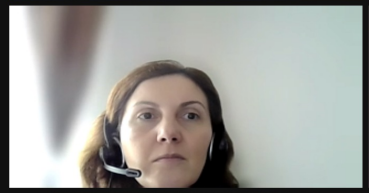
BIG DATA

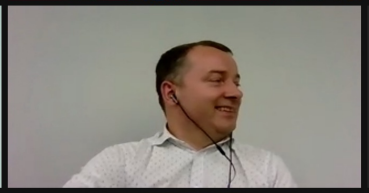
LABOUR MARKET INTELLIGENCE

8, 10 and 15 June 2021

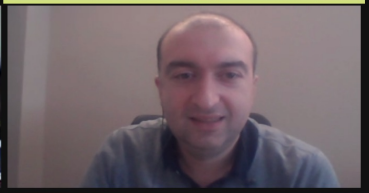
Recording...

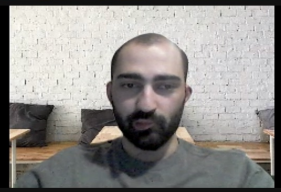
PB - Melissa Del Ci...





Pomilio Blumm





PB - Marco Colleve...

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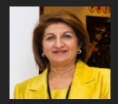
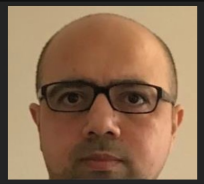
zaktinga

Samia moumen ana...





Radhouane Zaabi

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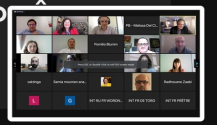
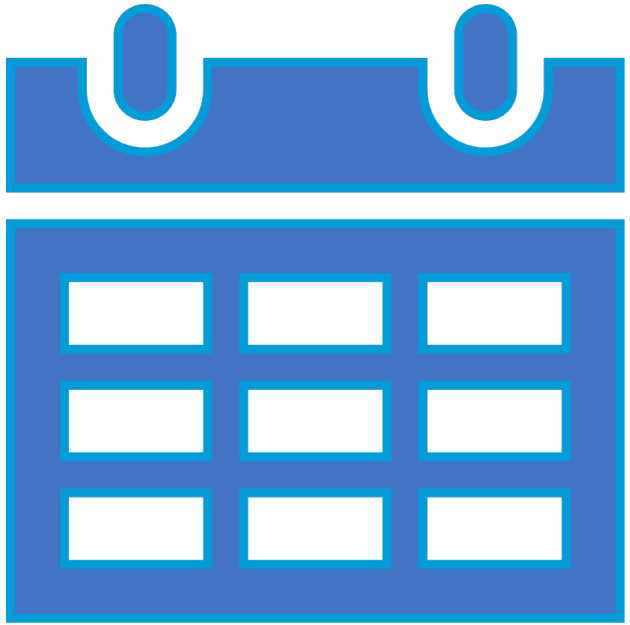


DAY 3

15 JUNE 2021

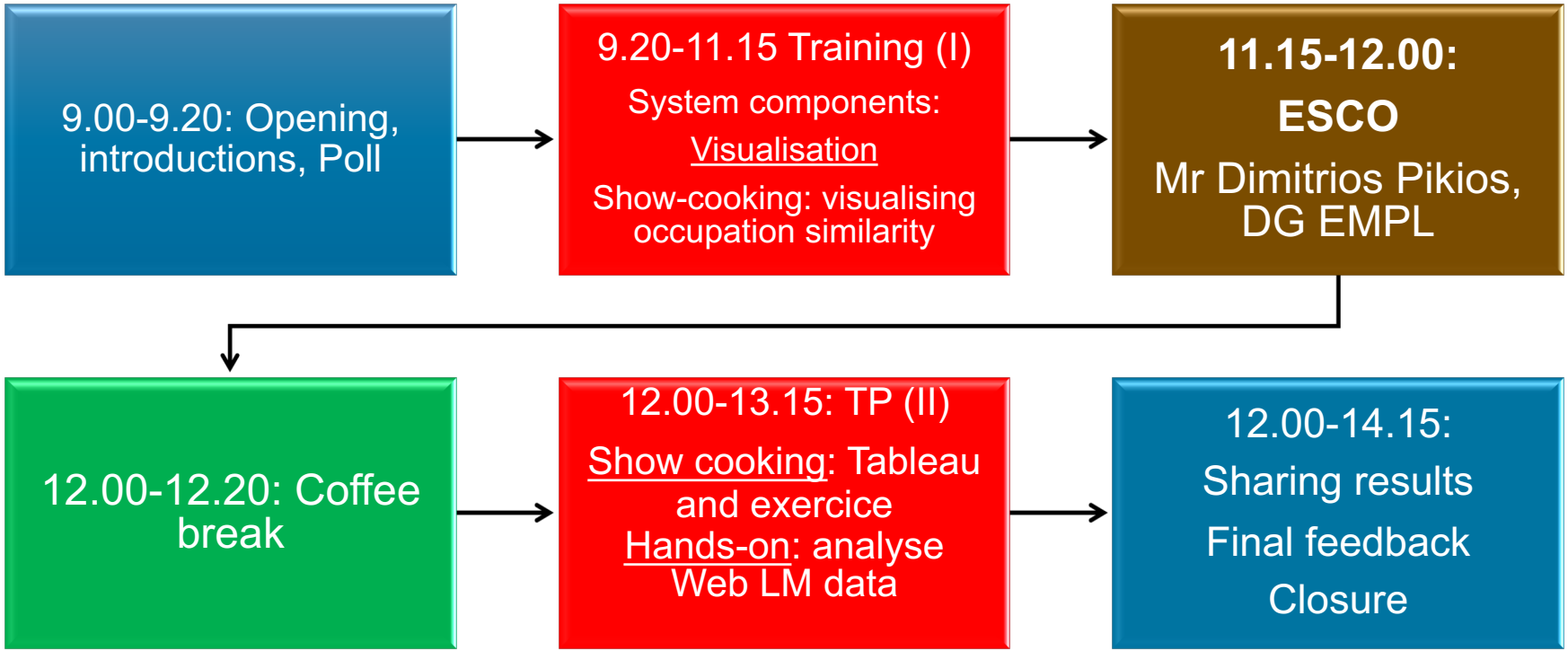


WELCOME TO DAY 3

4

- Training Programme on **Big Data for Labour Market and Skills Intelligence**
- **Day 3: Presentation area. Use cases. ESCO**
- **Case study:** ESCO – European Skill/ Competences Qualifications and Occupations. Taxonomy, novelties of the skills hierarchy, new terms

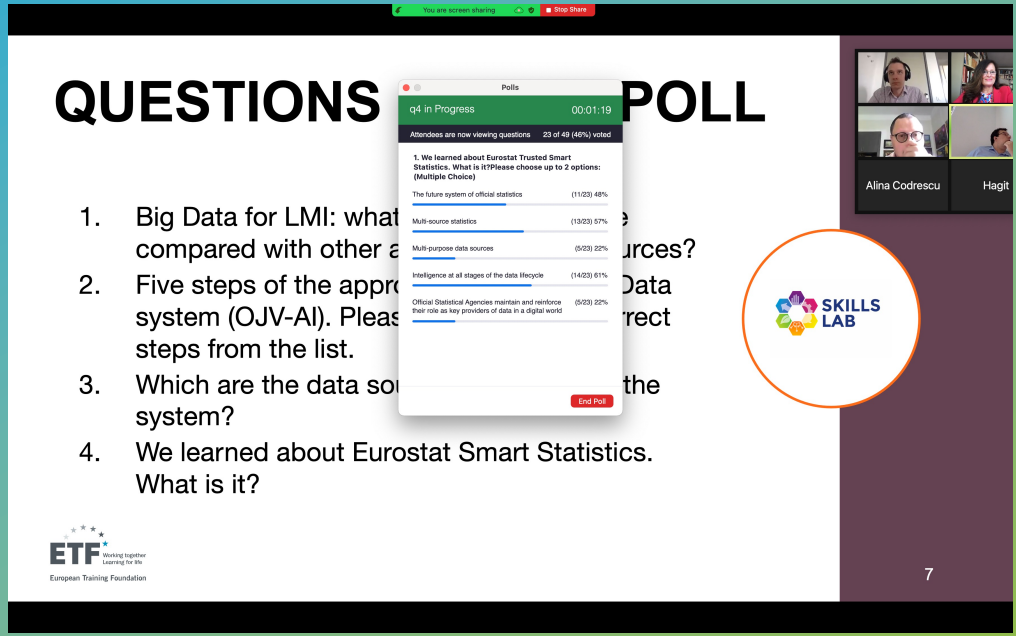
AGENDA DAY 3: 15 JUNE



TOPICS OF THE TRAINING

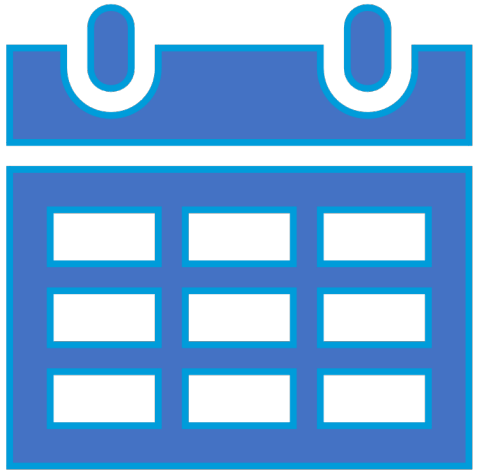
- Visualisation - Presentation area
- Use cases:10 cases!
- Lab session
- Case Study: ESCO

OUR POLL


You are screen sharing
Stop Share
QUESTIONS
POLL
1. Big Data for LMI: what
compared with other a
urces?
2. Five steps of the appro
Data
system (OJV-AI). Pleas
rect
steps from the list.
3. Which are the data so
the
system?
4. We learned about Eurostat Smart Statistics.
What is it?
Polls
q4 in Progress
00:01:19
Attendees are now viewing questions
23 of 49 (46%) voted
1. We learned about Eurostat Trusted Smart Statistics. What is it?Please choose up to 2 options: (Multiple Choice)
The future system of official statistics
(11/23) 48%
Multi-source statistics
(13/23) 57%
Multi-purpose data sources
(5/23) 22%
Intelligence at all stages of the data lifecycle
(14/23) 61%
Official Statistical Agencies maintain and reinforce their role as key providers of data in a digital world
(5/23) 22%
End Poll
Alina Codrescu
Hagit
SKILLS LAB
ETF
Working together Learning for life
European Training Foundation
7

QUESTIONS OF THE POLL

1. Q1: “Data Lake” and “Data Warehouse” – are they the same?
2. Q2: Which features better define “Data Lake”
3. Q3: In the online job vacancy labour market what changes more rapidly?
4. Q4: Skills are the Genome of Jobs. Why is this notion important?



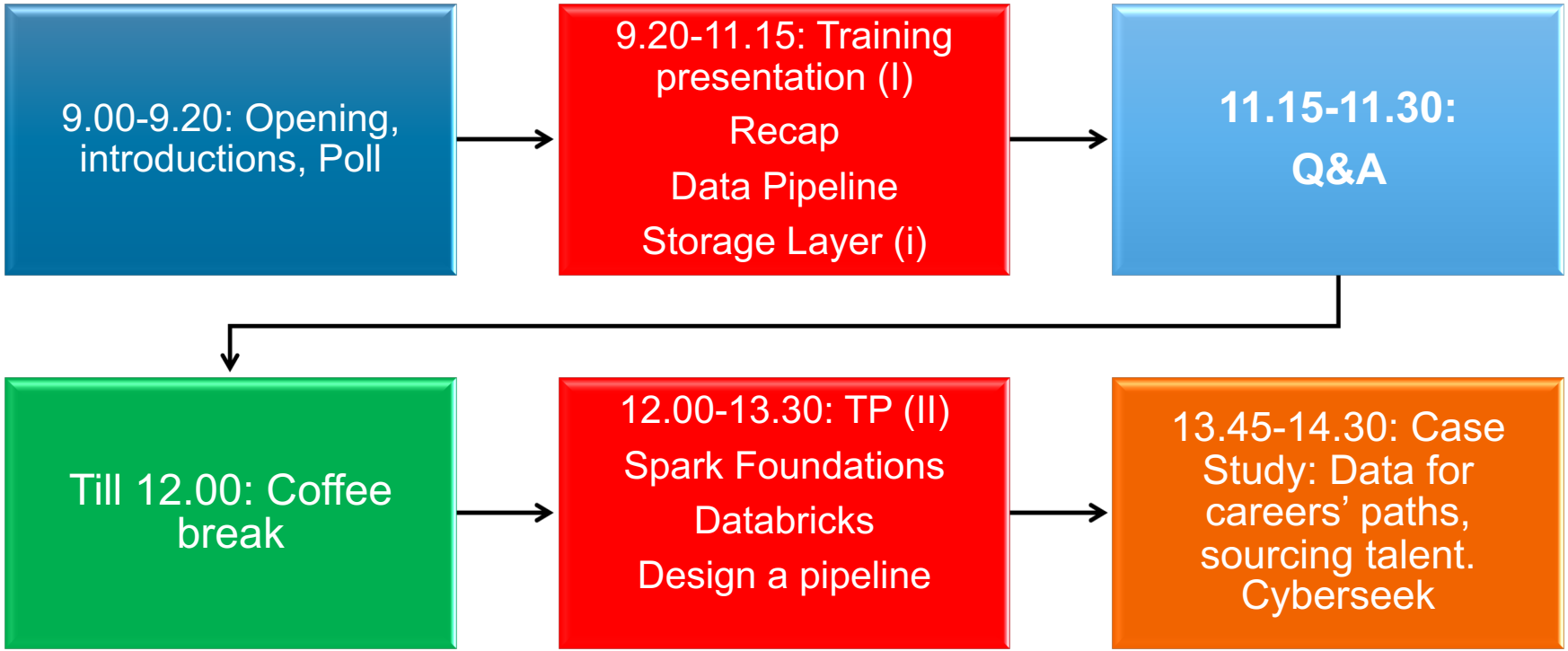
DAY 2

10 JUNE 2021

WELCOME TO DAY 2

- Training Programme on **Big Data for Labour Market and Skills Intelligence**
- **Day 2: Processing – Build a Pipeline**
- **Case study:** Real Time LMI – for career paths and informed choices

AGENDA DAY 2: 10 JUNE



TOPICS OF THE TRAINING

1. Overview & Recap
2. What is a pipeline?
3. Storage layer
    a) Staging area
    b) Metadata
    c) Datalake
4. Spark foundations
5. Databricks (intro)
6. Design a pipelines from zero to solid
    a) The dataset
    b) Build our pipeline with Spark

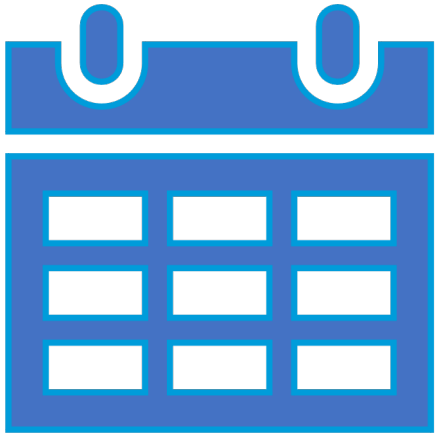
OUR POLL

QUESTIONS OF THE POLL

1. Big Data for LMI: what is the added-value compared with other approaches and sources?
2. Five steps of the approach to create the Data system (OJV-AI). Please choose the 5 correct steps from the list.
3. Which are the data sources NOT used in the system?
4. We learned about Eurostat Smart Statistics. What is it?

MOTION

TO SESSION 1, WITH MAURO AND ALESSANDRO



DAY 1

8 JUNE 2021

WELCOME

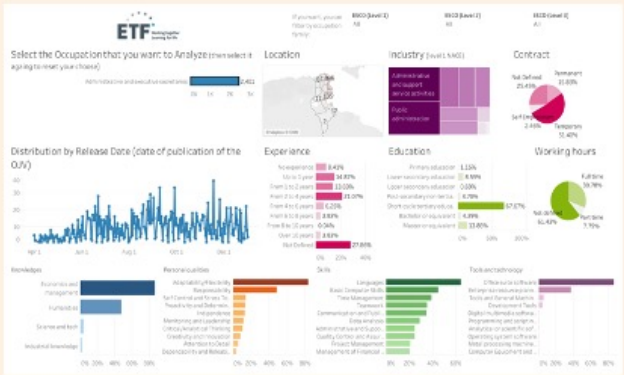
- To the Training Programme on **Big Data for Labour Market and Skills Intelligence**
- Participants from Africa, Europe and Middle East
- Intensive journey: 5h x 3 days
- Knowledge and discovery-rich
- Presentations x discussion x questions and answers x hands-exercices
- 2 case studies
- Team: Alessandro, Mauro, Eduarda, Alina
- Thanks to interpreters' team and team Pomilio

Big Data for Labour Market Intelligence: Online job vacancy analysis (OJV)

Virtual training programme

Full programme: 8, 10 and 15 June 2021

Multilingual: English-French-Russian



ETF working with Burning Glass Europe

SKILLS LAB

ETF Working together Learning for life

Agenda:

Day 1: 08/06/2021, 09.00-14.30 CET (GMT+2)

- LMI – based on Webdata: from online job vacancies to data and analysis of skills, occupations, sectors. Architecute, data ingestion techniques, data processing pipeline, classification techniques.
- Case study: Smart Statistics - Eurostat

Day 2: 10/06/2021, 09.00-14.30 CET (GMT+2)

- LMI – based on Webdata: Focus on building a data pipeline
- Case study: Big Data – career progression

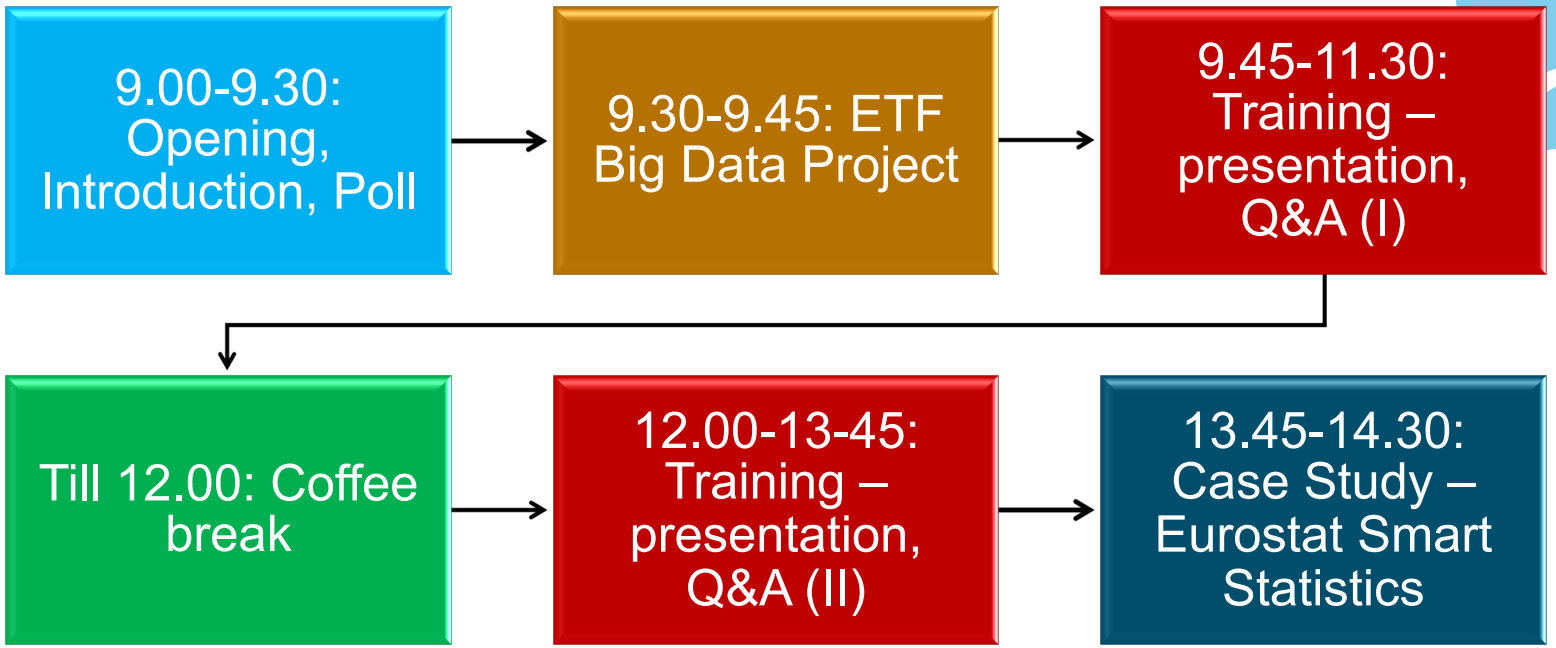
Day 3: 15/06/2021, 09.00-14.15 CET (GMT+2)

- LMI – based on Webdata: Presentation area, use cases, hands-on exercises and lessons learned

THE 3-DAY JOURNEY HELPS US DISCOVER…

- What is Big Data analytics for Labour Market Information Systems?
- How to explore and create value from large volumes of Online Job Vacancies for real-time LMIS?
- Which dimensions and issues related to skills, occupations, and labour market dynamics questions can be analysed with help of Big Data / Real-time LMI?
- Which are the requirements to harness these novel data sources and systems by ETF Partner countries?
- How can Real-time LMI based on Big Data and AI-aided classification be used and complement established national statistics?

AGENDA DAY 1: 8 JUNE



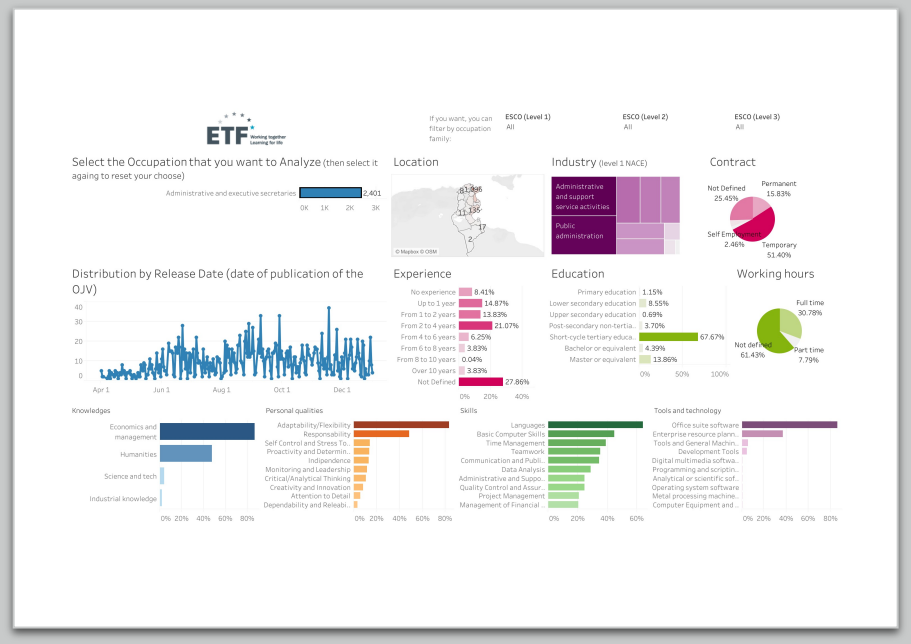
GETTING ACQUAINTED…

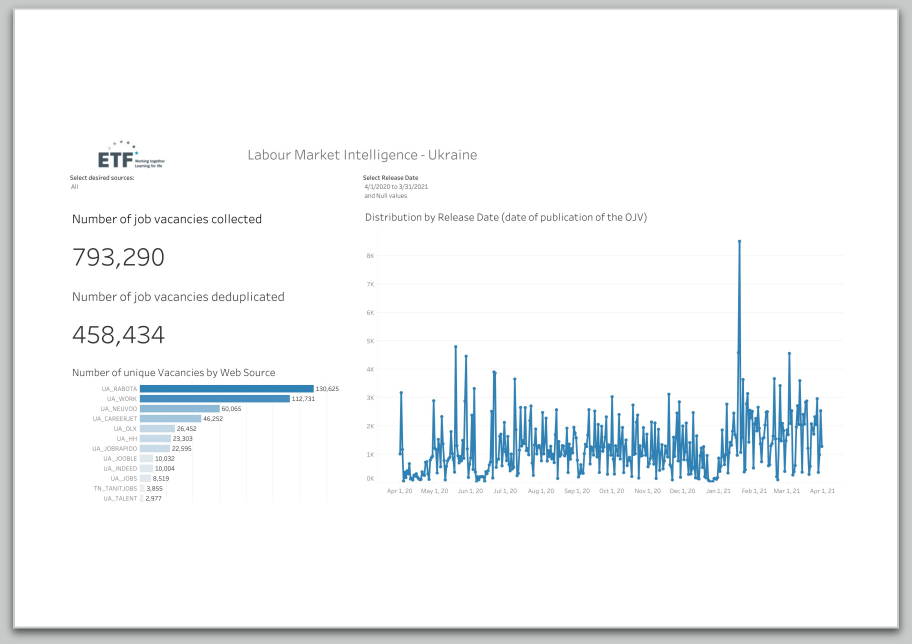
USING A POLL

ETF Working together Learning for life
European Training Foundation

ETF PROJECT
BIG DATA FOR LMI

- Data ingested: up 31/03/2021
- Update: up 31/05/2021

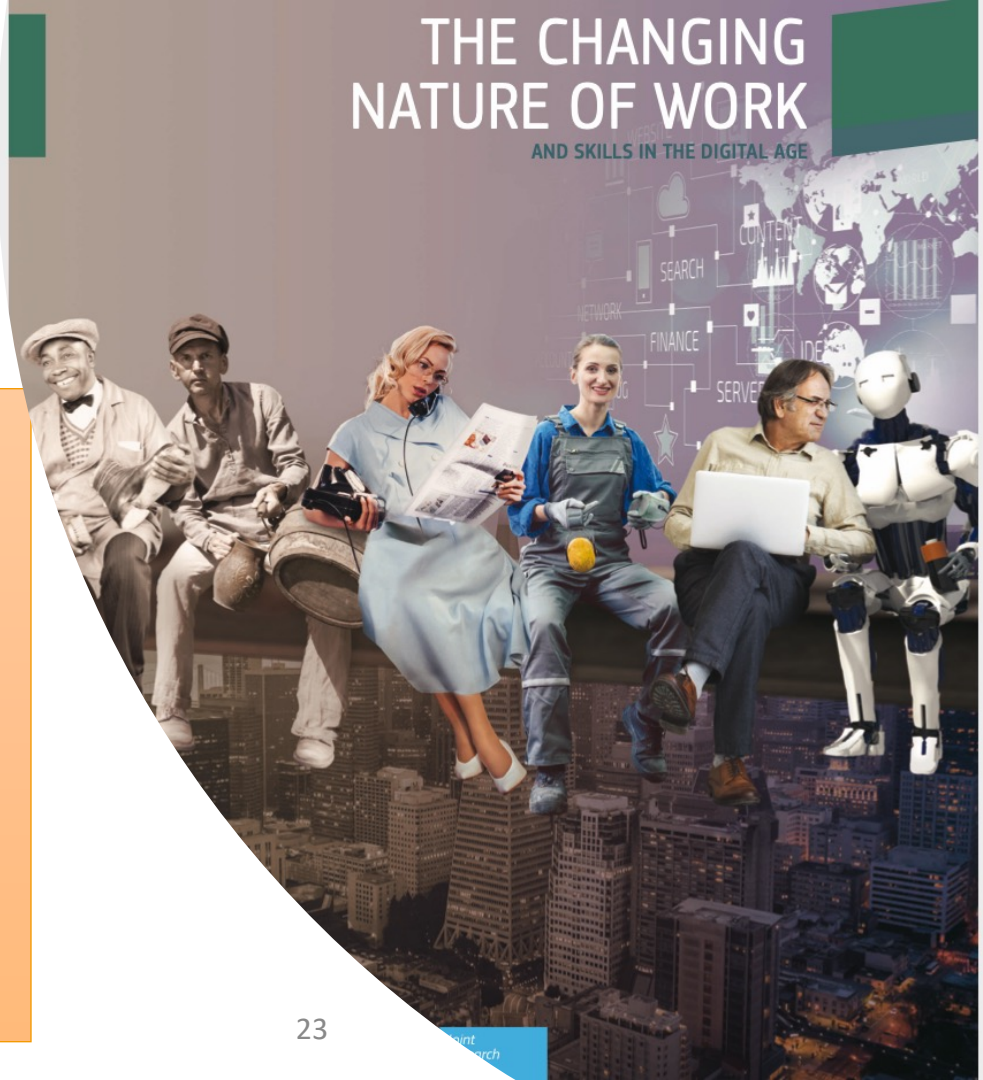


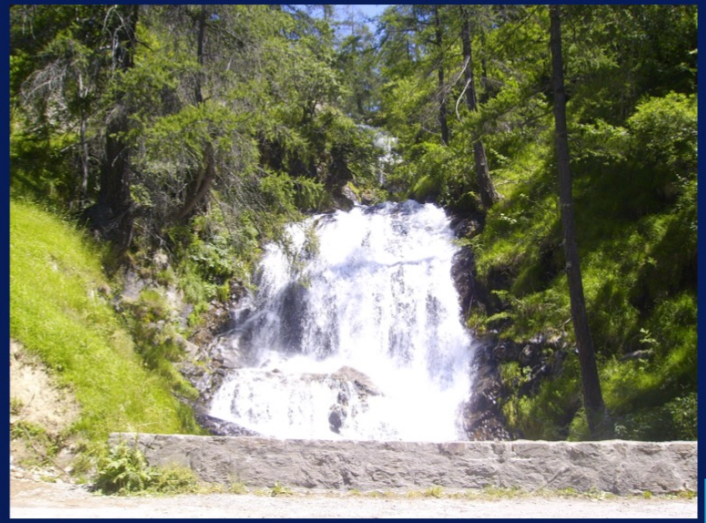


WORK, TASKS, JOBS AND SKILLS ARE IN TRANSFORMATION

Social media manager, Airbnb host, influencer, SEO specialist, app developer, Uber driver, driverless car engineer, podcast producer and drone operator…

- These are just some of the jobs that did not exist 10 years ago.
- What will happen in the future? What kind of jobs will disappear, what will be created and why?
- Which new skills will be essential in the job market?
- How much is digitalisation and greening changing our occupations, tasks, skills?





Data Torrent

AI algorithms

Computing Anytime, Anywhere

Big Data Era

TRANSFORMATION OF LABOUR MARKET INFORMATION / INTELLIGENCE

- **“Artificial intelligence (AI) and machine learning are not only changing the labour market, but also giving us new tools for analysing the workforce”.**
- **Terabytes of data from online job vacancies**! Job vacancies or job advertisements are published, refreshed, updated in large numbers through websites of different types, size and coverage
- Exploring the inherent information of a such large data source has become an objective of research centres and public bodies in a number of countries. **EU OVATE (Cedefop) is a major breakthrough!**
- **EUROSTAT:** embracing Smart Statistics
- These **vast and fast** data sources are essential to understand the transformation of jobs (as bundles of tasks and skills), of changing forms of work and employers’ recruitment practices in the context of **Covid-19 (and Beyond…)**

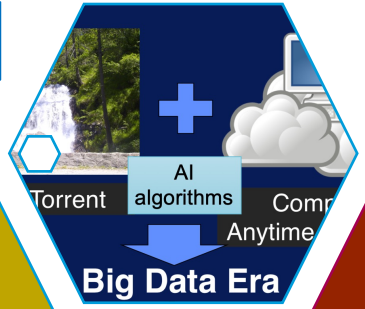
ETF PROJECT BIG DATA FOR LABOUR MARKET INFORMATION

2018-2021

- **2018-2019: Methodology**: first step - project elaborated first a brief methodological handbook "Big Data for labour market intelligence: an introductory guide" (**2019**).
- **2019: First application**: Feasibility analysis – Landscaping of Web Labour Markets Tunisia and Morocco
- **2019:** A training programme for experts of the "Make it Match Network" of Eastern Partnership
- **2020:** Creation of the complete data system supported by AI with data visualisation platform (dashboard): Tunisia and Ukraine;
  - Analytical reports: LM and skills Ukraine and Tunisia
- **2021**:
  - New country – Georgia;
  - Green dashboard;
- ETF works with the data analytics specialists of **University Milano-Bicocca and Burning Glass Technologies**.
- 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)

Main elements

Dashboard and variables



Classifications ESCO, ISCO

Let the data speak

AI-aided data system

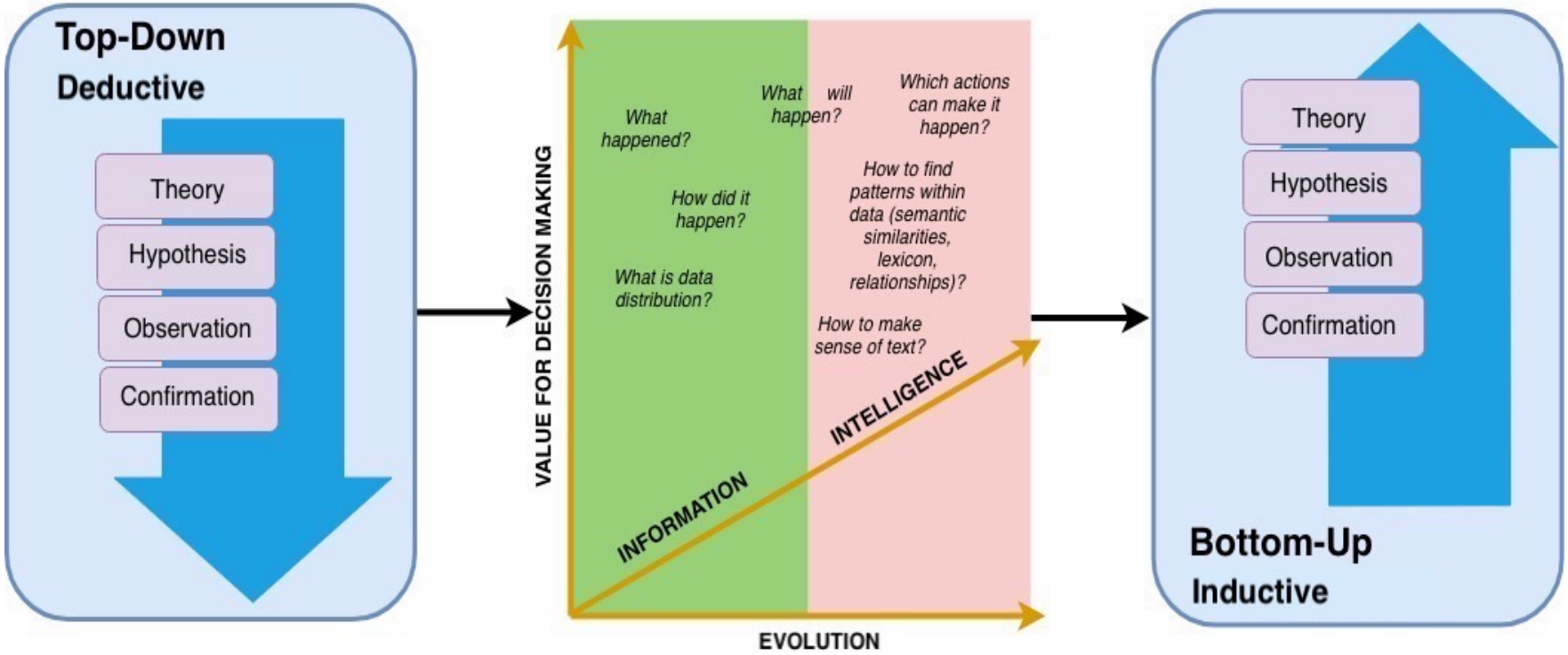
Data from OJV

Volume, Velocity, Variety, Veracity, Value

DATA SOURCES LMI: SOME CHARACTERISTICS

Data Source	Type	Data model	Analysis paradigm
Statistical conventional (surveys)	Structured	Relational	Top-down & model based
Administrative (registers)	Structured or semi-structured	Relational	Top-down & model based
Web data	Structured, semi-structured or unstructured	Relational and non-relational (NoSQL)	Bottom-up & data driven

PARADIGM SHIFT: FROM TOP-DOWN TO BOTTOM-UP



BIG DATA FOR DEMAND ANALYSIS - DIMENSIONS

SKILLS NEEDS : IDENTIFY AND ASSESS

SKILLS RATES

EMERGING SKILLS AND EVOLUTION OF THE SKILLS MIX

LANDSCAPE OF OJV WEBSITES AND DYNAMICS OF THEIR UTILISATION

SHARPEN THE QUESTIONS THAT CAN BE ANALYSES

EXPLORE THE COMBINATION OF BIG DATA AND CONVENTIONAL STATISTICS

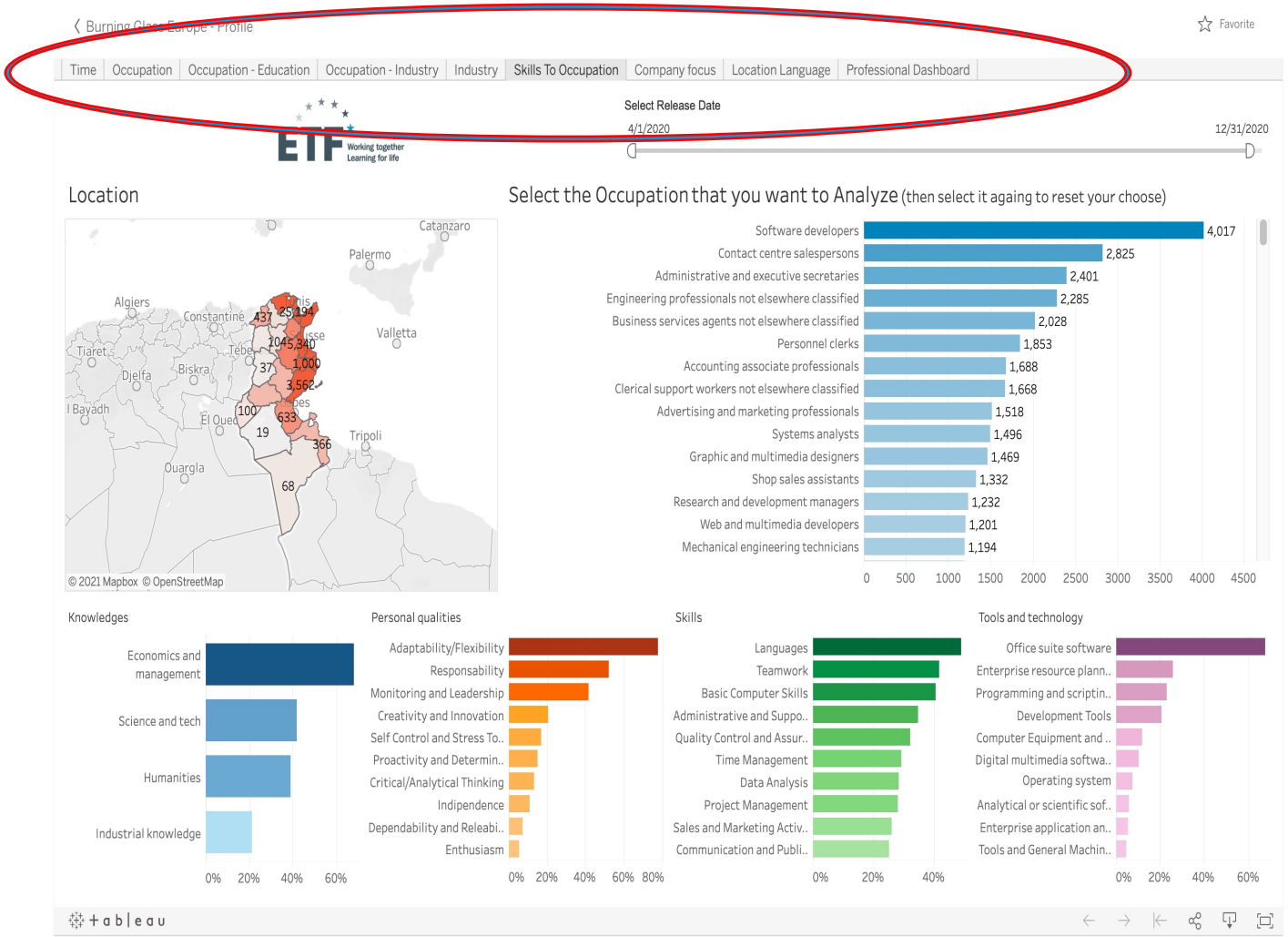
DATA CLASSIFICATION – TAXONOMIES

- **Occupations:** ESCO/ISCO
- **Skills**: ESCO
- **Location**: NUTS and ISO
- **Educational Level**: ISCED
- **Sector**: NACE

DASHBOARD: SKILLS AND OCCUPATIONS

Variables:

1. Occupation
2. Skills
3. Education level
4. Experience
5. Salary
6. Location



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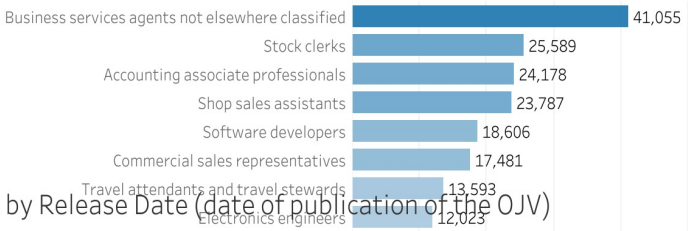
If you want, you can filter by occupation family:

ESCO (Level 1)
All

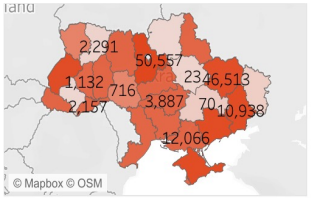
ESCO (Level 2)
All

ESCO (Level 3)
All

Select the Occupation that you want to Analyze (then select it againg to reset your choose)

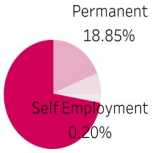


Location

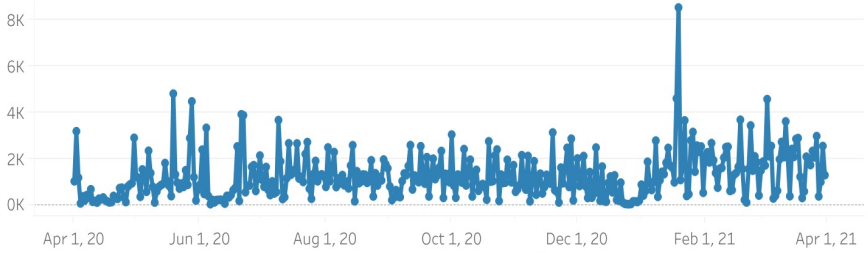


Industry (level 1 NACE)

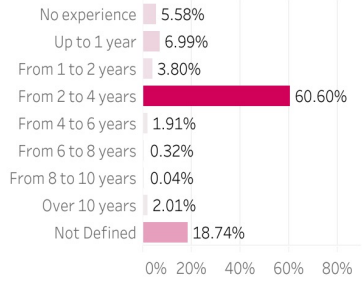
Contract



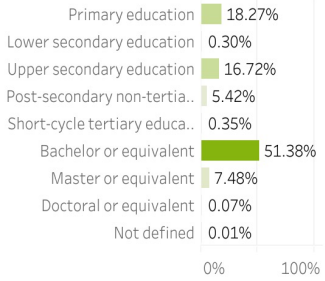
Distribution by Release Date (date of publication of the OJV)



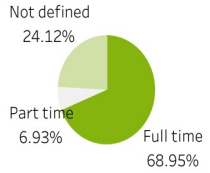
Experience

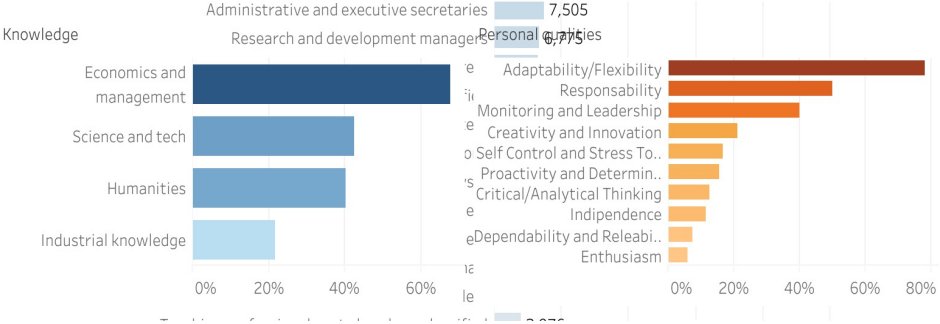


Education



Working hours





GAME CHANGER?

- New data source: vast, non-structured, inductive, continuous inflow data
- New data analysis and classification
- New paradigms - open our mind for different views on data

THE GOLD MINE OF OJV DATA:

REAL TIME, FAST AND GRANULAR DATA

THE LINKS THAT CAN BE DONE WITH OTHER DATA SETS (STATISTICAL) AND OTHER BIG DATA DATABASES

BUT NOTE! BIG DATA - COVERS PART OF THE LABOUR MARKET (SECTORS, OCCUPATIONS, QUALIFICATIONS)

SKILLS LAB

THANK YOU