

The WA Biodiversity Science Institute: Key learnings and progress from the inaugural 18 months

Guy Boggs & Chris Gentle

THE WESTERN AUSTRALIAN BIODIVERSITY SCIENCE INSTITUTE



Our Rationale

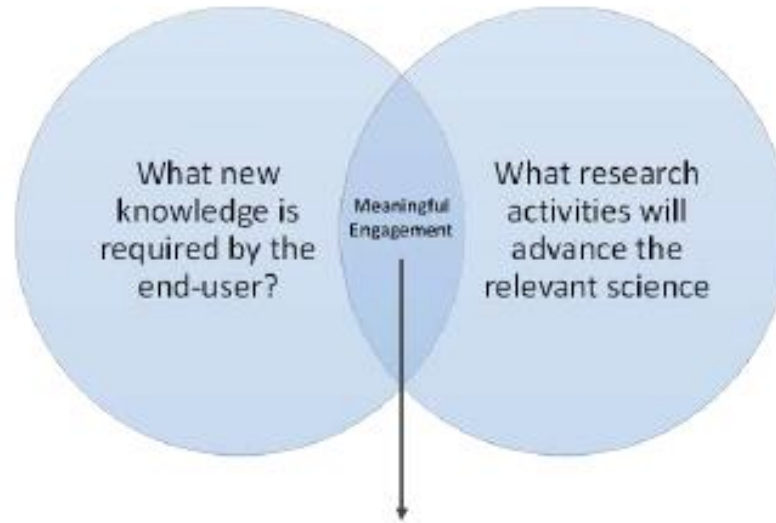
THE WESTERN AUSTRALIAN BIODIVERSITY SCIENCE INSTITUTE



Biodiversity Conservation: More effective and efficient strategies for setting priorities and conserving WA Biodiversity

Facilitation of **Sustainable Development:** More effective, efficient and timely processes for environmental assessment, regulation and management

“Western Australia is a developed-world jurisdiction with a developing-world’s knowledge of its biodiversity.”



Will research in this area produce an effective and implementable solution?

An enabler (not a competitor)

THE WESTERN AUSTRALIAN BIODIVERSITY SCIENCE INSTITUTE



Government of Western Australia
Department of Mines and Petroleum



- Link parties together
- Represent WA research capability
- Work with managers and regulators: identify knowledge gaps
- We don't do the research: but we bring project ideas from managers to researchers

Our Journey

THE WESTERN AUSTRALIAN BIODIVERSITY SCIENCE INSTITUTE



- 2016 – Foundational Year
- Council, Board & Research Committee Established
- WABSI Executive Team Formed by 2017
- Strategic Planning, Stakeholder Engagement, Workshop Delivery, Project Development and Funding Support





Lesson 1

This is not easy





Lesson 1

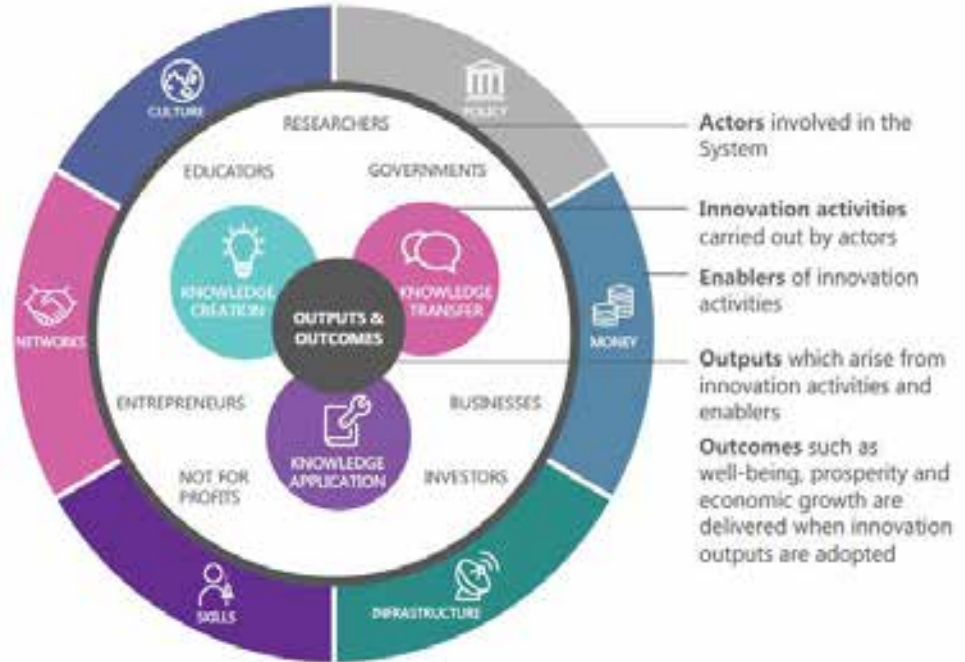
Culture change is required to build stronger innovation partnerships across the research and end user community

Knowledge creation

Highly cited publications (top 1% in the world, all disciplines) per million population **8th out of 36**

Knowledge transfer

Proportion of publications with industry affiliated co-authors **27th of 38**



2016 Performance Review of the Australian Innovation, Science and Research System
 2016 (<https://industry.gov.au/Innovation-and-Science-Australia>)



Lesson 2

Researchers and End Users see value in a biodiversity research strategy for the state



Progress



- Research Plan released for review early 2017
- Research Director (Neil Burrows) appointed to lead process of expanding scope of research plan
- State Government support: positive response from leaders across a number of agencies in supporting a biodiversity research plan for WA
- Consultation process to continue in 2017 to recognise key issues and research priorities across sectors in final research plan



Lesson 3

Big and complex challenges require long term planning, multiple stakeholder engagement and flexible implementation approaches.



Progress

- Wetland Futures and the Drying South West
- Pilbara Rehabilitation Research Strategy
- WA Vegetation Information System
- Evaluating restoration success in a global biodiversity hotspot
- eFlora of Western Australia
- Subterranean Fauna





Lesson 4

There are multiple ways we can support the development of and access to projects that address key end user needs & make best use of WA research capacity



Progress

WA Completion Criteria Framework – Industry and Government Funding & Cross Partner Research Delivery

Pilbara Mammals – ARC Linkage Proposal. Partner funding and document development.

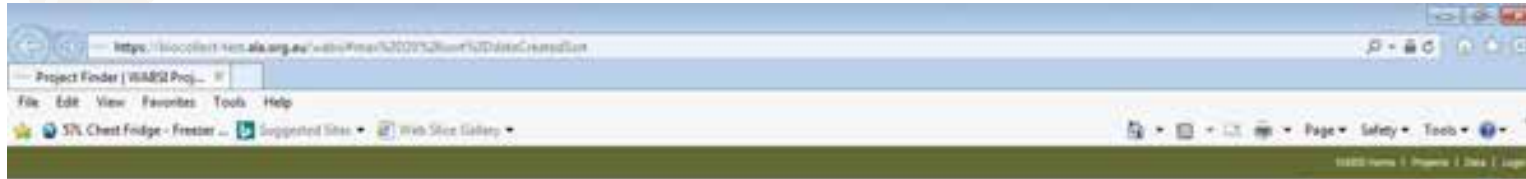
ARC LIEF Critical Zone Observatory – WABSI partner funding & facilitate stakeholder access to research infrastructure

Citizen Science Projects – Researchers Identified to Develop Priority Projects for End Users

Bringing them Back – ECU/SWCC Funding Partnership Development Supported

WABSI Partner Research Portal




THE WESTERN AUSTRALIAN BIODIVERSITY SCIENCE INSTITUTE



WABSI Projects Portal

Filter results:

- Project Name
- Year
- Location
- Project Type
- Project Status
- Project Lead
- Project Funding
- Project Duration

Project 1:  **Project 1**
Project 2:  **Project 2**
Project 3:  **Project 3**

Australian Seedbank
Preserving Australia's native plant life.

Save the Bilby



Welcome, thank you & today's objectives

1. Provide a perspective on 2008 - 2017 Biodiversity information management journey in Western Australia
2. Update on 'baseline assessment' and 'target state' for the maturity of Biodiversity information management 'culture' in WA

WABSI - Information Management Background

THE WESTERN AUSTRALIAN BIODIVERSITY SCIENCE INSTITUTE



- *'A great deal of information on the State's biodiversity has been collected and interpreted by research agencies and industry. However, the **existing knowledge base is fragmented and difficult to access**. All stakeholders agree that an **enhanced information base**, which can be readily accessed and easily interpreted by decision-makers, will **improve decision-making**'*
- *'The issues associated with biodiversity information management will not be resolved quickly or easily. A concerted and disciplined approach over several years is required across government, industry and research agencies to ensure that **information is made accessible** by establishing clear policy frameworks and **investing in the supporting infrastructure and information technology** that is required'*



Current Information Management Node *Vision*

THE WESTERN AUSTRALIAN BIODIVERSITY SCIENCE INSTITUTE



*‘To create a **collaborative environment**, including a **web-based data management platform**, where biodiversity information is **collected once**, made **openly accessible**, and able to be used for multiple applications’*

WABSI Pathways Documentation (2012 – 2014)

Vision – Existing Benchmark Organisations

THE WESTERN AUSTRALIAN BIODIVERSITY SCIENCE INSTITUTE



*'To create a **collaborative environment**, including a **web-based data management platform**, where biodiversity information is **collected once**, made **openly accessible**, and able to be used for multiple applications'*

(very!) limited snapshot of current benchmarks

'Collaborative Environment'

- www.spur.wa.gov.au
- www.ala.gov.au
- www.nbn.org.uk

'Web Based Data Management Platform'

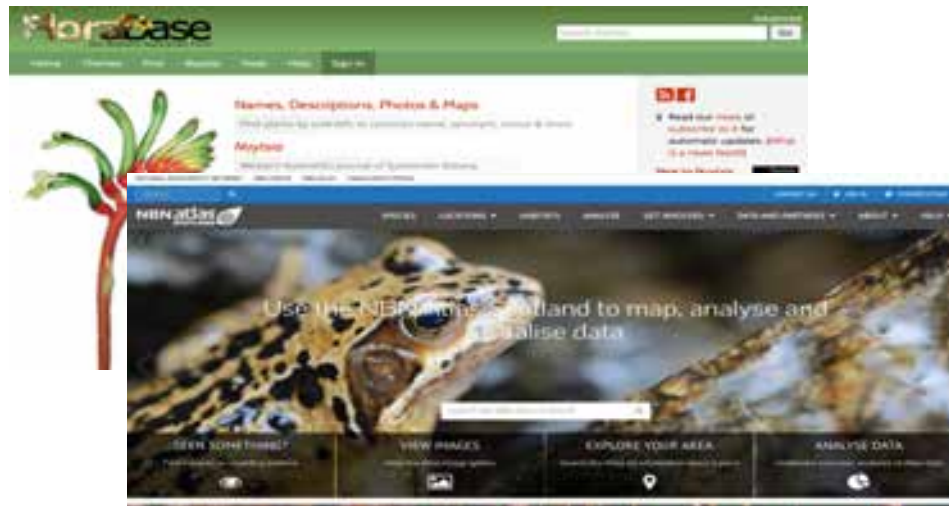
- www.tern.org.au

'Collected Once'

- www.tdwg.org
- www.gbif.org

'Openly Accessible'

- www.data.wa.gov.au
- www.ala.org.au
- www.gbif.org
- www.naturemap.dpaw.wa.gov.au
- www.seed.nsw.gov.au

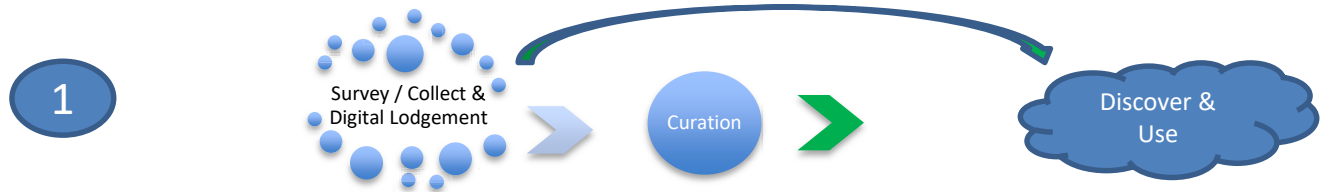


Vision – Biodiversity Information Supply Chain

THE WESTERN AUSTRALIAN BIODIVERSITY SCIENCE INSTITUTE

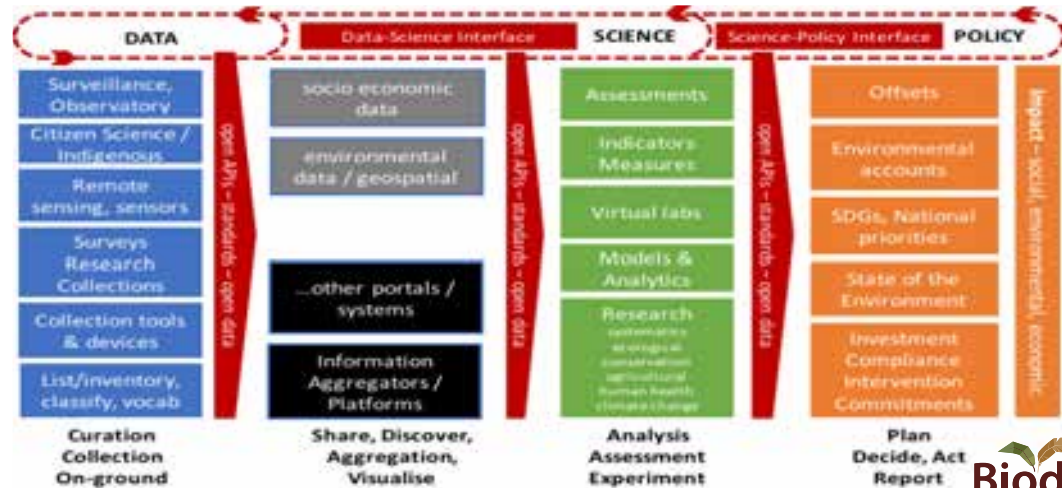


*‘To create a **collaborative environment**, including a **web-based data management platform**, where biodiversity information is **collected once**, made **openly accessible**, and able to be used for multiple applications’*



Vision requires a connected biodiversity information supply chain, leveraging and enhancing existing practices to overcome fragmentation, improve the seamless flow of information and deliver strategic outcomes and impact.

2



Vision – Recent Milestones

THE WESTERN AUSTRALIAN BIODIVERSITY SCIENCE INSTITUTE



This initial focus is supported by recent history in the biodiversity community, including:

- Environmental Impact Assessment Review (2009)
- Shared Environmental Assessment Knowledge (SEAK) taskforce (2011)
- Independent review of Australian Government Environment Information Activity (2012)
- State Environmental Data Library policy announcement and prototype (2014)
- Office of the Government Chief Information Officer (WA) Open Data Policy (2015)
- Department of the Environment and Energy proposal to undertake EPBC approvals flows, data access, repositories and use and associated potential value of proponent data (2017)

2009 > 2017 vision from Biodiversity community focussed on 'approvals process & survey data supply chain'

THE WESTERN AUSTRALIAN BIODIVERSITY SCIENCE INSTITUTE



Current EIA practice is to use the environmental information submitted with a proposal for the purpose of that proposal's assessment only... Inefficiencies arising from these practices include re-collection of environmental survey data where it already exists and time-intensive gathering of dispersed information, which results in longer time-lines and delays on project approvals and policy development...

...providing for the systematic capture and integration of this information into a growing environmental knowledge base available to government, industry, and the community for assessments of new development proposals and for ongoing strategic planning, decision-making and management (SEAK Taskforce Report, December 2011)



SEAK Taskforce Report, December 2011

Stakeholder Engagement to date:

THE WESTERN AUSTRALIAN BIODIVERSITY SCIENCE INSTITUTE



- Office of the Government Chief Information Officer
- Department of Premier and Cabinet
- Department of Parks and Wildlife
- Department of Mines and Petroleum
- Office of the Environmental Protection Authority
- BHP Billiton Iron Ore
- NSW Office of Environment & Heritage
- CSIRO
- Environmental Consultants Association WA
- Environmental Institute Australia & New Zealand (WA Chapter)

*“If you do nothing else **capture & manage the survey data** collected as part of the **environmental approvals** process and make it **accessible**”*

Where is the value?

THE WESTERN AUSTRALIAN BIODIVERSITY SCIENCE INSTITUTE



SEAK report (2011) focused on qualitative benefits

- The EIA process involving the Minister, Government and EPA will benefit through enhanced capability to provide better decisions; made faster with increased environmental outcomes including cumulative and regional issues.
- Proponents will avoid environmental assessment delays and save time and money by enhanced capacity to plan and design proposals in regard to previous decisions and a collection of assessment specific environmental information.
- Other Government Agencies will benefit through enhanced capability to provide better decisions; made faster with increased environmental outcomes. This relates to their own Agency assessments as well as their advice to EIA.

SEDL Business case (2014) focused on quantitative benefits

- The State Environmental Data Library (2014) business case '*...conservatively estimate there are around 600 environmental surveys conducted for the resource sector in Western Australia each year*'.
- Preliminary consultation with the Environmental Consultants Association (WA) estimates the simplest form of survey would cost in 2017 terms an estimated \$35,000.
- This equates to a conservative rough order of magnitude benefit to state in biodiversity survey data alone of \$21m per annum. Or ~\$105m of opportunity cost in non-collected biodiversity survey data in the 5 years since the SEAK taskforce reported.

Our challenge...

THE WESTERN AUSTRALIAN BIODIVERSITY SCIENCE INSTITUTE



... to evolve the

'2011 SEAK Vision > 2014 SEDL Vision > 2014 WABSI IM Vision'

focus it for 2017/20.

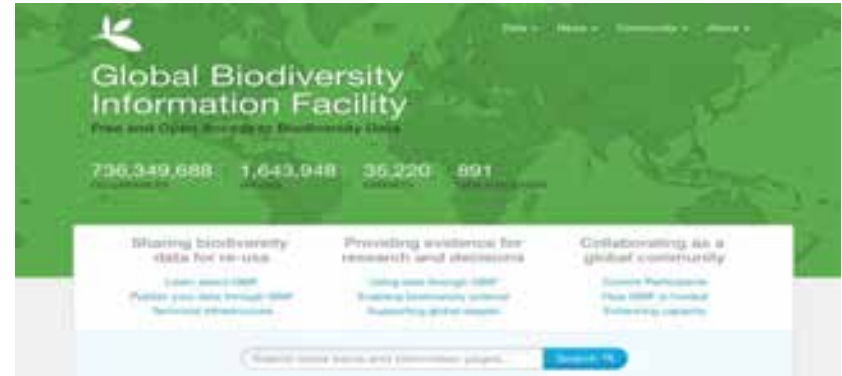
What are the *critical success factors* to evolve the WABSI IM Vision and avoid history repeating?

CSF > Global Biodiversity Information Facility

THE WESTERN AUSTRALIAN BIODIVERSITY SCIENCE INSTITUTE



- Founded in 2001 – www.gbif.org/what-is-gbif
- 54 countries (including Australia) & 39 associate organisations participate - www.gbif.org/participation/participant-list
- *‘The Global Biodiversity Information Facility (GBIF) is an **international open data infrastructure**... By encouraging and helping institutions to publish data according to common standards, GBIF enables research not possible before, and informs better decisions to conserve and sustainably use the biological resources of the planet’*
- Issued Global Biodiversity Informatics Outlook in 2013 - <http://www.gbif.org/resource/80859>
- The **Global Biodiversity Informatics Outlook (GBIO)** offers a **framework** for reaching a much deeper understanding of the world’s biodiversity, and through that understanding the means to conserve it better and to use it more sustainably.
- The GBIO identifies **four major focal areas**, each with a number of core components, to help coordinate efforts... these are the essential elements of a global **strategy to harness biodiversity data** for the common good.



Global Biodiversity Informatics Outlook (GBIO) - Critical Success Factors

THE WESTERN AUSTRALIAN BIODIVERSITY SCIENCE INSTITUTE



- Creating a **culture** of shared expertise, robust common data standards, policies and incentives for data sharing and a system of persistent storage and archiving of data
- Mobilising biodiversity **data** from all available sources, to make them promptly and routinely available. Data should be gathered only once, but used many times. This includes data in all forms from historic literature and collections to the observations made by citizen scientists; from the readings of automated sensors to the analysis of the genetic signatures of microbe communities.
- Providing the tools to convert data into **evidence** by enabling those data to be discovered, organizing them into views that give them context and meaning. This includes major collaborative efforts to improve the accuracy of data and their fitness to be used in research and policy; to provide a taxonomic framework; and to organize information about the traits of species and the interactions between them.
- Generating **understanding** of biodiversity and our impacts upon it, by applying the evidence in models, tools for visualization and identifying gaps to prioritize future data gathering.

<http://www.gbif.org/resource/80859>

GBIO 'Culture' Framework – Elements

THE WESTERN AUSTRALIAN BIODIVERSITY SCIENCE INSTITUTE

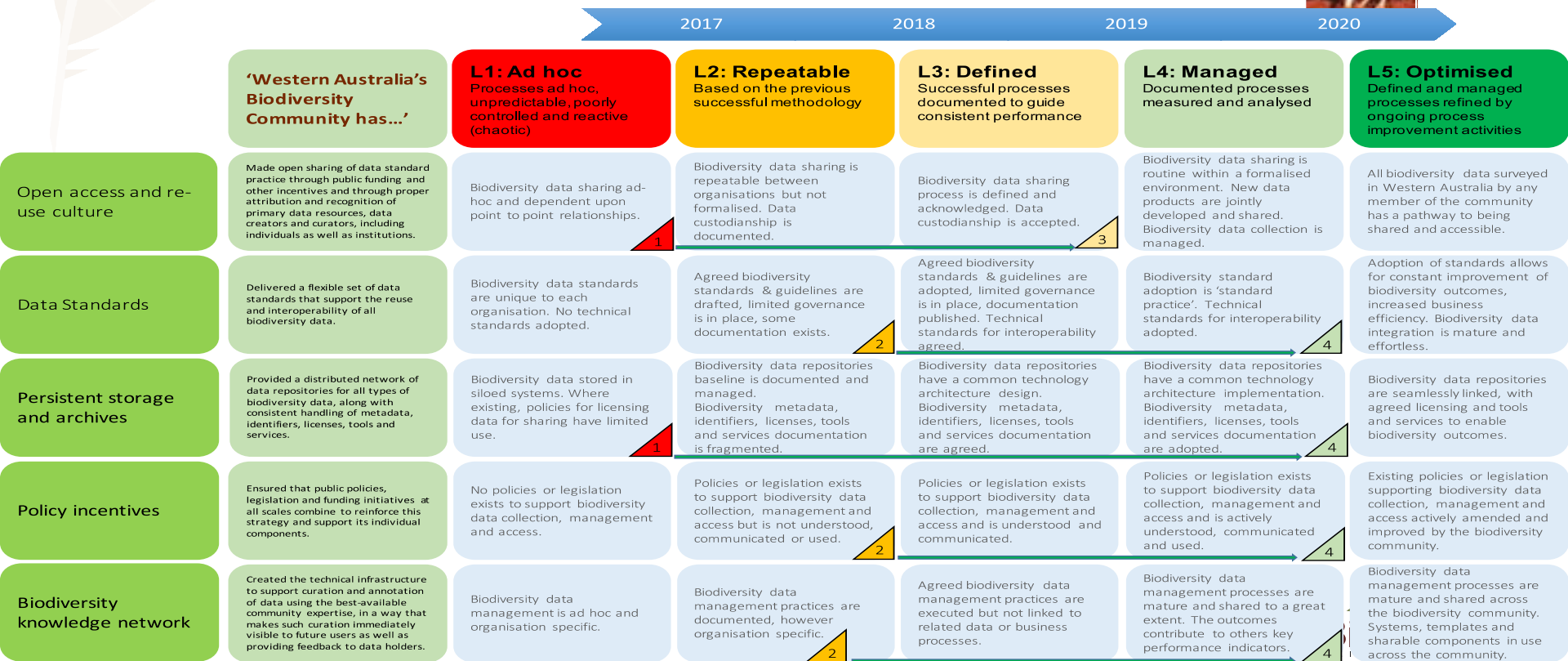


- A1. Open access and reuse culture: make open sharing of data standard practice through public funding and other incentives and through proper attribution and recognition of primary data resources, data creators and curators, including individuals as well as institutions.
- A2. Data standards: deliver a flexible set of data standards that support the reuse and interoperability of all biodiversity data.
- A3. Persistent storage and archives: provide a distributed network of data repositories for all types of biodiversity data, along with consistent handling of metadata, identifiers, licences, tools and services.
- A4. Policy incentives: ensure that public policies, legislation and funding initiatives at all scales combine to reinforce this strategy and support its individual components.
- A5. Biodiversity knowledge network: create the technical infrastructure to support curation and annotation of data using the best-available community expertise, in a way that makes such curation immediately visible to future users as well as providing feedback to data holders.



Preliminary Biodiversity 'Cultural' Maturity Assessment

THE WESTERN AUSTRALIAN BIODIVERSITY SCIENCE INSTITUTE



THANK YOU

Contact:

Guy Boggs – guy.boggs@wabsi.org.au

Chris Gentle – chris.gentle@wabsi.org.au



 @_WABSI
WABSI.ORG.AU

PROUDLY SUPPORTED BY:



Environmental
Protection
Authority



Government of Western Australia
Department of Mines and Petroleum



Department of
Parks and Wildlife

