### FAIR Data Maturity Model: specification and guidelines

The FAIR principles have to be considered as inspiring concepts but not strict rules. This means that they may lead to diverse interpretations and ambiguity. To remedy the different forms of FAIR Implementation, the Research Data Alliance (RDA) Working Group "FAIR data maturity model" was established in January 2019 to develop a common set of core assessment criteria for FAIRness, as an RDA Recommendation. In the course of 2019 and the first half of 2020, the WG established a set of indicators and maturity levels for those indicators. The work culminated in the release of the FAIR Data Maturity Model: specification and guidelines. Research Data Alliance. [DOI: 10.15497/RDA0050](https://doi.org/10.15497/RDA00050)). This excellent specification has been adopted for FAIR assessment throughout this implementation guide. It has also influenced the "Recommendations for services in a FAIR data ecosystem", which includes the Open Science Cloud (EOSC) [DOI: 10.1016/j.patter.2020.100058](https://doi.org/10.1016/j.patter.2020.100058).

### Application of the FAIR Maturity Indicators

The FAIR maturity indicators are designed for re-use in approaches to evaluation. They are accompanied by guidelines for their use which is intended to assist evaluators to implement the indicators in the evaluation approach or tool they manage. The exact way to evaluate data based on the core criteria is up to the owners of the evaluation approaches, taking into account the requirements of their community. The objective is consistency of application to make sure that the indicators, the maturity levels and the prioritisation are understood in the same way.

### FAIR Data Maturity Indicators and priority

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|  | **PRINCIPLE** | **INDICATOR\_ID** | **FAIR DATA MATURITY INDICATOR** | **PRIORITY** |
| **F** | F1 | RDA-F1-01M | Metadata is identified by a persistent identifier | Essential |
| F1 | RDA-F1-01D | Data is identified by a persistent identifier | Essential |
| F1 | RDA-F1-02M | Metadata is identified by a globally unique identifier | Essential |
| F1 | RDA-F1-02D | Data is identified by a globally unique identifier | Essential |
| F2 | RDA-F2-01M | Rich metadata is provided to allow discovery | Essential |
| F3 | RDA-F3-01M | Metadata includes the identifier for the data | Essential |
| F4 | RDA-F4-01M | Metadata is offered in such a way that it can be harvested and indexed | Essential |
| **A** | A1 | RDA-A1-01M | Metadata contains information to enable the user to get access to the data | Important |
| A1 | RDA-A1-02M | Metadata can be accessed manually (i.e. with human intervention) | Essential |
| A1 | RDA-A1-02D | Data can be accessed manually (i.e. with human intervention) | Essential |
| A1 | RDA-A1-03M | Metadata identifier resolves to a metadata record | Essential |
| A1 | RDA-A1-03D | Data identifier resolves to a digital object | Essential |
| A1 | RDA-A1-04M | Metadata is accessed through standardised protocol | Essential |
| A1 | RDA-A1-04D | Data is accessible through standardised protocol | Essential |
| A1 | RDA-A1-05D | Data can be accessed automatically (i.e. by a computer program) | Important |
| A1.1 | RDA-A1.1-01M | Metadata is accessible through a free access protocol | Essential |
| A1.1 | RDA-A1.1-01D | Data is accessible through a free access protocol | Important |
| A1.2 | RDA-A1.2-01D | Data is accessible through an access protocol that supports authentication and authorisation | Useful |
| A2 | RDA-A2-01M | Metadata is guaranteed to remain available after data is no longer available | Essential |
| **I** | I1 | RDA-I1-01M | Metadata uses knowledge representation expressed in standardised format | Important |
| I1 | RDA-I1-01D | Data uses knowledge representation expressed in standardised format | Important |
| I1 | RDA-I1-02M | Metadata uses machine-understandable knowledge representation | Important |
| I1 | RDA-I1-02D | Data uses machine-understandable knowledge representation | Important |
| I2 | RDA-I2-01M | Metadata uses FAIR-compliant vocabularies | Important |
| I2 | RDA-I2-01D | Data uses FAIR-compliant vocabularies | Useful |
| I3 | RDA-I3-01M | Metadata includes references to other metadata | Important |
| I3 | RDA-I3-01D | Data includes references to other data | Useful |
| I3 | RDA-I3-02M | Metadata includes references to other data | Useful |
| I3 | RDA-I3-02D | Data includes qualified references to other data | Useful |
| I3 | RDA-I3-03M | Metadata includes qualified references to other metadata | Important |
| I3 | RDA-I3-04M | Metadata include qualified references to other data | Useful |
| **R** | R1 | RDA-R1-01M | Plurality of accurate and relevant attributes are provided to allow reuse | Essential |
| R1.1 | RDA-R1.1-01M | Metadata includes information about the licence under which the data can be reused | Essential |
| R1.1 | RDA-R1.1-02M | Metadata refers to a standard reuse licence | Important |
| R1.1 | RDA-R1.1-03M | Metadata refers to a machine-understandable reuse licence | Important |
| R1.2 | RDA-R1.2-01M | Metadata includes provenance information according to community-specific standards | Important |
| R1.2 | RDA-R1.2-02M | Metadata includes provenance information according to a cross-community language | Useful |
| R1.3 | RDA-R1.3-01M | Metadata complies with a community standard | Essential |
| R1.3 | RDA-R1.3-01D | Data complies with a community standard | Essential |
| R1.3 | RDA-R1.3-02M | Metadata is expressed in compliance with a machine-understandable community standard | Essential |
| R1.3 | RDA-R1.3-02D | Data is expressed in compliance with a machine-understandable community standard | Important |