

[REPORT]

IT DIVISION STRATEGIC PLAN 2018-2022

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 19 January 2017

Document Revision History

Revision	Date	Comments
1.0	February 2017	Plan for 2017-2022 approved at February 2017 Council meeting.
1.1	April 2017	Minor updates.
2.0 DRAFT	January 2018	Updated for 2018-2022.

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Executive Summary

This is Information Technology Division's strategic plan for the 4-year period from 2018 to 2022, and is an updated version of plan for 2017 to 2022.

IT Division is integral to the day-to-day business operations of the Library. This plan sets out objectives, principles and initiatives to address the need for improved and evolving IT capabilities required to achieve the Library's goals.

The IT Strategic Plan is aligned with the Library's Corporate Plan; IT asset and operational plans will be derived from or aligned this Plan. Performance against all IT plans will be assessed and reported annually to the Corporate Management Group (CMG). This Plan will be reviewed and updated annually.

Emerging Trends and Business Context

The Library exists in an environment that is characterised by rapid change in several areas. The most significant drivers influencing the IT Strategic Plan are:

Transition to digital

Australian society is in the midst of a major digital transition that fundamentally changes the ways in which collecting and memory institutions must operate. The digital deluge – the sheer volume and dynamic nature of content documenting our society, and the need to make sense of, capture, securely store and provide meaningful access to it – will be a significant challenge for the Library. To meet these challenges, the Library will need to build on its track record of delivering innovative technology-based solutions. IT Division has also shifted from a traditional IT support function to a core business and services delivery role, providing solutions for Library users as well as other libraries around the country.

Funding

The Library enters this period with a continued, long-term decline in its appropriations from Government. As a smaller government agency, the impact of this decline has been significant, with the Library curtailing and ceasing many activities. The future of the Library will depend strongly on how well it can use technology to reduce costs, automate business processes, and expand access, despite reducing appropriation. The success of initiatives supported by additional funds provided to the Library, announced through the MYEFO 2016-17 statement, are therefore critical.

Cybersecurity

The frequency and impact of information security breaches are increasing across the online world. As the Library's digital footprint expands the value of the data it holds online increases. Efforts to steal, exploit or damage that information are also likely to increase.

The Library recognises the challenges smaller agencies face in meeting ever-increasing cyber security requirements. To ensure that the Library continues to meet and exceed its security obligations, it must continue to invest in cyber security solutions to address the three major strategies of cyber security: policies, people and enforcement. Computer, network and information security is based on three pillars - confidentiality, integrity and availability – and Library systems

must have these attributes. Achieving a high level of cyber security resilience also aligns with the Australian Government's *Australia's Cyber Security Strategy 2016*.

The library and GLAM sector

Online, connected and global information systems will continue to challenge the relevance of libraries, the GLAM sector and information service providers more broadly. With funding diminishing and finite resources available there is a both a driver and an opportunity to collaborate and consolidate. The success of the Library may depend on how well it can support and leverage the shared requirements and needs of Australia's National, State and Territory libraries and the broader cultural, humanities and social science sectors.

User expectations

Users expect immediate access to and heightened engagement with library collections and services across a multitude of devices and formats. Meeting this expectation will be challenging. The Library has developed a significant and loyal user base through Trove and its digital library services. These services will need to be sustained and developed to remain relevant, useful, and meet the needs of a broader cross-section of the Australian community.

Internal stakeholder expectations and requirements

As reliance on technology increases, internal library systems used for day-to-day workflows need to be simple, reduce process friction, and leverage improved staff digital capabilities to maximise productivity.

Business and enterprise IT

Shared services, outsourcing, cloud computing and changing service models may provide opportunities to reduce risk, lower costs and focus on core strengths. However, there are challenges assessing the myriad of options and determining if, how and when to transition from our existing in-house service model that provides value and remains cost effective. IT Division will need to navigate these issues with business areas and external providers to determine a suitable path forward.

IT asset lifecycle management

Technology investments are capital intensive with hardware and software infrastructure comprising a significant portion of the Library's budget. IT assets must be managed to understand the total cost of ownership, maximise return on investment and realise business benefits.

IT asset management must incorporate effective procedures for each stage to: promote the effective use and maintenance of assets throughout lifecycles; ensure proper upgrading, replacement and disposal; and understand environmental impacts and costs.

IT Division pressure points

IT Division structure, services and capabilities need to be revised for the post-DLIR period to ensure they are aligned with Library needs, and can be delivered with reduced budgets and less staff. This means governance, operational, workforce management and service delivery arrangements must be optimised.

Objectives

IT Division's goal is to be a reliable, trusted partner supporting Library staff, business areas and the Library as a whole. Strategic IT Division goals are:

Short-term (2018)	Medium-term (2019-2020)	Long-term (2021+)
<ul style="list-style-type: none"> Revised disaster recovery and business continuity arrangements, operationalising first tranche of improved capabilities. Updated NLA online presence, with enhanced intelligence/analytics, for improved digital engagement. Complete National edeposit Network (NeD) implementation. Release web archive and AJCP systems, realising more post-DLIR benefits. Options for lighter development and project processes, start rationalising applications portfolio and moving from advanced virtualisation to private cloud capabilities. Maintain a reliable, trustworthy and secure internet presence. 	<ul style="list-style-type: none"> Improved disaster recovery and business continuity arrangements operational. Modernised Trove services in production. Simplified applications portfolio, with improved internal business systems. Flexible technology architecture, using hybrid and cloud computing infrastructure. Keep pace improving services, by making systems easier to use and cheaper to run, and continuously improving operational efficiency. 	<ul style="list-style-type: none"> Continue providing a digital library and discovery service suite that meets or exceeds those of similar institutions. Continue providing Australia's largest, richest and most widely used online resource of documentary heritage and improving the accessibility, appeal and reach of our digital services. Continue imagining (and having) new ways of working internally and delivering externally. Enabling and supporting future Library business models.

Principles

This plan will have a set of guiding principles to help IT Division better understand how to achieve its goals, informing decision making and implementation.

Partnerships	<p>Partner with business areas to build consensus and collaboratively deliver products and services that meet business and user needs.</p> <p>Collaboratively draw on all divisional capabilities when designing, implementing and supporting solutions.</p> <p>Supplement internal organisational knowledge and capability with external partners and networks.</p>
Play to our strengths	<p>Leverage the Division's core strengths to develop, operate and scale world leading and highly efficient digital library and discovery services.</p> <p>Ensure appropriate resourcing to support continued innovation, and maintain national leadership in the library space.</p>
Focus on outcomes, build on success	<p>Use agile development approaches and iterative release cycles to regularly deliver incremental, tangible outcomes.</p> <p>Focus on delivering outcomes and realising business benefits, building on progress.</p> <p>Solve actual problems – focus on the right and high impact things - if practical and possible. Not repeating errors.</p>
Re-use where possible and buy when appropriate	<p>Rather than building from scratch use tools, frameworks and software components that others can provide and minimise our coding. When business and technical requirements can be met by adapting existing software packages, preference this option so specialist in-house capabilities can be used to build the software that needs to be built.</p>
Open source software and commodity hardware	<p>Implement open source software where appropriate over enterprise and proprietary solutions.</p> <p>Purchase commodity hardware where possible.</p>
Consolidate and simplify infrastructure and systems.	<p>Minimise system duplication and the need for data synchronisation by consolidating systems, establishing authoritative data sources, and using single sign-on.</p> <p>Find the appropriate balance between the 'best of breed' and 'one system to rule them all' patterns.</p> <p>Avoid over-customising purchased software solutions.</p> <p>Consolidate infrastructure by virtualising servers and storage arrays.</p>
Cloud first options	<p>Analyse cloud-based services before developing new applications or major application redevelopments.</p>
Open data	<p>Continue our commitment to making data we create, public domain content we digitise or collect digitally, available to the public.</p>

<h2 style="text-align: center;">Key Themes</h2> <p style="text-align: center;">Initiatives to achieve our objectives and adhere to these principles</p>		
 <p>Foundational Strategies</p> <p>that support how we operate as a technology group</p>	 <p>Library Roadmap</p> <p>that support how we apply our capabilities to achieve Library goals</p>	 <p>Innovation</p> <p>that support how we can explore and harness technology to do things differently and to be involved in completely new things</p>

 <h2 style="text-align: center;">Foundational Strategies</h2> <p style="text-align: center;">Initiatives that support how we operate as a technology group are based on improving: IT governance; execution of programs and projects; operating efficiency; and the capabilities of our systems and workforce.</p>	
Initiatives	Activities and Corporate Plan Priorities
<p>Improve IT Governance</p> <p>IT Division will continue revising and improving IT governance, with a focus on integrating IT and organisational strategy, and by making sound IT investment and resource allocation decisions. This is to ensure all IT Division activities support Library goals by improving rigour, and consider both quantitative and qualitative critical success factors, when making investment decisions.</p> <p>The division will continue to build and grow relationships with business areas to ensure the organisational context and goals are understood.</p>	<ul style="list-style-type: none"> ● Review/refine project proposal framework for aligning corporate priorities with IT investments. ● Review/refine integration of IT governance with divisional planning and management processes. ● Maintain the capacity to respond to strategic reprioritisation or resourcing opportunities. ● Maintain an up-to-date IT Security framework that reduces cyber security risks.

<p>Improve execution of programs and projects</p>	<p>IT Division will successfully carry out its change and innovation agenda through effective management of individual projects, larger programs and ongoing work across the Division, building on processes that have proven their effectiveness in the Library context.</p> <p>The division will develop an adaptable and scalable structure to support the successful execution of projects and programs in an environment of ambiguity and uncertainty.</p> <p>The division will establish cross-business and disciplinary teams to ensure business needs are understood, delivering value and meeting expectations.</p>	<ul style="list-style-type: none"> ● Review/refine centralised project and program management functions. ● Continue building the maturity of the Technical Advisory Group and the use of the multidisciplinary teams. ● Continue building maturity of the User Experience (UX) Group. ● Continue embedding business and domain experts within project and program teams.
<p>Improve operating efficiency</p>	<p>IT Division will improve the efficiency of its business-as-usual operations by reviewing operational management arrangements. The division will develop a division-wide, all-systems and whole-of-lifecycle planning and management approach.</p> <p>The division will then look to optimise service delivery and monitor the availability of alternate service provisioning models.</p> <p>The division will develop metrics and benchmarks and track progress to assess and improve performance.</p>	<ul style="list-style-type: none"> ● Develop new IT operating models, including consideration of cloud and outsourced services, for the continued delivery of robust, scalable and innovative online services (Corporate Plan Priority). ● Review/refine the IT Division structure. ● Rationalise and standardise technologies used, reducing the number of technology and supported platforms in use. ● Ensure the Division contributes actively to the Library's environmental strategies.
<p>Improve Capabilities</p>	<p>IT Division will ensure its workforce, technical, and infrastructural capabilities meet current requirements while evolving and adapting to meet future needs.</p> <p>The division will develop an understanding of the knowledge, skills and attributes of its human resources, identify skills gaps and strategies to address deficiencies, and build expertise with nascent technologies.</p> <p>The division will establish and maintain a technology roadmap. This will ensure we can build capabilities with emerging technologies as they become available, using cheaper and better tools, and finding new ways of doing things.</p>	<ul style="list-style-type: none"> ● Develop an applications and infrastructure roadmap to effectively integrate cloud-based products with the Library's digital ecosystem (Corporate Plan Priority). ● Review and improve business continuity, disaster recovery and cybersecurity capabilities (Corporate Plan Priority). ● Conduct an analysis to identify current skills and capabilities within the IT Division; perform a gap analysis against projected needs; develop strategies to address shortfalls or surpluses; and maximise the utility of the existing workforce.



Library Roadmap

The Library's Corporate Plan 2017-18, covering 2017-18 to 2020-21 financial years, has three overarching strategic priorities; build the nation's memory; make access happen; and lead, partner, connect and excel. To support the Corporate Plan, IT Division has a number of initiatives to achieve these aspirations through the application of technology.

Initiative		Supports Corporate Plan Priorities and Focus Activities
Trove modernisation program	Modernise Trove delivery and discovery and services. [Improved text welcome]	Make Access Happen: Implement projects supported through the Public Service Modernisation Fund.
National edeposit Network	Implement national infrastructure and systems for NSLA partners supporting new legal deposit provisions for electronic material.	Lead, Partner, Connect and Excel: With National and State Libraries Australasia, enhance shared digital library infrastructure, especially to facilitate a national approach to edeposit and collaborative archiving of Australian websites.
Digital Engagement	Enhance user engagement with the Library's online services by implementing: a new NLA website, better aggregated search, digital engagement features and business intelligence/analytics to ensure the Library is responsive to the needs and expectations of our users. [Improved text welcome]	Make Access Happen: Implement projects supported through the Public Service Modernisation Fund.
Web archiving	Deploy an updated suite of web archiving systems that provides improved capability to perform selective, themed and bulk web harvesting using contemporary web archiving technology. Deploy enhanced of web archive discovery in Trove to incorporate the Australian Government and Australian Domain harvests.	Build the Nation's Memory: Leverage the Library's new digital library platform to efficiently build, manage and preserve Australia's digital documentary heritage; and ensure collecting and collection management workflows are continually improved. Lead, Partner, Connect and Excel: With National and State Libraries Australasia, enhance shared digital library infrastructure, especially to facilitate a national approach to edeposit and collaborative archiving of Australian websites

AJCP project	Provide online access to the content of the 10k+ microfilm reels holding records relating to Australia and New Zealand from 1560 to 1984.	Build the Nation's Memory: Leverage the Library's new digital library platform to efficiently build, manage and preserve Australia's digital documentary heritage; and ensure collecting and collection management workflows are continually improved. Make Access Happen: Implement projects supported through the Public Service Modernisation Fund.
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Innovation

The Library has a tradition of delivering new and inventive services and innovation is a theme throughout our Corporate Plan. Our most successful services have been built on new ideas and spawned out of experimentation - and developed, operated and delivered by a modest resource base.

Innovation will become increasingly important, as reflected in the Australian Government's innovation and digital agendas, which will continue to encourage the Library to review service delivery, drive efficiencies, collaborate in new ways and demonstrate value and impact. In a period of rapid change, our ability to adapt to meet expectations, will determine our success or failure.

To build on tradition and ingenuity, IT Division has a number of initiatives to identify, test and apply technology – existing or emerging – for the benefit of the Library and its patrons.

Initiative		Corporate Plan Technology Capability Domain
User engagement, crowdsourcing and disintermediation	<p>Explore options for increased user curation, crowdsourcing and disintermediation, such as the use of transcription tools and geocoding.</p> <p>Optimise the mobile web experience integration with social media services and the use of video to improve our audience reach. Continue to explore native mobile apps to bring rich experiences to our audience.</p> <p>Investigate the feasibility of apps on emerging platforms such as Apple TV, Google Chromecast and other relevant ubiquitous computing platforms.</p>	<ul style="list-style-type: none"> Digital Engagement Access
Big Data Analytics and Open Data	<p>Subject to funding from the research sector, provide researchers access to capabilities and tools for analysing and data mining our datasets to generate new knowledge.</p> <p>Provide open access to the Library's datasets, subject to resourcing and legal constraints.</p>	<ul style="list-style-type: none"> Infrastructure Access
Machine Learning and Natural Language Processing	<p>When redeveloping applications for the cloud, explore access to higher level capabilities that may be available including:</p> <ul style="list-style-type: none"> The potential of machine learning to enhance discovery for our large digital collections. For example, the use of image recognition software to automatically organise and caption photographs. The potential of natural language processing, allowing users to speak and listen to our systems, to enhance access to 	<ul style="list-style-type: none"> Access Automation

	<p>our content and to help the disabled and visually impaired.</p> <ul style="list-style-type: none"> Automatic zoning of newspaper articles, leveraging significant human-based structure analysis data, using machine learning. Entity recognition and extraction. 	
Process Automation	<p>Exploring solutions to improve efficiencies and explore new approaches to eliminate all unnecessary processes, and to automate all repetitive collection management workflows.</p> <p>Explore the use of digital assistants to field reference enquiries.</p> <p>Algorithmic subject allocation and catalogue record creation.</p> <p>Explore solutions for handwriting recognition, so that our manuscripts collections are text-searchable, and to improve OCR quality generally without the need for manual text correction.</p>	<ul style="list-style-type: none"> Infrastructure Automation

IT Division Schedule of Initiatives

	Initiative	2018	2019	2020	2021	Nature of work
Foundational Strategies	Improve IT governance					BAU
	Improve execution of programs and projects					BAU
	Improve operating efficiency					BAU + Project (M)
	Improve capabilities					BAU + Project (L)
Library Roadmap	Trove modernisation program					Projects (L)
	National edeposit Network					Project (L)
	Digital engagement					Project (M)
	Web archiving					Project (M)
	AJCP					Project (M)
Innovation	User engagement, crowdsourcing and disintermediation (exploration)					Project (S)
	Big Data analytics and Open Data exploration (exploration)					Project (S)
	Machine Learning and Natural Language Processing (exploration)					Project (S)
	Automation exploration (exploration)					Project (S)

Indicative size of projects, please refer to operational and program/project plans for additional details:
Small Project >\$5k and <\$100k, **Medium Project** >\$100k and <\$500k, **Large Project** >\$500k

Funded	Investment Required
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