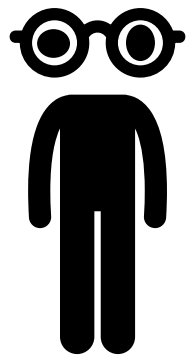


A Linked Data Powered Hardware Design Search Ecosystem

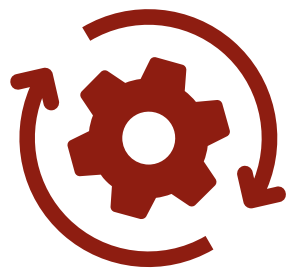
Use and Improve
Ontologies & Tools
by utilising standards, linters,
pretty printers, validation,
etc.



Ontology
Developer

Linters

- RDF
- OWL
- TTL
- hosting



Pretty Printer

improve local
ontology development

Ontology Proxy
translates and provides
other formats

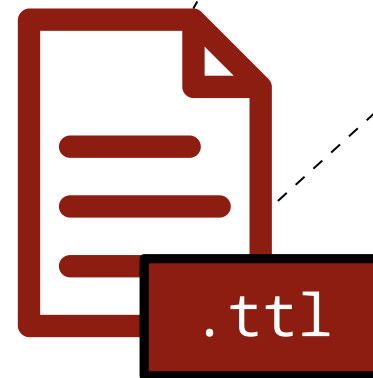
Ontology Dev Kit

Open Source

Ontologies

qualified standards
for linked data

Open Know How Standard (OKH)



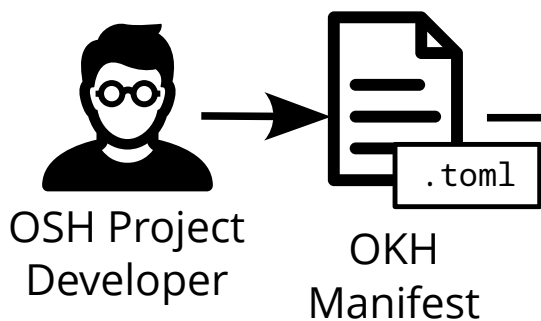
The tools to improve and
validate the OKH Standard
are designed to serve other
ontology developers too.

Ontologies are the backbone
of the Linked Data universe,
which aims to connect all
kind of information.

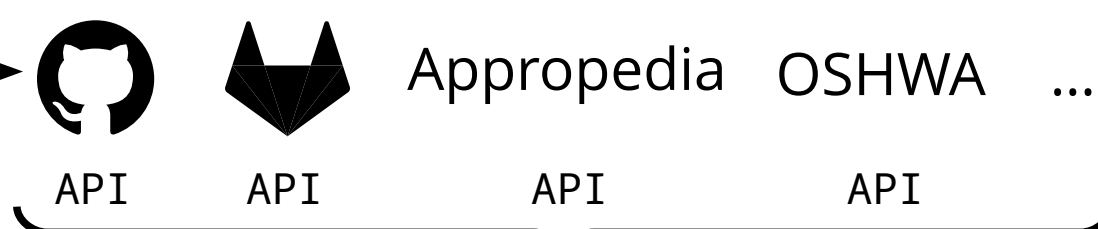
So by pioneering one field,
the ecosystem is extended
to serve a greater
community.

Hardware Metadata from:

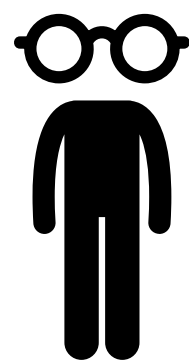
own environments



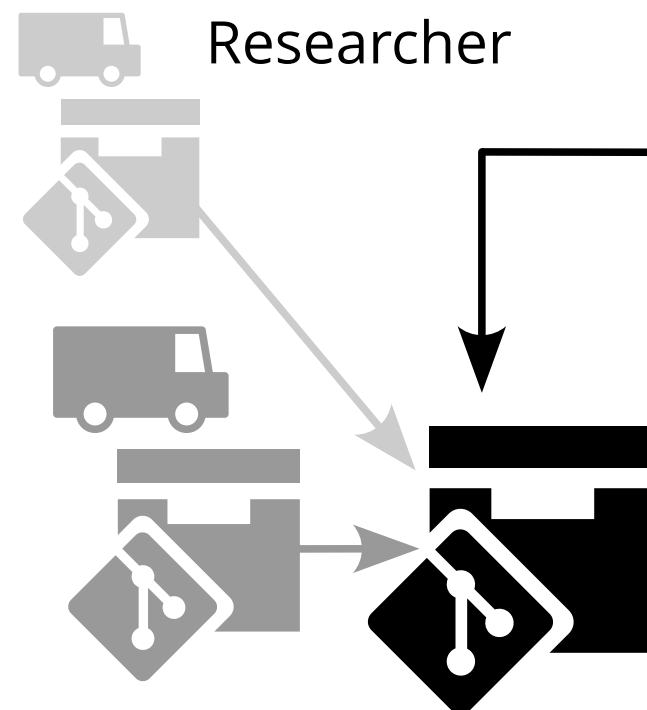
supported Platforms



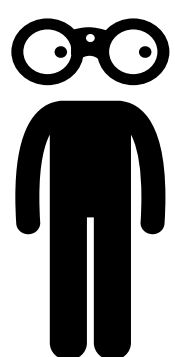
Discover and Exploit
via Search Queries
complex questions,
source file packages,
etc.



Researcher



Find and Filter
Hardware Projects
by function, license,
field of technology
etc.



User

Scraper

- collects
- converts

data can also be
uploaded directly
via the API
normalisation
of data
conversion to
linked-data format

Server

providing linked data
search & export
functionality

Triple Data-Base



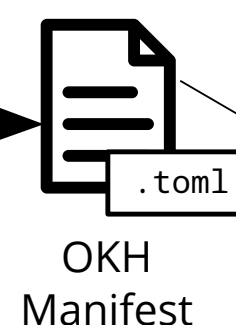
(HTTP)

Search



- Apache Jena: An RDF triple store (the DB)
- Apache Jena Fuseki: A SPARQL server for querying the data over the network (incl. a basic Web-UI to test SPARQL queries)

OSH Project
Developer



detail pages of projects
will support data format
exports incl. manifest file

source:

<https://github.com/OSGermany/OpenSearchEcosystem>

find the attributions in res/media/img/attributions.md

Towards a Linked Data Powered Hardware Design Search Ecosystem

This Project is part of the 5th NGI Search Call aiming to enable a better searchable internet of the future.

Ontology Development Tools



Distributed Data Collection & Search

Background:

The Open Know-How (OKH) standard was introduced in 2019 by a consortium of 10 organizations, led by the MakerNet Alliance (now Internet of Production Alliance (IoPA)) under a grant from the Shuttleworth Foundation. It was developed to establish a structured, interoperable format for Open Source Hardware (OSH) documentation.

Between 2020 and 2024, the Linked Open Source Hardware (LOSH) variant became the most advanced version of OKH, developed within the OPEN!NEXT project, a European Union-funded initiative. LOSH introduced Linked Open Data (LOD) principles to enhance data discoverability and interoperability.

In 2022, the LOSH fork was proposed as the new official OKH standard, maintained by Open Source Ecology Germany (OSEG). By May 2024, OKH LOSH was formally re-integrated into IoPA, establishing it as the official successor to OKH v1.

Currently, OSEG is continuing under the NGI Search-funded project, "Towards a Linked Data Powered Hardware Design Search Ecosystem" (2024–2025). This initiative aims to advance metadata structuring, RDF compatibility, and federated search capabilities, reinforcing high-quality ontologies, enabling OKH as the foundation for an open, searchable hardware ecosystem and beyond.

A distributed way to collect and search hardware. Ontology tools to index hardware designs better. Linked Data powered information. Let people find, research, combine existing technology and make its meta-data available for powerful search applications.



Join the Mission



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