Open WebSearch

Towards an open and federated European Web Data Infrastructure for Search, Analytics and AI

How Europe can regain Sovereignty in the Web

Stefan Voigt, Open Search Foundation / DLR

Brno, 21. May 2025

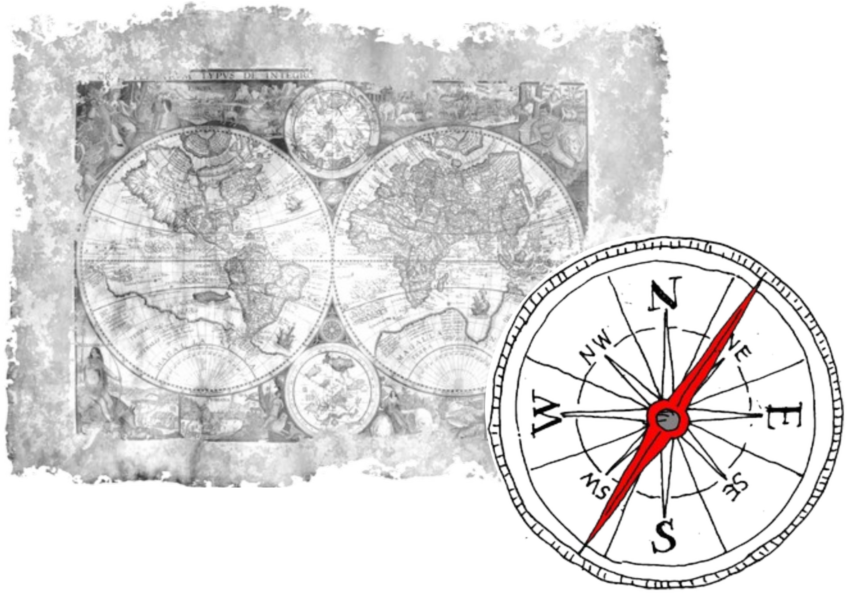
Open Web Search

Funded by the European Union

SUPPORTED BY NGI

Orientation = Power + Control
(economic, strategic, geographic, cognitive, political …)

Orientation in the geographic sphere used to be exclusive knowledge and a tool of power



This is still the case in the digital sphere

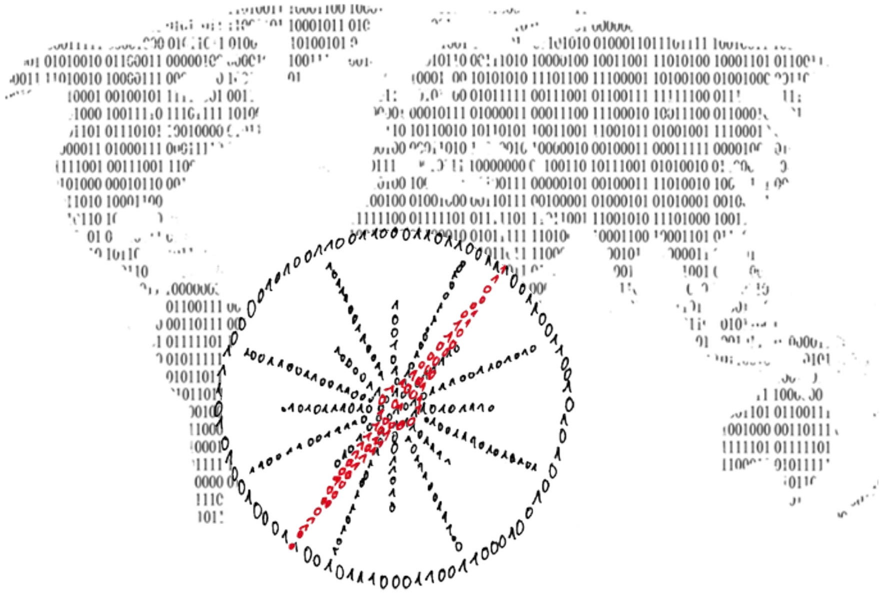
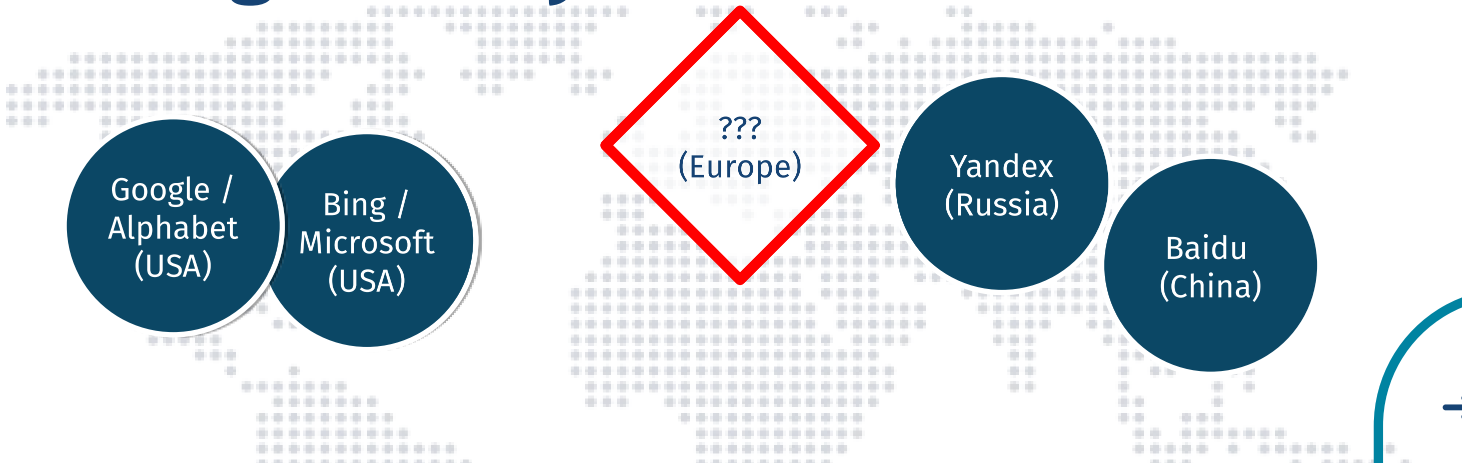


Illustration: www.atelier-anne-rieken.de

Europe needs a Programme like „Galileo” or „Copernicus“ for sovereignty in Web Search and Web Data Services

Why does Europe need an independent “Navigation System” for the web?



Google / Alphabet (USA)

Bing / Microsoft (USA)

??? (Europe)

Yandex (Russia)

Baidu (China)

➜A web index is the key element of web search.

➜Globally, only four comprehensive indices exist. They are either purely commercially driven or state-controlled.

➜Europe does not have its own web index. More than 90% of all web search is done via Google.

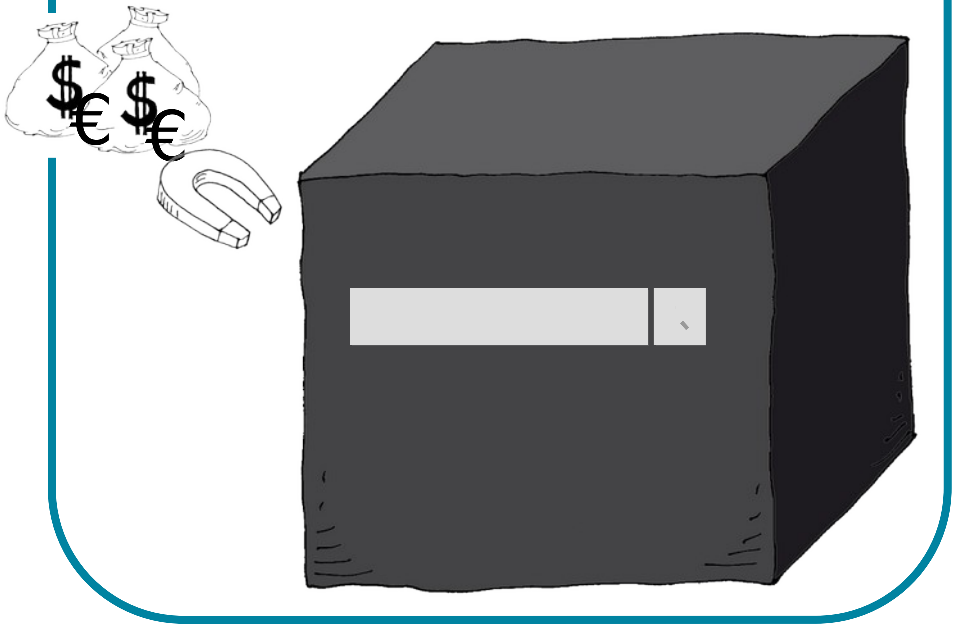
➜Europe depends completely on US-American search/webservice providers and their commercial interests.

➜An Open Web Index for Europe will

- strengthen the strategic sovereignty and technological autonomy through an independent and transparent web access and
- essentially contribute to the European digital targets for 2030 by building a sustainable digital infrastructure

An Open Web Index will enable transparent and unbiased access to Web Content

From a closed and opaque internet search …



… to an open, transparent and auditable search and webdata ecosystem

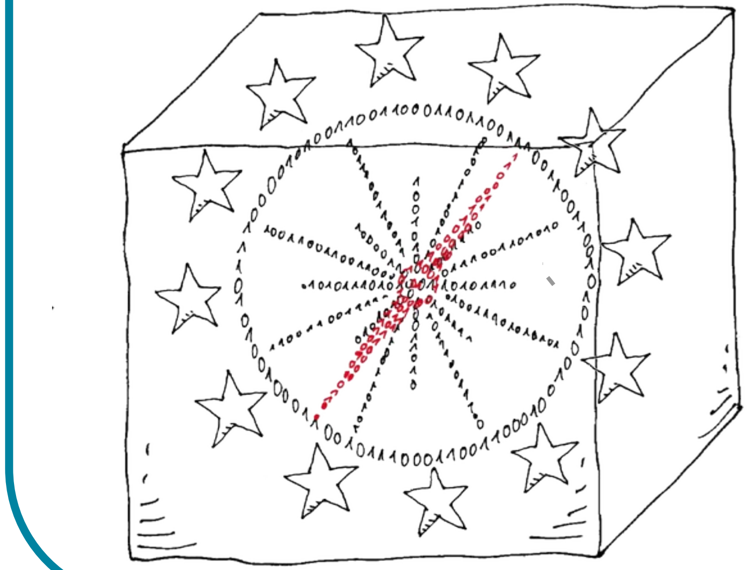


Illustration: www.atelier-anne-rieken.de

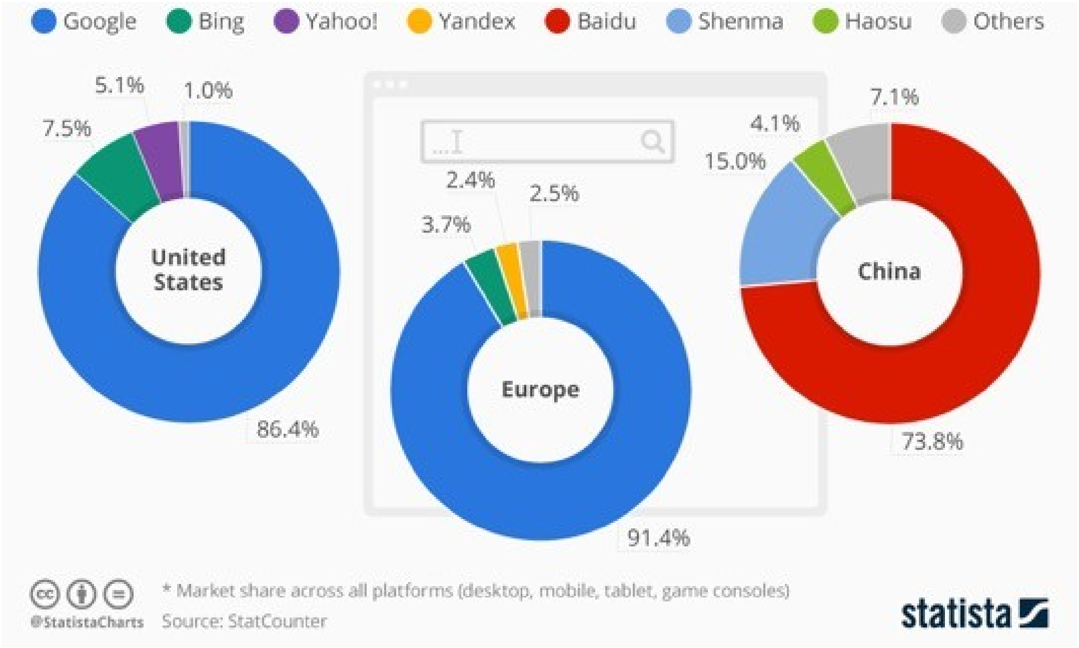
A Critical Infrastructure managed by an Oligopoly

Two current properties of Web Search that don’t fit

- A critical infrastructure for society, comparable to satellite navigation
- A market oligopoly: i.e. “a market structure in which a market or industry is dominated by a small number of large sellers or producers.” (Wikipedia)

Effects

- Missing Digital Sovereignty
- Reduced User Experience (limited choice, lock-in ...)
- Limited Innovation Potential
- No large scale access to Web-data as driver for AI Innovation and beyond



* Market share across all platforms (desktop, mobile, tablet, game consoles)

Source: StatCounter

OpenWebSearch.EU’s Proposition

Open WebSearch .eu

Goal: Building an **Open Index of the Web** and a **federated Open European Web Data Infrastructure as a basis for a Web Search, Analytics and AI in Europe – in order to**

- empower Europe’s researchers, innovators and businesses to systematically tap into the Web as scientific, business and innovation resource at scale – Petabyte-Scale!
- contribute to Europe’s tech and digital sovereignty
- support Web-data analytics and AI / RAG systems across Europe
- build a federated infrastructure across existing European cloud, data and HPC centres

The piloting, currently funded by the EC (HE/NGI), GA:101070014, is carried out by 14 core partners plus 9 additional third party projects and a large ecosystem of early adopters and supporters

UNIVERSITÄT PASSAU
Radboud Universiteit
open search foundation
SUMA-EV
lrz
VSB TECHNICAL UNIVERSITY OF OSTRAVA | IT4INNOVATIONS NATIONAL SUPERCOMPUTING CENTER

Webis.de
UNIVERSITÄT LEIPZIG
Bauhaus-Universität Weimar
TU Graz
nlnet FOUNDATION
A1
DLR
CERN
CSC
ICT Solutions for Brilliant Minds

Current Core Partners

Open WebSearch.eu

UNIVERSITÄT PASSAU

Webis.de

UNIVERSITÄT LEIPZIG

Bauhaus-Universität Weimar

Radboud Universiteit

DLR

TU Graz

Research

lrz

CERN

VSB TECHNICAL UNIVERSITY OF OSTRAVA | IT4INNOVATIONS NATIONAL SUPERCOMPUTING CENTER

CSC ICT Solutions for Brilliant Minds

Infrastructure

osf open search foundation

nlnet FOUNDATION

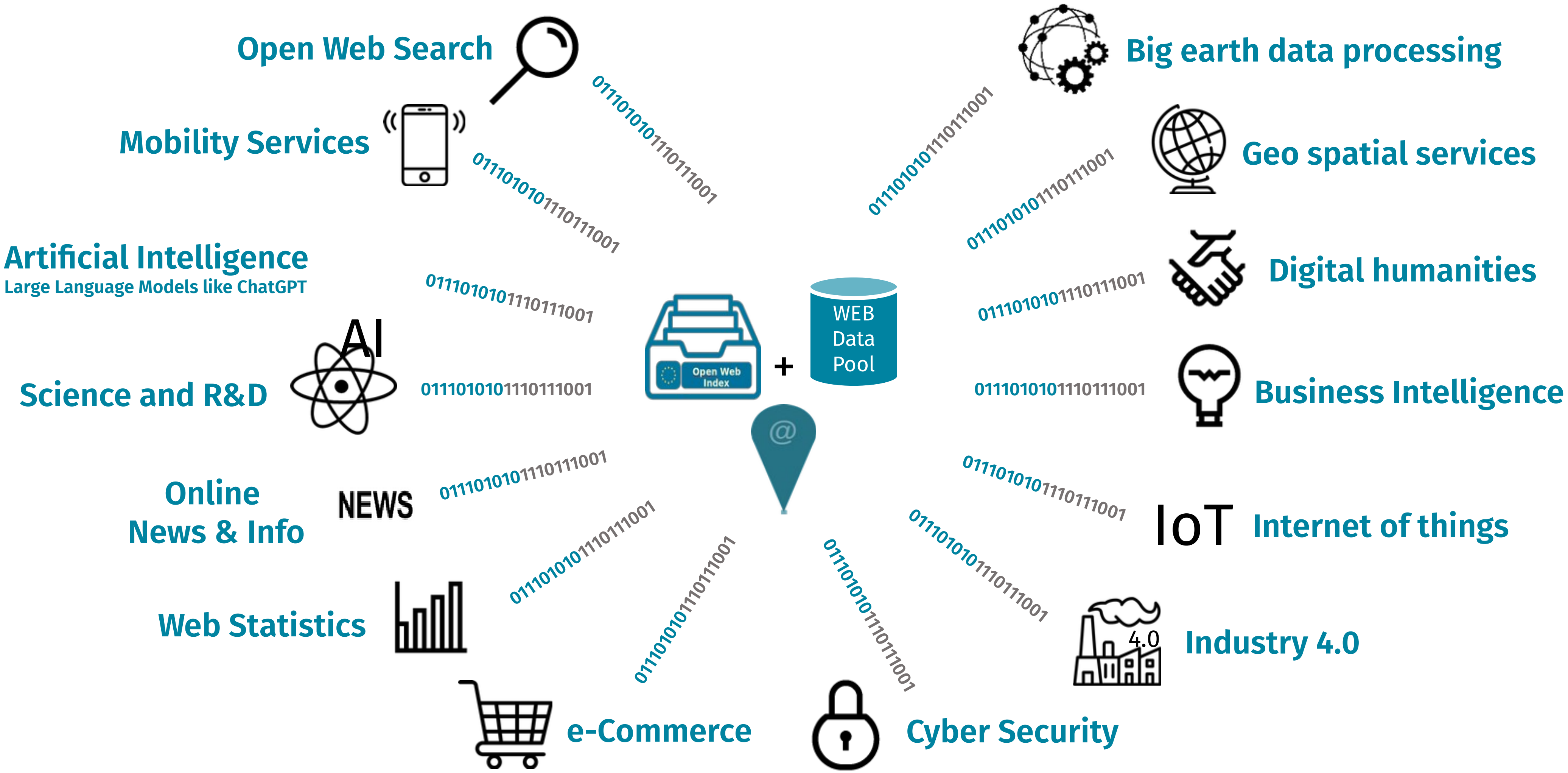
suma-ev

NGOs

A1

Businesses

A federated European Web Data Infrastructure enables a large variety of new public and private Web services, boosting innovation in Europe



Open Web Search

Mobility Services

Artificial Intelligence
Large Language Models like ChatGPT

Science and R&D

Online News & Info

Web Statistics

e-Commerce

Cyber Security

Industry 4.0

Internet of things

Business Intelligence

Digital humanities

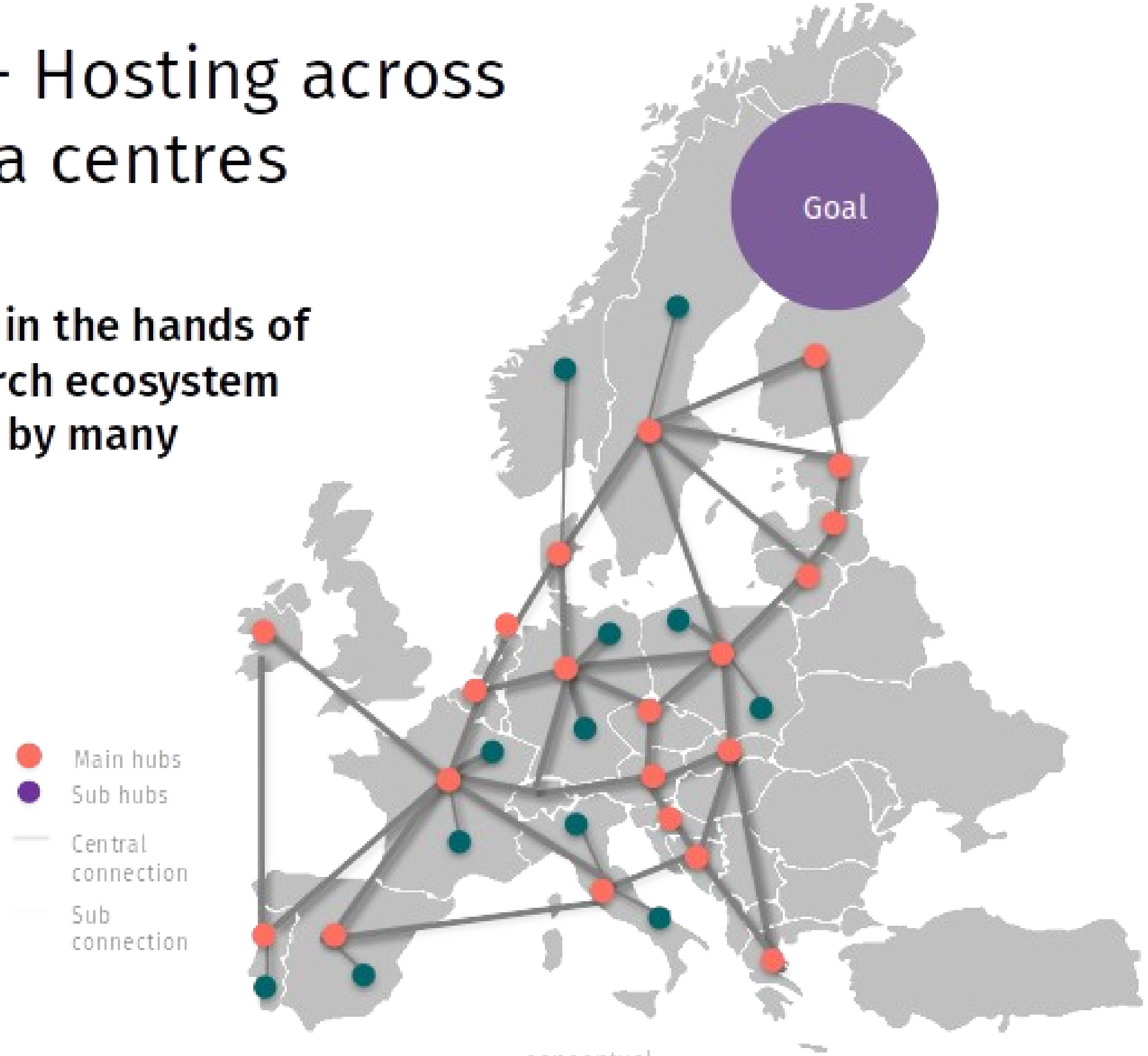
Geo spatial services

Big earth data processing

Federated Computing + Hosting across European HPC and Data centres

From a centralized server landscape in the hands of one company to a decentralized search ecosystem that is shared and collaborated with by many

Together: existing data centers Faster, lower costs

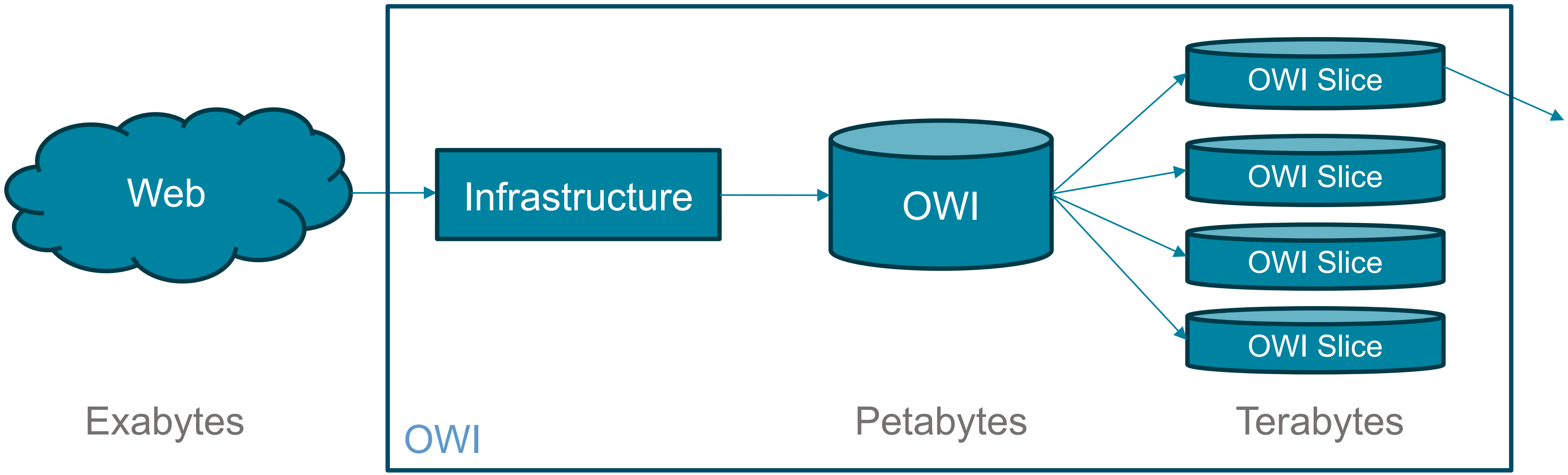


conceptual

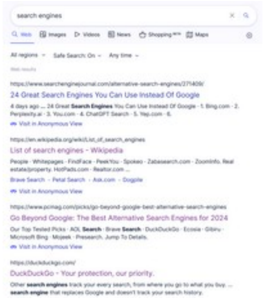
The Open Web Data Infrastructure – a booster for Web Sovereignty in AI, Search, Analytics and more

A federated Web Index (OWI) and Web data infrastructure is a data infrastructure for fast query-based access and ranking of web documents at scale for a large variety of web-data-driven services

OpenWebSearch.EU: Piloting a collaboratively created, federated and transparent European Web Index for empowering scientists and innovators and creating an ecosystem for Web Search, Web-data Analytics and AI



Frontend Services



https://www.searchenginejournal.com/alternative-search-engines/271409/
24 Great Search Engines You Can Use Instead Of Google
4 days ago ... 24 Great **Search Engines** You Can Use Instead Of Google · 1. Bing.com · 2. Perplexity.ai · 3. You.com · 4. ChatGPT Search · 5. Yep.com · 6.
Visit in Anonymous View

https://en.wikipedia.org/wiki/List_of_search_engines
List of search engines - Wikipedia
People · Whitepages · FindFace · PeekYou · Spokeo · Zabasearch.com · ZoomInfo. Real estate/property. HotPads.com · Realtor.com ...
Brave Search · Petal Search · Ask.com · Dogpile
Visit in Anonymous View

https://www.pcmag.com/picks/go-beyond-google-best-alternative-search-engines
Go Beyond Google: The Best Alternative Search Engines for 2024
Our Top Tested Picks · AOL **Search** · Brave **Search** · DuckDuckGo · Ecosia · Gibiru · Microsoft Bing · Mojeek · Presearch. Jump To Details.
Visit in Anonymous View

https://duckduckgo.com/
DuckDuckGo - Your protection, our priority.
Other **search engines** track your every search, from where you go to what you buy. ... **search engine** that replaces Google and doesn't track your search history.

Query

Yo, yo, check it out, let me spit it nice and clear,
Who's the artist on the track bringing ***All That*** to your ear?
The theme song's lit, got that funky rhythm and flow,
So who's behind the mic, making that classic show glow?
Turn up the volume, it's time to reveal the name,
Who's droppin' those bars, bringing heat to the game?

Retrieved Passages

1 The theme song for "All That" was performed by TLC. The intro features the entire cast in an alleyway. They are playing games and playing with a sheet with the "All That" logo on it. The cast...

2 "All That" is a song recorded by Canadian singer Carly Rae Jepsen for her third studio album, "Emotion" (2015), included as its fifth track. It was written by Jepsen, Ariel Rechtshaid...

•••

Kilobytes

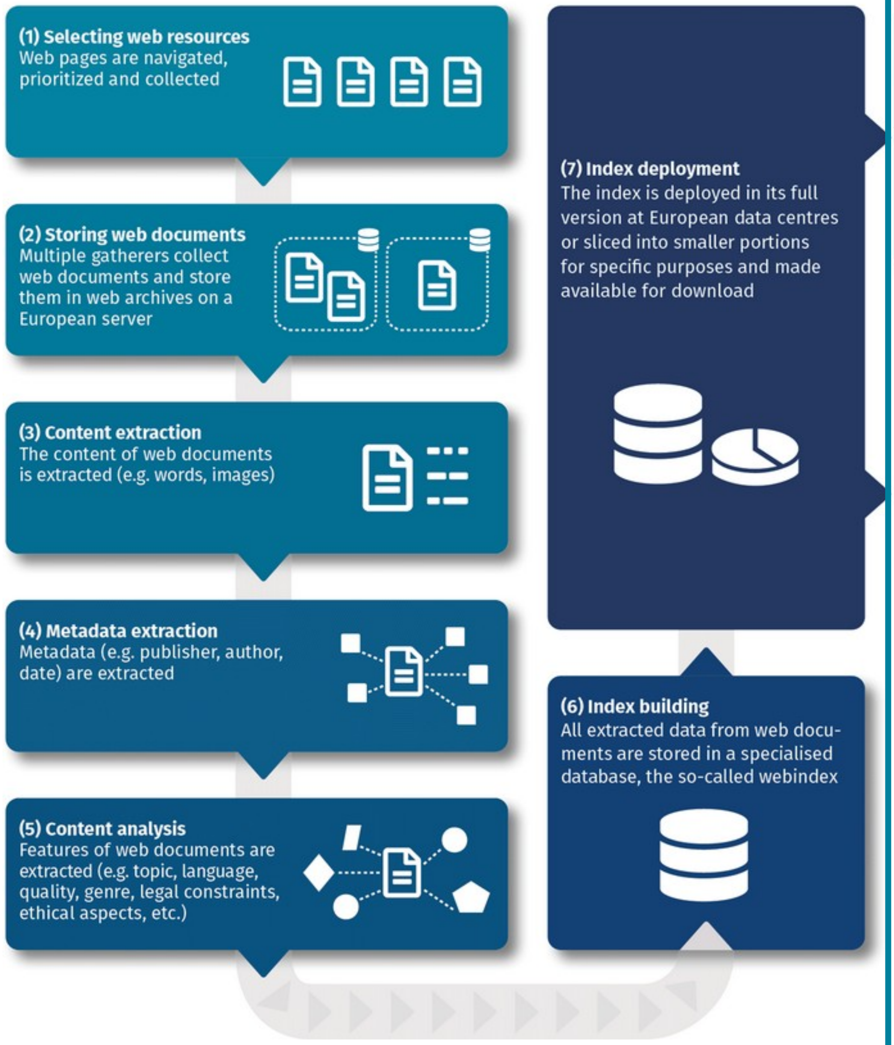
Granitzer, Michael, et al. "Impact and development of an Open Web Index for open web search." *Journal of the Association for Information Science and Technology* (2023).

Core Elements of the Web Data Infrastructure and Index

Open WebSearch.eu

Index Generation

Web resources are selected and retrieved, their content and metadata are analysed, and all data stored in the index database.



(1) Selecting web resources
Web pages are navigated, prioritized and collected

(2) Storing web documents
Multiple gatherers collect web documents and store them in web archives on a European server

(3) Content extraction
The content of web documents is extracted (e.g. words, images)

(4) Metadata extraction
Metadata (e.g. publisher, author, date) are extracted

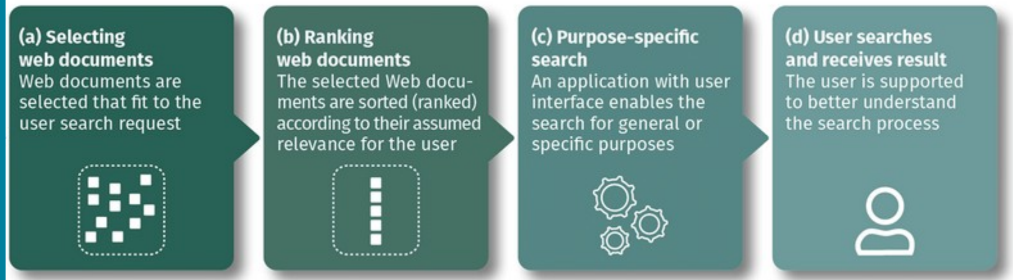
(5) Content analysis
Features of web documents are extracted (e.g. topic, language, quality, genre, legal constraints, ethical aspects, etc.)

(6) Index building
All extracted data from web documents are stored in a specialised database, the so-called webindex

(7) Index deployment
The index is deployed in its full version at European data centres or sliced into smaller portions for specific purposes and made available for download

Search Applications

A user search request will be answered by a search application that makes use of the open web index.



(a) Selecting web documents
Web documents are selected that fit to the user search request

(b) Ranking web documents
The selected Web documents are sorted (ranked) according to their assumed relevance for the user

(c) Purpose-specific search
An application with user interface enables the search for general or specific purposes

(d) User searches and receives result
The user is supported to better understand the search process

Data Products

Knowledge representation models will be created using the open web index, in order to be used by any agent and for many applications

Building knowledge graphs
Using the extracted information from web documents, a knowledge graph is created that supports specific search requests

Building AI Language Models
Creation of different types of language models by using Web documents

Any agent, multiple applications
Language models and knowledge graphs can be used by any agent (or application)

...

LUMI@CSC

KAROLINA@IT4I

Leibniz Supercomputing Centre of the Bavarian Academy of Sciences and Humanities

CERN

DLR

Web-scale Platform for heavy-lifting

Applications and Innovations as Multiplicator

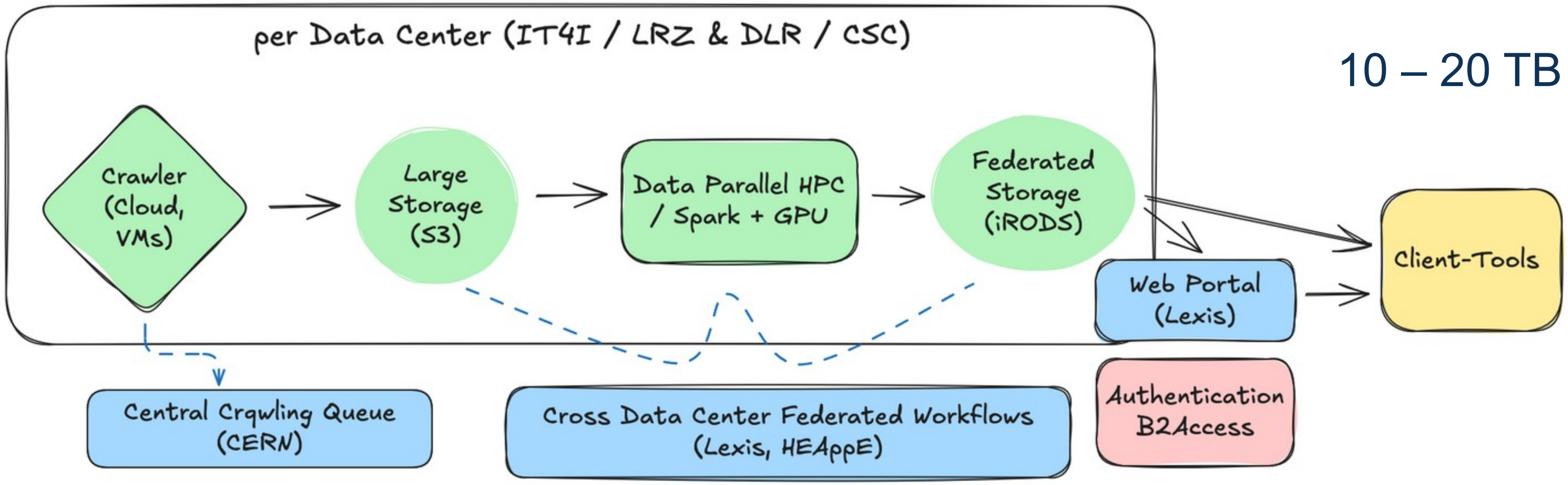
Distributed Infrastructure as Enabler

Our current OWI setup

18 VMs
100 Million URLs/day
100-200 TB per month (text only)

3-5 TB / Day / data center
IO + memory bound
GPU bound when including AI methods

10 – 20 TB index data / month



per Data Center (IT4I / LRZ & DLR / CSC)
Crawler (Cloud, VMs)
Large Storage (S3)
Data Parallel HPC / Spark + GPU
Federated Storage (iRODS)
Web Portal (Lexis)
Client-Tools
Authentication B2Access
Central Crqwling Queue (CERN)
Cross Data Center Federated Workflows (Lexis, HEAppE)

Cross Data Center Workflow Execution + Federated Data Storage

- approx. factor 20 for commercial indices
- Approx. factor 10-50 when including multimedia

Tech setup:
Open Web Crawler

Open WebSearch .eu

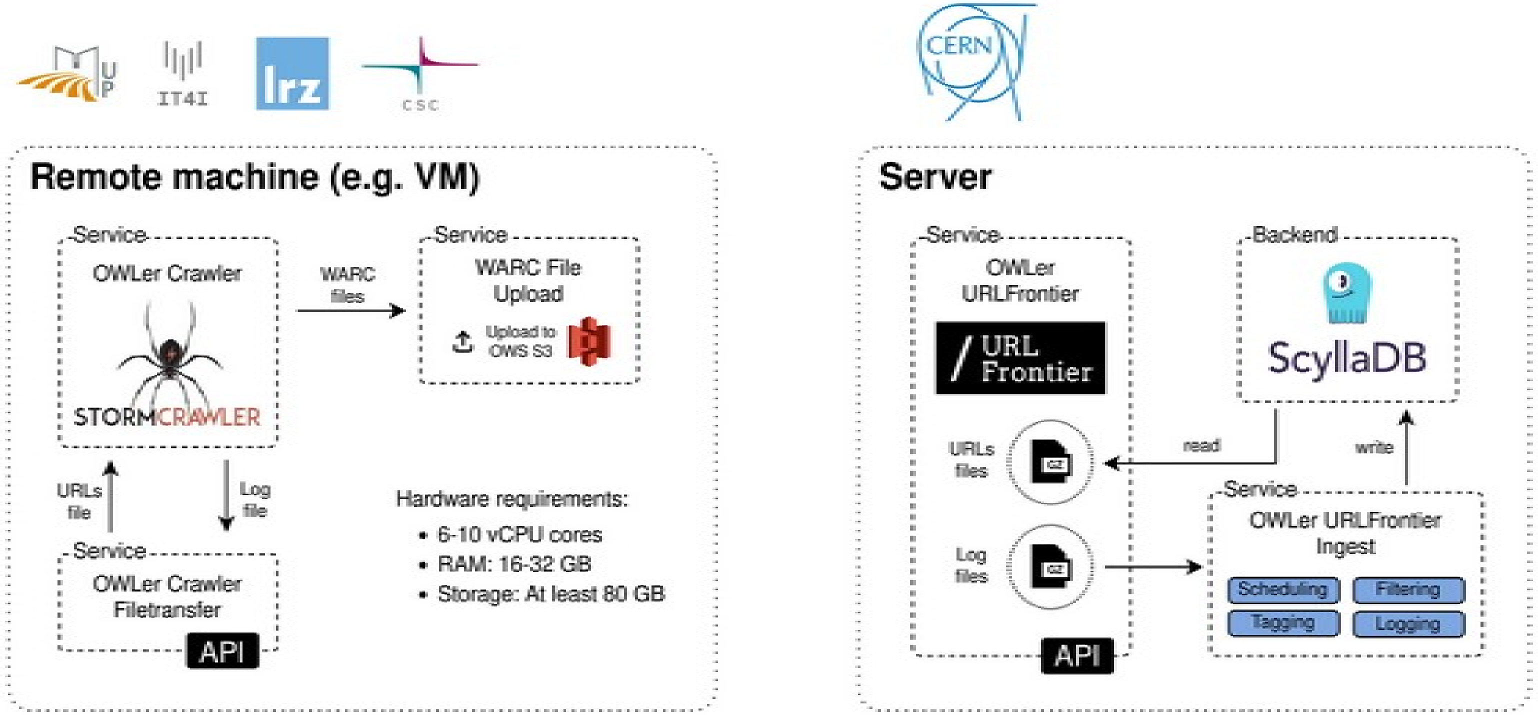
https://opencode.it4i.eu/openwebsearcheu-public/open-web-crawler

CERN **2 Servers (+ 2)**

lrz **5 VMs**

CSC **5 VMs (+ 5)**

IT4I **8 VMs (+ 2)**



Hardware requirements:

- 6-10 vCPU cores
- RAM: 16-32 GB
- Storage: At least 80 GB

Collecting structured Meta Data
Microdata

murena

Open WebSearch.eu

Addresses

Phone numbers

FAQs

Opening hours

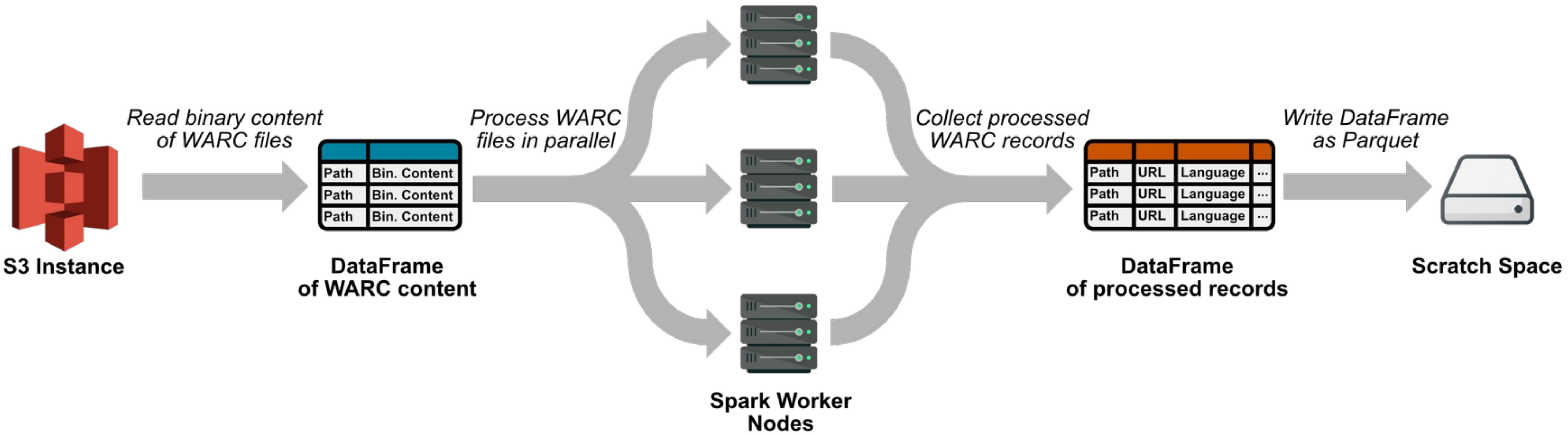
JSON-LD

```
{
  ...
  "telephone": "(425) 614-3256",
  "address": {
    "@type": "PostalAddress",
    "addressCountry": "US",
    "addressLocality": "Bellevue King",
    "addressRegion": "WA",
    "postalCode": "98007",
    "streetAddress": "1410 156th Ave NE"
  },
  "openingHours": ["Mo 08:00-22:00", "Tu 08:00-22:00", "We
    08:00-22:00", "Th 08:00-22:00", "Fr 08:00-22:00", "Sa
    09:00-22:00", "Su 09:00-22:00"]
  "@type": "FAQPage",
  "mainEntity": [{
    "@type": "Question",
    "name": "How can I place a Subway Catering order?",
    "acceptedAnswer": {
      "@type": "Answer",
      "text": "To place an order, visit us online at
        catering.subway.com or call your local restaurant."
    }
    ...
  }]
  ...
}
```

All Webpages are processed on CPU-Queues

Resilipipe [OpenCode.it4i.eu]

- Extracts meta data from the daily crawls and saves it in Parquet files
- Runs on PySpark and uses Resiliparse to parse the WARC files
- Processes all crawled web pages with lightweight modules on CPU queues



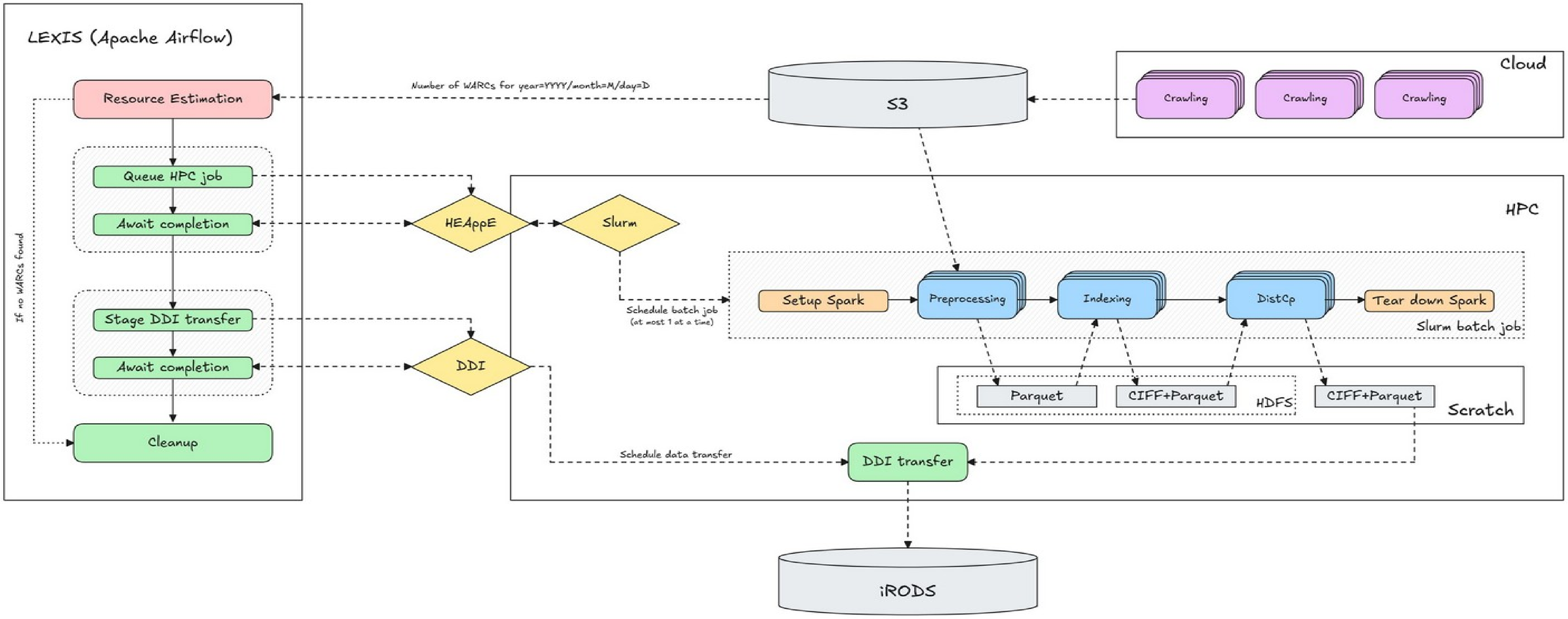
S3 Instance
Read binary content of WARC files
DataFrame of WARC content
Process WARC files in parallel
Spark Worker Nodes
Collect processed WARC records
DataFrame of processed records
Write DataFrame as Parquet
Scratch Space

Path	Bin. Content
Path	Bin. Content
Path	Bin. Content

Path	URL	Language	...
Path	URL	Language	...
Path	URL	Language	...

Extension: Select subset of pages to be processed on GPUs

LEXIS workflows: architecture

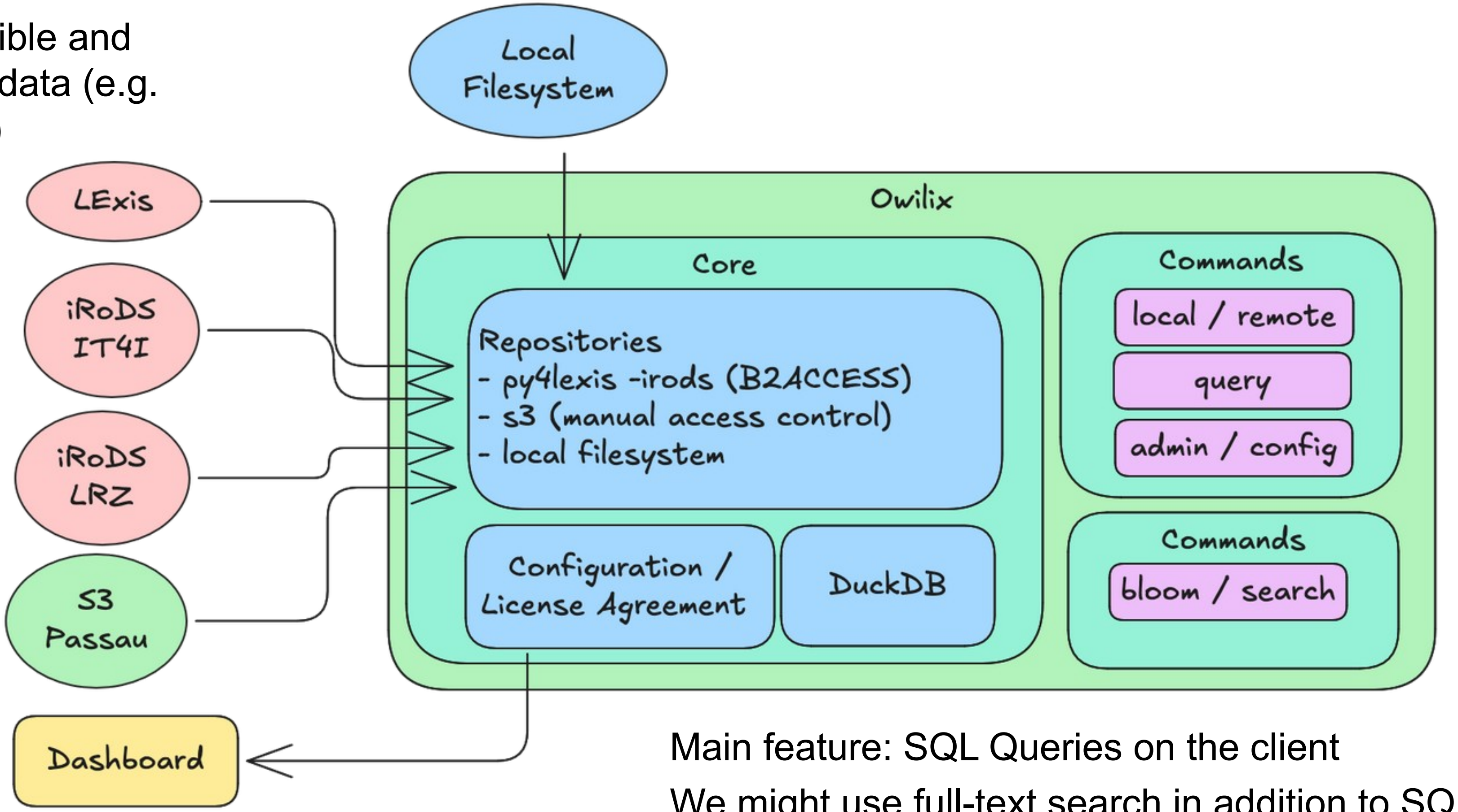


Owilix – The Open Web Index Client

Goal: Access, synchronize (pull/push/slice), query etc. index shards

Main purpose: pushing / pulling / slicing datasets

We can mage repositories flexible and mirror/ partition data (e.g. topic, language)



Flexible command structure

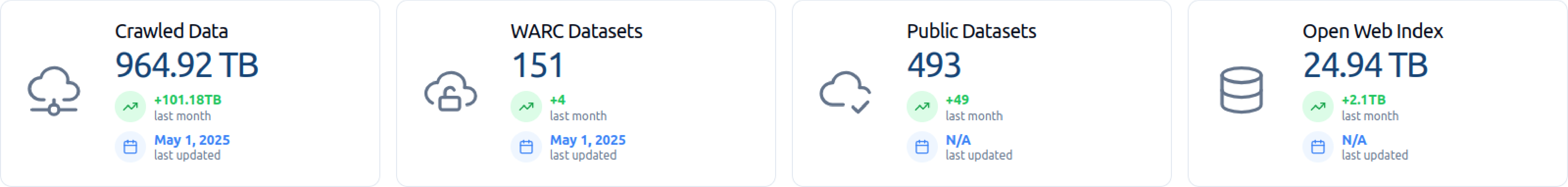
Plugins are somehow possible

Main feature: SQL Queries on the client

We might use full-text search in addition to SQL!

We might be able to integrate owilix as Web-App, i.e. Command Line in your browser

Open Web Index Dashboard => OpenWebIndex.EU

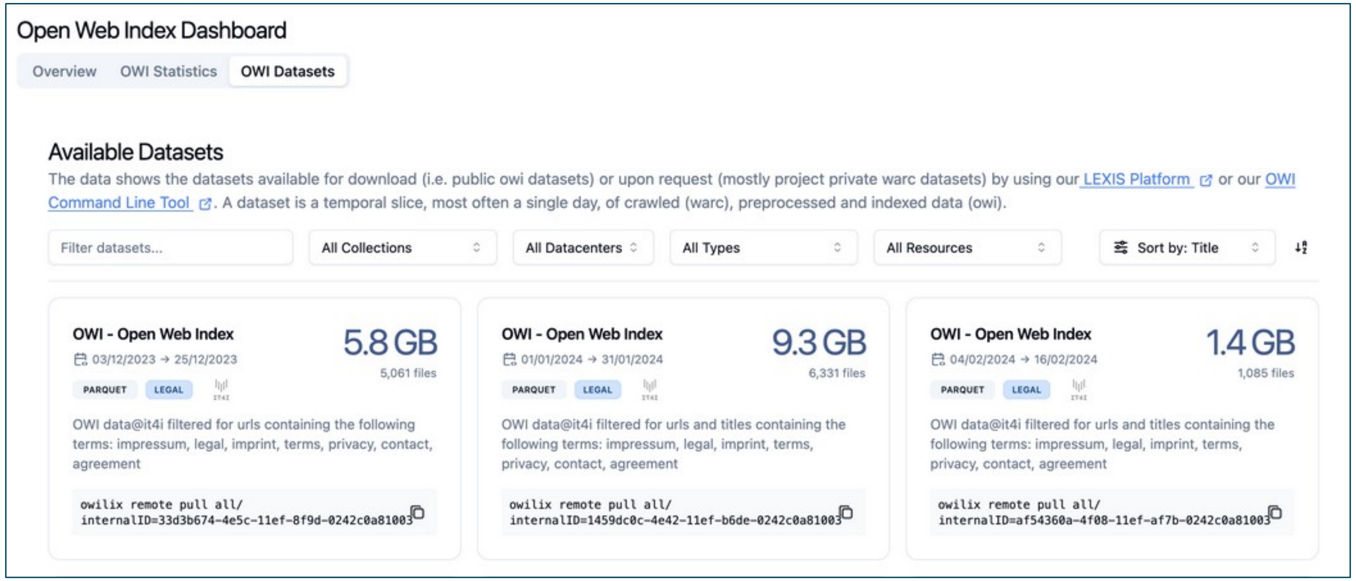


Crawled Data
964.92 TB
+101.18TB
last month
May 1, 2025
last updated

WARC Datasets
151
+4
last month
May 1, 2025
last updated

Public Datasets
493
+49
last month
N/A
last updated

Open Web Index
24.94 TB
+2.1TB
last month
N/A
last updated



Available Datasets

The data shows the datasets available for download (i.e. public owi datasets) or upon request (mostly project private warc datasets) by using our LEXIS Platform or our OWI Command Line Tool. A dataset is a temporal slice, most often a single day, of crawled (warc), preprocessed and indexed data (owi).

OWI - Open Web Index
03/12/2023 → 25/12/2023
5.8 GB
5,061 files
PARQUET LEGAL IT4I

OWI data@it4i filtered for urls containing the following terms: impressum, legal, imprint, terms, privacy, contact, agreement

```
owilix remote pull all/
internalID=33d3b674-4e5c-11ef-8f9d-0242c0a81003
```

OWI - Open Web Index
01/01/2024 → 31/01/2024
9.3 GB
6,331 files
PARQUET LEGAL IT4I

OWI data@it4i filtered for urls and titles containing the following terms: impressum, legal, imprint, terms, privacy, contact, agreement

```
owilix remote pull all/
internalID=1459dc0c-4e42-11ef-b6de-0242c0a81003
```

OWI - Open Web Index
04/02/2024 → 16/02/2024
1.4 GB
1,085 files
PARQUET LEGAL IT4I

OWI data@it4i filtered for urls and titles containing the following terms: impressum, legal, imprint, terms, privacy, contact, agreement

```
owilix remote pull all/
internalID=af54360a-4f08-11ef-af7b-0242c0a81003
```

Pipelines

- Flexible, cross data center pipelines
- Daily index shards are available
- Tooling for index access still needs improvement
  - Currently working on search based data selection
  - New: query url lists

Index Details (V 0.2.0)

- Sources: Crawls, Mastodon, Wikipedia
- Collection indices: curlie, legal, main
- Features:
  - Plain text, url, id
  - Content-Metadata: json-ld, Microdata, opengraph, curlie-label(s), links, address.list (=geo microdata), language
  - HTTP-Metadata: http-server, crawler-source, charset, mimetype etc.
  - Process-Metadata: warc reference (file+offset), genai flag, index flag, canonical links

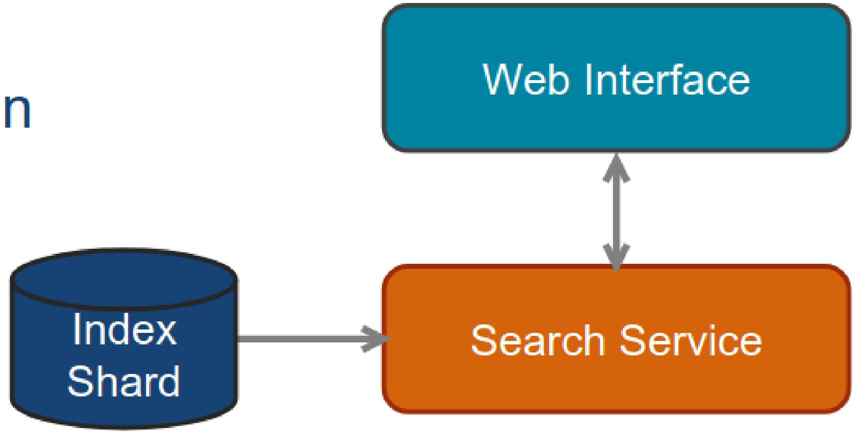
Index launch event on June 6

openwebindex.eu

Some applications built on the Open Web Index
Modular Search Application Builder (MOSAIC)

MOSAIC

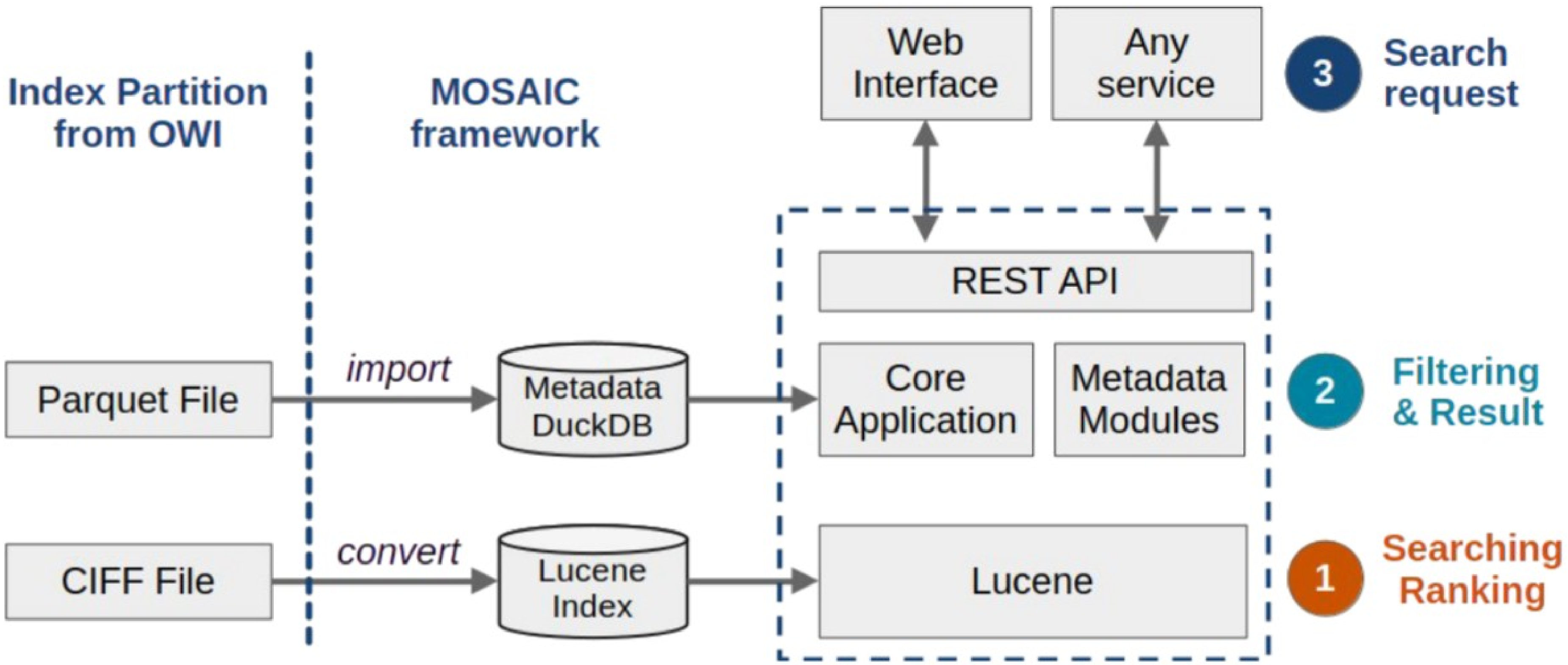
- **M**odular **S**earch **A**pplication based on **I**ndex Fra**c**tions
- Generic implementation of an OWS.eu vertical search engine
  - Demonstration of the concept of an OWS.eu vertical engine
  - Out-of-the-box search engine
  - Toolbox for an own search application
- Uses index shards from the OWI



More information:
- OWS GitLab: https://opencode.it4i.eu/openwebsearcheu-public/mosaic
- OWS Book: https://openwebsearcheu-public.pages.it4i.eu/ows-the-book

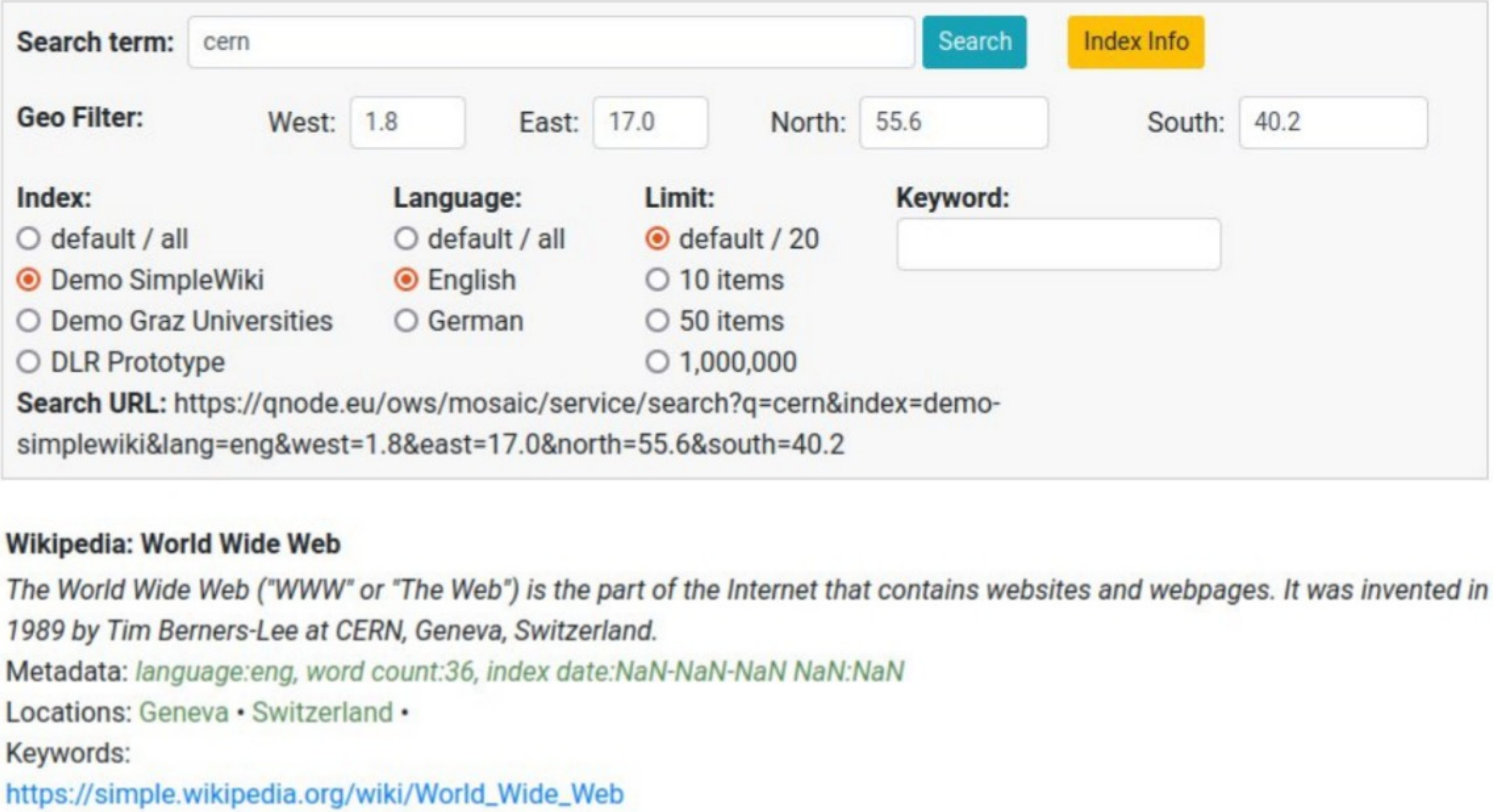
Some applications built on the Open Web Index
Modular Search Application Builder (MOSAIC)

MOSAIC Concept



Some applications built on the Open Web Index
Modular Search Application Builder (MOSAIC)

MOSAIC Front-end (for Developers)



Search term

Location filter

Language filter

Index selection

Text snippet

Metadata

Search term: cern

Geo Filter: West: 1.8 East: 17.0 North: 55.6 South: 40.2

Index:	**Language:**	**Limit:**	**Keyword:**
○ default / all	○ default / all	● default / 20	
● Demo SimpleWiki	● English	○ 10 items	
○ Demo Graz Universities	○ German	○ 50 items	
○ DLR Prototype		○ 1,000,000	

Search URL: https://qnode.eu/ows/mosaic/service/search?q=cern&index=demo-simplewiki&lang=eng&west=1.8&east=17.0&north=55.6&south=40.2

Wikipedia: World Wide Web

The World Wide Web ("WWW" or "The Web") is the part of the Internet that contains websites and webpages. It was invented in 1989 by Tim Berners-Lee at CERN, Geneva, Switzerland.

Metadata: *language:eng, word count:36, index date:NaN-NaN-NaN NaN:NaN*

Locations: Geneva • Switzerland •

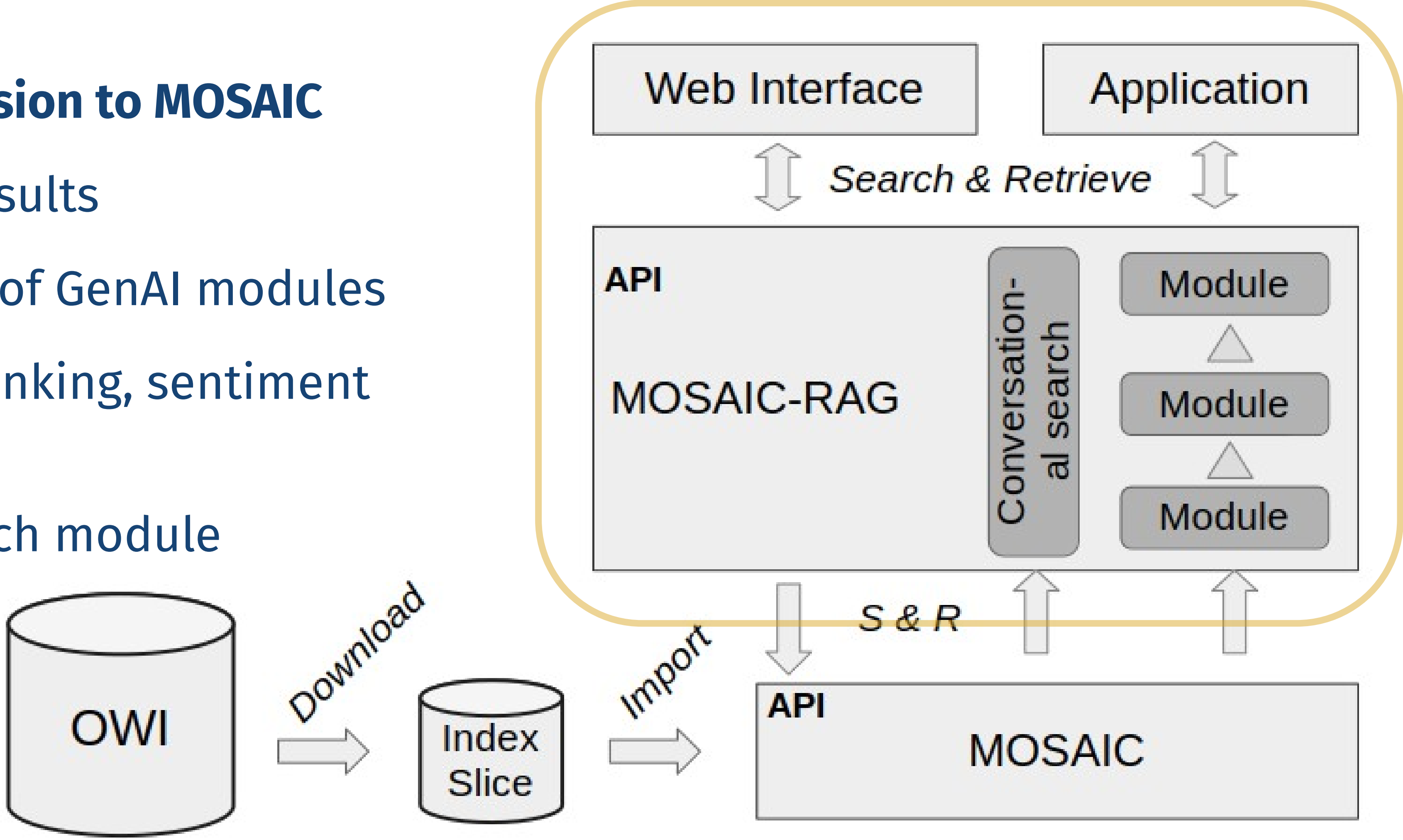
Keywords:

https://simple.wikipedia.org/wiki/World_Wide_Web

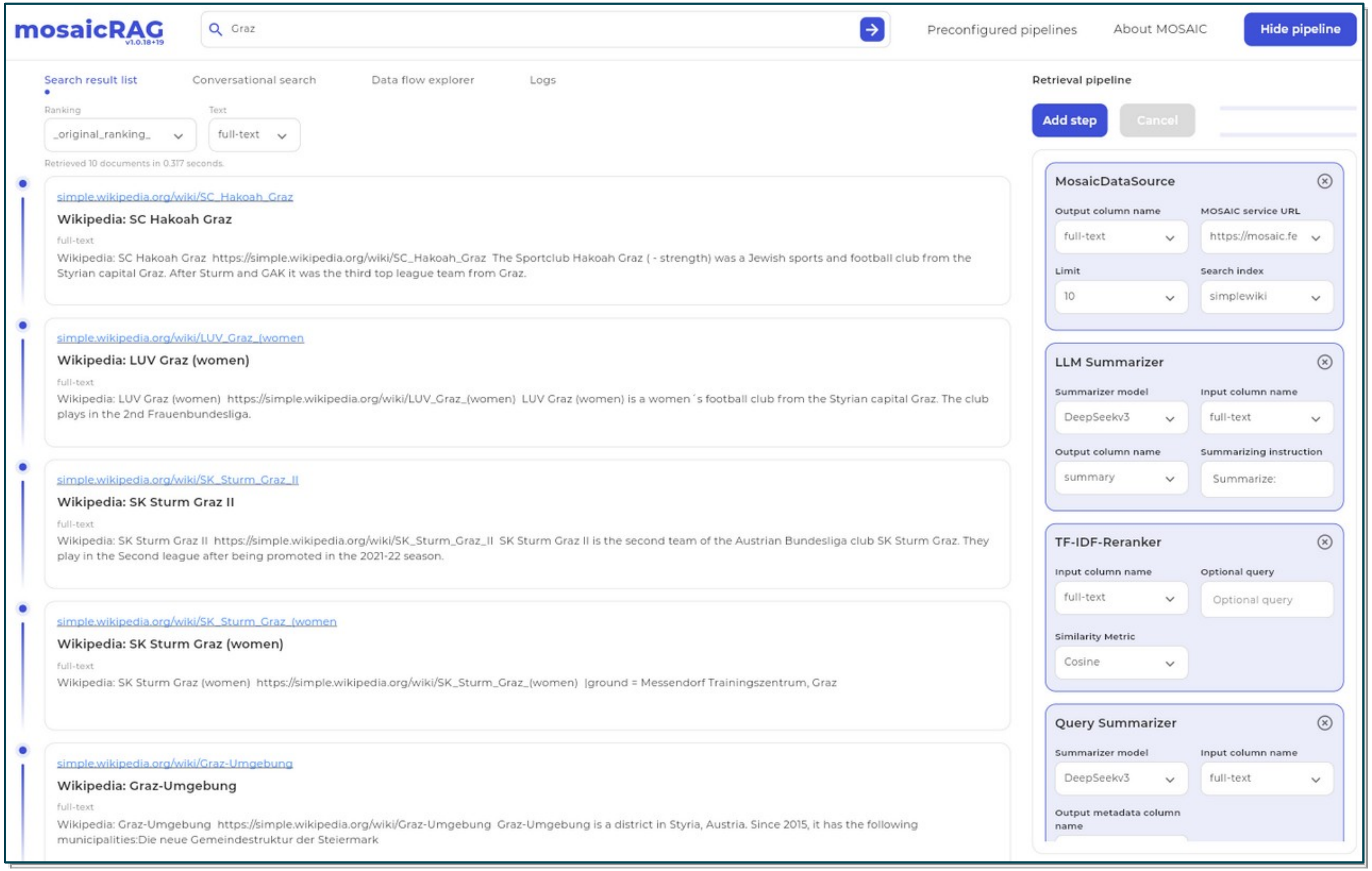
Some applications built on the Open Web Index
MOSAIC-Retrieval Augmented Generation (RAG)

RAG approach as extension to MOSAIC

- Based on MOSAIC results
- Processing pipeline of GenAI modules
- Summarisation, reranking, sentiment analysis,
- Conversational search module



Some applications built on the Open Web Index
MOSAIC-Retrieval Augmented Generation (RAG)



Ranking: _original_ranking_

Text: full-text

Retrieved 10 documents in 0.317 seconds.

simple.wikipedia.org/wiki/SC_Hakoah_Graz

Wikipedia: SC Hakoah Graz

full-text

Wikipedia: SC Hakoah Graz https://simple.wikipedia.org/wiki/SC_Hakoah_Graz The Sportclub Hakoah Graz (- strength) was a Jewish sports and football club from the Styrian capital Graz. After Sturm and GAK it was the third top league team from Graz.

simple.wikipedia.org/wiki/LUV_Graz_(women

Wikipedia: LUV Graz (women)

full-text

Wikipedia: LUV Graz (women) https://simple.wikipedia.org/wiki/LUV_Graz_(women) LUV Graz (women) is a women´s football club from the Styrian capital Graz. The club plays in the 2nd Frauenbundesliga.

simple.wikipedia.org/wiki/SK_Sturm_Graz_II

Wikipedia: SK Sturm Graz II

full-text

Wikipedia: SK Sturm Graz II https://simple.wikipedia.org/wiki/SK_Sturm_Graz_II SK Sturm Graz II is the second team of the Austrian Bundesliga club SK Sturm Graz. They play in the Second league after being promoted in the 2021-22 season.

simple.wikipedia.org/wiki/SK_Sturm_Graz_(women

Wikipedia: SK Sturm Graz (women)

full-text

Wikipedia: SK Sturm Graz (women) https://simple.wikipedia.org/wiki/SK_Sturm_Graz_(women) |ground = Messendorf Trainingszentrum, Graz

simple.wikipedia.org/wiki/Graz-Umgebung

Wikipedia: Graz-Umgebung

full-text

Wikipedia: Graz-Umgebung https://simple.wikipedia.org/wiki/Graz-Umgebung Graz-Umgebung is a district in Styria, Austria. Since 2015, it has the following municipalities:Die neue Gemeindestruktur der Steiermark

MosaicDataSource

Output column name: full-text

MOSAIC service URL: https://mosaic.fe

Limit: 10

Search index: simplewiki

LLM Summarizer

Summarizer model: DeepSeekv3

Input column name: full-text

Output column name: summary

Summarizing instruction: Summarize:

TF-IDF-Reranker

Input column name: full-text

Optional query: Optional query

Similarity Metric: Cosine

Query Summarizer

Summarizer model: DeepSeekv3

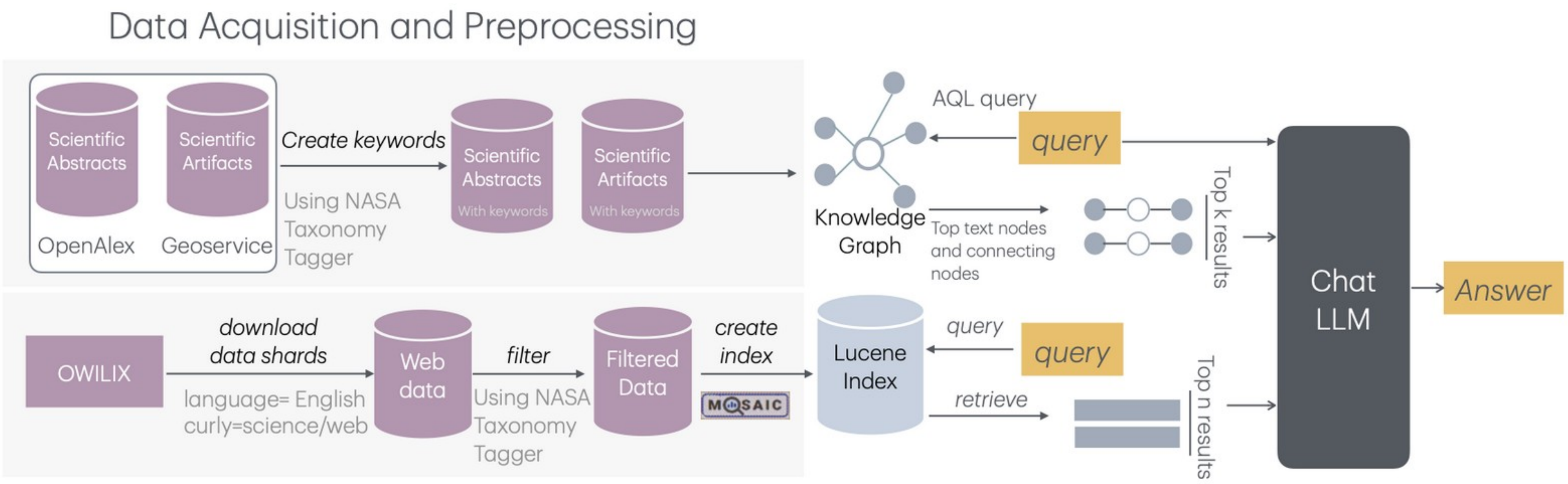
Input column name: full-text

Output metadata column name

Some applications built on the Open Web Index
Open Science Search: DLR Prototype

Current state

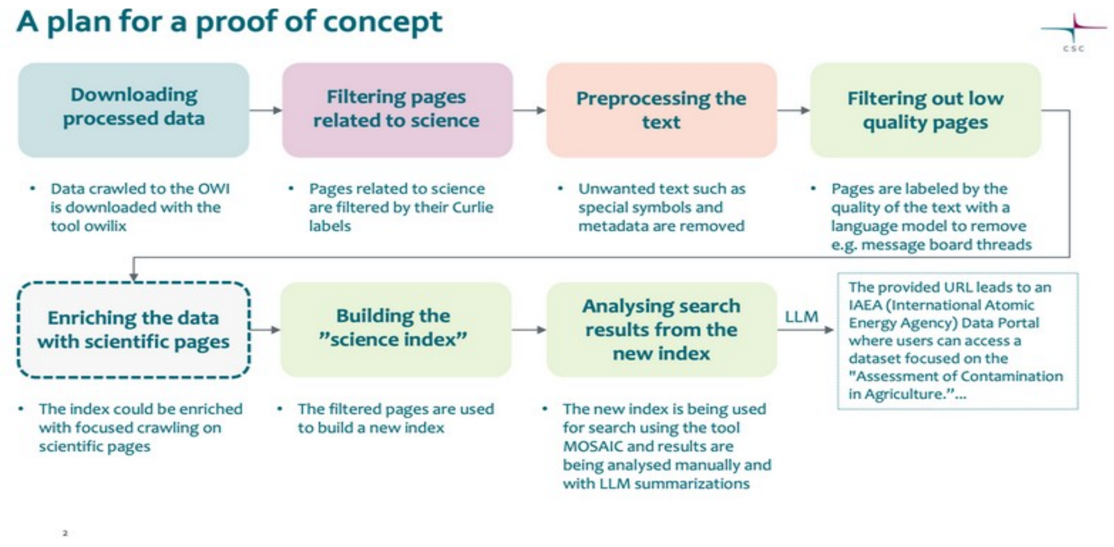
- Working on the *data acquisition and Preprocessing* for multi-genres: scientific abstracts and artefacts, web-data from owilix.
- Developed LLM-based (with multiagents validation) and human-based evaluation plan.
- The *Taxonomy Tagger* was implemented.



Some applications built on the Open Web Index
Proof-of-concept: Open Science Search by CSC

- Research.fi is a Finnish portal for national research outputs, provided by the Ministry of Education and Culture and developed by CSC – IT Center for Science
- Research Information Hub: national aggregator of research-related data in Finland
- Information on research conducted in Finland including publications, grants, organizations and infrastructures.

- **=> Studying how the Open Web Index can be exploited to create a multilingual science index and new features to Research.fi**



A plan for a proof of concept

Downloading processed data
- Data crawled to the OWI is downloaded with the tool owilix

Filtering pages related to science
- Pages related to science are filtered by their Curlie labels

Preprocessing the text
- Unwanted text such as special symbols and metadata are removed

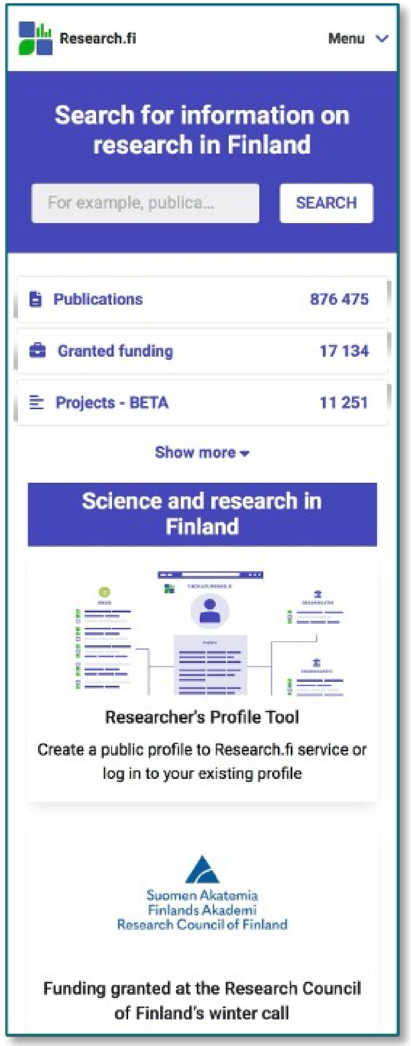
Filtering out low quality pages
- Pages are labeled by the quality of the text with a language model to remove e.g. message board threads

Enriching the data with scientific pages
- The index could be enriched with focused crawling on scientific pages

Building the "science index"
- The filtered pages are used to build a new index

Analysing search results from the new index
- The new index is being used for search using the tool MOSAIC and results are being analysed manually and with LLM summarizations

The provided URL leads to an IAEA (International Atomic Energy Agency) Data Portal where users can access a dataset focused on the "Assessment of Contamination in Agriculture."...



Search for information on research in Finland

Publications	876 475
Granted funding	17 134
Projects - BETA	11 251

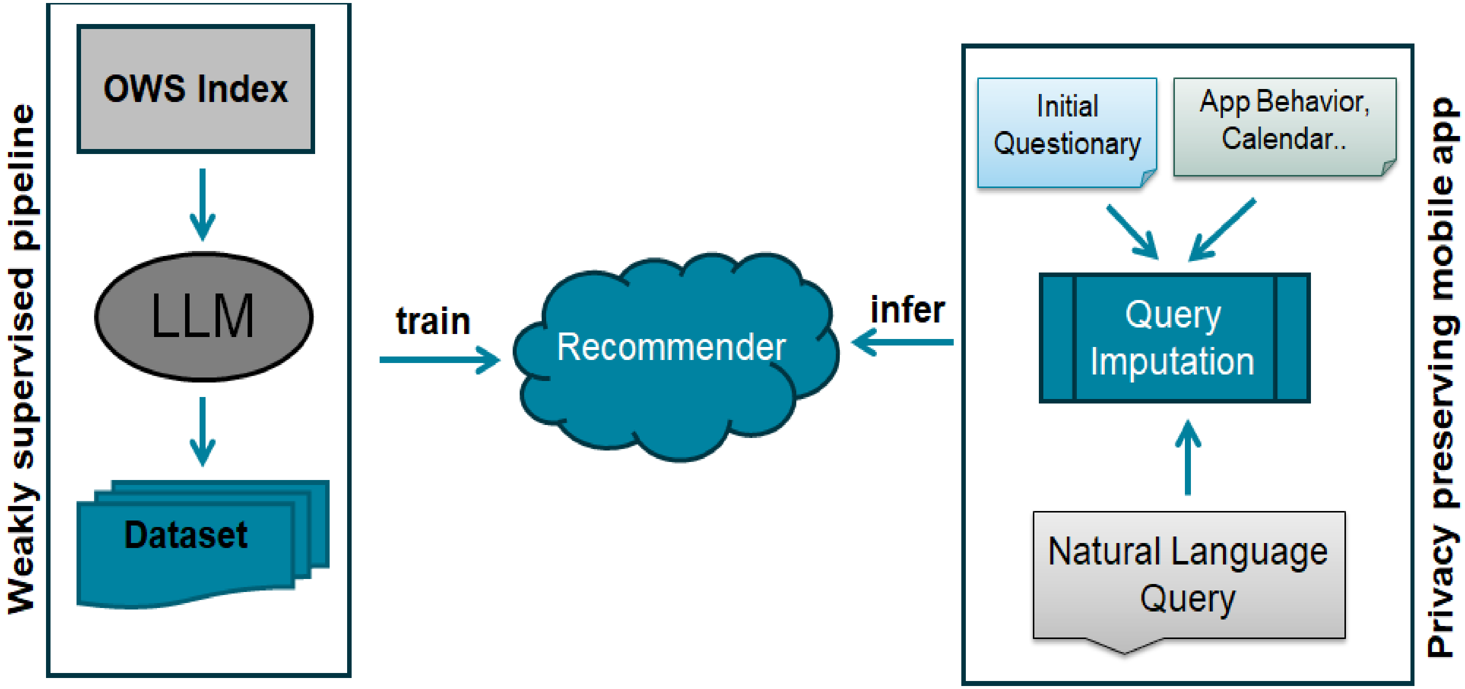
Science and research in Finland

Researcher's Profile Tool

Create a public profile to Research.fi service or log in to your existing profile

Funding granted at the Research Council of Finland's winter call

Some applications built on the Open Web Index
Mobile privacy-preserving, personalised recommendation of geo-entities by A1



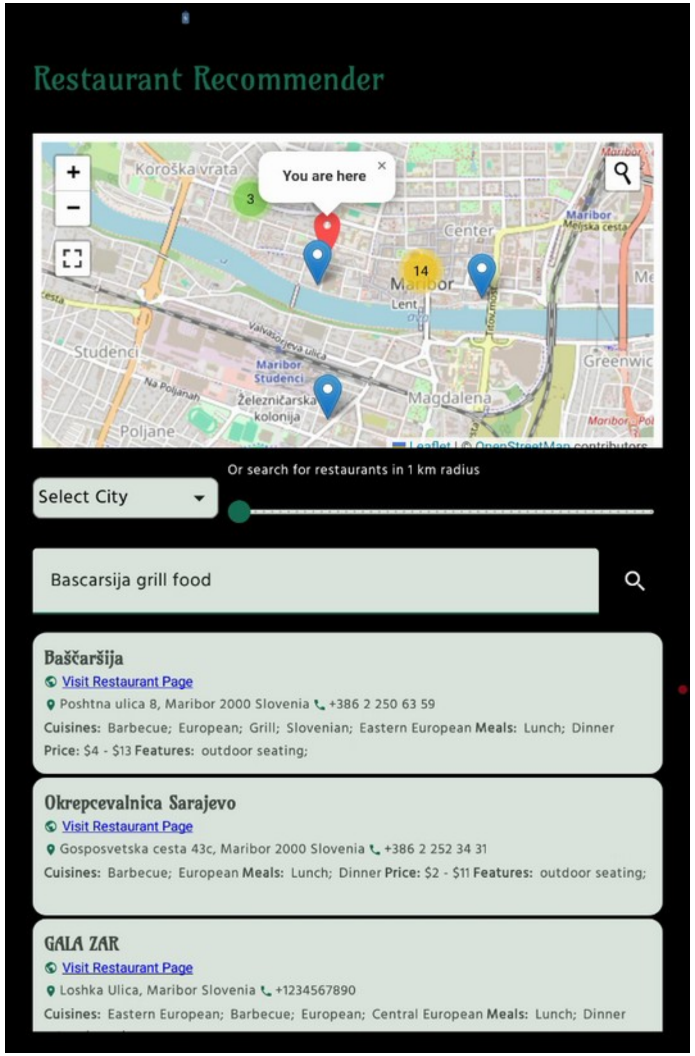
- Development of a content based recommender system
- Definition and deployment of suitable model to enable location- and feature-based search for restaurants

  => e.g. city name, cooking style, price range, rating

- Integration of Open Web Index as the data source
- Usage of data sets created from Tripadvisor web pages

Some applications built on the Open Web Index
Mobile privacy-preserving, personalised recommendation of geo-entities by A1

- OWS metadata is used to build the dataset
- Meta-Llama-3-8B LLM is used to extract relevant information from “plain_text” column of the OWS metadata
  - Query Imputation pipeline
  - Initial query sent to server
  - Meta-Llama-3-8B detects entities, which are sent back to the app
  - If any entity is missing, query is complemented by user preferences inside phone
- Ranking system
  - We use BM25, a ranking system based on query terms and “bag-of-words” (a combination of all features) of the restaurants
  - Android app using Kotlin, uses OpenStreetMap.



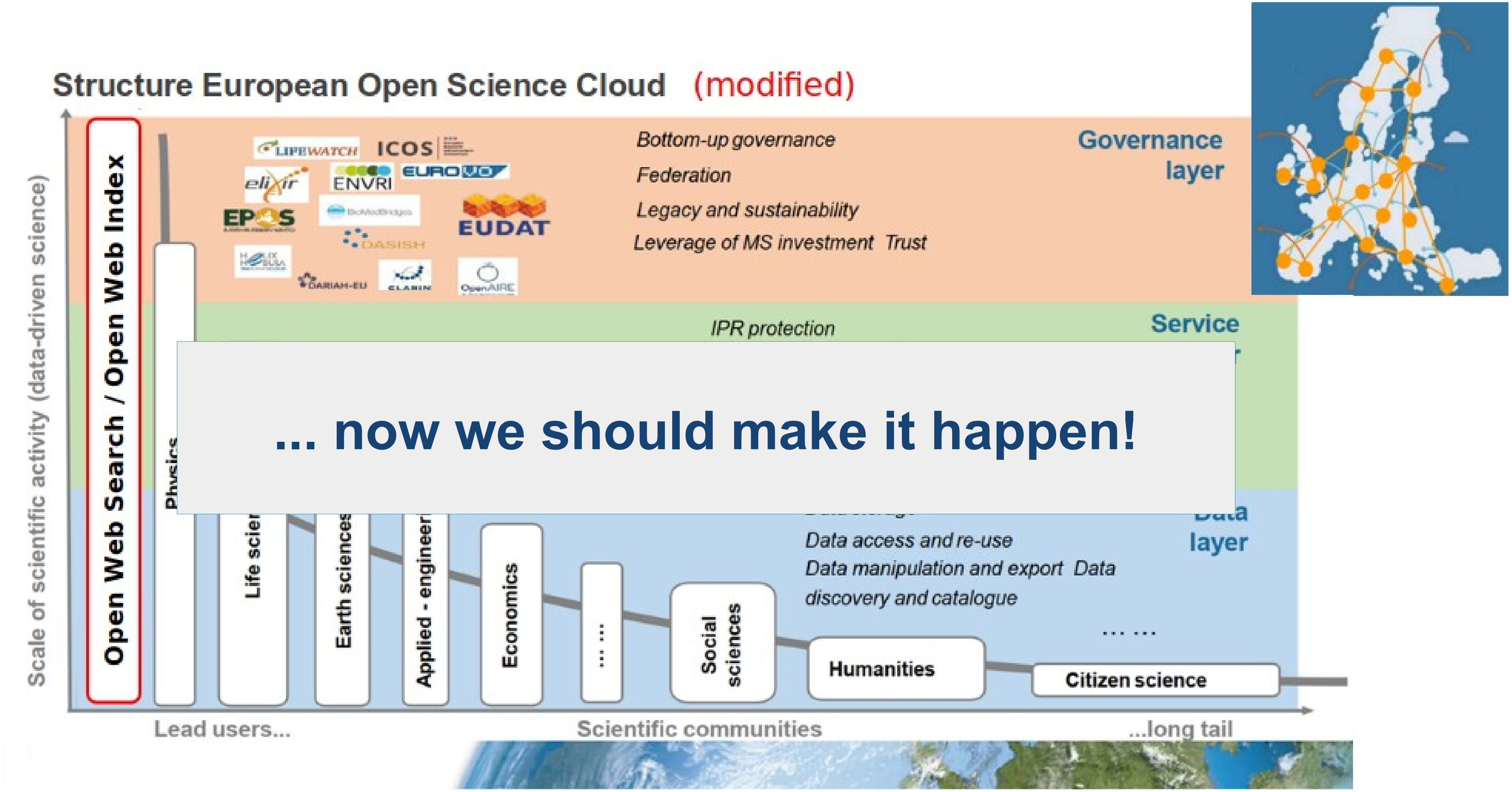
Bascarsija grill food

Baščaršija
Visit Restaurant Page
Poshtna ulica 8, Maribor 2000 Slovenia ☎ +386 2 250 63 59
Cuisines: Barbecue; European; Grill; Slovenian; Eastern European **Meals:** Lunch; Dinner
Price: $4 - $13 **Features:** outdoor seating;

Okrepcevalnica Sarajevo
Visit Restaurant Page
Gosposvetska cesta 43c, Maribor 2000 Slovenia ☎ +386 2 252 34 31
Cuisines: Barbecue; European **Meals:** Lunch; Dinner **Price:** $2 - $11 **Features:** outdoor seating;

GALA ZAR
Visit Restaurant Page
Loshka Ulica, Maribor Slovenia ☎ +1234567890
Cuisines: Eastern European; Barbecue; European; Central European **Meals:** Lunch; Dinner

Back in 2018 we already thought how Open Web Search could be part of EOSC ...



... now we should make it happen!

How can Open Web Search and EOSC join forces?

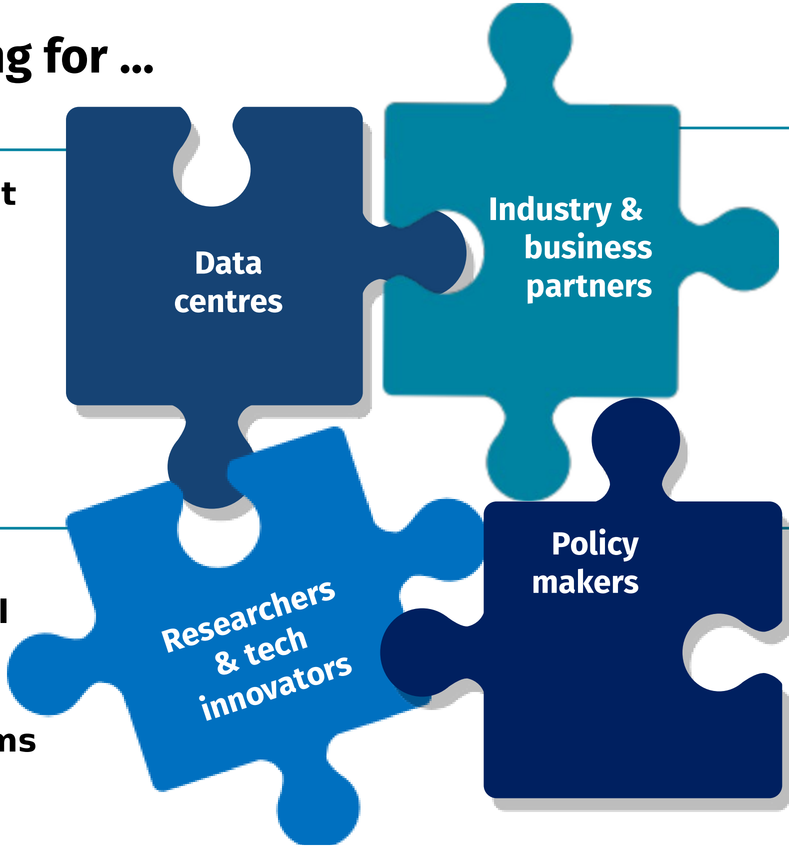
- **Explore synergies** between the two initiatives (technically and organisationally)
- **Exchange on how to set-up and govern** a data-intensive federated infrastructures across Europe
- **Share capacities** (e.g. storage and compute) and **make Open Web Search part of the EOSC services**
- Join forces to **complement scientific data (-spaces) with specific and general web-text corpora** - for enabling search, foresight, training of scientific language models, RAG etc.
- **Exchange on search and analytics strategies** in large large scale distributed data and meta-data repositories (science search, scientific data search, etc.)
- **And many more**...

Europe needs to cooperate across domains and communities to regain sovereignty in using and accessing the Web at scale!

Open WebSearch .eu

Stefan Voigt
Open Search Foundation
Chairman
Germany

We are looking for …



→ **Partners to host the distributed Open Web Index**

→ **extend the business and service models of the Open Web Data Infrastructure**

→ **develop new search & retrieval paradigms and content analysis algorithms**

→ **help shaping the governance of an open search ecosystem**

Contact: ows@openwebsearch.eu & sv@opensearchfoundation.org

Upcoming Events!

Open Web Index - Official Kick-off
June 6, 10:00 - 11:30
Online

https://cscfi.zoom.us/meeting/register/eATIpDQ5TZidh4Jzkim6FQ#/registration

OpenWebSearch.eu session at NGI Forum
June 20, 9:00 - 13:00
Brussels and online

https://ngi.eu/ngi-forum25/

NGI FORUM 2025
www.ngi.eu
Loading event...

Building an
Open Internet Stack
for **European Digital Sovereignty**

Albert Borschette Congress Center
Brussels, Belgium

19 June 2025 | 8:30 - 20:00
20 June 2025 | 8:30 - 16:30

Don't miss it!

NEXT GENERATION INTERNET
The Next Generation Internet is a European Commission initiative.
Join Us!