



# Start-up Story

## Dimensions from Digital Science

### Keywords

Discovery; software; open access; knowledge translation; metrics

Back in 2010 the research technology company Digital Science was established with the aim of supporting innovation and investing in emerging ideas in the scholarly space. Since then its varied offering has grown to include now familiar services Altmetric, Figshare and Symplectic Elements, amongst many others that have become a recognized part of the scholarly ecosystem. These tools, widely adopted by publishers, institutions and funders around the world, have changed the way we work.

In 2016 the company embarked on its biggest challenge to date: drawing on expertise from six of the portfolio companies to develop an entirely new way to discover, access and analyse research. The result was Dimensions (Figure 1).



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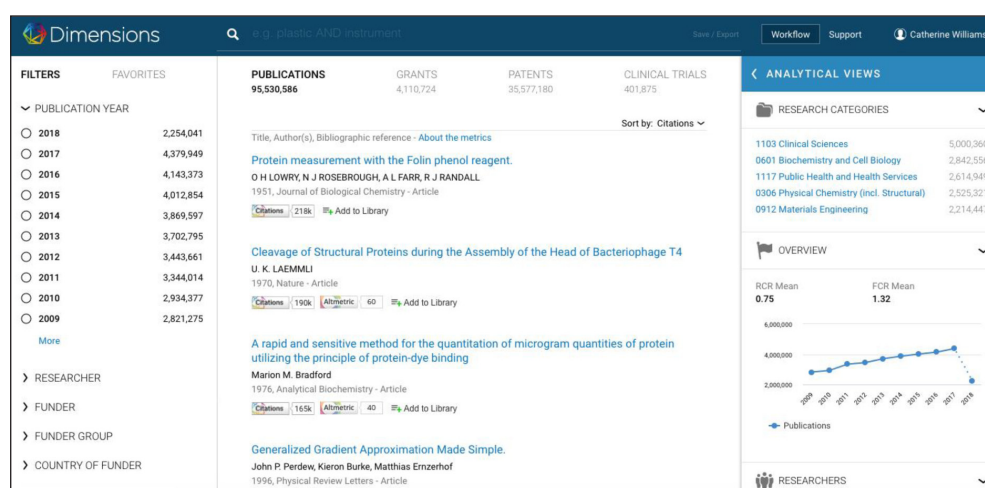


Figure 1. The Dimensions Plus interface

Launched in January 2018, Dimensions links over 133 million research documents from across the research life cycle. Described by Outsell as a 'game-changing' initiative, it enables users to explore and report on more than four million grants, 400,000 clinical trials, 95 million publication records and 35 million patents, as well as detailing the connections between them.

A free version of the platform provides openly available search across the 95 million+ publication records and their associated metrics for individual users, and paid-for versions Dimensions Plus and Dimensions Analytics deliver extended functionality and analytical tools to institutions, funders, publishers and corporate research organizations.

Beyond just the platform, further innovations exist. Citations can be easily added to any institutional repository via embeddable Dimensions badges, powerful APIs make it possible to query the data however the user chooses, and Anywhere Access technology enables libraries to provide single-click access to licensed content.

## Why create Dimensions?

Digital Science and its portfolio companies have a clear mission: to deliver tools and technologies that can help change research for the better. Central to this aim is working in close collaboration with the scholarly community to develop a deep understanding of their goals and challenges – ensuring not just a comprehensive knowledge of the landscape but also a unique relationship from which to develop new ideas.

The need for Dimensions was borne out of these collaborations. Information across the scholarly landscape had become siloed, and extensive commercial barriers were becoming increasingly significant blockers to innovation. Researchers and the organizations and people that support them were struggling to get access to the information they needed, and investing significant amounts of time and resource to meet the requirements of ever-changing use cases.

In developing Dimensions, Digital Science wanted to:

- shift the focus from being so much on publications alone to a more complete view across the research life cycle
- champion a more open approach to content and metrics that puts the power of data back into the hands of the scholarly community
- provide a tool that is rooted in real-life use cases and meets the needs of modern research organizations.

'extensive commercial barriers were becoming increasingly significant blockers to innovation'

## Building Dimensions

Developing a platform of this complexity and scale required extensive expertise and input from within Digital Science and beyond. Keen to work closely with the wider community and ensure the finished solution delivered on key use cases, the core Dimensions team established a Development Partner Program that brought together over 100 institutions and funders from around the world.

These Development Partners met with Digital Science on a monthly basis to review progress, discuss potential applications of the data, and provide vital feedback to the internal team at every stage. Their responses significantly influenced the direction of the technical process, and have resulted in a platform that is intuitive, robust and eminently flexible.

Combined with the skills and experience drawn from six of the Digital Science portfolio companies (Altmetric, Figshare, ÜberResearch, ReadCube, GRID and Symplectic), Dimensions went from concept to launch in just under two years.

'a platform that is intuitive, robust and eminently flexible'

## Unique content and scope

A core aim of the Dimensions project was to not just deliver another research database, but to build something that aligned with the requirements and resources of research organizations in a way that could truly change how we navigate and understand the scholarly landscape.

By drawing together funded grants, clinical trials, publication records, patents and policy, Dimensions offers a unique way to trace the research process from ideas to eventual impacts. For the first time, users can follow links between the different content types to explore research stories and trends as they develop (see Figure 2).

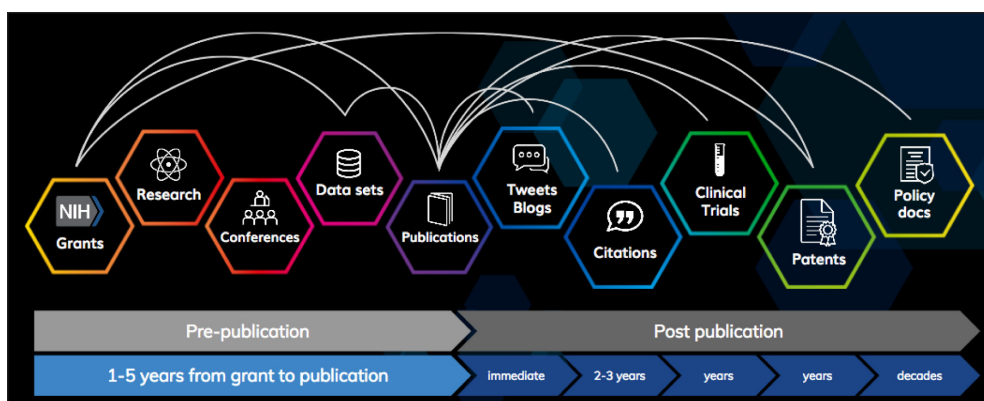


Figure 2. How Dimensions connects information from across the research life cycle

But it is not just the content that makes this platform different; it is the complexity of what goes on beneath the surface that makes it so powerful. An extensive data enrichment process has ensured that search results are both comprehensive and meaningful.

Organization identification, researcher disambiguation, natural language processing and reference extraction mean Dimensions is able to respond accurately to complex search queries, enabling users to draw out insights that would not previously have been possible to uncover.

‘search results are both comprehensive and meaningful’

A prime example of this exists in the funding data: with over \$327 billion of the \$1.3 trillion of awarded grants indexed in the platform due to be spent in the coming years, analysing these data provides an exciting opportunity for developing future research strategies.

Metrics make up a critical part of today’s scholarly world, and yet they remain often misused and misinterpreted. Within Dimensions, citations and altmetrics (online engagement with a research item) provide context that gives an indication of the influence of a research output within and beyond the academic sphere.

Alongside the core platform, the team at Altmetric developed Dimensions badges: embeddable visualizations that are freely available for individual researchers, institutional repositories, open access (OA) publishers and those who have their content indexed in Dimensions to embed in their publication pages.

The badges show the citation count for an item, and clicking on them takes users to a details page where they can view more information on the items that have referenced the work, as well as further metrics including Field Citation Ratio, Relative Citation Ratio and number of recent citations. See Figure 3 for an example.

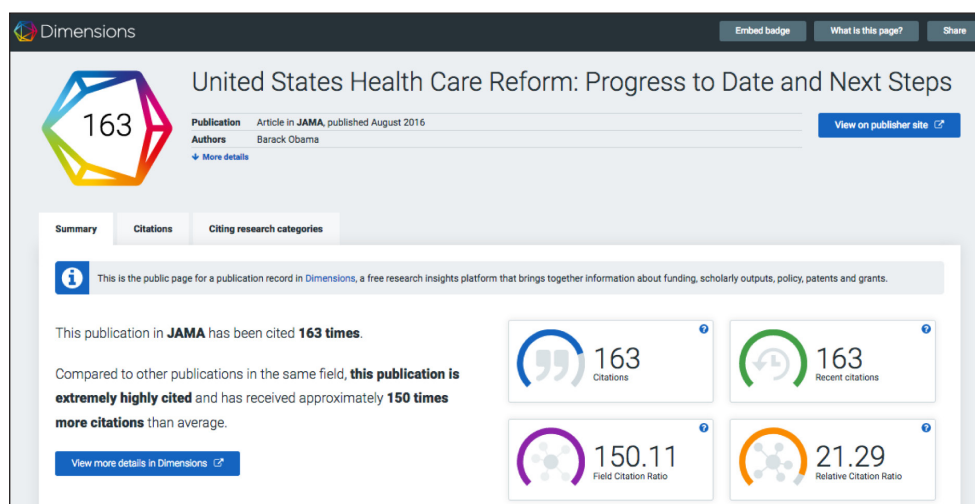


Figure 3. A Dimensions badges details page

- 4 These metrics are surfaced throughout the Dimensions platform, too, but they are intended as just a starting point. A free metrics API is made available to encourage others to build off the data and develop indicators that best meet the needs of the global research community.

## Using Dimensions

The potential applications of Dimensions are varied and wide-ranging and span academic institutions, publishers, funders, governments, non-profit and commercial research organizations.

Librarians can use Dimensions and its data in a number of ways:

- to support research discovery
- to inform collection development decisions
- to provide insights and reporting to key stakeholders.

### Supporting research discovery

With over 95 million publication records and associated grants, clinical trials, patents, policy and metrics, Dimensions offers a unique and comprehensive view of global research activity. OA content can be viewed in just one click, and Anywhere Access technology makes it possible to provide the same for library-licensed content, delivering the fastest route yet to the final, legally available version of a publication.

### Informing collection development decisions

As well as books and preprints, Dimensions indexes more than 62,000 journals across a huge range of disciplines. This, and the associated metrics and funding data within the system, makes it easy to gather rich information that can help determine priorities – be those evaluating the influence of a publication, or looking at the funding your own and peer organizations have been awarded to determine future content needs.

### Providing insights and reporting to key stakeholders

Advanced analytics, visualizations and exportable data mean that Dimensions is a uniquely valuable source for internal and external reporting. Users can track and benchmark the outcomes of projects, departments or organizations, and query and display the data any way they wish with the comprehensive API. Dimensions makes it simple to monitor trends and performance across the research life cycle, deliver data to support internal decision-making, and gather further evidence for government or funder-led evaluations.

Researchers themselves benefit enormously, too. Whether or not their institution has chosen to license the Plus or Analytics version of the platform, they can conduct advanced literature searches using the openly available application at <https://app.dimensions.ai> – and explore the grants, clinical trials, patents and policy records directly associated with the publications that appear in their search results.

Optionally, they can create a free account to save searches and export data, and an integration with ORCID makes it possible to add publications from Dimensions to an individual ORCID profile in just one click (see Figure 4).

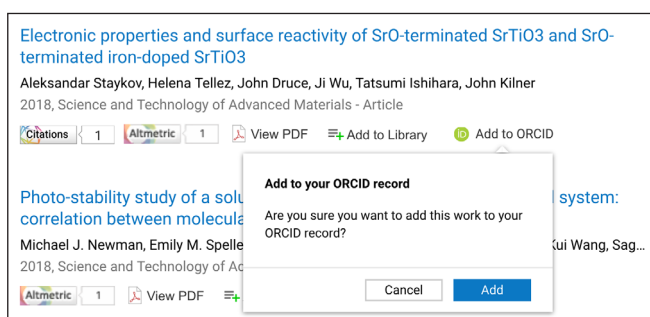


Figure 4. ORCID functionality within Dimensions

5 Enhanced PDF technology and library management software developed by ReadCube ensures a streamlined reading environment, where interactive tools can deliver significant benefits to existing workflows.

Beyond the library and its patrons, the data and analytical opportunities Dimensions provides offer extensive opportunities for Research Managers and Communications Offices.

Administrators can use Dimensions Plus and Dimensions Analytics to conduct in-depth reporting and analyses, tracking funding and other research trends globally, benchmarking against peer organizations, informing research development and other critical strategic decisions.

Marketing and communications teams benefit from the early indicators of activity and the additional context provided by the breadth of Dimensions' data and up-to-the-minute citations and altmetrics. Combined, these insights make it possible to tell the story of research and to evidence its outcomes in a way that has never been possible before.

Funders are increasingly using Dimensions to better understand scholarly activity and their contribution to it around the world. Over 200 such organizations are already using the platform and associated APIs to interrogate the data, develop advanced interpretations and inform future strategy.

For publishers, Dimensions offers a wealth of opportunity. Not only does it make content more discoverable, but it can also be used to benefit the internal workflows and decisions that get taken every day: finding reviewers, determining which content to promote, reporting to editorial boards, societies and authors, and enabling data-driven strategic development of diverse markets and content programs.

The funding data within Dimensions is unique and provides an invaluable early indicator of future research activity, whilst advanced disambiguation and matching makes it possible to not only identify potential reviewers, authors or editorial board members, but also highlight potential conflicts of interest that may need to be taken into account.

## The future of Dimensions

Today's version of Dimensions is just a starting point. The content, the metrics, the technology and the functionality will all evolve from here, driven entirely by the needs of the research community. With a new release every six weeks, the scope of Dimensions is expanding rapidly. The original development partners continue to provide ongoing feedback and input to help shape the future road map, and new collaborations are already beginning.

Adoption of the platform has been swift, with leading research organizations in Australia, the UK, Europe and North America in the process of rolling it out campus-wide. Several institutions, publishers and researchers have added Dimensions badges to their publication pages, and work with scientometric experts to refine and develop metrics and other indicators is well under way.

Dimensions can be explored at [www.dimensions.ai](http://www.dimensions.ai). The team at [info@dimensions.ai](mailto:info@dimensions.ai) can also provide more information.

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