# MyLK Project

## D1.5: Consolidated report

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# 1. Introduction

The Consolidated Report summarises the main issues discussed in the four deliverables developed in Work Package 1: "Functional specifications".

**The MyLK Dashboard concept**

MyLK's Dashboard is planned as a tool/service for the automatic tracking of (digital) learning episodes (LE) of the individuals: learners, students, employees, professionals, whether the context of that learning is formal, non-formal, or informal (as it is not relevant in the context of learning). In the Dashboard, what matters is the intention of the learner. And as the computer can not know the intention of the learner, we decide to track everything we can. The Dashboard will then suggest digital learning episodes (DLE) to the user who will be able to decide what is relevant and if DLE should be display in the Dashboard.

The main purpose of the Dashboard is to help learners recognize what they have learnt; to facilitate gathering evidence of their learning and to present those in a way that is meaningful to the employers and other audiences. The Dashboard will track and record online activities taken up by the user as digital learning episodes, facilitate recognition of skills and competences, suggest learning resources and help present them in a meaningful and coherent way.

*Definition of a learning episode*

A learning episode, as defined for the MyLK project, is a set of one or more periods of time during which a learner is learning, and for which the learning outcomes are considered to be related, either by the learner, or by some other agent with an interest in the learner or the learning episode.

A learning episode can have a larger or smaller granularity: one greater learning episode may comprise several lesser learning episodes e.g., a MOOC may have a designed structure and outcomes, a playlist on YouTube, an education video (e.g. TED), etc.

A learning episode is defined by the combination of the identity of the learner, and either or both of the learning outcomes identified, and the period or periods of time spent learning. For best definition, all three will be specified. A future learning episode may not have firmly fixed dates and times. A past learning episode may not have the learning outcomes fully defined.

Learning episodes range from formal experiences, as arranged and managed by a learning institution, as in a course of study leading to a qualification; to informal experiences documented and identified by a learner as having intended or actual learning outcomes.

A continuous learning episode is a single experience with no interruption. Examples of continuous learning episodes would be a lesson, a lecture, an experiment, a training session, or one session of a game. A composite learning episode is a set of learning episodes where the learning outcomes are related, whether by intention or by accident. Examples of composite learning episodes would be a course of study, a project, the creation of a creative work, a period of employment.

For a composite learning episode to exist, there must be some reason to believe that the learning outcomes of the constituent learning episodes are related. There could potentially be other aspects of relationship between the constituent episodes.
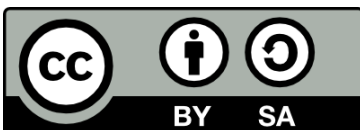
## MyLK LABEL concept

The idea is to create a quality label to give the content created by the MyLK Dashboard users better recognition and increase the content's visibility online. The label would be given by the institutions using the MyLK Dashboard and involved in validation and recognition procedures. The label would also facilitate making connections between various Dashboard users  and would also contribute to the better connectivity between LOCs.

The learner who is the author would ask for a content to be labeled and as a result have his/her work recognised. The institution would indicate the learning outcomes associated with the content and other contents with similar LOCs would be also identified. As a result the increase in number of viewers or content users is foreseen this is a source of potential income.

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# 2. Context

## 2.1 Learners' profiles

Omnipresence of Internet and mobile devices, widespread use of social networks as well as extensive use of many online services has changed the way people are learning nowadays. Learners search for information, develop skills and competences, debate and reflect, engage and create artifacts online without actually realizing that they are in fact learning. For the purposes of the project we identified two main types of learners.

- **a consumer** would tend to be more information oriented, using the media to acquire information: read, watch or listen. The content is crucial for such a user, and quality of information and the attractive delivery would be the paramount.
- **An author** is engaged with more interactive, communicative or productive media. For such a learner the publication, ease of use and connectivity with other users would be more important.
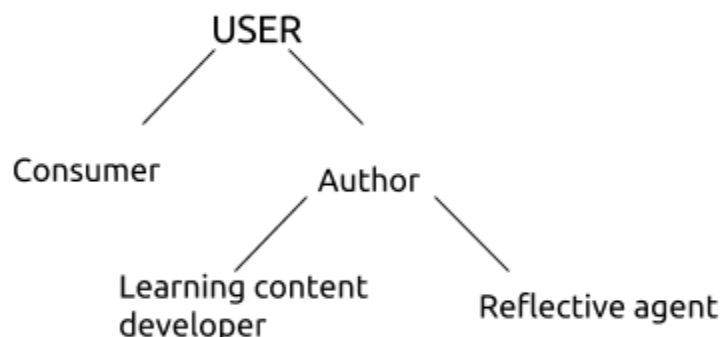


*Fig. 1 Types of MyLK users*

## 2.2 Definitions of different types of "learning"1:

**Formal learning** is always organized and structured, and has learning objectives. From the learner's standpoint, it is always intentional: i.e. the learner's explicit objective is to gain knowledge, skills and/or competences. Typical examples are learning that takes place within the initial education and training system or workplace training arranged by the employer. One can also speak about formal education and/or training or, more accurately speaking, education and/or training in a formal setting.

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[1] Recognition of Non-Formal and Informal Learning, 2010, OECD Report, http://www.oecd.org/edu/skills-beyond-school/recognitionofnon-formalandinformallearning-home.htm

**Informal learning** is not explicitly organized, has no set of objectives in terms of learning outcomes and is not usually intentional from the learner's standpoint. Often it is referred to as learning by experience or just as experience. The idea is that the simple fact of living constantly exposes the individual to learning situations, at work, at home or during leisure time for instance. This definition, with a few exceptions also meets with a fair degree of consensus.

Mid-way between the first two, **non-formal learning** is the concept on which there is the least consensus, which is not to say that there is consensus on the other two, simply that the wide variety of approaches in this case makes consensus even more difficult. Nevertheless, for the majority of authors, it seems clear that non-formal learning is rather organised and can have learning objectives, but that any learning objectives are not within the scope of the main formal curriculum for the course being taken.

## 2.3 The recognition of informal and non-formal and prior online learning

As people are constantly learning online and such learning is mostly outside any formal education framework, there is a need to recognize such non-formal and informal activities. The idea of recognition derives from OECD's initiative on "lifelong learning" dating from 1996 and results in concrete measures taken by countries all over the world to give adequate position to the non-formal and informal learners, such as the "Recommendation of the European Parliament and of the Council of 18 June 2009 on the establishment of a European Credit System for Vocational Education and Training (ECVET)".

The recognition of non-formal and informal learning is one of the main concerns of the European Union related to training. Currently it focuses on the recognition of the experiential learning and MyLK believes that the issue of digital learning and the recognition of informal digital learning need to be seriously taken into consideration as well. So MyLK would go beyond recognition of learning in the professional context and also would support recognition of other types of online learning experience to fill up the profile of the contemporary learner. The Dashboard can have two purposes with regard to informal and non-formal learning recognition: (1) to help learners to gather and present results of their non-formal and informal learning (2) to guide learners with the recognition procedures in their countries.

So the Dashboard could gather information related to the European initiatives as regards recognition of professional experience, and analyze all the frameworks gathered, to guide people in their recognition process in the most effective way. That could really ease the process for learners and, in that way, help them their learning to be recognized.

Recognition of prior learning (RPL), prior learning assessment (PLA), or prior learning assessment and recognition (PLAR), describes processes used by regulatory bodies, adult learning centers, career development practitioners, military organizations, human resource professionals, employers, training institutions, colleges and universities around the world to assess skills and knowledge acquired outside the classroom for the purpose of recognizing competence against a given set of standards, competencies, or learning outcomes. RPL is practiced in many countries for a variety of purposes, for example an individual's standing in a profession, trades qualifications, academic achievement, recruitment, performance management, career and succession planning.

## 2.4 Recognition of the content produced by learners as social networkers

The "user as an author" concept has several implications. For MyLK one of them is the recognition of the content produced by the learners. As learners are engaged in meaningful learning episodes they produce digital artifacts that can be then recognized as (1) evidence of their learning (2) meaningful resources and reference materials for other learners. The MyLK idea is to implement a support system for learners who produce content, which can be based on ratings, feedback and measure of popularity, as well as possibility of the formal recognition of the content e.g. by educational institutions.

## 2.5 The changing role of the university

For many formal educational institutions, such as schools and universities, the advance of communication technologies has posed challenges that require support and re-definition of their roles and responsibilities. The transition from teacher-centered to learner-centered education has been taking place within institutions, and is triggered by various socio-economic factors. World-wide accessibility of high quality content and learning opportunities, such as MOOCS, is a challenge to traditional universities, which need to adapt by both widening and innovating their educational offer as well as acknowledging the learning that has occurred outside the formal or domestic context.  As learning can happen literally anywhere, educational institutions need to re-think their role and act to support their main "clients" – learners.

## 2.6 Learning design context

**Inverted pedagogy** (the flipped classroom concept[2]): this means the use of technology (computers, tablets, smart phones) and communication channels (networks, social media) outside the classroom, and emphasizing active interactions (between learners as peers, as well as between learners and teachers) in the classroom. The principles of self-management and taking personal responsibility over learning, as well as making opportunities for greater "ownership of learning" are issues that are taken into consideration by MyLK.

**Distribution of Learning**: the consequence of active performance of the users as noted in 1 is that learning takes place in a variety of places and so the learning environment of contemporary learners consists of a multitude of episodes facilitated by a multitude of services and tools. Such personal learning environment – that is "a collection of a network of people, artefacts, and tools (consciously or unconsciously) involved in learning activities" – may be effectively managed, but most learners would need support of the facilitator to set and achieve their learning goals.

**Assessment in technology-enhanced learning**:  the application of technologies has influenced the change in the assessment methods in the formal educational settings. Creative thinking, soft and higher-order skills are valued in parallel to domain-specific knowledge. Also assessment has been perceived as a way to support development of online learners rather than as a grading procedure. A combination of **formative and summative assessment** in the context of MyLK project seems to be the key approach as it supports development and in the same time it shows overall progress achieved at the end of learning. **Peer assessment** is enhanced by digital technology as in a variety of LMSs there are functionalities that support the process of assigning randomly selected fellow learners to assess their peers' work according to an assessment rubric. This type of assessment is used especially in MOOCs (institutional mass training portals) where massive participation requires alternative, scalable assessment methods. In the context of MyLK, peer assessment can be reported as a learning episode from the perspectives of learners both assessing and being assessed. **Digital badges** provide the learners with a symbol of accomplishments of skills, competences, qualities or interests. They can be realized in either formal or non-formal and informal educational setting. Open badges are collected by the learner while badges as a more general concept can be used in a formal context (eg. academic courses, certified trainings etc).  Open Badges "can be used to set goals,

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[2] https://en.wikipedia.org/wiki/Flipped_classroom

stimulate motivation, recognize and represent achievements, supporting open credentialing and accreditation for formal and informal learning"[3].

**E-portfolios** have been used in education and training for various purposes: to support development and reflection; to present and celebrate achievements; to facilitate assessment; and to store evidence of learning. Implementations in different educational contexts, and the long history of practice provide valid information for pedagogical perspective of MyLK, since the planned Dashboard and e-portfolio tools have many features in common. In particular, facilitated reflection, supports for automatic upload of data to the system as well as service independence are among the most important issues tackled by MyLK.

## 2.7 Tight links between companies and educational/vocational institutions

There is an increasing tension between companies and universities concerning the level of responsiveness to industry sectors' needs, and between study as personal development and study as vocational training. Cooperation between business and universities with the view not only to research but also to learning and teaching has been growing. Companies frequently do not expect universities to equip learners with highly specialized knowledge, but rather to develop specific learning and management skills, soft skills and the like.

Another important observation here is a shift regarding validation of skills and competences. Educational institutions (e.g. universities, colleges) don't have a monopoly for delivering diplomas and certifications any more. Vocational training institutions are starting to be entitled to deliver certificates which attest that some competencies have been acquired. In order to obtain this kind of validation, candidates should either pass a practical exam or provide tangible elements which prove their professional experience.

## 2.8 European standardization

At present, there is only one European accreditation system that is actually working: ECTS, the European Credit Transfer and Accumulation System. It is used mostly for academic studies, and its aim is to make qualifications/certifications more transparent through Europe.

Another accreditation system at an experimental stage is the European Credit System for Vocational Education and Training (ECVET). This is designed to create a homogenous framework to recognize and validate skills and competences, but it seems to be difficult to

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[3] Knight & Casilli, 2012, [in] Open Badges Theory,
https://beuthbadges.wordpress.com/category/openbadges-theory/

establish and it raises an issue of European vision. Indeed, when inflexible standards or norms for Europe are created, it implies that Europe is considered as a homogenous entity, and not as a composition of very diverse countries including all their particularities.

## 2.9 Validation

The validation process aims at the verification of whether the competences required for a certain qualification have been achieved adequately. The validation standards ensure the quality and viability of the system through (1) alignment of the assessment to the learning outcomes, (2) the degree of assessment of the results, (3) the suitability of the assessors for validation. Validation supports further development of the learner as well as better exploitation of the qualification in the market.

Validation as a process is generally composed of 4 elements:
- Identification and skills audit
- Documentation of achievements
- Assessment and verification
- Confirmation of achieving qualification, degree or credits.

The process is different in various countries and current European efforts are targeted into greater flexibility and transparence of the system throughout the common market.

## 2.10 Qualification framework and curriculum design

The introduction of European Qualification Framework set the common ground for the description of courses and studies and each country has their own systems of curricula accreditation Therefore it is also the basis for the recognition of competences and skills gained outside the formal system performed by the educational institutions operating with NQF/NQVET.

# 3. Correspondence between official and non-official certification and validation

In the latter half of the 20th century formal education was mainly aimed at knowledge and based on the knowledge. There was relatively little change in professions, and jobs tended to last for a lifetime. Therefore there was little need to account for personal skills and competence. These were learned "on the job", and rarely needed to be transferred, and within most jobs it would be obvious whether someone was competent or not. The issue of skills correspondence was not so important, because the knowledge and skills people learned formally were clearly separate from the skills and competence learned "on the job".

In the 21st century, however, the rate of changing jobs is likely to continue to increase. The retirement age is increasing across Europe, and more and more people are remaining active at work beyond the retirement age. While formal learning, education and training will most likely continue to play a vital role, it is wildly impractical to imagine that all of a person's lifelong knowledge and skills needs will be supplied through this formal path. Hence comes the need to account for both formal and informal learning in the same or similar terms. A much better **basis for establishing correspondence** is needed. This implies being much more explicit in developing, recording, managing and accounting for skills and competences.

People will want to know if they are ready for a different job, and will want to convince others that they are able to perform. The best validation there is for effectiveness at work comes from the companies, organizations, or colleagues one has worked with. This is not only true of technical knowledge, skills and competence, but it is increasingly recognised that other attributes – known variously as "soft skills", qualities, or attitudes – are essential for a person to perform well in a job. Talent development, and therefore experiences in the area of education, work and social context are important.

The individual in the 21st century is likely also to have more of an inherent natural desire to be in command of his/her own learning and career path. Based on their knowledge, skills, competences and attitudes they will be more proactive in finding suitable jobs. They also will learn and develop themselves with the knowledge, skills, competences and attitude that is necessary for this new job. They will be more aware of their own performance as such. Therefore they will also need a informative, supportive and guidance tool, which MyLK should provide.

What we have seen, however, is a great lack of systems and initiatives to provide that needed correspondence. Formal learning has its own way of describing learning outcomes, mainly to do with knowledge, and some skills, while for informal learning there is what often looks like a chaotic profusion of ways in which someone might acquire knowledge, skills, and competence, of which few, if any, are seen by employers to be relevant to them.

On the formal side, some kind of RPL gives perhaps the best promise of some kind of correspondence. The idea is to investigate what an individual has learned informally, and map it onto the same learning outcomes as are in use in the formal learning sectors. However, this approach falls short of providing what employers want in exactly the same way that most formal learning also falls short. Many of the skills, particularly "soft skills", that are needed by employers are simply not formally documented in any formal course.

On the informal side, perhaps the Open Badges approach is the most promising. Once a well-accepted framework of skills and competences is in place, the MyLK system and other badge technology, working together, could help by encouraging and facilitating individual learners to convert their knowledge, skill and experience into badges that correspond to what is wanted by employers.

If European policy aims to develop work-related skills and competence of EU citizens, then it should also be policy to provide ways in which skills and competence can be accredited by formal education, by employers, and by other informal learning. MyLK should be the tool that support this policy. The tools should facilitate the the development of skills and competencies and also show experiences and talents.

**Formal education**

The EQF provides a framework for assigning a level to attainment across education, training and practice. While every sector may have learning outcomes in all three areas – knowledge, skills and competences – broadly speaking, formal education is strongest in the area of knowledge, vocational training is strongest in the area of skills, and professional practice is strongest in the area of competences.

Certification of competences, distinct from knowledge and skills, within the official system is rare. There are instances, for example, of PhD degrees awarded for professional practice, but this is the exception rather than the rule.

There may only be a small overlap between the knowledge, skills and competences in these different areas of life. Beyond the overall levelling given by the EQF, current approaches to

certification of official learning give us little or no idea about skills correspondence between these different areas.

As detailed above, the Diploma Supplement, the Certificate Supplement, and similar systems, by themselves, offer little help to any automatic system in mapping correspondences between knowledge, skills or other learning outcomes learned in different contexts. What is missing is, first, the ability to map these learning outcomes onto the knowledge, skills and competence required in employment, and second, some way of agreeing definitions of those employment requirements.

RPL gives a good approach to validating informal learning in a way corresponding to formal learning. However, this is limited to establishing correspondence between informal learning and the skills that are recognized in formal learning. To satisfy employers through RPL, a much more comprehensive set of learning outcomes will have to be assessed using RPL, and these will need to be defined in a way that is generally recognized and accepted.

Given all these considerations, it is not too difficult to envisage a Dashboard system that makes these correspondences clearer to learners. In cases where the requirement of employment is not agreed, the task of a Dashboard is almost impossible, trying to track a vast number of different kinds of overlapping requirements. If no mapping or correspondence can be made between what is learned from digital resources and what is learned from live experience, a Dashboard cannot be directly relevant to employment. Yet there is a ray of hope, to be investigated in this MyLK project, that the existence of the Dashboard technology can stimulate agencies to create frameworks of skills and competence that cover more of the real requirements for employment.

**Frameworks for the learning outcomes**

One challenge that could be addressed is the challenge of creating learning outcome frameworks, covering knowledge, skills and competenc, that better allow correspondence to be mapped. It is difficult to see how it would help to simply bringing together two non-corresponding frameworks on the same Dashboard. Rather, the challenge is to create frameworks where the concepts and the language work across different sectors.

Traditionally, formal education and training has been concerned with outcomes that are more easily assessed or measured. Knowledge of all kinds is relatively straightforward to assess. Many technical skills can be assessed in controlled environments. The issue here is how to recognize non-official learning in various areas, and in principle this can often be done through bypassing established courses and going more or less straight to some kind of formal

summative assessment, which might be similar to the kinds of assessment currently used in formal learning situations.

Competence, as opposed to knowledge and skills, presents different challenges. Professional and/or vocational certification is usually done in the context of a workplace, whether during regular employment or at an early stage such as an apprenticeship. Formal education and training covers the knowledge and skills that "underpin" competence, but cannot fully assess competence in the classroom or through formal examinations.

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Non-official learning can either be very easy or very difficult to relate to official learning and employment in terms of the skills and competences involved. Non-official learning may be deliberately aimed at a particular skill or competence, which may relate immediately either to official learning or to employment. On the other hand, where unofficial learning has no explicit intended learning outcome, or where the outcomes are not described in terms that relate directly to other areas, it is more difficult to relate it to official skills.

The reason for this is plain to see. Official learning is designed and managed within an established body, whether that be an institution of learning or a business organization. The opportunity is there within the body that manages the learning to consider what the intended learning outcomes might be, even if this is not consistently done. In contrast, for unofficial learning, the only ways to achieve clarity in the learning outcomes are (a) for the learners themselves to decide on the learning outcomes, or (b) to take outcomes from the learning materials themselves, based on the ideas of authors or reviewers.

Perhaps what the MyLK project is looking for is a way for people to define and agree learning outcomes that can, in principle, be certified both formally and informally. For, at present, there appears to be no such system, and no such learning outcome definitions, at least none that are well known or well used.

If there were some well used and agreed frameworks of skills and competences that covered what is needed by employers, and if there were some means of assuring the reliability of awards mapping to these frameworks, then a well-designed set of something like open badges might offer real progress.

The MyLK project could help greatly with this, by showing the frameworks within the Dashboard, and thereby enabling individuals to work towards being accredited either through recognized institutions of learning, or other authorities, including workplaces, that had proved themselves reliable in awarding those badges.

# 4. Stakeholders

In MyLK Dashboard the following roles in the MyLK system can be distinguished:

- Learner (as a user-consumer and as an author of the content)
- Educational Institution
- Employer / Company

The Dashboard should be learner-oriented as this role is the main role in the system (1st level role). However, the two other roles of users – educational institutions and employer / company – would benefit directly from learners' activity in the Dashboard but they are independent from each other. Educational Institution and HR departments are 2nd level role in the system.

**Target user level 1: the learner**

For the purposes of the project the definition of the MyLK learner has been derived from the scenarios identified: this is the **individual adult that engages online in a (series) of learning episodes be it in formal, non-formal and informal** educational setting, no matter if the learning is purposeful or not. As such, the learner is further defined as (1) a reader/watcher/user - that is a person that accumulates knowledge and/or (2) as an author - that is a person who actively engages and creates knowledge. MyLK learner has a central role - his/her actions and needs have impact on the surrounding environment and other stakeholders that can benefit from MyLK service.

MyLK learner characteristics (inclusive description)

- uses Internet
- can have an account in social networks
- learns intentionally or/and non-intentionally online
- looks for a job,
- wants some sort of acknowledgement of her/his own learning
- has already got a job (either self-employed or employed)
- is either inside the educational institution or outside
- may have already e-portfolio
- may have any reasonable level of digital competence

**Target user level 2: Employer / Company and Educational institutions**

Educational Institutions:

- Universities
- VET institutions
- Schools
- Training and development institutes and companies

Role in MyLK

Educational institutions have an important role regarding the learner's quest for formal recognition of informal learning in MyLK concept. This recognition, which must go through an assessment may take two forms :

- an assessment of knowledge and LOCs related to courses issued by the institution proposing this assessment.
- an assessment of learning content created by the learner. This evaluation may result in a label issued by the educational institution and administered by Mylk, if the content is deemed good enough .

Thus , educational institutions would have the mission to enhance the learning of the learner as both consumer and producer of learning content.

**Employers, and in particular:**

- HR  and recruitment companies or departments
- Skills management companies or departments

Role in MyLK

Companies and especially  HR managers have an important role regarding the learner's quest of "operational" recognition of informal learning in MyLK concept. This would take into account the interests and the various formal and informal digital learning developed by the learner to promote mobility, whether it is an internal mobility, a national or international external recruitment.

**Other stakeholders**

Any other type of user(s) who is interested in MyLK Dashboard is understood as external role from the system. The Dashboard does not specify alternative role in the system for any other stakeholder who may benefit from content collected in the system by a learner  / educational institution / employer / company.

A list of potential stakeholders:

- E-learning companies
- The career advisor/job counsellor
  - Job centers
  - VET centers
  - Placement centres
- Social software services
  - Videos platforms
  - Blogosphere
  - Facebook

## 4.1 Benefits for MyLK Dashboard users

The Dashboard will present the same general benefits for every learner, but some specific benefits will depend on the status of the learner. We have identified several scenarios where the general role of the learner is modified by the specific contextual factors, such as life goals or online behaviors.



*Fig 2. Learner's position in MyLK*

**General benefits**

- increased awareness and reflection about own learning,
- easier identification of the learning objectives

- awareness about digital learning episodes and of the learning objectives (LOC) they have developed during these episodes,
- Increased ability to structure the LOC they develop in a digital way,
- easier access to validation and recognition of skills and competences
- management of own learning

**Benefits for the learner**

- possibility to record achievement from formal education that would serve as an evidence of competences,
- guidance in his/her researches for content relevant to learning
- gain more self-confidence thanks to a better understanding and visibility of his/her skills and competences and thanks the promotion of Learning Outcome performed in several ways, even informal ones.
- have a guidance to learn how highlighting one's competences and skills
- opportunity to validate skills and competences achieved informally and non-formally in the learning institutions,
- access to institutions providing validation of skills and competences
- recognition for his/her creation on development of evidence and learning objectives linked to them which are specific to the subject of the learning content,
- a recognition for the LOC he/she is supposed to have acquired and that he/she can use in his/her résumé/e-portfolio through the content label
- a recognition of his/her learning content what means a better visibility for this content and so more viewers through the content label
- a content label that would mark attributes of digital informal learning contents creation
- label for the attributes of the content produced
- access to relevant job adverts
- peer-evaluation/rating of content created by the learner
- access to the content / learning episodes recommended by other users of the Dashboard

**Benefits for the educational institutions**

- development of their activity of assessment / validation / recognition / certification.
- sell validation / recognition / assessment and certification services also to people who have not taken their courses, because the courses are inconvenient or too costly

**Benefits for the employer/ company**

- facilitate the matching between a job-seeker and an specific position
- provide digital proofs for accreditation [MyLK label]
- extract information from LMSs
- communicate systems
- intermediary between institutions and learners
- advisor templates based on LOCs
- improved profiling and business positioning of the candidate

# 5. Tools and pedagogical assumptions

In formal, non-formal and informal online learning users engage in various online services and use multitude of tools to support their learning. The learning environments can be constructed differently by the users and learning providers where a particular tool or service can be at a time a part of formal, non-formal and informal setting. The affordances of particular tools need to be explored further towards the possibilities of tracking and extracting data to be published in the MYLK Dashboard. The non-exhaustive list[4] of the learning episodes facilitated by each tool or service is developed so as the level or granularity enables the developers in WP2 to extract meaningful data from the selected ones.

**Learning and Content Management Systems**

Learning Management Systems (LMSs) and Content Management Systems (CMSs)  allows to build structured and categorized learning activities including reference tables of skills and relevant meta data. So that the MyLK Dashboard needs to be able to communicate with the LMS to use these data. The data extracted from a LMS platform can provide more specific details about learning (metadata: learning objectives, titles of modules, learning paths, etc.). That is why the MyLK Dashboard will be able to use the data extracted from different kinds of LMSs and CMSs in an effective way.

**MOOCs**

MyLK can contribute to co-building an international reference table of skills as well as by centralizing and automating the validation process. In this case, it is necessary to use a system of assessing and validating learning either the existing one, such as ECTS or a new one. The current technologies can guarantee the identity of the person who is behind a screen by means of a webcam or the analysis of keystrokes. Why shouldn't we make a profit of this to set up a remote evaluation process related to the reference tables? Furthermore, it'd be interesting to exploit connectivism and to propose the candidate to be assessed by his/her peers on the basis of a portfolio.

We suggest to include **initial learning** in the Dashboard by some declarative information. The learner will complete a part of the Dashboard himself to mention his current degree and his already acquired VET.

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[4] List of the learning episodes

# 6. Integration of systems and tools with the Dashboard

In order to gather, manage and present data for aforementioned purposes, it is required that MyLK Dashboard communicates with various platforms where learners engage in the learning episodes. Desk research provides an overview of existing ICT tools and services that can, in principle, be integrated with MyLK project Dashboard. There are e-portfolio platform (Mahara), Europass services, open badges (Mozilla Open Badges, Badge Alliance, IMS Global), MOOCs platforms, LinkedIn, Academia, CVTRUST. Taking into account the list of pedagogical assumptions and recommendations[5] two types of technology have been chosen for detailed investigation:

1. E-portfolio tools, in general have been understood to include repositories of records about the outcomes of lifelong learning, from which portfolio owner can create presentations of skills and competences.
2. Five Europass instruments have also hold information about individual learning, skills, and competences, both formal and informal.

## 6.1 The MyLK Dashboard and e-portfolios

As MyLK Dashboard is planned for the automatic tracking of digital learning episodes (DLE) of the individuals, the **easy export of evidence gathered in an e-portfolio to the Dashboard would be a key function for the usability of the MyLK system.**

There is a widely-used, an open source e-portfolio tool, Mahara, which can be implemented by anyone, anywhere and without any payment, permission, registration or monitoring. Because it is open source, the information formats used by Mahara are public and are interoperable between different (e-portfolio) tools through "Leap2A" standard. All information are represented in "entry" units which means that all information can be passed between systems. However, there is no guarantee that the more detailed semantics will be successfully transferred. This is natural and inevitable, because the detailed functionality varies between different e-portfolio tools. From all types of "entry" written in Leap2A, it would appear that at least **ability, achievement, activity, meeting, plan and publication are likely to be of interest to the MyLK Dashboard**.

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[5] Report on recommendations regarding integration of existing valuation tools, 2015, Simon Grant, Théodore Njingang, https://docs.google.com/document/d/1jNVmZMVGITeomtjOc1vMB9aq65O14rSoOXZLKWl8mqs/edit

Similar information may be available from tools compliant with NEN 2035. NEN 2035 is understood to cover similar ground to Leap2A, but being controlled by NEN, it is only available after payment.

## 6.2 The MyLK Dashboard and 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" ([Europass Interoperability web page](#), 2015).

The first two documents - **Curriculum Vitae and Language Passport** using Europass XML or JSON - 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 - Europass Mobility, Certificate Supplement and Diploma Supplement - 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 addition, 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 [eCOTOOL project](#), few if any suppliers of Europass CS have the capability to deliver electronic CS documents with semantic detail.

It is thus unrealistic to suppose that any significant amount of information will currently be available for a MyLK Dashboard.

## 6.3 Other systems

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.

*Open Badges* ([Mozilla Open Badges](#), [Badge Alliance](#), [IMS Global](#))

The concept of Open Badges is to allow anyone to award anyone else a "badge", as a token to recognize their achievement, or learning, or qualities, or any other characteristic of the person to whom the badge is awarded. 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.**

*xAPI (alias Tin Can API)*

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[6].

A learning record store concept hidden below the above definition 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. In terms of MyLK's Digital Learning Episodes, the most relevant type here may be "Activity".

## 6.4 Tools and standards recommended for detailed exploration

Given the practical limits of MyLK project, it seems unlikely that any of these will be able to be included in a prototype system. Recommended for detailed exploration, in particular, for potential integration with MyLK, are:
- e-portfolio information from Mahara and any other system compatible with Leap2A
- e-portfolio and 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 xAPI (for example, Valamis)

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[6] Experience API Working Group API (2013). The advanced distributed learning (adl) initiative. v1.0.1. Advanced Distributed Learning Initiative, U.S. Department of Defense locate at site http://www.adlnet.gov/wp-content/uploads/2013/10/xAPI_v1.0.1-2013-10-01.pdf

# 7. Functionalities of the Dashboard interface
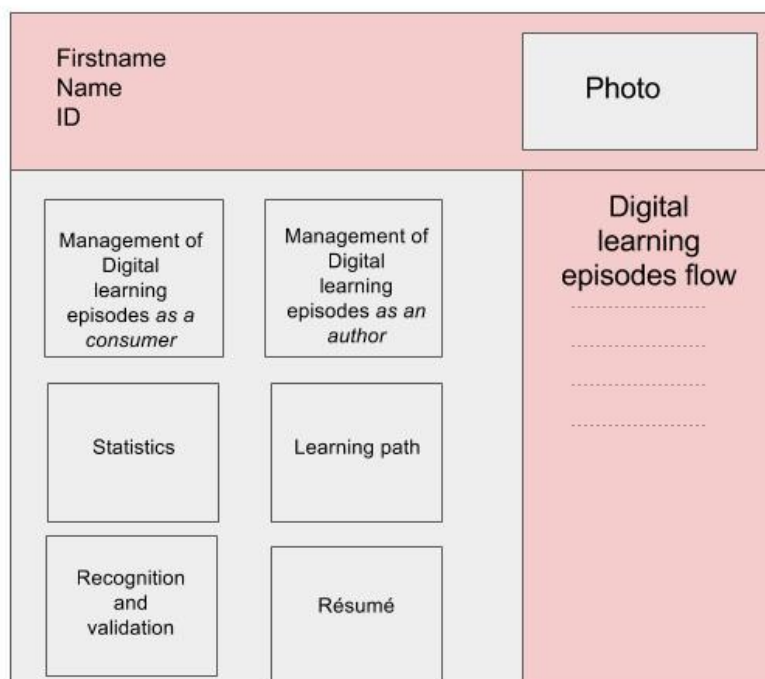


Fig. 3 Preliminary design of the user interface: the learner's view

**Digital learning episodes flow**
- Displays the digital learning episodes chronologically
- Enables to add learning episodes to the learner's profile.

**Management of digital learning episodes (DLEs)**

**User-author:**

(1) Displays DLE produced by the learner-author

(2) Offers the possibility to match skills and competences

(3) Offers the possibility to submit one's DLE as a producer to the educational institution

**User-consumer:**

(1) Identifies and organizes the DLE according to the topics/ areas/ tags

(2) Matches skills and competences to a learning content

(3) Assesses the content from the DLE provider in order to validate skills and competences

(4) Advices about relevant assessments from the European university repertoire

**Organization and management of Digital Learning Episodes**

Learner can access a list of DLE classified by topic and / or not managed (structured) yet. The management of DLE enables the learner to:
- Add LOC

- Cancel LOC
- Save LOC in the sections of Repertoire of DLE managed, Statistics, Résumé and Résumé template

Besides, a learner can add other LOCs considered as developed in the DLE apart from the suggested by the Dashboard. Learner can see the different topic of his/her DLE, together with the number of DLE per topic.

Learner can click on a topic to have more information about the matched LOCs or to add a new LOC. The learner can decide to add the DLE to the personal profile upon describing the DLE. If the learner decides to add it then moves to the section "Management of DLE as a consumer". If not, the traceability of this particular DLE is cancelled.

### Description of Digital Learning Episodes (DLEs)

DLEs are displayed chronologically. The flow of DLE can be related to the topic with the specific information pre-defined by the system e.g:

- *Title of the episode*
- *Nature of the episode (article, video…)*
- *Duration and/or time spent*
- *Date of the episode*

### Creation of Digital Learning Episodes
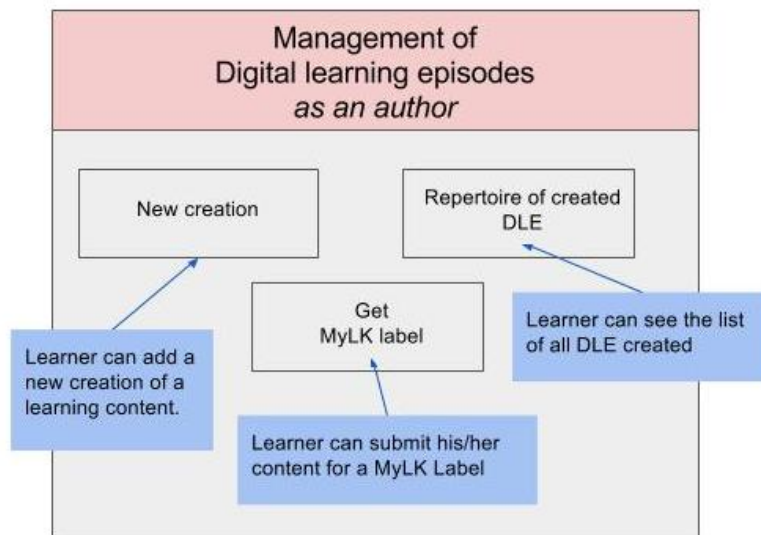


Fig. 4 Preliminary design of the user interface: adding new content owned/created by the learner

Learner indicates the web url address where he/she has uploaded his/her content

Learner has to confirm the authorship of the content. Once the DLE is created the management follows the same pattern as above. The content appears in the list of the learner's created content with the detailed description (see point **Description of DLE**). The learner can submit the content for rating (MyLK

label) selecting the institution from the list suggested (a form with a justification) or selecting peers that can recommend the content.

**Recognition and validation**

Offers the possibility to recognize any informal learning episodes that include particularly:
DLE and experiential learning episodes. The recognition and validation can be assisted by:

- **European formal educational assessment**: Learner can ask for a recognition and validation based on an assessment proposed by a university, a school, a VET organization and the like. This assessment can help to obtain a validation of a CU or LOC. This functionality will be based on the creation of an homogenous repertoire of certifications, diplomas, CUs, LOCs etc. According to the analysis of the various DLEs of the learner, the LOC obtained, and the body of LOC linked to a CU, the Dashboard can make suggestions of relevant CU or LOC for which one learner could ask an assessment with a good probability to succeed. The search can be defined by the country, type of institution, type of validation, key words, LOCs etc. When the learner clicks on the suggestion, a presentation of the CU/diploma/LOC and an explanation about the terms and nature of the assessment is displayed. Learner can click on the button "Assessment" and will have access to :
    - a purchase page if the institution has decided to propose a charged assessment,
    - a form with personal details to fill in
    - the assessment

- **European prior learning initiative**: Learner can ask for a recognition based on any European Prior Initiative (see. WP1-T3 / Part 2.5 for details). Here, the Dashboard would gather all the European initiatives in order to :
    - highlight them,
    - help people to have a better knowledge and understanding of theses initiatives,
    - make the administrative process easier

- **Badges:** Learner can see the different badges obtained in DLEs on different platforms

**Learning path**

This section provides support for further development of the learner. The Dashboard can suggest trainings (vocational or academic) within the interest of the learner, taking into consideration certifications and validations obtained already, CUs, LOCs and DLEs. The training offer will be matched with a profession or qualifications related to it.

## Resume

The résumé template is a collection of certifications, LOCs, professional experiences etc. It is built with some declarative functions and the automatic ones that elicit information from MyLK system. Personalised resume will be created from the "Résumé templates" and adapted by the learner according to his/her specific needs at a time. Also the section with job advertisements will provide offers relevant to the

learner's profile depending on the cooperation between MyLk and recruitment companies. Suggestions will be made on the basis of the adverts' analysis and the analysis and the résumé template of learner. Resumes can have various access options, if they are public they are accessible openly, if private only the learner can see them. Resumes can be downloaded in various formats.

## Statistics

The analysis of learners DLE by content type, by topics or by LOC. The page can be exported in different formats. The statistics would also compare data with a peer learning group, such as a class or cohort, similar LOCs owners etc.



Recruiters can edit and publish a job advert. Dashboard suggests various template classified by business sector. The recruiters can cancel or add some fields and write freely in some sections.

MyLK for HR management

Publishing a job advert

Applications management

Skills management for the internal mobility

Recruiters get the applications received or suggested by the dashboard, classified by the job advert. Recruiters receive résumés, cover letters, MyLK statistics pages, etc. Recruiters have access to the public profile of a learner suggested by the dashboard

HR managers have access to the public profile of his/her own employees. HR manager have a better vision of skills, competences and focus topics of his/her employee, what can be a leverage to encourage internal mobility.

Fig. 5 Preliminary design of the user interface: HR management



MyLK for educational institutions

Institution XXX
Department XX

User accounts are created by institutions and by departments according to the internal structure

In that section, an institution
- has access to the MyLK applications,
- fills MyLK label forms,
- assignes a content MyLK label,
- has access to an history of previous assessments.

MyLK labels management

Assessment management

In that section, an institution:
- has access to the assessments applications
- fills the assessments forms
- sends the completed assessment to the applicants
- has access to the history assessments.

Fig. 6 Preliminary design of the user interface: institution