



CAMERA

Coordination and support Action for Mobility in Europe:
Research and Assessment

How can AI support knowledge discovery: Understanding mobility research trends in Europe

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CAMERA challenge

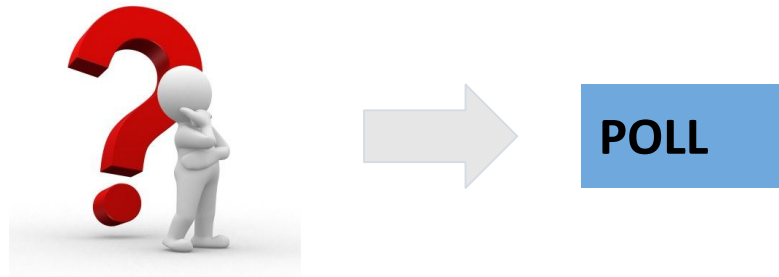
- Identification of **research themes** in a large corpus of unstructured textual information
 - How to go through all of it? → Fully manually is not an option
 - What information do we want out of it? → Knowledge representation

40.000 Projects
FP7 + H2020



Artificial Intelligence as a research assistant?

Activity of applying AI techniques to find, manage, represent and organise knowledge from large collections of unstructured data is called:



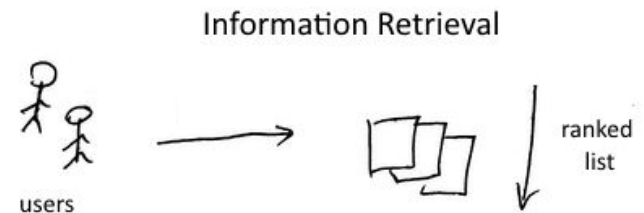


Information retrieval

- Searches for **relevant information** within a collection of unstructured (textual) data
- Organises found information → **knowledge**

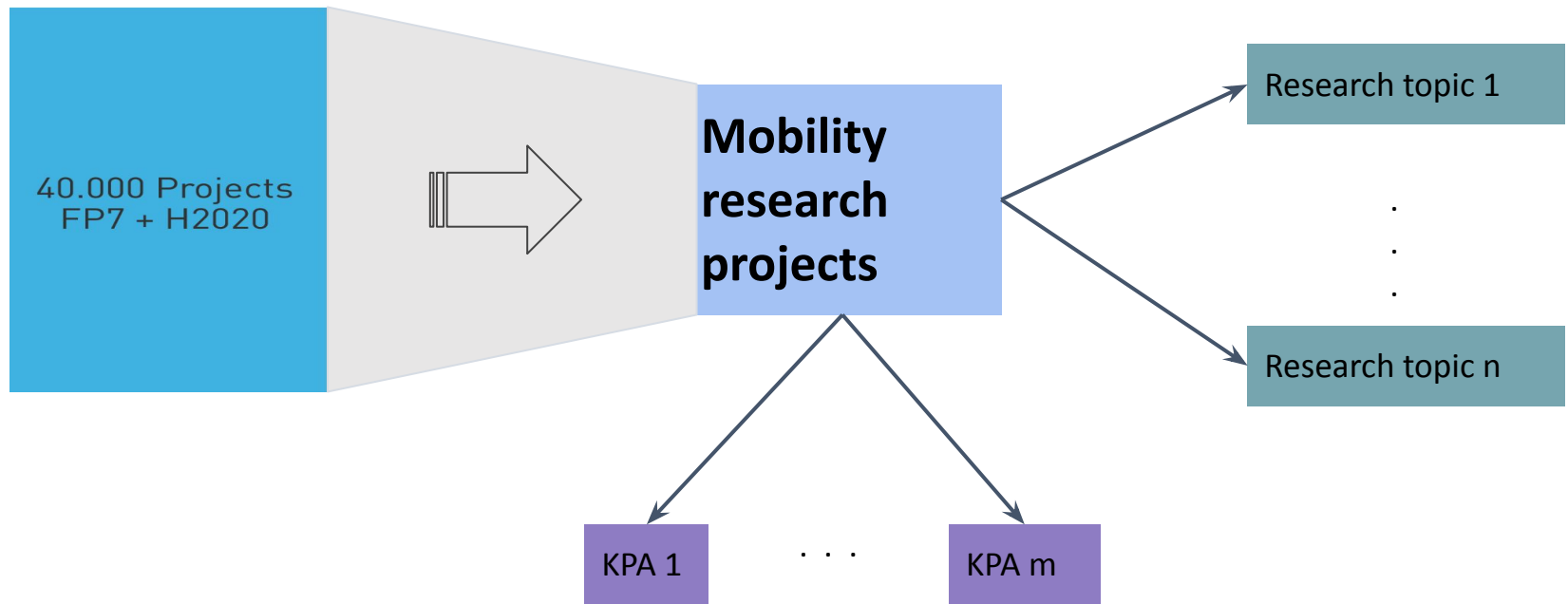


- Probabilistic model → **approximate matches**, not a solution
- Results returned: **RELEVANT documents** (some order)



AI helping us organise information

- Identification of **research themes** in a large corpus of unstructured textual information



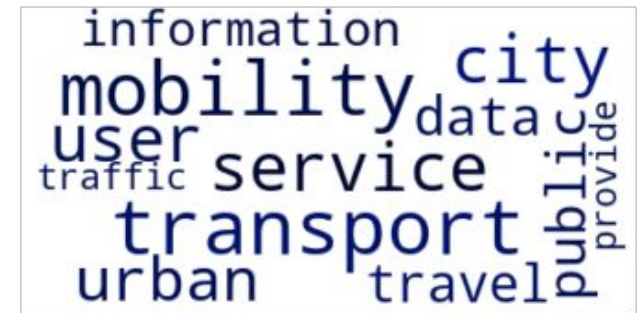


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Create a latent space of data

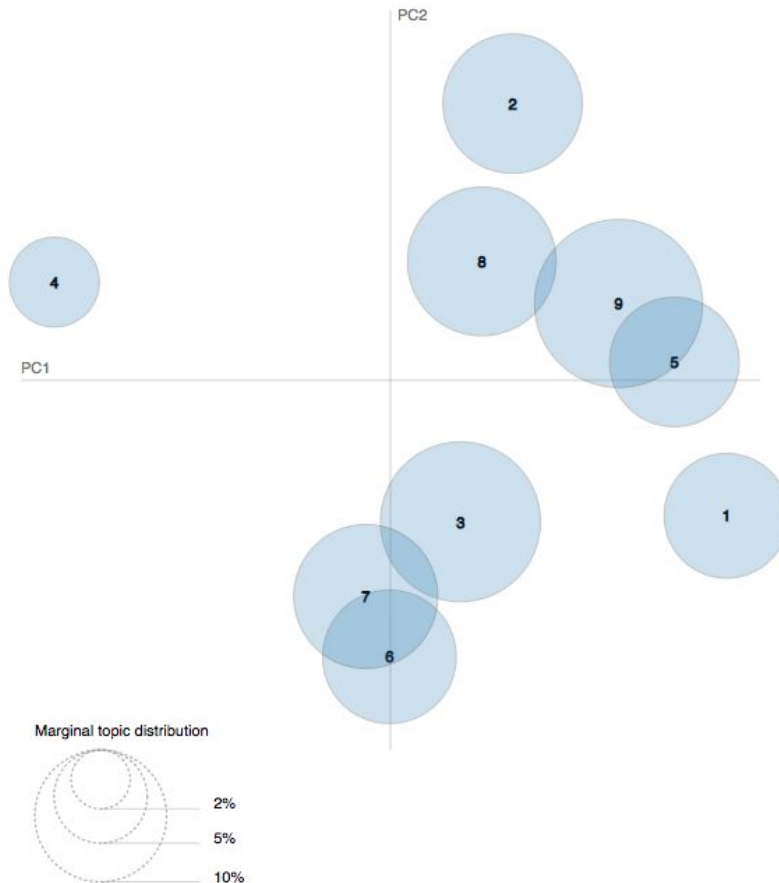


CLUSTERING

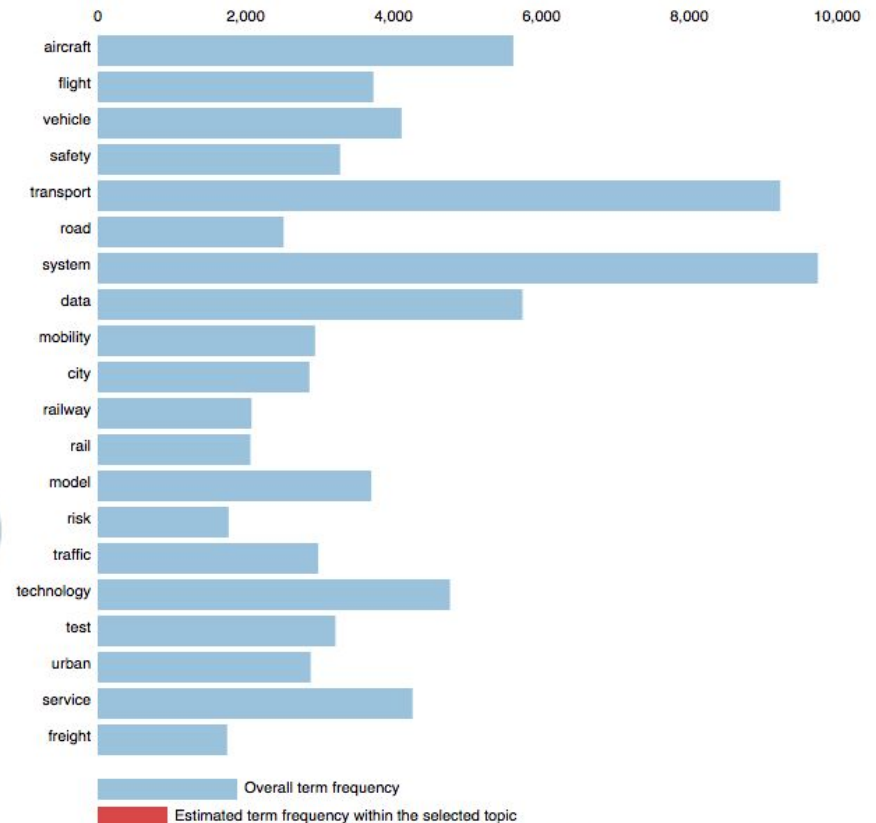


Create a latent space of data

Intertopic Distance Map (via multidimensional scaling)



Top-20 Most Salient Terms¹

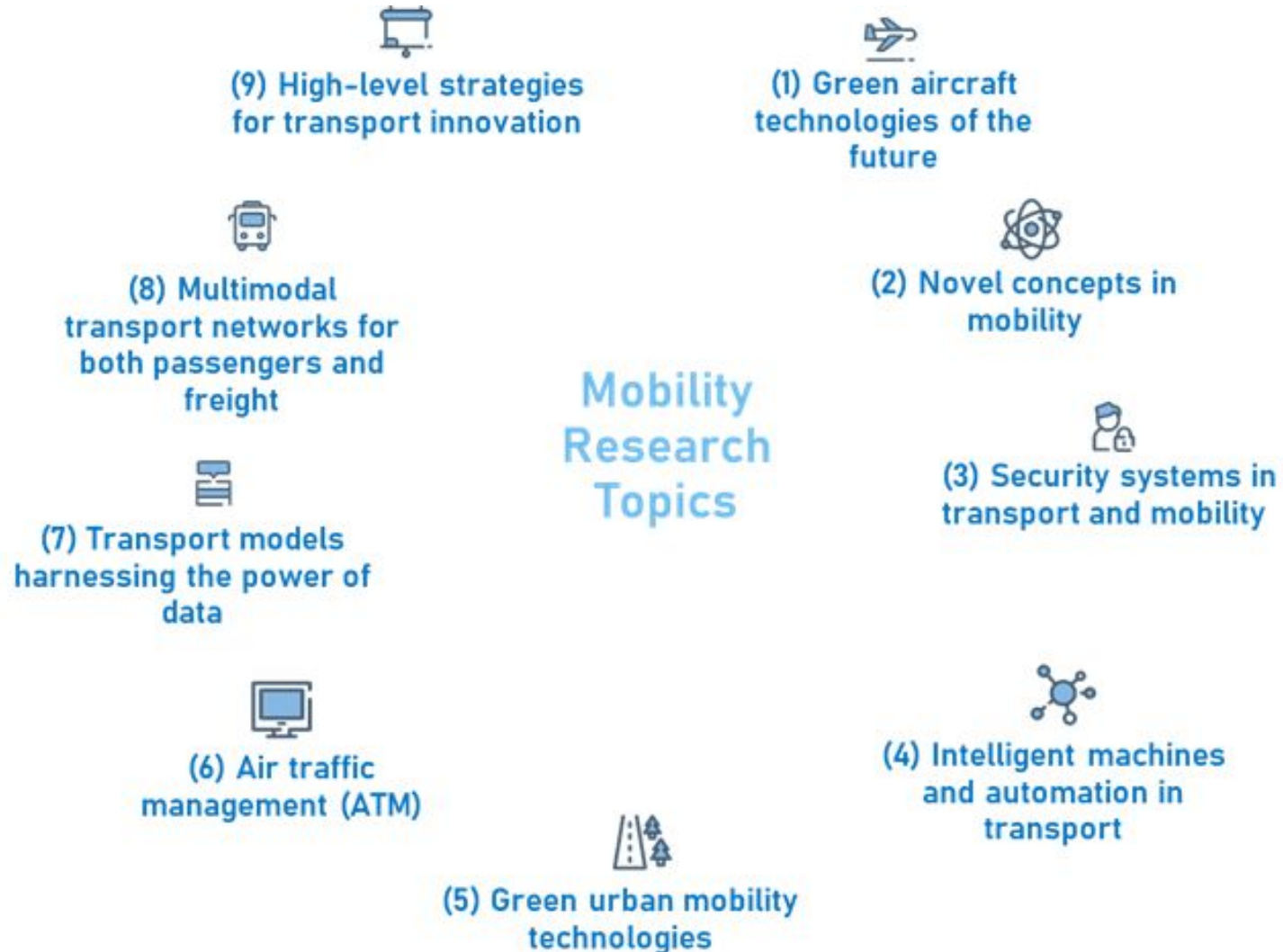


1. $\text{saliency}(\text{term } w) = \text{frequency}(w) * [\sum_t p(t | w) * \log(p(t | w)/p(t))]$ for topics t ; see Chuang et. al (2012)
 2. $\text{relevance}(\text{term } w | \text{topic } t) = \lambda * p(w | t) + (1 - \lambda) * p(w | t)/p(w)$; see Sievert & Shirley (2014)



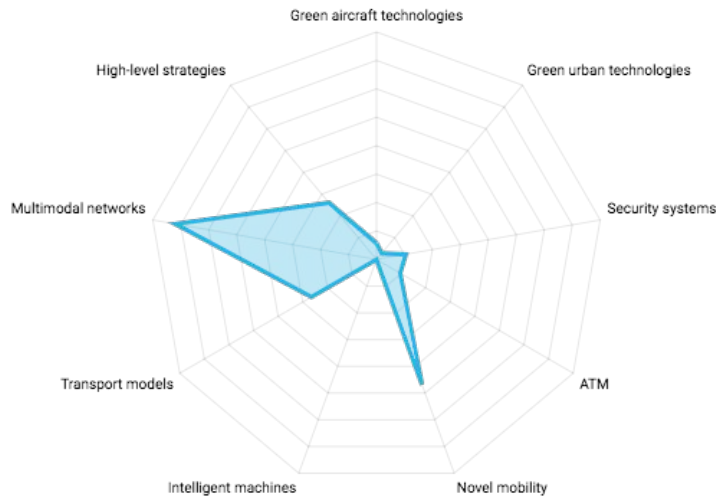
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Most common research topics



Mobility projects in two multidimensional spaces

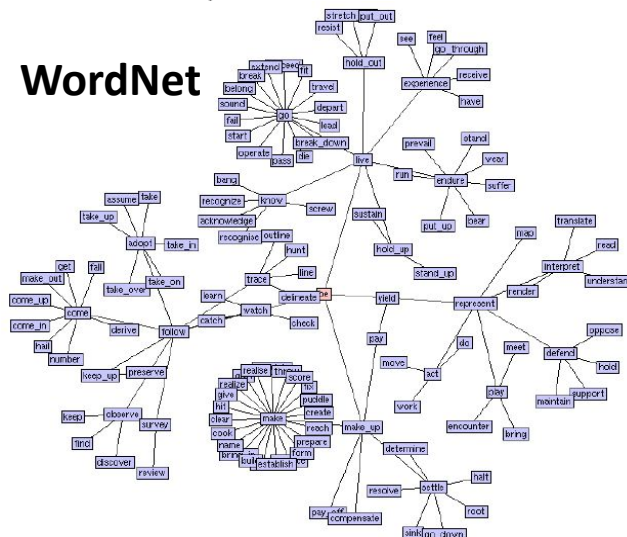
Research topics



Key Performance Areas (KPAs)



WordNet



→ RETRIEVAL FUNCTION

- based on **SEMANTIC SIMILARITY**

h2020camera.eu/the-project/

3.2 Mobility modelling assessment: implementation & Mobility Report 4 in October 2021

