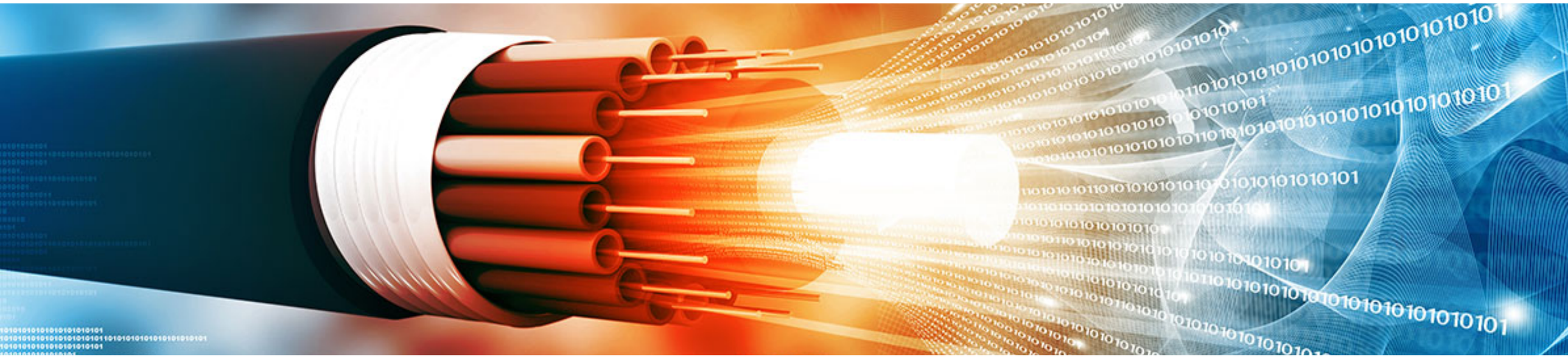


EOSC-Nordic intro
& highlights from WP4 FAIR Data

Andreas O Jaunsen (NeIC / WP4 lead)

EOSC-Nordic project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 857652

WP4 members

21 participants

Iceland

Guðbjörg A Jónsdóttir (HI)

Norway

Adil Hasan (Sigma2)
Trond Kvamme (NSD)
Andreas Jaunsen (NeIC)

Finland

Heikki Lehväslaiho (CSC)
Josefine Nordling (CSC)
Mari Elisa Kuusniemi (UHEL)
Mari Kleemola (UTA)
Pauli Assinen (UHEL)
Tuomas Aleterä (FSD)

Estonia

Liisi Lembinen (UTartu)

Denmark

A S Fink Kjeldgaard (DNA)
Henrik Jakobsen (DNA)
Troels Rasmussen (DeiC)

Latvia

Ilmars Slaidins (RTU)
Janis Kampars (RTU)
Lauris Cikovskis (RTU)

Sweden

Birger Jerlehag (SND)
Iris Alfredsson (SND)
Monica Lassi (SNIC/LU)

Netherlands

Bert Meermans (GFF)


Findable
Persistent Identifiers (PIDs)
Rich metadata
Indexed data repositories
PIDs in metadata
Accessible
Standard communications protocol
Open, free protocol
Authentication, where necessary
Metadata is always available
Interoperable
Vocabularies
Vocabularies are FAIR
Linked metadata
Reusable
Metadata have multiple attributes
Usage license
Provenance
Community standards

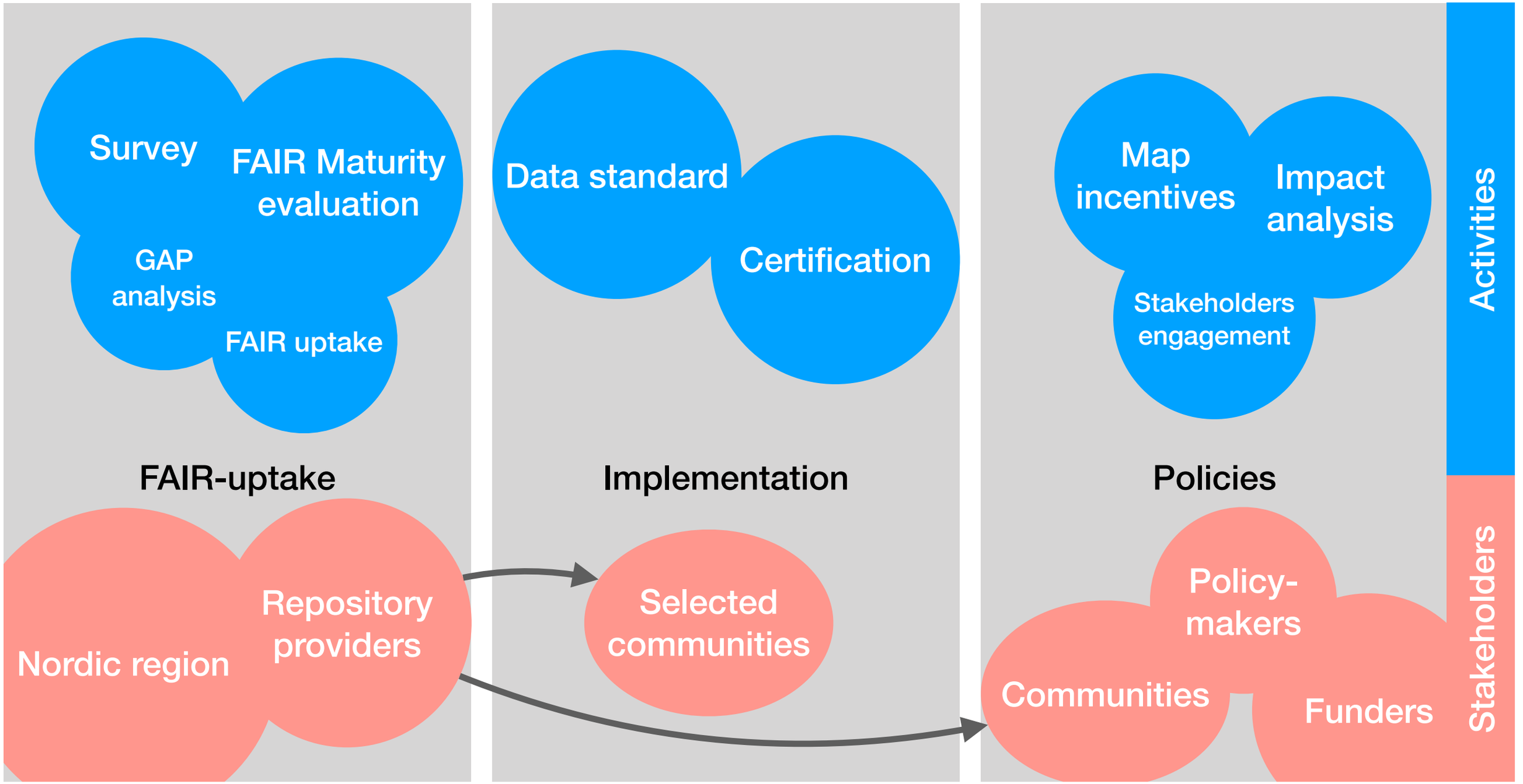
EOSC-Nordic WP4: FAIR data

FAIR-uptake

Implementation

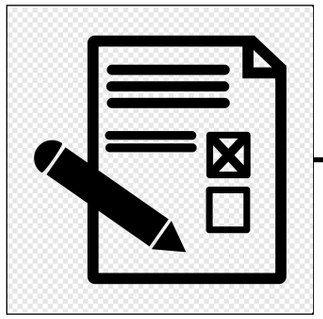
Policies

EOSC-Nordic WP4: FAIR data

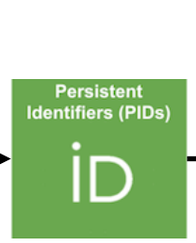


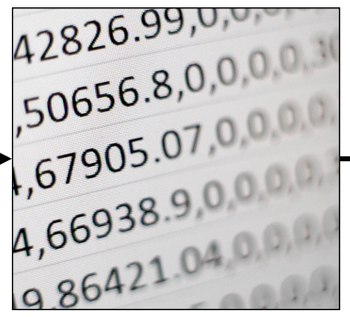
WP4 first year activities

Dataset GUID required
to evaluate datasets

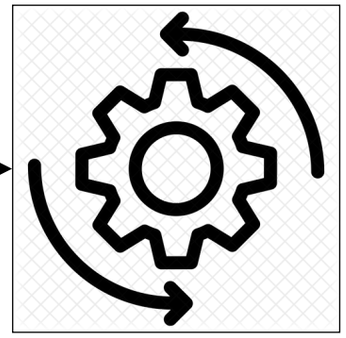


Surveyed Nordics region for research repositories (~100 repositories in sample)





(Manually) selected N=10 datasets per repository (700+ datasets)



Evaluated all datasets using fully machine-actionable metrics (Wilkinson gen2) using a licensed FDS-tool

Machine-actionable FAIR Maturity indicators

	Metric name	Principle association	Principle description
1	UNIQUE IDENTIFIER	F1	(Meta)data are assigned a globally unique and persistent identifier
2	IDENTIFIER PERSISTENCE	F1	(Meta)data are assigned a globally unique and persistent identifier
3	DATA IDENTIFIER PERSISTENCE	F1	(Meta)data are assigned a globally unique and persistent identifier
4	STRUCTURED METADATA	F2	Data are described with rich metadata (defined by R1 below)
5	GROUNDED METADATA	F2	Data are described with rich metadata (defined by R1 below)
6	DATA IDENTIFIER EXPLICITLY IN METADATA	F3	Metadata clearly and explicitly include the identifier of the data they describe
7	METADATA IDENTIFIER EXPLICITLY IN METADATA	F3	Metadata clearly and explicitly include the identifier of the data they describe
8	SEARCHABLE IN MAJOR SEARCH ENGINE	F4	(Meta)data are registered or indexed in a searchable resource
9	USES OPEN FREE PROTOCOL FOR DATA RETRIEVAL	A1.1	The protocol is open, free, and universally implementable
10	USES OPEN FREE PROTOCOL FOR METADATA RETRIEVAL	A1.1	The protocol is open, free, and universally implementable
11	DATA AUTHENTICATION AND AUTHORIZATION	A1.2	The protocol allows for an authentication and authorisation procedure, where necessary
12	METADATA AUTHENTICATION AND AUTHORIZATION	A1.2	The protocol allows for an authentication and authorisation procedure, where necessary
13	METADATA PERSISTENCE	A2	Metadata are accessible, even when the data are no longer available
14	METADATA KNOWLEDGE REPRESENTATION LANGUAGE (WEAK)	I1	(Meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.
15	METADATA KNOWLEDGE REPRESENTATION LANGUAGE (STRONG)	I1	(Meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.
16	DATA KNOWLEDGE REPRESENTATION LANGUAGE (WEAK)	I1	(Meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.
17	DATA KNOWLEDGE REPRESENTATION LANGUAGE (STRONG)	I1	(Meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.
18	METADATA USES FAIR VOCABULARIES (WEAK)	I2	(Meta)data use vocabularies that follow FAIR principles
19	METADATA USES FAIR VOCABULARIES (STRONG)	I2	(Meta)data use vocabularies that follow FAIR principles
20	METADATA CONTAINS QUALIFIED OUTWARD REFERENCES	I3	(Meta)data include qualified references to other (meta)data
21	METADATA INCLUDES LICENSE (STRONG)	R1.1	(Meta)data are released with a clear and accessible data usage license
22	METADATA INCLUDES LICENSE (WEAK)	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

https://doi.org/10.1038/s41597-019-0184-5

For Humans

For Machines

PLOS ONE

OPEN ACCESS PEER-REVIEWED

RESEARCH ARTICLE

Community Health Workers and Mobile Technology: A Systematic Review of the Literature

Rebecca Braun, Caricia Catalani, Julian Wimbush, Dennis Israelski

Published: June 12, 2013 https://doi.org/10.1371/journal.pone.0065772

Abstract

Introduction

In low-resource settings, community health workers are frontline providers who shoulder the health service delivery burden. Increasingly, mobile technologies are developed, tested, and deployed with community health workers to facilitate tasks and improve outcomes. We reviewed the evidence for the use of mobile technology by community health workers to identify opportunities and challenges for strengthening health systems in resource-constrained settings.

Methods

We conducted a systematic review of peer-reviewed literature from health, medical, social science, and engineering databases, using PRISMA guidelines. We identified a total of 25 unique full-text research articles on community health workers and their use of mobile technology for the delivery of health services.

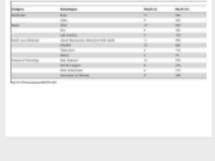
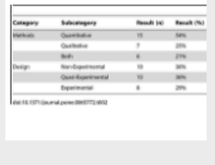
Results

Community health workers have used mobile tools to advance a broad range of health aims throughout the globe, particularly maternal and child health, HIV/AIDS, and sexual and reproductive health. Most commonly, community health workers use mobile technology to collect field-based health data, receive alerts and reminders, facilitate health education sessions, and conduct person-to-person communication. Programmatic efforts to strengthen health service delivery focus on improving adherence to standards and guidelines, community education and training, and programmatic leadership and management practices. Those studies that evaluated program outcomes provided some evidence that mobile tools help community health workers to improve the quality of care provided, efficiency of services, and capacity for program monitoring.

Discussion

Evidence suggests mobile technology presents promising opportunities to improve the range and quality of services provided by community health workers. Small-scale efforts, pilot projects, and preliminary descriptive studies are increasing, and there is a trend toward using feasible and acceptable interventions that lead to positive program outcomes through operational improvements and rigorous study designs. Programmatic and scientific gaps will need to be addressed by global leaders as they advance the use and assessment of mobile technology tools for community health workers.

Figures

Citation: Braun R, Catalani C, Wimbush J, Israelski D (2013) Community Health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    unique full-text research articles on community health workers and their use of mobi
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    community health workers use mobile technology to collect field-based health data, r
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    Increasingly, mobile technologies are developed, tested, and deployed with community
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    text research articles on community health workers and their use of mobile technolog
    to advance a broad range of health aims throughout the globe, particularly maternal
    workers use mobile technology to collect field-based health data, receive alerts and
    Programmatic efforts to strengthen health service delivery focus on improving adhere
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Test of: 10.1371/journal.pone.0065772

Thu, 27 Aug 2020 17:13:33 +0000

GUID: 10.1371/journal.pone.0065772

Date: Thu, 27 Aug 2020 17:13:33 +0000

Harvester Output

FAIR Metrics Gen2 - Data Identifier Explicitly In Metadata

FAIR Metrics Gen2 - Data Identifier Persistence

FAIR Metrics Gen2 - Grounded Metadata

FAIR Metrics Gen2 - Identifier Persistence

FAIR Metrics Gen2 - Searchable in major search engine

FAIR Metrics Gen2 - Structured Metadata

FAIR Metrics Gen2- Metadata Identifier Explicitly In Metadata

FAIR Metrics Gen2- Unique Identifier

F metrics

Date: Thu, 27 Aug 2020 17:13:33 +0000

Harvester Output

FAIR Metrics Gen2 - Data Identifier Explicitly In Metadata

FAIR Metrics Gen2 - Data Identifier Persistence

FAIR Metrics Gen2 - Grounded Metadata

FAIR Metrics Gen2 - Identifier Persistence

FAIR Metrics Gen2 - Searchable in major search engine

FAIR Metrics Gen2 - Structured Metadata

FAIR Metrics Gen2- Metadata Identifier Explicitly In Metadata

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INFO: Linked Data Found. Now searching for the metadata identifier using
appropriate linked data predicates (["http://purl.org/dc/elements/1.1/identifier",
"https://purl.org/dc/elements/1.1/identifier",
"http://purl.org/dc/terms/identifier", "http://schema.org/identifier",
"https://purl.org/dc/terms/identifier", "https://schema.org/identifier"]).
INFO: found identifier '10.1371/journal.pone.0065772' using
http://purl.org/dc/terms/identifier as a string or URI.
SUCCESS: the starting identifier (10.1371/journal.pone.0065772) was found in the
structured metadata
```

FAIR Metrics Gen2- Unique Identifier

I metrics

FAIR Metrics Gen2 - Metadata Knowledge Representation Language (strong)

FAIR Metrics Gen2 - Metadata Knowledge Representation Language (weak)

FAIR Metrics Gen2 - Metadata contains qualified outward references)

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INFO: TEST VERSION 'Hvst-1.3.2:Tst-0.2.3'

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INFO: Testing info:doi/10.1371/journal.pone.0065772.
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SUCCESS: 14 of the 14 triples discovered in the linked metadata pointed to
resources hosted elsewhere.
```

FAIR Metrics Gen2 - Metadata uses FAIR vocabularies (strong)

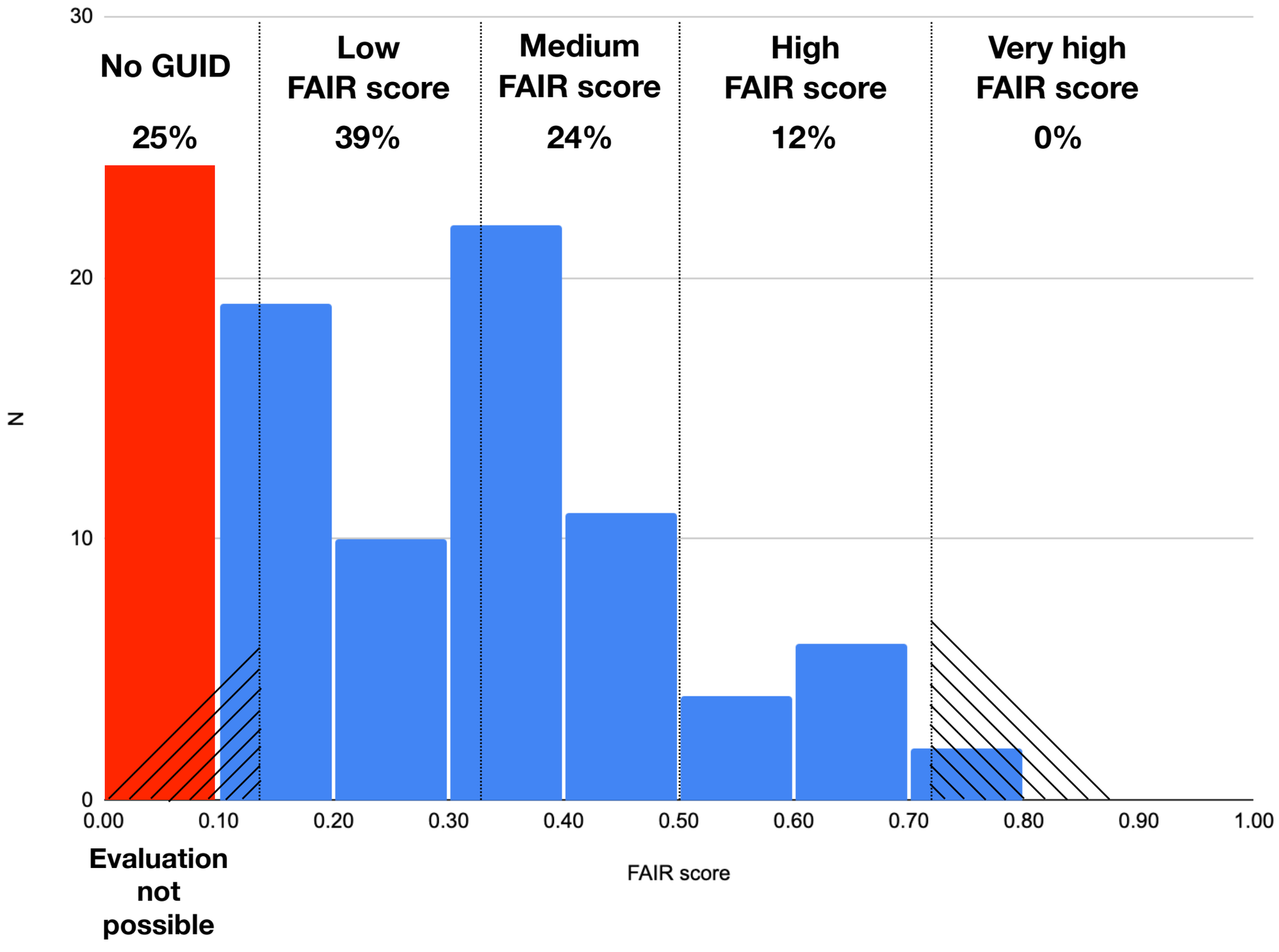
FAIR Metrics Gen2 - Metadata uses FAIR vocabularies (weak)

Run evaluations for more than 1000 datasets with the help of some clever Google scripts and multiple workers (VMs)

1018 DO evaluations (EP6, Jul 20, 2020)

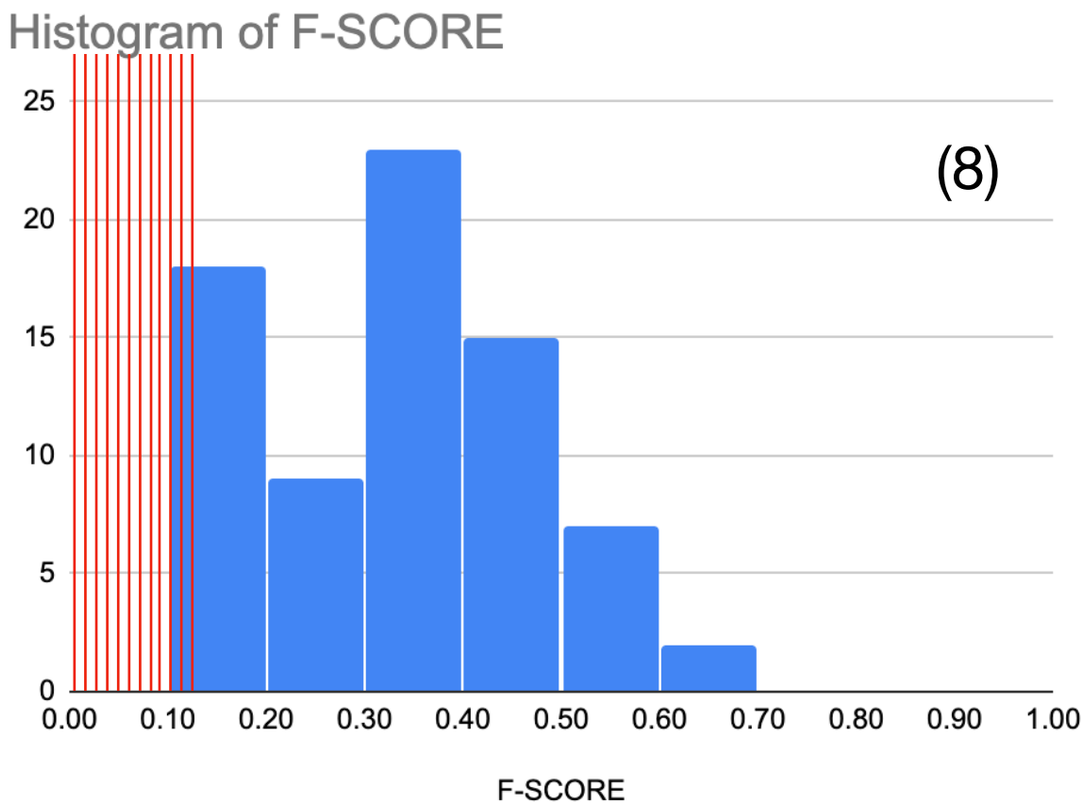
FAIR uptake

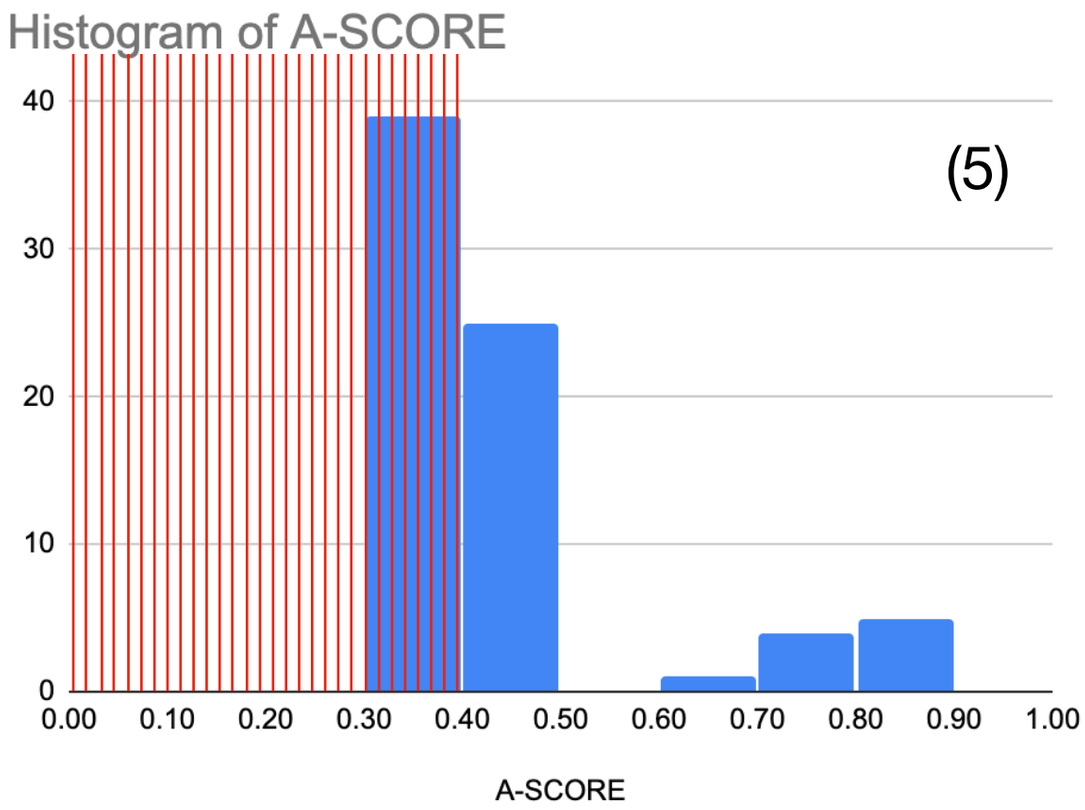
FAIR scores from 1018 PID+URI datasets



20 July 2020

98 repositories (74 evaluated)


Histogram of F-SCORE
(8)
25
20
15
10
5
0
0.00
0.10
0.20
0.30
0.40
0.50
0.60
0.70
0.80
0.90
1.00
F-SCORE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30
20
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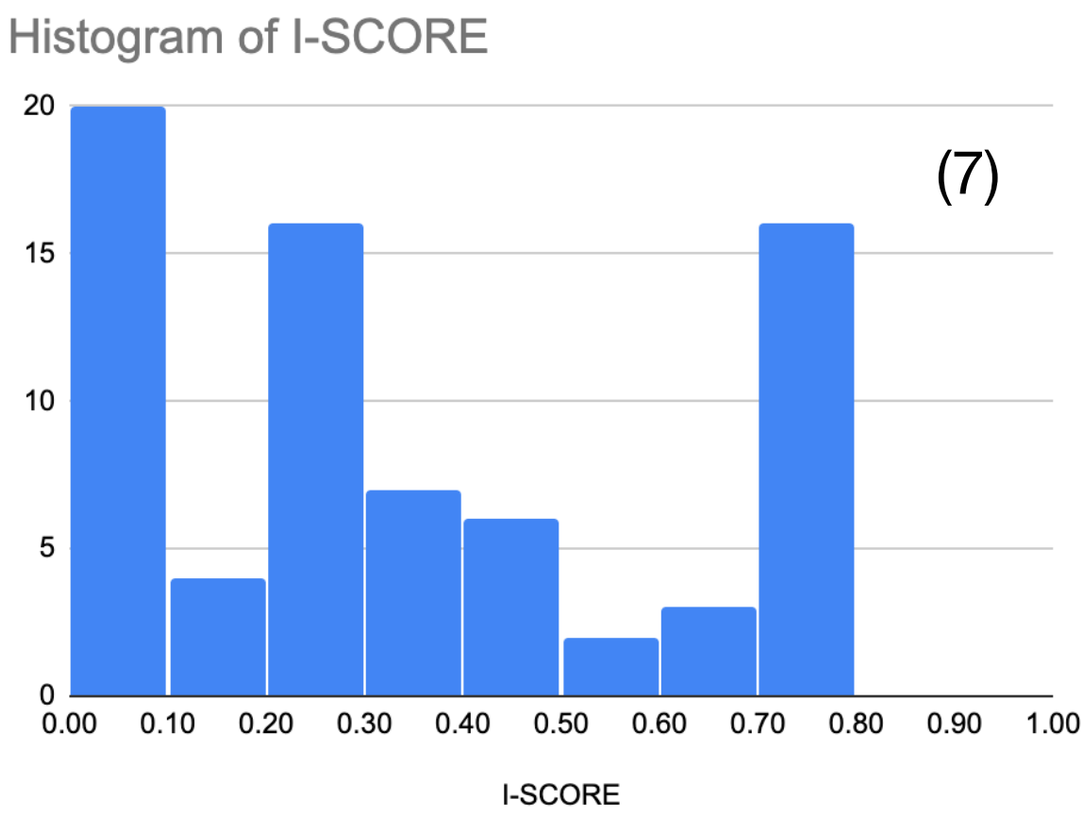
0
0.00
0.10
0.20
0.30
0.40
0.50
0.60
0.70
0.80
0.90
1.00
A-SCORE


Histogram of I-SCORE
(7)
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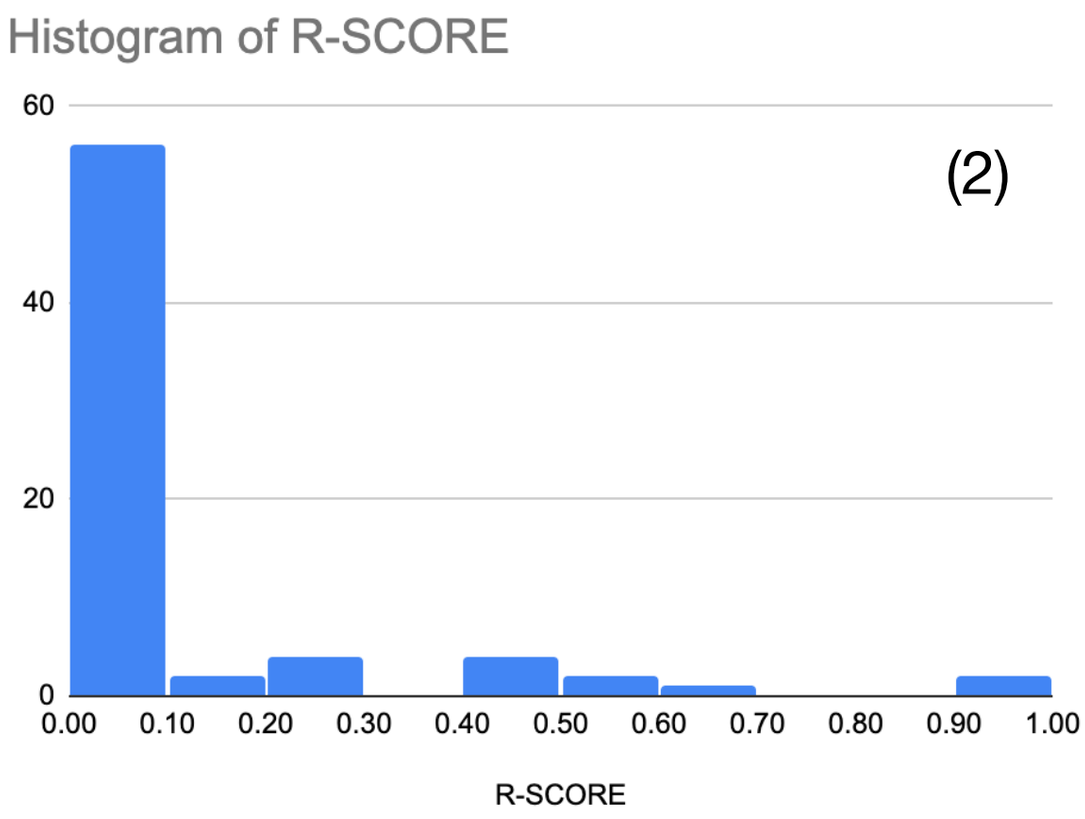
15
10
5
0
0.00
0.10
0.20
0.30
0.40
0.50
0.60
0.70
0.80
0.90
1.00
I-SCORE


Histogram of R-SCORE
(2)
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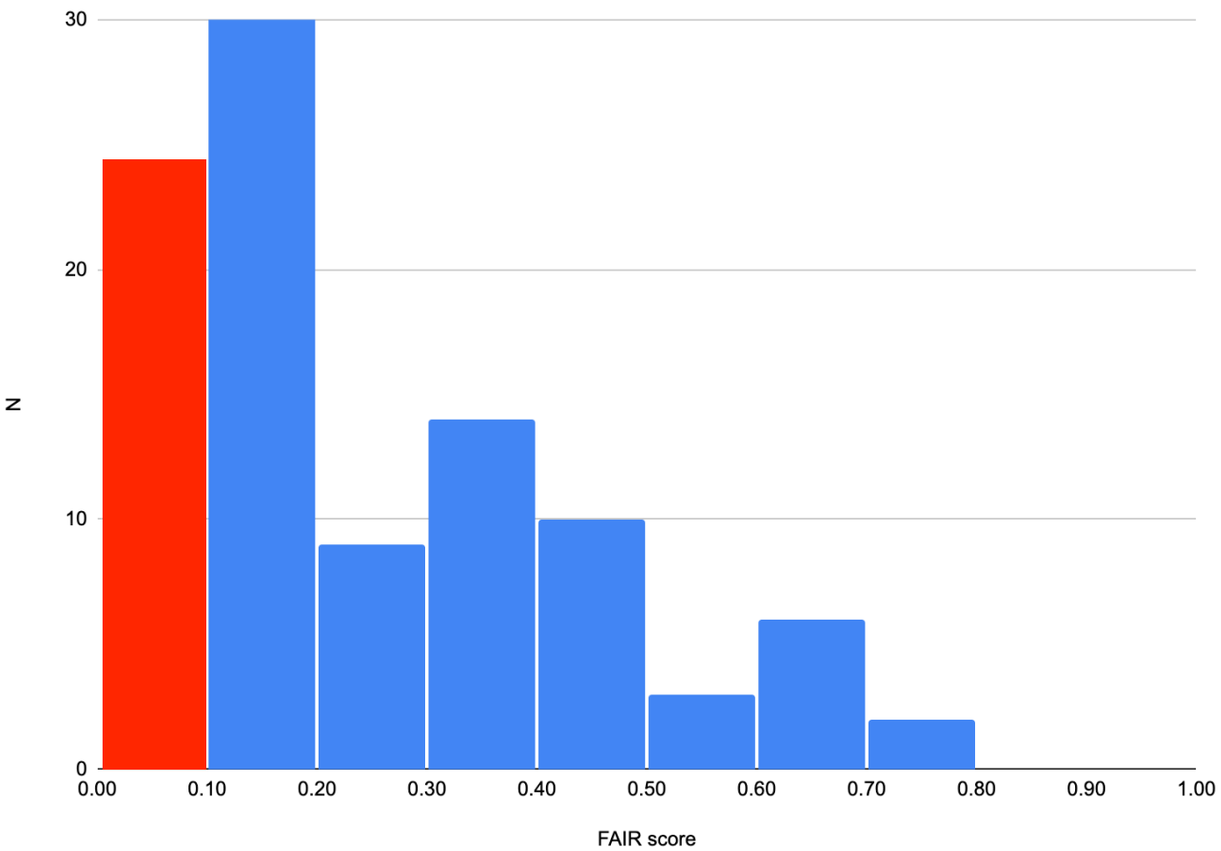
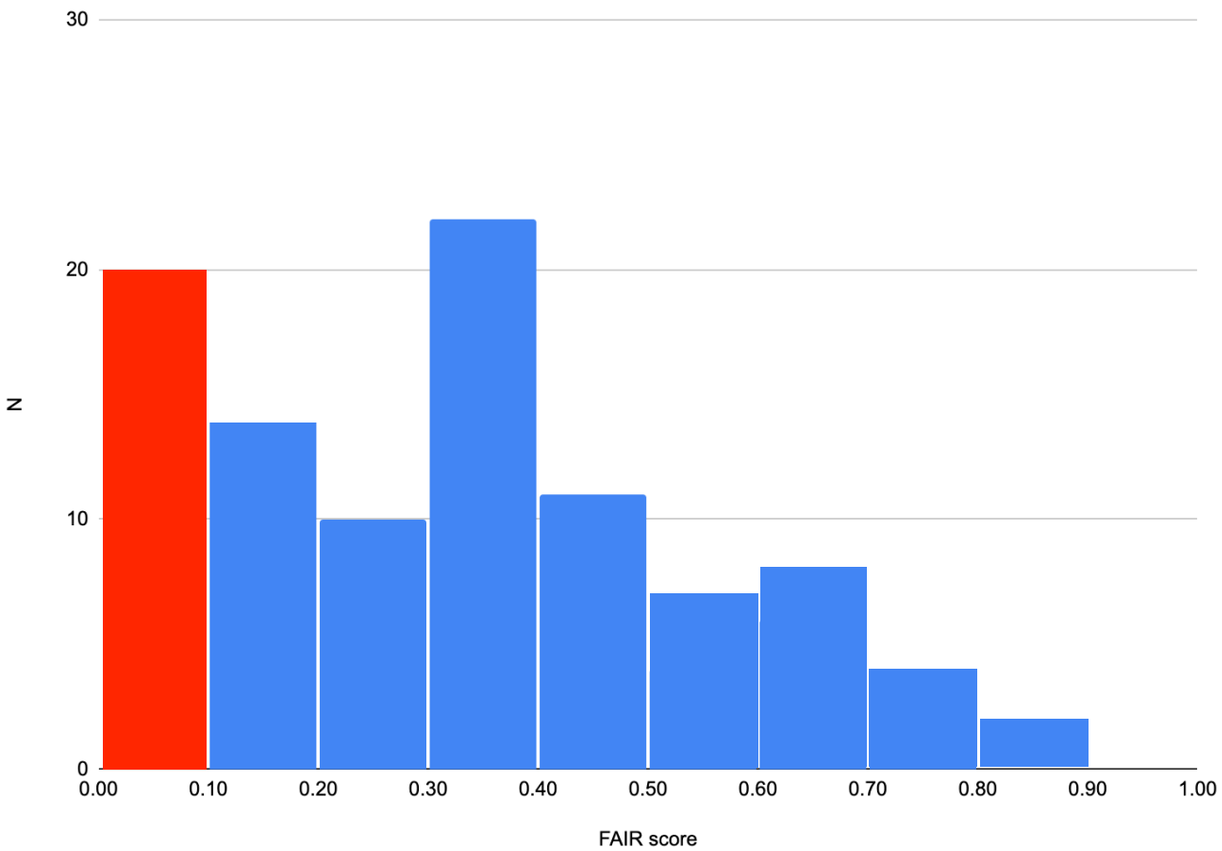
40
20
0
0.00
0.10
0.20
0.30
0.40
0.50
0.60
0.70
0.80
0.90
1.00
R-SCORE

FAIR uptake (sim)

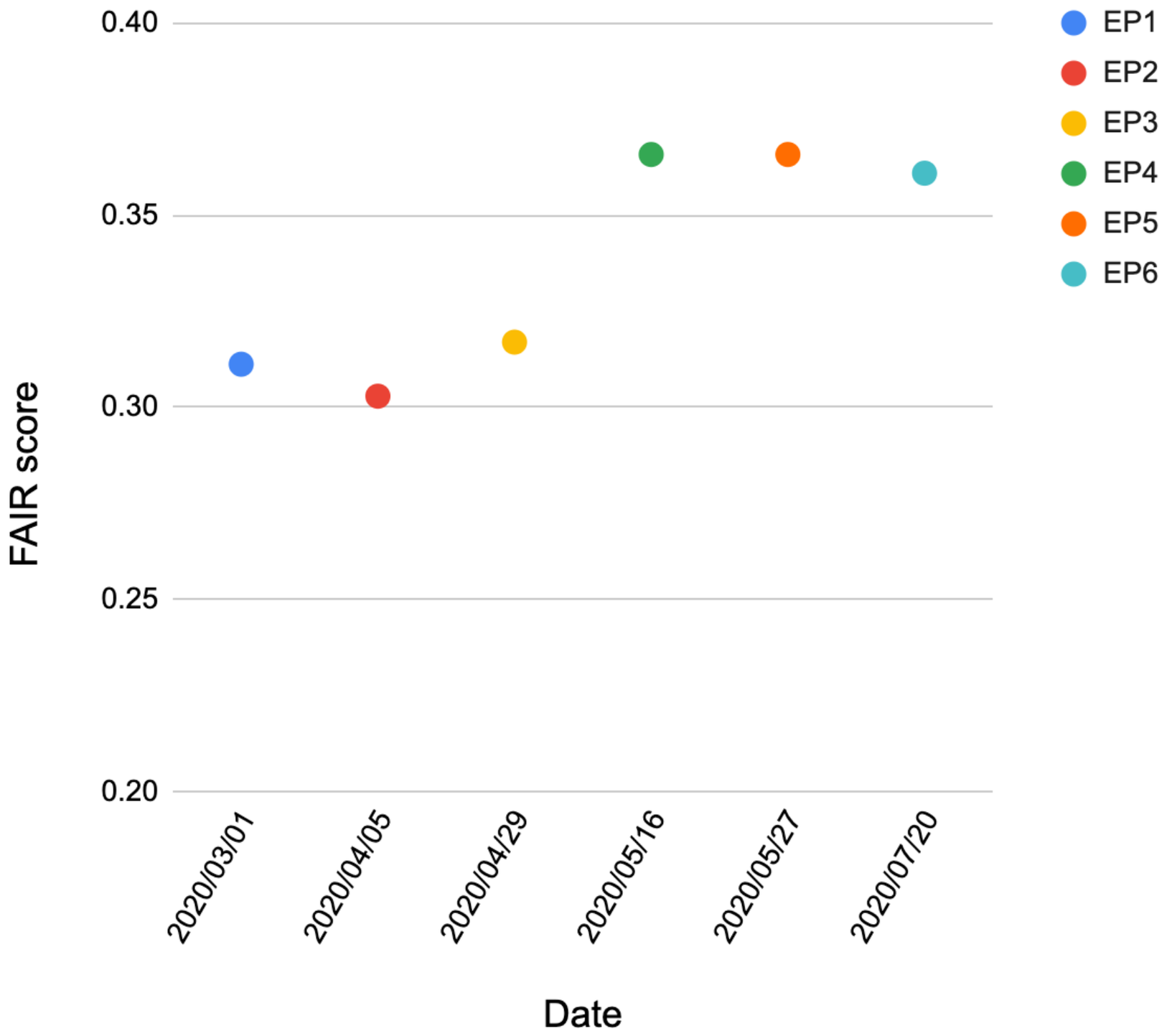
Epoch 3

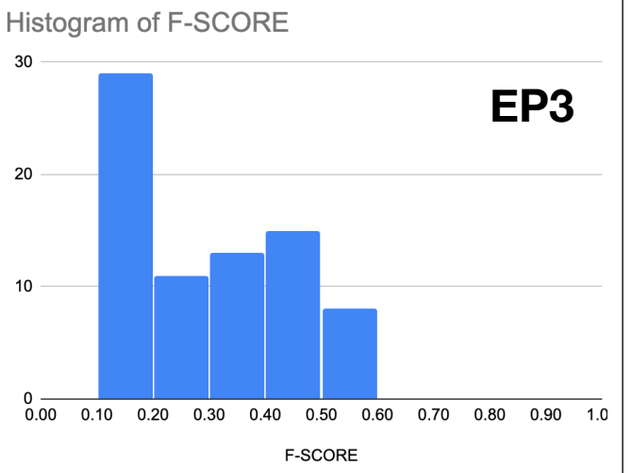


Epoch X



4876 DO evaluations




Histogram of F-SCORE
EP3
30
20
10
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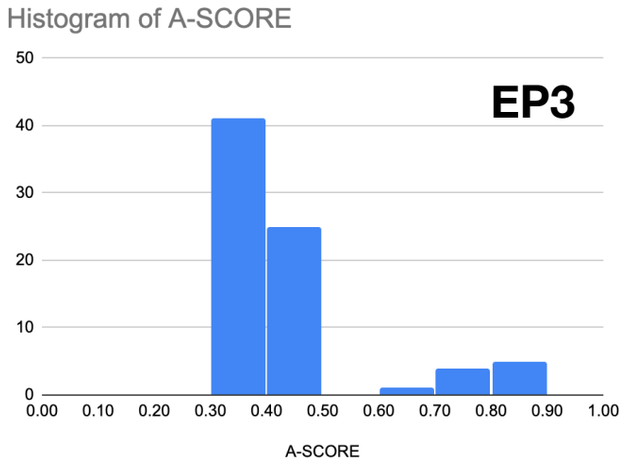
0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.0
F-SCORE


Histogram of A-SCORE
EP3
50
40
30
20
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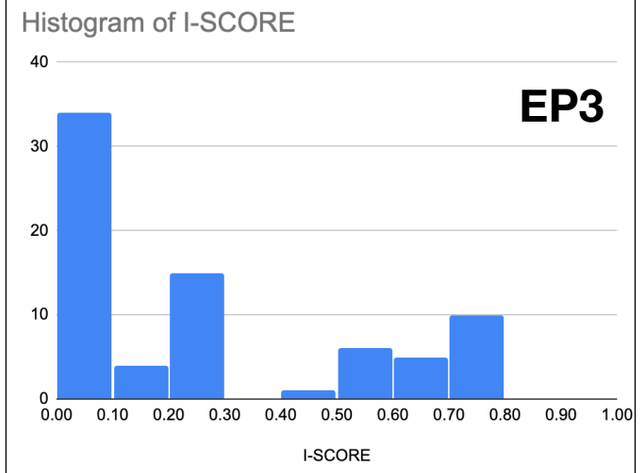
A-SCORE


Histogram of I-SCORE
EP3
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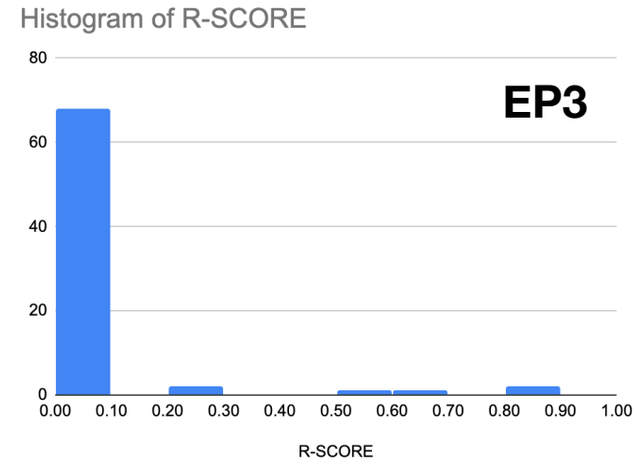
I-SCORE


Histogram of R-SCORE
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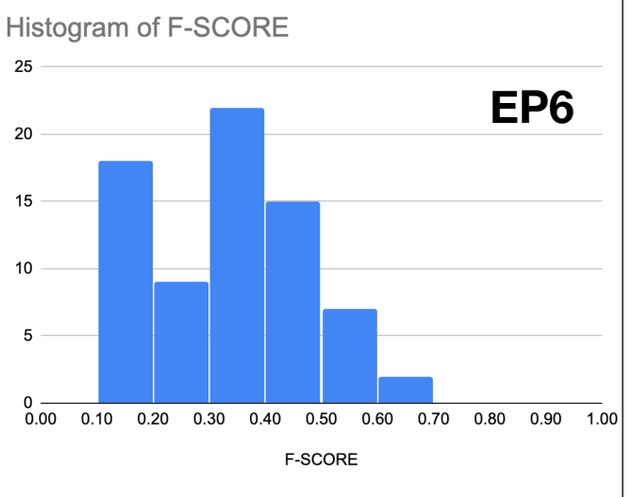
40
20
0
0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00
R-SCORE


Histogram of F-SCORE
EP6
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20
15
10
5
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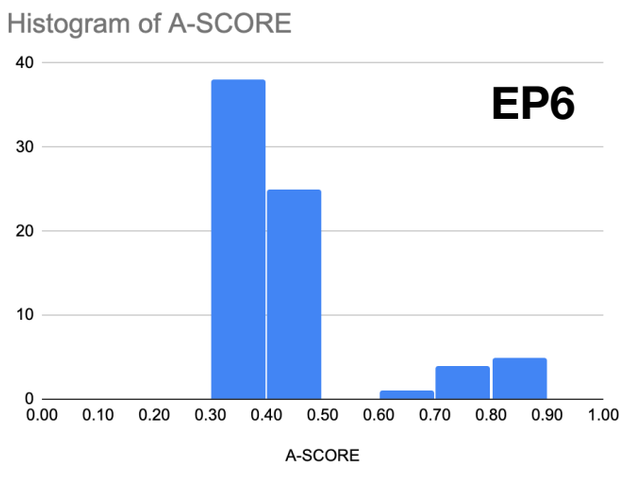
0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00
F-SCORE


Histogram of A-SCORE
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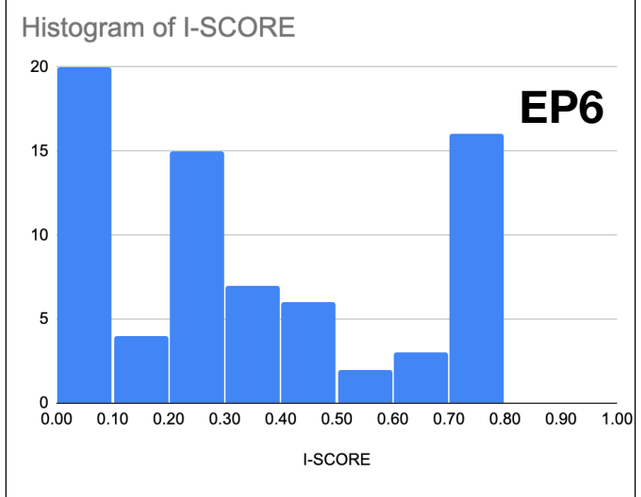
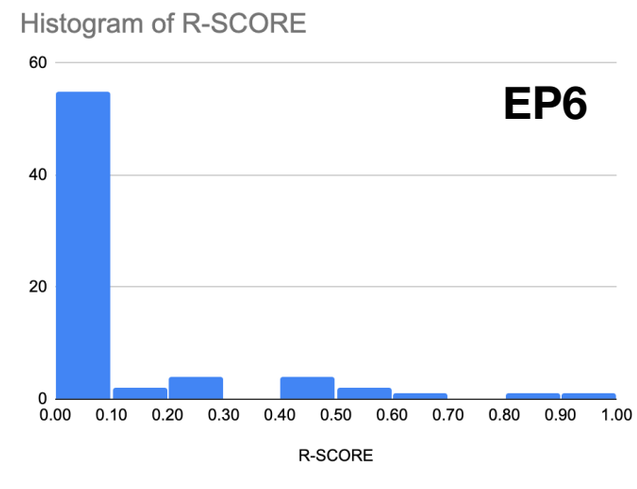
A-SCORE


Histogram of I-SCORE
EP6
20
15
10
5
0
0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00
I-SCORE


Histogram of R-SCORE
EP6
60
40
20
0
0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00
R-SCORE

Repository evaluation results

repoID	Name	Data	Platform	F-score	A-score	I-score	R-score	FAIR	Sigma	Sigma (F	Sigma (A	Sigma (I	Sigma (R				
2	CLARIN-DK	40	Dspace	43.75%	40.00%	28.57%	0.00%	34.09%	0.016	0.063	0.000	0.000	0.000	X			X
3	DDA	20		43.75%	40.00%	71.43%	0.00%	47.73%	0.016	0.064	0.000	0.000	0.000				
4	Det Kgl. bibliotek	20		23.75%	44.00%	17.86%	12.50%	25.45%	0.127	0.202	0.123	0.317	0.319				
6	Kielipankki	10	META-SHARE	12.50%	40.00%	0.00%	0.00%	13.64%	0.000	0.000	0.000	0.000	0.000	X			X
7	Data Service Portal Aila	10		57.50%	80.00%	71.43%	100.00%	70.91%	0.016	0.065	0.000	0.000	0.000				
8	Fairdata IDA	10		12.50%	40.00%	0.00%	0.00%	13.64%	0.000	0.000	0.000	0.000	0.000				
9	NMBU dataverseNO	16	Dataverse	61.72%	80.00%	71.43%	0.00%	63.35%	0.008	0.031	0.000	0.000	0.000				
10	NSD	20	NESSTAR	28.75%	42.00%	28.57%	5.00%	29.55%	0.119	0.195	0.089	0.359	0.224	X			
11	HUNT Databank	10		12.50%	40.00%	0.00%	0.00%	13.64%	0.000	0.000	0.000	0.000	0.000				
13	CLARINO Bergen Center repos	20	Dspace	26.25%	40.00%	8.57%	0.00%	21.36%	0.047	0.134	0.000	0.134	0.000	X			X
16	Språkbanken	10		37.50%	40.00%	42.86%	0.00%	36.36%	0.000	0.000	0.000	0.000	0.000				
17	ESS Data	9		37.50%	40.00%	28.57%	0.00%	31.82%	0.000	0.000	0.000	0.000	0.000				
18	TROLLing	22	Dataverse	60.00%	80.00%	71.43%	0.00%	62.73%	0.013	0.051	0.000	0.000	0.000	X			
19	EED	10	Nesstar	12.50%	40.00%	0.00%	0.00%	13.64%	0.000	0.000	0.000	0.000	0.000				
20	UiT Open Research Data Dat	20	Dataverse	58.13%	80.00%	71.43%	0.00%	62.05%	0.015	0.061	0.000	0.000	0.000				
24	Språkbanken	13		34.62%	40.00%	21.98%	0.00%	28.67%	0.034	0.055	0.000	0.125	0.000		X		X
25	Lund University Humanities	20		18.75%	40.00%	0.00%	0.00%	15.91%	0.016	0.064	0.000	0.000	0.000				
26	su.figshare.com	20	Figshare	57.50%	76.00%	70.00%	90.00%	68.64%	0.086	0.063	0.123	0.064	0.308				
27	SND	20		46.25%	40.00%	71.43%	0.00%	48.64%	0.015	0.059	0.000	0.000	0.000	X			
28	ICES data portals	8		37.50%	40.00%	28.57%	0.00%	31.82%	0.000	0.000	0.000	0.000	0.000				
29	JASPAR	10		12.50%	40.00%	0.00%	0.00%	13.64%	0.000	0.000	0.000	0.000	0.000				
30	STRING	10		12.50%	40.00%	0.00%	0.00%	13.64%	0.000	0.000	0.000	0.000	0.000				
32	GBIF	22	IPT	48.30%	40.00%	71.43%	100.00%	58.47%	0.011	0.044	0.000	0.000	0.000			X	
39	HPA	10		27.50%	40.00%	21.43%	30.00%	28.64%	0.160	0.242	0.000	0.345	0.483				
41	Fishbase	10		37.50%	40.00%	28.57%	0.00%	31.82%	0.000	0.000	0.000	0.000	0.000				
45	ISIG	10		12.50%	40.00%	0.00%	0.00%	13.64%	0.000	0.000	0.000	0.000	0.000				
47	GERDA	10		12.50%	40.00%	0.00%	0.00%	13.64%	0.000	0.000	0.000	0.000	0.000				
49	ACTRIS	8		34.38%	40.00%	39.29%	25.00%	36.36%	0.153	0.186	0.000	0.356	0.463				
52	NPDC	20		31.88%	42.00%	35.71%	50.00%	37.05%	0.167	0.201	0.089	0.366	0.513				
54	Bolin Centre Database	12		43.75%	40.00%	71.43%	0.00%	47.73%	0.016	0.065	0.000	0.000	0.000				
55	SMHI open data	10		37.50%	40.00%	71.43%	0.00%	45.45%	0.000	0.000	0.000	0.000	0.000				
57	NIRD Archive	20		33.75%	40.00%	35.00%	0.00%	32.50%	0.099	0.186	0.000	0.348	0.000				
60	GTN-P Database	10		12.50%	40.00%	0.00%	0.00%	13.64%	0.000	0.000	0.000	0.000	0.000				
62	UNITE	20		33.13%	40.00%	35.71%	15.00%	33.86%	0.140	0.216	0.000	0.366	0.366				
63	Estonian Biocentre Public D	10		35.00%	40.00%	25.71%	0.00%	30.00%	0.030	0.079	0.000	0.090	0.000				
64	DataDOI	18		43.06%	40.00%	47.62%	0.00%	39.90%	0.057	0.064	0.000	0.219	0.000				
65	CELR META-SHARE	20		43.75%	40.00%	50.00%	0.00%	40.91%	0.057	0.064	0.000	0.220	0.000	X			X
66	AHEAD	10		12.50%	40.00%	0.00%	0.00%	13.64%	0.000	0.000	0.000	0.000	0.000				
68	USN RDA	10	Figshare	61.25%	80.00%	71.43%	100.00%	72.27%	0.010	0.040	0.000	0.000	0.000				
71	LOAR	19		42.11%	40.00%	47.37%	47.37%	43.78%	0.144	0.095	0.000	0.243	0.513				
72	AIDA Data Hub	20		47.37%	40.00%	63.91%	89.47%	54.78%	0.099	0.079	0.000	0.225	0.315				
73	QoG Institute's data	10		41.25%	40.00%	41.43%	0.00%	37.27%	0.054	0.060	0.000	0.207	0.000				
76	JYX	20		31.25%	40.00%	14.29%	0.00%	25.00%	0.040	0.064	0.000	0.147	0.000				
78	B2SHARE	12	Invenio	29.17%	40.00%	29.76%	41.67%	32.95%	0.165	0.187	0.000	0.368	0.515				
79	DH	10		25.00%	40.00%	14.29%	0.00%	22.73%	0.000	0.000	0.000	0.000	0.000				
80	NLL	10		50.00%	80.00%	71.43%	0.00%	59.09%	0.000	0.000	0.000	0.000	0.000				
84	RTU RIS	10		37.50%	40.00%	71.43%	0.00%	45.45%	0.000	0.000	0.000	0.000	0.000				
85	FinBIF	10		37.50%	40.00%	71.43%	0.00%	45.45%	0.000	0.000	0.000	0.000	0.000				
87	SARV	10		37.50%	40.00%	28.57%	0.00%	31.82%	0.000	0.000	0.000	0.000	0.000				
92	SSRI	15		42.50%	40.00%	54.29%	40.00%	45.45%	0.133	0.063	0.000	0.145	0.507				
94	IINH	10		29.17%	40.00%	19.05%	0.00%	25.76%	0.047	0.125	0.000	0.143	0.000				
100	QsarDB	20		31.25%	40.00%	35.71%	45.00%	35.91%	0.164	0.192	0.000	0.366	0.510				
104	Bird	20		43.75%	40.00%	37.14%	20.00%	38.64%	0.113	0.064	0.000	0.176	0.410				
106	Migration Institute of Fin	10		37.50%	40.00%	28.57%	0.00%	31.82%	0.000	0.000	0.000	0.000	0.000				
108	Musiikkiarkisto	4	CKAN	59.38%	80.00%	71.43%	50.00%	67.05%	0.145	0.063	0.000	0.000	0.577				
109	SLS	14		37.50%	40.00%	28.57%	0.00%	31.82%	0.000	0.000	0.000	0.000	0.000				
113	SweFreq	10		12.50%	40.00%	0.00%	0.00%	13.64%	0.000	0.000	0.000	0.000	0.000				
114	Metabolic Atlas	10		37.50%	40.00%	71.43%	0.00%	45.45%	0.000	0.000	0.000	0.000	0.000				
115	SEAD	10		12.50%	40.00%	0.00%	0.00%	13.64%	0.000	0.000	0.000	0.000	0.000				
116	NOW	10		12.50%	40.00%	0.00%	0.00%	13.64%	0.000	0.000	0.000	0.000	0.000				
117	SNM Digital Assets	10		12.50%	40.00%	0.00%	0.00%	13.64%	0.000	0.000	0.000	0.000	0.000				
120	GEUS	10		20.00%	40.00%	8.57%	0.00%	19.09%	0.046	0.121	0.000	0.138	0.000				
123	LARM	10		12.50%	40.00%	0.00%	0.00%	13.64%	0.000	0.000	0.000	0.000	0.000				
127	Garamantas	10		37.50%	40.00%	28.57%	0.00%	31.82%	0.000	0.000	0.000	0.000	0.000				
129	MMB	10		12.50%	40.00%	0.00%	0.00%	13.64%	0.000	0.000	0.000	0.000	0.000				
130	PlutoF	20		35.00%	40.00%	35.71%	30.00%	35.91%	0.160	0.235	0.000	0.366	0.470				
131	MIDAS	10		12.50%	40.00%	0.00%	0.00%	13.64%	0.000	0.000	0.000	0.000	0.000				
132	NMDC	20	Dataverse	57.50%	80.00%	71.43%	0.00%	61.82%	0.016	0.063	0.000	0.000	0.000				
133	IINH BIOTA	10		38.75%	40.00%	42.86%	0.00%	36.82%	0.010	0.040	0.000	0.000	0.000				
134	ICOS	20		43.75%	40.00%	57.14%	0.00%	43.18%	0.016	0.064	0.000	0.000	0.000				
135	CESSDA DC	14		23.21%	40.00%	20.41%	0.00%	24.03%	0.095	0.176	0.000	0.335	0.000				
136	DTU data	10	figshare	46.25%	68.00%	62.86%	70.00%	58.64%	0.139	0.060	0.193	0.181	0.483				
137	CLARIN IS	20	CLARIN	43.75%	40.00%	28.57%	0.00%	34.09%	0.016	0.064	0.000	0.000	0.000				

FAIR Certification

- Selection of ‘suitable’ repositories
  (somewhat mature repositories based on scores)

- Adopting FAIR + CTS (recommendation from FAIRsFAIR)

- FAIR Certification webinar (3 September) to offer support:
  - Self-assessments
  - Guidance

- Requires commitment; mainly effort by repository

Recently started and coming tasks

EOSC NORDIC

Events to support community FAIRification process

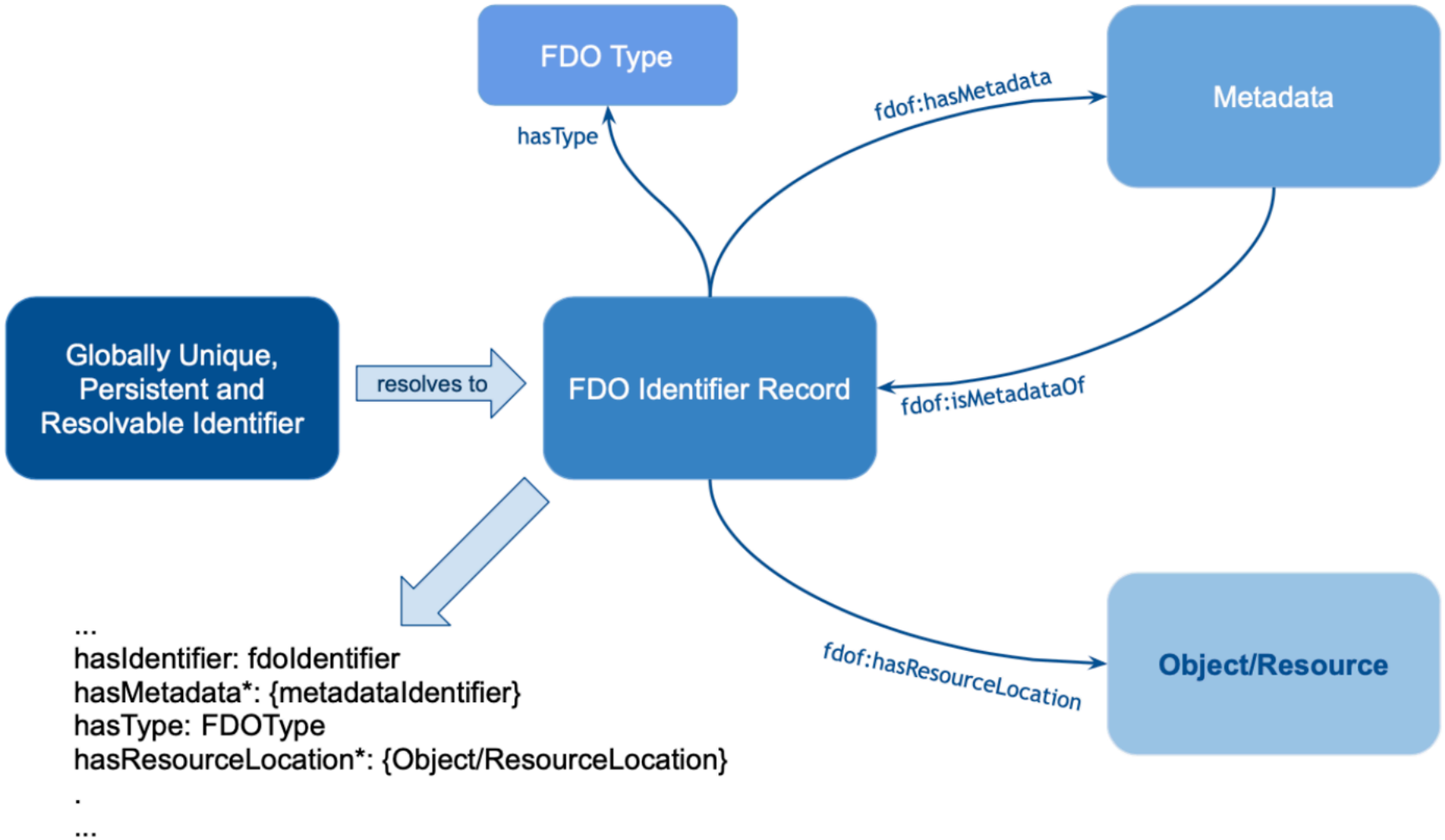
Certification support for repositories that wish to go this route

FAIR data standards and semantic attributes

FAIR incentives and stakeholder liaising

The End

FAIR Digital Objects



Bonino 2019