

Submission to the EDF2014 Call for Contributions

Contributors **Martin le Vrang**

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Short bios **Martin:** Since 2010 Martin le Vrang is team leader for ESCO in the unit "Skills, Mobility and Employment Services" of DG Employment, Social Affairs and Inclusion.

Before joining the European Commission Martin was managing partner of an Internet start-up for six years. The company developed Internet applications for SME and provided a blog hosting platform.

Martin studied in Germany and New Zealand, graduating in business administration, computer science and European law. During his studies he worked as an intern in various functions and in several economic sectors (automotive, chemical industry, broadcasting, social services).

Agis: Since early 2013 Agis Papantoniou is the Senior Project Manager of the SemTech Business Unit of TenForce, managing the ESCO project. During the last years Agis has been a Senior Researcher and Visiting Lecturer at the School of Electrical and Computer Engineering (ECE) of the National Technical University of Athens (NTUA), performing research and tuition on Linked Open Data.

Agis studied in Greece, receiving his PhD in Knowledge Engineering and Semantic Web Technologies in 2003. Thereafter he has been involved in various Semantic Web and LOD initiatives, also being the technical project lead of publicspending.gr, the first LOD initiative in Greece involving Greek Public Expenditure. From September 2012 until February 2013 he was an Invited Expert in the W3C Government Linked Data Working Group.

Type of presentation **In-use contribution**

Title of the presentation **ESCO – enhancing semantic interoperability in the labour market and in education/training throughout Europe**

Summary of the presentation Together with stakeholders the European Commission develops a multilingual classification of European Skills, Competences, Qualifications and Occupations (ESCO). ESCO was released in October 2013 and can be accessed at <http://ec.europa.eu/esco>.

The presentation will cover the following aspects:

- Role of semantic interoperability in exchanging data, in particular in a multilingual environment;

- Conceptual approach of ESCO: Mapping classification systems to a European umbrella classification using Linked Open Data;
- High level overview of components and technology used to implement the project;
- Business cases illustrating how ESCO as a semantic asset can be used in practice.
- Demo and short presentation of the ESCO LOD API.

**Extended
summary of
the
presentation**

What is ESCO?

The European Commission (DG Employment, Social Affairs and Inclusion and DG Education and Culture) is co-ordinating the development of a multilingual classification of European Skills, Competences, Qualifications and Occupations (ESCO). ESCO is being developed with the support of the European Centre for the Development of Vocational Training (Cedefop) and in close collaboration with stakeholders.

Stakeholders play a key role for the project, from strategic decision making (ESCO Board), over quality assurance (ESCO Maintenance Committee) to content creation and validation (Reference Groups).

ESCO has been launched on a conference in Brussels on 23 October 2013. It can be accessed via <http://ec.europa.eu/esco>.

Semantic interoperability

Exchanging data does not only require a technical, organisational and legal framework. It also needs a shared understanding of the *meaning* of the information to achieve semantic interoperability. Achieving this shared understanding is particularly challenging in multilingual settings, such as the exchange of data between organisations from different European countries.

How does ESCO increase semantic interoperability?

On labour markets and in education and training, we perceive a communication gaps due to the lack of semantic interoperability. Information between different European countries or between the labour market and the education sector is not exchanged in a "common language".

ESCO aims at improving the semantic interoperability on the labour market and in education/training throughout Europe. To achieve this, ESCO uses an approach of mapping national classification systems to each other and publishing the classification and the mappings as linked open data. It is available in 25 languages and serves as common reference that can be used to interpret the exchanged information.

ESCO is also integrated with other European transparency instruments, such as the European Qualifications Framework (EQF).

How is ESCO being implemented?

ESCO is improved in a pragmatic and step-wise approach. New releases are

foreseen on a regular basis, leading to a complete revision of the classification until 2017. The development of ESCO covers the following aspects:

Content creation: Sectoral and cross-sectoral experts (Reference Groups) develop the content of ESCO. Terminologists create the 25 language versions of ESCO. This process is supported by tools for managing workflows and creating the classification in an iterative process. Taxonomy management tools allow preparing releases in a back-end. Data mining tools for semantic enrichment of the classification are envisaged.

Quality assurance: Several quality assurance steps are built into the process before a new version of the taxonomy is released. Labour market experts and the ESCO Maintenance Committee assess the quality of the classification, before the ESCO Board endorses it for release.

Linking ESCO: Mapping national, regional and sectoral classifications is in a pilot phase. The development of a mapping environment will include documentation, tools for semi-automated taxonomy alignment and dissemination of mappings.

Data dissemination: ESCO is made accessible to human users via the ESCO Portal. It allows searching for terminology, browse through the classification and download it in various formats. The ESCO portal also provides the possibility to download the complete classification in RDF format for use in applications. In the near future, this will be complemented by a LOD API and a service API to further improve machine-to-machine communication based on ESCO.

How can ESCO be used in practice?

ESCO can be used in applications to increase their coverage to other European countries and to manage multilingualism. ESCO is tailored for use in applications such as:

- Online job portals (e.g. <http://eures.europa.eu>)
- Career guidance tools
- CV creation and processing (e.g. <http://europass.cedefop.europa.eu>)
- Databases of learning outcomes (e.g. <http://ec.europa.eu/ploteus>)
- Skills intelligence (e.g. <http://euskilspanorama.ec.europa.eu>)