



A common format for Qualifications in EQF databases and in ESCO

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1. Purpose of the document

This document outlines how to systematically integrate information on qualifications¹ for EQF databases, and notably in the "Learning opportunities and qualifications in Europe" portal and in the multilingual classification of European Skills, Competences, Qualifications and Occupations (ESCO). The Commission services consulted the ESCO Board, the ESCO Maintenance Committee and the European Qualifications Framework (EQF) Advisory Group on the approach.

The ambition is to provide jobseekers, learners, education and training providers and employers with comprehensive information on all major European qualifications and to link these to the "Learning opportunities and qualifications in Europe" portal and to the terminology on occupations and skills and competences provided by ESCO. The note focuses on the following issues relevant to the achievement of this aim:

- The current state of affairs and guiding principles as regards the integration of qualifications into ESCO.
- The general information needs for better integrating qualifications into ESCO.
- The role and structure of a common format for describing learning outcomes.
- Linked Open Data (LOD) as technical solution for the implementation of the further integration.

¹ A qualification is a formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards. (Source: RECOMMENDATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 April 2008 on the establishment of the European Qualifications Framework for lifelong learning)

2. The need for transparent information on qualifications across Europe

2.1 EQF and its state of play

Europe's education and training systems are diverse in structure, tradition and output, so that Member States, social partners and other stakeholders felt the need to have a common reference to increase the transparency and comparability of qualifications. This resulted in the development of the European Qualifications Framework for lifelong learning (EQF)², adopted in 2008 through a European Recommendation. EQF is a common reference framework that helps learners, graduates, education and training providers and employers to understand and compare qualifications awarded in different countries and acquired in different qualification systems in Europe. The main goals of the EQF are to facilitate lifelong learning and promote peoples' mobility between countries.

The EQF covers all types of qualifications. It consists of eight common European reference levels³, described in terms of learning outcomes that the learner should acquire through the completion of a learning process. They span the full range of qualifications, from basic (Level 1, for example school leaving certificate) to advanced (Level 8, for example Doctorate) levels. Each level is formulated in terms of knowledge, skills and competences and should be attainable through a variety of educational and career paths. Using learning outcomes as common reference point, the Framework facilitates comparison and transfer of qualifications between countries, systems and institutions and is therefore relevant to a wide range of users at European and national levels.

The EQF Recommendation invites Member states to reference their national qualification levels to the EQF and present the results in a national report. The development of national qualification frameworks and their reference to the EQF is an on-going process. Currently 25 countries have referenced their system to the EQF. A total of 36 countries participate to the EQF process.

In the framework of the EQF process countries are also invited to link information on their national qualifications to the European portal "Learning Opportunities and Qualifications in Europe". The aim is to enhance understanding of individual qualifications. To support this process the EU issues grants enabling Member States to develop or improve national qualifications databases and link them to the portal. A Call for Proposals was launched for this in 2014 and another one will be issued still in 2015. The information on qualifications collected in these databases must be based on a minimum set of information (see point 3.1 below for more on this topic), including a

² <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008H0506%2801%29&from=EN>

³ <https://ec.europa.eu/ploteus/content/descriptors-page>

description of the learning outcomes of the qualification in terms of knowledge, skills and competences.

2.2 ESCO and its state of play

As with the EQF, one of the main aims of ESCO is to help bridge the (semantic) gap between the world of education and training and the labour market. Thereto ESCO describes and interlinks vocabularies related to i) occupations, ii) skills and competences⁴, and iii) qualifications in three pillars. It will be available in all official EU languages.

The nature of the information on the three dimensions differs. The occupations pillar and skills and competences pillar are developed on a shared understanding of concepts by the ESCO contributors⁵; they describe the concepts and find the appropriate terms. Aiming at labour market relevance, they identify knowledge, skills and competence terminology, starting from a functional analysis of occupations. Furthermore, they analyse learning outcomes descriptions in order to ensure that the knowledge, skills and competence terminology of ESCO provide a bridge for communication of the labour market with the education and training sector.

The two initial ESCO versions, the ESCO v0 pilot version and the forthcoming ESCO v1 full version⁶, both contain rich content in the first two pillars (occupations and skills and competences). In total, ESCO v0 already contains around 4 800 occupations and 5 000 skills and competences, deriving from the EURES taxonomy. ESCO v1 is expected to include around 2 000 to 3 000 occupations and 10 000 to 15 000 skills and competences.

In contrast to the development of the other two pillars, in the qualifications pillar ESCO aims to collect existing data on qualifications. The aim is to provide a comprehensive listing of those qualifications that are relevant for the European labour market. ESCO will include qualifications which Member States decide to include in their national qualification databases (indirect inclusion in ESCO) as well as qualifications that are not part of these databases (direct inclusion in ESCO, e.g. many cases of international sectoral qualifications). The development of the qualifications pillar therefore depends largely on external sources and follows a different pace. In contrast to the other two pillars, the qualifications pillar is not yet well developed. At present the ESCO v0 pilot version includes only a small sample of qualifications, illustrating how qualifications could appear in ESCO in future. Currently greater focus is being put on the development of the qualifications pillar and its relation to the other pillars in view of ESCO v1 and beyond.

2.3 ESCO and the EQF

The referencing of national qualifications frameworks (NQFs) to the EQF creates transparency at European level about the levels of the national qualifications that are

⁴ The ESCO skills and competences also include knowledge concepts.

⁵ Several groups contribute to the development of ESCO: Members of Reference Groups, stakeholders participating in online consultation, contractors of the Commission ("Taxonomy Expert Groups"), ESCO Secretariat, ESCO Maintenance Committee, translators and terminologists.

⁶ ESCO v1 is planned to be launched at end of 2016.

part of the NQF. National databases of qualifications provide information on the content and scope of qualifications. The information on qualifications in the national databases will be used by the ESCO qualifications pillar.

By creating links between its three pillars ESCO seeks to provide more transparency on the learning outcomes of qualifications across sectors of education and economy, across geographic borders and across language barriers. Interlinking learning outcomes descriptions of qualifications in the qualifications pillar with the skills and competences concepts in the other ESCO pillars will enable better understanding of the scope of qualifications and their relevance to the labour market. These interlinks will allow for better competence-based job matching, as work-related search for specific skills, competences and associated qualifications can be done through ESCO; it will also support career guidance and further learning by correlating qualifications and skills to employability prospects and will allow for better gauging of qualifications by employers when recruiting, as these qualifications will be affiliated to specific skills and competences. Furthermore, it ensures that a minimum set of information on learning outcomes of qualifications is available in all official languages of the European Union.

3. Information needs on qualifications

When developing the qualification pillar in ESCO the Commission services apply the following principles:

- **Subsidiarity:** The development of the qualifications pillar in ESCO needs to fully respect the competences of Member States, their different traditions of education and training systems, and where applicable, the autonomy of the awarding bodies⁷.
- **Complementarity with the EQF:** The qualifications pillar of ESCO will be developed in full compliance and complementarity with the EQF.
- **Learning Outcomes approach:** Qualifications in ESCO and their link to the skills and competence pillar will reflect the learning outcomes approach in Education and Training, expressing what someone knows, understands and is able to do on completion of a learning process.
- **Bridging the communication gap:** ESCO will interlink information on qualifications with the occupations and skills and competence information, thus supporting closer cooperation between employment and education/training.
- **Transparency:** Information on qualifications in ESCO needs to be fully transparent. This includes information that is required by market actors to judge on the quality and trustworthiness of a qualification.
- **Up-to-date:** Data on qualifications needs to be up to date reflecting the actual qualification landscape in Europe.

⁷ This note uses the term "awarding body" as defined by Cedefop (2008): "Body issuing qualifications (certificates, diplomas or titles) and formally recognising the learning outcomes (knowledge, skills and/or competences) of an individual, following an assessment and validation procedure."

- **Non-discriminatory:** ESCO will provide transparent information including on quality assurance, but it will not provide any judgement on the quality of qualifications.

The information on qualifications included in national qualifications databases will be available in the "Learning Opportunities and Qualifications in Europe" portal and in ESCO through their electronic presentation. It will support the understanding of the individual qualifications needed by employers, public and private employment services, learners, workers, jobseekers, education and training providers and other actors. This information should be as complete and transparent as possible to meet the information needs of these stakeholders.

3.1 Qualifications core data

In previous discussions, in the context of the development of the "Learning opportunities and qualifications in Europe" portal, the EQF Advisory Group agreed⁸ that the following data fields are essential to properly describe qualifications:

- **Title:** Exact title of the qualification (without translation)
- **Qualification group:** Based on ISCED Fields of Education and Training
- **Country/Region**
- **EQF and NQF level:** Only relevant for qualifications that already have an EQF level assigned through the referencing process of National Qualifications Frameworks to the EQF
- **Awarding body:** Name of the awarding body, its location and hyperlink to its website⁹
- **Learning outcome descriptions of knowledge, skills and competences:** using a common format (see chapter below).
- **Further information on the qualification**

National qualifications databases should include these data in order to be linked to the "Learning opportunities and qualifications in Europe" portal. These data are also essential in the context of the ESCO project.

To guarantee quality assurance ESCO will only display qualifications (either national or private) complying with this core data, notably the required fields indicated in Annex I of note "EQF AG 21-5".

Several other optional fields¹⁰, agreed as well by the EQF Advisory Group, will allow users of the portals to have complementary information on qualifications. One of these optional fields, the "Relationships to occupations", will enable to indicate the relationship between national qualifications and national occupational classifications, wherever it exists.

⁸ "EQF Portal developments" (Note EQF AG 21-5) and in particular its Annex I.

⁹ Further information on awarding bodies could be given based on the ISA Core Vocabularies.

¹⁰ These fields are: further information on qualifications; source of information; link to supplement; URL of the qualification; information language (code); entry requirements, expiry date (when relevant), ways to acquire qualifications and relationship to occupations. Please see Figure 1 for more information.

3.2 Common format for presenting learning outcomes

A transparent description of the learning outcomes of a qualification is essential for the information on qualifications in ESCO. While the learning outcomes approach is increasingly used to define and describe qualifications across Europe, no common solution on how to present and share these learning outcomes descriptions has been developed and/or agreed in previous discussion of the EQF AG. The resulting diversity makes it difficult to compare qualifications, for example in qualifications databases. It also makes it difficult to integrate data on learning outcomes in ESCO.

To improve the comparability of qualifications the EQF AG has agreed to start work on a common format to describe learning outcomes of qualifications in the national and European databases and portals¹¹.

The common format, to be used on a voluntary basis, will add to but not replace existing learning outcomes formats currently used at sectoral, regional, national or international level. The format will make it possible to:

- Strengthen the independent ability of the EQF and NQFs to provide comparable information on the content and profile of qualifications, directly benefitting individual citizens and employers.
- Link the learning outcomes descriptions in national qualifications databases to the skills and competence pillar of ESCO by providing comparable data.

For this common format to play any practical role, it needs to be short, constructed according to a pre-defined syntax (structure) and refer to commonly agreed learning domains (for example following the EQF distinction between knowledge, skills and competence Development of the common format can build on the experiences gained from the Europass certificate and diploma supplements for qualifications in Vocational Education and Training and Higher Education. It should furthermore be developed in a way which facilitates semantic annotation with the ESCO skills and competences pillar (see chapter 4.1 below).

Seeking to facilitate synergies between EQF, ESCO and Europass, it is suggested to use a simple syntax for the writing of learning outcomes consisting of four main elements:

- The holder of the certificate (not the provider or institution offering the training)
- The use of an action verb to signal the complexity of the skills (a standardised list has been developed for Europass and ESCO)
- The object and scope of learning (see below as regards learning domains)
- The occupational/social context of the learning

These elements are today in common use across institutions, sectors and countries and allow those involved to structure their descriptions in a clear way. Each of these elements will be supported by guidance on how to reduce ambiguity and improve transparency. Furthermore the format will be supported through a standardised list of

¹¹ "Work programme to promote the implementation of learning outcomes approaches across Europe – further proceeding" (Note EQF AG 29-4).

action-verbs (to support appropriate contextualisation and express complexity). The learning outcomes presented through the common format should be provided in the national language as well as in English.

The different elements of the format are briefly introduced below¹².

The learning outcomes description should be limited to circa 1000 characters and be written taking the following elements into consideration:

It should address <u>the actor/holder</u> of the qualification	It should use an <u>action verb</u> to signal the complexity and the level of learning	It should indicate the object and scope of learning, notably by identifying relevant learning domains		It should clarify the occupational and/or social context in which the qualification is relevant
		Knowledge Skills Competence	Other, reflecting national traditions.	

3.3 Additional data on qualifications– inputs and quality assurance

The Commission reckons that further information on qualifications beyond the core data (as indicated in section 3.1) would improve wider transparency of qualifications across Europe. Additional data fields that i) can facilitate the use of the information for the purpose of recognition of qualifications and ii) help users to understand the quality level and trustworthiness of qualifications would achieve this purpose. It is crucial to provide full transparency to users on the differences between qualifications. Contrary to the core data indicated in section 3.1 the adjunction of all these fields to the qualifications pillar would only be optional.

The Commission therefore consider adding some or all of the following data fields as additional information:

- **Credit points**, e.g. ECTS.
- **Volume of learning**: notional learning hours.
- **Accreditation and other quality assurance processes**: The publisher of data on qualifications should indicate that the qualification is covered by an accreditation or other quality assurance process. The trusted bodies (e.g. accreditation agencies) can publish the lists of accredited qualifications, so that the information can be automatically cross-checked and validated. This provides more reliability than a pure self-declaration.

As indicate above qualifications that are not currently included in national qualifications frameworks but are relevant to the labour market (such as international sectoral and "private" qualifications) will only be displayed in ESCO if they comply with the core data indicated in point 3.1. However for these qualifications the compulsory

¹² See ANNEX I for a concrete illustration on how this structure already is being applied. These cases, based on extracts from existing qualifications descriptions, seek to demonstrate the feasibility of the approach, but also to demonstrate that certain flexibility is needed for it to work.

fields "EQF level" and "NQF level" will not be required because, as a general rule, these qualifications do not have any of these levels at present.

Figure 1(next page) below shows the additional fields being currently proposed in relation to what was agreed by the EQF AG in 2013.

DATA			Fields agreed in 2013 for national qualifications data bases	Fields proposed in 2015 for national qualifications data bases	Fields proposed in 2015 for qualifications outside national qualifications databases.
Title of the qualification			Required	Required	Required
Thematic Area			Required	Required	Required
Country/Region (code)			Required	Required	Required
EQF Level			Required	Required	Not relevant
NQF Level			Required	Required	Not relevant
Description of the qualification	Either	Knowledge	Required	Required	Required
		Skills			
Competences					
Or	Open text field describing what the learner is expected to know, understand and able to do				
Awarding body					
Further information on the qualification			Optional	Optional	Optional
Source of information			Optional	Optional	Optional
Link to supplement			Optional	Optional	Optional
URL of the qualification			Optional	Optional	Optional
Information language (code)			Optional	Optional	Optional
Entry requirements			Optional	Optional	Optional
Expiry date (if relevant)			Optional	Optional	Optional
Ways to acquire qualification			Optional	Optional	Optional
Relationship to occupations			Optional	Optional	Optional
<i>Credit points</i>			X	<i>NEW Optional</i>	<i>NEW Optional</i>
<i>Volume of learning</i>			X	<i>NEW Optional</i>	<i>NEW Optional</i>
<i>Accreditation and other quality assurance processes</i>			X	<i>NEW Optional</i>	<i>NEW Optional</i>

Fig.1 New data fields being proposed for including qualifications in national qualifications databases and in ESCO compared to 2013.

4. Technical solution

4.1 Linked Open Data

The Commission services intend to use Linked Open Data¹³ (LOD) as the enabling technology when building ESCO's qualifications pillar and the portal "Learning opportunities and qualifications in Europe". Through the use of LOD the data will directly be integrated into the portal and into the ESCO classification. By using LOD exporting and importing data does not need to be done manually. Updates done by the owner of the data will directly be reflected in the databases and tools that make use of the data.

The use of LOD has important advantages in terms of workload and sustainability of updated information. With LOD, the data owner – be it the awarding body, the ministry or another party – is in charge of publishing and updating data correctly in its own systems. Services that make use of the data, such as the "Learning opportunities and qualifications" portal and applications built with ESCO, can directly use the published data without managing data centrally. Without LOD, the entity managing the database takes responsibility for publishing and updating the data. Often, this means that one organisation has to manage data for another organisation.

Using LOD makes it possible to link data with other sources. In the framework of ESCO, this can for example be used to annotate¹⁴ learning outcomes descriptions of qualifications with knowledge, skills and competences concepts from the ESCO skills and competences pillar. Through the use of the ESCO classification, the data (available in all European languages) will be disseminated into systems that directly provide services to people. This includes e.g. job boards and job matching platforms, such as EURES, HR management systems, career guidance tools and tools for documenting professional profiles, such as Europass.

On a national level, LOD offers new opportunities for Member States to exploit the data on qualifications. Member States could for example use it to link their qualifications data with the national classifications of occupations and skills or to integrate it into existing online services. Furthermore the use of LOD follows the requirements and facilitates the implementation of Directive 2013/37/EU15 on the re-use of public sector information.

Chapter 4.4 below focus on the available European support and the resources needed to possible adaptations by current national databases to these specifications.

¹³ Linked Data is "a method of publishing structured data so that it can be interlinked" (http://en.wikipedia.org/wiki/Linked_data). If Linked Data is released as open content, it becomes Linked Open Data and can be reused by service providers. This way, the data can be used to improve search or to build online tools and apps.

¹⁴ See more on "annotation" in point 4.2 below.

4.2 Semantic annotation

The LOD approach builds on Internet standards through semantic annotation. Tagging, is the process of attaching names, attributes, comments, descriptions, to a document or to a selected part in a text. These additional tags can be used to find or group documents.

Semantic Annotation goes one step further. Where tagging speeds up searching and helps find relevant and precise information, semantic annotation enriches the unstructured or semi-structured data with metadata and context that is further linked to the structured knowledge of a domain. It allows results that are not explicitly related to the original search. So, if tagging is about promptly finding the most relevant result, semantic annotation adds diversity and richness to the process.

Semantic Annotation helps to bridge the ambiguity of the natural language when expressing notions and their computational representation in a formal language. By telling a computer how data items are related and how these relations can be evaluated automatically, it becomes possible to process complex filter and search operations^{16, 17}

Using semantic annotation, organisations (e.g. Member States' authorities or awarding bodies) that publish information on qualifications or their learning outcomes in human-readable formats (HTML, PDF, etc.), can at the same time and in the same document publish machine readable and reusable structured information about the data categories mentioned above. They can for example add machine-readable information on the awarding bodies and the field of education and training when publishing information on the web about a specific qualification. This way, the website for the human reader is published together with the underlying data. Since the semantic annotation is added to the existing format and does not replace it, actors can build on their existing technical infrastructure.

4.3 Process for the inclusion of qualifications in ESCO

For the integration of qualifications in ESCO, the following approaches are possible (cf. fig. 2):

- Importing qualifications from the national qualification databases in XML format (for a transition phase).
- The responsible authorities of the Member State publish information on national qualifications as part of their national qualification databases in LOD according to the technical specifications indicated below. ESCO "reads" directly the information as published. In this scenario the Member States publish the information about each qualification and provide the list of qualifications which are part of the NQF.

¹⁵ <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32013L0037&from=EN>

¹⁶For more information on annotation, tagging and semantic annotation please see" <http://en.wikipedia.org/wiki/Annotation>; [https://en.wikipedia.org/wiki/Tag_\(metadata\)](https://en.wikipedia.org/wiki/Tag_(metadata)) and <http://ontotext.com/products/ontotext-semantic-platform/semantic-annotation/>

¹⁷ The same approach can also be used to annotate machine-readable information that is using other formats, e.g. XML.

- Awarding Bodies publish the information on qualifications in LOD according to the technical specifications. The responsible authorities of the Member State publish, also as LOD, a list of the qualifications which are part of the NQFs. Again, ESCO "reads" directly the information, as published by the Awarding Body. They then automatically verify in the list provided by the Member States that the qualifications are part of the NQF. In this scenario the Awarding Bodies publish the information about their qualifications and the Member States provide the list of qualifications. Such division of tasks would be a national decision. While this approach might need the Member State to invest resources in processes and to some extent in technical implementation, it will be the most cost-efficient solution in the longer term (see also chapter 4.4 below). It avoids managing data that is controlled by other organisations (such as awarding bodies) and can therefore be more efficient than managing centralised databases.

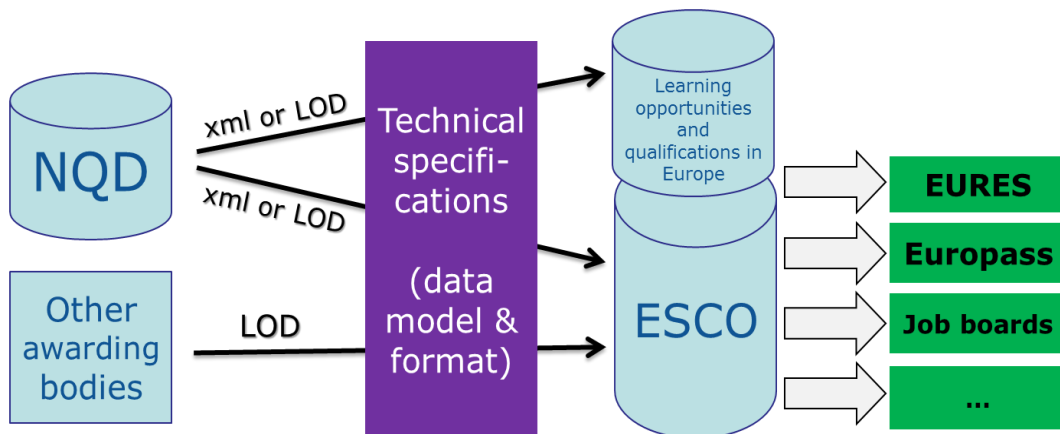


Fig. 2: Including qualifications in ESCO and in the Learning opportunities and qualifications portal

The Commission services will publish the agreed technical specifications used to describe the qualifications. The exact same format will be used for all qualifications to be included in ESCO. Awarding bodies of international qualifications that are not part of the national qualification databases will therefore be required to use these specifications when publishing information on their qualifications in case they want their qualifications to be part of ESCO.

This proceeding will allow users to have full transparency and understand about which qualifications are part of national qualifications databases and which ones have been published by an awarding body but are not part of a NQF. Other information that helps to assess the trustworthiness of a qualification can be published and cross-checked as well, e.g. accreditation and quality assurance processes and metadata on awarding bodies (see chapter 3.3)

4.4 Resources

Implementing the scheme proposed in this document may require technical adjustments to the current national qualifications databases in most Member States. Rigorous quantification of the resources needed to adopt this solution (on top of a central qualification database) is difficult to establish, as current situations in Member States differ substantially.

A correct evaluation of these resources requires a technical analysis of how currently domestic data bases gather and disseminate information on qualifications at national level and how adding semantic annotation to these already existing data could be applied. At the request of interested Member States, the Commission will organise country study visits and one technical workshop to support this process. The workshop and visits will be conducted by an IT team, aiming at assessing together with national experts the current IT state of national databases. The team will also present recommendations on the steps to follow for linking those databases to the "Learning opportunities and qualifications in Europe" and ESCO portals.

Further implementation of the whole process will keep being supported by European funding on upcoming Calls for Proposals.

The advantages of this limited one time effort are clear: efficiency will be increased and the manual procedure to import/export data from and to the portal "Learning Opportunities and Qualifications in Europe" and to the ESCO portal will become obsolete and replaced by a fully automated process.

5. Next steps

Following the consultations with the EQF Advisory Group, ESCO Board and ESCO Maintenance Committee, the Commission services updated the general approach for developing a common format for describing qualifications the Europe (this document). They will develop the technical specifications and metadata schemata, as well as manuals and documentation on how to apply them. The first version of the high-level specifications is expected in October 2015, the refined version and the manuals in December 2015.

Once finalised, the technical specifications will be published on the "Learning opportunities and qualifications in Europe" and ESCO portals. These specifications will be included in future European calls for proposals supporting the development of national qualifications databases. As indicated before, information and training sessions on the implementation of these specifications will be available to national experts of the interested Member States.

The first meeting of the new Member States working group on ESCO will take place on 6th November 2015. The mission of this group is to act as consultation and information forum on ESCO between the Commission, Member States' authorities and European social partners and to stimulate the debate between employment and education at national level. Whenever pertinent qualifications related matters will be included in the group's agenda.

In parallel, the Commission will set up a pilot project, to simulate the implementation process of these technical specifications. This pilot project will focus on two cases: how to connect national qualifications databases to the European portals and how to connect private providers also to the European portals. This pilot project is expected to be ready by Q4 2015 and will work with voluntary Member States and voluntary private providers.

As indicated in point 4.4 above the Commission services intend to support Member States in their work to publish data according to this technical standard, in particular with the technical workshops (in Q4 2015) and country visits (in Q1 and Q2 2016) described before. Semantic annotation of ESCO content can start once ESCO v1 full version is published, by the end of 2016.

TIMELINE	
Tasks	Time
Draft high level specifications for inclusion of qualifications in ESCO	Q3 2015
First meeting of the new Member States working group on ESCO	6th November 2015
Pilot project for inclusion of qualifications in ESCO	Q4 2015
Manual with specifications for inclusion of qualifications in ESCO. Refining of specifications.	Q4 2015
Call for proposals supporting the development/improvement of national qualifications databases using the new specifications	Q4 2015
Technical workshop on specifications	Q4 2015
EQF AG meeting	1-2 December 2015
Country visits for exchange of technical information on specifications	Q1 and Q2 2016
Launch of ESCO v1	Q4 2016
Semantical annotation of ESCO content	Q1 2017

ANNEX I – Cases illustrating the application of a common format for presenting learning outcomes

Case 1.

The following extract from a national qualification description (CNC Machine Operation) demonstrates the basic model suggested could be applied in practise. The basic structure {learner}>{action verb}>{object and scope with reference to learning domains}> {context} has been applied.

The learner

- *will be able to demonstrate understanding of a broad range of the main features of both a CNC Milling Machine and CNC Lathe to include the main console controls, axis configurations, methods of tool changing programming techniques, thread cutting and tool mounting;*
- *will be able to demonstrate a broad range of skills and tools in the use of a CNC Milling Machine and CNC Lathe to include the use of part programming functions, the correct starting and termination functions, using a tool library, producing parts, mounting and positioning work pieces and applying programs.*
- *will be able to demonstrate good practice} in using the main consoles to input information, correctly starting and terminating formats, employing risk reduction measures for the use of both machines and setting up, monitoring and maintaining typical types of both machines.*

To access programmes leading to this award the learner should have reached the standards of knowledge, skill and competence associated with the preceding level of the National Framework of Qualifications.

Case 2.

The following extract from a national qualification description (Journeyman Sanitation, heating and cooling) demonstrates a slightly different approach where the basic structure is contained {learner} >(Action verb)> (Object and scope} > {context} but where the explicit reference to knowledge, skills and competence (as in Case 1) is missing.

The holder of the certificate will be able to process orders in a customer-oriented manner, plan and control work processes

- *Monitor and assess results and apply quality assurance systems*
- *Repair and maintain operating equipment*
- *Install and dismantle supply engineering plants and systems, conduits and piping, ducts and components for supply engineering plants and systems*
- *Carry out insulation, sealing and protective measures*
- *Produce electrical connections for supply engineering plants and systems and install and test electrical subassemblies and components in supply engineering plants and systems*

- *Install and measuring systems, open and closed loop control systems, safety and monitoring equipment and set index values for such systems and equipment*
- *Test, adjust, optimise and maintain the functionality of supply engineering plants and systems*
- *Commission supply engineering plants and systems, deliver supply engineering plants and systems to the customer and*
- *instruct the customer in the operation of such plants and systems*
- *Maintain supply engineering plants and systems*
- *Conduct inspections, maintenance and repair of supply engineering plants and systems*
- *Advise and support customers with regard to products and services offered by the company according due consideration to environmental and economic aspects*
- *Accord due consideration to sustainable energy and water use systems*
- *Work with English language documentation and use specialist English language terminology.*

Case 3.

The following extract from a national qualification description (Veterinary Master Degree) demonstrates how the basic structure of learning outcomes descriptions in Higher Education are following the same basic structure as in vocational education and training.

As regards knowledge, the student shall have

- *demonstrated knowledge of the disciplinary foundation of the field and insight into current research and development work as well as the links between research and proven experience and the significance of these links for professional practice*
- *demonstrated both broad and specialised knowledge in the field of veterinary medicine*
- *demonstrated insight into the conditions applying to animal management, its function and interaction with the environment and society, both nationally and internationally, and*
- *demonstrated knowledge of economics, organisation and statutory provisions that are of significance for the field of veterinary medicine.*

As regards Competence and skills the student shall have

- *demonstrated the ability to diagnose the most frequent illnesses and injuries of animals autonomously and to undertake appropriate medical and surgical treatment in basic veterinary medicine*
- *demonstrated the ability to initiate and undertake measures in preventive veterinary care*
- *demonstrated the ability to identify problems and take the measures needed to comply with social requirements regarding cruelty to animals, the control of infectious diseases and food safety*

- *demonstrated the ability to account in speech and writing for interventions and treatment outcomes with those concerned and to document them in accordance with the relevant statutory provisions*
- *demonstrated specialised skills in discussing new data, phenomena and issues in the field of veterinary medicine with various audiences on a disciplinary basis and also to review, assess and use relevant information critically,*
- *demonstrated the capacity for teamwork and collaboration with various constellations, and*
- *demonstrated the skills required to take part in research, development and evaluative activities or to work autonomously with other specialised tasks in the field of veterinary medicine and so contribute to the development of the profession and professional practice.*

Comments to the cases

Given that these are only extracts from official qualification documents (significantly longer and more complex), their purpose is to illustrate how the basic structure outlined by the paper to a large extent already is used at national level. We can observe the following:

- While some countries describe qualifications using the distinction between knowledge, skills and competence (KSC, as illustrated by case 1 and 3), other will not do so - seeking rather to focus on the professional activity as such without making an attempt to use the KSC categories. This difference in approach reflects national policies. It is therefore important that the description of object and scope is carried out in a flexible manner, as demonstrated by the cases above.
- The learning outcomes descriptions, as illustrated above, needs to be closely linked to and integrated with the other qualification core data listed by the paper. This will help to further contextualise the learning outcomes description. The Europass certificate supplement provides a good illustration of how this is already done.
- Due consideration have to be given to the length of the text. The cases presented above operate within the range 900 to 1700 characters. Further piloting will be necessary to decide on an optimal length - balancing the need for short presentations with the need for sufficient information.