

Minimum information model for APPRISE Virtual Biobank (Phase 1)

Background

APPRISE is developing a virtual infectious disease biobank to demonstrate a collaborative approach to biobanking with minimal impact on current specimen storage arrangements. The virtual biobank will enable the discovery, integration and interpretation of data relating to stored biospecimens across institutions and geographic locations. It will have its own ethics approval and will not alter the current specimen custodianship arrangements for participating collections. The virtual biobank will develop the data standards and architecture required for an interoperable and harmonised biobank.

Data model requirements for the virtual biobank

A global information infrastructure for biobanking needs to integrate information from different systems and in different formats. This is called 'semantic interoperability' and requires common terminologies, data fields and harmonised services.

The data model for the APPRISE virtual biobank is based on an international community standard. The Minimum Information About Biobank data Sharing (MIABIS) was developed by the Biobanking and BioMolecular Resources Research Infrastructure of Sweden (BBMRI.se) to address the problem of semantic interoperability^{1,2,3}. MIABIS has been widely used and adapted to develop more structured standards for different purposes⁴. It underpins a number of well-known international collaborations, including:

1. European Molecular Biotechnology Laboratory (EMBL) BioMedBridges Project⁵
2. RD Connect Genome-Phenome Analysis Platform⁶
3. **P**redictive In-silico **M**ultiscale **A**nalytics to support cancer personalized dia**G**nosis and prognosis, **E**mpowered by imaging biomarkers (PRIMAGE) project^{7,8}
4. New South Wales Biobank Standard Operating Procedure – Clinical Annotation of Biospecimens⁹

The core terminology of MIABIS is divided into two levels:

1. Components describing the biobank itself (including aggregate information on sample collections and studies), sample collections and studies (which contain aggregate information about samples and sample donors).
2. Components describing the samples and sample donors at an individual level. Samples need to be described at an individual level in a harmonised manner to enable efficient querying of available studies and sample collections.

What we're asking you to provide

The APPRISE virtual biobank has adopted the MIABIS core terminology to create a minimum information model (Figure 1). This model includes the essential information needed to create a harmonised view for the biobank. For Phase I of the virtual biobank, we require Biobank, Study and Sample Collection data. More detailed information (individual sample and participant data) can be provided as we move to the next phase of the project.

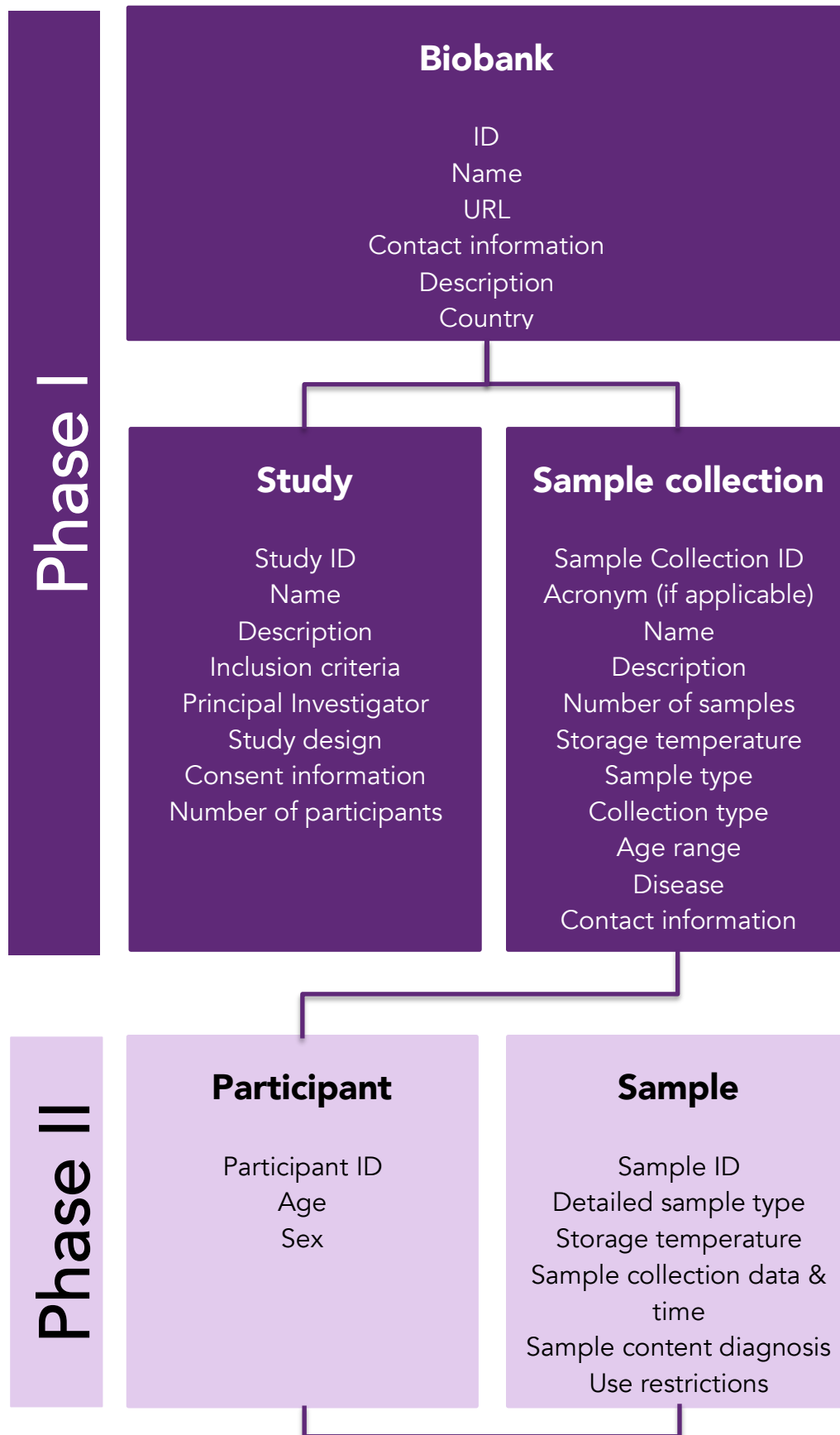


Figure 1 Minimum information model for APPRISE Biobank

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