Lakewood
Durham, NC
3 June 2018

National Open Science Research Analytics in VIVO

VIVO Conference, Montenegro, 6th September 2019

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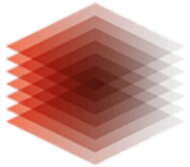
Part of the OPERA project – Open Research Analytics

Danish project with international partners



Funded by

OPERA - in brief

In the OPERA project we:

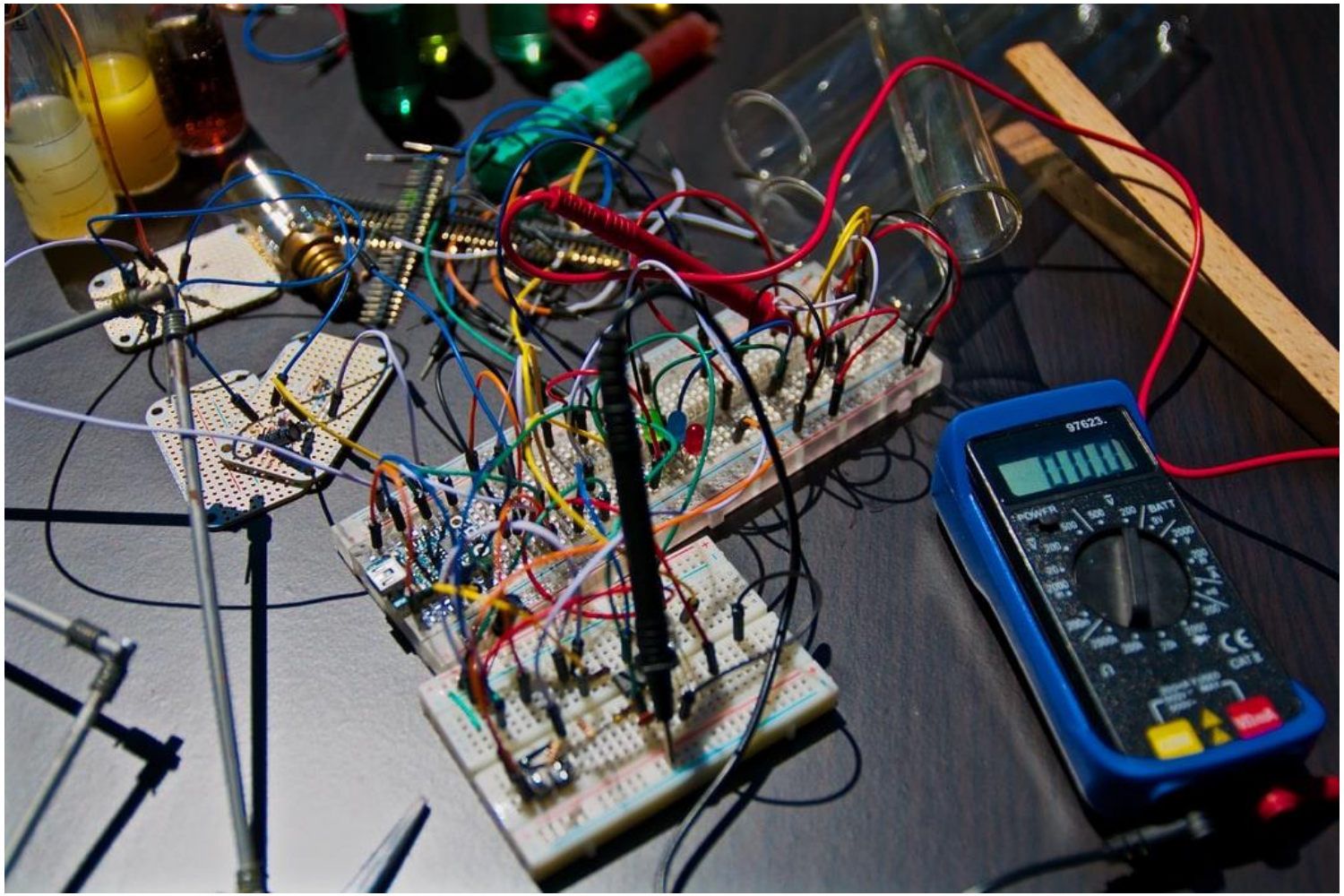
Explore and review:	*Opportunities and barriers to include Open Science and Open d… in research analytics*
Identify:	*the most relevant and promising indicato… Open Science*
Examine:	*relevant quantitative indicators for the soci… impact of research in the humanities and social sciences*
Develop:	*Research analytics systems with **Open**:*

Reports and reviews soon to be published on https://deffopera.dk

- ***Metrics***
- ***Systems***
- ***Software***
- ***Code***
- ***Tools for visualization and analysis***
- ***Indicators for Impact assessment***

We want to move from talking…

…and start experimenting



National open science research analytics: Pilot based on Dimensions++ data

With data from all Danish universities & university hospitals

In order to identify & understand some of the many aspects, patterns, impact and potential of the Danish research landscape

And to compare on an international level

While making the system openly available

Primary data sources

DIGITAL science Dimensions

+ The Bibliometric Research Indicator

Danish Indicators

+ Danish Open Access Indicator

neo4j Graph Database

VIVO

VOSviewer Visualizing scientific landscapes

Open Science elements

unpaywall

PUBLONS EVALUATING ACADEMIC RESEARCH

DataCite

figshare

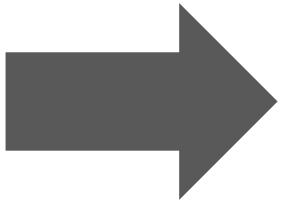
Why did we choose Dimensions as the primary source?

- Opportunity to test and dive into an alternative to the established citation databases
- From a data provider with a more **open** approach to data, sources, methods
- …and a less traditional view of research output and its impact
- A lot of potential collaborating with Digital Science
- Most of all because we find Dimensions data to be promising and of good quality → based on comprehensive testing

Three-step Approach to the Dimensions Test

In order to understand Dimensions coverage of the Danish universities, the data quality, data gaps, potential and challenges

1. Initial, unstructured test of **data and functionality**
2. Structured test focusing on **coverage**
3. **In-depth comparison** of data on publication level in Dimensions and Web of Science



Results discussed with Digital Science

What we envision: Optimized data

Working with Digital Science to make sure

- The data is complete for Denmark
- Correctly reflects the affiliation to Danish universities

  – And Danish university hospitals

- Correctly reflects Danish funders and grants

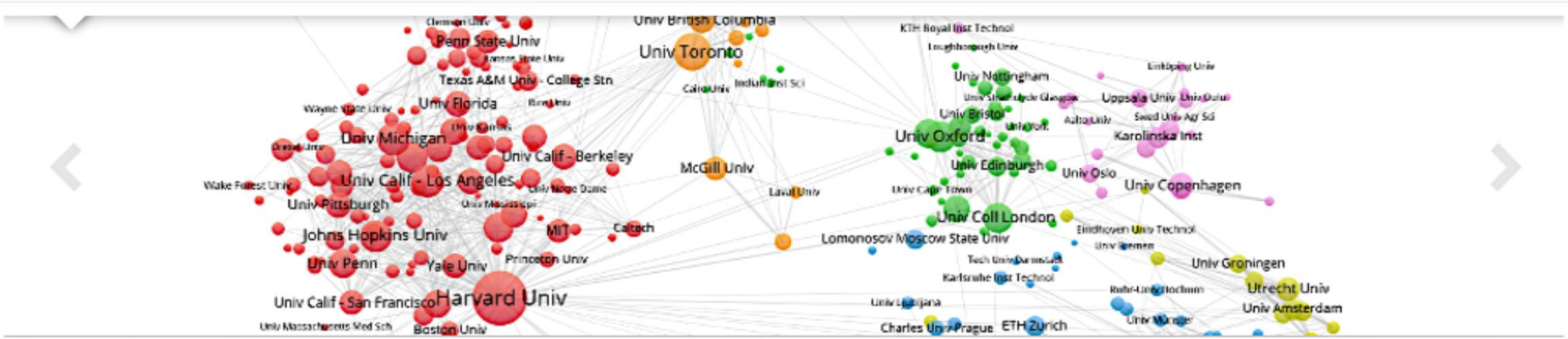
Benefitting (hopefully) from Dimensions' article level subject classification ...

- Having been very dissatisfied with the journal level classifications of the traditional databases

... and the wider array of data types: Grants, Patents, Clinical trials, Policy documents

What we envision: Analytics of the DK universities

Looking very much at the Leiden Ranking as a source of inspiration.



CWTS Leiden Ranking 2019

The CWTS Leiden Ranking 2019 offers important insights into the scientific performance of nearly 1000 major universities worldwide. Select your preferred indicators, generate results, and explore the performance of universities.

List view

Chart view

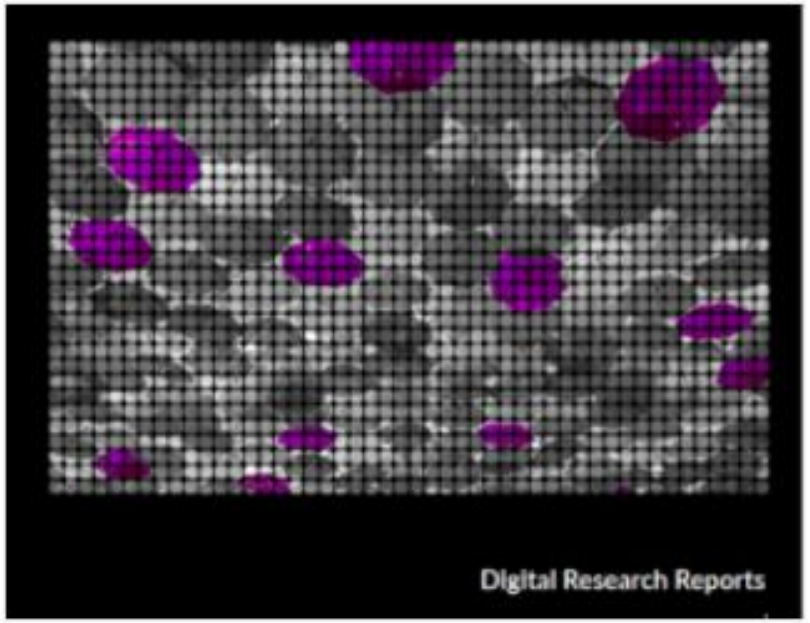
Map view

What we envision: Analytics of the DK universities

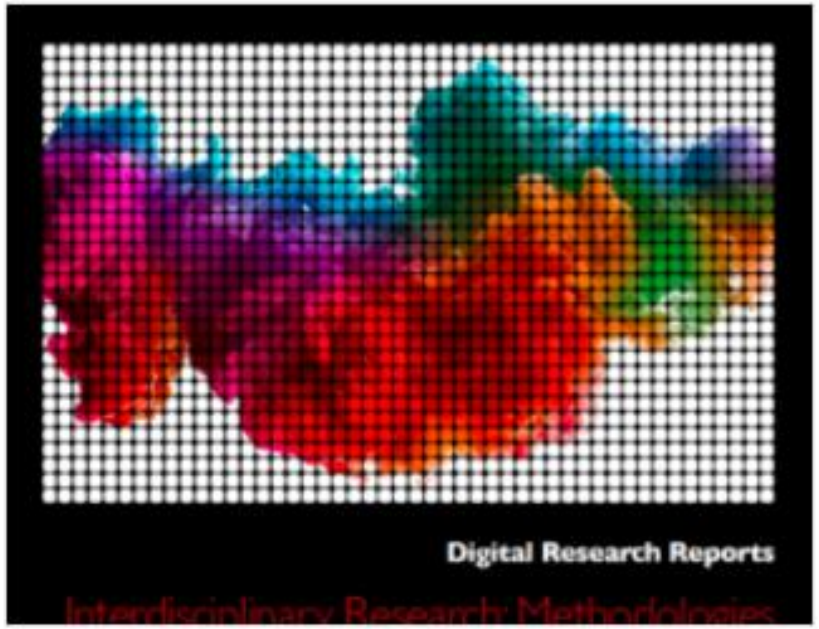
Looking very much at the Leiden Ranking as a source of inspiration.

And adding other analytics, inspired by Dimensions itself and Digital Science reports, like:

The Diversity of UK Research and Knowledge



Gender Representation in UK Research



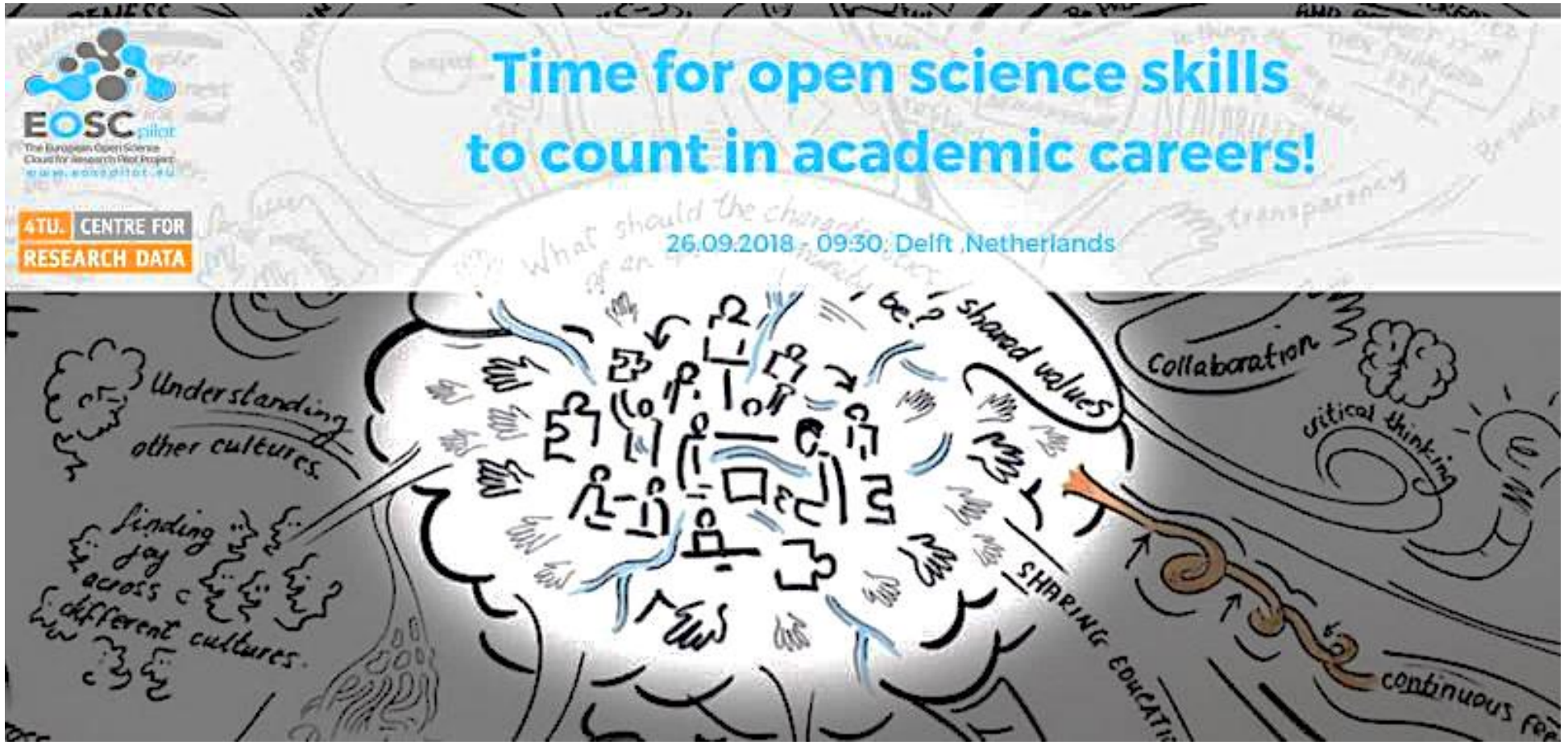
Interdisciplinary Research: Methodologies for Identification and Assessment

What we envision: Analytics of DK in the world

Comparing Denmark with

- Global and regional (Europe, EU etc.) baselines
- Other countries (selected)

What we envision: Open Science metrics



**How can academic rewards systems
better recognize the work to make science open,
and encourage researchers to develop the right skills?**

What we envision: Open Science metrics

https://ec.europa.eu/research/openscience/pdf/os_rewards_wgreport_final.pdf

What we envision: Open Science metrics

Open Science Career Assessment Matrix

- **Research output**
  - Research activity
  - Publications
  - Datasets and research results
  - Open Source
  - Funding
- **Research process**
  - Stakeholder engagement / citizen scíence
  - Collaboration and interdisciplinarity
  - Research integrity
  - Risk management
- **Service and leadership**
  - Leadership
  - Academic standing
  - Peer review
  - Networking
- **Research impact**
  - Communication and dissemniation
  - IP (patents, licenses)
  - Societal impact
  - Knowledge exchange
- **Teaching and supervision**
- **Professional experience**

What we envision: Open Science metrics

- Nature 508, 312–313 (17 April 2014) doi:10.1038/508312a

What we envision: Open Science metrics

The 14 roles of the CRediT taxonomy

1. Conceptualization
2. Data curation
3. Formal analysis
4. Funding acquisition
5. Investigation
6. Methodology
7. Project administration
8. Resources
9. Software
10. Supervision
11. Validation
12. Visualization
13. Writing – original draft
14. Writing – review & editing

And Peer Reviewing ?

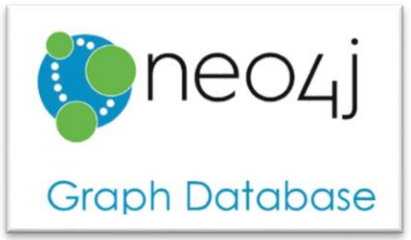
What we envision: Open Science metrics

- ✓ We can do **Open Access** fully (Unpaywall & Danish OA Indicator)
- ✓ We can do **FAIR Data** to some extent (DataCite & Figshare)
- ✓ We can do **Peer Reviewing** to some extent (Publons)
- ❑ But to generate exemplar profiles with full Open Science coverage - before the end of next year
- ❑ We will have to work with researchers that are Open Science champions, and manually curate the necessary metadata.

Network analyses & visualizations

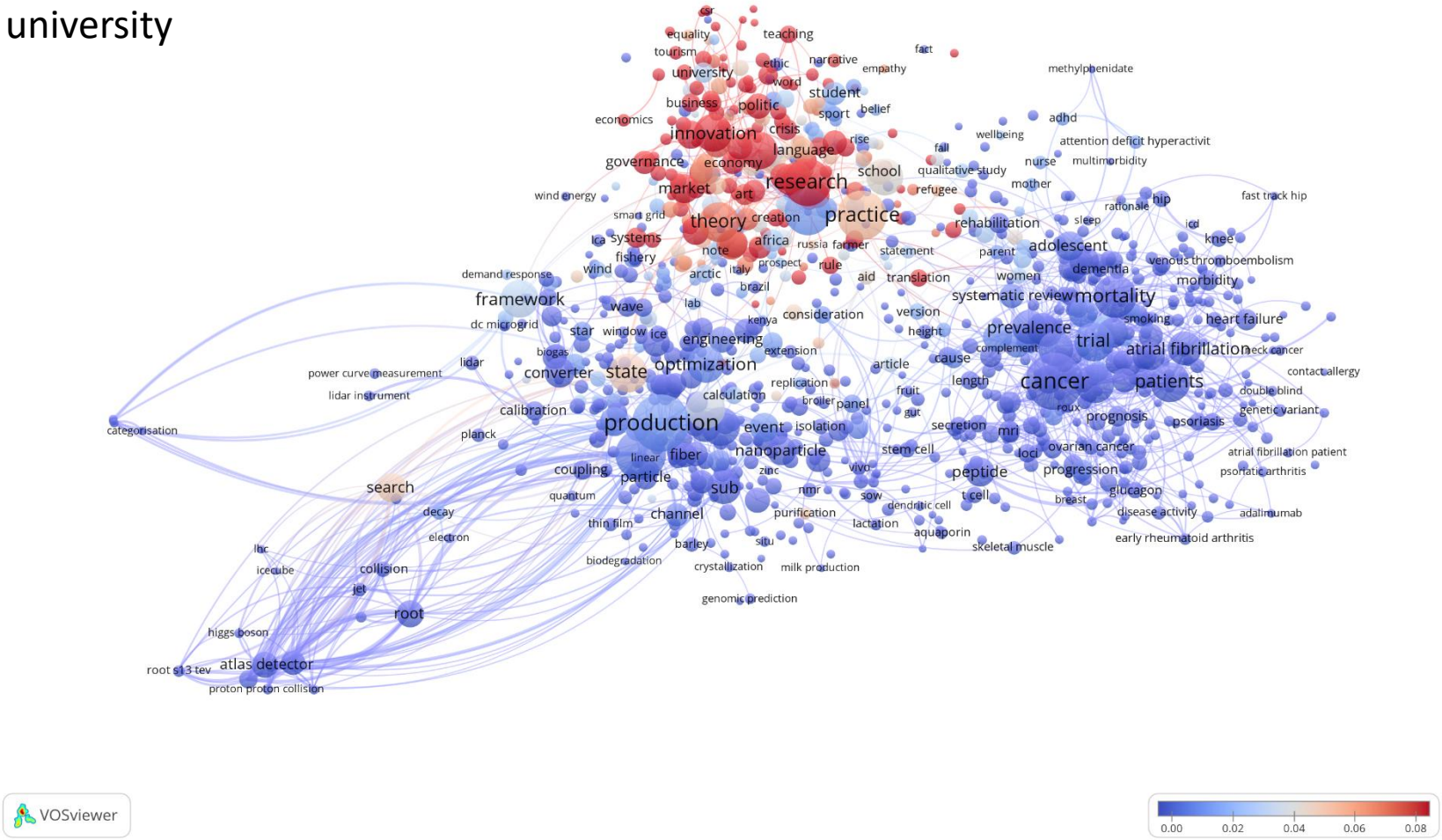
In order to complement the more traditional analytics and visual elements

and to support new ways of perceiving numbers, patterns and potentials.



Knowledge Landscape - across and beyond silos

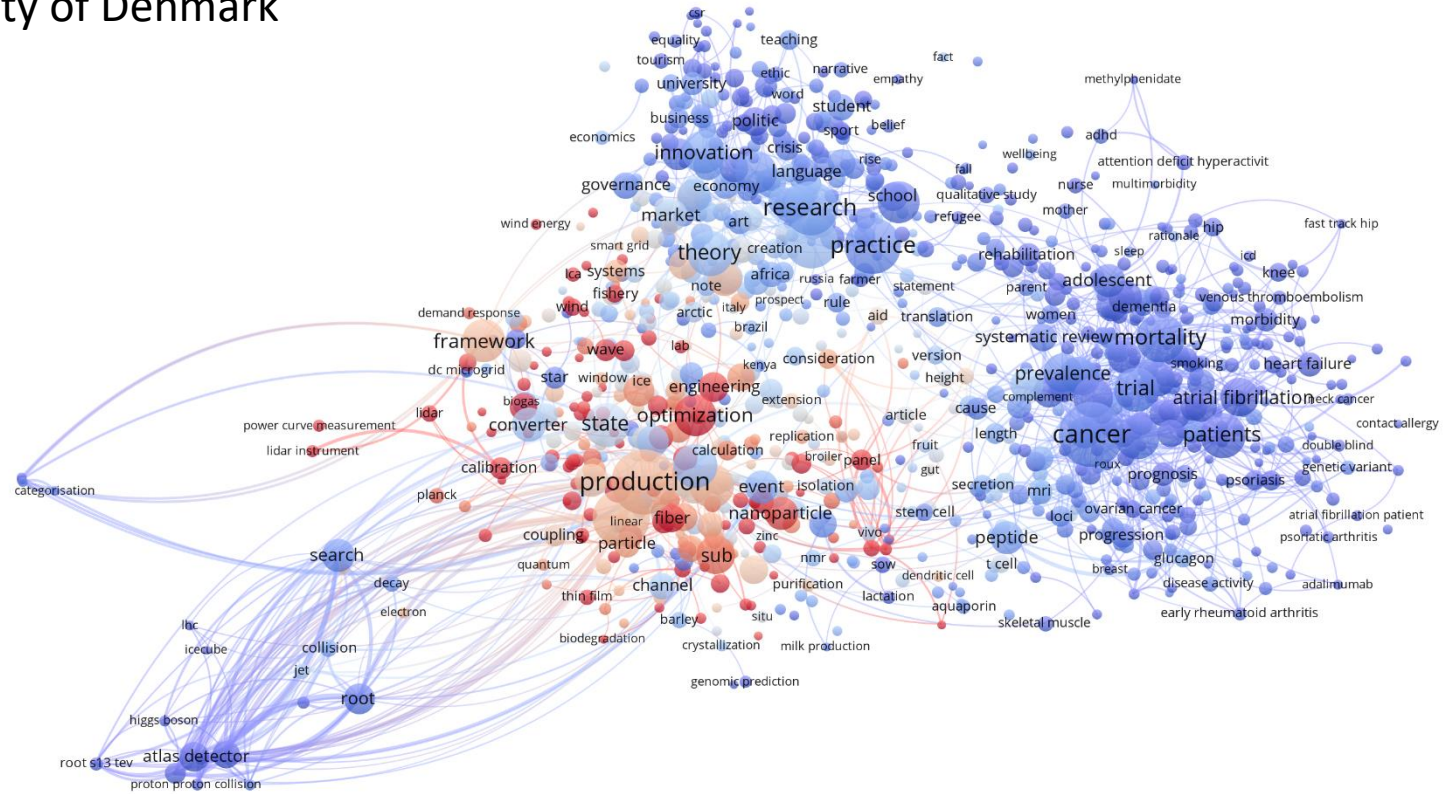
Map of Science DK - English 2015-2017
Copenhagen university



Capability mapping: using bibliometric data to explore the potential of research ecosystems - @parraguezr

Knowledge Landscape - across and beyond silos

Map of Science DK - English 2015-2017
Technical University of Denmark



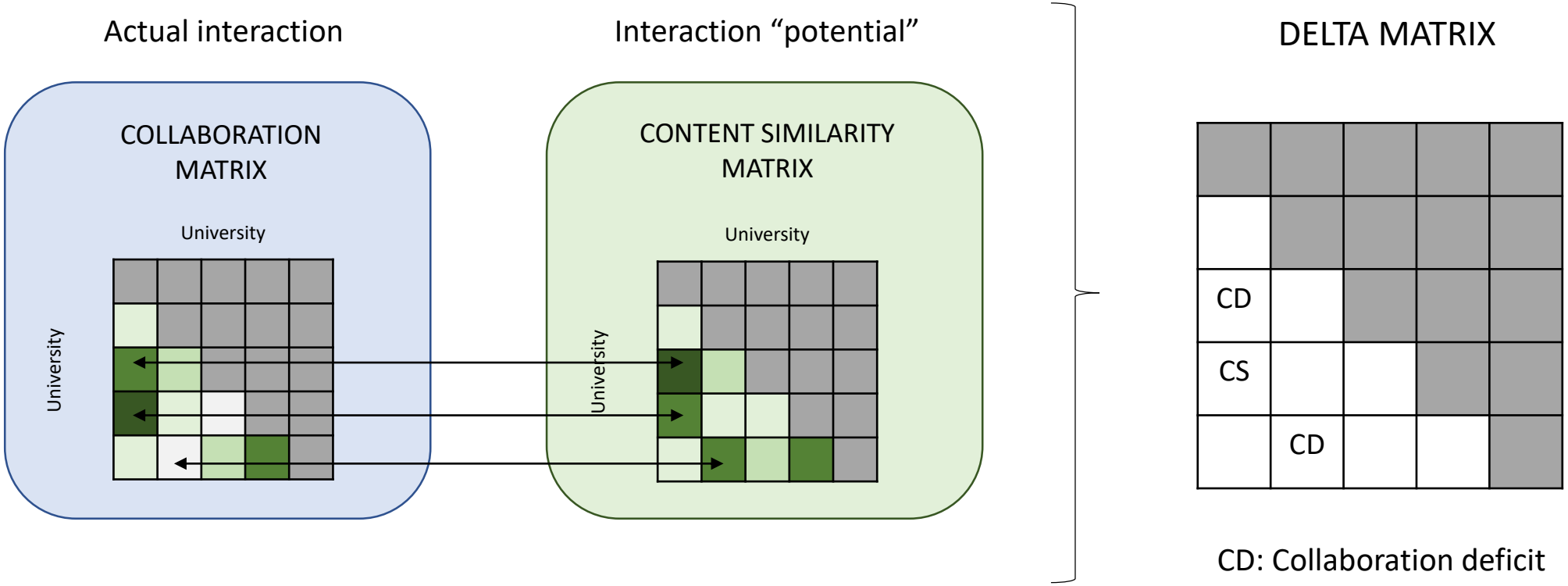
Capability mapping: using bibliometric data to explore the potential of research ecosystems - @parraguezr

Calculating collaboration deltas - Across and beyond silos

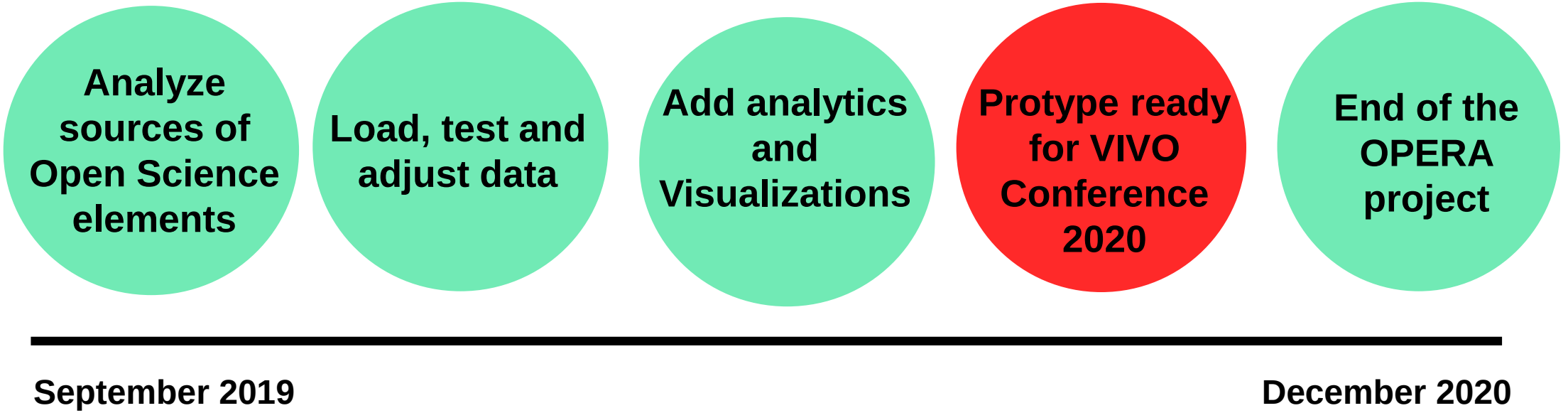
	University A	University B	University C	University D	University E
University A		10	30	100	10
University B	10		20	10	5
University C	30	20		5	20
University D	100	10	5		25
University E	10	5	20	25	

Example collaboration matrix

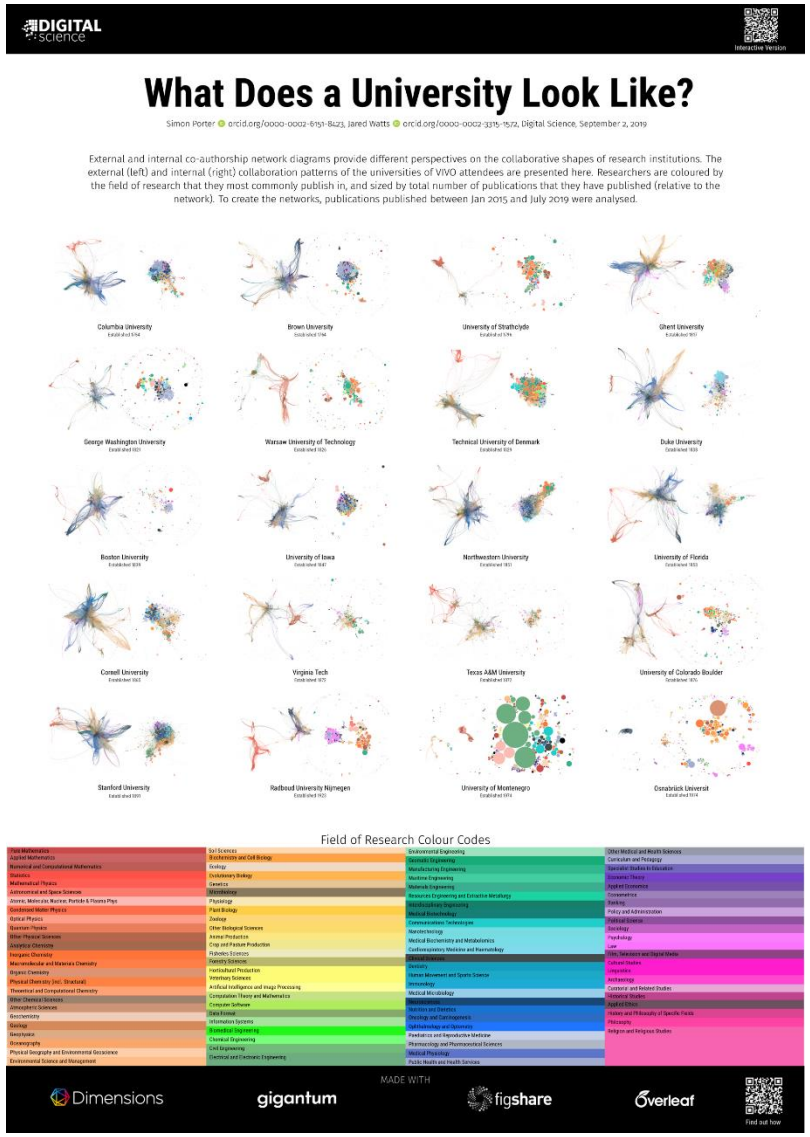
Calculating collaboration deltas - Across and beyond silos



Project timeplan

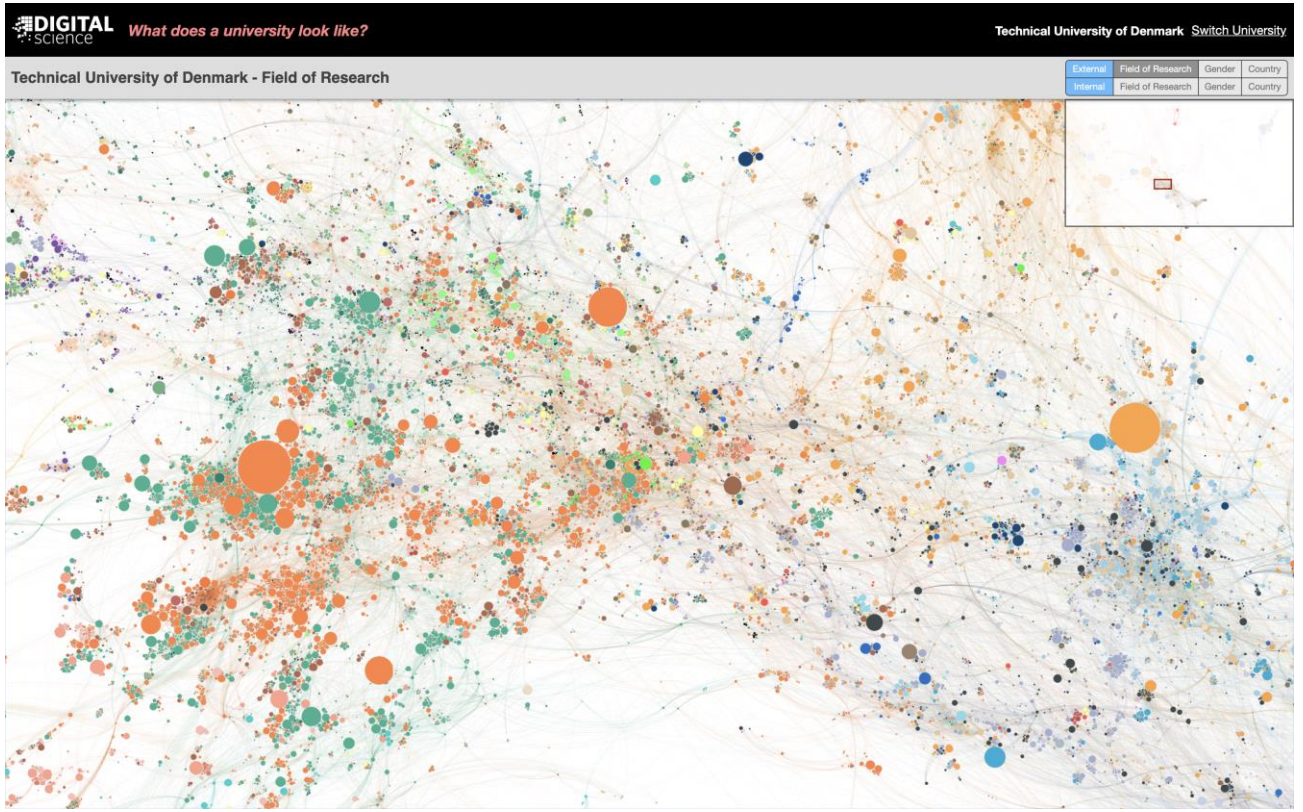


Getting a lot done quickly with the Dimensions API



Dimensions API examples on Github

https://digital-science.github.io/dimensions-api-lab/



What does a University Look Like Project:

https://gigantum.com/sjcporter/what-does-a-university-look-like

Thank you for your attention!

Acknowledgements:

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