

Handout for the OKH working group meeting 25.2.2022

1: Notes on OKH-LOSH

2: DAPSI: Exploring portability, interactivity, interoperability

1 - Links and notes on OKH-LOSH (provided by the LOSH team)

LOSH: Library of Open Source Hardware

- Documentation:
 - Current draft of OKH-LOSH: <https://github.com/OPEN-NEXT/OKH-LOSH/blob/master/OKH-LOSH.md>
 - Derived ontolog: <https://github.com/OPEN-NEXT/OKH-LOSH/blob/master/OKH-LOSH.ttl>
 - both documents have flaws, you will encounter errors in them
- Main differences that would come into play when mapping OKHv1 to OKH-LOSH
 - https://github.com/OPEN-NEXT/OKH-LOSH/blob/master/data_mapping/data-mapping-OKHv1.md
 - Tool doing this conversion: <https://github.com/OPEN-NEXT/LOSH-OKH-tool>
- Considerations that shaped OKH-LOSH:
 - OKHv1's approach of a human-readable file format for metadata input (manifest file) keeps the threshold low for non-techies → kept
 - however, looking onto previous, extensive discussions, OKH-LOSH uses TOML instead of YAML
 - Quantity of optional fields:
 - There have been discussions about 2 approaches for OKH1: "more data is better" vs. "keep the specification simple & readable" this point has not been resolved in OKHv1 yet.
 - Many of these optional data fields are not used in practice. See <https://github.com/OPEN-NEXT/D3.3-Report/tree/main/raw%20data/OKHv1%20Test%20Crawl>
 - Appropedia example: introducing own data fields (such as relevance for SDGs).
 - Exploration of automatic manifest file creation:
 - Metadata is already available on OSH online platforms via their API. OKHv2 should accept different data specifications (as e.g. Thingiverse delivers other data than OSHWA or Wikifactory).
 - OKH-LOSH aims to bridge these gaps and make data explorable across these platforms. This is where RDF came into play.
 - This would also resolve the discussion about specific data fields → messy data is not an issue anymore, when using RDF.
 - Main task of OKH-LOSH: provide a stable structure and "interfaces" for data specifications from different platforms.
- Possible misconceptions about OKH-LOSH:
 - "RDF is overkill" → RDF is exclusively used in the backend, where data is processed and linked. Individual users are not intended to read or write RDF files.
 - "OKH-LOSH is a competing specification" → Not meant to be. For LOSH it doesn't make a big difference whether metadata is provided following OKHv1 or OKH-LOSH. The crawler (+scripts) supports both. However, the LOSH team is very much interested to merge the efforts.

NGI DAPSI

**European Commission's Next Generation Internet (NGI) initiative,
the Data Portability and Services Incubator (DAPSI)**

THE CHALLENGE

The Issues

The General Data Protection Regulation (GDPR) has the purpose of making it significantly easier for citizens to have any data which is stored with one service provider transmitted directly to another provider. This means European residents need you to develop interoperable solutions that enable data portability and tackle the following issues:

- **DATA COMPATIBILITY & INTEROPERABILITY:** facilitate switches between service providers
- **DATA SOVEREIGNTY:** empower users to transfer a complete data set or parts of it to any new provider without giving reasons
- **DATA TRANSPARENCY:** more transparent personal data storage and a more fine-grained data transfer when exercising personal data access rights
- **SERVICE PORTABILITY:** empower users to share their data with any service provider and host that they trust
- **SECURITY & PRIVACY:** ensure the security & privacy of consumers when their personal data are transferred from one provider to another
- **OTHER TOPICS:** solve relevant challenges in the Data and Service portability field

IOP PROPOSAL

Overview of Deliverables

- Conduct research towards developing a standard for portability & interoperability
- Increasing discoverability of works between platforms through better data validation
- Developing portability tools to transform data hosted on specific platforms into the Open Know-How (OKH) data standards for Open Hardware designs
- Investigating the possible use of decentralised data-storage for project data

Research

- Investigate the current state of use of platforms and of the OKH standard
- Outcomes:
 - Provide knowledge and specifications for the software development
 - A technical standard to be used within the project and by any other stakeholder.

Validation

- Improve the manifest generator to provide better validation of data
- Building on the outputs of the user research, the improved OKH manifest validation tool will result in better inter-platform compatibility and interoperability for makers to use the standard as a basis for enabling inter-platform portability

Portability Tools

(Building on LOSH work)

- Data transformation tools to generate different data formats for data stored on different platforms to the OKH standard, including the use of linked-data such as RDF
- Outcome: Increased interoperability for makers

Decentralized Data Storage

- Investigate the use of decentralized data storage protocols and tools, such as those developed by Solid, to allow makers to have more control of the data related to their projects
- Outcome: The use of these protocols and tools will enable much greater service portability than alternative methods of transfer of project data between platforms



Users control which entities and apps can access their data.



Apps can access rich stores of data from any Pods, with user permission.



Pods store user data in an interoperable format and provide users with permissioning controls.

PHASES

Phase I

5 months

1. Research: Use-case analysis, development of further OKH standards
 1. Research implementations of the specification documentation standard, within the OKH community and investigate use-cases beyond.
 2. Stakeholder working groups to develop *portability & interoperability* standards
 3. Research how the platforms treat data: IP, encoding and data structure
2. Better tools for portability: enhancing the validation and machine-readability of Open Know-How manifests
 1. Build a PoC of enhanced data validation tool for the OKH manifest
3. Decentralized data storage: enabling options for Open Know-How data to be stored and managed by the maker rather than the platforms
 1. Investigate the applicability of decentralization tools and protocols including Solid and ActivityPub
 2. Build proof-of-concept
4. Data conversion from platform-specific data models to the OKH standard: building more tooling to enable better maker project data portability
 1. Identify target data standards for conversion to OKH

Phase II

4 months

1. Better tools for portability: enhancing the validation and machine-readability of Open Know-How manifests
 1. Build and deploy MVP of enhanced validation tool
2. Decentralized data storage: enabling options for Open Know-How data to be stored and managed by the maker rather than the platforms
 1. User testing of decentralized publishing
3. Data conversion from platform-specific data models to the OKH standard: building more tooling to enable better maker project data portability
 1. Develop conversion tools