



Lakewood
Durham, NC
3 June 2018



National Open Science Research Analytics in VIVO

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Karen Hytteballe Ibanez, DTU – Technical University of Denmark, kshi@dtu.dk

Mogens Sandfær, DTU – Technical University of Denmark, mosa@dtu.dk

Simon Porter - Digital Science, s.porter@digital-science.com

Part of the OPERA project – Open Research Analytics

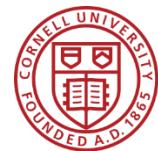
Danish project with international partners



AARHUS UNIVERSITY



AALBORG UNIVERSITY
DENMARK



Cornell University



Funded by



Ministry of Higher
Education and Science

OPERA - in brief

In the OPERA project we:

Explore and review:

Opportunities and barriers to include Open Science and Open in research analytics

Identify:

the most relevant and promising indicators for Open Science

Examine:

relevant quantitative indicators for the societal impact of research in the humanities and social sciences

Develop:

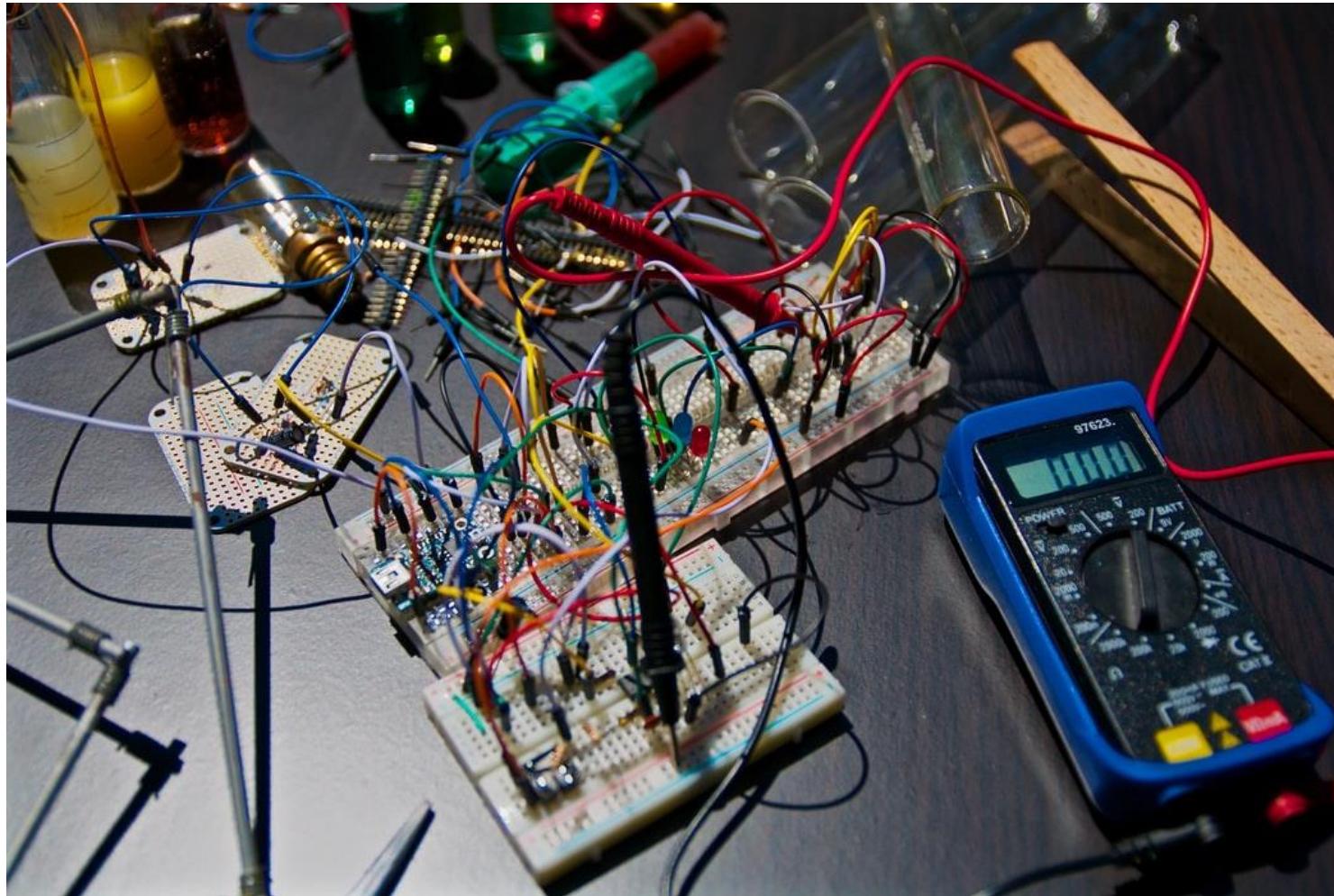
*Research analytics systems with **Open**:*

- **Metrics**
 - **Systems**
 - **Software**
 - **Code**
 - **Tools for visualization and analysis**
 - **Indicators for Impact assessment**
- Reports and reviews soon to be published on <https://deffopera.dk>*

We want to move from talking...



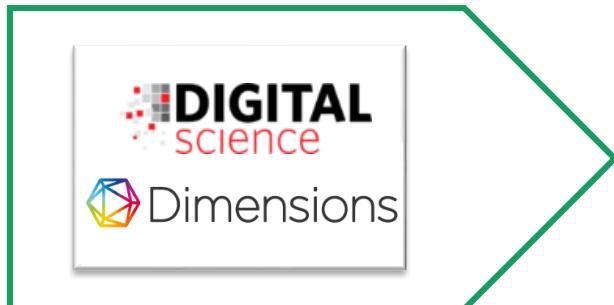
...and start experimenting



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



Open Science elements



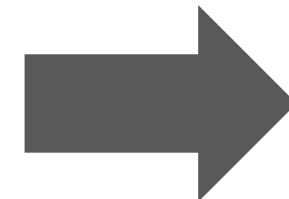
Why did we choose Dimensions as the primary source?

- 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 ...

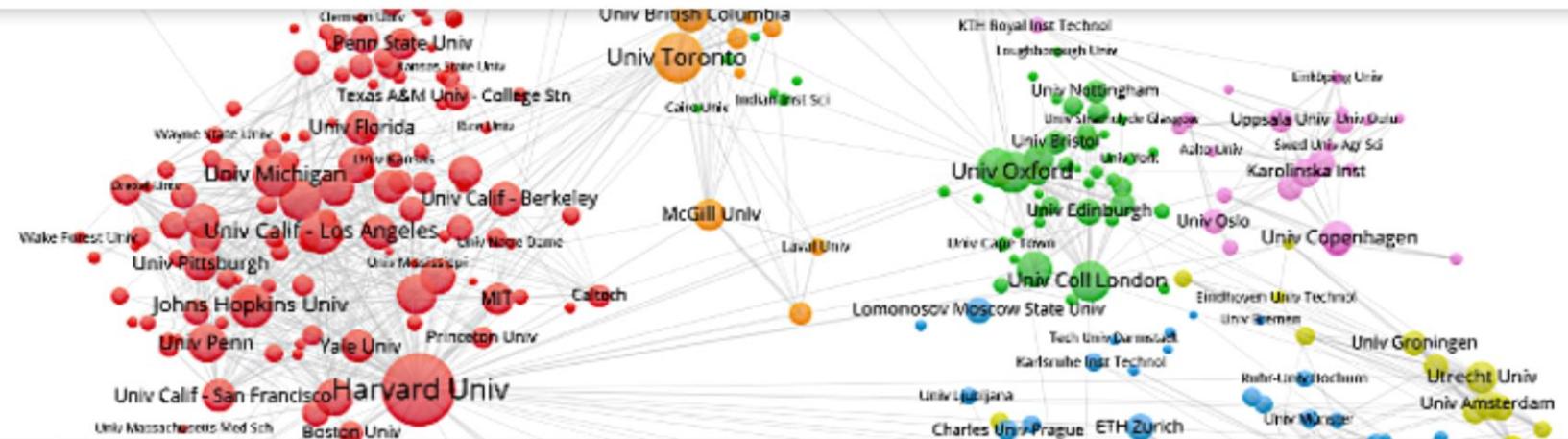
- Having been very dissatisfied with the journal level classifications of the traditional databases
- ... and the wider array of data types: Grants, Patents, Clinical trials, Policy documents



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.

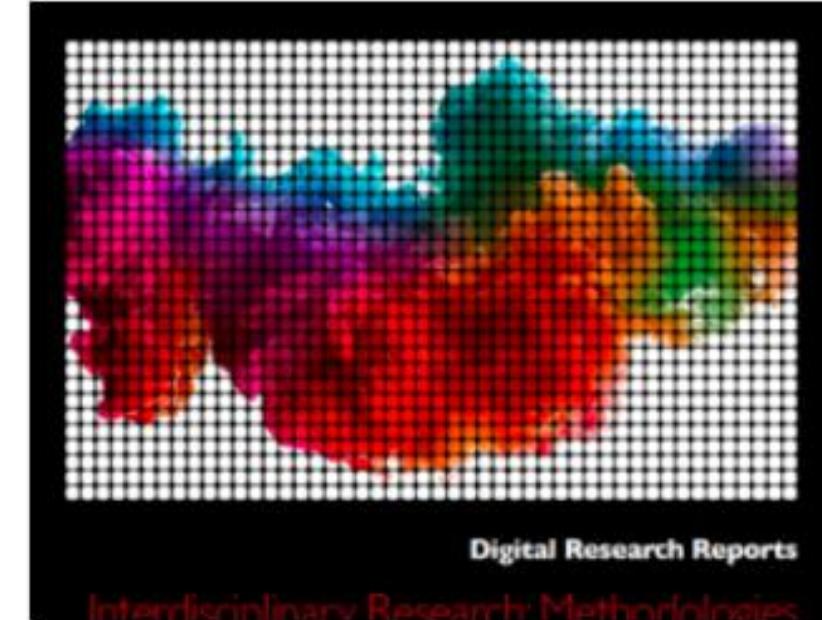
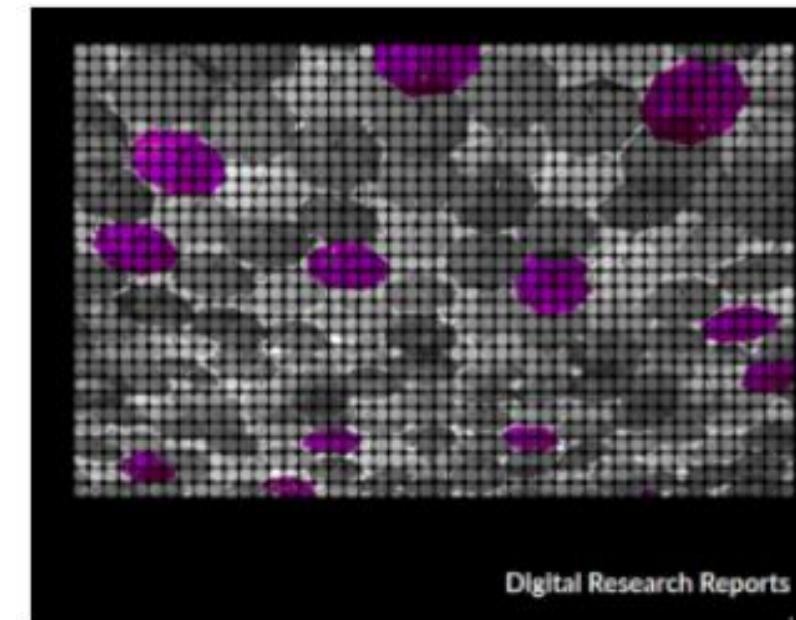
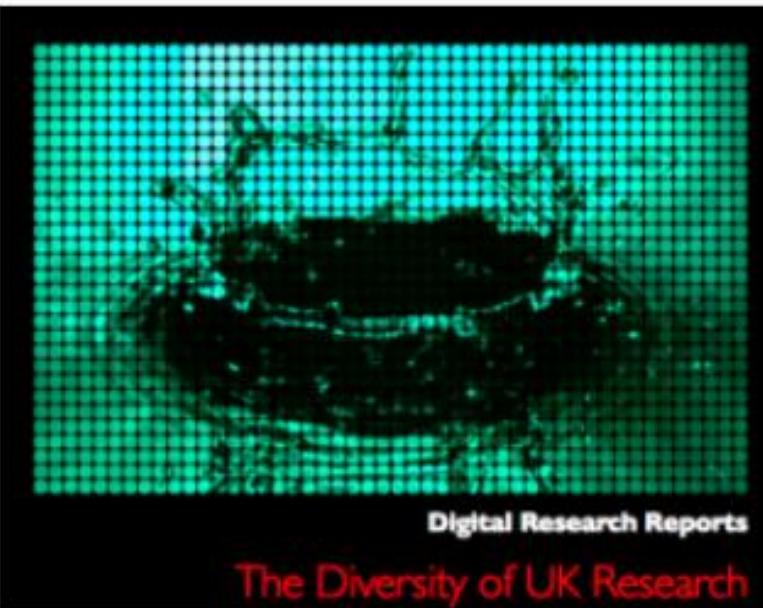
University	Country	P	F (Top 1%)	F (Top 5%)
1. MIT	USA	10440	400	4.0%
2. Massachusetts Inst. Tech.	USA	31127	1226	3.2%
3. Caltech	USA	5087	161	3.2%
4. Stanford University	USA	14182	442	3.1%
5. Univ. Calif., Berkeley	USA	11304	360	3.0%
6. University of Michigan, Ann Arbor	USA	11248	51	3.0%
7. Univ. Calif., Santa Barbara	USA	4258	126	3.0%
8. Brown University	USA	5176	116	2.9%
9. Duke University	USA	2489	84	2.9%
10. Univ. Calif., San Francisco	USA	10199	264	2.9%
11. UMKC	USA	10331	248	2.9%
12. Univ. Texas, Southwestern Med. Ctr.	USA	4235	100	2.9%
13. Washington Univ.	USA	2414	57	2.9%
14. Univ. Calif., San Diego	USA	11759	276	2.9%
15. Univ. Georgia	USA	12130	279	2.8%
16. Univ. Colorado, Boulder	USA	5216	118	2.8%



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



The European Commission logo is positioned at the top center of the slide. It consists of a blue rectangle containing the yellow stars of the European Union flag, flanked by two stylized white wave-like patterns. Below the logo, the words "European Commission" are written in a smaller, sans-serif font.

Evaluation of Research Careers fully acknowledging Open Science Practices

Rewards, incentives and/or recognition for researchers
practicing Open Science

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 science
 - Collaboration and interdisciplinarity
 - Research integrity
 - Risk management
- **Service and leadership**
 - Leadership
 - Academic standing
 - Peer review
 - Networking
- **Research impact**
 - Communication and dissemination
 - IP (patents, licenses)
 - Societal impact
 - Knowledge exchange
- **Teaching and supervision**
- **Professional experience**



What we envision: Open Science metrics

Credit where credit is due

Liz Allen, Amy Brand, Jo Scott, Micah Altman and Marjorie Hlava are trialling digital taxonomies to help researchers to identify their contributions to collaborative projects.

Research today is rarely a one-person job. Original research papers with a single author are — particularly in the life sciences — a vanishing breed. Partly, the inflation of author numbers on papers has

Through the endorsement of individuals' contributions, researchers can start to move beyond 'authorship' as the dominant measure of esteem. For funding agencies, better information about the contributions of grant applicants would aid the decision-making process. It could also enable journal articles could be classified using a 14-role taxonomy (see 'Who did what?'). The survey was sent to 1,200 corresponding authors of work published in PLOS journals, Nature Publishing Group journals, Elsevier journals, Science and eLife. Corresponding authors were asked to indicate the contribu-

- 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

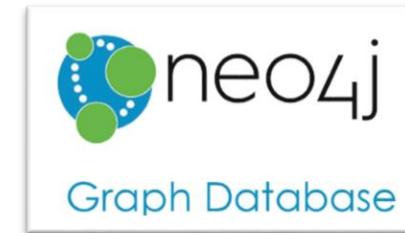
- ✓ We can do **Open Access** fully (Unpaywall & Danish OA Indicator)
- ✓ We can do **FAIR Data** to some extent (DataCite & Figshare)
- ✓ We can do **Peer Reviewing** to some extent (Publons)
- But to generate exemplar profiles with full Open Science coverage
 - before the end of next year
- We will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



Network analyses & visualizations

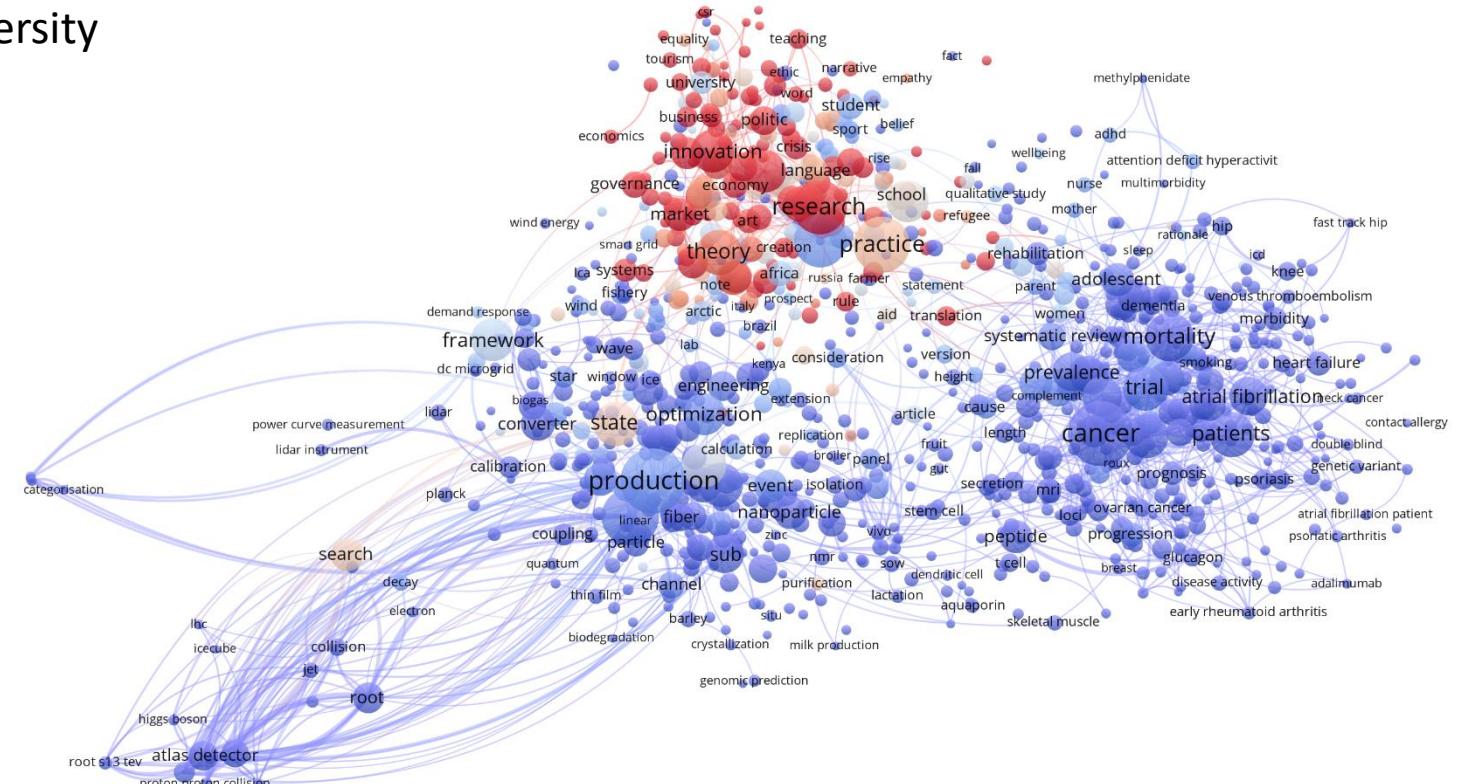
In order to complement the more traditional analytics and visual elements

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



Knowledge Landscape - across and beyond silos

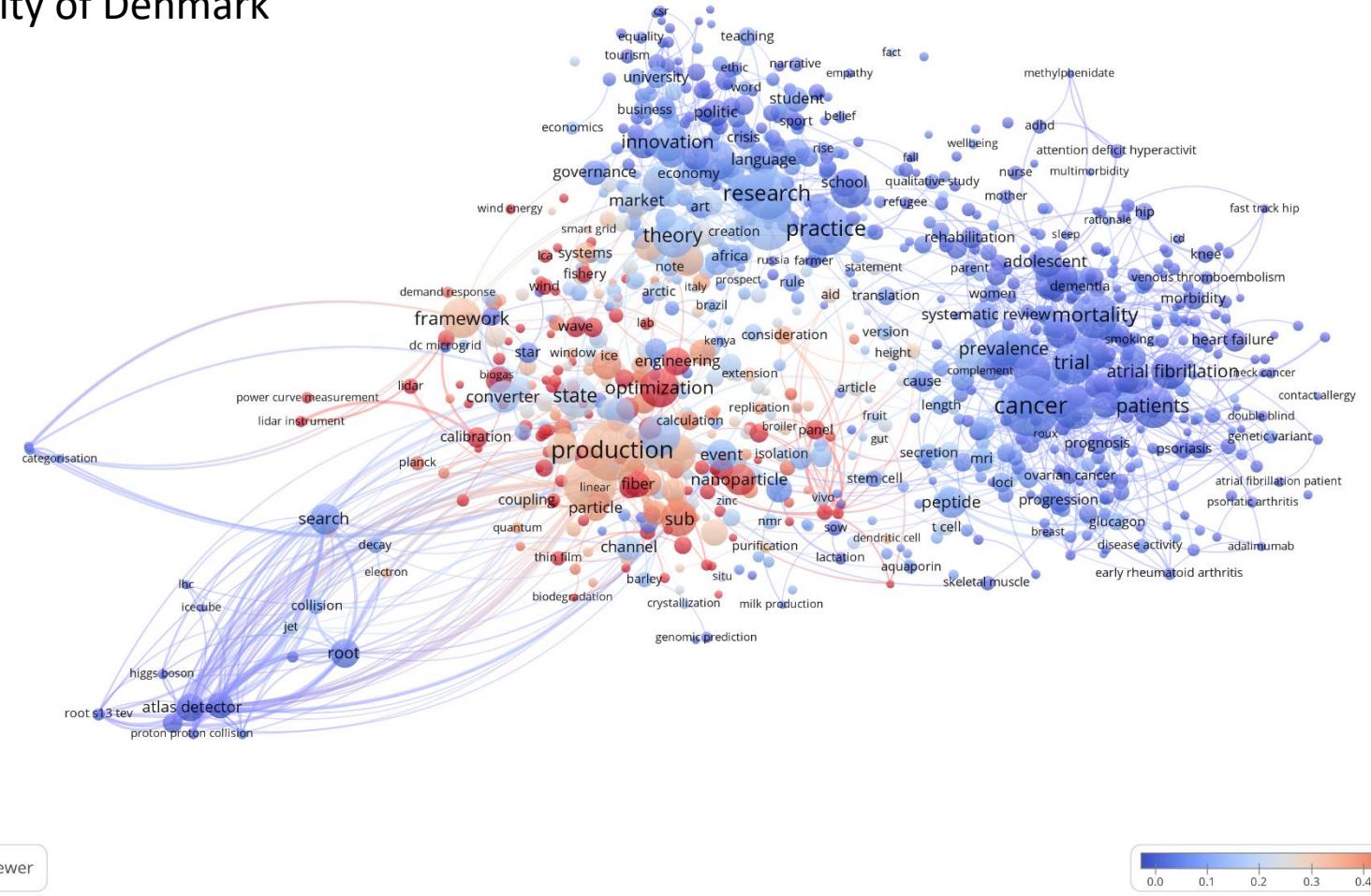
Map of Science DK - English 2015-2017
Copenhagen university



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

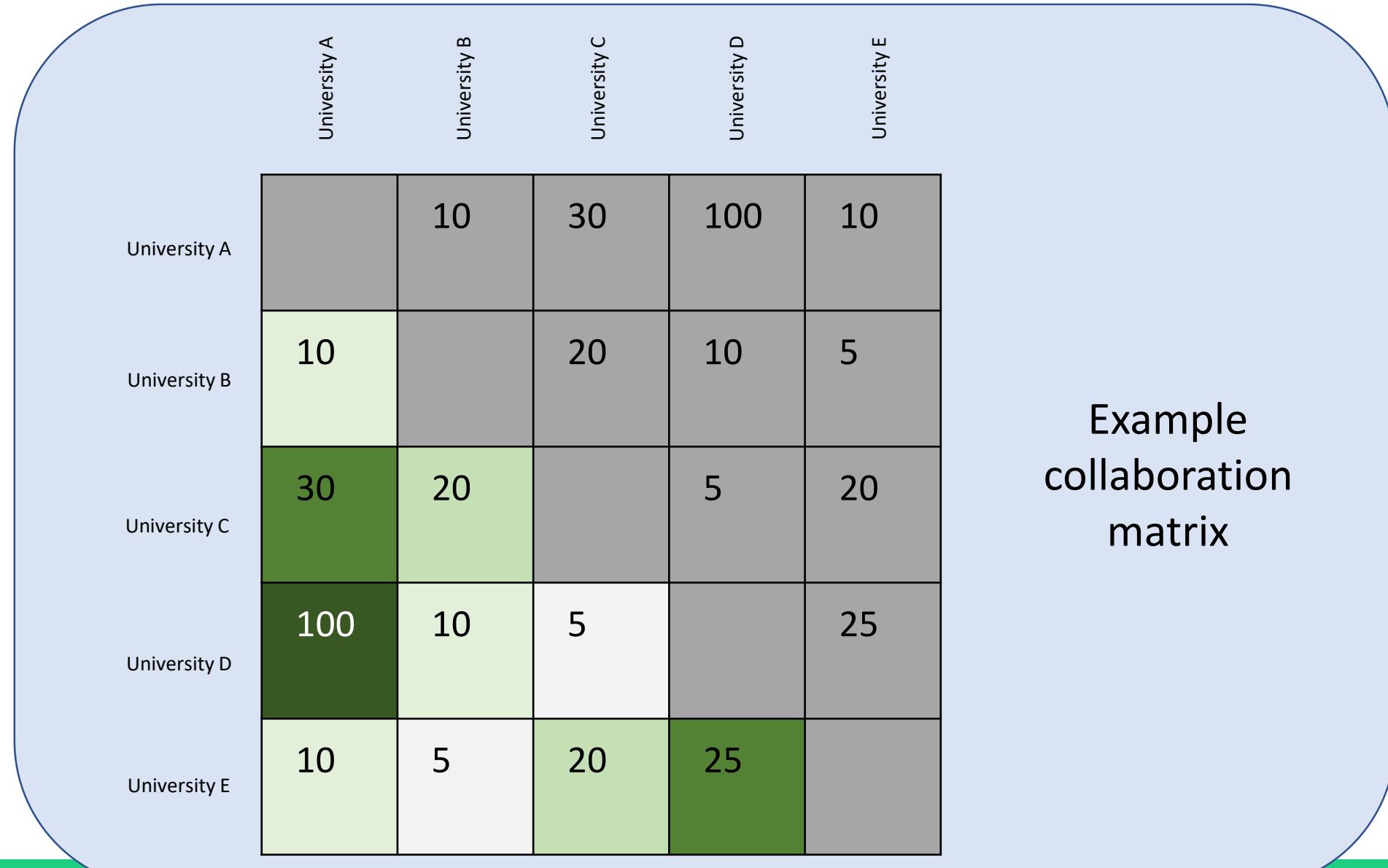
Knowledge Landscape - across and beyond silos

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

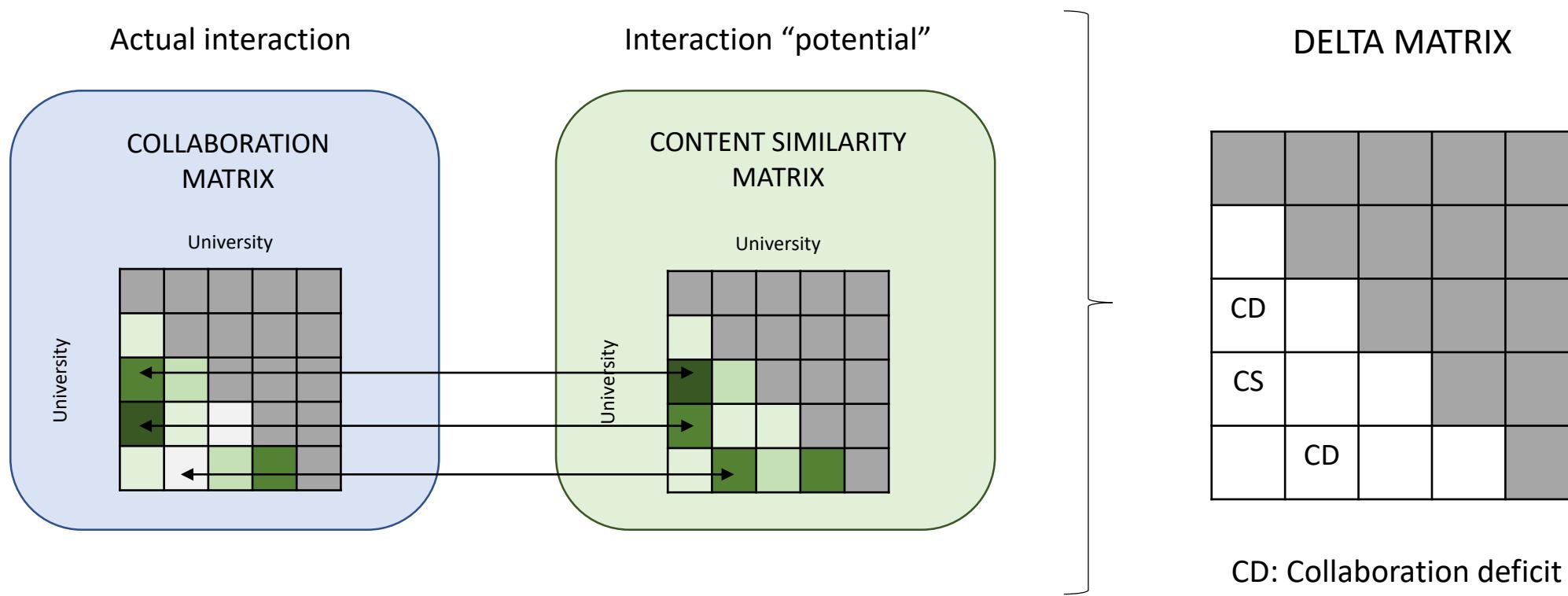


Capability mapping: using bibliometric data to explore the potential of research ecosystems - @parraguezr

Calculating collaboration deltas - Across and beyond silos



Calculating collaboration deltas - Across and beyond silos



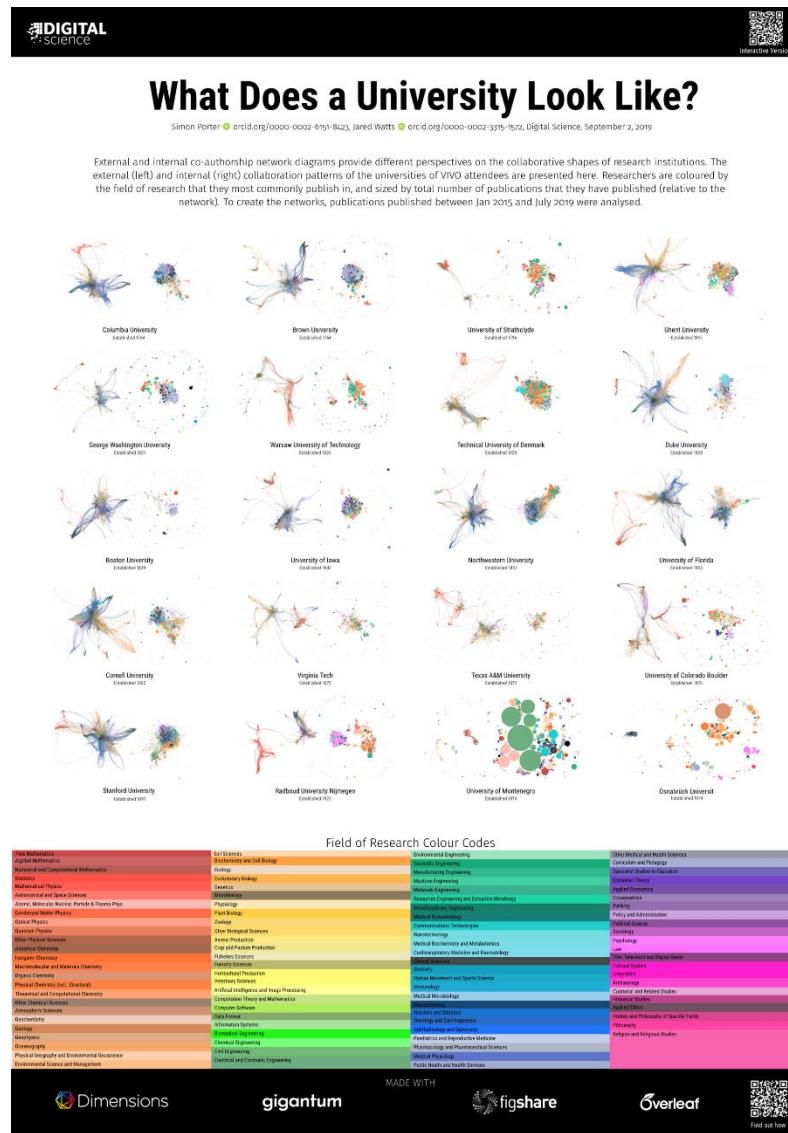
Project timeplan



September 2019

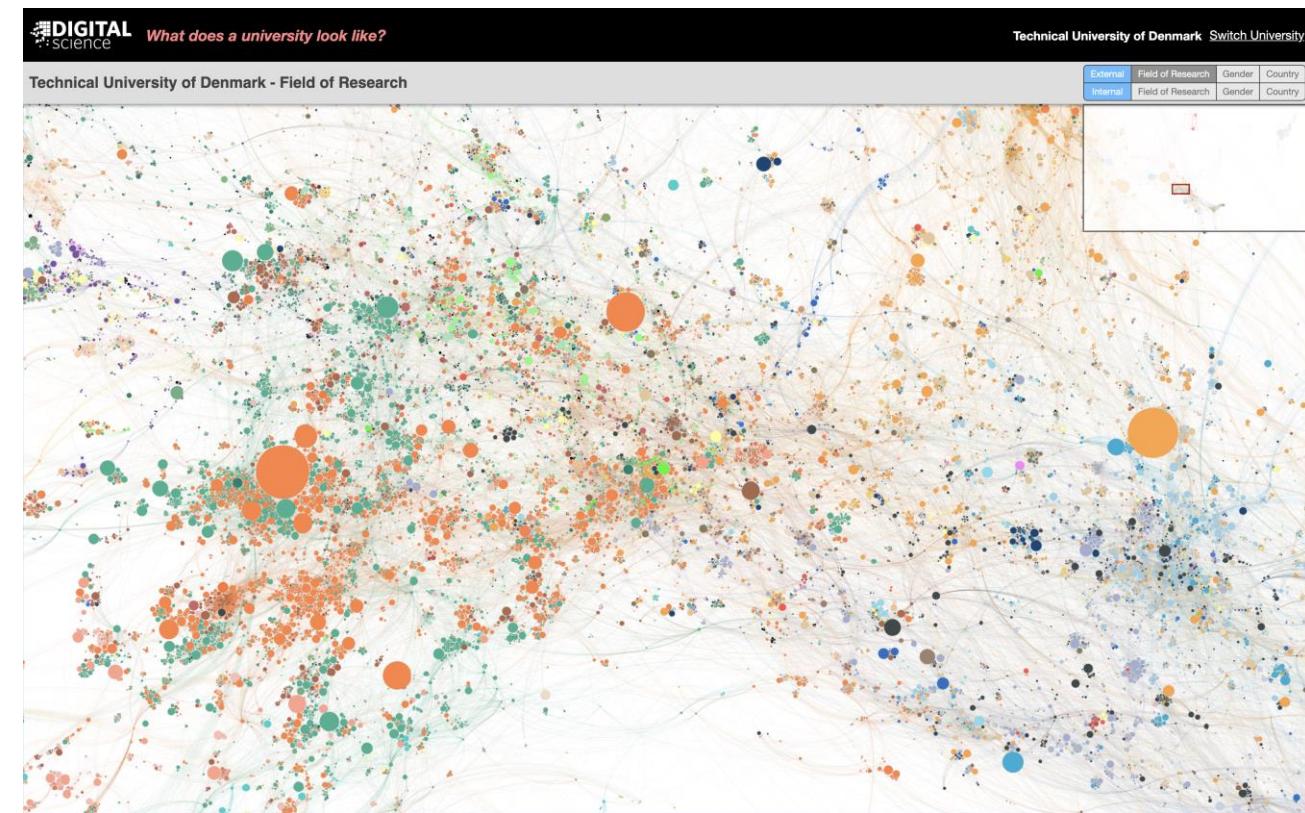
December 2020

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!

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Karen Hytteballe Ibanez, DTU, <https://orcid.org/0000-0002-8229-0392>

Mogens Sandfær, DTU, <https://orcid.org/0000-0001-8436-5346>

Simon Porter, Digital Science, <https://orcid.org/0000-0002-6151-8423>

Christina Steensboe, DTU, <https://orcid.org/0000-0002-8783-0036>

Nikoline Dohm Lauridsen, DTU, <https://orcid.org/0000-0002-6139-0108>

Pedro Parraguez, Dataverz, <https://orcid.org/0000-0002-0017-4057>

Marianne Gauffriau, KU, <https://orcid.org/0000-0001-7639-7719>

Adrian Price, KU, <https://orcid.org/0000-0002-7045-2147>

Anne Lyhne Høj, AAU, <https://orcid.org/0000-0003-1210-6999>

Kirsten Krogh Kruuse, AU, <https://orcid.org/0000-0002-3307-7325>

Franck Falcoz, Vox novitas, <https://orcid.org/0000-0003-3666-5699>

Brian Lowe, Ontocale, <https://orcid.org/0000-0002-8143-6345>



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