Streamlining Data Governance: A Solution for Managing Reference Data

Context

Currently, at the Flemish government's Environment Department, business analyses culminate in the creation of distributed, non-machine-readable documents such as Word files or wiki pages.

When developing a business application, the reference data present in business terms lists needs to be converted into machine-readable formats, enumerated values in java code or tables in relational databases.
For publication, the enumerated values and reference data tables are transformed into SKOS (Simple Knowledge Organization System) concepts.

Need

To optimize the governance of reference data, the focus should be on adopting machine-readable formats and web standards as outcomes from business analysis. This enables seamless integration with business applications and easy sharing through web publication. The reusability of machine-readable lists in both business applications and web publication enhances data consistency, facilitates collaboration, and drives operational efficiency.

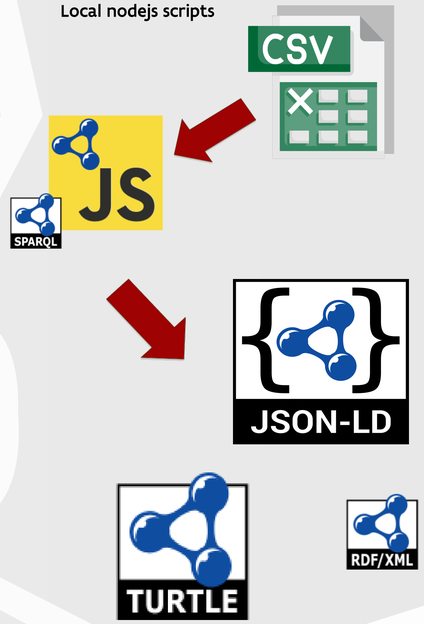
Task

- Implementing a set of user-friendly tools for managing reference data, accommodating individuals with limited technical background.
- Establishing a transparent system for managing different versions of reference data.
- Ensuring machine-readable distributions, versioned code dependencies, and adherence to web standards.

Figure 1: governance work groups oversee and guide the data governance processes.

Figure 2: business analysts and business architects producing the desired outcomes from their analysis.
(machine readable web standards; csv-source template) => GitHub pull request

Figure 3: csv to rdf-distributions
+ generate metadata + shacl validation
Local nodejs scripts



Scan code for conceptscheme overview

Scan code for catalog overview

View it on GitHub

Figure 7 a, b, c:
Usage
a) lod publication, etl-processes
b) etl-processes
c) java code

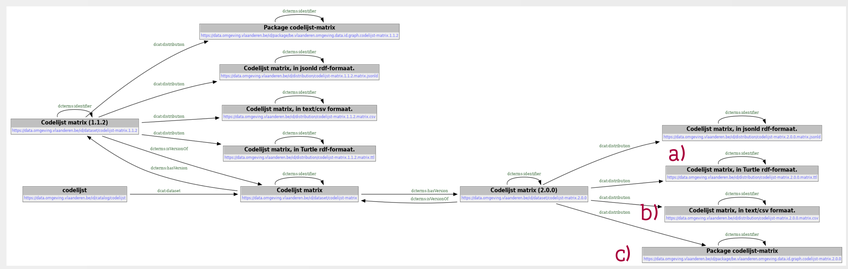


Figure 4: push result to GitHub

Figure 6 a,b,c:
Publication
a) jar dependencies via code repository (jfrog)
b) Conceptschemes and DCAT metadata as linked data via subjectpages/sparql endpoint (virtuoso/ netkernel)
c) findable via metadata on metadata Vlaanderen

Figure 5: Maven release

Ufora

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Conclusion

In conclusion, the proposed system is suitable and user-friendly for managing simple lists and controlled vocabularies with limited interdependencies and a small number of concepts. It efficiently handles straightforward reference data requirements.
However, for more complex lists, particularly those categorized as master data, such as chemical substance lists that necessitate a step-by-step protocol, it may be beneficial to develop specific business applications to assist in the governance process. These applications can provide dedicated functionalities and features tailored to the unique complexities of managing and governing intricate reference data, enhancing efficiency and accuracy in the governance process.

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Solution

The proposed solution for this project involves utilizing GitHub version control software to manage the reference data. The source of the reference data is a CSV file, which undergoes transformation, using javascript, into multiple RDF distributions.
Additionally, a JAR dependency is created, containing these distributions.
To ensure proper documentation, metadata for the versioned distributions is generated in DCAT (Data Catalog Vocabulary) format, which is added to the version control system and also packaged as a jar dependency.
Once there is consensus on the content of the reference data, all these components are released as a version in a Maven build on a Bamboo build server.