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# WHAT ARE WEB 2.0 COMPETENCES AND WHY ARE THEY IMPORTANT? – A PROPOSAL TO ENRICH EPORTFOLIO STANDARDS

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## **Abstract**

The changing nature of students leads to take into consideration the strength of emerging learning environments which lie in the use of Web 2.0 tools, of the serious games, of the social networks, etc. The challenge is to recognize and spread valuable student competency and artifacts associated to these non formal environments which are not dependent on a course addressed to university students. This paper focuses on the importance on Web 2.0, on MOOC, etc and on the ePortfolio's use to support the students learning in these non formal environments. To emphasize this we propose to enrich the ePortfolio's structure by adding an item dedicated to the associated artifacts. The paper introduces the importance of the competences and the artifacts related to these non formal environments. The lack of items associated with the ePortfolio in current standards is also studied. Considering such an item in the ePortfolio's structure may replace the "Googling" process because the hiring managers generally use the internet to have an idea about the candidates.

**Keywords:** ePortfolio, web 2.0, learner, competency, artifact

## **Introduction**

Nowadays student learning is changing, and the university is faced with the Web 2.0, with the Massive Open Online Course (MOOC), with the serious games, with the Open Education Resources (OER), with social networks, etc. Considering these different learning sources, learners become autonomous in acquiring and in producing knowledge and this contributes to enhance their competencies. Many researchers suggest taking into account the strength of these emerging non formal learning solutions which lie in the use of Web 2.0 tools as well as the MOOC, the OER, etc. The challenge is to recognize and spread valuable student work and competencies related to these non formal environments. These different learning sources also raise problems of organization because the learners' artifacts associated to these environments are scattered across the internet. Students need to gather and organize their different results and enhance the learning's artifacts to showcase their competency. This paper highlights the importance of learning via Web 2.0 and the other non formal environments as well as the associated competencies and knowledge. It also addresses the contribution of the ePortfolio to enhance these students competency and artifacts scattered through the internet and stresses the fact that it is still relevant to students. Therefore the concept of competency is introduced as well as learning via Web 2.0 and via some other non formal learning environments. The ePortfolio is introduced and the lack of items associated with these learning sources in current ePortfolio standards is also studied based on two examples. The paper proposes to add an item in the design of these standards which offers the opportunity to follow the current students' tendency as well as the market demand for its uses.

## **The learning sources**

Nowadays, learning is done not only via the universities but also through several non formal environments related to the internet. These environments differ in their competency, in their approaches, and in their artifacts.

## ***The concept of competency***

Literature introduces competency as a total set of knowledge, skills, and attitudes as the action characteristics of an organizational environment (Boyatzis, 1982). The competency is also considered as a measurable pattern of knowledge, skill, abilities, behaviours, and other characteristics that an individual needs to perform work roles or occupational functions successfully (Rodriguez et al., 2002). The European e-Competence Framework (e-CF) mentioned on its site (<http://www.ecompetences.eu>) that because of the growing importance of Information and Communication Technologies (ICT) in the context of the global economy and the enormous potential of this sector in terms of creating employment, there is a need for a common framework that enables ICT professionals to describe and develop their capabilities, and which also allows companies and employers to identify which individuals possess the skills they require. The e-CF provides a reference of 40 competences as required and applied at the ICT workplace. As reported on its site, the e-CF is designed to be used by ICT service, user and supply companies, for managers and human resources (HR) departments, for education institutions and training bodies including higher education, for market watchers and policy makers, and other organizations in public and private sectors. The 40 competences of the framework are classified according to 5 main ICT business areas and relate to the European Qualifications Framework (EQF) (<http://www.ecompetences.eu/e-cf-overview/>). These 5 areas are:

- Plan,
- Build,
- Run,
- Enable,
- Manage.

Each one contains a set of competencies, for example the RUN area contains the competencies:

- C.1. User Support;
- C.2. Change Support;
- C.3. Service Delivery;
- C.4. Problem Management.

Besides, each competency is described by 4 sections:

- a section presenting a set of items describing its specificity,
- a section presenting proficiency levels,
- a section presenting knowledge examples,
- a section presenting skills examples.

The site (<http://profiletool.ecompetences.eu>) offers a tool for creating a (pdf) file related to these competencies. In the following sections, we will distinguish the competencies associated with some examples of learning sources.

## ***The Web 2.0***

Web 2.0 is a source of learning and the literature even mentioned the concept of e-learning 2.0 where the learners apply Web 2.0 media, social software, wikis, weblogs or RSS in collaborative learning activities for autonomously producing their own learning contents and using them for their own learning objectives (Downes, 2005). With Web 2.0 learners are autonomous and acquiring knowledge is based on conversation, interaction, sharing, creating and participating (Blees & Rittemberger, 2009). Thus, the learner can explore the potential of digital applications which are not designed specifically for e-learning such as blogging, podcasting, social networking (e.g. Facebook), multimedia sharing (e.g. Flickr, Youtube), social tagging (e.g. Delicious), etc. (Pascu, 2008; Duffy, 2012; Downes, 2010; Lytras et al., 2010). For example, the blog and the wiki can motivate students to learn more thoroughly and add their newly acquired knowledge to the World Wide Web (Richardson,

2009). Thus, blogging may cause the learner to promote critical and analytical thinking, so the posts or the comments he deposits are evidence of his competency. Using wikis is also an opportunity to learn how to publish content, and how to develop and use collaborative skills, to negotiate with each other to agree on correctness (Richardson, 2009). On the other hand, sites like Flickr, Del.icio.us (for folksonomy), YouTube, and others, allow users to publish and organize content by annotating it with descriptive keywords, or tags (Plangprasopchok et al., 2010; Jakes, 2007). Although these environments lack formal structure, they capture the collective knowledge of users and once extracted from the traces left by many users, such collective knowledge will add a rich semantic layer to the content of the World Wide Web (Plangprasopchok et al., 2010). Besides, social networks can also be set up to provide a space where learners can meet and discuss their “learning” both formally and informally (Hart, 2014). The sharing of knowledge and experiences by learners is invaluable, and the use of social network is not just letting people interact with one another, it is more about helping people learn from one another as they work together enhanced by collaborative social tools (Hart, 2014). Indeed, in the report of the “European Education and Training institutions” (Redecker et al., 2009) it was found that Web 2.0 tools can be used effectively to open windows from the closed formal educational and training environment to the outside world. The current challenge of the learners is how to valorise the knowledge and the competencies acquired via Web 2.0 as well as the artifacts created via its different tools.

### ***The serious games***

A serious game is a game which targets learning rather than entertainment (Chen & Michael, 2006). According to Zyda (2005), serious games have more than just story, art, and software, they involve pedagogy. It is an activity that educates, thereby imparting knowledge and competency. Serious games can provide immersive learning opportunities and some appear crucial for competences required for modern citizens and professionals in business and industry in the current information age (Chen & Michael, 2006). The serious games provide the student with the opportunity to practice and apply skills needed in the real world, thus like every other tool of education, they can show that the necessary learning has occurred (Chen & Michael, 2006). For example, these games use pass/fail mechanisms no less rigorously than many college entrance exams, and one form of assessment in entertainment games is scoring (Chen & Michael, 2006). Many games even offer comparisons between players with high score lists. These high scores can be a source of bragging rights for the player, but, more importantly, the scoring system teaches the player what is important within the game. Therefore, the outcomes of a serious game may correspond to a certain competency as well as knowledge that should be enhanced by the learner. For example, presenting a screen copy of the environment created in the game Second Life ([www.secondlife.com](http://www.secondlife.com)) is a proof of the player’s (learner) competency. It is also the case when a learner shows his score after using the Small Business Game ([www.thsmallbusinessgame.co.nz](http://www.thsmallbusinessgame.co.nz)), which is aimed at providing experience for running one’s own business. All of these gaming proofs deserve to be valued and showed as a proof of the learner competency and knowledge.

### ***The Open Educational Resources (OER)***

The term Open Educational Resources (OER) is introduced as “digitized materials offered freely and openly for educators, students and self-learners to be used again and again for teaching, learning and research” (OECD, 2007). These reusable digital materials are intended to facilitate teaching and learning for educators, students and self-learners. The OER are generally stored into repositories such as Jorum ([www.jorum.ac.uk](http://www.jorum.ac.uk)) or Open University ([www.openuniversity.edu](http://www.openuniversity.edu)). These repositories are accessible without any condition except the respect of Creative Common Licenses (Issack, 2011). The term OER may be used to refer to learning materials such as learning objects (quizzes, crossword puzzles, flashcards, animations, etc.), or audio lectures, or images, or entire course content and open courseware, etc. These OER are sources of learning, so a learner may be enrolled for a course, he may answer the corresponding homework, and he may take the associated

exam. Once again, the learner needs to show his artifacts because they are a proof of his competencies acquired throughout this learning resource.

### ***The Massive Open Online Courses (MOOC)***

The Massive Open Online Courses ( MOOC) is an online course with the option of free and open registration, a publicly shared curriculum, and open-ended outcomes (Siemens et al., 2010). MOOCs integrate social networking, accessible online resources, and are facilitated by leading practitioners in the field of study. MOOCs build on the commitment of learners who self-organize their participation according to learning goals, prior knowledge and skills, and common interests. According to Cormier (Cromier & Siemens, 2010), all of these open courses provide educators and learners with an opportunity to develop the skills, the knowledge, and the mindsets needed to participate in complex, ever-shifting real-world situations in which the will to learn is as important as knowing. When a learner is enrolled for a MOOC he should be active and he has to do exercises, write paragraphs introducing a concept, or even create a video in order to give more details, etc. (Wegerif, 2013; Berge & Muilenburg, 2013). Generally, at the end of a course, a badge is attributed to the learner if he succeeds in the proposed exam. All of these artifacts are proofs of the learner's participation to in course, and are also proofs of his competency. However these proofs are scattered through the MOOC environment or through the used social network.

The different examples of learning environments introduced above, as well as others contribute to enrich the learner knowledge, although, his competency, his knowledge and the strengths of the current students are scattered across different networks. The tool (<http://profiletool.ecompetences.eu/>) offered by the e-CF may be used to specify a learner competency, but its result is a (.pdf) file. Learners should gather and organize these different forms of evidence in order to emphasize their competencies and their activities and the ePortfolio may be a solution to gather and emphasize the learning outcomes. Therefore, there is a need for students to demonstrate their learning in more authentic ways, aligning with real-world situations and the ePortfolio can respond to this need.

### **The ePortfolio and some standards**

#### ***The ePortfolio***

The ePortfolio is a purposeful collection of documents which narrates a learner's development, and achievements, with the intention of providing a record of progress, collecting evidence for outcome assessments, and providing the opportunity for reflexion on learning (Stefani et al., 2007). The ePortfolio is provided by the learner and by other people and organizations, including products in a range of media that the learner has created or helped to create alongside formal documents from authoritative sources, such as transcripts of assessed achievement, which the learner has chosen to retain (Zubizarreta & Millis, 2009). Researchers propose different structures for the ePortfolio, and a commonly used structure is proposed by the "Association for Supervision and Curriculum Development" (Wade et al., 2005; Mhiri Sellami, 2011). This structure includes three sub-ePortfolios:

- The learning sub-portfolio shows the student's progress in knowledge acquisition. It may contain works in progress and may track student learning over time. The creation of this sub-ePortfolio is a reflective exercise designed to promote learning (Barrett & Carney, 2005).
- The assessment sub-portfolio supports evaluation by teachers as well as by pairs. It provides evidence of learning and useful measurable outcomes for university evaluators. The student writes a brief, designed to prove, that learning has taken place.
- The presentation sub-portfolio exhibits the student's best work. It is generally used to illustrate the level of accomplishment that the student has attained. Students often use this portfolio during college applications or for professional employment purposes (Barrett & Carney, 2005; Mhiri Sellami, 2011).

The current ePortfolio standards such as Leap2A or IMS (Grant, 2009) don't have in their specification a special item where an artefact such as, the student's score in a certain game or a post from his blog, can be stored. These artefacts are generally included in the items "achievement" for example. The other standards do not dedicate an item, or a set of items, for such a kind of competency either. We limit ourselves to these two standards because several ePortfolio systems use Leap2A such as Mahara (Hand et al., 2012) or Pebblepad (<http://www.jisc.ac.uk/publications/briefingpapers/2010/bpleap2a.aspx>) and the IMS is considered as the pioneer of the ePortfolio's standards (Jafari & Kaufman, 2006).

### ***The standard Leap2A***

The Leap2A specification has been developed to support interoperability between ePortfolio tools and similar systems and the portability of information between them (Grant, 2009). In its site (<http://www.leapspecs.org/2A/>), Leap2A is introduced as a specification intending to cover the representation of several kinds of information centred around individuals, who collect, create, reflect on and use their own information for learning, development, self-presentation, or related purposes. Leap2A reports that there are three different kinds of information that are often included in portfolios:

- Digital artifacts made or jointly made by the ePortfolio holder.
- Information about the ePortfolio holder, his abilities, achievements, experiences, activities, goals, plans and such like.
- Things written that are not specifically about one of the things above — these may include blog posts, comments, reflections, etc.

In an ePortfolio, any selection of these kinds can appear together, as a set of single, self-contained ePortfolio items. The items themselves are the minimal units of information that make sense in their own right, and could be reusable separately from other ePortfolio items. Information managed by an ePortfolio system is just that which the ePortfolio holder wants to keep or maintain, perhaps to reflect on, and potentially to present to others. Digital artifacts, including audio, video, multimedia as well as plain word processed files, may have some associated information, including metadata such as author or owner, date of creation, modification, title, perhaps summary, etc. They exist as self-contained entities, and an ePortfolio holder commonly presents them by way of evidence for his abilities. The item here is the combination of the artifact itself and any metadata represented within the ePortfolio system. However, the Leap2A specification introduces the lists of types that can be degraded to items, and these types are (entry, ability, achievement, activity, affiliation, meeting, organization, person, plan, publication, resource, selection).

It is obvious that the competency related to Web 2.0 and to the other learning environments can be inserted into one of these items. For example an item typed ability which is described in Figure 1, may be used to report a competency, however this will be considered as one ability among the others and will not help the recruiter focus directly on Web 2.0 competencies for example.

### Specification

- > Introduction
- > Core Specification
- > Examples
- > Types
  - > Entry
  - > **Ability**
  - > Achievement
  - > Activity
  - > Affiliation
  - > Meeting
  - > Organization
  - > Person
  - > Plan
  - > Publication
  - > Resource
  - > Selection
- > Relationships
- > Literals
- > Categories
- > Attachments

## Ability

*One of the Leap2A item types*

```
<rdf:type rdf:resource="leap2:ability" /> or
<rdf:type rdf:resource="http://terms.leapspecs.org/ability" />
```

Definition:	EITHER: a general and impersonal definition of some area of knowledge, skill, competence or similar personal attribute, able to be used by anyone as a reference for a claim to possess the ability, or for a goal to achieve the ability, or as an intermediary for exploring pathways in education, employment or life  OR: information about a self-defined and self-claimed ability
Examples:	
Literals used:	
Relationships used:	<ul style="list-style-type: none"> <li>has part → ability</li> <li>is part of → ability</li> <li>has evidence → evidential items</li> <li>reflected on by → entry</li> </ul>
Categories:	
Can degrade to: / inherits from:	entry
	<p>The main challenge with abilities is that they can be described in different levels of detail. Exactly the same applies to what are normally called "intended learning outcomes" and "competencies", which are essentially similar. The detail and definition of a description of ability can range all the way from the most vague, e.g.</p> <ul style="list-style-type: none"> <li>car driving</li> </ul>

Figure 1. One of the Leap2A item types

Therefore, Leap2A specification has no item dedicated to the Web 2.0 competencies while this may be attractive for the current recruiter. Having an item to show these competencies may facilitate the exploration of an ePortfolio, where this exploration is automated or made by the recruiter himself. In fact, in 2012 the Joint Information Systems Committee (JISC), which funded Leap2A, conducted a project whose purpose was to review the current status of implementations, to identify actual and potential benefits, to note challenges and issues, and to discuss their views of emerging or actual practice around the movement of ePortfolio related data and readiness for the specification. Many recommendations were proposed such as the fact that students have shown interest in having their university systems interface with social media. In part, this is so that they do not feel obliged to include their tutors and their course pages in their social sphere, but also widens the scope for data to be built on during their professional lives, once they have left education and set up a blog or other personal portfolio. For example the University of the Arts London is considering whether their Leap2A implementation may be able to interface with Wordpress XML structures (Leap2A Review, 2012).

### **The IMS ePortfolio**

The IMS ePortfolio specification, as introduced in its site (<http://www.imsglobal.org/ep/ePortfoliobrochure.pdf>), was created to make ePortfolios interoperable across different systems and institutions. The ePortfolio specification is used to represent the superset of the components of a Portfolio and it is represented by the Figure 2. Thus the IMS ePortfolio introduces classes corresponding to these supersets, thus on the left of the Figure 2 we have: (accessibility, activity, affiliation, competency, goal, identification, interest, product). On the right of the Figure 2 we have (other, rubric, rubricCell, reflexion, assertion, participation, transcript, securityKey, qcl).

The acquired competency through Web 2.0 or through the other non formal environments may be described in the class Competency. According to the IMS description "... the Competency class consists of the descriptions of the skills the learner has acquired. These skills may be associated with some formal or informal training or work history (described by an Activity) and formal awards (described by a Qualification). The corresponding level of

competency may also be defined. A different Competency instance will be used for each competency. This class does not have a concrete definition, but should be realized by a technology appropriate to the binding in use. In the ePortfolio XML Binding, the Competency class from the IMS LIP specification is used” ([http://www.imsglobal.org/ep/epv1p0/imsep\\_infov1p0.html#1658456](http://www.imsglobal.org/ep/epv1p0/imsep_infov1p0.html#1658456)). We should mention that neither the IMS ePortfolio nor the Leap2A standards pay a particular attention to the artifacts concerning the web 2.0, the OER, the MOOC, etc. It is obvious that these artefacts may be included in the competency item or even in the interest or the product item. To focus on these artifacts, we propose to add a new type or item content related to the web 2.0 competency so that the recruiter will focus directly on it.

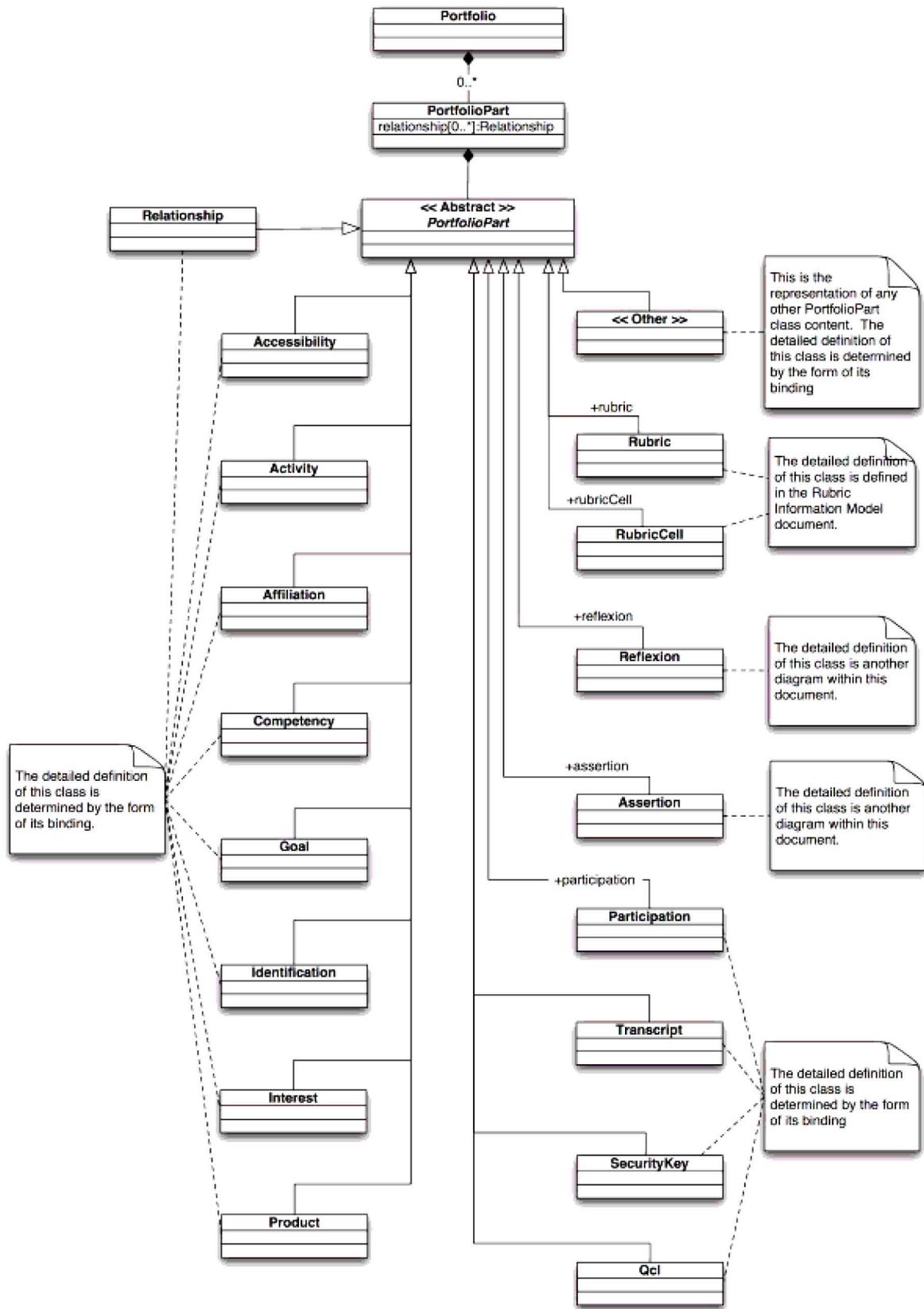


Figure 2. Portfolio class description  
 ([http://www.imsglobal.org/ep/epv1p0/imsep\\_infov1p0.html#1658456](http://www.imsglobal.org/ep/epv1p0/imsep_infov1p0.html#1658456))

## **An item to enrich the ePortfolio**

The current ePortfolio structures don't dedicate items to distinguish between the items relevant to the "classical" ePortfolio content and those relevant to the "new" competencies related to Web 2.0, to OER, etc. This distinction exists neither in the technical nor in the conceptual ePortfolio's specification even though the learning takes place more and more through participation and engagement in Web 2.0, in social networking sites, etc (Attwell, 2007). According to Attwell (2007), the failure of education providers to engage in Web 2.0 and in the other learning environments might make schools and other educational institutions irrelevant to the way in which young people interact and exchange ideas. Thus, people, education, and learning have to try to harness the skills and competencies being learned in social networking sites, in OER, in serious games, etc. Therefore, we call for granting specific "treatment" to these "new" learning sources and their artifacts by dedicating an item to them. This item may help the job recruiters who frequently "Google" a candidate to locate his "reputation", his behaviours in community, his ability, etc. Currently, hiring managers use the internet to have an idea about the candidates, so their LinkedIn, their Facebook accounts are generally inspected. Thereby, considering such an item in the ePortfolio's structure may replace the "Googling" process. We emphasize the consideration of such an item at the conceptual level and not at the technical one. Indeed, including these "new" learnings in the ePortfolio doesn't raise a technical problem as many ePortfolio are easily interfacing social networks (Dysthe, 2007). Besides this competency and this knowledge can be inserted in one of the items proposed in the current standards, however our proposition is to enrich the conceptual structure of the standards by adding an item (or even a group of items) dedicated to these "new" learning artifacts. Thus, as we generally find an item about "Personal Information" we suggest considering in the ePortfolio structure an item concerning the learning and the competency via Web 2.0, via social networking sites and others. Adding this item in the ePortfolio standards may enable students to enhance and to gather the artifacts issues from these non formal environments in corresponding items. Thus, showing the badges or the certificates delivered by the MOOCs in a specific item, reinforces their importance and offers an opportunity to directly access them (Hugh, 2014). This item may also facilitate the recruiter navigation through the ePortfolio. Beside, learners should be made aware that because their skills and competencies are scattered through many sites, the ePortfolio provides them with an alternative online environment for marketing their skills and accomplishments. The ePortfolio can also assist them in crafting marketable online identities (Agerbæk, 2009). Thus, the ePortfolio's future is promising provided that it motivates and make students aware of its importance. In order to motivate students to have and to maintain their own ePortfolio, we should enhance its professional impact. Students should consider their own ePortfolio as the student's professional web site that may enable them to present their competencies and qualities to employers. These backgrounds are attested by a collection of diverse evidence (texts, images, applications, etc) created in an authentic activity.

However, we can ask the question about the usefulness of such an item with aggregations that can be offered by the e-learning 3.0 or the Web 3.0. The Web 3.0 may be introduced as the transformed version of Web 2.0 with technologies and functionalities such as intelligent collaborative filtering, cloud computing, big data, linked data, openness, interoperability, usage of 3D, and smart mobility (Wheeler, 2011). Web 3.0 is based on web applications that provide value to the user through the usage of intelligent applications giving them a more accurate and precise information (Rego et al., 2010). Therefore, if, in the Web 2.0, data is in a free and fragmented form spread across the internet, the next generation web aims to create "a web of data that can be processed directly and indirectly by machines" based on the semantic web principles (Wheeler, 2011). However, some researchers believe that semantic linking is over ambitious and hard to achieve on a wide and general scale due to inherent ambiguity of natural language (Marshall & Shipman, 2003). This does not mean that the learner's artifacts couldn't be linked. There has been some success in using artificial intelligence to produce the needed links that capture even some of the semantics such as

folksonomy, blog, etc. However, these links will be more adequate if they are proposed by the learner himself because he is in a better position to do them. His links may have deep semantic associations which deserve to be introduced in a specific item in his ePortfolio. Thus, the big amount of generated data reinforces the need and the importance of the item we propose to enrich the ePortfolio conceptual structure with, because it allows the user or the learner to create the best links. By assembling and organizing his artifacts in his ePortfolio, the learner offers a specific profile. Even though, the web 3.0 tools might come to find and create links between a learner's artifacts which are scattered on the web, this arrangement is not specific and may not emphasize the learner competency. Thus the learner should customize the arrangement of his artifacts as well as their relationship to offer an authentic profile on the internet. This profile may be used by his eventual employers as well as by his professors instead of looking for him in some social networks for example.

## Conclusion

Learning sources via internet are numerous and their merits are becoming increasingly recognized. Web 2.0, OER, MOOC, serious games, some social networks and others are some examples of these new learning sources. The associated knowledge and competency are so important that employers are using electronic tools to research a potential employee's background, personality, and skills via the internet. These competencies and skills scattered through the internet deserve to be given more importance. Even though some institutions, like The European e-Competence Framework, attached importance to some of these competencies and to the way of noticing and measuring them, more attention should be attributed to this scattered information. Our proposition is to enrich the ePortfolio's standards with an item dedicated to these artifacts. This enrichment may help learners, who may also be job candidates, to improve their reputation over the web. This item may also help the recruiter have an idea about the candidates instead of "Googling" them. The challenge is to motivate students to maintain their own ePortfolio, and to convince them to gather, to organize, and to prove their non formal artifacts. Even though many job candidates are reporting fewer requests to see ePortfolios of their work, students should be aware that these employers are increasingly turning to the candidate social media presence as the new measure of his ability in the public relation world. However, academic institution should be aware that by offering storage and access options for the learners' ePortfolios, they provide them with the permanency needed to be used as a tool for lifelong learning. Insuring the authenticity of the ePortfolio content is a challenge that faces any academic institution.

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