DO Implementation of FDO

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This document briefly summarizes how FDOF can be implemented with the help of the Digital Object methods as described by Kahn & Wilensky, RDA Data Foundation & Terminology and many others, and recently extended by including Linked Data concepts.

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| Req | available | missing |
| G1 | basic construction & intention is meant to survive for many decades | broadest uptake to ensure survival |
| G2 | trustworthiness is a social concept and depends on reliability and uptake | solidity of all components is given, broad mobilisation is to be achieved |
| G3 | FAIR compliance to a certain extent (see below) | some higher level specifications are missing |
| G4 | all aspects of DOs specified yet are machine actionable | some higher level specifications are missing |
| G5 | abstraction is at the core of the DO concept | no |
| G6 | stable binding is realised by using the PID record | no |
| G7 | encapsulation is intended and implemented through DOIP | no |
| G8 | DOs are one implementation of FDOF |  |
| FDO1 | based on clearly defined PID systems such as Handle | no |
| FDO2 | resolution is a structured record and attributes should be defined and registered[[1]](#footnote-1) | miss an authority to maintain registry |
| FDO3 | should be specified by FDO service providers (repositories) | miss an authority to define best practices |
| FDO4 | model allows access through PIDs, DOIP allows association between types and operations | no |
| FDO5 | DOIP has these features | no |
| FDO6 | RDA specified a type registry, is being used | more complex ontologies might be necessary |
| FDO7 | metadata are indeed FDOs; metadata availability as assertions is possible | miss specifications associated with the DO model |
| FDO8 | collections are DOs; construction of collections not defined | miss specifications associated with the DO model |
| FDO9 | tombstone notes are possible, yet not defined | miss an authority to define best practices |

The digital object approach provides a framework for the various components needed for a FAIR DO Framework but any implementation will require further specification and one unspecified piece is how to get to the explicit semantics needed for machine understanding of structured metadata and collections.

**Available readings**

* R. Kahn, R. Wilensky (1995): A Framework for Distributed Digital Object Services; <https://www.cnri.reston.va.us/k-w.html>
* R. Kahn, R. Wilensky (2006): A Framework for Distributed Digital Object Services; <https://www.doi.org/topics/2006_05_02_Kahn_Framework.pdf>
* RDA DFT Group: DFT Core Terms and Model; <http://hdl.handle.net/11304/5d760a3e-991d-11e5-9bb4-2b0aad496318>
* RDA DTR Group: Data Type Registry¸ <https://www.rd-alliance.org/group/data-type-registries-wg/outcomes/data-type-registries>
* RDA Kernel Group: Recommendation on PPID Kernel Information; <https://www.rd-alliance.org/group/pid-kernel-information-wg/outcomes/recommendation-pid-kernel-information>
* RDA Research Collection Group: Recommendations; <https://www.rd-alliance.org/group/research-data-collections-wg/outcomes/rda-research-data-collections-wg-recommendations>
* DONA: DOIP V2.0, <https://www.dona.net/sites/default/files/2018-11/DOIPv2Spec_1.pdf>
* P. Wittenburg, G. Strawn: Common Patterns in Revolutionary Infrastructures and Data; <http://doi.org/10.23728/b2share.4e8ac36c0dd343da81fd9e83e72805a0>
* P. Wittenburg, G. Strawn, B. Mons, L. Bonino, E. Schultes: Digital Objects as Drivers towards Convergence in Data Infrastructures; <http://doi.org/10.23728/b2share.b605d85809ca45679b110719b6c6cb11>
* S. Hodson et. al.: Turning FAIR into Reality; <https://doi.org/10.2777/1524>
* E. Schultes, P. Wittenburg: FAIR Principles and Digital Objects: Accelerating Convergence on a Data Infrastructure; <http://doi.org/10.23728/b2share.166a074bff614a31b05e9df5bfd9809d>
* G. Strawn: Open Science, Business Analytics, and FAIR Digital Objects; <http://doi.org/10.23728/b2share.6ceeed13eb6340fcb132bcb5b5e3d69a>
* K. de Smedt, D. Koureas, P. Wittenburg: Analysis of Scientific Practice towards FAIR Digital Objects; <http://doi.org/10.23728/b2share.e14269d07ce84027a7f79ee06b994ef9>

1. It should noted that some Handle Services do not support machine actionable types in the Handle record. [↑](#footnote-ref-1)