

Big Data for Labour Market Intelligence

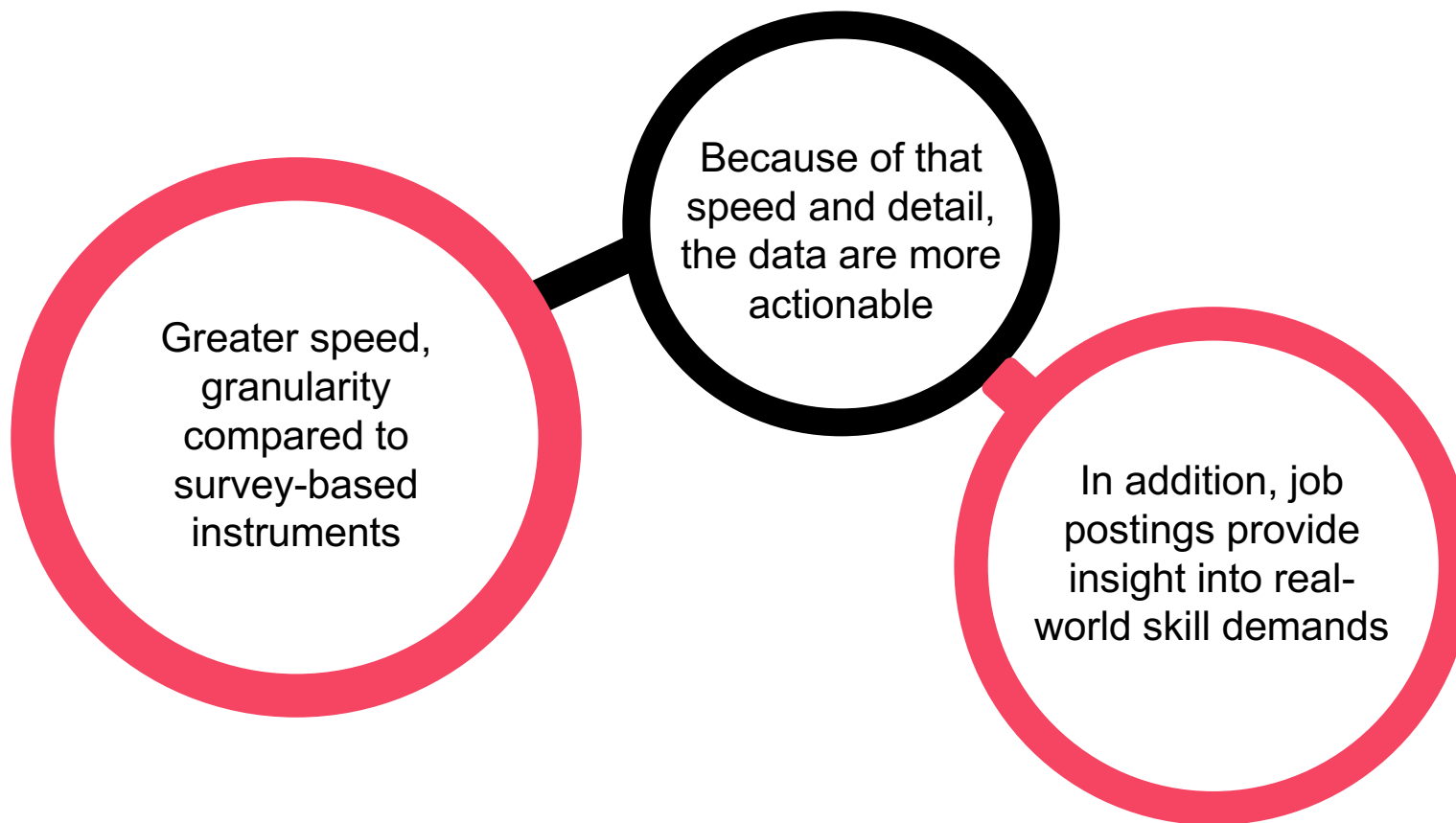
Capacity development programme 2024

Workshop 1: Big Data for LMIS: Digital and Green Analysis Session 2

Big Data for LMIS - for skills demand analysis. Main concepts and methodological framework. Database. Dashboards to navigate the data.

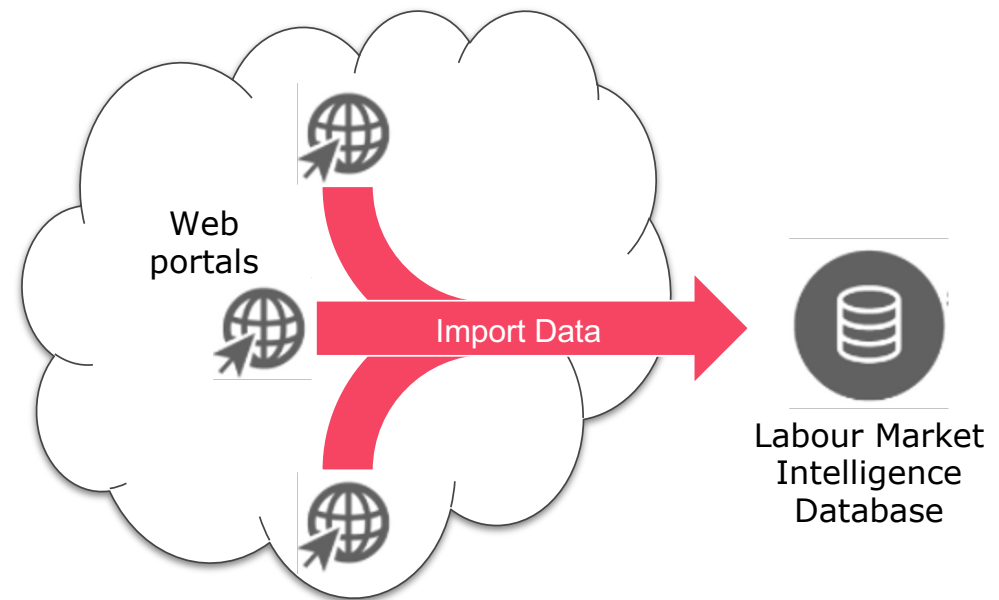
What a Billion Jobs Can Tell Us

vs. Traditional Labour Market Information



New source of data

Web Data ingestion is the process of obtaining and importing **data** from **web portals** and storing in a **database**



What are the impacts on the Labour Market?

Some of the 2024 Key Trends

Talent shortage

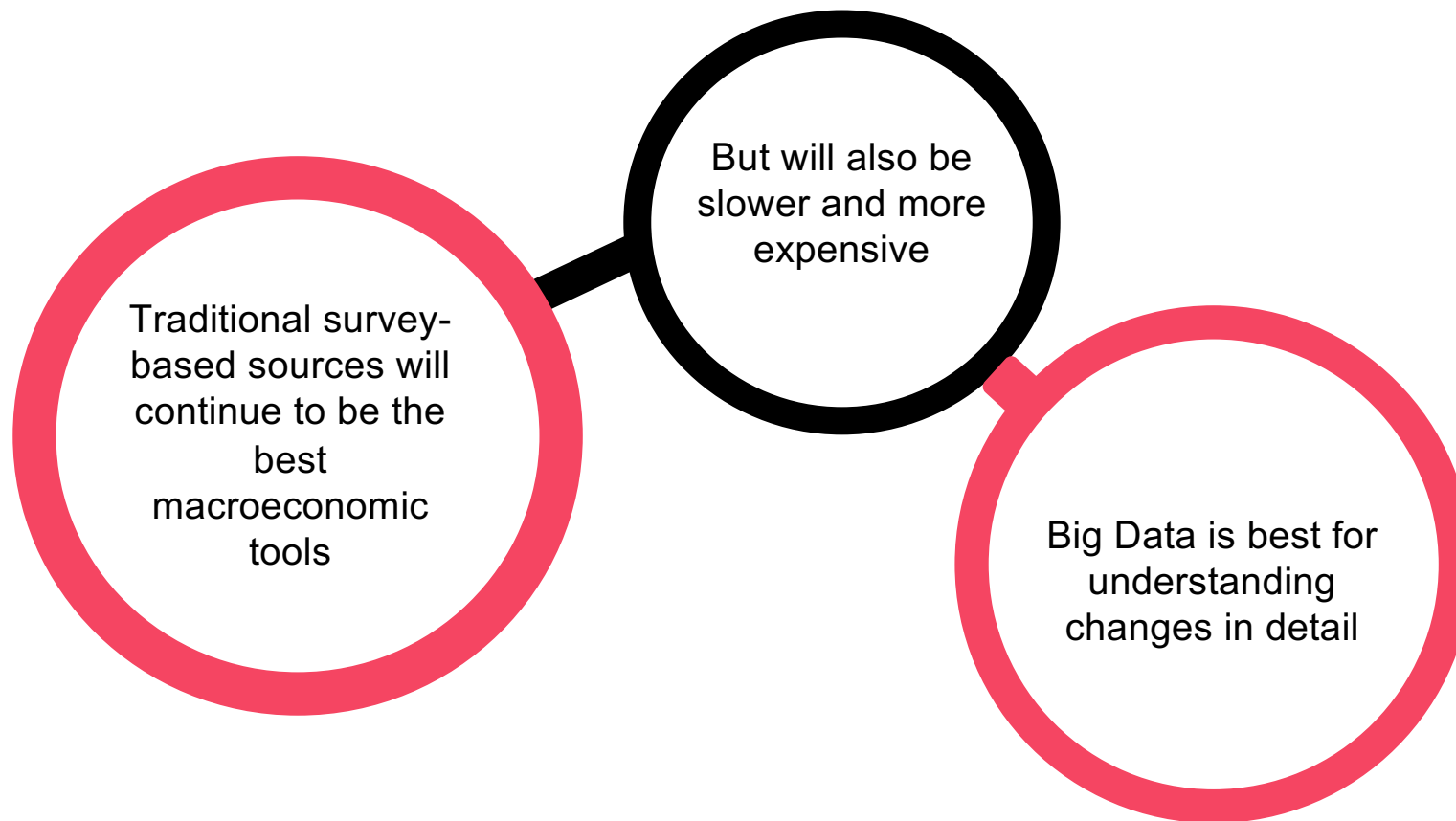
- Digitalization of professions
- Relevance of Soft skills
- New professions and skills emerging
- Green economy and sustainability
- Artificial intelligence

How observe these impacts?

Using Online Job Postings for many reasons:

- Up to date
- Detailed
- Adherent to reality

A Complement, not a Replacement



Type of data	Years of data	Ease of time series analyses	Data representativeness	Compatibility across economies	Real-time data access	Regular taxonomy (classification) updates	Data granularity
Traditional labor market data	~50	High	Apply statistical sampling methods and weights	✓			Low
Big data	~10	Medium	Captures digitized labor market; can benchmark against public data to gain insight	✓	✓	✓	High

Big Data for the Labor Market: Sources, Uses and Opportunities (APEC Secretariat, APEC Policy Support Unit)



Topics

- Value of Big Data for LMI
- Main concepts and methodological framework
- Skills demand analysis
- Dashboards to navigate the data

Motivations

Labour market changes

Constantly changing labour market:

- Skills Evolution
- New Emerging Occupations
- Job Automatisatation
- Mobility
- Remote Working
- Artificial Intelligence

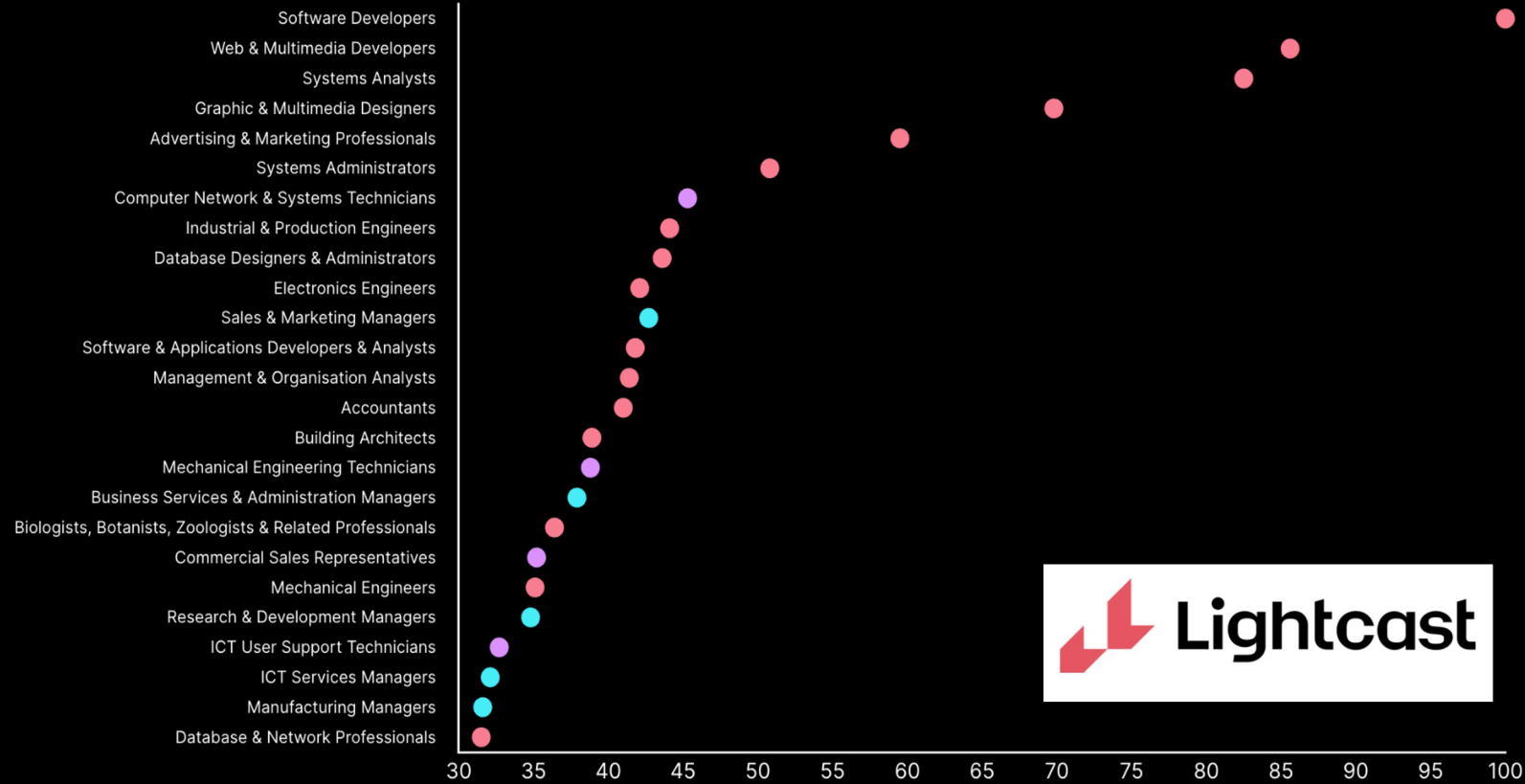
Improving skills needs analysis: the foundation of skills development

- Up-to-date information
- Information aligned with market demands
- Prediction can be done to anticipate trends

Example of applications: Skills Change Index

Index of the Top 25 European Occupations by Skills Change

All



JUNIOR DATA SCIENTIST & ANALYST PLACEMENT

London • Hybrid remote

Internship

You must create an Indeed account before continuing to the company website to apply

[Apply on company site](#)



As at Data Scientist a [redacted] you will join the rapidly developing data team, who are responsible for measurement solutions and modelling expertise help a diverse client-set understand the true value of their media investment, create compelling data stories on how to drive growth, and automate the insights into the planning cycle through their advance and integrated tech stack.

We are looking for [inquisitive, articulate, numerate and above-all, enthusiastic] placement students to support the wider team in delivering these critical insights and building on the capabilities of our product.

You will be part of a close-knit and friendly team who share results and celebrate success together.

[redacted] is a media agency that's made differently. We're purpose-led, data-driven and proudly independent. Our independence means we can focus 100% on doing the right thing to secure success for our clients and our brilliant people. We are trusted to deliver that success for some of the UK's most ambitious and complex organisations, including SunLife, Guide Dogs, RNLI, Laithwaites and National Trust.

WHAT YOU'LL BE DOING

✕ Work closely with business to identify issues that can be resolved using data solutions effectively for decision making

Machine learning tools and statistical methods to solve complex problems

Build algorithms and design experiments to merge, manage, interrogate, and extract data to supply tailored reports to colleagues, clients and wider areas in company

Support the account management and planning teams across all facets of campaign measurement across media channels

Develop automated data processes using Python/R

Ability to organise a variety of large data sets

Undertake regular analysis and reporting for retained clients

Maintain clear and coherent communication, both verbal and written, to understand data needs and report results

Working with the Datalab team and other senior business stakeholders to develop analytical propositions

THE SKILLS YOU WILL BRING

Highly numerate undergraduate studying a relevant degree in mathematics, statistics, econometrics or computer science

Pre-requisite skills: Strong Excel and MS Office usage

Experience of coding in Python, R or SQL

Experience of data visualisation tools like Tableau/Qlik/Power-BI/Google Data Studio would be useful but not essential

Theoretical understanding of statistical techniques such as regression and developing confidence measures.

Strong data manipulation skills and a keen eye for detail.

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Good communication skills.

DESIRED SKILLS

Inquisitive analytical mind with a strong desire to find things out.

Structured data

Unstructured data

Noise

Challenges

High interest

- Observe **micro-level labour demand** (with some caveats)

Retrieval and analytics

- High **volume**
- High frequency **velocity**
- Many formats **variety, noise**
- **Duplications**
- No control over reference population **veracity**

مطلوب فوراً شباب و بنات للعمل كـول سنتر و مكاتبه العمل من المنزل
NEW FUTURE COMPANY
الإسماعيلية
\$٤,٠٠٠ - \$٤,٥٠٠ لكل شهر
تمت الاستجابة إلى 75% أو أكثر من طلبات التوظيف في غضون آخر 30 يوماً، بينما يستغرق الأمر عادةً (3) أيام.

المطلوب فوراً

تقدم للوظيفة الآن

تفاصيل الوظيفة

الراتب
\$٤,٠٠٠ - \$٤,٥٠٠ لكل شهر

نوع الوظيفة
دوام جزئي
موقت
لحديثي التخرج

وصف الوظيفة الكامل

مطلوب شباب و بنات فوراً الحد المحدود جداً
للمعمل كـول سنتر و سوشيال ميديا و مكاتبه العمل من المنزل او من الشركة بمرتب 4500
عدد ساعات العمل 6 ساعات متواصلين او 8 ساعات متقطعين
السن من 16 الي 45 سنة ولا يشترط الخبرة و نقل طلبه و خريجين
يشترط الجدية و البقاء في العمل المحدود جداً
للتواصل واتس 01553071560
نوع الوظيفة: دوام جزئي، موقت، لحدثي التخرج
ساعات الدوام الجزئي: 42 كل أسبوع
الراتب: EE4,000.00 - EE4,500.00 لكل شهر

رؤى التوظيف

معدل الاستجابة للطلبات: 79%
حاجة مستمرة لشغل هذا المنصب

نشاط الوظيفة

تم النشر بتاريخ منذ 60 يوم

مطلوب فوراً راتب

3500 جنيه
مجموعة شركات S H مصر
القاهرة

Translator Editor -Remotely

Full Time Work From Home
Confidential Company - Cairo, Egypt
Posted 2 hours ago
2 open positions

Apply For Job

Be the First to Apply

Job Details

Experience Needed: 3 To 5 Years
Career Level: Experienced (Non-Manager)
Education Level: Not Specified
Salary: Confidential
Job Categories: Writing/Editorial

Skills And Tools:

Arabic Editorial media Social Media Translation Writing English Editing

Job Description

Required for a reputed UAE Media company (Remote working position) :
Professional translator with experience in (News and Journalism).

Job Requirements

- Experience in the same field.
- Native Arabic Speaking, Professional English command.
- Experience in Social Media channels usage.

WUZZUF

indeed

الإعلان عن وظيفة

How do you (a human) classify a job posting in an occupation?

Junior Data Scientist

BiP Solutions

Glasgow

Hybrid remote

£25,000 - £35,000 a year - Full-time

Apply now



Job details

Salary

£25,000 - £35,000 a year

Job type

Full-time

Full Job Description

Are you passionate about product, analytics, and technology? The BIP product team is looking for enthusiastic analytics candidates that are passionate about data and want to make an impact.

The BIP Data Science team handle large volumes of text data, application data and business operations data. Our team is focused on developing data visualisation dashboards, text-based machine learning solutions, evaluating and optimising search applications, and implementing recommender systems.

Candidates will work with product analysts and engineers to translate data into meaningful insights to enable data driven decision making and new feature development.

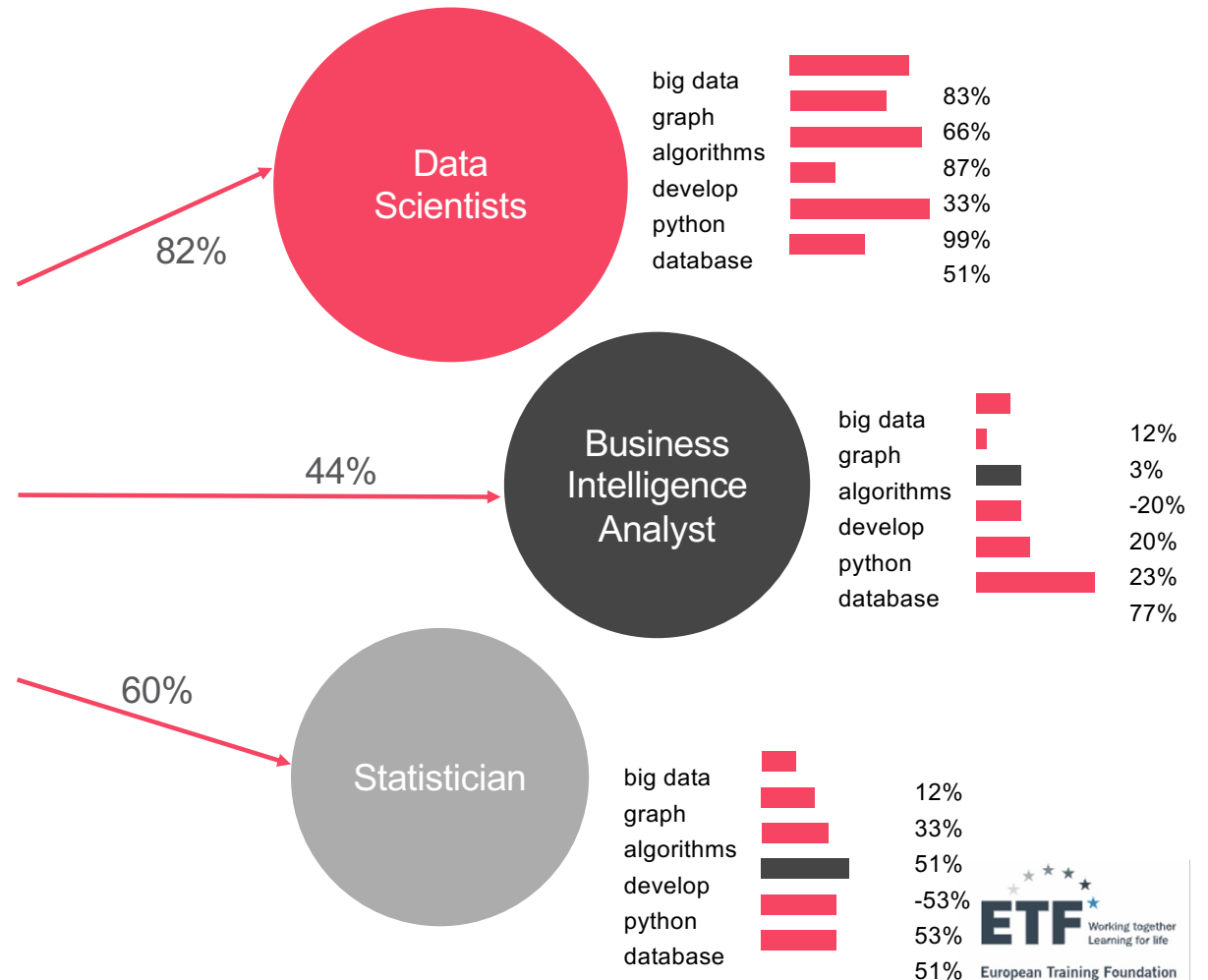
The junior data scientist role will have a primary focus on the development and evolution of data visualisation dashboards with a clear growth path to develop your wider data science skillset.

You will also be encouraged to be innovative and put forward ideas that shape what data science is within BIP and ultimately drive the adoption of it within the business

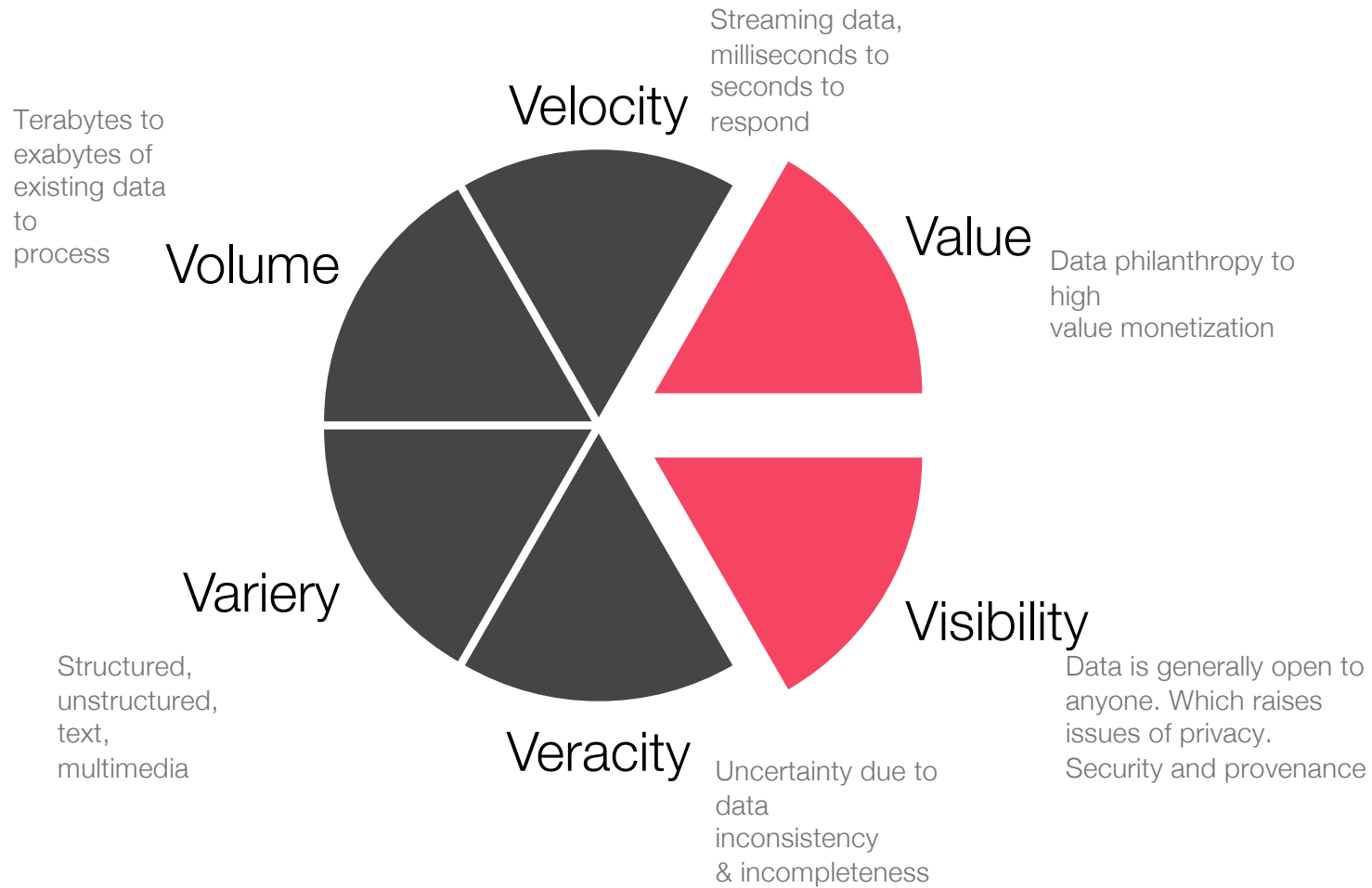
Core Responsibilities

Data Analytics & Visualisation

- Work with business stakeholders to find the right questions to ask of data.
- Communicate complex analytics insights to business stakeholders.
- Champion and enable data-driven decision making within BIP Solutions.
- Design and implement self-service data analytics dashboards

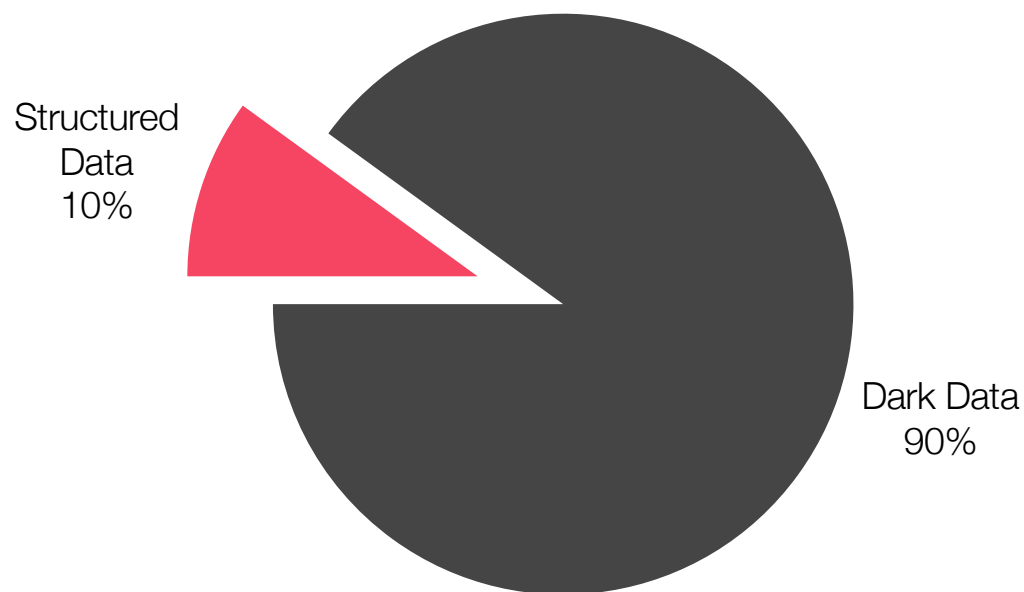


Big data and new considerations



Why and how to use Cognitive Computing and Machine Learning?

90% of data is **unstructured**. Cognitive computing and machine learning help us **to analyze and leverage on 100% of data**: this techniques provide the tools **to solve problems that couldn't be solved before**.



Labour Market Information and Intelligence

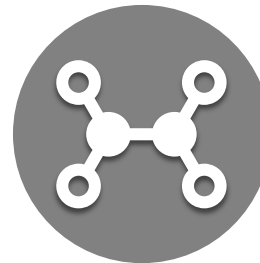
LMI is any **quantitative** or **qualitative facts**, analysis or interpretation about the past, present or future structure and workings of the labour market and the factors that influence it.



Economic and labour market conditions



Education, qualifications, training and skills

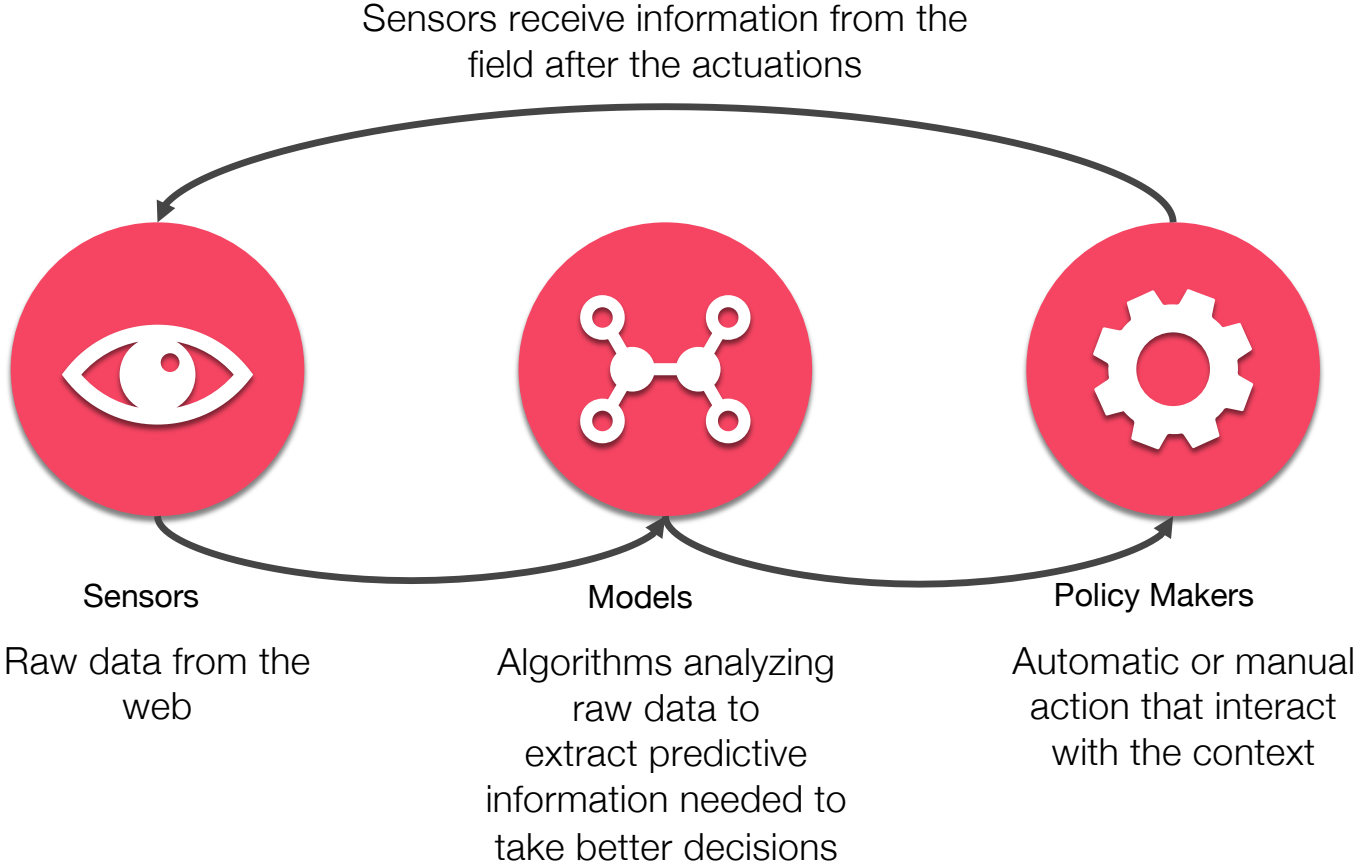


Current and future demand and supply of labour and jobs



Vacancies and recruitment

Big Data Analytics in Action

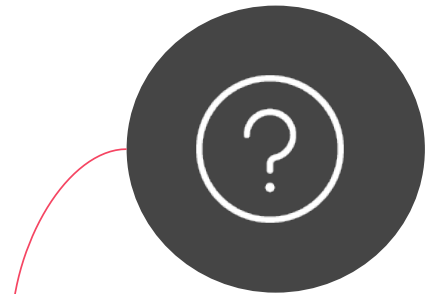


Main concepts and methodological framework

Methodology

Question

What are the emerging skills and competencies in the labour market?



Source systems



Collecting
& transform



Storage



Provisioning



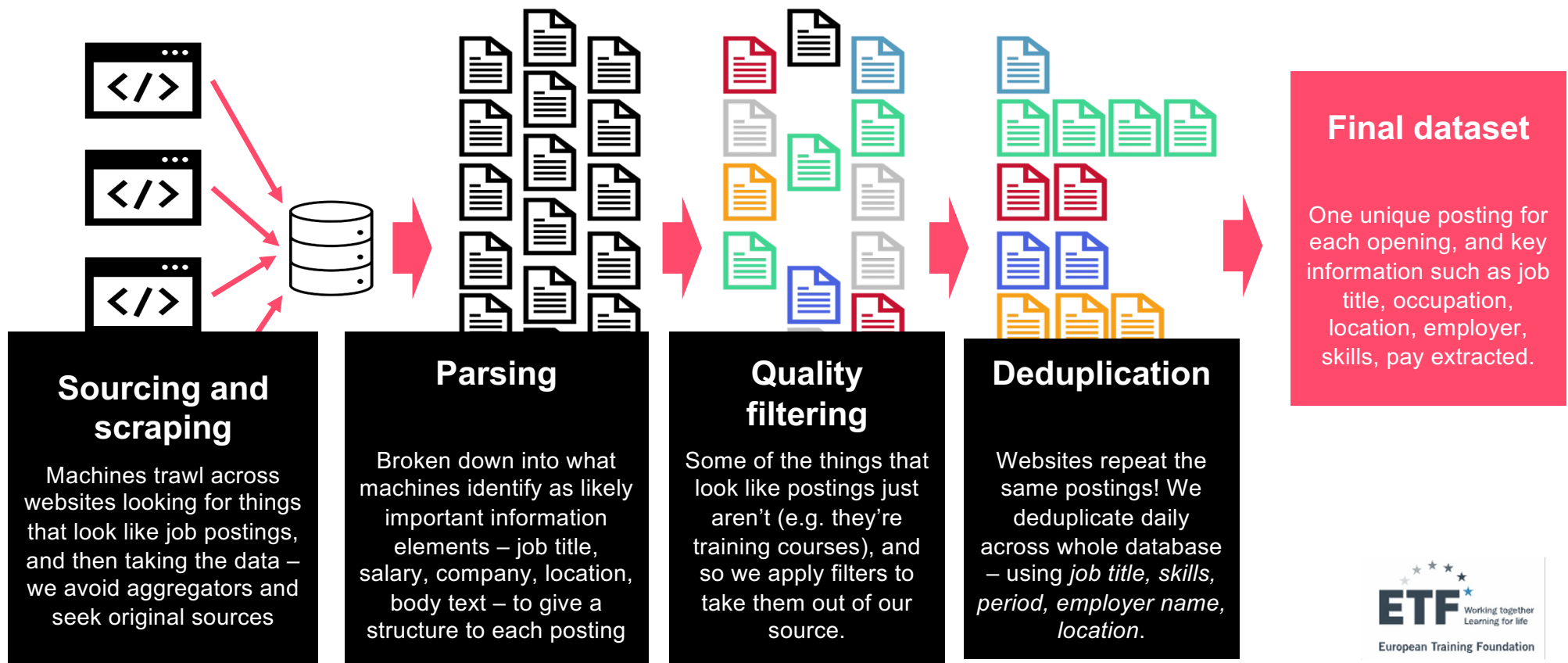
Application and
analytics

- Negash, Solomon, and Paul Gray. "Business intelligence." Handbook on decision support systems 2. Springer, Berlin, Heidelberg, 2008. 175-193.

- Fayyad, Usama, Gregory Piatetsky-Shapiro, and Padhraic Smyth. "From data mining to knowledge discovery in databases." AI magazine 17.3 (1996): 37-37.

How draw meaningful insights

Turning big noisy data on job postings into clear and actionable data points

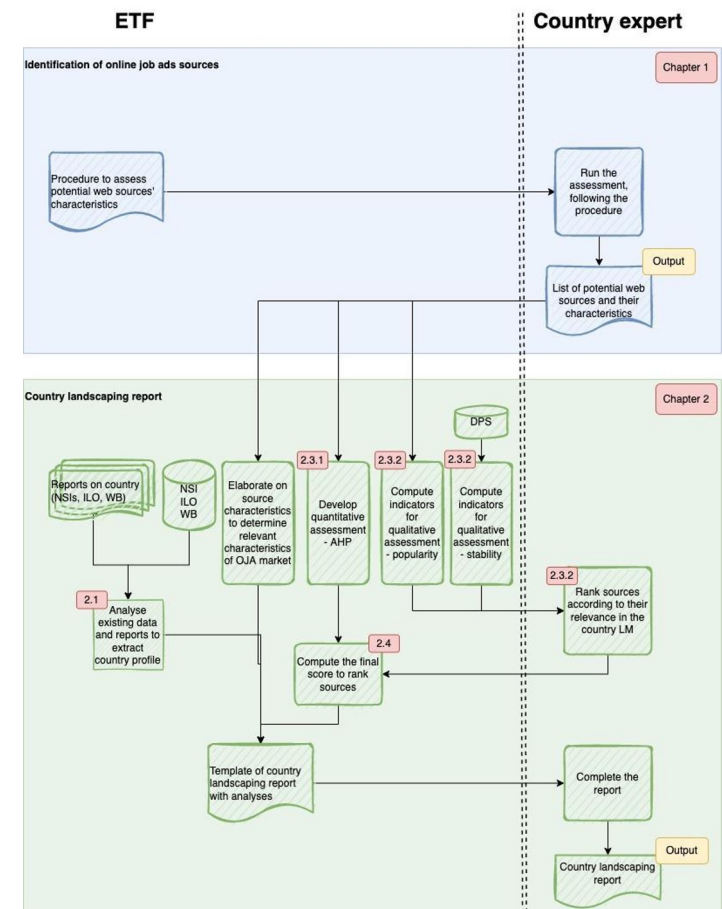
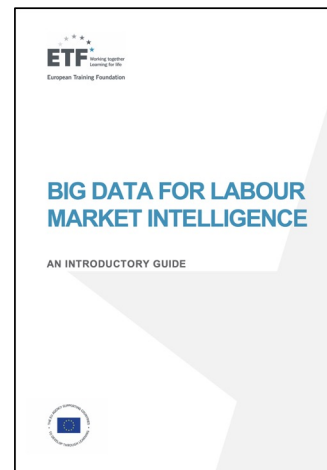


Identifying reliable online job boards

A data-driven approach of more relevant job posting sources

A **Landscaping activity** is performed to produce a list of **sources** (web portals) that are relevant for the Web Labour Market in a given country.

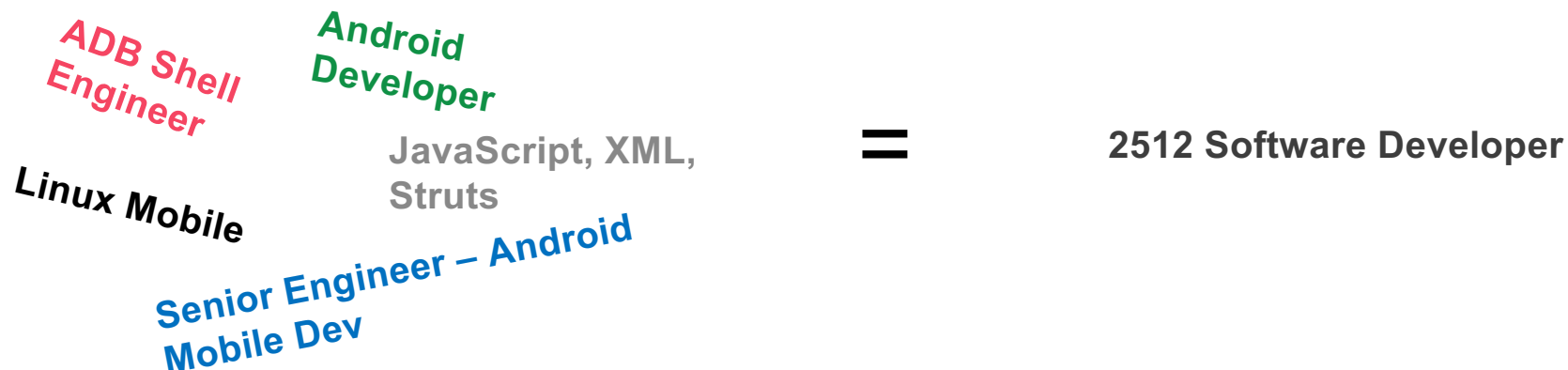
International Labour Market Experts **validate** this list, that will become the initial step of the LMI System



Mezzanzanica, Mario, and Fabio Mercorio. "Big data for labour market intelligence: An introductory guide." European Training Foundation (2019)

Conventional and New data: speaking the same language

Data classification using AI and Taxonomy



- **Occupations:** ISCO - International Standard Classification of Occupations
- **Skills:** ESCO - European Skills, Competences, Qualifications and Occupation
- **Location:** NUTS and ISO
- **Educational Level:** ISCED 2011 - International Standard Classification of Education
- **Sector:** NACE - Statistical classification of economic activities

The role of AI in Lightcast

Job title = Data Scientist

Data Science Analyst (Remote) ⋮
 Yelp 3.4 ★
 Remote

Full-time

- A knack for communicating quantitative results to a broad audience through writing and compelling **data** visualization.

Posted 30+ days ago · More...

Machine Learning Research Engineer ⋮
 Evolution Artificial Intelligence
 Remote

- You'll be putting state of the art deep learning technology into production use.
- Designing, developing and rigorous testing of machine learning models.

Data Science Manager ⋮
 Consortia
 Remote

£120,000 a year **Permanent**

- As **Data Science Manager**, you will lead and grow a world-class

Biostatistician - Global Biostatistics ⋮
 IQVIA 3.8 ★
 Remote

Full-time

- Perform protocol development, sample size calculation, protocol and CRF review, and **data** management on database design and data.

Posted 30+ days ago · More...

Applied Scientist (Remote)
 Yelp 3.4 ★
 Remote

Full-time

- Experience with **data** analysis/statistical software and packages (pandas/statsmodels/sklearn within Python, R, etc.).

Posted 30+ days ago · More...

Senior Analyst, BI & Analytics ⋮
 WorldRemit
 Remote

Full-time

- Experience in an analytics or **data** science role.
- Strong SQL skills, able to handle large, complex **data** structures from multiple sources.

Posted 30+ days ago · More...

Job Postings | Key dimensions

Industry	Occupation	Type of employment	Geography	Time	Skills
Job Title	Wage	Experience	Education required or preferred	Certifications	Employer

Skills demand analysis

Identifying Future Skill Demands

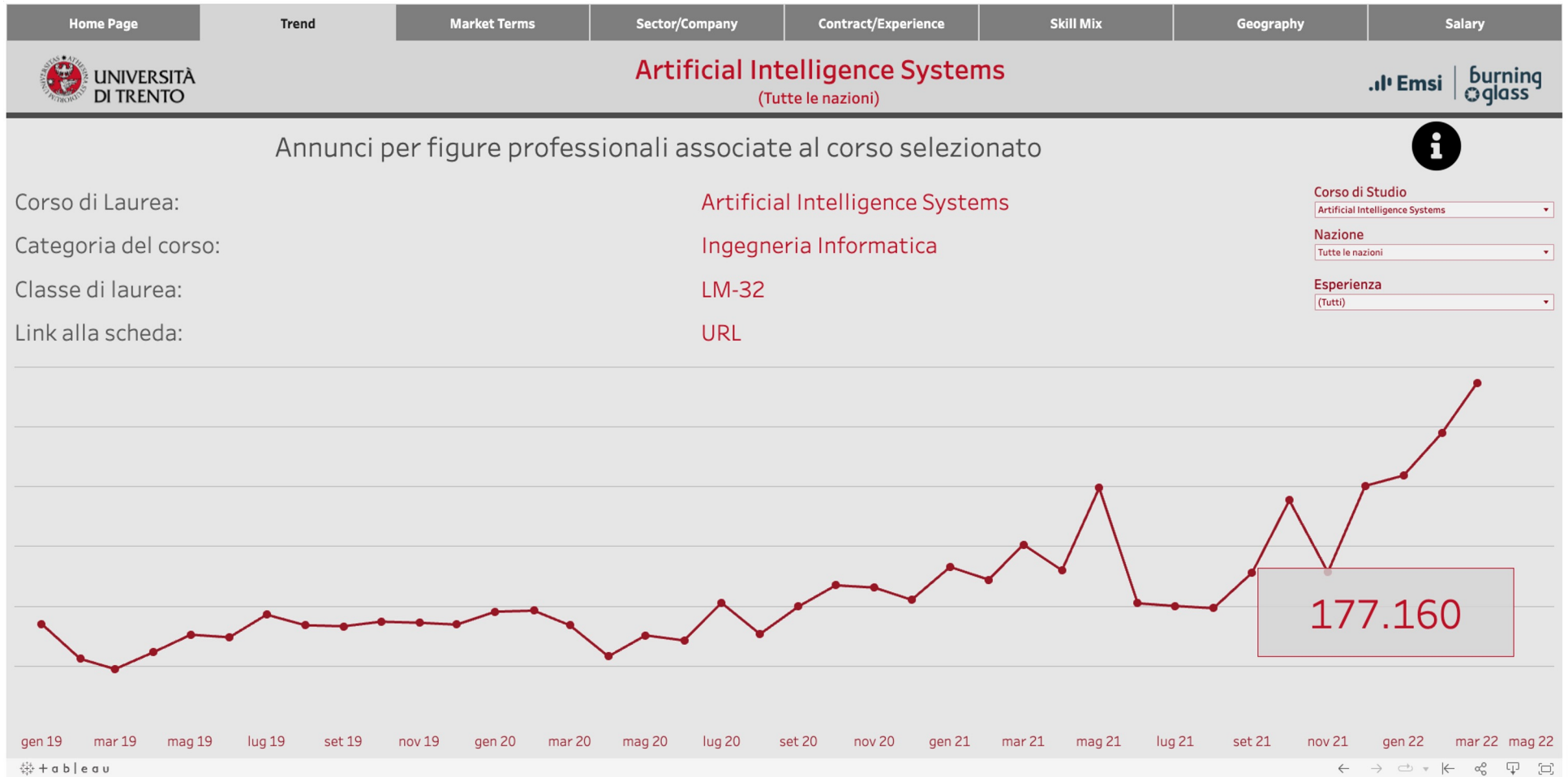
A Range of Lenses for Tracking Emerging Trends

	Top IT Skills (Total postings)	Highest Paying IT Skills (Mean advertised salary)	Fastest Growing IT Skills (24 month projections)	Hardest to Fill IT Skills (Mean posting duration)
1.	SQL	Zookeeper	TensorFlow	Public Cloud Security
2.	Java	TensorFlow	General Data Protection Regulation (GDPR)	Infrastructure as a Service (IaaS)
3.	JavaScript	Scala	Kubernetes	Cloud Technology Architecture
4.	Linux	AWS Redshift	Spring Boot	Cloud Infrastructure
5.	Python	AWS DynamoDB	Webpack	Ansible
6.	Data Analytics	Go Programming Language (Golang)	AWS Lambda	Apache Mesos
7.	Salesforce	Pig	Salesforce Lightning	Data Protection Planning
8.	C#	Apache Mesos	Redux	Work Breakdown Structure
9.	Scrum	AWS CloudFormation	Financial Microservices	Hadoop Cloudera
10.	C++	Deep Learning	Apache Kafka	OpenShift

What Is the Best Transition?

	esco_level_4_1	esco_level_4_2	Cosine	Motyka	Ruzicka	Jaccard
35223	Systems analysts	Systems analysts	1.000000	0.500000	1.000000	1.000000
35210	Systems analysts	Software developers	0.221716	0.159765	0.190143	0.120758
35091	Systems analysts	Database and network professionals not elsewhere...	0.107499	0.135108	0.156214	0.046229
35112	Systems analysts	Engineering professionals not elsewhere classi...	0.128942	0.127291	0.145858	0.061319
35137	Systems analysts	Information and communications technology user...	0.138873	0.120262	0.136702	0.074417
35239	Systems analysts	Web and multimedia developers	0.087979	0.108967	0.122293	0.043215
35190	Systems analysts	Research and development managers	0.090797	0.102387	0.114066	0.044422
35080	Systems analysts	Computer network and systems technicians	0.085416	0.084232	0.091980	0.040742
35193	Systems analysts	Sales and marketing managers	0.039574	0.073370	0.079180	0.020081
35136	Systems analysts	Information and communications technology serv...	0.109083	0.071072	0.076509	0.056837

LMI for Education





Skills Intelligence - ART-ER Emilia-Romagna (Italy)

Skills Intelligence & Talent Manifesto

- New models for **skills projections** and **difficulty to fill occupations**

- The **future skill gaps** in the local market

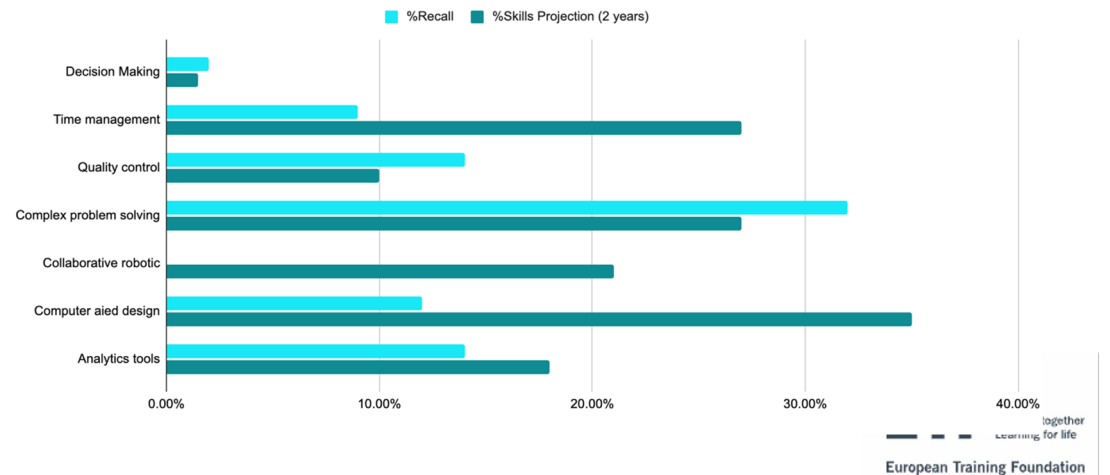
- Talent Manifesto, a **public policy**, to attract talented individuals

- **Enhance the region's workforce** by bridging the gap between demand and supply of skills

<https://emiliaromagnainnodata.art-er.it/skills-intelligence-emilia-romagna/>

ISCO08 Occupations	Recall%	Difficulty to Fill	ESCO Occupations	Recall%
Mechanical technicians	6.81%	MEDIUM	Mechanical technician	7.37%
			Production technician	3.31%
			Mechatronic engineer technician	1.96%
Specialized engineers	4.45%	HIGH	Quality engineer	8.23%
			Test engineer	5.17%
			Project engineer	3.74%
Mechanical engineers	5.82%	HIGH	Mechanical engineer	17.90%
			Automotive engineer	16.97%
			Equipment designer engineer	0.40%

Skills Analysis - Specialised Engineers

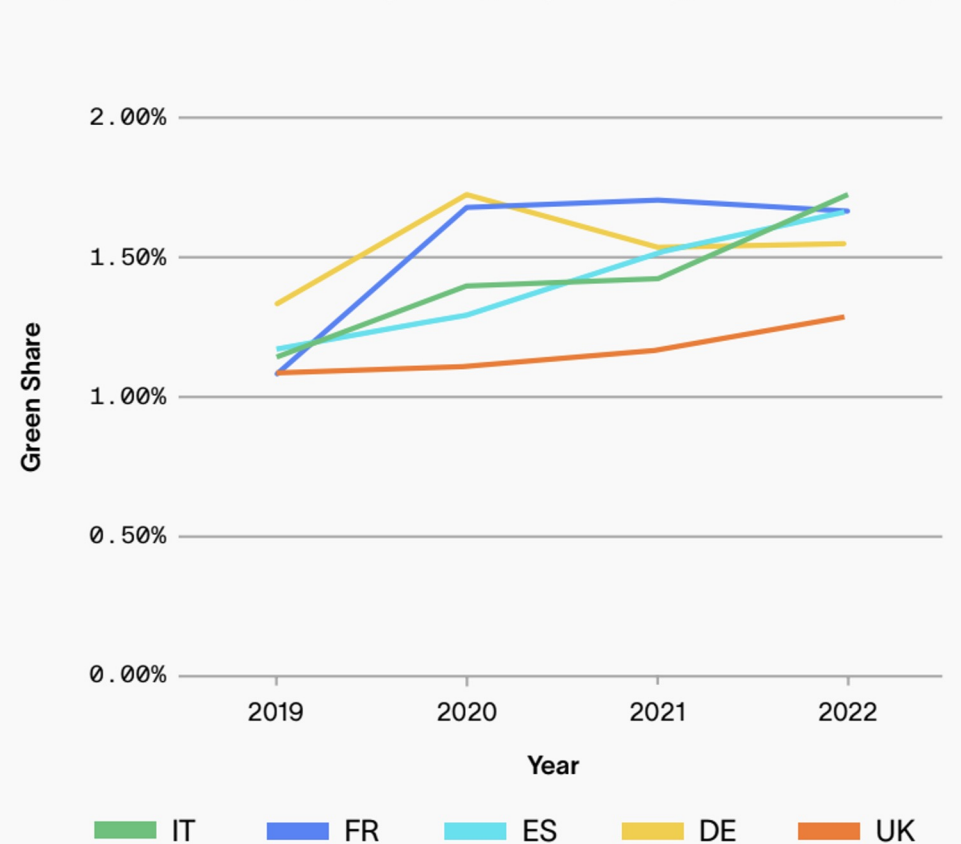


The transition to a greener economy

**INVESTMENTS MEANS
INCREASED JOBS DEMAND AND
CHANGING SKILLS NEEDS**

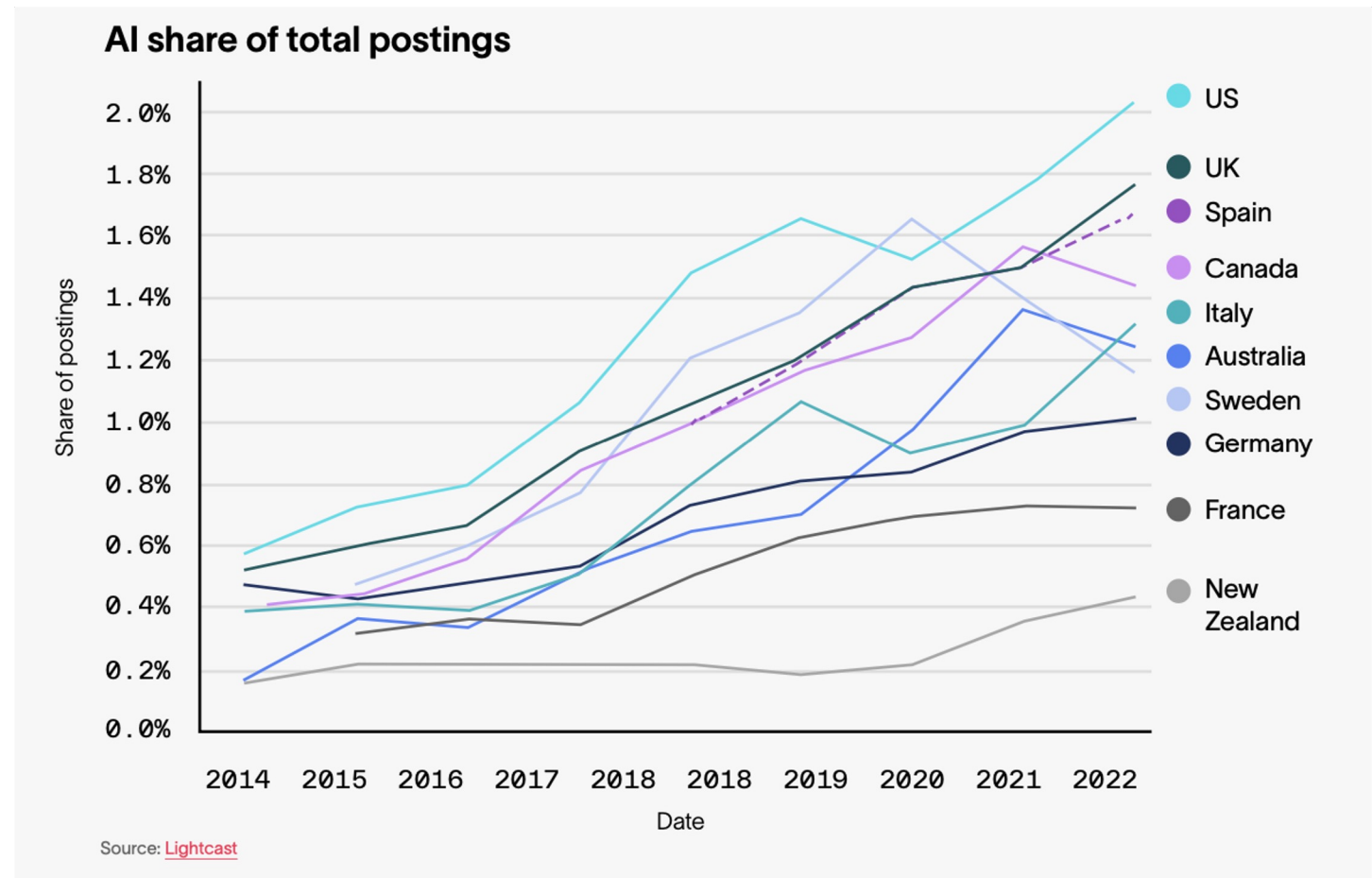
Top 5 green skills in Germany in 2022
Renewable energy
Energy supply
Recycling
Waste management
Photovoltaics

Figure 1: Share of green postings by country, 2019 - 2022 (%)



AI disrupting the way we work?

AI RISING FAST


































Detailed datasets

NEWS ARTICLES | 14 December

8.5% of online



-  Digital economy and society (isoc) [\(Important notice\)](#)
-   ICT usage in households and by individuals (isoc_i) 
-   ICT usage in enterprises (isoc_e) 
-  Digital skills (isoc_sk)
-   ICT users (isoc_sku) 
-   ICT specialists (isoc_sks)
-   ICT training (isoc_skt)
-   Labour market demand for ICT specialists in online job advertisements – experimental statistics (isoc_sk_oja)  EXPERIMENTAL
-   ICT sector (isoc_se) 
-   Additional indicators on digitalisation (isoc_ad)

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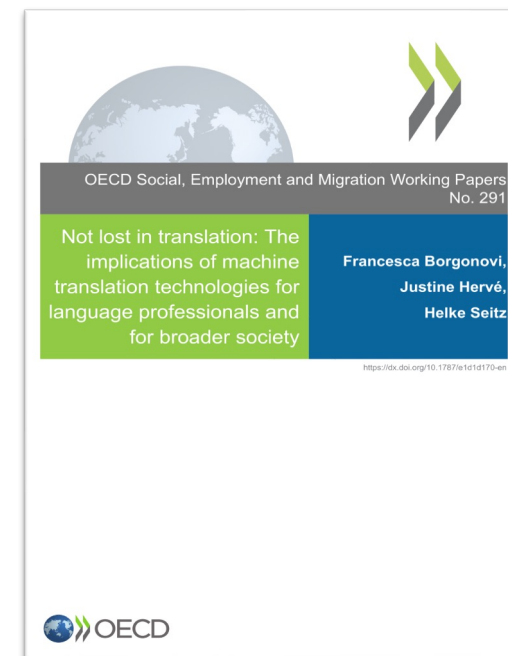
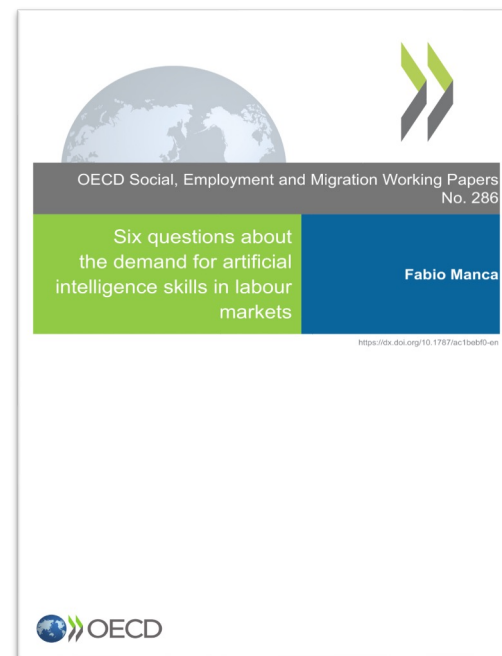
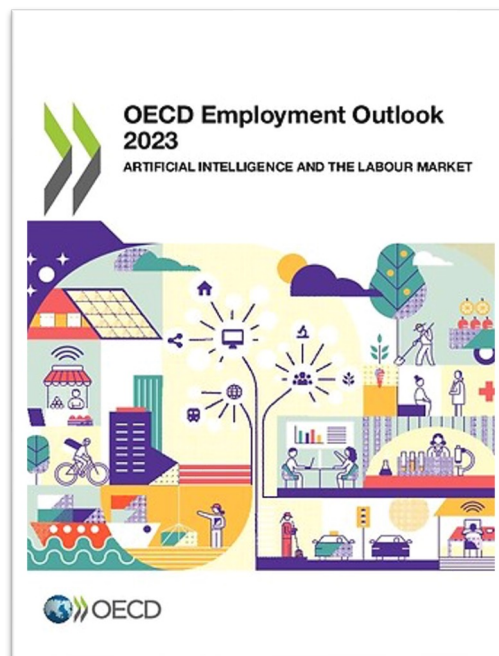
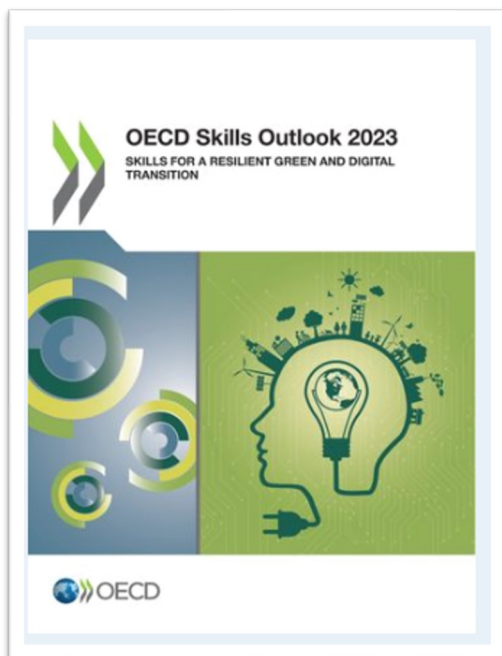
Big Data for the Labor Market: Sources, Uses and Opportunities



Published Date	December 2021
Type of Publication	Reports
Publication Under	APEC Secretariat, APEC Policy Support Unit
Accessed	1694
Pages	76
Download publication	Download 

Description

Big data is the future of labor market information. Big data on the labor market can help augment traditional sources of data in providing real-time analyses, and could be especially useful in times of economic shocks. It allows for analyses such as calculating skill premia, understanding skill-adjacencies and creating career pathways, enabling reskilling and upskilling, and cataloguing emerging technology skills. This issues paper, which was made possible through a partnership with The Asia Foundation, conducts a mixed methods study of existing labor market data sources and compares them with big data available through digital platforms. It looks into integration of new data into labor market information systems, and assesses opportunities for bringing this data into public policymaking. This can open doors for policymakers to use big data to quickly respond to economic shocks (such as that caused by the COVID-19 pandemic), reskilling and upskilling workers, and matching job seekers with appropriate employers.



Skills for the Digital Transition

Assessing Recent Trends Using Big Data

This report presents the most recent trends in the labour market demand for digital professionals and skills, highlighting where bottlenecks are emerging and policy action is – and will be – needed to support individuals who aim to thrive in the digital transition. The report analyses a wide range of digital occupations and the associated skill and technology demands using a unique set of data collected from millions of job postings published online in Belgium, Canada, France, Germany, Italy, the Netherlands, the United Kingdom, the United States, Singapore and Spain. The evidence contained in this report is key for governments to design targeted retraining and upskilling policies, and for workers to fully benefit from the digital transition.

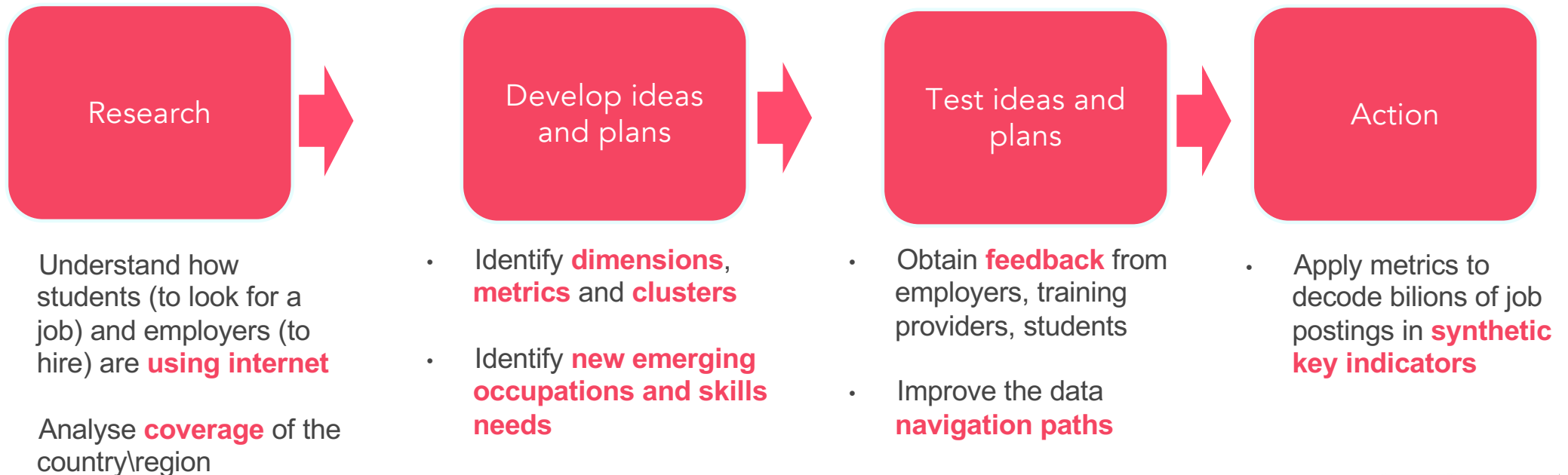
[^ Less](#)

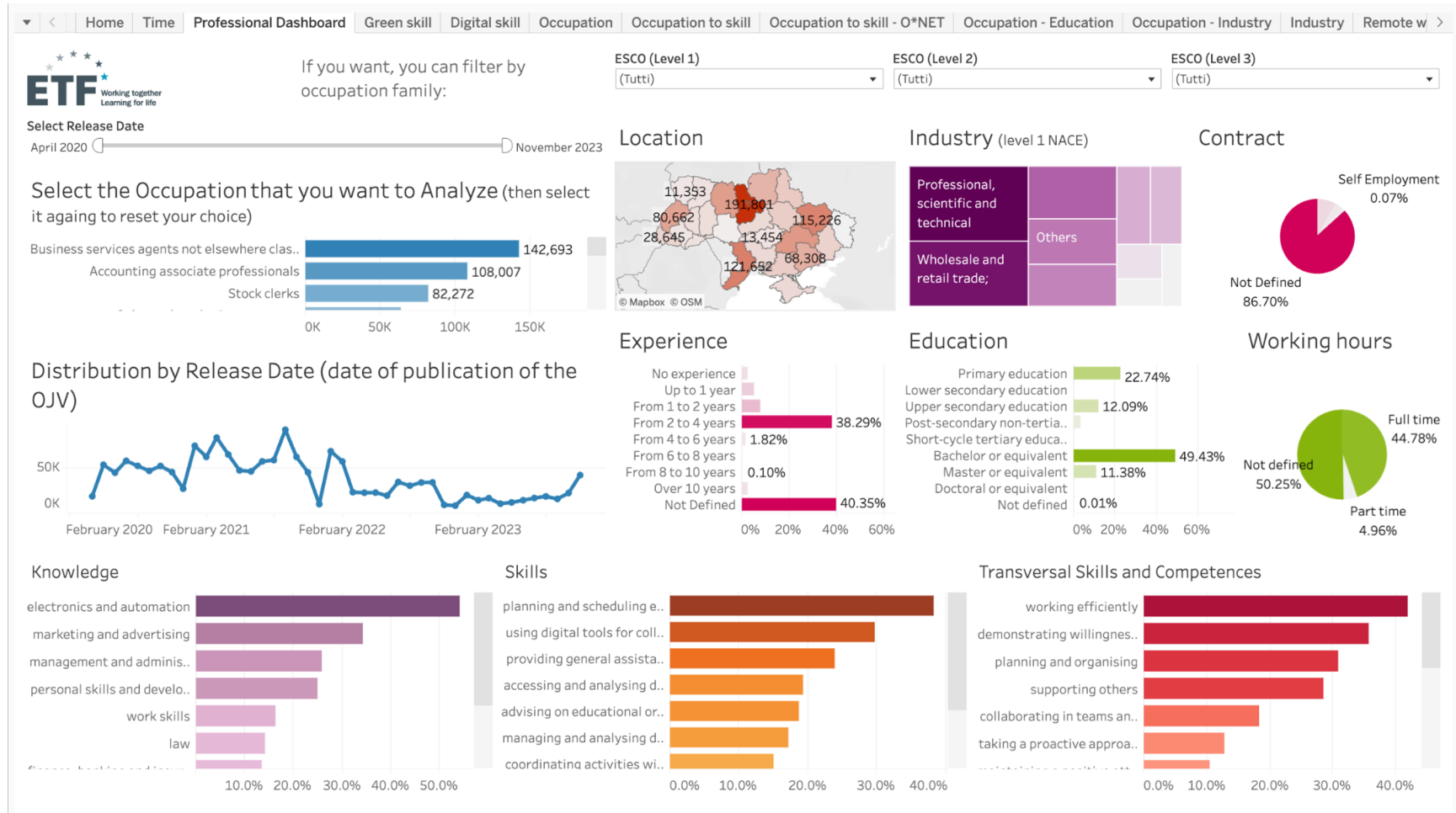
Dashboards to navigate the data



Inform decision makers and practitioners

Use billion job postings to inform on skills development







Thanks !

Mauro Pelucchi - Head of Data Science -
mauro.pelucchi@lightcast.io

Anna Clara Gatti – Data Analyst –
anna.gatti@lightcast.io