1. About ESCO and its review process

1.1. ESCO

The objective of ESCO is to develop a European multilingual, structured terminology of skills/competences, qualifications and occupations. By providing a tool for identifying, sorting, connecting and applying relevant terms, ESCO is expected to facilitate the dialogue between the labour market and the education/training sector.

ESCO’s primary objective is to boost online skills/competences based job matching in order to allocate the workforce within Europe in the most efficient way. Using ESCO to analyse individuals' skill/competences sets will not only improve job matching, but also offer new possibilities to guide people in their careers. Additionally, ESCO will provide direct feedback on the skills/competences demand on the labour market and therefore underlines the importance of lifelong learning.

Increasing employment and overcoming skills/competences shortages in Europe will require more geographical mobility from jobseekers. ESCO can help to overcome obstacles for geographical mobility.

The structure of ESCO will consist of three different pillars covering occupations, skills/competences and qualifications, all three reflecting the European labour market reality and the world of education and training. The three pillars will be linked to make interrelations between them visible.
1.2. Development of ESCO

The development of ESCO is a process of continuous development and revision. Reference Groups will cover the industry sectors or fields of economic activity relevant for the European labour market within their field of expertise. Once all these industry sectors or fields of economic activity been covered, the classification will be released as "ESCO v1". After a second, complete iteration it will become "ESCO v2" and so on. Intermediate results will be released adding a minor version number (e.g. "ESCO v1.1").

The ESCO project takes as its starting point the EURES taxonomy that initially has been developed by the Swedish public employment service, translated into 22 languages. However, substantial changes and improvements concerning both structure and content are required, to make ESCO a tool that is adapted to the reality of European education/training systems and labour market.

As of mid-2013, ESCO v0, a preliminary version of ESCO, will be accessible online. In this version of ESCO, already some qualitative and structural changes will have been realised. In ESCO v0:

- All three pillars will be present: the occupations-, skills/competences- and qualifications pillar.
- ISCO-88 will be replaced by ISCO-08 as the hierarchical structuring element of the occupations pillar;
- The basis for a hierarchical structure for both the skills/competences- and qualifications pillar will be implemented;
- Transversal skills/competences will be included;
- A limited amount of international and/or regulated qualifications will have been added;
- Occupations, skills/competences and qualifications will be interrelated.

However, to ensure the reflection of the European Labour market reality in ESCO v1 to its maximum, the development of ESCO v1 starts from scratch not basing itself on the terminology in ESCO v0. Only in a later stage of the revision work, the dataset of ESCO v0 will feed into the revision process.

1.3. Reference Groups (REF)

The development and continuous revision of ESCO will be done based on the input from expert REF.

a) Sectoral Reference Groups (SREF):
SREF will cover the main occupational areas addressed by ESCO by developing occupational profiles. ESCO will contain European relevant occupations, the "essential"- and "nice to have"-skills/competences and qualifications to work in these occupations. Each SREF will cover a specific industry sector or field of economic activity. Based on the characteristic, complexity and size of the industry sector or field of economic activity, the SREF will work as a meeting, panel or small expert group model (see annex).

b) Cross-sector Reference Group (CSREF):

The work of the SREF will be accompanied and supported by a horizontal REF, the CSREF, dealing with transversal (non-job specific) skills/competences and structuring of the qualifications pillar.

The approach for the sectoral revision of ESCO with the help of SREF and the CRSEF ensures strong stakeholder involvement in the ESCO project. It allows making best use of stakeholders’ expertise and achieving results that are widely accepted. Since the ESCO management bodies also include the main future users of ESCO the approach helps to develop a classification that suits the needs of the main actors in the European labour market and education/training sector.

The aim of the work of the REF is to include the common denominator of the terminology used on the European labour market and the education/training sector, with the level of detail that is needed to perform qualitative skill-based job matching, in ESCO. Richly detailed and more specific occupational profiles exist or are to be created and managed at a national level when necessary.

The expertise of the SREF and the CSREF and their professional networks are the basis for the revision of ESCO to arrive at ESCO v1.

2. The Reference Group on Transportation and storage

The SREF "Transportation and storage" reviews ESCO v0 applying the panel model.

In this model, SREF serve as an expert panel. A small team of taxonomy experts, the taxonomy expert group (TEG), assists the SREF by developing a prototype that serves as a "working hypothesis". In an iterative process, the SREF gives feedback on the "working hypothesis" and suggests changes or validates it. Feedback by the panel can be based on an unguided review of the "working hypothesis". However, it can also include checklists and test cases to evaluate its usefulness for specific business cases or to assess the compatibility with national/sectoral classifications.

While ESCO's content is developed by the TEG, the SREF focus on their role as reviewers and testers of the classification.
The SREF "Transportation and storage" follows the scope of "NACE section H: Transportation and storage" and "NACE class N82.92: Packaging activities". This section includes the provision of passenger or freight transport, whether scheduled or not, by rail, pipeline, road, water or air and associated activities such as terminal and parking facilities, cargo handling, storage etc. Included in this section is the renting of transport equipment with driver or operator. Also included are postal and courier activities, packaging activities on a fee or contract basis.

This section excludes major repair or alteration of transport equipment, except motor vehicles, see group (belongs to the scope of SREF "Machinery and equipment, except electrical equipment"), construction, maintenance and repair of roads, railways, harbours, airfields (belongs to the scope of SREF "Construction"), maintenance and repair of motor vehicles and renting of transport equipment without driver or operator (belongs to the scope of SREF "Wholesale, retail trade, rental and leasing").

Each member of the ESCO Reference Group on "Transportation and storage", should have expertise in at least one of the following sub-sectors:

- Division 49: Land transport and transport via pipelines
- Division 50: Water transport
- Division 51: Air transport
- Division 52: Warehousing and support activities for transportation
- Division 53: Postal and courier activities
- Class 82.92: Packaging activities

2.1. Land transport and transport via pipelines

This division includes the transport of passengers and freight via road and rail, as well as freight transport via pipelines.

A more detailed description of the economic activities included in this division, is available under the following NACE classes:

- Passenger rail transport
- Freight rail transport
- Urban and suburban passenger land transport
- Taxi operation

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2 For the general required profile see Annex A
• Other passenger land transport
• Freight transport by road
• Removal services
• Transport via pipeline

2.2. Water transport

This division includes the transport of passengers or freight over water, whether scheduled or not. The operation of towing or pushing boats, excursion, cruise or sightseeing boats, ferries, water taxis etc. are also included. Although the location is an indicator for the separation between sea and inland water transport, the deciding factor is the type of vessel used.

This division excludes restaurant and bar activities on board ships, if carried out by separate units.

A more detailed description of the economic activities included in this division, is available under the following NACE classes:

• Sea and coastal passenger water transport
• Sea and coastal freight water transport
• Inland passenger water transport
• Inland freight water transport

2.3. Air transport

This division includes the transport of passengers or freight by air or via space.

This division excludes crop spraying (belongs to the scope of SREF "Agriculture, forestry, fishery"), overhaul of aircraft or aircraft engines belongs to the scope of SREF "Machinery and equipment, except electrical equipment"), aerial advertising (sky-writing) (belongs to the scope of SREF "Business administration"), aerial photography (belongs to the scope of SREF "Science and technical activities").

A more detailed description of the economic activities included in this division, is available under the following NACE classes:

• Passenger air transport
• Freight air transport
• Space transport
2.4. **Warehousing and support activities for transportation**

This division includes warehousing and support activities for transportation, such as operating of transport infrastructure (e.g. airports, harbours, tunnels, bridges, etc.), the activities of transport agencies and cargo handling.

A more detailed description of the economic activities included in this division, is available under the following NACE classes:

- Warehousing and storage
- Service activities incidental to land transportation
- Service activities incidental to water transportation
- Service activities incidental to air transportation
- Cargo handling
- Other transportation support activities

2.5. **Postal and courier activities**

This division includes postal and courier activities, such as pickup, transport and delivery of letters and parcels under various arrangements. Local delivery and messenger services are also included.

A more detailed description of the economic activities included in this division, is available under the following NACE classes:

- Postal activities under universal service obligation
- Other postal and courier activities

2.6. **Packaging activities**

This class includes packaging activities on a fee or contract basis, whether or not these involve an automated process:

- Bottling of liquids, including beverages and food
- Packaging of solids (blister packaging, foil-covered etc.)
- Security packaging of pharmaceutical preparations
- Labelling, stamping and imprinting
- Parcel-packing and gift-wrapping

3. **The mandate**

This mandate displays a summary of the approach for the revision of ESCO in five steps. The revision process of ESCO v0 is fully described in the ESCO Guidelines. The SREF can rely on these
The five steps for the revision of ESCO v0:

1. Create a sectoral breakdown and list up relevant sources;
2. Create a prototype;
3. List up occupations;
4. Define job specific and transversal skills/competences for each occupation;
5. Complete the occupational profiles.

The SREF is expected to apply the five-step approach for the revision of ESCO v0 for the "Transportation and storage"-sector.

3.1.1.1. Step 1: create a sectoral breakdown and list up sources

In the first step, the SREF starts by creating a sectoral breakdown, a tree-structured representation of the economic sector covered by the SREF. This sectoral breakdown shows a comprehensive picture of the whole sector.

Once the sectoral breakdown has been developed, the SREF identifies two not too broad subsectors in it. They will be used in the next step, to create a prototype.

Additionally the SREF collects relevant sources and creates a repository which will serve as an input for the revision of the sector. Relevant sources can be international or national classifications, sectoral taxonomies, articles about the evolution of the employment market and any other meaningful information.

It is expected that the SREF will need around four months to complete this step.

3.1.1.2. Step 2: create a prototype

The prototype is created in six phases:

1. List up the occupations for the two not too broad subsectors selected in step 1;
2. Select three occupations from the list created in step 1;
3. Add skills/competences to the three selected occupations;
4. Describe the relationship of the identified skills/competences with the occupations as essential or nice to have;
5. Identify which of the skills/competences are transversal taking into account the terminology developed by the CSREF;
6. Identify the relevant knowledge areas for the three selected occupations.
In the *panel model* the SREF works with the assistance of the Taxonomy Expert Group (TEG).

The TEG creates the prototype based on the relevant sources available in the repository.

The SREF reviews the draft prototype and provides feedback on it to the TEG and the coreSREF. This is an iterative process and repeats itself up to three times. During this iterative process, the SREF starts a dialogue with the CSREF on the topic of transversal skills/competences. The members of the SREF aim at being able to agree and accept the prototype by the end of the iterative process.

Aim of this step is:

- To find the best approach for the SREF and TEG to cooperate;
- To test the entire revision process on a small part of the sector;
- For the SREF to get acquainted with the expected final outcome of the revision of the sector;
- To verify whether the available sources will be enough for the TEG to build the revision upon.
- To establish a first contact between the SREF and the CSREF and find the best approach for future cooperation.

It is expected that the TEG and SREF will need around two months to complete this step.

### 3.1.1.3. Step 3: list up occupations

In this step, the SREF lists up occupations for each of the lowest branches/subsectors of the sectoral breakdown. Additionally, the SREF provides a definition- and a scope note for each occupation which might be considered ambiguous.

In the *panel model* the SREF works with the assistance of the TEG.

The TEG delivers a first draft list of occupations ready to be reviewed a first time by the SREF approximately ten weeks after starting step three. The SREF reviews the draft list of occupations and provides feedback on it to the TEG. This is an iterative process and repeats itself up to three times. The members of the SREF aim at being able to agree and accept the final list of occupations at the end of the iterative process.

The outcome of this step should be an agreed list of occupations reflecting the European labour market for the sector "Transportation and storage", a clustering of occupations according to the sectoral breakdown and definition- and scope notes for ambiguous occupations.

It is expected that the TEG and SREF will need around six months to complete this step.
3.1.1.4. Step 4: define job specific and transversal skills/competences for each occupation

For each of the occupations identified in step three, the SREF develops a skills/competences profile existing of "essential" and "nice to have" skills/competences.

In the panel model the SREF works with the assistance of the TEG. The TEG delivers a draft list of core skills/competences to each occupation listed up in step three, ready to be reviewed a first time by the SREF.

The SREF reviews the first draft list of core skills/competences and provides feedback on it to the TEG. This is an iterative process and repeats itself up to three times. The members of the SREF aim at being able to agree and accept the final list of 'essential' and 'nice to have' skills/competences for each occupation.

The SREF provides a definition note and a scope note in English for each skill/competence which might be considered ambiguous.

The SREF develops and agrees upon the clustering of the identified skills/competences into the skills/competences groups of ESCO v0.

The outcome of this step should be a list with essential and nice to have skills/competences per occupation. For each of the skills/competences a clarification is added whether the skills/competence is jobspecific, transversal or both and where they fit it into in the newly developed semantic substructure.

The SREF and TEG have around nine months to complete this step.

3.1.1.5. Step 5: complete the occupational profiles

In this step the SREF cooperates with the CSREF to complete the occupational profiles with missing transversal skills/competences and qualification. Additionally, the SREF identifies knowledge areas and relevant wordlists where possible. The members of the SREF aim at being able to agree and accept the final attribution of transversal skills/competences, qualifications, knowledge areas and relevant wordlists to the occupational profiles.

It is expected that the SREF will need around five months to complete this step.
4. Organisation of the SREF

4.1. Appointment

SREF (members and chair) are appointed by the ESCO Secretariat and endorsed by the ESCO Board. SREF are appointed for the duration of the revision of a sector of the ESCO taxonomy and will cease to exist on completion of their task.

4.2. Size

The size of each SREF depends on the SREF-model applied and should ensure the efficient and effective functioning of the SREF. For the panel model, the size of the SREF can vary from 8 till 27 members.

4.3. Meetings and Conferences

1. An introductory meeting on 24 and 25 April 2013:
   This meeting will require approximately two working days, travel time included for the meeting itself and a half working day afterwards to process the event.

2. Face-to-face SREF meeting panel model:
   Yearly, around four face-to-face SREF meetings will take place. Each meeting requires about one working day for preparation of the meeting and one and a half working day for the meeting itself, travel time included. This estimation is indicative and may depend on the sector. The SREF will prepare minutes of each meeting.

3. Stakeholders Conferences:
   This participation will require approximately two and a half working days per conference, traveling time included. Members that are participating in the organisation of a Stakeholders Conference will require more preparation time, depending on the level of involvement. It is planned that a Stakeholder Conference takes place approximately every two years. The next Stakeholders Conference is scheduled for the third quarter of 2013.

4. E-meetings panel model:
   A SREF may decide to have additional E-meetings. Especially for the panel model, where individual members have more expertise in one or more subsectors and therefore don't need the presence of the entire SREF to review their field of expertise, E-meetings might replace some of the face-to-face meetings. The ESCO Secretariat can organise these meetings upon request.

5. Internal-communication meeting:
ESCO is a European Commission initiative.

Once or twice a year, depending on the need, the ESCO Board invites all members of the Board, Maintenance Committee and the Chairs and Vice-Chairs of the REF for an internal communication meeting. The meeting itself will require two working days for the Chair and Vice-Chair of the SREF, traveling time included. The preparation time required will depend upon the agenda of the meeting.

4.4. Estimation of workload

Based on the above mentioned assumptions the involvement into a SREF will come with a workload for every individual member, estimated at one to two working days a month.

4.5. Reimbursement

The Commission will, via the ESCO Secretariat, cover travel costs of all SREF members and accommodation costs for private experts. Meetings will take place in Brussels.
## Indicative timeline for the revision of ESCO

<table>
<thead>
<tr>
<th>Month</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>n-4</td>
<td>The ESCO Secretariat sends a proposal for the next SREF and their draft mandates to the ESCO Board.</td>
</tr>
<tr>
<td></td>
<td>The ESCO Board endorses the proposal for the next SREF and their draft mandates.</td>
</tr>
<tr>
<td></td>
<td>The ESCO Secretariat performs research to create mailing lists with key stakeholders per SREF: Social partners, Ministries, PES/PRES, skills councils, professional associations, federations of enterprises, employers, education institutes.</td>
</tr>
<tr>
<td>n-3</td>
<td>The ESCO Secretariat contacts key stakeholders in each sector to inform them that the SREF are being established and to invite them to propose candidates.</td>
</tr>
<tr>
<td>n-1,5</td>
<td>Deadline for proposing candidates for the SREF.</td>
</tr>
<tr>
<td>n-1</td>
<td>The ESCO Secretariat makes an appointment decision and sends its appointment decisions by e-mail to the ESCO Board for written approval.</td>
</tr>
<tr>
<td>n</td>
<td>The ESCO Board endorses the appointment decision.</td>
</tr>
<tr>
<td></td>
<td>The ESCO Secretariat notifies stakeholders of their (non)appointment and sends out invitations for the introductory meeting.</td>
</tr>
<tr>
<td>n</td>
<td>Introductory meeting of the SREF; Step 1: The SREF starts to develop a sectoral breakdown and a repository of sources for the revision of ESCO v0.</td>
</tr>
<tr>
<td>n+4</td>
<td>Step 1 is completed; Step 2: The SREF starts with the development of a prototype for the revision of ESCO v0.</td>
</tr>
<tr>
<td>n+6</td>
<td>Step 2 is completed; Step 3: The SREF lists up occupations for each lowest branch/subsector of the sectoral breakdown.</td>
</tr>
</tbody>
</table>
ESCO Secretariat will support the Reference Groups on the following matters:

- Logistical support through organising the meetings of the Reference Group: Assists during the SREF meeting to find an appropriate date for the next SREF meeting and provide a location for each SREF meeting. An option will be provided to not only meet face-to-face, but also via e-meetings;

- Technical support through granting access to the ESCO database via the ESCO Portal and helping to get access to documentation on national and sectoral classifications.

- The SEC establishes the TEG which helps to reduce the workload for the individual SREF members.

- Communication between the SREF, the CSREF, the Maintenance Committee and the Board;

- The SEC and the Maintenance Committee develop the ESCO guidelines in close cooperation. The ESCO Guidelines are an essential tool for the revision of ESCO v0.

### 6. Input from ESCO Secretariat

The ESCO Secretariat will support the Reference Groups on the following matters:

<table>
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<tr>
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<th>Task</th>
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<tr>
<td>n+12</td>
<td><strong>Step 3</strong> is completed; <strong>Step 4</strong> is completed; <strong>Step 5</strong> is completed</td>
</tr>
<tr>
<td>n+21</td>
<td>Step 4 is completed; Step 5: the SREF completes the occupational profiles</td>
</tr>
<tr>
<td>n+26</td>
<td>Step 5 is completed</td>
</tr>
<tr>
<td>n+27</td>
<td>MAI decision on the proposal.</td>
</tr>
<tr>
<td>n+30</td>
<td>Publication of the revised sector</td>
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</table>
Annex 1: SREF models

Introduction
The revision of the ESCO is a time-consuming process. Therefore, the ESCO Secretariat, with the endorsement of the ESCO Board, experiments with three different approaches to limit the workload of individual SREF members and to ensure results within the foreseen timeline.

Meeting model
In this approach SREF of 8-15 sectoral experts work on the content of the classification. Members of the SREF are the actual developers of the classification.

Work is organised in about four REF meetings (virtual or face-to-face) per year. Based on intensive dialogues, stakeholders come to a common decision which elements need to be included in ESCO.

While this approach is very inclusive it puts a lot of workload on the shoulders of the SREF members. The dialogue based, intensive discussions in the REF make quick work results less likely.

Panel model
In this model, SREF serve as an expert panel. A small team of taxonomy experts, the taxonomy expert group (TEG), assists the SREF by developing a prototype that serves as a "working hypothesis". In an iterative process, the SREF gives feedback on the "working hypothesis" and suggests changes or validates it. Feedback by the panel can be based on an unguided review of the "working hypothesis". However, it can also include checklists and test cases to evaluate its usefulness for specific business cases or to assess the compatibility with national/sectoral classifications.

While ESCO's content is developed by the TEG, the SREF focus on their role as reviewers and testers of the classification. This approach allows involving a larger number of experts in one SREF, while maintaining a strong involvement of the individual members and their professional network. In this model the workload for each individual member of the SREF is significantly reduced.

Small expert group
The approach of a small expert group implicates a twofold role of the SREF. A core team of 2-5 members develops the contents of ESCO together with the TEG. The intermediate work results are reviewed and tested by the larger SREF in the same manner as in the panel approach.

The fact that the SREF is directly involved in developing the contents of ESCO might lead to a higher degree of ownership as compared to the panel model. However, it requires strong involvement of some Reference Group members.
Annex 2: General profile

Experts in a specific field of economic activity with the following profile could become part of a Reference Group:

- Sound knowledge of the terminology related to education/training and labour market in a specific sector, in particular the terminology on occupations and skills/competences;
- Good understanding of relevant skills/competences and occupations of at least one particular sub-industrial sector/field of economic activity;
- Up-to-date knowledge and understanding of education-training and qualifications systems in Europe, in particular within the relevant sector;
- Experience with classifications, taxonomies, controlled vocabularies;
- Good understanding of the employment and skills related standards and classifications (ISCO, ISCED, NACE, etc.);
- Very good English language skills.