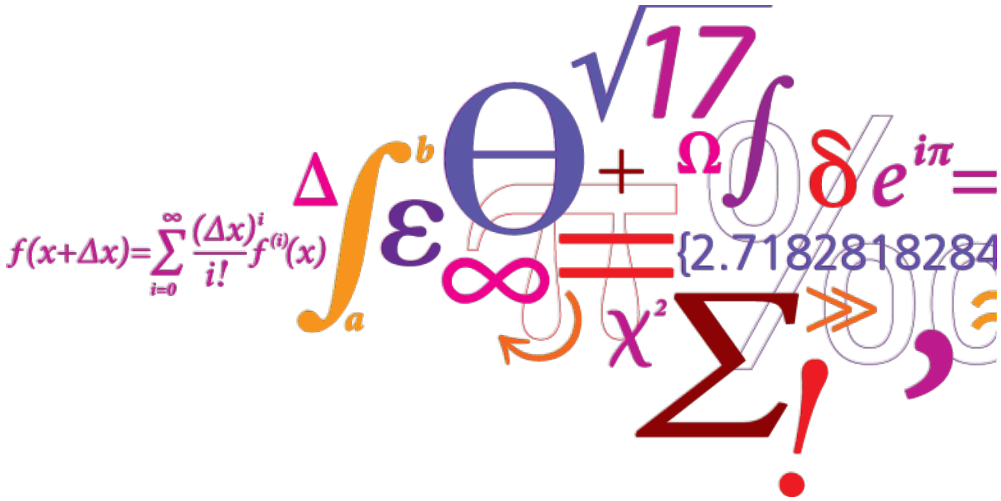
European Forum for Studies of Policies for Research and Innovation

DTU

Do Open Access Publications Facilitate University-Industry Knowledge Transfer?
- A Novel Perspective -



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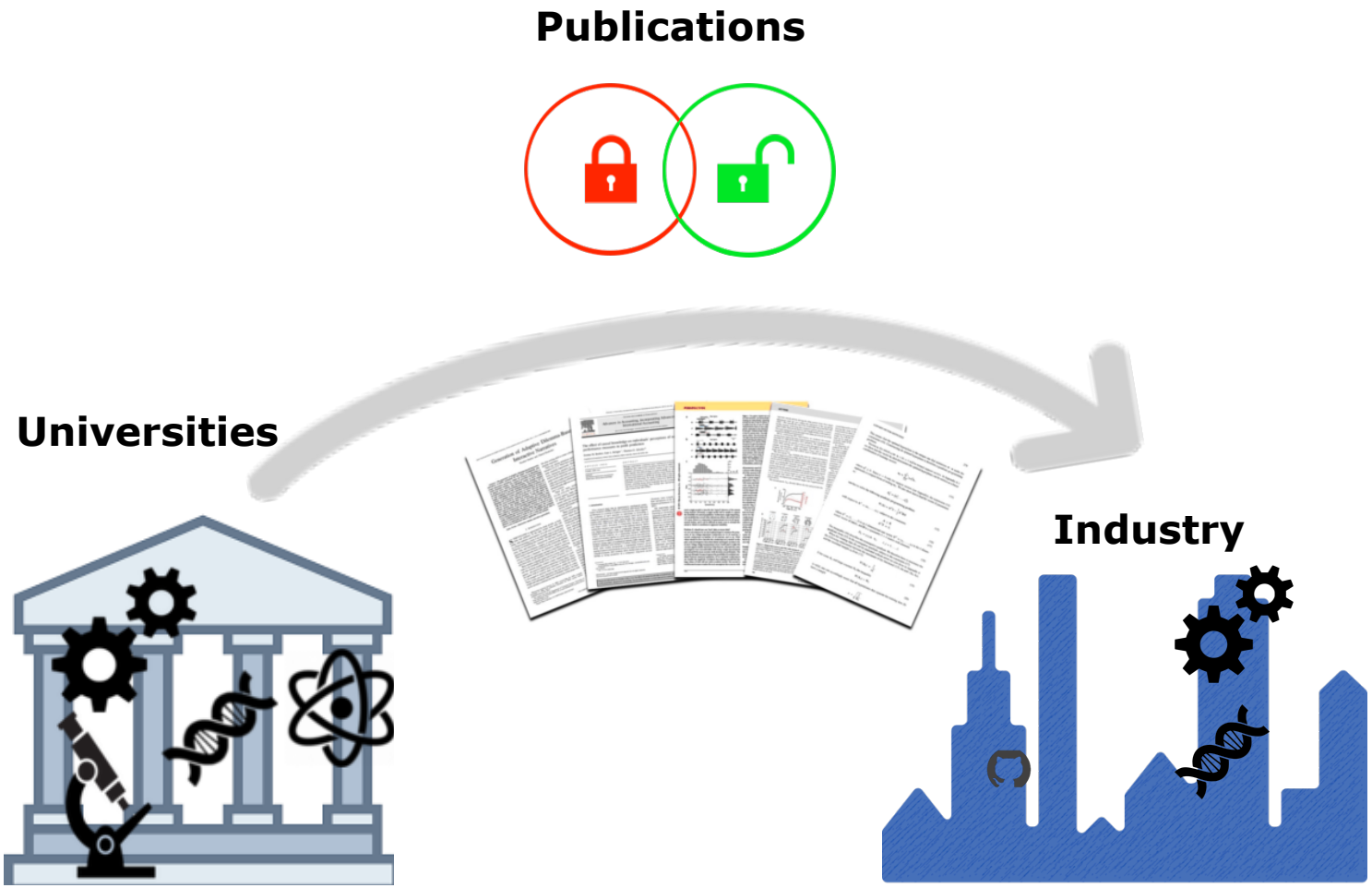
Open Access & Subscription Based



What is OA and what is not?

- Articles that are "both free to read and free to reuse"- 2002 Budapest Open Access Initiative (BOAI)

- Manuscript that it is "digital, online, [and] free of charge." (Matsubayashi et al., 2009)

- Emergence of very different OA approaches:
  - Green OA: Green articles are published in a toll-access journal, but self-archived in an OA archive.
  - Gold OA: articles are published in an "OA journal"
  - Hybrid OA: articles are published in a subscription journal but are immediately free to read under an open license, in exchange for an an article processing charge paid by authors
  - "Black OA": Articles shared on illegal pirate sites, primarily Sci-Hub and LibGen.

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Brief history of OA

- Publishing changed decades ago: ICT changes
  - Distribution
  - Costs
  - Peer-review
- Big publishing houses under critic:
  - Monopoly
  - Knowledge gate keepers
- Current estimations are that over 50% of published manuscripts are OA
  - This might vary extremely depending on the research field

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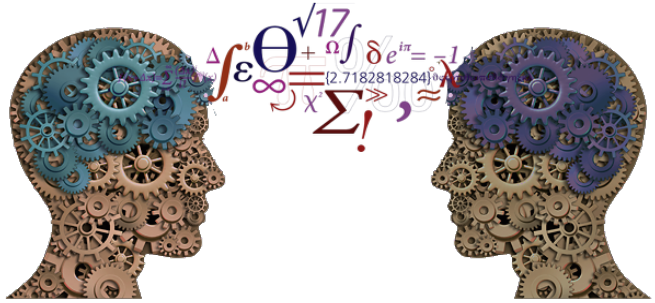
Policy relevance

- Publicly funded publications increased the notion that the public has a right to have access
- On the other hand, some argue it is anyway too complex for the public
- OA assumed to improve dissemination/accessibility improving overall (national) knowledge base improving:
  - Competitiveness
  - R&D
- Several countries began to focus on OA:
  - UK excellence
  - Denmark by 2020



Current Research on Impact of OA

- Many studies focused on the impact of OA publications for the scientific community and internal (academic) knowledge exchange
  - Often quite normative
  - Focusing on the benefits/ drawbacks for researchers

- Studies focus mainly on:
  - Citations and citation advantage of OA
  - Comparing within a field
  - Evidence is mixed and robustness is not a given

- Common data challenges:
  - The more recent a publication, the less citations or uneven distribution
  - Fields vary in the citation count overall
  - High outlier numbers-easy to argue that just better, or less good articles are published and the OA has no impact on the citations

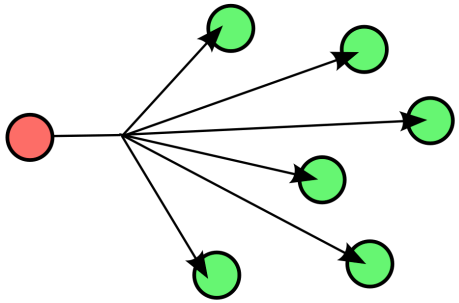
Communication and Knowledge transfer

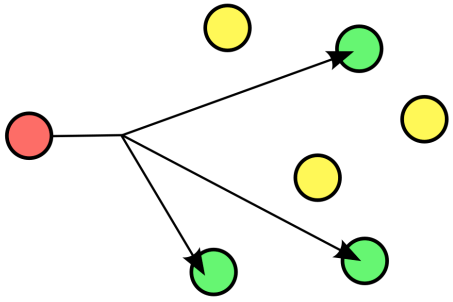
Knowledge management and knowledge transfer:

> *"(…) knowledge transfer process has two main components, i.e. the source or sender that shares the knowledge, and the* ***receiver*** *who* ***acquires*** *the knowledge."* (Liyanage2009, p. 123)

- **Broadcast uses a one-to-all association**.

- **Multicast addressing uses a one-to-many or many-to-many association**

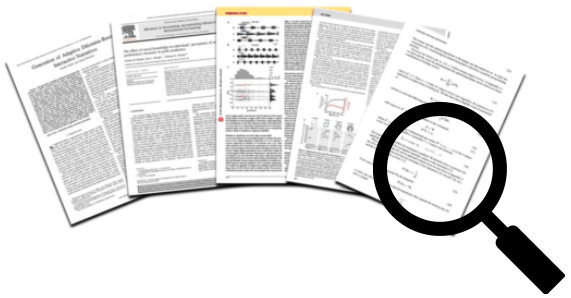




Our Approach

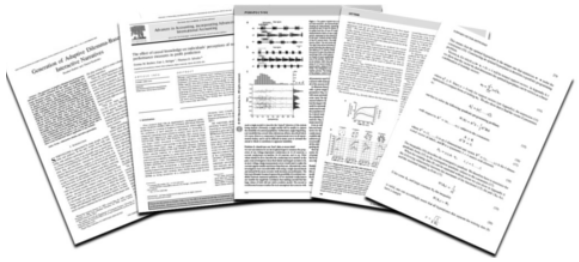
We use text mining to identify knowledge transfer from universities to the industry by comparing publications and websites.

Coherent contents are identified via an combination of established statistical methods from text mining.



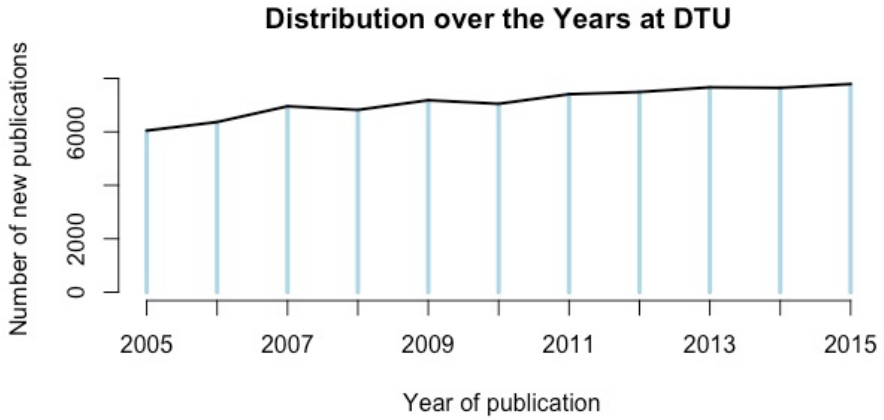
Data: University

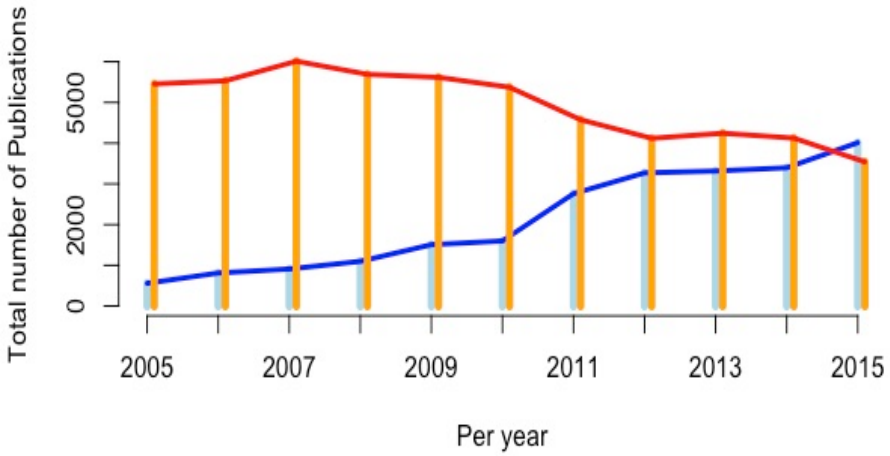
Department	Abstract	Text	Abstract OR Text
Compute/Math	3,890	1,933	4,398
Biochemistry	2,343	1,038	2,718
Chemistry	1,420	413	1,510
Civil Eng.	2,122	1,017	2,526
Electrical Eng.	3,519	1,778	3,746
Energy Conversion	1,244	521	1,421
Environmental Eng.	1,699	1,269	2,383
Management Eng.	2,569	1,886	3,460
Mechanical Eng.	2,999	1,223	3,291

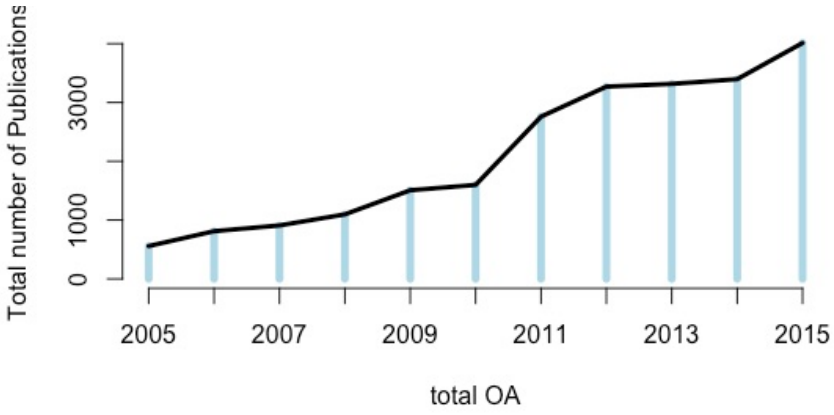


Year	Abstract	Text	Abstract and Text	Abstract or Text	Total
2005-2010	16,478	6,581	3,844	19,215	40,426
2011-2017	28,509	17,132	11,995	33,646	38,001
2005-2017	44,987	23,713	15,839	52,861	78,427

Data: University







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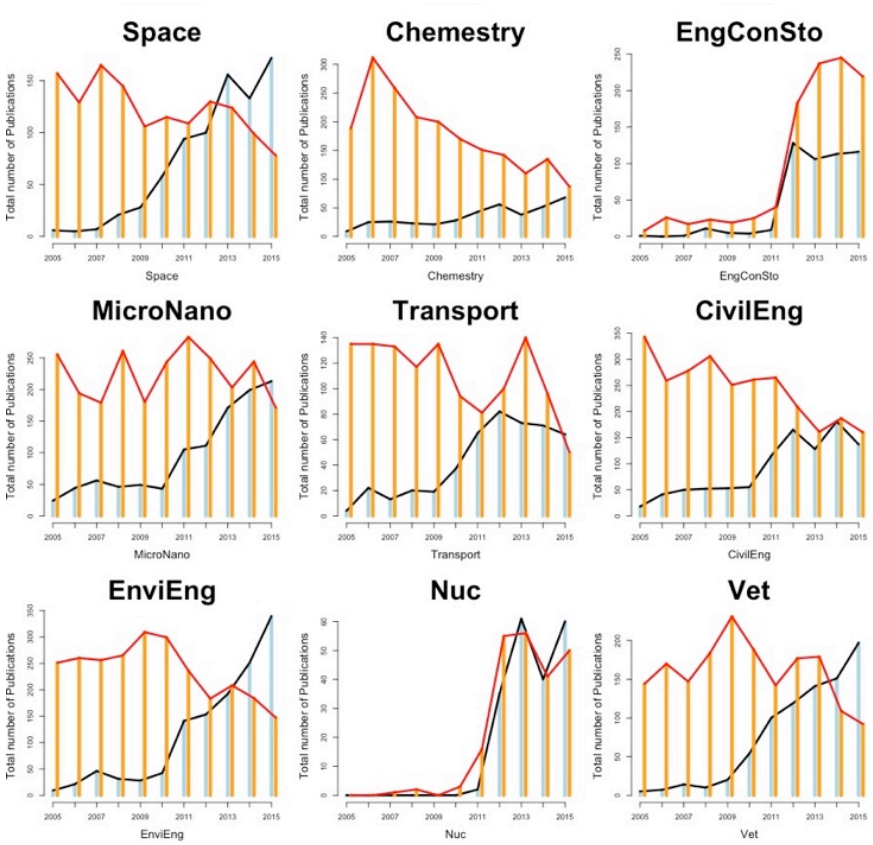
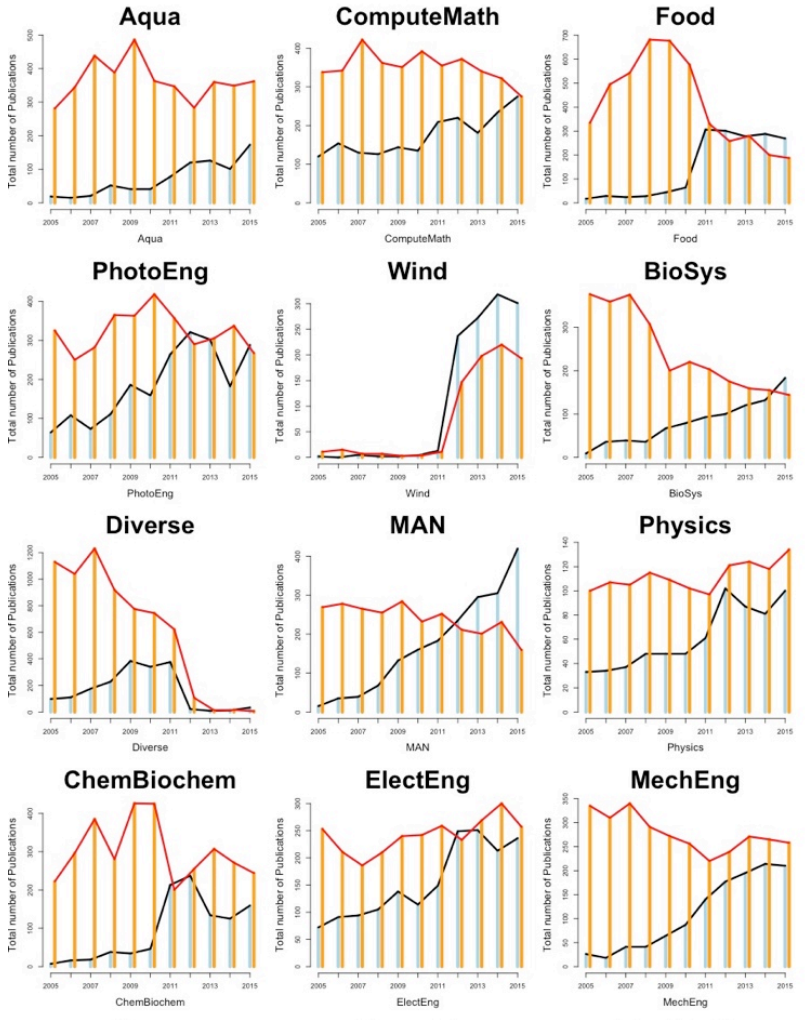
OA distribution per Department

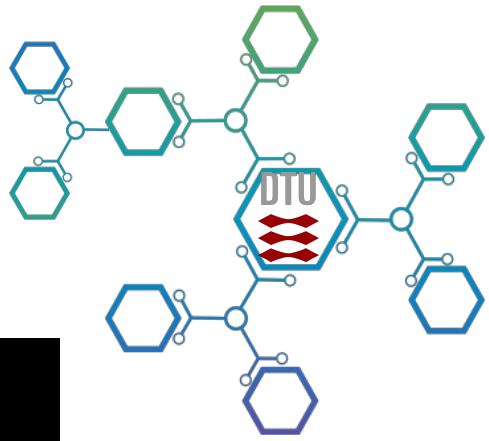




Company websites

Requirements for retrieving full HTML website texts:

- Collaboration between 2012-2016 OR Hyperlink presence at DTU's website
- Danish VTA (CVR)
- >5 webpages in English
- Max. 5000 pages



Final sample 445 companies

	Pages (P)	P. Mean	Terms (T)	T. Mean
total	138,544	311	2185,191	4,911
1st quantile	22	12	905	521
2nd quantile	69	42	2233	1476
3rd quantile	257	142	6018	3819
4th quantile	10106	155	67351	13866

Preliminary Results

- Shows clearly that the topics of certain industry partners of the university are very aligned to the universities scientific areas.

- The statistical analysis based on the keyword extraction shows that more than 50% of the identified positive matches between company websites and publications were OA

- The entire sample only has 30% open access publications

- Overall we found most statistical matches in the fields of:
  - Electrical Engineering
  - Environmental Engineering
  - Food
  - Mechanical Engineering
  - Photonics (most true positives)
  - Space

Challenges

- **The OA statistical dominant could also be explained:**

a) the OA publications are in more 'interesting' or 'relevant' domains for companies

b) the open access journals use more terms which are also used in the industry

c) they publish in areas with many very succinct terms or proper nouns

d) are just newer and more on the cutting edge

This needs to be solved in broadening the sample and improving the detection mechanisms

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