

Joint Research Centre

the European Commission's in-house science service

*Serving society
Stimulating innovation
Supporting legislation*

JRC Data Visualisation Implementations

Wim VERDEYEN

Workshop on Data Visualization
Tools in the EU Institutions – 14th
April 2016

www.ec.europa.eu/jrc

JRC Data Visualisation Task Force

Repository of data visualisation projects

Versie 21

aangemaakt door Miguel QUEROL op 1-okt-2015 15:16, laatst gewijzigd door Emiliano BRUNO op 26-jan-2016 17:01

| Name | URL | Scope | Target audience | Main tasks | Description | Tech Plat |
|--|---|---------------------|---|---|--|-------------------|
| RIO - Research and Innovation Observatory - Horizon 2020 Policy Support Facility | https://rio.jrc.ec.europa.eu | World wide web | Policy makers, Academia, Industry, Consumer | R&I country analyses, policy document repository, data collection and visualisation, R&I news dissemination | Monitoring and analysis of R&I developments. | Tablet, PHP, Pent |
| Biso | http://biobs.jrc.ec.europa.eu | World wide web | Policy makers, Academia, Industry, Consumer | Monitoring / Dissemination | Visualisation of Bioeconomy datasets divided in the Research and Markets pillars | Tablet |
| Midas Portal | http://midas.jrc.it | European Commission | Policy makers, JRC/EC modellers | JRC marketing/ research/ Commission wide dissemination/ Visual Analytics | Exhaustive description and comparison of JRC's modelling repository and related policy | PHP, jsplur |

Visualisation Types

❖ Exploratory (Tableau, Qlik,...)

- Help you discover significant, meaningful patterns in data
- Quickly help you generate multiple views on the same data set

❖ Explanatory (D3, Highcharts,...)

- Highlights what you have already discovered.
- More constrained and limited, but more focused and designed to communicate the important points.

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Tableau use in RIO and BeO

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Tableau (Desktop + Server)

- 1) Ease of use, Agile, encouraging data discovery, efficient collaboration between developer and business user etc.
- 2) Data connections: from cloud databases over enterprise data warehouses to prepared flat files + custom Web Data Connections
- 3) Creating dashboards with global filtering (with parameters) across multiple worksheets.
- 4) Advance maps integration (Multiple map stores; fx Tableau, Mapbox - External WMS – custom geocoding)
- 5) Single step multiplatform deployment (desktop, mobile) and API calls.

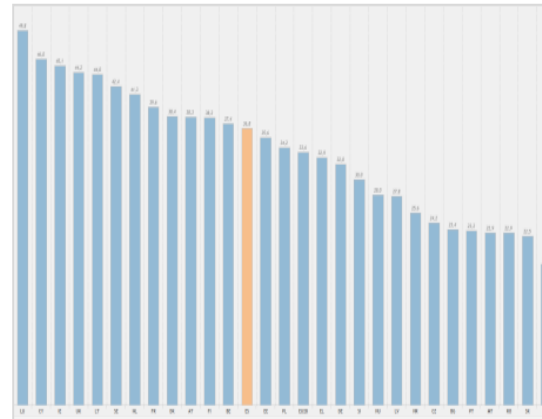
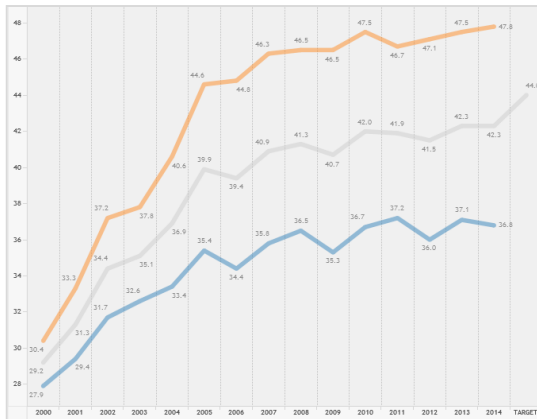
Use of Tableau in the context of the joint RIO/PSF website

- RIO – Research and Innovation Observatory (DG JRC initiative)
- PSF - Horizon 2020 Policy Support Facility (DG RTD instrument)
- The JRC hosted website provides information on development and performance of national research and innovation systems and related policies in the perspective of EU strategy and goals. As such it constitutes an important knowledge base in support of the European Semester.
- Target group: policy makers at EU and national level (main), researchers, interested general public (secondary)
- One main section of the website: Statistics including Tableau visualisations of research and innovation Key Indicators

<https://rio.jrc.ec.europa.eu>

Tableau visualisations of Research & Innovation Key Indicators

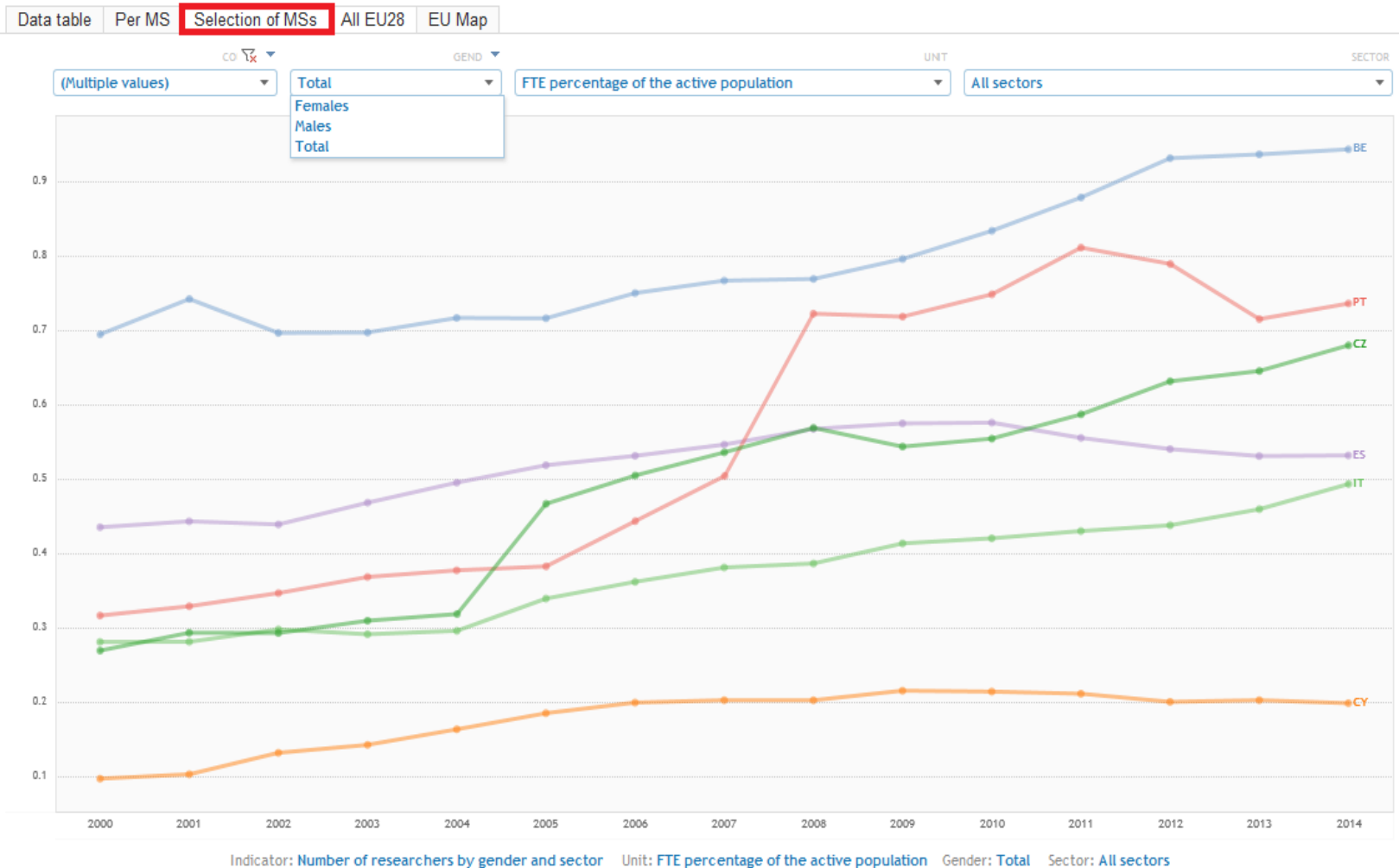
Interactive visualisations based on the RIO database which is automatically updated from several data sources, e.g. Eurostat, OECD, UNESCO



| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Austria | | | 0.622 | | 0.667 | 0.717 | 0.723 | 0.768 | 0.828 | 0.824 | 0.867 | 0.874 | 0.916 | 0.932 | 0.941 |
| Belgium | 0.695 | 0.743 | 0.697 | 0.697 | 0.717 | 0.717 | 0.751 | 0.767 | 0.769 | 0.796 | 0.834 | 0.879 | 0.932 | 0.937 | 0.944 |
| Bulgaria | 0.282 | 0.274 | 0.275 | 0.292 | 0.295 | 0.303 | 0.302 | 0.321 | 0.32 | 0.343 | 0.323 | 0.356 | 0.338 | 0.364 | 0.389 |
| Croatia | | | 0.477 | 0.327 | 0.392 | 0.316 | 0.321 | 0.318 | 0.346 | 0.358 | 0.371 | 0.364 | 0.359 | 0.355 | 0.323 |
| Cyprus | 0.098 | 0.103 | 0.132 | 0.143 | 0.164 | 0.186 | 0.2 | 0.203 | 0.203 | 0.216 | 0.215 | 0.212 | 0.201 | 0.203 | 0.199 |
| Czech Republic | 0.27 | 0.294 | 0.293 | 0.31 | 0.319 | 0.467 | 0.505 | 0.536 | 0.569 | 0.544 | 0.555 | 0.587 | 0.632 | 0.646 | 0.68 |
| Denmark | | 0.678 | 0.895 | 0.869 | 0.903 | 0.974 | 0.988 | 1.035 | 1.208 | 1.248 | 1.28 | 1.34 | 1.379 | 1.395 | 1.399 |
| Estonia | 0.389 | 0.395 | 0.46 | 0.448 | 0.503 | 0.497 | 0.507 | 0.535 | 0.574 | 0.628 | 0.598 | 0.655 | 0.67 | 0.648 | 0.638 |
| Finland | | | | | 1.581 | 1.51 | 1.526 | 1.458 | 1.512 | 1.525 | 1.551 | 1.491 | 1.504 | 1.465 | 1.429 |
| France | 0.671 | 0.686 | 0.714 | 0.713 | 0.743 | 0.738 | 0.763 | 0.797 | 0.813 | 0.829 | 0.858 | 0.877 | 0.905 | 0.926 | 0.936 |

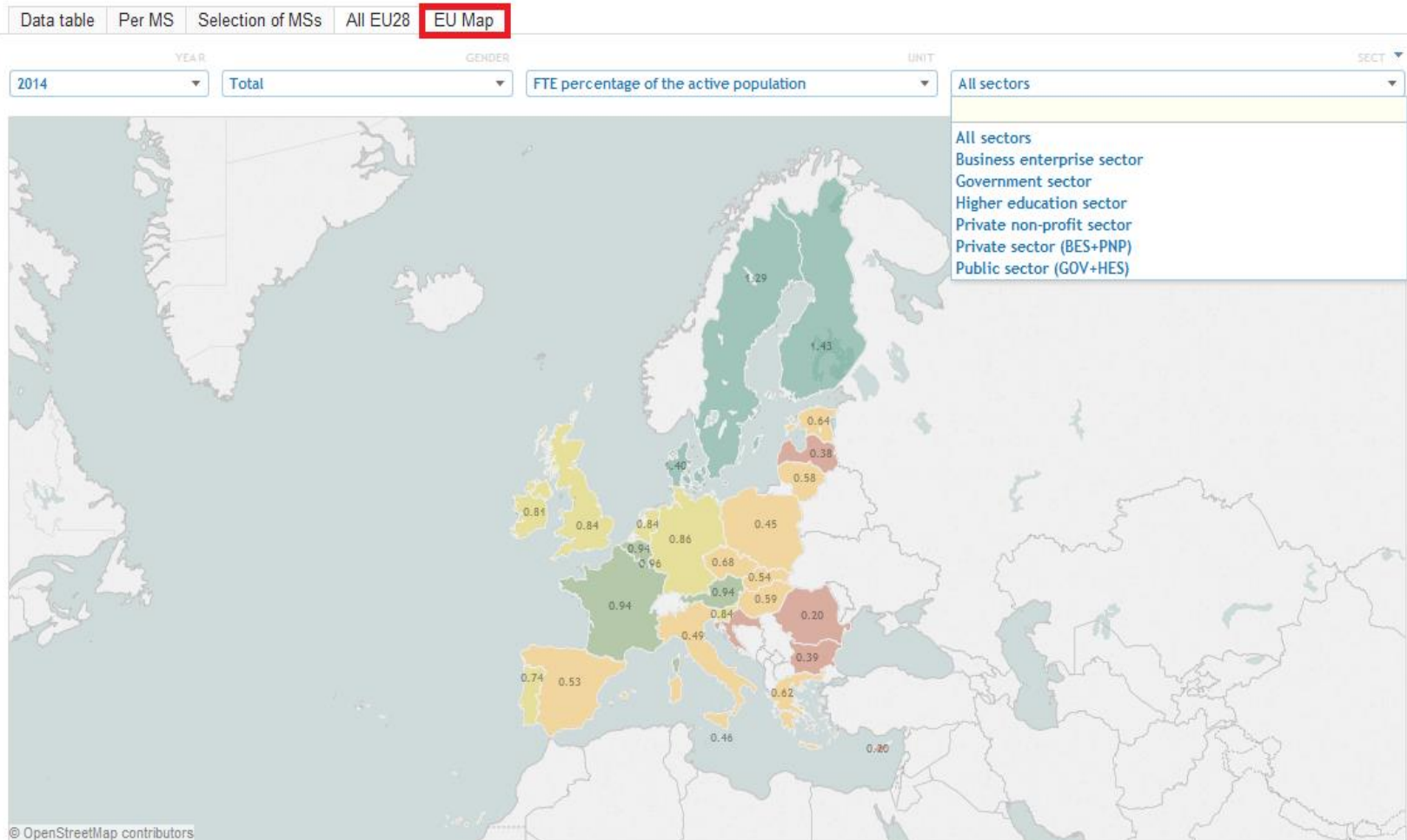
Example: Number of researchers by gender and sector (1)

Number of researchers by gender and sector



Example: Number of researchers by gender and sector (2)

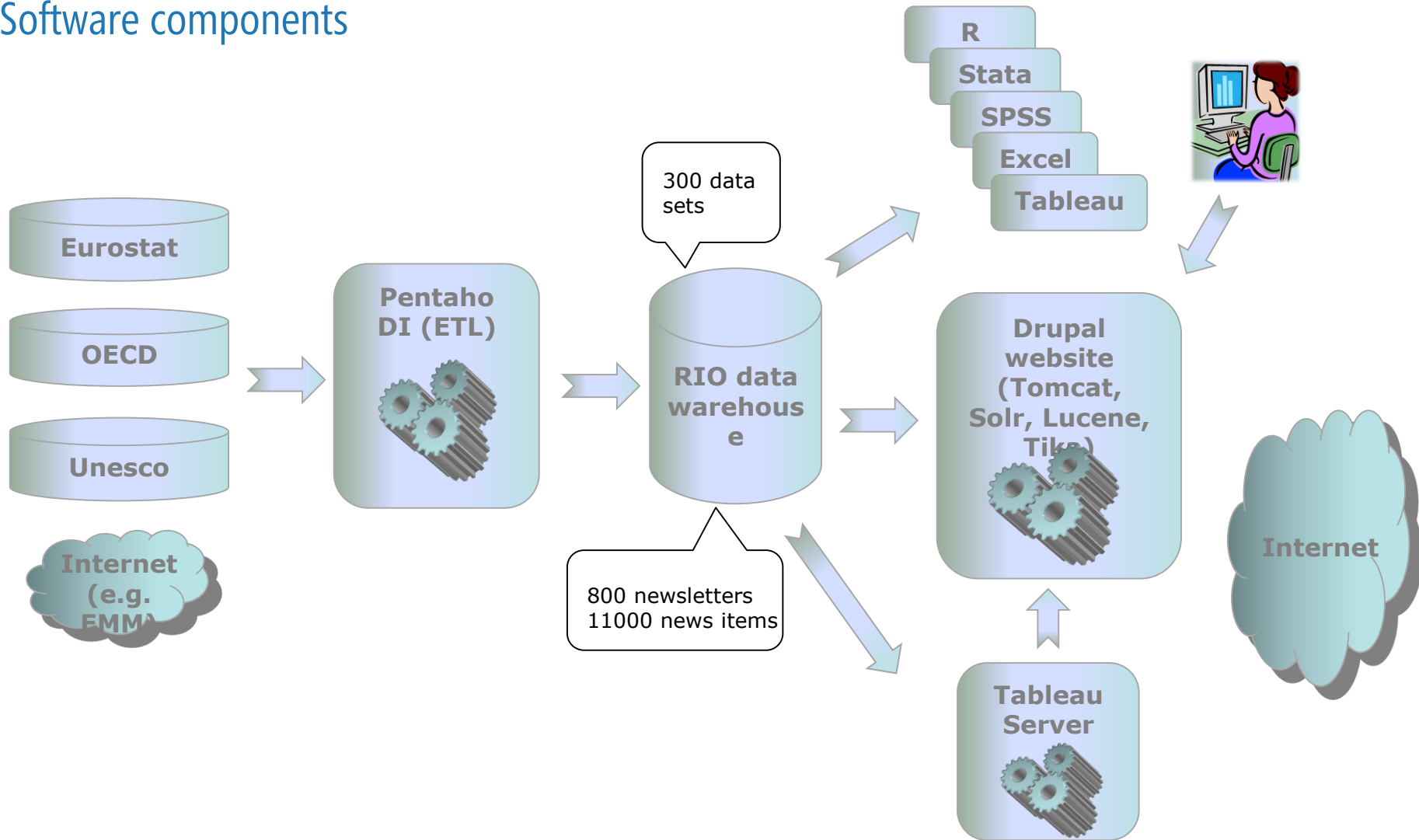
Number of researchers by gender and sector



Indicator: Number of researchers by gender and sector | Unit: FTE percentage of the active population | Gender: Total | Sector: All sectors

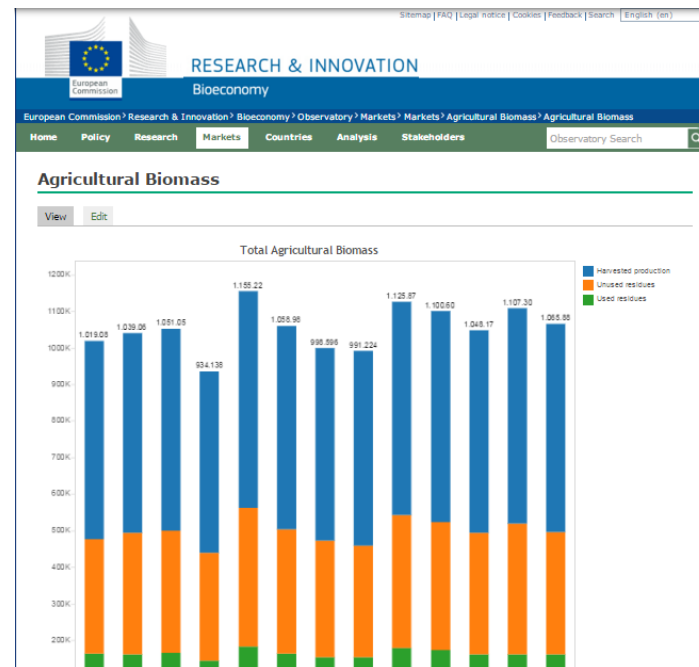
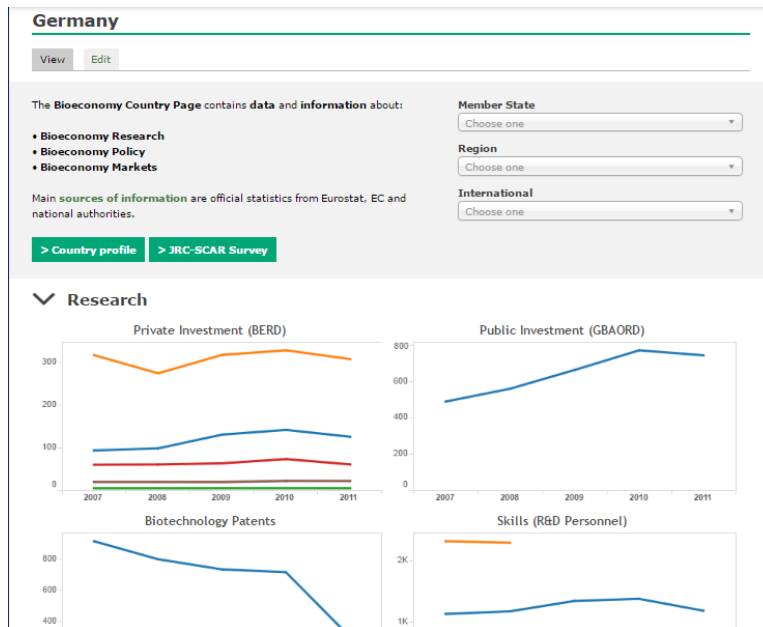
The categories Private sector (BES+PNP) and Public sector (GOV+HES) are calculated only when data for both their components exist

Software components



Use of Tableau in the context of the BeO website

- Integrated in Drupal via a Token system
- Stand-alone
- Country dashboard – one visualisation filtered by parameter



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MIDAS Modelling Inventory and Data Access Services

MIDAS Support Team:

Nicole Ostlaender, Paul Smits, Matthew Hardy,
Roberto Sgnaolin, Gabriele Ghirimoldi

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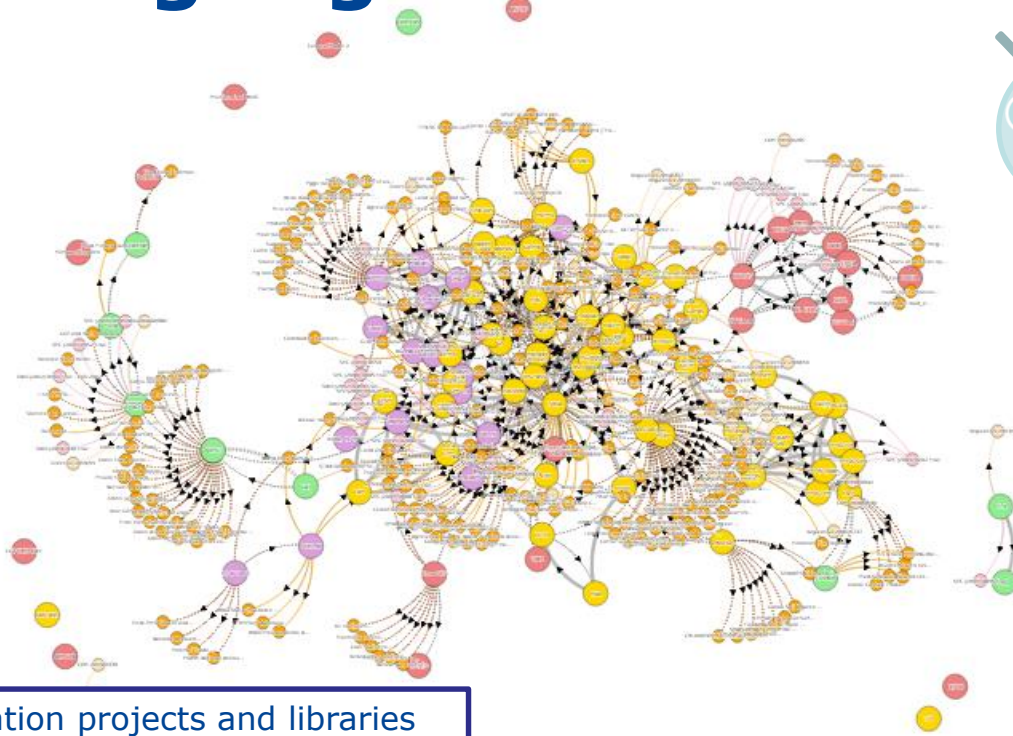
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MIDAS – Background & Scope



Since 2012 JRC develops MIDAS to document and share knowledge on models in use in JRC for policy making. Following the recommendations of the [High Level Reflection Group on Information Management](#), MIDAS is currently rolled out to the Commission as a [Corporate Model Inventory](#).

Linking together ...

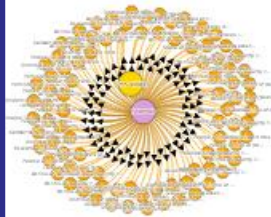


Visualization projects and libraries used in MIDAS

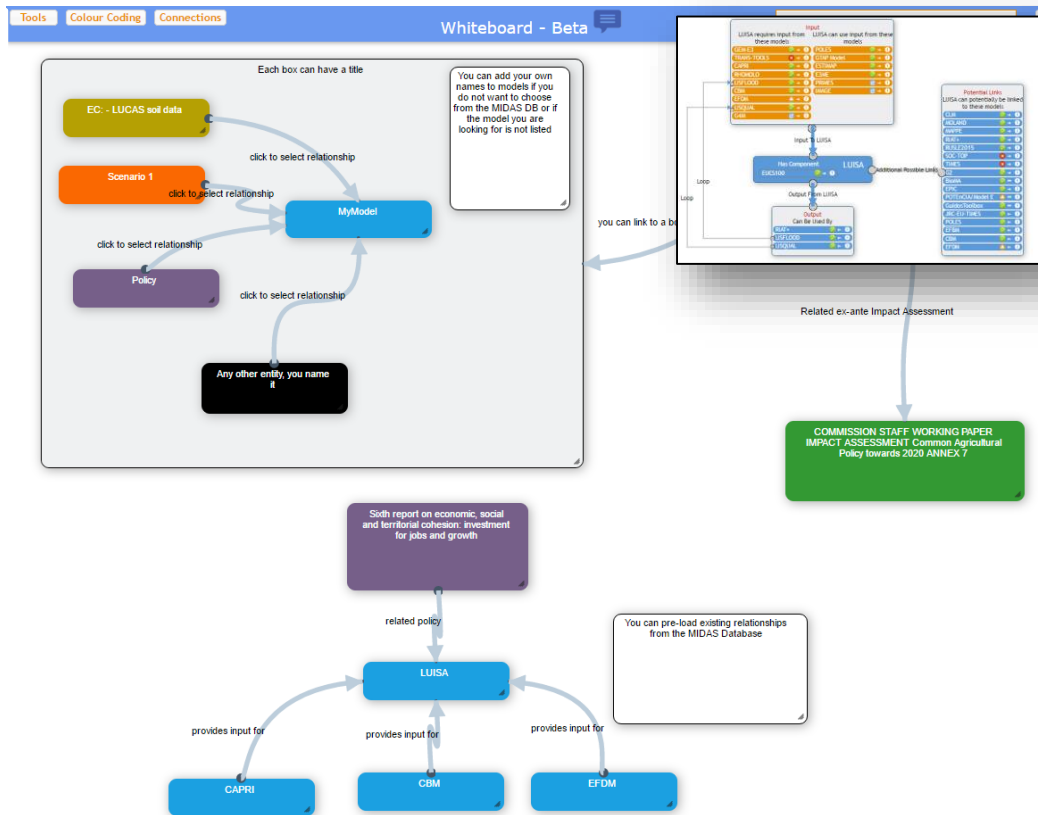
- D3 - Data driven documents
- JsPlumb

Sources

- JSON
- SQL Database
- RDF & Triple Store



Visualisation for ...



Conclusions

MIDAS provides interactive visualization (including graphs) and data browsing tools for content stored in

- JSON
- SQL Database
- RDF & Triple Store

MIDAS medium/long term plans include migration to DIGIT's data centre.

JRC invites DIGIT to consider supporting the visualisation projects/libraries implemented in MIDAS:

- D3 - Data driven documents for the majority of graphs
- JsPlumb – Workflow & Design representation

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[MIDAS extension to all Commission Services – dedicated ISG](#)

