PARC approach to ensuring FAIR Chemical Risk Assessment Data”

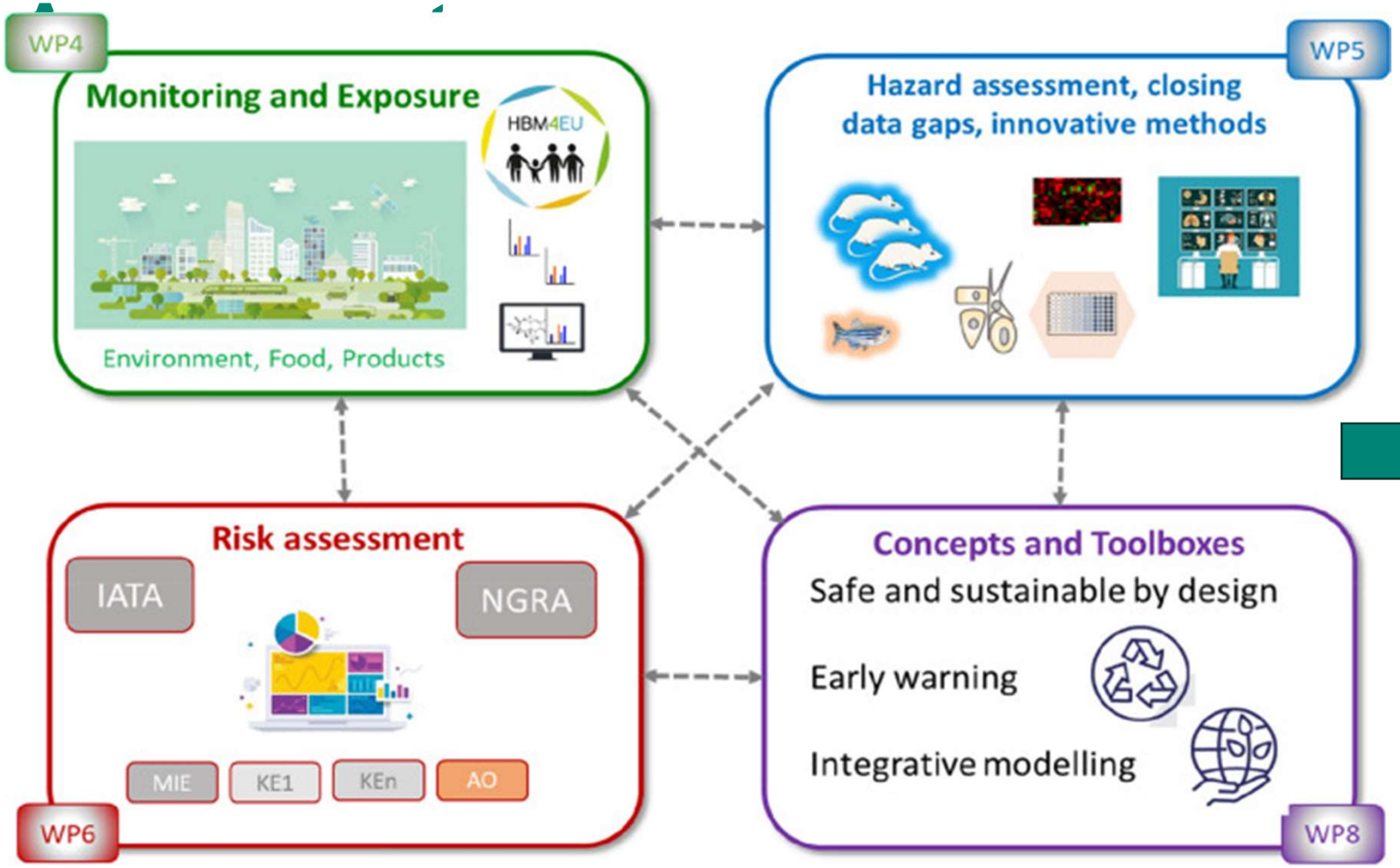
Partnership for the Assessment of the Risks from Chemicals

Iseult Lynch, Univeristy of Birmingham, Co-Lead WP7

JRC Webinar - Improving the utility of research data in regulatory assessments – 31st January 2024

PARC

PARC: Regulatory Research for Chemicals Risk

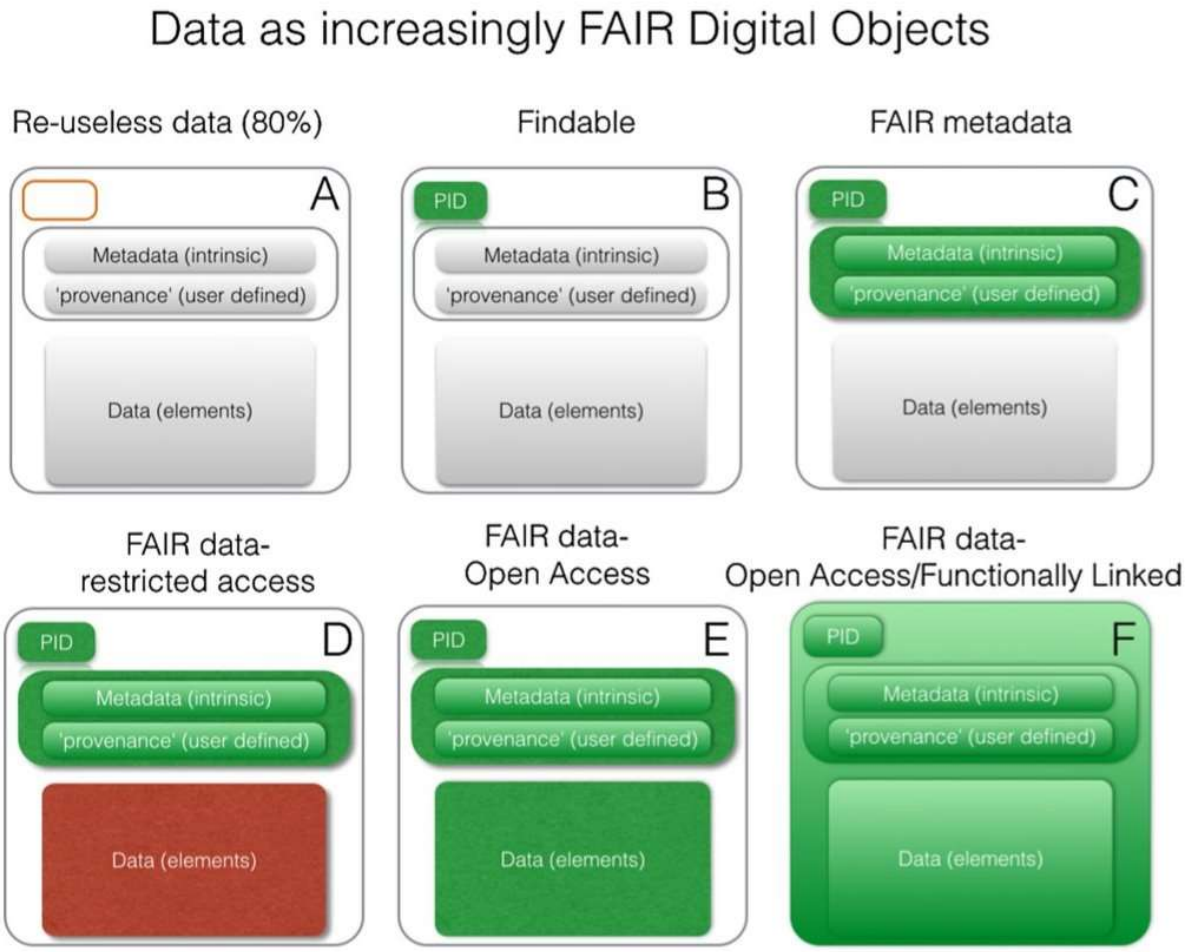


Human Biomonitoring

Environmental monitoring

Toxicology including omics

PARC's Ambition regarding FAIR and Open Data

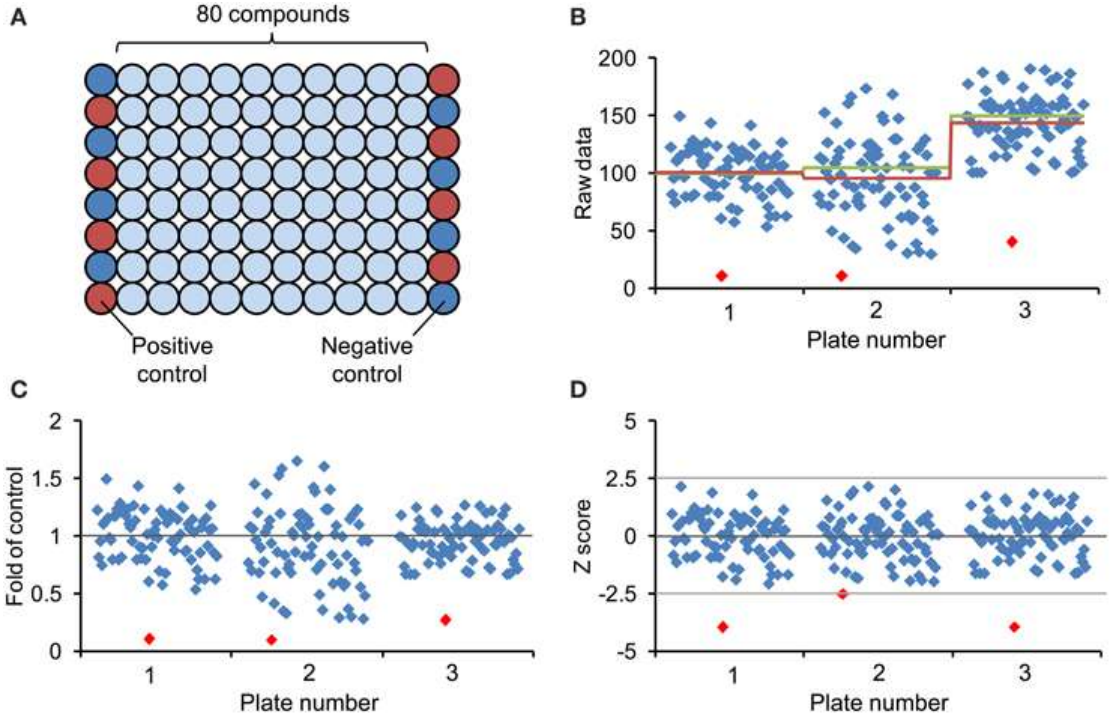


PARC Data Policy

The ambition for PARC is to strive towards FAIR, Open and linked data (Panel F), recognizing that:
1. resources are limited,
2. not every sub-domain within PARC is equally far along the road to FAIRness,
3. not all Participants / Researchers are as experienced in FAIR, and
4. technical constraints may have to be solved.

PARC will strive for a minimum level of FAIRness for all PARC data and metadata, whether it is Open or Closed, as shown in Panels D and E."

What data are we interested in making FAIR? Raw data, processed / transformed, summary data

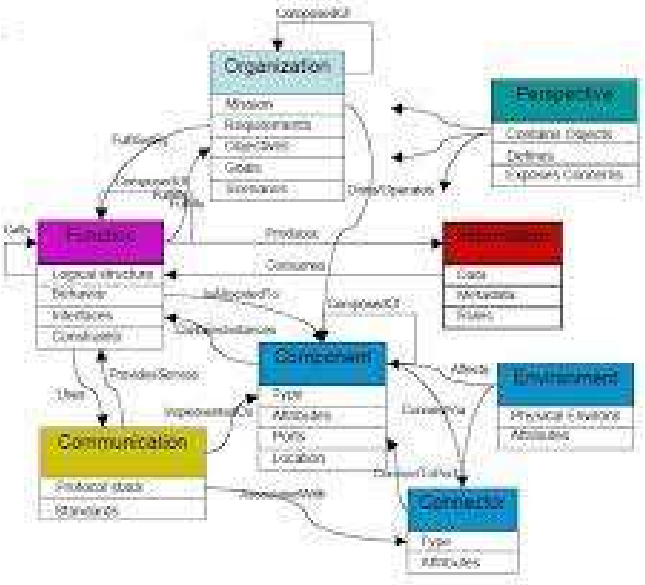


log [antioxidant]	Experiment No.			Mean ± SD
	1	2	3	
−5.22	39.36%	41.58%	39.04%	40.00 ± 1.38%
−5.15	45.09%	47.88%	43.19%	45.39 ± 2.36%
−5.10	49.30%	50.01%	49.99%	49.77 ± 0.40%
−5.05	54.63%	56.35%	54.35%	55.11 ± 1.08%
−5.00	56.71%	60.51%	56.17%	57.80 ± 2.37%
EC_{50}	−5.090	−5.097	−5.097	−5.095 ± 0.004

PARC recommendations for each level of data! Minimum to make the summary data FAIR.

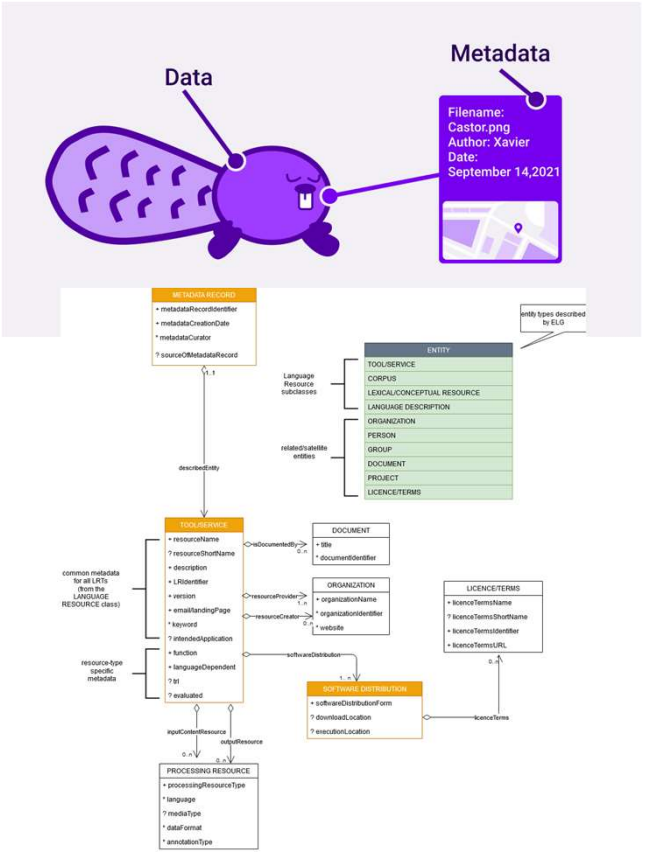
Key resources being developed in PARC

FAIR Implementation Profiles – per domain / data type



PARC Ontologies

PARC Vocabularies



PARC Metadata schema

Close collaboration with the GO FAIR Foundation

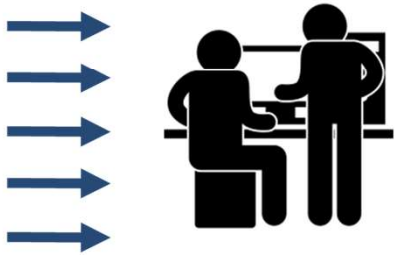
FIP workshops with red and blue experts

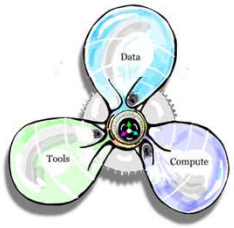
Qualified / Certified FAIR Implementation Profile

Auto-infomred FAIR data management plan (template)

FAIR data management implemented in a project

FAIR data Sharing / visting





DSW @ maDMP hackathon (Grand Finale)

Mapping the FIP onto the DMP
Kristina Hettne, Leiden University Libraries, 2020

https://github.com/RDA-DMP-Common/hackathon-2020/blob/master/results.md
https://docs.google.com/presentation/d/1h7iTS9gW8A-bOkSjR3qFNPzaU0NQfGJFRtCHZuC78FY/edit?us

FIP2DMP: Linking data management plans with FAIR implementation profiles Cite

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Keywords: Data Management Plan, FAIR implementation profiles, FAIR enabling resource, metadata standards, machine actionable DMPs

DOI: 10.3233/EC-221515

All-PARC versus domain-specific community standards

The FIP is a socio-technical approach to drive wide-spread FAIR convergence

FAIR Principles

To be Findable:
F1. (meta)data are assigned a globally unique and persistent identifier
F2. data are described with rich metadata (defined by R1 below)
F3. metadata clearly and explicitly include the identifier of the data it describes
F4. (meta)data are registered or indexed in a searchable resource

To be Accessible:
A1. (meta)data are retrievable by their identifier using a standardized communications protocol
A1.1 the protocol is open, free, and universally implementable
A1.2 the protocol allows for an authentication and authorization procedure, where necessary
A2. metadata are accessible, even when the data are no longer available

To be Interoperable:
I1. (meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.
I2. (meta)data use vocabularies that follow FAIR principles
I3. (meta)data include qualified references to other (meta)data

To be Reusable:
R1. meta(data) are richly described with a plurality of accurate and relevant attributes
R1.1. (meta)data are released with a clear and accessible data usage license
R1.2. (meta)data are associated with detailed provenance
R1.3. (meta)data meet domain-relevant community standards

Machine-actionable metadata

Technical infrastructure (accepted generic services) = Technical experts

Social contracts (domain specific agreements) = Domain experts

FAIR Enabling Resource (FER)

- Choices
- Challenges

GFF

FAIR Implementation Profile (FIP)

FAIR Implementation Community

- *FAIR Enabling Resource*
- *FAIR Enabling Resource*
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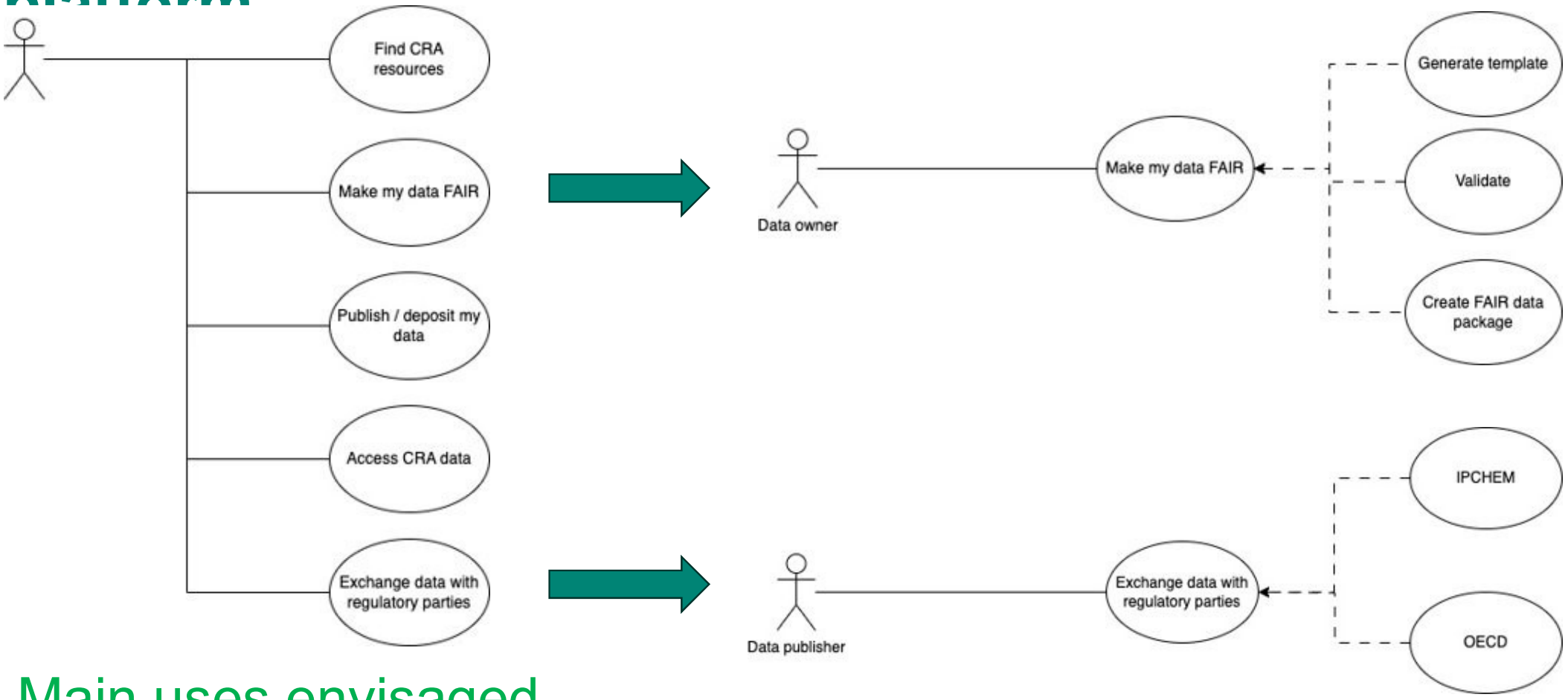
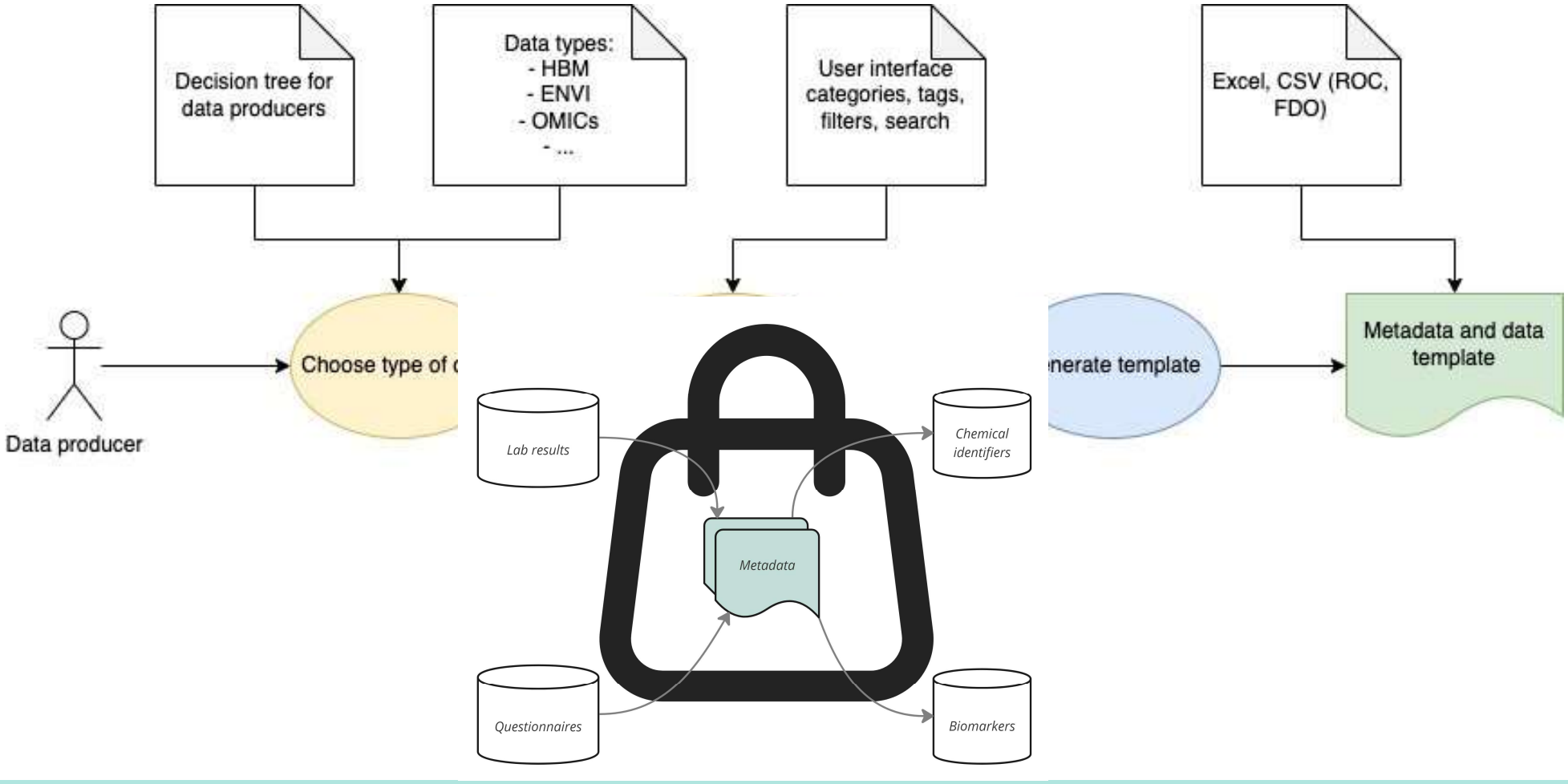
The PARC Data Hub – an integrating & enabling platform

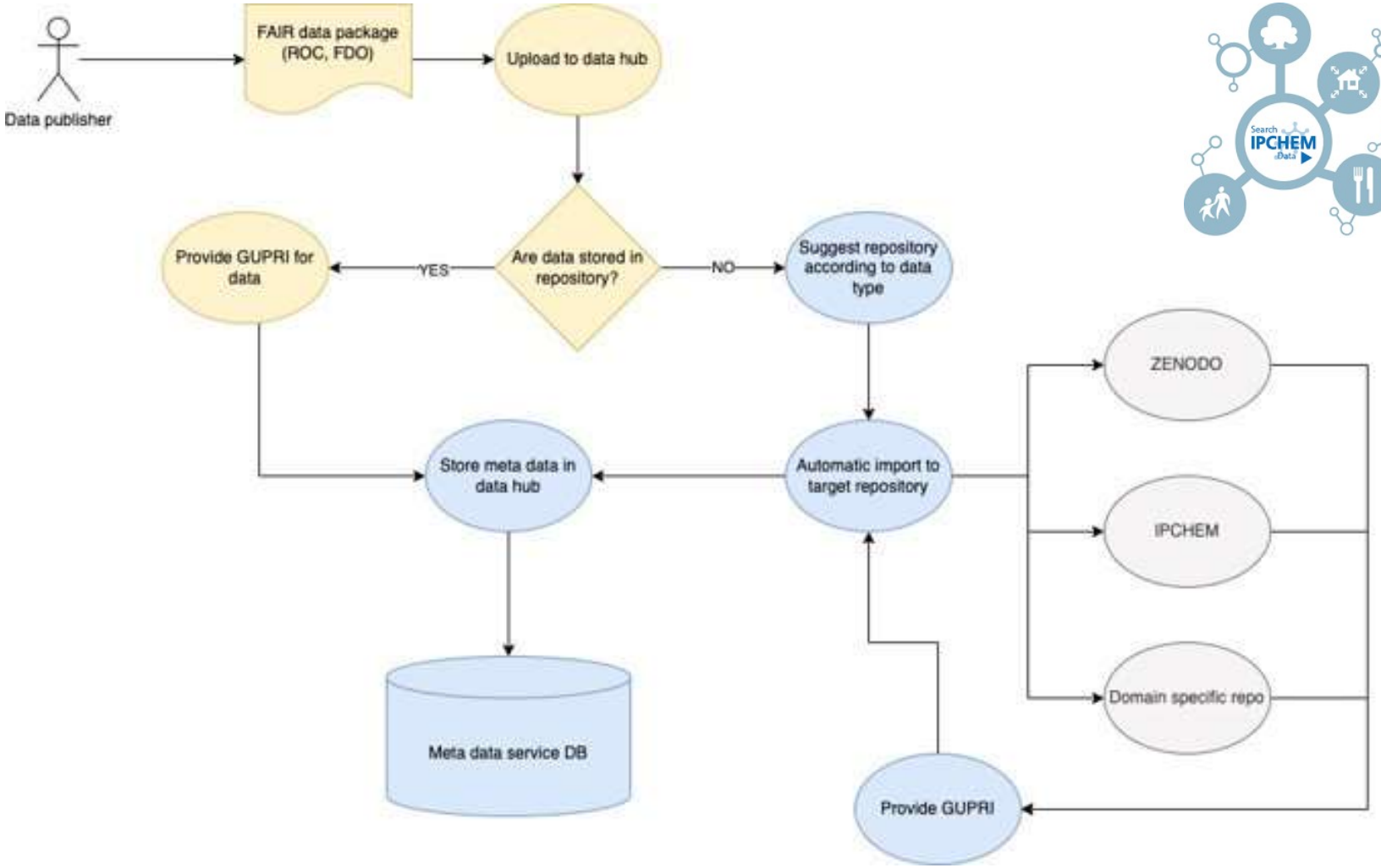


Main uses envisaged

Example workflow: developing a data / metadata template

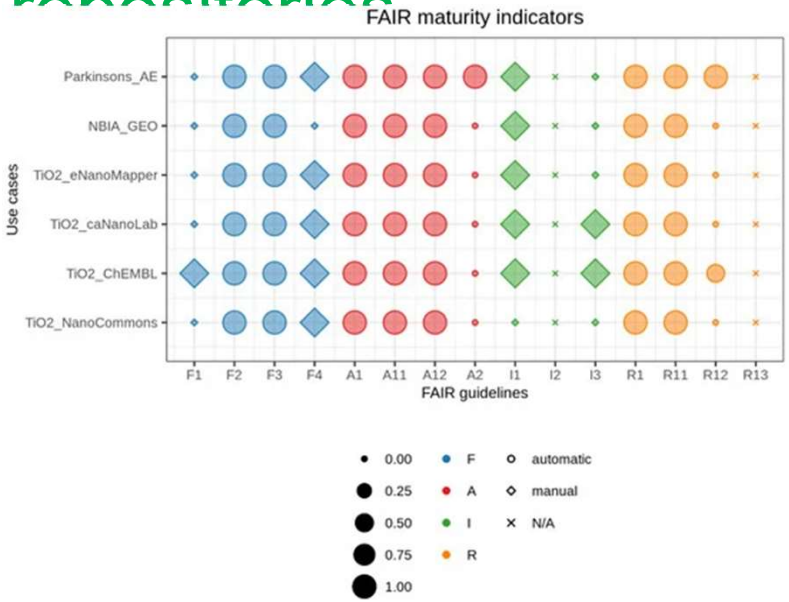


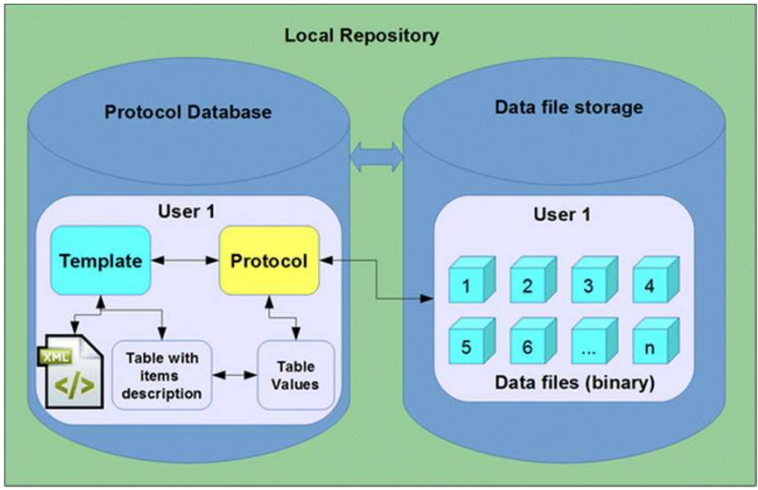
Example workflow: publishing a FAIR data package



Other things WP7 will provide for PARC partners

FAIR maturity indicators for PARC-used repositories





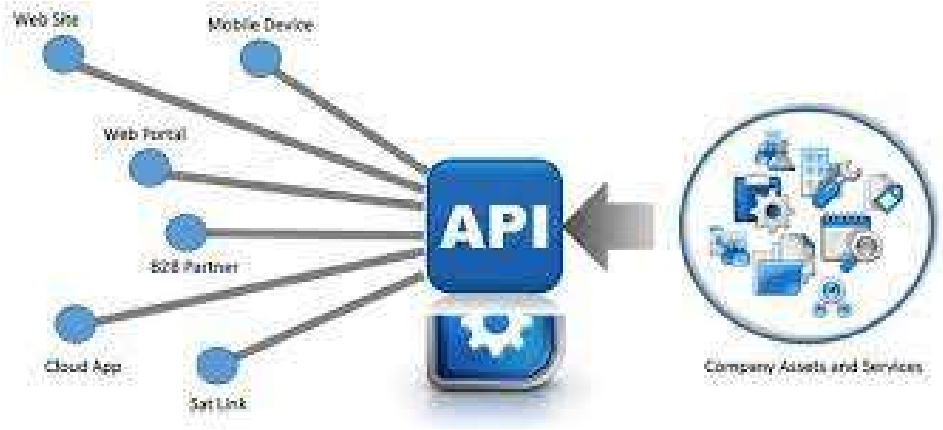
0.1186/s12938-016-0188-8

PARC Protocols repository

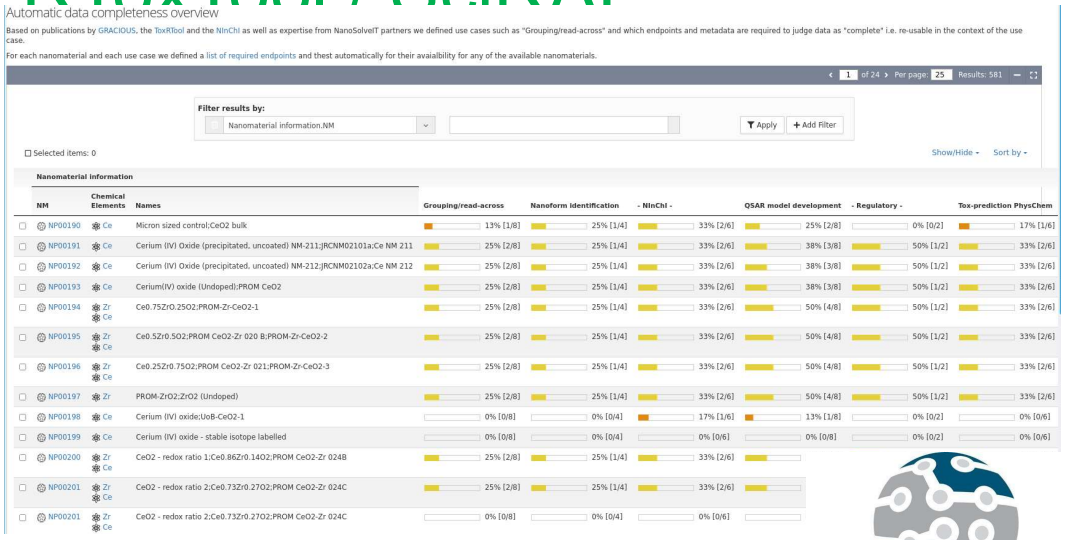
PARC Data “Tools”

https://doi.org/10.3390/nano10102068

Other things WP7 will provide for PARC partners



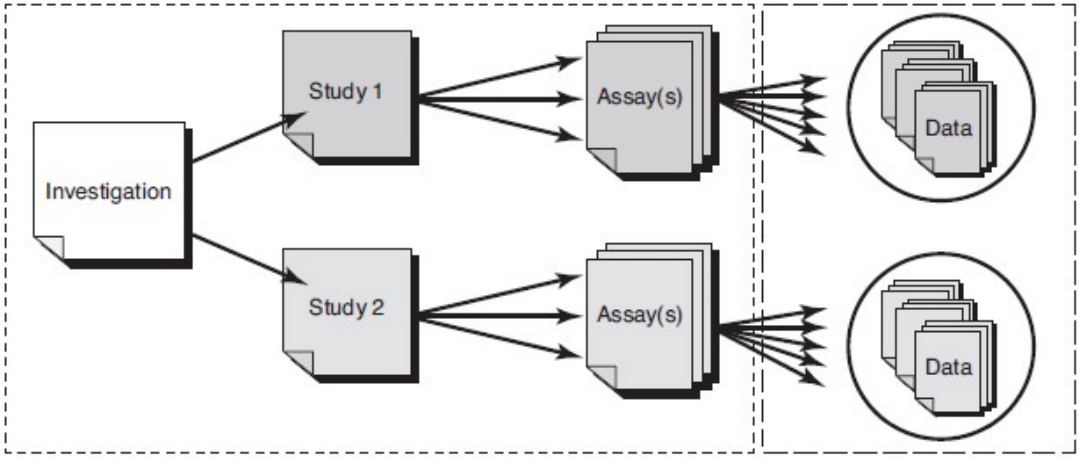
Automated visualisation of PARC QA/QC / data completeness criteria. e.g., RToxTool / SciRAP



PARC APIs
PARC interoperability layer
Link to Modelling tools / SSbD

Key performance indicator: No. & % PARC datasets made FAIR

What is the unit of a dataset?



Investigation (project in PARC) / study / assay

Initially using unit of a publication and its data

FAIR Scoring approaches?

Metric	Measure
Findability	0.70
Accessibility	0.22
Reusability	1.00
Good DMP Practice	0.67
Openness	0.69

DSW has some indicators

FAIR metrics for databases

Many thanks for listening….

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