



FIP Introduction

2022-01-25

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& Erik Schultes



FIP Workshops: Making the ENVRI "FIP for purpose" through FAIR Convergence



Welcome to a three-part workshop on FAIR Implementation Profiles (FIPs), organized by ENVRI-FAIR and GO-FAIR as part of the ENVRI week 2022.

FIP INTRODUCTION

2022-01-25 TUESDAY, 09:00-12:00

FIP CONSULTATION

2022-01-28 FRIDAY, 09:00-12:00

FAIR CONVERGENCE

2022-02-22 TUESDAY, 09:00-12:00

REGISTER AT WWW.ENVRI.EU



ENVRI-FAIR has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824068



Agenda

9:00	20 min	Barbara:	Review of process, tool improvement
9:20	40 min	Erik:	FAIR principles, FERs and qualifications
10:00	30 min	Barbara:	Introduction to the improved FIP Wizard
10:30	15 min break		(be sure all accounts are available/working)
10:45	75 min	Barbara/Erik:	Hands-on, using the improved FIP Wizard check prepared FIP 2020
12:00			End of workshop 1

**Review of
FAIR Assessment Process &
Assessment of tool
improvements**

2019 – 2022

Barbara Magagna

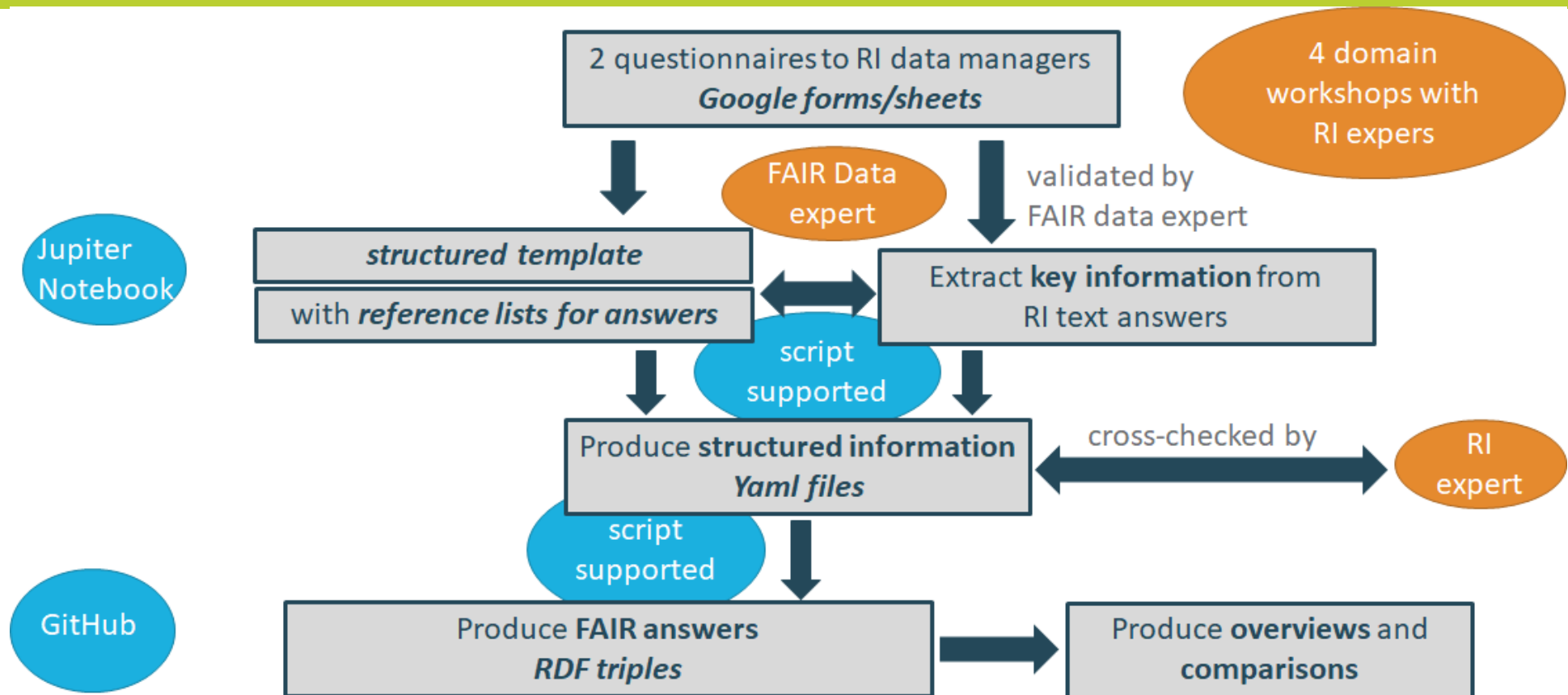


Objectives for FAIR Assessment

- Understand FAIR principles and their advantages for the RIs
- Assess the status quo of the RI's data and services
- Assessment based on each of the FAIR principles
- Detect information and implementation gaps
- Discover strengths
- Compare the different implementations
- Evaluate possible technology takeups for improvements
- Prioritize FAIR improvements
- Document improvements towards FAIR over time



2019: Questionnaire based assessment





2019: from human (text) to machine readable information (yaml)

1.10 Do you assign PIDs manually or automatically?	The Argo DOI fragments are assigned automatically	automatically	
1.11 Which PID registration provider do you use?	DataCite	SEANOE	
1.12 Do you use the PID Record to store attributes about the data?	"Yes for the monthly snapshot (the DOI+ fragment) No otherwise. "	yes	
1.13 Are these repositories certified? If so, which methods are used?	"Yes, Ifremer is DSA and IODE certified. Ifremer-Sismer is in certification process as "RDA-Trustworthy repository" "	- Data Seal of Approval	
1.14 Are repository policies mentioned at the website? If so, indicate the major ones.	"Yes https://creativecommons.org/licenses/by/4.0/ "	- data access	
1.15 Are your repositories registered in a registry? If so which registry?	Yes, GEO registry	GEO	
1.16 Which persistency guaranties are typically given?	"The Argo long term archive is managed by US-NCEI. US-NCEI has a Unesco-WMO mandate as world data centre (WDC-A). "	NULL	
1.17 Which are the most popular data types used?	The self-describing NetCDF CF format Argo implementation	binary	



```
repositories:
- URL: http://doi.org/10.17882/42182
  name: Euro-Argo Data
  kind: data repository
  data repository type: central
  metadata repository type: central
  software: NetCDF file
  identifier:
  - IRI: http://doi.org/10.17882/42182
    persistency-policy document IRI: https://doi.org/10.13155/44515
    kind: DOI
    system: SEANOE
    assigned: automatically
    provider: SEANOE
    includes-attributes: yes
  certification methods:
  - Data Seal of Approval
  - IODE certified
  - RDA Trustworthy Data Repository
  policies:
  - data access
  registries:
  - GEO
  persistency-guaranty: NULL
  access mechanisms:
  authentication method: VOID
  access protocol URL: https://doi.org/10.17882/42182
```



2020: FAIR Implementation Profiles (FIPs)

FAIR Principles

Box 2 | The FAIR Guiding 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

a collection of machine-readable
human agreements
addressing the 15 FAIR principles

Evaluate FAIRness



- Choices
- Challenges

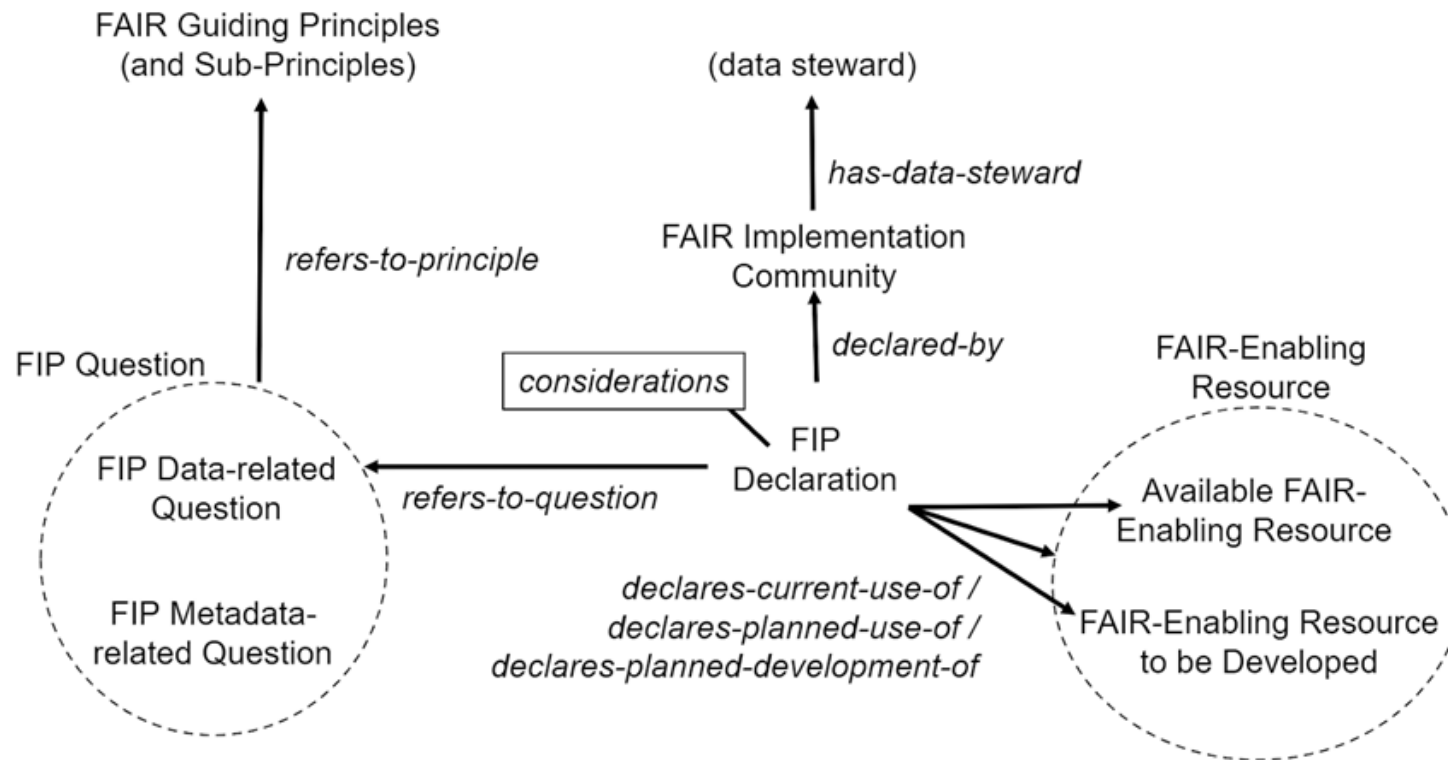
Implementations





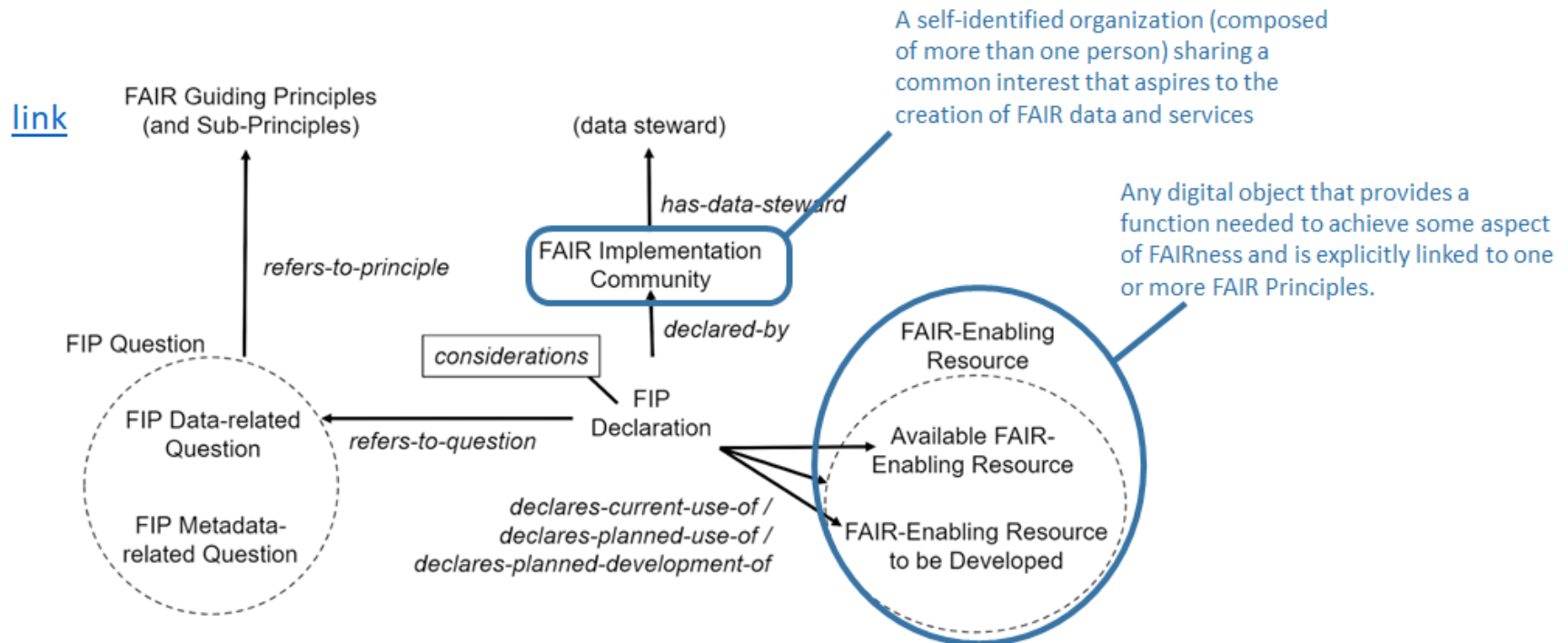
2020: FIP Ontology

[link](#)





2020: FAIR Implementation Community





2020: FAIR Enabling Resources (FERs)

FAIR principle	FAIR enabling resource types
F1	Identifier type
F2	Metadata schema
F3	Metadata-Data linking mechanism
F4	Search engines
A1.1	Communication protocol
A1.2	Authentication & authorisation technique
A2	Metadata longevity
I1	Knowledge representation language
I2	Structured vocabularies
I3	Schema/Model
R1.1	Data usage license
R1.2	Provenance model

R1.3 Community specific metadata -> the FIP as a whole



2020: nanopubs (T. Kuhn)

```
@prefix this: <http://purl.org/np/RA3YaGBziu69pvAVBZLIqXRzixq2QjYlQjoRqBQJSzpfQ> .
@prefix sub: <http://purl.org/np/RA3YaGBziu69pvAVBZLIqXRzixq2QjYlQjoRqBQJSzpfQ#> .
@prefix np: <http://www.nanopub.org/nschema#> .
@prefix dct: <http://purl.org/dc/terms/> .
@prefix nt: <https://w3id.org/np/o/ntemplate/> .
@prefix npx: <http://purl.org/nanopub/x/> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
@prefix skos: <http://www.w3.org/2004/02/skos/core#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix orcid: <https://orcid.org/> .
@prefix fip: <https://w3id.org/fair/fip/terms/> .
@prefix prov: <http://www.w3.org/ns/prov#> .

sub:Head {
  this: np:hasAssertion sub:assertion ;
  np:hasProvenance sub:provenance ;
  np:hasPublicationInfo sub:pubinfo ;
  a np:Nanopublication .
}

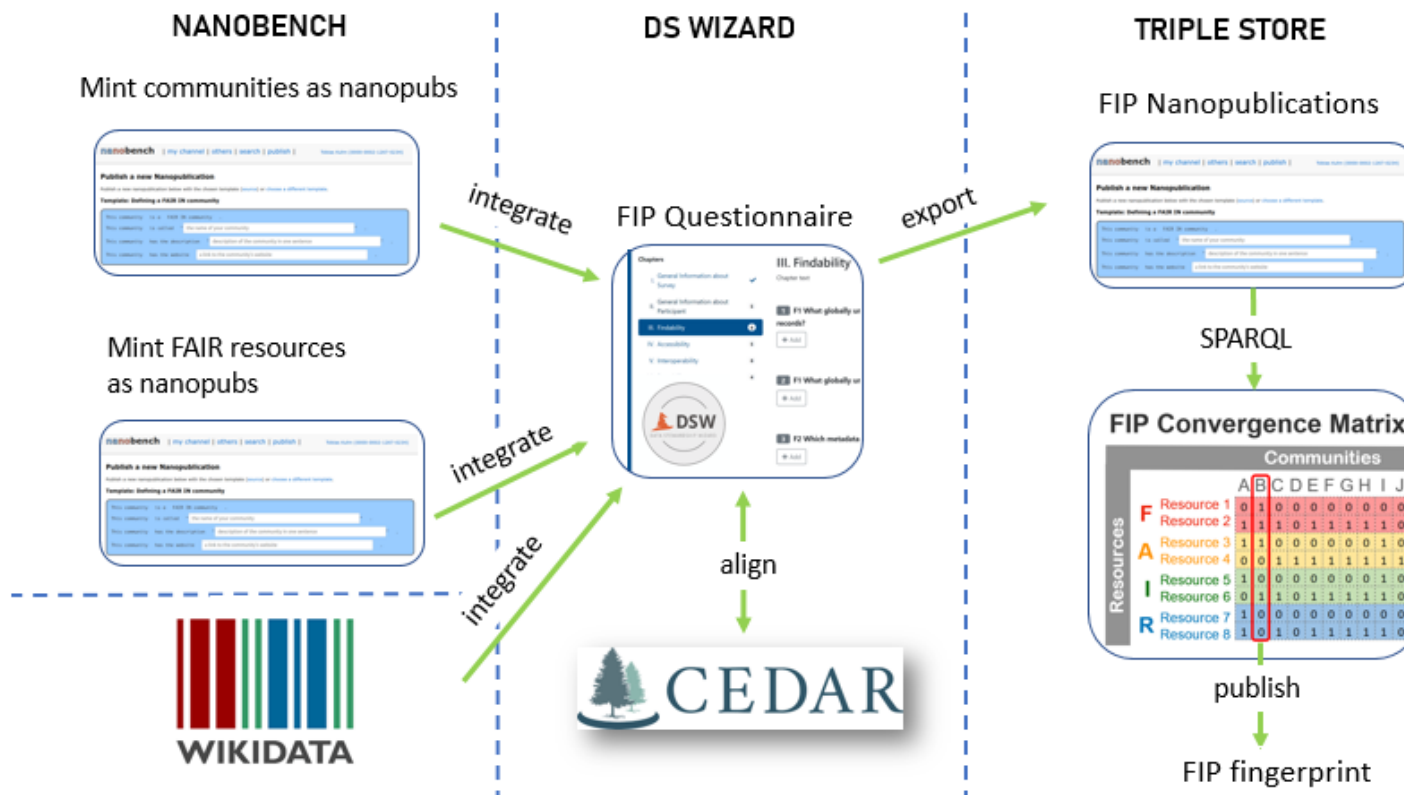
sub:assertion {
  sub:SKOS a fip:Available-FAIR-Enabling-Resource , fip:Communication-protocol , fip:FAIR-Enabling-Resource ;
  rdfs:comment "Simple Knowledge Organization System is a common data model for sharing and linking knowledge organi";
  rdfs:label "Simple Knowledge Organization System" ;
  skos:exactMatch <https://fairsharing.org/bsg-s001268/> .
}

sub:provenance {
  sub:assertion prov:wasAttributedTo orcid:0000-0003-2195-3997 .
}

sub:pubinfo {
  sub:sig npx:hasAlgorithm "RSA" ;
  npx:hasPublicKey
  "MIGfMA0GCsGqSIb3DQEBAQUAA4GNADCBiQKBgQCtpcftn7kbe6toJb0TDQaCcCsfESWqt6J4rZ02w+TFY7/eIOgJZY01pL6G3Az02RNmVWWRPS1Miyka
  npx:hasSignature "KFnUGYkQakNmgg/q1WqS41wDRJkEerLqmVJHK0hsCs8pHQ9g60EzFCHbnQi0c+aGGv3yQqomikojGTyioS9VAuzdHv05E7
  npx:hasSignatureTarget this;
  this: dct:created "2022-01-07T15:10:23.344+01:00"^^xsd:dateTime ;
  dct:creator orcid:0000-0003-2195-3997 ;
  npx:introduces sub:SKOS ;
  nt:wasCreatedFromProvenanceTemplate <http://purl.org/np/RANwQa4ICWS5S0jw7gp99nBpXBasapwtZF1fIM3H2gYTM> ;
  nt:wasCreatedFromPubinfoTemplate <http://purl.org/np/RAA2MfqdBcZmz9yVWjKLNbyfBNcwsMmOqcNUxkk1maIM> ;
  nt:wasCreatedFromTemplate <http://purl.org/np/RAhptb1hUg1kQ6LRBLJfBHxVwYbU2Y4Sw9UJg2qkzvpI> .
}
```



2020: FIP Wizard





2020: FIP Outputs

5 A2 Which metadata longevity plan do you use?

Answers

5.a.1 Choose your answer from FAIRsharing

✓ http://server.nanopubs.lod.labs.vu.nl/RAbcUK_UoP7qdlqGlcVZxTB_3wVh3DVQyAikNv_5S6Ys

5.a.2 Add your resource description here

✓ [link to the persistence policy nanopub](#)

V. Interoperability

Chapter text

Report

Indications

Answered 20 / 22

Metrics

No metrics for this chapter.

Questions

1 I1 Which knowledge representation languages (allowing metadata records)?

Answers

1.a.1 Choose your answer from FAIRsharing

✓ [Resource Description Framework](#)

 <https://fairsharing.org/bsg-s000559>

1.a.2 Add your resource description here

```
"referenceUids": [],
"requiredLevel": null,
"tagUids": [],
"text": null,
"title": "I1 Which knowledge representation languages (allowing machine-interoperation) do you use for datasets?",
"uuid": "53120a47-9151-42d4-bd33-4fd91fa9a48a"
},
"572af6fd-f346-40d6-872f-bab23b2d6a2b": {
  "expertUids": [],
  "questionType": "ValueQuestion",
  "referenceUids": [],
  "requiredLevel": null,
  "tagUids": [],
  "text": null,
  "title": "Add your resource description here",
  "uuid": "572af6fd-f346-40d6-872f-bab23b2d6a2b",
  "valueType": "StringQuestionValueType"
},
"598d5fda-7580-468f-8a68-ba0b7e9ebc19": {
  "expertUids": [],
  "questionType": "ValueQuestion",
  "referenceUids": [],
  "requiredLevel": null,
  "tagUids": [],
  "text": null,
  "title": "Add your resource description here",
  "uuid": "598d5fda-7580-468f-8a68-ba0b7e9ebc19",
  "valueType": "StringQuestionValueType"
},
"5f33c2e8-8b95-435c-870a-fd97d91ff8da": {
  "expertUids": [],
  "itemTemplateQuestionUids": [
    "3ded4b7d-fc8a-4386-b96f-34f0d681cf57",
    "3b4a4d1c-f74f-465c-95dd-3699070b443b"
  ],
  "questionType": "ListQuestion",
  "referenceUids": [],
  "requiredLevel": null,
  "tagUids": [],
  "text": null,
  "title": "F4 In which searchable resources are your datasets indexed?",
  "uuid": "5f33c2e8-8b95-435c-870a-fd97d91ff8da"
},
"6838d085-c55a-42c6-897e-c58dd414d211": {
  "expertUids": [],
  "questionType": "ValueQuestion",
  "referenceUids": [],
  "requiredLevel": null,
  "tagUids": [],
  "text": null,
  "title": "Add your resource description here",
  "uuid": "6838d085-c55a-42c6-897e-c58dd414d211",
```



2020: FAIR Convergence Matrix

FAIR Convergence Matrix

Datei Bearbeiten Ansicht Einfügen Format Daten Tools Add-ons Hilfe Letzte Änderung gestern um 15:38

100% Calibri 11

Persistent Identifier for eResearch

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	11/27/2020																			
2																				
3																				
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41																				



2022: Qualified FAIR enabling resources

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Quality Control

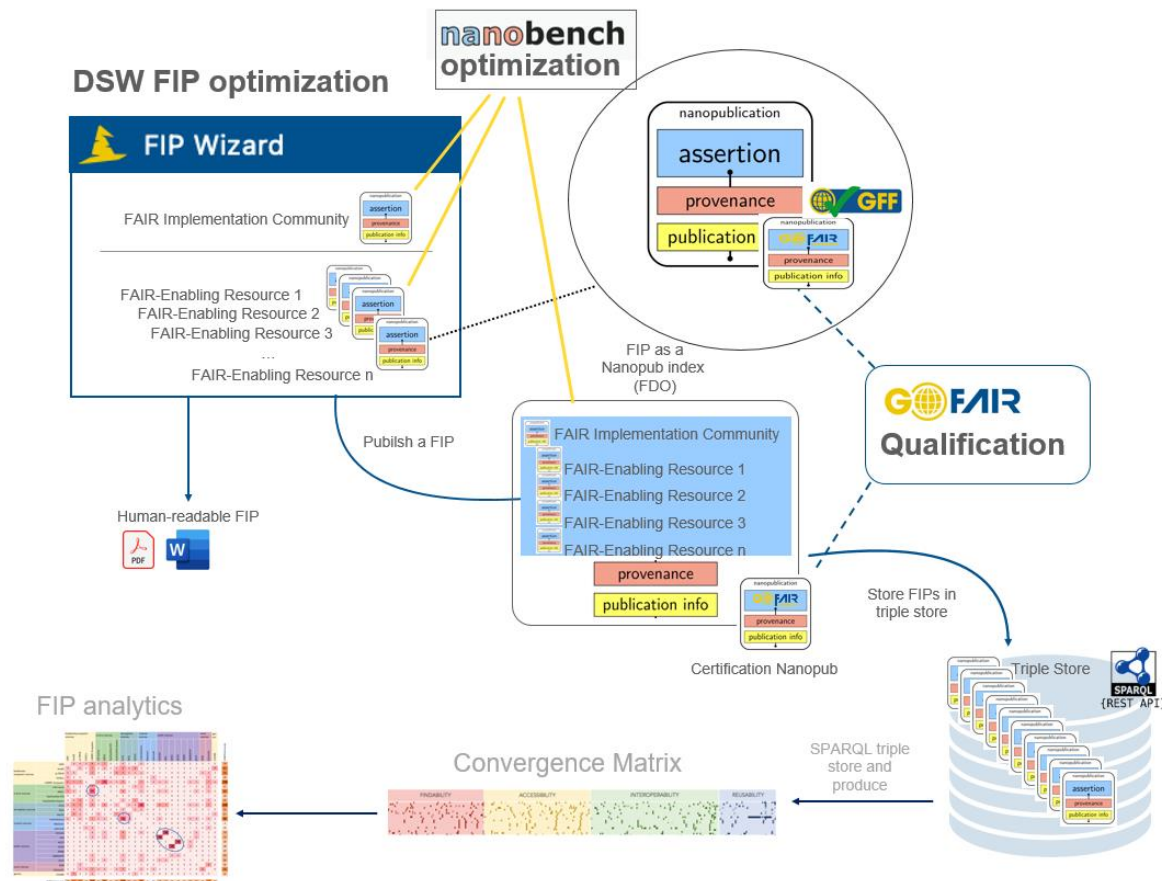


FAIR Implementations





2022: FIP tool improved





2022: new FIP Wizard features

- Qualified FERs are pre-minted as nanopubs, via drop-downs lists, more fields visible including a qualifier badge
- FERs can be minted via the Wizard (no need to install nanobench)
- FIPs can be edited by different users (defined roles)
- FIPs have a better structure and questions are optimized
- FIPs can be checked in terms of completeness (error messages)
- A FIP can be published as a Nanopub Index
- FIPs can be published as word doc with reduced text (only Q&A)
- FIPs can be filtered by users and tags



2023 ... Assessed FAIR enabling resources

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Evaluate FAIRness

- Choices
- Challenges

FAIR Implementations



Could do a 4th run in ENVRI-FAIR?



Ideal situation: one tool – all RIs – 3 FAIR assessment runs

RI/ Year	IAGOS	EISCAT-3D	ACTRIS	ICOS	EMSO	SDN	EURO-ARGO	EPOS	LW	SIOS	eLTER	AnaEE	Danubius	DISSCo
2019	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2020	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2022	1	1	1	1	1	1	1	1	1	1	1	1	1	1

towards FAIR



De facto: 3 FAIR assessment runs with unequal participation

RI/ Year	IAGOS	EISCAT- 3D	ACTRIS	ICOS	EMSO	SDN	EURO- ARGO	EPOS	LW	SIOS	eLTER	AnaEE	Danubius	DISSCo
2019	1	2	6	1		2	1	4	2	2	3	1		
2020	1			1		2	1		2	1	1	1		1
2022														



De facto: 3 FAIR assessment runs with 3 tools

RI/ Year	input	output	RI participation	based on	questions	answer choice	answer type
2019	Text/ yaml	RDF	10	repositories	~80	free	text
2020	FIP Wizard I	RDF	9	communities	24	free	Wikidata/nanopub
2022	FIP Wizard II	RDF	?	?	24	controlled, extensible	nanopub



achievable: 3 FAIR assessment runs with 1 tool = FIP Wizard II

RI/ Year	input	output	RI participation	based on	questions	answer choice	answer type
2019	FIP Wizard II	RDF	10	repositories	24	controlled, extensible	nanopub
2020	FIP Wizard II	RDF	9	communities	24	controlled, extensible	nanopub
2022	FIP Wizard II	RDF	?	?	24	controlled, extensible	nanopub



achievable? common decision on FIP unit: repository vs community

RI/ Year	input	output	RI participation	based on	questions	answer choice	answer type
2019	FIP Wizard II	RDF	10	communities	24	controlled, extensible	nanopub
2020	FIP Wizard II	RDF	9	communities	24	controlled, extensible	nanopub
2022	FIP Wizard II	RDF	?	communities	24	controlled, extensible	nanopub



achievable?

3 FAIR assessment runs with all RIs?

RI/ Year	input	output	RI participation	based on	questions	answer choice	answer type
2019	FIP Wizard II	RDF	10 + 4	communities	24	controlled, extensible	nanopub
2020	FIP Wizard II	RDF	9 + 5	communities	24	controlled, extensible	nanopub
2022	FIP Wizard II	RDF	14	communities	24	controlled, extensible	nanopub



Achievable?

3 FAIR Assessment runs with all RIs?

RI/ Year	input	output	RI participation	based on	questions	answer choice	answer type
2019	FIP Wizard II	RDF	10 + 4	communities	24	controlled, extensible	nanopub
2020	FIP Wizard II	RDF	9 + 5	communities	24	controlled, extensible	nanopub
2022	FIP Wizard II	RDF	14	communities	24	controlled, extensible	nanopub



Achievements of ENVRI-FAIR

- Increase awareness and understanding of the FAIR Principles supported by dedicated workshops
- Assess the status of the FAIRness of the involved RIs updated annually
- Co-develop approaches for assessing the FAIRness of RIs
- Landscape the use of FAIR Enabling Resources of RIs with the FIP tool
- Support convergence by informing about chosen implementations
- Improve the overall FAIRness level of the RIs