

1st International Conference on FAIR Digital Objects

"Turning the Internet into a meaningful data space"

26-28 October 2022

Leiden, The Netherlands

Conference Outcomes

Larry Lannom, Peter Wittenburg

e-IRG Workshop, Prague

13 December 2022

1st International Conference on FAIR Digital Objects

26 – 28 Oct 2022, Leiden, The Netherlands

- > 240 paying attendees from 175 institutions, across 30 countries
 - Five FDO Forum Working Group meetings
 - Three themes: Research, Technology, Policy
 - Four high-level panel discussions with international experts
 - 36 technical presentations, many in parallel sessions
 - 49 conference abstracts published, including posters
 - All 2.5+ days recorded and available on Youtube (link on fairdo.org)
 - Closed with the Leiden Declaration, available for signature at FDO website
 - Fairly generic – lays out goals and a commitment to continuing action
 - Many signatures, will probably remain open for more
 - Generally considered a success and the Steering Committee is now considering next steps.
 - Second Conference is already in the planning stage
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FAIR DO (FDO) Forum Evolution

- History
 - Digital Object Architecture seen by some as a promising implementation pathway for FAIR
 - Meeting in Paris Fall 2019 yielded Joint Statement on FAIR Digital Object Framework (FDOF)
 - Goal was to coordinate efforts and encourage use
 - Quiescent during the start of the pandemic, recent acceleration
- Steering Comm. + Working Groups formed, working since 2021
- Four Co-chairs
 - Christine Kirkpatrick – San Diego Supercomputer Center
 - Dimitris Koureas – Naturalis (Leiden), DiSSCo
 - George Strawn – Board on Research Data and Information at the U.S. National Academies of Sciences
 - Peter Wittenburg – Max Planck Tech Director (ret), DONA Board, many EU fora

FAIR Digital Object (FDO) Forum

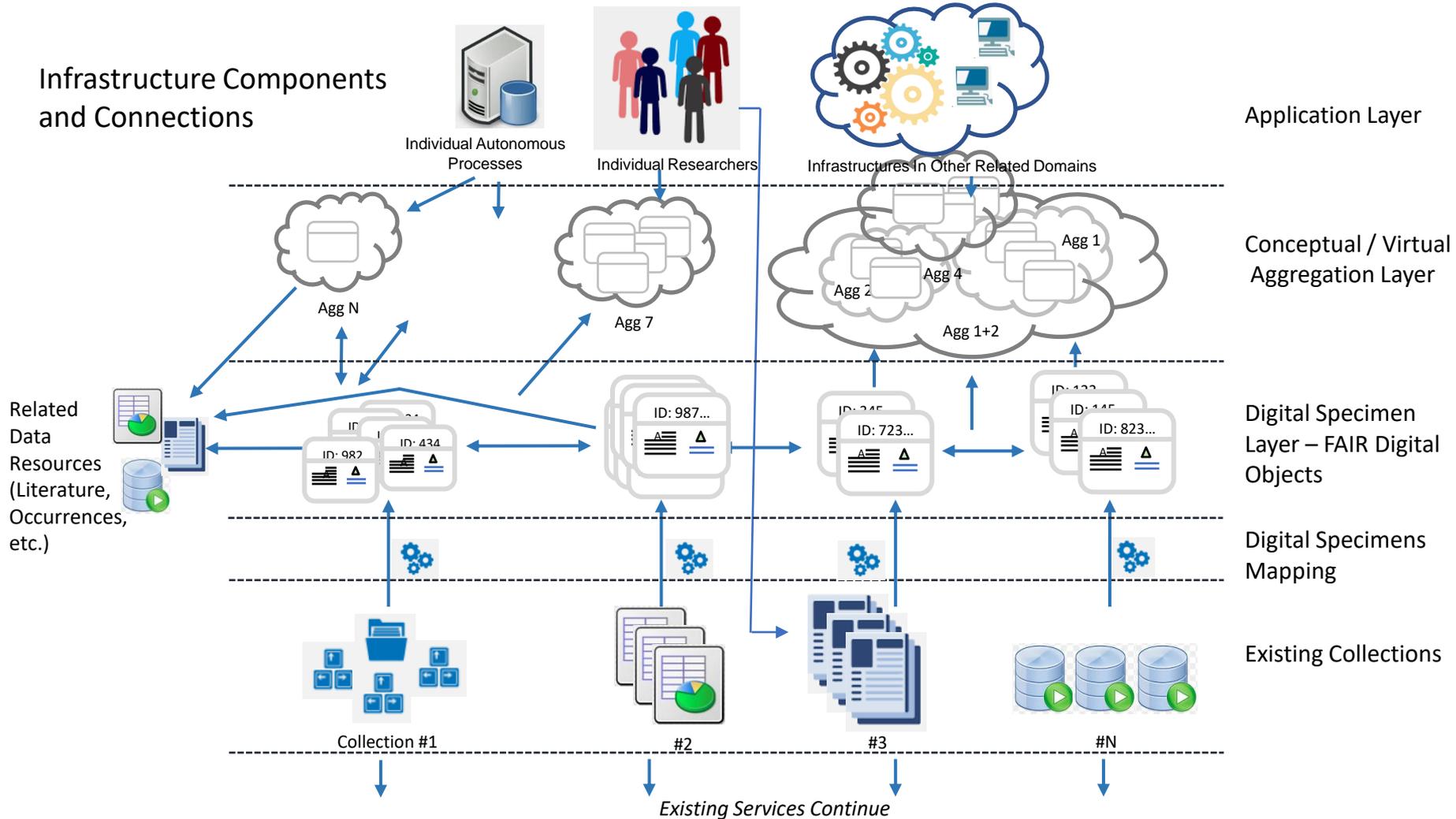
Current State: All on FAIRDO.org

- Five working groups focused on ‘rough consensus and running code’
 - 10+ Recommendations/Specifications open for public comment
 - MOU with DIN
 - Funding applications in on both sides of Atlantic (all volunteer to date)
 - 20 member Steering Committee
 - Ongoing discussions with multiple related organizations for joint efforts
 - Public forums and outreach events underway, e.g., 90 Min Q&A held on 6 Dec.
 - Institutional affiliations available (no cost)
 - Open mailing list
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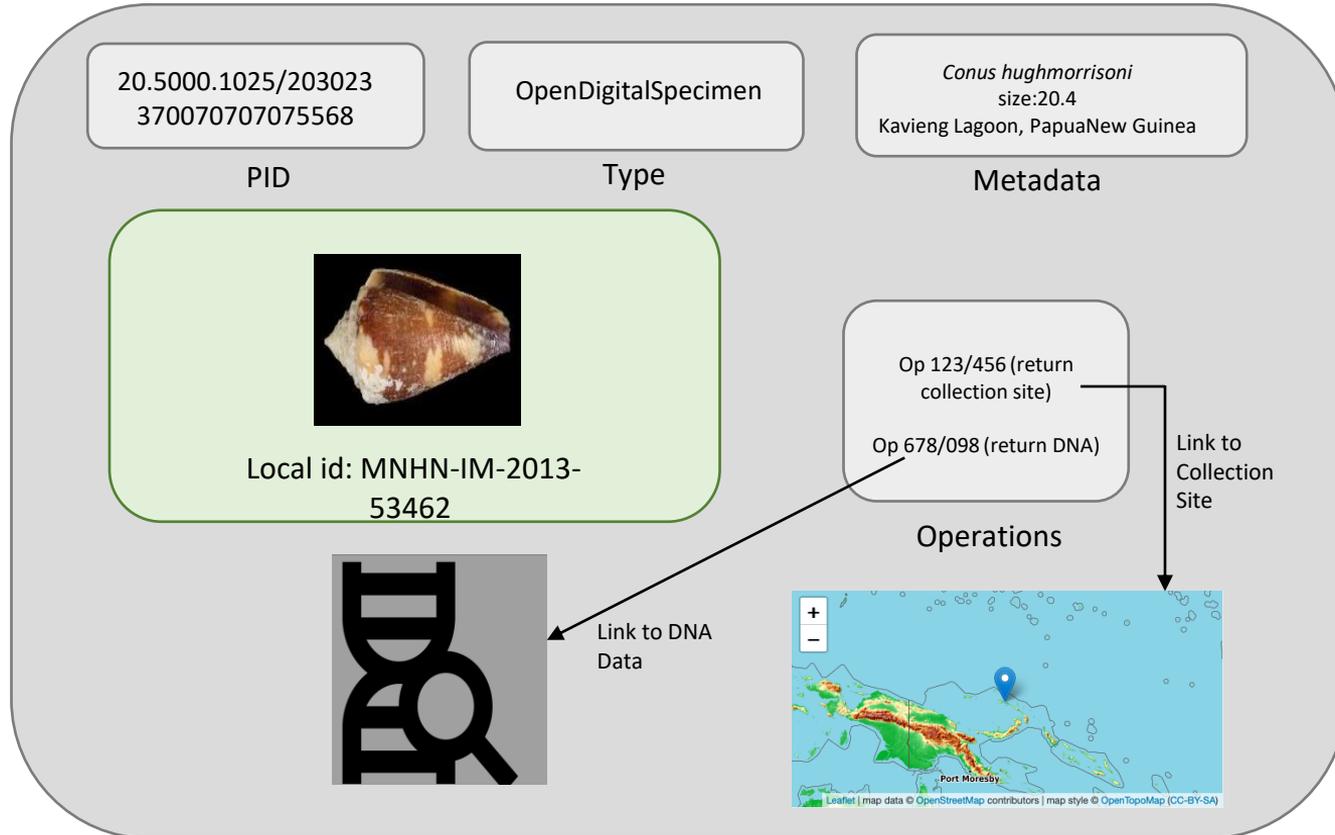
What Does DO Arch Add to FAIR?

- Add a level of abstraction to current information management systems and methods to create a set of persistently identified and uniformly addressable digital objects
 - For basic information management tasks every object can be treated the same, regardless of information content
 - Every object has a globally unique and actionable identifier
 - Every object is typed
 - Every object has tightly associated metadata
 - Every object has a queryable set of operations that can be requested of it
 - Every object can be addressed via a known protocol, e.g., Digital Object Interface Protocol
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Infrastructure Components and Connections



Sample Digital Specimen Object: A Cone Snail from the French National Natural History Museum in Paris



FDO Forum Roadmap

- Where are we going?
- What is needed to get there?
- Where are we now?
- How do we get from here to there?



FDO Forum Roadmap: Where are We Going?

- Global interoperable data space in which previously unencountered data objects can be interpreted, understood, and operated on by autonomous agents
- The already vast and exponentially growing universe of research and commercial data can be exploited in ways that unaided humans cannot
- Interoperability across space and time (current data has future value)
- What is needed?
 - minimal specifications for the various software components and network infrastructures that, when brought together, create the required environment
 - testbed and set of use cases that can be used to evaluate the interoperability and FAIR-ness of those components.
 - Allow maximum flexibility – cut away as many features as possible while still maintaining needed functionality.

FDO Forum Roadmap: Minimal Infrastructure Components

Minimal requirements can be characterized across a number of dimensions and perspectives. This is one such characterization.

- **Persistent Identification:** The management of information entities on networks absolutely requires the ability to reference them reliably over time, including changes in technology and object curation responsibilities
- **Typing:** Automated processing of large amounts of data, especially across domains, requires that the data can be parsed without human intervention, a fundamental goal of the FDO effort requires precision in associating data with the information needed to process it. Associating types with FDOs requires defining a set of types, that set being extensible, and making them discoverable via well-known registries.
- **FDO Interface:** Given a set of persistently identified objects associated with attributes that enable interpretability, the remaining need is a way to interact with those objects.
- **Testbed:** The combination of the above set of functional requirements, i.e., assigning and resolving persistent identifiers, assigning and resolving types, and interfacing with network services that provide FDO access, require implementation of a set of software components, best practices, domain specific requirements, approaches to structuring FDOs, associating types and other attributes with FDOs, and other technological choices.

FDO Forum Roadmap: Where Are We?

Three Phases

- We can separate 3 phases in our work on FDOs:
 - preparatory phase defined by the work in/on RDA, FAIR, DONA, CODATA, etc.
 - RDA Core Data Model building on Kahn/Wilensky
 - RDA Kernel work
 - DONA DOIP & DO-IRP specs
 - EOSC discussions
 - CODATA discussions
 - RDA DO Fabric IG
 - FDOF ramp up (from 1.1.2020 until 28.10.2022)
 - FDOF future

FDO Forum Roadmap: Where Are We?

Three Phases

- We can separate 3 phases in our work on FDOs:
 - preparatory phase defined by the work in/on RDA, FAIR, DONA, CODATA, etc.
 - FDOF ramp up (from 1.1.2020 until 28.10.2022)
 - Set up WGs
 - Drafted basic set of specs
 - Publicized FDO
 - Formed the core of a new organization
 - Organized FDO2022
 - FDOF future

FDO Forum Roadmap: Where Are We?

Three Phases

- We can separate 3 phases in our work on FDOs:
 - preparatory phase defined by the work in/on RDA, FAIR, DONA, CODATA, etc.
 - FDOF ramp up (from 1.1.2020 until 28.10.2022)
 - FDOF future
 - Optimal accommodation of existing practices with needed innovation
 - Funding
 - Decide on FDO organizational needs, if any
 - Finish the specs
 - Testbed(s) and implementations

FDO2022 - Any Outstanding Criticisms?

- One primary and often repeated criticism, both during and following FDO2022 – Lack of Transparency
- The Steering Committee agrees, but this is lack of capacity, not intent
- All volunteer effort, no funding to this point
- Overwhelming interest, lots of WG activity resulting in proto-specs, early implementations and demos, all needing greater organization and easy accessibility.
- Trivial example, I know who the co-chairs are, but you can't find that out at the website.