Dataversity

Biodata Management Framework: Overview

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A preliminary draft of a Biodata Management Framework has been created at **http://dataversity.org.nz/guide/practices/**. This is the result of a TFBIS-funded project to draft the Framework in consultation with its potential users, and to report on the need for a Framework, the kind of Framework that is needed, and a plan for developing that Framework.

Dataversity and Horizons acknowledge the financial assistance of the **Terrestrial and Freshwater biodiversity Information System (TFBIS)** Programme towards the preparation of the Biodata Management Framework. The TFBIS Programme is funded by the Government to help achieve the goals of the New Zealand Biodiversity Strategy, and is administered by the Department of Conservation.

Intended Uses

The Framework is intended to be of use to all organisations involved with biodata management. This includes local government, CRIs, the Department of Conservation, NGOs, Universities, Museums, MfE, MAF, MSI and TFBIS itself.

It is intended to facilitate the following tasks.

- Assess the current state of biodata management practices.
- Prioritise improvements to biodata management practices.
- Plan and take manageable steps to improve biodata management practices in specific areas.

There is potential for the Framework to be used to set benchmarks for biodata management systems that could be used to encourage consistency and for contractual requirements for data management.

The following User Stories illustrate how the Framework might be used.

- A Biodiversity Officer is seeking funding to improve biodata systems. She uses the Framework to assess the current state of systems, to set goals for system improvements and to justify investment in the improvements.
- A Biosecurity Officer is planning to acquire or develop a new biosecurity database. She uses the Framework to set criteria that the new system must meet, and to evaluate the new system as it is selected or developed and implemented.
- A Data Manager wants to connect a biodata system to a network of biodata systems. He uses the Framework and to assess and report on the system's suitability to become part of a federated system.
- A biodiversity team is trying to assess existing data so they can make better use of it. They use the Framework to assess the systems used to manage the data. This improves their understanding of the quality of the data.
- A contract to deliver science outputs uses the Framework to specify the level of biodata management that is required.
- A contract to deliver biodata system outputs uses the Framework to specify the level of biodata management that the system must support.

- A biodata manager is asked to justify why her systems do not meet a high standard in a specific area. She uses the Framework to illustrate the spectrum of biodata management areas that she is working on and the current state of biodata management across those areas.
- A group of district councils use the Framework to agree a level of biodata management that they will consider sufficient for organisations of their size.
- A biodata manager has decided to improve her systems in the area of Data Standards. She uses a guide contained within the Framework to identify specific steps she needs to take to improve her systems in that area, and to find links to resources that help her with that.
- A group of organisations agree a set of criteria that should be met by any organisation undertaking a biodata software development initiative. The criteria used include a specified level of maturity as defined by the Biodata Management Framework.
- A group of organisations build a catalogue of biodata systems. The systems are rated against the Framework, along with other criteria.

Structure of the Framework

The Framework is comprised of two main parts:

- a Biodata Management Maturity Matrix the specifies maturity levels in specific biodata management areas
- Biodata Management Guides

Biodata Management Maturity Matrix

Biodata Management Maturity Matrix will provide a concise description of the maturity level in each area.

The following example shows how the maturity matrix could be used to illustrate the current and desired maturity of systems across a number of areas.

	Maturity Level				
Area	**1**	**2**	**3**	**4**	**5**
Data Standards					
GIS Integration					
Data Quality Management					
Integration of Prioritisation					
Data Exchange					
Permissions Management					

The preliminary maturity matrix that resulted from the first stage of this project is visible at **`http://dataversity.org.nz/guide/practices/`**.

The guide could be delivered in other forms such as an interactive self-assessment tool.

Biodata Management Areas

The preliminary maturity matrix is based on biodata management areas that resulted from consultation with the Dataversity community about the need for guides. A closer look at the areas reveals that the choice and naming of the of areas is not straight-forward. Of the areas that are chosen, some overlap, some (like Data Quality Management) apply to the entire data life cycle, while others (like Field Data Capture) relate to a single stage in that cycle. The areas contain a varying number sub-areas. Some areas are specific to biodata, while others are generic to information systems.

Before the Framework is developed further, the selection and definition of biodata management areas requires considerable refinement.

Maturity Levels

The definition of maturity levels also requires considerable refinement. "Maturity" itself requires definition. The level descriptions should be technology-independent and consistent across all biodata management areas.

Biodata Management Guides

Each biodata management area in the Framework requires an individual guide describing the maturity levels in that area in greater detail.

For each area, the guides will contain the following.

- A Title
- User Stories
- An Owner who is responsible for maintaining the guide
- A link to a discussion topic
- Levels
- References where more detailed information can be obtained

For each level the guide will contain the following.

- A description
- A list of criteria that a system must satisfy to reach the level – the criteria may include prerequisite levels in other areas that should be reached and how-tos for improving systems
- Descriptions of the benefits that the maturity level offers
- Some indication of the costs that are likely to be incurred in maintaining systems to the level.

Demand

Participants in the workshops unanimously agreed that there was a need for a biodata management Framework to facilitate the assessment and improvement of biodata systems.

Maintenance Plan

The level of support expressed for the Framework was reflected in participation in online discussion about the Framework. This suggests that as the Framework becomes more useful, it will be increasingly feasible to engage users of the Framework in its maintenance.

Development Plan

The following broad steps are required to get the Framework to the point where it will be useful to most organisations.

1. Structure Established – review prior work, finalise definition of areas and design of Framework.
2. Maturity Matrix Complete – specify all maturity levels in all areas.
3. Guides Useful for Planning and Development – complete checklists.
4. Guides Useful for Contractual Purposes – checklists approved, managed and maintained by accountable governance structure.