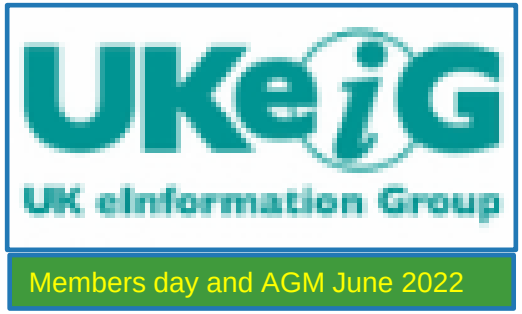
The library technology ecosystem.

Where are we now. What does the future hold?



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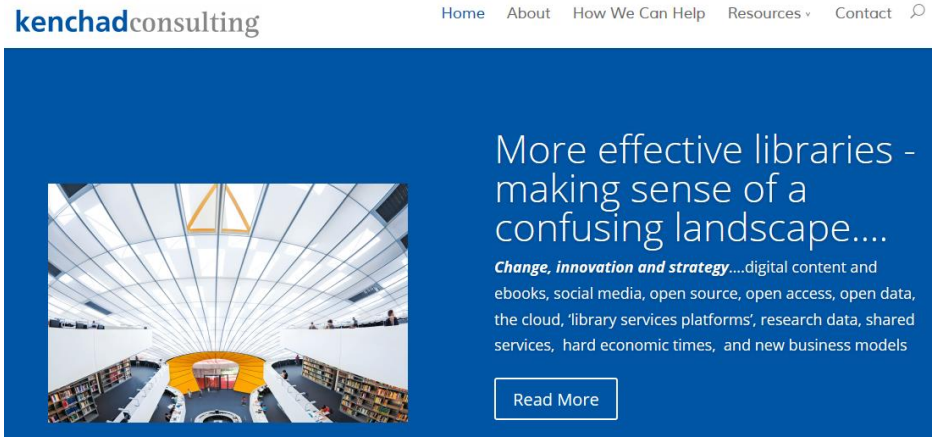
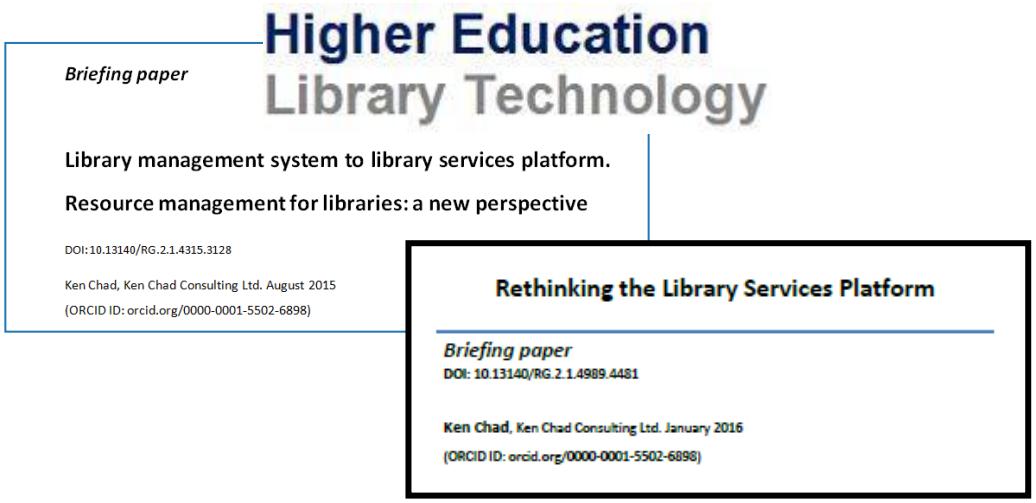
Ken Chad Consulting –some of the things I do…..

www.kenchadconsulting.com





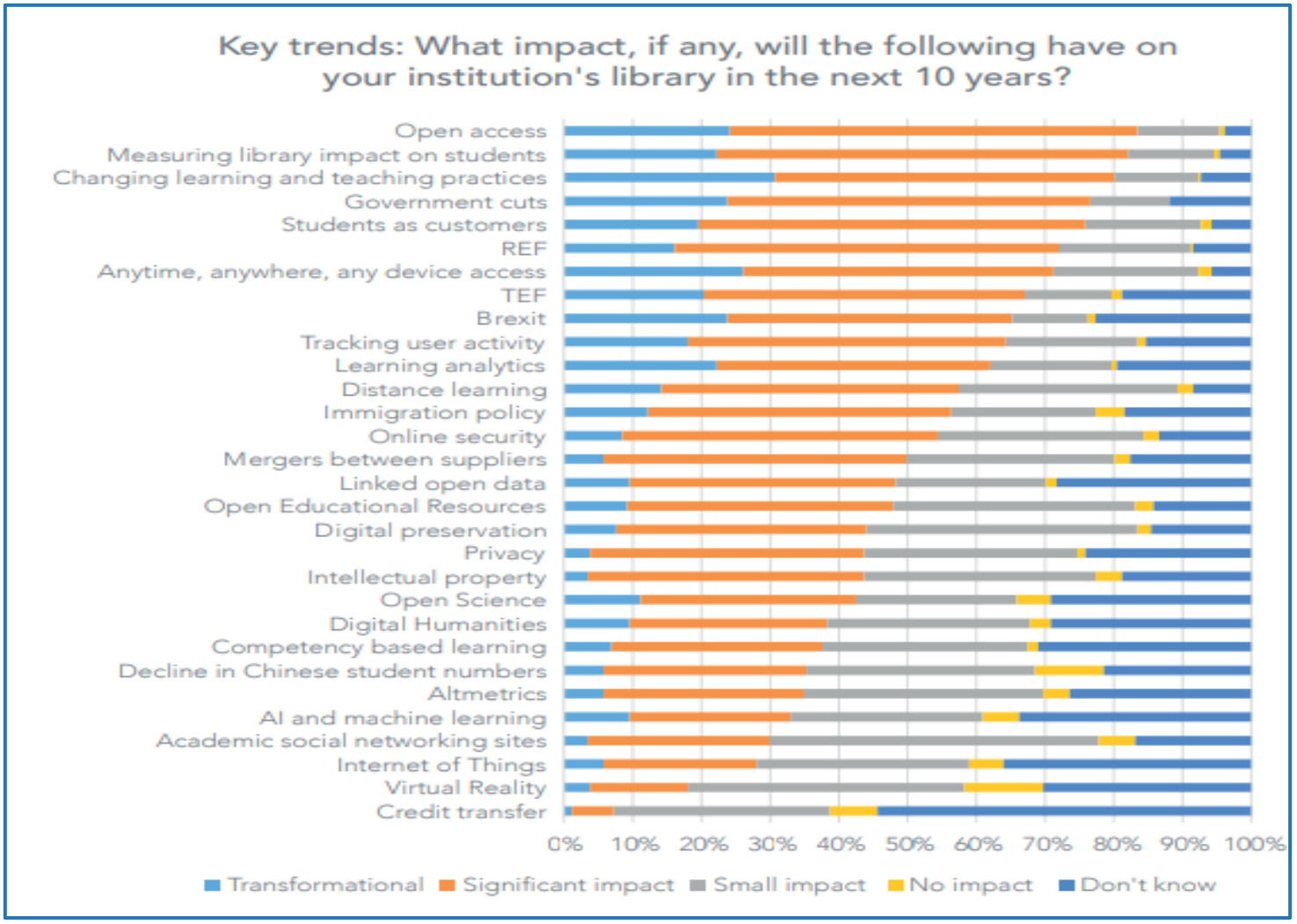
Kenchadconsulting helping create more effective libraries.....

Setting your expectations.....

My contribution today should be treated as "food-for-thought"

My bias is to the UK and Higher Education

HE library trends (2017)



Mapping the Future of Academic Libraries: A Report for SCONUL. Stephen Pinfield, Andrew Cox & Sophie Rutter
Nov 2017. https://sconul.ac.uk/sites/default/files/documents/SCONUL%20Report%20Mapping%20the%20Future%20of%20Academic%20Libraries.pdf

HE drivers

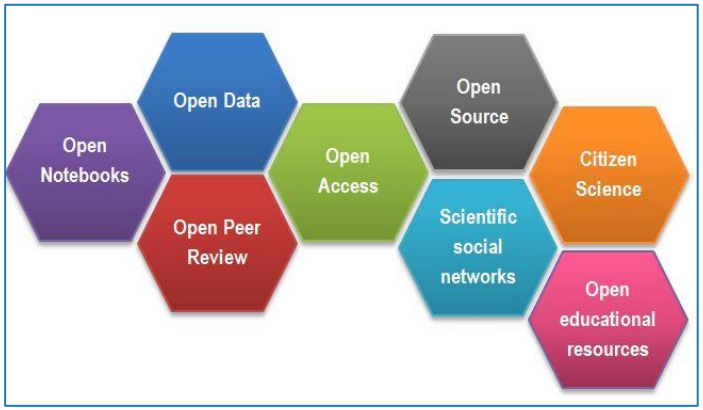
HE institutions are driven by two core (revenue generating) activities: teaching and learning and research.

Libraries are judged primarily by their ability to support those activities.

In the UK, an institution's performance in the Research Excellence Framework (REF) and Teaching Excellence Framework (TEF) are critical to funding.

https://www.kenchadconsulting.com/wp-content/uploads/2021/02/Trends_in_library_tech_KenChad_Feb2021.pdf

We are talking about a library technology *ecosystem*



https://www.fosteropenscience.eu/content/what-open-science-introduction

Plan S
Making full & immediate Open Access a reality

Plan S

Making full and immediate Open Access a reality

UNIVERSITY OF SURREY
Open Research

UK OPEN TEXTBOOK PROJECT

UCL PRESS

Open Educational Resources

PART 1: Where are we now?

Where are we now? : some themes

- Discovery and delivery of resources
- Identity Management – authentication and access. Ensures user access is legal and within the resource license terms
- Resource management, curation ‘asset management-books, journals archives, digital assets, research outputs etc)
- Teaching and Learning (T&L) support - student success
- Research support
- Interoperability
- Marketing – “creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large”

It’s complex- discovery as an example

Generic discovery solutions
- Conventional (library system) OPAC
- Discovery services with a central index (e.g. Primo, Summon & EDS)
- Discovery layers without a central index (E.g. Open source VuFind, BlackLight)
- Google/Google scholar

Other discovery interfaces to:
- Publisher web sites
- A & I/citation databases -e.g. Scopus, Web of Science
- (Various) repositories inc IRs Special collections, archives
- Discovery interfaces to archives
- Discovery interfaces to VLE
- Theses and dissertations

Alternative access solutions
- E.g. Lean Library, LibKey that assume users start in Google, A&I databases or publisher platforms and provide link to library licensed resources
- Tools to enable access to Open Access/free to read resources
- AI based discovery tools
- Linked Data to better ‘open up data to the web’

Services/Curation tools
- LibGuides
- Reading/resource lists-For especially undergraduates, a reading list solution may mean they don’t need a separate ‘discovery’ solution

E-book/e-textbook platforms

Users are often confronted a confusing number of options to access ebooks.

Shared catalogue solutions
- Jisc NBK Library Hub Discover
- OCLC WorldCat
- OCLC OAIster

It’s complex- research support

Research management

- **Libraries have often managed Intuitional Repositories (IRs)**
- **A move to Research Information Systems**
- **Reference Manager solutions (to enable student & researcher to manage/share citations)**
- **The move to open science and open access (exemplified by ‘Plan S’ is challenging and libraries are engaging more and more in this space - for example in managing APCs and ensuing researchers comply with open access policies and guidelines including data management plans**
- **Some university libraries have ‘open research/open science teams to support researchers esp. in terms of OA**
- **Challenges in how the library works with researcher and other parts of the university -in particular the Research office**

University press

- **Recent years have seen a blossoming of new University presses -typically producing open access research monographs**
- **Some libraries are in charge of the University Press**

Research –what is the role for libraries and library systems?

"It is striking that over a third of environment statements (37.7%) made no direct reference to the institutional library or librarians, not even just to mention the library collections. A similar number (36.5%) only briefly referenced the library or librarians"

An analysis of the 2014 Research Excellence Framework (REF) https://www.kenchadconsulting.com/wp-content/uploads/2021/02/Trends_in_library_tech_KenChad_Feb2021.pdf

Expanding roles - the library and research support

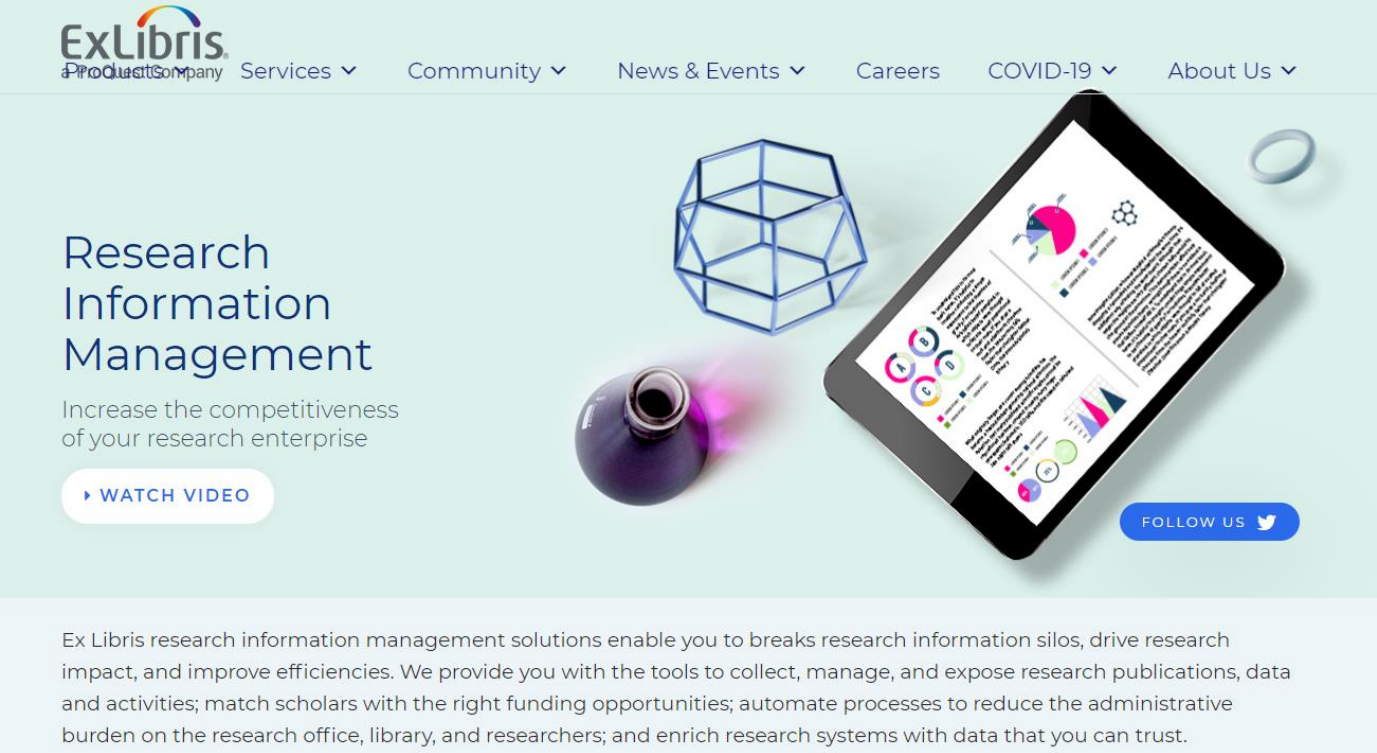
Research Information Management

There is a growing awareness of how university RIM (Research Information Management system) workflows are increasingly intersecting with those in the library. Librarians, ‘should see this as an opportunity to draw a new map of support and services for researchers.’

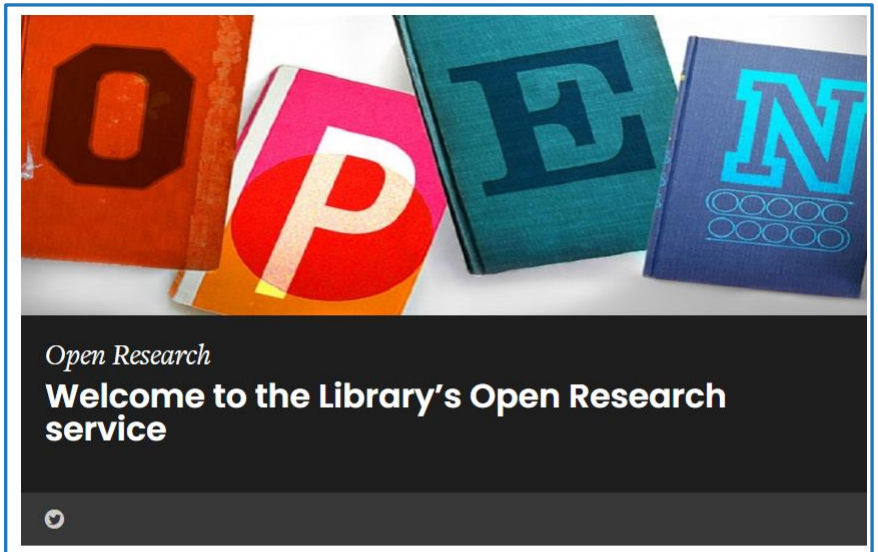
There is clear opportunity for librarians and university research office staff to work more closely to deliver a more coherent approach to benefit researchers.

https://www.kenchadconsulting.com/wp-content/uploads/2021/02/Trends_in_library_tech_KenChad_Feb2021.pdf

Expanding roles - the library and research support



Expanding roles - the library and research support



https://www.liverpool.ac.uk/open-research/

Expanding roles - the library as publisher

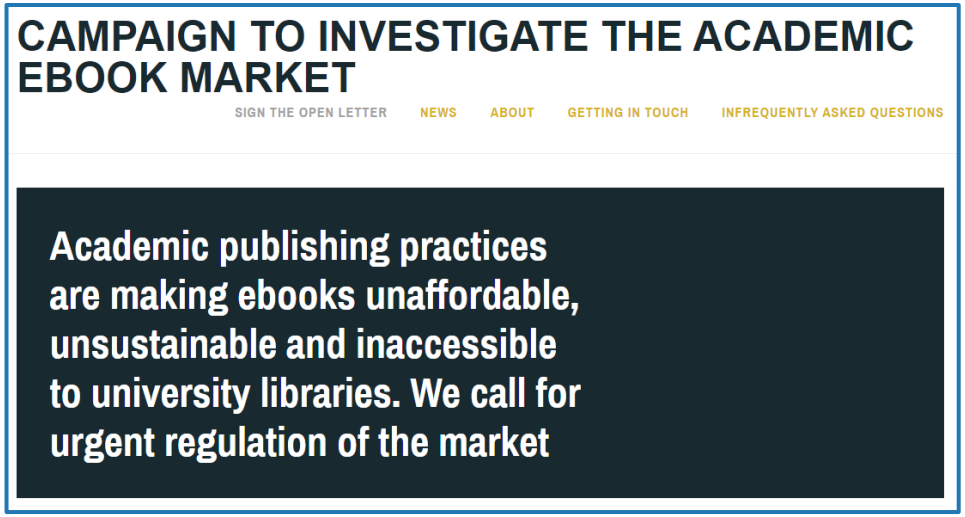
Library as publisher

"Over the past five years, however, library publishing has gained a critical mass within academic libraries and has garnered increasing attention from librarians and publishers"

Library as Publisher: New Models of Scholarly Communication for a New Era
Sarah Kalikman Lippincott ATG LLC (Media), 2017 DOI: http://dx.doi.org/10.3998/mpub.9944345

Institution as e-textbook publisher. Jisc project (ended 2018) Investigating the viability of higher education institutions publishing their own e-textbooks

https://www.jisc.ac.uk/rd/projects/institution-as-e-textbook-publisher



Expanding roles - the library as publisher

Dr Paul Ayris, *Paul Ayris Pro-Vice-Provost (Library, Culture, Collections, Open Science), UCL and CEO of UCL Press*

Paul is the founder and CEO of UCL Press, and serves on UCL's Senior Management Team. He chairs the UCL Press Executive Board.

A team of 15 people

Teaching and Learning

In an increasingly ‘marketized’ HE environment students are impatient if the university cannot deliver the resources they need.

Some universities responded by proving students with devices preloaded with relevant content bypassing any need to use the ‘library’ system.

Middlesex University invested over £2 million in its programme to provide students with free core e-books.

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Teaching and Learning-part of the ecosystem

Reading/Resource Lists

- Reading lists remain mostly managed by the library and engaging academics in reading lists remains a long standing problem for some libraries
- There remains a division between 'library' resources (managed in the library system and 'learning 'resources -managed in the VLE. Reading lists are often access via the VLE-merging of approach to management of 'library' and 'learning' resources
- The evolving Teaching Excellence Framework (TEF) is an important driver

VLE

VLE is not typically managed by the library

'virtual study room' solutions

Library space is increasingly devoted to 'study space'

Teaching and Learning

Library resources vs. learning resources

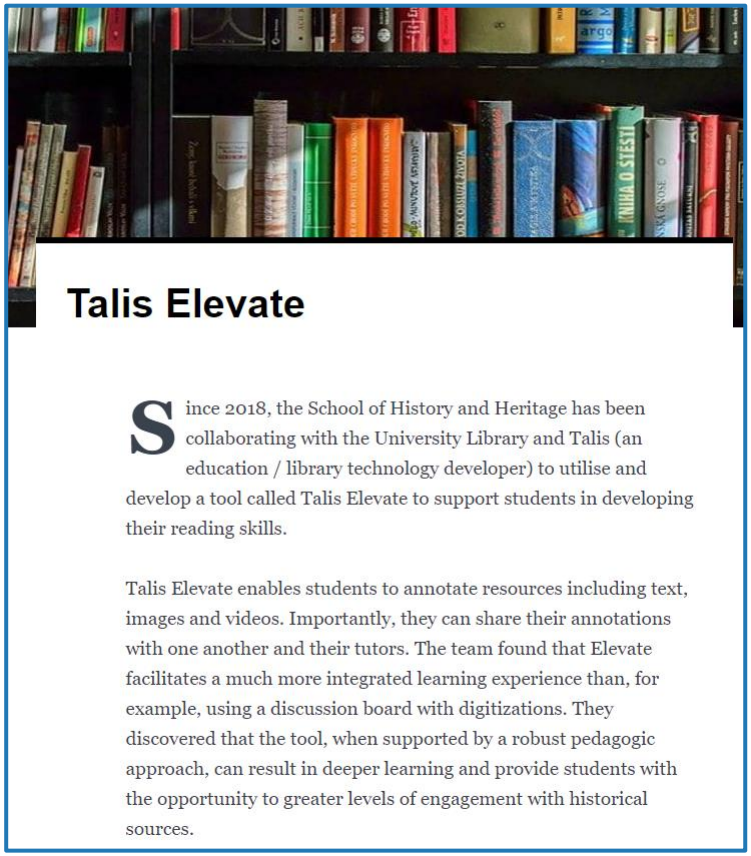
There is a dichotomy about what constitutes a resource that is managed (and paid for) by the library (e.g. journal articles and books) and what is a learning resource (e.g. course resources and content, including digital textbooks, lectures etc) that is typically managed in the virtual learning environment (VLE) and paid for from the learning budget.

The LMS has almost no role to play in managing or delivering these ‘learning’ resources.

https://www.kenchadconsulting.com/wp-content/uploads/2021/02/Trends_in_library_tech_KenChad_Feb2021.pdf

Expanding roles - the library and teaching and learning

Mr Ian Snowley
Dean of Student Learning Development and University Librarian



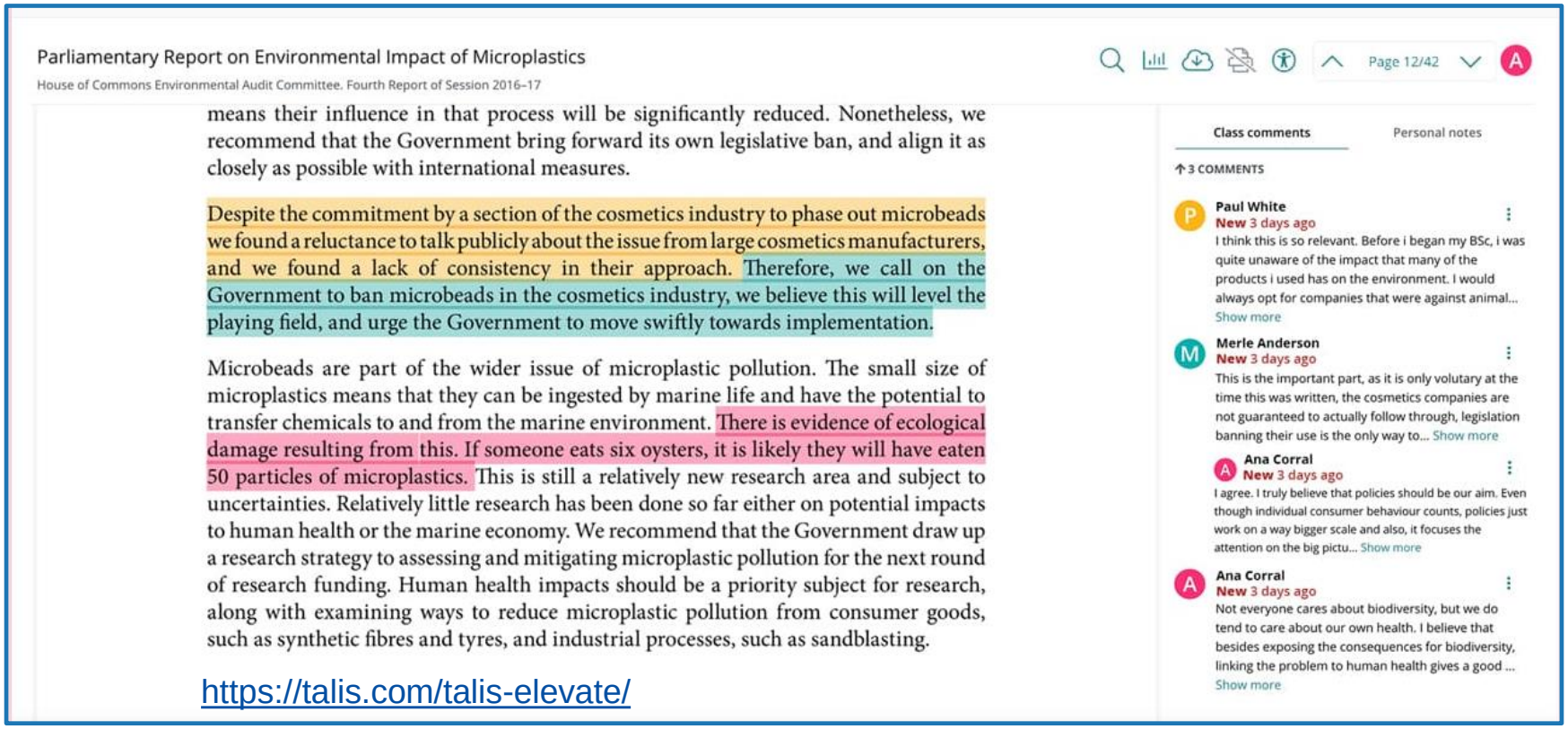
Talis Elevate

Since 2018, the School of History and Heritage has been collaborating with the University Library and Talis (an education / library technology developer) to utilise and develop a tool called Talis Elevate to support students in developing their reading skills.

Talis Elevate enables students to annotate resources including text, images and videos. Importantly, they can share their annotations with one another and their tutors. The team found that Elevate facilitates a much more integrated learning experience than, for example, using a discussion board with digitizations. They discovered that the tool, when supported by a robust pedagogic approach, can result in deeper learning and provide students with the opportunity to greater levels of engagement with historical sources.

Expanding roles - the library and teaching and learning

Engaging with a resource - collaboration and co-creation



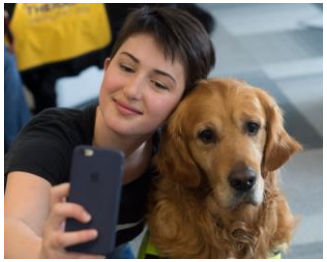
https://talis.com/talis-elevate/

Expanding roles: student wellbeing

Study Happy Library wellbeing initiatives from the University of Warwick
One question that we hear is: ‘Why on earth is the library doing this?’

All this fits nicely with the University of Warwick Library mission statement: ‘connecting you with information, support and your community’.

In 2014 the university launched a new strategy, ‘Looking forward’. This highlights ‘community’ as a key University Value and adds new weight to this by making ‘Engage our communities’ one of our six strategic goals. **A key objective for us in the library is to create ‘the conditions for our students and staff to succeed’.**



Study Happy Library wellbeing initiatives from the University of Warwick. Antony Brewerton and Becky Woolley. SCONUL Focus 68. 2016 sconul.ac.uk/sites/default/files/documents/4_18.pdf

PART 2: What does the future hold?

For context - some numbers……

How much is the library tech' market worth?

Library technology market

Aggregate global revenues total in the $1.85 billion range. "These figures include RFID and other self-service products in addition to the technologies related to library management and resource discovery."

Library Systems Report. By Marshall Breeding. American Libraries 2015

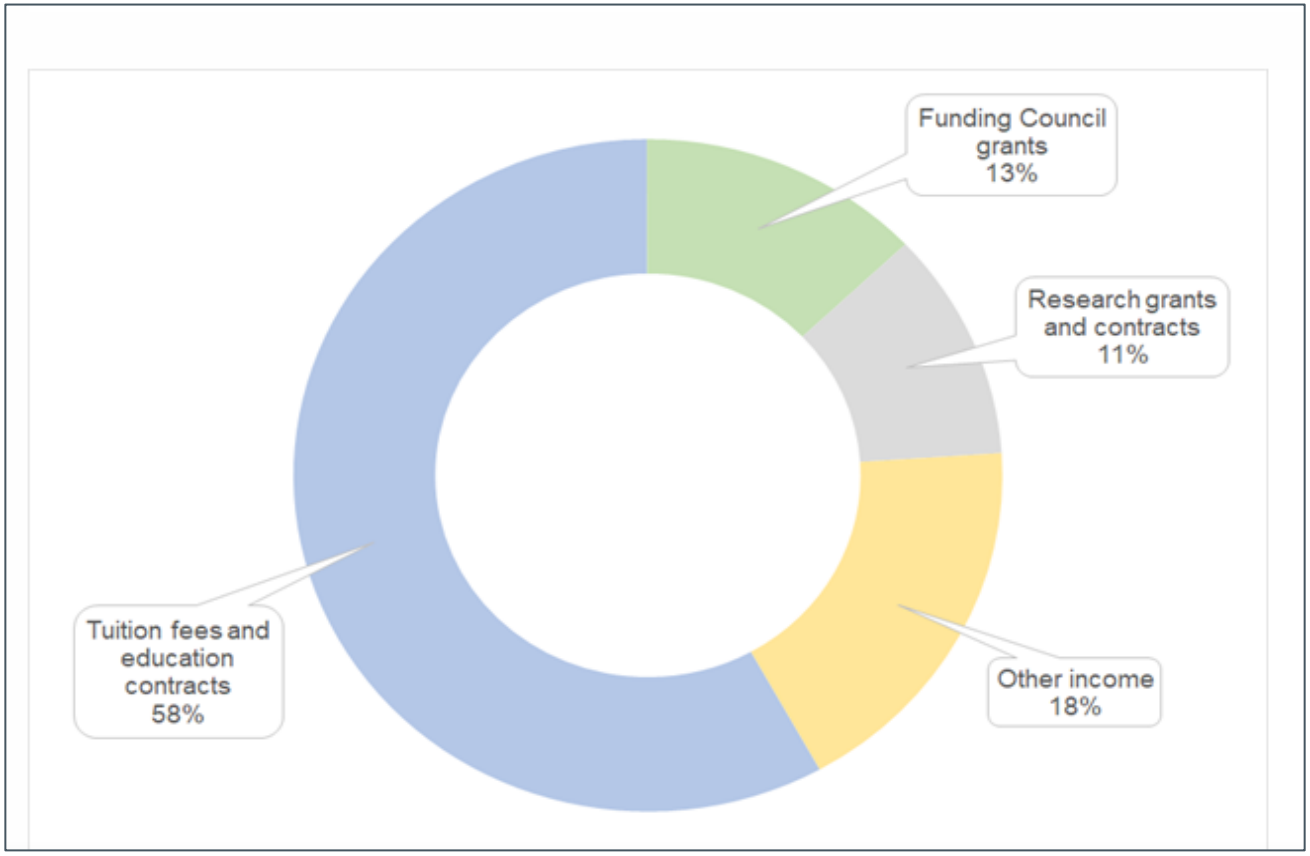
$2.1 billion in 2022?

Getting things into perspective: Comparative revenues (2021)

Approximate revenues	
Talis (now part of Sage)	£2.9 million
Innovative Interfaces $55.1 million	£39.7 million
SirsiDynix $59.6 million	£42.94 million
Ex Libris $144.1 million	£103.82 million
OCLC $214.6 million	£154.62 million
ProQuest $876 million	£631.1 million
Clarivate $1.254 billion	£0.9 billion
Wiley	£1.3 billion
Elsevier	£2.6 billion
SAP	£22.billion
Google £181.69 billion	£130.91 billion

Where does a mid sized university get its income/revenue?

Tuition fees make up 58% of the University's income



In little over a decade, from 1998 to 2010, universities in England and Wales increased their prices (tuition fees) by 800%.
https://en.wikipedia.org/wiki/Tuition_fees_in_the_United_Kingdom

Getting things into perspective: Some numbers…….

Academic year **2018/19 revenues**

	Tuition	Research	Total income
Brunel University	127,967,000	22,962,000	229,753,000
University of Cambridge	320,150,000	592,388,000	2,192,053,000
City University	195,306,000	11,716,000	244,080,000
Total for England & Wales	19,885,381,000	6,575,362,000	40,506,597,000

Comparative staff numbers

A mid sized university: Total Staff 1,556 (F/T) 1,025 (P/T) 2,581

“ProQuest has a workforce of 2,740—including 1,461 employed at the parent company and the rest via subsidiaries including Bowker, Ex Libris, and Innovative.”

“OCLC reports 1,238 total personnel”

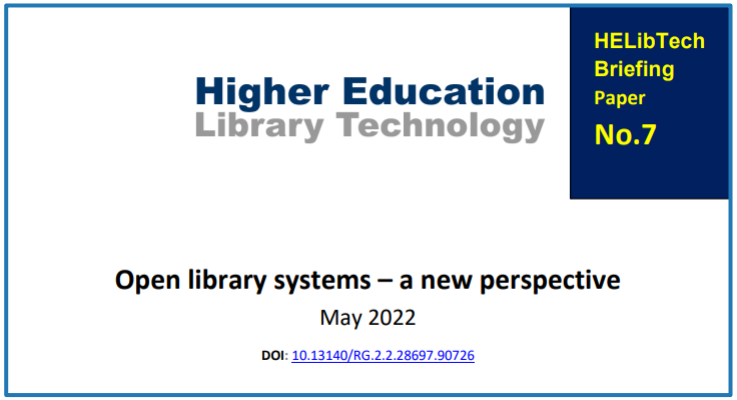
2021 Library Systems Report Advancing library technologies in challenging times
By Marshall Breeding 3 May 3, 2021

Drivers for change

Drivers for change: moving to electronic/digital

Moving beyond the LMS/ILS

Libraries need technology solutions that go way beyond the core functionality of an ILS to enable their growing supporting role for teaching and learning and especially research. **The ILS/LMS or even the LSP is increasingly marginalised in this environment, and its value is diminished**



Learning analytics

"Every time a student interacts with their university – be that **going to the library**, logging into their virtual learning environment or submitting assessments online – they leave behind a digital footprint.

Learning analytics is the process of using this data to improve learning and teaching"

Learning analytics in higher education: A review of UK and international practice. Read our updated briefing on learning analytics and student success from January 2017. By Niall Sclater, Alice Peasgood & Joel Mullen. Jisc. 2016. https://www.jisc.ac.uk/reports/learning-analytics-in-higher-education

Learning analytics –using library data

Northumbria University NEWCASTLE

Using Student Data for Educational Analytics

"Northumbria University's approach to the utilisation of Educational Analytics is directly linked to the University Strategy"

The following data, which is currently captured by the University, is initially in scope for Educational Analytics:

- personal information provided by the student at registration
- student level study records held by the University including assessment marks
- details of a student's assigned Personal Tutor system-generated data from Blackboard, such as the date and frequency of accessing pages
- student attendance data
- **library borrowing logs**
- smart card activity log on Campus
- Northumbria gym membership

This data will be used in line with the University's Student and Applicant Privacy Notice.

https://www.northumbria.ac.uk/-/media/corporate-website/new-sitecore-gallery/services/academic-registry/documents/qte/student-engagement/ethical-use-of-student-data-for-educational-analytics.pdf?la=en&hash=EEB8CF87D03669F66A935ECEA17D084F05947832

Drivers for change: The rise of platforms

The Rise Of Business Software Platforms

"With the increase in cloud adoption in the past 10 years, a new breed of software solutions has emerged. These solutions can be thought of as business software platforms that are designed around a subset of business processes that are closely related — even if the initial design did not intend to be for more than a single-purpose solution. These solutions don't cover every business process in the enterprise by design, but they are designed with an awareness of other upstream and downstream business processes. This makes **business software platforms much more easily extensible** into other areas."

The Rise And Evolution Of Business Software Platforms Mohamad Zahreddine. Forbes. 8 November 2019
https://www.forbes.com/sites/forbestechcouncil/2019/11/08/the-rise-and-evolution-of-business-software-platforms/

Software *product vs platform*

“A software product is a set of tools from one company that comes in one package. Everything contained within that package is designed to work together, but it can be challenging to add on new tools that didn't originally come in the package.

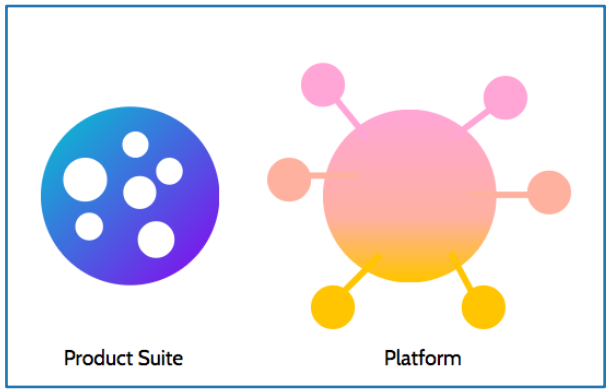
For example, if you wanted to add a new help desk tool that works directly with your existing CRM, you'd need to build an integration that can connect the new tool to your existing product suite. The help desk tool wasn't originally designed to work with your product suite, but an integration can effectively enable them to pass information back and forth.

One-off integrations are useful if most of the tools you need already exist within your product suite, but they can get complicated fast and become difficult to troubleshoot. As your business grows, your needs will inevitably change, and the tools that worked for you originally might not be enough to keep you up and running. You'll need to supplement your original product suite with more outside tools -- and that means more integrations.”

What Is a Software Platform & How Is It Different From a Product? Emilie Nøss Wangen. Hubspot [Blog]. Originally published Jun 26, 2019. Updated January 26 2021. https://blog.hubspot.com/marketing/software-platform

Software *product vs platform*

A platform offers a different, more straightforward approach to managing your growing business. Instead of purchasing a box of tools, a platform is more like an electrical outlet with the potential to easily plug in as many tools as you need. Products require integrations (sometimes custom, complex ones) to connect different tools, but platforms are designed from the start to help different tools work together and share information more easily.



Not only do platforms make data more readily available …..but they also enable non-developers to create and maintain advanced, interconnected ecosystems of tools.

What Is a Software Platform & How Is It Different From a Product? Emilie Nøss Wangen. Hubspot [Blog]. Originally published Jun 26, 2019. Updated January 26 2021. https://blog.hubspot.com/marketing/software-platform

The rise of platforms

The underlying technology of platforms differs radically from older systems. Within each multi-tenant environment, there is only **one copy of the application software, one operating system and one database supporting multiple organisations on a single bank of servers.** The vendor only has to deploy, develop, maintain and upgrade one copy of the software.

In the UK this approach enabled Ex Libris to increase its market share from 23% in 2008 to over 37% in 2020. The WMS cloud-based platform enabled OCLC to make a breakthrough into the UK HE market and establish a small but significant and growing market share.

Non-platform approaches are losing HE market share

Vendors, such as SirsiDynix, Innovative Interfaces and, in the UK, Capita (now Education Software Solutions), have continued to lose HE market share.

In the UK, for example, Capita/ESS's market share halved from 2008 to 2020, and SirsiDynix dropped from over 22% to 14% in the same period.

=

Platforms need Interoperability – making things work together

Interoperability - a challenge for the library sector

Achieving better integration means supporting and developing APIs and also enabling open data. Some progress has been made by vendors and through organisations such as NISO and BIC but Todd Carpenter of NISO remarks, **'fundamental advances in management of library information [….] have been slow to advance**

Making ‘open’ work: interoperability - a challenge for the library sector

Baltimore, MD - October 31, 2019 -
The National Information Standards Organization (NISO) seeks comments on a new draft Recommended Practice pertaining to the modernization of library-vendor technical interoperability using RESTful web service application programming interfaces (APIs) and standard mobile application intent calls.

“There may be more work ahead,” says Nettie Lagace, Associate Executive Director of NISO, “but by **implementing standards using RESTful Web services APIs, vendors will be able to abandon some of the bulky toolsets of the past, and thereby allow libraries more flexibility** in meeting local needs.”

https://www.niso.org/press-releases/2019/10/niso-releases-draft-fasten-recommended-practice-public-comment

Interoperability and open data initiatives - slow progress and the graveyard?

DLF ILS Discovery Interface Task Group (ILS-DI)
Technical Recommendation

An API for effective interoperation between integrated library systems and external discovery applications

Revision 1.1

December 8, 2008

Biblios.net - the world's largest database of freely-licensed library records

Search Results for
‡biblios.net
Not Found

R & D project

Plan M: streamlining the bibliographic metadata marketplace

Engaging with stakeholders throughout the supply chain to streamline workflows, enhance usability and facilitate collaboration through leadership and a vision for change.

BIC Brunch:
What is the Library Communications Framework?

29th April 2021 - 12 noon (BST)

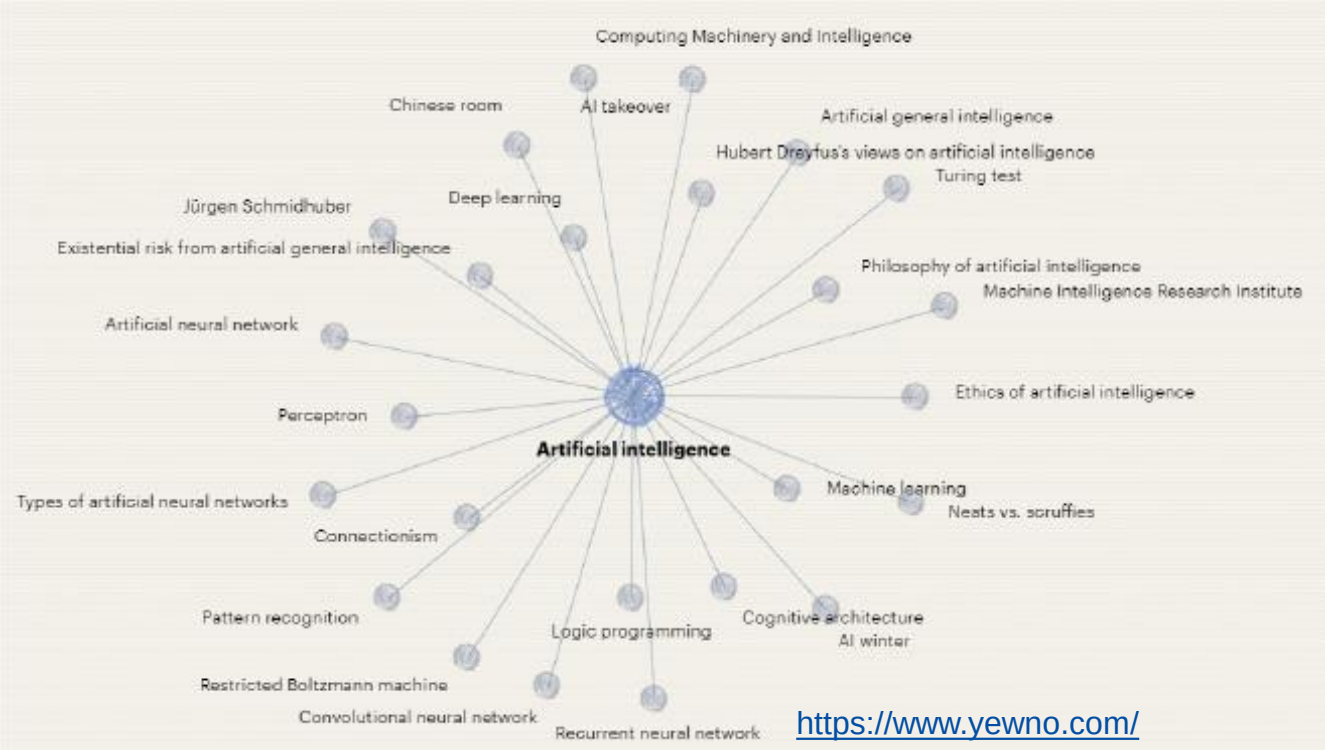
Kindly sponsored by:

#bicbrunch @bic1uk

Application of new technologies – AI Machine learning

‘it is in its impact on knowledge discovery that AI will have the greatest impact’

The impact of AI, machine learning, automation and robotics on the information profession CILIP. May 2021
https://www.cilip.org.uk/page/researchreport



https://www.yewno.com/

AI initiatives

kenchadconsulting Ltd

The *Discovery AI* - initiative

The development partner collaboration model will deliver three key benefits. It will:

1. Enhance the current discovery ecosystem through the deployment of a proven AI solution available through Jisc collections licence subscriptions manager

2. Shape the development of next generation AI technology

3. Upskill and empower librarians and other university staff in dealing with the practical, ethical and other issues related to AI

Yewno

National centre for AI in tertiary education

Accelerating the adoption of artificial intelligence across the tertiary education sector

Jisc

focused on:

piloting a number of promising AI products so that we can share insights into which products add value and in what circumstances consulting with colleges and universities in order to understand how/whether AI solutions could address the most pressing problems they face

identifying and showcasing best practices in the use of AI in education so that Jisc's members can learn from and be inspired by the experiences of others

building a community group around the national centre for AI so that Jisc members can work together to achieve shared goals and address shared problems

hosting events that will increase Jisc members' knowledge around AI and its uses in education

providing thought leadership in order to guide and inspire members

https://www.jisc.ac.uk/rd/projects/national-ai-centre

The need for scale

The need for scale

Forbes

a company may spend $10 million to build/assemble a platform and spend a quarter of a million to maintain it the next year. But that next year also will require the cost of building a second iteration of the platform, and that will constantly continue. This is because **platforms change the way a company competes in the marketplace and how it operates**. A platform continually requires more investment because companies seek to lean into those platforms, add to them, and evolve them. They need to move them forward because they are integral to how companies operate.

Understanding Digital Platform Costs. Peter Bendor-Samuel. Forbes 30 Nov 2021.
https://www.forbes.com/sites/peterbendorsamuel/2021/11/30/understanding-digital-platform-costs/

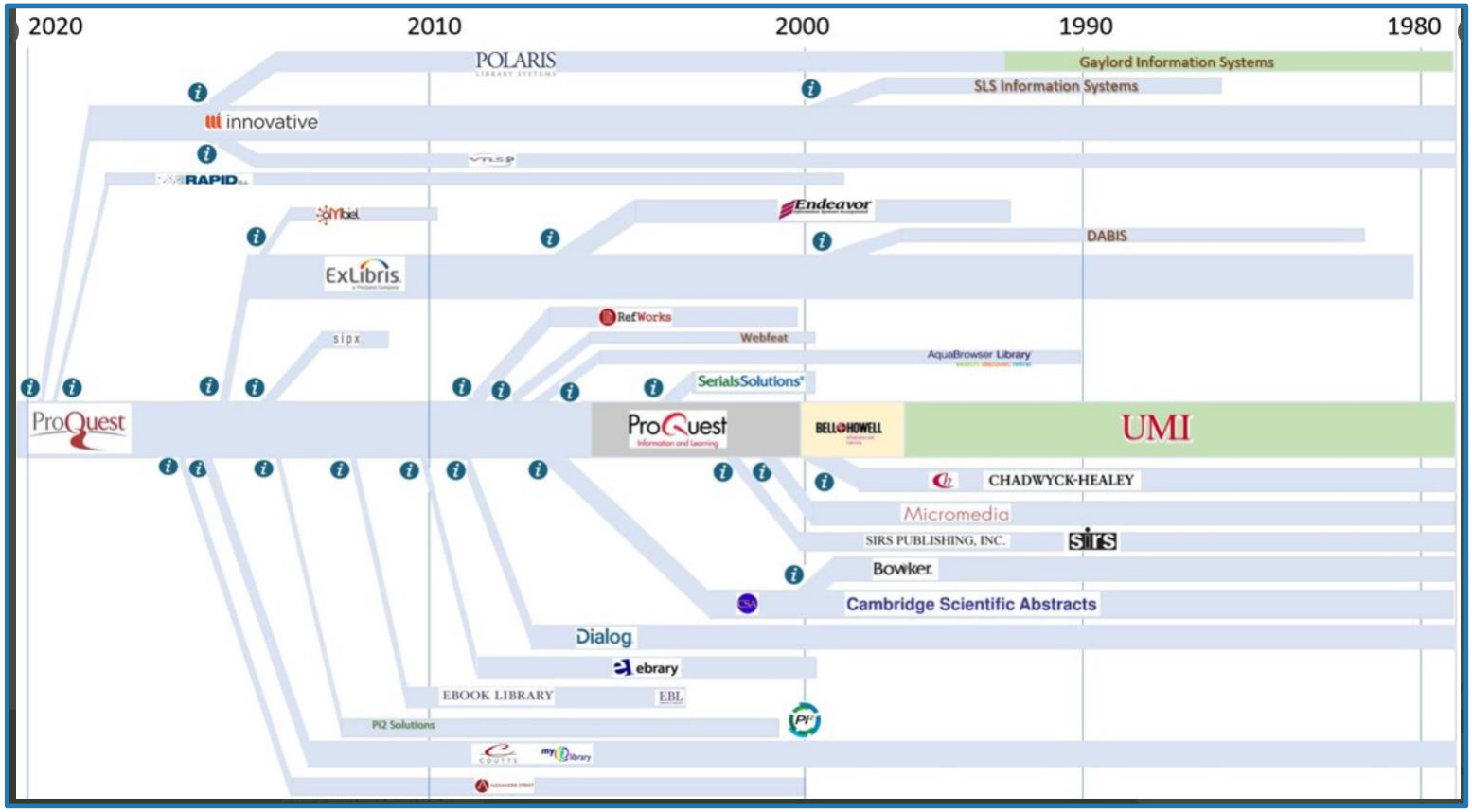
The need for scale

Platforms work best at a large scale. A global platform can extend a partner's reach into new sectors and geographies. The more customers a platform has, the more likely open APIs and data standards will be developed. Furthermore, data at scale delivers huge insights, and technologies such as artificial intelligence need considerable investment and work best with large volumes of data. **Building these platforms requires a level of investment that only the largest, well-funded vendors or open-source communities can deliver.**

A consolidating market

A consolidating market

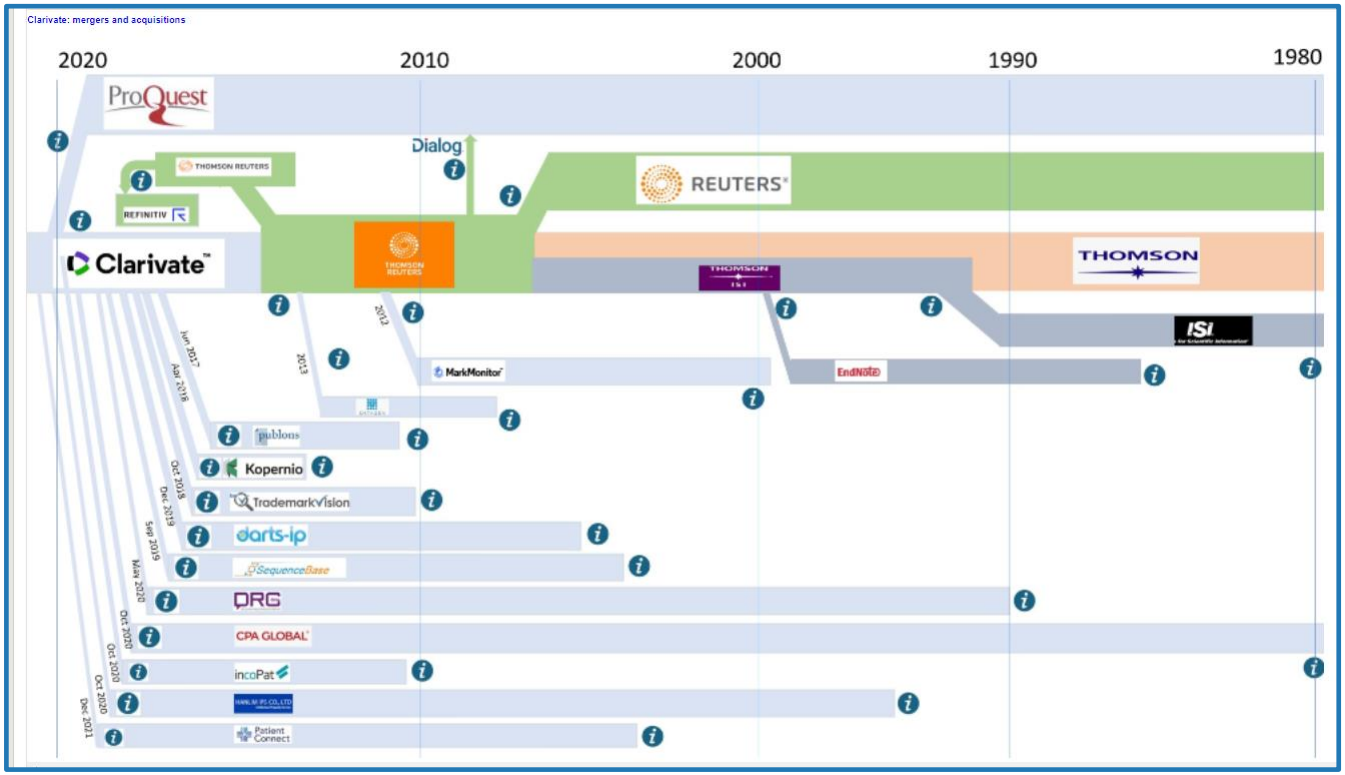
Ex Libris, Innovative Interfaces are acquired by ProQuest



Marshall Breeding https://librarytechnology.org/mergers/

A consolidating market

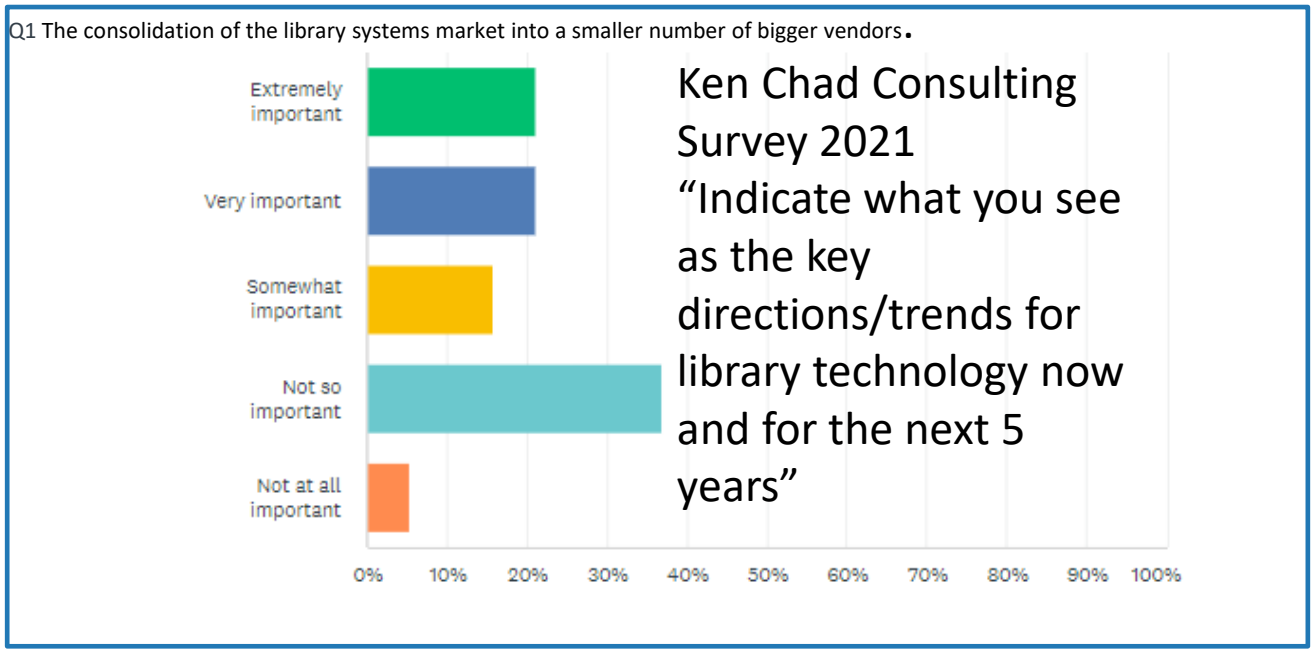
ProQuest is acquired by Clarivate



Marshall Breeding https://librarytechnology.org/mergers//

A consolidating market

Some librarians are concerned by what they see as a lack of choice.



Marshall Breeding suggests that competition remains, "despite consolidation and the products implemented in the Association of Research Libraries reveal a more competitive environment now than there was a decade ago".

Challenges – who pays for the ecosystem?

As ‘LibTech’ merges with ‘EdTech’ and technology to support research the question of who pays for what will arise more often.

Who pays for the VLE?

Who pays for textbook/course content?

Who pay for the research information system?

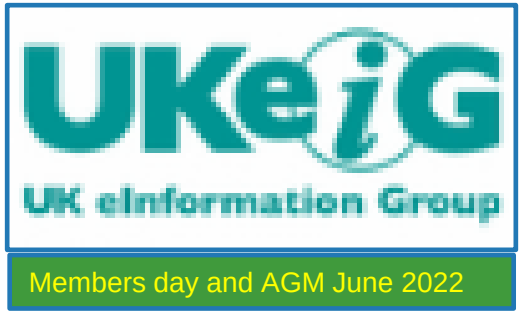
Challenges – for library technology vendor?

Some current library systems vendors are mired in supporting legacy LMSs that hamper them in delivering the transformative approach needed.

Only those that can deliver new higher value platform solutions will thrive in the longer term.

The library technology ecosystem.

Where are we now. What does the future hold?



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