

AGENDA

EVENT NAME	Big Data for Labour Market Information – focus on data from online job vacancies – training workshop
LOCATION	Hotel Hilton, Milan - Via Luigi Galvani 12, 20122, Milan, Italy https://hilton-milan.hotels-milan.info/en/
DATE(S)	21-22 November 2019



INTRODUCTION AND OBJECTIVES

Under the framework of Eastern Partnership (EaP) multilateral cooperation, notably Platform 4 (People to People), the European Commission and ETF co-organise a training workshop on 21-22 November 2019, in partnership with the University Milano-Bicocca and TabulaeX.

Participants of the “Make it Match” experts network of EaP, which ETF supports since 2014, expressed high interest to learn more on the application of Big Data analytics in the context of Labour Market information (LMI). At several workshops of the network in 2016-2019, participants had exposure to concepts and examples of how Big Data can be explored for analysis of labour market and skills dynamics. This workshop provides a deeper understanding of the concepts, value, methodological approach and architecture solutions of Big Data for LMI (focus on OJV data).

The publication in June 2019 of the synthetic handbook “*Big Data for Labour Market Intelligence – a brief introductory guide*”¹ offers new possibilities for dissemination of well systematised information on the potentialities, requirements, the approach and the concrete architectural solutions for data gathering

¹ <https://www.etf.europa.eu/sites/default/files/2019-06/Big%20data%20for%20LMI.pdf>

from online job vacancies (OJV) websites, classification, analysis and visualisation. To undertake this initiative ETF worked together with data scientists and researchers of CRISP², the research centre of the University Milano-Bicocca.

Big Data analytics offer new possibilities to improve labour market information and deliver real-time and fine-grained skills analysis and insights for users. Big Data is all around us. Big Data is characterised by volume, variety, velocity and eventually - value. Machine learning and artificial intelligence algorithms, combined with immense computing power of anytime and anywhere allow data science to exploit certain Big Data sources, which have large potential to supplement and enrich conventional LMI: it is the case of online job vacancies (OJVs) managed by a large variety of online job portals and boards.

OJVs are a rich source of information about the skills and other job requirements that employers require, which is difficult to gather via other conventional methods. Data from OJVs does not replace other types of labour market information, but add value and can be combined with conventional statistical data.

Cedefop works on a vast database and visualisation tool based on analysis of millions of OJVs of European Union (EU) Member States – OVATE (Online Vacancy Analysis Tool for Europe): <https://www.cedefop.europa.eu/en/data-visualisations/skills-online-vacancies>. This tool presents data collected from July 2018 until March 2019 in Austria, Belgium, Czech Republic, Denmark, Germany, Hungary, Spain, Finland, France, Italy, Ireland, Luxembourg, the Netherlands, Poland, Portugal, Sweden, Slovakia and the United Kingdom. Other EU Member States will be included in 2019. This is the first large scale multi-country experience of the use of Big Data analytics and the KDD process for labour market information.

Eight previous thematic workshops took place in June 2014 (Turin), in June 2015 (Helsinki), in November 2015 (Paris), in June 2016 (Maastricht), in November 2016 (Prague), June 2017 (Riga), September 2018 (Dublin), and June 2019 (Milan).

Participants of the workshop are experts in the domain: labour market statistics, research in labour market and skills dynamics, data / computer science and management of online job vacancies.

Simultaneous interpretation English-Russian will be available throughout the 2 days workshop.

² <http://www.crisp-org.it/>

Day 1: Thursday, 21st November 2019

DAY 1: understanding the approach, distinctive elements and the relevance of Big Data (online job vacancies – OJV) to analyse and understand the labour market (LM) & employers' requirements.

Chair: ETF

08.30-09.00	Registration of participants
09.00 – 09:30	Opening Objectives of the workshop. Introduction of the participants <i>Eduarda Castel-Branco (ETF), CRISP</i>
09:30 – 10.15	<u>Session 1</u> General overview of Big Data for LMI: important distinctive features, 5 Vs; potentialities, main questions in debate. Why AI is useful to Big Data? Enriching conventional LMI: a “game changer”? AI; Machine Learning, Big Data concepts; What LMI needs? Examples. <u>Speaker:</u> <i>Fabio Mercorio, Alessandro Vaccarino</i>
10.15 – 11.00	<u>Session 2: State of play of analysis of Big Data (online job vacancies) for Labour Market Information in the countries of Eastern Partnership</u> Discussion: experience-sharing with the countries on ongoing and planned Big Data projects in the domain of skills and labour market dynamics. Country cases: Armenia, Belarus 2 presentations. Q&A <u>Moderator:</u> <i>ETF</i>
11.00-11.30	▪ Coffee break
11.30 – 12.30	<u>Session 3</u> Knowledge Discovery in Databases (KDD) for LMI: overview of the steps from selection of data sources to classification, evaluation, and visualisation. What you can do with derived knowledge? Understanding the interconnections. Examples from practice and research. <u>Speakers:</u> <i>Fabio Mercorio, Alessandro Vaccarino</i>
12.30-13.30	▪ Group photo and lunch
13.30-14.00	<u>Session 4</u> Data cleaning: purposes and tools. Importance for quality and believability of the data and analysis. <u>Speakers:</u> <i>Fabio Mercorio, Alessandro Vaccarino</i>
14.00 – 15.00	<u>Session 5:</u>

	<p>Machine learning, AI algorithms: types, role, development and integration in KDD. How does it change paradigms of data analysis? Multi-disciplinarity in and domains of expertise required in KDD.</p> <p>Knowledge base. Guiding principles, concepts; instruments. Examples</p> <p><u>Speakers:</u> <i>Fabio Mercorio, Alessandro Vaccarino</i></p>
15.00 – 15.30	<p>Questions and answers on all topics of the day. Discussion, practical examples.</p>
15:30-16.15	<p><u>Session 6: Usage of results of Big Data analytics for LMI.</u></p> <p><u>Discussion in working groups:</u></p> <ul style="list-style-type: none"> ❖ What can we learn about the labour market - out of analysis of OJV portals and data: skills and occupations; how employers define distinguishing characteristics for the jobs they offer; is there a dilemma between skills and qualifications defined in OJVs? ❖ What part of demand is covered by OJVs in different countries? ❖ Is the issue of data “representativeness” a relevant question in the context of Big Data for LMI? <p><u>Moderators:</u> <i>Alessandro Vaccarino, Eduarda Castel-Branco</i></p>
18.00-20.00	<ul style="list-style-type: none"> ▪ Welcome dinner at Hotel Hilton Milan

Day 2: Friday, 22 November 2019

Focus of the day: understanding critical aspects of architecture and techniques for Big Data for LMI

Chair: Eduarda Castel-Branco, ETF

09:00 – 09:15	<ul style="list-style-type: none"> ▪ Recapitulation of day 1. Objectives and agenda of day 2 <p>Eduarda Castel Branco, ETF</p>
09:15 – 10.15	<p><u>Session 7: Architecture: solutions for real-time LMI (based on KDD)</u></p> <p>Guiding principles, concepts; instruments. Examples</p> <p><u>Speakers:</u> <i>Fabio Mercorio, Alessandro Vaccarino</i></p>
10.15 – 11.15	<p><u>Session 8: Overview of OJV websites and their use in the Eastern Partnership countries</u></p> <p>Experience-sharing with the country teams on the panorama of OJV websites: main developments, features and coverage of OJV websites. Shourt country presentations (3 countries). Discussion: comparative overview – main similarities, differences.</p>

	<p>Countries: Belarus, Georgia, Ukraine</p> <p><u>Moderation:</u> ETF</p>
11.15 – 11.30	Coffee break
11:30 – 13.00	<p><u>Session 9:</u></p> <p>Interpretation, visualisation, usage of results of Big Data for LMI - for skills anticipation, employment and skills policies, career guidance.</p> <p>How can Big Data analytics contribute to skills anticipation?</p> <p>Knowledge-base; guiding principles, concepts; instruments. Examples. Discussion.</p> <p><u>Speakers:</u> Fabio Mercorio, Alessandro Vaccarino</p>
13.00 – 14.00	<ul style="list-style-type: none"> ▪ Lunch break
14.00 – 14.45	<p><u>Session 10: Big Data for LMI and national statistics</u></p> <p>Big Data for LMI and conventional Statistics – how to converge, cooperate and find common ground?</p> <p>Eurostat presentation (to be confirmed) and debate with national statistical offices of the Eastern Partnership countries</p> <p><u>Moderation:</u> ETF</p>
14.45 – 16.00	<p><u>Session 11: group exercise - preparing a project Big Data for LMI.</u></p> <p>Simulation in country groups</p> <p><u>Indicative themes:</u></p> <p>a) defining the key objectives and questions for research;</p> <p>b) defining a simple approach to assess the coverage of the labour market (demand) by Big Data for LMI (sectors, occupations, qualifications, skills);</p> <p>c) defining the architecture and roadmap for the simulation project</p> <p>Presentation country projects. Discussion.</p> <p><u>Moderator:</u> Fabio Mercorio, Alessandro Vaccarino</p>
16.00 – 16.30	<p>General feedback: participants and experts.</p> <p>General conclusions, recommendations and next steps.</p> <ul style="list-style-type: none"> • Eduarda Castel-Branco, ETF <p>Closing remarks and closure</p> <ul style="list-style-type: none"> • ETF, CRISP - University Milano-Bicocca