



Megatrend and intervention impact analyser for jobs

Estonia

Aims

- Understand which parts of the labour market will be impacted by automation and computerisation of jobs, including competing scenarios about the future
- Develop a visual tool capable of analysing and combining different heterogeneous data sets and researching the impact of various megatrends on labour markets across various EU countries

Data

- EURES CV and job vacancy data set
- ESCO classifier in RDF format
- List of jobs susceptible to automation/computerisation (Benedikt and Osborne, 2017)
- Occupation classifications mapping table from *Occupation classifications crosswalks – from O*NET-SOC to ISCO* (Wojciech; Autor; Acemoglu, 2016)

Methods, technologies and tools

- An **occupation graph** was built from the ESCO classifier:
 - a node denotes an ESCO occupation;
 - a link is defined when two occupations are similar in terms of shared essential skills.
- Each node has metadata attached – statistics from EURES (e.g. number of vacancies) and other external data sets (e.g. probability of automation of the job). Nodes in graph are colour-coded by values from connected external data
- The ESCO classifier was converted to relational structure suitable for SQL and metadata (counts and totals) were calculated with Apache Hive

Results

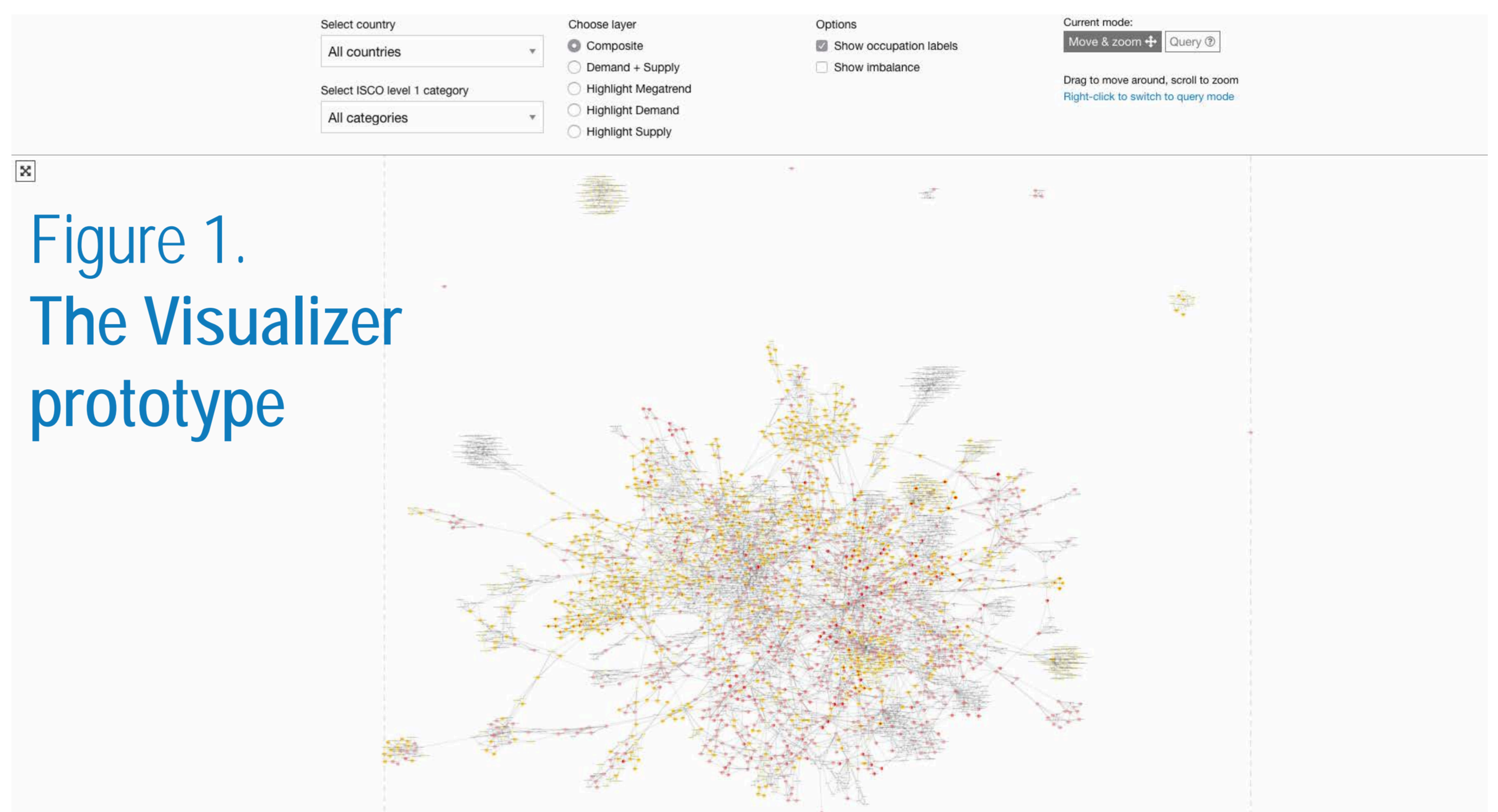
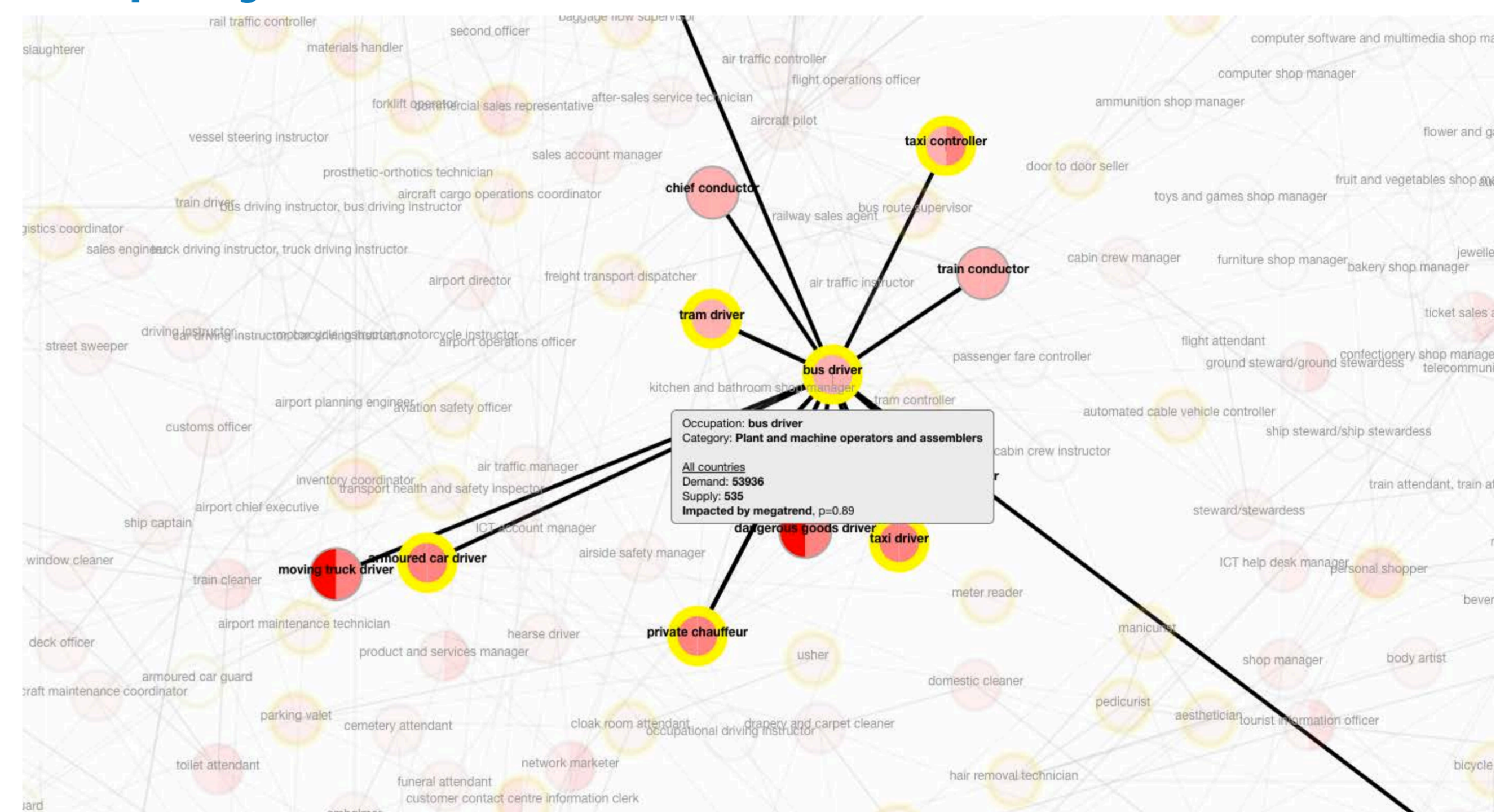


Figure 1.
The Visualizer
prototype

Figure 2.
A close-up of the occupation graph
with query mode activated



Conclusions

Key achievements:

- novel use of the ESCO jobs and skills classifier;
- visualising multi-layered complex information on a single graph;
- the prototype can be used in web browser without additional software requirements;
- visualizer was designed to work without a server to minimise running costs;
- published **open source** solution, easily extensible to other megatrends.

Main challenges:

- making different **big data** sources comparable;
- data pre-processing – conversion and import to databases;
- conversion of ESCO RDF database to relational format (SQL tables) for efficient querying across different large data sets;
- mapping occupation classifications from O*NET to ISCO;
- development in a short time frame.