National Research Infrastructure Investments in Humanities, Arts and Social Sciences

Discussion Paper

June 2019

Investment in HASS research infrastructure

Humanities and Social Sciences (HASS) is a potential area for national research infrastructure investment

World-class national research infrastructure helps to increase the impact of Australian research and make it more internationally competitive. It helps researchers to conduct high quality and rigorous research, increases collaboration, improves efficiency and helps to unlock innovative research methodologies.

The Australian Government has a long history of investing in this type of infrastructure, alongside other partners including universities. Traditionally, these investments have usually been made in the `hard' and medical sciences fields, with investment in HASS mostly limited to galleries, libraries and museums.

Advocates for national investment in HASS research infrastructure have been successful in establishing the sector as a potential area for investment. Accordingly, the Investment Plan / Roadmap identified HASS as an important area for which research infrastructure support should be considered.

The established process for scoping investments has been designed for investments in hard science (e.g. enabling synthetic biology). There is a strong argument that the established process may not be suitable for HASS. In particular, the scale (dollar value) of proposals in HASS is likely to be very different to other more capital intensive fields.

The next step in this process is to determine a process to scope potential investments in HASS, with input from the Australian HASS research community.

HASS has distinctive characteristics. The established process for scoping investments may need refinements

Relative to other areas, HASS is broad, complicated and relatively new to the investment process.

HASS is complex:
- It's **big**: 43% of academic staff are in HASS disciplines.[1]
- It's **broad**: Includes everything from linguistics to criminology to anthropology to literature and sociology.

HASS also has some distinctive challenges and characteristics:
- It's **rarely considered an area for innovation**: There is a perception that the hard sciences are the source of innovation and progress.
- It has **rarely seen large-scale research infrastructure investment**: There is a perception that Australia's HASS sector is behind other jurisdictions in research infrastructure.
- It has **capability issues**: There is a perception that the sector will need to invest in human capability to fully unlock the benefits of infrastructure.
- It has **complicated custodianship**: The majority of HASS collections are held by government and national institutions, whereas most researchers are in universities.

While Government investments need to consider relative priorities across the whole research sector, and HASS (like all disciplines) will need to work within established frameworks to demonstrate the value of any investment, the Department acknowledges the need to consider the best process for scoping HASS investment proposals.

Because of this complexity and the challenges, and the lack of clarity about the best possible process, the Department commissioned dandolopartners – a management consulting firm – to support the development of an appropriate process for scoping HASS investment proposals.

[1] Mapping the Humanities, Arts and Social Sciences in Australia 2014

dandolopartners

A discussion with the HASS community about investment in research infrastructure

On behalf of the Department, dandolopartners led a process to hear the sector's views

The HASS community wants sound investment decisions made about research infrastructure, because this enables competitive, quality research for Australia's largest group of researchers, which in turn leads to better outcomes across the broader community.

The best way to ensure investments reflect what is really needed for world-class research in HASS is for the sector to help inform and shape the Government's decisions on investments in research infrastructure.

dandolopartners developed a proposed framework that aimed to maximise the opportunities for investment in HASS research infrastructure and assist HASS organisations needing to pursue ambitious national infrastructure projects, by proposing a way to identify, describe and assess investments.

This thinking was tested through consultation with the Department and sixteen highly regarded and influential stakeholders from the HASS community. These included:
- the academies of humanities and social sciences
- key executive and research staff from leading Australian universities, and
- key executive staff from national HASS institutions.

The rest of this document describes these frameworks, which have been revised in accordance with the feedback of HASS stakeholders. It provides:
- a definition for national research infrastructure in HASS
- a framework for describing proposals and their benefits
- a set of hurdle and evaluative criteria to support assessment of benefits, and
- a range of examples to demonstrate the type of proposals that could be funded.

The release of this discussion paper isn't the end of the conversation.

Much progress has been made over the past few months, and there is an opportunity to keep moving the work forward.

In [MONTH], 2019 the Department will commence a scoping study that will look in far more detail at the possibility of national research infrastructure in HASS. This scoping study will:
- Department to provide bullet points on intended aims of scoping study.
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After conclusion of the scoping study, in line with the consistent views of the sector it is possible that any funding committed for national research infrastructure investment in HASS might be allocated through a supported application process. This will allow high-quality proposals to be supported through the application process, and for the process to be tested.

The draft next steps in the process will be along the following lines:
- Release of this dandolopartners paper
- Hold a series of discussions and roundtable events, to test a proposed application process.
- Development of an application process and form
- Call for EOIs
- Shortlisting of a small number of highly prospective, high impact proposals
- A supported process to further develop applications
- Submission of developed applications

[these are early ideas about next steps – for Departmental determination]
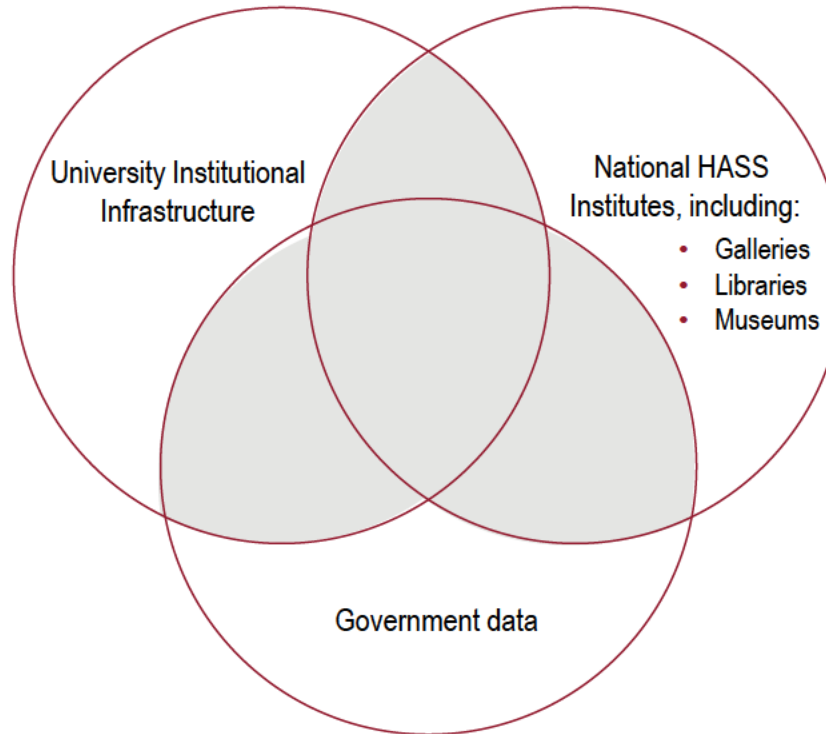
Identifying NRI investments in HASS

Investments must meet the definition of NRI in HASS.

HASS disciplines cover the study of human behaviour and interaction in social, cultural, environmental, economic and political contexts — both historically and now.

As a result, HASS as a whole spans a broad range of subjects. Previous mapping exercises have identified the following fields of education as HASS disciplines:[1]

- Built Environment and Design
- Education
- Economics
- Commerce
- Management, Tourism and Services
- Studies in Human Society
- Law and Legal Studies
- Indigenous Research.
- Studies in Creative Arts and Writing
- Language, Communication and Culture
- History and Archaeology
- Philosophy and Religious Studies

Figure 1: potential areas for NRI investment

University Institutional Infrastructure

National HASS Institutes, including:
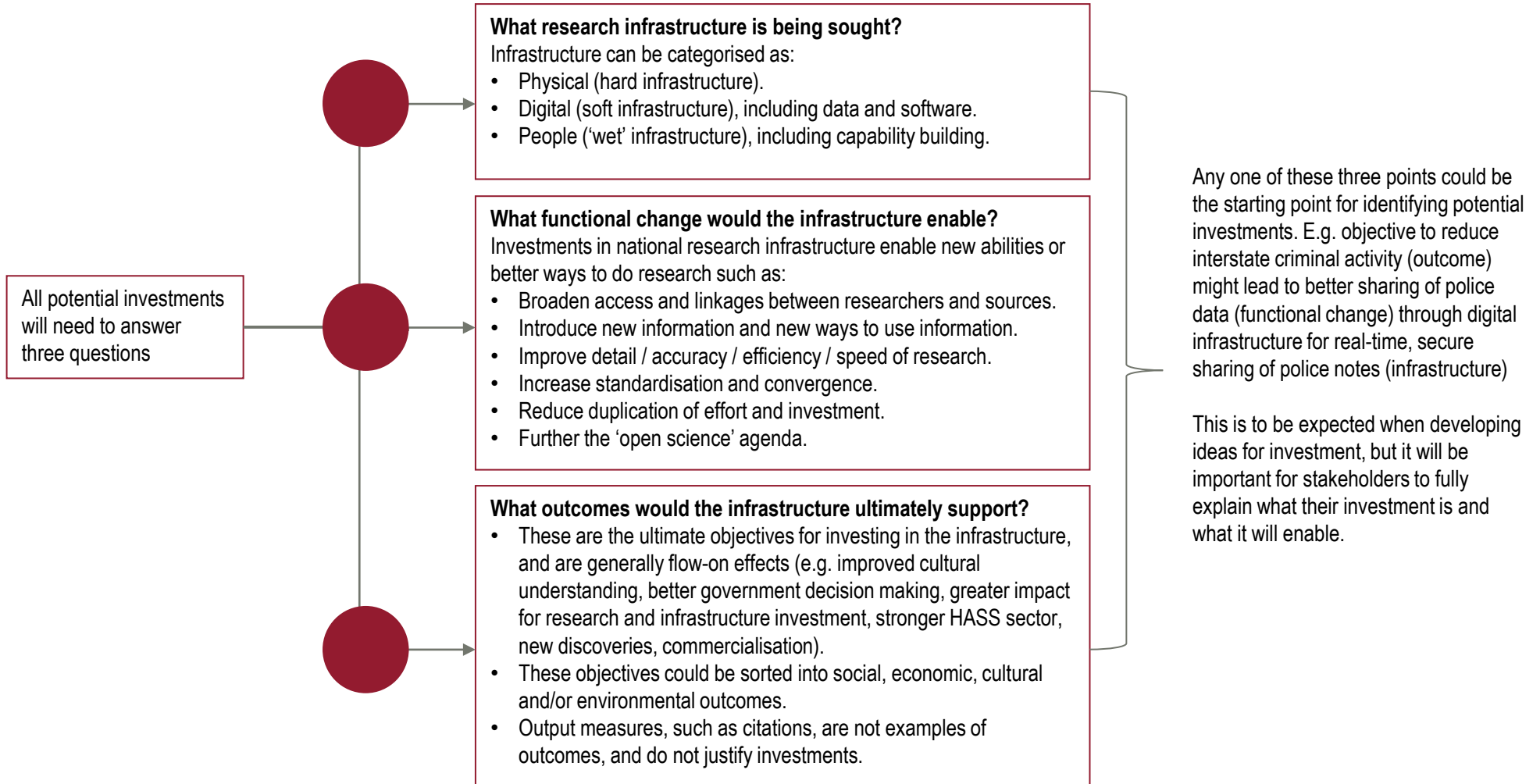- Galleries
- Libraries
- Museums

Government data

All shaded areas are eligible to be considered for NRI investment

- National research infrastructure is defined as nationally significant assets, facilities and services to support leading-edge research and innovation. It is accessible and of sufficient benefit and priority to a wide group of publicly and privately funded users across Australia, and internationally.

- This does not include institutional infrastructure or specific research projects.

- Future iterations of the National Research Infrastructure Roadmap may revisit and refine the definition of NRI, but the current definition is a parameter for this work.

- Being identified as national research infrastructure doesn't automatically result in funding, or additional funding for existing facilities.

- Investments can be made by Government through various programs / initiatives, and not necessarily NCRIS.

Source: [1] Mapping the Humanities, Arts and Social Sciences in Australia 2014

Describing investments

Decision makers need to understand the nature of investments, what constitutes them and what benefits are likely to result. HASS stakeholders helped to define this.

What research infrastructure is being sought?
Infrastructure can be categorised as:
- Physical (hard infrastructure).
- Digital (soft infrastructure), including data and software.
- People ('wet' infrastructure), including capability building.

What functional change would the infrastructure enable?
Investments in national research infrastructure enable new abilities or better ways to do research such as:
- Broaden access and linkages between researchers and sources.
- Introduce new information and new ways to use information.
- Improve detail / accuracy / efficiency / speed of research.
- Increase standardisation and convergence.
- Reduce duplication of effort and investment.
- Further the 'open science' agenda.

What outcomes would the infrastructure ultimately support?
- These are the ultimate objectives for investing in the infrastructure, and are generally flow-on effects (e.g. improved cultural understanding, better government decision making, greater impact for research and infrastructure investment, stronger HASS sector, new discoveries, commercialisation).
- These objectives could be sorted into social, economic, cultural and/or environmental outcomes.
- Output measures, such as citations, are not examples of outcomes, and do not justify investments.

All potential investments will need to answer three questions

Any one of these three points could be the starting point for identifying potential investments. E.g. objective to reduce interstate criminal activity (outcome) might lead to better sharing of police data (functional change) through digital infrastructure for real-time, secure sharing of police notes (infrastructure)

This is to be expected when developing ideas for investment, but it will be important for stakeholders to fully explain what their investment is and what it will enable.

Framework to assess investments

There needs to be a consistent, comparable approach for determining the value of NRI investments. HASS stakeholders helped to refine an explanation of criteria for HASS related investments.

There are different types of criteria that can be applied to investments:

1: Hurdle criteria Base requirements that all NRI investments will need to meet	2: Evaluative criteria Criteria that identified what is considered valuable to help prioritise investments

1: Hurdle criteria

- Objectives of the infrastructure are clear and of national scale, with a clear cost and plan for implementation and ongoing management.

- The investment does not duplicate other existing infrastructure and there is a market failure* in establishing the infrastructure.

- Wide and national need for infrastructure demonstrated across users, institutions and disciplines.

- Co-investment from a range of partners – including the lead agent – involving cash and/or in-kind contributions

- Collaborations have been identified and are viable for the infrastructure, including a stakeholder engagement plan (including industry, users, institutions, government, relevant communities)

- The infrastructure provides open merit-based access to infrastructure and research output or data against FAIR principles, noting any appropriate security and access control.

2: Evaluative criteria

- **Of national and research significance** – including impact on Australia's global positioning in research supported, whether there is a unique Australian need, address national interest needs (i.e. in key government priorities), (likely) impact on university rankings and research impact ratings and/or a link to national research priorities. A high level of international significance is of value also.

- **Return on investment** – including level of access use generation, level of merit based access, access and use by Commonwealth agencies, whole of life costs, level of co-investment from applicant and other partners, and potential revenue streams and returns on investment.

- **Impact** – including size of public benefit provided or enabled and level of innovation in research achieved or enabled.

- **Governance / risk** – including management, implementation, risk and asset management, decommissioning/transition plans

Notes on process
- A staged process is anticipated, to reduce burden on applicants and to provide support available where required. Greater government support may be needed for development of some proposals (e.g. facilitated applications, scoping studies).
- Investments will be made for a fixed period
- Consistent with commitments to regular Roadmaps and Investment Plans, all infrastructure investments by Government will be periodically re-assessed for future funding priority, including against alternative investment opportunities

* Market failure in this case covers benefits being too distant or too dispersed to incentivise any single institution to invest or step in.

Examples

This table demonstrates how the frameworks would be used to filter and prioritise investments

(1) Could be this…	(2) But not this…	Why
• A time capsule of social continuity for research investigation	• Storage of "orphaned" datasets	• (2) Data storage is responsibility of custodian unless national need and of high-volume / use
• Australian standards for HASS metadata	• Data management and cleaning of individual datasets	• (2) Storage and cleaning is generally the responsibility of data custodian / owner
• A federated research cloud service providing Australia's research community with computing infrastructure and software.[1] Researchers can store, access, and run data, remotely, rapidly and autonomously	• An intranet for a group of universities • Training in accessing and manipulating data	• Access is open to all researchers in (1) and supports innovations in research as opposed to (2) where benefits of investment are only for a small group or an institutions own responsibility • (1) training is focussed on how to use the tools and resources, not general research skills
• 20 institutions across Australia seeking to digitise assets at risk and in high demand through share equipment, other outputs very open	• NGV (National Gallery of Victoria) wants funding to digitise its records	• (2) is outside of definition — it is institutional infrastructure not national research infrastructure
• Support indigenous research through functionality to link government data with indigenous research surveys, supported by specialist tools	• Collection of longitudinal population data	• (2) is a research survey whereas (1) is open tools to bring together data

Other supporting documentation to guide the scoping study and any investment proposals appear in appendix 1:
- Collated list of national and international examples of HASS infrastructure, existing and prospective
- 7 case studies to demonstrate the application of the framework in this document (note these are to demonstrate the application of the framework and are not sample applications. Applications would require significantly more detail, quantification, and examples).

[1] This example is based on the Nectar Research Cloud. See https://ardc.edu.au/services/nectar-research-cloud/

1.1 A list of existing and prospective Australian HASS infrastructure

Status	Name	Description
Existing initiatives	1. Trove *	Trove is a digital platform which provides online access to over 22 million aggregated documentary resources, from more than 1300 Australian institutions, including libraries, government departments, museums, and cultural and historical societies. Through the National Library of Australia, it has digitised millions of records and grants the Australian public free access to a wide range of information. Source: https://trove.nla.gov.au.
	2. PARADISEC *	The Pacific and Regional Archive for Digital Sources in Endangered Cultures is a digital archive of records of some of the many small cultures and languages of the world, with the primary goal to safely preserve material that would otherwise be destroyed. It is a consortium of three universities (University of Sydney, University of Melbourne and Australian National University), and uses external data storage facility the Research Data Storage Infrastructure. It established a framework for accessing, cataloguing and digitising audio, text and visual material, and preserving digital copies. It ensures that the archive provides access to interested communities and conforms to international standards for digital archiving. It has spread from Asia / Pacific to languages across the globe, with 1000 languages in the collection. Source: http://www.paradisec.org.au.
	3. AustLit	AustLit is a research infrastructure used to disseminate the results of research in literature, theatre, film and television, Indigenous cultures, publishing, media history and Australian literature education. It provides access to data, information and curated content that develops understandings of Australian culture and communities, both past and present. They currently have to purchase and maintain their own server in order to achieve the storage speed necessary to deliver 24/7 service, so future government investment could look to improving the means by which other organisations can harness strong and efficient data storage (like NeCTAR). It is part of the Australian National Corpus (AusNC). Source: https://www.austlit.edu.au.
	4. Victorian Child and Adolescent Monitoring (VCAMs)*	A government initiative that tracks and measures children and young people's health, wellbeing, safety, learning and development outcomes as identified in the VCAMS outcomes Framework. It synthesises this data on under 18-year-old outcomes and releases the data onto a portal page in stages. The portal provides interactive dashboards of data at state and LGA level. The portal allows users to view and customise data to identify emerging issues, and to compare and monitor the progress of children, young people and their families. Users are able to view and explore data visualisations about children and young people. Source: https://www.education.vic.gov.au/about/research/pages/vcams.aspx?Redirect=1.
	5. Australian Research Data Commons (ARDC) *	ARDC is a transformational initiative that enables the Australian research community and industry to access nationally significant, leading edge, data intensive infrastructure platforms that similarly build skills and capabilities. IT facilitates the effective use of services to maximise research quality and impact through a coherent research environment that enables researchers to find, access and contribute to documents. It is supported by the Australian Government and NCRIS. Source: https://ardc.edu.au.

	6. Australian National Corpus	AusNC is a discovery service that collates and provides access to assorted examples of Australian English text, transcriptions, audio and audio-visual material. It provides access to multiple different corpora, including AustLit. It is used for both academic research and teaching purposes. Source: https://www.ausnc.org.au.
	7. Australian Dictionary of Biography (ADB)	ADB is an Australian dictionary of national biography. It contains concise, information descriptions of the lives of over 12,000 significant and representative persons in Australian history, from prime ministers and premiers to bishops, artists, authors, teachers, and thieves. It is based at ANU, and the information is available both online and as a hardcopy publication. Source: http://adb.anu.edu.au.
	8. AusStage	AusStage provides an accessible online resource for researching live performance in Australia. Development is led by a consortium of universities, government agencies, industry organisations and collecting institutions with funding from the Australian Research Council and other sources. It is committed to collecting and sharing information about Australian live performance as an ongoing, open-access and collaborative endeavour. It has contributions from artists, spectators, producers, agents, students, teachers, researchers, librarians, archivists and the public. Researchers and students use AusStage to develop new knowledge about live performance in Australia and to assess the contribution that live events make to the nation's cultural vitality and international image. Source: https://www.ausstage.edu.au/pages/learn/about/project-history.html.
	9. Global Policing Database	GPD is a web-based and searchable database designed to capture all published and unpublished experimental and quasi-experimental evaluations of policing interventions conducted since 1950. It was developed at University of Queensland. Source: http://www.gpd.uq.edu.au/search.php
	10. Time Layered Cultural Map (upcoming)	The TLC map is an upcoming infrastructure, funded by the ARC, to support a time-layered cultural map of Australia. It is an online research platform to deliver researcher driven national-scale infrastructure for the humanities, focused on mapping, time series and data integration. It enables researchers to visualise hidden geographic and historical patterns and trends, and to build online resources which present to a wider public the rich layers of cultural data in Australian locations. It links geo-spatial maps of Australian cultural and historical information and will give new perspectives to the public, with online and printed resources. Source: https://www.arc.gov.au/news-publications/media/research-highlights/australian-cultural-and-historical-data-be-linked-new-research-infrastructure.
	11. QUT Digital Observatory	The QUT Digital Observatory provides state-of-the-art infrastructure for tracking, collecting, and analysing digital media data. IT manages large sets of continuous and dynamic digital data to enable innovative digital media and society research, across multiple fields. The infrastructure allows on-demand data gathering for Twitter and Facebook, an access to analytical software collections. Source: https://www.qut.edu.au/institute-for-future-environments/facilities/digital-observatory.
	12. Discovering Anzacs	An online database of the Australian and the New Zealand Government records, in associated with the National Archives of Australia and the Archives of New Zealand, of WW1 and the Boer War. It enables users to enhance an e-profile dedicated to the

		wartime journey of someone who served. It also enables users to access personal stories about the service of men and women through original archive records. Source: https://discoveringanzacs.naa.gov.au.
	13. Collaborative Embodied Movement Design Network	The Collaborative Embodied Movement Design Network was established by Monash University, but has since been terminated. It aimed to provide ground-breaking infrastructure to enable the collaboration between leading digital arts, intelligent systems and human computer interaction (HCI) centres across Australia, thereby enabling and scaling new research into the creative potential of movement-based human computer interaction systems, with benefits in many fields. Source: https://research.monash.edu/en/projects/collaborative-embodied-movement-design-network.
	14. Humanities Networked Infrastructure (HuNI)	Funded by Deakin University and NeCTAR, HuNi combines data from many Australian cultural websites into the biggest humanities and creative arts database ever assembled in Australia. HuNI data covers all disciplines and brings together information about the people, works, events, organisations and places that make up the country's rich cultural landscape. One example of HuNi infrastructure is Design and Art Australia Online, a collaborative e-Research tool built upon the foundation of the Dictionary of Australian Artists Online. It is an open source, and freely accessibly. It presents biographical data on Australian artists, designers, craftspeople and curators. Source: https://huni.net.au/#/search.
	15. Analysis and Policy Observatory (APO)	An online knowledge hub that makes public policy research visible, discoverable and usable. Collects and curates high-quality content, with a database of over 40,000 resources, including specialist collections, grey literature reports, articles and data. It was established in 2002 at Swinburne University of Technology and is a not-for-profit collaborative knowledge infrastructure and web platform that works with institutions across Australia, New Zealand and beyond. Source: https://apo.org.au.
	16. Aboriginal History Archive	Funded through the Australian Research Council, the extended archive gives access to primary source material collected and donated by individuals and community-controlled organisations around Australia. Scholars, policymakers and communities can use the new archive to deliver a better-informed evidence base, for understanding the contemporary history of Australia. The archive is also a valuable resource for students of History and many other areas of academic study. It contains a large amount of unique primary source material not available or easily accessible elsewhere. Source: https://www.arc.gov.au/news-publications/publications/making-difference-outcomes-arc-supported-research-2016-17/funding-research-infrastructure-equipment-and-facilities/aboriginal-history-archive.
	17. AURIN*	The Australian Urban Research Infrastructure Network is an initiative of the Australian Government under the National Collaborative Research Infrastructure Strategy (NCRIS) and associated programmes. It is a collaborative network of leading researchers and data providers across the academic, government, and commercial sectors; a one-stop online Workbench with access to thousands of multi-disciplinary datasets, from hundreds of data sources and analytical tools covering spatial and statistical modelling, planning and visualisation.

		It aims to provide researchers with access to diverse sources of data, the ability to integrate data across disciplines and interrogate that data to answer their research questions.
		Source: https://aurin.org.au/about-aurin/the-aurin-journey/
	18. Queensland Places + Victorian Places	The Victorian and Queensland Places websites both provide access to research and writing data sets that provide a historical and current assessment of all settlements in Victoria and Queensland and help provide context and insights into the growth of regional and metropolitan cities, and associated issues of this. The website combines original research with newly digitised historical sources and unique images to give a comprehensive view of each place and its history.
		Source: https://www.victorianplaces.com.au/about; https://queenslandplaces.com.au/places.
Prospective initiatives	1. Atlas of Cultural Australia	The Tasmanian Museum and Art Gallery suggests the extension of the ALA (Atlas of Living Australia- a collaborative national project that aggregates biodiversity data from multiple sources and makes it freely available and usable online), to more specifically provide access to large cultural datasets to help regions remember and develop their cultural history. In the Tasmanian context, the museum points to the potential of linking historical photos, newspapers, architectural plans, sound recordings, convict recordings, to enable the identification of convicts in photographs. Or providing access to early colonial art from Tasmanian artists, or artefacts retrieved from fieldwork in Tasmania, that are distributed across the country (like John Glovers painting or materials kept in universities). Source: submission to the 2016 National Research Infrastructure Roadmap Capability Issues Paper.
	2. Australian Academy of the Humanities	The Academy did not put forward a specific proposal but responded to the Capability Issue Paper in support of the need to increase the Understanding Cultures and Communities capability. Investment into HASS research infrastructure needs to be cross disciplinary and collaborative. Source: submission to the 2016 National Research Infrastructure Roadmap Capability Issues Paper.
	3. GLAM Peak	Museums Galleries Australia has proposed the creation of an integrated infrastructure that expands Australia's digital access to collections from galleries, libraries, archives and museums. It has already received investment to complete a supply-side development of a national framework and case-study toolkit. It needs user-side investment, to allow people to easily find, interrogate, compare and use the digital data to create knowledge. Source: submission to the 2016 National Research Infrastructure Roadmap Capability Issues Paper.
	4. Data Analytics Hub	The Department of Social Services (DSS) has proposed the creation of the DAH, to remove the barriers faced by policy makers and researchers trying to access nationally secured data. It would piggy back off existing infrastructure, like the Secure Unified Research Environment (SURE), to streamline data sharing processes and help unify a standardised approach to data sharing, to benefit Australian research and policy making. Source: submission to the 2016 National Research Infrastructure Roadmap Capability Issues Paper.
	5. HASS lab	Prospective only – does not exist in this form. Source: Arising from discussion with and developed by dandolo.

1.2 A list of existing and prospective international HASS infrastructure

Country	Name	Description
Europe	1. DARIAH* 2. CLARIN* 3. CLARIAH*	There are a number of digital research infrastructures that are funded by the European Commission and connected in the European Research Infrastructure Consortium). They all promote the development of research methods in the arts and humanities, by: ▪ Documenting the state of the arts ▪ Supporting the preservation and curation of research data with a focus on particular challenges including diversity, provenance, multimedia collections and granularity ▪ Acting as a coordinator and integrator for a diverse community of practices. Their names change based on the country of the infrastructure. Source: https://www.dariah.eu/activities/projects-list/; https://www.clarin.eu; https://www.clariah.nl/en/about.
	4. CESSDA	CESSDA provides large-scale, integrated and sustainable data services to the social sciences. It brings together social science data archives across Europe, with the aim of promoting the results of social science research and supporting national and international research and cooperation. It provides access to a data catalogue (containing metadata of all CESSDA service providers in a one-stop shop), a data management expert guide (to help European experts make their research data findable, accessible, interoperable and reusable) and a training website (with a collection of resources and events for learning about the management, preservation and distribution of research data). Source: https://www.cessda.eu.
	5. Survey of Health, Ageing and Retirement in Europe (SHARE)	The Survey of Health, Ageing and Retirement in Europe (SHARE) is a multidisciplinary and cross-national panel database of micro data on health, socio-economic status and social and family networks of about 140,000 individuals aged 50 or older (around 380,000 interviews). It covers 27 EU countries and Israel and is an ERIC. SHARE responds to a Communication by the European Commission calling to "examine the possibility of establishing, in co-operation with Member States, a European Longitudinal Ageing Survey". Access to the data collected and generated in the SHARE projects is provided free of charge for scientific use globally, subject to the EU and national data protection laws. Source: http://www.share-project.org/home0.html.
	6. Europeana Collections*	Europeana Collections aims to transform the world with culture by making it easier for people to use and access Europe's rich heritage whether for work, for learning or entertainment. Europeana Collections was established in 2009. It acted as the replacement to the European Digital Library Network, aimed to be a

		cross-border, cross-domain, user-centred research service. The project will be expanded to Europeana Pro (in beta round). It provides access to over 50 million digitised items – books, music, artworks and more – with sophisticated search and filter tools to help you find what you're looking for, from over 3000 different institutions. It groups collections thematically (e.g. by art, fashion, music, photography or historic event), with each collection containing extended galleries, blogs, articles and exhibitions that aim to inform users and to inspire future research. Source: https://www.europeana.eu/portal/en
	7. OSF.io	The Open Science Framework is a cloud-based management program / scholarly common to connect the entire research cycle. It allows users to structure projects (keeping all files, data and protocols in one centralised location), allows researchers to control parts of a project that is open to public or private. Labs and teams across the globe use OSF to open their projects up to the scientific community. OSF is a free, open source service of the Centre for Open Science. Source: http://osf.io/
	8. AGATE	Elaboration of a Concept for a European Academics Internet Gateway for the Social Sciences and Humanities. Established by the Union of the German Academies of Sciences and Humanities, in close collaboration with ALLEA, the federation of All European Academies. It is bringing together participants from the 'European science academies, infrastructure projects in the fields of digital humanities and social sciences, and related infrastructures, such as DARIAH, CLARIAH(NL)/CLARIN, Europeana, OpenAire, and the German Council for Scientific Information Infrastructures' to conduct a feasibility study for the project. Source: AGATE social science research.
US	9. Smithsonian Institution Digitisation Program Office	The DPO supports discovery through digitization. Founded in 2009 as a division of the Smithsonian's Office of the Chief Information Officer, DPO partners with others to increase the quantity, quality, and impact of digitized Smithsonian collections. It offers access to more than 155 million objects and specimens, volumes, and archives, distributed across 19 museums, nine research centres, a zoo, and numerous storage facilities Example: The Cooper Hewitt Museum, where the whole collection of 200,000 objects was digitised in less than a year. Source: https://dpo.si.edu.
NZ	10. Online Cenotaph: Auckland War Memorial	Online Cenotaph is our digital social space where enthusiasts, families, and researchers can share and contribute to the records of those who served for Aotearoa New Zealand. 1/3rd of the collection was digitised over the last four years. Source: http://www.aucklandmuseum.com/war-memorial/online-cenotaph
	11. Unnamed NZ police Force Initiative	The NZ Police force are implementing an innovative online mobile platform for frontline police staff to rapidly access information about key aspects of their work. It's built on a concept developed by paramedics in NZ and comprises checklist-type information, together with a range of material about 'how to' deal with various issues and some emerging ideas around 'what works'. Source: interview conducted by dandolopartners.

*Identified as meeting the criteria for investment.

1.3 List of underdeveloped ideas (from stakeholder engagement) not captured in local and international infrastructure [section 1.1-1.2]

- A one stop shop portal for government data, such as the ABS has done. Huge ethical issues associated with this, but they can be overcome.

- Computational linguistics – the use of data and digital methods.

- Performing arts infrastructure (e.g. recreating Shakespeare's stage time virtually)

- Development and analysis of social media analytics and datasets.

- More linkages between social sciences longitudinal studies – eg, linking medical databases with other databases.

- Replicating ancient sites virtually, for later consumption by students and researchers using VR.

Case Studies for HASS

Applying our proposed HASS research infrastructure investment criteria to existing Australian / European infrastructure as well as a prospective ideas for future infrastructure

May 2019

dandolopartners

Contents

	Local	**International**
Existing	Case study 1: PARADISEC Case study 2: Trove Case study 3: Time-Layered Cultural Map (upcoming)	Case study 4: DARIAH Case study 5: Europeana Collections
Prospective	Case study 6: National Ethics Approval Portal Case study 7: HASS Lab	

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Case study 1: existing Australian HASS research infrastructure

PARADISEC

Project overview

The primary objective of PARADISEC, to preserve endangered cultures through the digitisation of historic cultural language sources, solidifies its value and national need in Australia where many cultures are at the highest risk of being lost.

Objectives

- PARADISEC aims to establish a framework for accessioning, cataloguing and digitising audio, text and visual material, and preserving digital copies.
- A primary goal is to safely preserve endangered cultural materials that would otherwise be lost, especially ethnographic field tapes from the 1950s and 1960s that examine these cultures in their prime- before colonisation.

Problem being addressed

Many of the languages currently spoken in Australia and the Pacific Islands are at risk of being lost forever if they are not documented correctly.

It is hard to assess the accuracy and value of existing sources of information available on the internet.

Researchers are discouraged from contributing their findings due to need to safeguard their work for publication.

There is a fear of duplication of documents interfering with the program's usability.

Descendants of the represented cultures cannot access the materials.

Solution proposed

Allows for the digitising and preservation of audio, text and visual materials necessary to interpret at risk languages.

Materials are verified before they are deposited online. Further, the software requires researchers to complete a deposit form that validates their profession (as either linguists, ethnographers, ethnomusicologists and other researchers) to permit them to digitally deposit material.

Depositors can specify conditions on the access and use of their data. Moreover, some primary records are only accessible to registered users.

The software requires all materials to be itemised and notifies depositors of similar name titles- rejecting duplicated files.

Distributes copies of recordings across the world, i.e. to the Vanuatu Cultural Centre, the University of New Caledonia, the Institute of Papua New Guinea Studies.

Description

- The Pacific And Regional Archive for Digital Sources in Endangered Cultures (PARADISEC) was first established in 2003, when researchers began to recognise that many fieldwork recordings in Australia were not being cared for properly. It is now a digital archive of records of some of the many small cultures and languages of the world. The online archive contains 500 collections representing over 1,200 languages, including Indonesian, Malay, Indigenous Australian languages from across the country.
- It is a consortium of three universities (University of Sydney, University of Melbourne and Australian National University), and uses external data storage facility infrastructure- the Research Data Storage Infrastructure.

Response to criteria

The benefits of PARADISEC have expanded beyond Australia, meeting the HASS investment criteria through the implementation of fully functional and multi-disciplinary infrastructure that propels HASS research both nationally and internationally.

Criteria	Response
Objectives are clear and a wide need can be demonstrated across institutions and / or across disciplines	• There are clear objectives of the project to create a Pacific and regional archive of all relevant and at risk documents attached to endangered languages and cultures in these regions. Moreover, there is clear room for the project to expand beyond these original regions. The benefits of the project spread across different disciplines and institutions, with linguistic, cultural, historic, geographic and social implications.
Scale • Number of investments	• The Nabu management system was funded by the Australian Research Council Linkage Infrastructure Equipment and Facilities scheme .**[Provide number of investments, quantity]** • They were also initially sponsored by the University of Sydney, the University of Melbourne, the Australian National University, the University of New England and Grangenet.
Size and nature of public benefit • National / international significance and / or innovation. • Enables innovation in research outcomes	• The project is of national and international significance. It recognises that Australia lies in a region of great linguistic and cultural diversity, with over 2000 of the world's 6000 languages spoken in Australia and the Pacific Islands- with this figure likely to drop to a few hundred in the next century. It thereby seeks to make unique and irreplaceable audio visual recordings of these languages and cultural expressions. This is integral to the HASS sector- to ensure the languages and cultures can persist into the future. • Moreover, the project is not at risk of duplication. There are no other existing projects / initiatives that share the PARADISEC objective, target or successful scale of reach.
Need for (continued) national investment • Why there is a gap • Who is active in this space • Existing / potential collaboration	• PARADISEC is constantly looking to extend its funding opportunities. It operates on a project basis, and this cannot fund tape digitisation, nor the necessary negotiation and travel to ensure that collections are located, transported and digitised. Therefore, much of the available materials are not being stored. If funded to **XXX** PARADISEC could expand from **YYY** records to **ZZZ**, covering **AAA** additional languages and cultural practices. Based on support of $XXX, records would be expected to increase by YYY and usage by ZZZ more users/ projects.

Meets other requirements
    • Access
    • Co-investment
	• It ensures that the archive provides access to all interested communities whose cultures are projected through the platform. Further, it conforms to international standards for digital archiving.
	• The 'PARADISEC Catalog' can be accessed by anyone. Some fast unrestricted are available via the OLAC or the LINGUIST LIST gateway, otherwise it requires users to first register before use.
	• PARADISEC relies on various kinds of grants, however, where it is not possible to apply for a grant they require applicants wanting assistance in their research to include allowances for this purpose. They also except donations from philanthropic organisation and the general public.

Project implementation and impact

The project has enabled access to researchers, to the public and within this, to the descendants of its represented cultures. It enables collaborative documentation of languages and has a direct positive impact in preserving and diffusing cultural resources.

PARADISEC has implemented new and effective research infrastructure

- The 'PARADISEC catalog' has 500 collections representing over 1,200 languages.
- It implemented a media management system called Nabu in 2012- Nabu is a South Efate word for 'road' as a connector of various locations.

The investment has had functional change

- Nabu provides a catalogue of items, metadata for these items, and information about the workflow status of the items.
- The 'catalog' allows researchers (and any interested) the ability to filter their search by the content language, country and top 100 collectors (researchers who have deposited material to the catalog).
  - Filter by the 409 available collections or the 18,149 available items
  - Moreover, users can use a map function to locate the region of an item before listening to it.
- Provides additional information on materials (primary texts, lexical resources, language descriptions, and other resources about each material).
- Access is restricted to registered users of the catalog. However, some items – like the digitised fieldnotes of Arthur Capell, Stephen A Wurm and Calvin Roesler- are publicly available through the PARADISEC website.

PARADISEC has had positive outcomes

- The infrastructure has enabled the publication of 10 academic articles and 4 books.
- The infrastructure has spread from Asia / Pacific to languages across the globe, reaching Northern America, Asia and central Africa.
- This has simultaneously allowed for it to extend from solely capturing cultural data from endangered communities to harnessing this data for intersectional analyses (economic, social, political and most of all environmental).
- Beyond digitisation, the organisation is now involved in training and supporting language workers and provides recording equipment to researchers and students to undertake fieldwork.

The collection currently contains approximately 7,800 hours of archived audio material. It contains 33.5 terabytes of data.

Case study 2: Existing Australian HASS research infrastructure

Trove

Project overview

Trove is a digital platform that acts as a single point of access 'search engine' for 22 million aggregated documentary resources from more than 1300 Australian institutions.

Objectives

The main objective for Trove is to aggregate HASS data and research resources into a single, interconnected portal that allows both researchers and the general public to access information relevant to their research or their general interest. Trove helps to preserve legacy Australian knowledge and supports its use now and into the future.

Problem being addressed	Solution proposed
A major barrier to HASS research is accessibility and retrievability of resources – particularly in regional communities.	Trove provides free, web-based access to millions of aggregated online resources to all Australians, including researchers and the general public. For researchers, the NLA can sometimes support more sophisticated uses and analysis.
A major problem and risk with HASS research is the loss of data and research stores, in addition to the 'siloing' of other nationally useful data and research inside institutional walls.	Trove has a large and ever-growing store of research and data, with the ability to add more. Institutions are able to partner with the NLA to add their historical stores to the archive.

Description

Trove is a digital archive that safely stores and provides provides access to 22 million aggregated documentary resources, including books, archived websites, letters, diaries, research papers, music, videos, and Australian newspapers ranging from 1803 to 1954). These resources are derived from more than 1300 Australian institutions, such as libraries, government departments, museums, cultural and historical societies, and universities.

Trove has helped to support a paradigm shift for Australian researchers in the humanities and social sciences. It is the most significant community store of Australia's social and cultural past in the country. It acts as a community, a set of services, an aggregation of metadata, and a growing repository of full text digital resources. Over 25,000 searches occur on Trove every hour, and constant improvements are being made.

An example of its usefulness to researchers is one researcher who used Trove to look at transgendered history. As a result of research, he worked out that a large number of trans men were living in rural and isolated communities. This has transformed the understanding of LGBTI history, by breaking down the assumption that LGBTI Australians mostly lived in cities.

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Response to criteria

Xx

Criteria	Response
Objectives are clear and a wide need can be demonstrated across institutions and / or across disciplines	Trove's primary objective is to be portal for researchers and the general public to access the National Library of Australia's resources. Its secondary objective is to unite researchers, cultural institutions and the public for continual capture, use, refinement and expansion of Australian research.
Scale • Number of investments	Since the project was launched by the NLA in 2008, Trove has grown to contain 2.2 million records from 1,300 institutions. It is the single largest store, online destination and source for HASS research in the country. It aims to connect HASS researchers and the public with any and all relevant national resource they require. In this regard, Trove is an example of HASS research infrastructure that does not require duplication and is able to effectively operate across the entire nation.
Size and nature of public benefit • National / international significance and / or innovation. • Enables innovation in research outcomes	Trove is of national significance due to the size of its stores (2.2 million records from 1,300 institutions), the broad scope of its offering (a set of services, aggregation of national metadata, and a growing repository for full-text digital resources), and its status as one of a small number of backbone investments that preserve nationally critical cultural material.
Need for (continued) national investment • Why there is a gap • Who is active in this space • Existing / potential collaboration	The significance of Trove as both an Australian cultural vault and as a critical piece of infrastructure for the HASS research community justifies the need for continued national investment in the platform. Without it, the backbone of cultural discovery for both researchers and the general public would be lost, and enormous stores of Australian cultural material would be put at risk. There is a further role for government investment to ensure its continual maintenance and improvement so that it can achieve its objective. Without further evolution, it will lack the modern tools researchers require to do their work, and will not keep up with the pace of technical change.
Meets other requirements • Access • Co-investment	Trove provides free, open access to all Australians. It was initially funded by the NLA's own budget, however it received a grant from government in 2016 to maintain and upgrade its servers/systems. The NLA is currently developing a new business model to encourage further co-investment from partner institutions and diversify funding partners, due to uncertainty of continued government support. Trove has already positively impacted thousands of Australians. More than 25,000 people use the resource every day – with about 70% of that access by the general public, and this use has enabled the refinement and continued accuracy improvement and quality of resources.

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Project implementation and impact

Trove has already been successfully implemented and had positive impacts for the Australian HASS sector.

Trove is an existing piece of effective research infrastructure	• Enormous vault for vast quantities of Australian cultural stores. • Web-based access for all Australians, including HASS researchers.

The investment has had functional change	• Trove has:
	  — become an aggregation point for vast quantities of nationally significant information that would otherwise be dispersed over disconnected platforms.
	  — simplified and expanded the access to data, with faster processing speed and more accessible settings, and free access to all including the general public.
	  — enabled researchers to quickly interrogate large volumes of texts that were previously irretrievable or required huge amounts of manual effort (eg, newspapers on microfilm).
	  — improved data accuracy, through Optical Character Recognition (OCR) software, which allows members of the public to scan newspapers and update manual text corrections.
	  — reduced duplication of effort, by providing one nationally recognized and supported store, without which there would be a larger number of institutional stores with significant overlap.

Trove has had positive outcomes	• Trove is now a significant cultural asset for Australia, because of its status as a huge vault of nationally significant historical documents that has been successfully deployed to millions of Australians and HASS researchers. It has generated a step-change in the Australian humanities and social sciences research because of the breadth and depth of its collection, and the ease and scale of access to its systems.

Case study 3: upcoming Australian HASS research infrastructure

Time-Layered Cultural Map

Project overview

The Time-Layered Cultural Map of Australia will push innovation in the Australian HASS research sector through a cross-disciplinary data integration that enables new thinking around entrenched research topics.

Objectives

- The TLCMap is not a singular project or software infrastructure with a defined research objective and outcome.
- Rather, it aims to invigorate future research and innovation more broadly in the HASS sector through the provision of visual mapping tools. This will help provide a new impetus for multi-disciplinary research that harnesses data integration and time series to push the scope and granularity of all HASS research projects.

Problem being addressed

The process of integrating data and maps from disparate sources is difficult, slow and expensive. Combining data from separate sources is difficult.
- I.e. Place and time data in texts like newspaper articles has to be manually geocoded and date-stamped to serve in maps and timelines.[1]

It is hard to excite new thinking on stubborn research questions and propel innovation in the HASS sector- similarly restricting overall engagement in HASS.

Solution proposed

The planned TLCMap will provide tools, data and an umbrella infrastructure related to time and place, activating and drawing together existing high-quality resources in an efficient and one-stop-shop location. This will cut costs and time.[1]

Moreover, these digital maps help answer research questions, turn research outcomes into research tools for others and are an interactive and visual way to engage the community. For example, Prof. Ros Smith, from C21CH, plans to use the TLCMap to visually represent literary true crime sites in urban and rural Australia.
- This will help collate instances where true crime stories appear in different times (often spanning centuries) and different locations.
- It will provide new ways of presenting evidence of character reuse and create extended publication events.

Description

- The University of Newcastle's Centre for 21st Century Humanities (C21CH) put in a bid and won a $420,000 grant from the ARC for the upcoming infrastructure of a Time Layered Cultural Map of Australia (the TLCMap).
- The TLCMap of Australia is an online research platform that will deliver researcher driven national-scale infrastructure for the humanities, with a specific focus on mapping, time series, and data integration.
- It will link geo-spatial maps of Australian cultural and historical information and will give new perspectives to the public, with online and printed resources.

Response to criteria

The TLCMap holds up against the proposed HASS infrastructure investment criteria, through a clear and wide application across the HASS sector that will provide access to all researchers and build the national capability of the sector.

Criteria	Response
Objectives are clear and a wide need can be demonstrated across institutions and / or across disciplines	TLCMap aims to enable inter-disciplinary research and innovation, responding to the need for data integration of Australian history and culture to interpret the hidden patterns that emerge from their combination. Part of the research proposal developed prospective projects that demonstrate the projects reach across the HASS sector :[1] • One of the founding professors (Prof Hugh Craig) plans to use the software to collaborate with the UON Priority Research Centre in Generational Health and Ageing to analyse domestic violence data. The TLCMap will provide visualisation of the geographic and temporal distribution of domestic violence reports. • The TLCMap will be used by Prof Victoria Haskins to draw comparisons between instances of mid-19th century kidnapping of indigenous women and children in California and Queensland. It will be able to pin point comparative geographical movements of kidnappers.
Scale • Number of investments	• The TLCMap will be created by a recent **Australian Research Council** Linkage Infrastructure, Equipment and Facilities (LIEF) grant of $420,000. It will be a one-year project. • The University of Newcastle have committed to basic maintenance funding for 2-5 years after the grant round. • Will go on to seek additional funding streams to constantly expand and improve efficiency and reach.
Size and nature of public benefit • National / international significance and / or innovation. • Enables innovation in research outcomes	• For researchers, it will transform access to data and to visualisation tools and open new perspectives on Australian culture and history. • Moreover, it is of benefit for all HASS sector workers, researchers and students, including but not limited to use by historians, linguistics, literary scholars, built environment researchers and cultural heritage professionals. • For the public, it will enable increased accessibility to historical and cultural data through visualisations made available online and in print.
Need for (continued) national investment • Why there is a gap • Who is active in this space • Existing / potential collaboration	• There is no existing Australian gazetteer- a geographical index or dictionary. Gazetteers are important to national research. They act as the interface between the social / cultural world and the physical world of geographic information. They are thereby an integral tool in exploring the evolution of research questions and expanding the scope and understanding that can be achieved. • There is a national gap and need for an Australian gazetteer, and the TLCMap could fulfil this.

Meets other requirements
   • Access
   • Co-investment
	• The program is mostly for researchers- and runs on the logic that "there is no platform without a project, and no project without a platform". By this, the C21CH are seeking to grant access to all research projects to help harness visual tools to push new innovation. The only condition of use is that it has an aim to progress a specific project.
	• However, it is seeking to expand and include a wider circle of users and hopes to begin to provide immediate results for absolute beginners and students.

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Project implementation and impact

The Time-Layered Cultural Map infrastructure will be implemented this year and provide functional changes to the HASS research sector, with anticipated positive impacts on future innovation.

Implemented new and effective research infrastructure

- **XXX** infrastructure that will process data from different categories of maps: time maps, deep maps, data maps, text maps, media maps, virtual maps. [*Need to specify nature of infrastructure*].
- **YYY** infrastructure to link geo-spatial maps of Australian cultural and historical information [Need to specify nature of infrastructure].
- **ZZZ** infrastructure to adapts data into time series. [*Need to specify nature of infrastructure*].

The investment has had functional change

- Researches can search data held in different Australian repositories by location and time
  - With software to detect place names and time references in official records, diaries, newspaper articles and books.
- Researchers can use the TLCMap to collaborate. The infrastructure allows researchers to combine the existing data sets with their own research and field notes to create new fields and clusters of information, each with a different specific project, content and depth.

The TLCMap will likely have positive outcomes

- The cultural implications of the work allow for people to combine historic data and better understand the context and activities of Australian history.
- The TLCMap offers the opportunity for all kinds of researchers, in any stage of development of an idea, to pursue research with new, interactive and visual technological infrastructure- allowing the HASS sector to tap into the benefits of technological advancement and push further innovation in the sector.
- [Need to provide further evidence of impact].

Case study 4: existing international HASS research infrastructure

DARIAH

Project overview

The Digital Research Infrastructure for the Arts and Humanities accelerates European research for arts and humanities scholars through the simplification of large, complex data sets and necessary computational tools of digital research methods.

Objectives

- The Digital Research Infrastructure for the Arts and Humanities (DARIAH) aims to enhance and support digitally-enabled research and teaching across the arts and humanities.
- [Needs to provide further examples to substantiate the objective].

Problem being addressed

The HASS sector is not properly connected and it is difficult to pool resources effectively- and to scale them for access to all.

There is a fear amongst HASS researches that their work will not be properly attributed and potentially exploited if they share it and relinquish their control over their content.

Solution proposed

By working with communities of practice, DARIAH brings together individual state-of-the-art digital arts and humanities activities and scales their results to a European level.

DARIAH preserves, provides access to and disseminates research that stems from expert collaborations and ensures that best practices, methodological and technical standards are followed.

Description:

- DARIAH was established as a European Research Infrastructure Consortium (ERIC) in August 2014.
- DARIAH is a network of people, expertise, information, knowledge, content, methods, tools and technologies from its member countries.
- It develops, maintains and operates an infrastructure in support of ICT-based research practices and sustains researchers in using them to build, analyse and interpret digital resources.
- DARIAH integrates digital arts and humanities research and activities from across Europe, enabling transnational and transdisciplinary approaches.

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Response to criteria

Since its establishment, DARIAH has introduced clear objectives and services that enable constant expansion and growth of the infrastructure to adapt to the evolving needs of the European HASS research sector.

Criteria	Response
Objectives are clear and a wide need can be demonstrated across institutions and / or across disciplines	• Structurally, it operates through a network of Europe-wide Virtual Competency Centers (digital interface systems), each of the four VCCs is cross-disciplinary, multi-institutional, international and centered on a specific area of expertise. • DARIAH adheres to a 'bottom-up' organisational approach around emerging research needs- pooling the researcher-level needs to motivate and shape the online services and tools. This demonstrates their wide / clear objective to enhance and support digitally-enabled research and teaching across the arts and humanities.
Scale • Number of investments	• As part of ERIC (the European Research Infrastructure Consortium), DARIAH is partly funded by the European Commission with co-funding by the Horizon 2020 project (a 30 billion euro investment for Research and Innovation between 2018-2020).

Size and nature of public benefit
• National / international significance and / or innovation.
• Enables innovation in research outcomes
	• DARIAH is important as it documents the state of the arts, supports the preservation and curation of research data with a focus on particular challenges including diversity, provenance, multimedia collections and granularity, and acts as a coordinator and integrator for a diverse community of practices.
	• There are 10 active projects and 6 past projects
	   • Current projects include: *European Holocaust Research Infrastructure* (integrates the data, services and expertise of existing Holocaust infrastructures on an unprecedented scale)
	   • Past projects include: *Humanities at Scale* (connects various hubs of excellence in trans-national arts and humanities research and helps them share their results and innovations)
	• A 2014 DARIAH survey of VCC2 'Education and Research' reached twelve EU countries and 17000 researchers. The survey was of significance as it was used to help provide a reliable account for how scholars use digital information technology to conduct research across Europe.

Need for (continued) national investment • Why there is a gap • Who is active in this space • Existing / potential collaboration	• The European Commission established the European Research Infrastructure Consortium as it understood the importance of European research infrastructure on a non-economic basis. • Investing in a similar infrastructure in Australia would help promote innovation and knowledge and technology transfers, an area that Australia currently lags in.

Meets other requirements
   • Access
   • Co-investment
	• Currently, DARIAH has 17 Members and several cooperating partners in eleven non-member countries. For the most part, DARIAH membership depends on being a part of the EU- however, it can extend to interested parties. For example, DARIAH is open to institutions and individual researchers who have an interest in collaborating with or contributing to DARIAH, as part of working groups or otherwise.

Project implementation and impact

The investment enabled new and effective research infrastructure and functional change to the European HASS sector with interconnected positive impacts on research, education, culture and the economy.

Implemented new and effective research infrastructure

- *VVC1: the E-Infrastructure*, maintains a digital environment that allows community-developed data and tools to be shared
- *VVC 2: Research and Education* Liaison, acts as the primary interface with research and teaching communities
  - DH Course Registry provides and overview of formal training programs available in digital humanities, linguistics or curation, based in a European higher education Institution.
  - DARIAH Teach Platform offers a Moodle-based set of courses in digital humanities.
  - PARTHENOS Training platform offers lectures and exercises in digital humanities, digital heritage and research infrastructures.
- *VVC3: Scholarly Content Management*, manages stages of creation, curation and dissemination through pooling of scholarly digital resources.
- *VVC 4: Advocacy, Impact and Outreach*, connects the 20 dynamic work groups to integrate national services

The investment has had functional change

- Enabled high-impact research in digital arts and humanities through the formed networks of people, partnerships, outreach and scholarly communication.
- Enabled validation and academic recognition through a controlled platform of data sharing services and tools that proactively enhance the reach of digital arts and humanities while ensuring strict copyright standards.
- Increased the provision of training and education opportunities, like the teaching of computational methods.
- Provided information services for policy engagement.

DARIAH has had positive outcomes

- DARIAH works with partners and demonstrates how traditional humanities research skills play a prominent role in the digital age, and how such skills can be deployed in a commercial setting. DARIAH has impact on four interconnected domains: research, education, culture and economy
  - The consortium builds services for researchers working with ICT-based methods to support the sustainable development of digitally-enabled research in the arts and humanities.
  - Advances research through long-term storage of work, ensuring all documents are easily retrievable.
  - Provides teaching material as well as teaching opportunities to develop digital research skills.
  - Directly contributes to the understanding of the cultural, economic, social and political life in Europe.

Case study 5: existing international HASS research infrastructure

Europeana Collections

Project overview

Europeana Collections propels research in the HASS sector through digital infrastructure targeted at cultural collaboration.

Objectives

- Europeana Collections aims to transform the world with culture by making it easier for people to use and access Europe's rich heritage whether for work, for learning or entertainment.
- To extend the reach and impact of existing assets to ensure ongoing relevance and support for and understanding of creative achievements and the endeavour it seeks to build on Europe's rich heritage and make it easier for people to use and access, whether for work, for learning or just for fun.
- It aims to do this through innovative aggregation infrastructure, improved metadata quality, efficient distribution infrastructure and increased quantity of resources.

Problem being addressed

Researchers struggle to promote and distribute their research without publication.

It is hard to collaborate between researchers across Europe- due to geography and uncertainty of the value and expertise of different researchers.

There is a fear amongst HASS researches that their work will not be properly attributed and potentially exploited if they share it and relinquish their control over their content.

Solution proposed

Europeana allows researchers to showcase collections in blogs, galleries, online exhibitions and campaigns and benefit from Europeana's active follower base on social media to reach millions of citizens across Europe. This helps them reach new audiences and make collections available for reuse within research, education and the creative industries. It also centralises research in one location, making it more accessible.

Allows researchers to communicate with validated, like-minded industry professionals of the Europeana Network Association to solve common issues.

Sharing on Europeana Collections ensures that all material is data compliant with the Europeana Data Model. The EDM specifies the data types and obligations of the research values accepted on the infrastructure. It also provides a digital system that validates data based on its adherence to these standards.

Description:

- Europeana Collections was established in 2009. It acted as the replacement to the European Digital Library Network, aimed to be a cross-border, cross-domain, user-centred research service. The project will be expanded to Europeana Pro (in beta round).
- It provides access to over 50 million digitised items – books, music, artworks and more – with sophisticated search and filter tools to help you find what you're looking for, from over 3000 different institutions.
- It groups collections thematically (e.g. by art, fashion, music, photography or historic event), with each collection containing extended galleries, blogs, articles and exhibitions that aim to inform users and to inspire future research.

Response to criteria

The project meets the proposed hurdle and evaluative criteria for national HASS infrastructure investment and could be considered a valuable investment due to its success and scope for future collaboration and expansion.

Criteria	Response
Objectives are clear and a wide need can be demonstrated across institutions and / or across disciplines	• Europeana Collections bring together the organisations that have great content with the people and sectors that want to research, share and create new things. • It has clear priority areas that intersect across the HASS sector: • Namely, academic research, creative industries, cultural heritage institutions, education, advocacy, campaigns, standardisation tools, projects.
Scale • Number of investments	• Europeana is an initiative of the European Union, co-financed by the European Union's Connecting Europe Facility (CEF) and European Union Member States. It has has received 15 CEF grants totalling 7.5 million euro, in the past 2 years. • Each new round of grants enables the infrastructure to fund different research projects that improve the content on Europeana Collections, allowing for better access to and reuse of new types of data through the platform. This has allowed the available collection to continually expand, with 50 million digitised items, and within this over 13 million images licensed for re-use.
Size and nature of public benefit • National / international significance and / or innovation. • Enables innovation in research outcomes	• Europeana works with thousands of European archives, libraries and museums to share cultural heritage for enjoyment, education and research. • The infrastructure understands the importance of creative collaboration and teamwork on innovation and pushes users to utilise technological innovation and make cultural resources a part of everyday life. For example, the infrastructure offers the 'Europeana Transcribathon', which encourages users to decipher, transcribe and annotate handwritten stories. The Europeana 1914-1918 collection has a total of 52,100 documents- because of this initiative 14,175 have been completed and 15,583 are in the process of being transcribed.
Need for (continued) national investment • Why there is a gap • Who is active in this space • Existing / potential collaboration	• The catalyst for Europeana was set in a letter from Jacques Chirac to the European Commission and premiers from across Europe in 2005, that recommended the importance of the creation of a digital European library- to make Europe's cultural heritage accessible to all. • Europeana operates in the same space as the European Research Infrastructure Consortium, and adds value with its culturally rich focus. • The ERICs, linked to Europeana Collections via the European Commission, act as potential collaborators.

Meets other requirements
    • Access
    • Co-investment
	• At its core, Europeana Collections aims to be accessible to all who seek to use its services. It is available in over 27 language and completely free.
	• Beyond this, since 2016 Europeana Collections facilitates the process of conducting research through an annual research grant program (up to 8,000 euro) that aims to support early career scholars in the the Humanities undertaking innovative research projects that reuse openly licensed Europeana data and digital tools. innovation through also Beyond this, it offers grant funding streams to encourage future innovation and research in the cultural sector.

Project implementation and impact

Europeana Collections implements effective digital infrastructure that allows for functional changes in the conducting of cultural research and simultaneously provides structures / resources to measure the positive outcomes it enables.

Implemented new and effective research infrastructure

- Meta-aggregator and display space for European digitised works.
- Data publication platform: that connects, links and shares researchers content.
- HASS discovery platform: online access to a vast store of books, photos and paintings to television broadcasts and 3D objects.
- HASS data funding platform: provides users with various funding strategies and an incubation process for cultural heritage products.

The investment may have functional change

- Enables the user to explore 58,780,359 artworks, artefacts, books, films and music from European museums, galleries, libraries and archives.
- The digital objects that users can find in Europeana are not stored on a central computer, but remain with the cultural institution and are hosted on their networks.
- Enables users to share content, link it to thousands of other collections and have that content accessible to new audiences to reuse in research, education and creative industries.
- Crowdsourcing initiatives enable users to transcribe digital material and help solidify the vast fully digital record of events.
- Accessible to many across Europe due to the multilingual keyword search function.

Europeana Collections has had positive outcomes

- Europeana Collections have positive outcomes for the easy distribution of information, collaboration of researches and digitization and preservation of literary, artistic and cultural resources.
- Moreover, the infrastructure provides an 'Impact Playbook' that advertises the cultural heritage sector and also provides researchers with tools to measure their own impact. In this way, it also plays an integral part in educating the research sector.
  - The 'Change Pathway' tool, that connects activities and outputs of an organisation with outcomes,
  - The 'Empathy Map' a collaborative tool that grants deeper insight into stakeholders,
  - The 'Strategic Perspectives' tool, which provides strategic contexts for decision making, on what is to be measured and why it needs to be measured.

Case study 6: prospective Australian HASS research infrastructure

National Ethics Approval Portal

Project overview

The *National Ethics Approval Portal* will streamline the process for ethics approval across Australian jurisdictions and will be integral to facilitated HASS research, particularly in sectors that intersect with policy.

Objectives

- The objective of a National Ethics Approval Portal would be to enable more efficient and more cross-jurisdictional research in government settings and engaging with government clients. For example, it could span research applications from users of public health and human services, teachers, students, police officers, prisoners etc.

Problem being addressed	Solution proposed
The need to complete multiple ethics approval processes for different jurisdictions is a dis-incentive to research crossing jurisdictional borders- restricting existing research to narrow scope.	Proposes a standardised national approach with common base application standards- accounting for regional and remote variation.
There is a missed opportunity to maximise the face that different Australian jurisdictions have different policy settings, and to be able to compare and contrast the advantages / disadvantages of those. E.g. a common argument for federation is that it creates a natural basis for good experimentation- however, this is complicated by the current processes.	Implement a common portal / clearing house that allows researchers to submit all applications through the one location, to encourage researchers to conduct more cross-jurisdictional research.
From an process perspective, it is very expensive and labour intensive (for researchers and jurisdictions processing applications). In terms of economies of scale, and considering the processes occurring in 8 states / territories, the process is not effective.	There are opportunities for automation to make the process more efficient and less expensive. For example, a national portal could provide preliminary assessments to researchers completing the application of the risk level (if it is targeting high needs group) and triage the information to inform researchers on application status and expected completion of the review (with identification of what departments are reviewing what documents).

Description:

- **[Provide and overview of the organisation that will help set it up, who will invest, which states might pilot the program [in which sector], etc]**
- It is a HASS project as most research in policy setting will be in sociology, criminology, psychology, public policy, economic, behavioural science, education, public health etc- all of which may require ethics approval.

Response to criteria

An standardised *National Ethics Approval Portal* adheres to both the baseline requirements for all NRI investments, and the evaluative criteria, and could be considered a high value proposal for investment.

Criteria	Response
Objectives are clear and a wide need can be demonstrated across institutions and / or across disciplines	• There is a process barrier to efficiency in lots of HASS research because of the lack of a standard approach. • It would be too great an investment for any one institution (e.g. a university) to make because it would require the coordination of wide range of actors. Further, it is too much for one jurisdiction because cross-jurisdictional research is of less interest and significance to the one jurisdiction.
Scale • Number of investments	• Taking an assumption driven approach: one jurisdiction (Victoria) with 2 full-time staff members (approx. 80 hours a week) working in approving ethics requests for education research; these workers process 20 apps per week /1000 per annum; across 8 jurisdictions, totalling 8000 research applications per annum. Simplifying this process would not only cut the cost of workers and make it more efficient but would likely increase the number of applications undertaken a year due to the increased appeal of the process.
Size and nature of public benefit • National / international significance and / or innovation. • Enables innovation in research outcomes	• The public has a specific interest in research being done within a government setting / context- not only as it allows for standardised control and maintenance / adherence to the national values but it also ensures that research is being done with a policy lens applied to it- increasing its chance to have an impact. • On a national level, there is benefit in cross-jurisdictional research in building innovative research questions that have a direct impact on Australian policy. For example, if one state has implemented a policy lever, and the others have not, a cross-jurisdictional review can compare the consequences of the different settings to assess their utility
Need for (continued) national investment • Why there is a gap • Who is active in this space • Existing / potential collaboration	• It is a collective action problem. There is no one actor that is sufficiently incentivised to undertake this project alone- rather investment requires coordination and a standard setting. • However, this may be initially extremely difficult to set up. The government could look to pilot the program in specific jurisdictions and sectors and expand it depending on success.

Meets other requirements
    • Access
    • Co-investment
	• Access would remain the same to all that currently involved in ethics approval processes for research (open access)- the only retaining caveat is that the process does not guarantee that applications are successful, it only streamlines the process (and may help ensure all relevant documents are included)).
	• There is scope for co-investment at an early stage. For example, if you can convince the Vic DET that there will be 20 hours saving a week of staff time, and you can expand this to every sector (justice; human services etc), then you have scope for co-investment.

Project implementation and impact

If successfully implemented, a *National Ethics Approval Portal* would bring beneficial functional change to the conducting of all HASS research in Australia that requires ethics approval.

There is scope for new and effective *Ethics Approval* infrastructure	• There is an online national portal for schools right now but practically speaking, every jurisdiction has their own process. • **[Need to specify specific infrastructure to achieve objectives]**

The investment may have functional change	• Less of a barrier to doing cross-jurisdictional research.
	  — It is faster / more efficient
	  — It is cheaper
	  — The application process is more consistent

National *Ethics Approval* infrastructure could have many positive outcomes	• It has scope to have positive outcomes in research in sociology, criminology, psychology, public policy, economic, behavioural science, education, public health. • **[Need to include more outcomes]**

Case study 7: prospective Australian HASS research infrastructure

HASS Lab

Project overview

HASS Lab is a storehouse for historical HASS data and research, an active research platform for the progression and dissemination of current research, and a collaboration space for all HASS researchers.

Objectives

The objective for HASS Lab is to be the 'one stop shop' for HASS research stores and collaboration in Australia. It is a national archive of all significant HASS research and data, a platform for current researchers to build on and share their work, and a collaboration space for researchers to join up with others and form cross-institution, cross-disciplinary partnerships on topics of mutual interest.

Problem being addressed	Solution proposed
Lack of online collaboration space and tools for HASS researchers, preventing effective research partnerships, reinforcing the 'lone wolf' trend, and causing inefficiencies in Australian research.	Cloud-based collaboration space for researchers that allows them to easily discuss their research, find partnerships with others, and take advantage of a range of collaboration tools available as part of HASS Lab.
Lack of comprehensive national store for past, present and future HASS data and research – including research currently being conducted – and acts as a 'one stop shop' for HASS researchers.	Cloud-based research storage platform with both historical stores and active research currently being undertaken. It includes tools and APIs that make HASS Lab data and research stores useable to a wide range of research partners.

Description:

The "HASS Lab" is a data and collaboration platform, widely accessible by a consortium of universities and their research staff. It is both a historical store of data and research, and an active research platform for new content to be frequently added. This allows researchers from multiple disciplines to join up and conduct broad and different research around topics of interest.

Response to criteria

Criteria	Response
Objectives are clear and a wide need can be demonstrated across institutions and / or across disciplines	• The objective for HASS Lab is to join up as many Australian universities (and other relevant institutions) as possible through one cloud-based research storehouse and collaboration site. This would increase the dissemination, access, collaboration and impact of this research. There is currently no central, universal repository for historical research, no storehouse for current, cutting-edge research, and no platform for collaboration across institutions or across disciplines (with the exception of ad hoc message boards).
Scale • Number of investments	• The HASS Lab would be one of the most ambitious NRI investments in humanities and social sciences in Australian history. It would offer every Australian university the opportunity to join one single collaboration platform, providing the researchers at each the access to colleagues and research from the others. The HASS Lab could also be linked to other Australian organisations with an interest in HASS research. It has the potential to be the one stop shop for all HASS research and researchers in Australia.
Size and nature of public benefit • National / international significance and / or innovation. • Enables innovation in research outcomes	• The HASS Lab would be an Australian first. It would put the nation, its universities and its researchers on par with the leading international jurisdictions. [*Provide examples of innovation in research outcomes*].
Need for (continued) national investment • Why there is a gap • Who is active in this space • Existing / potential collaboration	• The HASS Lab would benefit a very large number of Australian universities and other institutions, but the project is too broad to be delivered by one partner. There is a role for the government to be both the initial investor and the project manager, brokering access and leading development, after which they could get a return on that investment through platform access fees by universities and other partners. • The HASS Lab is a generational step change in Australian research and research collaboration. Collaboration should begin almost immediately. However, is likely to take years to get the system fully developed and integrated with partner universities. It will take yet more time for historical data and research to be audited and uploaded in standard, searchable and accessible formats.
Meets other requirements • Access • Co-investment	• All Australian universities, their researchers and potentially their students would have access to HASS Lab. Other partners would be considered for access on a case-by-case basis. All Australian universities wishing to partner with HASS Lab would need to co-invest in the development, ongoing maintenance and ongoing improvement of the platform. The HASS Lab proposal has a fully developed change management, risk management, and asset management plan.

Project implementation and impact

HASS Lab will be a once-in-a-generation infrastructure investment in HASS research outcomes in Australia, putting our universities, their research and their research on a shared platform on par with the best in the world.

Proposed research infrastructure to be implemented

- Cloud based collaboration space for researchers from multiple disciplines.
- Cloud based research platform with active and historical stores.

Proposed functional change of the investment

- Broader linkages between research partners.
- Aggregation of effort on topics of interest.
- Convergence to shared data standards.
- Convergence to shared terminology.
- Increased access to broad stores of historical data and research.
- Increased access to cutting edge / current data and research.
- Increased capability of sector and its researchers.
- Increased visibility of historical and current research and research trends.

Prospective project outcomes

- Making new discoveries through multi-disciplinary approaches to topics of shared interest, such as climate change, Islamophobia, populism.
- Breaking down 'solo model' of research, maximising dissemination, collaboration, access and impact of research.
- Increasing value for money and efficiency from government investment in HASS research and infrastructure.
- Increasing research collaboration between universities who are partners in the HASS Lab.

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