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**e-CF Multistakeholder partnership driving ICT
professional up-skilling and pick up of employability**

WP9

DLV09.2 – Exploitation Strategy



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Executive summary

This document reports the ideas on a possible business model of the joint e-CF Alliance services and the Vocational Training/certification programme developed mentioning which stakeholders could be involved and the strategy to enlarge the overall network. The document analyses the information collected along the project from different sources (attendants to courses, workshops, online surveys, etc.) to extract the clues for a proposal for exploitation of services and courses to ensure the sustainability of the project outcomes and gained expertise. The IPR requirements are also briefly mentioned and analysed, always according to the document DLV 09.2. Additional reflections on policy recommendations and measures to boost e-CF Alliance Qualification and Certification Scheme as well as associated challenges, risks, barriers and description of possible solutions are included in this document.

1. Introduction: sustainable results from the project

The analysis of sustainability for the project should be always linked to the analysis of the results produced during its lifetime. The catalogue of results is evidently fed by the list of official deliverables but maybe should not be restricted to it. Creation of expertise and know-how among partners could provide additional options for exploitation after the end of the project mostly by the VET and certification providers but also by industry and professional organisations.

When analysing the list of deliverables, the most evident results for exploitation are the courses developed by the corresponding partners and tested during the pilot training courses which namely are:

- A1 IS and Business Strategy Alignment
- A3 Business Plan Development
- A6 Application Design (**ADFOR Pilot**)
- A7 Technology Trend Monitoring (**biTA Pilot**)
- A9 Innovating
- B3 Testing (**UAH Pilot**)
- C4 Problem Management
- D2 ICT Quality Strategy Development (**ESICEE Pilot**)
- E6 ICT Quality Management
- E8 Information Security Management (**CEFRIEL Pilot**)

Apart from courses we must add the consideration other less tangible outcomes which even may represent the most valuable assets resulting from. These are the methodology for the development of the e-competences training curricula and learning units as well as the expertise gained in connecting the e-CF standard and the ESCO classification to the training world. The standard EN16234 cannot be disconnected from the three pillars involved in the IT professionalism: candidates and their competence profiles, the training providers and the maps of their course to e-CF and employers and the expression of their needs in terms of e-competences from e-CF and occupations and skills from ESCO.

2. Ideas for business model

Following the strategy for WP9 –Sustainability presented in the project proposal, possible ideas for a business model will be developed for the e-CF COUNCIL community, activities, services and products. beyond the project, and to facilitate the take-up of project results by

private and public stakeholders. The model and roadmap will be elaborated on the basis of the input coming from the external surveys and evaluations carried out in WPs 6 and 8 as well as from the pilot outcomes in WP5, especially the opinions from students who participated in the pilot training courses.

2.1. Information collected from courses for the evaluation of sustainability

Participants in pilot courses are a very valuable source of information for evaluating sustainability of project results as they are the ones who directly experience the courses as project products, thus having a privileged view of the quality of contents and training as well as the perception of usefulness. All courses should have asked all the participants two key questions which would help in the analysis of sustainability:

- I would attend more training courses on other e-competences in the future? (5-point Likert Scale from Fully Agree to Fully Disagree)
- I would pay to attend more training courses like this on other e-competences? (5-point Likert Scale from Fully Agree to Fully Disagree)

The results coming from the different courses are the following ones:

- A7 Technology Trend Monitoring (bITA Pilot): they haven't added the agreed questions about sustainability in their satisfaction quiz, but 93% students indicated that they recommend the course series to their colleagues.
- D2 QM Strategy Development (ESICEE Pilot): they haven't added questions about sustainability in their satisfaction quiz, but students indicated that they would recommend the course to their colleagues.
- E8 – Information Security Management (CEFRIEL Pilot): There isn't any satisfaction quiz in the final report.
- B3 Testing (UAH Pilot): the results coming from participants are shown in the subsection 2.1.1
- A6 Application Design (ADFOR Pilot): the results from participants are shown in the subsection 2.1.2

2.1.1. Results from course B.3

This section presents the results of the questions related to sustainability which were included in the satisfaction questionnaire for the attendants of the course on B.3: all the 20 attendants answered the questions. The profile of attendants is reported in the document on the Spanish pilot but as a reminder we can mention the following data:

- Average age: 42 years old
- Female: 20%
- Average years of experience as professional in ICT: 14.5 years

- Only 2 (10%) were unemployed
- Education: 75% with university degrees and master level

Therefore, we can consider the attendants as experienced people whose opinion could be representative of the impact of the course in professional career.

Regarding satisfaction, 90% of them rated their general satisfaction with the course as high or very high (very high for 50%) as shown in Figure 1. This suggests that the course was well accepted and the opinion of attendants on sustainability are based on a satisfactory experience so a negative bias towards sustainability is not expected.

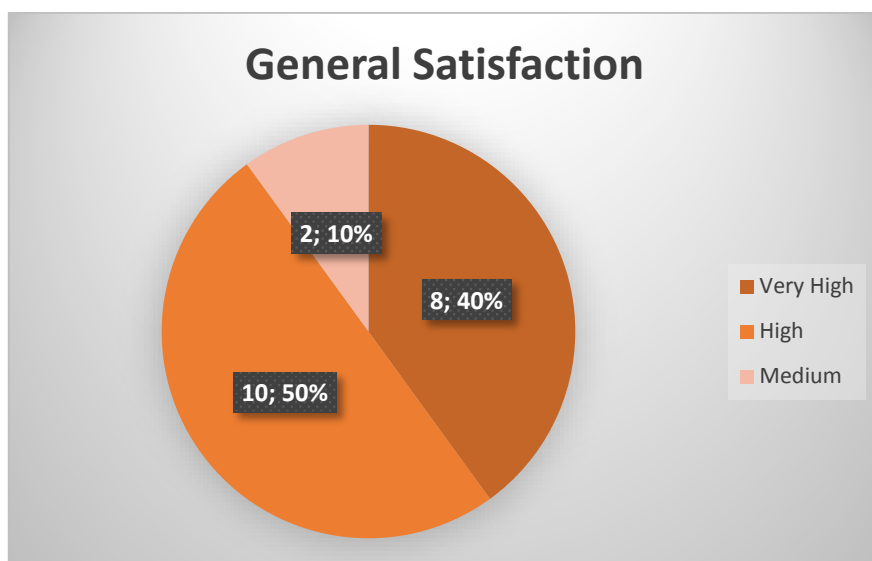


Figure 1 Results from question on general satisfaction with course by Spanish B.3 pilot students

When asked on their interest in future occasions of attending similar courses on e-competences from e-CF and developed with the methodology of the project, they tend to support good prospects in terms of interest in new courses even paying for that (see Figure 2 and Figure 3).

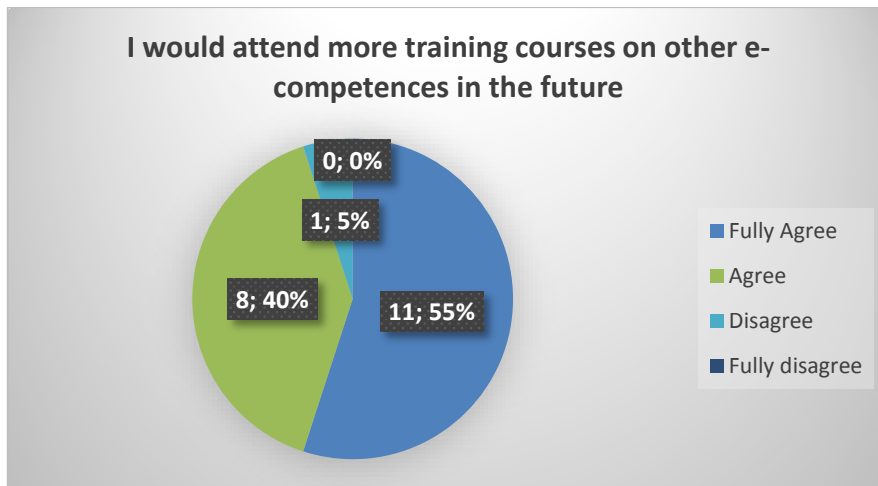


Figure 2 Results from question on enrolling in more courses answered by Spanish B.3 pilot students

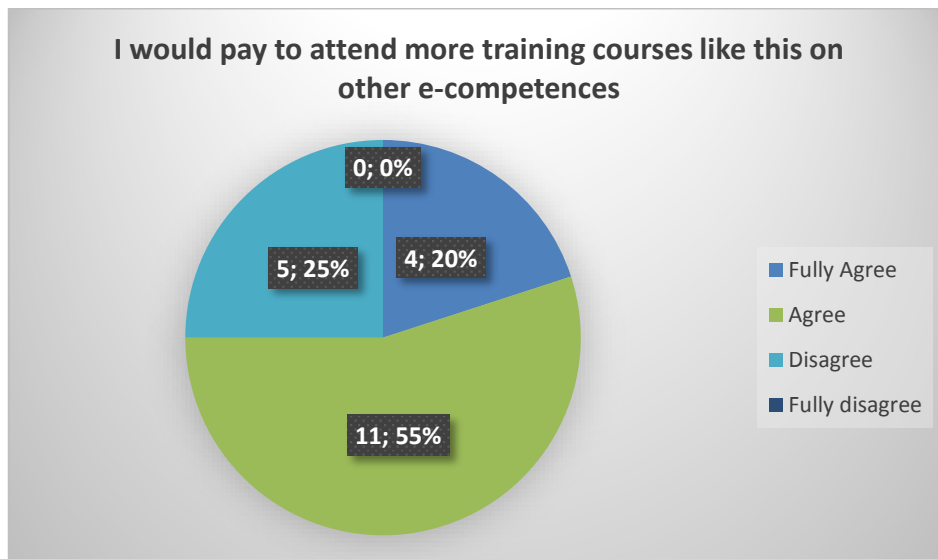


Figure 3 Results from question on paying for new courses answered by Spanish pilot students

The interest in new courses is supported by 95% who would attend more training courses like B3 Testing: 55% fully agree, 40% agree and only the 5% disagree (see Figure 2). When asked if they would pay for such new courses (see Figure 3) 20% fully agree, 55% agree and only the 25% disagree. So, the 75% would pay to attend more courses like B3 Testing.

2.1.2. Results from course A.6

This section presents the results of the questions related to sustainability which were included in the satisfaction questionnaire for A.6 course attendants which were 13 in total. In

this case, the profile of attendants was closer to those who are seeking for an ICT qualification, most of them had no professional experience in ICT. Those who declare to have experience had in the past a low-level occupation in ICT but now are unemployed. The profile of attendants is reported in the document on the Italian A.6 pilot but as a reminder we can mention the following data:

- Average age: 8 (20-25), 2 (25-30) and 2 (30-40)
- Average years of experience as professional in ICT: 8 none, 2 (1 year) and 2 (2 years)
- None working in ICT
- Education: only 1 with university degree and the rest with high school and technical high school studies

Regarding satisfaction, 83% of them rated their general satisfaction with the course in terms of recommendation to others as very probable and probable (very probable for 41%) while only one chose improbable as shown in Figure 4 (1: very unlikely, 5: very likely). This suggests that the course was well accepted and the opinion of attendants on sustainability are based on the satisfactory experience, so a negative bias towards sustainability is not expected.

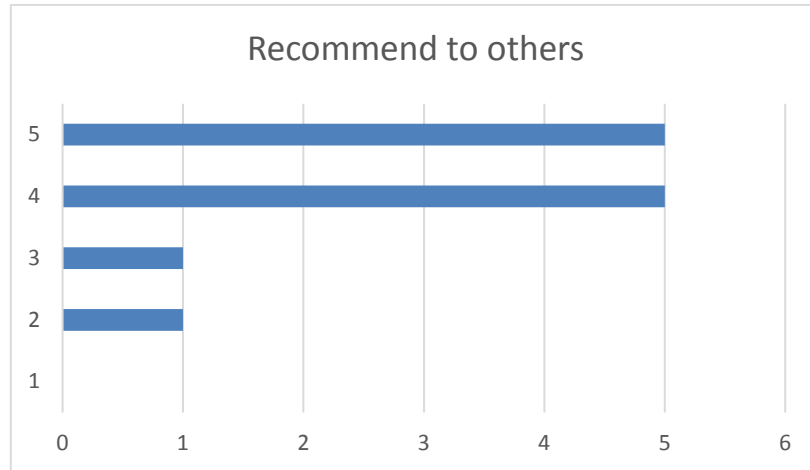


Figure 4 Results from question on recommendation to other persons by Italian students

When asked on their interest in future occasions of attending similar courses on e-competences from e-CF and developed with the methodology of the project, they tend to support good prospects in terms of interest in new courses as can be seen in Figure 5 (1: very unlikely, 5: very likely). Only one participant expressed a negative opinion, all the others (91%) expressed probability or high probability of repeating experience.

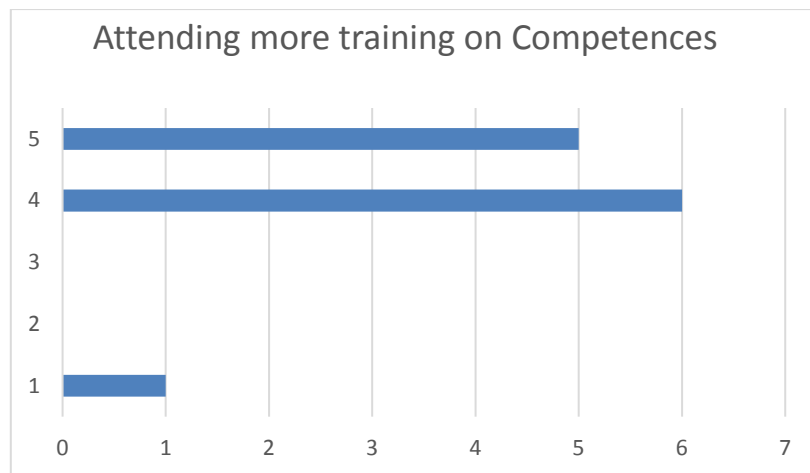


Figure 5 Results from question on attending more course by Italian students

Unfortunately, there was not a specific question on their intention to attend more courses which could require paying for them. This would have been extremely useful for the analysis.

2.2. Information collected from stakeholders survey for the evaluation of sustainability of courses

Additional information was collected through an online questionnaire addressed to relevant stakeholders as part of the work in WP8. 17 stakeholders provided their answers to the survey implemented on the EU Survey tool. Among the respondents, around 47% were sectoral organisations, 30% were regulatory bodies, and 23% were VET providers. As for the geographical representation, 47% of respondents were from Southern Europe (30% from Italy and 17% from Spain), 12% represented Western Europe (The Netherlands and Ireland), 23% - Eastern Europe (Bulgaria), and 18% of respondents covered EU level.

As first relevant question for sustainability, the respondents were asked whether they agree that developed LUs could be still relevant in a few years, especially, keeping in mind a fast-changing ICT environment. Majority of respondents from different stakeholder categories (almost 59%), stated that that they neither agree nor disagree with such statement (the rest agreed with the statement). All of them provided similar comments, highlighting a fast development of the ICT sector, and a need to periodically review not only the LUs, but also eCF competences in general. The stakeholders mainly stressed a need to review and update the Learning Units (LUs) and probably eCF competences in general.

After the effort to create quality content and materials with an established methodology, something that was costly for the project partners, there is a very positive trend noticed in

most of the comments: stakeholders stressed that the general approach and methodology will also be relevant as project result so for sustaining the training offer only the content itself would have to be updated in the future.

The relevance of the competences selected for the project which were the basis for training courses developed by the partners was also checked, asking whether they agree that developed LUs could be still relevant in a few years, especially, keeping in mind a fast-changing ICT environment. Majority of respondents from different stakeholder categories (almost 59%), stated that they neither agree nor disagree with such statement (the rest agreed with the statement). All of them provided similar comments, highlighting a fast development of the ICT sector, and a need to periodically review not only the LUs, but also eCF competences in general. According to the respondents, ICT market is evolving very quickly, and it is not possible to predict even which competences will be needed in the future. This opinion does not doubt of usefulness of the developed courses, but it warns that sustainability of business related to training course would require investment of resources to keep them updated or to generate the ones which would be needed in the future.

Most respondents either fully agrees (approx. 29%) or agrees (approx. 65%) trainings for the e-competences could be recognised as valid for such competences, based on the instructions given in the LU design. The only hesitation was expressed by one of the sectoral organisations that neither agreed nor disagreed with statement and indicated that recognition of a training is possible, but it would need very good planning of the courses, including the case studies, as well as validation processed to guarantee quality and standards.

However, stakeholders were more reluctant to agree that the e-competence trainings based on provided LUs could be certified. Around 12% disagreed with such statements, and another 12% neither agreed nor disagreed. These were mostly sectoral organisations from different European regions. To their view, the main obstacles are similar to those raised regarding the 6th question – strict quality procedures (and necessity to comply with ISO standards) that are difficult to implement with the given resources and a timeframe, as well as a need for a very detailed planning, etc. In addition, one of the stakeholders pointed out another difficulty for certification – a challenging mapping with the Bloom taxonomy. However, 76% of stakeholders (across the sectors and across the different geographic areas) still either agree (approx. 17%) or fully agree (59%) with the possibility of trainings' certification. For sustainability, this means a challenge for the future and for the business model as the services related to certification have a worse forecast for the model.

Finally, the survey to experts were asked if they think that the targeted stakeholders (ICT training providers, HR departments and employers, ICT professionals, educational authorities) would be interested in:

- paying for the developed courses or similar ones developed according to the same methodology
- investing resources into the development of new courses developed with proposed LU design methodology.

Results were that 59% in ICT training providers, 65% in HR departments and employers, 47% in ICT professionals' organisations and 59% in Educational authorities agree with investing resources for having courses. Payment for courses is agreed by 53% of HR departments and employers and by ICT professionals' organisations while 41% neither agree nor disagree in ICT training providers and 53% in educational authorities.

It seems that ICT training providers and educational authorities are particularly likely to invest their resources into such ICT trainings, but they are not inclined to pay for courses (most probably because they felt they can develop or teach such courses by themselves, just investing resources). As it comes to the HR departments and employers, experts' opinion is not that strong. Most of them do agree that the mentioned stakeholder would be willing to pay for the courses or even to invest its resources to it. However, a big percentage of, mostly sectoral organisations, did not express a clear opinion. It may suggest that training providers and educational authorities would be interested in exploiting methodology and existing materials for ensuring training offer for themselves or for others while the other organisations would at most be consumers of the type of training developed with the expertise of the project methodology within their regular training activities for their organisations.

2.3. Information for the evaluation of sustainability collected from stakeholders during workshops

The eCF Council project planned national workshops to be celebrated in the different partner countries: 2 national workshops in Italy, 1 national workshop in Spain, Bulgaria; and The Netherlands) as part of the activities for WP7. When analysing information provided by stakeholders participating in those events, we can only find some evidences from Spanish and Italian events.

2.3.1. Results from Spanish national workshop

The Spanish national workshop provided the following results collected through a questionnaire responded by 48 out of the 53 participants. We calculated the average score provided by respondents using the sum of all answers coded by numbers divided by the number of responses in each question (lowest is 1 and highest is 5). The relevant question was:

Please, express your opinion about the following statements courses developed by the e-CF Council project for the competences of standard EN16234 and ESCO (Likert Scale: 1 "total disagreement" and 5 "total agreement"):

- a) *It is essential that the learning design is based on the mentioned standards*
- b) *I would encourage others to enrol (or I would enrol myself) in the courses developed following the references of e-CF and ESCO*
- c) *I would pay for courses developed the courses developed following the references of e-CF and ESCO*

When looking at results (Figure 6) 2 of the question got results above 3 while the final question (“I would pay for the courses developed based on E-CF and ESCO”) gets the worst score. While the stakeholders are interested in courses, they are not inclined to pay for courses. Obviously most of the respondents did not attend the pilot courses (or even they were not interested in being personally enrolled): we can compare workshop attendants’ list and list of students who finally complete the course and even those attending the course were still at the beginning of it when workshop was celebrated.

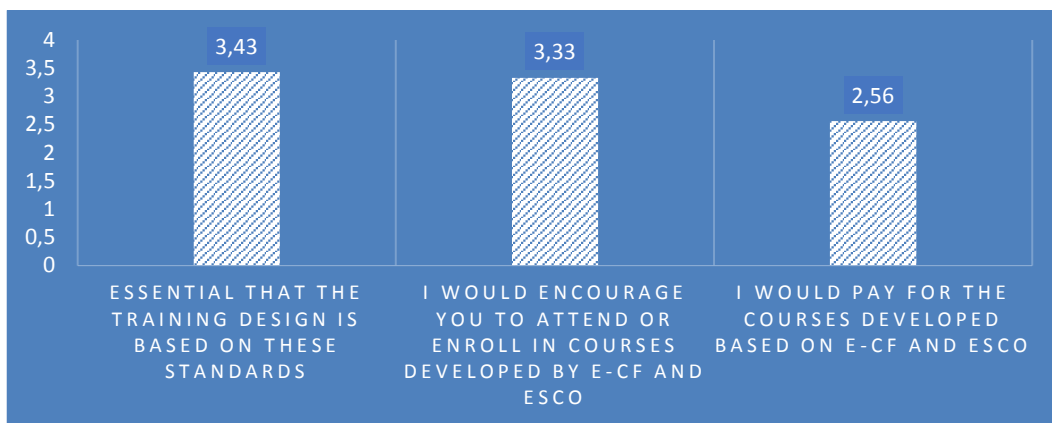


Figure 6 Results to questions related to sustainability collected during the Spanish workshop

However, when comparing these results to the ones provided by students who completed the B.3 course (see section 2.1), 75% of them would agree or strongly agree with paying for this type of courses. This could be explained by the quality of the B.3 course which was capable of overcoming the doubts on the value of courses by stakeholders who just attended the workshop

2.3.2. Results from Italian national workshop

Regarding the Italian workshops, some information has been found in the corresponding documents. The results from the second Italian workshop most of the respondents did not have previous knowledge or experience with the eCF 3.0 standard. However, they were able to evaluate the importance of each e-competence for their profile and identify the best way(s) to acquire them by selecting the most appropriate one from these possibilities for each of the learning units (LU) of the competences selected by the ECF Council project for design of courses: a) Scholar training is enough, b) I will need to make operative experiences and C) I would like to enrol a blended (presence+online) course. The following LUs exceeded 30% of the respondents who would like to enrol:

- IS and Business Strategy Alignment: New emerging technologies and business impacts
- Application Design: Application integration and innovative technologies
- Technology Trend Monitoring: Bits in Atoms -Next Tech
- ICT Quality Strategy Development: Quality assurance in agile environment (Scrum, XP,Kanban and others)

- Information Security Management: Current security scenarios and ISM role
- Information Security Management: Infosecurity governance and standard
- Information Security Management: Vulnerability evaluation in real-world
- Information Security Management: Security in new technologies
- Information Security Management: Legal aspects in information security
- Information Security Management: Forensics
- Information Security Management: Elements of Information Security Governance and Risk planning

These are low numbers which contrast with the interest expressed by the students at the Spanish pilot course. Again, the respondents were stakeholders with low probability of wanting to be enrolled in courses.

2.3.3. Results from Italian national workshop

During the final conference of the e-CF Alliance project celebrated in Brussels on 11th October 2018 (see reference at <https://www.ecfalliance.org/finalconference>), the project developed a survey to participants to collect some extra information on their view of sustainability and exploitation of the project outcomes and associated services. The conference was attended by 38 people and the survey form on paper was answered by 22 attendants. The profile of the associated organisations was varied including representation from different types of stakeholders (see Figure 7).

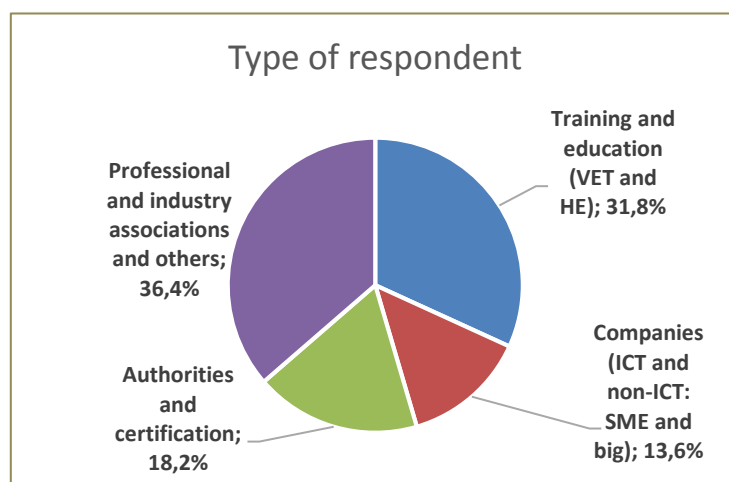


Figure 7 Types of stakeholders who answered the questionnaire during the final project conference

The audience was satisfied with the event (31,8% much and 68,2% very much). Two questions were asked to collect the opinion of the attendants: one on their possible interest in project outcomes and associated services, the other on the possibility they would pay or invest resources for such outcomes and services. The outcomes and services mentioned in the questions were the following ones:

- Open contents of courses developed by eCF Alliance project
- Support services (tutoring, platform, expert support, etc.) for teaching/implementing courses developed by the eCF Alliance project (open contents)
- Methodology and expert support for linking training to standards and models like e-CF and ESCO (e.g. mapping training to e-CF and ESCO)
- Expert support services on qualification linked to e-CF (e.g. developing new courses linked to e-CF)

Open contents are free, so they were not included in the second question on payment. The results for the first question on interest in each of the items are shown in Figure 8.

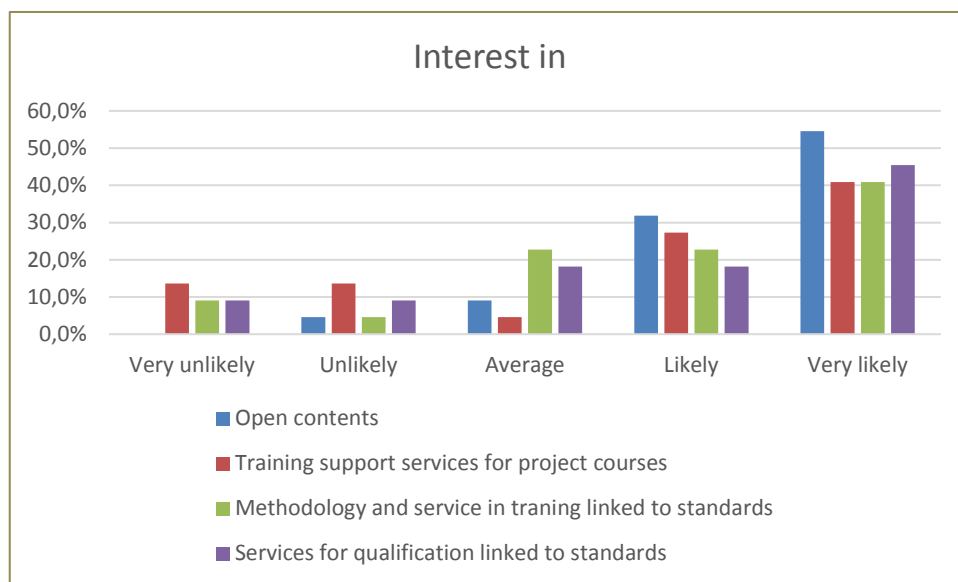


Figure 8 Results on the interest raised by each type of outcome and service

Analysing the acceptance and interest of the four different possibilities, we can see that open content tend to concentrate more probability of interest (86.4% of likely and very likely answers) while the rest are very similar (between 63.6% and 68.6% of likely and very likely answers). However, these percentages above 60% are good signs for the exploitation of the outcomes and services.

Regarding the intention of paying or investing resources in the three options (contents are excluded as they are open and free), the results are shown in Figure 9. We can see that the services which provide support for the teaching and implementation of the courses delivered by the project (based on the open contents) are the ones with highest probability of getting resources or revenues. They cumulate a total percentage of 68.2% for the options likely and very likely. The two others are closer to 50% with 59.1% (methodology and expert support for linking training to standards and models like e-CF and ESCO) and 54.5% (Expert support services on qualification linked to e-CF) as percentage of answers for likely and very likely.

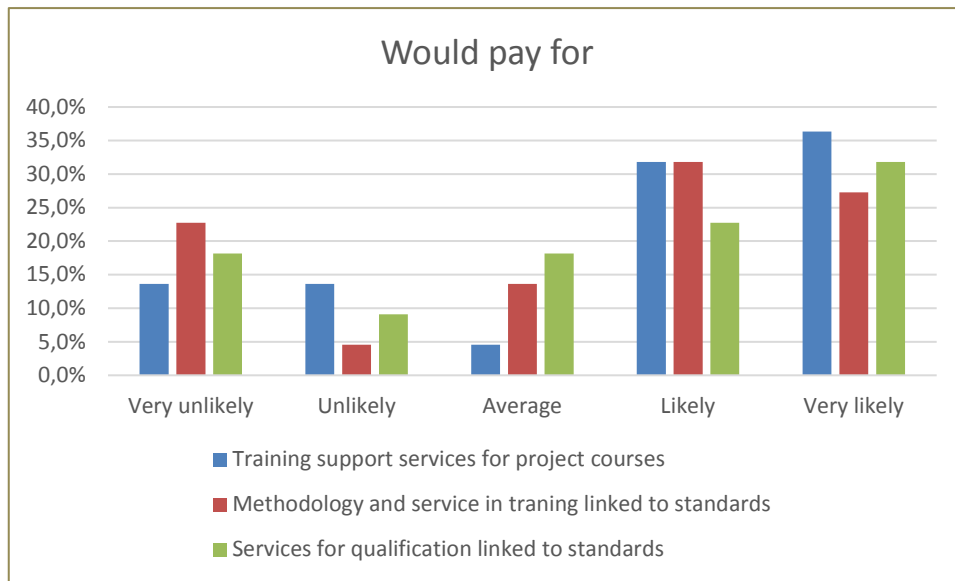


Figure 9 Results on the intention of paying or investing resources for each type of outcome and service

2.4. Ideas for services from e-CF Alliance partners

The E-CF Alliance partners did a joint exercise of analysis and creativity for the specification of possible added value services to be provided in the future based on the developed products as well as the expertise gained through the project. Although people in the sector may think that it is easy to work with the EN16234 standard in practical manner, there are not so many real experts prepared for it. The project has enabled that many organisations already have people prepared for working in detailed aspects of EN16234 and its connection to ICT training.

Globally, the project consortium has identified several evident services connected to the main project outcomes which are the courses;

- Services for implementing/teaching courses, adding hosting in platform, providing specialised tutors/teachers who are trained for it.
- Service for preparing personnel of other course providers to teach the courses
- Services for translation into local languages

Partners which developed, and/or taught courses were the most probable ones which could provide these services with appropriate quality then exploiting the expertise gained during the project as a factor of sustainability: getting some revenues will help to add more courses and spreading their use as well as providing resources for the necessary update and continuous improvement required in any professional service.

Other partners with a different nature (such as the educational authorities and the certification bodies or the labour market representatives), the produced courses are an opportunity of feeding their catalogues and their activity. Some partners provided specific examples of their intentions following this idea:

- CCOO Servicios (Spain) will offer the courses to the Spanish workers through its own training platform, assuming the cost of installation and maintenance of materials. In the case of workers affiliated to the organization, we will offer them the courses for free as an additional service.
- Department of Employment of Comunidad de Madrid (Madrid Region, Spain) wants to include the courses developed during the project in the National Catalog of courses of the State Public Employment Service (SEPE) which is an agency of the Spanish Ministry of Employment. This could help in mitigating the problem of the cost of the courses detected from stakeholders during workshops. This process of inclusion and registration in this official record means that the courses could be taught throughout Spain financed by the European Social Fund without specific costs for the participants who are normally unemployed people or workers who need to be reskilled.
- Department of Employment of Comunidad de Madrid (Madrid Region, Spain) can also propose to the Spanish Ministry of Employment the possibility of investing some funds in supporting the update and translation into Spanish of the more relevant LUs to use them in our courses for unemployed people.

Of course, as commented, there are more opportunities for also exploiting the intangible benefits of knowledge and expertise gained during the project. Even some partners have already applied to specific actions. For example, the learning outcomes/ objectives-based approach and alignment with e-CF, ESCO and European Foundational ICT Body of Knowledge were already used by ESI CEE and the other consortium partners as a starting point methodology in a recently started project under Erasmus+ Sector Skills Alliance for the design and delivery of innovative VET programmes to Data Science and Internet of Things professionals (another partner BASSCOM also participates). This means that many partners and other organisations can exploit the developed qualification profiles, Learning Unit sets and content for training courses linked to the 15 competences of e-CF as basis for further development by VET providers, universities, research organizations and in specific cases by IT companies. This options is shared by other partners who suggest that a possible chance for the e-CF Alliance is to prepare a proposal to enlarge/complete the LUs set and the available course on the training platform, maybe at lower proficiency levels, involving a Public Administration authority (or a mixed public/private organization targeting large sectors) in order to jointly set up internship training paths, with the assessment and certification standard.

Other partners suggest that expertise and know-how obtained during the eCF Council Project implementation, as well as the lessons learned could be used as a basis for future actions in the field of education, ensuring more precise and timely planning, implementation and control. Different aspects within the field of education are mentioned.

One aspect is that some partners like CCOO Servicios and Comunidad de Madrid coincide in promoting national qualification authorities (e.g. the National Institute of Qualifications in Spain) the inclusion or adjustment of the competences that they currently manage in their program to follow e-CF and also presenting them the developed methodology for connecting EN16234 to training programs. Of course, as confirmed during the project with surveys and questionnaires (e-CF and ESCO are still not well recognised and known). Only big companies, universities and some ICT related government agencies are aware about e-CF and its value. That makes the introduction of new professional profiles and educational standards by the state VET agencies difficult and slow process. The ESCO classification is a good substitute of the relevance but in some specific cases the state standard is more necessary.

Another aspect is the private sector where there are larger IT consultancy companies that start accepting e-CF in search for standards in a changing world. It calls for better insights and cost and impact analysis of e-CF. When talking to different CIO's, the rather static and top down approach is an issue they would like to see tackled. Faster reviewing and adaption of the framework and more agile ways of working would be a good start.

A final additional aspect refers to the partners who are training providers. They may start by promoting the LU model and the compliance of some of their courses to the model as a plus. This won't generate direct revenues, but it can be an added value to the education propositions. Some of these partners have already started with specific actions connected to their regular activities. For example:

- Thanks to the experience acquired in the setup and management of the platform, CEFRIEL is exploiting the platform for our trainees and stakeholders in order to manage all our courses, masters, workshops and seminars, adding new courses before the end of the year.
- CEFRIEL has been offering the Master in Information Technology for thirteen years and this year it was able to align the Master to the e-CF framework E.8 helping the participants to acquire the competence. Furthermore, CEFRIEL has started collaborating with ECSO (European Cyber Security Organization) on the education and certification topic. CEFRIEL has contributed to a whitepaper about the cyber-security competence certification and recognition in Europe and it is going to participate in a workshop about European framework in professional development of cybersecurity professionals (November 2018).
- CEFRIEL has already offered the courses on A.3 Business Plan Development and B.6 System Engineering competences, but the alignment with e-CF competence framework has given a better foundation to the course outline, syllabus and chosen topics, enhancing the added value of the training.
- BASSCOM declare they will multiply the impact of the Project by applying the competence-based approach in the development and execution of any VET-related project, financed by its own budget, national or EC funds.
- ESI CEE reports that, in Bulgaria, the most promising users of the e-CF project results are the universities which need a clear solution for almost yearly update of their BSc and MSc ICT programs. They need to align to European standards (ECTS,

European cooperation in quality assurance in higher education etc.) and European competence model (e-CF) under the pressure of the evaluation, accreditation and monitoring of the quality in higher education institutions and scientific organizations by the National Evaluation and Accreditation Agency. ESI CEE have already implemented 3 initiatives for aligning IT university programs to competences in e-CF and the feedback from both sides – university and company – was very positive. This educational consultancy represents another line of services.

- University of Alcalá (UAH) has already mapped two master programs to e-CF and ESCO providing an additional value to the students (e.g. see <http://bit.ly/MapaECFMasterProyectos>). UAH sees a potential market of educational consultancy services related to e-CF and ESCO in the shape of:
 - Advice for educational manager to align and map their programs to e-CF and ESCO
 - Courses for presenting the concept and details of practical application of e-CF and ESCO to educational managers (as well as employers and HR specialists)

There is a final set of high-level services linked to the final shape of the governance of the planned e-CF Alliance organism where a Scientific Committee, composed by experts from the eCF Alliance project, would be responsible for developing the standard methodology (based on other outputs of the eCF Alliance project) for assigning the DS Quality Label (Digital Skills Quality Label) inspired by the partner Digital SME. This methodology shall explain how the DS Quality Label is obtained, what are the criteria, etc. Long-term goal would be to create the CEN standard based on this methodology. The DS quality label would distinguish the alignment of training courses to e-CF. Experts would agree to offer their contribution to draft the methodology standard on a voluntary basis, building on their methodological experience already obtained through the project lifespan expecting to receive a monetary compensation every time a DS Quality Label is assigned to an organisation, for instance in the form of a royalty. Obviously, this option is a long-term but feasible possibility to be developed.

2.5. Target stakeholders and network

Some stakeholders mentioned in the project proposal do not preserve the same status as years ago when the project as launched. For example, CEN Workshop on ICT Skills no longer exists from 2018. A new forum is being promoting by CEPIS (www.cepis.org) as meeting point for e-CF and other ICT professionalism models and frameworks: the name is ITPE and is serving as continuation forum for the former community on CEN Workshop on ICT Skills. It seems that an alliance between the project consortium and partners with ITPE (CEPIS) would be better way to work with the concept of the e-CF Alliance community than working in a separated organization.

Within this frame, the established partnership network could be used for further development of the delivered project results, as well as for future joint activities aiming at improvement of

the professional vocational training systems in the participating countries and at EC level. The partnership relations between the involved organizations after the formal completion of the project should not only be maintained at the same level but even be extended to ensure a long-term sustainability of the project outcomes. The key point would be its capacity to serve as source of valuable information on trends, employers' and other stakeholders' requirements, validation of the recent or future training courses as well as their content and quality. This could be a generator of ideas for the development of new products and services. The guarantee for this role comes from the large numbers of relevant stakeholders contacted and informed of the project through participation in national workshops and in the pilots and the ones reached via events and other communication activities. An additional value is the variety of stakeholders represented (especially when compared with other forums where mostly free lancers, service providers and a few organisations usually meet): employers, professional associations, social partners, vocational education and training (VET) providers, higher education, research centres, regulatory bodies, and SMEs

A partner like CIONET which holds a very strong network of CIOs thinks in continuously monitor the developments in the IT markets and the development of demand of competences which may lead to new proposal of development of courses under the methodology developed in the project. The prescriptive nature of CIOs (they sign for training investments of their employees) can be exploited for the dissemination within the global community (CIONET is active in 20 countries), supporting the creation of certified training material for personnel and giving active feedback on future updates of the courses.

3. IPR considerations

An IPR based on Open Access Licence schemes will regulate the exploitation of the project products not only within the project partnership but even beyond it, when further interested stakeholders and providers will join or ask for using e-CF CONCIL products. This means that only additional added value items and services would be the only logical way of further exploitation thus some examples could be:

- the provision of tutoring/teaching services by specialised personnel for the exploitation of course materials by third parties for new editions of courses: obviously
- the services for implementation of the course as is or extended version on demand of third parties

Those new services and materials are not subjected to the open nature required for the deliverables and may adopt any type of restricted IPR scheme. However, some partners involved in development of contents think that this open nature of material delivered through the project is a limitation for the highest quality.

3.1. IPR conditions for deliverables

In the scope of the law, a **license** is an arrangement between two parties (licensor and licensee) granting some kind of permissions to use the specified goods of the licensor. In the same scope, **intellectual property rights** (IPR) are the protections given to content creators,

offering privileges in relation to their creations. Some materials may have a license under the terms of intellectual property rights, such as trademarks, patents or technologies.

At the light of the previous references, it seems that the content resources of the eCF Council project must be released with a Creative Commons license. **According to the IPR document of the project DLV09.3, the final shape of the license should be Attribution (BY) - ShareAlike (SA). Attribution is assigned to the partner (VET provider) of the project who developed the course.**

However, as commented in the introduction, this concerns to the materials of courses officially delivered as deliverables of the project. Any additional work by partners could be subjected to the IPR scheme which best fits the interest of the partner authorship.

This also includes the translation into local languages (which is considered a different item for IPR) but in that case the translator of the course materials should request permission from author (in case of not being the same organization). This means that official translation of courses to other languages could also be considered a service to be provided by partners who authored courses and the translator can add a restricted IPR scheme.

4. Challenges, risks and barriers

According to partners and stakeholders' opinion, the following ones are the identified barriers for the ideas expressed for business model.

- Quality of developed courses is not so good to generate opportunities around them: demand for being trained with those courses will not promote demand of services of teaching, implementation, adaptation, etc. For some people, it is unrealistic to create the best courses ever for a specific competence, but this is not strictly necessary as their added value comes from their alignment to standards, and endorsement they provide. This could be true when thinking in general market, but it is also clear that even some partners would like to exploit the courses for their own activities. One limitation is that it is difficult to think that a course can cover all the levels of proficiency in e-CF, specially the highest ones. However, they provide the basis for a comprehensive approach of training and experience, especially for organisations.
- The developed courses are not self-contained, and it is very improbable that any course could be: this means that they need to be delivered with the support of a qualified expert (in class or online) and this makes transferring or sharing capabilities even among partners challenging (not considering the language barrier). However, this is an opportunity for cooperation in services among partners as well as an opportunity for selling services to third parties (see section 2.4). An additional challenge is the support of the e-learning platform and the constant need of maintenance (both content and platform) but this could be easily overcome if demand of learning services is stable
- The value of e-CF was recognised, however the readiness to implement was low. Partly due to the limited use of e-CF and partly because people felt it was a top down approach to the market instead of bottom up. Moreover, the lack of recognition

for students participating in courses is a hindrance that was stressed by the participants of the project with regards to certification of courses. Obviously, it is not easy to create from scratch a new certification immediately recognised by the whole market. However, given this is the first and largest initiative in training development connected at multinational level to e-CF and ESCO, there are a lot of opportunities to exploit the assets and expertise in the world of EN16234. Here the connection to the proper forums and actors who are working with e-CF and ESCO is the key for gaining a relevant role in the market.

- Recognition of certifications provided to students who completed courses is weak so forecast of future demand based on certification will be not strong enough to sustain the certification model. Despite efforts, e-CF is still not widely recognised by the organisations, this means a limited market in a first stage. Moreover, both organisations and trainees look for established providers, on their market and for specific knowledge areas. The demand for training and education by the organisations is mainly addressed to specific technologies or methodologies, some players also offering well recognised certifications (e.g. IBM, Microsoft, Cisco, Oracle, ITIL, Prince2, ITSQB ...). However, as it is well known, there are more than 2300 ICT personal certifications from more than 160 providers in the present market and they are not serving as solution for employers and HR specialist as they can cope with such a huge and extremely varied catalogue. Then working with core general competences like e-CF then complemented with specialisation in specific solutions or technologies supported by specific market certifications. The extension of the mapping to e-CF by certification providers is an urgent need for the present HR market.
- Of course, this approach must fight against the simple view or ignorance in the market which misunderstands the concept of competence and mix up them with technologies, changes in products and brands, etc. While the evolution of the universe of acronyms, methods, technologies, etc. is fast evolving, the competences to work with them are frequently not changing so much. E-CF is changing and a new version 4-0 is on the way, updating minor parts of the standard to be adapted to changes in the market so obsolescence of the concept seems not to be a real challenge but more a simplistic view from those with no time to devote for a careful analysis. The challenge to fight is the view to avoid that organisation may think it is not motivational for organisations to invest into e-CF.
- Regarding the fast development of the ICT sector, one of the main risks is the possible obsolescence of the contents if the partners don't disseminate quickly. It would be necessary to begin to use these contents as soon as possible. For example, it was noted that not only there were a lack of opportunities to participate in the pilots, but also a low quality of the dissemination of the developed courses to train those interested in the demanded services of upskilling in the market. Dissemination will be a very relevant challenge for the future at EC level, at national levels and transversally throughout all the possible markets where training for ICT professionals represents a relevant topic.
- Some stakeholders mentioned that some assumptions made in the project proposal are no longer present when the project was launched and obviously when the project ends. For example, the CEN Workshop on ICT Skills no longer exists now, as from Spring 2018. A new forum is being promoted by CEPIS (www.cepis.org) as meeting

point for e-CF and other ICT professionalism models and frameworks: ITPE (<http://www.itprofessionalism.org/>). ITPE is serving as continuation forum for the former community built around the CEN Workshop on ICT Skills. The partners are convinced that an alliance between the project consortium and ITPE (CEPIS) will be the best way to guarantee the sustainability and growth of the e-CF Alliance community, maximizing the chance to make a concrete impact. Strong ties between CEPIS and the project have already been made, being CEPIS part of the e-CF Alliance's Stakeholder Committee.

- The coordination of the effort for transferring e-CF to VET in a European perspective needs an authority or body at European level to harmonize such link and the complementary recognition of certifications, quality labels for training, etc. Obviously, this is not a short-term easy task but synergistic work with TC428, ITPE and other organism may create the good conditions for this goal. One smart option is a strong link to ESCO to be benefited by the political commitment of adoption ESCO in each EU Member State by 2020. Unless such mechanism of coordination could be well established, the e-CF will remain weaker than what is desirable.