

Create Once Use Many Times

The Clever Use of Metadata in eGovernment and eBusiness Processes in Networked Environments

ARC Linkage Project 2003-2005

www.sims.monash.edu.au/research/rcrg



Outline

- The Metadata Challenge
- Clever Recordkeeping Metadata Project
- Interoperability
- Research Design
- Relationships to InterPARES 2, San Diego Supercomputer Center and ISO initiatives
- Conclusion



The Metadata Challenge

Current practice – metadata silos, with metadata generation and deployment semi-automated at best, resource intensive and application specific

Essential to the development of business, recordkeeping, and archival systems of the future is the clever use of metadata, including inheritance from business environments and reuse in current recordkeeping, archival and cultural domains – and vice versa

Strategies and tools needed so that metadata can be “created once, and used many times”



Clever Recordkeeping Metadata Project

Brings together researchers and practitioners from Monash, UCLA, NAA, SRA NSW and ASA to:

- Explore metadata interoperability
- Demonstrate the business case for automating metadata capture and reuse
- Provide a model for archival description as a process of managing, augmenting and repurposing the rich mines of metadata in our environments



Interoperability

Interoperability means enabling information that originates in one context to be used in another in ways that are as highly automated as possible (Rust et al, 2000)

- Explore how metadata can cross technical, spatial and temporal boundaries, including translations between business, recordkeeping and archiving systems, across levels of aggregation, through time, across contextual boundaries
- Develop/deploy meta-tools, e.g. metadata registries, mapping tools, standardised data representations, communication protocols (e.g. encoding languages like XML, communication protocols like SOAP)



Layers of Interoperability Model

Conceptual Data Model



Layer 3

Abstract

Attribute Space

e.g. Dublin Core,
Recordkeeping Metadata
Standards

Value Space

e.g. Ontologies, Classifications,
Controlled Vocabularies, Taxonomies

Layer 2

Representation

e.g. XML, RDF, DAML-OIL, OWL

Layer 1

Transport & Exchange

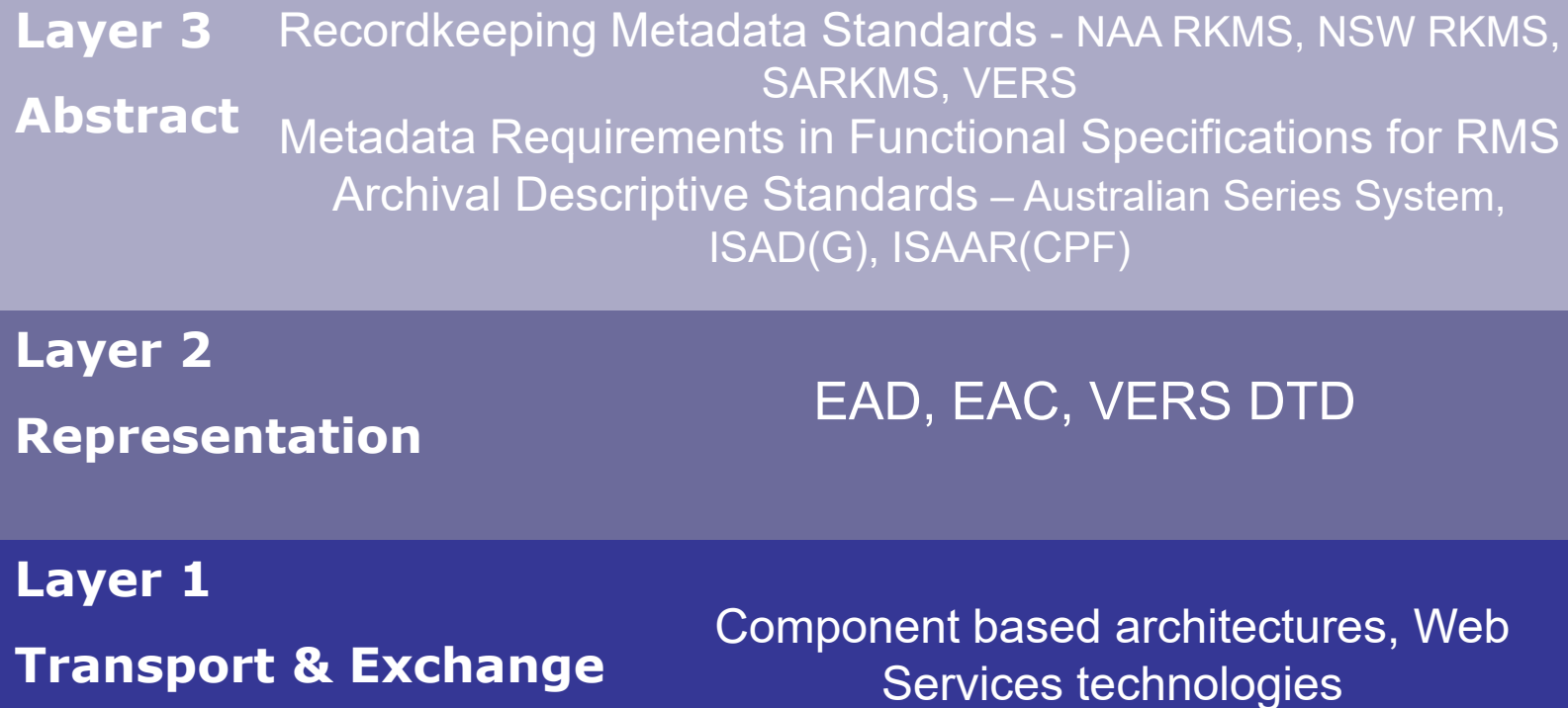
e.g. OAI Protocol for
Metadata Harvesting

From: Thomas Baker et al., *Principles of Metadata Registries*, 2002,
<http://delos-noe.iei.pi.cnr.it/activities/standardizationforum/Registries.pdf>

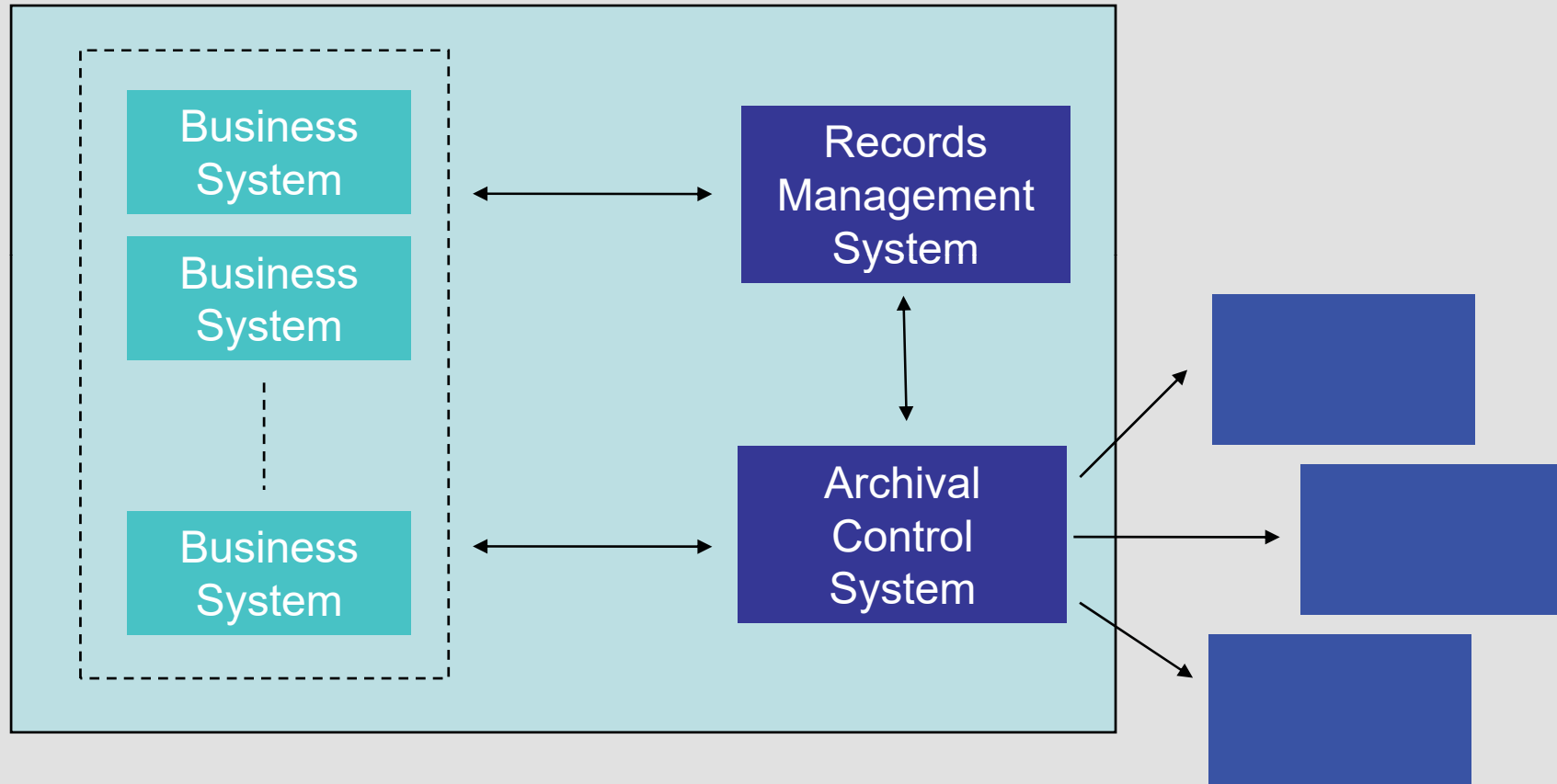


Recordkeeping Metadata Initiatives

Australian Recordkeeping Metadata Schema Conceptual Models



Example of Metadata Interoperability

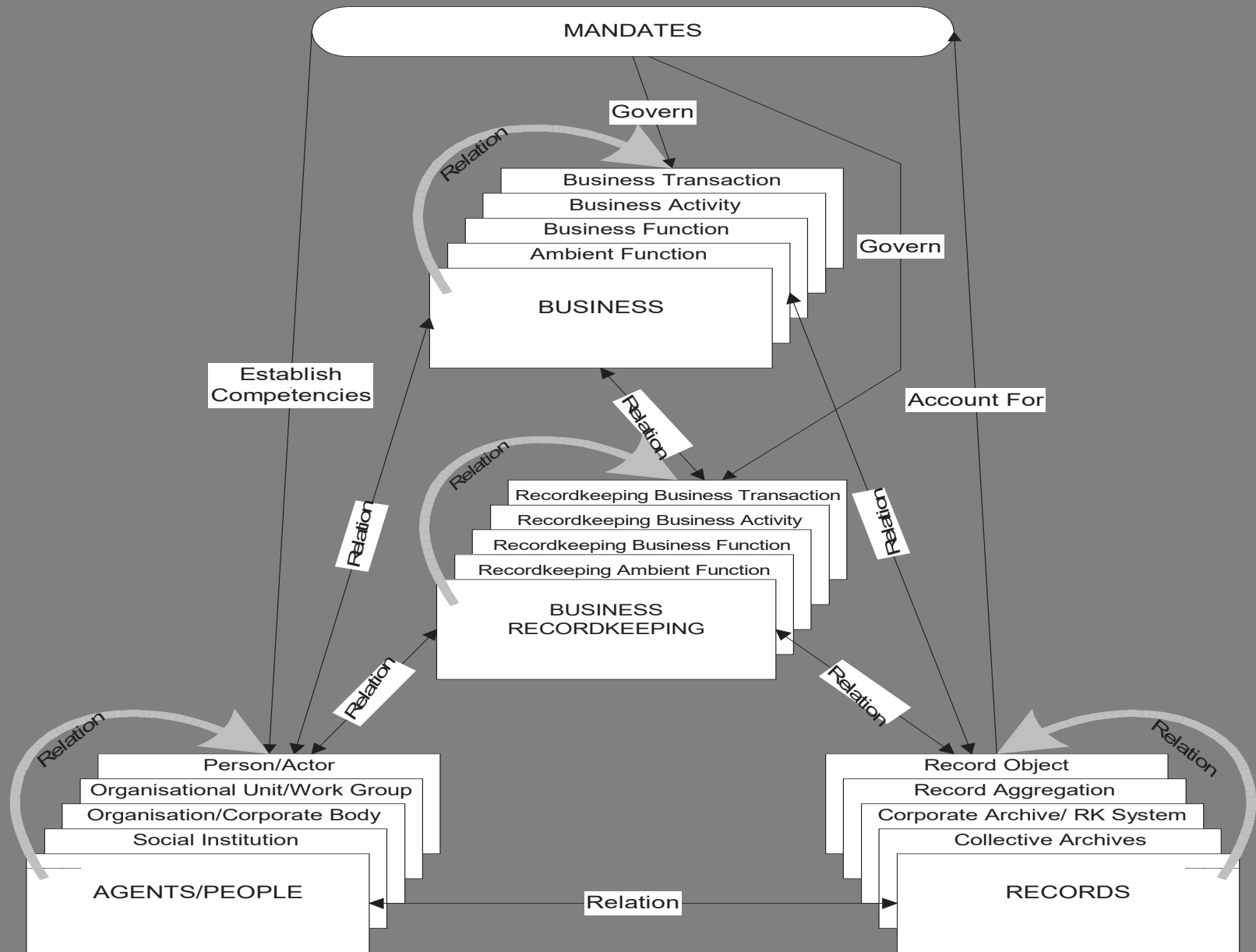


Research Design

- Conceptual framework
 - Records Continuum, Metadata conceptual models from the Australian Recordkeeping Metadata Schema, ISO/TS 23081 Metadata for Records
- Demonstrate the concept
 - Simulated real world scenario
 - User centred rapid prototyping using agile methods
- Implementation model
 - Test bed implementation as model for best practice
 - High profile to attract attention
- Meta-registries and meta-tools

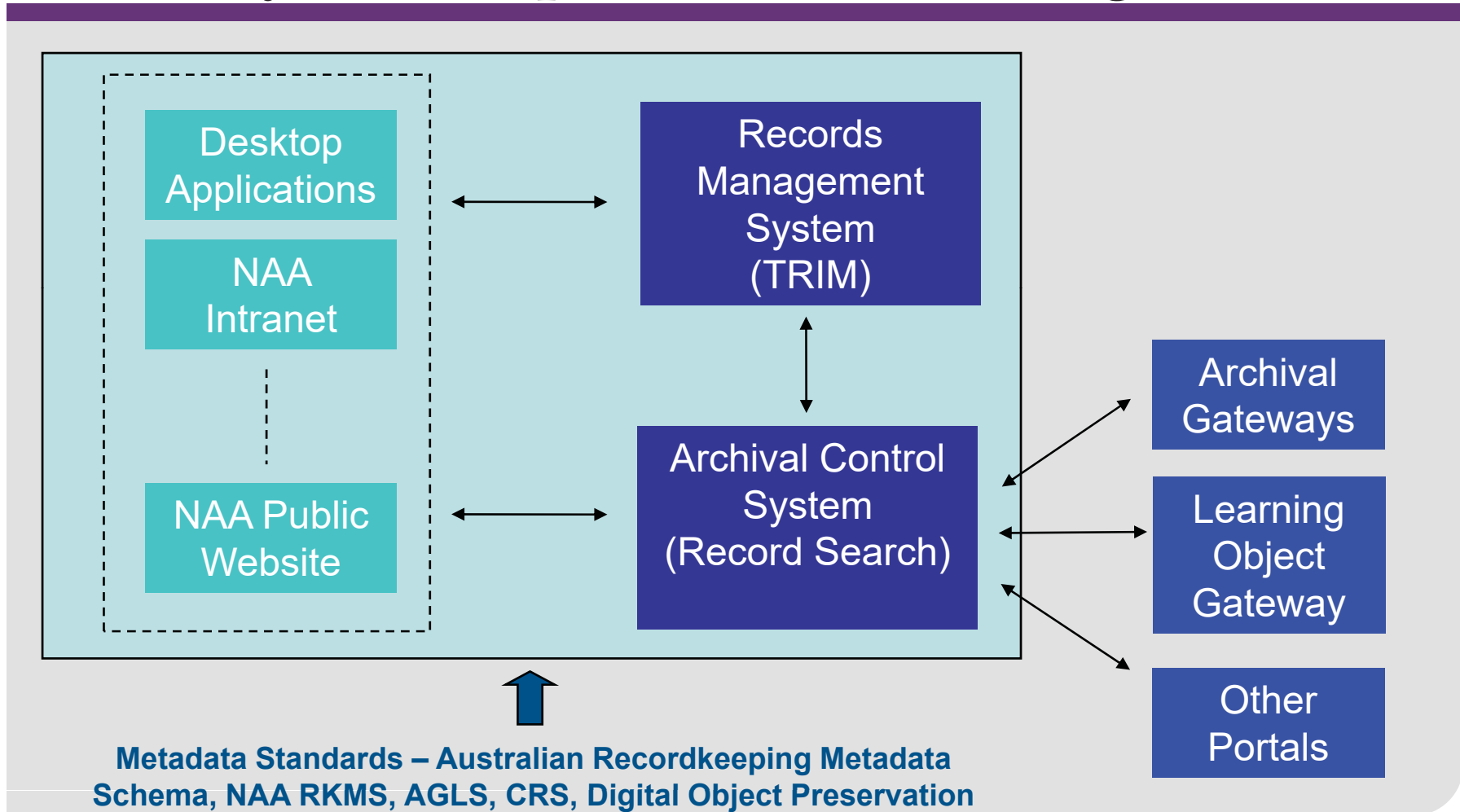


Figure 4: Coverage of Recordkeeping Metadata



NAA Scenario

Policy Development – Publishing – Transfer



Build the prototype ...

Innovative techniques

User-centred rapid prototyping involving:

- An agile programmer to extend existing software and metadata deployment functionality in small, user-centred iterations
- Generation of new ideas and reprioritising old ones as the prototype evolves and insights develop
- A multidisciplinary research team and focus groups of experts to develop the scenario, and derive the metadata requirements, and for validating each iteration

Then develop a model for best practice...

Test-bed implementation:

- An intelligent model that demonstrates interoperability – “create once, use many times” – within metadata standards framework
- Applies in different domains
- High profile to attract attention

Meta-registries and Meta-tools

- Mini meta-registries
- Mappings between attribute and value spaces
- Representation of mappings for automated processing – crosswalks
- Rules for aggregation of data and making contextual metadata explicit
- XML DTDs and Schemas
- Metadata interchange and translation tools



Related Projects

- InterPARES 2 – Metadata Schema Registry (translation of attributes and transformation of values; exploration of meta-tools for representation and exchange)
- San Diego Supercomputer Center – tools and technologies for metadata representation, translation and ongoing management
- ISO recordkeeping metadata standard – framework standard for metadata schemas that relate to attributes and values spaces, and possible extension to address interoperability model representation layer issues



The Archives of the Future

- At the beginning of the new millennium recordkeeping professionals are challenged to develop systems that can operate beyond the level of the individual or corporate archive, and of collective archives as we now know them, to describe parallel recordkeeping universes, encompassing the world views of all parties to the transactions, and providing meaningful access paths to all stakeholders.
- Metadata frameworks, strategies and tools to support systems that can:
 - encompass Chris Hurley's "parallel provenance" and Jeannette Bastian's communities of records
 - negotiate the complex matrices of mutual rights and obligations invoked in Eric Ketelaar's vision of shared ownership and joint heritage



Conclusion: Project Outcomes

- Translation and transformation of metadata between business, recordkeeping & archival systems, and resource discovery portals, across levels of aggregation and contextual boundaries, in and through time
- Contribution of CRKM Project, InterPARES 2 Description Research Team, San Diego Supercomputer Center, and ISO recordkeeping metadata standard initiative
- Understandings and strategies relating to the clever use of recordkeeping metadata in forming and transforming the archives of the future

Chief Investigators

Chief Investigator

Professor Sue McKemmish
Monash University



Partner Investigator

Professor Anne Gilliland-Swetland,
UCLA
Mr Adrian Cunningham, National
Archives of Australia



Australian Government
National Archives of Australia



MONASH University
Information Technology

www.monash.edu.au

Industry Partners and Collaborators

National Archives of Australia

Mr Duncan Jamieson



Australian Government
National Archives of Australia

State Records New South Wales

Mr Tony Leviston



Australian Society of Archivists, Descriptive Standards Committee

Ms Barbara Reed

Distributed Systems Technology Centre

Mr Andrew Wood



MONASH University
Information Technology

www.monash.edu.au

Multidisciplinary Research Team

Australian Postgraduate Award Industry

- Ms Joanne Evans

Research Associate

- Ms Karuna Bhoday

Agile Programmer

- Sergio Viademonte