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Project overview

Goal of the project - *(text from the Proposal)*

The project focuses on education and job balance in Andalusia region featured by high rates of unemployment and the mismatch of qualifications. This system will be based on competence-based approach identifying Knowledge and Skills required by the world of labour and adapting the learning outcomes in the Educational regional system.

The main goal of the project is to investigate the compliance between job market expectations (labor market demand through available job postings) and educational offers (learning outcome described by competencies acquired by completing a course).

Other Specific objectives are - *(text from the Proposal)*

- *To improve collaboration between VET, institutional and business sectors.*
- *To design and validate an ontology-based adaptive tool that mapped companies' and education competences.*
- *To identify and anticipate new emerging jobs and market needs.*

The SMART system is envisaged to provide periodic review on how the regional educational output meets the labor market demand articulated in job postings and other strategic documents. The report will provide feedback for the individual VET providers and educational institutions on the compliance of their curricula (in terms of competencies acquired) with the real labor market needs (in terms of competencies required). The SMART system is capable of discovering new emerging skills and jobs.

The outcome of SMART system will be an essential tool to improve the collaboration between VET and the business sector.

Objectives of SMART System

The overall objective of the SMART SYSTEM is to provide a methodology and a tool to check efficiently the level of compliance in a timely, effective and localized manner.

The objectives of WP3 are

- the validity of the SMART in managing (and anticipating) the job market and educational sector mismatches;
- the effectiveness of the SMART SYSTEM in analysing, anticipating, resolving competences matches/gaps (also in terms of guidance services and of learning resources) *(text from the Proposal)*

Pilot es

*The SMART system prototype will be tested in the Andalusia Tourism Industry as a potential source of emerging jobs in our region and a clear example about deviations between both sector needs and learning outcomes. In this sense, the **Observatory for Human Resources in the Tourism Sector of Andalusia (ORSTA)** has made an in-depth analysis on the functioning of the labour market in the tourism sector in Andalusia. This analysis notes how the demand and offer in the sector is remarkably not well balanced yet. (Text from the proposal)*

The preconditions of the pilot run is the ontology developed on the tourism domain, the highest number possible of VET providers and educational institutions identified and their curricula mapped, and a vast number of job postings identified and processed.

e-Learning

The e-learning environment will be also adapted in this phase. INERCIA will be in charge of this adaptation from their Moodle platform. (text from proposal)

SMART system results will be published on the SMART project website. Emerging skills and knowledge areas will be highlighted. Relevant learning material will be accessible on the Moodle platform of Inercia Digital. The Moodle system will be accessible by direct link from SMART project website.

Benefits for stakeholders

The end product of this project provides benefits for policy makers and educational experts too. They will access to the system after registration. The report about the compliance checking will be readable only for the authorized persons. The main beneficiaries are the Chamber of Commerce of Sevilla and Fundación Universidad Sociedad de la Universidad Pablo de Olavide.

Chamber of Commerce of Sevilla

The main benefits for CCSEV are:

- to receive an overview about the balance between the demand of labour market and supply of labour market.
- the possibilities for closing the gap between current educational offer and labour market needs:
 - the missing competences may be provided by the training offers of Inercia Digital
 - the extra competences are taken into the consideration of decision makers.

- the common competences are examined from regional and temporal perspectives.

Fundación Universidad Sociedad de la Universidad Pablo de Olavide

The main benefits for Fundación Universidad are:

- - to receive an overview about the balance between the demand of labour market and supply of labour market.
- the possibilities for closing the gap between current educational offer and labour market needs:
 - the discovered missing and extra competences provide information for decision makers to restructure its training programs.
 - the common competences are examined from regional and temporal perspectives.

Exploitation

The technology developed in this project can be adapted for other industries or regions. So CCSEV can service this system for their business partners or the educational institutions too.



The SMART System overview (WP3)

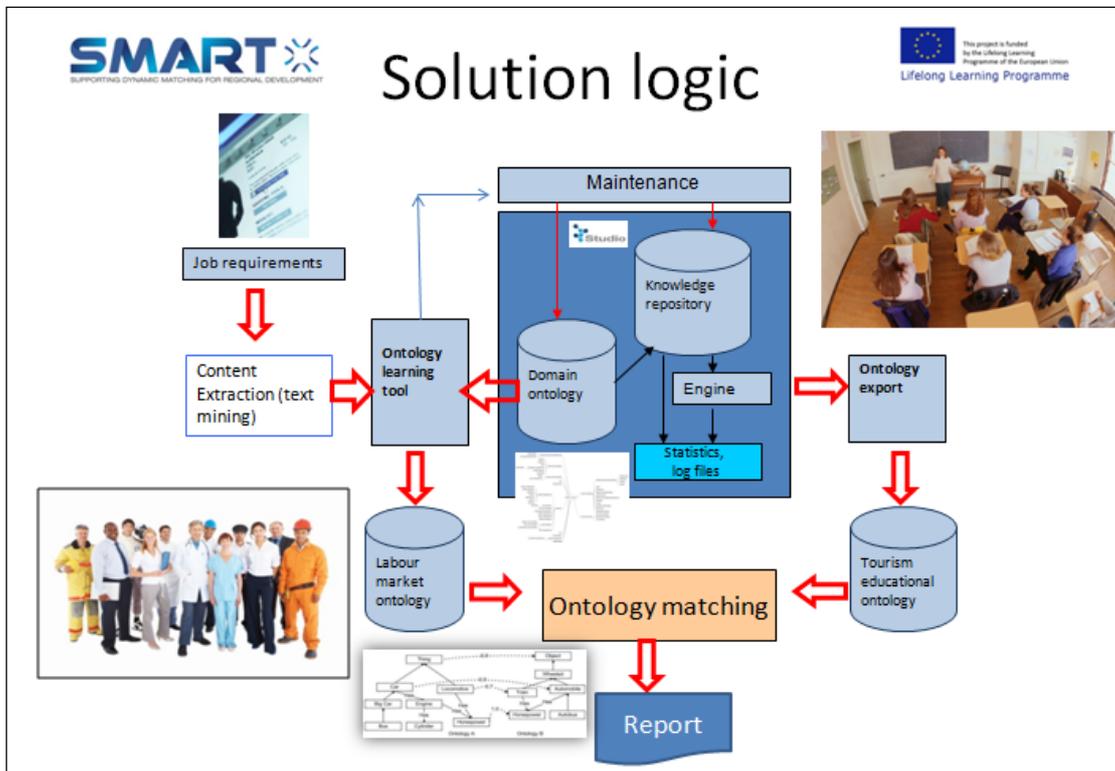


Figure 1. Solution logic of the SMART System

STUDIO

Studio is a competence-based e-learning methodology and system which provides support in exploring missing knowledge areas of users in the frames of an ontology driven e-learning environment in order to help them to complement their educational deficiencies. The ontology method helps to the problem solving with eLearning materials.

The Domain Ontology is **the core of this system**. It contains competences, mostly knowledge elements, in structured manner. In this project, we need to elaborate general domain ontology for tourism sector. The first draft of this ontology (see in Figure 2.) was created based on four related documents¹. On the left side of the

Domain Ontology figure general knowledge elements are illustrated, related to tourism. On the right side tourism products and job roles appear which are constructed by the aforementioned knowledge elements as building blocks. Hence, nomenclature, job roles in the tourism sector are interpreted as a special view of the knowledge elements, knowledge blocks.

One of the main tasks in the SMART project is to develop and populate the ontology with new competence elements. Based on the MISLEM project's methodology, the new competence elements will be identified. The logic of STUDIO, and the system itself will help to structure the new competencies into an ontology.

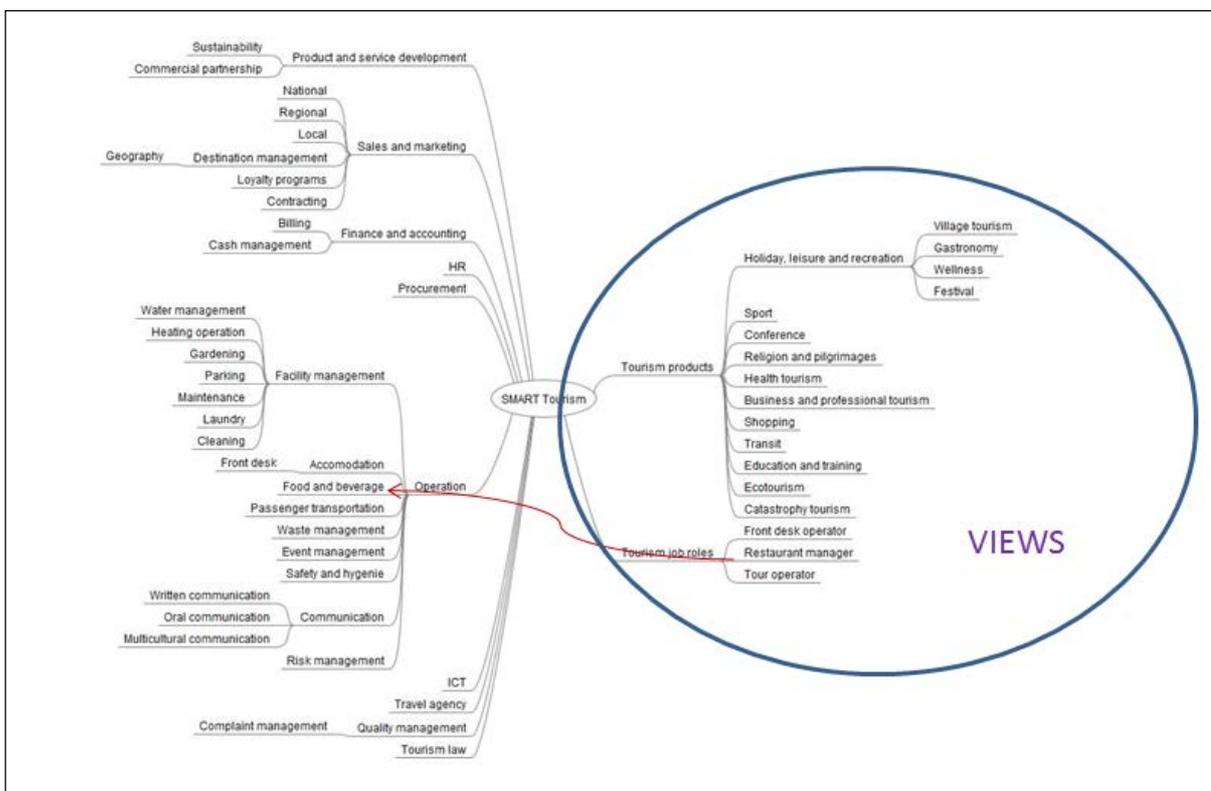


Figure 2. First draft of the Domain Ontology

Strietska-Ilina, O., Tessaring, M., & Jonckers, P. (2005). *Trends and skill needs in tourism* (Vol. 115). Office for Official Publications of the European Communities.

Anon (2006). *Regional model competency standard: tourism industry*, International Labor Office

Anon (2009). *Comprehensive sectoral analysis of emerging competencies and economic activities in the European Union – Hotels and restaurants*, European Community Programme for employment and Social Solidarity – PRogReSS (2007-2013)

Vassallo, R. (2010) *Skills and Competencies for Employability in Tourism*. The Yes Project: Research and Analyses. Institute of Tourism Studies, Malta. P.100

The objective of SMART is to investigate the compliance between job market expectations and educational offers, in a timely and localized manner. Therefore a **demand and a supply specific view** will be created from the ontology, referring to a given time period and place. The demand will be represented by job vacancies published and collected from job portals. Another source of information is the national qualification, occupational and classification frameworks².

The frameworks characterize the occupations in a standard manner. The online job offers contain information about the position name, the working place, the validity period and the job description. In some cases, the job descriptions are ill-defined. In order to avoid potential mistakes, an occupation is characterized by standard description originated from occupational classification framework or other relevant official sources, and information from job offers is added to the general description.

The supply is represented by the competencies offered by the educational institutions. Competencies may be explicitly given or derived from training programs, syllabi, etc. The latter mentioned activities are assumed as 'manual' contributions of the local staff.

The mentioned specific views of the Domain Ontology will be created either manually or using the ontology learning tool. This tool searches expressions as patterns in the text of job offers, syllabi, in order to identify competence elements already included into the Domain Ontology.

Time, volume and regional attributes are associated to the ontology elements which are extracted from the processed documents (in case of job offers the working place, validity period of the job offers; in case of educational institutions, the geographical position, output volume data).

The subontologies behind of the specific views enable the comparison, in other words the ontology matching. We will match the demand of the labour market with the supply of a one or a set of regional educational institutions.

The report will include extra, missing and common competence elements, in timely and localized manner. Partners help to evaluate and interpret the evaluation method, represented in the report given by the system. Following this evaluation method, persons outside the consortium will be able to interpret the results.

² e.g. ISFOL, O*NET (www.onetonline.org), BDC Catalogue of Incual <https://www.educacion.gob.es/iceextranet/bdqCualificacionesAction.do>



Action points

AP 1. Collecting regional educational output

Educational institutions collect the output competencies (following the MISLEM methodology and tipology).

AP 2. Investigation of regional job market

Chamber of Commerce will collect the most relevant job portal addresses, and any other additional materials which help to identify required competencies.

AP 3. Collecting information from job offers

Collecting websites of national occupational classifications (like O*Net, Isfol, CNCP etc.) that contain required competences or job descriptions. Collecting relevant, widely used job portals (maybe including job offers in English) where we can filter the job offers by region.

