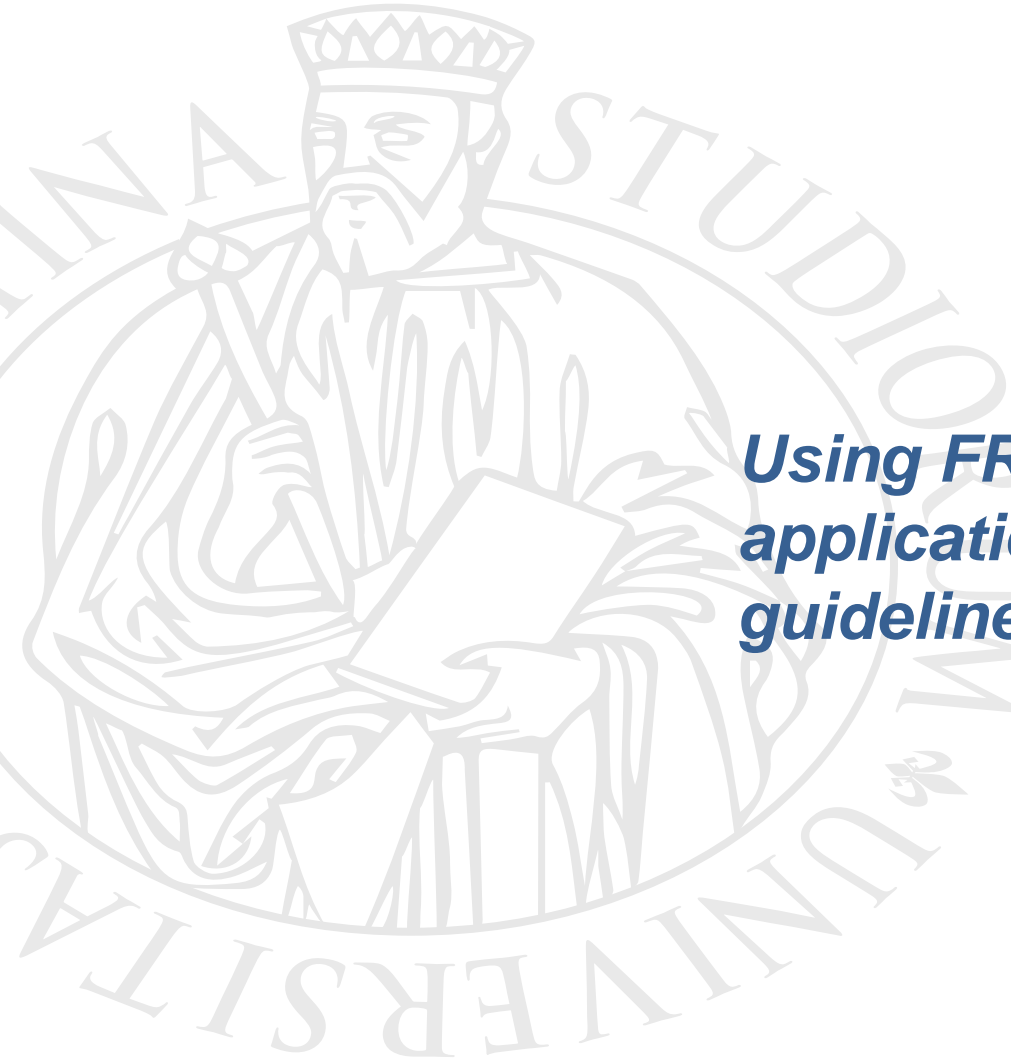




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***Using FRAM to reduce skill mismatch: an  
application to public employment offices  
guidelines***

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*Roma 25 maggio 2017*

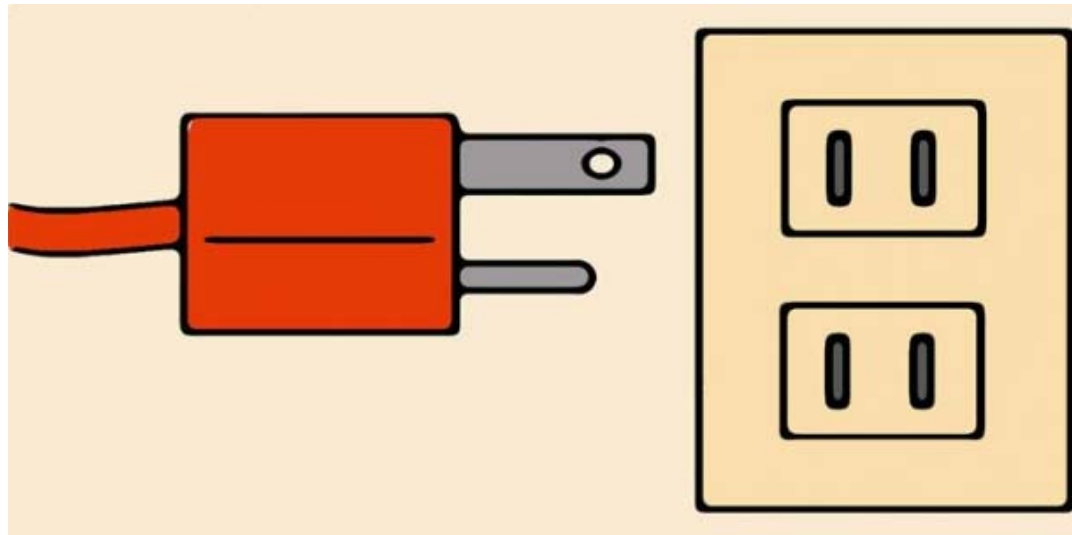


## Objectives

- To support job centers activities in addressing persons to the most adequate working or training opportunities
- To explore the Fram approach *quantitative potentialities* through data exploitation and reuse in output variability control



## The problem- Skill mismatch



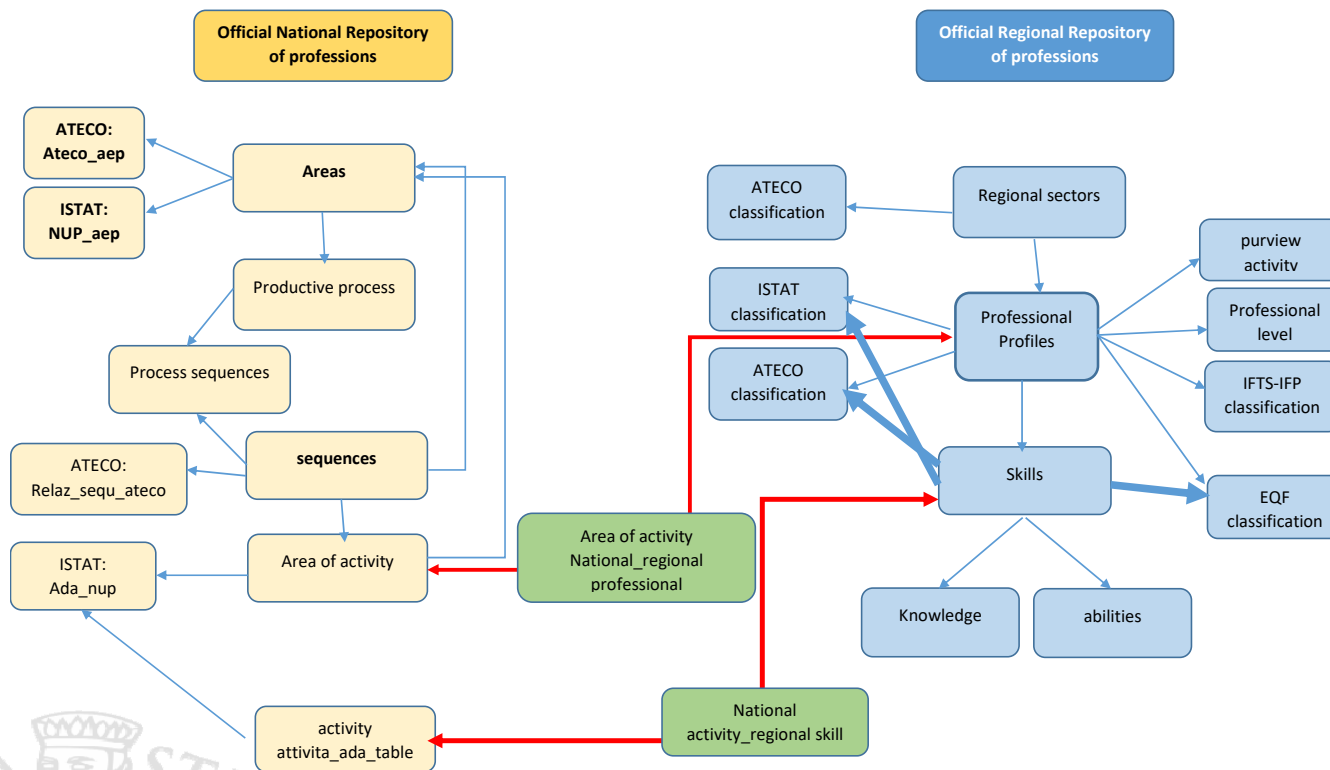
- Skills Mismatch is defined as the gap between an individual's job skills and the demands of the job market.
- qualification or skill mismatch is also where individuals take jobs in which their educational qualifications and skills are inadequately used

*To reduce skill mismatch job centers operators must be able to properly understand employers needs and workers experience, qualification and training and to match them, or, in alternative to find and propose proper training and educational initiative to empower the worker*

## Flexibility vs job insecurity



## The complexity of italian competences and labour system

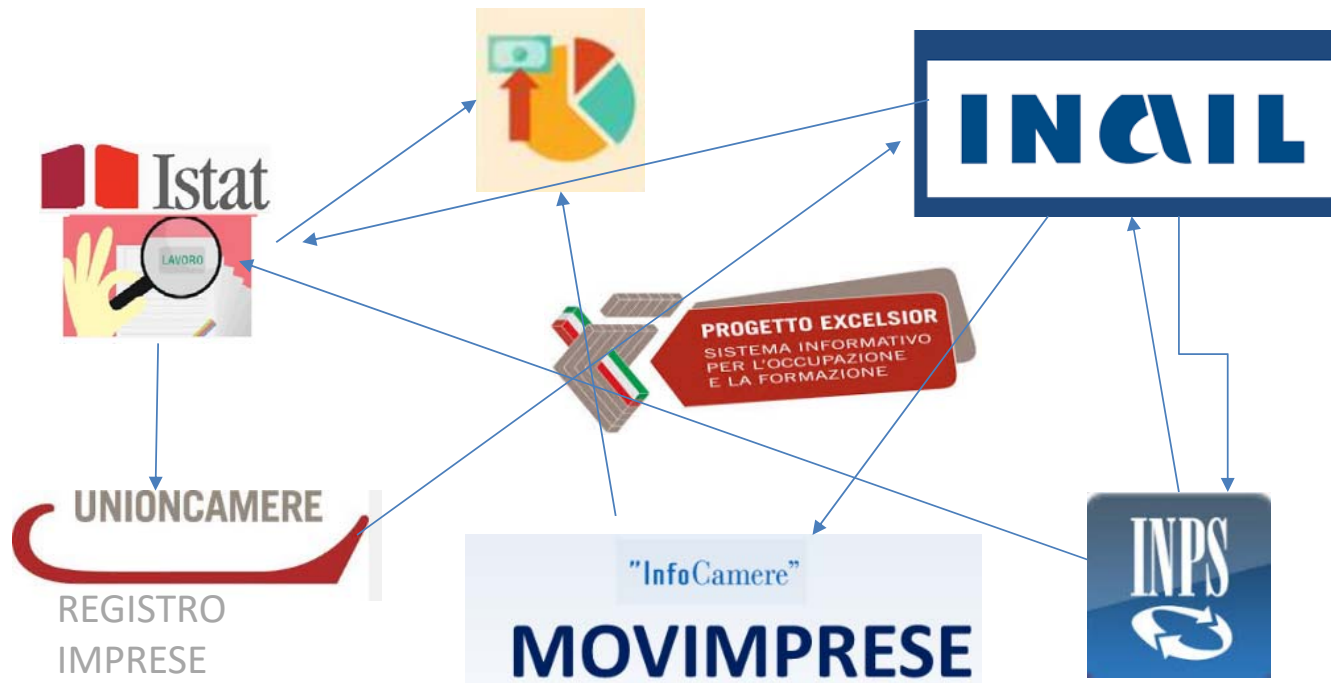


*Competencies, production processes, activity sectors, companies typology are defined at several levels:*

- *European*
- *National*
- *Regional*
- *Trade unions*
- *Specific companies semantics*
- *Vocational training qualifications*

*All these different languages are used in repositories, list of opportunities, descriptive figures*

## The data system complexity



*This stakeholders' semantic heterogeneity becomes **data and information noise***

*To properly support job offer and demand, **the job-centre operator ought to be extremely competent in all these languages and data, often in fields in which he/she does not have a specific expertise***

## The critical role of the job center operator



The successful matching between offer and demand critically relies on job center operator professionalism

From a recent research on Pistoia job center:

- Companies complain that they don't get the required competencies
- Only classical professions are properly recognized and addressed by job center operators
- Innovative or technical competencies are out of the reach of the majority of job center operator.



## Traditional informative supports

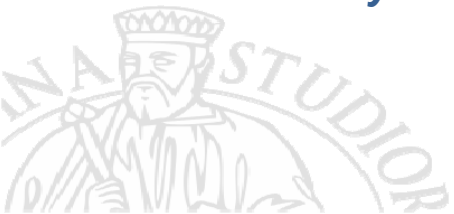


Job opportunities lists

Training offer lists

- Too many data
- The job center operator has not the time and the competence to select and use them

*The classical decision supporting system approach is too rigid and unsuccessful to reduce the variability of the system output*





## Job center system as a complex and not resilient system

**The system is not resilient:** there are a plurality of dimensions which affect the matching between offer and demand and the data and figures repositories available to the operators are not useful to reduce the variability of offer-demand matching.

The classical decision supporting system approach is too rigid and it prove to be often unsuccessful to reduce the variability of the system output.



## A FRAM approach hypothesis

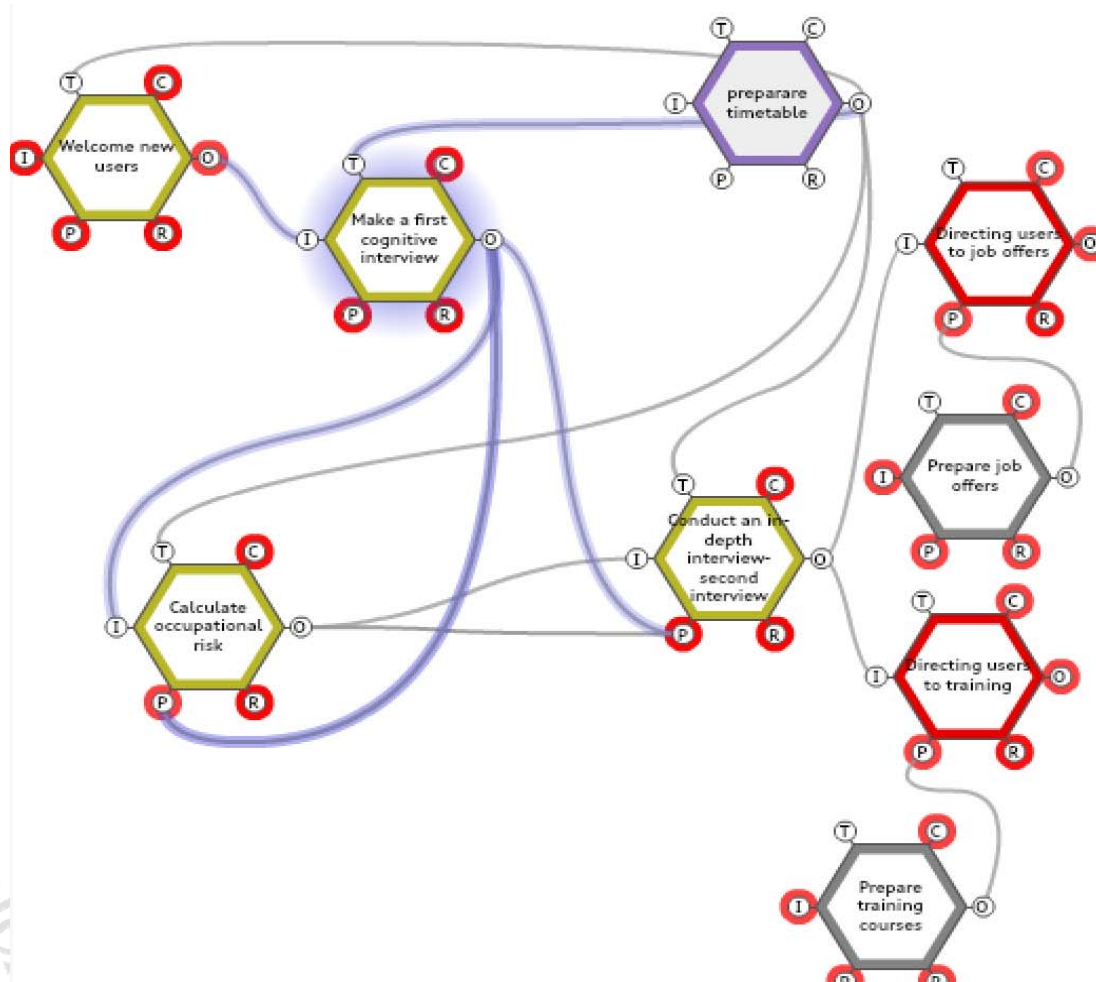
The idea is to use the FRAM approach to address data and indicators useful to reduce the output variability

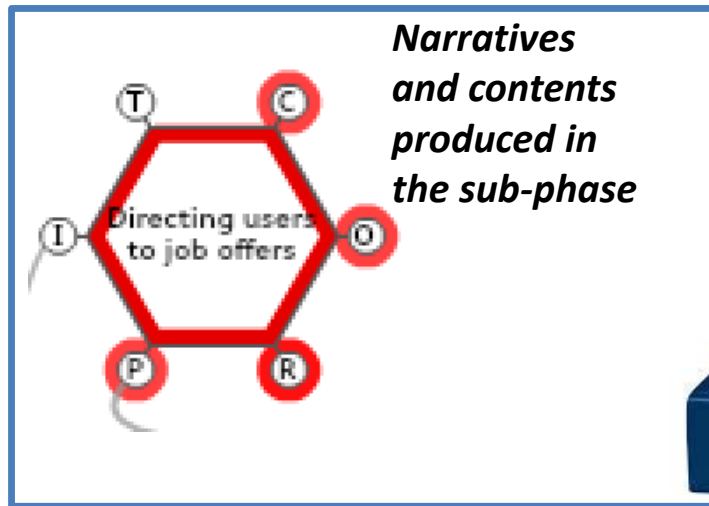


- In any function there is the support, as resources, of instruments like learning machines, semantic glossaries statistical indicators repositories
- These instruments are able to deal with the narratives developed during the sub-phase and support the job center operation with the information useful to reduce the variability

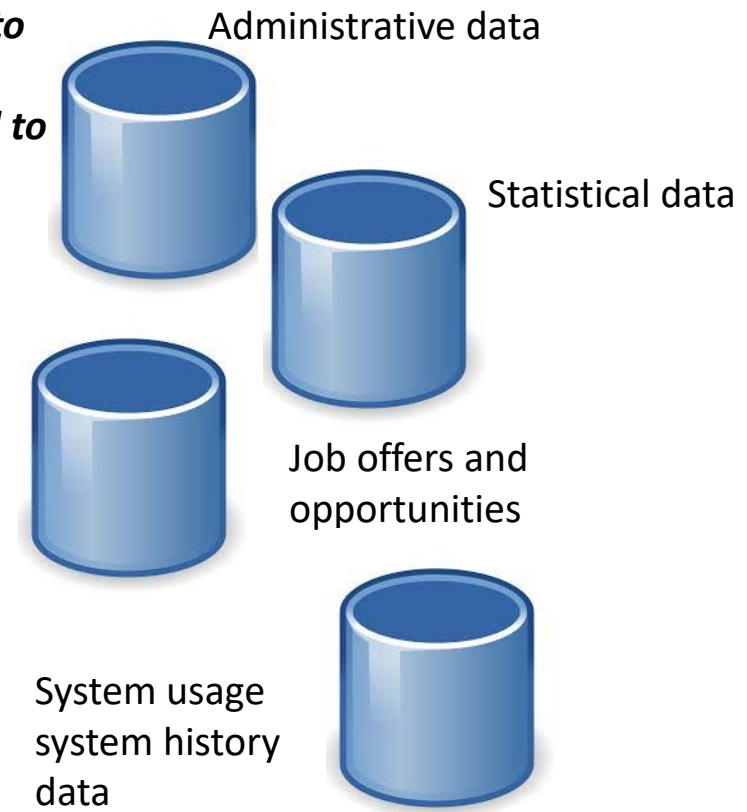
***Skill mismatch is the «incident»***

## A simplified example of job service FRAM

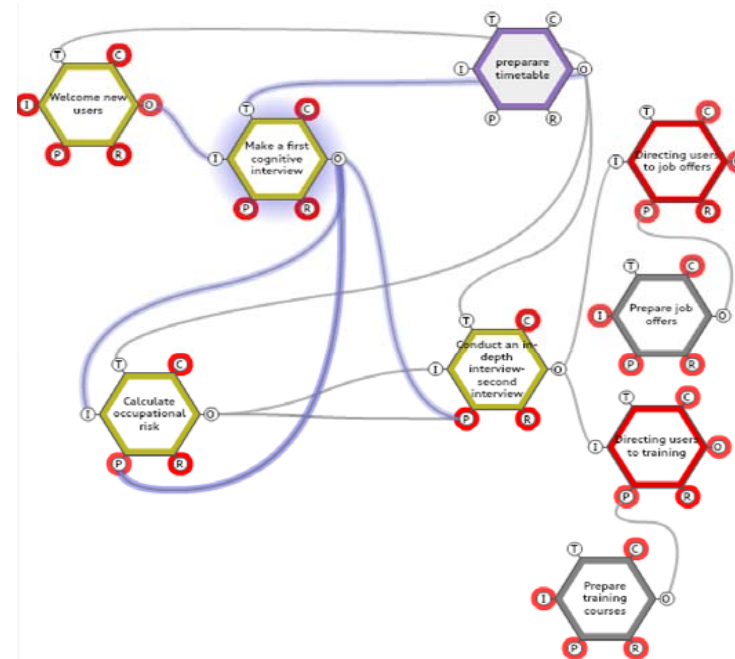




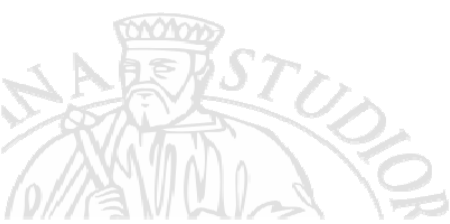
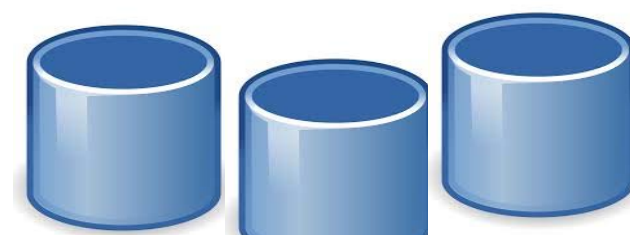
*The semantic analysis extracts concepts to address the information useful to reduce the output variability*



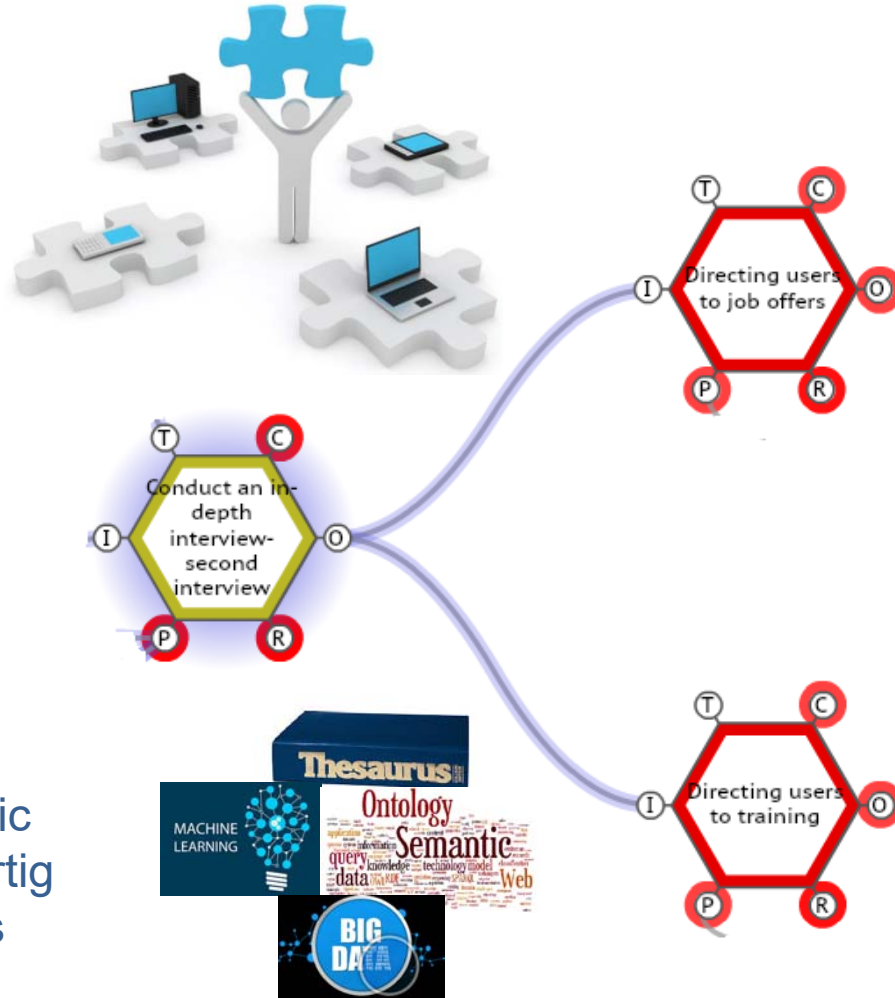
## Toward a context sensitive NON-dashboard



Semantic layer



A computer tech is looking for a new job



Job offers in agriculture sector that could be in line with the computer tech skills but that are expressed with a different semantic and on unusual media



Semantic  
supporting  
utilities



## Output variability control : a semantic perspective

In absence of the semantic instruments and data repositories as Resources of the sub-phase «**Directing users to job offers**» the overall system would miss the opportunity in addressing competent persons to a proper job .



## An example

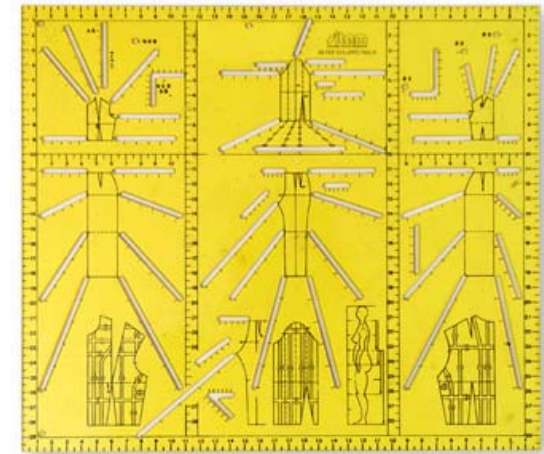
A company operating in **fashion sector** is looking for a tech in fashion drawing.

The company belongs to the economic activity sector ***Fashion Specialised design activities***

There is a specific vocational training for this type of profession

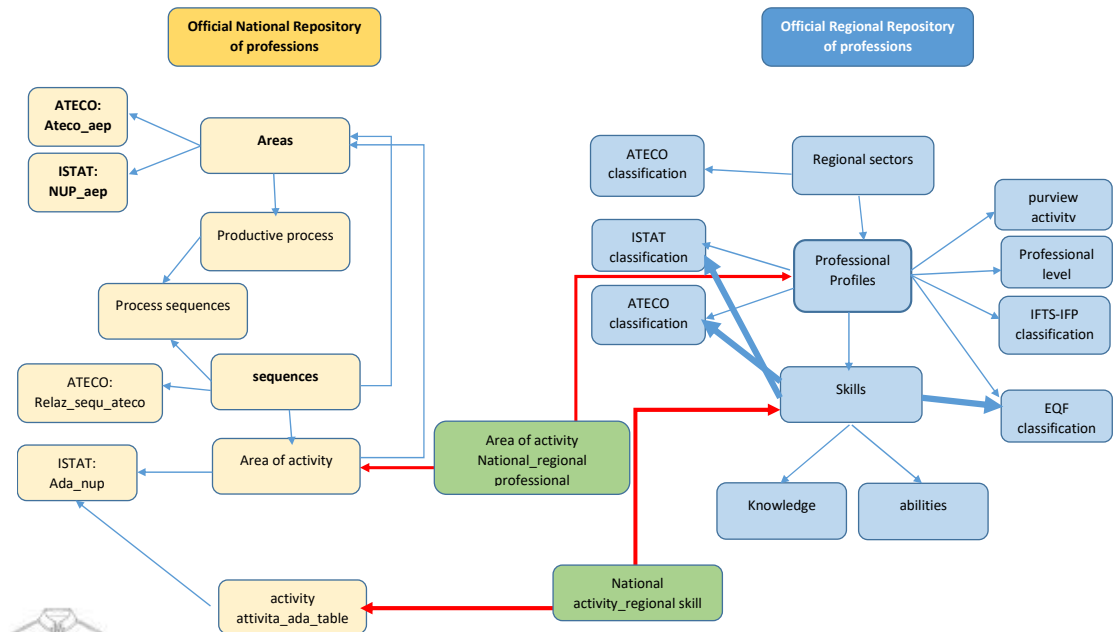
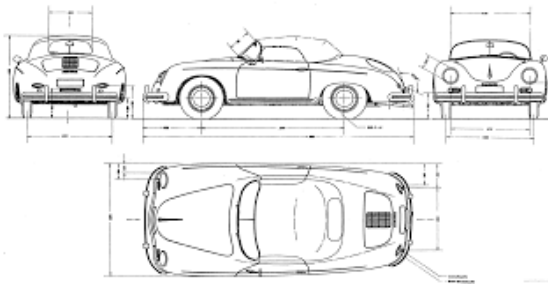
Usually, a job center operator, looks for:

- graduated from this vocational school
- people with a specific progressive experience,
- people generally working in the same sector.



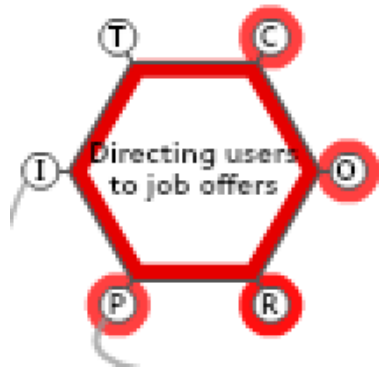
Browsing with semantic instruments the description of

- professions,
- working processes,
- competences,
- skill,
- we derive that the required profession has many characteristics in common with techs in mechanical/technical drawing



In absence of specific demands for the required profession a job center may propose the re-training of mechanical drawing techs

## Learning from the experience to reduce output variability



Being referred with pertinent data, any element, coupling, upstreams or downstreams may be associated to sets of measures and figures,

This could help in designing output variability time series, useful to train the learning machine to address the most useful information



## FRAM semantic utilities

In the proposed perspective FRAM MODEL VISUALIZER has been integrated with the following instruments:

- A tabular representation of Fram graphs, which allows to obtain upstream and downstream couplings of a specific output. This instrument is useful when the graph to be explored is particularly complex
- A learning machine (up to now specifically tailored in exploring the dominion of italian competences and professions)
- An ontological thesaurus, which documents and disambiguates lemmas and concepts used by the involved stakeholders and link them to pertinent figures which may be useful in decisions support.





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## Glossary

ontoclasse:

WORDNet	Definition	Source
PP_To Welcome new users	It has the task of informing, facilitating and promoting access to services, encouraging the encounter between those who seek and who offers work by fostering a climate of mutual trust. Welcoming is the reference to turn over time to guide choices in the world of work and training	Centro per l'impiego di pistoia
	<b>Relation Type</b>	<b>WORDNet</b>
	has_1input	Users in the state of "concerned with"
	has_1input	Users in the "new user" status
	has_2output	Users in the state of "welcomed"
	has_2output	document of Received reception
	has_3resource	CPI operator
	has_3resource	web pages of CPI
	has_3resource	Administrative dataset of CPI
	has_4precondition	User looking for services



has\_4precondition      CPI open      Centro per l'impiego di pistoia

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has\_5control      Welcome rules of CPI      Centro per l'impiego di pistoia

---

has\_5control      Activity logging rules on administrativ      Centro per l'impiego di pistoia

---

has\_6time      orario di apertura      Centro per l'impiego di pistoia





Lemma	Definition	Source
<b>CPI operator</b>	CPI operator	Centro per l'impiego di pistoia
Relation	Lemma	Source
is_resource	PP_To Welcome new users	Centro per l'impiego di pistoia
is_resource	PP_To Directing users to training	Centro per l'impiego di pistoia
is_resource	PP_To Directing users to job offers	Centro per l'impiego di pistoia
is_resource	PP_To Conduct an in-depth interview-second interview	Centro per l'impiego di pistoia

