

Workshop report

FAIR data maturity model Working Group

Online meeting #6 - 4th December 2019

Project	RDA FAIR data maturity model working group	Date & Time	4 December 2019 07:00 — 08:30 UTC 4 December 2019 15:00 — 16:30 UTC
Type	Online meeting	Location	Google Meet
Meeting Chairs	Keith Russel Shelley Stall	Issue date	11/12/2019

Objectives

The primary objective of this sixth online meeting was twofold. Prior to the workshop, two members of the FAIR data maturity model WG volunteered to test the current version of the indicators against some digital resources. Therefore, the first objective of this meeting was to report on this pilot testing and draw out some early lessons. As a second objective, the editorial team took the opportunity to present the structure and content of the FAIR data maturity guidelines. Other than that, they editorial team gave an update on the current status of the development of the FAIR data maturity model. Lastly, a discussion was foreseen about the early lessons derived from the pilot testing.

Agenda

1. Welcome, objectives of the meeting
2. Roundtable
3. State of play
4. Pilot testing | Presentations
5. Discussions about testing results
6. Draft guidelines
7. Action items & next steps

Useful links

- [RDA FAIR data maturity model WG](#)
- [RDA FAIR data maturity model WG – Case Statement](#)
- [RDA FAIR data maturity model WG – GitHub](#)
- [RDA FAIR data maturity model WG – Collaborative document](#)

- [RDA FAIR data maturity model WG – Indicators prioritisation](#)
- [RDA FAIR data maturity model WG – Indicators prioritisation survey results](#)
- [RDA FAIR data maturity model WG – Guidelines](#)
- [RDA FAIR data maturity model WG – Mailing list](#)
- [RDA FAIR data maturity model WG – Workshop #6 material](#)

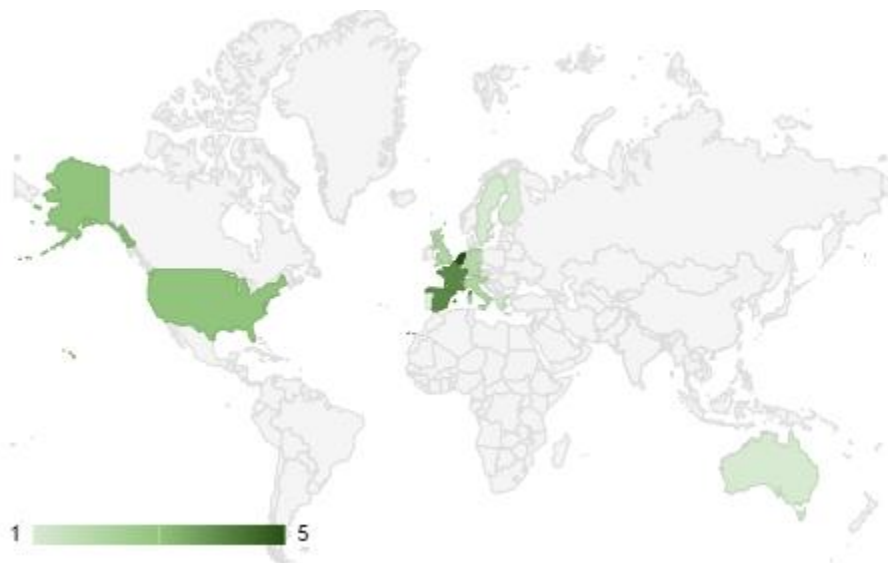
Participants

The workshop was well attended. Here below is a non-exhaustive list of the participants.

Name		Affiliation
Alicia Fátima Gómez Sánchez	ES	INAECU
Anusuriya Devaraju	DE	University of Bremen
Barbara Sierman	NL	KB National Library of the Netherlands
Carlos Casorrán Amilburu	BE	European Commission DG RTD
Christophe Bahim	BE	PwC, Editor team
Daniele Bailo	IT	EPOS-ERIC - ING
David Carr	UK	Wellcome Trust
Dimitra Mavraki	GR	Hellenic Centre for Marine Research,
Edit Herczog	BE	Chair, Vision & values SPRL
Eva Martin Del Pico	ES	Barcelona Supercomputing Center
Françoise Genova	FR	Strasbourg Astronomical Data Centre
Ge Peng	US	North Carolina State University / NCEI
Hervé L'hours	UK	UK Data Archive
Ian Fore	US	CBIIT
Ingrid Dillo	NL	DANS / H2020 FAIRsFAIR
Janez Štebe	SI	University of Ljubljana, Social science data archives
Jerry de Vries	NL	DANS
Jessica Parland-von Essen	FI	CSC - IT Center for Science
Keith Russell	AU	Chair, ARDC
Konstantinos Repanas	BE	European Commission DG RTD
Leyla Garcia	DE	ZBMED

Makx Dekkers	ES	Independent Consultant, Editor team
Marco Molinaro	IT	INAF (Italian national institute for Astrophysics)
Margareta Hellström	SE	Lund University
Mark Wilkinson	ES	Universidad Politécnica de Madrid
Marta Teperek	NL	TU Delft
Milan Ojsteršek	SI	University of Maribor (FERI)
Mohamed Salah Yahia	FR	Inist-CNRS / Datacite
Mustapha Mokrane	NL	DANS
Nicolas Loozen	BE	PwC, Editor team
Oya Beyan	DE	The Fraunhofer Society
Pete McQuilton	GB	FAIRsharing / University of Oxford
Romain David	FR	INRA
Salvador Capella	ES	Barcelona Supercomputing Center
Shelley Stall	US	Chair, American Geophysical Union
Susanna-Assunta Sansone	GB	University of Oxford
Victoria Dominguez Del Angel	FR	ELIXIR-France
Vitaly Sedlyarov	AT	CeMM

Here below is a map representing the provenance of the different participants



Content¹

The workshop was designed in order to be as interactive as possible: as mentioned in the introduction, a discussion was foreseen.

As a result of the comments and suggestions from the pilot testing, four discussion items were put forward for the discussion. The meeting was fruitful and enabled lively discussions. The major issues discussed and the comments from the members of the Working Group can be found later in this document.

1. The Chairs opened the workshop, welcomed the participants and addressed the agenda. The approach to the Working Group was again presented:
 - Challenges rising from the different interpretations of FAIRness
 - Bringing together the relevant stakeholders to discuss and build on existing expertise and different approaches
 - Intended results: i) set of core assessment criteria for FAIRness ii) FAIR data maturity model & toolset iii) RDA recommendation and iv) FAIR data checklist.

¹ Please note that some of the slides are displayed for information purposes. The full presentation can be accessed via the RDA FAIR data maturity model WG web page.



Context

The principles are **NOT** strict

- **Ambiguity**
- Wide range of **interpretations** of FAIRness



Different **FAIR Assessment** Frameworks

- Different metrics
- No comparison of results
- No benchmark

FAIR



SOLUTION is to bring together **stakeholders** to build on **existing approaches** and **expertise**

- Set of **core assessment criteria** for FAIRness
- FAIR **data maturity model & toolset**
- FAIR data **checklist**
- RDA recommendation

Join the **RDA** Working Group: [RDA WG web page](#) | [GitHub](#)

2019-12-04

www.rd-alliance.org - @resdataall

3



Slide 3 | Welcome and objectives of the meeting

As usual, the Chairs insisted that despite all the challenges arising when designing indicators, the purpose of the WG was **NOT** to re-design the FAIR principles. As there are currently different interpretations of what the FAIR principles entail, the primordial goal is to build a common understanding.

In addition, the chairs reminded the participants that all the presentations and reports are on the RDA FAIR data maturity model WG [web page](#) and that the members are encouraged to participate via the dedicated [GitHub repository](#).

2. The Chairs and the editor team introduced themselves, after which the participants were invited to enter in the chat window their affiliations and roles.
3. The editorial team reported on the current state of development: what steps have been taken and what steps remain to be taken.



State of play

1. Definition	DONE
2. Development	CLOSING
i) First phase	DONE
ii) Second phase	CLOSING
3. Testing	ONGOING
4. Delivery	ON HOLD

* Any comments are still welcomed with regards to the output produced during the first phase | [GitHub](#)

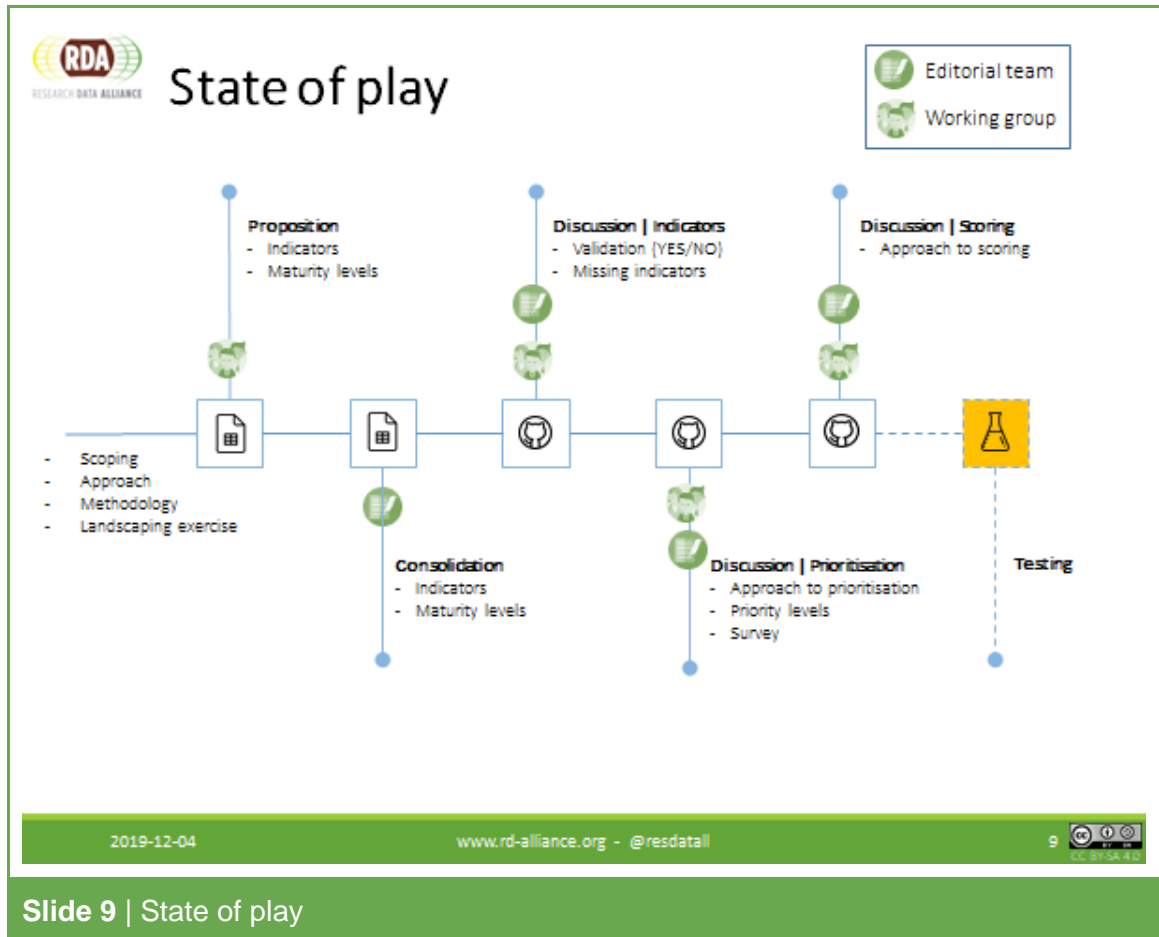
2019-12-04

www.rd-alliance.org - @resdata11



Slide 8 | State of play

As illustrated on the slide above, the editorial team reminded participants that at the outset of the working group a methodology was designed. The methodology is composed of four main phases. Currently, the editorial team is closing phase two and initiating phase three, with first a pilot testing. In the beginning of 2020, the editorial team will roll-out the full testing phase. Then, the input of the testing phase will serve to update all the deliverables included in the fourth phase.



As illustrated by the slide above, the Working Group was first invited to propose potential indicators to measure the FAIRness of a digital resource. The editorial team then consolidated all the contributions, which resulted in a finite set of 51 indicators and their respective maturity levels.

That consolidated set was shared for comments on the dedicated GitHub. Additionally, the editorial team made proposals for prioritisation and scoring. Discussions related to these three topics (i.e. indicators, prioritisation and scoring) took place in parallel on the GitHub.

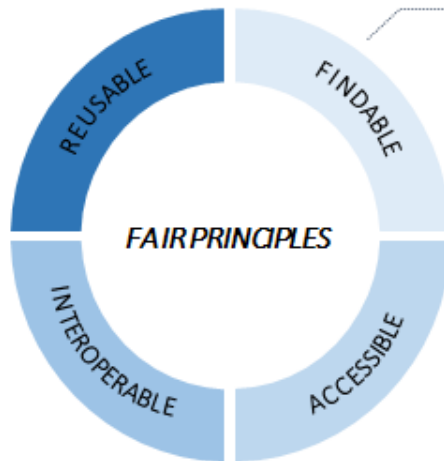
In order to facilitate the consensus process about prioritisation, the editorial team put together a survey. The results of the survey were used to propose priorities for all indicators. Further discussion on the priorities will take place after the test phase.

As of early December 2019, the editorial team is further investigating ways to score the FAIRness of a digital resource and has started to look into an approach for testing. In addition, the editorial team has closed the pilot testing, which will serve as basis for the full testing phase.

State of play

- ◆ Goal is to finalise indicators and priorities
- ◆ Indicators and priorities will be further used in their current state
- ◆ Indicators and priorities will be re-evaluated after the testing phase

Furthermore, the editorial team reminded the audience that the state of the indicators was frozen in late October 2019. The current indicators will be used in a testing phase where owners of evaluation approaches are invited to compare their approaches (questionnaires, tools) against the indicators. As such, the current set of indicators can be seen as an 'alpha version'. In the first half of 2020, the indicators may be revised and improved, based on the results of the testing.



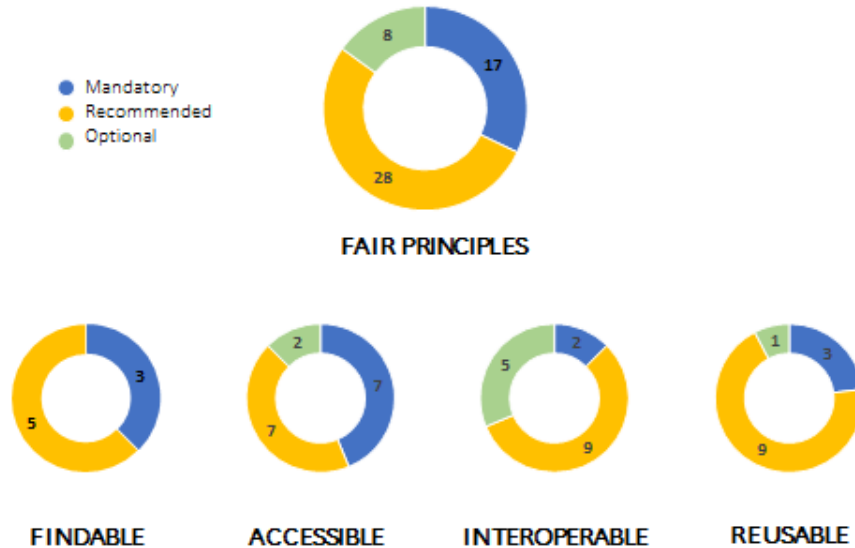
Indicators for Findability

- [F1-01M] Metadata is identified by a persistent identifier
- [F1-01D] Data is identified by a persistent identifier
- [F1-02M] Metadata is identified by a universally unique identifier
- [F1-02D] Data is identified by a universally unique identifier
- [F2-01M] Sufficient metadata is provided to allow discovery, following domain/discipline-specific metadata standard
- [F2-02M] Metadata is provided for the discovery-related elements defined by the RDA Metadata IG, as much as possible and relevant, if no domain/discipline-specific metadata standard is available
- [F3-01M] Metadata includes the identifier for the data
- [F4-01M] Metadata is offered/published/exposed in such a way that it can be harvested and indexed

* The full list of indicators can be found on the following [GSheet](#)

The editorial team gave a glimpse of what consists the indicators: metrics derived from the principles to measure the FAIRness of any digital resource. The editorial team also reminded the audience that, in scope of the charter, this Working Group needs to look specifically at *what* to measure and not *how*. The *how* part will come at a later stage.

Distribution of the weight of the indicators



Slide 15 | Weighting stats

The results of the survey related to prioritisation of the indicators were introduced. Overall, the Working Group members tended to be stricter towards evaluating FAIRness, proposing 17 indicators to be mandatory. The editorial team highlighted some notable results:

- No optional indicators for *Findability*
- Two mandatory indicators for *Interoperability*

Results of the survey can be consulted at the following [address](#).

4. Two participants, namely Françoise Genova and Oya Beyan were invited to present their results of testing the indicators in their own methodology. Here below are few elements brought up by our two speakers:

Françoise Genova

- This pilot testing case was an opportunity to test how the disciplinary practices with regards to FAIR were fitting with the FAIR data maturity core criteria.

- For this exercise, data from the VO (Virtual Observatory) were used. The VO integrates tools and standards to ensure data findability, discoverability and interoperability. As a matter of fact, the astronomy community is quite advanced in terms of data sharing and reuse. This community aims at developing a data sharing framework.
- Françoise and her team looked at each proposed criterion and paid attention to the indicators labeled as mandatory (as they are seen as key elements to determine whether a resource is FAIR or not).
- It is fair to say that a significant fraction of the indicators work well, however there is a problem of granularity. There is no need to change the indicators but eventually to improve the understandability and usability of some.
- 'Open by default' should be considered as acceptable in spite of the legal hurdles. In other words, they proposed that any resource without an attached license should be regarded as Open.
- Astronomy VO (Virtual Observatory), uses a customized URI-derived persistent ID solution for all its resources.
- Françoise strongly recommends using compliance scales when determining the FAIRness level of a resource. This will provide an inclusive system and a way to set up goals and measure progress.
- Françoise Genova made specific comments² about the criteria that posed problems during the evaluation.

Oya Beyan

- Oya and her team used four different datasets, where they applied the FAIR data maturity indicators to measure the FAIRness. Independent experts reviewed each metric and agreed on a score.
- The major pitfall of the current version of the FAIR data maturity indicator is that some indicators are difficult to assess as they are subject to different interpretations.
- Out of the 51 indicators only a small proportion was evaluated differently according to the evaluator. There are some concepts that evaluators found confusing and for which clarifications should be provided (e.g. protocol, persistence, metadata, self-describing, automatic download, standard vocabularies, FAIR compliant, metadata to allow reuse, community/domain standards).
- The WG should work to better define concepts (e.g. metadata, automated, standardized, etc.) and develop guidelines with concrete examples and best

² <https://www.rd-alliance.org/workshop-6> see slides 21-23

practices (e.g. there are different ways of publishing data that may lead to different interpretations).

- FAIRification for a specified purpose has an impact on interpretation.
 - Community data and metadata standards should be referenceable via a community resource as FAIRsharing.org
 - Oya Beyan made specific comments³ about the criteria that posed problems during the evaluation.
5. In order for the session to be interactive, the editorial team proposed a number of discussion items stemming from the early results of the pilot testing.
- Compliance scales instead of yes/no evaluation
 - How does 'Open by default' fits with FAIR?
 - How to address the terminology of the indicators and get examples of good practices?
 - Should the evaluation of metadata concern the metadata attached to the data item and/or the data collection?

³ <https://www.rd-alliance.org/workshop-6> see slides 33-37

Discussions about testing results

- 1** Should we define **compliance scales** instead of **yes/no evaluation**? E.g.:
0= does not comply to indicator
1= does not yet comply, under development
2= fully complies to indicator
- 2** How does **'Open by default'** fit with FAIR, especially for indicators related to access conditions and re-use licences?
- 3** How can we address **improving terminology** in some of the indicators and how can we get **examples of good practices**?
- 4** Should the evaluation of metadata concern the **metadata attached to the data item** and/or **data collection**?

Slide 43 | Discussion about the testing results

Here below are a number of comments put forward by the audience:

- Oyan Beyan mentioned agreed that compliance levels could be useful. Oya suggested also to have more objective measures.
- The compliance scale will help users to visualise progress which is not possible in a yes/no evaluation. Furthermore, a compliance scale could allow the users to self-monitor progress. CoreTrustSeal is also using such levels.
- The different scales should incorporate guidance to move from one level to another and reach the objectives set by the community. As reminded by a member of the audience, what matters is how FAIR a digital resource is along the road of FAIRness. The key argument of compliance scales is to allow people to make progress on their FAIR journey.
- Compliance scales are useful if FAIRness is seen as an objective rather than a state. On the contrary, if the evaluation is intended to determine the FAIRness of a digital resource, compliance scales are less useful: a resource either meets or doesn't meet a criterion.

- If FAIR is not seen as a continuum, we risk losing communities that are not as far advanced in the process of making data FAIR and this would be counterproductive. Therefore, it is recommended that the WG does not consider the FAIRness evaluation as a value judgment and rather considers it as guidance, all communities will remain involved.
- Automated evaluation is more objective and scalable.
- How will it be possible to evaluate FAIRness with a compliance scale? The yes/no automated evaluation via a tool can give a precise answer. The compliance levels, on the other hand, can only be assigned by a human evaluator. If one looks at the automated evaluation perspective, having different levels doesn't help.
- The problem with automated assessment, considered that the evaluation of some indicators should be done automatically, is how will it compare to the manual evaluation. In addition, some bias could be introduced by an algorithm and thus compromise the evaluation.
- Scalability is an important 'facet' of testing an indicator. If it cannot be automated it will not scale.
- The 'compliance scale' should be composed of a level 0 – where the indicator is seen as not relevant (i.e. does not apply).
- As a first step before defining compliance levels the ambiguity of some of the indicators needs to be removed.
- As a conclusion to the points made above, there is a necessity to first agree on the FAIR goal / objective and then define the measurement for the way to achieve the agreed ideal framework.
- The FAIRness evaluation should go in parallel with the respective DMP of the project.
- It was requested to drop the current naming of priorities and shift to 'Essential', 'Important' and 'Useful'.
- If a digital resource has a license attached to it, people reusing the digital resource should take the license into account whereas a digital resource without a license should be automatically and systematically considered as open (i.e. 'blank statement' → free to use, free to reuse). However, the prevalent legal position is that a resource cannot be reused if there is no explicit associated with it.
- Some data repositories will indicate that their data holdings are public domain without attaching a license to each dataset. In astrophysics, metadata are attached to collections saying that data are public, without actually attaching an explicit license.

- Ideally, license information should be 'handed down' to the dataset level.
- Persistence is a key question not only for the identifiers. The issue of FAIRness over time is dependent on long term preservation of the datasets which is currently not taken into account in the FAIR principles.
- Data objects in context and it is important to also assess the data repository.
- For the sake of persistence, datasets should be independent of repositories. For if the repository happens to disappear the datasets should still be FAIR.
- Participants proposed to have a visualisation of the result of the evaluation. A visual presentation could better help one to understand the FAIRness level.
- Weights on 'Mandatory', 'Recommended' and 'Optional' results or bars instead of compliant / not compliant can be a solution.

Draft guidelines | Development



Working Group to share **remarks** and **suggestions** about the guidelines



Testing phase will bring out comments and suggestions for change and for additional guidance



Stable version of the guidelines to be published



https://docs.google.com/document/d/1pDGGL3-BbBJu18KlfZUI3AizKLHXGXdlI_mPtpEWmeg/

Slide 47 | Draft guidelines | Development

The editorial team introduced the guidelines to the WG. The document will contain three parts: i) introduction, ii) framework and iii) reusability. The framework part, which is an essential part of this document, will provide a description for each of the 51 indicators (e.g. definition, assessment details, etc).

As for the development of the guidelines, the editorial team has made the document public, enabling comments and suggestions to be made directly in the document. In addition to the comments made in the document, the results of the testing will also contribute to the guidelines.

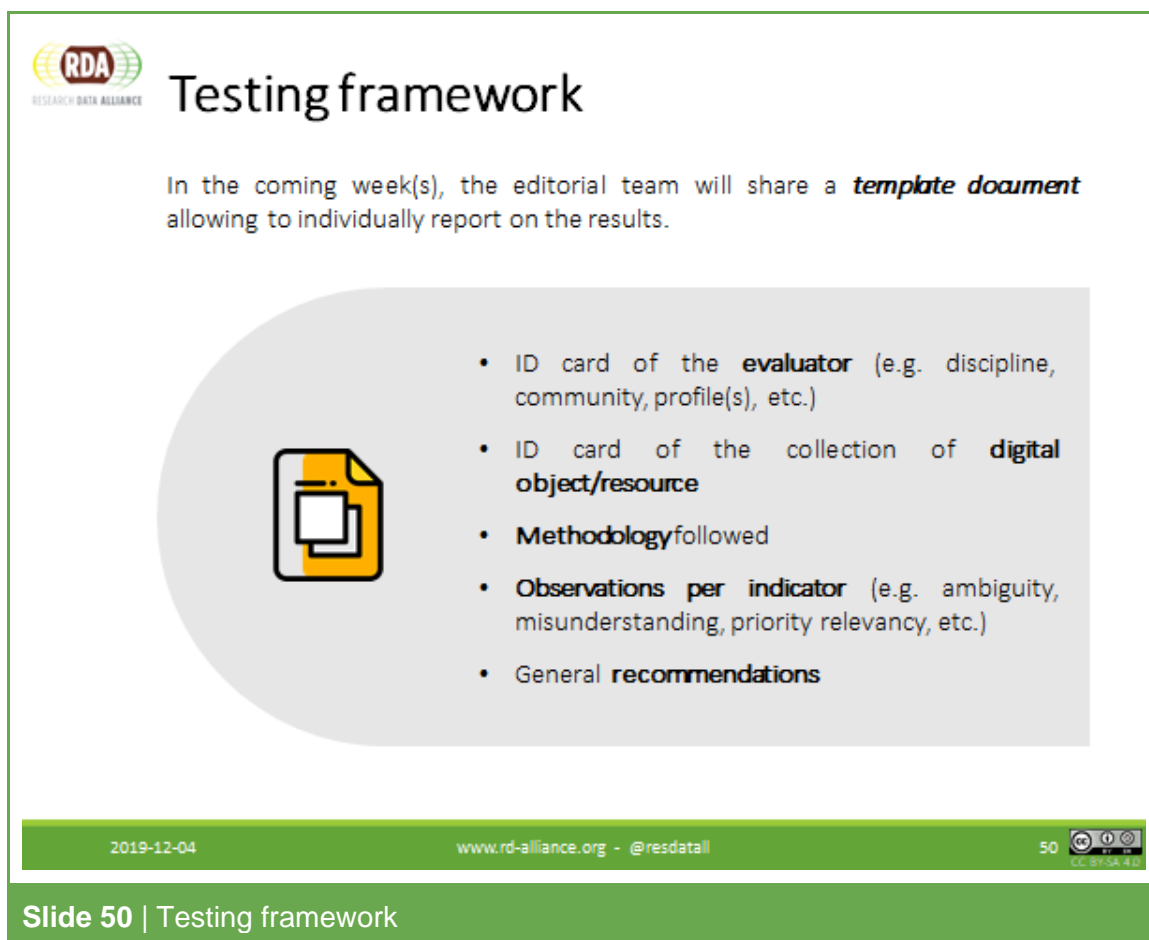
The guidelines are intended to fill the gaps already identified by the two speakers, such as the need for:

- Better definition of the concepts employed in the FAIR principles and indicators (i.e. glossary of terms);
- A concise and agreed terminology;
- Inclusion of assessments details & examples of good practices to minimise differences in interpretation; and

Alicia Fátima Gómez Sánchez volunteered to help the editorial team develop the glossary, which will be an integral part of the guidelines.

Here below are a number of comments put forward by the audience:

- FAIRsharing should be referenced as a useful repository of standards.
- Development of the 'glossary' will be a challenging but important exercise.
- The guidelines should be as self-contained as possible.



The slide features the RDA logo (Research Data Alliance) in the top left corner. The main title is "Testing framework". Below the title, a text block states: "In the coming week(s), the editorial team will share a **template document** allowing to individually report on the results." To the left of a list is a yellow document icon with a white page and a shadow. The list contains five items: "ID card of the **evaluator** (e.g. discipline, community, profile(s), etc.)", "ID card of the collection of **digital object/resource**", "**Methodology** followed", "**Observations per indicator** (e.g. ambiguity, misunderstanding, priority relevancy, etc.)", and "General **recommendations**". The footer contains the date "2019-12-04", the website "@resdata", the number "50", and a Creative Commons license logo (CC BY SA 4.0).

Testing framework

In the coming week(s), the editorial team will share a **template document** allowing to individually report on the results.

- ID card of the **evaluator** (e.g. discipline, community, profile(s), etc.)
- ID card of the collection of **digital object/resource**
- **Methodology** followed
- **Observations per indicator** (e.g. ambiguity, misunderstanding, priority relevancy, etc.)
- General **recommendations**

2019-12-04 www.rd-alliance.org - @resdata 50 CC BY SA 4.0

Slide 50 | Testing framework

As mentioned during the meeting, the editorial team is starting the testing phase for the indicators that the Working Group has developed over the last few months. In the latest meeting, two presentations were given by people who have already evaluated the indicators and put forward initial comments and suggestions. After those early tests, the editorial team now wants to start a more organised test phase.

In order for the results to be presented in a common way, the editorial team will send the testers a template for the test reports, which will include information about the tester, the evaluation approach used for the test, observations for each of the indicators, and general comments or conclusion. Results of all tests will be consolidated by the editorial team with

a selection of discussion items to be proposed for the meeting on 13 February. The editorial team will be available for support needed during the testing phase.

Follow-up action plan

The editorial team reminded the participants that the Working Group ends in six months, meaning that we are aiming to publish the RDA recommendation around the middle of 2020. The end of the working group should not mean that the FAIR data maturity model is finalised, as further experience will certainly require further maintenance of the model. How such maintenance can be organised is an issue for further discussion.

The working group was encouraged to share any feedback in the [GitHub](#). In addition to that, the editorial team and the Chairs proposed the following two action items:

- Share feedback – comments, remarks & suggestions – on the [Guidelines](#)
- Volunteers for testing

The next meeting of the working group is scheduled for:

WORKSHOP #7
13 February 2020

09.00 - 10.30 CET | Morning session
17.00 - 18.30 CET | Afternoon session

The chairs of the working group have submitted a request for a face-to-face meeting at the 15th RDA plenary in Melbourne. A decision on this request is expected for early January 2020.