|  |
| --- |
| LIRMM, University of Montpellier & CNRS, France |
| FAIRness assessment questions for semantic resource |
| First iteration V1- public version |
| Data to Knowledge in Agronomy and Biodiversity (D2KAB) <https://d2kab.mystrikingly.com/>  Work Package 1 |

|  |
| --- |
| Emna Amdouni and Clement Jonquet  07/04/2021 |





|  |
| --- |
| **FINDABLE (113 credits)** |
| F1. ontologies and ontology are assigned a globally unique and persistent identifier41credits  Q1. Does an ontology have a “local” identifier i.e., a globally unique and potentially persistent identifier assigned by the developer (or developing organization)? 3 pts  Q2. If yes, is this identifier a resolvable/dereferenceable URI? 6 pts  Q3. Does an ontology provide an additional “external” identifier i.e., a guarantee globally unique and persistent identifier assigned by an accredited body? 6 pts  Q4. If yes, is this external identifier a DOI? 5 pts  Q5. Are the ontology metadata included in the ontology file –and consequently share the same identifiers? 6 pts  Q6. If not, is the metadata record clearly identified by its own GUPRI? 6 pts  Q7. Does an ontology provide a version specific URI? 4 pts  Q8. If yes, is this URI resolvable/dereferenceable? 5 pts |
| F2. ontologies are described with rich metadata 27 credits  Q1 Is an ontology described with additional “MIRO must” metadata properties? (4 points per property up to 16 credits) 16 credits  Q2. Is an ontology described with additional “MIRO should” metadata properties? (2 points per property up to 5 credits) 5 credits  Q3. Is an ontology described with additional “MIRO optional” metadata properties? (1 point per property up to 3 credits) 3 credits  Q4. Is an ontology described with another metadata property with no explicit corresponding MIRO requirement? (1 pt per property up to 3 credits) 3 credits |
| F3. Ontology metadata clearly and explicitly include the identifier of the data they describe 21 credits  Q1. Are the ontology metadata included and maintained in the ontology file? 21 pts  Q2. If not, are the ontology metadata described in an external file? 11 pts  Q3. Does that external file explicitly link to the ontology and vice-versa? 10 pts |
| F4. Ontologies and ontology metadata are registered or indexed in a searchable resource 24 credits  Q1. Is the ontology registered in multiple ontology libraries? (1 point per ontology library up to 7 credits) 7 credits  Q2. Is the ontology registered in multiple open ontology repositories? (1 point per ontology repository up to 9 credits) 9 pts  Q3. Is an ontology registered in the "de facto" reference libraries or repositories ? (1 point per a “de facto” reference library up to 4 credits) 4 pts  Q4. Are the ontology libraries or repositories properly indexed by Web search engines? 4 pts |

|  |
| --- |
| **ACCESSIBLE (credits 113)** |
| A1. Ontologies and metadata are retrievable by their identifier using a standardized communications protocol 43 credits  Q1.Does the ontology URI and other identifiers, if exist, resolve to the ontology? (3 points per a resolvable identifier up to 6 credits) 6 credits  Q2. Does the ontology URI (if metadata is included in the ontology file) or the external metadata URI resolve to the metadata record? 7 pts  Q3. Are ontology and its metadata supporting content negotiation? (6 points per format up to 24 credits) 24 credits  Q4. Is an ontology and its metadata accessible through another standard protocol such as SPARQL? 6 pts |
| A1.1. The protocol is open, free and universally implementable 28 credits  Q1. Is an ontology relying on HTTP/URIs for its identification and access mechanisms? 20 pts  Q2. Are the other protocols –if any– open, free, and universally implementable? 8 pts |
| A1.2. The protocol allows for an authentication and authorization where necessary 22 credits  Q1. Does the protocols used to resolve ontology identifiers support authentication and authorization? 4 pts  Q2. Is the ontology accessible in an ontology repository or library that supports authentication and authorization (such as NCBO BioPortal, AgroPortal)?  (3 points per ontology repository up to 18 credits) 18 credits |
| A2. Ontology metadata should be accessible even when the ontology is no longer available 20 credits  Q1. Are "most" ontology versions accessible? 7 pts  Q2. Are the metadata of each version available? 4 pts  Q3. Are ontology metadata accessible even if no more versions of the ontology are available? 4 pts  Q4. Is the ontology accessible in an ontology repository or library that supports metadata archiving? 2 pts |

|  |
| --- |
| **INTEROPERABLE (credits 109)** |
| I1. Ontologies and ontology metadata use a formal, accessible, shared and broadly applicable language for knowledge representation 44 credits  Q1. What is the representation language used for ontology and ontology metadata? 20 pts (if the ontology is in an OWL format else follow our representation format scoring scale\*)  Q2. Is the representation language used a W3C Recommendations? 10 pts  Q3. Is the syntax of the ontology informed? 5 pts  Q4. Is the formality level of the ontology asserted by the author? 5 pts  Q5. Is the availability of other formats informed? 4 pts   (\*) Scoring scale of each representation format: (OWL, 20 pts) - (SKOS, 18 pts) - (RDFS, 16 pts) - (OBO, 14 pts) - (XML, 12 pts) - (CSV, 11 pts) - (PDF, 5 pts) - (TXT, 5 pts). |
| I2. Ontologies and ontology metadata use vocabularies that follow FAIR principles 31 credits  Q1. Does the ontology import other FAIR vocabularies? 5 pts  Q2. Does the ontology reuse URIs from other vocabularies? 4 pts  Q3. If yes, does it include the minimum information for those URIs (cf. MERIOT)? 3 pts  Q4. Is an ontology aligned to other vocabularies? 5 pts  Q5. If yes, are those alignments well represented and to unambiguous entities? 3 pts  Q6. If yes, are those alignments curated? 4 pts  Q7. Does an ontology provide metadata information about relation to or influence of other vocabularies? 3 credits (1 point per metadata property up to 3 credits)  Q8. Does the ontology reuse standards metadata vocabularies to describe its metadata? 5 pts |
| I3. Ontologies or ontology metadata include qualified references to other (meta)data 32 credits  Q1. Non-automatically assessable qualified references. 10 pts  Q2. Does an ontology provide cross-references to external resources? 9 pts  Q3. If yes, are those cross-references well represented and to unambiguous entities? 3 pts  Q4. Does an ontology provide information about projects using or organization endorsing? 6 credits (3 points per property up to 6 credits)  Q5. Is an ontology using GUPRIs to encode some metadata values? 5 pts |

|  |
| --- |
| **REUSABLE (credits 143)** |
| R1. metadata-based FAIRness assessment questions 32 credits  Q1. Does the ontology provide metadata information about how classes are defined? 8 pts  Q2. Does the ontology provide metadata information about its hierarchy? 8 pts  Q3. How much of the ontology classes (or concepts) are defined using a property restriction (e.g. defining a class using OWL “quantifier”, “cardinality” or “has value” restrictions ) or an equivalent class (e.g. an OWL named class with a necessary and sufficient condition) ? 8 pts  Q4. How much of the ontology objects provide provenance information with annotation properties (e.g. author, date)? 8 pts |
| R1.1 Metadata-based FAIRness assessment questions 37 credits  Q1. Is the ontology license clearly specified (i.e., with a persistent, unique identifier)? 8 pts  Q2. If yes, is the license description accessible and resolvable by a machine? 7 pts  Q3. Are the ontology access rights clearly specified/declared? 7 pts  Q4. Are the permissions, usage guidelines and copyright holder clearly documented? 15 pts  R1.2 metadata-based FAIRness assessment questions 38 credits  Q1. Does an ontology metadata inform on its general provenance (e.g., source, creator, validator)? 10 pts  Q2. Are the accrual methods and policies documented? 10 pts  Q3. Is the ontology clearly versioned? 5 pts  Q4. Are the methodology and tools used to build the ontology documented? 5 pts  Q5. Is the ontology rationale documented? 5 pts  Q6. Does an ontology inform on its funding organization? 3 pts |
| R1.3 metadata-based FAIRness assessment questions 36 credits  Q1. Is the ontology recognized by one or several groups\* (or organizations) which attest it meets standard practices and guidelines relevant for a specific community? 30 pts  Q2. Is the ontology openly and freely available?  6 pts  (\*) In the case of AgroPortal, an ontology can be assigned to a “group”. Groups associate ontologies from the same project or organization. Currently, AgroPortal considers 8 main groups in the agriculture domain: OBO foundry initiative, WHEAT, CROP ontology project, and INRAE. |