



MyLK Project

Deliverable 1.2 Report on recommendations regarding integration of existing valuation tools

Authors: Simon Grant, Théodore Njingang

Contributors: Engelinus Jothanan, Julien Bugman

1. Introduction

There are several existing ICT tools and services that could, in principle, be integrated in some way with the MyLK project dashboard. The more information that can be transferred from other tools and services to the MyLK dashboard, the fuller the record of lifelong learning that the MyLK dashboard can have. Two areas have been singled out for detailed treatment.

1. E-portfolio tools in general have for many years been understood to include repositories of records about the outcomes of lifelong learning, from which individual portfolio owners can create presentations of their skills and competence.
2. The 5 Europass instruments have also for many years held information about individual learning, skills, and competences, both formal and informal.

And there are other newer entries into this space. The Open Badges project, originally run by the Mozilla Foundation, defined a format and an infrastructure for people to award and receive digital “badges”, recognising their achievements or learning outcomes. And all kind of e-learning tools keep information about progress through courses of study, and perhaps also results of assessments. E-portfolio tools and e-learning tools may also be able to provide, or hold, other kinds of evidence relevant to learners’ skills or competence.

In order to clarify what information from existing tools might be relevant, it is necessary at the same time to consider the nature and functionality of these tools, and the overlap with the potential functionality of the MyLK dashboard.



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2. E-portfolio integration

2.1 Describing and defining e-portfolio

E-portfolio terminology has not always been easy to understand. On the one hand, a portfolio is essentially a presentation of works, reflections, skills, evidence, etc. to some intended audience, and this usage derives from the meaning of “portfolio” before they were ever electronic. The request to “show me your portfolio” might well lead artists, designers, and other creatives to get out a selection of what they have done, where that selection serves as evidence of the kind of things they are capable of.

On the other hand, what is now known as an “e-portfolio” could properly be called an “e-portfolio management system”, by analogy with “database management system”. E-portfolio management systems typically allow people to record details of what they have done, what they have created, etc., and arrange that as evidence in the creation of an e-portfolio presentation of skills and competence to anyone, but particularly to an actual or potential employer.

Further considerations about definitions of e-portfolio terms appear in the paper “Clear e-portfolio definitions”¹ from the 2005 European e-portfolio conference. But beyond that paper, it might be helpful simply to use the phrase “e-portfolio tool” to mean any software or service that helps to manage the e-portfolio information and functionality mentioned here.

As well as covering learner-centred systems, the term “e-portfolio” has also been used (especially in the UK) to describe e-assessment management systems. These e-assessment systems are of use particularly for vocational qualifications, where there is one tradition of practice in which learners present their own practical evidence of meeting the vocational or occupational “standards” required to attain a relevant qualification. These kinds of system enable vocational assessment to take place quickly and easily, with assessors having access to the “portfolio” of evidence gathered and presented by the learners. However, because the system is designed specifically for assessment, it is not common to have these systems manage lifelong learning information, nor to provide the information in a form that can be downloaded by the learners.

For instance, the “Ecordia e-portfolio system (...) “enables centres to deliver and manage online a wide-array of different qualifications”. Their web site lists many kinds of vocational qualifications available in the UK².

At the other extreme, it is perfectly possible to create a presentation highlighting one’s own skills and competence without the need for tools or software specific to e-portfolios. This has been a method championed over many years by some researchers and authorities on e-portfolios, such as Helen Barrett.³ A straightforward blogging tool can be used as an e-portfolio, but not all the functionality of e-portfolio tools is supported. Using generic tools only, it may be difficult to have gradations of privacy, and hard to create and manage specific views of personal information tailored to specific audiences. If a person wants to present

¹ Grant S., [Clear e-portfolio definitions](#), 10.2005, accessed 20.06.2016

² see : [Ecordia e-portfolio system](#), accessed 20.06.2016

³ For more visit Barret H., [eportfoliosblog](#), accessed 21.06.2016

their skills and experience to potential employers, it is common to want to create separate targeted versions for each potential employer, as job seekers are advised to do when creating CVs or résumés.

According to the Livre blanc⁴ (“white book”, Groupe ePortfolio, 2013), the ePortfolio (system + methodology) contributes towards the five objectives below:

1. an easier recognition of qualifications ;
2. a strengthened quality assurance in Europe (European Commission, 2016) ;
3. the improvement of the reputation of the learning centers and of the students ;
4. the encouragement of mobility ;
5. the highlighting of the qualifications during job search or studies admission.

The authors of the Livre blanc (Groupe ePortfolio, 2013) state that the types of the portfolios have evolved in times with time: “to encourage the acknowledgement and to promote the recognition and the valorisation of competences, acquired experience, and formal / informal / not formal learnings along the life, from a reflective approach to the learning”⁵. More specifically, it describes the ePortfolio as an “evolutionary set of documents and electronic resources capitalized on a digital environment describing and illustrating the experience, the competences, and the learning journey of its author”⁶. An ePortfolio has to be accessible online in an interoperable manner, and to remain editable by the student. In this way, the ePortfolio can take a part in the building of the digital identity of the learner.

More specifically and according to Heutte & Jézégou (2012)⁷, the ISO/IEC 20013 norm classifies the objectives of any ePortfolio :

- Learning : identification of the progress of knowledge and skills ;
- Evaluation : measure and validation of knowledge and skills ;
- Presentation: push forwarding of achievements and skills ;
- Personal development: encouragement of building of reflective competences.

For a finest list of the types of ePortfolio system, the two works above refers to (Ravet, 2016)⁸. This one defines three possible levels for an ePortfolio.

1. First, the ePortfolio (eP) is a document, or set of documents, presenting the learning results of its owner (a person or an organization) with a specific purpose.
2. Second, the ePortfolio system is a technical product allowing the owner to archive, reflect on, and present of the results of their learning. The user can also broadcast the results to a specific audience.
3. Third, the ePortfolio management system (ePMS) is a software tool allowing an organization to manage a set of ePortfolios with a specific purpose like training or assessment.

⁴ See: [Livre Blanc](#), Ministère de l'Education nationale, de l'Enseignement supérieur et de la Recherche, 10.04.2013, accessed 21.06.2016

⁵ Ibid.

⁶ Ibid.

⁷ Heutte, J. & Jézégou, A. “[La démarche ePortfolio dans l'enseignement supérieur français : Retours d'expériences et proposition de clarification](#)”, 1.2012

⁸ Ravet, S., [Reinventing ePortfolio technology and Practice](#) – White Paper, Europortfolio, 2016, accessed 25.06.2016

2.2 E-portfolio information

Electronic portfolios created without any dedicated e-portfolio tool may have any content at all, and no structure or particular format can be expected. Though there may be plenty of relevant information presented, there is no standard semantic information added, and it is not easy to transfer this information in a structured way into any other tool, such as the MyLK dashboard.

Commercially produced e-portfolio systems usually do not expose the information they hold for a learner to export in a structured way. If an institution purchases an e-portfolio system for use by their learners, the investment may be justified by their hoping to extract valuable information from the system, and if the information is commercially valuable they would not want it to be given away easily. There is the potential to build interfaces to other systems such as the MyLK dashboard, but this will typically require extra software to be written. The question will be, what kind of motivation will there be to write this extra software, or to allow an external system to have access to the information that is managed within that tool.

There is a well-known open source e-portfolio tool, Mahara⁹, which may well currently be the most used e-portfolio tool in the world. Mahara is built with open source software, and can be implemented by anyone anywhere without any need for payment, permission, registration or monitoring. Because it is open source, the information formats used by Mahara are public. Mahara provided part of the core team of developers who implemented the interoperability specification “Leap2A”¹⁰, and Mahara has continued to support this specification fully.

The Leap2A specification is based on Atom Syndication Format¹¹ (the “A” at the end of “Leap2A”), which was originally designed to represent and communicate blog feeds and entries. This very simple basis of all information being represented in “entry” units means that all information can be passed between systems, though there is no guarantee of the more detailed semantics being successfully transferred. This is natural and inevitable, because the detailed functionality varies between different e-portfolio tools. In general, all e-portfolio tools that cover a similar range of uses will contain similar information, even if not formatted exactly like Leap2A.

The specified types of an “entry” in Leap2A are:

- [ability](#)
- [achievement](#)
- [activity](#)
- [affiliation](#)
- [meeting](#)
- [organization](#)
- [person](#)
- [plan](#)
- [publication](#)
- [resource](#)
- [selection](#)

⁹ For more: Mahara [website](#), accessed 21.06.2016

¹⁰ See Leap2A full [specification](#), accessed 21.06.2016

¹¹ Nottingham, M., Sayre, R., “[The Atom Syndication Format](#)”, 12.2005, accessed 21.06.2016

which gives a good idea of the kinds of information that are represented in detail in Mahara and other e-portfolio tools.

There is one other e-portfolio specification known to be in common use, derived from IMS Global's ePortfolio specification¹². It is the NEN 2035:2014 standard. IMS Global Learning Consortium originally published the Learner Information Package¹³ specification (LIP) back in 2001 (with minor corrections in 2005). It was intended to represent a kind of extended electronic CV. However, it was never widely adopted, and was seen as over-complex, with too much scope for differences of approach. It is not known whether any two systems ever achieved interoperability using this specification.

In 2005, IMS produced the ePortfolio specification, based on IMS LIP, but this was not adopted as it was either. Meanwhile in the UK, UK Leap was produced, as a UK version of IMS LIP, but was also closely tied to IMS LIP, and it was not successful in being adopted. It was as a reaction to the lack of success of UK Leap that the Leap2A work was initiated, in parallel with the work in the Netherlands that led to NTA 2035 and subsequently NEN 2035, for which the Dutch needed to modify and simplify IMS ePortfolio to make an effective working specification.

There has been occasional talk of reconciling NEN 2035 and Leap2A, but this has not yet been taken forward. The two separate specifications remain the only ones known to be used in real life for this area of work. NEN 2035 is understood to cover similar ground to Leap2A, but being controlled by NEN, it is only available after payment. The IMS ePortfolio specification is available for public view, which gives a fair general understanding of what is involved.

2.3 The hybrid portfolio concept

The term "hybrid portfolio" was used by Parent & Ringuet (2015)¹⁴ to reinforce the principle of combination in a system organizing digital traces integrating two or more types of portfolio: presentation, learning (development), assessment and professional development described by Tardif (2006)¹⁵ and Barrett (2001)¹⁶.

A "dashboard", as envisaged in the MyLK project, could display information from formal education, or different steps of a course or learning process, both informal and non-formal in a professional context. Learners can justify their choice of items to include in the hybrid portfolio, and that relates to performance and feelings about his individual progress or in teams. (It also reflects the learner's ownership concept) In this regard, the dashboard gives the opportunity to represent this combination from the hybrid portfolio, because as it also reinforces the fact that a portfolio should bring not only learning to self-evaluate, but to develop his practice by reflexive questioning, to make it more explicit consideration while examining his actions (Martin, 2012)¹⁷.

¹² For more: IMS Global e-portfolio [website](#), accessed 22.06.2016

¹³ [IMS Learner Information Package Specification](#), 3.2005, accessed 22.06.2016

¹⁴ Parent, S., Ringuet, S. "The ePortfolio – Companion Document" Cegep, 2015, accessed 22.06.2016

¹⁵ Tardif J. "L'évaluation des compétences : Documenter le parcours de développement. Montréal : Chenelière Education", 2006

¹⁶ Barrett H.C. "Electronic Portfolios as a Means for Initializing Learner Models for Adaptive Tutorials, Educational Technology": An Encyclopedia, eds. ABC-CLIO, 2001

¹⁷ Martin N., [Conception d'un portfolio pour documenter le développement des compétences de l'élève au collégial](#). Mémoire de maîtrise, Université de Sherbrooke. Repéré sur le site du Cégep du Vieux Montréal, 2012., accessed 25.06.2016

Portfolio tools have been well used as a stimulus for learner reflection and metacognition. Reflection can bring up questions to answer later, and timely questioning of the purpose of any activity can result in further thought-provoking comments. These can contribute to the overall learning process. This process is highlighted by the synthetic diagram below, exploitable in the configuration of professional and educational information to made up of the Dashboard.

Synthetic diagram of framework questioning and comments in hybrid portfolio link to dashboard

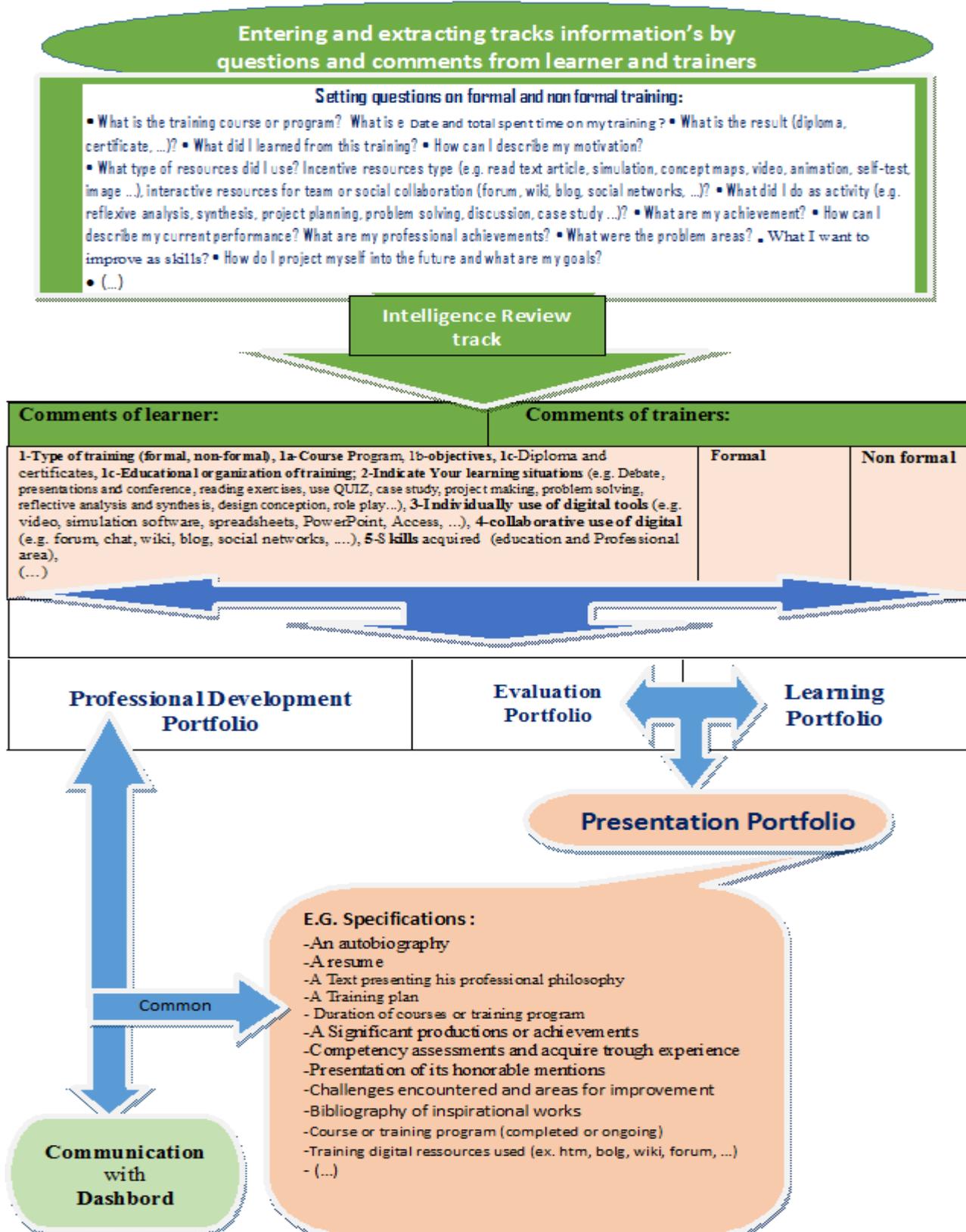


Fig. 1. Njingang, T. (2015)¹⁸, In "Educational digital strategy in MOOC EMA/TechEduLAB, UCP university, Cergy

2.3 The MyLK dashboard and e-portfolios

In considering the integration of the MyLK dashboard with e-portfolio tools, we need both to consider the overlap in functionality, and the overlap in the information used, so we can understand the potential for existing e-portfolio systems to be integrated into the MyLK dashboard. The MyLK dashboard is envisaged as being owned by the learner, rather than being managed by an organisation, because it is not easy for an organisation to manage the recording of learning across several stages of life.

The MyLK dashboard shares with e-portfolio tools the goal of collecting evidence relevant to learners' skills and competence, and also of presenting evidence to others, e.g. potential employers. While the MyLK dashboard is envisaged as collecting much of this information automatically, it would clearly be an advantage if evidence already gathered in an e-portfolio tool was able to be transferred to MyLK.

Of the Leap2A types, it would appear that at least ability, achievement, activity, meeting, plan and publication are likely to be of interest to the MyLK dashboard. Similar information may be available from tools compliant with NEN 2035.

But it should not be forgotten that in most cases, in order to extract suitable information from e-portfolio tools will need permission of the tool creators, and work to be done in writing the necessary software.

¹⁸ Njingang, T. "Les portfolios numériques et l'évolution entre les normes et standards." 2015, University of Cergy-Pontoise. Awaiting publication

3. Europass integration

3.1 What is Europass?

According to Cedefop, the Europass standard “defines specific vocabularies / schemas for representing the information contained in the CV, Language Passport and European Skills Passport in both XML and JSON format” (Europass Interoperability web page, 2015)¹⁹. Europass²⁰ comprises the five following documents described in the table below.

Origin	Document name	Object
completed by European citizens	Curriculum Vitae (CV)	Skills and qualifications
	Language Passport	Self-assessment tool for language skills and qualifications.
issued by education and training authorities	Europass Mobility	Knowledge and skills (personally) acquired in another European country
	Certificate Supplement	Knowledge and skills (typically) acquired by holders of vocational education and training certificates
	Diploma Supplement	Knowledge and skills (personally) acquired by holders of higher education degrees

The first two documents can be created and downloaded on line on the Europass website. The download options include the Europass XML format, which makes it possible for the information to be correctly identified and reused in another system, given some appropriate software. Both of these documents are suitable input for the MyLK dashboard.

The other three documents are issued by institutions, and whether the information contained is able to be imported by any other tools will depend on the software used by the issuing institution. In the UK, several universities are members of a group trialling the “Higher Education Achievement Report”, or “HEAR”, and those institutions may be able to give graduates an electronic copy of the HEAR, formatted according to the HEAR specification²¹,

¹⁹ See: Europass Interoperability [website](#), accessed 22.06.2016

²⁰ See: Europass [website](#), accessed 22.06.2016

²¹ [Cetis LLP Standards Support - HEAR 1.0c Specification](#), accessed 22.06.2016

which is intended to be compatible with the Europass Diploma Supplement (DS), which, along with ECTS provides verified information about the learners achievement in formal higher education.

The most official standard for the representation of DS information is the European EN 15981, "EuroLMAI"²². While the official CEN standard is behind a paywall, due to the surprisingly maintained CEN policy of attempting to generate income from sale of published standards, the standard is very similar to that outlined in the work that preceded the publication of the standard, and was published as CEN Workshop, Learning Technologies as CWAs 16131²³, 16132²⁴ and 16133²⁵.

The Europass Certificate Supplement (CS) is only issued with respect to a course, not to individuals separately, and is intended to show what knowledge and skills are typically acquired by a learner who successfully completes a professional or vocational course which is not a university degree. Despite the fact that significant work was done to define an electronic format for the CS, in the eCOTOOL²⁶ project, few if any suppliers of Europass CS have the capability to deliver electronic CS documents with semantic detail. (The point here is that a PDF document, while being technically electronic, gives no significant improvement in terms of the ability to process the information with ICT over a paper document.) It is thus unrealistic to suppose that any significant amount of information will currently be available for a MyLK dashboard through this route, though of course things could change in the future, for example if there was a decision by the controlling organizations (Cedefop, etc.) to mandate the provision of electronic CS documents in a standard, semantically rich format.

The Europass Mobility could in principle be treated as a partial Europass DS, but we are unaware of any initiatives to supply rich semantic information from this document.

²² For more: European Learning Standards CEN TC 353 "ICT for LET", [EN 15981 = European Learner Mobility - Achievement Information \(EuroLMAI\)](#), 2011, accessed 22.06.2016

²³ For more: Diploma Supplement Application Profile of the EuroLMAI ([EuroLMAI Europass DS AP](#)), Brussels 06.2010, accessed 22.06.2016

²⁴ For more: European Learner Mobility Achievement Information ([EuroLMAI](#)), Brussels 06.2016, accessed 22.06.2016

²⁵ [Guidelines on a European Learner Mobility model](#), Brussels 06.2016, accessed 22.06.2016

²⁶ eCOTOOL Project [website](#), accessed 22.06.2016

4. Independent systems of valuation

Beyond the two well-established valuation systems or tools detailed above, there are a number of newer initiatives that are potentially highly relevant to MyLK. Open Badges and xAPI have grown up together in the last 5 years, both using JSON rather than XML as the standard technology for representation. They were not well-developed or well-publicised when the InLOC project²⁷ was taking shape, and they are both American-led rather than European-led, both reasons contributing to their not being fully taken into account in the InLOC work.

In general, these other technologies are less tied to existing systems than are the technologies for e-portfolio or Europass, and they offer useful insights into aspects of how a MyLK dashboard might operate.

4.1 Open Badges

Work with Open Badges was initiated around 2011 by Mozilla as Mozilla Open Badges²⁸, funded by the MacArthur Foundation²⁹. Other players have since joined in the Badge Alliance³⁰, including IMS Global³¹.

The concept of Open Badges is to allow anyone to award anyone else a “badge”, as a token to recognise their achievement, or learning, or qualities, or any other characteristic of the person to whom the badge is awarded. This was originally seen as a counterbalance to the present near monopoly that education and training institutions have on qualifications and certificates. With a greater openness, there is increasing uncertainty about the meaning and value of each badge. As the MyLK project is aiming to put together many sources of evidence that are easy to integrate, it makes sense also to be able to input information from Open Badges, even if they are not always reliable as evidence for skills and competence.

There is a special website dedicated to the Open Badges Technical Specification³², where the information associated with Open Badges is specified. As well as the usual, and necessary, administrative metadata, a badge “assertion” contains reference to the “badge” as a class, and optionally also to a description the specific evidence which supports the awarding of that badge to that particular individual. The badge class is associated with the image representing the badge, and can point both to an explicit description of the criteria for which the badge is awarded, and to a set of “alignments”, that is, mappings of where the badge stands in relation to the kind of frameworks that may be used in education or training, to map the knowledge, skills, competence, or other learning outcomes that may have been attained.

It is likely that badge information of this kind would be of interest to a MyLK dashboard user.

²⁷ see InLOC (Integrating Learning Outcomes and Competences, 4.2013) Project [website](#), accessed 22.06.2016

²⁸ From Wikipedia: [Mozilla Open Badges](#), accessed 22.06.2016

²⁹ For more: MacArthur Foundation [website](#), accessed 22.06.2016

³⁰ See: The Badge Alliance [website](#), accessed 22.06.2016

³¹ For more: IMS Global [Enabling Better Digital Credentialing](#), accessed 22.06.2016

³² See: [Open Badges Technical Specification](#), 1.5.2016, accessed 22.06.2016

4.2 xAPI (alias Tin Can API)

What is known as the “Tin Can API” or “Experience API” or “xAPI”³³ is a format with its origins in the Advanced Distributed Learning (ADL)³⁴ organisation in 2011, leading to version 1.0 being released in 2013 (see the Wikipedia article³⁵). As the ADL GitHub³⁶ site for the Experience API states:

The Experience API is a service that allows for statements of experience to be delivered to and stored securely in a Learning Record Store (LRS). These statements of experience are typically learning experiences, but the API can address statements of any kind of experience. The Experience API is dependent on Activity Providers to create and track these learning experiences; this specification provides a data model and associated components on how to accomplish these tasks (Experience API Working Group , 2013, p. 3³⁷)

A learning record store could in principle have substantial similarities to the concept of the MyLK dashboard. The dashboard concept adds specific functionality to the idea of a store.

The core of xAPI is the “Statement”. “All learning events are stored as Statements. A Statement is akin to a sentence of the form ‘I did this.’ The “I” is called the “actor” in xAPI, the “did” is called the “verb” and the “this” is called the “object”.

The verb is stored as an IRI (internationalized resource identifier, which takes the same form as a URL, but allowing the majority of Unicode characters)³⁸ and there is no defined and preferred list of verbs in the xAPI specification. This has advantages and disadvantages. One advantage is that anyone is free to define a new verb, if existing ones are not adequate; but on the other hand, this freedom to define verbs can easily lead to a disorganised mass of definitions, with ones that are the same or similar not being recognised as such. IRIs may reduce the readability for those used to a Latin-based alphabet, but may greatly increase readability and comprehensibility for people habitually using other character sets.

“The Object of a Statement can be an Activity, Agent/Group, Sub-Statement, or Statement Reference.” In terms of MyLK’s Digital Learning Episodes, the most relevant type here may be “Activity”. For activities that are interactions, xAPI gives a vocabulary, taken from the SCORM standard:

- “true-false”,
- “choice”,
- “fill-in”,
- “long-fill-in”,
- “matching”,
- “performance”,
- “sequencing”,

³³ For more check : [TinCanAPI](#), [Experience API](#), [xAPI](#), accessed 22.06.2016

³⁴ From Wikipedia: [Advanced Distributed Learning](#), accessed 22.06.2016

³⁵ From Wikipedia: [Experience API \(Tin Can API\)](#), accessed 22.06.2016

³⁶ See: ADL GitHub [website](#), accessed 22.06.2016

³⁷ Experience API, [The advanced distributed learning \(adl\) initiative. v1.0.1](#). Advanced Distributed Learning Initiative, U.S. Department of Defense, 2013

³⁸ From Wikipedia: [Internationalized Resource Identifier](#), accessed 22.06.2016

- “likert”,
- “numeric” or
- “other”

This list makes it very clear, if it were not otherwise clear already, that the typical granularity of xAPI statements is quite small.

At the same level as the actor, the verb and the object, an xAPI statement has an optional “result” property. Reproduced here is the table in the specification describing the sub-properties of the result property³⁹ :

Property	Type	Description	Required
score	Object	The score of the Agent in relation to the success or quality of the experience. See: Score	Optional
success	Boolean	Indicates whether or not the attempt on the Activity was successful.	Optional
completion	Boolean	Indicates whether or not the Activity was completed.	Optional
response	String	A response appropriately formatted for the given Activity.	Optional
duration	Formatted according to ISO 8601 with a precision of 0.01 seconds	Period of time over which the Statement occurred.	Optional
extensions	Object	A map of other properties as needed. See: Extensions	Optional

Again, it can be seen that this is quite suitable for the recording of fine-grained interactions with digital learning resources, and likely to be desirable to take into account by MyLK. 4.3 Evaluation with MOOCs

MOOCs mobility and European standards

Discussed in another study (Njingang, 2015)⁴⁰ are a variety of LMS (Learning Management System) standards and chronological evolution of portfolios tools involved in the techno pedagogical management of learning. This is the case of North American standards: IMS-LD (Instructional Management System / LD-Learning Design) and IMS / LIP (Learner Information Package), and the European model EDS (European Diploma Supplement).

The work of Engelinus (2016)⁴¹ focuses on two groups of components as an extension of IMS-LIP standard. It states in this regard, the nature of structuring an Europass portfolio in a

³⁹ See: “[Chapter 4.1.5: Results](#)” in: Experience API, [The advanced distributed learning \(adl\) initiative. v1.0.1](#). Advanced Distributed Learning Initiative, U.S. Department of Defense, 2013

⁴⁰ Njingang, T. “Les portfolios numériques et l’évolution entre les normes et standards.” 2015, University of Cergy-Pontoise. Awaiting publication

⁴¹ Engelinus. Interoperability between the ePortfolio standards and Europass formats. 2016, TechEduLab/EMA Laboratory, UCP and Montréal universities. Awaiting publication.

MOOC. It appears in the first group, three formats of link to: the CEN CWAs 16131, 16132 and 16133. And for the second, three sub compounds formats to describe skills and semantic message MOOC as: IMS-RDCEO, and CWA14927 CWA15455.

When technology is enhanced by the distance in training, it acts as an analyzer (Lapassade, 1971)⁴²; integrating the hidden dimensions from the model of Bertin (2015)⁴³, which emphasize the pedagogical situations that leave digital traces.

4.4 Other less promising valuation tools

There are many other ICT tools and services that deal with related information. However, if there is no published API to these services, and the software is proprietary, it is difficult to imagine how, practically, the information managed by these tools could be useful in the context of a MyLK service.

- LinkedIn
- GoldenLine (Poland)
- Academia
- CVTRUST which is used both as labeling and valuation tool⁴⁴

Given the practical limits of a project like MyLK, it seems unlikely that any of these will be able to be included in a prototype system. However, if the MyLK service, or something similar, became widely used, it may then be of interest to people owning other web-based services to allow information from their services to be used by MyLK.

4.5 The role of resource metadata

Information about the learning resources, if available, may also be of use in conjunction with xAPI, or with any information describing the interaction of a learner with a learning resource. An early attempt at this was Learning Object Metadata,⁴⁵ (LOM), which is no longer widely used or advocated. Two initiatives in this area are current: first, Metadata for Learning Resources (MLR), ISO/IEC 19788,⁴⁶ and second, the Learning Resource Metadata Initiative (LRMI).⁴⁷ MLR is a large multipart standard aiming to comprehensively replace and extend LOM, while LRMI is a more focused project, aimed at integrating with schema.org⁴⁸, which allows metadata to be embedded in web pages. Information such as educational level and topic identifiers can be found in all of these metadata formats.

⁴² Lapassade, G., L'analyseur et l'analyste. Paris: Gauthier-Villars, 1971

⁴³ Bertin J.-C., [Modélisation en apprentissage des langues médiatisé : quelle utilité?](#), Alsic, vol. 18, n° 2 | 2015, mis en ligne le 15.02.2015; DOI : 10.4000/alsic.2781 (Consulted on February 10, 2016), accessed 26.06.2016

⁴⁴ See the following services: [LinkedIn](#), [GoldenLine](#), [Academia](#), [CVTRUST](#), accessed 22.06.2016

⁴⁵ From Wikipedia: Learning Object Metadata [LOM](#), accessed 22.06.2016

⁴⁶ From Wikipedia: Metadata for Learning Resources [MLR](#), accessed 22.06.2016

⁴⁷ From Wikipedia: Learning Resource Metadata Initiative [LRMI](#), accessed 22.06.2016

⁴⁸ For more: Schema [website](#), accessed 22.06.2016

5. Conclusions

From the above studies it appears that there are several ICT tools and services that can, in principle, provide information to a MyLK dashboard. Recommended for exploration, in particular, for potential integration with MyLK, are:

- e-portfolio information from Mahara and any other system compatible with Leap2A
- e-portfolio information from related systems in the Netherlands using NEN 2035
- Europass Diploma Supplement using EuroLMAI, EN 15981
- Europass CV and Language Passport information, using Europass XML or JSON
- information from any Open Badges
- information from any tool or service able to output xAPI⁴⁹. (For example, Valamis⁵⁰)

⁴⁹ See: [Tin Can Api - Adopters](#), accessed 22.06.2016

⁵⁰ Check: Valamis [website](#), accessed 22.06.2016

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