RDA P13 Breakout Session -
IG RDA-SHARC (SHAring Rewards & Credit)

Evaluating FAIRness Practise - Need for Integrated Ecosystem of Assessment Linked to Crediting and Rewarding Mechanisms.

SESSION MINUTES
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Session slides:
Sharc presentations:
https://docs.google.com/presentation/d/1hb2sZ3Ik0HcFRhseujF5A3DAJfD4O9u0XMv6aFuzjHI/edit#slide=id.p1

Panelists:
L. Bonino, GOFAIR
https://rd-alliance.org/system/files/documents/L%20BONINO%20slides-%20RDA%20P13-20190403%20%20-%20SHARC%20session.pdf

Meeting agenda
● Goals of the group's project; current standing; objectives of the meeting: Introduction to the group?
A. Cambon-Thomsen (FR) 10 min
● Grids in SHARC recommendations, L. Mabile (FR) 5 min
● Grids construction and structure, R.David (FR) 10 min
Panelists:
● Eliane Frankhauser, DANS (NL) 10 min:
DANS FAIR assessment tools and implementation (provisional title).
● Luiz Olavo Bonino, GO FAIR (NL) 10 min:
Essential FAIR criteria, prioritisation and rules for implementation (provisional title)
● Questions-mediated discussion with panelists and audience (approx. 45 min)
Chairs: Alison Specht, Anne Cambon-Thomsen

❖ Goals of the group's project
A. Cambon-Thomsen, University Toulouse III-INSERM, FR

Current standing; objectives of the meeting: Introduction to the group.

Session organised in 2 parts, 45 minutes each
Objectives
- To review the existing rewarding mechanisms in various scientific communities
- To rely on this analysis to encourage the inclusion of data sharing-related criteria in the scientific activity evaluation process.
- More to come

What is needed?
- Guidance to enable credit/reward, for various stakeholders
- Integration of the sharing activity in the overall scientific assessment scheme
- Training and education
- Exchange of experience in data sharing policies regarding crediting mechanisms?

❖ Grids in SHARC recommendations
L. Mabile, University Toulouse III-INSERM, FR
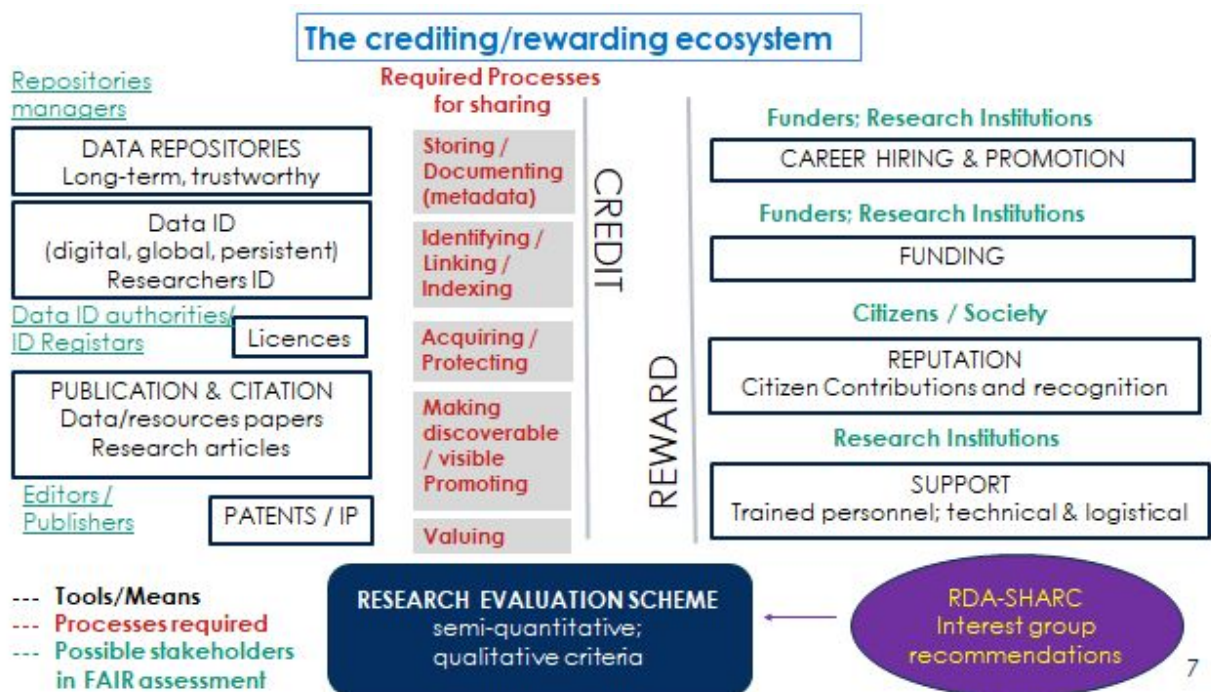
To highlight the need to acknowledge and reward FAIRness criteria in research output. Since the first exercise several initiatives have aimed at assessing FAIRness, and we are looking at synergies and complementarities at different levels.

❖ Various FAIR assessement tools

➢ *SHARC Grids construction and structure*
R.David, INRA, FR

Need to providing a set of recommendations for FAIRness literacy improvement.
1. Evaluation tools for sharing activities
2. (self) assessment tool usable by neophytes
3. FAIRness literacy training and 'how to' guidance tips

What kind of assessment grids?
1.1 extensive FAIRness external assessment grid (for evaluators). 52 criteria so far
1.2 extensive FAIRness external assessment grid (for…)
…
Main properties:
- As simple as possible
  - Understandable by non IT people
  - Precise enough to ensure veracity of FAIRness assessment
- Step by step processes
  - Realistic & encouraging
- Easy to complete

Based on information given by researchers in career activity reports
Reusable / adaptable by anyone: creative commons author license.

The three grids are designed as a decision tree for each of the 4 FAIR principles
- 3 levels of criterion importance (essential / recommended / desirable)
- 4 possible answers / criteria (never, mandatory, …)
- Evaluation based on scoring each answer for each possible answer
Some criteria are at the third level of the grid.

FINDABLE - 12 criteria, most essential, close to the semantic web, and mainly machine readable, but distinct quality levels for given answers are possible.

ACCESSIBLE - 11 criteria, more technical
3 subcategories
Data repository
Data security and service

INTEROPERABLE - 5 criteria, 2 essential, 3 recommented.
USABLE - 17 criteria, more complex. Distinct quality
5 subcategories

Built a survey launch on the RDA-SHARC fairness assessment grid. Survey in 5 parts, 1 page each, 20 minutes each.

Every participant will have the option of being a co-author of the publication.

Please complete the survey! Look at the RDA page:
https://www.rd-alliance.org/groups/sharing-rewards-and-credit-sharc-ig

➢ *A questionnaire and checklist developed at DANS (2017-18)*
Eliane Fankhauser, DANS, NL

Two self-assessment tools:
   -The **FAIRdat tool** was a questionnaire based on yes/no basis of compliance.
Targeted users: data managers, curators and researchers
The evaluation of FAIRness of any datasets deposited in a repository
Score: 5 star rating for F, A and I
   -The **checklist FAIR enough**? developed at DANS in 2018, based on yes/no questions
Evaluation of FAIRness is aimed to be done before deposit
Targeted users: researchers

What is the difference between these two tools:
FAIRdat tool: evaluation *after* deposit, for data managers and researchers (data curation)
FAIR checklist: evaluation *before* deposit, for researchers (data preparation for re-use)

FAIRdat, 15 questions, findable: 3; Accessible: 2-4 questions; Interoperable (or reusable): 2-3 questions
Some questions for feedback on the tool...still a beta version

For example, the evaluation of **Findable** (F) - does the dataset have a persistent identifier; you get a short text explaining what a PID is.
Metadata: insufficient or sufficient.

Some observations
   ● Detailed additional information and explanation provided
   ● Score visible immediately after evaluation of a letter (F, A, I)
   ● Lack of overview due to Survey Monkey layout
   ● No summary or feedback at the end of assessment
   ● Only 3 of the 4 letters are covered -> 5 star ratings only for F, A, and I
   ● Questionnaire not anonymous
   ● Beta version

FAIR checklist
Overview questions
11 in total,
1 about data repository
Findability: 3; Accessibility: 1; Interoperability: 2; and Reusability: 3
Additional: 1 question of openness of data set

FAIR checklist: some observations
- Questions formulated to be as simple as possible
- Level of evaluation (repository, metadata, dataset, data files) addressed
- No direct 'translation' of FAIR principles
- Short explanations of terms and concepts for every question
- Reference to Trustworthy, Digital Repositories (TDR) and CoreTrustSeal
- Overall score at the end
- Recommendations for questions answered with no
- Beta version

Next Steps
- Profit from analysis of FAIR self-assessment tools made in FAIR Maturity ModelWG
- Contributing to work done in FAIRsFAIR on badging scheme for data assessment implementing FAIR metrics -> FAIRdat will possibly serve as a pilot
- In the near future, production versions of both tools

eliane.fankhauser@dans.knaw.nl

➢ *Challenges in evaluating, compliance with the FAIR principles*
   Luiz Olavo Bonino, GO FAIR, NL

FAIR principles: do you find any of them...weird.

For example, metadata clearly and explicitly include the identifier it describes. This term is very specific, whereas other criteria are more general. This variance in detailing needs to be considered.

Understanding the objective/purpose of each principle helps clarify the basis of a 'maturity Indicator' we designed to measure it (FAIR Principles explained: www.go-fair-.org/fair-principles) In the 2016 paper the principles were never really properly explained, so trying to explain better on that web site.

Why to assess?

- Because everybody is talking about FAIR and my resources should be seen as FAIR, whatever this means?
- To satisfy funders' requirements?
- To serve as a guideline for achieving higher levels of interoperability and reuse with clarity on the concrete benefits (help improve)?

What to assess?
- Metadata and data?
- Only metadata?
- Only data?

What do we mean by data?
- In the FAIR principles, data refers to a variety of different resources, e.g. 'tradition' data etc.

How do we assess?

Manually
- Takes advantage of human understanding
- May lead to subjective assessments
- Harder to scale
- Harder to evaluate FAIR for machines, which is the main goal

Automatic
- Requires more rigor on the assessed resources
- More likely to produce objective assessments
- Easier to scale
- Able to check if machines can., in fact, 'work' with the metadata

How to read the assessments?
- Need for a scoring system
- One score for the 4 aspects of FAIR
- Is there a hierarchy among the principles or are they interdependent?
- One score per principle, what about the sub-principles
- Is there an acceptable minimum FAIR level? Should it be across domains and applications?
- Do we use a pass/fail approach or introduce intermediary compliance levels.

Need for a visual representation of the scores
To facilitate may be useful

What makes a measurement good?
- Clear
- Realistic
- Discriminating
- Measurable

- Universality

Rubric for designing a Maturity Indicator (MI)
We designed a set of parameters…

M1 Identifier
MI name
To which principle does it apply
What is being measured
Why should we measure if
What must be provided etc.

General challenges
- Clarify that nobody has been asked to be 100% FAIR
- Consider different preparedness levels from different community
- How to deal with the conflicting forces that want to pur the communities towards a better data landscape and or to preserve the status quo
- Who will define the assessment criteria?
- Who will execute the assessments based on the defined criteria
- Should we have a unique set of assessment criteria? Or a core set for general comparison, and domain-specific subsets on top of the core for the specific needs of a given domain / application

❖ Questions-mediated discussion with panelists and audience
Chairs: **Alison Specht, Anne Cambon-Thomsen**

ACT: The idea is to express your ideas about what has been presented and around the following points:
- Relevance and quality design for FAIR criteria implementation in various contexts

Need to:
- Identify potential criteria to be used by stakeholders
- Identify the various levels of possible implementation
- Identify and rank binding versus incentives for future grid evolution
- Evolve from usable to efficient grids
- ...

Who will get credit?
Question: If data stewards are doing the data curation/cleaning, making data FAIR, then should the researcher get the reward/ credit for it?

Audience: FAIR is good assessment of data, the action of sharing, but not necessarily for promotion-type credit and rewards.

Genericity
Question: When you need to define metadata, field by field, how can you be generic for different domains? You have to explain it? Especially if done by machine.
LB: Some responses are pretty straightforward but, for example, R 1.3 there is a question about what standard you are following. But how do we know that the standards are domain relevant? We need a registry about which domains endorse which standards. Nice to have a link at that point to a registry.

Machine-readability:
RQ : limit of machine readable is often not understandable by neophyte peoples
Relevance and quality design for FAIR criteria
Clear
Realistic
Discriminating
Measurable
Universality (vs field / work adapted?)

Consensus :
- needs of different sets of criteria
- needs of an adaptation for a given field
- perfect FAIRness is a goal impossible to reach

EOSC pilot has a FAIR skills framework (to be published end of April) that will be used also in FAIRsFAIR and we will try to map to indicators (Angus Whyte)

Audience: difficulty to be generic and machine readable for different fields
LB: It depends on the type of criteria, some are straightforward such as F1 on identification; others such as R1.3 related to the use of domain community standards are more difficult to implement as standards need to be recognized by a community. There is a need for a registry that contains the standards endorsed by communities to help people follow this.
Too much is asked to researchers, they have been trained to do research, they should be doing this; some studys show that they can spend 4/5th of their time doing other tasks than research. The whole fairification business should be done by others. Support is needed from our institutions: tools, engineers.
ACT: In France, CNRS (the biggest national research institution) is evaluated itself like other institutions. If sharing activities are part of the evaluated missions of the institution, they will need to support this activity. It will be an actionable level to get more support.

Need for dedicated staff

LB: Another thing is we always mention (my personal opinion) the researcher. I think we are asking too much, and the whole data business should be done by someone who helps the researcher. Need to reach the organisations to provide more support for the scientists.
Audience: agree with having additional data management specialized staff to manage these Fair activities. The handover between data producing and data management is always a problem, no time, no money to do that. Efforts should come from both sides. How can we challenge the institutions to get this needed support?
No representative from institutions in the room.
One suggestion from the audience: for ex. 5 % of project budget could be dedicated for Fair data stewardship.
LB: One way to convince our institutions is to highlight the extent of the money waste due to the current activity of researchers who dedicated too much of their time to the data management. This waste is far bigger than the cost that would be generated by a regular dedicated support.
EF: Still researchers should be responsible in providing FAIR material.
Remark from the audience: Some disciplines already recognize the data management and reward this activity in terms of funding. This should be highlighted in this group.
Any application to NIH can already budget for data stewardship.

Fairness assessment in the workflow
How does the Fairness assessment fit in the normal workflow of an investigator?
RD: Fairification of research data is like accessibility to a building; if the building is very high tech and very well equipped but lack the entrance steps, no one will access, e.g. if only one key criteria is not fulfilled, the whole process can not be implemented. There is a need to work together at building the first step as easy as possible (machine readable is not the easiest way first).
ACT: some steps are much easier to implement if they are thought from the beginning of the work. There is a chain in time and responsabilities to build that will be part of our recommendations.

Audience: a long time ago, research was not making papers but it is now, it became a norm because there were measure for that; that is why new indicators need to be put in the cycle. No ideal formula for so many fields but indicators of frameworks for Fairness?
RD: Indicators will never work if there is no literacy about them before.

Institutional engagement
Stakeholders need to be properly identified to make incentives and appropriate rewards (researchers, data stewards, organization management, funding agencies…). They need to be engaged.
In clinical research, Contract Research Organisations and Pharma need to be engaged and to provide the funding and expertise for data management.
ACT: Innovative Medicine Initiative FAIR+ addresses some clinical and pre-clinical work and aim to demonstrate with some pilots of use data from other IMI projects who would like to have

their data as Fair as possible. Half of the budget is from Pharma so they are concerned with those issues.

Case of a post-doc in biology and chemical data who has to devote 10 % of her time of research to comply to the government rules and who feels alone in doing this and who actually spends much more than that to manage data. Need for directives from RDA to help in this task.

LB suggests to contact their group of data stewards who share good practices.

Comments from remote participants:

As a researcher from South America, following FAIR principles can be greatly challenging. To start, people have little (o rather none) data-sharing culture. I do agree that it should be less responsibility of researchers and more of data managers, but I feel there is still an urgent need to train researchers for gathering data that is more o less FAIR from the beginning. Follow minimum standards, etc.

And a question: The gap global south-north is huge (regarding FAIRness). Are there any initiatives towards shortening them? (Florencia) *Hi Florencia! I have encouraged people to answer! I shall not (Alison)Thanks :) (Flo)*

ACT: The challenges encountered now are normal in the evolving world of research; 20 y ago in the domain of genomics and informatics some professions such as genetic councelors did not exist at all, now they do in many countries. RDA and the groups may be accelerators of those needed processes.

In summary:

Main questions addressed:
-        machine readable tools versus human use of criteria in evaluation
-        the ecosystem around FAIR activity :
> who is doing these activities
> who should get credit for it
> need for the identification of the chain of responsibilities
> specificities between domains and difficulty between generic and specific criteria for assessment
> current transition situation where in many institutions specific professionals for such activities are not identified
> difficulty and general under-estimation of the time required for FAIR data management,
> enormous north – south gap

Attendees (incomplete list)- please include your name in the table below (add lines as required)

name	organisation	country	email
Nick Juty,	University of Manchester (ELIXIR-UK)	UK	nsjuty@gmail.com
Mohamed S. Yahia	Iniqt-CNRS	France	mohamed.yahia@inist.fr
Angus Whyte	Digital Curation Centre, University of Edinburgh	UK	a.whyte@ed.ac.uk
Tess Grynoch	University of Massachusetts Medical School	USA	tess.grynoch@umassmed.edu
Hannah Calkins	Children's Hospital of Philadelphia	USA	calkinsh@email.chop.edu
Fiona Murphy,	Independent Consultant	UK,	fionalm27@gmail.com
Sherry Lake	Repository Librarian	USA	shlake@virginia.edu
Pascal Suppers	DataHub Maastricht	NL	p.suppers@maastrichtuniversity.nl
Maria Sorokina	University of Jena	DE	maria.sorokina@uni-jena.de
Florencia Grattarola	University of Lincoln	UK	fgrattarola@lincoln.ac.uk
Eva Méndez	Universidad Carlos III de Madrid /YERUN OSPP	Spain	emendez@bib.uc3m.es
Shelley Stall	AGU	US	sstall@agu.org
Leslie Hsu	USGS	US	lhsu@usgs.gov
Erik Schultes	GO FAIR	NL	erik.schultes@go-fair.org

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