Lessons learned while building the vocabulary mapping tool Cocoda

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Introducing coli-conc

Colibri, the mother of all

Context generation and **li**nguistic tools for **b**ibliographic **r**etrieval **i**nterfaces, conducted by our colleauge Ulrike Reiner since 2002

- automatic DDC classification (**coli-auto**)
- automatic checking of DDC number correctness (**coli-corr**)
- automatic analysis and synthesis of DDC numbers (**coli-ana**)
- semi-automatic creation of DDC concordance (**coli-conc**)

$\Rightarrow$ Domain expert and previous works to build on

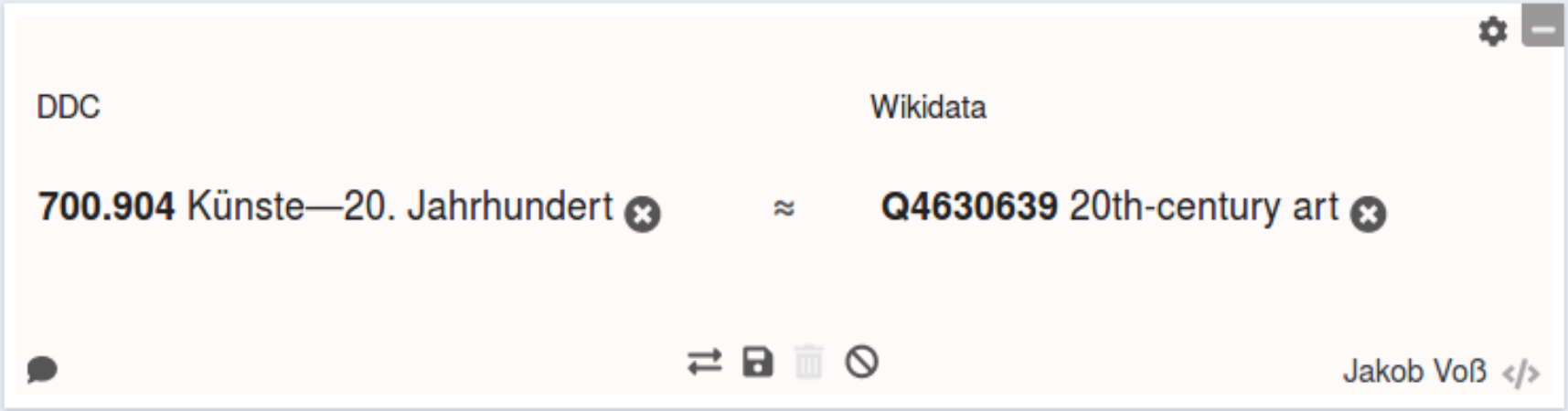
coli-ana, an example

700.90440747471

Info | Search Links | coli-ana

```
 700.90440747471
 7                  Arts & recreation
 70                 Arts
 700                The arts
 700.904            Modern arts
T1--0904            20th century, 1900–1999
T1--09044           1940–1949
     T1--074        Museums, collections, exhibits
        T2--7       North America
        T2--74      Northeastern United States
                    (New England and Middle Atlantic states)
        T2--747-749 Middle Atlantic states
        T2--747     New York (State)
        T2--7471    New York Metropolitan Area
```

coli-conc, an example



coli-conc, the idea

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- facilitate creation and management of **concordances** between **knowledge organization systems (KOS)**

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- in particular library classifications
  - Dewey Decimal Classification (DDC)
  - Regensburger Verbundklassifikation (RVK)
  - Basisklassifikation (BK)
  - *several local classification schemes*
  - ...

coli-conc, to-do list

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   $\Rightarrow$ BARTOC registry

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   ⇒ BARTOC registry

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   - DDC/RVK/GND/BK/STW/LCSH/IxTheo
     384.491 mappings
   - Wikidata
     3.607.683 mappings (as of 6/2018)
   - additional mappings not converted yet

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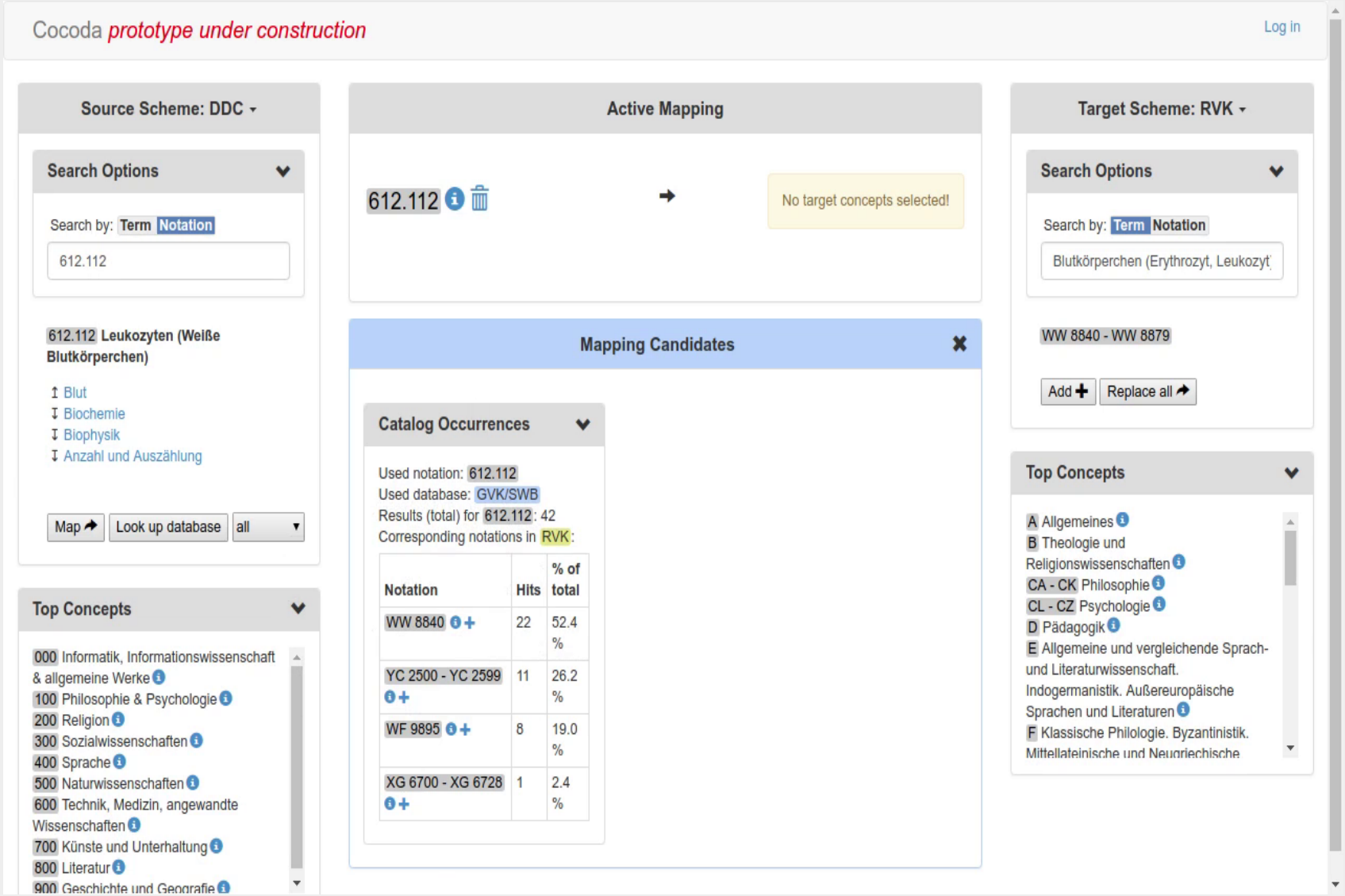
3. Create mapping tool
   ⇒ Cocoda!

Cocoda 2014: first prototype with AngularJS



Cocoda 2015-2016

- Write project grant and receive additional funding
- Continue with specification (esp. JSKOS data format)
- Create a new implementation

JSKOS data format for Knowledge Organization Systems

- JSON-LD for SKOS (`prefLabel`, `broader`, `narrower`…)
- Additional properties from other ontologies (`url`, `next`, `previous`, `startDate`, `endDate`…)
- Additional classes for mappings, concordances, registries…

⇒ `https://gbv.github.io/jskos/`

Getting data into JSKOS format

1. CSV, MARCXML, SKOS, ... $\longrightarrow$ Cleanup
2. CSV, MARCXML, SKOS $\longrightarrow$ JSKOS

Using at least three different tools:

- skos2jskos (Perl)
- jskos-convert (NodeJS)
- mc2skos (Python)
- scripts for minor JSON adjustments (jq)

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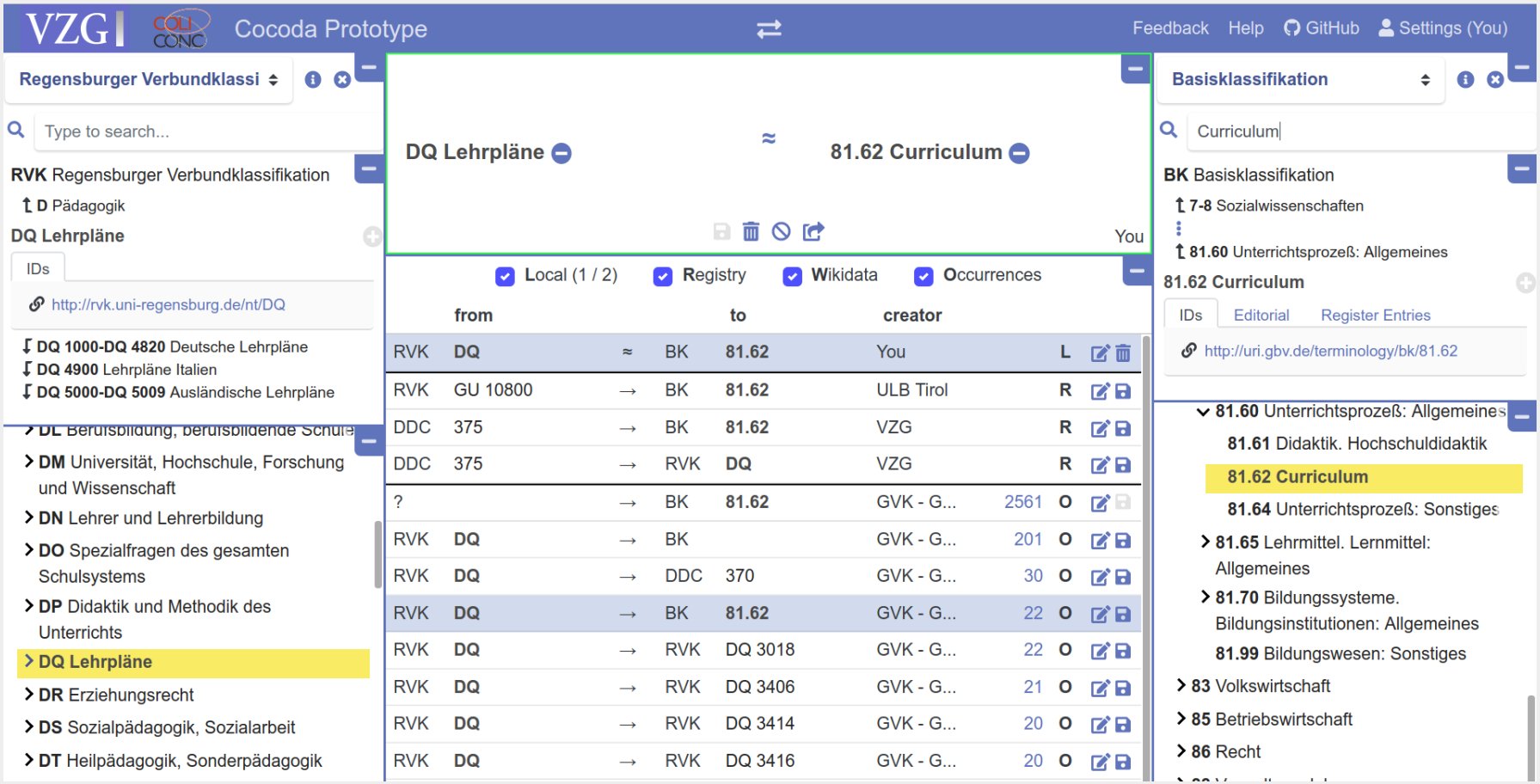
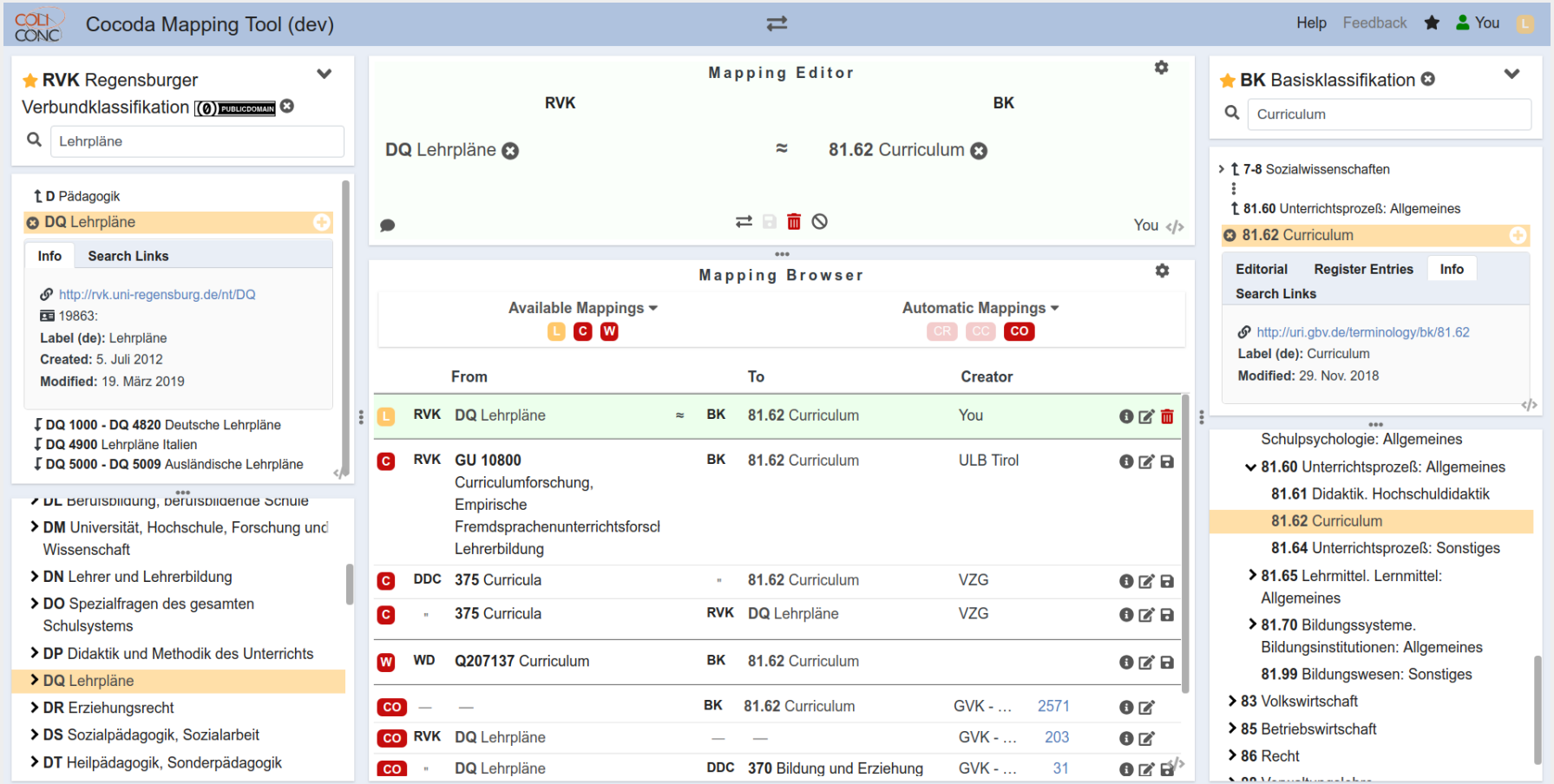
  - and throw it away afterwards

coli-conc 2018: start new from scratch (Node & Vue)



coli-conc 2019: curent layout



Live Demo

https://coli-conc.gbv.de/cocoda/app/

Infrastructure

- jskos-server & DANTE terminology registry (JSKOS-API)
- mapping suggestions (OpenRefine Reconciliation API)
- login-server (OAuth)

Lessons learned

People stick to spreadsheets

- limited
  - 1-to-n mappings
  - repeatable fields
  - leading zeroes
  - ...
- at least better than MS Word
- you think CSV, they think Excel

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⇒ ***spreadsheets are not perfect but actually useful***

Software development is communication

- listen
  - what is actually wanted?
  - how do the involved parties work?
- understand
  - face2face meetings to find a common language
  - most problems are communication problems
- explain
  - pros and cons of technical decisions
  - basic such as URIs and Open Data
  - not all features are implemented first

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$\Rightarrow$ ***Communicate!***

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- Notations and identifiers must match regular expressions
- JSON Schema helped to find inconsistencies in JSON data
- Additional constraints not expressible in JSON Schema
- empty strings, empty arrays, null values...

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⇒ ***Never trust any data you haven't validated!***

Holy decoupling

- service oriented architecture (SOA)
- APIs and data formats matter most
- Things will break anyway

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Easy to replace parts of the infrastructure

- RVK API → own DB → DANTE → jskos-server
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⇒ ***split your application into decoupled services!***

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- users prefer a mature product instead buggy prototype
- real use-cases and outcome instead of click-around testing
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⇒ ***Agile development requires some agile users!***

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- coli-conc started in 2013
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$\Rightarrow$ ***Good luck!***

Summary

We build...

- JSKOS data format to unifiy KOS & concordances data
- several web services to process and share mapping data
- a web application based on the format and services

We learned to...

- stop worrying about spreadsheets
- listen, understand, and explain
- inist on schemas for data quality
- decouple and rewrite services
- work together with beta-user
- be more patient and use lucky chances

Feedback is welcome!

https://coli-conc.gbv.de/ the project

https://coli-conc.gbv.de/cocoda/ the mapping-tool

https://github.com/gbv/cocoda/ the source code

https://gbv.github.io/cocoda/ the documentation

https://github.com/gbv/cocoda/issues the issue tracker