**Requirements of**

**Permanent Unique Identifiers (PUIDs)**

**in the context of the Global Information System (GLIS)**

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| **#** | **Requirement** | **Description** |
| 1 | **Uniqueness** | Each PUID shall be associated to one and only one PGRFA entity |
| 2 | **Permanence** | The association between the PUID and the entity shall be maintained without any time limit |
| 3 | **Opacity** | No information on the entity should be inferable from the PUID alone |
| 4 | **Resolvability** | Suitable web interfaces are needed where a given PUID can be used by humans and client applications to obtain a description of the metadata associated with the PGRFA entity. Humans will receive a HTML page while a machine-readable format will be returned to client applications (see also #10 below) |
| 5 | **Discoverability** | Given one or more attributes of the entity, a web interface exists where those attributes can be entered to obtain the list of entities matching those attributes along with the associated PUIDs. Again, this applies to both humans and client applications (see also #10 below) |
| 6 | **Security** | Access to PUID management functions (e.g. editing of associated metadata) shall be allowed only to authorized users |
| 7 | **Scalability** | The adopted PUID type shall be designed to handle very large number of identifiers (hundreds of millions) |
| 8 | **Interoperability** | Interoperability with other PUID types shall be ensured |
| 9 | **Compatibility** | Local identifiers already assigned to PGRFA entities (e.g. Accession Numbers, Collecting Number) shall be preserved and provided as an attribute of the new PUID in the resolution service |
| 10 | **Content negotiation** | The default response format is HTML, but client applications shall be able to specify a preferred format (e.g. XML, RDF, JSON) |
| 11 | **Accepted standard** | Selecting a PUID type that follows an internationally accepted standard is considered a plus because it will guarantee a coordinated development of the framework |
| 12 | **Acquisition and maintenance costs** | The cost of acquiring licenses or registration with a central authority, as well as any other cost associated in acquiring the PUID technology (e.g. software tools) should be assessed |
| 13 | **Acceptance by publishers** | It is expected that GLIS entities will be cited in journals, books and papers. Selecting a PUID type that is widely accepted by publishers is considered a plus |
| 14 | **Popularity** | Adopting a PUID type that is widely used facilitates acceptance by users |
| 15 | **Availability of tools** | Software tools available in the most common programming languages (e.g. PHP or Java) will facilitate integration in GLIS |
| 16 | **Resolution service and multiple resolution** | Availability of a reliable, global resolution service is considered a plus because it will allow users outside the GLIS community to resolve GLIS PUIDs from third party websites. As an optional and powerful feature, a list of links to multiple destinations (with specific, multidisciplinary information on the same entity) can be returned in the resolution response. In this case, filtering of destinations according to some metadata description can be supported |
| 17 | **Framework design** | The detail and completeness of the logical and technical design framework should be evaluated because functions and services that are designed and specified for the PUID types in such frameworks are likely to be more reliable, powerful and interoperable with existing and future management systems compared to areas that are not specified |
| 18 | **Metadata** | The ability to incorporate different entity types and metadata descriptions is critical |
| 19 | **Relations** | The PUID shall support modeling of complex relations among entities such as instantiation, hierarchy, derivation, inclusion and so on |
| 20 | **Identification of fragments** | The possibility of identifying individual attributes or fragments of an entity |