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**NDRI Investment Plan Consultation Survey Summary**

NDRI for Humanities, Social Science and GLAM

| Q5 - What are the gaps and weaknesses in Australia's NDRI landscape for our humanities, social sciences and GLAM sectors? | * Repository infrastructure and preservation archives where research outputs can be made FAIR
* National Roadmap for open research.
* Skills:
	+ Lack of technical professional support for humanities, social sciences and GLAM.
	+ Lack of digital literacy and data management skills as well as exposure to emerging digital technologies for GLAM and researchers.
	+ Need for training that is tailored to the humanities, social sciences and GLAM sectors.
	+ Perception that much of humanities, social sciences and GLAM research can be done without digital tools and digital solutions have large learning curve.
* Siloing:
	+ Humanities, social sciences and GLAM siloed from STEM fields and receiving less funding.
	+ Humanities, social sciences and GLAM expertise should be on committees advising and designing NDRI Investment.
	+ State and data collections siloed leading to loss of integrity of data.
	+ Digital infrastructure in Humanities, social sciences and GLAM sectors are fragmented and siloed.
	+ Different research domains within the Humanities, social sciences and GLAM sector have different legacy practices and tools that need to be considered.
	+ Divide between the “cutting edge” NDRI users and those left behind.
* Lack of data linkage, data storage and missing data.
	+ Lack of curated national data repository leads to data loss.
	+ No funding for continued hosting of Federal Government funded research project data after the grant ends.
* Lack of consistent data and metadata management practices and standards due to wide range of data types and repositories.
* Concerns about adequacy of cybersecurity measures.
	+ Sensitive data concerns and ethical use of data.
	+ Unwillingness by researchers and institutions that humanities, social sciences and GLAM research might be target of foreign interference.
* Need for better recognition and implementation of the Indigenous Data Sovereignty principles.
* A lot of relevant research data is commercially sensitive or has unclear intellectual property.
* Access to key data sets difficult.
	+ In some cases not all data has been digitised.
* Trust and identify across platforms.
* Need investment to make GLAM collections more FAIR and CARE-ful for researchers.
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| Q6 - How can NDRI investments support the creation, management and access to digital twins? | * The potential uses of a digital twin are variable so the activities could use the cross-disciplinary nature of the humanities, social sciences and GLAM domain to encourage collaboration.
* Investment in staff resources to help researchers design analyses and evaluations and training materials for researchers.
* Develop national digital twin repositories and frameworks to facilitate management and analysis of complex datasets.
* Invest in high performance compute (HPC) and cloud infrastructure to support required simulation and processing.
* Enhance cybersecurity to protect sensitive data used in digital twins including trust and identity.
* Develop collaborative platforms to share digital twin models.
* Standardised approach to the creation, management and access to digital twins and support development of interoperable systems.
* Investment in the ability for institutions to assign globally unique persistent identifiers to physical objects and digital twins derived from them.
* Automated research data processing and AI resources for modelling and visualisation .
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| Q7 - What international exemplars of large-scale research infrastructure investments to support the humanities, social sciences and GLAM sectors do you recommend Australia should consider as part of the NDRI Investment Plan? | * Open repositories:
	+ Zenodo repository – especially as an example of plans for long term preservation.
	+ OAPEN digital library.
	+ Directory of open access books.
	+ Towards a national collection (TaNC) – using digital technology to create a unified national collection of the UK’s museums, libraries, galleries and archives to maintain global leadership in digital humanities and arts research.
	+ CoSTAR – UKRI creative industry investment.
	+ Digital Public Library of America – aggregates metadata to provide single access point to millions of artefacts.
	+ Common Language Resources and Technology Infrastructure (CLARIN) is a digital infrastructure offering data, tools and services to support research based on language resources.
	+ Common Lab Research Infrastructure for the Arts and Humanities (CLARIAH) – Netherlands based distributed research infrastructure for the humanities and social sciences as part of Europe-wide ESFRI enterprise.
	+ HathiTrust Digital Library - a partnership of academic and research institutions offering a collection of millions of digitised titles.
	+ The European Social Survey (ESS) - a biennial survey that measures the attitudes, beliefs, and behaviour patterns of diverse populations in Europe.
	+ The UK Data Service - provides access to a wide range of social and economic data.
	+ DiSSCO – Distributed System of Scientific collections in European museums holding natural science collections.
	+ European Digital Research Infrastructure for the Arts and Humanities (DARIAH).
	+ Humanities Commons: A collection of tools and materials to support education.
	+ CLOSER -an interdisciplinary partnership of leading social and biomedical longitudinal population studies, the UK Data Service and The British Library.
	+ Europeana - access to Europe's digital cultural heritage.
	+ Social Science and Humanities Open Cloud (SSHOC) - seamless, Europe-wide access to research data and tools across scientific or thematic disciplines and geographical borders.
	+ CESSDA - Consortium of European Social Science Data Archives.
	+ REIRES - Research infrastructure on religious studies.
	+ E-RIHS - European Research Infrastructure for Heritage Science.
* Skills:
	+ UKRI Digital Research Technical Professional Skills NetworkPlus – addresses cross-cutting challenges related to digital RTP skills and careers.
* Transformative technologies and AI:
	+ Responsible AI UK – international ecosystem for responsible AI research and innovation.
	+ Future data services: pilots to enhance data services for the future (pilot new data service delivery solutions to enable federation of data services, data discovery using AI, skills capacity).
	+ National Library of Norway’s AI lab.
	+ Alan Turing Institute – particularly projects with British Library materials that reduce black boxing of language.
* Research Security:
	+ NSF-backed SECURE Centre in the United States – a collaborative format to delivery national capability in research security advice.
	+ The Authentication and Authorisation for Research Collaborations (AARC) Framework developed by the international community specifically for globally aligned research infrastructure.
	+ Smart Data Research UK (formerly Digital Footprints) – provides secure data access, safeguard public trust, and build capability for cutting-edge research.
* Standards:
	+ The International Image Interoperability Framework (IIIF) provides a set of standards and APIs for working with image data that is widely used internationally – example of leveraging is the Biblissima project.
* Funding streams:
	+ The US National Endowment for the Humanities (NEH) which funds data infrastructure for humanities.
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| Q8 – What are the priority humanities, social sciences and GLAM NDRI investments that would enhance Australia’s collaborative research efforts? | * Skills:
	+ Training for digital literacy.
	+ Create them-based team around research style (for example, qualitative vs quantitative) and broad topics to identify missing elements requiring NDRI investment.
	+ Training in Aboriginal and Torres Strait Islander people data governance and sovereignty.
* Security, trust and identity:
	+ Secure environments for sensitive data.
	+ Trust and identity to ensure researcher identification.
	+ Trust and identity tools based on AARC Blueprint.
* Data:
	+ Non-commercial repository infrastructure compliant with FAIR and CARE principles.
	+ Indigenous data sovereignty.
	+ Centralised data linkage for health data.
	+ Integrated platforms to facilitate sharing of cultural and research data.
	+ Consistent data management standards including metadata.
	+ Tiered access to sensitive data.
	+ Support for archiving research-focussed websites that contain research results and supporting media.
* Tools:
	+ HPC and cloud tailored to the needs of humanities, social sciences and GLAM researchers.
	+ Use of persistent identifiers (PIDs) to track and report on research impact and reproducibility.
	+ Use of PIDs for physical objects.
	+ Investment for developing interoperable digital tools (for example, collaborative data labs).
	+ Digital twins for cross-sector research.
* Collections:
	+ Digitisation of social and cultural assets.
	+ Digitisation of historical death records from state and territories.
* Strategies/strategic thinking:
	+ Open research roadmap that includes humanities, social sciences and GLAM.
	+ Develop a national strategy for humanities, social sciences and GLAM.
	+ Ongoing sustainability of key existing infrastructure in the space.
	+ Support an independent coordinating body to support humanities and social science researchers and identify research infrastructure requirements.
	+ Establishment of a national humanities collection builder and repository adhering to linked open data standards.
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