

Minutes of the expert groups

Brussels, 13/4/2021

Minutes
34th ESCO MAI
22 October 2020, Brussels

1. Approval of the agenda and of the minutes of previous meeting

The Commission chaired and opened the meeting and welcomed the participants.

The minutes of the 33rd meeting were approved without changes.

The Commission presented the four thematic blocks on the meeting agenda (doc MAI 34-01). The agenda of the meeting was approved.

The Commission proposed one item to be addressed in ‘any other business’: Memberships of the ESCO Maintenance Committee.

2. Nature of the meeting

The meeting was non-public and held online via MS Teams conference call. The meeting was recorded for the purpose of making the minutes of the meeting.

All the presentations and documents from the meeting are available in the [ESCO Portal](#).

3. List of points discussed

3.1 Thematic block 1: ESCO version 1.1

3.1.1 Update on the new content of ESCO version 1.1

The Commission presented an update on the state of play of the update of new content in ESCO version 1.1.

Main points during the subsequent discussion were as follows:

- Participants asked how the Commission identified new skills and knowledge concepts and which sources took the most weight to decide on which concepts are to be included. Related to this question was a risk of giving too much weight on ‘top-down’ sources in which case ESCO could lose touch with the labour market. For example, this could happen when smaller organisations are less represented in associations.
 - > The Commission specified that a combined bottom-up and top-down approach was used. The Commission did not rely only on vacancies due to the underlying bias of such method. The Commission combined research, publications and more detailed industry reports with specific expert feedback and online vacancies.

The Commission also included the requirements of both large corporations as well as smaller organisations such as SMEs, in order to adapt occupations so that they fit both. This is the case for example with cybersecurity and data protection officers - smaller organisations often combine both roles.

- Participants proposed to identify/label STEM skills in ESCO, and asked whether there are any plans for that.

> The Commission clarified that STEM skills need further reflection. In line with the combined top-down and bottom-up approach for updating ESCO, it needs to be seen how such STEM skills are reflected in job vacancies and at the same time experts such as associations, blueprint projects, etc., need to validate the findings. In the current approach to update ESCO, this specific category of STEM skills seems to be included but of course this will be verified in more detail.

- Participants asked how to detect digital skills in the current ESCO.

> The Commission specified that the skill hierarchy groups can be useful to find the digital skills. Participants shared from their experience that digital skills can also be found specifically via the skill group ‘S5-working with computers’ (<http://data.europa.eu/esco/skill/S5>).

- Participants provided specific feedback about the proposed new content:

- ‘International aid worker’ could be considered an area of work rather than an actual occupation. Some people working in international aid might be doctors or nurses, while others might be involved in construction work.

- Additionally, there is a concern about including occupations that appear and disappear quickly, for example ‘corona virus tester’ and ‘temperature screener’. As an alternative option, these occupations could be listed as other, existing occupations.

> The Commission clarified that indeed a necessary check at this stage is to look to what extent creating a new occupation concept is better than integrating changing skills and context into an existing concept.

- There is a risk of using too short names or not specific enough names (in relation to the description) which can result in concepts being too general. For example, for the occupation ‘offshore engineer’ the description starts with ‘offshore renewable energy engineer’.

> The Commission welcomed all feedback on formulation.

- It is important to carefully check the list of alternative labels of occupations. For example, the ‘medical physics expert’ is a useful occupation to include but the alternative label ‘medical physicist’ already exists as an alternative label for another occupation (‘physicist’).

> The Commission confirmed that the alternative labels will be reviewed, as was done with the skills quality review and the review of occupations. The particular example of the ‘medical physics expert’ has also been flagged by the Commission but during discussions with experts it was concluded that the medical physics expert and medical physicist are too different to integrate them in one occupation.

- Some (preferred terms of) occupations were either not sufficiently contextualised or were too contextualised, e.g., ‘perform cannulation’ should be less specific in the description as it is a widely performed activity in different occupations.
- About the new content regarding agriculture: in some cases, horticulture is not mentioned in descriptions while agriculture is.
- ‘Drone operator’ is currently categorised under ‘construction’ but it can be used more widely for example in art performances, in agriculture for crop surveying, etc.

> The Commission clarified that a sector is sometimes shown only as a reference to organise the work internally. It is not an indication that ‘drone operator’ would be limited to construction.

- Some occupations seem to be too restrictive. For example, metal additive manufacturing (3D printing) is only about metal while 3D printing also uses other materials.

> The Commission clarified that this input came from a blueprint project dedicated specifically to metal additive manufacturing. However, the Commission is also looking into 3D printing more in general, across sectors.

- New technologies lead to more than one occupation. For example 3D printing relates to occupations in manufacturing but also in design/creation of blueprints.
- New occupations linked to social media such as ‘community creators’ or ‘vloggers’, ‘influencers’, etc. are emerging in the labour market even though they are not really reflected in vacancies.

- Participants asked whether a consultation with the ILO is on the agenda, as it is important to have an understanding on the relevant ISCO codes to which new ESCO occupations are assigned.

> The Commission confirmed that a consultation with the ILO is indeed on the agenda.

- Participants expressed concern about the use of ‘ecosystems’ instead of existing structures such as NACE to structure the development of the new content. This could cause confusion with existing hierarchies and structure.

> The Commission clarified that existing NACE codes were used and that the ‘ecosystems’ are simply a means to group the many sectors and to organise the work

internally. The notion of ‘ecosystems’ is also coming up in the policy debate, which facilitated the organisation of the work.

- Participants expressed concern about the timeline in terms of giving feedback as it seems that there is still a lot of work.
- Participants asked about the process concerning the lack of skills or the existence of too many skills in occupations, in particular how skill gaps have been identified and handled in order to ensure the right number of skills per profile (e.g. through levelling).
- Participants inquired about the numbers of (sectoral) expert inputs that was received and from which experts across the different platforms.

> The Commission explained that experts either validated work of the Commission or provided direct input for new and updated concepts in ESCO v1.1. These experts include EU professional associations, sectoral blueprint projects. In some cases, Commission services were involved because of their leading role in certain domains and their close work with the industries in question. For example, to update blockchain-related concepts, ESCO worked closely with DG Connect and the leading European blockchain association. To update EU funds management concepts, ESCO worked closely with DG REGIO and national experts already working with the latter. The Commission will share a list with experts that were involved in or provided input for the update of ESCO. The Commission also welcomed any proposals or feedback for additional experts.

- Participants asked about the ‘disguised skills’ including transversal skills. If many transversal skills are moved from a certain sector to the transversal skills, how does that change the nature of the skills in that particular sector?
- Participants asked about ‘proficiency levels’ to be added in ESCO and whether this will be put on the table for further discussion.

> The Commission indicated that this will potentially be discussed for ESCO v1.2 or ESCO v2.0 as this is also a question of metadata. At this point, it is not a question of time but the availability of the proper tools, AI tools in this case. Currently the maintenance of ESCO is a fully manual process, which would make the addition of proficiency levels too time-consuming. With the help of AI, such exercise becomes more feasible.

The Commission welcomed further feedback and comments in writing within one week in order to be able to discuss further with the Member States Working Group on November 5th.

Follow up actions:

- Members may provide additional written feedback within about a week. The Commission will then include this feedback in the discussion with the Member States Working Group of November 5th, and in the further development of ESCO v1.1.
- The Commission to provide a document detailing the sources of the new content.

3.3 Thematic block 2: Data for Artificial Intelligence in ESCO

3.3.1 Perspectives of using Artificial Intelligence in ESCO:

The Commission presented some perspectives of using Artificial Intelligence (AI) in ESCO.

Main points during the subsequent discussion were as follows:

- Participants understood the potential of AI for future developments. However, there is some caution as to jumping too quickly in the positive results. For example, existing models from Facebook or Google are in English. How to ensure the quality in every language to account for semantic differences between similar languages (e.g. Dutch spoken in the Netherlands vs Dutch spoken in Belgium)?
 - > The Commission clarified that researchers indeed first publish their work in English. However, nothing in the pipeline is depending on the English language. Every model that is being developed is kept as generic as possible and can be extended to other languages. Additionally, models that are now being published have advanced significantly and are available in many languages. However, even these multilingual models might perform better in English. To evaluate the quality, benchmark datasets are needed, and this preferably for every language. The Commission further added that languages are very important, especially in the context of ESCO. For example, in the pilot project to link learning outcomes to ESCO skills, the challenges with different languages and the performance of AI suggestions have been clearly identified.
- Participants asked about the timeline of these developments.
 - > The Commission clarified that ‘mapping of raw text to ESCO’ is the first building block being developed because it is already applicable in different situations, for example in mapping different taxonomies.
- Participants asked for more information on the methodology that was used, especially in relation to online vacancies.
 - > The Commission explained that online vacancies are not used yet to develop the models but the idea is to implement a similar approach with data extracted from online vacancies. Despite the fact that a hard timeline could not be provided at this time, the goal is to use AI for ESCO v1.2, which means that this technology will be further developed during 2021.
- Participants asked what NLP (natural language processing) models are being used.
 - > The Commission clarified that currently word2vec and similar models for semantic text embeddings are being used.

3.3.2 Workshop: Data and their potential sources for the usage of AI in ESCO’s maintenance and updates

The MAI members participated in the workshop in three groups.

Main points during the plenary discussion were as follows:

- Mapping manually (as was done during the v1.1 exercise) proved not straightforward. There were different viewpoints which illustrated that it is even harder for a machine to grasp all the nuances. For example, there was a need for a clearer definition of what an ‘exact’, ‘narrow’ or ‘close’ match is. Models are evaluated based on the overlap between results validated by experts and results coming from the machine. The goal is to increase that overlap as much as possible.
- The large number of skills and links makes it very hard to keep ESCO consistent.
- It is good to use real world data, such as online job vacancies, in order to develop such AI tools but also this comes with challenges. For example, many vacancies (especially from smaller organisations) contain skills from different occupations. In other cases, some skills are implicit to the job title and not explicitly mentioned. The conclusion was that AI can definitely help processing data more efficiently but in the end it is humans who should take the final decision.
- There is much more data available in English than in other languages.
- The models/algorithms should be transparent as well as the data that was used to train the model.
- Data sources should be weighted to compensate for distortions. For example, if the dataset contains more data in a certain language compared to others, this should be taken into account when training the model.
- In some smaller or specialised sectors, recruitment is often happening outside the mainstream platforms, thus resulting in an underrepresentation of these occupations. Getting data from such specialised platforms can help.
- Possible applications of developed models:
 - Reference was made to O*Net which shows additional metadata such as demand of skills and occupations in the labour market.
 - Implementers use such models in knowledge engineering tools that help experts not only to identify new concepts but also to classify them in the hierarchy.
 - Suggesting skills in CV- or vacancy builders.
- Other data sources that can be used to train algorithms are:
 - Country specific taxonomies.
 - Data from the Learning Outcomes Linking pilot which provides manually validated data.
 - Data from similar ‘linking’ projects of participants.

3.4 Thematic block 3: ESCO’s terminology on transversal skills

Cedefop presented an update on the ESCO transversal skills.

Main points during the subsequent discussion were as follows:

- Participants indicated that this draft result is more clear than the original set of transversal skills included in ESCO version 1.0.
- Participants expressed the concern that even though the structure is understandable for MAI members, this is not necessarily the case for end-users who are not familiar with ESCO.
- Participants highlighted that the life skills and competences seem to be directed inwards to the person while these skills can also be directed at other people and should therefore be described in a more 'bidirectional' way. The same goes for civic skills, for example 'capability of caring for or protecting others'.
- Participants highlighted that in the 'social skills' group, emotional intelligence and empathy seem to be lacking.
- Participants asked how many skills would have been added or taken away compared to version 1, and what this means to the knock-on effect of going back to the occupation profiles in terms of reworking the descriptions of existing occupation profiles.
 - > Cedefop confirmed there will be a knock-on effect. The previous version of transversal skills was not sufficient both in terms of structure and integration. Having a clear structure and a relative limited number of single concepts, it should be easier to identify the knock-on effect.
- Participants asked about the impact on the contextual aspect of transversal skills. Transversal skills can be very different in different contexts/sectors, even when the words used are the same.
- Participants asked how the new proposed structure will fit in the existing structure, what are the consequences for the detailed skills currently in the classification, and if this will be an opportunity to de-contextualise some of these skills.
- Participants wondered whether, in case two distinct hierarchies emerge, there should be rules to avoid confusion about groups of skills e.g. working with computers.
- Participants had some doubts about grouping digital skills with health skills in the cluster 'life skills' as they are not similar in nature.
 - > Cedefop clarified that digital skills played a big role in the first version of the transversal skills in ESCO version 1.0, in which there were many digital skills included in the cross-sectoral and transversal skills. This played a role in placing them in this new structure.
- Cedefop acknowledged that the points raised are highly relevant and need to be processed in order to improve this draft structure on the basis of feedback on the clusters and the single concepts.

3.3.2 Workshop

The MAI members participated in the workshop in two groups. Main points during the plenary discussion were as follows:

- With regards to the integration of the transversal skills in ESCO, two scenarios emerged:
 - keep a separate transversal skills hierarchy, in parallel with the existing skills hierarchy; or
 - integrate the clusters into the overall skill hierarchy

The best scenario may depend on the feedback of ESCO implementers. The two scenarios might also coexist in that the transversal skills hierarchy can exist separately but also as integrated, for example through contextualisation. There is an agreement that the interaction between the two structures is the key point for further discussion.

- The participants observed that there are duplicates between the current and the new transversal skills list. A thorough quality check is needed before further integration.
- Currently there are four parallel hierarchies among which ‘Languages’ and ‘Attitudes and Values’. These are already included in the new transversal skills hierarchy, which would mean they need to be replaced by the new hierarchy.
- The participants suggested to add additional metadata to the skills by using ‘labels’ such as for example ‘green skills’, a certain sector, ‘STEM’, etc. This can facilitate implementers in locating the skills faster.
- Participants expressed the need for guidance on how to use these transversal skills in practice. For example, it is important that employers are able to understand what the ‘general terms’ mean in a practical situation.
- Participants indicated the need to reduce the complexity (both in number and structure) in ESCO rather than increase it. Too many categories should be avoided, and attention should be paid to the naming of groups and concepts in order to avoid overlap. For example, ‘Attitudes and Values’ and ‘Languages’ could be integrated.
- The Commission concluded that, as a next step, it will look how to best organise a wider consultation.

3.5 Thematic block 4: The upcoming new ESCO portal

3.5.1 The new ESCO portal

The Commission presented the state of play of the new ESCO portal currently in development. During the subsequent discussion, the Commission clarified that the presented portal design was based on a testing with different stakeholders, among which were also volunteers from the MAI.

3.6 AOB

- The Commission explained consequences of Brexit on the governance of ESCO. Members of expert groups (the MAI being one of them) with only a UK nationality will

no longer be able to participate. The Commission noted that the call of interest on which the MAI is based allows for people to participate based on expertise, regardless of nationality.

- The Commission referred to the contribution of Alison Harold and Tony Bird to the ESCO project.

4. Next meeting

The next MAI meeting is scheduled for the 27^h of April 2021.

5. List of participants

List of present members and observers

Bakker Marcel, Bird Tony, Cerk Tina, Flaka Katerina, Franco Lopes Ana, Goetschalkx Gerd, Harold Alison, Hunter David, Kikute Lelde, Kopyt Marek, Kovacs Tibor, Mirski Peter, Mrcic Leo, Postavaru Nicolae, Ramombordes Cecile, Ravaioli Simone, Szebeni Kinga, Triganza Clyde, Valk Sarah, Van der Sanden Karin.

List of absent members and observers

Kozakova Diana, Kreher Wolfgang, Sundin Kenneth Oe, Ulovec Martin

List of guests

Bjornavold Jen, Branka Jiri