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HELMHOLTZ METADATA COLLABORATION

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Interconnected PID Systems

We looked into six established PID systems (ROR, ORCID, PIDINST, IGSN, DataCite DOI, Crossr DOI) to map the interconnection (graph) and overlap between systems. This was carried out by inspecting and comparing the metadata schemas of these PID systems in their current version to find out, to what extent they support each other and how this is done.

The number of external PID systems supported varies considerably for the six PID systems investigated, with ROR at 4 and up to 49 systems at ORCID. The system mostly implemented as a reference is DOI (4 other systems do refer to DOI in their metadata schema), while ROR is only referenced by DataCite DOIs yet.

First step: identify the set of external PIDs that is supported for each of the systems (comprehensive list \rightarrow)

PID System	Number of external PID systems supported		
ROR	4		
ORCID	49		
PIDINST	20		
IGSN	13		
DOI	33		







Detailed graph of PID systems supporting other systems

ORCID Supported PIDs		\Rightarrow	DOI Supported PIDs		PiDINST Support
AGR			# creationIdentifierType #	4	ARK
ARK			Ad-ID		arXiv
ARXIV			AMGAn		bibcode
ASIN			Baseline		DOI
AUTHENTICUSID			CRID		FISSN
BIBCODE			DOI		Handle
CBA			EAN13		IGSN
CIENCIAIUL			EditionNumber		ISBN
CIT			EIDRContentID		ISSNa
CSIR					ISTC LISSN
DNB			ISAN		PMID
DOI			ISBN10		PURL
EID			ISBN13		RAiD
EMDB			ISRC		RRID
EMPIAR			ISSN		UPC
CRANT NUMBER			ISIC		URL
HAL			IVA		w3id
HANDLE			MUZE		
HIR			PII		
ISBN			Proprietaryldentifier		
ISMN			SMPTE-UMID		
ISSN			TRIB		
JSTOR			UPC		
KUID			URI		
LCCN			URN		
LENSID			UUID		
MR			Hanardal dan Marittan Tana di		
			# partyidentifier i ype #		
OSTI			DOI		
OTHER-ID			EIDRPartyID		ROR Supported
PAT			IPNumber		
PDB			ISNIProprietaryIdentifier		FundRef (Crossref Funder
PMC			Λ		ISNI
PPR			11		Wikidata
PROPOSAL-ID					
RFC					(not actively curated
RRID			IGSN Supported PIDs		HESA
SOURCE-WORK-ID			veronumoration		UCAS
SSKN			ARK		UKPRN
URN			DOI		CNRS)
WOSUID			Handl		
ZBL			IGSN		Δ
			ISBN		
4			15NI		
			LSID		
			ORCID		
			PURL		
			URL		
			URN		
			VIAF		
				•	
			DataCite Supported PIDs		
			DOI		
			ORCID		
			GND		
			ROR	r	
			WIKIDATA		

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Potential of PID graphs

Interconnected PID systems can be visualized as graphs of relationships (PID graphs) between for instance scientists, datasets, publications, institutions etc. They can be machine actionable and thus be tailored to specific questions or fields of interest, as shown by EU program FREYA (https://www.project-freya.eu).

Our findings show, that PIDs should act as an important part of the data space we strive to construct. They allow to link meta information of different data sets in a uniform manner. Consistently implementing PIDs will allow a high level of informational data interoperability among distributed data sets, which should complement other interoperability measures, e.g. the semantic interoperability



PID Graphs establishes connections between different entities within the research landscape, thereby enabling researchers and institutions to access new information. Through the PID Graph, the infrastructure is in place to answer new questions about connections within the research world. [They are established by programmatically performing a] crosswalk through connected PID systems. *

* Cousijn, H. et al.: Connected Research: The Potential of the PID Graph (2021) (https://doi.org/10.1016/j.patter.2020.100180)



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