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Making competences visible with Open Badges

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Final report of the HFD Community Working Group Competence Badges

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Hochschulforum Digitalisierung (HFD)

Hochschulforum Digitalisierung (HFD) orchestrates the discourse on higher education in the digital age. As an innovation driver, it informs, advises and connects stakeholders from higher education institutions, politics, business and civil society.

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Further information is available at https://hochschulforumdigitalisierung.de/en.

STIFTERVERBAND
CHE Centrum für Hochschulentwicklung
HRK Hochschulrektorenkonferenz
GEFÖRDERT VOM Bundesministerium für Bildung und Forschung

Disclaimer

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Chapter 1: Introduction

The area of recognition and certification of higher education is becoming increasingly central to issues of organisation, flexibility and permeability of the transition between higher education and the labour market. Especially in the context of 21st century skills and industry 4.0, the question arises to what extent new forms of certification or procedures for issuing digital credentials of competence are necessary.[1]

The *HFD Community Working Group Competence Badges*[2] on digital credentials of competence was established in 2018 to sound out the opportunities and obstacles in the implementation of digital credentials of competence on the basis of open badges. The group's work was based on these six key questions:

1. What knowledge do potential users (including employers) already have of digital credentials of competence based on open badges?
2. What acceptance is given to this instrument and how is its usefulness assessed as an alternative form of certification or recognition?
3. What are the common challenges related to the transition from higher education to the labour market?
4. Can higher education institutions also meet the demand for continuing education among employees? What role would they have here?
5. How do potential users (including employers) assess the effectiveness of formal qualifications and the scope for considering alternative or supplementary certificates or competence recognition instruments?
6. What role can universities play in the implementation and quality assurance of alternative or supplementary digital credentials of competence?

In order to approach these questions in a constructive and concrete manner, a total of five rounds of talks were held with selected experts and stakeholders in Germany and abroad in 2018. On the basis of the results, three concrete scenarios were developed for the use of digital credentials of competence on the basis of open badges to facilitate transitions from higher education to the world of work, i.e. a minimum scenario (MinS), a medium scenario (MedS) and a maximum scenario (MaxS).

In this report we describe the theoretical background as well as the the methodical approach (Chapter 2), the summary of insights related to the six key questions (Chapter 3), and the scenarios developed (Chapter 4). The report ends with a discussion and recommendations for further steps. Finally, we provide a list of selected good practice examples for the use of digital credentials of competence on the basis of open badges.

[1] For reviews, please consult https://hochschulforumdigitalisierung.de/de/kompetenz-badges and scroll down to see the English reviews.
[2] https://hochschulforumdigitalisierung.de/de/news/hfd-community-working-groups-starten-die-arbeitsphase


02

Chapter 2: Theoretical Background and Method

The Internet and digital networks connect different information and communication channels. It is not so much the technology itself, but the use practices of the new information nodes and the emerging configurations of connection that make it possible to organise processes differently (Castells, 2010; Cerwal, 2017). The use of new technologies, therefore, concerns not only the question of what the technology can do, but also how it interacts with other existing practices and how it creates new practices. It thus changes the organization and functioning of many processes in the economy (Hüther, 2016), as well as in society as a whole. New practices require new competences and by implication new ways to document competence profiles.

2.1 Making competences visible

In general, two dimensions of competence profiles can be distinguished: general and specialised (together these constitute the T-model of competences). Digitalisation is leading to the reconfiguration of social and technical processes and thus requires the development of general and specialised competences. For this reason, education can no longer be thought of linearly (Stifterverband and McKinsey, 2019). The significance of general and specialised competences in the context of networked education can be described as follows:

- General competence and skill profiles consist of basic skills (such as arithmetic and reading) and transversal skills[3] (such as teamwork, problem solving, communication and reflection). In the context of networked education, learners must be able to apply their competences in these categories to familiar and new situations. This type of fluency in knowledge and competence acquisition has traditionally been a focus of general and higher education. It is the breadth of knowledge and skills that is crucial to managing digital change (Winthrop & McGivney, 2016).
- Specific competence and skill profiles are required for a particular area of work or specialisation (e.g. engineering or law) and provide a basis for knowledge and practice in the workplace. The identification and transfer of such knowledge and skills depends on whether there is a consensus on what is required in a particular area. What becomes important is a conceptual summary of what has been learned in practice, which can then be codified in the form of curricular design and content (Bessen, 2015). This facilitates the dissemination of knowledge and the development of competences within sectors of the economy and in different countries. Codified knowledge is the basis for most initial education programmes, especially in vocational education and training.

The challenge to standardised knowledge (whether specific or general) is that digital technologies can be harnessed in a variety of ways. The use of digital technologies for the creation of social

[3] https://unevoc.unesco.org/go.php?q=TVETipedia+Glossary+A-Z&id=577

innovations, in the sense of changes in how people interact with each other as well as with people and machines, is increasingly emphasised. The properties of digitalisation can be used in the sense of social innovation to improve communication structures and decision-making processes (Weise, Hanson, Sentz, & Saleh, 2018). There are two consequences of these developments for the topic of competences:

- First, competences and successful practices from the work context must be **made visible and communicated more widely** so that knowledge and know-how from innovative practices can be disseminated and used (also in education). Therefore, tools are needed to that make the current competence profiles of people visible in the workplace, beyond formal qualifications.
- Secondly, both people who are not yet employed and professionals need to know **how to document, visualise and recognise** their competences in order to be flexible and adaptable in an evolving digital labour market.

The documentation of competences is thus gaining importance in the context of networked learning in the digitalised world.

2.2 Digital skill certificates

In view of the new (non-)formal and informal possibilities of networked education in times of digitalisation (e.g. online courses, online communities, online resources), the question arises how the competences acquired in digital and informal learning settings can be made visible (Hoyer, Rademacher, Pham, & Schroll, 2018). A discussion paper on the future role of higher education institutions in this context comes to the following conclusion: "*What is decisive is the proven competence and not the way, place and time of the acquired competence*" (Baumgartner, 2018).

These developments lead to an increased current interest in alternative, digital forms of proof of competence (Braxton et al., 2019; Gallagher, 2018; ICDE, 2019). The Open Badge Standard, initiated by the Mozilla Foundation in 2011, is now used worldwide by individuals and organisations, including universities, to make competences visible that were not previously considered in formal certification or which have been acquired outside formal educational contexts (Buchem, 2018). These include, among other things, competences that are currently regarded as key 21st century skills, e.g. communication, collaboration, creativity and critical thinking (Fadel, Bialik, & Trilling, 2017).

An open badge is a digital certificate in which information, so-called metadata, on acquired learning outcomes can be stored and coded. Both non-digital and digital educational certificates can be stored electronically, e.g. examination results, term papers or extracts from an e-portfolio. Metadata not only records learning achievements, but also information on the issuing institution (e.g. university, continuing education provider) as well as on the issuing person (e.g. teacher, coach, employer). Evaluation or award guidelines can also be coded in an open badge. An important criterion for the interoperability, validation and verification of these documents in digital form is a common standard for the data structure, which is given with the Open Badge Standard. Mozilla's open standard for digital certificates describes how information on metadata packages can be packaged, distributed and displayed as transferable files on different platforms on the Internet. The Open

Badge Standard has been further developed by IMS Global since 2017 (Hoyer et al., 2018). The aim of this study was to discuss the uptake and success conditions for the use of open badges.

2.3 Methods

The methodical approach comprised the planning, implementation and evaluation of rounds of talks with pre-defined experts/stakeholder groups, as well as the elaboration of two draft deployment scenarios based on the results of the rounds of talks. A total of five rounds of talks were held at different locations and with different expert/stakeholder groups:

1. Business and employer representatives, 16.11.19, Berlin
2. Experts from Human Resources, 22.11.19, Berlin
3. Actors from the university context, 30.11.19, Berlin
4. Open Badge pioneers from abroad, 6.12.19, Berlin
5. European experts, 14.12.19, Brussels

The planned number of participants for each of the discussion rounds was about five external persons. The five discussion rounds were conducted jointly by the heads of the working group. All discussion rounds except for the longer workshop in Brussels (group 5) lasted about one to two hours and were divided into four parts, i.e. Part 1 Introduction to Open Badges, Part 2 Problem Identification, Part 3 Suggestions for Improvement, and Part 4 Potentials of Open Badges. The results of all discussion rounds are outlined in Section 4.

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Chapter 3: Results

3.1 Discussion with business and employer representatives

The first round of talks brought together stakeholders from business and employers' representatives from seven organisations who looked at the importance of making competences visible from different angles, in particular with regard to transitions between education and the labour market. The invited organisations were the German Chambers of Industry and Commerce (DIHK), the Federal Association for Information Technology, Telecommunications and New Media (Bitkom e.V.), the German Confederation of Skilled Crafts (ZDH), the Technology Foundation Berlin, the Technical University of Berlin (TU Berlin) and the German Trade Union Federation (DGB). The discussion was prepared and moderated by three persons from the Community Working Group. The open discussion lasted about an hour.

After a presentation of the Open Badges concept, a sceptical but open discussion began. The new concept was directly compared with the formal qualifications used in initial education (whether training or higher education). Although open badges could be used as proof of learning stages, it was emphasised in the discussion that a formal qualification should not be reduced to the sum of the individual learning units or proofs of learning that led to completion. The general understanding of both higher education and vocational education and training is that education also consists of personality development. Formal certificates are at the end of various stages in education and development processes. It is therefore expedient to replace the comprehensive certificates with several individual, small-scale certificates (including micro credentials), which may have been acquired in different contexts.

The question of confidence in a new form of certification was also viewed critically. The interviewees stressed that behind the award of formal certificates there are usually various bodies (including individuals and committees) that check quality. This raises the question of who determines and checks the quality of the criteria and the assessment of the performance of open badges. This new form of proof of competence can only be accepted if it becomes clear which bodies ensure the quality of the proof.

The participants saw a meaningful use of digital certificates of competence instead where there are gaps in the formal system. Three examples were cited in this regard:

1. In the case of admission to higher education for persons who have not acquired the higher education entrance qualification by formal means, the use of digital certificates of competence would make it possible to grant access on the basis of other qualifications, e.g. professional experience.
2. For occupational groups that are primarily dependent on lateral entry (e.g. in the IT sector), competences from non-formal and informal learning could be made visible through digital evidence of competence and facilitate entry into IT occupations, which could be particularly helpful in view of the shortage of skilled workers in the IT sector.

3. Competence development within the framework of continuing training and the recognition of learning at the workplace in the course of a person's professional life could also very well be represented by digital certificates of competence.

Participants agreed that new forms of competence recognition will become increasingly relevant in the light of demographic developments and changes in the labour market. In this context, it was interesting to note that although the first phase of the shortage of skilled workers in the ICT sector could be solved by lateral entrants, there is currently an increasing demand from companies to hire people with formal qualifications, as the number of courses on offer has increased in the meantime. One interviewee considered this tendency to be inappropriate because (a) there is still a shortage of skilled workers and (b) training courses cannot keep pace with technological changes in this market segment over time.

Open badges could meet the need for agile solutions in the area of competence recognition as a complement to the formal system. Open badges would have a special potential here if they could systematically and comprehensively document the competences that people have acquired on the labour market and in the workplace.

3.2 Discussion round with experts from Human Resources

The discussion with HR experts took place at the conference "HR Tech 2018" in Berlin. People from eight organisations took part: Capgemini, DNB Norway, Mastercard, European Commission, T-Systems and Amazing Hiring (a recruitment agency). The discussion was prepared and moderated by two people from the Community Working Group.

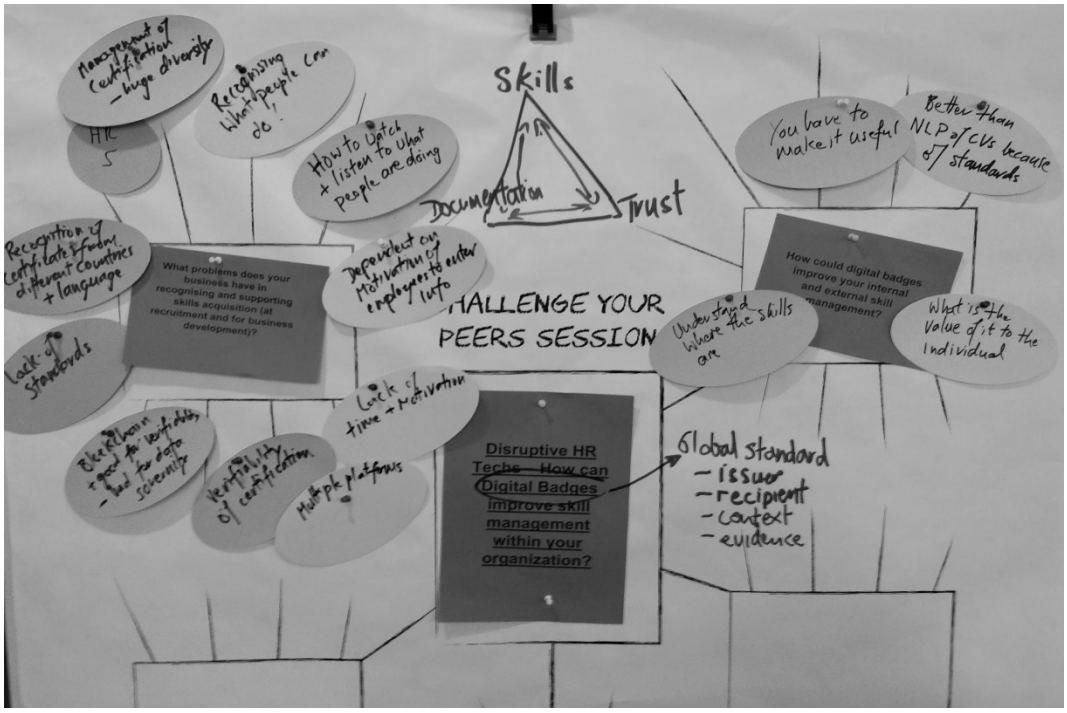


Figure 1: Post-it notes from the session at HR Tech, Berlin 22.11.18. Source: Ilona Buchem, CC BY-SA 4.0

It was an open discussion called "Challenge your peers" which lasted about one hour. The free discussion using post-it notes is documented in Figure 1. Each participant was asked to name current challenges in the area of personnel management and HR. These were grouped around three main topics.

Competence profiles and skills

The challenge here is to see what people can really do. Classic certificates alone are not meaningful enough. The question often arises: What talents does a person have (e.g. an applicant)? The challenge of recognising or identifying talents on the part of HR often leads to personality tests being used in job interviews. But even if people are hired, personnel management must find ways to make performance transparent. Employees can recognise performance in normal work situations among themselves, but HR has not yet been able to systematically record and document this information. Only then can HR help to ensure that personal skills are used optimally and that the right training paths are being offered.

Classification for CVs and certificates [4]

HR departments have major problems with the management of certificates, especially when they recruit both nationally and internationally. Procedures are needed to recognise certificates from different countries in different languages. The common form of the CV does not help here, as it is not fundamentally standardised. This means that even if natural language processing is used to analyse CVs, the results are only partially useful. In addition, the authenticity of traditional certificates is not easy to verify.

Focus on motivation to learn

HR has changed, so HR managers have stressed the importance of promoting learning within their organisations. The biggest challenge is to motivate people to continue learning. DNB, a Nordic bank, attaches great importance to the establishment of a learning culture within the organisation, but even here the perceived lack of time and motivation limits the training activities of employees.

In view of these challenges, the group was fundamentally interested in the idea of open badges. This is because in the current HR system the question arises whether formal certification really best reflects a person's competence profile, especially if a person has a lot of work experience in different contexts. However, the group was of the opinion that an alternative system of evidence of competence can only be successful if these **three conditions** are met:

- The new system creates trust in a similar way to formal qualifications.
- The new system documents competences according to target groups, preferably in a language that is understood by companies (e.g. not just the course content).
- The new system is already being used by other companies (e.g. competitors or partner companies).

[4] Es ist anzumerken, dass die vertretenen Firmen alle international rekrutieren und nicht allein in Deutschland.

3.3 Discussion round with actors from the university context

The discussion with actors from higher education took place at the Allianzforum in Berlin. A total of eight people from different educational institutions (Code University, Alice Salomon University, TUHH, Berliner Zentrum für Hochschullehre, HTW and Kiron) were invited. Six of the invited persons were present on 30.11.2018. The conversation was prepared and moderated by two persons from the Community Working Group and prepared and accompanied by a member of the HFD. The discussion lasted about 2 hours. The discussion was opened after a thematic introduction on the subject of certificates of competence and open badges by the moderators and lasted just over an hour. The discussion was recorded, transcribed and analysed with software support (MAXQDA).

The analysis of the discussion showed that the actors from the field of higher education have a very strong interest in digital systems for proving competences and that some of them are very well informed about them. However, the use of such systems in their own teaching seems to be the exception.

The document portrait (Figure 2) makes it clear that four topics played a prominent role in the course of the discussion: (1) the question of how digital systems can be meaningfully used to demonstrate competences; (2) the question of the changing role of learners in the learning process when digital evidence of competences is used across the board; (3) the question of how competences can actually be measured; and (4) the question of whether and how the higher education institution must change its self-image.

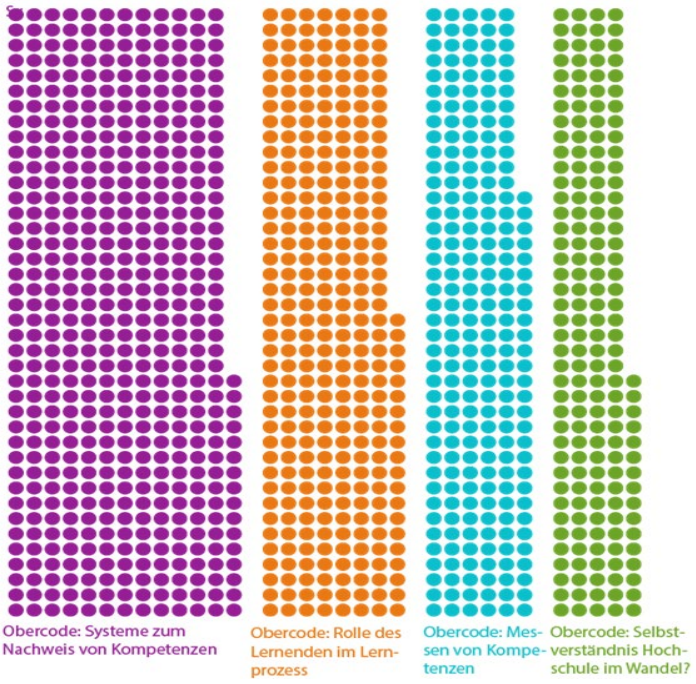


Figure 2: Document portrait of the call visualized by weighting the upper codes. Source: Christine Brunn, CC BY-SA 4.0

There was a very intense discussion on how digital systems can be used meaningfully to prove competencies, whereby the technical dimension was addressed here rather than the content di-

mension. It was considered important that already established competence models or qualification frameworks should not be ignored, but rather placed in a meaningful relationship to new digital systems. Furthermore, it was emphasised that no top-down system would be set up. The problem was also described that competences would be formulated and surveyed differently from sector to sector and that standardisation would only make sense and be possible to a limited extent.

Every system that stores, documents or collects competences is fundamentally dependent on the competences having a credibility that can be ensured above all by quality assurance. An independent quality assurance is indispensable to strengthen the credibility of competence and qualification proofs. At the same time, the participants expressed the expectation that competences that are presented and proven via digital systems will increasingly be given a market value. On the one hand, this can be a sensible development because it is more worthwhile for individuals to undergo further training, for example, but it can also be prob-lematic because individuals who apply to the labour market may not be able to escape the power of the market and commercial providers. Those who are unable to hold digital proofs of qualification may become less attractive on the labour market. On a structural level, it is expected that digital systems for proving competences can facilitate mobility and permeability between the higher education system and the world of work.

- **Measurement of competences:** It was pointed out that it can be a great challenge for both learners and teachers to be able to assess competences accurately and granularly. This requires more support on both sides, for example through further training, coaching and consistent implementation of competence-oriented teaching. In a first step, however, it is considered sensible to collect, evaluate and relate competences in digital systems in order to gain an overview and to initiate discussion about them.

- **The role of the learner in the learning process:** The starting point for the discussion was the thesis that learners could regain control over their own learning by being able to digitally map individual competences. While learners in most educational settings are dependent on the issuing of certificates and similar proofs by institutions and the curricula and examination scenarios are already predefined, the establishment of systems for the digital recording of competences and qualifications would provide the opportunity to control and reflect on one's own learning process and to decide for oneself to whom and in what way the individual presents oneself online. The aspect of data protection was addressed critically, as was the problem of dependence on platforms with commercial interests or from the USA with data protection guidelines that may not comply with the GDPR.

- **Self-image of higher education institutions in Germany**: In the course of the discussion, the question of a change in the self-image of higher education institutions in Germany was regularly raised. Based on the observation that the idea of a competence orientation in the sense of the Bologna reform has not yet been broadly implemented, it is expected that universities will at some point be forced to question their self-image in order to remain capable of action and competitiveness. This train of thought is underpinned, for example, by the fact that in some areas, such as computer science, practical experience and project work (documented in GitHub) are already more decisive than university certificates. Finally, however, the development of digital systems for proving competences, e.g. with the instrument

of open badges, is seen as an opportunity to simplify and make certification and recognition procedures for achievements within and between different universities more transparent.

All in all, it can be seen that the discussion dealt in particular with aspects at the level of the individual (learners, employees, teachers) and the institution (educational institution, sector, company). Overarching questions on cultural and structural aspects were always addressed when the discussion revolved around the permeability between education and work and when the language (semantics) was addressed, with which competences can be described and recorded.

3.4 Discussion round with Open Badge pioneers from abroad

The discussion with Open Badge pioneers from abroad took place during the Online Educa Berlin 2018 conference *Shaping the Future of Learning* in Berlin. Participants came from six organizations that are members of the Alliance for Open Recognition[5]. The discussion was prepared and moderated by two people from the Community Working Group. It was an open discussion that lasted about an hour. The focus was on the question of what can be learned from practical examples for the future. Three concrete initiatives were discussed, each of which implements Open Badges. These are briefly presented here:

Badgeons la Normandie, France[6]

Badgeons la Normandie is a network of organisations and individuals that use the potential of open digital badges to build an ecosystem that facilitates the recognition and assessment of competences as part of lifelong learning. The starting point for the project is the realisation that the normal procedures of formal accreditation of prior knowledge are too complex. The initiative focuses on people who are not in employment and are not in education or training (NEET) and tries to motivate them to further their education. Open badges are used as evidence of competence to help owners find new jobs. The project is well received by employers and participants.

Bestr, Italy[7]

The Open Badges platform Bestr is operated by Cineca in Italy. Cineca is a non-profit consortium made up of 70 Italian universities, eight Italian research institutes and the Italian Ministry of Education. The project managers collaborate with universities in Italy to develop badges as proof of competence for academic achievement. The universities use them to strengthen the commitment of their students, especially for those courses that are not a compulsory part of the courses, such as courses on social and communication skills development and Sustainable Development Goals. Badges can now be stored on a blockchain.[8]

Be.Badges, Belgien[9]

Selor is an employment portal for government job advertisements in Belgium.[10] Candidates must take a test to get a job in the public sector. Selor had the idea that the candidates' test results and

[5] https://www.openrecognition.org/
[6] http://www.badgeonslanormandie.fr/
[7] https://bestr.it/organization/show/19?ln=en
[8] https://blog.bestr.it/en/2019/06/13/how-get-your-blockcerts
[9] http://www.bebadges.be/
[10] https://www.selor.be/fr/proc%C3%A9dures/

certified competences could be shared (with the candidate's consent) with other parties in the labour market to help candidates who were unsuccessful at Selor find suitable jobs. To this end, the Be.Badges project was initiated. This approach was adopted by the municipal city of Ghent, which used the competence profiles based on Be.Badges in the recruitment process. It was a proof-of-concept, which did not succeed in stabilizing the use. It is possible that open badges were too general and contained too little information on the context of competence acquisition.

The three examples have shown that **open badges can be used flexibly**. However, they also show that the badge concept **must be adapted to the specific user group**. In the initiatives from France and Italy, open badges are used to strengthen the motivation of learners. At the same time, they give particular importance to the learning of certain competences, which can also be recognised on the labour market. Thus, the Badgeons la Normandie project is receiving increased attention from small and medium-sized enterprises for current topics such as sustainability in agriculture.

The third example refers to a topic that was also deepened in the discussion, namely that new proofs of competence will only be successful if they are **integrated into a larger ecosystem** and considered useful by all sides. This can partly be achieved by the reputation of renowned companies, as the examples of IBM and SAP Open Badges show. Otherwise, networks, as in the case of Badgeons la Normandie and Cinecas Bestr, must be developed within which recognition can succeed.

3.5 Discussion round with European experts

The discussion with European experts took place at the premises of the Skills and Qualifications unit of DG Employment, Social Affairs and Inclusion of the European Commission on 05.12.2018. A total of twelve experts from various European organisations were invited to the meeting for a discussion[11]: ESCO[12], EUROPASS, MOODLE, the Dutch Ministry of Education, Culture, Science, Research, Gender Equality and Communication as well as representatives of the European projects, including Open Badge Network (OBN) and MIRVA. The discussion was prepared and moderated by a person from the Community Working Group and recorded by a member of the Community Working Group.

Note: ESCO (European Classification of Skills, Competences, Qualifications and Occupations) is managed by the European Commission. The European Commission is responsible for updating the ESCO classification. ESCO's common reference terminology functions like a dictionary that lists, describes and classifies occupations, skills/competences and qualifications relevant to the labour market and education and training in the EU. The classification is available for free in 27 languages (the 24 official languages of the EU plus Icelandic, Norwegian and Arabic) on the ESCO online portal. ESCO enables jobseekers to describe their knowledge, skills and competences and compare them with job vacancies. Employers can record searched skills and qualifications more precisely and uniformly. Europe-wide databases of job vacancies (including EURES) can compare vacancies in EU countries with CVs.

[11] https://ec.europa.eu/social/main.jsp?catId=1326&langId=de
[12] https://ec.europa.eu/esco/portal

The participants introduced various perspectives on the topic of open badges into the discussion, including:

- interoperability of digital evidence of competence, skills and qualifications and their interpretation and use within the framework of ESCO and EUROPASS,
- national initiatives on the use of digital media in formal and non-formal education,
- promotion of educational cooperation from the perspective of policy makers, ministries, research and scientific publications on the recognition of learning based on Cedefop's European Survey on Skills, Qualifications and Jobs in Europe (ESJS),
- Europass Digital credentials[13],
- recognition of non-formal and informal learning,
- integration of open badges in learning management systems,
- technical development of the open badge standard,
- semantic referencing of competences in open badges, and
- integration of open badges in e-portfolio instruments.

The discussion lasted four hours and was recorded in writing, transcribed and analysed using software. After the presentation of the participants and the thematic introduction of the moderator on the topic of certificates of competence and open badges, the challenges of open badges were discussed, including: What are the central challenges in the implementation, scaling and acceptance of open badges? The experts were asked to present experiences and observations from their own application contexts and countries and to identify the most important challenges. The key challenges mentioned were:

- **Conceptual misunderstandings:** The use of Open Badges as graphical badges with attached metadata is not easy to explain as a concept. There is confusion about what open badges are and what they are not, what the standard refers to, and what digital data is processed by whom and where. There is a misconception that an open badge is an image on a website that anyone can copy. There is a lack of conceptual understanding for the open metadata standard.
- **Acceptance of the name:** Many people do not like the word "badge" and create new word variations to describe the concept differently, e.g. "open medallions" in Brazil or "digital certificates of competence" in Germany. The different names can lead to confusion and worsen the understanding of the Open Badge standard.
- **Openness:** Experience to date has shown that badges often function in closed ecosystems (e.g. only within an educational organisation). However, it is important that they can also be used in open ecosystems (e.g. education and the labour market). Open badges have so far only been represented to a limited extent in digital portfolios. There are also problems with the use of the Mozilla backpack, including the deactivation of the Mozilla backpack in Feb-

[13] https://ec.europa.eu/futurium/en/system/files/ged/europass_background-info_framework-digitally-signed-credentials.pdf

ruary 2019 and the development of a new solution for hosting open badge.[14] There are also misunderstandings about openness, such as the criticism that open badges are "too open". However, DSGVO conformity can also be ensured in the design of open badges, e.g. by additional encryption with blockchain technology.

- **Interoperability and machine-readability:** A major challenge relates to the interoperability of open badges if they are to be used within the framework of formal certification. Open badges must be related to competences, otherwise they are basically useless. Another challenge is machine readability: machines must be able to understand what an open badge stands for. The semantic information can already be referenced in open badges about competences, as we find them in ESCO. Methods must be developed to compare open badges with each other automatically in order to determine whether open badges are similar. It should be possible to automatically determine whether a Bachelor's degree contains similar smaller Open Badges, whether someone already has an Open Badge and whether another Open Badge contains the same competences or not. If these technical problems are solved, there will be great benefits for the world of work and also for educational institutions.
- **Digital exclusion:** Another challenge, however, is the comparability of people due to machine processes, which is reflected in the use of keywords, among other things. Recruiters can exclude many perfectly qualified people just because they don't use the right keywords. The challenge is to avoid digital exclusion through open badges.
- **Relevance for the labour market:** The competences presented in open badges must be described in a meaningful and understandable way for third parties. Relevance means, for example, that Open Badge platforms and issuers must ensure that the competences referenced in Open Badges are understood by employers and are relevant to them. Employers must be able to understand the relevance of the evidence of competence for a particular position. Organisations are interested in the relevance of open badges for the labour market. On the user side, however, there is uncertainty as to whether open badges are recognised by employers or not.
- **Political control problems:** The difficulty lies in the lack of a clear vision of digitalisation at the political level. There is a lack of ability to promote issues such as open badges at national level. The digital infrastructures in higher education systems are lagging behind. The competences of the young population are not reflected strongly enough. The challenges lie in regulation. A legal framework must be created in order to be able to apply open badges in a legally secure manner in various contexts.
- **Stagnation in formal education:** In formal education, especially higher education and school education, there is a lot of uncertainty about innovations and there is a lot of fear of additional efforts. Obsolete IT structures and standards are maintained and issued as official recommendations. Doors for innovation within universities must open. One method of opening up the discussion would be for universities and colleges to award open badges as digital certificates parallel to PDF or paper-based certificates.

[14] Badgr Backpack offers a new solution for hosting of Open Badges: https://support.badgr.com/portal/kb/articles/mozilla-backpack-transition-to-badgr-faqs

The next round of discussions focused on success factors, including: What are the success factors for the implementation and acceptance of open badges, also with regard to European initiatives such as ESCO and EUROPASS?

The discussion on the success factors produced the following results:

1. **Investments and incentives:** Some examples, e.g. in the UK, show that larger investments are needed to change the status quo and promote experimentation with digital technologies. Without investment and incentives, there is a risk that current gatekeepers will invest in outdated systems to keep the existing business going. Investment is also necessary to finance new projects and to compensate for digital differences or gaps. Regional initiatives also need to be promoted, such as the example of Belgium shows: young people can apply for learning opportunities in different parts of the city (e.g. support for institutions or people in need). Learners receive open badges that confirm their commitment. This type of activity could be brought into line with the ESCO and EUROPASS framework to support the creation of personal e-portfolios.

2. **Convergence:** A success factor for the use of open badges is convergence. For example, it is not enough to use technologies only locally or temporarily. Digital technologies, such as open badges must be used nationwide and with a long-term perspective. There are regions, even in the same country or in the same sectors, that lag behind technological development. Convergence is also necessary within education. In higher education it can be helpful to combine open badges with European Credit Transfer System ECTS and the credit point system to define equivalences. Further convergence is also important between education and the labour market. Transparency must be created for the market. Both education and the labour market need reliable descriptions of competences. The relationship and connection between education and the labour market is necessary to develop common approaches. The labour market, the education system, but also the government side and the technical side must be brought together.

3. **Regulatory framework:** The example of ESCO shows that a regulatory framework supports dissemination. This makes ESCO known and used in the public sector. The private sector is involved and wants to use it because it is interoperable with the public employment services. In order for open badges to be used in the public and private sectors, it is first necessary to determine the governance. Who is responsible for creating a legal framework, the education sector or the labour market? First, the acceptance of the public sector must be increased, followed by the private sector. The body that will take the lead must be identified. The communication strategy for open badges in general needs to be improved. The added value of open badges must be better communicated. Control can be taken over by an association. There must be coordination that is trustworthy.

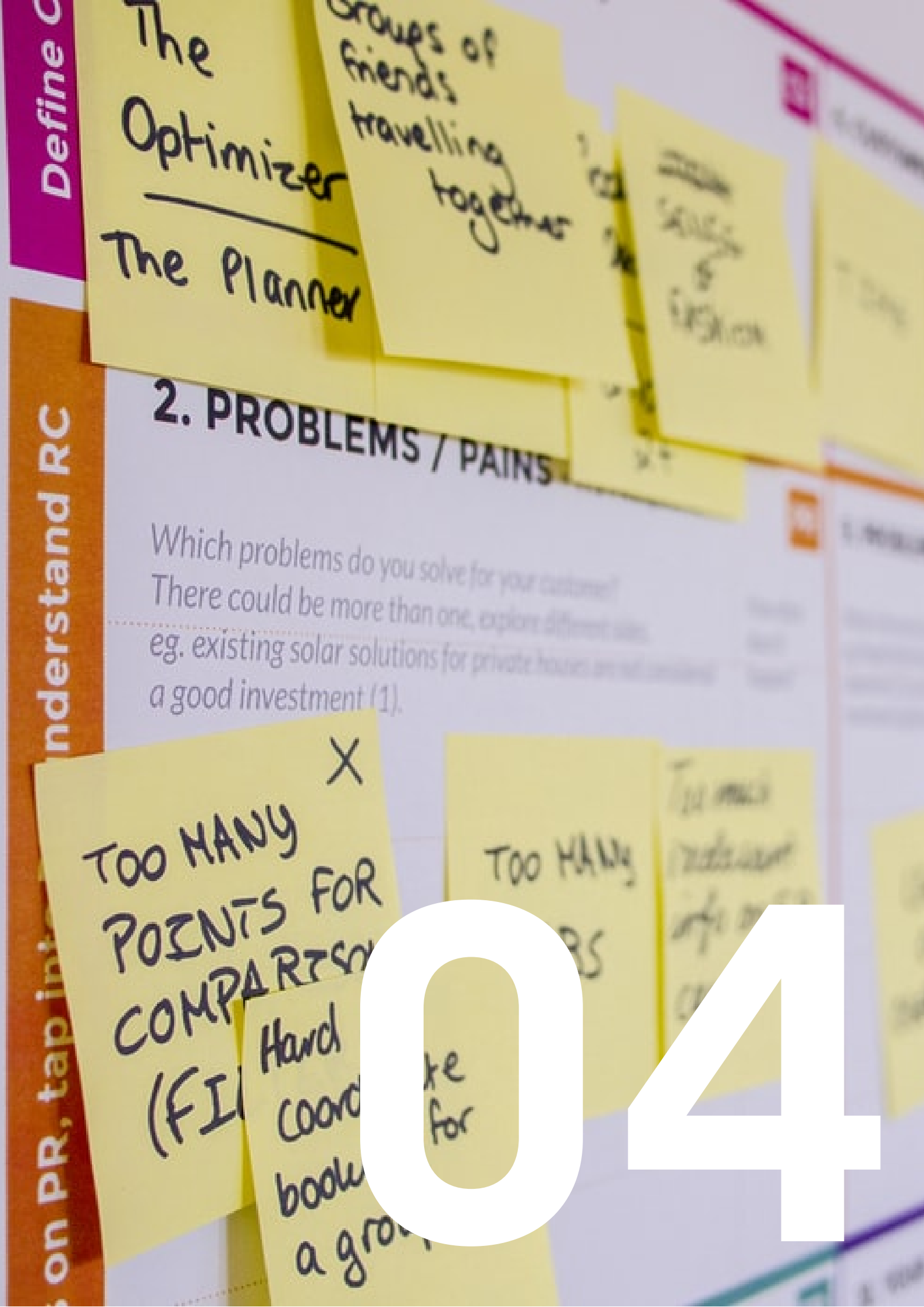
4. **Technical development:** Above all, the interoperability and compatibility of different systems must be ensured. Open badges must be integrated into existing infrastructures. Open badges are rarely used in HR because they are not integrated into the common HR platforms. As a technology, open badges must be understandable and easy to use. An understandable technical solution is necessary to strengthen trust in open badges. Interlocking with European instruments such as ESCO, e.g. a blockchain-based digital proof of competence based on ESCO, must be sought. Another approach could be a standard for the global documentation of learning, rather than having separate systems for informal, non-

formal and informal learning. An example can be the Europass Digital Credentials Infrastructure (EDCI) of the New Europass.The European Commission is developing the Europass Digital Credentials Infrastructure (EDCI) – a set of tools, services and software to support the issuance of authentic, tamper-proof digital credentials (such as qualifications and other learning achievements) across Europe. The EDCI is being developed as part of ongoing work to implement the new Europass Framework for supporting transparency of skills and qualifications in Europe.[15] Another idea is to use open badges in the EUROPASS Skills Profile to consider formal, informal and non-formal education and competences.

The following cloud of words (Figure 3) summarises the key terms from the fifth discussion.After the discussion rounds, the minimum scenario and the maximum scenario were collaboratively designed. At this point, the description of the work results for the scenarios is omitted, since the condensed results are described in Section 4 in the form of three scenarios, i.e. a minimum scenario (MinS), a medium scenario (MedS) and a maximum scenario (MaxS).

Figure 3: Word cloud with central terms from the conversation at ESCO headquarters. Source: Rocio Ramirez, CC BY-SA 4.0

[15] https://ec.europa.eu/futurium/en/system/files/ged/europass_background-info_framework-digitally-signed-credentials.pdf


The Optimizer
The Planner
Groups of friends travelling together
2. PROBLEMS / PAINS
Which problems do you solve for your customer? There could be more than one, explore different ones. eg. existing solar solutions for private houses are not considered a good investment (1).
X
TOO MANY POINTS FOR
Define C
nderstand RC
on PR, tap ini
04

Chapter 4: Application Scenarios

The following section outlines three scenarios for scaling open badges:

- Minimum scenario (MinS)
- Medium scenario (MedS)
- Maximum scenario (MaxS)

All three scenarios were developed on the basis of the work results from the five discussions with different stakeholder groups described above and were supplemented by further findings of the members of the HFD Community Working Group on Open Badges. The methodological approach comes from the scenario technique. Scenario technique is a planning method used to describe possible developments in a particular area on the basis of analysis results and interlinking quantitative data and qualitative information as well as expert assessments and opinions (Albers & Broux 1999). With the three scenarios outlined here, future development possibilities or alternatives for action to open badges are pointed out.

Different types of scenarios can be developed using the scenario technique, including positive extreme scenarios (so-called best case) and negative extreme scenarios (so-called worst case) (cf. Albers & Broux, 1999), as well as scenarios with minimum, medium and maximum values (cf. Klühspies, 2012). The scenarios developed in this report differ in the scope of possible future developments and alternatives to open badges. The minimum scenario (MinS) corresponds to a minimum extent of use and systemic integration of open badges, the medium scenario (Med S) to a medium extent and the maximum scenario (MaxS) to a maximum extent. All three scenarios refer to the higher education context, but could be transferred to other contexts, e.g. school education, and adapted to the respective circumstances.

4.1 Minimum Scenario (MinS)

The minimum scenario (MinS) refers to a future scenario with the smallest scope. The minimum scenario comprises a minimum of elements, i.e. (1) infrastructure (2) framework conditions and (3) stakeholders, which are necessary for the use and scaling of open badges in a system, e.g. school education, higher education. Thus the scope of the minimum scenario is limited to one system, e.g. higher education, in which similar logic, rules and structures can be used.

The minimum scenario is aimed at the target group of **students** who wish to document and map their competences with open badges within the respective education system. The minimum scenario thus describes the infrastructure, the framework conditions and the stakeholders that are necessary to achieve the goal of **digitally documenting and mapping competences with open badges**.

The two central questions in the minimum scenario from the perspective of the target group are (Figure 4): 1) Where can I host my Open Badges? (Service) and 2) How can I use my Open Badges in the context of my higher education (national and in Europe, e.g. change of university, mobility)? (Education)

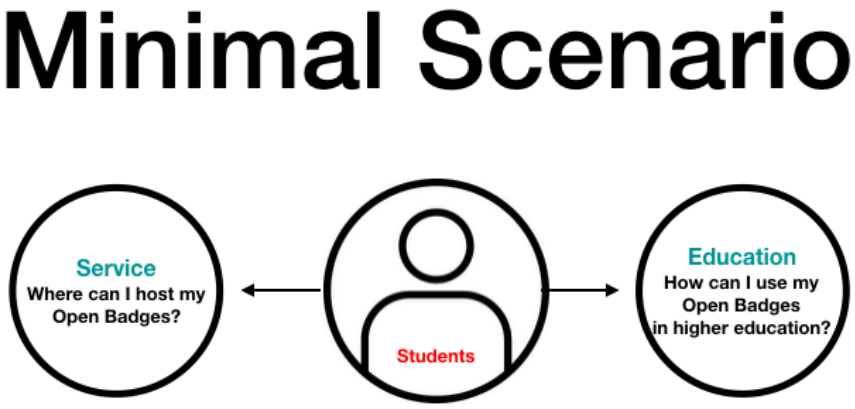


Figure 4: Questions in the minimum scenario (MinS). Source: Ilona Buchem, CC BY-SA 4.0

Possible development possibilities or action alternatives in the minimum scenario are:

- **Infrastructure:** Along the open badge infrastructure (Exhibit > Save > Display), existing learning management systems, especially open source systems such as Moodle, can be extended to include the functionalities for exhibiting and managing open badges (e.g. through plug-ins) and used as a service at universities for exhibiting open badges. Hosting open badges in this scenario takes place in a cloud service such as Badgr Backpack (successor to Mozilla Backpack)[16], which offers a server for the EU (Figure 5). The central requirements include access and administration options for open badges by students, options for exporting and importing open badges between learning management systems at universities and hosting them in a university-independent service such as Badgr Backpack. Open badges are displayed in the universities' learning management systems (e.g. international mobility, university transfers, credit transfer, ECTS) and in social networks for work and career, such as LinkedIn (e.g. internship search, project work).

- **Conditions:** In order to enable the use of open badges in the higher education system in the minimum scenario (also in the context of the European Higher Education Area), the recognition and use of open badges from other higher education institutions as well as the recognition of services and competences certified with open badges must be ensured.

- **Stakeholders:** The necessary stakeholders for the implementation of the minimum scenario are decision-makers from the higher education system at the national and European levels, the higher education institutions themselves and the providers of learning management systems and hosting services such as Badgr Backpack.

[16] https://support.badgr.com/portal/kb/articles/mozilla-backpack-transition-to-badgr-faqs

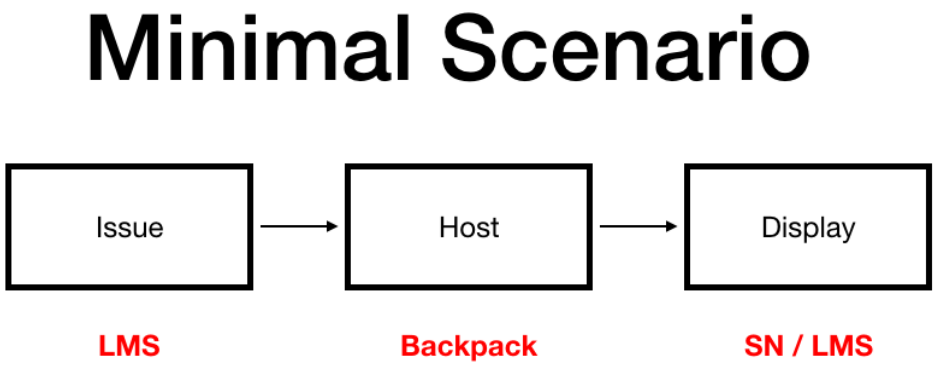


Figure 5: Infrastructure in the minimum scenario (MinS). Source: Ilona Buchem, CC BY-SA 4.0

4.2 Medium scenario (MedS)

The medium scenario (MedS) refers to a future scenario with a medium scope and comprises a medium set of elements, i.e. (1) infrastructure, (2) framework conditions and (3) stakeholders, necessary for the use and scaling of open badges in two different systems, e.g. higher education and the world of work. The medium scenario extends the minimum scenario in which the use of open badges in one system is already assumed.

The medium scenario is aimed at the target group of **university graduates** who wish to use their competences with open badges after leaving university in another system, e.g. work, occupation. The medium scenario thus describes the infrastructure, the framework conditions and the stakeholders that are necessary to achieve the goal of **using competences with open badges in education and work.**

The two central questions in the medium scenario from the perspective of the target group are (Figure 6): 1) Where can I host my open badges? (Service), 2) How can I use my Open Badges from higher education for work (application, profession, career)? (Work)

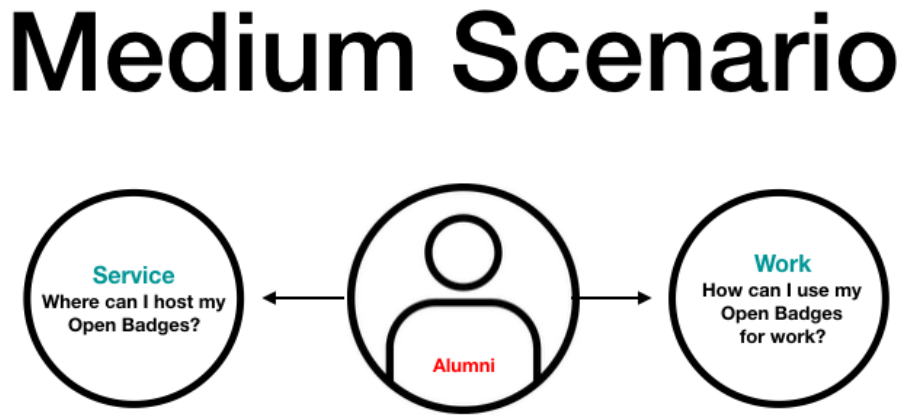


Figure 6: Questions in the medium scenario (MedS). Source: Ilona Buchem, CC BY-SA 4.0

Possible development possibilities or options for action in the medium scenario are:

- **Infrastructure**: Systems must be used along the open badge infrastructure (Exhibit > Save > Display) that enable the use of open badges both in higher education and in the world of work (Figure 7). One conceivable solution in this scenario is the use of existing European instruments that address precisely the interface between higher education and the world of work, e.g. ESCO and EUROPASS. To support the transition from education to work, the European Classification of Skills, Competences, Qualifications and Occupations (ESCO) can be used as a common European reference framework to describe skills, competences and qualifications in open badges and job advertisements, e.g. the European Job Mobility Portal EURES. To enable the storage and display of open badges, EUROPASS can be used as a single Community framework to promote transparency of qualifications and competences. When using ESCO, this means that when creating open badges semantic links are established between the certified competences and the ESCO framework. When using EUROPASS this means that students create their CVs with integrated Open Badges as digital CVs. Open badges can also be displayed on a case-by-case or transitional basis, depending on the requirements and current practices in the world of work, in internal recruitment software or as PDFs.
- **Conditions:** The central requirements include recognition and use of ESCO and EUROPASS at universities and in the world of work. In order to enable the use of open badges at the interface between higher education and the world of work in a European context, employers must recognise European instruments such as ESCO and EUROPASS and create interfaces to open badges in enterprise software, e.g. HR software.
- **Stakeholders:** The necessary stakeholders for the implementation of the medium scenario would be decision-makers from the fields of education and work at national and European level, the universities themselves, the ESCO and EUROPASS managers as well as the providers of open badge hosting services and HR systems.

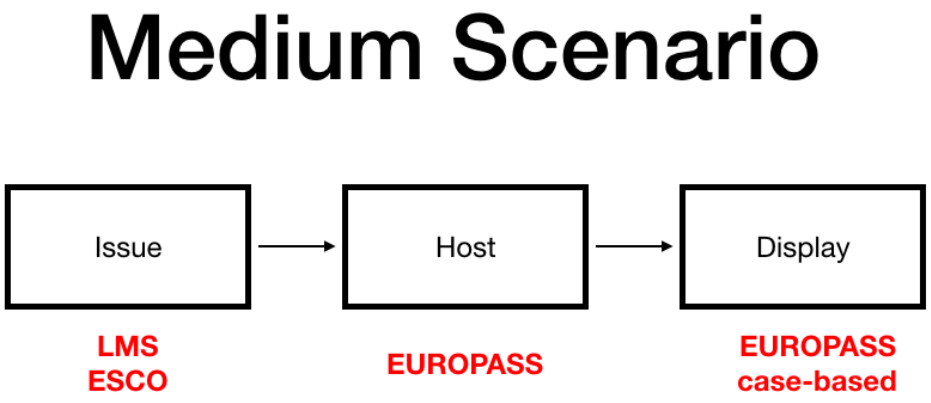


Figure 7: Infrastructure in the medium scenario (MedS). Source: Ilona Buchem, CC BY-SA 4.0

4.3 Maximum scenario (MaxS)

The maximum scenario (MaxS) refers to a future scenario with the largest scope and comprises a maximum of elements, i.e. (1) infrastructure, (2) framework conditions and (3) stakeholders, which are necessary for the use and scaling of open badges across systems, e.g. in school, university, work, further education, informal self-education. The maximum scenario extends the medium scenario, in which the use of open badges in two systems, e.g. university and work, is already assumed.

The maximum scenario is aimed at the target group **learners**, i.e. all persons who learn in the sense of lifelong learning in formal, non-formal and informal contexts and wish to use their competences with open badges in the process of lifelong learning. The maximum scenario thus describes the infrastructure, the framework conditions and the stakeholders that are necessary to achieve the goal of **using competences with open badges in lifelong learning**.

The two central questions in the maximum scenario from the perspective of the target group "learners" are (Figure 8): 1) Where can I host my Open Badges? (Service), 2) How can I use my open badges in lifelong learning (school, university, work, continuing education, self-education)? (Learning paths)

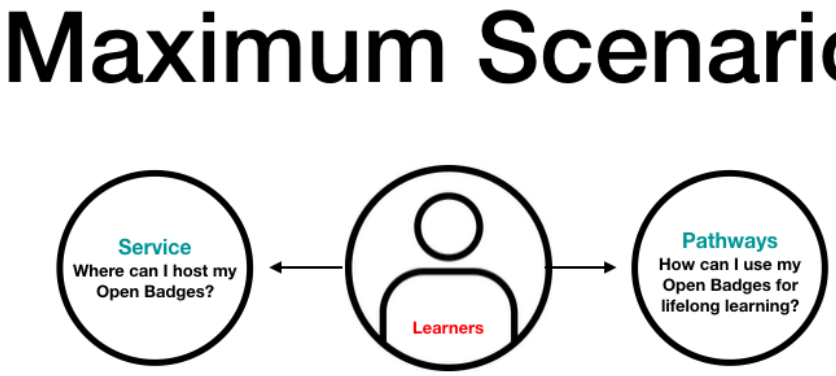


Figure 8: Questions in the maximum scenario (MaxS). Source: Ilona Buchem, CC BY-SA 4.0

Possible development possibilities or options for action in the maximum scenario are:

- **Infrastructure:** New systems must be developed along the open badge infrastructure (Exhibit > Save > Display) to support the mapping of individual learning paths with open badges in various phases of lifelong learning (Figure 9). One conceivable solution in this scenario is the development of systems to identify gaps in competences and qualifications, which can point out or suggest individual development potentials to learners, and of systems which make it possible to record acquired competences just-in-time, e.g. in work situations. The use and further development of existing instruments, such as ESCO, which can support the identification of competence gaps in various areas, can also be helpful. For the storage of open badges, new systems would have to be developed which could map individual learning paths and suggest new competence development opportunities. New systems would also

have to be developed for displaying open badges, which would (automatically) open up suitable possibilities after displaying open badges, e.g. access to a job after displaying necessary evidence. In the maximum scenario, digital certificates such as open badges will replace traditional CVs and become part of the digital portfolio or digital identity of individuals.

- **Conditions:** In order to enable the cross-system use of open badges in lifelong learning in the European context, sectoral taxonomies for competences and qualifications must be developed and described in machine-readable form, open badges used in job descriptions and job descriptions, and methods and tools developed for recording and automatically processing informally acquired competences. Central prerequisites also include consideration of the relevant EU regulations on data protection (e.g. GDPR).
- **Stakeholders:** The necessary stakeholders for the implementation of the maximum scenario are decision-makers from the fields of school and higher education, work, further education/adult education, vocational education and training at national and European level, schools and universities themselves, ESCO managers and providers of learning and HR systems.

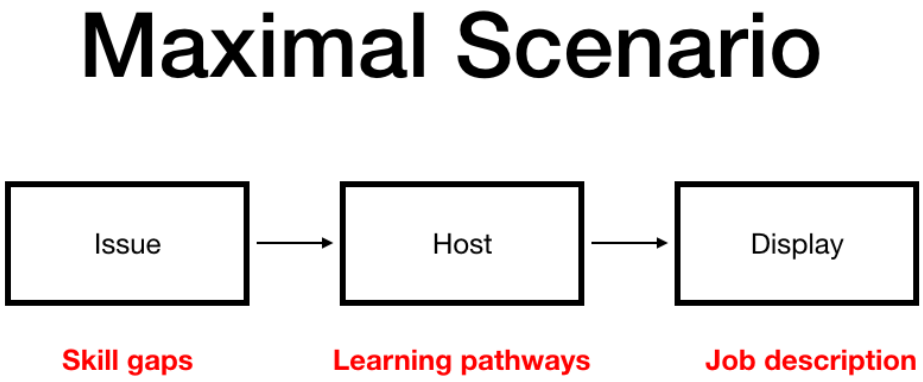


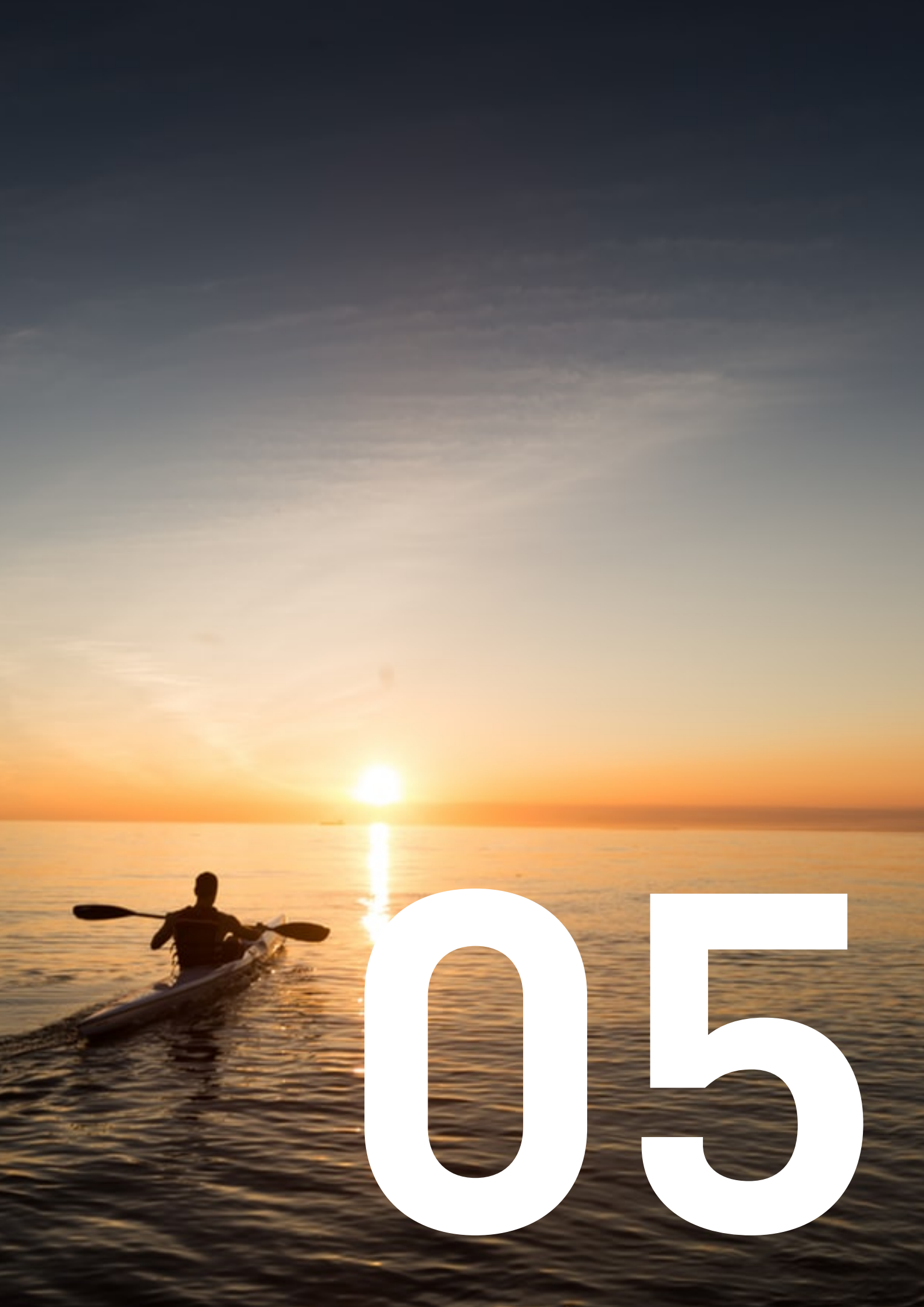
Figure 9: Infrastructure in maximum scenario (MaxS). Source: Ilona Buchem, CC BY-SA 4.0

4.4 Results

The following table summarises the characteristics of the three scenarios for open badges:

	Minimum scenario	Medium scenario	Maximum scenario
Target group	Students	Graduates	Learners (LLL)
Scope	Open badges are used within a system, e.g. university, national and European higher education area	Open badges are used in two different systems, e.g. universities and the world of work (national and European).	Open badges are used across all systems, e.g. school, university, further education, work, etc.
Infra-structure	LMS of the universities with integrated functionalities for open badges and a hosting service	European instruments at the university-work interface, e.g. ESCO, EUROPASS	New systems to identify competence gaps and design learning pathways (LLL)
Conditions	Recognition and use of open badges from other universities as well as recognition of services or competences certified with open badges	Recognition and use of ESCO and EUROPASS at universities and in the world of work (e.g. HR systems)	Sectoral and machine-readable taxonomies for competences and qualifications, methods and tools for recording and automatically processing competences
Stake-holders	Decision-makers on higher education (national and European level), universities, LMS providers and hosting services	Decision makers on education and work (national and European level), universities themselves, ESCO, EUROPASS, providers of hosting and HR systems	Decision-makers on education, work, continuing education (national and European level), schools, higher education institutions themselves, ESCO, learning and HR systems

Table 1: Characteristics of the three scenarios for open badges



05

Chapter 5: Outlook

The work in the HFD Community Working Group on Open Badges has highlighted that the topic of digital proof of competence (micro-/ credentials) remains contentious and extremely complex. Stakeholders from different areas articulate very different expectations and also have different views and concerns about the issue.

- At the round table discussion of **stakeholders from private and state universities**, the demand was made, among other things, to bring the certificates of competence into line with the existing qualification and competence frameworks, as they were developed in Europe following the Bologna Process, without establishing a new top-down system. Rather, digital systems of certificates of competence developed bottom-up can be used to provide a more transparent, more consistent, easier to "transport" and more detailed documentation of competences, to make learning paths visible, to link learning places with each other and to place the individual learner at the centre. In this sense, the opportunity for the individual would be to control, document and reflect on lifelong learning and to share acquired competences with others on their own initiative or to present them to potential employers. The opportunity for higher education institutions lies in imparting competences and enabling transparent, comprehensible and reliable documentation of these competences.
- During the round table discussion with **stakeholders from business and employer representatives**, the discussion on the use of digital certificates of competence was controversial: The question of whether everything that is technically possible makes sense was raised particularly critically by this group. For example, it was argued that the dual system of vocational education and training, as it has established itself in Germany, has a high level of acceptance and that the acquisition of skills is already very strongly reflected and optimised for practical use due to the proximity of the school and company sides. A completely new system would not be appropriate here. However, the participants reflected on the fact that the growing need for further and continuing training in the labour market could make new methods of proof of competence necessary.
- During the discussions with **heads of personnel and recruiters**, it was emphasised in particular that the Human Resources department is undergoing a major transformation. Thus, it is increasingly a question of linking recruitment and personnel development in the sense of continuing learning at the workplace, in the company and via non-formal and informal learning paths. They are open to digital forms of proof of competence, need process knowledge and technical know-how in order to understand the trustworthiness and credibility of these proofs. Badges and digital certificates can be included in application procedures as well as in the personnel files of employees.
- In the course of the discussion with the **pioneers from abroad**, it became clear that this group of people already has a great deal of experience with the use of open badges and is very willing to use open badges across systems and over the long term in the sense of a maximum scenario. Based on the experience gained, the misunderstandings, prejudices and problems associated with the use of open badges are also known and possible solu-

tions can be identified more clearly. In addition, the international composition of the discussion group makes it easier to generate ideas for better communication and coordination of measures across regional borders. The international comparison indicates in particular that there are discussions as to whether a future standardization of information in open badges will limit its field of application or whether it will make the cross-system use of the instrument possible in the first place.

The fact that **three different dimensions** are addressed in the field of digital certificates of competence was evident from all the discussion rounds:

1. a **technical dimension**, one of the aims of which is to develop technical standards and systems or use existing European and international standards;
2. a **content dimension**, where the aim is, among other things, to formulate the competences of the educational institutions and to determine the possibilities for review;
3. a **political dimension**, including the balancing of interests between different stakeholder groups, taking into account individual learners and institutional and legal bases on which digital proof of competence systems can function legitimately.

The challenge for the future is certainly to continue pursuing developments within these three dimensions, but above all to identify the crucial pivotal points where the three dimensions affect each other and, at best, optimise each other. One such linchpin is the attempt to model competences in such a way that they are machine-readable, discoverable and exchangeable via unambiguous semantics. Although the modelling must be carried out technically via databases, the semantics must also be meaningful and exchangeable for different educational areas and individuals. Politically, the potential that unfolds technically and in terms of content must be broadly disseminated through processes of exchange and participation in a wide variety of educational sectors, and at the same time integrated into the life reality of the individual through the inclusion of lifelong and self-directed learning individuals.

06

Chapter 6: Good Practice Examples of Open Badges

In the following section we present selected good practice examples for the use of Open Badges. The good practice examples come from the following projects:

1. Open Virtual Mobility (OpenVM, Erasmus+)
2. Beuth Bonus (Network Integration through Qualification)
3. pMOOCs (BMBF)
4. INTEGRAL+ and IMPact Digital (BMBF)

1.1 Good Practice Exemple: Open Virtual Mobility (OpenVM)

Project name	Open Virtual Mobility (OpenVM)
Duration	2017-2020
Funding	European Commission, Erasmus+ Programms KA2 - Cooperation for Innovation and the Exchange of Good Practices, KA203 - Strategic Partnerships for higher education
Website	Project website: https://www.openvirtualmobility.eu/ OpenVM Learning Hub: https://hub.openvirtualmobility.eu/my/ OpenVM Bestr Badges: https://bestr.it/project/show/107?ln=en
Objectives	The aim of the Open Virtual Mobility (OpenVM) project is to increase the willingness of universities, university lecturers and students to develop, evaluate and reward competences in the field of virtual mobility. The Open Virtual Mobility project addresses the need to create generally accessible opportunities for the development of virtual mobility competences in order to increase the acceptance of virtual mobility in higher education in Europe. The aim is to support higher education institutions, university teachers and students in the development, assessment and labelling of virtual mobility competences, i.e. key competences necessary for successful design, implementation and participation in virtual mobility. The project aims to design, implement and test open certificates based on open badges for the recognition of virtual mobility competences of university teachers and students. The aim is to intensify participation in virtual mobility

	in higher education and to recognise and visualise the key competences for virtual mobility with open badges.
Competences	The key competences for virtual mobility recognised with OpenVM Badges include Open Mindedness, Networked Learning, Collaborative Learning, Intercultural Skills, Active Self-Regulated Learning Skills, Autonomy-driven Learning, Media & Digital Literacy. There are 3 levels for each competence: 1 Foundations: Overview Knowledge 2 Intermediate: Practical application 3 Advanced: Passing on to others
Example badge	 *Source: Open Virtual Mobility, CC BY-SA 4.0* Networked Learning Foundation Level This digital credential "Networked Learning Foundation Level"certifies that the owner has acquired Basic Networked learning skills. Designed by the Open Virtual Mobility Erasmus+ project, the networked learning MOOC provides teachers, students and other stakeholders in higher education with the learning pathway addressing the following networked learning skills relevant for successful engagement in virtual mobility: 1. knowing what networked learning is, and its value for personal learning; 2. knowing of what social forms of learning are and how learners benefit from one another's knowledge and actions; 3. knowing about digital media for communication in the context of networked learning. The digital credential is issued after successful completion of the Foundation level Pathway in Networked learning MOOC in the OpenVM Learning Hub. To earn the "Networked Learning Foundation Level" you must have: 1. read the contents and watch the videos about Teaching crowds, networks and the six degrees of separation theory; 2. successfully passed the e-assessment. On foundation level of the networked learning MOOC, networked learning is assessed through short online quizzes. Link: https://bestr.it/badge/show/1037#!#badge-description-wrapper

Application context	In today's global world, higher education is confronted with a variety of demands and challenges. One of these challenges is the internationalisation of higher education in response to globalisation. Virtual mobility (VM) makes an important contribution to internationalisation, innovation and integration in higher education. The physical mobility of students and faculty is often constrained by high costs, socio-economic, political and health-related factors. These barriers can be significantly reduced by adding a virtual component to mobility, making mobility possible for all students and faculty. Despite numerous virtual mobility initiatives and projects in recent years, the use of virtual mobility in higher education remains low and the opportunities for virtual mobility, including virtual placements, are unknown to many university teachers and students.
Stakeholders	Students and lecturers at universities in Europe, foreign offices at universities, university networks, the German Academic Exchange Service e.V. (DAAD)
Infrastructure	OpenVM Learning Hub (Moodle with Plugins) with an offering of MOOCs and interlocking with the Bestr Badging Platform, where OpenVM Badges are hosted and awarded to MOOC participants.
Achievements	• Creation of a competence framework with key competences for virtual mobility on the basis of empirical results from the Group Concept Mapping study. The competence framework comprises a total of eight competence types for virtual mobility. • Semantic mapping of the eight competence types and their subcategories to the ESCO framework (European Classification of Competences, Qualifications and Occupations). • Creation of eight miniMOOCs in the OpenVM Learning Hub in orientation to the eight competence types for virtual mobility from the competence framework. Each miniMOOC is offered at three levels, i.e. Foundations, Intermediate and Advanced. After successful completion of each level, an open badge can be acquired in the form of a digital certificate of competence. • Creation of a set of a total of 24 open badges which recognise eight types of competence at the three levels. • Effects: Identification and description of relevant competence types, integration with European competence frameworks and aggregation of media/data in digital certificates of competence for the recognition of key competences for virtual mobility. Media didactic linking of MOOCs with Open Badges. All instruments are open, flexibly applicable and can support various teaching-learning as well as cooperation and exchange scenarios.

Table 2: Good Practice Example: Open Virtual Mobility (OpenVM)

1.2 Good Practice Example: BeuthBonus

Project name	BeuthBonus and BeuthBonus+
Duration	2013-2021
Funding	German Federal Ministry of Labour and Social Affairs within the framework of the Federal Programme "Integration through Qualification", in short: IQ Network
Website	Project website: https://beuthbonus.beuth-hochschule.de/ BeuthBonus Badges https://www.openbadgeacademy.com/beuthbonusbadges
Objectives	The BeuthBonus project is a qualification for immigrant university graduates at the Beuth University of Applied Sciences. In the model project Credit Points in 2013 - 2014, 25 migrant graduates were able to successfully prepare themselves for entering the labour market with the help of an individual qualification. This included specialist modules from Master's programmes and optional modules on key competences (including language, media and application skills). As a follow-up project, the BeuthBonus project implements the revised Credit Points concept. Since 2019, BeuthBonus+ has been a revised and expanded extra-occupational supplementary qualification for migrant graduates. In addition to special modules from Bachelor's and Master's programmes, this includes modules on key competences (including language, media and application skills). In addition to the regular BeuthBonus university certificate for the successfully completed modules in the qualification, participants can acquire digital certificates based on Mozilla Open Badges with BeuthBonus Badges.
Competences	Open Badges are awarded by lecturers and coaches in the BeuthBonus/BeuthBonus+ qualification programme as proof of the following skills: language skills, team play, leadership, management, social media and intercultural skills. There are 3 levels for each competence: 1 star: Basics that can be mastered upon instruction or request; 2 stars: advanced knowledge which is provided independently and 3 stars: Expert knowledge, i.e. one or the other is also able to train or instruct others in this competence. Individual competence descriptions can be found in the handout: https://beuthbonus.beuth-hochschule.de/wp-content/uploads/2015/03/Handout_BeuthBonus-Badges_2017.pdf

Example badge	 *Source: BeuthBonus, CC BY-SA 4.0* **Social Media Skills – Level 2** This Open Badge was acquired in BeuthBonus program at Beuth University Berlin: http://beuthbonus.beuth-hochschule.de. This badge certifies that the earner has independently created a professional online profile, uses at least two social media channels and has a network with at least 35 professional contacts. The earner developed a strategy for a professional online network with the help of a tutor, uses social media in an active way and has an extended knowledge of data privacy and copyright.
Application context	BeuthBonus/BeuthBonus+ is a qualification for graduates who have a university degree and have professional experience in the field of information technology (IT), information or communication technologies (ICT), or who have directly obtained their university degree with an IT or ICT connection abroad, but wish to work in another profession in Germany and return to the first profession, and/or have not received recognition or partial recognition of their degree in Germany and wish to close gaps, and/or wish to further their professional development or career reorientation after a time-out or parental leave. BeuthBonus/BeuthBonus+ prepares immigrant university graduates for entry into highly qualified jobs in the IT/IKT sector in Germany.
Stakeholders	Immigrant University Graduates in Germany, Migrant Organisations, The Network Integration through Qualification, in short: IQ Network, Employers and Employers' Associations, especially IT/IKT sector.
Infrastructure	Digital certificates of competence (Open Badges) are awarded or acquired in the Moodle learning management system (in German) and on the BeuthBonus Open Badge Academy[17] website (in English).
Achievements	• Concept, implementation and testing of a total of 22 digital certificates of competence for eight competence categories in the Moodle learning management system (German versions) and in the BeuthBonus Open Badge Academy (English versions), • Positive feedback from participants on the possibilities of visualising their own competences with Open Badges, • Definition of relevant competence categories and the visualisation of competences of migrant graduates, • Definition of processes for competence identification (e.g. with the help of ProfilPass[18]) and the mechanisms for the allocation of open badges for the visualisation of competences.

Table 3: Good Practice Example: BeuthBonus

[17] https://www.openbadgeacademy.com/beuthbonusbadges
[18] https://www.profilpass.de/

1.3 Good Practice Example: pMOOCs

Project name	pMOOCs1 and pMOOCs2
Duration	2014-2020
Funding	German Federal Ministry of Education and Research within the framework of the programme "Ascent to Education. Open universities"
Website	https://pmooc.oncampus.de (pMOOCs1) https://pmooc2.oncampus.de (pMOOCs2, in progress)
Objectives	The project wants... • to facilitate access to higher education for working people without a university degree and to enable them to obtain a modular qualification at Bachelor level. These courses developed in the project should be creditable towards a Bachelor's degree. • to enable people with a university degree to pursue postgraduate scientific further education at Master's level. At this level, the scientific profile of the university in particular should become visible in the communication of current research findings. • to create a further pillar of lifelong learning and the opening of the university to non-traditional students in addition to part-time Bachelor's and Master's degree programmes and part-time continuing education, An important question within the project is how competences acquired in online courses can be measured and credited for a transition to higher education. The project aims to ensure that courses and integrated competence assessment procedures satisfy the accreditation bodies and that credit points are accepted by the departments and examination offices. In addition to open badges and digital certificates of participation, which are awarded by automatically verifiable tasks and tests, classical university certificates are awarded for the proof of ECTS points via a final examination or a project work.
Competences	A total of 15 courses are/have been developed in the project. For all courses, open badges will be assigned automatically. The award criteria are fixed and transparent for learners to see in advance. Example course "Cost and Performance Accounting In the course, one so-called listener badge and one so-called understander badge will be assigned to each of the topics basic, cost type accounting, cost centre accounting, cost unit accounting and partial cost accounting. A listener badge indicates that simple quiz questions have been successfully solved, a verifier badge that all arithmetic tasks have been successfully solved.

	Additionally - in the sense of a gamification application - negative badges are assigned, a cheat badge, a model badge, a flunker badge and a cheater badge. These are then "acquired" when assistance is requested for a calculation path. For the certification of the course conclusion either a participation certificate or - after successful examination - a university certificate is assigned.
Example badge	 *Source: oncampus, CC BY-SA 4.0* In the chapter "Cost unit accounting" in the MOOC "Introduction to cost and activity accounting" you have fibbed a little!
Application context	University, further education, professional activity
Stakeholders	Stakeholders from higher education, vocational training and practice.
Infrastructure	University infrastructure, MOOC platform based on Moodle (oncampus.de)
Achievements	• pMOOCs1: Completion and testing of six MOOCs (on oncampus.de) • pMOOCs2: Design of nine MOOCs (under development) • Opening the university to professionals and testing new forms of permeability, • Competence assessment and design of transitions from non-formal to formal learning, • Deepening a dialogue between the university and other target groups from practice, • Anchoring of new learning scenarios at the university.

Table 4: Good Practice Example: pMOOCs

1.4 Good Practice Example: INTEGRAL+ and IMPact Digital

Projektname	INTEGRAL+ and IMPact Digital
Duration	2017-2020
Funding	German Federal Ministry of Education and Research
Website	https://kiron.ngo/our-projects/integralplus/ (project description) https://www.oncampus.de/impact-digital (project description) http://integralplus.oncampus.de (sub-project documentation)
Objectives	The project wants... • To improve the participation of fugitives in digital teaching and learning scenarios through personalisation and scaling. • To provide study preparation and support for international students in Germany through innovative online learning and task formats and certification technologies. For this purpose have been developed: • self-paced Online preparatory courses with the integration of digital performance records for the general and subject-specific preparation of international target groups for studies at a German university, • MOOCs, including multi-level task formats and self-assessments, in order, among other things, to enable target-group-specific preparation for examination situations at German universities. • digital and competence-oriented examination systems developed and tested during the semesters and at the end of each semester • designed a learning environment for digital study preparation for international target groups • develops innovative certification technologies and digital certificates • the sustainability and transferability of the results to the higher education landscape and to other target groups.
Competences	In the project different courses are/have been developed by the Technical University Luebeck. Open Badges are automatically assigned for all courses. The award criteria are fixed and transparent for the learners. Example course "Technical English. Mechanical Engineering". A badge is acquired for each content chapter. A final badge is acquired for the overall completion of the course.

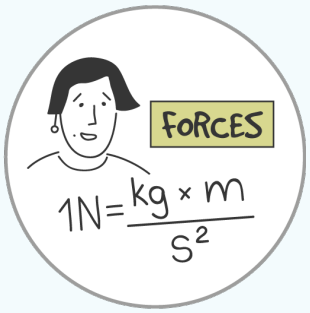
	The final badge certifies the following learning results: You are able to… • recognize and understand and use the English vocabulary from topics such as: algebra and geometry; energy and electricity; materials and properties; forces; friction; and transmission • apply grammar rules in specific-context related to all of these areas covered • use strategies to understand lectures, articles, process descriptions and graph descriptions. An overview of all badges to be acquired and the associated learning outcomes is available here: https://h5p.org/node/578809
Example badge	 *Source: INTEGRAL+, CC BY-SA 4.0* The owner of this badge has proven to be able to understand and use English vocabulary in the area of "Forces", to understand how to use conditional clause and the language of cause and effect and to make the most of a lecture by preparing for it.
Application context	University, international university landscape
Stakeholders	Stakeholders from universities, research institutions and international student advisors
Infrastructure	Infrastructure of the institutions and universities involved, various course platforms (oncampus, edX)
Achievements	• INTEGRAL+: Completion and partial testing of three propaedeutic courses and three MOOCs (on oncampus.de) • IMPact Digital: development of a blockchain to manage e-learning certificates via Moodle-Plugin (prototype)

Table 5: Good Practice Example: INTEGRAL+ and IMPact Digital

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