20

YEARS

Powering the
Research Management
Ecosystem

SYMPLECTIC
Elements

20 YEARS

Powering the
Research Management
Ecosystem

Digital research through the years...

1971
The world's first online digital library
is launched, Project Gutenberg

1975
First Journal Citation Reports (JCR),
listing Journal Impact Factors

1986
Launch of the Research Assessment
Exercise (RAE) in the UK

1987
The first OA online journals
begin to publish

1991
arXiv goes online as the world's first
digital archive of scientific papers

Symplectic was founded with the aim of reducing the administrative burden on researchers, in order to help them get on with doing what they're best at – research.

The research lifecycle by its very nature is information-heavy, which translates into a lot of form filling, data entry, and administration - whether that is carried out by the library or the research officer, or by faculty and researchers themselves. The outputs and metadata surrounding research present an information management problem: how can we control and manage our research and scholarly information, how can we make it discoverable so that it can be utilised to the best benefit of society, and how can we track and gain actionable insight into it?

From left to right: Daniel Hook, Phil Parkin, Marko Ivin & John Fearns

Symplectic was founded at Imperial College in 2003 by four friends studying theoretical physics (Daniel Hook, John Fearns, Marko Ivin & Phil Parkin), who were frustrated by the experience of using outdated, fragmented systems while working on their PhDs.

Together, they took on the challenge of freeing up researchers and administrators so that they could concentrate on their core mission and other value-add activities rather than manual, repetitive admin, giving them more time to spend on what's important: driving and enabling global research.

Read their founding story here as part of the Digital Science #FoundersFriday series.

The birth of _____ Symplectic Elements

It became clear that what university staff and researchers were in need of was simple, effective software that would enable academic institutions to collect, contextualise and raise visibility of their research outputs. This was the genesis of Symplectic Elements, which was first trialled as 'Symplectic Publications' across Imperial College's Faculty of Medicine and Faculty of Life Science. In 2006, after the successful trial period, 'Symplectic Publications' was rolled out across the entirety of the Imperial campus - where it remains in use to this day, albeit looking very different!

1993
Project Muse is founded by Johns Hopkins University

1995
The National Science Foundation, NASA, DARPA and other Federal Agencies in the US begin the Digital Libraries Initiative

1996
The National Institute of Health (NIH) launches PubMed

From CRIS to RIMS: The Expanding Role of Research Management Systems

Current Research Information Systems (CRIS) were first developed and used in Europe in the late 80s and early 90s. Early projects consisted of structured text using an ordered set of fields, and were based on the idea of the library catalogue card; providing metadata and context around a given research publication and making it locatable to the user.[1]

Starting as administrative systems for reporting research performance to government, CRISs have evolved in the course of time into multifunctional information systems of use also for research management as well as for the profiling or showcasing of research, both on an individual (researcher) and institutional level."

OCLC, Practices & Patterns in Research Management [2]

Over time, as the role of the CRIS evolved and its use cases proliferated, so too did its names and its function. While Research Information Management System (RIMS) is now widely used, the differing terminologies found particularly in North America reflect the myriad use cases now supported by these systems. These include terms such as Research Networking System, Research Profiling System, Expert Finder System, and Faculty Activity Reporting systems.[3]

Elements

Symplectic Elements as we know it today came about in 2009, with a rebrand and a fresh new logo designed to hark back to the library catalogue card while representing the many layers of publication data. Elements was the first commercially available research information management system to draw on data from multiple external sources to populate records and save academics time, and the first to be "open access aware" and connect to an institutional digital repository in order to enable open access deposit (at this time, DSpace; with the later additions of EPrints, Hyrax, and Figshare).

Drawn by the reduction in repetitive administration and double-keying data enabled through Elements' integration with multiple sources and automatic population of data, Symplectic Elements as a commercial entity grew rapidly, signing up world-renowned institutions such as University of Oxford and University of Cambridge, and increasing its global footprint through clients in Australasia (University of Auckland, 2010) and North America (Duke University, 2012).

1998
Founding of the first commercial open access publisher, BioMed Central

1998
Founding of The Scholarly Publishing and Academic Resources Coalition (SPARC)

DIGITAL science

The Digital Science story

Digital Science was launched in 2010 out of Nature Publishing Group as a new division, codenamed "Project Babbage"' and dedicated to the development of software to support researchers. Read more about the Digital Science origin story here. As the Project Babbage team toasted the launch with champagne in the atrium of the Nature building, Symplectic's co-founders were upstairs in the boardroom finally signing investment paperwork. Accordingly, Symplectic became part of the Digital Science family in 2011 - soon to be followed by many more!

> Research is becoming more and more digitally enabled and hence more productive but the gap between the potential opportunity and the current state of the art is still wide. At Digital Science we want to change that."
>
> Timo Hannay,
> Former publishing director of nature.com
> and original Digital Science MD

Dr. Daniel Hook (pictured) began his career with Symplectic then moved on to become the CEO of Digital Science. Here, he reflects on what makes Symplectic special.

> Symplectic has moved from serving a single institution in 2003 to being fortunate enough to collaborate with institutions around the world to help them save time for their researchers.
>
> Symplectic's work is trusted around the world, saving time every day for more than 500,000 academics and administrators in 18 countries. Symplectic systems hold more than 8.8m distinct publications sourced from different data sources, saving academic and administrative time every time an article is added to a system, full text is deposited, or data is reused in other systems to inform decisions, help annual reviews or advertise the expertise of colleagues to potential partners around the world.
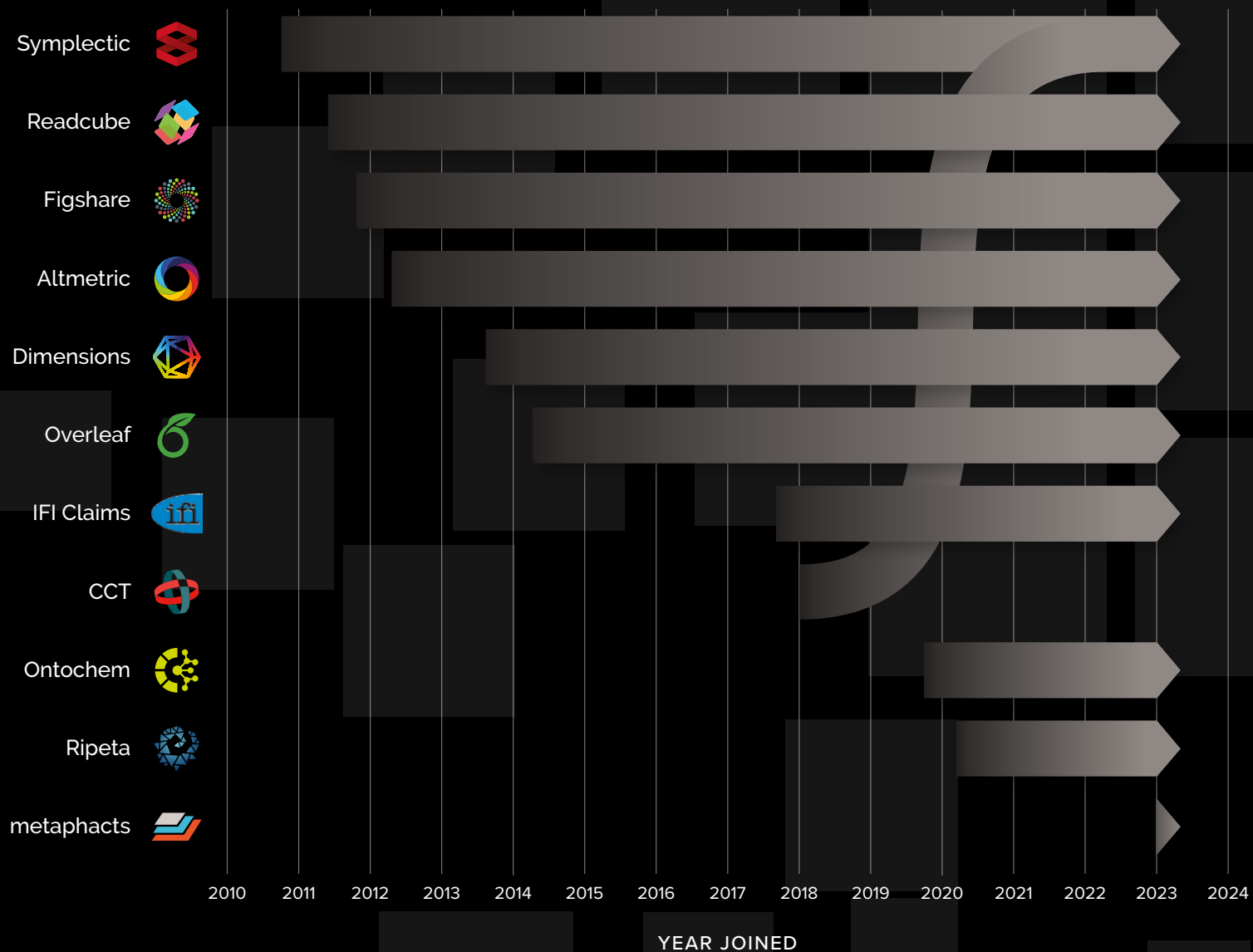>
> Symplectic enjoys a special level of collaboration with its clients, partners, friends, and colleagues. So many over the years have taken a long view — not solely focusing on their own project or installation but giving their time and knowledge generously. This has not only created a company and a piece of software, but also a shared store of deep domain knowledge. Every relationship has gone toward "paying it forward" so that the broader Symplectic community benefits from the innovations and ideas of each participant.
>
> Setting collaboration at the centre of Symplectic's world has created a very special ethos in the company as both those inside the company and those who work with Symplectic's team will attest. Symplectic's story is not just about those of us who founded the company or those of us who have been part of the team — it is a story that is shared with Symplectic's wider community."

1999
UNESCO and ISCU publish the Declaration of Science

1999
OAI issues the Santa Fe Convention

1999
OAI issues The Santa Fe Convention

2000
Launch of PubMed Central, a database of free full-text articles

Joining the Digital Science family

| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |

YEAR JOINED

The Symplectic team at a Digital Science company retreat in 2018

The Digital Science Ecosystem

All Digital Science 'portfolio' companies have a shared vision: that of a future where a trusted, frictionless, inter-connected research ecosystem drives progress for all. We aim to help people who make a difference make a difference - by making open, collaborative and inclusive research possible.

Becoming part of Digital Science gave Symplectic the means to work closely with other products and platforms which link together to mutually enhance and augment each others' data sets, giving users of multiple products the most comprehensive view of their research ecosystem. Beginning in 2015, we introduced Figshare and Dimensions as data sources - enabling integration between Elements and Figshare for Institutions, and providing a powerful source of grants and patent data via Dimensions.

Powerful bidirectional integration with Figshare meant that researchers could deposit via either Elements or directly to Figshare. Publications deposited directly into Figshare are then automatically harvested by Elements, creating a new record or being linked to an existing record - retaining a consistent, comprehensive and current picture of all of a researcher's publications.

Integrating with Dimensions offered the first fully searchable grants data source for Symplectic Elements and automatically created links between publications and grants. Dimensions is the only Elements data source

Dimensions data is pulled through into the Symplectic Elements interface.

that can harvest records for both publications (including preprints) and grants, and, in addition, create links between the two. Dimensions also disambiguates authors automatically and provides researcher IDs which can be used to automatically claim publications and grants within Elements.

As Symplectic, Figshare and Dimensions are all part of Digital Science, our product and implementation teams are able to collaborate seamlessly in order to provide a joined-up experience for our clients that utilises common technologies and processes. However, we never mandate that clients only use our chosen platforms and continue to provide support for alternative third-parties. Symplectic has always prioritised openness and interoperability, and is proud to say we offer the widest range of data sources in the industry - going beyond just publications metadata and capturing citations, altmetrics, and other research metrics as well as direct links to open access files.

> I am a very happy librarian today. System upgrade to Symplectic means we've got Dimensions grants data coming through, linking grants and papers by magic and just basically making my life so much easier and better!"[4]

Kate O'Neill
Research Services Librarian,
University of Sheffield

Driving
the Research
Ecosystem

Elements

Capture, analyse, showcase
and report on all your scholarly
activities, with minimal manual
input from academics.

Automatically harvest grants,
publications and researcher
identifiers into Elements from
Dimensions via the CRIS API.

Populate your Altmetric Explorer
instance directly from Elements,
providing insights at the author,
group and department level.

Show your researchers the
attention relating to their research
outputs in their Elements profile.

Dimensions

Analyse and report on scholarly,
economic and broader impacts.
Inform research strategy and
accelerate research discovery.

Run your Dimensions search in
Altmetric at the click of a button,
enabling you to delve into mentions
from policy, news, social forums and
other online sources.

Altmetric

Monitor, search and report on
conversations about research
from your own institution, as well
as that of peer organisations.

See attention data for individual
outputs, and how the volume of
attention coverage compares
between journals, authors
and organisations.

Powering Open Access

With Open Access becoming an increasingly important driver in both Europe and Australia, Symplectic expanded its 'Open Access awareness' beyond DSpace integration, launching the 'Repository Tools' module in 2011 to enable integration with institutional repositories (including Figshare for Institutions, EPrints and Hyrax) in order to drive open access initiatives. This introduced the ability to identify publications and outputs that were eligible for institutional or governmental Open Access policies and flag them for deposit, helping to guide researchers to take easy action at the push of a button. We also added functionality allowing administrators to act on behalf of researchers, giving multiple routes toward Open Access compliance.

The introduction of the OA Monitor within Elements in 2015 went a step further, letting institutions easily monitor and report on their researchers' levels of engagement or compliance levels. Using the OA Monitor, administrators could now filter publications by parameters to review progress, record exceptions, and track library status.

Leveraging the interoperability between Symplectic Elements and DSpace has increased policy-driven institutional repository deposits by over 350%."

Ellen Phillips
Open Access Specialist,
Boston University

2002
The California Digital Library launches the eScholarship Initiative, enabling researchers to have direct control over access to their work

Open & Interoperable

In 2012, Symplectic took another big global step with its first client in North America, Duke University. Not only did Duke implement Elements as a research information management system, it also integrated with its DSpace repository - DukeSpace - and worked with Symplectic to pass data to Scholars@Duke, an implementation of VIVO. Scholars@Duke is a researcher expertise portal which publicly features the scholarly, research, and activities of Duke faculty and academic staff.

VIVO is an open source semantic web application which - when populated with information from research information management systems such as Elements - builds out discoverable public profiles for institutional researchers. Symplectic worked closely with VIVO for many years, supporting VIVO conferences and launching many public institutional discovery portals (also known as Expert Finder Systems, or Faculty Information Systems) built upon the technology integration. In 2014, Symplectic was proud to become the first Registered Service Provider for the VIVO project, and continues to integrate with VIVO for a number of clients to this day - while other institutions now choose to utilise Symplectic's own Discovery Module (introduced 2019 following community feedback — see page 21) in order to seamlessly populate public-facing profiles.

> Research information management means different things to different people - most people usually think of researcher profiles, or institutional reporting and analytics processes, or ways to count and judge that elusive thing called productivity. It is all those things, but at Duke, we've been thinking about it in a broader way. We're primarily thinking about it as a way of understanding the complexity and richness of our community, and of sharing this richness with the broadest possible audiences."[5]

Paolo Mangiafico
Coordinator of Scholarly Communications Technology, Duke University

< Duke Chapel: Duke University's iconic landmark
Image credit: Jonathan Lee / Discover Durham
via Wikimedia Commons

2002
JISC launches Projects RoMEO and Sherpa in the UK

2002
DSpace is jointly developed by MIT and HP Labs

2003
Symplectic is founded

2003
First Performance Based Research Fund (PBRF) funding assessment held in New Zealand

Leading the way on the REF

Given the increased emphasis on Open Access, it was of little surprise in the UK when the Higher Education Funding Council of England announced an OA framework for the REF (Research Excellence Framework, mandating OA if institutions wished to guarantee future research funding).

The Research Excellence Framework is a UK-wide process of expert review designed to assess the quality of research in UK higher education institutions, and contemporaneous to ERA (Excellence Research for Australia) in Australia, or the PBRF (Performance Based Research Fund) in New Zealand. For HEIs in the UK, the REF is not only a part of securing funding and demonstrating societal impact, but also a key contributor to an institution's reputational ability to attract a high calibre of talent and knowledge across faculty, students and researchers.

The REF was first carried out in 2014, replacing the previous Research Assessment Exercise (RAE). Symplectic set up a REF Steering Committee made up of 11 UK-based higher educational institutions, representing a variety of sizes and disciplines, in order to identify and explore their needs.

REF processes were again revised considerably ahead of the REF 2021 following the recommendations of a 2016 independent review led by Lord Stern. As part of his review, Stern noted that "Research Information Systems (RIS) play an increasingly important role for the governance of research at the institutional, funding body and national levels."

Read case studies on how Symplectic supports the REF here.

> A wonderful thing for us was that we were able to get data back out of our repository again - so everything that was sitting within Elements was ready to be used in our REF preparations. That was wonderful by comparison to the manual approach of yesteryear."

Dr. Tim Brooks
Head of Research Excellence & Enhancement,
Anglia Ruskin University

2003
The Directory of Open Access Journals (DOAJ) is launched.
Berlin Declaration on Open Access to Knowledge

2004
Washington DC Principles for
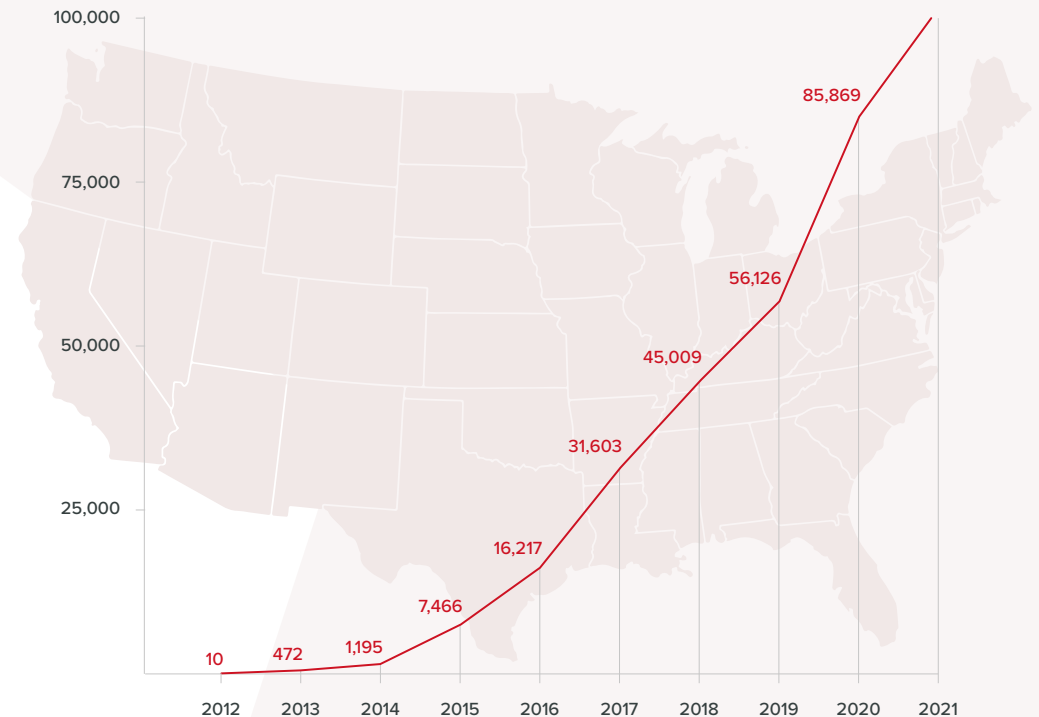Free Access to Science statement

OA in the USA

While the Open Access movement became well established in the rest of the world, the Obama Administration finally committed to public access to federally-funded research in 2013 following a public consultation and more US institutions began to turn to Symplectic to help them meet new open access needs.

The California Digital Library (CDL), in conjunction with University of California campus partners, selected Symplectic as the vendor to implement a publication harvesting system in support of the UC Open Access Policy, passed by the Academic Senate in July 2013. University of California was an early proponent of Open Access, launching its eScholarship repository in 2002 to enable researchers to have direct control over access to their work.

Following the implementation of Elements as a route to deposit publications, CDL has seen exponential growth in the amount of deposits into eScholarship - which this year also celebrates its 20th anniversary! eScholarship serves as the institutional repository for the ten University of California campuses and affiliated research centers.

OA Policy deposits to eScholarship: May 2012 – Nov 2021

Year	Deposits
2012	10
2013	472
2014	1,195
2015	7,466
2016	16,217
2017	31,603
2018	45,009
2019	56,126
2020	85,869

2004
Google Scholar launches

2005
The NIH & The Wellcome Trust mandate that all health-related research be made publicly available via PubMed Central

2006
Launch of PLoS One

2008
Formation of The Open Access Scholarly Publishers Association (OASPA)

2016-18

Library & Campus
as a Driver of Innovation

Symplectic continued to expand its global footprint while prioritising user experience and client support, a focus which was borne out when Elements was ranked first in customer satisfaction in a 2018 OCLC Global Survey into Practices and Patterns in Research Information Management, with a 91% satisfaction rate.[6]

At the same time, partnering with other Digital Science platforms acted as a catalyst to explore new avenues of innovation.

For example, Carnegie Mellon University opted to roll out Symplectic Elements, Dimensions, Figshare for Institutions, and Altmetric Explorer - with researcher profile information surfaced using the Symplectic Discovery Module (see page 19) through Scholars@CMU. The many use cases for Carnegie Mellon University include service tracking, faculty annual reviews, publications monitoring, public directory, custom reporting, data visualization and analysis, data feeds to external websites, open access research and scholarship, data migration from historical systems, researcher identity management, and mapping faculty research to Sustainable Development Goals.

The library is at the heart of the work of the institution and must provide a reimagined 'intellectual commons' for a campus community. With this partnership, we have the opportunity to position ourselves as a world leader in the development of the scholarly ecosystem."

Keith Webster
Dean of University Libraries, CMU

Elements powered the faculty annual review at Carnegie Mellon University at Qatar (CMU-Q) in the 2019-2020 academic year. Its size and mix of faculty in the arts and sciences made CMU-Q a good candidate for piloting the process. Kemal Oflazer, who at the time served as associate dean for research at CMU-Q, worked with the Elements team to capture all faculty data and generate reports based on activities ending in June 2020. "By early July, all faculty annual reports were available in a uniform format in the system," Oflazer said. "If the data is updated, faculty need only spend perhaps less than an hour a year to prepare and submit their annual reports."

2008
First international Open Access Week

2009
ORCID announced as a collaborative effort to provide persistent identifiers for scholarly authors

2010
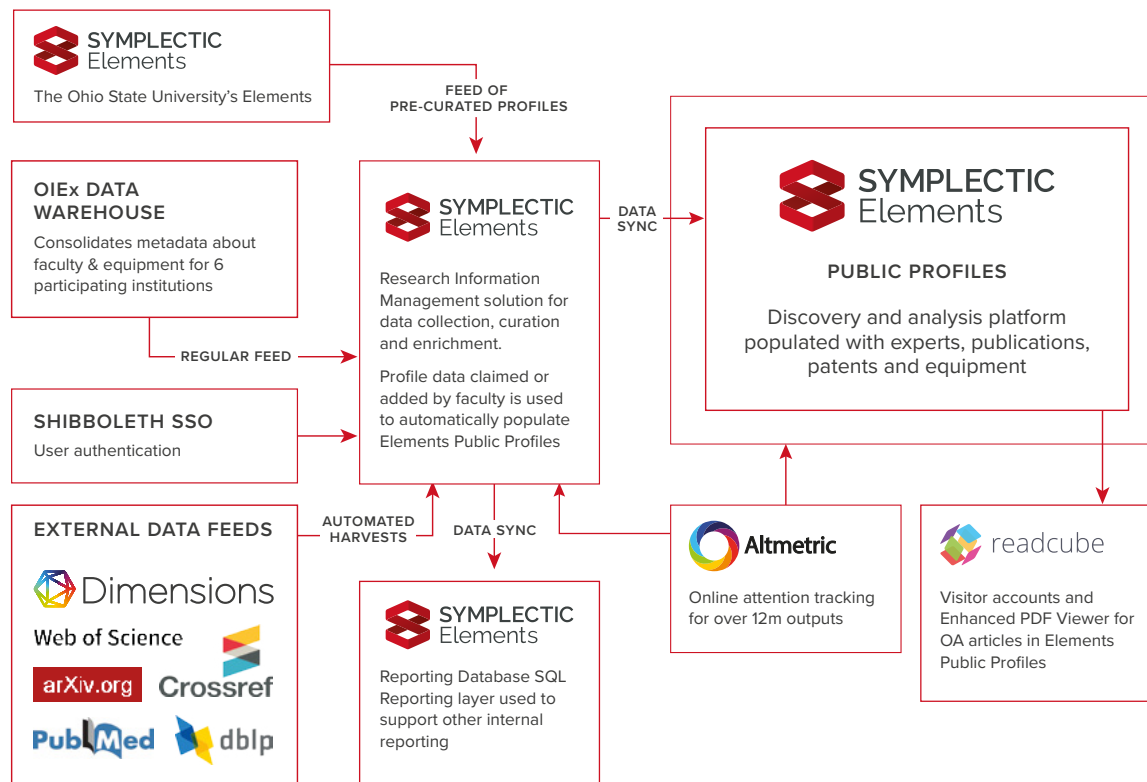First full round of Excellence in Research for Australia (ERA) assessment

Connecting Universities with Industry to Drive Innovation

The Ohio Department of Higher Education together with eight participating universities launched the Ohio Innovation Exchange (OIEx) in 2018, built upon Symplectic Elements and Dimensions and designed with the specific goal to connect Ohio's academic experts with business and industry to drive innovation.

As of today, OIEx provides an openly accessible platform featuring profiles of over 10,000 STEMM-focused faculty experts as well as information about equipment, research support services and intellectual property (IP) from across the higher education system in Ohio. OIEx provides extensive search functionality and an intuitive interface, which allows visitors to find relevant experts and explore each institution's publications, patents and equipment. It also facilitates connections with the OIEx human network, a team of university-embedded, industry liaisons who help visitors find more information and build strategic partnerships with researchers and institutions.

Download the whole case study.

SYMPLECTIC Elements
The Ohio State University's Elements

FEED OF PRE-CURATED PROFILES

OIEx DATA WAREHOUSE
Consolidates metadata about faculty & equipment for 6 participating institutions

REGULAR FEED

SHIBBOLETH SSO
User authentication

SYMPLECTIC Elements
Research Information Management solution for data collection, curation and enrichment.
Profile data claimed or added by faculty is used to automatically populate Elements Public Profiles

DATA SYNC

SYMPLECTIC Elements
PUBLIC PROFILES
Discovery and analysis platform populated with experts, publications, patents and equipment

EXTERNAL DATA FEEDS
Dimensions
Web of Science
arXiv.org
Crossref
PubMed
dblp

AUTOMATED HARVESTS

DATA SYNC

SYMPLECTIC Elements
Reporting Database SQL Reporting layer used to support other internal reporting

Altmetric
Online attention tracking for over 12m outputs

readcube
Visitor accounts and Enhanced PDF Viewer for OA articles in Elements Public Profiles

2010
Genesis and rise of the Altmetrics movement

2011
Symplectic announces an Elements module focused on interfacing with popular institutional repository platforms to help drive open access initiatives

2012
The UK government mandates that all publicly-funded research will be free for all to read

Ohio Innovation Exchange Spotlight
– with <u>Jeff Agnoli</u> & <u>Tim Cain</u>[6]

What are some of the more intangible benefits you've seen accrued by OIEx?

It is hard to measure, but the Intel Corporation has just invested $100m to build a new microprocessor plant in the state, and competitors along with others in their supply chain are also considering a move into Ohio. Intel is also offering Ohio universities and colleges $50m over 10 years to fund research and curricular projects, so you can see how the research funding landscape is changing. It is not only about bidding for federal research grants any more, but also recognizing the value of seeking industry partnerships to help fund discovery, innovation, and economic development.

Can you give us an example of increased engagement between academia and industry in the strategic sphere?

One example that comes to mind is, a firm came to us with a business plan it was looking to develop and needed help. We were able to partner the firm with a capstone project with our students and faculty. This led the firm to develop and refine its business plan and also enabled students to get a real-world project.

> It is not only about bidding for federal research grants any more, but also recognizing the value of seeking industry partnerships."

What new use-cases and methods of engagements do you see ahead through OIEx?

Two rather intriguing ones stand out. Our university partners have asked if OIEx could be positioned to source information from Ohio businesses advertising internships, sponsoring research, or seeking next-generation workers. Moving beyond a unidirectional flow of information about our universities to a platform where bi-directional exchange could occur is an intriguing challenge and opportunity. From the other side of the table, business leaders often remind us that one key university asset excluded from OIEx, but frequently at the top of their list, is the ability to find qualified students and graduates as they build and grow the next-generation workforce. Ohio is among those committed to workforce development with universities playing a major role.

Meanwhile, in Scotland...

In 2018, CC Technology - who, with their Grant Tracker product, would later become part of the Symplectic team - joined Digital Science. Much as Symplectic Elements was focussed on reducing administrative burden for academic institutions, including supporting researchers in applying for research grants, Grant Tracker was designed to streamline workflows for the funders who needed to review applications for grants.

Formed in Glasgow in 1988, CC Technology brought with them some of the world's largest research funders, public bodies, and international development charities - including Wellcome Trust, Leverhulme Trust, Caribbean Development Bank, and Howard Hughes Medical Institute. On go-live in 2018, the Wellcome Trust were managing £800m GBP of awards via Grant Tracker.

> This grants management system will streamline our research funding management processes, providing valuable time for our teams to focus on ensuring that Macmillan's research investments maximise their potential for improving the lives of people with cancer."
>
> Meera Craston
> Head of Evidence,
> Macmillan Cancer Support

2013
The Australian Research Council publishes an open access policy
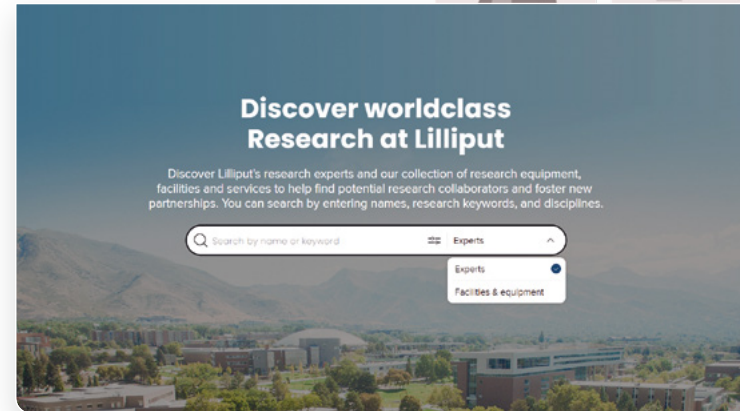
2013
Launch of PeerJ, an OA mega journal

Going Public with the Discovery Module

Following the success of showcasing academic experts in public profiles as part of the OIEx project, Symplectic introduced the Discovery Module in 2019 to provide a public portal for institutional researchers and faculty that could be seamlessly populated from within Elements.

The Discovery Module repurposes the rich and often unique data already collected within Elements to populate fully-rounded profiles including biographical information as well as publications, grants and professional & teaching activities. The Discovery Module aims to make researchers and their expertise as discoverable as possible. The popularity of the Discovery Module grew quickly, with 46 institutional instances either live or being implemented as of 2022, including Virginia Tech, Victoria University of Wellington, University College Dublin and the National University of Singapore.

The Discovery Module continues to expand the types of objects it can showcase in order to reflect the changing approach to how institutional "expertise" is defined, introducing Equipment profiles in 2021 to support industry-leaders such as Ohio Innovation Exchange and Victoria University of Wellington, and evolving to encompass technologies, services, and patents.

Discover worldclass Research at Lilliput

Discover Lilliput's research experts and our collection of research equipment, facilities and services to help find potential research collaborators and foster new partnerships. You can search by entering names, research keywords, and disciplines.

🔍 Search by name or keyword   ⇄ Experts ⌃

Experts ●
Facilities & equipment

"

[Elements] will help to bring transparency to the richness of thought showcased within non-traditional publications, providing a more holistic representation of faculties' scholarly work."

Caleb Smith
Senior Strategy Manager for Research & Analytics,
University of Michigan

2013
Launch of bioRxiv, open access preprint repository for the biological sciences

2013
The Obama Administration commits to public access to federally-funded research

2014
The Higher Education Funding Council of England replaces the RAE with the Research Excellence Framework (REF)

19

Beyond Citations:
Measuring Impact in Society

Over the past decade or so, institutions and research bodies have begun to move away from traditional citation metrics, first to analyse alternative forms of reach through altmetrics, and later to move beyond 'reach' and begin instead to assess the societal impact of a piece of research.

This means recording and understanding the ways in which research is having an impact beyond academia has become a vital task for many organisations. More funders, government bodies and organisations than ever before are seeking to go beyond the confines of traditional research metrics to unearth the stories of how their research is contributing to the wider world.

The question of 'impact' is nebulous, though; often data are qualitative rather than quantitative, and what impact is and how it is measured can be difficult to define. This is an ongoing challenge for the research ecosystem, and one on which Symplectic is actively engaged with the community.

When the 2014 REF introduced Impact Case Studies, Symplectic designed an Impact Module designed to help gather and manage this information - not just ahead of the REF, but on an ongoing basis. Since its introduction, the Impact Module in Elements has been used by many organisations to capture records of impact, build narratives about impact-related activities, and collect related evidence.
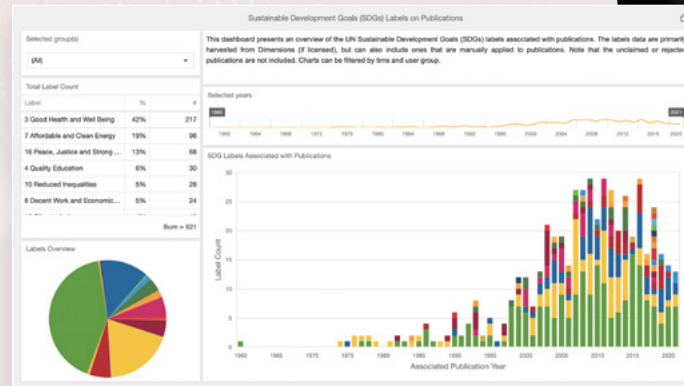
Reporting on SDGs in Elements

Once collected, this data can be drawn on for internal reporting and analysis, external assessment activities, or developed into public interest stories for communicating to the media and wider world.

Other initiatives working to track and analyse the societal impact of research include The Sustainable Development Goals (SDGs), adopted in 2015 by UN member states. These 17 goals aim to address economic, environmental and social impacts, and are designed to form a blueprint for good growth, both nationally and internationally, by 2030.

> The Impact Module was really useful for collecting impact case studies."
>
> Phineas Wenlock
> Research Systems Manager,
> University of Essex

2014
The World Health Organisation mandates that all papers authored by its researchers be made OA

2015
Formulation of the Sustainable Development Goals (SDGs) by the United Nations

Merging Teams

Since SDGs were introduced, there has been a growing vested interest in tracking, analysing and showcasing the ways in which researchers are contributing to achieving these goals, and in demonstrating global research impact at an institutional level. This can be clearly seen in the increasing numbers of institutions participating in the Times Higher Education (THE) Impact Rankings, which in 2022 showed a 23% increase from 2021.[8]

In 2022 we introduced simple but powerful functionality into Elements, allowing institutions to track which research outputs, publications, and activities connect back to the 17 SDGs via use of a new label scheme. SDG labels can be applied to any items captured in Elements (eg. publications, grants, professional & teaching activities and records of impact).

Institutions using Dimensions as a data source can further exploit the close integration between Elements and Dimensions to have SDG labels harvested and applied to records automatically. Dimensions maps SDG labels to over 12.9 million publications and hundreds of thousands of grants, with more records being analysed and mapped all the time.[9]

In 2021, Symplectic and CC Technology joined to become one team, extending our remit from outputs and discoverability of research to focus also on supporting the research and grants funding lifecycle.

Symplectic Grant Tracker delivers effective, impactful grants management for the research funding lifecycle. With 15+ years of streamlining the management and administration of grant-making, we now specialise in empowering mission-driven organisations to make strategic funding decisions.

"

We have a really large charity client base, most of whom fundraise and get money from the public. They need to show efficient use of the money they are given."

Brian Armour
Solutions Consultant,
Symplectic Grant Tracker

SYMPLECTIC Grant Tracker

Enabling public access to federally-funded research

While the global picture of Open Access remains something of a patchwork, trends are nevertheless moving in broadly the same direction, with the past decade seeing a move globally from 70% of all publishing being closed access to 54% being open access.[10]

As the landscape of Open Access continues to evolve, with national and even regional disparities and a growing proliferation of pathways to OA, supporting OA monitoring and reporting within Elements necessitates greater flexibility and ongoing attention to global mandates. We actively work with the community on how to respond to changes to OA, and monitor progress in different regions to identify areas of similarity and difference.

We expect to see the White House OSTP's 2022 memo (aka the Nelson Memo) rapidly advance the OA trend in the United States, stipulating that federally funded publications and their associated datasets should be made publicly available without embargo.

2018
cOAlition S launches Plan S, requiring that from 2021 all UK research funded by public grants be published in compliant OA journals or platforms

Responding to the Nelson Memo

Oklahoma State University (OSU) has been a user of Symplectic Elements since 2019, leveraging the system across a broad range of functionality including public profiles for faculty, integration with DSpace as an institutional repository, and publications and grants reporting. We spoke to Clarke Lakovakis (pictured), Scholarly Services Librarian, on how OSU plan to meet the needs of the Nelson Memo.

The OSU Libraries supports the OSTP's efforts to maximize public access to scholarship and research data. Thus far we have provided a few workshops on the memo and what it might mean for faculty and others involved with research on campus. We have maintained a long-established and trusted institutional repository, and we have had a Research Data Initiatives Librarian in place since 2018, who has established an excellent foundation for supporting faculty in data management and sharing practices, and we plan on continuing to build out our technical and personnel infrastructure. Already we have seen some inquiries from faculty with regard to the NIH Data Management and Sharing Plan, as well as increasing numbers of journals requiring data sharing, and we expect that to continue growing as funders and publishers push open access forward on a policy level.

The repository integration with Elements provides researchers with an easy and seamless process for depositing their scholarly works and data, and having those items openly available, crawled in Google Scholar, and linked to their
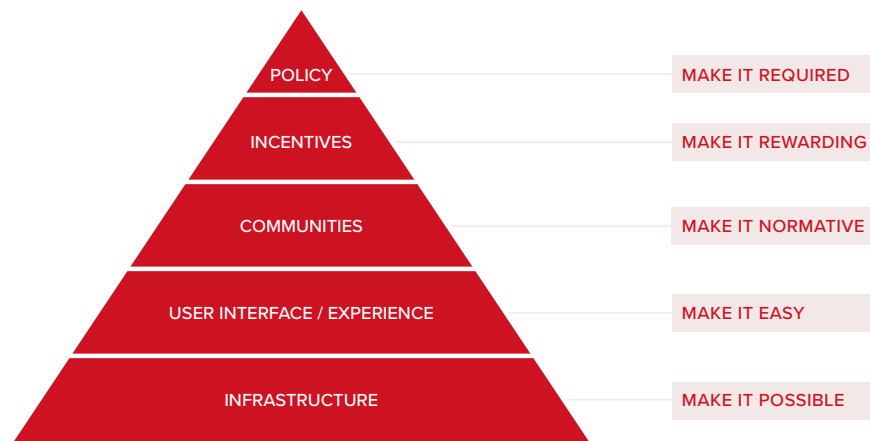
Hierarchy of needs for culture change
identified by the Center for Open Science's Strategy

public profile page. We have also done some work to import metadata records for openly available datasets to faculty profiles, and Elements allows faculty to link to their figshare profile if they use that tool.

Referencing the graphic in the Center for Open Science's Strategy for Culture Change document, we feel that we have the base of the pyramid well covered in terms of supporting faculty who wish to provide open access to their work: the infrastructure and interface in place make it both possible and easy. Certain communities (for example, certain disciplines, departments, research groups) have adopted these norms. Some are intrinsically motivated; whereas open access is becoming increasingly extrinsically incentivized, as discussed above. Should there be any top level policy changes we feel that we will be well-prepared.

> We feel that we have the base of the pyramid well covered in terms of supporting faculty who wish to provide open access to their work."

Carnegie Mellon University Spotlight: SDGs

At Carnegie Mellon Universities, The University Libraries worked alongside the Provost Office's Sustainability Initiative to conduct the Sustainable Development Goal mapping with a set of early adopters.[11]

Director of Sustainability Initiatives Alexandra Hiniker (pictured) utilised Elements to support faculty in thinking critically about how their work aligns with the 2030 Agenda.

"One thing I've heard consistently from students, faculty, staff, and external partners that I work with here in Pittsburgh, across the country, and around the world, is that they want to know what our CMU community is doing on the range of sustainable development goals that cover everything from poverty and hunger, to good health and wellbeing, peaceful, just and strong institutions, reducing inequalities, and of course, climate action," explains Hiniker in a recent video interview published by the university. "There's so much great work going on across CMU but it's hard to pull out all of that information, and share it with all of these different people who are interested in collaboration"

"As part of my role linking students, staff, and faculty across the campus to sustainability efforts, I heard from them that the most important thing was to connect to different parts of the university to which they usually didn't have access," Hiniker explained. "Elements is a way for people to quickly access information about what researchers are doing, so that they can help contribute to finding solutions to some of the world's greatest challenges."

Elements is now providing a centralised space for CMU's campus researchers to record which SDGs are associated with their research outputs and other academic activities. The Libraries' Elements reporting and data visualisation team worked with the Sustainability Initiatives Office to build reporting dashboards which surface data on how faculty initiatives and research across campus are supporting specific SDGs.

Read more.

> Elements is a way for people to quickly access information about what researchers are doing, so that they can help contribute to finding solutions to some of the world's greatest challenges."
>
> Alexandra Hiniker
> Director of Sustainability Initiatives,
> Carnegie Mellon University

2023-43

Driving Research for Good: The Next 20 Years

Symplectic now works with both research performing and research funding organisations in the pursuit of knowledge, delivering flexible research solutions to help them achieve their research goals.

We seek to:

1. **Relieve Administrative Burden & Empower Researchers**
   We free up researchers and administrators in the research office and grants teams to concentrate on value-add activities rather than manual admin, giving them more time to spend on what's important.

2. **Drive & Support Collaboration & Innovation**
   We help researchers find mentors, collaborators, scientific equipment and other institutional research services - helping them do their research better and driving better cross-pollination of knowledge across disciplines.

3. **Enable Funding of Research**
   We help research funders manage their grants award processes and grants applicants build the best applications possible. Powerful reporting tools make it possible to demonstrate ROI and end-impact of grants, helping funders spend money most effectively on impactful research, and researchers achieve success in gaining funding.

4. **Enable Open Access for the Benefit of All**
   We make it easier for researchers and institutions to make their publications & data open access, making knowledge more widely accessible for all (including developing countries).

5. **Gain Insight & Track the Impact of Research Done**
   Powerful reporting tools help organisations track KPIs, monitor progress on things like how much of research is actively contributing to initiatives such as SDGs or Open Access workflows, or analyse and understand the impact of grants and funds allocated and research carried out.

6. **Promote Research Excellence**
   The Elements assessment module makes it easier for institutions to assess and demonstrate research excellence, through exercises such as the Research Excellence Framework in the UK, PBRF in New Zealand, ERA in Australia, and Faculty Annual Reporting (FAR). This helps to ensure that research and teaching carried out is of the highest quality.

2022
Under the Biden administration, the OSTP's Nelson Memo recommends all federally-funded research be made publicly available without embargo

2022
In Australia, The National Health and Medical Research Council (NHMRC) requires all NHMRC-funded research be made publicly available upon publication

People-Centric & Mission-Driven

One thing all Digital Science staff have in common is a desire to make a difference. By helping research institutions achieve their research goals, helping research get funded, and supporting research quality, our aim is to best support those making the world a better place. The way we work as a group of people, the way we prioritise development, and the way we conduct support, are all designed to fulfil our clients' current and future needs.

"Over the years, the Symplectic team has worked hard to attract and retain staff who are genuinely invested in furthering our work as a product and service team and as part of the research community," says Symplectic CEO Jonathan Breeze. "This isn't a one-time event, it's something we need to do every day and it's aided enormously by the collaborative foundations laid by Symplectic's Founders".

"Roll forward 20 years and at the heart of our work is a collaborative ethos and honesty that is enormously refreshing for organisations used to one-way, transactional vendor relationships. It's also an approach that has allowed us to maintain long-term relationships with our partners and suppliers — many of whom also have an interest in supporting the research ecosystem".

"Although we're now 20, our work with the research community is far from complete, and in an ever-changing space, it will be our people-centric approach that will propel us forwards, and together."

Endnotes

1 https://eurocris.org/about/history-cerif
2 https://www.oclc.org/research/publications/2018/oclcresearch-practices-patterns-research-information-management.html
3 https://hangingtogether.org/what-is-rim/
4 https://twitter.com/katefoneill
5 https://dukespace.lib.duke.edu/dspace/handle/10161/13672
6 https://www.oclc.org/research/publications/2018/oclcresearch-practices-patterns-research-information-management/report.html
7 https://www.symplectic.co.uk/connecting-ohio-universities-with-industry-to-drive-innovation/
8 https://www.universityworldnews.com/post.php?story=20220430080957202
9 https://www.digital-science.com/resource/sustainable-development-goals-classification/
10 https://knowledge.figshare.com/article/halfway-to-happiness-what-the-ostp-update-means-in-the-grand-scheme
11 https://www.library.cmu.edu/about/news/2022-10/elements

Writer & Editor: Natalie Guest
Design: If Destroyed Still True

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We work in pursuit of the advancement of knowledge, delivering flexible research solutions that help universities, institutions and funding organisations achieve their research goals.

For 20 years, Symplectic has been designing and delivering solutions that help research performing and research funding organisations streamline their workflows, navigate informational complexity, and meet their missions.

During that time we've helped institutions drive innovation and collaboration inside and outside of campus, develop public profile portals to showcase the work they're doing, tackle the challenges of regional assessment exercises such as REF, ERA and PBRF, and spearhead Open Access initiatives.

Today, Symplectic Elements is trusted by 115+ academic institutions, government and federal departments around the globe to manage their scholarly activities and information. Symplectic Grant Tracker underpins the pre and post award processes for 50+ funding agencies who award more than $2 billion annually.

We hope this guide will tell you more about what we've done for our clients over the past two decades. To find out more about what we can do for you, get in touch. enquiries@symplectic.co.uk

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