



European
Commission

Technical standards and formats necessary for the operation of the EURES Common IT Platform

European Skills, Competences,
Qualifications and Occupations

ESCO



European Skills,
Competences,
Qualifications
and Occupations

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1. Purpose of the document

The purpose of this document is to present the common technical standards and formats according to article 3, in particular paragraphs (2) and (3), of the Commission Implementing Decision (EU) 2018/1021¹. Member States shall apply these technical standards and formats when creating mapping tables for the purpose of automated matching through the EURES common IT platform using the European classification, thus enhancing the interoperability among European public employment services.

2. Article 3 of the Commission Implementing Decision (EU) 2018/1021: Creation of mapping tables

The first four paragraphs of Article 3 of the Commission Implementing Decision (EU) 2018/1021 stipulate the following:

1. Member States that use national, regional or sectoral classifications when recording information related to occupations, skills or competences in national systems for job vacancies or job seeker profiles connected to the single coordinated channel, within the meaning of Article 18 of Regulation (EU) 2016/589, shall, in order to make them available to the EURES portal in accordance with Article 17(1) of Regulation (EU) 2016/589, create and use machine-readable² mapping tables³ between each of these national, regional and sectoral classifications and the European classification adopted pursuant to Article 19(2) of Regulation (EU) 2016/589.
2. Member States shall create these tables in accordance with common technical standards and formats in order to enable an effective operation of the automated matching through the common IT platform as referred to in Article 19(6) of Regulation (EU) 2016/589.
3. The technical standards and formats referred to in paragraph 2 shall consist of: (a) the set of information to be included in the mapping tables; (b) a syntax⁴ to express this set of information.
4. The European Coordination Office for EURES shall communicate and make available the technical standards and formats referred to in paragraph 2 on the EURES portal Extranet.⁵

¹ Commission Implementing Decision (EU) 2018/1021 of July 2018 on the adoption of technical standards and formats necessary for the operation of the automated matching through the common IT platform using the European classification and the interoperability between national systems and the European classification

² Article 2 of the Commission Implementing Decision (EU) 2018/1021 defines ‘machine-readable’ as information presented in a format that can be easily processed by a computer.

³ Article 2 of the Commission Implementing Decision (EU) 2018/1021 defines ‘mapping tables’ as machine-readable correspondence tables that express how concepts in one classification relate to one or more concepts in another classification. Mapping tables are used for automatic transcoding of information for the purpose of automated matching through the common IT platform.

^{4,5} Article 2 of the Commission Implementing Decision (EU) 2018/1021 defines ‘syntax’ as the rules and arrangements for the presentation of information in a structured way.

3. Overview of the format

The Member States should provide the set of information in a comma-separated values (CSV)⁶ file. CSV expresses tabular data (i.e. spreadsheet data) in plain text, which is convenient for the exchange of information among homogenous systems.

The specific CSV type that the EURES platform supports uses a plain comma (i.e. U+002C/“;”) as a delimiter and encodes text using the UTF-8 character encoding⁷.

4. Preview of the data

The common EURES IT platform uses a specific model of CSV data in order to standardise the position of the different information during the import/export of the mapping data procedure. Below you can see a snapshot of this model in:

- **Plain text:** Mapping data preview in plain text (Figure 1);
- **Using spreadsheet editor:** Mapping data preview using a spreadsheet editor (Figure 2).

Figure 1: Mapping data preview in plain text

```
1 *****
2 Mapping project name,ESCO - Slovenia Occupations
3 Mapping project author,ESCO Secretariat
4 Mapping project version,N/A
5 Mapping project version date,2018-06-11
6 Classification 1 Name,Poklici ESCO
7 Classification 1 Concept type,Occupation
8 Classification 1 Version,1.0.3
9 Classification 1 Language,sl
10 Classification 1 Landing page,https://ec.europa.eu/esco/portal/occupation
11 Classification 2 Name,Slovenščina poklice
12 Classification 2 Concept type,Occupation
13 Classification 2 Version,1.0.0
14 Classification 2 Language,sl
15 Classification 2 Landing page,
16 *****
17 *****
18 Classification 1 URI,Classification 1 PrefLabel,Classification 1 URL,Classification 2 ID,Classification 2 PrefLabel,Classification 2 URL,Mapping relation,Editorial note
19 http://data.europa.eu/esco/occupation/579254cf-6d69-4889-9000-9c79dc568644,inženir/Inženirka strojništva,http://data.europa.eu/esco/
occupation/579254cf-6d69-4889-9000-9c79dc568644,2144.01,Inženir strojništva,,skos:exactMatch,
20 http://data.europa.eu/esco/occupation/dbc88790-a8c1-4dc4-9507-8f9dcff9c990,inženir/Inženirka strojništva za motorje,http://data.europa.eu/esco/occupation/
dbc88790-a8c1-4dc4-9507-8f9dcff9c990,2144.06,Inženir strojništva za motorje in vozila,,skos:broadMatch,
```

Figure 2: Mapping data preview using a spreadsheet editor

⁵ <http://eures.europa.eu>

⁶ <https://tools.ietf.org/html/rfc4180>

⁷ http://ec.europa.eu/ipg/standards/unicode/index_en.htm

Mapping project name	ESCO - Slovenia Occupations						
Mapping project author	ESCO Secretariat						
Mapping project version	N/A						
Mapping project version date	2018-06-11						
Classification 1 Name	Poklici ESCO						
Classification 1 Concept type	Occupation						
Classification 1 Version	1.0.3						
Classification 1 Language	sl						
Classification 1 Landing page	https://ec.europa.eu/escportal/occupation						
Classification 2 Name	Slovenščina poklice						
Classification 2 Concept type	Occupation						
Classification 2 Version	1.0.0						
Classification 2 Language	sl						
Classification 2 Landing page							
Classification 1 URI	Classification 1 PrefLabel	Classification 1 URL	Classification 2	Classification 2 PrefLabel	Classification 2 UF	Mapping relation	Editorial note
http://data.europa.eu/escportal/occupation/inzenir/inzenirika-strojnistva	inzenir/inzenirika strojnštva	http://data.europa.eu/2144.01	Inženir strojnštva			skos:exactMatch	
http://data.europa.eu/escportal/occupation/inzenir/inzenirika-strojnistva-za-motorje	inzenir/inzenirika strojnštva za motorje	http://data.europa.eu/2144.06	Inženir strojnštva za motorje in vozila			skos:broadMatch	
http://data.europa.eu/escportal/occupation/inzenir/inzenirika-strojnistva-za-vozila	inzenir/inzenirika strojnštva za vozila	http://data.europa.eu/2144.06	Inženir strojnštva za motorje in vozila			skos:broadMatch	
http://data.europa.eu/escportal/occupation/inzenir/inzenirika-strojnistva-za-aerodinamiko	inzenir/inzenirika strojnštva za aerodinamiko	http://data.europa.eu/2144.08	Inženir letalskega strojnštva			skos:broadMatch	
http://data.europa.eu/escportal/occupation/inzenir/inzenirika-strojnistva-za-aeronavtiko-in-astro	inzenir/inzenirika strojnštva za aeronavtiko in astro	http://data.europa.eu/2144.08	Inženir letalskega strojnštva			skos:broadMatch	
http://data.europa.eu/escportal/occupation/inzenir/inzenirika-ladjskega-strojnistva	inzenir/inzenirika ladjskega strojnštva	http://data.europa.eu/2144.09	Inženir ladjskega strojnštva			skos:exactMatch	
http://data.europa.eu/escportal/occupation/zdravnik-specialist/zdravnica-specialistka	zdravnik specialist/zdravnica specialistka	http://data.europa.eu/2212.01	Porodničar			skos:narrowMatch	
http://data.europa.eu/escportal/occupation/zdravnik-specialist/zdravnica-specialistka	zdravnik specialist/zdravnica specialistka	http://data.europa.eu/2212.02	Pediater			skos:narrowMatch	
http://data.europa.eu/escportal/occupation/zdravnik-specialist/zdravnica-specialistka	zdravnik specialist/zdravnica specialistka	http://data.europa.eu/2212.03	Urolog			skos:narrowMatch	
http://data.europa.eu/escportal/occupation/zdravnik-specialist/zdravnica-specialistka	zdravnik specialist/zdravnica specialistka	http://data.europa.eu/2212.04	Transfuziolog			skos:narrowMatch	
http://data.europa.eu/escportal/occupation/zdravnik-specialist/zdravnica-specialistka	zdravnik specialist/zdravnica specialistka	http://data.europa.eu/2212.05	Kardiolog			skos:narrowMatch	
http://data.europa.eu/escportal/occupation/zdravnik-specialist/zdravnica-specialistka	zdravnik specialist/zdravnica specialistka	http://data.europa.eu/2212.06	Psihiater			skos:narrowMatch	
http://data.europa.eu/escportal/occupation/zdravnik-specialist/zdravnica-specialistka	zdravnik specialist/zdravnica specialistka	http://data.europa.eu/2212.07	Otorinolaringolog			skos:narrowMatch	
http://data.europa.eu/escportal/occupation/zdravnik-specialist/zdravnica-specialistka	zdravnik specialist/zdravnica specialistka	http://data.europa.eu/2212.08	Ortoped			skos:narrowMatch	

As you can see in the images, the data is split into two distinct sections:

- **Metadata header:** Contains information such as 'Mapping name' or 'Classification 2 Landing page'. This section provides information about i) the mapping project and ii) the source and the target classification. This section is described in further detail in Section **6. Metadata header structure**.
- **Mapping relations:** Contains information such as 'Classification 1 URI' or 'Editorial note' for each mapping relation that was established. This section is described in further detail in Section **7. Mapping relations structure**.

5. Data structure

The Member States should provide information for the properties mentioned in the Sections **6. Metadata header structure** and **7. Mapping relations structure**. The tables in these Sections use the generic terminology "Classification 1" and "Classification 2". "Classification 1" refers to the European classification and "Classification 2" refers to the Member States classification according to the Implementing Decision under Article 19(2) EURES Regulation.

The Sections define each of these properties with the following indicators:

- **Description:** Gives a meaning to the property.
- **Range:** Indicates the type of content that should be used in this property.
- **Example:** Exemplifies content of each property.
- **Validation:** The type of validation that can be run on this property. This column also indicates whether the incorrect content is considered an 'error' or 'warning'. The types of validation are described in Section 6: Types of validation.



Note: 'Errors' must be resolved to successfully process the data. 'Warnings' can be ignored, if the Member State decides so.

The properties in the sections **6. Metadata header structure** and **7. Mapping relations structure** are validated for their correctness based on a set of rules. The following is an indication of the types of these validations:

- **Match range:** The property must be present in the data and its content must match the indicated range.
 - **For example:**

Mapping relation – “skos:broadMatch”	>	■ Correct
Mapping relation – “broad”	>	■ Incorrect
Mapping relation – “”	>	■ Incorrect
- **Must exist:** The content of the property must match an existing concept in the related classification.
 - **For example:** (concept 2144.06 exists in the Classification 2)

Classification 2 ID – 2144.06	>	■ Correct
Classification 2 ID – 2144.06a	>	■ Incorrect
Classification 2 ID – .06	>	■ Incorrect
- **Match content:** The content of the property must exactly match the equivalent one in the related classification.
 - **For example:** (The name of Classification 1 is ‘ESCO’)

Classification 1 Name – ‘ESCO’	>	■ Correct
Classification 1 Name – ‘ESCO Classification’	>	■ Incorrect
Classification 1 Name – ‘ESKO’	>	■ Incorrect

6. Metadata header structure

Below you can see a list of the properties of the metadata header.

Property name	Description	Example	Range	Validation
Mapping project name	Name of the mapping project	ESCO - Slovenia Occupations	String	<i>Error level:</i> Match content
Mapping project author	Name of the organisations that performed the mapping	Employment Service of Slovenia	String	<i>Error level:</i> Match content
Mapping project version	Indication of the version of the mapping	V1.0	String	None
Mapping project version date	Indication of the date when the mapping was finalised	2018-06-11	Date	<i>Error level:</i> Match range
Classification 1 Name	Name of the primary classification	Poklici ESCO	String	<i>Error level:</i> Match content
Classification 1 Concept type	Concept type of the primary classification	occupation	"occupation" or "skill"	<i>Error level:</i> Match content
Classification 1 Version	Version indication of the primary classification	1.0.3	String	<i>Error level:</i> Match content
Classification 1 Language	Indication of the default language of the primary classification	sl	Language indicator ⁸	<i>Error level:</i> Match content
Classification 1 Landing page	Indication of the URL where the primary classification can be accessed	https://ec.europa.eu/esco/portal/occupation	URL	<i>Error level:</i> Match content

Classification 2 Name	Name of the secondary classification	Slovenščina poklice	String	<i>Error level:</i> Match content
Classification 2 Concept type	Concept type of the secondary classification	occupation	"occupation" or "skill"	<i>Error level:</i> Match content
Classification 2 Version	Version indication of the secondary classification	1.0.0	String	<i>Error level:</i> Match content
Classification 2 Language	Indication of the default language of the secondary classification	sl	Language indicator ⁸	<i>Error level:</i> Match content
Classification 2 Landing page	Indication of the URL where the secondary classification can be accessed	https://www.stat.si/skp/	URL	<i>Error level:</i> Match content

⁸ The values should be aligned with the Language controlled vocabulary provided by the The Publications Office of the European Union:
<https://publications.europa.eu/en/web/eu-vocabularies/at-dataset/-/resource/dataset/language>

7. Mapping relations structure

The table below lists the properties that can be provided for each mapping relation. A mapping relation is a relation between a concept in one classification and one or more equivalent types of concepts in another one.

Property name	Description	Example	Range	Validation
Classification 1 URI	Uniform resource identifier (URI) used to globally uniquely denominate a concept in primary classification (in case such an identification method is used)	http://data.europa.eu/esco/occupation/579254cf-6d69-4889-9000-9c79dc568644	URI	<i>Error level:</i> Must exist ⁹
Classification 1 ID	The identifier used to locally uniquely denominate a concept in primary classification (in case such an identification method is used)	2144A	String	<i>Error level:</i> Must exist ^{Error!} Bookmark not defined.
Classification 1 PrefLabel	The default name of the concept in the primary classification	inženir/inženirka strojništva	String	<i>Warning level:</i> Match content
Classification 1 URL	A URL where the concept in the primary classification can be viewed online	http://data.europa.eu/esco/occupation/579254cf-6d69-4889-9000-9c79dc568644	URL	<i>Warning level:</i> Match content
Classification 2 URI	URI used to uniquely denominate a concept in secondary classification (in case such an identification method is used)	https://www.stat.si/skp/2144.01	URI	<i>Error level:</i> Must exist
Classification 2 ID	The identifier used to uniquely denominate a concept in secondary	2144.01	String	<i>Error level:</i> Must exist

⁹ Either 'Classification # URI' or 'Classification # ID' must be present in the file. Whether URI or ID is used depends on the technical implementation of the given classification.

	classification (in case such an identification method is used)			
Classification 2 PrefLabel	The default name of the concept in the secondary classification	Inženir strojništva	String	<i>Warning level:</i> Match content
Classification 2 URL	A URL where the concept in the secondary classification can be viewed online	https://www.stat.si/skp/browse/url=2144.01	URL	<i>Warning level:</i> Match content
Mapping relation	Indication of the type of relation that was established between the related concepts	skos:broadMatch	skos:exactMatch ¹⁰ skos:broadMatch ¹¹ skos:narrowMatch ¹² skos:closeMatch ¹³	<i>Error level:</i> Match range
Editorial note	A text note provided to clarify reasoning behind the established mapping relation for future reference	This mapping was established due the similarity between the work context of the occupations.	String	None

¹⁰ The property skos:exactMatch is used to link two concepts, indicating a high degree of confidence that the concepts can be used interchangeably across a wide range of information retrieval applications. skos:exactMatch is a transitive property, and is a sub-property of skos:closeMatch.

¹¹ The property skos:broadMatch is used to state a hierarchical mapping link between two concepts.

¹² The property skos:narrowMatch is used to state a hierarchical mapping link between two concepts.

¹³ The property skos:closeMatch is used to link two concepts that are sufficiently similar that they can be used interchangeably in some information retrieval applications. In order to avoid the possibility of "compound errors" when combining mappings across more than two concept schemes, skos:closeMatch is not declared to be a transitive property.

