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“Dimensions provides a very easy to use and powerful package for interdisciplinary research topic analysis”

An easy to use and powerful API for topic analysis

John de Mello, Head of Nano at Norwegian University of Science & Technology (NTNU), describes how he has used the Dimensions API to help his university understand what it does - and what it could do - in nanoscience and technology.

When John joined NTNU in September 2018, he was tasked with getting a handle on the breadth of nanoscience and nanotechnology-related research being conducted at the university. John says:

“At that stage, there were no detailed records within the university’s three campuses on the topic.”

John was asked to not only map the nano activity but figure out the university’s respective research strengths and weaknesses in the area. John decided to take a bibliometric approach and was soon drawn to the Dimensions API because of the flexibility it offered to build and run highly customized queries.

Using the Dimensions API, John wanted to answer the following questions about NTNU and nanoscience:

- Who is working in nanoscience?
- What areas are they currently working in?
- What areas are they not covering? Who are their current collaborators?
- Who should they consider collaborating with?
- Where is NTNU getting its nanoscience funding from?
- Are there other funding opportunities?
- What has NTNU published in nanoscience in the last year/ last 5 years?
- What nanoscience-related patents has it filed?

“The Dimensions API comes with great documentation and technical support”

Using the Dimensions API to find nano publications published by NTNU in 2018

In this example, John was looking for all 2018 publications affiliated to NTNU that contained the keyword “nano” in the title, abstract or full text. He wanted to know:

- Publication type
- Citation numbers and Altmetric score
- Authors
- Funders
- Open Access status

He also wanted to obtain the publication DOIs so that he had a consistent identifier to find and acquire the resulting papers.

Fig 1: Dimensions API search query

```
search publications
for "\"nano\""
where year=2018 and research_orgs.id="grid.5947.f"
return publications
[year+type+times_cited+title+altmetric+author_affiliations+
journal+researchers+funders+doi+open_access]
```

John found that Dimensions did a very good job of collating all the nano-related publications authored by NTNU researchers. Dimensions even found papers NTNU was previously unaware of.

Fig 2: Example of the manipulated Dimensions API results

Year	Type	Citations	Altmetric	Title	Authors	Institutes	Countries	Journal	Funders	doi
2018	'article'	0	0	'Atomistic Simulations of Early Stage Clusters in Al-Mg Alloys'	1x4 cell	1x1 cell	1x1 cell	'Acta Materialia'	1x1 cell	'10.1016/j.actamat.2018.12.050'
2018	'article'	0	2	'Crystallographic relationships of F ₂ /F ₅ -phase aggregates in an Al _{0.2} Co _{0.8} Al _{0.2} alloy'	1x6 cell	1x1 cell	1x1 cell	'Acta Materialia'	1x1 cell	'10.1016/j.actamat.2018.12.036'
2018	'article'	0	0	'Optimization of topological complexity for one-dimensional arterial blood flow models'	1x4 cell	1x1 cell	1x1 cell	'Journal of The Royal Society Interface'	1x1 cell	'10.1098/rifl.2018.0548'

+ another 287

John liked the following aspects of Dimensions:

- Easy to use API
- Integration of publication data with funding and patent data
- Integrated Altmetric data to show wider impact of work
- Comprehensive documentation: in little more than a day, John was able to extract the kind of information he wanted
- Good technical support: for technical questions same day solutions were provided

Overall, John found Dimensions a very easy to use and powerful package for interdisciplinary research topic analysis.