



NUS
National University
of Singapore

NUS
Libraries

NUS Libraries - A Partner in Teaching, Learning and Research at the National University of Singapore

Mrs Lee Cheng Ean
University Librarian
9 November 2017

Outline

- Overview of NUS & NUS Libraries
- A Partner in Teaching, Learning & Research
 - Learning Services
 - Scholarly Communication
 - Digital Scholarship
- Our Strategies & Future Plans



Vision

A leading global university centred in Asia, influencing the future

Mission

To transform the way people think and do things through education, research and service

Mission

To transform the way people think and do things through education, research and service



Research-intensive University with an entrepreneurial dimension



Transformative Education



High Impact Research



Dedicated Service

Our focus will centre on nurturing future-ready graduates, enhancing our research's translational impact and making NUS Asia's most vibrant university enterprise ecosystem. Our goal? More distinctive, high-impact value for Singapore and the world.

~ Professor Tan Chorh Chua
NUS President

NUS Community

17 Faculties/Schools

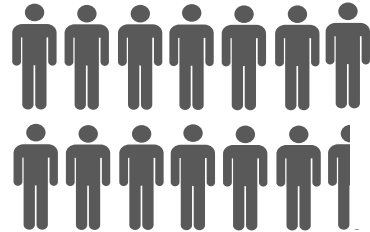
9 Overseas Colleges

30 Research Institutes & Centres

3 Research Centres of Excellence*

STUDENTS

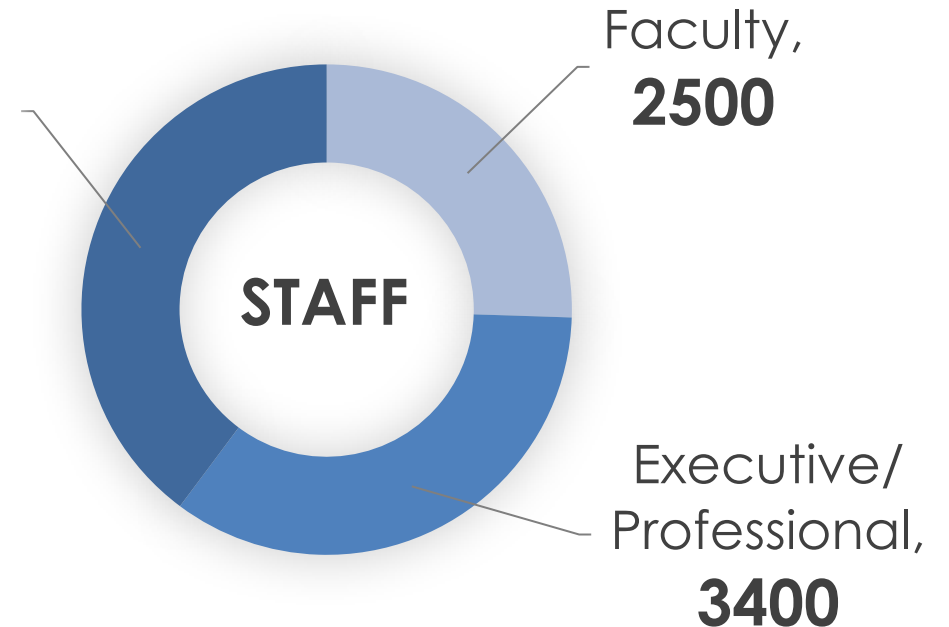
27,000
Undergraduates



8,000
Graduates



Research Staff,
3900



* 4th Research Centre of Excellence shared with Nanyang Technological University

Common Framework to Improve Services at NUS



Align with University Vision, Mission



Engage and Manage Stakeholders



Foster Customer Centricity



Improve Resource Management
(Finances, People and Space)

OUR VISION

To be a leading global academic library ~ Impacting research ~ Enriching learning ~ Revitalising experiences

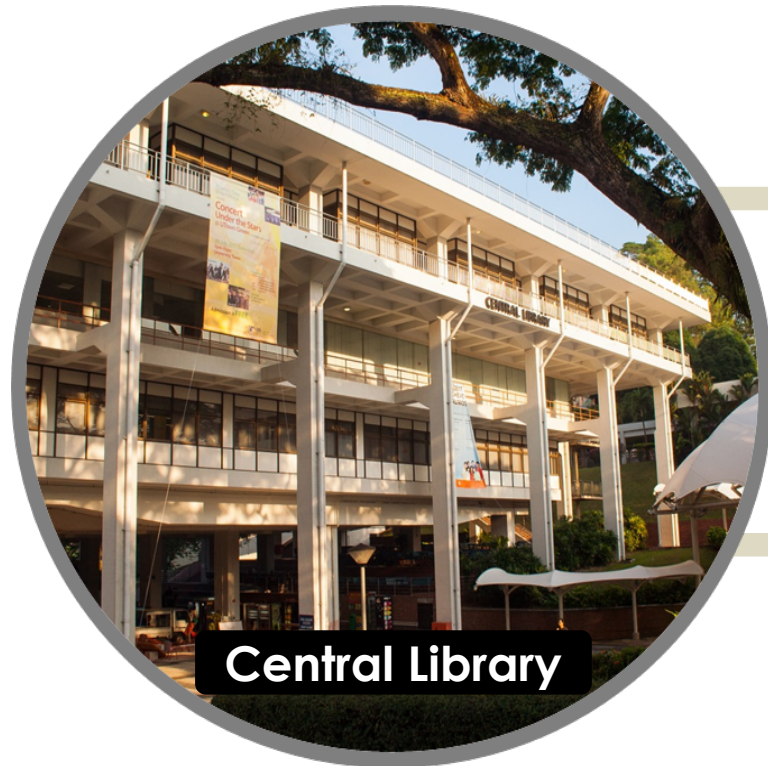
OUR MISSION

To actively engage and partner the NUS community in advancing scholarship and research through innovative library services



About NUS Libraries ... Since 1905

De facto national libraries in their respective disciplines



Chinese Library



CJ Koh Law Library



Music Library



Medical Library



Hon Sui Sen Memorial Library



Science Library



East Asia Institute Library



Digital Library

Collection & Budget Allocation (FY2016)



1.4 Million
Unique Book Titles



637 Thousand
Electronic Books



49 Thousand
Electronic Journals

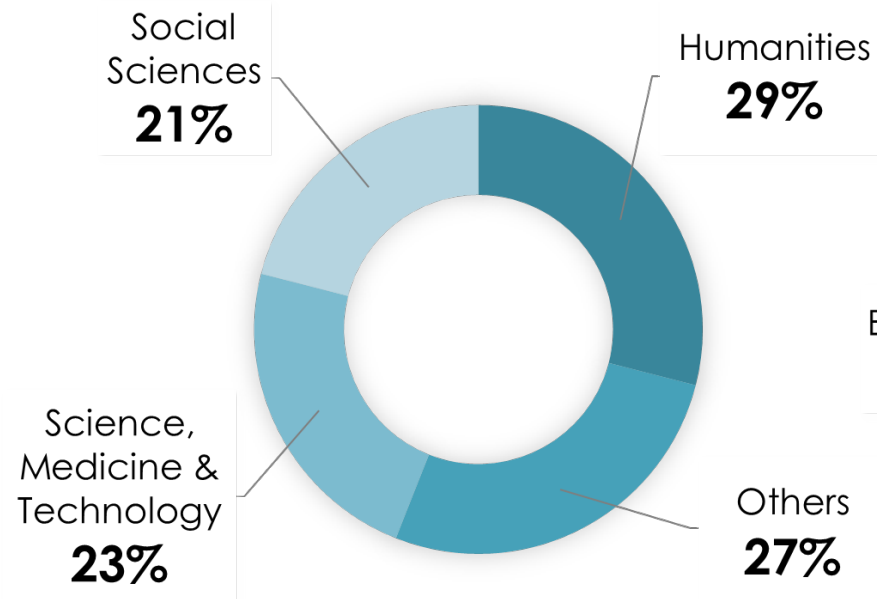


49 Thousand
Journal/Newspaper
Subscriptions

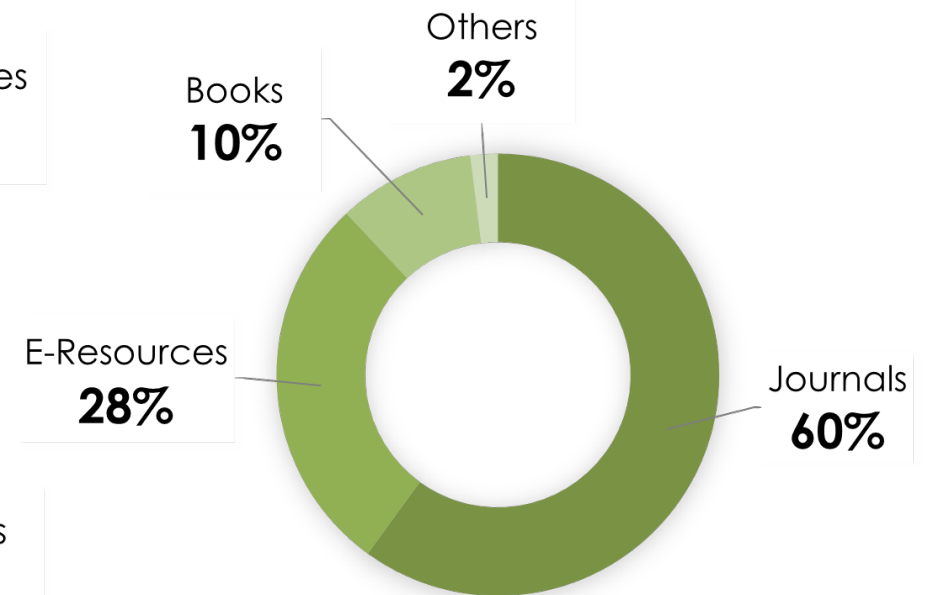


300
Databases

Collection by Disciplines (%)



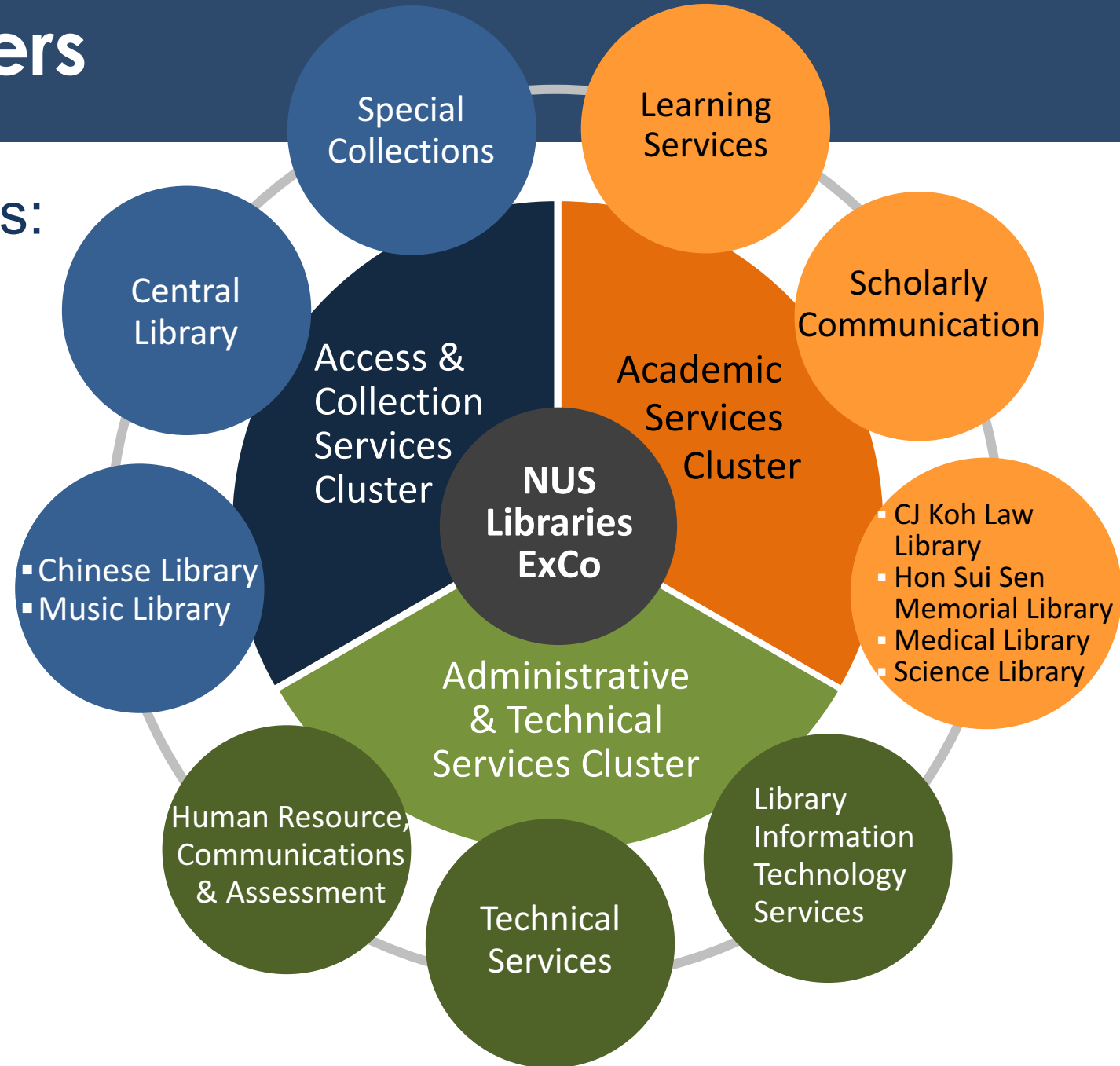
Budget Allocation (FY2016)



Organisational Clusters

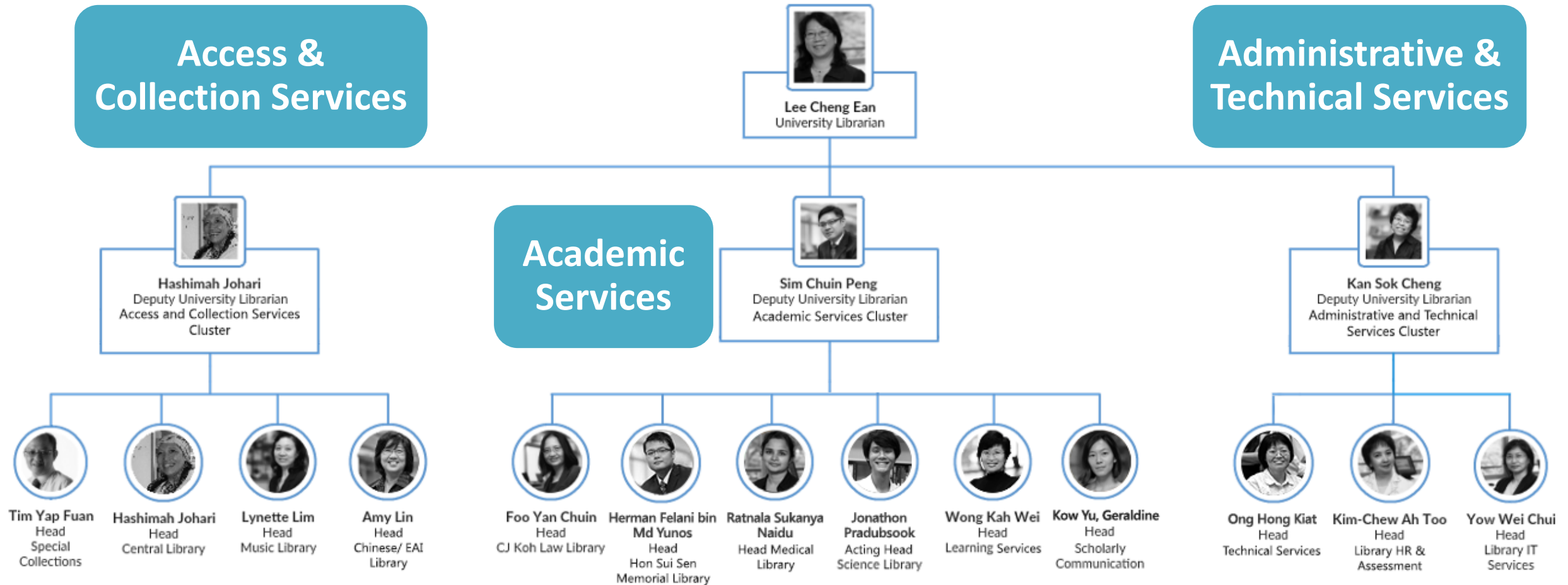
Reorganised into 3 main clusters:

- Access & Collection Services
- Academic Services
- Administrative & Technical Services

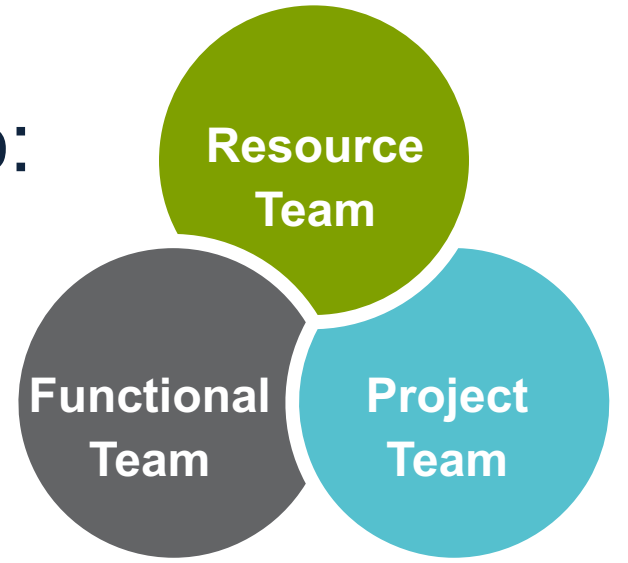
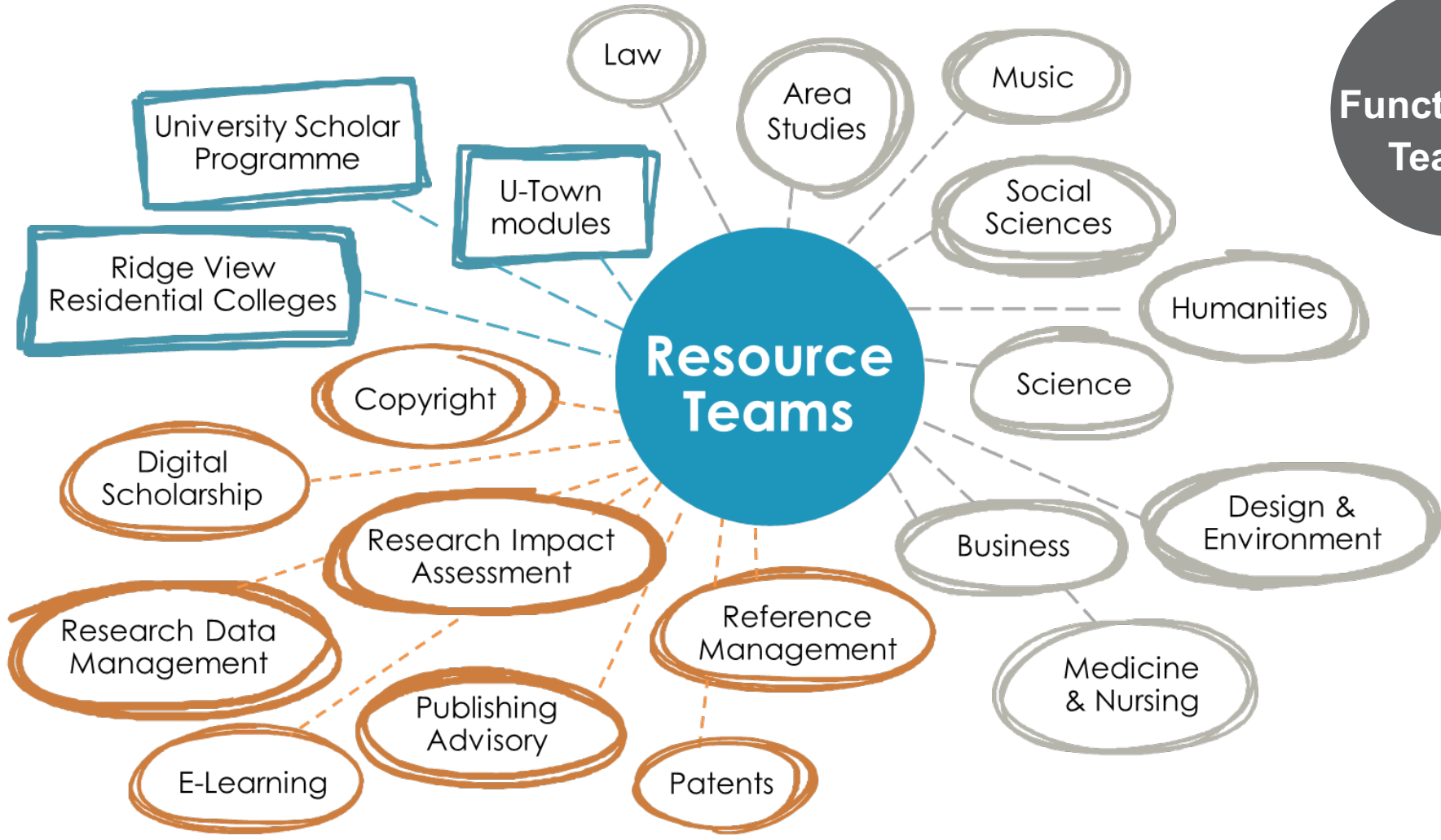


(As at February 2017)

Organisational Chart (will be updated in 2018)



Library professionals are organised into:

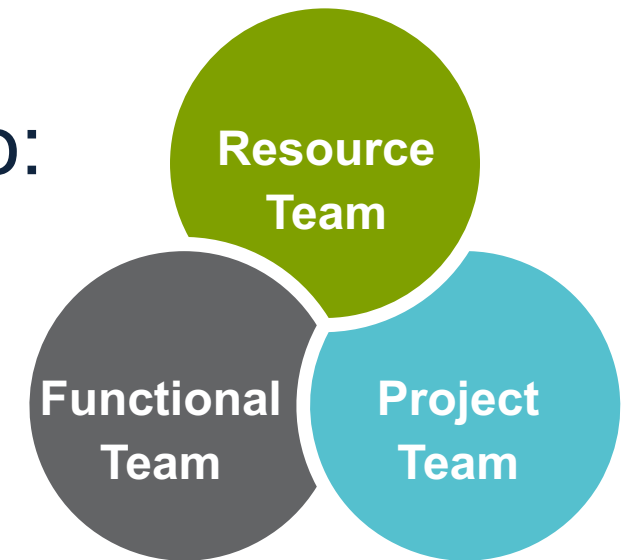


Library professionals are organised into:

- Access & Collection Services
- Institutional Repository (ScholarBank@NUS)
- Research Data Repository Services
- Metadata & Cataloguing Services
- Special Collections & Preservation
- Ordering & Receiving

- Web Discovery & Digital Innovative Services
- Library Portal Enhancement
- Technical Services Process Improvement
- Library Renovation

- Library Assessment
- Library Communications
- Library Human Resource
- Library Finance
- Facilities & Safety Committee

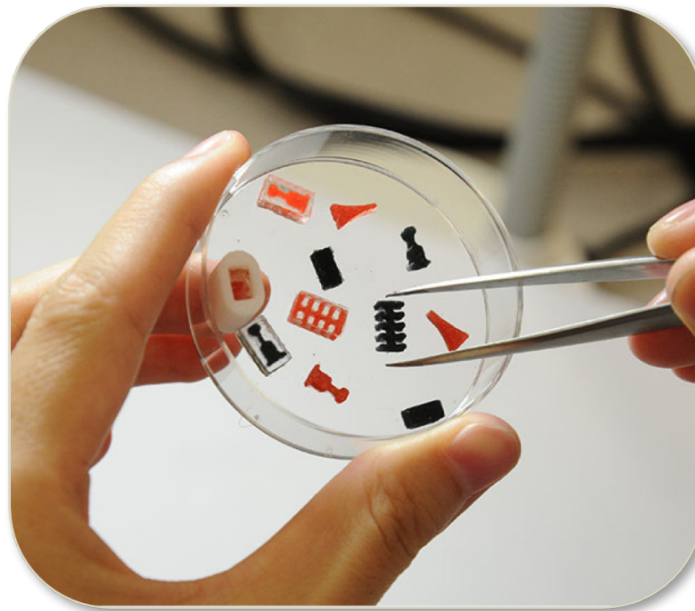


**A Partner in Teaching,
Learning & Research**

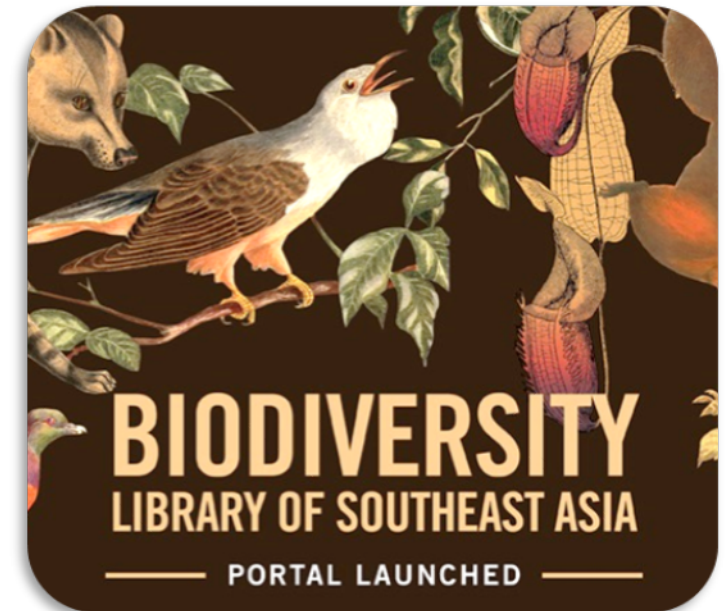
Key Drivers & Outcomes



Facilitate Student
Success & Teaching
Excellence



Increase Research
Visibility & Impact

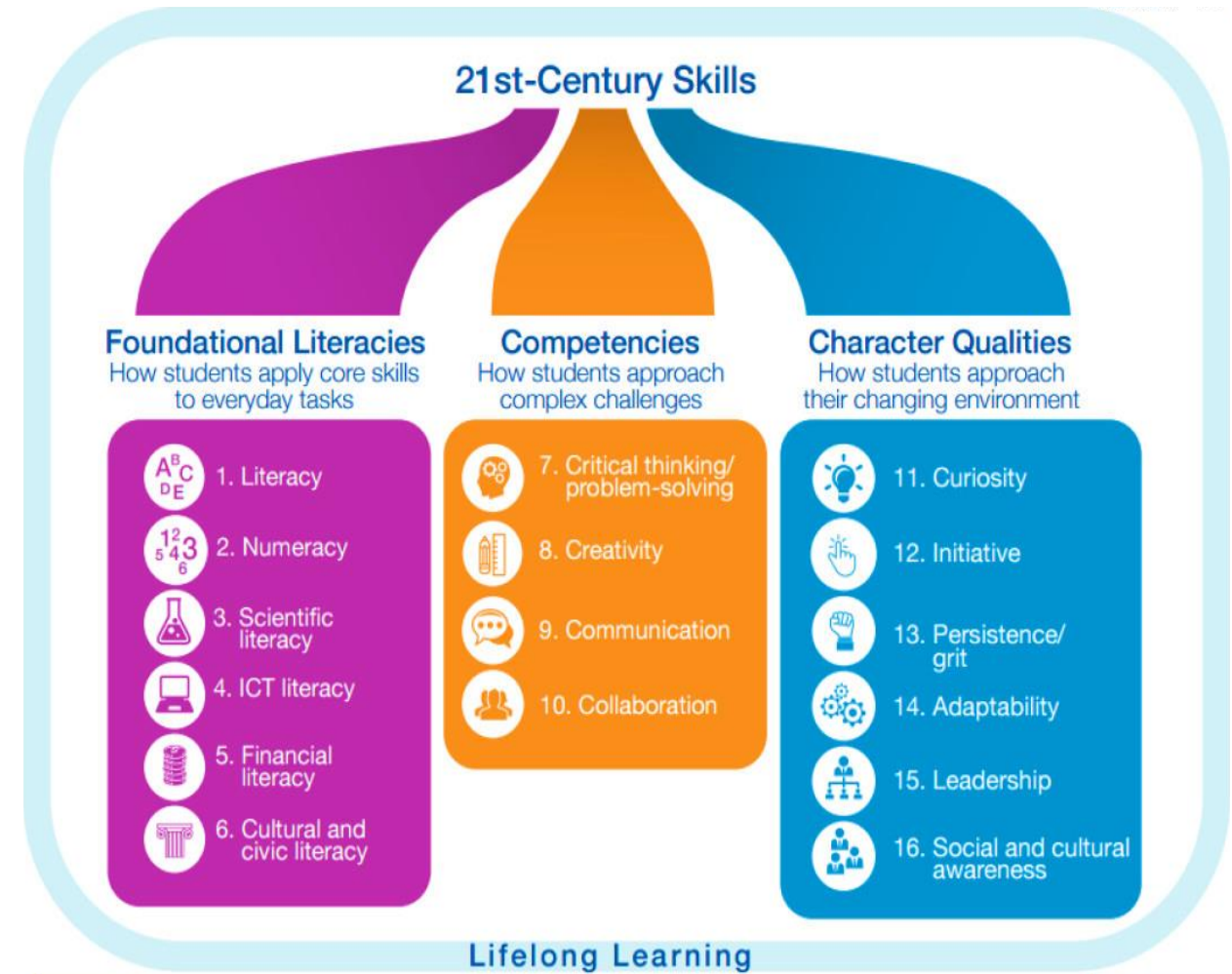


Create Value
for the World

Facilitate Student Success

Students learn how to:

- Ideate projects using evidence
- Select relevant information sources to locate evidence
- Search for evidence using various search techniques
- Evaluate information sources
- Manage and use information responsibly



Source: Meta-analysis of research about 21st-century skills in primary and secondary education, *New Vision for Education*, World Economic Forum

Learning Services

Identify & Describe

Apply & Relate

Create & Reflect



Orientation programs collab with faculties

Orientation programs org by libraries

Research SKILLS + Libguides + videos

1-to-1 consultations

Info Lit embedded in module

Mod-spec ILP commitment + marks

Mod-spec ILPs commitment or marks or compulsory

RESEARCHER unbound Module-specific Info Literacy Programs No commitment

Research SKILLS + Libguides + videos (Self-directed learning)

1-to-1 consultations

Info Lit embedded in module

Strategic publishing & research support workshops

Mod-spec ILP commitment + marks

Mod-spec ILPs commitment or marks or compulsory

RESEARCHER unbound Module-specific Info Literacy Programs No commitment

Research SKILLS + Libguides + videos (Self-directed learning)

Library resources & services

**B
A
S
I
C**

Ideate
Locate evidence
Evaluate
Write, present & cite

**A
D
V
A
N
C
E
D**

Ideate, Locate evidence, Evaluate
Write, present & cite
Publish & collaborate
Enhance visibility

Start my studies

Start to teach

Start my research

Get my assignments done

Teach my module

Get published

Get CAP 4.5!

Get my students to learn more!

Raise my research impact!

LEARNING SERVICES *Facts & Figures at a Glance*

690 SESSIONS
11405 USERS



Advisory
293 sessions
331 users



Orientation
92 sessions
2323 users



Information Literacy Programs (ILPs)
305 sessions
8751 users

Top faculties served (# users)



Advisory

1. YLL Sch of Med
2. FASS
3. Business



Orientation

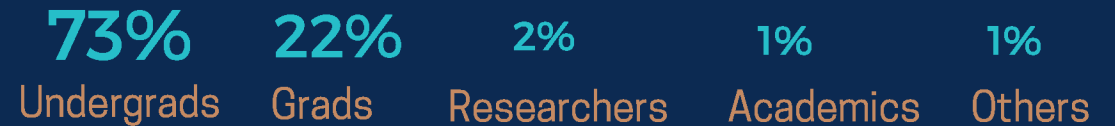
1. Engineering
2. Law
3. YLL Sch of Med



ILPs

1. Engineering
2. FASS
3. Law

User segments served



90% module-specific ILPs

Guides students of a specific module in searching for information for their assignments and projects

10% open sessions

Does not support any module. Open to all in NUS community in learning how to use tools, databases or resources

88 ILPs consistently conducted for past 3 years

10 support research methods modules

12 support critical thinking modules

16 ILPs consistently conducted since 2007

LEARNING SERVICES

Embedding Information Literacy in Curriculum

4 Embedded librarian at Ridge View Residential College

- Started in 2016
- Librarian is part-time Academic Advisor of GEQ1917 an environmental sustainability module.
- Tutors and grades 1 class of 15 students
- Information Literacy fully-integrated and taught by all Academic Advisors.

3 EG5911 Research Methods & Ethics

- Started in 2014
- Information Literacy is a learning outcome of the module
- All Engineering PhD students have to pass module in order to take their Qualifying Exams
- Over 140-70 students each semester
- 40% of the module's marks allocated to Info Literacy
- 4 hours of class time
- 6 librarians

LEVELS OF EMBEDMENT

- ### **4**
- 1%**
- Fully co-teach
 - Contribute to module's design, assignments
 - Teach & grade all tutorials
 - Info Lit assessed in all assignments;
 - All faculty teach & assess Information Literacy
-

- ### **3**
- 1%**
- Co-teach
 - Compulsory
 - Supports module's objectives
 - Allocated > 10% of module's marks
-

- ### **2**
- 43%**
- Customized for module's assignment
 - > 1 session; or Compulsory; or 5-10% of module's marks
-

- ### **1**
- 45%**
- 1 session
 - Customized for module's assignment

10% are open sessions and have no embedment

Researcher Unbound Framework for Research Skills



WORKSHOP SCHEDULE
j.mp/ru_about

IDEATE	SEARCH	ORGANISE & MANAGE	CITE & USE	COMMUNICATE	CREATE & IMPACT	MEASURE & ENHANCE
<p>How do you scope and frame an idea for your research?</p> <p>Learning Outcomes Apply various frameworks / methods / tools to help you ideate, scope your research topics, and identify research gaps or discover emerging trends:</p> <ul style="list-style-type: none"> • Mindmaps • PESTLE analysis • PICO model • Questioning existing literature or research 	<p>How do you conduct effective literature search to support your research?</p> <p>Learning Outcomes Apply appropriate search methods to find the relevant information to support your research.</p> <p>You will learn:</p> <ul style="list-style-type: none"> • The differences between primary and secondary research for the various disciplines • The advantages and disadvantages of various search methods such as citation pearl growing, using keywords vs controlled vocabulary, search operators, etc. • How to conduct a systematic review 	<p>How do you collect, organize, analyze and manage your research, including data, effectively.</p> <p>Learning Outcomes</p> <ul style="list-style-type: none"> • Apply latest tools for research collaboration and for keeping current in your field of research • Apply emergent digital research methods in an evolving technological environment. Includes text mining, geographic information systems (GIS), social networks, data visualisation and data analytics • Apply best practices for managing your research data 	<p>How do you use and cite sources in appropriate citation styles?</p> <p>Learning Outcomes</p> <ul style="list-style-type: none"> • Evaluate & select information sources according to specific evaluation criteria (e.g. CRAAP, etc.) • Apply reference management tools to keep track of sources • Understand copyright and fair use, including Creative Commons licenses, to prevent copyright infringement • Apply duplicate content detection tools (e.g. Turnitin and iThenticate) to prevent plagiarism 	<p>How do you publish and communicate to share your research effectively?</p> <p>Learning Outcomes</p> <ul style="list-style-type: none"> • Apply the appropriate writing skills for theses, publications, conferences / research proposals, grant funding applications, etc. • Understand the publication process (such as manuscript submission, selection and editorial review) in order to get your research published • Find suitable journals / publications to publish your research • Communicate your research to engage the public 	<p>How do you commercialize your ideas / scientific discoveries / inventions to achieve the intended benefits to the society?</p> <p>Learning Outcomes You will learn about:</p> <ul style="list-style-type: none"> • Patents • Intellectual Property (IP) • Product design • Entrepreneurship 	<p>How do you measure the impact and enhance the visibility of your research?</p> <p>Learning Outcomes</p> <ul style="list-style-type: none"> • Understand the importance of author identifiers (such as ORCID iD, ResearcherID, Google Scholar Citations author profile, etc.) and apply best practices for building your research profile • Understand the importance of depositing your research into the Institutional Repository – ScholarBank@NUS and other repositories to enhance the discoverability and impact of your research output • Apply tools / methods (such as citation databases and altmetrics) to measure your research impact and societal influences



Scholarly Communication @ NUS Libraries

Research Impact Assessment

Workshops on citation metrics, altmetrics, SciVal, journal metrics, etc

Support for **NUS Elements**, e.g. Advise on publication types & metrics, citation data sources, advocate adoption of author identifiers (ORCID, Scopus author identifiers, ResearcherID)

Consultations on publication metrics for P&T and grant-writing, department benchmarking

Exploring using Python to create automated reports

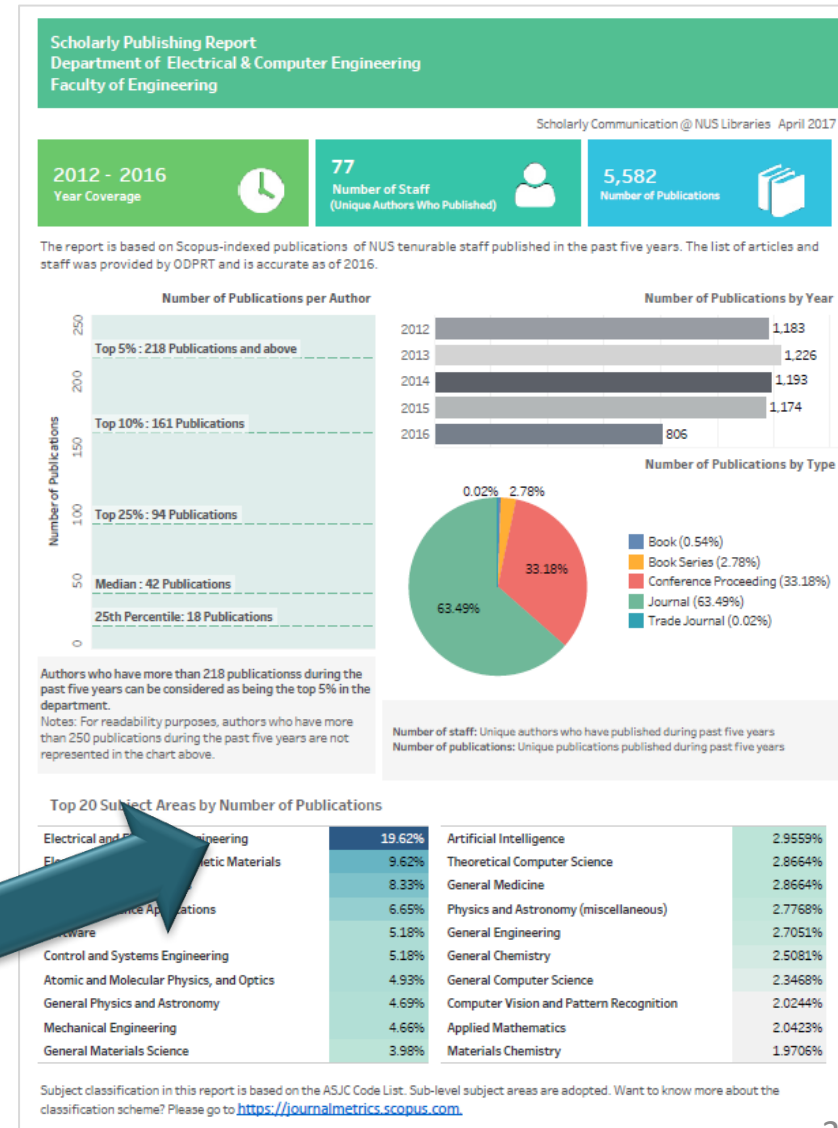
Publishing Advisory

Outreach & Education on scholarly communication issues, e.g. open access publishing; peer review; author rights & basic copyright matters; compliance with funding OA mandates; awareness of predatory publishers

Talks/Workshops on getting published; enhancing research visibility

Advisory, e.g. on locating journals for publication

Department Scholarly Publishing Reports (A snapshot of the department's research publications in the last 5 yrs)



Scholarly Communication @ NUS Libraries

NUS Institutional Repository

2010
Launched
ScholarBank@NUS

2012
Added patents filed
by NUS researchers

2014
Activated self-archival
by researchers

2011
Added Recordings
from Conservatory
of Music

2013
Enriched with
Scopus data

2017
Achieved 10
Millionth
full-text views

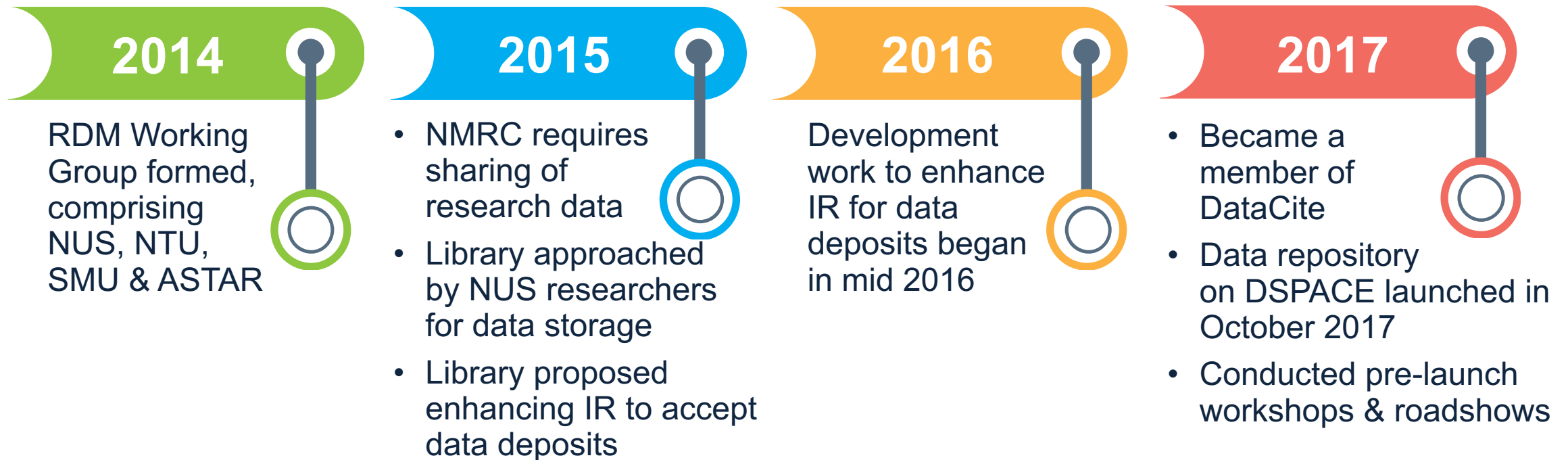


Scholarly Communication @ NUS Libraries

Research Data Management (RDM) Services

Stakeholders in NUS:

- Office of the Deputy President (Research & Technology)
- School/Faculty Research Offices & Academic Departments
- NUS Libraries



Integration with NUS Elements - Full-text Deposit

Dynamic adjustment of lexical processing in the lexical decision task: Cross-trial sequence effects


Summary

NUS users (1)

History (0)

Data sources (2)

Links (1)

 Balota DA, Aschenbrenner AJ, [Yap MJ](#)

Quarterly Journal of Experimental Psychology 1-10 27 Oct 2016 [doi>](#)

Reporting date: 27 Oct 2016 [Edit](#)

Journal Rankings

Quarterly Journal of Experimental Psychology

SNIP 

0.887

SJR 

1.159

ERA2010

A

Impact Factor

-

Citations

Scopus

0

WoS

?

Europe PMC

?

Altmetrics

1

Journal article 



Digital Scholarship @ NUS Libraries

TO BE AN INNOVATIVE & **TRUSTED** PARTNER FOR DIGITAL SCHOLARSHIP (DS) IN NUS

Our Scope

[1] Build a robust infrastructure **[2]** Analytics for special collections **[3]** Facilitate use of digital methods **[4]** Facilitate interdisciplinary research **[5]** Collaborative research projects **[6]** Recruit/develop to be partners in DS

Guiding Principles

The right core staff: Interest, attitude, aptitude and skills.

Values matter: By using values to evolve our services, we ensure librarianship stays meaningful to our users.

Quality matters: Rigour and quality builds credibility and trust. Requires knowledge of research methods.

Momentum: Start small with projects that utilise existing skills, implement in phases, focus on champions.

Learning culture: Emphasis on staff development.

Local context: Scope services based on local ecosystem, and local demand and supply of skills and interests.

Scalability & sustainability (Vinopal & McCormick, 2013)

Local Context

[1] Funding from operational budget

[2] Few in job market with complete set of DS competencies

[3] No existing mature "Digital Humanities" community

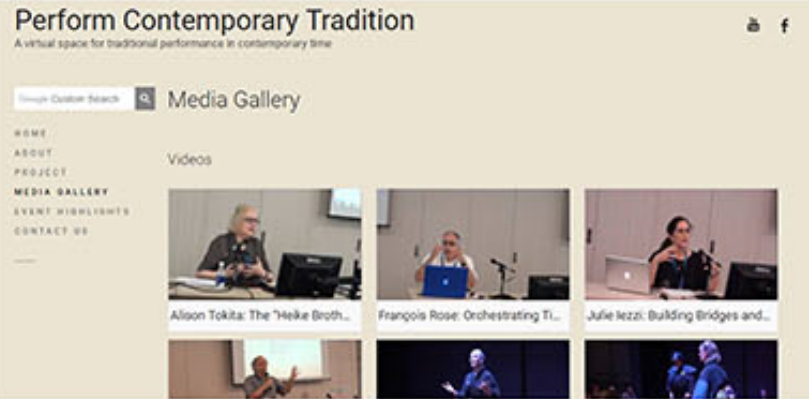
	2017	2018	2019	2020
Objective	<ul style="list-style-type: none"> Understand ecosystem via small projects 	<ul style="list-style-type: none"> To be an innovative and trusted partner for DS in NUS 		<ul style="list-style-type: none"> To be a DS hub in NUS
Build a Robust Infrastructure	<ul style="list-style-type: none"> DS Portal Collaboration space 	<ul style="list-style-type: none"> API endpoints for repositories Datarama visualization cylinder DS Lab prototyping 		<ul style="list-style-type: none"> DS Lab
Analytics for Special Collections	<ul style="list-style-type: none"> API endpoints for bibliographic metadata of special collections 	<ul style="list-style-type: none"> API endpoints for text statistics of special collections Name authority file linked data service: Organisations 	<ul style="list-style-type: none"> API endpoints for text analytics of special collections Name authority file linked data service: People 	<ul style="list-style-type: none"> Name authority file linked data service: Places
Facilitate Use of Digital Methods	<ul style="list-style-type: none"> Basic consultation 	<ul style="list-style-type: none"> Basic consultation Specialised consultation (Fellows) 		
Facilitate Interdisciplinary Research	<ul style="list-style-type: none"> Workshops & symposiums Reading group meetups 			<ul style="list-style-type: none"> Workshops & symposiums Reading group meetups DS Conference
Collaborative Research Projects	<ul style="list-style-type: none"> Grant-funded collaborative projects Collaborative projects Library-led projects 		<ul style="list-style-type: none"> Grant-funded collaborative projects Collaborative projects Library-led projects Fellowship projects 	
Recruit/Develop to be Partners in DS	1 Coordinator 0.2 Librarian 0.5 Librarian + IT support	1 Coordinator 1 DS Technologist 1 DS Librarian + IT support	1 Coordinator 1 DS Technologist 1 DS Librarian 2 Fellows + IT support	

Digital Scholarship @ NUS Libraries

COLLABORATIVE PROJECTS



blsea.nus.edu.sg The **Biodiversity Library of Southeast Asia** (BLSEA, above) is an open access digital library. BLSEA provides access to biodiversity research materials on Southeast Asia for students, educators, researchers and the general public. It is a collaborative project with the Lee Kong Chian Natural History Museum (LKCNHM), Singapore.



performct.nus.edu.sg **Perform Contemporary Tradition** (PerformCT, above) is an open-access, multi-media archive for academic and theatrical works that are related to traditional performance today. It is a collaboration with A/P Lim Beng Choo from the Dept of Japanese Studies, NUS.

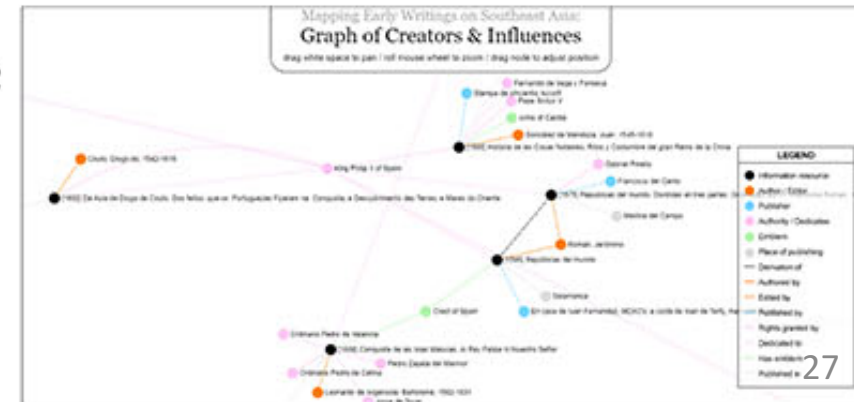


doi.org/10.25541/V5AF-1BBY **Mapping Early European Writings on Southeast Asia** is an interactive visualisation of 57 early Iberian writings on Southeast Asia from the 16th to mid-17th century, comprising of a connection map (above) and a semantic graph (below). It is a collaboration with a PhD student Cuauhtémoc Villamar from Dept of History, NUS.



China Meteorological Publications 1872-1951 (left)

As part of Ministry of Education Academic Research Fund Tier-2 project, Prof. Chen Yehning, A/P Chu Junhong and Prof. Ivan Png compiled a digital collection of daily China weather records spanning 1872-1951, from paper records in libraries and archives in the China, Japan, Taiwan and the USA. The digital collection was handed over to NUS Libraries, who created a listing and geovisualisation of the collection.



Hosting DS Events to Connect & Collaborate

Using Geographic Information Systems to Support Social Sciences Research

DATE : 29 January 2016, Friday

TIME : 2:00pm – 5:00pm

VENUE : Central Library, Theatre 1 (CLB-04-04)

You are cordially invited to a Geographic Information Science Strategic Initiative workshop, entitled "Using Geographic Information Systems to support social sciences research". This workshop is jointly organized by the Department of Geography and NUS Libraries.

This workshop aims to share the achievements of the Geographic Information Science Strategic Initiative, and the applications of Geographic Information Systems in NUS Libraries' Digital Humanities initiative.

DIGITAL HUMANITIES IN NUS LIBRARIES

PRESENTING CULTURAL SPECIFICITY IN DIGITAL COLLECTIONS



Alex Gill is the Digital Scholarship Coordinator for the Humanities and History at Columbia University.

He is vice chair of the Global Outlook: Digital Humanities Initiative focusing on minimal computing and translation, is one of the founders and directors of Columbia's Group for Experimental Methods in the Humanities and the Studio@Butler, and is actively engaged in several digital humanities projects at Columbia and around the world.

Minimal Computing and Cultural Specificity:

How is humanistic knowledge in digital environments produced in the second decade of the 21st century? Under what conditions? Who owns it? Who benefits from it? Can a "local" practice be isolated within specific geographic coordinates? I will propose some possible responses to our current dispensation based on our experiences with plain text and minimal computing investigations around the



Farah Wardani completed her MA in Art History (20th Century) from the Department of Historical & Cultural Studies, Goldsmiths College, London, UK, in 2001.

She has been active as a teacher, researcher, writer, curator and art organizer since 2001 in her home country, Indonesia. She is the co-author of a book titled 'Indonesian Women Artists: The Curtain Opens' (Indonesian Fine Arts Foundation, 2007. From 2007 until 2015 was the executive director of Indonesian Visual Art Archive (IWA) in Yogyakarta, Indonesia, with works include the IWA Digital Archive <http://archive.iwa-online.org/>, the first digital archive of contemporary art in the country. Since March 2015 she joined the National Gallery Singapore as the Assistant Director for the Gallery's Resource Centre.

Reinventing Historiography, Redefining Contexts: Creating the

Southeast Asian Art Archive: The work of the National Gallery Singapore Resource Centre is to build its facilities of reference and archival collection management, adhering to NGS curatorial and research framework, which mainly focuses on Southeast Asian modern art history. The Resource Centre is designated to function as a library and online portal fulfilling roles in research, documentation, digital archiving, public services, promoting issues of art history preservation, distributing resources and reproducing documents while working with artists, artists' estates and art institutions to preserve Southeast Asian art. Currently, NGS Resource Centre is collecting memorabilia, ephemeras, documents of Singapore and Southeast Asian pioneer artists of the 1990s contemporary. The challenge is to find something to start with.

Chair:

Asst/Prof Miguel Escobar Varela

National University of Singapore, English Language & Literature

Friday, 12 August 2016
2:30 pm - 4:30 pm

NUS Central Library
Theatre 1
(Level 4)

NUS Libraries Workshop

by the Digital Scholarship Team



You are invited to "Digital Humanities: Who's Doing What?" workshop organised by NUS Libraries. This informal session seeks to connect the digital humanities community in NUS by bringing like-minded researchers together to share their experiences on digital projects across disciplines. Aside from NUS, we have speakers from SIMU and SUTD who will also share digital humanities initiatives in their universities. After the presentations, you have the opportunity to network with the speakers and participants in this collaborative field.

Friday, 6th May 2016
2pm – 5 pm

NUS Central Library
Theatre 2, Level 4

To register, click this poster or visit
http://bit.ly/dsworkshop_6may

Workshop Outline



Associate Professor Yong Li Lan

Associate Professor in Department of English Language and Literature, FASS, NUS

"To Use One Language in Each Several Clime": the Asian Shakespeare Intercultural Archive

Asian performance cultures produce a rich diversity of interactions with Shakespeare. As performance tours grow, A|S|I|A (a-s-i-a-web.org) matches their circulation by providing audiences, teachers and scholars with ways of understanding and approaching these performances comparatively. In this talk Prof Yong will present the rationale and an overview of the parallel language interface of A|S|I|A, where videos may be watched alongside scripts in the original language and in full translations in English, Chinese, Japanese and Korean, and where users can search detailed data on the performance event, its art/forms, reception and points of reference. She will argue for the possibility of culture-specific archiving approaches and for an intercultural methodology through multilinguality in the digital humanities.

Metadata in the Digital Humanities: Who's Using What?

5th May 2017 (Friday)

2pm to 6pm

NUS Central Library Level 4, Theatre 1 (CLB 04-04)

Open to public, registration required.

[Register Here](#)

Metadata standards play an important role in the Digital Humanities and are utilized widely either in research data curation, database design or to enhance accessibility, discoverability and interoperability of information on the web. Learn more about the issues surrounding metadata in the Digital humanities and network with our invited speakers from NUS, NTU and NLB in this collaborative field!

Topics and Presenters

Using Metadata to Describe Research Data for Data Curation: Issues and Challenges

Sun Guangyuan

Wee Kim Wee School of Communication and Information
Nanyang Technological University



Ontology for Graphical Representation of Social Science Research Using a Graph Database

A/P Chris Khoo

Wee Kim Wee School of Communication and Information
Nanyang Technological University



Visual Knowledge Aggregation: Metadata Standards From Static To Dynamic Information Systems in Library Contexts

A/P Andrea Nanetti

School of Art, Design and Media
Nanyang Technological University



Library DS Collaboration Space



Strategies & Future Plans

Changing Education and Research Landscape

- Falling birthrate – lower enrolment
- Funding & delivery of Masters courses being reviewed by MOE
- MOE re-directing S\$70m to continuing education & training over next 3 years
- SkillsFuture series - bite size stackable courses – industry related modular training in data analytics, finance, entrepreneurship, cybersecurity, tech-enabled services, digital media, advance manufacturing and urban solutions
- Research Innovation Enterprise 2020 -S\$19bn over 5 years – to support initiatives for SkillsFuture and SMART Nation

NUS Libraries' Transformation Plan

As steward & repository of national & regional heritage

- Preserve, provide access & educate
- Foster common identity & establish legacies for future generations

Library of Legacies

Library of Experiences

Revitalized spaces, services & programmes

- Catalyse experiential learning, research & knowledge creation
- Visualise possibilities & make breakthroughs

See world and data anew

- Facilitate tinkering, experimentation & invention
- Conduit to turn aspirations into realities

Library of Possibilities

Library of Excellence

- Improve organisational efficiencies through excellence in administrative and technical services
- Focus on values and culture, leadership, staff development

6 Strategic Directions for 2018-2020

- Enrich & preserve content
- Improve access to quality content
- Facilitate the creation of new knowledge

Link to the full report:

https://libportal.nus.edu.sg/media/media/the_future_of_nus_libraries.pdf



6 Strategic Directions for 2018-2020

- Impart new skills to NUS students & staff
- Revitalise the environment
- Build internal capabilities

Link to the full report:

https://libportal.nus.edu.sg/media/media/the_future_of_nus_libraries.pdf

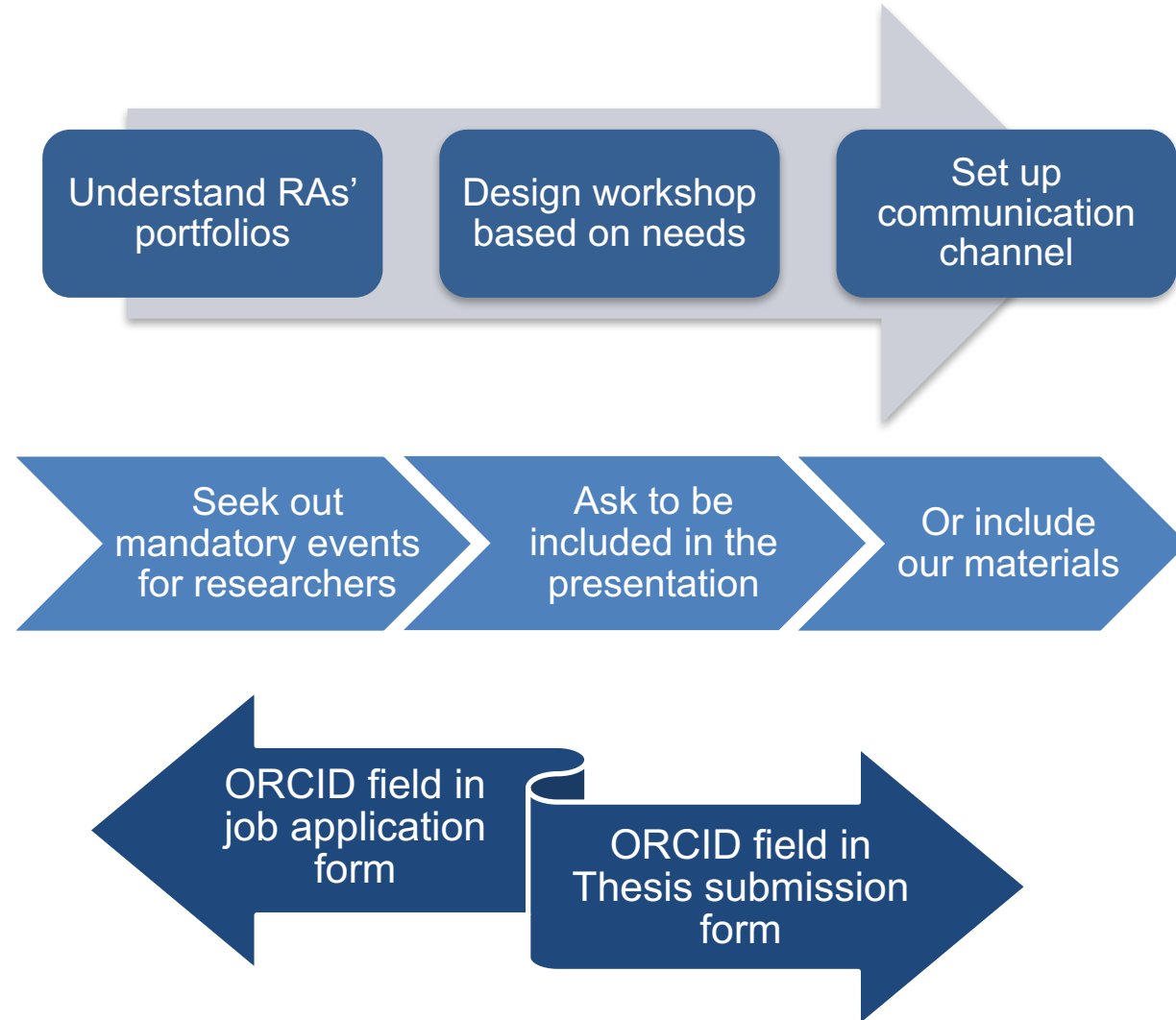
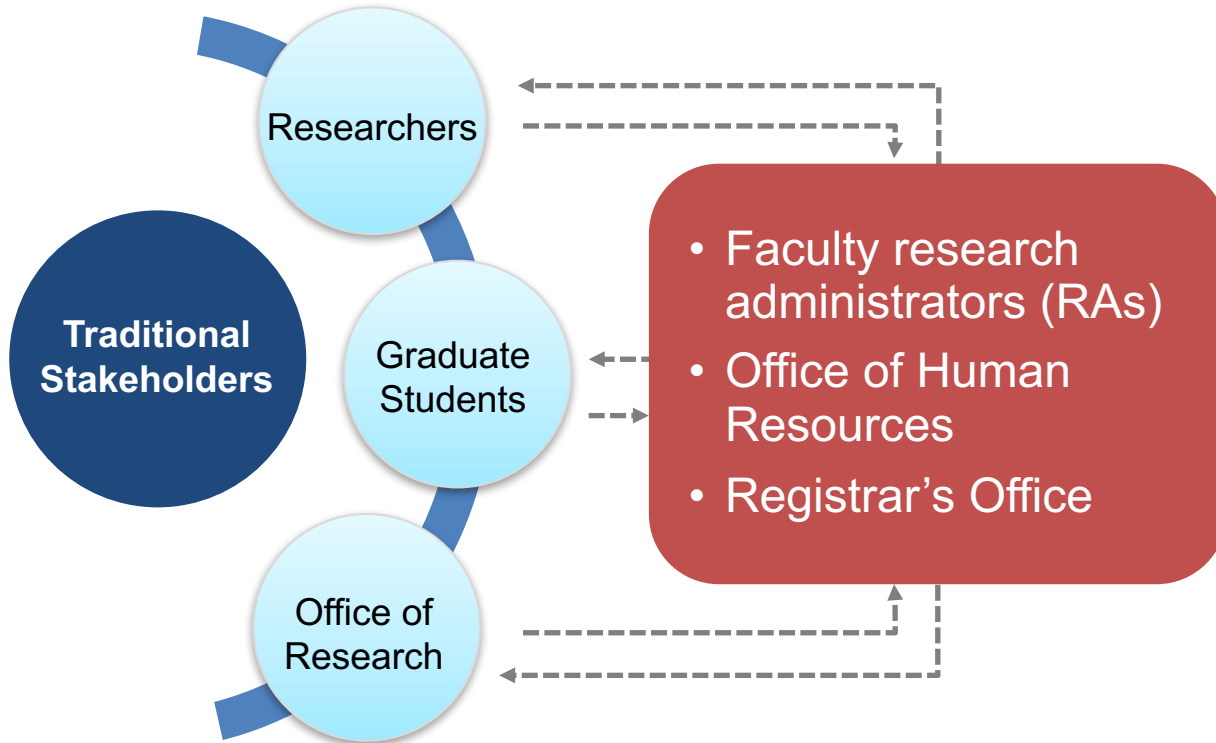


Practise Strategic Alignment & Expand Partnerships

- Align library services, programmes & resources in support of the university's strategic goals & priorities
- Identify other potential partners supporting teaching, learning & research

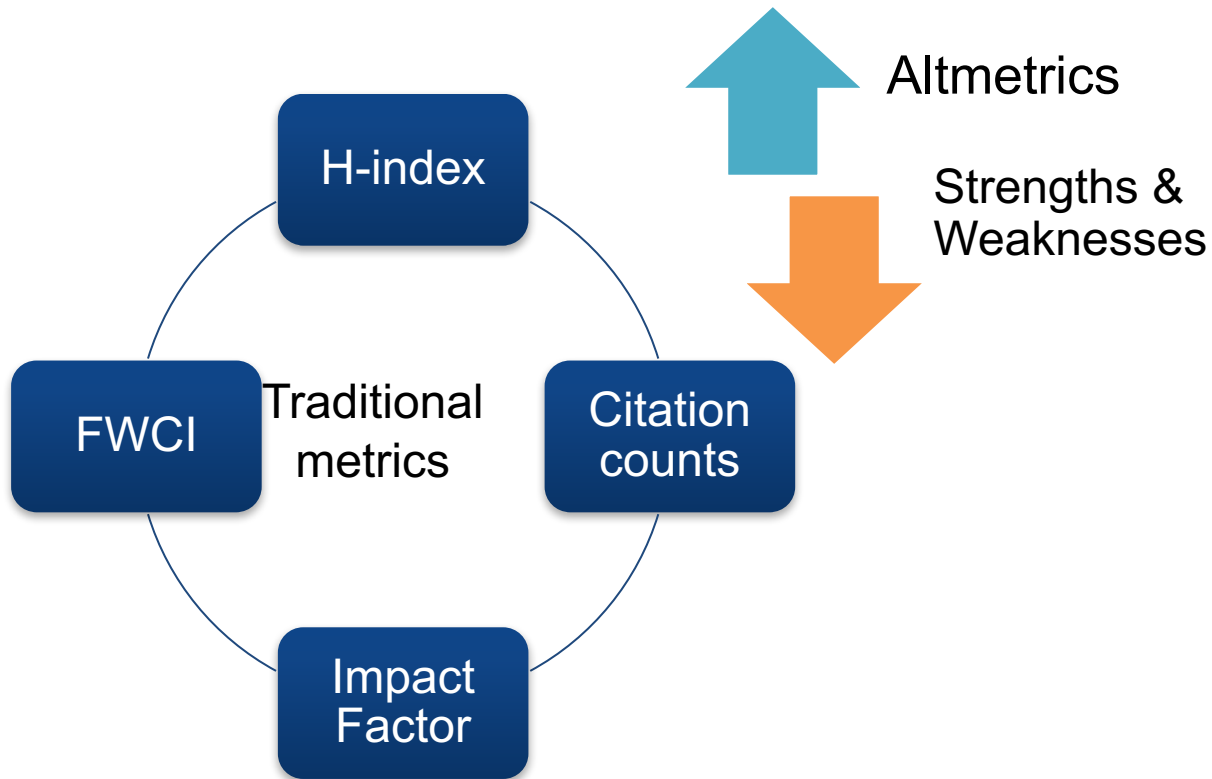


Engage New Stakeholders

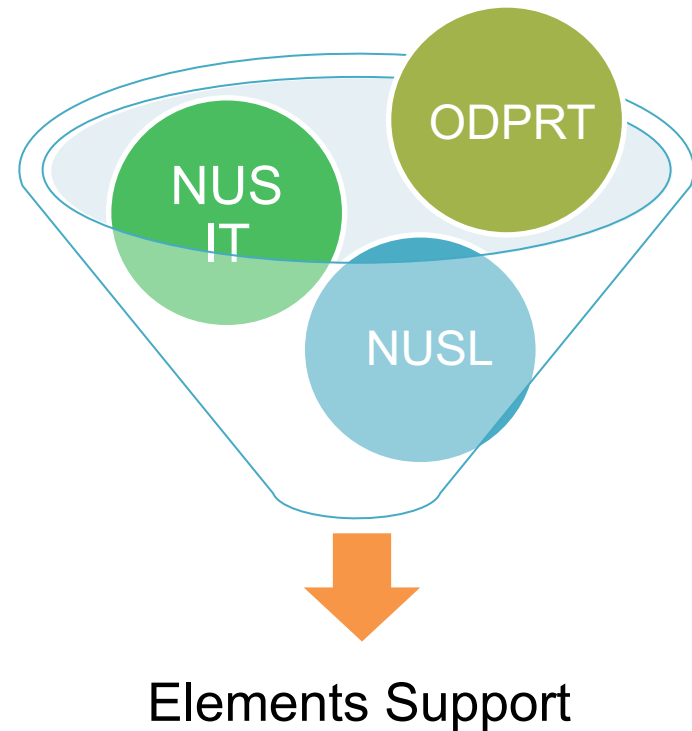


Monitor Trends & Identify New Opportunities

New measures of research impact



NUS Elements System Potential platform for promoting other library services



Scholarly Communication Initiatives

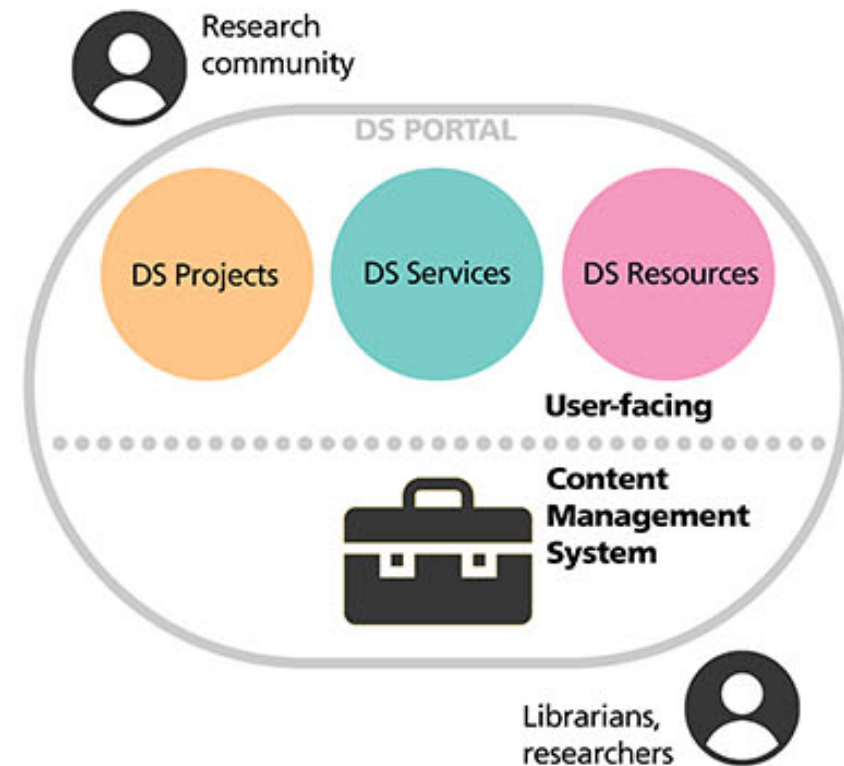
- Automate the process of retrieving metrics (e.g. order of authorship, FWCI, etc) from various data sources for an all-in-one research impact and benchmarking reports
- Scan for and utilise available APIs to improve Library services and provide new innovative services
 - Explore the use of publishers' APIs and [CORE](#) to harvest open access publications into the institutional repository (IR)
 - Explore the use of APIs for text-mining purposes to enrich digital scholarship
 - Create API to encourage harvesting/discovery of content in IR
- Provide DOI minting service for institutions in the region

Digital Scholarship Initiatives

DS PORTAL: A NEXT-GENERATION CONTENT MANAGEMENT SYSTEM

Virtual DS Hub in NUS

A hub that connects researchers involved in DS. The goal is to improve discovery of collaboration opportunities, visibility of NUS research outcomes, and facilitate access to projects, services and resources.



Empower Subject Librarians to Create Dynamic Exhibits

A "next-gen" content management system simplifies the creation of innovative digital exhibits to facilitate discovery.

Scalable data entry: Spreadsheet with following features:

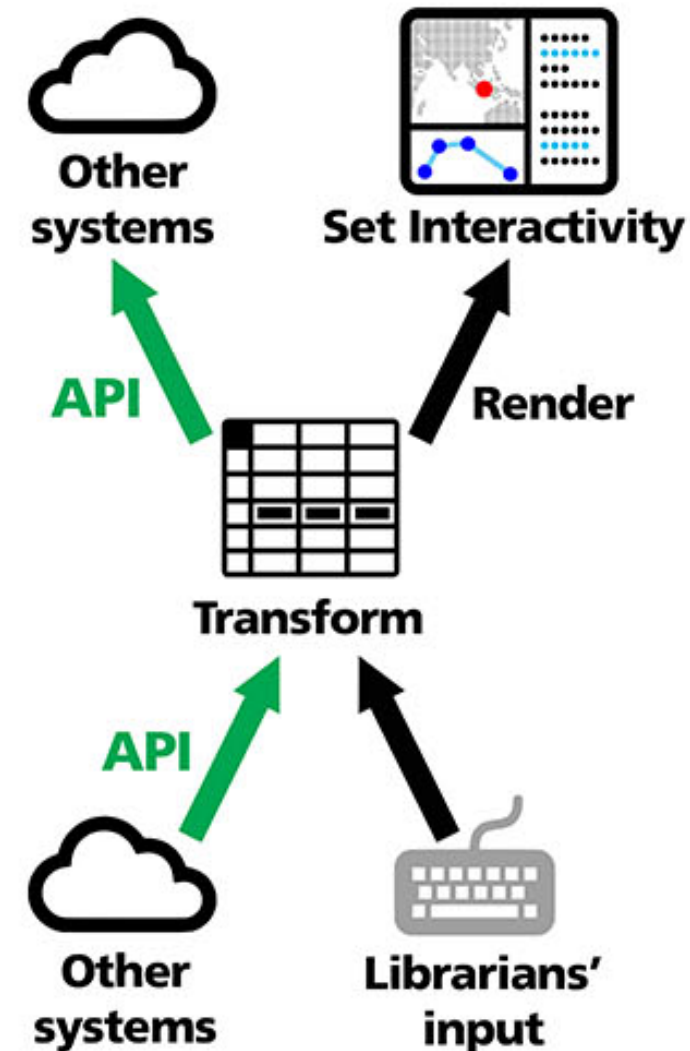
- Import tabular text data (eg. CSV) produced from various software and workflows
- Read directly from Google Sheets, enabling real-time collaborative data entry
- Parse data via API

These features help streamline data entry common in most content management systems, reducing manual work.

Transform and render: OpenRefine-like data transform tool facilitates data cleaning. Columns are then mapped to widgets and rendered. Each widget has an API endpoint.

Interactive linked views: Widgets can show different content types (eg. maps, text, photos) and allow for non-linear browsing by geography, time, subject, etc.

Easy customisation: Click and drag widgets to rearrange, edit code directly to tweak rendering behaviour.



Digital Scholarship Lab

- Interdisciplinary space with visualization facilities for NUS researchers across faculties to work together collaboratively
- Located in the library, it will be part of our suite of research infrastructural services including data management, preservation, etc.



Revitalise the environment

Redevelop library space to support technology-enabled learning & teaching

- **Datarama**

360 degree visualisation wall for showcasing interdisciplinary research works within NUS in immersive environment that combines audio-visual display & interactive contents

- **Mixed Reality Room**

Green screen room that lets users wear Virtual or Augmented reality (VR or AR) headsets to experience immersive simulation of a unique teaching environment

EXPERIENCE
MIXED REALITY@NUS



Build Internal Capabilities

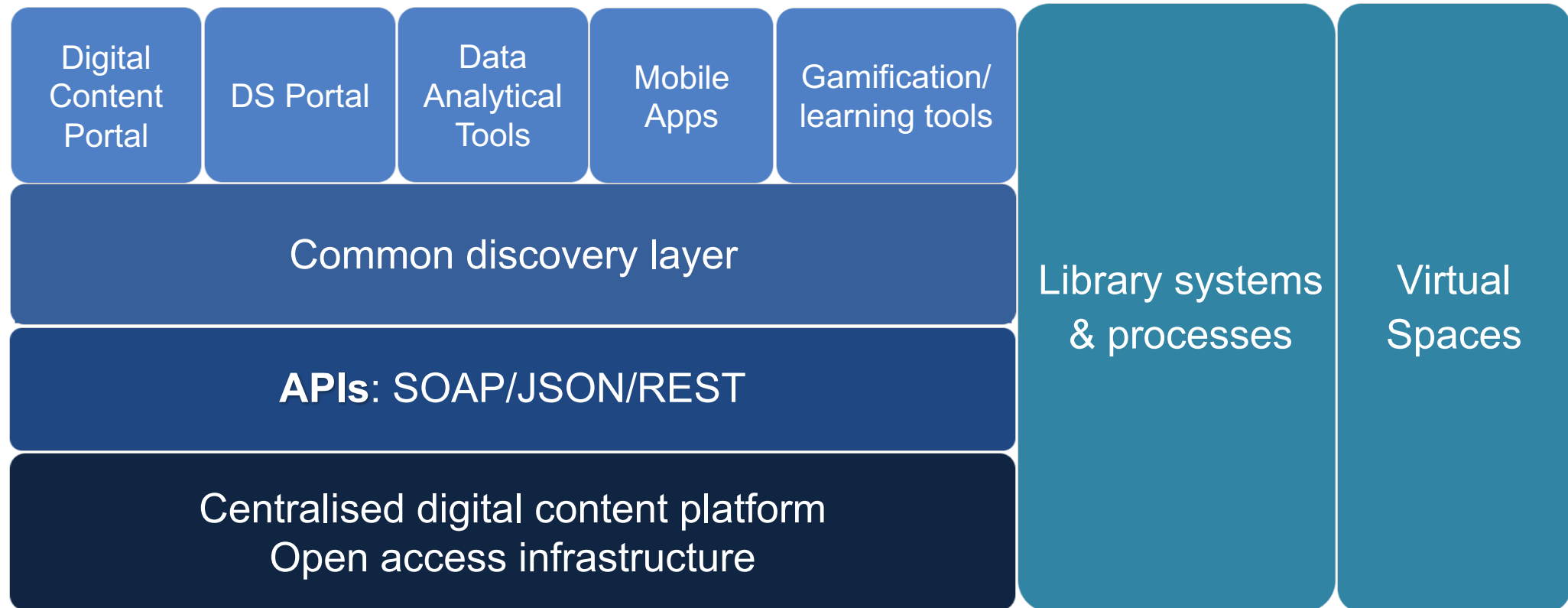
Foster a learning organisational culture through investment in staff learning and development as well as individual commitment by library staff

- Library professionals completed a Service Design Course by NUS Institute of Systems Science in 2016-2017
- Learning from within (internal cross-training) & from others (conferences, formal training programmes, summer school, study trips)
- Progressively developing the library's data analytical skills
 - Adopt data-driven approach to planning & decision-making across the libraries



IT Infrastructure

Build a unified platform to further enhance discovery



What Our Users Have Told Us Since...

LEARNING SERVICES

- Dr Asana Miho, Saw Swee Hock School of Public Health Systematic Review Workshop for research team of SSHSPH
- Thank you very much for being such great educators! It made my day to learn that they enjoy their learning process and work.

Dr Ameek Kaur, Design-Centric Program
EG2301 Case Studies in Engineering

Yesterday's session was great!
This time, since we changed our lecture notes there was not enough time to fully align the library session with our lectures but you guys did a great job.

Compliments from the faculty

Ms Amanda Lim and Mr Joshua Chia, both awarded "Best Written Submissions" at the Oxford International Intellectual Property Moot 2017

Thank you so much! We couldn't have done it without your guidance on using the library's extensive resources, and are especially grateful for the librarians' help in arranging the transfer of books from other libraries -- Amanda Lim

Most efficient and comprehensive ways of doing legal research. -- Joshua Chia

Mr Saul Sio, Manager, School of Business
CEMS Masters Program Skills Seminar

From the student feedback, I can see the students really benefitted from it. Thank you for the partnership. Let us organise similar workshops in the next semester.

LEARNING SERVICES

Compliments from the faculty

NUS National University of Singapore

Adopting a Flipped Classroom to Teach and Learn SciFinder in an Undergraduate Chemistry Laboratory Course

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INTRODUCTION
 The ability to retrieve relevant literature articles is crucial towards the training of future-ready chemistry graduates. SciFinder is a robust and powerful chemical search engine tool that fetches high relevant articles quickly. However, students struggle to learn SciFinder to obtain appropriate contents.

CURRENT METHODS
 (1) Instructing via live classroom ONLY
 (2) Teaching via recorded videos ONLY
 In the online tutorial setting, students are unable to clarify doubts after watching the online videos. In contrast, having the live tutorial provides limited time to interact with the students.

ALTERNATIVE APPROACH

Lecturer uploads SciFinder contents online before library session

Trained librarians act as teaching assistants prior to library session

Trained SciFinder library hands on training session with SciFinder expert, covering more content

Trained librarians are on the ground to facilitate learning, making sure no students were left behind

Sessions were made specially informal by allowing students to eat in the library

Students were grouped and tasked to complete a mini quiz at the end of the session

FINDINGS

Percentage of students with respective grades A, B & C (Conventional Approach)

Grade	Percentage
A	7%
B	44%
C	49%

Percentage of students with respective grades A, B & C (Flipped Approach)

Grade	Percentage
A	21%
B	77%
C	2%

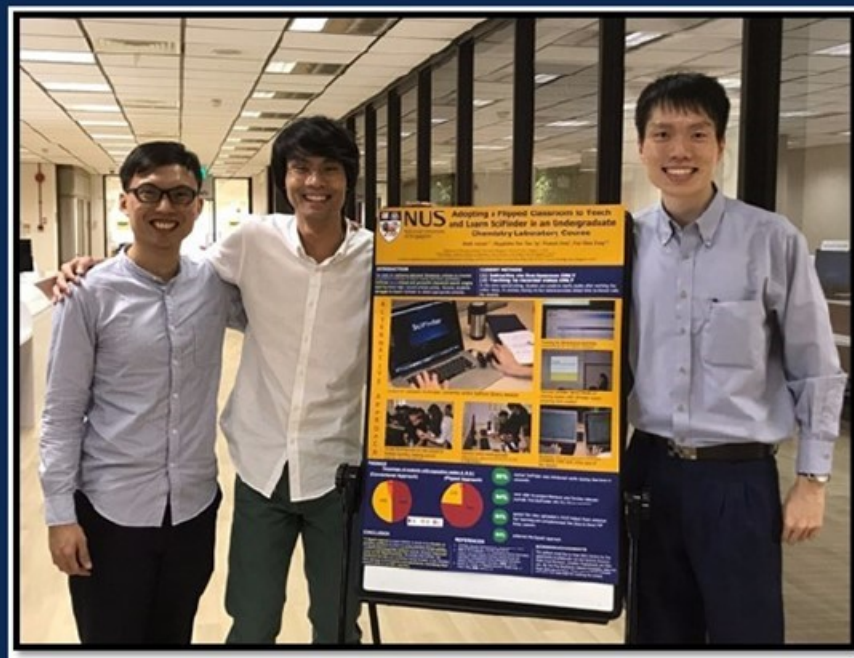
- 96% wished SciFinder was introduced earlier during their time in university
- 94% are able to conduct literature and find the relevant journals from SciFinder after the library session
- 84% agreed the video uploaded in NUSLE helped them enhance their learning and complements the (face to face) P2F library session.
- 64% preferred the flipped approach.

CONCLUSION
 The flipped approach to teach SciFinder is shown to be effective in providing students with the opportunity to learn SciFinder search. The flipped classroom method addresses students' learning by 21 students without compromising the content. Students showed an improved average grade in the flipped learning. We conclude that SciFinder was introduced for help in our curriculum. Moving forward, we will introduce these resources to the broader and implement, maintaining their research skills in scientific reporting.

REFERENCES

- SciFinder, American Chemical Society, Washington, DC, 2014.
- Hsu, K. H., & Anderson, C. S. (2016, June 2017). Integrating Online and Live Organic Chemistry Classes through the Laboratory and Simulation Series. International Journal of Chemical Education, 44(12), 2151-2152.
- Phan, N. J. (2015). A "Flipped Classroom" Study Class. J. Chem. Educ., 92(4), 5713-14.

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Mr Fung Fun Man, Chemistry Dept
 CM3291 Advanced Experiments in Organic & Inorganic
 Chemistry

Mr Fung thanked Science librarians for adopting flipped classroom to teach SciFinder by creating a poster of the ILP

Impact & Compliments

Acknowledgements

I wish to thank Jacques Prost, Jean-Francois Rupprecht and my lab for stimulating discussions and in particular S. Zhang and S. Tlili for the images used in Fig. 2; Fig. 3. I am very grateful to the National University of Singapore library service for help with the citation analysis of On Growth and Form. I thank V. Viasnoff, A. Singh, S. Tlili and C. Amourda for comments on the manuscript. This work was funded by a National Research Foundation NRF Fellowship (NRF2012NRF-NRFF001-094) and a HFSP Young Investigator award (RGY0083/2016).

“Thank you for following up on this! I am always grateful that NUS has very resourceful and dedicate librarians ... Please help to convey my upmost gratitude to everyone in your team, especially you for such a helpful and organised information!” (SSHSP - RA)

I am very very grateful to the library” for helping to get my journal reclassified ... the library is very “impactful”

We are very glad that this long standing point of contention has been resolved – and so effectively by yourself and your colleagues!! (Medicine – Asst Prof)

“Thanks. This is SUPER helpful for my promotion! Much much appreciated.” (FoE – Asst Prof)

Thank you so much for all your invaluable help and support regarding my citations and bench-marking exercise! I would not be able to complete this task without your kind help.

I truly appreciate all the hard work, kindness, guidance and patience extended to me in the course of this exercise. The final data provided by Irine (below) is extremely useful for my research folio. It has been a very useful learning experience for me and I have benefited much. (Malay Studies – Asst Prof)

Thanks Hayati for all the time and effort invested into helping me identify possible ‘homes’ for my manuscripts.

Must find opportunity to let the President know that our librarians are doing such wonderful jobs to help researchers publish their work. And this exemplifies the kind of research intensive university we claim we are 😊 (SW-HoD)

From DS Researchers

PhD Student, Engineering

Well, I am trying to generate a stream order raster based on an existing digital elevation model (DEM), stream vector, and flow direction raster. It would be great if there was someone experienced in hydrology modelling who could advice me on the best ways to get this done. Thanks for the help last week, it was really useful. I'm running the model now, so fingers crossed. I will let you know if I need any more help with GIS.



Faculty, Public Policy

Do you know of boundary map (shapefile) for China's administrative divisions at the county level? I found one on GADM, but unfortunately they did not have the commonly-used 'guobiao' identifier. As such, I can't merge my data. Thanks!

Thank you so much for your effort! This map looks better than anything I can find out there. Do of course let me know if you manage to locate a better source. Once again, thank you so much!



Faculty, Chinese Studies

Thank you for your excellent presentation of Chinese Clan Associations GIS project early tonight. All my 34 graduate students who attended the class learned a lot from your presentation. I also believe that this GIS project will them in their research and assignment for this module.

PhD Student, Chinese Studies

I deeply appreciate all the effort and time you and your team members have spent on helping me to use GIS in my research. The workstation is excellent and your sharing of related knowledge and information was clear and helpful. I will definitely approach you again once I try to start doing the map myself. As I mentioned yesterday, I have found the addresses of bookstores in 1950s/1960s recently. I might replace the 1970s' addresses with those of 1950s. So I will need to work out another excel file and design it better, as you all suggested yesterday, before I start to geocode it. Will always contact you when necessary.



Faculty, Public Policy

Good news! My paper has been accepted and hence, your work on the map has been productive. Thanks for your help. We expect the article to go online early next year – will send you a copy then.

I'll be using the Brahmaputra map you did for me for a book chapter (revision stage) and an article (which I'm applying a grant for and haven't written yet). Just to let you know so that the other maps won't go to waste and also if I need you to adjust the map later.

Adding Value in Collaborative Projects

End-to-End Support for Web Platform

With advice from and participation of the NUS Libraries' digital scholarship team and the technical support from the NUS Libraries and FASS, the website <http://performct.nus.edu.sg> (PerformCT) was created and launched in July this year.

Without the invaluable input from two members of the NUS Libraries digital scholarship team Feng Yikang and Richard Ho, together with advice from Miguel Escobar Varela from Theatre Studies and Yow Wei Chui from the NUS Libraries' Library Information Technology Services, the initial project would never have taken off. I am grateful for their input, and more importantly, this initial collaboration demonstrates clearly the great potential of interdisciplinary collaborations made possible, even essential, by the advent of Digital Humanities.

- Collaborating Faculty from Japanese Studies



Copyright advice

Thank you very much for your work on copyright issues – the information is very helpful. I look forward to further discussions regarding certain of these materials.

- Collaborating Faculty from Chinese studies

Enable Research Collaborations

<http://libportal.nus.edu.sg/frontend/ms/china-meteorological/browse>

Dear Prof Png,

Thank you for your email. I have quickly browsed the webpage. It's amazing work that your team could compile all those data from a variety of different sources. The year-month-day temperature map is very useful for demonstration.

As Prof Wang has mentioned that our goal is to reconstruct historical climate in the last 2000 years, right now we have just reached Qing dynasty 1644-1911 in the reconstruction. Some of your data can be tracked back to the late 19th century. Those data will be very valuable for calibrating our reconstructed climate in the period, e.g. temperature, precipitation, wind..etc.

This is the very initial idea across my mind. It has been great to learn other teams working on the field of climate reconstruction studies in East Asia. We look forward to more interactions with you.

DS Collaboration Space

This is fantastic workspace! I am a professor at a university in Canada; I haven't seen anything like this here - at a time when universities are reducing books; reducing library space.

My only suggestion is that there are too few such spaces yet. CL might be able to use the large corridor space (empty) to set up more collaborative stations.

acti@yahoo.com

THIS SPACE IS AWESOME!!

SO COOL. BUT WHY IN MY LAST YEAR? 🐾

Spectacular
I nnovative
M arvelous

“Crucial to a successful career in librarianship is not only keeping up with and accepting change but getting involved with and mastering it. It isn’t always easy or fun, but it is what keeps us and our libraries alive and growing.”

- John N. Berry III, Editor-at-Large, Library Journal



Thank You

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#weareNUS