A Digital Single Market for Europe

Lucilla Sioli: Head of Unit, DG CONNECT, European Commission

Milan – 15 October 2015

European Commission

ICT drives 1/3 EU GDP growth
2001-2011

43% EU risk capital
in ICT companies

17% EU patents
in ICT

70% fixed Broadband subscriptions

72 mobile subscriptions per 100 people

ICT PROFESSIONALS

825 000 estimated EU demand/supply gap by 2020

55% work outside of ICT sector

2.8% of EU workforce

3-4%
yearly employment growth

President Juncker's Political Guidelines

Connected DSM – with growth and jobs - highest on political agenda:

"break down national silos in telecoms regulation, in copyright and data protection legislation, in the management of radio waves and in the application of competition law"

What is the Digital Single Market?

*"The **Digital Single Market** means an area where the free movement of goods, persons, services and capital is ensured and where **citizens** and **businesses** can therefore seamlessly access and exercise online activities under conditions of fair competition, irrespective of their nationality or place of residence."*

Why the Digital Single Market ?

- The global economy is rapidly becoming digital
- Changes in our society are happening at a very fast pace and require European solutions
- Improve cross-border opportunities for businesses and citizens
- Keep the EU on an equal footing with other major world economies

Focus on limited number of coherent, high-impact initiatives

2015

2016

Better access for consumers and businesses to digital goods and services across Europe

Legislative proposals for simple and effective cross-border **contract rules** for consumers and businesses

A wide ranging review to prepare legislative proposals to tackle unjustified **geo-blocking**

Competition sector inquiry into **e-commerce**, relating to the online trade of goods and the online provision of services

Legislative proposals for a reform of the **copyright** regime

Review of the **Satellite and Cable Directive**

Review of the **Regulation on Consumer Protection Cooperation**

Measures in the area of **parcel delivery**

Legislative proposals to reduce the administrative burden on businesses arising from different **VAT** regimes

Creating the right conditions for digital networks and services to flourish

Comprehensive analysis of the role of **platforms** in the market including **illegal content** on the Internet

Legislative proposals to reform the current **telecoms rules** and the **Audiovisual Media Services Directive**

Review of the **e-Privacy Directive**

Establishment of a **Cybersecurity contractual Public-Private Partnership**

Maximising the growth potential of the Digital Economy

Adoption of a **Priority ICT Standards Plan** and extending the European Interoperability Framework for public services

Initiatives on data ownership, **free flow of data** (e.g. between cloud providers) and on a **European Cloud**

New **e-Government Action Plan** including an initiative on the 'Once-Only' principle and an initiative on mandatory interconnection of business registers

1 Better access for consumers and businesses to digital goods and services across Europe

Unlocking the e-commerce potential

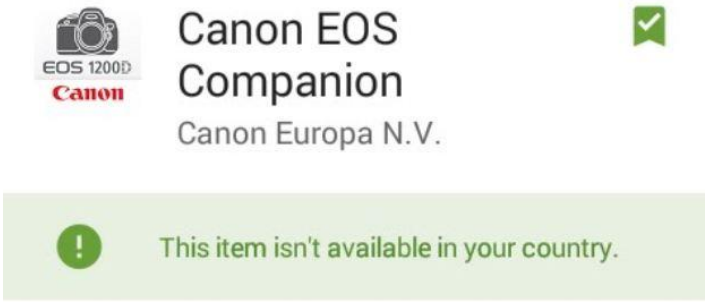
Enable SMEs and start-ups to scale-up

End to geoblocking of goods and services

Geo-blocking: consultation

- Can geo-blocking be justified? If so, in what circumstances?

- Should geo-blocking be banned completely?



2 Shaping the right environment for digital networks and services to flourish

Establish role of online platforms

Telecoms rules fit for the digital age

Improved data protection rules

Combat illegal content online

Online Platforms: Consultation

- Do platforms have a positive or detrimental effect on the economy?

- Are you concerned about the impact of platforms on consumers and SMEs?

3 Creating a European Digital Economy and society with growth potential

Big data and Cloud Strategy

e-Government Action Plan

Standardisation

e-Skills

Why digital skills must be high up the agenda

- Impact of digitisation on the labour force.
- 90% of jobs require some level of digital skills whatever the sector; all jobs will change and many will disappear.
- One third of the EU workforce has insufficient digital skills
- 40% of enterprises trying to recruit ICT professionals have difficulty doing so.
- We estimate more than 800,000 vacancies for ICT professionals in the EU by 2020.
- Impact of digitisation on society
- Citizens must have basic skills. Yet, 20% of them has never used the internet

Context

- **ICT Practitioners**: fast-growing segment of the labour force in the EU
  - Employment in ICT grew on average 4% per year since 2004
- **Shortage of ICT skills** in the labour market
  - 38% of companies trying to recruit ICT practitioners had difficulties
  - **By 2020:** over 800k potential ICT jobs that won't materialise due to lack of skilled workers
- Current data sources on ICT vacancies:
  - Show little detail (either geographical or by job category)
  - Are difficult to compare across member states
  - Are quickly outdated
- **Digital sector by definition**:
  - Virtually all advertised jobs can be found online
  - Possibility of **data collection via automated online search**

Objectives

- Monitor vacancies for ICT practitioners published online
  - **Automated search** of vacancies published on the Internet
  - Production of **statistical data** on number and characteristics of such vacancies
    - Job sub-category (ISCO)
    - Industry sector (NACE)
    - Region (NUTS 2)
    - Skills required (ESCO)
- **Continuous** data collection (weekly/monthly data updates)
- **Automated** processing
- Online **platform for visualisation** of results

Challenges in automated data collection

- **Technological**
  - Permission for scraping (robots.txt)
  - Different website structures
  - NLP (Natural Language Processing) of vacancy notices
- **Contextualising** vacancy notices
  - Job category / Industry / Place of employment / Skills required / etc.
- **Structural**
  - De-duplication
  - Assessing the lifespan of vacancy notices
- **Linguistic**
  - 24 languages (at least)
  - Mapping to common taxonomies (ISCO, ESCO, NACE)

VICTORY: purchase the data

- There are companies with longstanding experience in collecting online vacancy data
  - EU coverage: around **60% of the population**
    - Plans for **expansion**
  - Crawling about **1000 job boards and websites per country**
  - **Mature technology** that deals with most mentioned challenges

- **Risk-minimising strategy**
  - **Procure** the raw data from economic operators
    - Weekly deliveries of "contextualised" raw data
  - **Develop** the infrastructure to analyse and visualise the data

ec.europa.eu/priorities/digital-single-market/index_en.htm

Thank you!

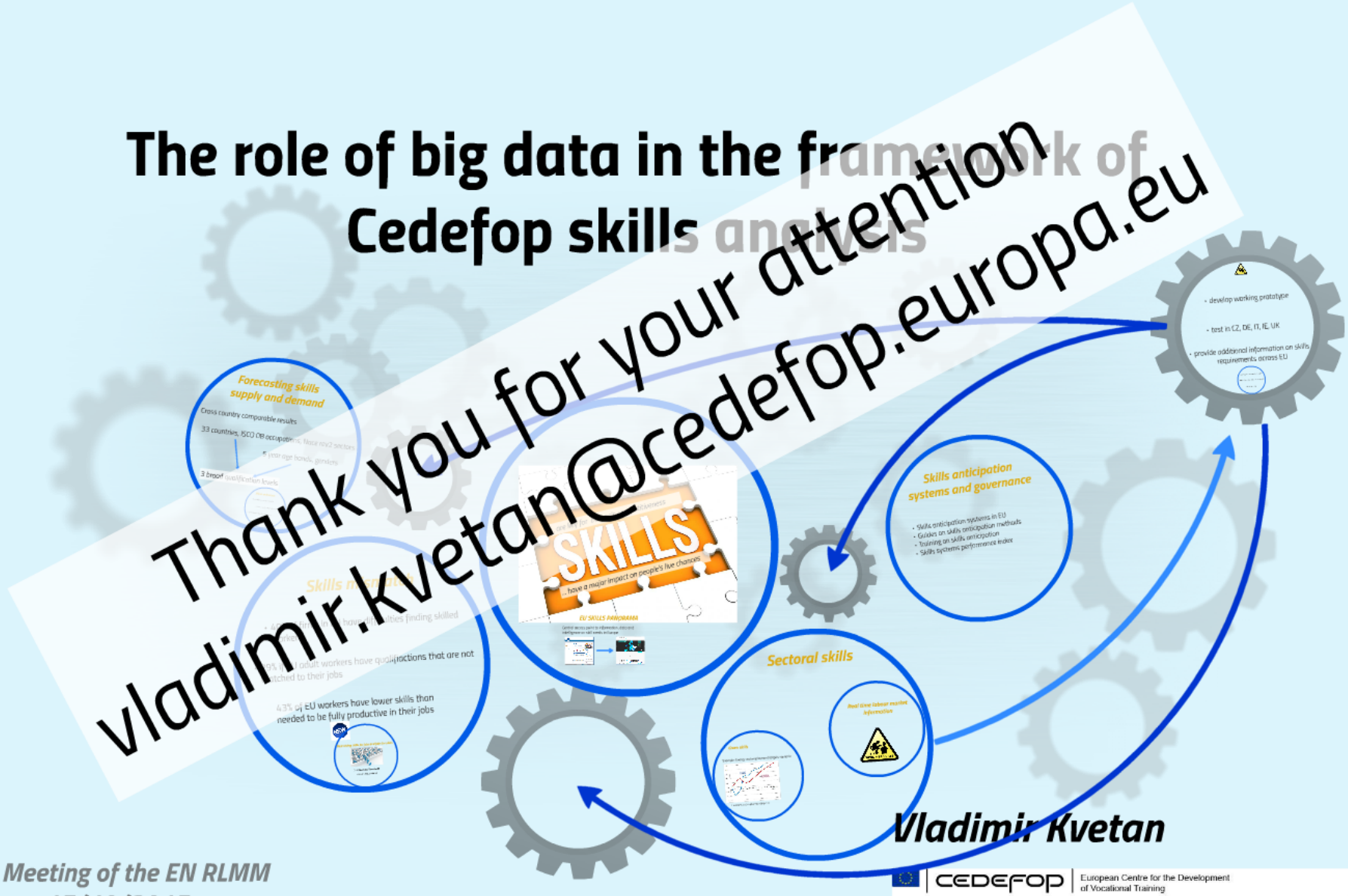
ec.europa.eu/digital-agenda/en/digital-single-market

@DigitalSingleMarket
@StartUpEU

Digital Agenda for Europe

The role of big data in the framework of Cedefop skills analysis

Thank you for your attention
vladimir.kvetan@cedefop.europa.eu



Vladimir Kvetan

CEDEFOP | European Centre for the Development of Vocational Training

10th Annual Meeting of the EN RLMM
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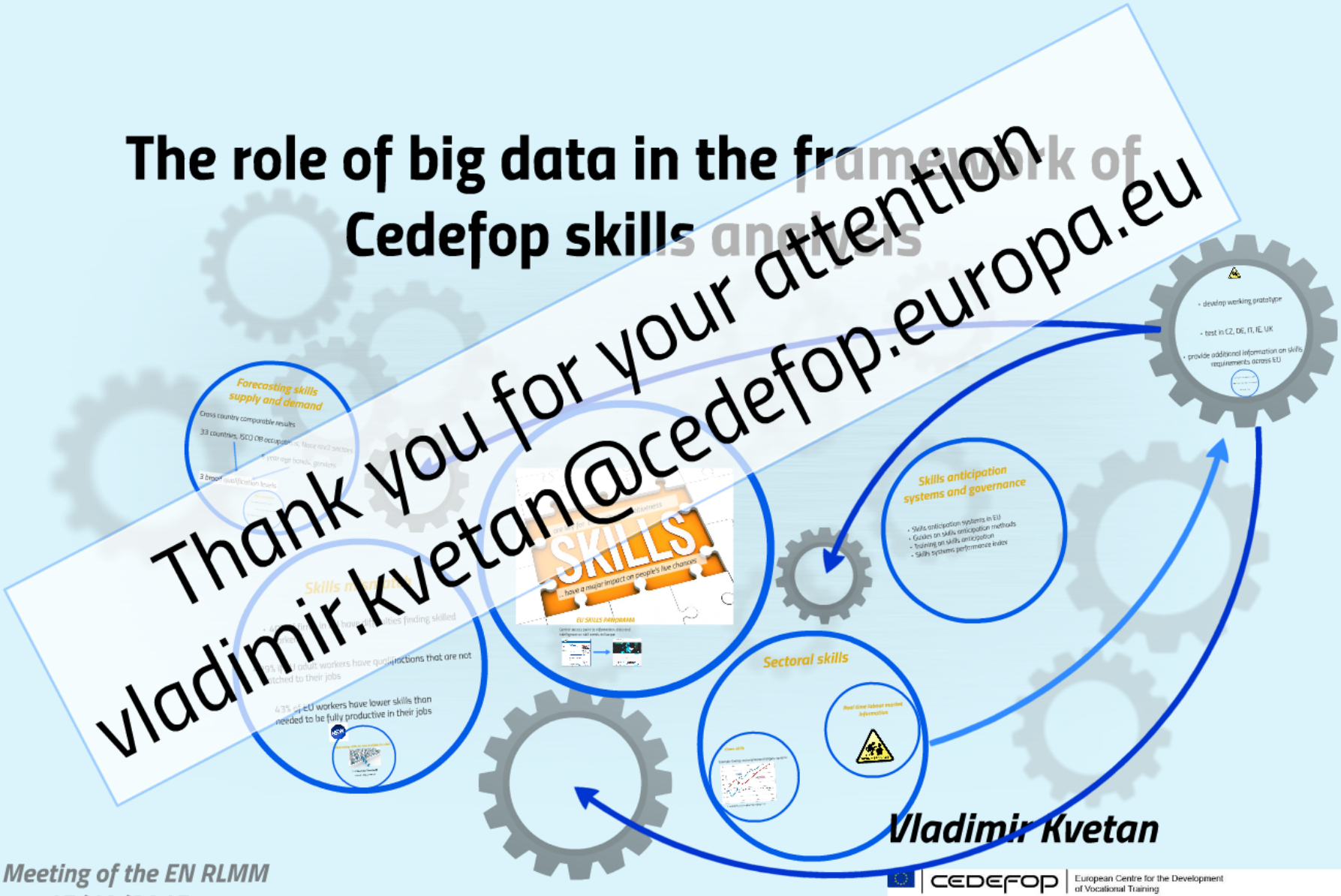

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40 years

EU SKILLS PANORAMA

Central access point to information, data and intelligence on skill needs in Europe

Forecasting skills supply and demand

Cross country comparable results

33 countries, ISCO 08 occupations, Nace rev2 sectors

5 year age bands, genders

3 broad qualification levels

Main outcomes

- More skills intesive labour market
- Medium qualification key for Labo
- Older but better qualified labour force

MT
-3.2
-0.8
1.6
4
6.4

Skills mismatch

- 40% of firms in EU have difficulties finding skilled workers
- 29% of EU adult workers have qualifications that are not matched to their jobs

43% of EU workers have lower skills than needed to be fully productive in their jobs

NEW

Maximizing skills for jobs and jobs for skills

7 - 8 December, Thessaloniki

www.cedefop.europa.eu

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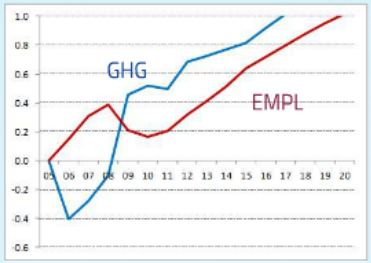
Skills anticipation systems and governance

- Skills anticipation systems in EU
- Guides on skills anticipation methods
- Training on skills anticipation
- Skills systems performance index

Sectoral skills

Green skills

Example: Energy and employment targets scenario



Emissions and employment target =1

Real time labour market information

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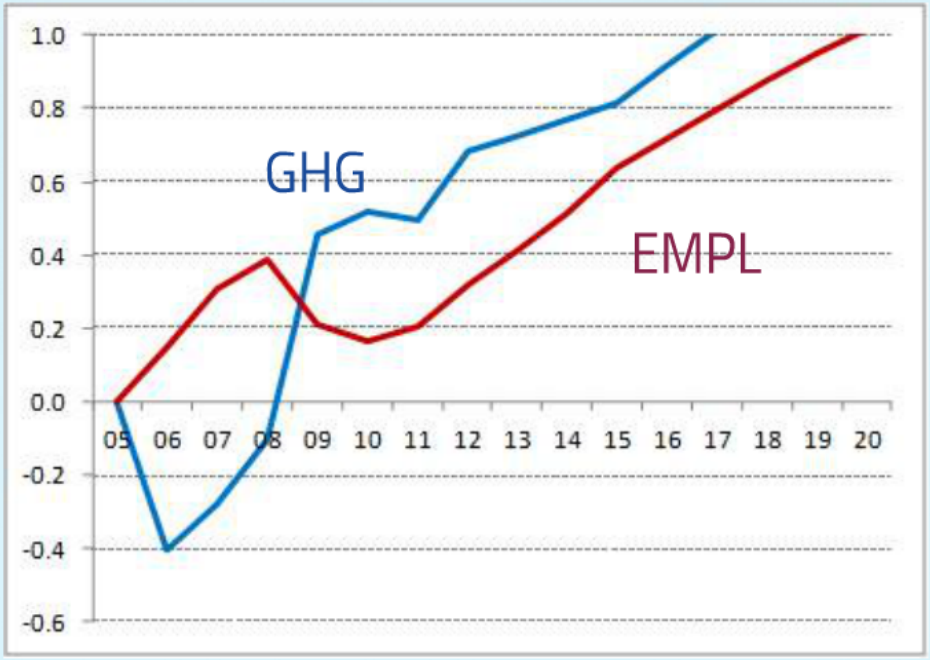
Green skills

Example: Energy and employment targets scenario



Emissions and employment target =1

Real time labour market information

- develop working prototype
- test in CZ, DE, IT, IE, UK
- provide additional information on skills requirements across EU

- Pan European tool ("including difficult languages")
- Skills intelligence rather than forecasting elements
- assessing links to E&T

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SKILLS

... have a major impact on people's live chances

EU SKILLS PANORAMA

Central access point to information, data and intelligence on skill needs in Europe

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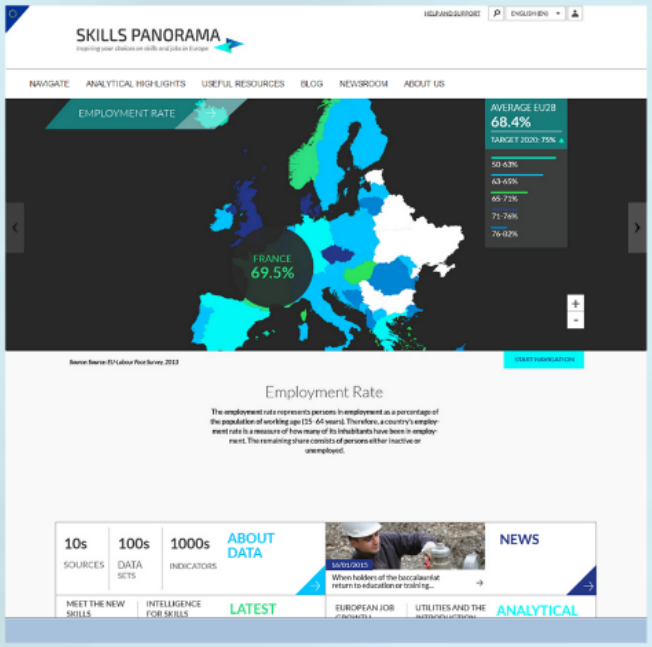

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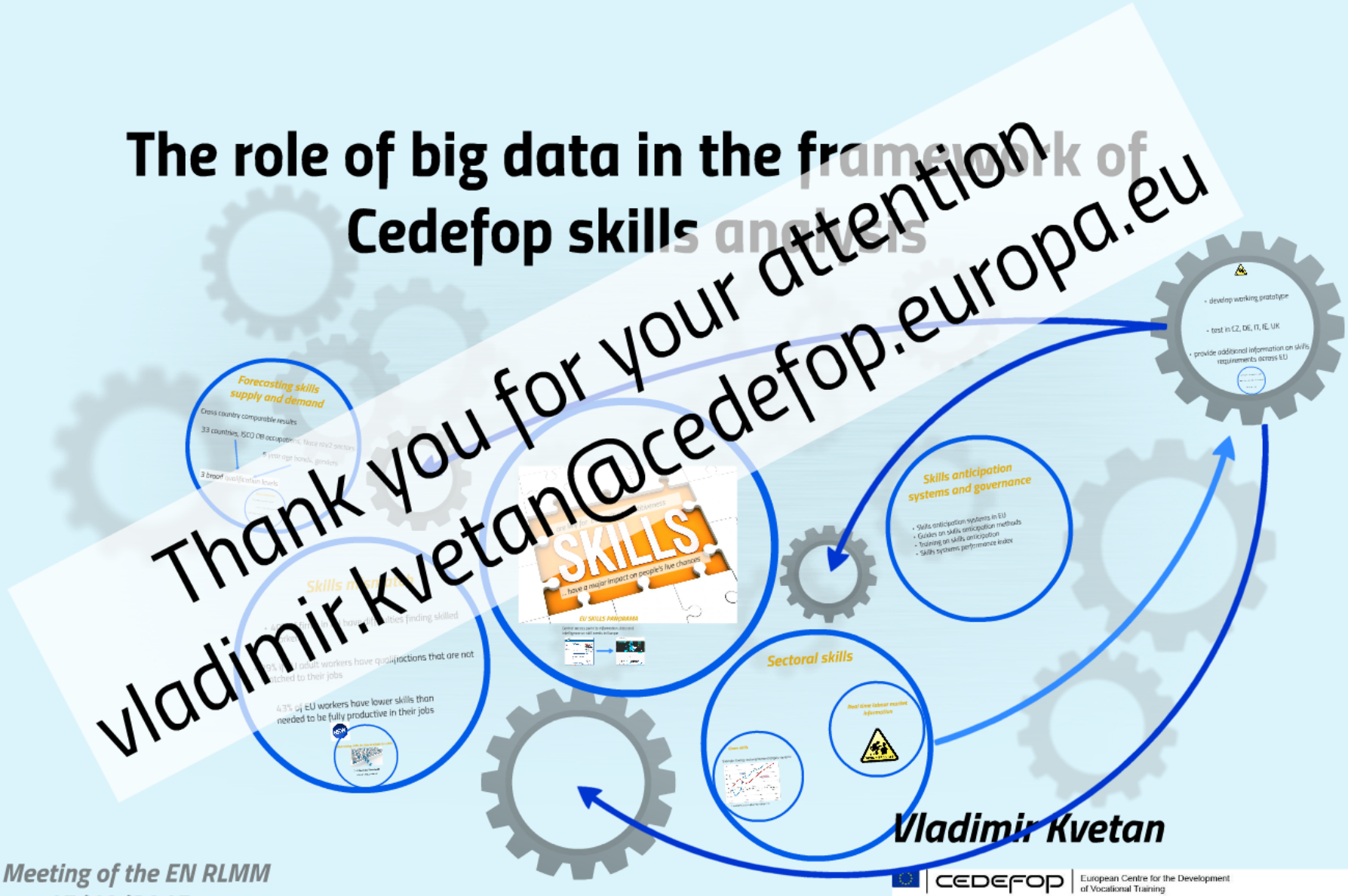

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40 years

CRISP centro di ricerca interuniversitario per i servizi di pubblica utilità

October 2015

Big data in labour market monitoring

Emilio Colombo

CRISP
Interuniversity
Research centre
On public services

University of Milano - Bicocca
Viale dell'Innovazione 10, 20126 Milan, Italy
e-mail: crisp@crisp-org.it
web: www.crisp-org.it

Technology, web and vacancies

- Technology has radically changed the way people work but also the way people look for work.
- The web is becoming an increasingly important channel for posting vacancies and in general for matching labour demand and supply
- Specialised websites are emerging alongside with general ones
- Social networks are becoming popular in this domain. Some of them have a professional profile e.g. Linkedn
- How can we extract information from the web?
- What criteria should be used? What are the limits?

Technology and the labour market

- Technological change, globalisation etc. are exerting rapid and profound changes to the labour market, to occupations and to their skill requirements.
- As a consequence the problem of skill mismatch is emerging as one of the most important challenges that Europe will face in the next decades.
- Skill mismatch has a lot to do with the difficulty in correctly define and classify skills (mainly soft skills).
- The traditional solution has been so far the use of skill surveys, however technology can be itself the solution: web based tools can provide useful insights.

Problem with skill surveys

1. **They are costly**, considering direct (implementation) and indirect (opportunity cost) costs.
2. **Their implementation is not easy**, thus they cannot have a high frequency.
3. **They have a top-down approach**, i.e. soft skills and occupation-specific skills are generally pre-defined.
4. **What you have is what you designed.** Not more sometimes less.

How web vacancies may help

1. **Less costly** to be implemented. High initial cost but low marginal cost.
2. **No implementation lag**. Almost real time data.
3. **Bottom-up approach**, richer classification especially useful for some soft skills and particularly for occupation-specific skills.
4. **Information is always there.** Unless there are storage problems you can also go back and retrieve what you missed.

Limits of web analysis

Critical aspects of web based data

1. **Ethical issues.** Scraping is not technically illegal, however when conducted on a large scale should be done with the agreement of the website.

2. **Sampling issues**. The measured universe may not coincide with the universe of the data. Not all vacancies are posted on the web, some types are overrepresented other are totally absent (doctors, university professors, public servants etc.) Same for sectors and regions (more on this below). In general the sample is not designed to be representative (as in surveys) but is extracted from a given (biased) universe.

Limits of web analysis

Critical aspects of web based data

3. **Technical issues.** Techniques and tools are rather specialised and require a great deal of knowledge.

4. **Classification issues**. Data on the web are not classified according to a determined standard (Nace, Isco etc.). There is the problem in creating a common standard for comparison and cross analysis.

Sampling issues

- Web based data tend to offer a biased representation of the real labour market.
- High skill occupations tend to be overrepresented
- Industrial sectors are overrepresented while services underrepresented
- Digital divides at regional and age level affect the type of vacancies posted.
- For all these reasons these tools are extremely useful but cannot substitute standard tools such as surveys or administrative data.
- They provide a complementary information

Scaling up

- In Europe how do we deal with vacancies posted in different languages with different standards, codes etc?
- CRISP is conducting a research project for Cedefop in developing a working prototype for the analysis of web based data
- Countries involved: Italy, Germany, Ireland, UK, Czech Republic
- We have completed the data collection phase (3 million vacancies in 3 months)
- We are currently conducting the data analysis and we will soon complete the prototype.
- Stay tuned on Cedefop's website to learn for future developments

CRISP | University of Milano-Bicocca
Viale dell' Innovazione 10, 20126 Milan, italy

Web: www.crisp-org.it
E-mail: crisp@crisp-org.it

Big Data and the Complexity of Labour Market Policies

Big Data meet Labour Market

Mario Mezzanzanica

October 15th, Milan, Italy

European Network on Regional Labour Market Monitoring

Big Data at a Glance

”Big Data” term usually refers to large amounts of different types of data produced with high velocity from a high number of various types of sources.

Making these date useful for stakeholders requires to turn these **data** into knowledge, **as the knowledge is the end product of a data-driven discovery.**

First, we focus on the key “dimensions” that make dealing with Big Data challenging

The 4V's Big Data model

Big Data: An opportunity for LMI

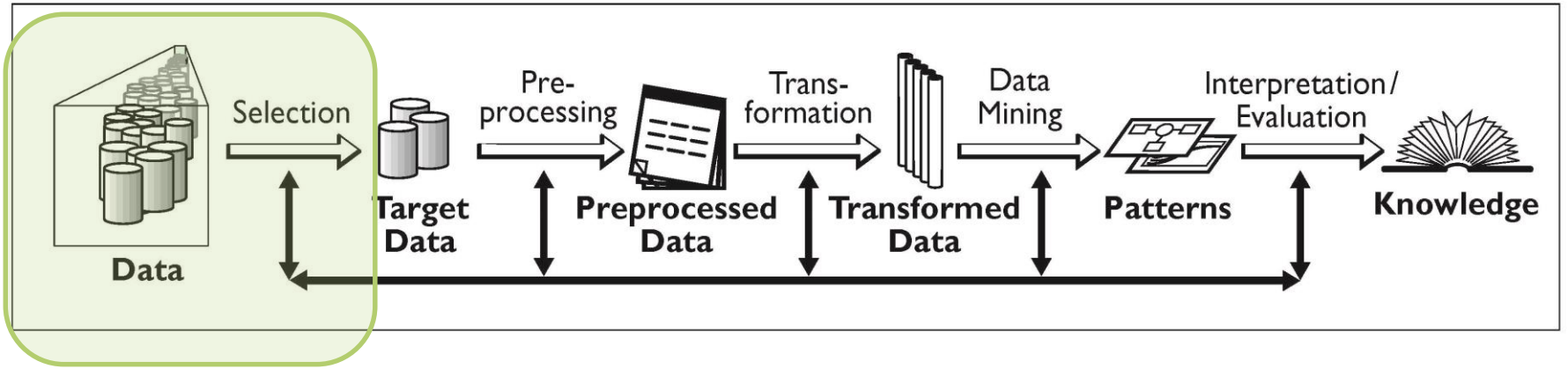
A growing number of **Job Vacancies** are advertised through Web portals and services

These *semi and unstructured* data would allow describing *trends and dynamics* of labour market phenomena, under several points of view as *territorial area*, *occupations (even emerging)* and *skills*.

Web Job Vacancycan be used for supporting **Labour Market Intelligence (LMI)** by both public and private operators

PROCESSING WEB JOB VACANCIES FOR LMI

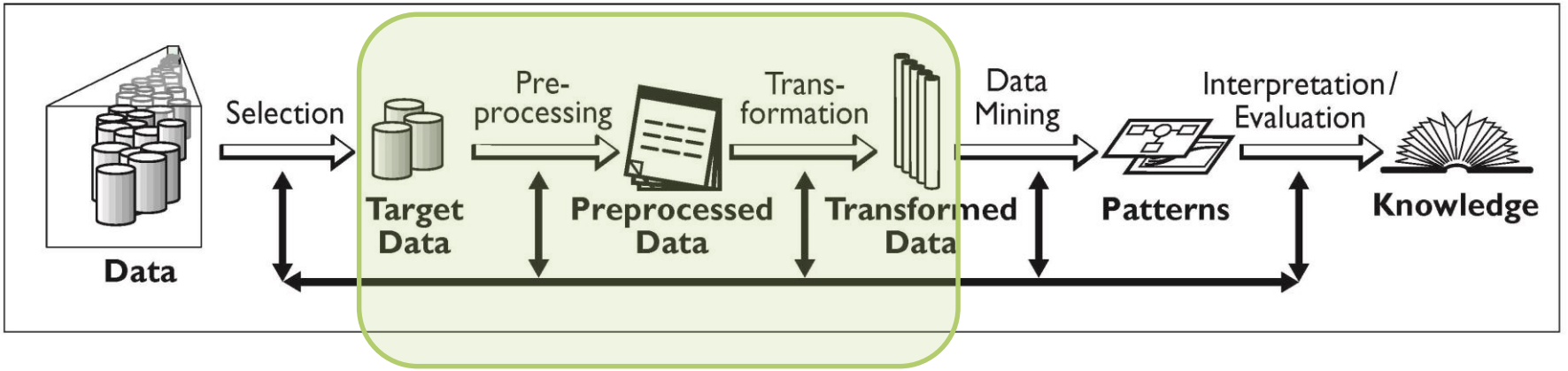
Step1: Sources Selection and Scraping



Each Web source has to be evaluated and ranked on the basis of identified criteria, as:

- Source availability and download/access restriction
- Portion of structured/semi/unstructured data
- Presence of publication/update timestamp
- Territorial granularity

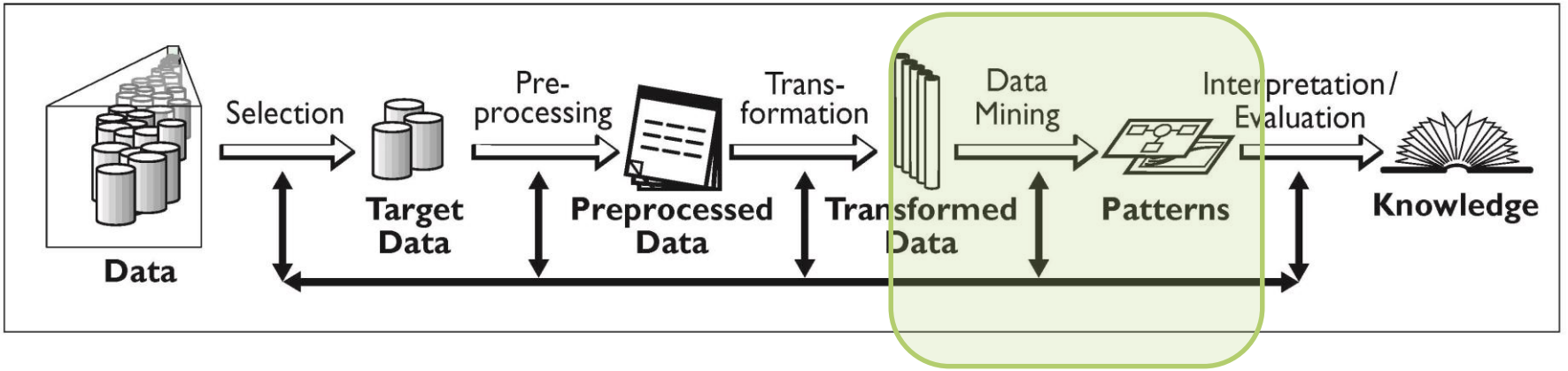
Step2: Data Transformation and Cleaning



This task requires to face with:

- **Data Model Selection** (e.g., identification of a unified data model lossless)
- **Duplicate Detection** (e.g., being able to identify duplicate job vacancies posted on different Web source)

Step3: Data Reasoning and Mining



Aim at extracting the value from the data in answering to a specific business or research question

- **Classification** (e.g., exploit supervised learning approaches to classify Web Job Vacancies according to ISCO/ESCO classification system)

Classification Example: Training and Test

Testing....

Job Vacancies Training Set

Machine Learning Algorithm

Test

Staff Manager (ISCO 1212)

ESCO classes (down to 4 level)

- Armed forces occupations
- Clerical support workers
- Craft and related trades workers
- Elementary occupations
- Managers
- Plant and machine operators and assemblers
- Professionals
- Service and sales workers
- Skilled agricultural, forestry and fishery workers
- Technicians and associate professionals

Classification Example: Classify Web Job Vacancies

Job Vacancies to be classified

Machine Learning Algorithm

ESCO classes (down to 4 level)

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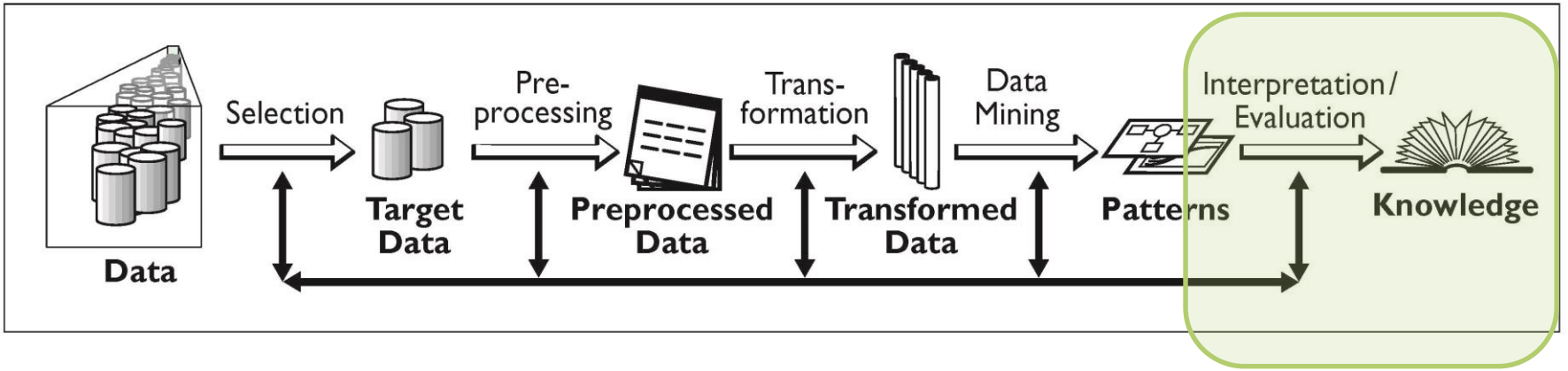
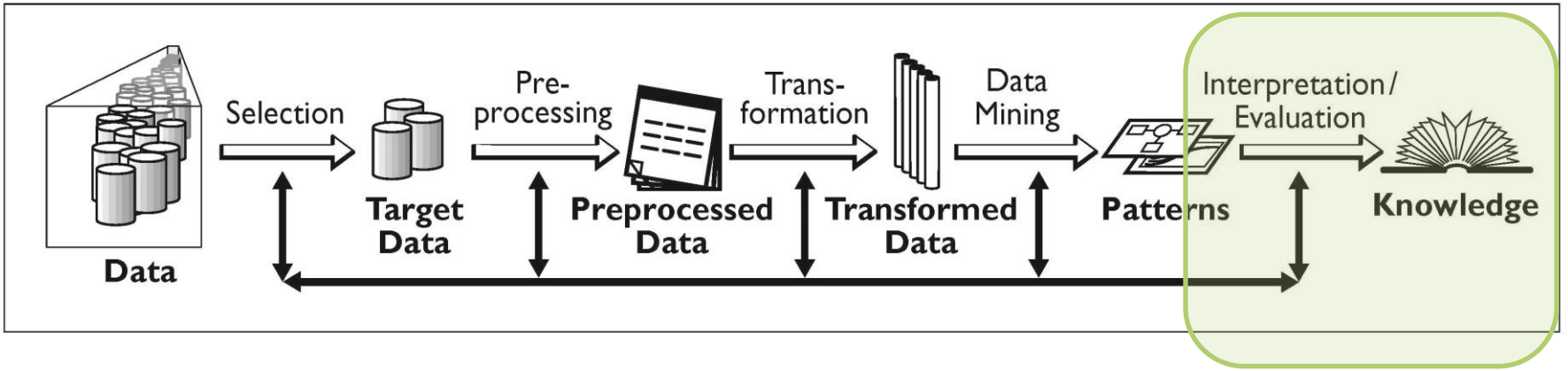
Step4: Interpretation and Data Visualisation



Knowledge representation of data evolution over time by means of **data visualisation model**, having in mind the **stakeholder peculiarities** and abilities in reading the data

Step4: Interpretation and Data Visualisation



Knowledge representation of data evolution over time by means of **data visualisation model**, having in mind the **stakeholder peculiarities** and abilities in reading the data

Workforce Agencies

Business Association and Unions

Government Employment Agencies

Training Organisations

Step4: Interpretation and Data Visualisation

Thematic Dashboards

Personalised Analyses

Basic Dashboards

Analytic Reports

Workforce Agencies

Business Association and Unions

Government Employment Agencies

Training Organisations

WOLLYBI:

THE ITALIAN LABOUR MARKET DIGITAL MONITOR

WOLLYBI Italian Labour Market Digital Monitor

A SaaS tool for **surfing web job vacancies** collected from the most relevant Italian Web sources

A powerful tool for a in-deep knowledge of the **dynamics of Labour Market**

304

Jobs

1.020.768

Vacancies

194

Skills Retrieved

1) Territorial Occupation Navigator (see)

2) My Skills My Job (see)

THANK YOU FOR YOUR ATTENTION

Predicting Monthly Unemployment Rate with Google Trends Data

Michele D'Alò
Stefano Falorsi
Andrea Fasulo

Istat

Contents

- Introduction
- Google Trends
- Software
- Case study
- Conclusions

Overall aim

The aim was to investigate the empirical performances of statistical methods using Big Data. Demonstrate the goodness and therefore the statistical validity of Big Data, can lead to use it in the production of official statistics and in the integration with both sampling and administrative data.

- **Use of GT data for nowcasting**

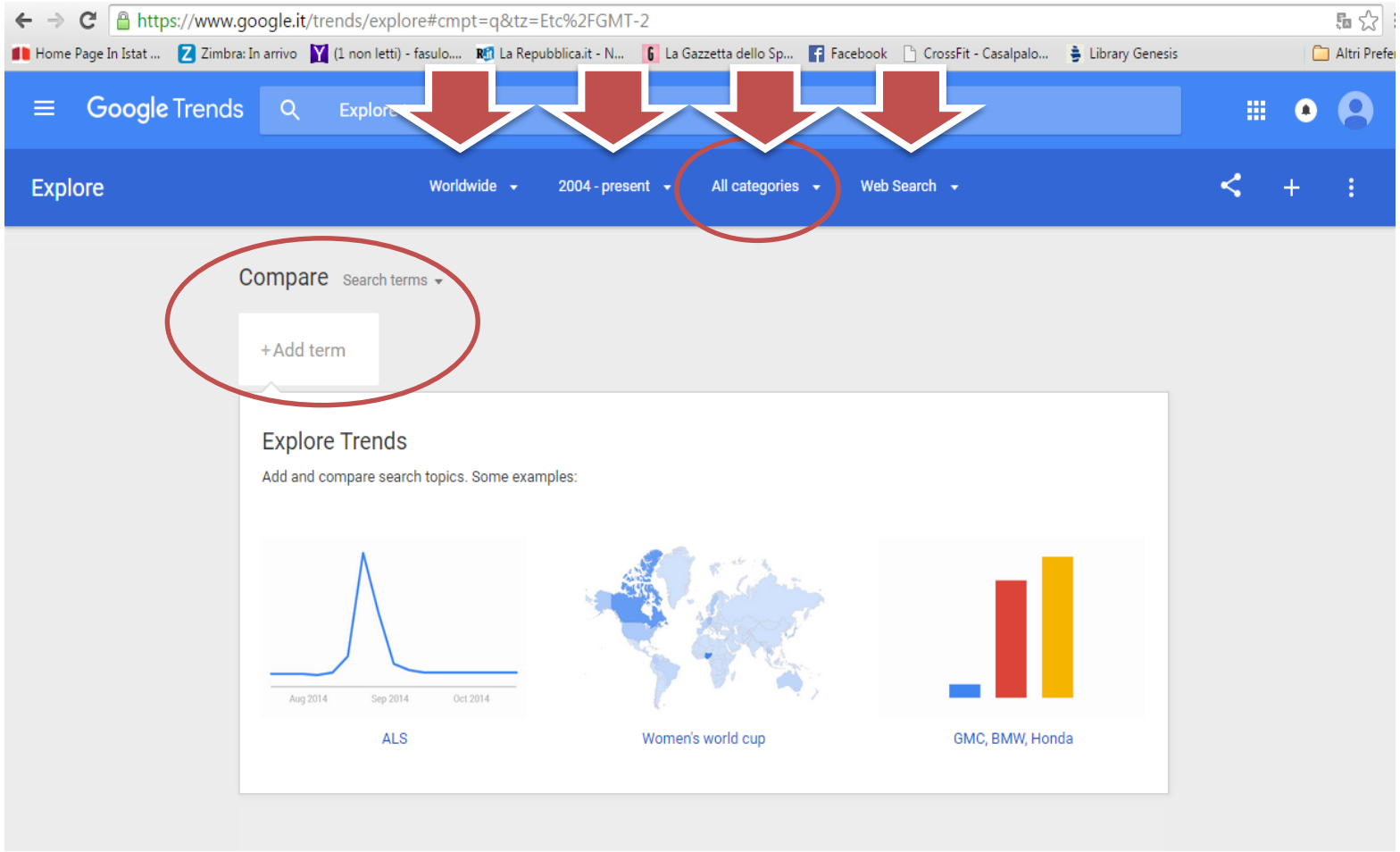
Exploit the predictive capability of Google Trends (GT) web search data for the nowcast of relevant short-term economic indicators .
Askitas et al.; Choi and Varian; D'Amuri and Marcucci; Ginsberg et al.

- **Use of GT data for SAE**

Use of big data as external auxiliary information for the production of small area estimates for large scale surveys on households and enterprises .
D'Alo et al.; Pratesi et al.; Marchetti et al.

Google Trends instrument

www.google.com/trends - Home page



Google Trends indices

Category

$$GT_t = \frac{qs_{t,a} - qs_{0,a}}{qs_{o,a}} * 100 \quad \Rightarrow \quad qs_{t,a} = \frac{x_{t,a}}{x_t}$$

Search terms

$$GT_t = \frac{x_{t,a}}{x_{t^*,a}} * 100 \quad \Rightarrow \quad x_{t^*,a} = max_t(x_{t,a})$$

R packages - `googletrend`

Function structure

```
gettrend('keywords', geo='location',year=NULL)
```

`'keywords'` <- Word, or set of words, for which we want to download the series

`'location'` <- Region/Nation for which you want to limit your search.

`year` <- Time series period we want to download. By default, set to NULL, to download the whole series available, otherwise you can choose a particular year of interest

Temporal trends of LF unemployed series and the related GT series (2004 – 2012)

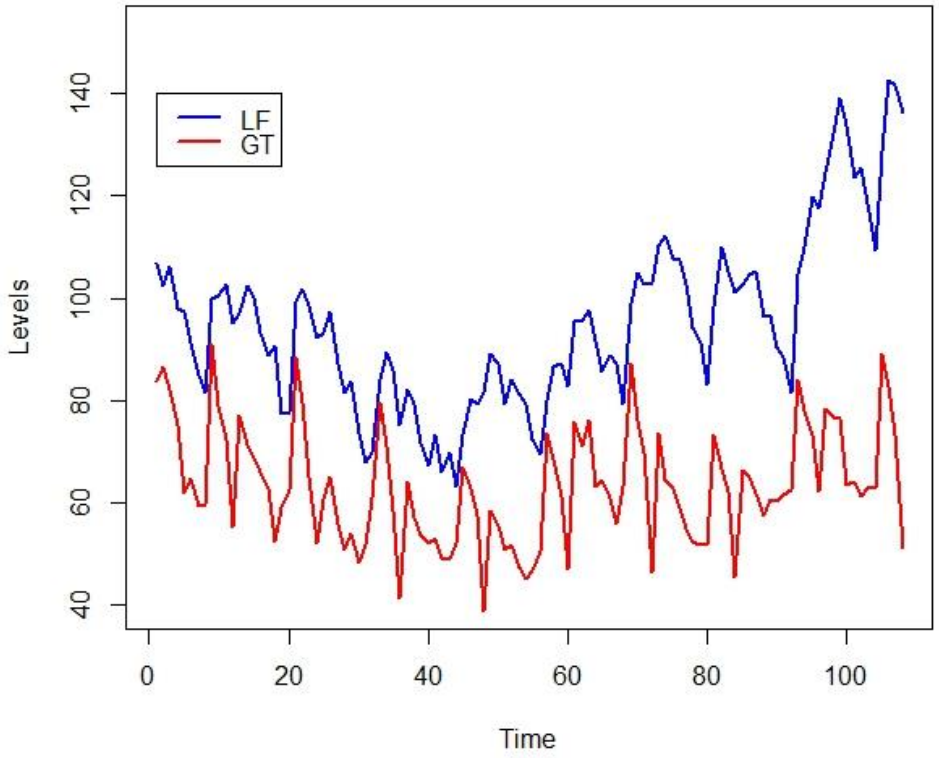
LF time series:

Italian monthly raw unemployment rate 2004-2012

GT time series:

Query share on search term "Offerte di lavoro"2004-2012

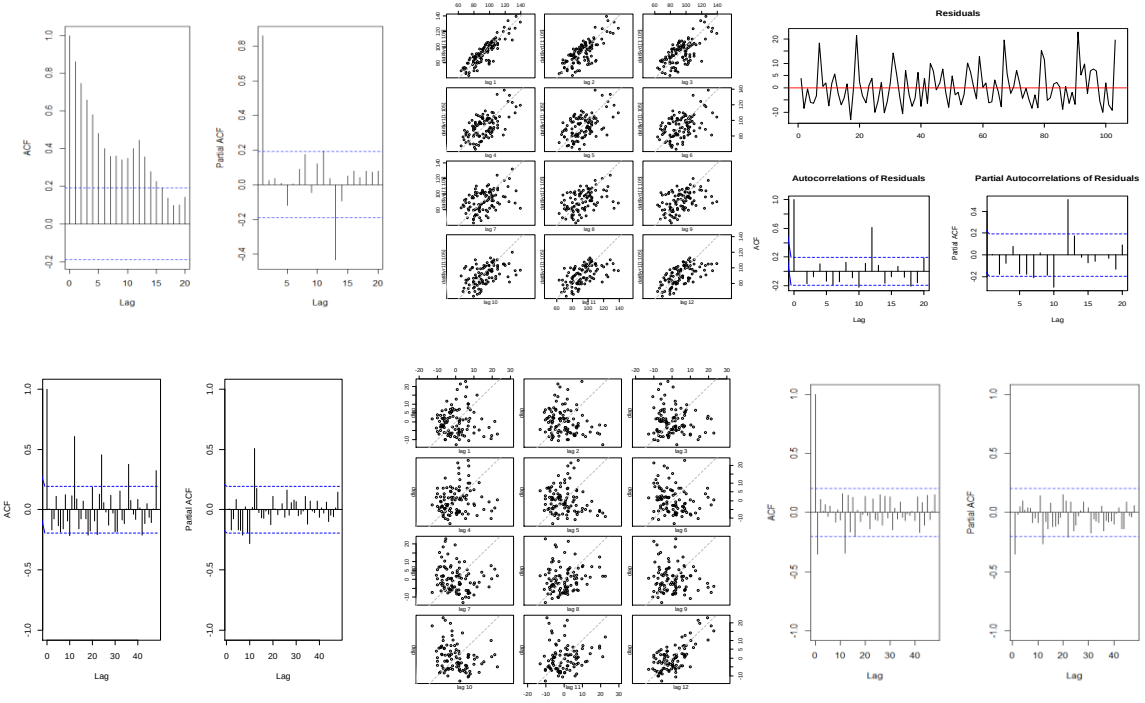
Nowcasting of 2013 and 2014



Methodology

Box-Jeckins approach

It is based on three primary stages, aimed to identify, fit and check the best model



Several models have been studied and the benchmark model that best fits the LF time series follow an ARIMA(1,1,0)(0,1,1)

Istat

Augmented models

- The time series query share extracted from GT is used as auxiliary variable to improve the out-of sample forecasting through the use of model based estimation methods.
- In addition, with the aim of testing and comparing the result obtained using GT data, some leading macro-economical short-term indicators have been taken into account as exogenous variables: Industrial Production Index (IPI); Harmonized Index of Consumer Prices (HICP); Import value (IMP); Export value (EXP).

  - **Model 1**: the benchmark model;
  - **Model 2**: the augmented benchmark model including GT;
  - **Model 3**: the augmented benchmark model including the lagged value of IPI;
  - **Model 4**: the augmented benchmark model including the lagged value of HICP;
  - **Model 5**: the augmented benchmark model including the lagged value of IMP;
  - **Model 6**: the augmented benchmark model including the lagged value of EXP;

Model 2 has two different formulations as we consider 1-step ahead or 3-step ahead estimation. Considering 1-step ahead estimation, the best model includes the current value of GT, while for 3-step ahead estimation the best model is obtained with the lagged value of GT.

Goodness-of-fit of the models

Variables	*Model* 1	*Model* 2^{1-step}	*Model* 2^{3-step}	*Model* 3	*Model* 4	*Model* 5	*Model* 6
$AR(1)$	-0.27^{**}	-0.31^{**}	-0.33^{**}	-0.31^{**}	-0.26^{*}	-0.27^{*}	-0.28^{*}
$SMA(1)$	-0.60^{***}	-0.65^{***}	-0.57^{***}	-0.59^{***}	-0.64^{***}	-0.58^{***}	-0.60^{***}
GT_t		0.32^{**}					
GT_{t-1}			$0.21^{\cdot}$				
IPI_{t-1}				$-0.47^{\cdot}$			
$HICP_{t-1}$					1.37		
IMP_{t-1}						–0.16	
EXP_{t-1}							$-0.11^{\cdot}$
AIC	572.74	489.39	493.46	493.22	495.31	491.83	493.69
BIC	580.37	499.56	503.63	503.39	505.48	502	503.86
Log-lik	-283.37	-240.69	-242.73	-242.61	-243.66	-241.91	-242.85
Residual diagnostic							
Mean	0.61	0.36	0.39	0.43	0.44	0.40	0.44
Skewness	0.30	0.40	0.24	0.24	0.22	0.20	0.14
Kurtosis	-0.01	0.12	0.07	-0.07	-0.04	0.02	0.17
JB normal test	0.44	0.35	0.57	0.20	0.16	0.34	0.41
LB test (24 lags)	0.14	0.21	0.08	0.60	0.65	0.68	0.73

Signif. codes: 0 "***" 0.001 "**" 0.01 "*" 0.05 "." 0.1 " " 1

Results (1/2)

All the estimators were compared by means of the standard indicators of accuracy of prediction:

1. Mean Relative Error (MRE)
2. Mean Absolute Relative Error (MARE)
3. Root Mean Squared Error (RMSE)

1-step ahead

	2013					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
MRE	0.09	0.18	0.19	0.35	0.02	0.01
MARE	3.36	2.88	3.27	3.24	3.60	3.58
RMSE	6.03	5.22	6.01	5.99	6.35	6.26
	2014					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
MRE	-0.97	-0.66	-0.98	-0.72	-0.95	-0.95
MARE	4.39	4.26	4.39	4.36	4.52	4.55
RMSE	8.56	8.23	8.44	8.49	8.77	8.83
	2013-2014					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
MRE	-0.44	-0.24	-0.39	-0.18	-0.46	-0.47
MARE	3.88	3.57	3.83	3.80	4.06	4.06
RMSE	7.40	6.89	7.33	7.35	7.66	7.65

Results (2/2)

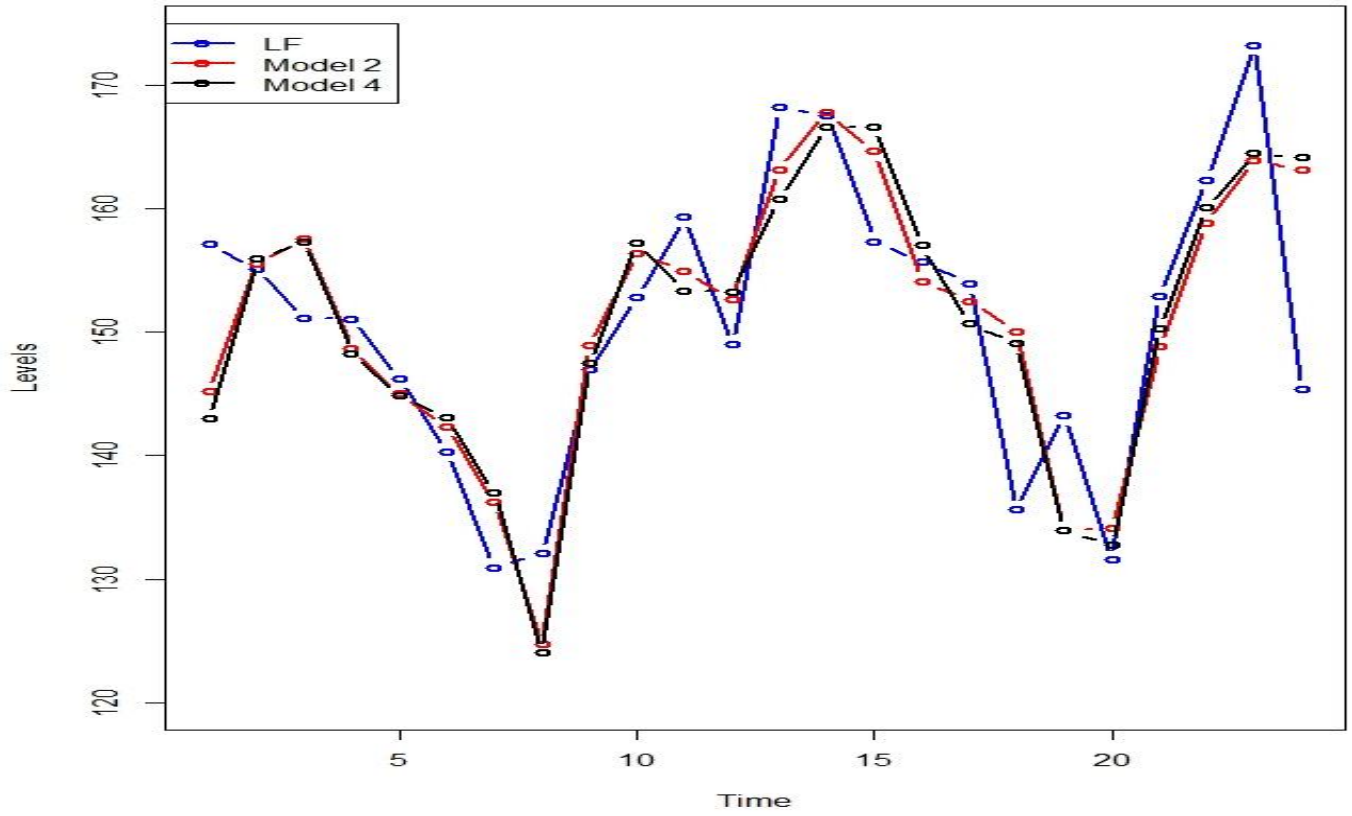
All the estimators were compared by means of the standard indicators of accuracy of prediction:

1. Mean Relative Error (MRE)
2. Mean Absolute Relative Error (MARE)
3. Root Mean Squared Error (RMSE)

3-step ahead

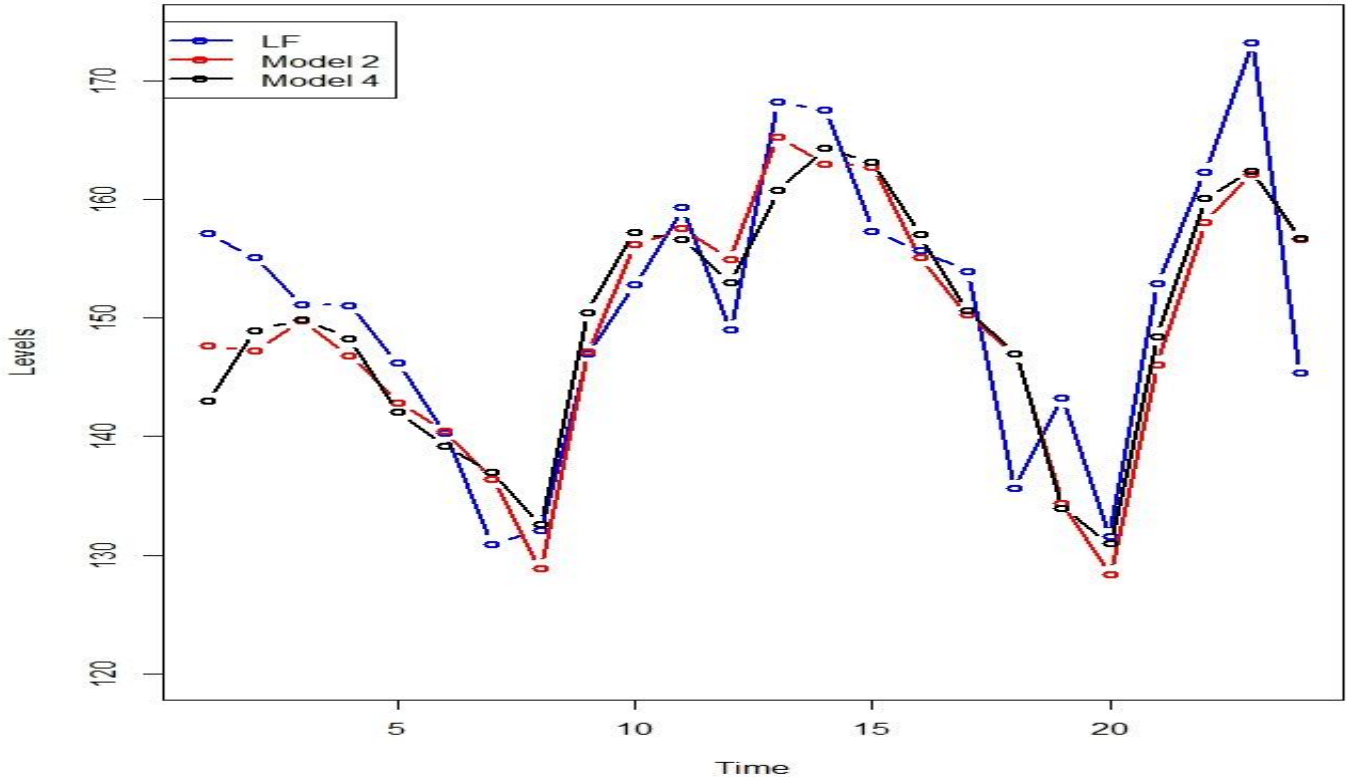
	2013					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
MRE	1.15	0.84	1.29	0.66	0.96	0.94
MARE	2.96	2.60	2.97	2.82	2.72	2.82
RMSE	5.70	4.76	5.74	5.45	5.26	5.56
	2014					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
MRE	0.81	0.81	0.64	0.44	1.14	0.92
MARE	4.18	4.07	4.16	3.90	4.43	4.35
RMSE	7.28	7.10	7.20	7.07	7.62	7.55
	2013-2014					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
MRE	0.98	0.82	0.96	0.55	1.05	0.93
MARE	3.57	3.34	3.56	3.36	3.57	3.59
RMSE	6.54	6.04	6.51	6.31	6.55	6.63

Nowcast years 2013-2014, rolling regression 1-step ahead



Istat

Nowcast years 2013-2014, rolling regression 3-step ahead



Istat

Future development

- Study a more short series: from 2004 to 2006 and predict from 2007 to 2014
- Study models with regional information
- Study the LF seasonal adjusted series
- Try more complex models (VEC/VAR model, 2015, A. Naccarato, S. Falorsi, A. Pierini)

Conclusions

- Good properties of the ARIMA model when Google Trends data are used, better than those arising from competitor ARIMAX models based on traditional macro-economical indicators
- NSI programs could obtain an "edge" from non-traditional sources improving timeliness for preliminary estimates of key statistics
- NSIs and EUROSTAT should invest in the next years in specific research and skills development in different areas of expertise.
- To move forward on this path it would be essential to solve at National and European level, legal problems related to the usability of these sources of data

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The Use of Big Data in the Social Domain

Harry Piepers
KWIZ Netherlands
15 October 2015

Content of presentation

- legal framework for the use of personal data in the Netherlands
- practice and possibilities in using big data
- monitoring the social domain (case study)
- data and data processing technology
- findings from population research

Legal framework

- use of personal data for other purpose than gathered is prohibited unless using them …..
- to establish the right to social benefits
- for historical statistical or scientific research
- in case the principles of subsidiarity and proportionality are not violated
- the results of the study are not reducible to individual natural persons

Practice and possibilities local research

- under strict conditions it is possible to access existing datasets in encrypted form from the CBS registers and merge them with local data
- possible to use different datasets from one governmental supplier using privacy statements
- possible using datasets from different clients using both privacy statements and encrypted data

Monitoring the social domain

- survey in 2014 for the city of Leeuwarden with 100.000 inhabitants in North Netherlands
- to map the number of local clients on annual base after the transition of nationwide services
- to determine the need for personal formation for the various services on local district level
- to calculate the amount of money in terms of transferred program costs to the local government after the transition

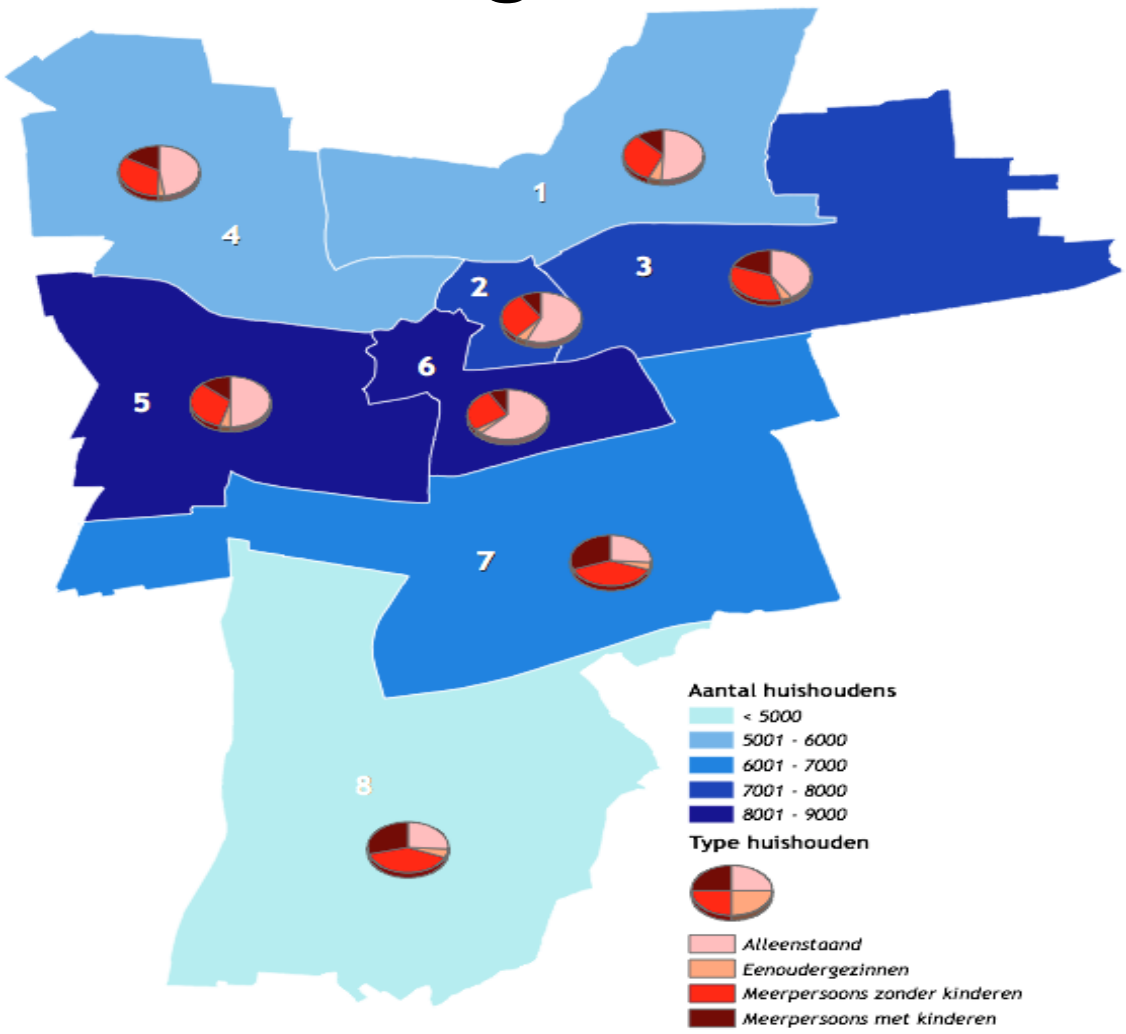
Used data sets

- population register city of Leeuwarden
- 4 municipal registers concerning social benefits, care, sheltered work and debt solving
- 1 regional register concerning mental care
- 1 regional register concerning nationwide care services to be transferred to the local domain
- 1 regional register concerning youth justice care to be transferred to the local domain

Data processing technology

- creating a file on household level by aggregating the population register from an individual level to household level
- merging the different client files concerning the individual use of services to each household
- determination of the exact use of each services with the aid of the historical users information

Demographical output population register



Output based on the use of services trough households

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	BSN	Date of birth	Gender	Partner number	Code Native Country	Code Native Country Parent 1	Code Native Country Parent2	House number		Type of dwelling	Code Soort Pand	Zip code	Area	Town
2	535286521	27-12-2013	V		5022	5022	7014	2		Gewone woning	1000	1221 SB	Oost	Hilversum
3	174478197	13-8-1963	M	3280696514	7014	7014	7014	2		Gewone woning	1000	1221 SB	Oost	Hilversum
4	170023333	26-7-1978	V		6030	6030	6030	3	A	Gewone woning	1000	1222 RG	Noordoost	Hilversum
5	246239426	16-6-2002	V		6030	6030	6030	9		Gewone woning	1000	1211 MW		Hilversum
6	174302460	22-6-1968	V	6313964147	6030	6030	6030	9		Gewone woning	1000	1211 MW		Hilversum
7	234887977	31-8-1999	V		6030	6030	6030	11		Gewone woning	1000	1211 MW		Hilversum
8	37040443	28-1-1939	M	6365618315	6030	6029	6030	3		Gewone woning	1000	1211 MW		Hilversum
9	344904258	24-5-2013	M		6030	6043	6030	8	A	Gewone woning	1000	1211 CB	Centrum	Hilversum
10	174395723	27-5-1983	M	3743647307	6030	6043	6043	8	A	Gewone woning	1000	1211 CB	Centrum	Hilversum
11	67357726	15-2-1962	M	1942459795	6030	6029	6030	95	A	Gewone woning	1000	1221 JR	Oost	Hilversum
12	216189780	23-12-1992	V		5033	6030	6030	14	G	Gewone woning	1000	1211 BK	Centrum	Hilversum
13	207952759	3-1-1992	M		6030	6030	6030	14	G	Gewone woning	1000	1211 BK	Centrum	Hilversum
14	206170385	1-1-1991	M		6030	6030	6030	159	A	Gewone woning	1000	1214 JC	Zuid	Hilversum
15	167049008	7-9-1982	M		6030	6030	6030	35	A	Gewone woning	1000	1211 BP	Centrum	Hilversum
16	602606226	19-11-1989	M		7028			11	C	Gewone woning	1000	1211 PX	Centrum	Hilversum
17	65510586	13-3-1989	V		6030	6027	6030	165	A	Gewone woning	1000	1211 AR	Centrum	Hilversum
18	194644509	20-3-1987	M		6030	6030	6030	165	A	Gewone woning	1000	1211 AR	Centrum	Hilversum
19	422530165	2-11-1990	V		7028			163	B	Gewone woning	1000	1211 AR	Centrum	Hilversum
20	174372218	22-9-1983	M		6030	6030	6030	10		Gewone woning	1000	1221 SB	Oost	Hilversum
21	212257304	15-4-1993	V		6030	6030	6030	43		Gewone woning	1000	1221 HM		Hilversum
22	220562192	13-6-1995	V		6030	6030	6030	30	A	Gewone woning	1000	1217 RS	Noordwest	Hilversum
23	205910051	7-2-1991	V		6030	6030	6030	67	A	Gewone woning	1000	1211 CA	Centrum	Hilversum
24	172138528	16-9-1982	M		6030	6030	6030	2		Gewone woning	1000	1213 LV	Zuidoost	Hilversum
25	174383113	16-9-1928	V	1075986865	5002			194		Tehuizen	4002	1214 EH	Zuid	Hilversum
26														

Calculation of the program costs of services

AWBZ aantal	AWBZ jaarkosten	Jeugdwet aantal	Jeugdwet jaarkosten	WMO aantal	WMO jaarkosten
168,63	2.057.947	29,50	164.540	139,13	1.893.407
408,63	6.443.410	112,89	817.061	295,73	5.626.348
1.470,53	17.613.644	213,19	1.860.765	1.257,34	15.752.879
107,75	575.055	86,22	449.794	21,54	125.261
1.381,04	23.984.887	0,00	0	0,00	0
539,48	9.002.236	0,00	0	0,00	0
4.076,06	**59.677.180**	**441,80**	**3.292.161**	**1.713,74**	**23.397.895**

Concluding remarks

- using local data sources enables the possibility to monitor social and economical developments
- the ability to do so is present…
- the political courage to support this is needed to make this approach successful

ASSOLAVORO
Associazione Nazionale delle Agenzie per il Lavoro

Italian Member of eurociett

BIG DATA AND THE COMPLEXITY OF LABOUR MARKET POLICIES

Information as a development factor for the agencies' services

Milan, 15 October 2015

ASSOLAVORO
Associazione Nazionale delle Agenzie per il Lavoro

Italian Member of eurociett

A FEW WORDS ABOUT ASSOLAVORO

Assolavoro is the **National Association of Private Employment Agencies**

Assolavoro officially **represents the main staffing companies** that account for **85% of the overall Agency Work industry in Italy**

Assolavoro is the Italian member of **Eurociett**, the European Confederation of Private Employment Services

Assolavoro is currently developing its **DataLab**, a research and statistical unit on Agency Work in Italy to support the association's **institutional activities**

Assolavoro DataLab **mission** is to promote and develop a **proper quantitative representation of Agency Work** mainly throughout **official sources** (sample and administrative)

AGENCY WORK: WHAT IT IS AND HOW IT WORKS

Agency Work is a **triangular relationship between a company, an employee/job seeker and an authorized agency** in which employees are formally hired by the agency and then assigned and coordinated within the company's organisation

In this triangular scheme **the agency has basically a commercial relationship with the company and an employment relationship with the employee**

Overhead costs of this scheme (agency's costs) are totally charged on the client company whereas **there in no fee/cost for the job seeker/employee**

According to different national regulations **Agency Work can be either temporary or open-ended**

Agency Work was **introduced in Italy in 1997** (so called «Pachetto Treu») and further regulated in 2003 («Legge Biagi»).

SOME PECULIARITIES OF THE ITALIAN MODEL

Specific sectoral **collective agreement** on Agency Work

Bipartite welfare system totally funded through non-public resources (supplementary contributions)

Open-ended Agency Work (the worker is hired permanently by the agency and assigned to different companies)

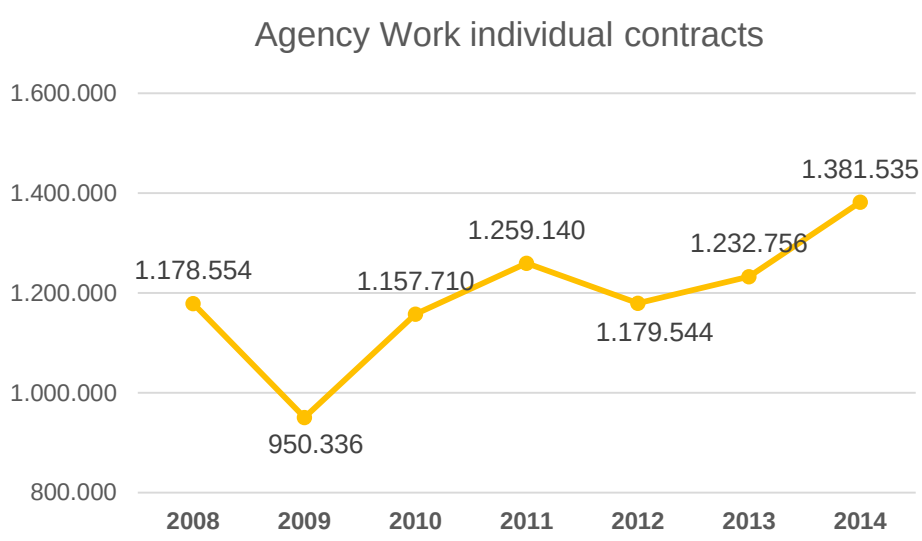
Following the 2003 «Legge Biagi» reform, private employment agencies have **deeply articulated the range of services** including **Active Labour Market Policies**

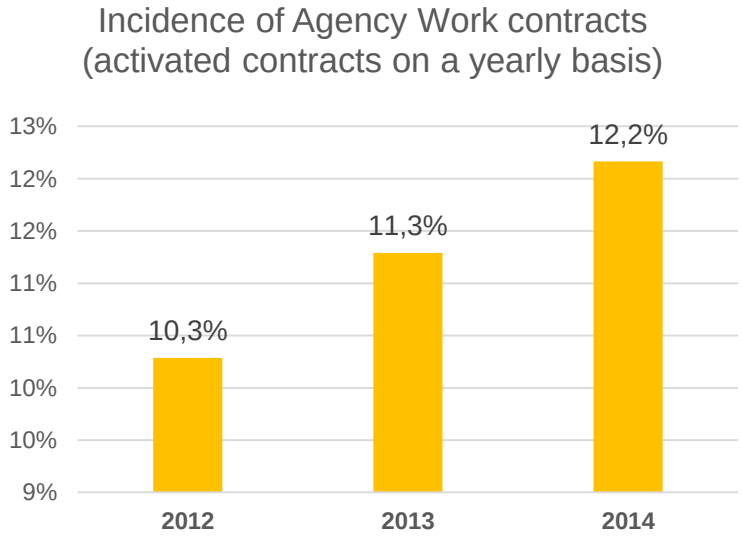
AGENCY WORK IN ITALY: FACTS & FIGURES (2014)

- **81** authorized **agencies**
- **€6.25 billion** of total sales revenues
- **2.600 branches** and **11.000 employees** (internal staff)
- **200.000 FTE** agency workers
- **1,4 million** individual **contracts**
- 36% industry, 49% services
- 50% under 35
- €135 million on vocational training of 200.000 agency workers

AGENCY WORK AS THE MAIN «DRIVER» IN LABOUR DEMAND & SUPPLY MATCHING

Recently published data on individual contracts from the Italian Ministry of Labour have certified the role of PrES as the main actors in **work-related transition processes**





Source: Italian Ministry of Labour

THE RATIONALE OF AGENCY WORK AND HOW IT'S BEEN REPRESENTED (SO FAR)

Agency Work has been commonly represented as **«flexibility at the margin»** mainly used to **manage production peaks, absences, seasonality**

The model developed in Italy and consolidated from 2003 onwards has actually turned agencies in **organizational partners of companies** offering different HR services:

- Temporary and open-ended Agency Work
- Permanent Search & Selection
- Training
- Development and transition
- Recruitment Process Outsourcing

Agencies are also getting a major role in **Active Labour Market Policy** schemes often integrated or substitute to Public Employment Services

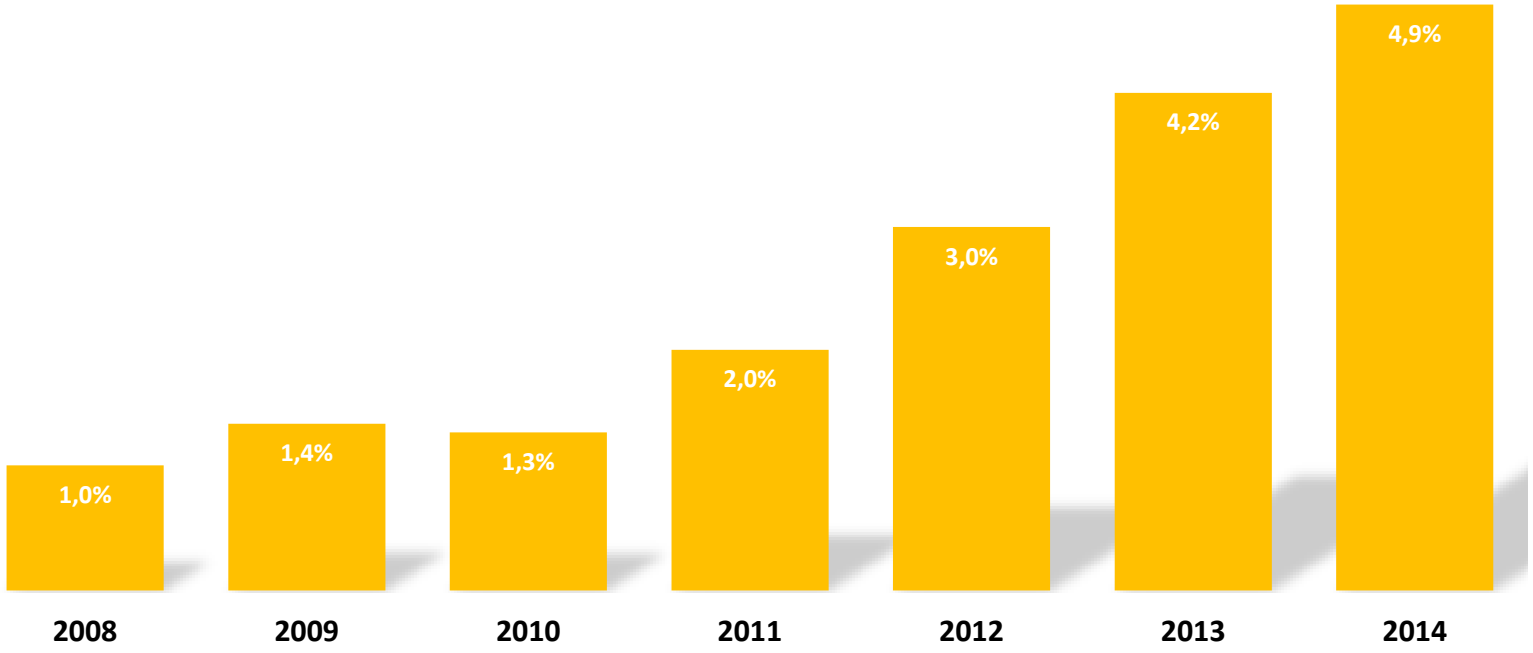
ASSOLAVORO POINT OF VIEW: FROM «MARGINAL FLEXIBILITY» TO «SUSTAINABLE FLEXIBILITY»

Assolavoro goal is to measure and show the evolution of PrES from the «flexibility at the margin» model to **«sustainable flexibility»** in which agencies play, using a wide range of services and tools, **a «buffer» function in the labour demand & supply process** and can reconcile **flexibility for enterprises and continuity for workers**.

The rapid growth of **open-ended Agency Work** is an explicit indicator of the transition to the «sustainable flexibility» model.

THE RAPID GROWTH OF OPEN-ENDED AGENCY WORK IS AN EXPLICIT INDICATOR OF THE TRANSITION TO THE «SUSTAINABLE FLEXIBILITY» MODEL

Incidence of open-ended Agency Work
(active individual contracts on a monthly basis)



Source: Forma.Temp Bipartite Fund

AGENCY WORK: INFORMATION AS A DEVELOPMENT FACTOR

From an **institutional/representation point of view** next efforts will focus on **unemployment/employment and temporary/permanent transition patterns**:

What's the story behind and after those 1,4 million contracts?

From the **agencies' point of view** much emphasis will be placed on the **design of effective and valuable services**:

- Defining **«employability» profiles** of workers to correctly determine **characteristics, intensity and cost** of services and Active Policy schemes
- Labour **demand and forecast** at micro/local level
- **Monitoring and impact evaluation**

For this purposes **structured/administrative data** seem to have the highest potential but other unstructured sources may apply

vernoni@assolavoro.eu

BIG DATA

THE MONSTER EXPERIENCE, TRENDS AND DEVELOPMENT PERSPECTIVES

PIETRO MANENTI,
PRINCIPAL PRODUCT MANAGER, EUROPE

Recruiting & Big Data
How market players see it

MONSTER

Source: rms news

Toute l'actu du Recrutement !
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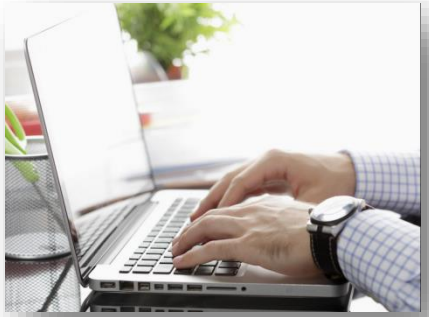
Is recruiting ready for Big Data?

Data overload



Manual, Boolean search

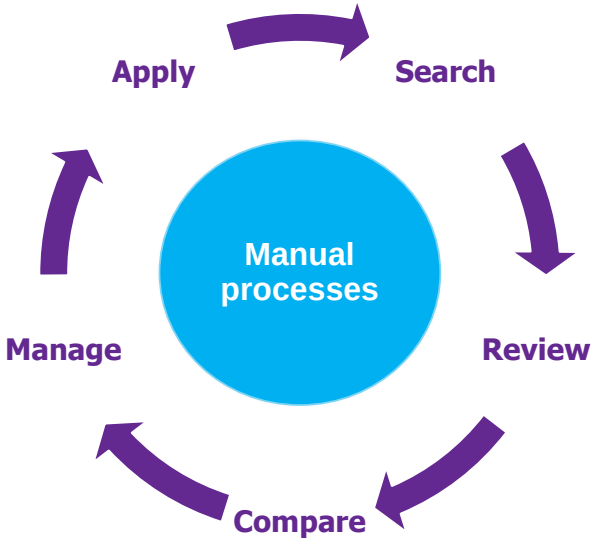
CV sources fragmentation

Recruiting subjectivity

Unscreened candidates

Recruiting is about matching people

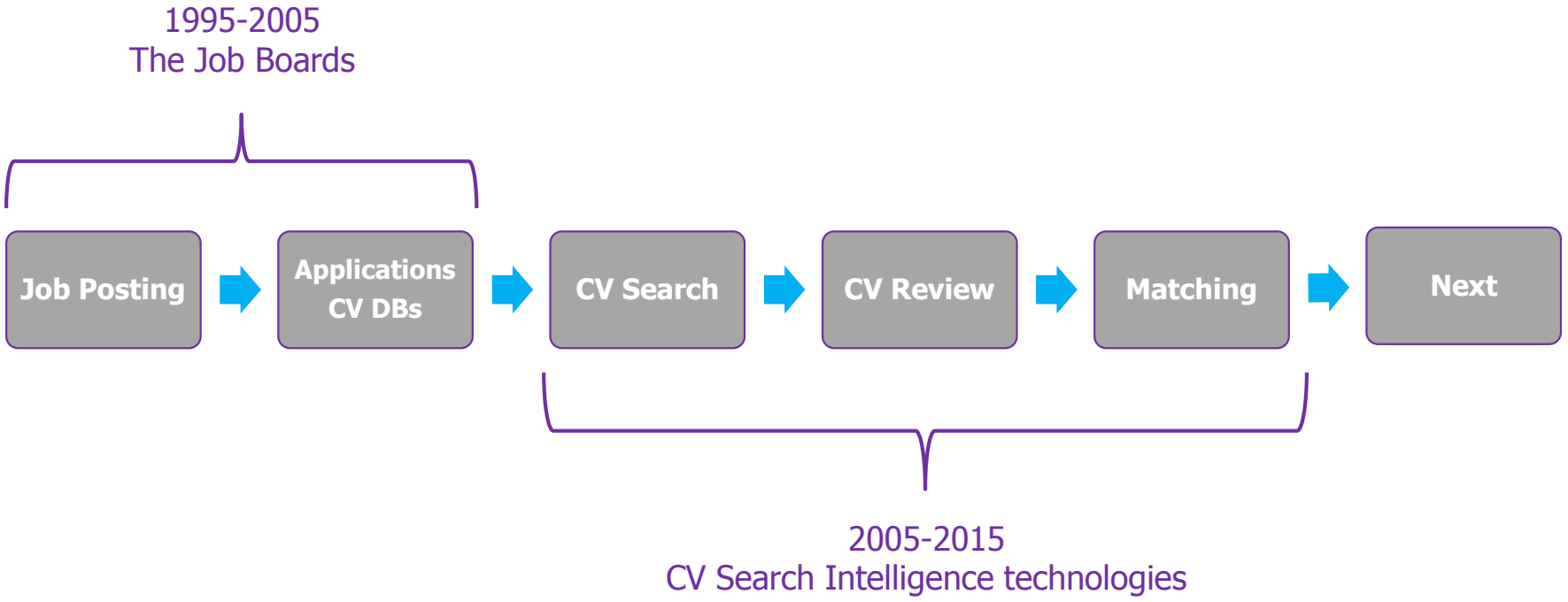
Job Seekers



Recruiter

How can technology improve this process?

Technological impacts on recruiting processes: an historical overview



New technologies are setting new recruiting trends

Big Data
& Analytics

Social Media
Tools

Cloud & Mobile
Technologies

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To connect the world's jobs to people.

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- streamline the process so they can save time and money;
- and make smarter, more informed decisions that improve their ROI.

PEOPLE

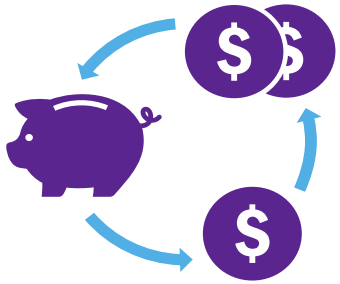
FINDING CANDIDATES, BETTER.

PROCESS

STREAMLINING YOUR TACTICS.

ROI

SPENDING SMARTER.



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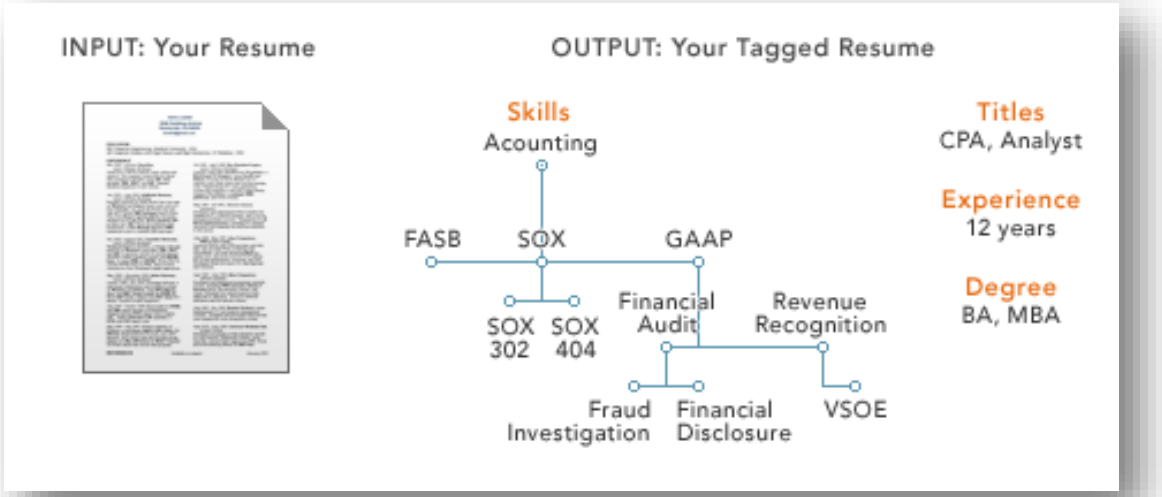
Monster's 6Sense® search technology

- Searches on the meaning of words
- Understands job titles, skills, industries, education etc.
- Understands the hierarchy of concepts

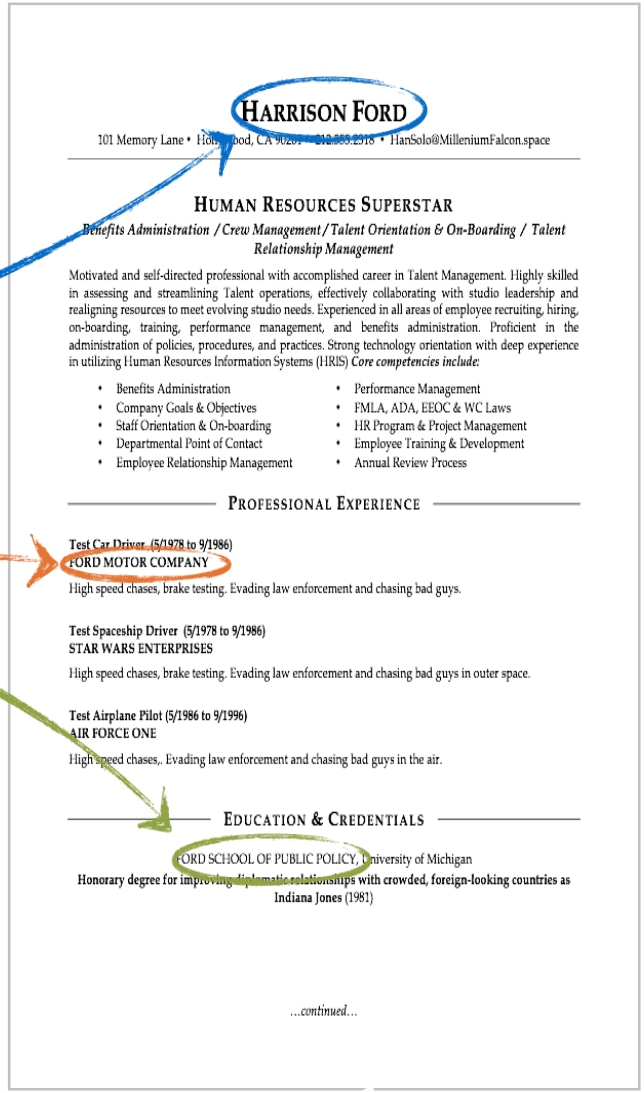


Monster's 6Sense® search technology

Harrison Ford

Ford Motor Co.

Ford School of Public Policy



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- Annual Review Process

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...continued...

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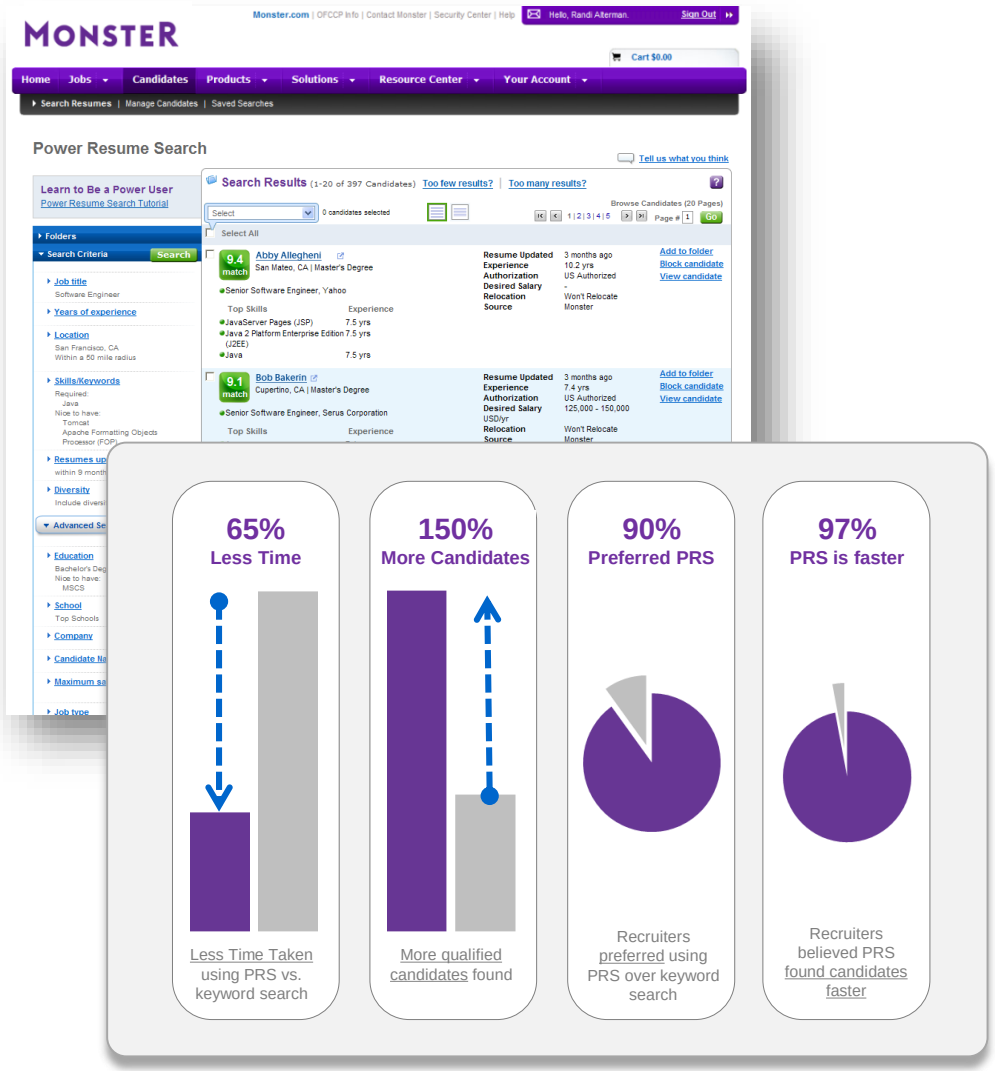
  - ✓ Job Search



- Delivers precise, relevant results faster and better than ever before.

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Source: Data collected from 48 recruiters, managers and executives from 15 enterprise customers nationwide after hands-on testing of PRS vs. various keyword searches; October 2009.

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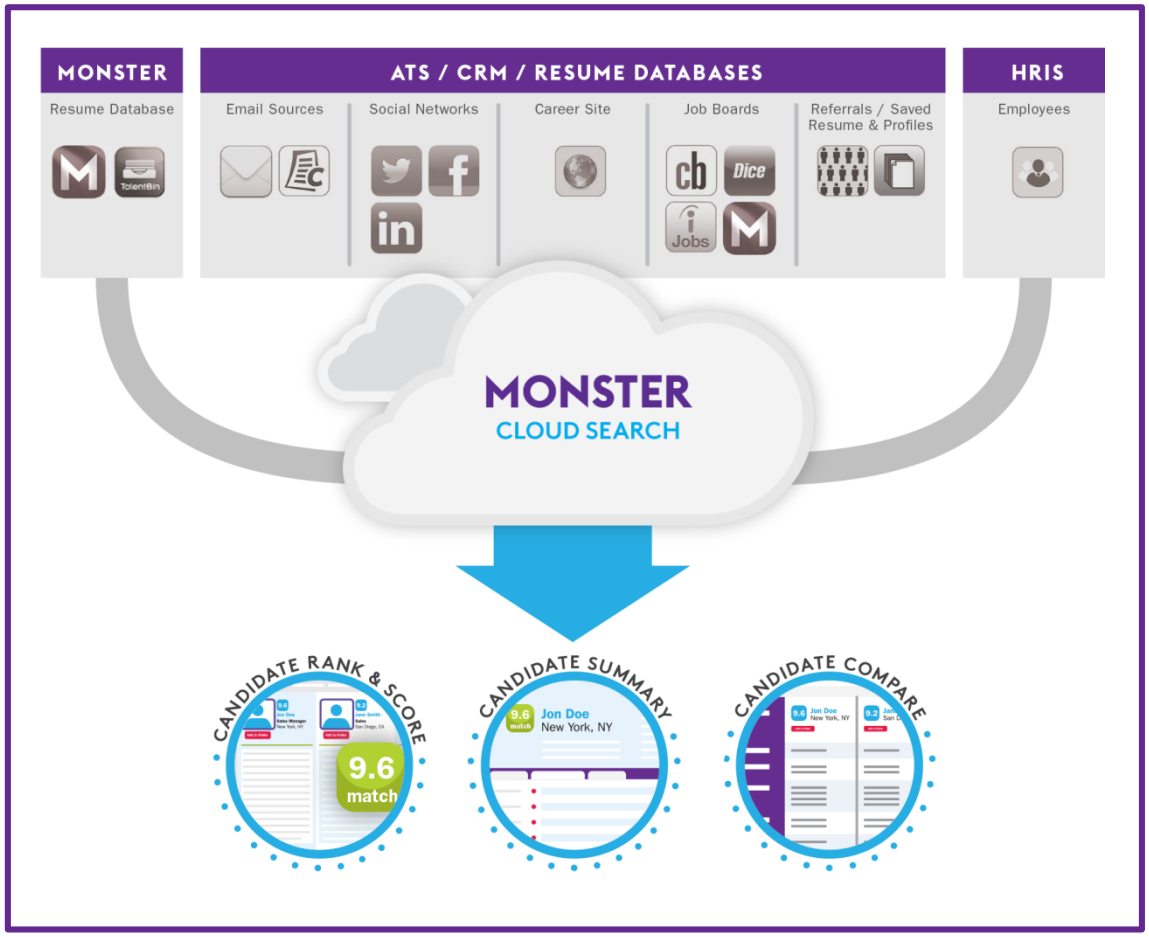
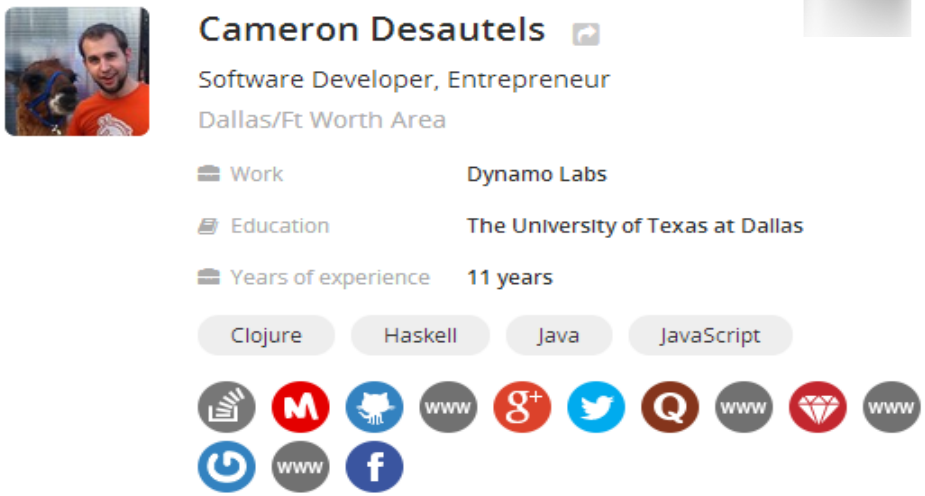


TalentBin by Monster

Social | **Vertical** | **Events** | **Publications** | **Mailing Lists**



Full 360-degree view of candidate

1. Extract professional activity
2. Analyze and score activity to surface skills and interests
3. Aggregate together all available contact vectors (email address, Twitter, etc.)

MONSTER

Monster is transforming to better meet the market needs.

We are aggressively enhancing our scale to satisfy all types of job seekers.

With end-to-end solutions to attract, engage and deliver candidates for all types of customers, we are:

- Enabling companies of all sizes and industries to find candidates both active on Monster, and from anywhere on the web
- Enabling the tools for customers to uncover talent at a larger scale, from any source through Monster – on desktop, mobile or social

And we won't stop until we have **all of the jobs** and **all of the people**.

MONSTER
FIND BETTER