status of assets development at the end of Y1 and part of Y2 considering that start of some of the pilots from WP3 were delayed to begin with those of WP5 and, the third one will focus on the rest of questions that can answered after the results of EMMA pilots will be analysed.

For the first stage ATOS designed an Exploitable asset questionnaire with the intention of gathering the initial asset information. It includes questions regarding the following: description in terms of what the result do and help to solve certain existing problem (Q1); potential application, existing alternatives, potential competitors (Q3). Advantages and benefits offered by the result (Q5+Q5). Initial assessment of expected date of achievement in the project and predicted time to market (Q5+Q6); IPR main features (Q8+Q15) as well as initial estimation of development costs (Q9) and desired collaborations with other partners (Q14). Appendix II includes all details about the questionnaire and the information provided by the partners during the first stage in Y1. The first version of EMMA assets' descriptions and their initial analysis is presented in Chapter 4.

For the second stage ATOS designed another questionnaire⁷ aiming at refining the assets' initial descriptions and trying to cover the set of proposed questions considering the maturity level of those assets at the end of Y1 and part of Y2. Questions include a newer assessment of expected date of achievement in the project and predicted time to market (Q5+Q6); IPR main features (Q8+Q15) as well as refinement of the initial estimation of development costs (Q9). And further description of potential clients (Q4) and external competitors and their capacity to respond to the emergence of the assets (Q12+Q13).

For the third stage, EMMA consortium will use the same questionnaire used in second stage but new questions regarding routes to commercialization (Q10), approximate price (Q11) will be included.

3. <u>Quantitative Assessment</u>: Using all the results coming out from the previous step, it is necessary to establish a ranking with prioritised results. It is highly possible that not all the results are in the same phase of maturity with respect to the market. It is then required to have a classification with all the assets to select those that are more advanced and integrate them in the value proposition. In order to build up that classification, it is necessary to have numerical values that can quantify the different aspects. A set of parameters that will be measured are the following (this may vary depending on the results obtained from the previous step):

Ownership		
Dependency	Requires use of IP(Intellectual Property) owned outside of the Project	
Influence	Co-Inventors exist outside the Project	
Funding	Multiple Industries/funding sources interested in the development	
Maintenance	Number of partners involved	
Stage of Development		
Understanding	Ability to understand the result/asset	
Experimentation	Simulation/Experimentation has been done	
Prototypes	The technology demonstration has(select from associated	

⁷ The second questionnaire about EMMA exploitable assets and partners' inputs is available at https://docs.google.com/spreadsheets/d/116tvDru3r6781pa0iwykZUz qj0RLk5kgvSLey9fTtA/edit?usp=sharing

	values)
Production	Amount of scale up needed
Financial	Investment needed for further development if required
	Investment needed for use
Leadership	Has an internal champion that is(select from associated values)
Protoctability	
Challenge	Are you willing to protect your results?
Strength	Ability to work around
Enforcement	Infringement detection
Reach	Geographical protection
Timing	Publications exist or are planned
Security	Ability to exclude others from practicing
Commercialization Potenti	al
Knowledge	Ability to identify market need
Breadth	Potential market size for the specific result
Industry Contacts	Availability of market contacts
Industry Feedback	Feedback from industry contacts
Market Location	Predominate use of technology within EU
Market Place Competition	Ability to compete in the market place
Time to Market	Amount of time before becoming ready for market
Regulations	Amount of regulations governing the technology
Significance	Improvement to the state of the art
Licensing Barriers	Partners are familiar with technology licensing procedures
Timeliness	Amount of time remaining to market/license this technology

Table 8- Parameters for Quantitative Assessment

The result of this step will be a complete classification of the outcomes that will allow EMMA consortium to select the most relevant information and with the higher potential to be included in the final version of its Value Proposition.

The value proposition is defined through mappings between the customer segment profiles and the value offered by EMMA set of assets. The profiles are described in terms of customer jobs composed of a set of tasks and goals, pains or difficulties and gains. Meanwhile the offered value is described in terms of pain relievers and gain creators considering the asset novelty or newness, performance, customization capabilities o potential to have the job done, asset design, brand or status, product prices and cost reductions; accessibility support and usability or convenience [28].

2.3.2.1.2 Market Segment: Customers, Competitors

The market segment building block defines the different groups of people or organisations and enterprises that the product/service aims to reach and serve. Once the customer segments are defined (it could be one or several), the business model should be carefully designed around a strong understanding of their needs. The work to be done under this building block is to identify the customers and define strategies for retaining them as well as to increase their expenditure in the proposed business. Also in this activity is important to define the most suitable ways of keeping satisfied customers and as well as new strategies to increase the business volume with them.

Other important aspects that should be taken into account are the competitors. Competitors are part of the business environment and should be considered as relevant actors for the final success; especially knowing how they approach the same customer segment. Although this aspect is not directly reflected in the Canvas, it should be taken carefully into account, thus requiring a special analysis.

2.3.2.1.3 Key Partnerships

This block will describe the needed partnerships (within or outside the consortium) to optimise the business models and reduce risks, as well as the possible joint ownership agreement required for making the partnerships work.

Key partnerships should be also identified in an early stage, although it can be seen as part of a second phase. If the product/services (the Value Proposition) require a third party outside the consortium to be exploited, it is important to seek for the best ally in order to reach the market in a much more effective way. Another very important point that is directly linked to other activities within EMMA' exploitation is the need of establishing an Exploitation Agreement (or similar). There are two types of agreements that could be expected for the project exploitation: on the one hand, a general framework considering all the partners and the whole results and on the other hand, particular agreements signed for concrete exploitation activities or opportunities (mostly probable of a bi-lateral nature).

All identified Partnerships should be evaluated in order to make sure they are needed. The effort devoted to agreements is huge when many institutions come together; therefore, the preliminary analysis of what it is really required or not, is in fact an investment that should be done carefully.

2.3.2.1.4 Channels

This block describes how the assets will be evaluated to satisfy customers, how they will be reached, and if there would be any kind of post-purchase customer support (e.g. maintenance service). On the other hand, the consortium will also identify the most suitable ways to disseminate the features and goals of the assets (articles, conferences, trade fair, demonstration, etc.). It comprises communication, sales and distributions channels, including therefore all the roads to the different parts where information and products have to arrive. These roads connect customers with the Value Proposition and consequently with the final products.

Other building blocks will be completed in a second iteration being the cash and revenues flows (horizontal ones) the last to be defined and structured.

2.3.2.2 SWOT Analysis

EMMA outcomes consist of a broad variety of products and services. Starting from the definition of assets previously described, the second step is to assess the positioning of each product and service in its corresponding market. To carry out this evaluation, the consortium applies the SWOT analysis (The Analysis of Strengths, Weaknesses, Opportunities, and Threats)⁸.

SWOT is a commonly employed framework in the business world for analysing the factors that influence a product's competitive position in the marketplace with an eye to the future. Generally, a SWOT analysis serves to uncover the optimal match between the internal strengths and weaknesses of a given entity and the environmental trends (opportunities and threats) that the entity must face in the marketplace. Consequently the main elements to consider are:

- **Strength** can be viewed as a resource, a unique approach, or capacity that allows an entity to achieve its defined goals (e.g. EMMA Translation and transcription services supports individuals' study needs ensuring the linguistic inclusiveness and the integration of learners with certain deaf or hearing disabilities as part of the MOOC audiences).
- A **weakness** is a limitation, fault, or defect in the entity that impedes progress toward defined goals (e.g. the limited facilities of EMMA platform in terms of supporting different MOOC pedagogical designs hinder the deployment of a variety of MOOC that restrict the potential of EMMA to serve as Pan European MOOC platform).
- An opportunity pertains to internal or external forces in the entity's operating environment, such as a trend that increases demand for what the entity can provide or allows the entity to provide it more effectively (e.g. tremendous growth of interest on MOOCs by non-English native learners represents an opportunity for ensuring a constant demand of EMMA services).
- A threat can be any unfavourable situation in the entity's environment that impedes its strategy by presenting a barrier or constraint that limits achievement of goals (e.g. the raise of interest about MOOCs in Europe in the last year can lead to other MOOC platforms with faster capacities to react on the emergence of EMMA platform creating effective European MOOC Aggregators)

What has typically been found to be effective, based on SWOT input, is a strategy that takes advantage of the entity's **opportunities** by employing its **strengths** and by proactively addressing **threats** by correcting or compensating for **weaknesses**.

There is a number of contrasting, if not contradictory views on the origin of SWOT. While SWOT was often said to have originated from Stanford University 'Stakeholders Concept and SWOT Analysis', we will use a version particularly adapted to EU research projects with the characteristics such as exploitable results are early prototypes/no fully developed products under exposed to pilot experiences or that ownership and IPR (Intellectual Property Rights) might be shared among several participants. In EMMA we started this analysis using a questionnaire about exploitation prospects⁹ that all partners completed in M6. The idea of the questionnaire was to gather information about the potential strengths and weakness of the project. The SWOT analysis can be very subjective and

⁸ <u>http://en.wikipedia.org/wiki/SWOT_analysis</u>

⁹ Exploitation prospect questionnaire and partners inputs are available at <u>https://drive.google.com/folderview?id=0B7QazvTsNoQXY1hveTNiLWgwRmc&usp=drive_web</u>

different EMMA partners might not come-up with the same final version of SWOT for their individual exploitation plan. So the SWOT analysis is used more as a guide and not a prescription.

Since this analysis is done at the month 11 of the project (from total duration of 18 months), we should distinguish between where EMMA consortium (as a whole) and project results are today, and where they could be in the future. We will also try to avoid grey areas, especially for project results which are still not mature as their full development is expected in Y2. As the SWOT analysis takes into a consideration EMMA competition, we will have to update it when the second iteration of the assets definition will be completed in Y2.

3 EMMA Market

3.1 Target Market

A **target market** is a group of customers that the business has decided to aim its marketing efforts and ultimately its merchandise. The review of the market is certainly one of the most fundamental steps and has mainly two primary objectives. Firstly, to determine the attractiveness of the target market (both now and the future), and secondly, to understand the dynamics of the market, so that opportunities and threats will be detected and appropriate strategies to address them will be accordingly implemented.

EMMA as European Multiple MOOC Aggregator aims at contributing to the modernisation of education and training by the provision a set of novel pilot services that could showcase ICT-based innovation and excellence covering blended modes of informal/non-formal learning with links to workplace-based or self-paced lifelong learning. Thus, the potential target market for EMMA is **Lifelong Education market**, specifically based on online Higher Education supported by MOOCs. We will refer to this target market as "MOOC market" or "EMMA market" from this point onwards. Next sections give a better overview of the characteristics of this market to allow us to select the most appropriated strategies to position EMMA products and services in this market.

The initial analysis about EMMA main stakeholders described in section 2.2.1 served as starting point to determine the primary and secondary target markets for EMMA. Next sections present details about them.

3.1.1 Primary Target Market

A primary target market is the segment of a marketplace that a business believes will have the best chance for sales. Usually it is set up by those that engage in economic transactions with the business (e.g. distributors, customers, suppliers).

EMMA primary target market includes the following set of stakeholders:

- Life-long learners (non-university or university learners willing acquire certain knowledge or competences, using learning contents and activities provided by experts in a specific field);
- Universities, research, cultural, other educational institutions, companies willing to improve their training;
- ICT based Educational content providers and MOOC providers (universities, industrial players and SMEs);
- National, local and regional authorities;
- Other service providers: hosting infrastructures, mobile services

• Education related policy makers.

This set of stakeholders is considered for assessing the size of the market and defining different market segments in the following sections.

3.1.2 Secondary Target Market

Usually there is a secondary market that can increase the business revenue. Knowing how to promote secondary target markets can boost sales outside of the primary and expected customer base. This market is set up by those stakeholders who, although they do not engage in direct economic exchange with the business, are affected by or can affect its actions. EMMA mainly addresses these two categories:

- Designers and developers of TEL infrastructure, applications and services;
- Professors, teaching facilitators, instructional designers, and Education Authorities, Head Teachers' committees, PTAs, teacher training groups, managers within human resources and professional development, community groups and leaders, youth and students organisations.

This set of stakeholders will be initially included in the different EMMA assets business scenarios to assess how they can benefited and according to the results of such evaluations, they will be addressed through the EMMA main promotion and dissemination channels in order to raise awareness about such benefits.

3.2 Market size

As it was commented in section 2.1.1, a basic characteristic to examine in a market research is the estimation of market size, which refers to the number of consumers (buyers) and businesses (sellers) in that particular market. Such estimation considers the sales values and volumes of current products and services in the market. In addition, such estimation needs to take into account the market potential based on additional sales that could be obtained if new consumers were attracted, new users were found, or existing consumers were enticed to use EMMA solutions more frequently.

The NMC 2013 reports on HE preview [12, 13] predicted the MOOC's mainstream adoption in 1 year or less time (i.e. starting in 2014). Meanwhile Gartner studies of the same year [18] put them "On the rise of expectations" stage and foresaw they will reach the mainstream adoption in 2 years (i.e. starting in 2015). Those predictions had been accurate and nowadays we attend to boom of MOOCs as it shown from the data collected by the MOOC Watch¹⁰ during 2014 and presented in the next Figures.

¹⁰ MOOC Watch included in the MOOC report section of Class Central <u>https://www.class-central.com/report/</u>



*Figure 1: MOOCs in Figures during 2014*¹¹(*first part*)

As of June 2014 there were 296 universities and colleges around the world offering 1781 MOOC courses in 12 different languages with 13 million of registered users (learners) and only 40% of them were from developing countries in the case of Coursera. According to Learning Light, there were more than 500 MOOCs registered across Europe in April 2014, with Spain leading with 200¹². Furthermore there is a growing interest of venture capitalists in the MOOC movement and around \$181 million has being raised since April 2012 by the main four American MOOC providers (Coursera, EDx, Udacity and Udemy). Meanwhile in Europe, Iversity received more than 1 million Euros in funding at its initial launch and the company total funding reached over €5 million [30] at the end of 2014.



Figure 2: MOOCs in Figures during 2014 (second part)

Robert J. Hutter, Managing Partner of Learn Capital one of the venture capital firms with participations in Coursera and Udemy, commented in an interview for the Wall Street Journal about

¹¹ http://oclc.org/publications/nextspace/articles/issue23/moocsbythenumbershopeorhype.en.htm

¹² http://www.mindtools.com/blog/corporate/2014/11/21/moocs-money-marketing-and-mystery/

the world expenditure of \$4.6 trillion on education products and services during 2013¹³ And according to Research and Markets estimations, it is expected that the total Higher Education market will grow from \$43.06 billion in 2013 up to \$65.83 billion in 2019 at a CAGR of 7.5% during the forecast period [7].

The MOOC market is still new and the information sources consulted for this analysis did not provide exact data about the size of this market in terms of the sales values and volumes of current products and services in the market. The rationale behind this is that major players in the MOOC market keep such information confidential with the goal of maintaining their competitive advantage but the data previously analysed and especially the prediction of growth in the next years gives us an idea of the good health of this market. In next sections we will analyse some of the market major players aiming at getting a better knowledge about their services and revenue streams in order to find a possible niche in the target market for the EMMA set of products and services based on the exploitable assets which are described in Chapter 4.

3.3 Consumer Markets

In consumer markets, the consumers are *individuals* or *households* buying for their own needs and satisfaction. According to Josh Bersin, a frequent contributor of Forbes Magazine¹⁴, "There are more than 2 billion potential learners around the world in 2013, and more than 70% of these are unable to afford a college degree. Adding to this hot market for college, there are hundreds of millions of post-secondary students and professionals who will flock to branded degree courses in a huge way". And today having college degree can represent a competitive advantage considering that McKinsey Global Institute¹⁵, an authoritative entity in the job market, believes college-educated workers will have a three-fold advantage in salaries and opportunities by 2020. As the MOOC market and its certification services keep maturing these individuals will find online education more and more valuable every quarter.

As such, considering the nature of these potential buyers (learners), the size of the MOOC market is potentially enormous. In fact, for EMMA is interesting that consumer purchasing power within the EU is estimated to be slightly larger than in the United States, with Germany holding the first place with € 1687 billion, followed by France (€ 1234 billion) (see Figure 3).

¹³ <u>http://allthingsd.com/20131122/more-moolah-for-moocs-coursera-raises-another-20m/</u>

¹⁴<u>http://www.forbes.com/sites/joshbersin/2013/11/30/the-mooc-marketplace-takes-off/</u>

¹⁵http://www.mckinsey.com/insights/employment and growth/the world at work



Figure 3: European Purchasing Power density (Europe 2013/2014)¹⁶

But we also need to consider the current economical settings where Europe is still fighting to recover from one of the strongest economic crisis. In the previous Figure, we can also observe that many regions in Europe, especially southern countries have very low purchasing power density (yellow zones) due to the high rates of unemployment, especially in the population age segment between 15-24 years old as it is shown in Figure 4 with the red zones [5].



Figure 4: 2006 vs. 2013 youth unemployment rates in Europe [5]

¹⁶ "Purchasing Power Europe 2013 / 2014 Study", GfK GeoMarketing, 2014 <u>http://www.gfk.com/documents/press-releases/2013/20131104_pr_gfk-purchasing-power-europe-2013_fin.pdf</u>

Accordingly, within EMMA, the consumers consisted of individuals or households that are instantiated by persons (no- higher education and higher education learners and lifelong learners) willing to acquire certain knowledge, competences or certifications, using MOOC learning contents and activities provided by experts in a specific field. The consumer market in the case of EMMA is similarly made up industrial players (educational and cultural institutions, corporations; content and platform providers) that offer products and services within the MOOC market, and which aim at directly addressing the individual requirements of lifelong learning. Therefore business strategies for EMMA solutions need to make a clear differentiation of the purchasing capacity of their potential target consumer markets. That is why in the next section we focus on the first type of consumers (learners) and analyse which segments of that market could have some motivations to use EMMA solution and would have capacity to pay for them. Meanwhile section 3.4 is dedicated analyse the second type, those industrial players which can be EMMA competitors in the market, to learn how they are creating revenue streams probing their services are satisfying some of the first type of consumers' needs.

3.3.1 Market Segments

Markets are not uniform by definition, and are subdivided according to the characteristics of their consumer base. A market segment is defined as 'a group of customers who share a similar set of needs and wants'. Therefore, it is of paramount importance for the successful introduction of EMMA solutions in the MOOC market that various subdivisions or 'segments' that make up the target market are identified and will be used to evaluate the suitability of the EMMA solutions for their needs.

According to the Market analysis foundations from the range of variables described in Table 2Table 3, only the relevant to the EMMA context need to be employed and used while performing the market analysis.

In order to determine which variables and values will be used to define and analyse the potential EMMA primary market segments, we took in to consideration the statistics information made available to the public by the edX consortium about their learners that do not contain sensitive personal information. Such data is based on the <u>Reports [10]</u> generated by Harvard and MIT earlier in 2014 which provided some of the best analysis of what people do while enrolled in a MOOC. The data about age, gender, education level and geographical distribution is analysed below aimed at getting a better picture of the potential EMMA primary market segments. These data are related to all courses since the launch of edX platform till mid of 2014. In the case of MITx courses the data gathering time period ends in May meanwhile, the period HarvardX ends in October, 2014.



Figure 5: Age composition of edX registrants [21] [22]

Figure 5 presents the data of edX registrants in terms of age composition. Analysing this data we observed that edX registrants from HarvardX and MITx are mainly in the range of [21-30] years old with a median age of 27 in the case of MITx and 28 in the HarvardX. They represent more than 25% of the total number of registered students. And it is interesting to see that next positions go to the ranges of [31-45], [16-20] and [46-65] years old which might represent another important age segments of lifelong learner customers in addition to the first one to be targeted by EMMA solutions.



Figure 6: Education levels of edX registrants [23] [24]

Figure 6 presents the data about edX registrants' education level for all edX courses. We observed that bigger percentage of registrants for both institutions hold Bachelor, Master or Doctorate degrees. In the case of MITx such percentage reach the 66,8% meanwhile HarvardX percentage is 67,2%. This gives us an idea that EMMA has a strong competitor addressing this type of learners but maybe the courses offered by EMMA could cover different knowledge areas and could still attract this segment of learners. In addition, it is interesting to see from the data presented in the previous figure that courses offered by edX are not attracting learners with lower education level

like secondary and maybe EMMA could check the possibility of getting more attention from that segment of learners.



Figure 7: Gender composition edX registrants [27] [26]

Figure 7Figure 8 shows information about the gender composition of edX registrants for all courses. We observe big differences in terms of gender, the majority of registrants for MITx (73,6%) and HarvardX (64,2%) are male. The reason behind this big gap can be rooted in the type of topics covered by the MOOCs available in edX where the offer of STEM related courses is higher than Social Sciences, Arts & Culture related courses¹⁷. The same observation has been made in relation to the lower female enrolment rates in Coursera MOOCs¹⁸ This could be an interesting element to take into consideration for EMMA to gain the attention of the female population of the market segment making available more courses related to Social Sciences, Art& Culture.



¹⁷ Subjects covered by edX courses. <u>https://www.edx.org/course</u>

¹⁸ What about women? <u>https://tech.coursera.org/blog/2014/03/08/what-about-the-women /</u>

All MITx Offerings (All Time) Estimated Registration by Country as of May 6, 2014



Figure 8: World Map of Enrolment of *edX registrants*[26] [25]

Figure 8 presents the global reach and enrolment of edX courses. In the case of HarvardX, there are 2585316 registrants coming from 195 countries as of February 2015. Meanwhile in the case of MITX are 1131693 registered users distributed in 165 countries. The geographical regions and countries with higher percentages of enrolments for both providers are North America (US), Asia (India, China), Europe (UK, Spain, France), Latin America (Brazil) and Australia. Observing these data and taking into account that edX only offers courses in English, we can say that EMMA has a big potential to reach learners not only in the European continent but also in Latin America, Asia and Africa since it offers a hosting platform and courses in multiple languages (i.e. Spanish, French, Italian, Estonian, Dutch, and English).

The information analysed in this section provide us with interesting inputs in addition to data gathered by of WP4 using EMMA platform registration and tracking facilities¹⁹ for refining the outline of the EMMA solutions' market segments. And also will be used as reference in the process of defining business strategies aimed at maximize the benefits offered to different EMMA solutions' market segments.

3.4 Main Players: competitors and their revenue streams

One of the goals of this market analysis is to assess competitors' information in order to determine which will be the best ways to successfully enter the market. Nowadays there are many organizations focusing on the MOOC Market but we made a selection of what we consider the main players in this market based on three criteria: their geographical location, the number of enrolments and their revenues during last year. In that list we included from North America: Coursera, edX, Udacity, Udamy; and from Europe: FutureLearn, MiriadaX and Iversity.

In the next sections we analyse their target audience, main business strengths and weaknesses, how they are positioned and perceived in the market and more importantly which are their revenue streams.

¹⁹ Initial demographic data about EMMA registrants is included in the Deliverable D4.3 Data and Impact Analysis Report
3.4.1 Coursera

Courserazo is a for-profit educational technology company, which started in 2012 with \$22 million total investment from venture capitalists, including New Enterprise Associates and Kleiner, Perkins, Caufield & Byers Education. Initially in 2012 it had four university partners, namely Stanford University, Princeton University and the Universities of Michigan and Pennsylvania but at the time of writing this report it has more than 114 institutions as partners.

The main target audience of Coursera are students willing to learn and connect with real work issues. Offered courses cover a variety of areas, including Humanities, Medicine, Biology, Social Sciences, Mathematics, Business, and Computer Science. As of October 2014, Coursera had 10 million learners enrolled in 839 courses. Coursera courses are available in one of the following languages: English, Chinese, French, Russian, Spanish, Portuguese, Turkish, German, Ukranian, Arabic and Italian [9].

During 2014 Coursera used the following ways to generate revenues [9]:

- verified certification fees
- ACE credits (credits recognized by the American Council for Education)
- introducing students to potential employers and recruiters (with student consent)
- tutoring, sponsorships and tuition fees

The verified certification fees started in 2012 using the Signature Track credential which is the mean used to uniquely connect learner identity to his coursework. Recently Coursera started a new form of the "Pay as you go" modality, called Specialization Certificate program to continue this form of revenue stream.

A Specialization Certificate program features two or more MOOCs grouped around a specific topic, described as a "targeted sequence of courses" plus a final project (Capstone project). Once the leaner completes his signature track credential for each courses of the sequence, he can ask for the Completion Verified Certificate. The structure of how the cost for a Certificate program is presented Figure 9 .The cost for Certificate program depends upon number of MOOC in the sequence, each MOOC is \$49 (the cost of a Signature Track credential) and \$49 for a capstone project.

Coursera offered 25 programs of Specialization during 2014. To get an idea of the impact of this type of revenue stream, we can look at John Hopkins University, which recently shared details about their Data Science Specialization²¹ consisting of nine courses and a capstone project. In the five months since the Specialization started, 14,000 people completed at least one course with a verified certificate (each cost \$49) while 266 students completed all 9 classes. These figures, do not consider for any financial aid given, amount to about \$1 million in verified certificates. It may be that some of these would have been sold even without the larger specialization, but it is safe to assume that the Specializations may be a big factor in driving sales of verified certificates. Given that Coursera's largest source of revenues is verified certificates, and with the current revenue rate of \$1M per month, it was estimated that Coursera could make \$8-12 million in revenues in 2014.

Pay as you go

You're in control. Pay for each course when you start it. If you don't pass a course, you'll get a second chance free. $\$49 \times 3 + \$49 = \$$

Specialization Certificate

²⁰ Coursera: https://www.coursera.org/

²¹ https://www.edsurge.com/n/2014-10-15-how-does-coursera-make-money

Figure 9: Coursera Specialisation Certificate costs

Other ways to generate revenue like introducing students to potential employers and recruiters has not been very successful and almost no data is available to further analyse its impact. In the case of tutoring, the idea is that some partner universities offer credit for their Coursera classes to those who willing to pay a fee to have some extra assignments and work with an instructor and be assessed. This option seems to be quite feasible and some of the universities like Universitat Autonoma de Barcelona offers the possibility of obtaining the Completion Verified Certificate and start the process of assessing the acquired skills to opt for credits recognized by the university²²

Another of the Coursera strengths is its partnerships. It is clear that partnership with top universities is a key element that benefits both ends and to ensure an offering of courses with authoritative quality contents. Coursera also has established a solid form of partnership with top corporations through capstone projects, provision of employee trainings and course sponsorships.

According to Coursera CEO Rick Levin interview for the Washington Post²³, a couple of universities are already recovering their costs through shared revenue since Coursera shares with universities 6-15% of the total revenue and 20% of gross profits on its courses ²⁴

In the case of capstone projects, Coursera is partnering with corporations to create real-world challenges to enable students to show their acquired skills. One example is the consortium made by John Hopkins University, Coursera and SwiftKey -the maker of Keyboard replacement App for Android- to provide the Data Science Specialization Program, which was explained in the example presented before.

For employee training, top companies rely on Coursera courses to support their employees training and development. This type of course offerings are not public in the platform but in a survey run by Coursera of 3000 users, the 92% of users found Coursera courses are rated as equal to or better than their corporate training programs²⁵.

In addition, Coursera gives the opportunity to companies to sponsor the production of a course created by a university. This allows for companies to align their brand with a university around the content area relevant to the company's core competency. Through these courses, companies could potentially recruit top performers. There are no public details about these efforts, but given private companies' willingness to work with Udacity, it seems likely there are real possibilities of developing partnerships based on the sponsorship.

3.4.2 edX

edX²⁶ is a non-profit MOOC provider, which runs on an open-source software platform. It was founded by Massachusetts Institute of Technology and Harvard University with \$60 million of resources contributed by the two institutions to support the project in May, 2012.

It hosts online university-level courses in a wide range of disciplines to a worldwide audience of higher education learners and working professionals. As of October 2014, EdX had more than 3

²² https://www.coursera.org/course/digitalsystems

²³<u>http://www.washingtonpost.com/local/education/new-coursera-chief-stresses-the-wow-factor-of-huge-audience-for-free-online-courses/2014/06/23/bf27a1fe-fad4-11e3-8176-f2c941cf35f1_story.html</u>

²⁴<u>https://www.documentcloud.org/documents/400864-coursera-fully-executed-agreement.html#document/p40</u>

²⁵ https://www.edsurge.com/n/2014-10-15-how-does-coursera-make-money

²⁶ edX: https://www.edX.org/

million users taking over 300 courses online, which are available in English and Spanish. edX has an strong focus on the Learning Analytics research with the purpose of improving retention, course completion and learning outcomes. All data analysed in the section 3.3.1 was gathered by the Research units of HarvardX and MITx.

According the contents of the edX site, its main ways to generate revenue are:

- edX verified certificate (fees vary by course)
- XSeries Certificate (fees vary by course)
- The Professional Education programme
- University self-service model
- EdX-supported model

The edX verified certificate of achievement shows that a learner have successfully completed an edX course and verifies his identity through his photo and ID. Verified certificates are available for a fee that varies by course.

In the fall of 2013, edX launched a pilot project to offer a special certificate in a subject area called "XSeries Certificate". It is similar to Coursera Specialization Program, the learner was entitled to get the certificate after completing a bundled set of 3-4 verified courses in that subject. The cost of this type of certificate varies depending on the courses and its lower value is \$50.

The Professional Education is a new modality of edX courses aligned with the goals of providing high-quality education to everyone, everywhere while obtaining another source of revenue. It is designed for an audience of working professionals and executive level learners who are interested in advancing their career. Currently there are only 5 courses available under this modality²⁷ with different prices, starting at \$250 as it is shown in Figure 10.

Other revenue streams are based on partnerships with universities based on two different models: a University self-service model and the EdX-supported model²⁸.

The "University self-service model" allows a participating university to use EdX's platform as a free LMS for a course on the condition that part of any revenue from it goes to EdX [9]:]. The courses can be created by any individual professor and branded as "edge" courses. Once a self-service course goes live on the EdX Web site, EdX will collect the first \$50,000 generated by the course, or \$10,000 for each recurring course. EdX and the contract partner will each get 50% of all revenue beyond that threshold.

²⁷ https://www.edx.org/course?type=profed

²⁸ <u>http://harvardmagazine.com/2013/04/harvards-edx-venture-growth-and-challenges</u>



Economics of Cybersecurity DelftX - \$250 Fee Starts: January 20, 2015 - Learn More



Medicine in the Digital Age RiceX - \$495 Fee Starts: May 5, 2015 - Learn More



Basics of Energy Sustainability RiceX - \$495 Fee Starts: April 2015 - Learn More



Engaging with Innovation Ecosystems *MITx - \$1249 Fee* Starts: July 2015 - Learn More

Figure 10: edX Professional programme courses and prices

Meanwhile under the "EdX-supported model" participant universities receive production assistance from EdX to create their MOOCs [9]. According to the standard agreement, EdX charges a base rate of \$250,000 for each new course plus \$50,000 for each time a course is offered for an additional term. Although this model requires cash upfront, the potential returns for the university are high if a course ends up making money since 70 % of course revenue goes to the university. However, if the university also has self-service courses with EdX, it will not get any revenue from the EdX-supported courses until EdX has made the equivalent of \$50,000 for every new self-service course and \$10,000 for every recurring one.

edX also has partnerships with big corporations and international organizations and give them services to expand and improve their corporate trainings like the case of the International Monetary Fund [11].

3.4.3 Udacity

Udacity²⁹ is another for-profit start-up which currently offers online courses in computer science, mathematics, general sciences, programming and entrepreneurship. It is built with the help of industry partners seeking skilled employees.

As of April 2014, Udacity had 1.6 million users in 12 full courses and more than 26 free courseware but by the end of last year the courses started to be offered under the Nanodegree programme. All its courses are only available in English. And its main target audience is composed of learners and professionals who want to show a recognized credential for working in IT Industry. When students complete a course, they receive a certificate of completion indicating their level of achievement, signed by the instructors, at no cost.

²⁹ Udacity <u>https://www.udacity.com/</u>

Udacity uses these two ways to generate revenue, according to the information available on its website:

- Support for proctored final exams in partnership with Pearson VUE
- A specialized training called Nanodegree program.

The idea behind the support for proctored 75 minutes final exams is that learners will take and complete course offered by Udacity that will prepare them take the official certification examination after paying a fee of \$89. This effort allowed Udacity classes to "count towards a credential that is recognized by employers. Part of that fee went to Pearson VUE (electronic testing company) and another to Udacity. As for the end of 2013, Udacity stopped offering this option of certification.

Currently Udacity focuses on the Nanodegree programs. Those are sets of specialized project based training courses to prepare learners to get an IT job. Currently main themes offered are Introduction to programming, Web development, Data Analysis and ioS development. The credentials for nanodegree program are demonstrable skill s built and recognized by important IT Industry actors: Google, Cloudera, which are publicized in the front-page of the program at the Udacity as shown in Figure 11.



Figure 11: The Nanodegree program offered by Udacity

Most nanodegree programs have a fee of \$200/month with a trial period of a week and flexible duration from 6 up to 12 months to be completed, depending on the learner's study schedule and prior background. In addition, Udacity offers premium services, which include feedback, a help line, a personal mentor (with guidance and support from the community and coaches) and certification of course completion. Other services include assistance with job placement since companies pay to produce the classes and pledge to accept the certificates awarded by Udacity for purposes of employment.

The value proposition of Udacity and its main strength is to provide education that facilitates a real employment. Unfortunately Udacity does not publish any data that will allow us to check how well Udacity is doing in terms of annual revenue but the fact is it keeps offering the nanodegree

programme and companies like Google and AT&T maintain sponsorships to courses offered by Udacity³⁰.

3.4.4 Udemy

Udemy³¹ is a for-profit MOOC platform and authoring service founded in 2010 according to its website as of July 2014, Udemy has served more than 5 million learners, and offers 22,000 course alternatives accessible form any type of mobile device (based on iOS or Android) and they are only available in English. It targets an audience composed of learners willing to improve their job-related skills, not only as individuals but also within corporate training programmes. Some courses are offered free of costs and for others the enrolment cost varies and starts from \$20 up to \$560. But all courses grant the certificate of completion without an extra fee.

Currently Udemy, according to its website, has these means to generate revenue:

- Certification track courses for Professional Qualifications
- Udemy for Business
- Tuition fees shared with Course Authors

In the case of certification track courses, it provides all courses for the preparation of IT professional qualification exams from Cisco and Microsoft. This type of courses has variable fees and once learners, obtain their certificates of completion, are ready to undertake the official qualification exam.

Udemy provides a platform for experts of any kind, including those related to specific enterprises or corporations, to create courses which can be offered to the public or internal corporate training, either at no charge or for a tuition fee. Udemy provides tools which enable those experts to create a course, to promote it and earn money from student tuition charges.

The company's website explains that instructor compensation from tuition varies based on who invests in marketing to attract students to Udemy. Instructors earn 97% of all tuition revenues if the instructor's own reputation or marketing attracts the student. Udemy retains 50% of the earnings if the student is attracted by the site's own marketing or other coursework, and the instructor earns just 25% of the tuition if Udemy promotional affiliate attracts the student to the site and course. In the latter case, the affiliate earns 50% of the tuition, and the remaining 50% is split between Udemy and the instructor.

These three ways to generate revenue represent interesting approaches that can be considered when designing the sustainability plans for EMMA services, especially for outlining the main activities to be jointly conducted with key partnership

3.4.5 FutureLearn

FutureLearn³² is a MOOC learning platform founded in December 2012 as a company wholly owned by The Open University (OUUK) in Milton Keynes, England. As of June 2014 included more than 60 UK and international University partners as well as British Council, the British Library, the British Museum, and the National Film and Television School. Its target audience is also composed of lifelong learners but Futurelearn follows a broader approach based on the model proved valid for

³⁰ <u>https://www.udacity.com/lp/google</u>

³¹ https://www.udemy.com/

³² https://www.futurelearn.com/

the OUUK: to offer high quality courses free of cost to attract prospective undergraduates to the university. The idea aims at signposting learners on to pay for courses offered by the different educational and cultural institutions which partner with Futurelearn. Accordingly, all courses give the option of obtaining free certifications of completions but no official credits. All courses are available only in English.

Simon Nelson, Futurelearn CEO commented, in an interview for Forbes Magazin in 2014³³, about the plans of Futurelearn to generate revenue based on the following elements:

- Proctored final exams (in collaboration with test centres)
- Extra contents sales (books and apps)
- Platform to support for Corporate training

In the case of proctored final exams, the idea is very similar to the concept initially used by Udacity and Udemy: is the provision of preparatory courses for IT professional qualification exams from Cisco and Microsoft. This type of courses has variable fees and once learners obtain their certificates of completion are ready to undertake the official qualification exam, using the services infrastructure offered by collaborator official test centres.

As for the extra content sales, it is an approach already used by the OUUK: each course offered includes additional related content on demand; those are book or apps which can be downloaded from YouTube at no cost or from iTunes for small fees.

The case of providing a platform to support corporate training is also similar to the edX supporting model, where Futurelearn offers assistance to the companies for the creation and hosting of courses which can be offered to the public or internal corporate training. This could be another interesting option to take into account when defining business strategies for EMMA services.

3.4.6 MiriadaX

MiriadaX³⁴ is MOOC platform funded in 2012 by two big Spanish enterprises Banco Santander and Telefónica, through the bank network Universia and *Telefónica Educación Digital*. As of June 2014, MiriadaX includes a network of more than 40 universities from Latin American countries, Brazil, Spain. It offer more than 300 courses mainly in Spanish and Portuguese[9] for an audience composed of higher education students and lifelong learners.

MiriadaX generates revenues based on offering certifications [9]. It currently gives two types of certifications: one for participation, once the learner had completed more than 75% of the activities prescribed in the course at no cost and, another certificate of completion when the learner has completed all activities and evaluation. The later one is at a fee previously agreed with the University provider of the courses and it is equivalent to official university credits. This type of agreement with collaborating partners can be another possible mechanism to ensure EMMA sustainability. Therefore, the analysis of such opportunity should be considered at the time of defining the sustainability plans during Y2

³³ <u>Simon Nelson, interview on Forbes Magazin http://www.forbes.com/sites/peterhigh/2014/01/13/a-british-mooc-with-a-44-year-old-parent/3/</u>

³⁴ <u>https://www.miriadax.net/</u>

3.4.7 Iversity

iversity is a for-profit organization, created thanks to the support of EXIST-Founder Scholarship from the German Federal Ministry of Science and Technology. In addition to more than 1 million Euros in funding from the BFB Frühphasenfonds Brandenburg (EU 75% / Brandenburg 25%) and bmp media investors in July 2011³⁵. It officially launched the MOOC platform online in October 2013 [30]. As of February 2015, iversity has a user base of 600,000 online learners, enrolled in 63 courses in German, English, Spanish and Italian offered by 41 partner universities. Currently it is the only MOOC platform offering courses with ECTS-integration [14]

In an interview to one of the members of the iversity management team published by Techcrunch³⁶ in 2013, he commented about the iversity's purposes of becoming "The Coursera of Europe" and gave some insights about the potential revenue streams considering the experience of the American giant MOOC provider. hose streams were based on three types of fees:

- Certification fees for students
- Licensing fees
- Recruiting fees generated by providing a "recruiting intelligence" service to employers based on students' performance in relevant classes

The certification fees for students is aligned with the concept also used by MiriadaX but it goes an step further since iversity is the only MOOC provider in Europe which has agreements with universities to grant certification of course completion with equivalences with the official credits based on the ECTS.

Under the scheme of licensing fees, universities with traditional face-to-face learning offerings, pay lversity to license courses in order to replace some of the classes they conduct (especially for introductory courses) freeing the university's staff up for more in-depth teaching.

The option of recruiting fees intends to generate revenue by providing a recruiting intelligence service to employers based on students' performance in classes relevant to the companies' business core.

3.5 Discussion

In this chapter, the state of the EMMA target market has been analysed and according to the figures reviewed in Section 3.2 the MOOC market is a healthy market with profitability potential, which clear definition of its and secondary target markets. The analysis of data of edX registrants provides EMMA consortium with better insights about its potential primary consumer market segments (age, educational levels and gender composition) and their preferences.

In addition, an analysis of the current status of the business conducted by existing MOOC providers, considered as more relevant competitors, helps us to detect existing barriers and potential opportunities for EMMA to enter this market. The results of this analysis will allow EMMA

³⁵ <u>https://iversity.org/</u>

³⁶ Berlin-Based iversity Relaunches As MOOCs Platform, Sets Its Sights On Becoming The Coursera Of Europe <u>http://techcrunch.com/2013/03/11/iversity-moocs-pivot/</u>

consortium to be in an informed position to start the preparation of business plans that will ensure long term sustainability for EMMA solutions.

Next we briefly present some conclusive observations from this analysis:

MOOCs' primary target market has an audience composed of two main types of stakeholders: first, higher education students and lifelong learners and second, educational, cultural institutions, and SMEs, corporations providing learning opportunities to the first type. A segmentation of this primary market considering the findings presented in section 3.3.1 will allow EMMA to establish a proper mappings between the requirements of the different customer segments' profiles and the facilities offered by EMMA solutions that could satisfy those requirements.

MOOCs are currently offered in one of the following languages: English, German, Spanish, Portuguese, Chinese, French, Russian, Italian, Dutch and Arabic. Only one provider, Coursera, offers transcriptions for some of its hosted courses. Therefore, there is an important opportunity for EMMA to support MOOC accessibility eliminating language barriers through the availability of transcription and translation services and also supporting the introduction of other languages like Estonian, Catalan.

Nowadays the main set of services offered by MOOC providers are LMS, Course Authoring, Progress monitoring, Certificates of Completion. At the current state of the project, EMMA platform offers the two first services, the monitoring of learning progress is under development and the issue of Certificates of Completion is being analysed as one possible way for revenue generation.

There are 11 potential means to generate revenues:

- Certifications students pay some fees to receive a certification after they have achieved competency from their free learning. (i.e. a badge or pdf document provided by a university, from a recognised badging system or official accreditation institution).
- Authentic assessments (proctored final exams) students pay a fee to have their learning assessed and certified at official physical testing site (test centre).
- Recruitment companies pay fees to access student course results to identify potential employees that match the company's recruitment needs.
- Screening companies and educational institutions pay fee to gain access to student records to verify that a level of knowledge or expertise has been attained. This would allow access to the company's recruitment processes or ensure a university course acceptance.
- Human tutoring students pay a tutor to help them achieve the desired learning outcomes from the free or paid courses.
- Support for corporate learning companies pay fees to get customized courses using the free content and to access special features that help their employees gain necessary skills.
- Sponsorship sponsors pay fees to have their appropriate advertising appear beside course materials (i.e. textbook publishers) or sponsors offer financial support to a segment of learner to pay their course registration and certification.
- Tuition fees students pay tuition fees for advanced level learning (after completing the free introductory course) or gaining specialised skills relating to high paying jobs.
- Extra content sales- students pay for additional fees for content/app related to the topics covered in the course.
- Specialisation tracks or Mini curriculum offers- students pay fees to take a set of related MOOCs in addition to the development of a project that facilitate their professional preparation and/ or future employment.

• Support to interested organization for the creation and hosting of their MOOCs- different organization pays fixed or variable fees to the platform provider for assistance in the creation of courses.

The analysis of the previous means for generating revenues needs to consider that EMMA has a double exploitation goal: first, to become sustainable when the funding from EC will be finished after the project ends and second, serve as European tool that helps to reduce the current levels of European unemployment and to integration of individuals on risk of exclusion due to lack of skills or education.

Currently MOOC providers had established **key partnerships** with different organizations representing the second type of MOOC primary market stakeholders to ensure the implementation of previous described revenue streams. Those key partners are:

- Universities and cultural institutions, providing MOOC contents and accreditations.
- Companies offering test centres facilities, sponsoring courses.
- Publishers, content providers for books and apps.
- Companies willing to offer corporate training or sponsorships.

EMMA consortium will assess which are the most suitable combination of those revenue streams and needed key partnerships for the definition of its business and sustainability plans during Y2. We will take into account that sustainability is not assured until we will find an economic model that rewards all involved stakeholders.

The creation of EMMA sustainability plans will follow the methodological approach described in section 2.3.2 to outline different business scenarios, through the use of Business Model canvas, which will become the cornerstone elements for EMMA business models. In addition, we will take into consideration the following existing definitions for business models:

Pay as you go: Learner pays for each course certification when starts and has the possibility of getting a second change to attempt completing the course for free. The whole price of a course (or specialisation) is divided in different segments to cover the prices of individual components' (or courses) certificates plus the prices of completing a project, in the case of specialisations.

Fixed fee quota per moth: Learner pays a quota of the total fee price of the course which has a flexible duration to allow learner to study and complete assignments at his own pace.

Freemium schema: Learning options are divided along the lines of Bloom's Taxonomy and providers make free those basic courses that target "Knowledge & Understanding" learning outcomes but a premium is charged for those follow-on courses that target higher cognitive skills like "Applying, Analysing, Synthesizing, Evaluating and Creating". The cost of premium courses would have a link to improving career and income prospects for the learners so they would have a clear cost/benefit understanding of the return on the investment in their learning making the payment choice more acceptable.

Value-added: It is similar to the rationale behind the previous one but the knowledge is separately offered from working examples and activities. Thus, all the knowledge is given for free but learners wanting a greater understanding of how the knowledge could be applied and to ensure that learning goals are attained would need to download and pay for eBook that contains worked examples, activities and answers to the activities. The free course could mention the eBook contents as milestones to complete in the learning process.

Corporate Social Responsibility (CSR) sponsorship: Corporations donate money to the MOOC provider that helps learners attain a higher education as it equally helps the corporation to demonstrate their social responsibility. Corporations can set eligibility criteria for their donation that secured some increased value for the brand. For instance, a possible sponsoring option can be to offer financial support to learners from a geographic location, ethnic group, social status or industry work preference. To get the best return of investment with this model, course costs per learner would need to be priced low (less than $100 \in$). If the number of registrants in the course reaches the 'expected massive' figures, this price can deliver a profitable model for the MOOC provider as well as allow the corporate brand to speak of the more emotive statistics in terms of 'number of students educated', rather than the less impressive and objective 'money spent' on supporting education.

The European education landscape is also different to the North American — with generally greater access to higher education and at lower cost — which means that EMMA maybe be inspired by existing business models but will might create a variation of them to better tailor it to specifically European educational realities.

4 EMMA SWOT

The Business Model canvas methodology is used to design EMMA business and market scenarios, as it was explained in section 2.3.2 The first stage in the design of business scenarios includes the definition of EMMA assets through its descriptions, understanding, qualitative and quantitative assessments. The definition of these assets is a complex task that will lead us to the elaboration of a Value Proposition for the project and also will help to evaluate the positioning of each EMMA product and service in the MOOC market through a SWOT analysis.

It is important to note that at current state of the project many of the EMMA potential exploitable assets are not fully developed or are being tested in the pilots; therefore we will complete the definition of EMMA assets, the SWOT analysis and the definition of the value proposition in an iterative fashion during Y1 and Y2 of the project. Thus, this chapter is first focused on the initial definition of EMMA assets and secondly presents the first version of SWOT analysis of EMMA exploitation potential as outcomes of our activities in Y1. Meanwhile Chapter 6 gives an overview of an initial version of the EMMA value proposition.

4.1 Initial identification of EMMA exploitable assets

The definition of EMMA assets started in M6 with the initial identification of EMMA exploitable assets following the methodological approach presented in section 2.3.2.1.1 through a mix of individual and collaborative activities namely: individual interviews with each partner based on a questionnaire about exploitable assets; a workshop held in Madrid last December to jointly analyse all information provided by partners to outline the list of EMMA potential exploitable results and, a second round of interviews to refine the descriptions of the assets using a second questionnaire. Appendix II includes all details about the questionnaire and the information provided by the

partners during this first stage of the asset definition. Meanwhile the second questionnaire about EMMA exploitable assets and partners' inputs are available at the shared WP7 working space³⁷

As result of this process EMMA consortium have initially identified 12 assets or exploitable results. They could be exploited in the following scenarios to be defined during Y2:

- Exploitation and use of the EMMA exploitable assets for the consortium as a whole.
- Exploitation and use of the EMMA exploitable assets for a group of beneficiaries.
- Exploitation and use of the EMMA exploitable assets for individual beneficiaries.

This initial set of results is composed of two different types of exploitable foreground:

- Knowledge assets, which represent a general advancement of knowledge.
- Technological developments, which are R&D results that can be commercially exploited.

Those results belonging to the knowledge assets' category can be reused or exploited in other educational situations or research projects. In EMMA we identified the following:

- Pedagogical approaches used in the designs of UaB's and OUNL's MOOCs, which are being tested in WP3.
- Methodologies for the Learning Analytics framework, designed by TLU for WP4 as foundation of Learning Analytics Dashboard and Learning locker components presented in Figure 12.
- Procedures like those included in the Evaluation methodologies used by IPSOS in WP4 and presented in Figure 12 as Performance tracker.

Meanwhile under technological developments category we found those tangible results with potential of becoming products or services to be exploited or commercialized in the market. In EMMA we identified the following:

- MOOCs designed, implemented and tested in WP3 and WP5.
- Individual software components of the EMMA platform or the whole platform resulting from WP2, WP3 and WP4 developments as those shown in Figure 12.
- Technical and pedagogical consulting and supporting services that can be associated to the two previous assets.

³⁷<u>https://docs.google.com/spreadsheets/d/116tvDru3r6781pa0iwykZUz_qj0RLk5kgvSLey9fTtA/edit?usp=sharing</u>



Figure 12 EMMA platform components and exploitable results

Figure 12 generically describes the EMMA platform components and some of the potential exploitable assets since MOOCs are not explicitly presented. The platform is composed of three sets of components: The first set facilitates the implementation of the learning design and creation of MOOCs in different languages. The second set allows participants in the MOOC learning process, let be students or facilitators, to carry out those activities and actions described in the learning design of the course. Meanwhile the third one facilitates the monitoring of the whole educational process, its progress and the generation of recommendations for improving the process as well as for enhancing the support offered to participants in the MOOC learning process by the rest of EMMA sets of components.

The first set is represented in Figure 12 by the Authoring component and the Translation and Transcription services, both of them are being developed in WP2. The second set is represented by PLE (Personal Learning Environment) and Social (and collaborative support) which has been also developed in WP2. And the third set is represented by the Data tracing component (also developed in WP2), the Learning Locker as repository of the interaction data and the Learning dashboards in charge of visualising useful data about the current status of the learning process, recommendations to improve it and to enhance the personalisation of learning experiences. The last 2 components of this set are being developed in WP4 based on the foundations laid by the Performance tracker methodologies.

Table 9 presents an overview of the initial definition of the set of EMMA exploitable results, which are described in the Appendix II-A: Exploitable asset questionnaires. Those assets and their descriptions could evolve and change along project lifetime and further iterations of this definition process will allow us to evaluate their maturity for entering the market.

Each asset is described in the next table in terms of type of exploitable result considering the categories explained at beginning of this section; indications to localize its full description in the Appendix II, partner who owns it, under which WP has been developed, the expected delivery time specifying when it will be ready for exploitation and whether there are plans for further

refinement; whether any collaboration with other partners is needed (or foreseen) as well as the Intellectual Property Restrictions (IPR) applied to the asset.

It is important to remark that dates presented as expected delivery time, are initial estimations and more definitive dates will be fixed according to the assets' business plans that will be defined during Y2.

Regarding the IPR, a further analysis will be required to solve some possible license conflicts which had been detected at this stage. A single license scheme cannot be applied since some of the set of components of EMMA platform had been developed following different open licensing principles and schemas and this limits the way the software can be packaged and released. The IPR analysis must determine under which license bundles of components can be released and what are the alternatives for those that cannot be directly released (links to the owner, etc.). As result of such study a list of most appropriated licenses will be provided to all technological partners in order to select the best alternatives also considering the recommendations from their legal and management departments. In relation to the licensing schemas for MOOCs, all providers agreed on using Creative Common licensing SA-BY (share alike and attribution) but there are different positions regarding the clauses NC-ND (non-commercial- no derivatives) to apply in such licensing schema. During Y2 we will also analyse which are the most suitable clauses to apply or the exceptions and limitation to consider in order ensuring the exploitation of MOOCs in the different scenarios. The whole process will be documented and delivered in the exploitation deliverable due at the end of Y2.

Type of Exploitable Foreground38	Project Exploitable result (Asset)	Outcome from WP	Main Responsible Partner(s)	Expected delivery time	FURTHER collaborations	IPR restrictions
Technological development	U-track described in Appendix II-A.1 and represented as Data tracing in Figure 12	WP2	CSP	The first prototype is expected for the 2014 Q3. Further developments are foreseen as result of pilot evaluations. Time to market: 4 months after the end of the project	WP2-WP4 TLU, UNINA	No initial restrictions
Knowledge asset	Permanent Performance Tracker described in Appendix II-A.1 and represented in Figure 12	WP4	IPSOS	The first evaluation approach has been used in WP3 and its final definition will be concluded at the end of project	WP2-WP4 TLU, UNINA	No initial restrictions
Technological development	OUNL MOOCs on EMMA described in Appendix II-A.3	WP3	OUNL	The first evaluation of this MOOC will be conducted during the second round of pilots (WP5). First fully operational/commercial version is expected in 4 months after the end of project	WP2-WP4 UNINA, TLU	Creative Commons v3 BY-SA-NC license
Knowledge asset	Learning Analytics methodology described in Appendix II-A.4	WP4	TLU	Methodology was documented in July 2014; it will be piloted in autumn 2014. Time to market: Final version of the methodology could be ready to market in the beginning of 2016	WP2-WP4 UNINA, ATOS, IPSOS	Creative Commons v3 BY-SA-NC license
Technological development	Learning Analytics dashboard, represented as Dashboard (front-end)	WP4	TLU	Expected date of achievement in the project: September 2016. Time to market: September- November 2016	WP2-WP4 UNINA, ATOS, IPSOS, CSP	GNU GPL license

⁷ Possible types of foreground: General advancement of knowledge (Knowledge assets), Commercial exploitation of R&D results (technological assets), Exploitation of R&D results via standards, exploitation of results through EU policies, exploitation of results through (social) innovation.

Type of	Project Exploitable	Outcome	Main	Expected delivery time	FURTHER	IPR restrictions
Exploitable	result (Asset)	from WP	Responsible		collaborations	
Foreground38			Partner(s)			
	and Learning Locker					
	(back-end) in Figure					
	12. It is detailed					
	described in Appendix					
	II-A.5					
Technological	Open Wine University	WP5	UB	OWU1 to be finalised in EN and FR	No considered	Creative Commons v3
development	MOOC (OWU) detailed			by end of May 2015	at the time of	BY-SA-NC or Creative
	described in Appendix			OWU2 to be produced later (new	this analysis	Commons v3 BY-SA
	II-A.6			content, not just a second iteration)		licenses depending on
				Time to market: 9 months from		the exploitation
				conception		scenario
Technological	MOOC Digital Culture	WP5	UB	The beta test of MOOC OWU will be	No considered	Creative Commons v3
development	and Writing (DCW)			tested by end of March, 2015 and	at the time of	BY-SA-NC or Creative
	described in Appendix			will be used to improve the next	this analysis	Commons v3 BY-SA
	II-A.7			version of MOOC DCW. Second		licenses depending on
				version is under development and		the exploitation
				will be finalized by April 2015. It will		scenario
				be ready for public launch in French		
				and English in May 2015.		
				DCW2 to be produced later (new		
				content, not just a second iteration)		
				Time to market: 9 months from		
				conception		
Technological	moUOC described in	WP5	UOC	MOOC implementation in 2015 and	WP2 UNINA	Creative Commons v3
development	Appendix II-A.8			micro-learning and student-led		BY-SA licenses
				design and learning in 2016		
				Time to market: mid of 2016 (June-		
				July)		
Technological	EMMA platform is	WP2	UNINA,	First working prototype tested	WP2-WP4	Further analysis is

Type of Exploitable Foreground ₃₈	Project Exploitable result (Asset)	Outcome from WP	Main Responsible Partner(s)	Expected delivery time	FURTHER collaborations	IPR restrictions
development	represented by all components in Figure 12 but Permanent Performance Tracker. Detailed described in Appendix II-A.9		(TLU, CSP, ATOS)	during the first wave of pilots (WP3). Second working prototype to be tested in Y2. Full working prototype will be ready by the end of the project Time to market: 2016 3Q4 (September- October)t	ATOS, IPSOS, CSP W6-WP7 ATiT and ATOS External collaborations	required to check possible conflicts of Federica IPR, EMMA consortium agreement and the licenses of other components of EMMA platform
Technological development	UNINA MOOCs are detailed described in Appendix II-A.10	WP3	UNINA	Initial working versions were tested during the first wave of pilots (WP3). Final versions will be ready by the end of the project. Time to market: mid of 2016 (end of H1) (June- July)t	Idem to previous and with other EMMA MOOC providers	Creative Commons BY- NC-ND 2.5 or Creative Commons v3 BY-SA licenses. Further analysis is required to check possible conflicts in the different exploitation scenarios
Technological development	Transcription and Translation of MOOCs is represented by Transcript- Translation components in Figure 12 It is detailed described in Appendix II-A.11	WP2	UPV	Initial transcription and translation prototypes for the languages mentioned in the DoW are now in production (EN, FR; SP, IT, DT, ET, CA, PT) and are being tested during the 2 waves of pilots. Time to market: 2016 3Q4 (September- October)	All partners	This is a derivative work from Translectures system which is licensed under Moses (Apache 2.0)
Technological development	UPV MOOCs on EMMA are detailed described in Appendix II-A.12	WP3	UPV	Courses were ready before EMMA started. Time to market: end of the project considering potential improvements derived from pilot evaluations	No considered at this time of this	Creative Commons v3 BY-SA license

Table 9 – Initial set of EMMA exploitable assets

4.2 Analysis of EMMA potential for exploitation (SWOT)

An initial SWOT analysis has been conducted to get a better insight of the factors that can influence EMMA competitive position in the marketplace in the near future and to determine the real potential for exploitation. The results of SWOT analysis will help us to uncover the optimal match between the internal strengths and weaknesses of EMMA and the environmental trends (opportunities and threats) that EMMA must face in the marketplace.

Since this analysis is done at the month 11 of the project (from total duration of 18 months), we should distinguish between where EMMA consortium (as a whole) and project results are today, and where they could be in the future. Therefore, the focus at this moment is on the first scenario considering EMMA as a whole and we avoided grey areas, especially for project results which are still not mature as their full development is expected in Y2. As the SWOT analysis takes into a consideration EMMA competition, we will need to update this analysis when the second iteration of the assets definition will be completed in Y2 and when potential competitors for the different assets will be fully identified.

In EMMA we started this analysis using the information provided by all partners to the questionnaire about exploitation prospects³⁹ that complements the data from Exploitable asset questionnaires used for the initial definition of assets, which is included in the Appendix II-A .The rationale behind the use of the first questionnaire was to gather information about the potential strengths and weakness of the EMMA. The information provided by all partners was analysed by ATOS and results of such study are next presented.

The first of the elements to consider in this type of analysis are **strengths**: They can be seen as a resource, a unique approach, or capacity that allows EMMA to achieve its defined goals.

Uniqueness: EMMA is unique in the sense that it provides access to inclusive, cross-cultural and multi-disciplinary learning based on MOOCs and it offers a holistic approach to support monitoring, improvement and enhancement of learning process. Main elements contributing to this strength are:

- 1. EMMA Translation and transcription components provide support for individuals' study needs ensuring the linguistic inclusiveness, allowing cross-cultural, multi-disciplinary learning. In addition, they potentially facilitate the integration of learners with certain deaf or hearing disabilities as part of the MOOC audience.
- 2. EMMA U-track + Learning Analytics dashboard +Performance tracker provide support for monitoring of the whole educational process, its progress and the generation of recommendations for improving the process as well as for enhancing the support offered to participants by the platform.

The full potential of features listed above is still uncover and the results from pilots will help us to determine to which extend those features contribute to the real uniqueness of EMMA, especially in the case of supporting cross-cultural learning.

Big public outreach: EMMA partnership led by ATiT has being conducted an excellent work to increase public awareness as to the existence and operation of EMMA and the learning

³⁹ Exploitation prospect questionnaire and partners inputs are available at

https://drive.google.com/folderview?id=0B7QazvTsNoQXY1hveTNiLWgwRmc&usp=drive web

opportunities it provides. Special attention should be paid to the impact of this work of dissemination/promotion because it could contribute to rise higher and possible false expectations about how EMMA services can satisfy stakeholders needs.

When analysing EMMA **weaknesses**, we looked at those limitations, faults, or defects in the EMMA that impede progress toward defined goals.

Limited aggregation facilities on EMMA platform: At the moment of this analysis, EMMA offers easy-to-use facilities to design and publish video-based open online-learning offerings that are common features provided by the majority of existing main players in the MOOC market. But the aggregation approach developed during Y1 only consider the creation of learner's collection of notes, tags and contents and a full metadata aggregation approach has not been considered to support a rich semantic aggregation of resources within EMMA and from other platforms. Therefore, nowadays EMMA is not a MOOC aggregator in a strict semantic sense.

Limited support for several MOOC pedagogical designs: Currently EMMA platform only allows full creation and deployment of xMOOCs and provides a limited support for cMOOCs through fora, personal blog postings and external links to social media components. The lack of support for other different MOOC pedagogical designs like iMOOCs, fully cMOOCs or newer paradigms can hinder the deployment of a variety of MOOCs in the platform that in turn will restrict the potential of EMMA to serve as Pan European MOOC platform.

EMMA **opportunities** pertain to internal or external forces in the EMMA operating environment that favour the chances of EMMA to get higher demand or to provide services more effectively. **A tremendous growth of interest on MOOCs by non-English native learners in the last year, which represents an opportunity for ensuring a constant demand of EMMA services**. Special attention should be paid to the effectiveness of Translation and transcription services since the resulting translations/transcriptions should be of high quality and similar to native language translations to ensure that expectation of those language native speakers will be met.

The outcomes of the analysis of revenue streams currently used by main MOOC providers, presented in sectionError! Reference source not found.3.4 provides EMMA consortium with valuable information about the opportunities to select suitable combinations of revenue streams and key partnerships to ensure EMMA sustainability. Initially EMMA partnership considers interesting or potential means to generate revenues the following: issue of completion certifications under demand and for some fee, tutitions fees, support for creation and hosting of MOOCs, hosting of SPOCs (Small Private Online Courses) and agreements with corporations to implement CSR sponsorships for EMMA courses.

And last, **threats** are any unfavourable situation in the EMMA's environment that impedes its strategy by presenting a barrier or constraint that limits achievement of goals. If EMMA weaknesses regarding the Limited aggregation facilities on the platform persist over time, the interest about MOOCs in Europe keeps rising as in the last two previous years, the **emergence of competitors with capabilities to create an effective European MOOC Aggregator** in less than a year will be important threads for EMMA to successfully enter the market.

In a dynamic environment like the MOOC market, changes and new learning developments are frequent so **EMMA pedagogical support is under threat** to be obsolete and not adaptable enough to facilitate the deployment of MOOCs based on those new developments.

The initial EMMA exploitation strategy, to be defined at beginning of Y2, will consider the use of current strengths to take advantage of EMMA previous described opportunities and will proactively address spotted threads by correcting on compensating the effects of existing weakness

5 EMMA Channels

EMMA channels are means that will allow us to reach and evaluate our customer base satisfaction since they help to disseminate/promote the features and goals of the different EMMA assets/products and facilitate gathering customers' assessments of their experiences using those products. Channels are also used to provide post-purchase customer support (maintenance services or help lines).

At this moment, considering the current status of EMMA exploitable assets, we had outlined which could be those means to reach the identified target groups. During Y2 a further assessment of their suitability for the promotion and post-purchase support of the different assets will be conducted. In principle, EMMA consortium as part of the dissemination and exploitation activities has identified the following:

- 1. A special Industrial forum for each exploitation scenario that will help to engage with potential contributors/partnerships from Education Industry (ELIG⁴⁰). Exchanges with EADTU and other educational organizations are also foreseen.
- 2. Workshops with end-users and stakeholders, as they are programmed as part of pilot experiences in WP3 and WP5.
- 3. Organizing at least one demo-event per exploitation scenario.
- 4. Private presentations to public and private stakeholders.
- 5. Usual means for the dissemination of assets (articles, conferences, trade fair, demonstration, press releases, newsletter, etc.).

Some of those channels are also being analysed by the Dissemination and Exploitation team, as it can be seen in D6.1 Dissemination and Promotion Plan. Next year we will further analyse how to get best advantage of those channels to promote each of the exploitable assets in the following years.

6 Initial version of the EMMA Value Proposition

The full definition of EMMA exploitable assets is a complex task that will result in the elaboration of a Value Proposition for EMMA. The Value Proposition itself integrates the whole set of products and services that could be offered and that will differentiate somehow EMMA from other potential competitors. Given the current status of the project, in this chapter we present a first approach to the Value Proposition focusing at this moment on EMMA as a whole and this intial version will be refined in Y2 when the assets identified in section 4.1 are expected to be more mature and results from the pilots will be available.

⁴⁰ http://www.elig.org/

A value proposition is defined through mappings between the customer segment profiles described in terms of needs and the value offered by EMMA described in terms of pain relievers and gain creators.

EMMA customer base is made up of two types of stakeholders: first type includes higher education students, lifelong learners and second, educational, cultural institutions, and SMEs, corporations providing learning opportunities to the first type. Teachers, professors and facilitators of the courses are individuals belonging to the second type of stakeholders.

The EMMA project seeks to expand the concept of the MOOC, making it relevant and accessible to all learners across Europe. Five challenges were identified as being critical to achieving this goal in D3.2.Pilot-operation plan. The positive outcomes of assessing EMMA solutions to those challenges in the different pilot settings will help us to confirm the validity of the next potential EMMA values.

Challenge 1: Design of the MOOCs - from pedagogy to instructional design – the pedagogy behind each model and the instructional design that derives from this, with particular emphasis on the MOOCs available in EMMA.

Stakeholders involved: Learners, teachers, professors, course facilitators, MOOC instructional designers.

Expected results: Pilots should provide useful insights on issues related to integration/aggregation of different MOOC pedagogical approaches and designs on the same platform.

EMMA value: Positive outcomes of pilots will help to confirm whether the different EMMA platform components' solutions to this challenge represent a valuable support to stakeholders' work in terms of innovation and capacities for hosting and full deployment of MOOCs based on a variety of instructional designs.

Challenge 2: Presentation of the MOOCs - from a web-based learning platform to a MOOC-based platform – the process of adapting the Frederica platform into EMMA to support sufficient features to allow the MOOCs to be effective in all relevant cultures and languages.

Stakeholders involved: Learners, teachers, professors, course facilitators, MOOC instructional designers.

Expected results: Pilots should provide qualitative and quantitative results on EMMA features; including their rationale, development, improvement, and use. The outcome of this process will enable the EMMA platform to support sufficient features to allow the MOOCs to be effective in all the relevant cultures and languages.

EMMA value: Positive outcomes of pilots will help to confirm whether the different EMMA platform components' solutions to this challenge, in particular the translation and transcription one, represent a valuable support to stakeholders' work in terms of good performance to facilitate the deployment of MOOCs in different language and cultural contexts.

Challenge 3: Supporting individual study needs - from individual MOOCs to integrated learning – the integration of the Personal Learning Environment (PLE) into an online MOOC platform designed to support tens of thousands of concurrent learners.

Stakeholders involved: Learners.

Expected results: Pilots should provide qualitative and quantitative results on the use of the EMMA PLEs and features; rationale, development, improvement and use.

EMMA value: Positive outcomes of pilots will help to confirm whether the different EMMA platform components' solutions to this challenge, specially the PLE, represent a valuable support to stakeholders' work in terms of effective customization features and scalable capabilities to facilitate massive number of concurrent learners' interactions.

Challenge 4: Accessibility through language - from linguistic isolation to linguistic inclusiveness – defining an effective process for transcription and translation of the audio-visual and textual content of MOOCs, including features of cMOOCs, xMOOCs and iMOOCs.

Stakeholders involved: Learners, teachers, professors, course facilitators.

Expected results: Pilots should provide qualitative as well as quantitative results on the use and deployment of the EMMA as Pan-European platform

EMMA value: Positive outcomes of pilots will help to confirm whether the different EMMA platform components' solutions to this challenge, specially authoring and translation and transcription components, represent a valuable support to stakeholders' work in terms of linguistic inclusiveness, effective customization capacities, hosting and deployment capacity for MOOCs based on a variety of instructional designs.

Challenge 5: Accessibility through culture - from a country-specific platform to a Pan-European platform – access to MOOCs from providers throughout the Union, without a language barrier, gives learners access to differing cultural perspectives through the process of aggregation of elements of similar MOOCs run in different languages.

Stakeholders involved: Learners, teachers, professors, course facilitators. Institutions as MOOC providers.

Expected results: Pilots should provide qualitative as well as quantitative results on the use and deployment of the EMMA facilities as a pan-European platform.

EMMA value: Positive outcomes of pilots will help to confirm whether the different EMMA platform components' solutions to this challenges, specially the translation and transcription one, represent a valuable support to stakeholders' work in terms of provisioning a pan-European MOOC platform without language barriers.

These challenges are being explored through the EMMA pilots and their results will be taken into account for updating this initial EMMA value proposition during Y2.

Concluding we can state that EMMA's unique concept specially in terms of Translation and transcriptions services, platform monitoring capabilities and educational offerings is expected to have a moderated but important socio-economic impact The growing demand of educated employees and the existence of initiatives to fight against the social and educational divide in the European society, leads to the safe assumption that EMMA can have an important economic potential. Accordingly, its innovative solutions will:

• Promote employment growth by the availability of contents and services adjusted to individuals' needs and requirements.

- Offer products and services that are envisaged to enable people at risk of exclusion to access educational opportunities in an affordable manner, bridging the digital and non-digital gap for particular social groups.
- Contribute to increase total IT investments in educational technologies.

7 Conclusive remarks

This document presents a Market Analysis report, which gathers the results of market research activities carried out in WP7 during the first year of EMMA project. This report offers an overview of the EMMA market and the EMMA potential for exploitation.

The Market research was conducted according to the methodological framework provided by the Kipling method detailed in Chapter 2 which includes the use of The Business Model Canvas and Analysis of Strengths, Weakness, Opportunities and Threats (SWOT) methodologies.

The analysis of the state of the EMMA target market provides an overview of the current profitability potential of the MOOC market, its primary and secondary target markets and will help EMMA consortium to get better insights on the primary consumer market segments and their needs. In addition, an analysis of the current status of the business made by existing MOOC providers, considered as more relevant competitors, helps us to detect existing barriers and potential opportunities for EMMA to enter this market. The results of this analysis will allow EMMA consortium to be in an informed position to start the preparation of business plans that will ensure long term sustainability for EMMA solutions.

The EMMA target market (MOOC market) is a healthy market with profitability potential, with clear definition of its primary and secondary target markets according to the figures reviewed in Section 3.2.

Some of the most Interesting observations derived from this Market analysis are:

MOOCs' primary target market has an audience composed of two main types of stakeholders: first, higher education students and lifelong learners and second, educational, cultural institutions, and SMEs, corporations providing learning opportunities to the first type. A segmentation of this primary market considering the findings presented in section 3.3.1 will allow EMMA to establish proper mappings between the requirements of the different customer segments' profiles and the facilities offered by EMMA solutions that could satisfy those requirements.

Important players on the market as EMMA competitors are based in North America and Europe. MOOC providers in North America like Coursera, edX, Udacity and Udemy are consolidated competitors with strong presence in the global market. But also important players, in terms of the number of enrolments during last year and revenues, are already working in the European market: Futurelearn, MiriadaX and Iversity.

Currently these *competitors offer MOOCs in one of 12 different languages* but only Coursera provides transcriptions for some of offered courses. Therefore, there is a good opportunity for EMMA to enter the market as provider which supports MOOC cultural accessibility eliminating language barriers through the availability of transcription and translation services.

The analysis of the competition in section 3.5 led us to *identify 11 possible means to generate revenues with different forms of key partnerships and 5 different business models*. This information will serve as reference for the definition of EMMA business models, which will also consider the peculiarities of European higher Education realities, as this is regional market to be initially targeted by EMMA.

The definition of EMMA business models and scenarios based the Business Model canvas methodology, requires a full the asset description and their added value for the set of market segments to be targeted, specification of channels to reach such segments as well as the definition of revenue streams and key partnerships. During this year, we identified a set of 12 EMMA potential exploitable assets, which can be grouped in the following sub-sets: EMMA platform components, Methodological approaches and MOOCs. Section 4.1 provides details about these assets. And they could be exploited in three different general scenarios:

- Exploitation and use of the EMMA exploitable assets for the consortium as a whole.
- Exploitation and use of the EMMA exploitable assets for a group of beneficiaries.
- Exploitation and use of the EMMA exploitable assets for individual beneficiaries.

Given the current status of the project as identified assets are not fully developed or are being tested in the pilots, we could not complete their full description, quality and qualitative assessments. Therefore, we postponed the full definition of those scenarios for next year and we focused on the preparation of the initial versions of the EMMA value proposition and SWOT analysis for the first scenario. It must be noted that descriptions of the identified assets will probably evolved during Y2 thus, an update of the current EMMA value proposition and SWOT analysis will be done by then.

As part of the analysis of the initially identified set of assets, we detected some possible license conflicts between the license schemas of some EMMA platform components as well as some possible problems with the use of clauses of Creative Common licenses of different MOOCs. Therefore, a further IPR analysis will be required in Y2 to determine under which license bundles of components can be released and what are the alternatives for those that cannot be directly released (links to the owner, etc.) .Such analysis will also determine which are the most suitable applicable clauses or the exceptions and limitation to consider in order to assure the exploitation of MOOCs in the three exploitation scenarios.

The SWOT allows, even at such an early stage of the project, to elaborate a strategy to overcome weaknesses and take advantage of strengths. This will be used in practice to provide feedback to the project teams and to define future steps towards exploitation. Opportunities offer encouraging arguments for the pursuing of the project developments and consider new directions taking into account the changing context of the project, when promising further benefits. Threats allow detecting risks and making proper plans well in advance in order to mitigate them. According to the analysis made with the rest of partners:

The *main strengths* of EMMA are: Its *uniqueness* in the provision of access to inclusive, crosscultural and multi-disciplinary learning based on MOOCs and offering a holistic approach to support monitoring, improvement and enhancement of learning process. And its *big public outreach* thanks to the excellent work carried out to increase public awareness as to the existence and operation of EMMA and the learning opportunities it provides. Special attention should be paid to the impact of this work of promotion because it could contribute to raise higher and possible false expectations about how EMMA services can satisfy stakeholders' needs.

Main *weaknesses* of EMMA are: the *current limited aggregation facilities* on EMMA platform since a rich semantic aggregation of resources within EMMA and from other platforms has not been developed yet. And its *limited support for several MOOC pedagogical designs*: Currently EMMA platform only allows full creation and deployment of xMOOCs and provides a limited support for cMOOCs but there is not flexible support for other MOOC learning designs like iMOOCs, fully cMOOCs or newer paradigms.

Main opportunities for EMMA are: A tremendous growth of interest on MOOCs by non-English native learners in the last year, which represents an opportunity for ensuring a constant demand of *EMMA translation and transcription services*. Special attention should be paid to the effectiveness of those services since the resulting translations/transcriptions should be of high quality and similar to native language translations to ensure that expectation of those language native speakers will be met. The analysis of the competitors in section 3.4 gives an opportunity to *make an informed selection of suitable combinations of revenue streams and key partnerships* to ensure EMMA sustainability.

Main *threads* for EMMA are: The possible *emergence of competitors* with capabilities to create an effective European MOOC Aggregator in less than a year will be an important thread for EMMA to successfully enter the market, if the first weakness mentioned above is not solved soon. And also EMMA *pedagogical support is under threat of becoming obsolete* and not adaptable enough to facilitate the deployment of MOOCs based on new developments that can emerge due the dynamic nature of MOOC market.

The initial EMMA exploitation strategy, to be defined at beginning of Y2, will consider the use of current strengths to take advantage of EMMA previous described opportunities and will proactively address spotted threads by correcting on compensating the effects of existing weakness

An initial outline of EMMA channels was presented in section 5. Some of those channels are also being analysed within the Dissemination and Exploitation team. Next year we will analyse how to get best advantage of those channels to promote each of the exploitable assets in the following years

The activities during this year concluded with the preparation the initial version of EMMA value proposition. The EMMA value proposition is derived from the EMMA main aims at expanding the concept of the MOOC, making it relevant and accessible to all learners around Europe.

The solutions to the five challenges, defined as critical for the attainment of those goals in WP3, represent the values EMMA offer to its customer base. Namely: innovation and capacities for hosting and full deployment of MOOCs based on a variety of instructional designs; good performance to facilitate the deployment of MOOCs in different language and cultural contexts; effective customization features and scalable capabilities to facilitate massive number of concurrent learners' interactions, linguistic inclusiveness, provisioning a pan-European MOOC platform without language barriers.

The results of the EMMA pilots will provide tangible evidences to confirm the validity of these values. Consequently, the EMMA project still needs to convince its primary market stakeholders

with the tangible results of its offer to expand the concept of MOOC making it relevant and accessible to a massive number of learners in Europe.

7.1 Next Actions

The work done during these first 12 months for the EMMA project has marked the starting point for the final exploitation phase of the project. The work to be carried out over the coming 18 months, which is the most intensive phase, will be aimed at the final definition of the different assets, the development of a joint exploitation strategy, as well as the Exploitation and Sustainability Roadmap for EMMA. Work to be carried out is divided in two parallel tracks that will result in an integrated Sustainability roadmap for EMMA's exploitation. On one hand, EMMA's exploitation team will work towards a complete characterisation of the project results to be used in the commercial approach extending the current Value Proposition and conducting the Cost-Benefit Analysis and Cost-Effectiveness Analysis. On the other hand, the team will work in the definition of the different Business and sustainability plans

The work to be done in the coming 18 months can be summarised as follows (items in blue should be completed by January 2016):

- The Business Canvas methodology
 - Conclude Value Proposition through the refinement of Asset definitions, Asset understanding. Qualitative Assessment. Quantitative Assessment and the further refinement of EMMA market segments based on the registration information to the EMMA platform.
 - Definition of business scenarios
 - Identify Market segments for each asset: Customer, Competitors. Identify competitors (in a detailed manner) & start a benchmarking study. Profitability
 - Identify Key partnerships
 - Identify distribution channels.
 - Investigate innovative exploitation schemas.
 - Technologies watch & market analysis.
 - Parameterise and describe in a business oriented way the individual results.
 - Identify route-to-market \rightarrow roadmap.
- The SWOT Analysis
 - Conclude a detailed SWOT Analysis for all EMMA exploitation assets
- IPR identification & quantification
 - Conclude second round of gathering information through individual questionnaires and workshops to identify IPR and exploitation intentions by partner/technology.
 - License analysis to identify suitable licensing schemas to solved IPR conflicts detected during Y1 to facilitate the viability of assets exploitation in the 3 global exploitation scenarios
 - Discuss about Exploitation Agreement (all partners and/or bilateral for partners).

- Exploitation plan
 - Finish gathering inputs from questionnaires to identify exploitable assets' costs and benefits and to conduct the Cost Analysis and Benefit Analysis
 - Investigate measures to draw higher industry attention.
 - Investigate possible alternative business scenarios.
 - First version of the exploitation and sustainability plan
- Marketing and dissemination plan
 - Extending and maintaining exploitation contacts.
 - Keep existing synergies with EMMA dissemination activities.
- Exploitation agreement
 - Exploitation agreement definition.
 - Refining of the business canvases (cyclical activity).

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Appendix I: Business Model Canvas template





Appendix II-A: Exploitable asset questionnaires



ASSET INFORMATION

TITLE: [Provide a title for your asset]

Must be a commercial title, not the title of a patent or the technical title used in the work package. The name selected must highlight the innovative character and the usefulness of the asset. It should encourage the reader to continue reading.

ABSTRACT

XXXXXXXXX This is a short description of 10 lines maximum. This must reply to the following questions:

- Characteristics of technology
- Advantages of technology
- Benefits of technology

DESCRIPTION

Include a long description of the exploitation result in one or two pages. Describe "**what does it do**" more than **"how does it do it"**

Include the background, a problem statement, the currently available solutions and their limitations, etc.

Should be included in this section, photos, sketches, drawings, etc.

APPLICATIONS

Concrete applications of the technology, concretion of the applicable sectors, future applications, etc.

INNOVATIVE ASPECTS AND BENEFITS





Mention other existing alternatives in the market and what are the innovative aspects and advantages of the technology offered in comparison to those components. Consider the benefits (more revenue, less cost ...) that this technology provides to the potential buyer. Structure the information using the following scheme:

- Alternative Products
- Innovative aspects
- Advantages

STATE OF THE ART

Describe the level of maturity of the technology (laboratory prototype, pilot, mainstream). In case there is a prototype include testing results.

TIMING

Expected date of achievement in the project:

Time to market:

INTELLECTUAL PROPERTY

Describe the IP information of the technology. In case there is an existing patent, indicate its number, the date and type of patent. Please mention also software licenses. Example: The EMMA platform is Open Source and could be released under Apache v2 license,

which is the most flexible open license. The contents: *MOOCs are designed by the different MOOC providers and supporting tools are responsibility of the technical partners. All those partners are in charge to decide what the most appropriated license to use is. Although we recommend in principle to use Common Creative by-sa for all contents/images/videos.*

FUTURE DESIRED COLLABORATION

Indicate the type of collaboration we would want for this technology:

- Technical Cooperation
- License Agreement
- Establish a joint venture

DEVELOPERS- COSTS

Example about the EMMA platform: UNINA is responsible for the platform implementation and maintenance.

For the Translation and transcription component will need: UPV (details of the integration) For the Tracing system: CSP, Tallin University, IPSOS For the contents: MOOCs used in the different pilot studies, MOOC providers and Pilots coordinators, new MOOC providers





Brief explanation of the partners involved in the development of this technology. Specify related components, partners responsible.

Provide details about the development and maintenance resources (personnel costs, time, technology suppliers)

CONTACT

Contact information of the exploitable results managers or partner representative

Full Name:

Phone:

E-Mail:





Appendix II-A.1 – CSP answers



ASSET INFORMATION

TITLE: U-track

ABSTRACT

The aim of U-track is to analyze what the user is doing on a web platform, in order to understand his behavior.

Through the definition of a list of actions that are useful to extract user behavior, the system will map these actions with what can be performed on the platform. Some examples of these actions can be "Learner enrolls the course", "Learner clicked on internal learning materials", and so on.

Understanding user behavior is important because it allows the web site/platform administrators to better understand who is the target user, in order to customize the platform functionalities and provide a better user experience.

DESCRIPTION

The system will intercept any low level interaction on a page (for example mouse clicks) to detect the action the user is performing.

While some of these actions are easy to intercept, involving a specific action on an element of the page (i.e. a click on a button), others are more tricky and needs much more work. One of the most difficult things to retrieve is the time a user spends on a single page, and even more, WHAT the user is doing on that page. The main difficulty in tracking the time spent on a page is that users can leave the page without logging-out: he could just close the page/tab/browser, or he can type a different URL in the address bar of the browser itself.

In theory, it would be possible to use the web server log to try to get some of these information, but there are some problems with that approach:

- 1. using only information contained in the log file, we are missing most of what the user is doing on client side (not every click is sent to the server, for example a click may just be a local anchor that scroll to a specific section);
- 2. if we base our information just on the server log, we have to assume that a user is





identified only by its IP address, which, of course, may not be always true due to network configuration (if two users are behind a proxy server, they may appear with the same IP). There are techniques that uses the web server log to try to extract the average user behavior (CBMG, Customer Behavior Model Graph by Menasce & Almeida), but this it's not useful for the purpose of this tracking system;

3. even analyzing the server log, it is impossible to understand when the user leave the page because this action does not affect the server, and thus nothing will be logged on the server.

In order to face these issues, we will develop a module that heavily relies on javascript and AJAX to intercept user activity on client side, and to periodically synchronize these information with the server (some server side sections of the platform will be developed as well).

Being based on standard javascript technology, the tracking system will work on every browser currently available (with some limitations for mobile/touch devices, where of course some information such as mouse movement won't be available).

Analyzing the page content, it's possible to track complex features such as the time spent on a page / number of words. This data will be used to calculate the actual reading speed of the user. Knowing the structure of the page, we could even calculate the time spent on a specific portion of the page (chapter, paragraph, slide, etc), and the related reading speed. If the reading speed is close to that of an average "human" user, the system can assume with a reasonable degree of certainty, that the user is actually reading the page. Otherwise the user is very likely just exploring. Of course it would be better to have some information provided by the teacher/facilitator/author about the estimated time required for reading a content, even if this kind of data is very subjective.

This system could be even improved collecting real usage data and calculating averages that can be used as reference for future automatic analysis of user behaviour.

One of the main challenge is to determine the actual duration of a user's session, because as said before, often the user does not explicitly perform a logout. That's one of the reasons why we use Javascript to analyze client-side activity. With JS is pretty easy to detect when a user is about to leave the page (intercepting the window.onBeforeUnload event which is automatically fired by the browser). When the user is leaving the page (or even periodically during the session) we will send back information about user activity to the server that will save them in to the database.

All the information about actions performed on the platform will be sent to the learning analytics systemⁱ (based on TinCan API & LeaningLocker) In the following picture you can find a diagram which will clarify the interaction between various modules of the platform.







U-track could be delivered with the same licensing of the EMMA platform as already said, it tightly connected to it.

FUTURE DESIRED COLLABORATION

CSP would appreciate technical cooperation for improve and make U-track a reusable object like API. We are especially interested in continuing collaboration with TLU for deepening the aspects connected to the Learning Analytics System.

DEVELOPERS- COSTS




U-Track is developed under the WP2-WP3 activities in collaboration with all the partners for the required behaviours to be tracked, and specially with UNINA regarding the interaction with the platform and TLU for providing data in order to be processed by the Learning Analytics Systems (TinCan APi + Learning Locker) and defining the dashboard for docents, facilitators and students. All the partners are expected to give feedbacks during the project – life in order to ameliorate the U-track.

The costs of maintenance are strictly connected to the cost of maintenance of the EMMA platform as at the present version, U-track is simply a part of it.

CONTACT

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Appendix II-A.2 – IPSOS answers



ASSET INFORMATION

TITLE: Permanent Performance Tracker - Improving Learning and Teaching Potential by Tracking Learning Behaviour, Expectations and Satisfaction –

ABSTRACT

Technology and Methodology are combined in this package, to produce a continuous flow of relevant information for both learners and teachers to guide them to the optimal usage of the tools provided in the field of e-learning.

In a nutshell, the asset will combine passive and active transfer of data from learners and teacher, a combination of which will enable learners to analyse and reflect on their learning experience and interactions; it will also support course designers and managers in analysing and adapting their products to the evolving needs of their audience.

The technical architecture of the EMMA learning analytics application is complex and consists of several technologies. The main components of the architecture are the tracking system, the learning record store (LRS) the Learning Locker for storing the tracked events, and the dashboards for MOOC participants and MOOC instructors.

Since EMMA is a unique offer in the current scenario in more than one way, (for example in its provision of a PLE, or in the multilingual approach,) the joint techniques will provide data to assess the level of impact, effectiveness, innovation, ... etc. of the value proposition.

This approach can be applied to other domain applications as a Permanent Performance Tracker.

DESCRIPTION

The combination of Learning Analytics and data collection was imagined at the time when the EMMA proposal was drafted as an integrating pillar of the pilot for an European Multiple MOOC Aggregator.

Actually, the Project Leader had a clear cognizance that the collection of analytical data was key to the progress of a pilot platform, but that it should also represent a permanent fixture in a well-functioning offer.

The opportunity of continuous monitoring and therefore continuous improvement as per a





Deming-like model (Plan, Do, Check, Act) is especially fruitful in a case such as EMMA, which is a pilot model, but it has proved effective also in well-established organizations. This will therefore represent an offer for all those organization which offer similar products, be they in the launching stage of their activity or, in progress.

There are debates as to what a successful e-learning model is like and it has been established that "completion" is not an undisputed measure of success or a metric for benefit on the learners' part.

This is why we believe that a set of tested measures and metrics, stemming from the combination of different techniques can represent a valid tool for the monitoring and enhancing of e-learning offers.

APPLICATIONS

The production of reporting with a listing of insights, comments and a so-called "So What?" chapter listing conclusions and possibly actions to take, will represent an operational tool for fine tuning and developing distance-learning offers.

INNOVATIVE ASPECTS AND BENEFITS

The Evaluation Methodology developed, tested and tuned during the 30 months of the EMMA pilot will result in a solidly grounded model. In the past several attempts have been made to survey the outcomes of MOOCs by proposing sets of questions – in different forms – to relatively small samples of learners.

This would be the first large-scale, systemized approach to surveying, on sufficiently large numbers of observations which will allow the partner to test the validity of the variables surveyed over a fairly long period of time, with as many repeats as possible, as long as MOOCs are offered on the Platform.

STATE OF THE ART

At the time of this description (Month 10), the very first results are being analysed with several objectives in mind:

- To find out which are the relevant measures, among all those included in the first pilot questionnaires, and which are the missing dimensions which will need to be included in the future
- To find out what the redemption rate is for any type of questionnaire, which submission processes are working and which if any need adjusting
- To find out which types of data will result in which "product" → e.g. reporting for the fine tuning of the platform/ the study materials/ the MOOcs/ the approach; study material for the production of theoretical papers; ...

TIMING

The first outcomes are expected in January, 2015, which will be discussed in a specific Deliverable (4.3.) and which will expectedly lead to the fine tuning of the various tools, plus the testing of other surveying tools, such as – for example - semi-structured questionnaires, focus groups, online discussion forums.

Time to market can expectedly range between 6 to 12 months after the completion of the EMMA Pilot





INTELLECTUAL PROPERTY

Creative commons BY-SA

FUTURE DESIRED COLLABORATION

Not explored yet

DEVELOPERS- COSTS

As per the EMMA pilot, CSP would be in charge of collecting the traffic data, Tallinn of generating the Learning Analytics and Ipsos of putting in place the ad hoc survey methods and contents

IPSOS would leverage on its existing structure and technical tools which would lead to costs related to personnel cost and overhead to be calculated on a project base.

CONTACT

Contact information of the exploitable results managers or partner representative

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Appendix II-A.3 – OUNL answers



ASSET INFORMATION

TITLE: OUNL MOOCs on EMMA

Description

The Open University has developed a unique design for Massive Open Online Courses that combines the strengths of xMOOCs (clear course structure, instructional clarity) with the strengts of cMOOs (interaction between learners) and adds also options for interaction with experts. At the moment these MOOCs are only offered to the Dutch market on our platform OpenU. Exploiting this MOOC design on the EMMA platform would be a promising exploitation option for us, but only if the gap between interaction options on our platform and EMMA will be addressed in the further development of the platform.

APPLICATIONS

This option for exploitation would enable us to reach new target groups with comparably low effort and would also be in line with our internationalisation strategy.

INNOVATIVE ASPECTS AND BENEFITS

There are probably competitive offerings from other MOOC providers outside EMMA, but the design of the masterclasses that are integrated in the MOOC e-learning is unique⁴¹.. However, the current platform does not fully support our design

TIMING

Expected date of achievement in the project: First version will be available during the second round of pilots which starts in April.

⁴¹. Rubens, W., Kalz, M., & Koper, R. (2014). Improving the Learning Design of Massive Open Online Courses. The Turkish Online Journal of Educational Technology (TOJET), 13(4), 71-80





Time to market: It will depend on the results of the pilots and the support provided by the EMMA platform. We understand that at least 4 months after the project will end; this version of the MOOC will be ready to be accessed by a broader audience in the EMMA platform.

INTELLECTUAL PROPERTY

All our content is available under a CC BY-NC-SA creative commons license.

FUTURE DESIRED COLLABORATION

OUNL would become a regular EMMA user if the platform becomes more flexible from an educational point of view.

DEVELOPERS- COSTS

We approximate production and maintenance costs per week-unit around 7000 EUR for developing these MOOCs on our platform. The majority of these costs are personnel costs; a minor amount of these costs comes from technical equipment and overhead. It depends on the final version of the EMMA platform how much effort we have to calculate for the transfer of the content on the platform and the adaptation of the instructional model (if any).

CONTACT

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Appendix II-A.4 – TLU answers (first)



ASSET INFORMATION

TITLE: Learning analytics methodology

ABSTRACT

EMMA learning analytics methodology is a research/knowledge asset. Learning analytics in EMMA project will focus on: a) real-time analytics through learning analytics dashboards for instructors and students; b) retrospective analysis of the digital traces in EMMA platform. First approach aims to support participants' learning activities whereas the second approach is intended for more in-depth analysis of the MOOCs and overall EMMA evaluation. As EMMA is a MOOC platform then calculating the dropout and clustering the participants will be one of the research aims. Additionally uptake of the knowledge, students' progress and social structures emerging from MOOCs will be analysed in the pilot phase.

DESCRIPTION

The main aim of implementing learning analytics in EMMA platform is to support students' awareness of their progress and provide meaningful learning activities. As EMMA is a MOOC platform, then there is a need to pay attention to dropout and provide information to course designers on how to improve their course. However, EMMA intends to move beyond that and provide personalized feedback to individual learners.

In the pilot phase of the MOOCs in EMMA platform, the following analysis will be performed:

• <u>Clustering of the participants</u> - In the pilot phase, MOOC participants of EMMA platform will be clustered as: a) enrolled (explicitly "enrolled" the course); b) not started (enrolled, but have not returned to course); c) lurker – enrolled and has returned to the course once; d) passive – enrolled and has accessed one material and participated in one discussion or submitted one assignment; e) active – has accessed 50% of the materials and submitted 50% of the assignments or participated in 50% of the discussions; f) drop-ins – enrolls, but is active in one-two weeks only. There is a chance that in EMMA participants can be at the same time "active" and "drop-ins".





The dropout rate will be also calculated, but after excluding the lurkers and drop-ins. Clustering enables to get insights about participants' behavior, which is needed for evaluating the courses and analyze for example in what stage the participants become less active. As the EMMA approach supports the participants to combine their own courses from different building blocks of different MOOCs, then calculating the completion rates is not the primary interest of EMMA. Pilot phase evaluation demonstrates in which way it is possible or needed to cluster the participants.

• <u>Progress and performance</u> - <u>Students' progress in EMMA MOOCs is measured</u> in accordance with the course lessons. Each course consists of lessons that consist of several units. Units consist of the materials, videos and assignments. Progress will be analyzed based on following events: a) accessed learning resources – learner has accessed n number of materials in given module; b) 'completed' learning activities learner has indicated that activity has been completed; activity is considered to be completed when learner submits an assignment; activity is also completed when assignment is graded and passed, when quiz has been passed and the expected learning goals had been achieved; c) time spent on materials – for how long the student has read the learning resources, watched the videos, spent on the course in general; d) grades and results – what level the learning activities has been performed. Progress will be visualized in the students' dashboards. Students can see their efforts during the whole course or within a module.

• <u>Uptake of knowledge</u> - In EMMA the learning analytics approach for the uptake of knowledge is mainly related with the social structures and has to consider available functionalities of EMMA. The uptake is mainly analyzed based on the interactions in the conversation functionality (later also weblog and comments could be added to the analysis). The posts, replies and comments in discussion board are also considered as the basis for social network analysis of the course participants and will be used to visualize the groups of learners within the MOOCs that will be of interest for the MOOC providers and participants.

• <u>Social structures</u> - social network and artefacts analysis will be performed in order to find out what kind of social structures emerge in the MOOC context and in which way the materials and resources mediate between the participants and what kind of networks emerge around the materials or artefacts.

• <u>Engagement with the content</u> - for supporting the evaluation of the course design, access and use of the learning materials will be evaluated. The intensity and frequency of the accessed learning materials will be provided to the MOOC instructors

The technical architecture of the EMMA learning analytics is complex and consists of several technologies. Figure 1 illustrates the components of the architecture: tracking system, learning record store (LRS) Learning Locker for storing the tracked events, dashboards for MOOC participants and MOOC instructors.







APPLICATIONS

Learning analytics application consists of following technologies:

- a) Tracking tool developed by CSP;
- b) Learning Record Store Learning Locker maintained by CSP;
- c) Dashboard developed by TLU.

In future the recommendation system for the MOOC participants will be developed

INNOVATIVE ASPECTS AND BENEFITS

Although the EMMA platform also acts as a regular MOOC platform, allowing providers to design and conduct their MOOC courses, the EMMA platform is more than that. The EMMA platform acts as an aggregator for European MOOCs and is designed to support personalization not only in the design of the MOOCs offered by providers, the provision of multilingual support in video transcription and translation, but also by providing a personal learning environment (PLE) that allows learners to pick and mix from those sections of the various MOOCs on offer that they consider important and relevant and build their own personalized courses.

In EMMA, learning analytics are applied to provide reflection opportunities to learners to assist them in monitoring their learning process and controlling the achievement of their learning goal, as well as prediction opportunities to give feedback to the course providers so they could enhance their course design. Moreover, the EMMA platform is designed and optimized for this learning analytics approach.

One of the characteristics of EMMA platform is the integration of a video transcription and translation system. As a result, seven transcription systems (English, Italian, Spanish, French, Dutch, Portuguese and Estonian) and eight translation systems (from Italian, Spanish, French, Dutch, Portuguese and Estonian into English; and from English into Italian and Spanish) are





provided. One of the aims of the learning analytics methodology is to investigate if the automatic translation module has an impact on learners' progress, but this activity is combined with the evaluation instruments developed by IPSOS in WP4. The aim is to investigate if there are more enrolments because our MOOCs are offered in multiple languages, if that leads to more students actually starting with the MOOC, or if it results in more students completing the MOOC?

EMMA's learning analytics application is a novel and advanced solution in learning analytics field for MOOCs since it makes a combination of the xAPI specification and the Learning Record Store (LRS) Learning Locker for storing and sharing the learning experiences that is not widely in common by MOOC platforms.

STATE OF THE ART

Learning analytics methodology is an on-going development. The first version of the methodology is documented in the project deliverable 4.1. Based on the pilot of the MOOCs and later iterations, methodology will be modified.

TIMING

Expected date of achievement in the project: Methodology was documented in July 2014. Methodology will be piloted in autumn 2014.

Time to market: Final version of the methodology could be ready to market in the beginning of 2016

INTELLECTUAL PROPERTY

Learning analytics methodology as a research asset will be under the license Creative Commons Attribution-NonCommercial-ShareAlike (CC BY-NC-SA)

FUTURE DESIRED COLLABORATION

Technical cooperation to implement the learning analytics methodology is expected with the project members (CSP, IPSOS, ATOS, UNINA, OUNL).

Research cooperation is warmly welcomed with the learning analytics community with the aim to continuously work on methodology and evaluate it in different settings. Joint research projects would be for TLU desired collaboration scenario for the future.

DEVELOPERS- COSTS

Learning analytics team consists of one full time researcher and one part time researcher, two developers, one PhD student.

CONTACT

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Appendix II-A.5 – TLU answers (second)



ASSET INFORMATION

TITLE: Learning analytics dashboard

ABSTRACT

Dashboard application is stand-alone application that could be integrated with EMMA system. Dashboard provides different visualizations for MOOC providers and students of the MOOCs based on the data stored in learning record store. The focus of the EMMA learning analytics dashboard will be to support awareness and sense-making of the learning activities in online settings. Students' dashboards enable to raise students' consciousness of their learning activities by providing overview of the progress or social structures in the course context. Instructors' dashboard provides feedback to course designers about the activities during the course.

DESCRIPTION

Instructors' dashboard visualizes:

a) students' progress during the lesson or the course as a whole. Instructor will be informed how many of the students (%) have submitted the assignments, are in progress (assignments accessed, but not submitted) or not started (assignments not accessed);

b) lessons' overview. Instructor will be informed what is the overall progress in different lessons within the course (%) – assignments performed, materials accessed, time spent on materials.

Weekly the snapshot of social interactions will be visualized in the course context based on posts and replies in discussion section and comments in blog (visualized through SNA). Different sub-communities that frequently interact with each other will be visualized with different colors.





Students' dashboard visualizes in real time:

a) social interactions in the course context based on posts and replies in discussion section and comments in blog (visualized through SNA). Different sub-communities that frequently interact with each other will be visualized with different colors.

b) progress in the course context based on the performed self-assessment tasks and assignments, accessed materials and time spent on them, participation in discussion and number of activities completed.

APPLICATIONS

Dashboard is developed from the scratch solution that visualizes learning interactions based on data stored in LRS. Dashboard will be integrated with the EMMA platform. In the future recommendation solution will be developed.

INNOVATIVE ASPECTS AND BENEFITS

There are different environments, which include learning dashboards that reflect the learning experience to users, but these are not environments that focus on MOOCs. Therefore developed application is novel by focusing more on supporting MOOC learners in reflecting on the learning experience and interactions, and predicting progress, while not forgetting valuable management information for course designers.

MOOC platforms do not to focus on recommender dashboards, which is one of the directions in EMMA platform. In Emma, the learner has a chance to choose from different modules in different MOOCs and to create their personal learning path for supporting personalized bottom-up approach to learning. For supporting students to find suitable MOOCs and select needed modules for their learning path, their dashboard will provide meaningful recommendations.

STATE OF THE ART

Dashboard is not ready product and it is under the development. Finalizing the dashboard development is in dependence with the development of tracking tool and implementing the learning record store.

TIMING

Expected date of achievement in the project: September 2016.

Time to market: September – November 2016.

INTELLECTUAL PROPERTY

Dashboard is developed from scratch, is open source and can be used under GPL GNU licence.

FUTURE DESIRED COLLABORATION

Technical cooperation between CSP and TLU is tight until the end of the project. Additional collaboration between UNINA and TLU is tight, because UNINA is responsible for integrating the dashboard solution, which is developed by the TLU.





Dashboard solution will be licenced under GPL GNU license, which means that collaborations with other interested parties are welcomed for further developments.

Research collaboration about dashboard is also planned. Together with IPSOS the usage and impact of the dashboard will be analysed and evaluated. Some additional research could be planned with the learning analytics community.

DEVELOPERS- COSTS

Dashboard will be developed by TLU developers, but in tight collaboration with the CSP, because of the tracking tool, LRS and dashboard are managing and exchanging the same data. Two developers are involved with the partial time (altogether 1,5 positions). Both developers work with their workplace technologies (laptops, extra screens).

CONTACT

Contact information of the exploitable results managers or partner representative

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Appendix II-A.6 – UB answers (first)



ASSET INFORMATION

TITLE: Open Wine University

DESCRIPTION

The OWU MOOC, created by lecturers and professors at the University of Burgundy Academic Institute of Vine and Wine, takes you on a journey into the world of wine and vine. From viticulture to wine-tasting, taking in the notion of "terroir", learners will discover all the stages in the manufacturing processes of different French wines as well as the essential steps in wine-tasting. Why is a wine white, red, rosé or sparkling? How can you train your senses to detect taste and aroma? Over and above viticultural techniques, the OWU MOOC also provides insights into the history of grape varieties and the socio-cultural environment of wine and vine. Learning activities take the form of fun, interactive and participative exercises linked to social networks. Learners will understand why wines may be different from year to year, according to terroirs and wine-making techniques. This course, based on short videos including animated illustrations, takes place over 5 weeks. Participants explore the world of wine and vine using blogs and social networks.



MOOC #OWU Open Wine University (french: Université de la vigne et du vin pour tous)

APPLICATIONS





The Open Wine University MOOC can be followed freely by anyone interested in wine and wine-making. Learners must be adults and of an age authorised to purchase and consume alcohol in their country of residence, due to the wine-tasting activities. The MOOC, or elements of it, can also be integrated into a degree course, as an introduction to a more specialist approach.

INNOVATIVE ASPECTS AND BENEFITS

There are other resources about wine on the market (see for example UVED, the French digital thematic university on environment and sustainable development) and also online courses provided by A British organisation, but these focus either on the vineyard or wine tasting, whereas the OWU MOOC provides a much wider picture. To the best of our knowledge, it is the first MOOC of its kind, especially one running in French and English.

STATE OF THE ART

The OWU MOOC is currently (Feburary 2015) being finalised ready for large scale Beta testing with 100-200 French participants (March-April 2015) prior to a full public launch in French and English in May 2015. Test results after the beta test will be provided.

TIMING

Expected date of achievement in the project: OWU1 :

finalised in EN et FR May 2015

OWU2 to be produced later (new content, not just a second iteration)

Time to market: 9 months from conception

Further exploitation via a SPOC for example would involve charging for additional services such as tutoring, certification or other suitable form to create revenue.

INTELLECTUAL PROPERTY

All video & pictures: Creative Commons BY-NC-SA or "BY-SA"

FUTURE DESIRED COLLABORATION

No considered collaboration right now

DEVELOPERS- COSTS

Brief explanation of the partners involved in the development of this technology. Specify related components, partners responsible.

Provide details about the development and maintenance resources (personnel costs, time, technology suppliers)

Cost of producing the OWU MOOC : Design : Denis GUVENATAM (uB) 8 months Project manager / MOOC designer : Denis GUVENATAM (uB)



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Email: Deborah.arnold@u-bourgogne.fr



authors: 14 number of hours spent ? 5h/authors Production : 1 cameraman : 30d Mehdi MEJDOUB (Independent) 1 sound technician : 30d François SALISSON (uB) Post-production Editor: PSIUN (Pôle système d'information et des usages du numérique) (uB) Sound technician (mix): 15d François SALISSON (uB) Other: Illustrations, music,...: Graphics: Denis GUVENATAM, illustrator, photoshop (uB) Animate: Mehdi MEJDOUB (independant) & Denis GUVENATAM (uB) After-effects & Premier pro, Cubase, Sonic Foundary Future MOOC providers: Internal request for proposal (uB): in progress Possible partners: Startups focus on e-learning, big data CONTACT Full Name: Deborah Arnold, Director AIDE-numérique, PSIUN, Université de Bourgogne





Appendix II-A.7 – UB answers (second)



ASSET INFORMATION

TITLE: MOOC Digital Culture and Writing

DESCRIPTION

The MOOC DCW provides an overview of the potential of digital culture and writing to create and publish on the web. The approach is meant to be practical while having a reflective and critical aim. The main objective is to make digital culture accessible and to play down the technical aspects. A team of researchers, teachers and professors, experts in their field will explain in a practical and affordable way these concepts. The MOOC CEN is for all those who want to:

- Learn more about digital technology and how to communicate with,
- Having a large reflective and analytical overview
- Understanding the nature of this new culture in the age of digital,
- Making their first steps in this universe.

Each week, activities will be proposed to test learner's knowledge, discuss his project and practices or communicate with other participants.



MOOC DCW

Digital Culture and Writing (FR : Ecriture et Culture numériques)





APPLICATIONS

The MOOC DCW can be followed freely by anyone interested in digital culture and writing from academic or business environment. Learners may be young adults, adults or more elderly, for example: students, administrative staff, independent, artisans, employees of small or large businesses and retirees. The MOOC, or elements of it, can also be integrated into a degree course, as an introduction to a more specialist approach.

INNOVATIVE ASPECTS AND BENEFITS

There are other resources and MOOCs about Digital Culture but the approach of this one is intended to be practical while having a reflective and critical aim. The best asset is that it's based on a different approach oriented reflection, theoretical and practical anchor. The main objective is to make digital culture accessible and to play down the technical aspects.

STATE OF THE ART

The MOOC DCW is the second MOOC of the provider (University of Burgundy - uB). The beta test of the first MOOC of uB, the MOOC OWU, in March-April 2015, will be used to improve the current version of MOOC DCW.

It is currently under development and will be finalized (April 2015). It will be ready for public launch in French and English in May 2015.

TIMING

Expected date of achievement in the project: MOOC DCW1 :

Finalized in EN and FR May 2015

DCW2 to be produced later (new content, not just a second iteration)

Time to market: 9 months from conception

INTELLECTUAL PROPERTY

All video & pictures: Creative Commons BY-NC-SA

FUTURE DESIRED COLLABORATION

Evocation of possible collaboration with companies or economic houses

DEVELOPERS- COSTS

Cost of producing the MOOC DCW : Design : Alexandra Maurice (uB) 8 months Project manager / MOOC designer : Alexandra Maurice (uB) Authors : 10 Number of hours spent: about 5h/authors

Production : 1 cameraman : 30d Eric PAUL (uB)

1 sound technician : 30d François SALISSON (uB)

Post-production Editor: PSIUN (Pôle système d'information et des usages du numérique) (uB) Sound technician (mix): 15d François SALISSON (uB)

Other:

Illustrations, music... Graphics: Pierre GUILLEMENEY, illustrator, photoshop, flash (independent) Animations: Pierre GUILLEMENEY and Eric PAUL (Adobe Premiere) Sound and visual design : Eric Paul et Alexandra Maurice (uB)





Future MOOC providers: Internal request for proposal (uB): in progress

Possible partners: Startups focus on e-learning, big data, education and professional training CONTACT

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Appendix II-A.8 – UOC answers



ASSET INFORMATION

TITLE: moUoc: Moving Open University of Catalonia a step further in flexible educational provision.

ABSTRACT

The Open University of Catalonia has been delivering online learning since 1995. From fully online undergraduate to graduate (masters and PhD) programs to Lifelong learning training solutions.

The EMMA technological platform provides the opportunity to expand and explore new learning formulas that range from massive open online courses to micro-learning as well as student-led units of learning composition.

The EMMA platform enables new ways of content and course segmentation and aggregation that supports innovative ways of learning provision including, among others: European interuniversity projects, unbinding learning offers, pedagogical innovation through learner empowerment, and e-portfolio lifelong learning building.

APPLICATIONS

EMMA platform for MOOC hosting

- UOC (institutional) driven MOOC: complementary offer potentially leading to recognition into programs or other alternative ways of certifications (competence certification).
- Inter-institutional driven MOOC: complementary offer potentially leading to joint programs.

EMMA platform aggregator

- University offer: flexible platform for course/activity aggregation (design) repository of quality resources for learning design
- Student (participant)-led learning: flexible platform for course/activity aggregation (design) repository of quality resources for self-constructed of LLL paths.

INNOVATIVE ASPECTS AND BENEFITS





Alternative products:

- open joint educational offer from EU universities,
- MOOC
- Micro-learning units
- Ad-hoc evaluation

Innovative aspects:

- Flexible ways of inter-institutional agreements on joint educational offer
- Certification of open learning from MOOC to self-constructed LLL paths.
- Improvement of RPL/RPE

Advantages

- New ways of satisfying social learning demand
- Increase in University visibility
- Increase in student enrolment
- New business models of the digital age

STATE OF THE ART

The design of our MOOCs follows the xMOOC pedagogical approach. We are using mainly three products for the video production:

- Wirecast 5
- Adobe CS6 (Premiere and After Effects)
- Camtasia Studio 5

TIMING

Expected date of achievement in the project: MOOC implementation in 2015 and micro-learning and student-led design and learning in 2016

Time to market: mid of 2016 (June- July)

INTELLECTUAL PROPERTY

Our organization has an Open Access Policy, our generated content is accessible in an open and institutional repository but also under Creative Commons by-sa v3 license

FUTURE DESIRED COLLABORATION

Technical cooperation: We would like that Emma Platform was a future repository of our MOOCs in order to provide students and stakeholders that could collaborate with us on creating new courses and content, constituting a technological solution and European platform for University projection. It would be interesting to, once EMMA project is finished be informed about the technical updates and its new features and collaborate with pilot experiences.

DEVELOPERS- COSTS

So far, the design of the MOOC, development of contents, coordination, meetings, etc. has resulted in 500 hours (approximately) of dedication. A part from that, we have also bought 5 licenses of the following video editing tool: Camtasia Studio 5 (785 euros). For its commercial use, we need to guarantee the quality of service and prompt response to the questions formulated by the students. We suggest hiring 3 assistant lecturers with a part-time dedication of 4 hours/day (a total of 3 x 4 x 35days= 420 hours).





CONTACT

Contact information of the exploitable results managers or partner representative

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Appendix II-A.9 – UNINA answers (first)



ASSET INFORMATION

TITLE: EMMA platform

The University of Naples Federico II (UNINA) is the coordinator of the EU funded Emma Project (GA 621030) aimed at providing a Multilingual Moocs Platform at European Stage. UNINA is also responsible for the managing of a FESR project (Federica.eu) for developing OCW academic content in a Mooc Format. As one of the largest university in southern Italy and one of the leading proponents of OER culture in Italy, UNINA has developed it own approach to online learning developing open-access, weblearning portals to HE and scientific Knowledge (Federica; Ipsaportal; Hyperpolitics) and has always been at the cutting edge of research and development in technology-enhanced learning, combining social sciences, digital culture and teaching experience.

The staff profile at UNINA reflects an interdisciplinary blend with a wide range of interests in the pedagogical, technological and social & cultural aspects of educational development. UNINA places emphasis on the promotion of a culture of scholarship in teaching and learning, thus involving leading scholars such as Derrick de Kerckhove and Orazio Miglino in the Emma Project. The research and development interests embrace in fact the didactical uses of new technologies in teaching and learning by bringing together expertise in relation to the pedagogical use of ICT, the technological development of ICT tools, applications and infrastructure and the social, cultural and organisational dimensions of such development. EMMA provides an opportunity for sharing Federica's MOOC production in Europe and in general aims to research in innovative teaching methodologies and learning approaches through the large-scale piloting of MOOCs on different subjects.

DESCRIPTION

E-learning is mainstreamed in Europe. Incentives exist for schools and universities that embrace innovation, experiment with new forms of teaching and learning, and encourage wider audiences in the discovery and delivery of best practice.





During the Italian presidency of the EU, the Minister for Education, Giannini, chose to make her mark through new educational policies, and drew attention to three key concepts: interdisciplinarily, multi-disciplinarily and diversification.

Using these same assets as a starting point, the Emma project aims to create a road map and a platform for experimenting an integrated approach to Online Education. The research aim is to improve the quality of the online learning experience and produce some best practice policy guidelines for learning design. The project requires interdisciplinary and multidisciplinary competencies. In fact, the Emma MOOC platform with its courses represent an unprecedented source of data inflow which can be used to experiment, define, redefine and recreate methodologies and approaches to learning analytics that gain insight into the question of how learning happens. According to Justin Reich (The Cronicle Review, Jan. 2014), MOOCs reproduced big data sets must shift the paradigm of learning analytics and research on learning "from studies of engagement to research about learning, from investigations of individual courses to comparisons across contexts, and from a reliance on post hoc analyses to greater use of multidisciplinary, experimental design".42

APPLICATIONS

Only through triangulated and quality data can we get useful indicators for improving the quality of online teaching and learning and for working towards innovative but not dehumanizing educational policies. The policy sector should be the one to have interest in such a pilot project, while for practice we strongly believe that all cultural institutions aiming at internationalize themselves should use Emma and its linguistic approach to gain position on the HE market.

INNOVATIVE ASPECTS AND BENEFITS

On the HE market there are a lot of wonderful platform. Unfortunately many of them are country-specific, language-specifics or profit oriented. Emma is the sole platform with a European Brand accepting diversity.

STATE OF THE ART

EMMA use an innovative support to language accessibility based on the translation and transcription services which make EMMA platform unique in the MOOC scenario. Currently EMMA platform is under development and the first prototype is being tested.

TIMING

It is expected to have a second fully working prototype tested on a large scale pilot by the end of the project lifetime.

INTELLECTUAL PROPERTY

As stated in the next appendix, the Unina's MOOCS are all under a CC licence. For what concerns the platform, UNINA team is not able to answer with a clear statement because Emma derives from the Federica Platform, which was funded by FESR. The consortium needs to analyse which will be the most suitable licensing schema considering the Consortium

⁴² Justin Reich http://www.sciencemag.org/content/347/6217/34.full





Agreement, the derivative nature of EMMA from Federica platform and the restrictions imposed by licenses of the different EMMA software components.

FUTURE DESIRED COLLABORATION

Further collaborations with TLU, IPSOS, UPV have been already established on the research plan through Erasmus plus project, also involving new partnerships (University of Malta, and University of Patras). UNINA also wish to maintain strong relationship with ATIT, ATOS for their competences in dissemination and market exploitation; UNINA also aims at cooperate with UOC with joint/interdisciplinary MOOC production and field research.

DEVELOPERS- COSTS

For the starting project:

Full professors have been involved at an advice level. Young and senior researchers have been involved at management level.

1 full time administrative support.

3 externals developers have been full-time involved on the project so far, but they have been paid by Federica' funds, since the project allows for minor subcontracting.

CONTACT

Contact information of the exploitable results managers or partner representative

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Appendix II-A.10 – UNINA answers (second)



ASSET INFORMATION

TITLE: UNINA MOOCs on EMMA

Description

For the EMMA pilot, the University of Naples has developed a design for Massive Open Online Courses that combines aspects of xMOOCs (clear course structure, instructional clarity and video lectures) and the Federica WebLearning model (frequent links to other authoritative multimedia sources in web archives and OER repositories) with the strengths of cMOOCs (interaction between learners and tutors, virtual classroom). EMMA offers opportunities for a multilingual, interdisciplinary approach to MOOCs that UNINA is interested in furthering, as well as opportunities for the co-creation of MOOCs with diverse institutions. This is in line with current aims of internationalization. However, as a public university, we need to explore the sustainability of this form of online delivery, especially where giving teachers and facilitators the recognition they deserve for their contribution is concerned.

APPLICATIONS

This option for exploitation would enable us to reach new target audiences in language groups other than Italian and English, which are the two languages used on our local platform. It would also provide new opportunities for research into diverse aspects of this form of online delivery taking advantages of Learning Analytics approaches

INNOVATIVE ASPECTS AND BENEFITS

Our MOOCs are maybe not so innovative in design but offer sustainable options through blending with Web Sources and they combine elements from different models of online learning to offer participants a full-blown university module, of the quality that is found inhouse.

STATE OF THE ART

TIMING

Expected date of achievement in the project: Second versions of UNINA MOOCs will be ready by the end of the project according to the results and recommendations from their evaluation in the pilots.





Time to market: estimated for mid of 2016 (end of H1) (June- July) but it will be fixed according to the business plans that will be defined in Y2

INTELLECTUAL PROPERTY

All our content will be available under Creative-Commons license BY-NC-ND 2.5 or BY-SA v3. Potential conflicts with other licensing schemas in EMMA will be analysed during Y2.

FUTURE DESIRED COLLABORATION

UNINA has developed the EMMA platform so would of course be interested in continuing to use it and further the experimentation work. It is obvious that our MOOCs are easily and comfortably delivered on EMMA with no adaptation. But issues of sustainability are important for public universities where the MOOC is an extra not an alternative to in-house courses. We are interested in developing inter-disciplinary MOOCs.

We have especial interest in collaborating with the rest of EMMA partnership: with other MOOC providers in terms of "transferring" know-how regarding other pedagogical approaches to MOOC design, with partners in charge of evaluation (IPSOS, TLU, CSP) as well as with those providing exploitation and dissemination expertise (ATOS and ATIT)

DEVELOPERS- COSTS

We approximate production and maintenance costs per 8 week MOOC at around 20,000 Euros, including video making, teacher time, technical time (uploading content and revising translations) and facilitator time during the running of the MOOC.

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Appendix II-A.11 – UPV answers (first)



ASSET INFORMATION

TITLE: Transcription and Translation of MOOCs

ABSTRACT

If you wish to open your MOOCS to a world-wide audience, UPV provides state-of-the-art technology to automatically transcribe and translate the content of your MOOCs. This technology will minimise your effort in this arduous task, since it can be adapted to the specific field of your courses. Needless to say, the content automatically transcribed and translated will require some review effort, but it is far from the effort needed to perform the transcription and translation from scratch. In addition, this technology learns from your corrections to keep you from fixing the same mistakes over and over again. The benefits of having the content of your MOOCs transcribed and translated to multiple languages are obvious. In addition audiovisual content can be indexed, so that students can search for specific content in a MOOC.

DESCRIPTION

The success of MOOCs is mostly caused by its universal and open access. However, in practice, the universal access to MOOCs, is not as such for hearing-impaired people and those not knowledgeable about the language in which the course is delivered. Enriching MOOCs with the transcription and translation of their audio-visual content and the translation of textual content significantly enhances accessibility, opening MOOCs to the worldwide community. However, the manual generation of transcriptions and translations is a time-consuming and expensive task.

A first approach is to employ automatic systems to generate transcriptions and translations for MOOC content. Unfortunately, even using the current state-of-the-art technologies, transcriptions and translations are far from perfect. Nevertheless, these automatic transcriptions and translations could be reviewed by course designers, teachers or even volunteers to produce accurate enough materials for students will little effort. In fact, this computer-human approach has shown to reduce the effort needed from a completely manual





approach.

State-of-the-art ASR and SMT systems are usually built from a large amount of data from different domains. As a result, these are general-purpose systems that cannot properly deal with content coming from specific domains. For instance, general ASR and SMT systems will have difficulties transcribing or translating specific vocabulary included in MOOCs. Fortunately, the quality of ASR and SMT systems can be significantly improved by adapting them to the specific domain of the MOOC content in question.

Our ASR system is based on a probabilistic approach to the transcription problem. Basically, given a speech signal, the system will search for the most probable transcription. This probabilistic approach to the transcription problem results in a system integrating three underlying models. First, the acoustic model, which estimates the probability of the phonemes that are being uttered in the speech signal. Second, a lexical model, which specifies how the phonemes are built up into words. Last, a language model, which estimates the probability of the sequence of words being transcribed.

As in ASR, state-of-the-art SMT systems also follows a probabilistic approach to the problem. In this case, given a sentence in an input language, the system calculates what is its most probable translation. SMT systems are composed by two models: the translation and language models. The language model corresponds to the same as described for ASR, but for the English language, since it is language to which we are translating. The translation model corresponds to a model trained using the current state-of-the-art Moses, which estimates a statistical phrase-based log-linear model. This model is built by extracting bilingual phrases (understood as segments of consecutive source-target words) from word-aligned parallel text corpora. Then, several scoring models are estimated from these extracted bilingual phrases.

In the case of audiovisual content, videos are automatically transcribed and translated, and lecturers of the course can easily review them using a post-editing web interface. An example of the interface is shown in Figure 1.

 States 		vamos a continuar	we are going to continue
Curso de Radiología Basada e	n Casos-Problema	con nuestro caso de un paciente on lumbociatalgia derecha crónica	with our case of a patient with a certain chronic right lumbosciatalgia
Profesor: Cristina Ramíre	z Fuentes	con la lectura radiológica	with the radiological readin
Area Clinica de Imagen Medic Universitario y Politécni Valencia	a dei nospital co La Fe y	este es el esquema que vamos a seguir	and this is the schema that we are going to follow
002850	Source language: Español V	mero comenzaremos con la	a first we will begin with the
poliMeda	Target language: English 🔻 del	tección y localización de la patología	detection and localization the pathology
∢ ► ₩ ₩ 4) 00:02	2/00:28 🕜 📲 🖪 🖸 🖵	seguiremos con la	we will continue with the

Figure 13: Web interface for the review of automatic video transcription and translation.

A similar interface is available to review the translation of HTML documents showing the original and translated text in parallel (see Figure 2).





View HTML (original) C Edit translation		(translation)					
		Original (pt)	[Show HTML tags	Translatio	on (en)	Status
	Tópico 1: O que a ciência nos diz sobre as alterações climáticas ?			 To ? 	 Topic 1 : what the science tells us about climate change ? 		
	 Semana 2: 27 de outubro a 2 de novembro			 <st </st 	 Week 2 : 27 october to 2 november 		
	Para esta segunda semana do nosso curso, encontram aqui algumas sugestões de atividades que podem promover uma boa aprendizagem dos conteúdos em estudo.			For this seco activities tha	For this second week of our course, find a few suggestions of activities that can promote good learning of content in study.		
	Sublinhamos que num curso deste tipo não é suposto realizar todas as atividades propostas e explorar todos os recursos disponibilizados em profundidade.			We stress th perform all a available in o	We stress that in the course of this kind is not supposed to perform all activities proposals and explore all the resources available in depth.		
	Existe uma diversidade de opções que visa ir ao encontro de diferentes necessidades, interesses e motivações.			There is a dinneeds, intere	There is a diversity of options that seeks to meet of different needs, interests and motivation.		
	Da mesma forma, os prazos sugeridos para cumprir as atividades servem para vos ajudar na gestão do tempo e das tarefas.			s Similarly, the serve to help	Similarly, the suggested time-limits to comply with the activities serve to help you in terms of time management and tasks.		

APPLICATIONS

There are many other possible applications that can be derived from automatic transcriptions and translations apart from those mentioned above related to accessibility and lowering language barriers:

- Transcribed video content can be easily indexed to search specific content by keywords.
- Automatic summaries of video content can be generated.
- Text-to-Speech technology can provide sound tracks in other languages.
- Automatic discovery of relations between content in different languages.

INNOVATIVE ASPECTS AND BENEFITS

Currently, there are automatic transcription and translation solutions offered by companies such as Google, YouTube, Koemei, etc. However, none of them provides an integrated solution for the transcription and translation of MOOC courses, and those transcription and transition systems target the general domain and are not adapted to the specific content of each course. In addition, the language coverage and quality of YouTube transcription systems is far from those provided by UPV.

STATE OF THE ART

Automatic Speech Recognition (ASR) and Statistical Machine Translation (SMT) have experienced an important progress over the last years achieving accurate enough results for many applications. Indeed, automatic transcription and translation of MOOCs define a new challenging application for ASR and SMT technology. Automatic transcription and translation of





video lectures was studied in the transLectures project, in which automatic transcription and translations of videolectures were produced and post-edited via a web interface. User evaluations corroborated the notable increase in productivity to generate transcriptions and translations for video lectures in comparison to do it from scratch. In addition, lecturers and students show their satisfaction with this computer-assisted transcription and translation system in terms of usability.

TIMING

Most transcription and translation systems for the languages mentioned in the DoW are now in production (EN, FR; SP, IT, DT,ET,CA, PT). However, these initial systems are timely updated when corrections from lecturers are provided.

INTELLECTUAL PROPERTY

The technology behind the transcription system was developed by the UPV team in the transLectures project and is publicly available at https://www.translectures.eu/web/tlk/ The translation system is based on Moses (Apache 2.0) publicly available at

http://www.statmt.org/moses/

FUTURE DESIRED COLLABORATION

Business agreement with organisations willing to transcribe and translate their video and document archives.

DEVELOPERS- COSTS

The development of an initial transcription system for a given language takes approximately 3 PMs if enough training data is available. If data is not provided, it could take up to approximately 6 PMs. The development of an initial translation system for a language direction pair it could take up to 3 PMs. So the cost is 3PMs plus the corresponding computer infrastructure usage, so an approximate cost around 12-15 Keuros per system (transcription or translation). Once the initial transcription and translation are deployed, system update is rather quick. It would take 0.25-0.5 PMs plus computer infrastructure, that is, 2-3 Keuros.

The integration is easily carried out via web service. An API has been defined to ingest videos or documents, query the state of the transcription and translation process and retrieve the automatic transcription and translation.

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Appendix II-A.12 – UPV answers (second)



ASSET INFORMATION

TITLE: UPV MOOCs on EMMA

DESCRIPTION

The Universitat Politècnica de València offers a great variety of MOOCs courses created by their lecturers. UPV courses follows the xMOOC design consisting in a series of videos in which basic concepts, organised so that it is possible to check each lesson or unit as many times as the student needs. A series of exercises interspersed with videos allow students to consolidate learning and some tests after each unit and lesson and a final exam monitor student's progress. Finally there exist a support forum where students can exchange questions and knowledge with other students and lecturers. UPV is currently exploiting their MOOC courses on the EdX platform, which currently lacks the multilingual support of EMMA.

APPLICATIONS

Exploitation of MOOCs in multiple languages.

INNOVATIVE ASPECTS AND BENEFITS

Depending on the content of the course, there are more or less alternative courses offering the same content. For example, there are many competitors in Excel related courses, but not that many on the course "Search on the Internet". The innovative aspects of our courses in comparison with other courses are the availability of videos and discussion forums in Spanish. However, the xMOOC design is well-established and extended. The advantages of this course is that UPV issues a (without academic validity) certificate after the completion of the course.

STATE OF THE ART

UPV MOOCs have reached a mature state in which a large number of courses are provided.

TIMING

UPV MOOCs were already developed before EMMA started. INTELLECTUAL PROPERTY





xMOOCs offered on EMMA were developed by UPV staff and will be release under Creative Commons by-sa v3. license

FUTURE DESIRED COLLABORATION

If self-assessment assignments work properly, multilingual versions of UPV courses might be offered on EMMA.

DEVELOPERS- COSTS

Development of new course and students' attention (rough estimation): Video recording: 2500 euros; Material preparation: 1000 euros; Facilitators: 1000 euros. Not accounting for computer infrastructure.

New edition of a course involving 25% update of materials (rough estimation): Video recording: 750 euros; Material preparation: 250 euros; Facilitators: 1000 euros

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