BIG DATA FOR LABOUR MARKET INTELLIGENCE

ONLINE CAPACITY DEVELOPMENT PROGRAMME 2022
OPENING SESSION

Day 1: 02 November 2022
Eduarda Castel-Branco
WELCOME TO THE TRAINING PROGRAMME

Opening, objectives

Agenda

ETF Big Data LMI project

Introduction participants (poll)
OPENING: OUR PARTICIPANTS

Registered: over 90 participants

- From 20 countries
- Ukraine, Egypt, Mauritius, Kenya, Sierra Leone, Lebanon, North Macedonia, Tunisia, Italy, South Africa, Cameroon, Georgia, Maroc, Azerbaijan, Angola, Armenia, Moldova, Guiné-Bissau, UK, Belgium

Many new participants – first time in training programme of ETF project!

Thank you for your active contribution to this knowledge-sharing and knowledge creation space
OPENING: CONTEXT

• Rapid and multi-layered transformation
  ➢ Work
  ➢ Transitions between jobs
  ➢ Mix of occupations in all economies
  ➢ New and hybrid skills
  ➢ Greening and digitalization
  ➢ Learning – anytime, everywhere
  ➢ Qualifications and new credentials

• Require innovation and transformation of labour market and skills intelligence information (*LMI more important than ever!*)
  ➢ Harnessing new data sources
  ➢ Applying novel data analytics
  ➢ New forms and tools for data delivery
  ➢ Real time and granular data
  ➢ Connected databases
  ➢ Interactive platforms – different target users and needs

Context and rationale of ETF project "Big Data for LMI"
A. To refresh and further enhance

- Knowledge and understanding of an innovative Model for analysis of demand in the labour market, including:
  - Main concepts, methodology chain, techniques, use of AI – ML in the model
  - New paradigms in data production and analysis
  - Use of the data delivery tools (dashboards) and databases of this “new data”
  - And also the challenges, and open issues for further analysis

B. To debate, review, propose

- Value of OJV analysis for LMI and skills and employment eco-systems
- Value of landscaping of the web labour market
- New angles of analysis (green skills, remote work)
- Role and place of AI in the data system
- OJV and labour market statistics
- Supply side analysis using Internet data (Big Data)
- Classifications (occupations and skills): new developments with ESCO
C. Peer learning - to share and learn with each other’s initiatives and experiences

- Mauritius: Human Resource Development Council
- Egypt: a networked and coordinated approach to co-create the national LMI system
- Credential Engine (USA) and CETIS LLP: the Semantic Web, linked data, knowledge graphs
- ESCO: new developments of the classification. Uses in skills analysis, skills matching, education. AI applications

D. Application and assessment of participants

- Application: Innovation space. Homework on use of the dashboards and databases for education-training planning / curriculum and qualifications
AGENDA

Module 1: technical training

3 webinars
• 2, 9 and 29 November
Themes:
• OJV analysis: methodology, quality, tools
• Dashboards: practical showcase
• Database
• Data classification and retrieval
• Use of Big Data for skills analysis. Combination of data from different sources
• Use of raw data from ETF database

Module 2: dissemination & analysis

3 webinars
• 15, 16 November and 6 December
Themes:
• Value: OJV analysis, landscaping
• New angles of analysis
• OJV data in the wider context of LM statistics / data
• Supply side analysis
• AI: applications in Big Data LMI
• ESCO developments
• Semantic Web, linked data, knowledge graphs

Use chat box for your questions and comments – all will be addressed
THE PEOPLE WHO CONTRIBUTE

ETF project
• Team Lightcast and CRISP:
  ➢ Mauro Pelucchi
  ➢ Anna Gatti
  ➢ Simone Perego
  ➢ Francesco Trentini
  ➢ Fabio Mercorio
  ➢ Mario Mezzanzanica

• ETF project coordinator: Eduarda Castel-Branco (chair and facilitator)
  • Silvia Ornano
  • Erika Davoglio (Opinno)
  • Interpreters

Guest speakers
• Mauritius HRDC: Harris Neeliah
• Egypt: Radwa Abdelraouf
• ESCO Team: Laura Visan, Jan Lutz
• Credential Engine and CETIS LLP: Phil Barker
BIG DATA FOR LMI

ETF PROJECT
ETF PROJECT
BIG DATA FOR LMI
2018-2024

- **2019:** First application: Feasibility analysis – Landscaping of Web Labour Markets Tunisia and Morocco
- **2019-2021:** 3 main training programmes for experts of the partner countries and other regions (Asia, Africa)
- **2020:** Creation of the complete OJV analysis system and dashboards: Tunisia and Ukraine
  - Analytical reports: LM and skills Ukraine and Tunisia
- **2021:**
  - New country – Georgia;
  - **Green dashboard**;
- The data system is based exclusively on demand – based on job vacancies (OJV) posted on web portals
- Full comparability with the Real-Time data system of the EU-27 (same methodology)
- ETF works with the data analytics specialists of University Milano-Bicocca and LightCast
- **2022-24:** expansion new countries, new themes analysis
• Data from internet sources (Big data): complement and add value conventional statistics and analyses (do not replace)

• The current activities of ETF Big Data LMI project are focused on **OJV analysis** (**demand analysis**).

• But...AI-aided data analytics and webdata offer wider perspectives for analysis, insights and trend-discovery related with **supply side**, which ETF is exploring.

• **Building and maintaining the OJV analysis system: skills and technology-intensive**

• To ensure quality, stability and credibility of the databases and dashboards ETF works with an experienced data science team, and a tested and continuously monitored methodological framework.

• Access of relevant national organisations to the databases can be planned and organised, and ETF will provide the necessary technical support to ensure clarity, quality and efficiency.

• Capacity development, dissemination and debate is important
Main elements of ETF OJV analysis system

1. Data from OJV

2. AI-aided data system

3. International Classifications ESCO, ISCO

4. Dashboard and variables

5. Let the data speak

6. Volume, Velocity, Variety, Veracity, Value
DATA CLASSIFICATION – TAXONOMIES

- **Occupations:** ESCO/ISCO
- **Skills:** ESCO
- **Location:** NUTS and ISO
- **Educational Level:** ISCED 2011
- **Sector:** NACE
Looking for a job?
Online job advertisements (OJAs) refer to advertisements published on the internet (WWW) revealing an employer’s interest in recruiting workers with certain characteristics for performing certain work.

This could be motivated by the employer’s need to fill a current vacancy, by an exploration of potential opportunities, or other reasons. OJAs usually include data on the characteristics of the job (e.g. occupation and location), characteristics of the employer (e.g. economic activity) and requirements (e.g. education/skills).

Part of this information is available only as natural language textual data.

This type of big data requires specific methodologies for processing and analysis but also provides much more detailed information (compared to alternative data sources) and avoids pre-conceived classifications (e.g. important to identify emerging skills).
THE GOAL IS OF OJV ANALYSIS IS...

To transform this...

...into value

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**Labour Market Intelligence - Dashboard Preview**

- **Number of job vacancies collected**
  - 43,418
- **Number of job vacancies deduplicated** (including Spanish language)
  - 29,120

**Sources**

- [Labour Market Information](https://www.etf.eu)
- [Dashboard Preview](https://www.wollybi.com)

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**Soft Skills**
- Analyze software specifications
- Administrator ICT system
- Database
- ERP system
- SQL
- Web programming
- Manage IT security

**Digital Skills**
- Computer programming
- Linux
- SQL
- Web programming
- Manage IT security

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**Supply Chain - Magazine IT - La Repubblica Universitaria**

**Lead Clinical Data Manager - Office or home based**
- Location: Milano
- Experience: 4+ years
- Responsibilities:
  - Develop and implement data analysis strategies
  - Ensure compliance with data governance policies
  - Collaborate with internal and external stakeholders

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**Study Area:**
- Database design specifications, edit check
- Data analysis
- Data integration
- Data visualization

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**Key Skills:**
- Lead large or complex EDC studies and study teams
- Strong understanding of database design specifications and check
- Knowledge of advanced analytical tools and techniques

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**Lead Software Developer**
- Experience: 5+ years
- Responsibilities:
  - Develop and maintain software applications
  - Collaborate with cross-functional teams
  - Ensure quality and efficiency of the design and implementation processes

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**Most relevant skill in digital occupations**

- Analyze software specifications
- Administrator ICT system
- Database
- ERP system
- SQL
- Web programming
- Manage IT security

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**European Training Foundation**

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**Notes:**

- Lead large or complex EDC studies and study teams
- Strong understanding of database design specifications and check
- Knowledge of advanced analytical tools and techniques

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**Diagram:**

- Labour Market Intelligence Dashboard
- Analysis of job vacancies by region
- Comparison of job vacancies across different job categories

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**Image:**

- Lead Clinical Data Manager - Office or home based
- Supply Chain - Magazine IT - La Repubblica Universitaria
- Lead Software Developer

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**Contact:**

- **European Training Foundation**
  - [Website](https://www.etf.eu)
  - [Dashboard](https://www.wollybi.com)
### “SPOILER”…ETF OVJ DATABASES

<table>
<thead>
<tr>
<th>Country</th>
<th>Total collected</th>
<th>Total deduplicated</th>
<th>Time series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tunisia</td>
<td>684,826</td>
<td>183,004</td>
<td>From 04/2020</td>
</tr>
<tr>
<td>Ukraine (general)</td>
<td>2,664,202</td>
<td>1,376,763</td>
<td>From 04/2020</td>
</tr>
<tr>
<td>Georgia</td>
<td>136,935</td>
<td>90,420</td>
<td>From 04/2021</td>
</tr>
<tr>
<td>Egypt</td>
<td>1,441,602</td>
<td>422,232</td>
<td>From 01/2021</td>
</tr>
<tr>
<td>Kenya</td>
<td>Approx. 15,000 (1st release soon)</td>
<td>1st release soon</td>
<td>From 08/2022</td>
</tr>
</tbody>
</table>
THANK YOU FOR NOW

Poll participants

- And to session 1
THANK YOU

- Eduarda Castel-Branco
- ecb@etf.europa.eu