StahlDigital

CI Pipeline for generating Linked Open Data ontology documentation

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Bundesministerium für Bildung und Forschung

FKz 13XP5116B

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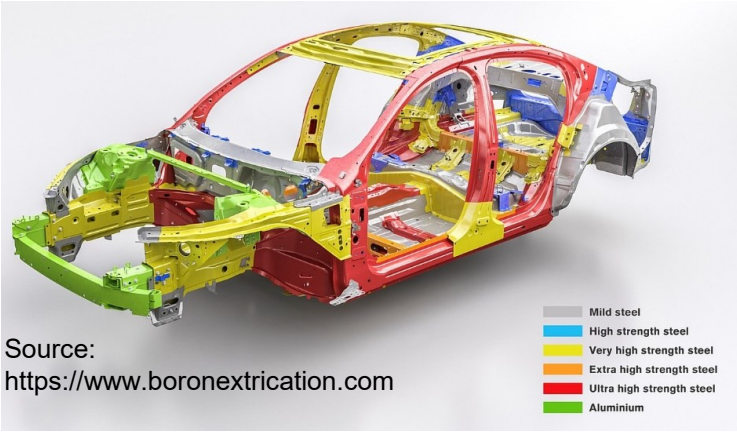
Introducing Project StahlDigital

- BMBF funded 2021-2024.
- Partners: MPIE, Fraunhofer IWM, InfAI
- Part of **Plattform MaterialDigital**
  - Different materials, e.g. steel, copper, rubber, glass, concrete …
  - Different problems, e.g. simulation workflows, digital twin, ML, …
  - All using ontologies and tackle material science challenges
- Main Topics **Project StahlDigital**
  - ontology development workflow
  - development of domain specific ontology
  - Ontology based workflows



Source:
https://www.boronextrication.com

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See also:
https://material-digital.de/project/6

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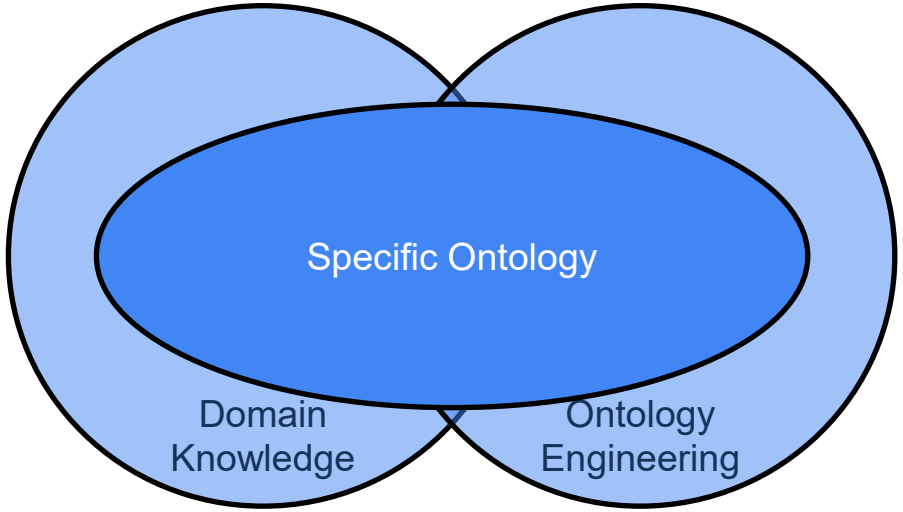
Challenges

- Building domain specific ontologies is hard
  - Domain experts lack knowledge about ontologies and tooling
  - Ontology experts lack knowledge about domain
- Publishing ontologies is also hard
  - Manual approach is error-prone
  - Ontologies require updates
  - Different representations required for humans and machines
- How to tackle this challenges cost efficient,
  especially if projects run out of funding?
  - Domains and servers need to be kept alive
  - Many 404s around
  - Dublin Core, FOAF and SKOS are around for over 20 years

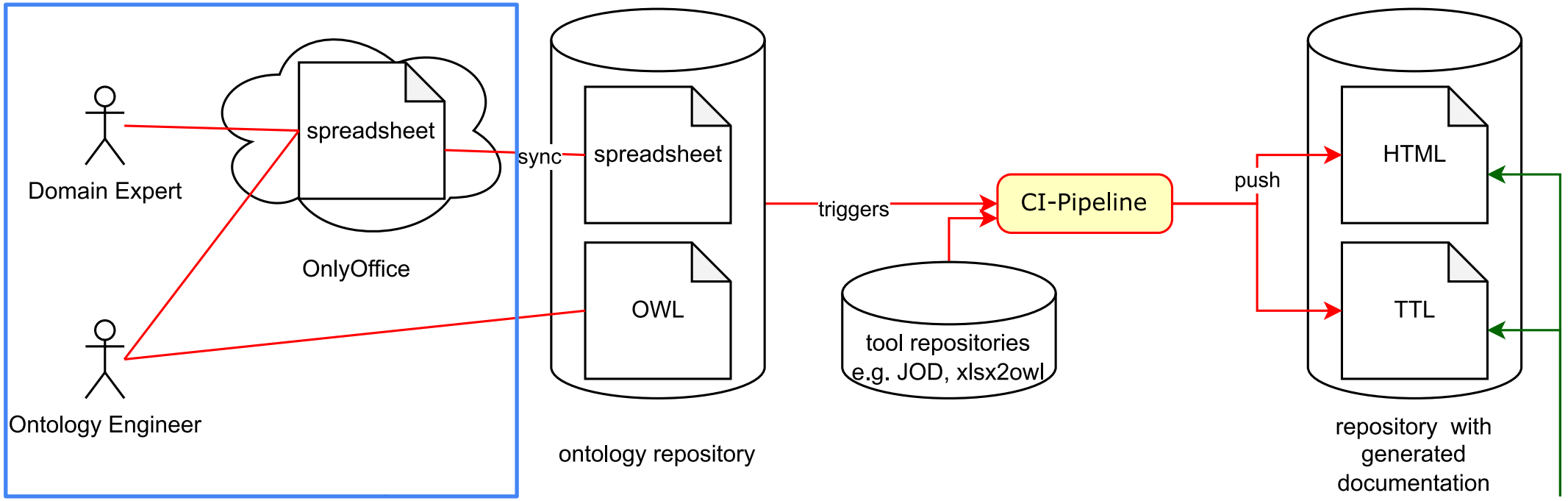


404

See also:
https://purl.org
https://w3id.org
https://archivo.dbpedia.org

Approach chosen by StahlDigital: Spreadsheet as input

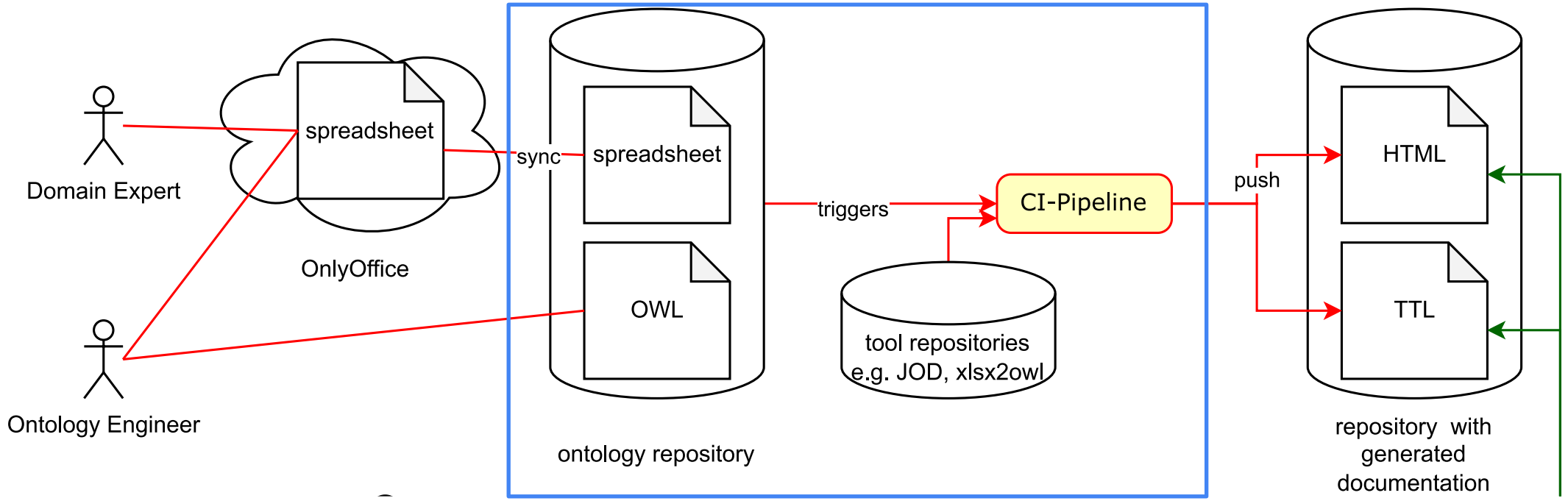
- Input interface for terms and data
- Ontology and Domain experts both used to work with
- Software available on most computers
- Data generally stored in spreadsheets within our domain



Special thanks to Eccenca GmbH for initial idea and input
https://eccenca.com

Approach chosen by StahlDigital: Git repository and CI pipeline

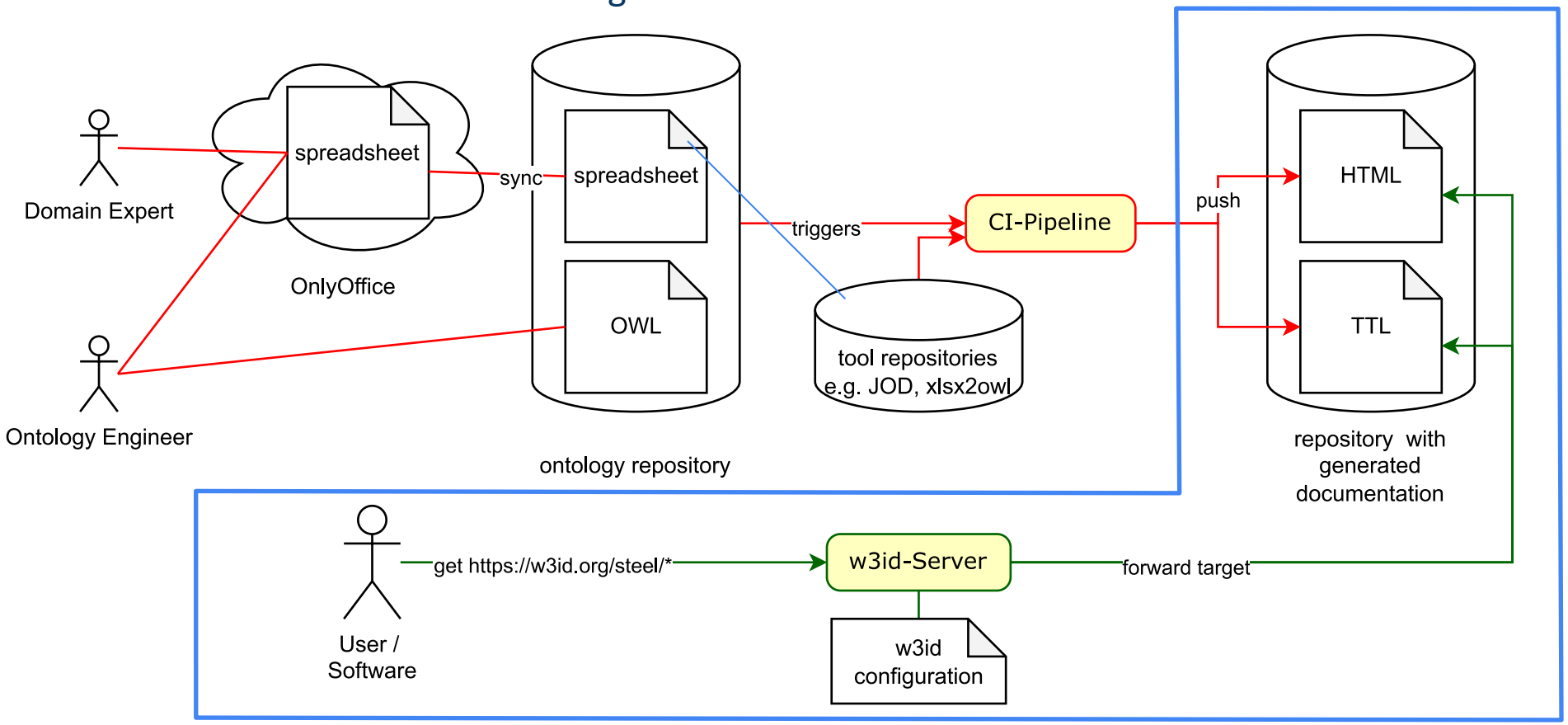
- Versioned storage
- Pipeline with input conversion, tests, publishing
- Tools used: OnlyOffice, Gitlab CI, Nextflow, YARRRML, JekylRDF, …



See also:
https://www.nextflow.io/

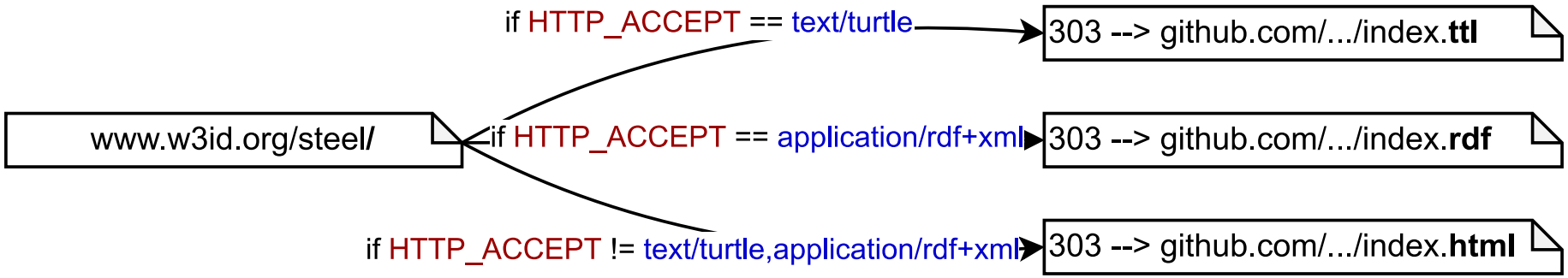
Approach chosen by StahlDigital: publishing with Github & w3id.org

- Documentation stored on Github
- Robust content aware redirection via w3id.org



W3id Redirect

- W3id utilizes Apache's httpd content-type aware rewrite rules
- Redirect(Code 303, see Other) based on URL and content type as suggested by “Cool URIs for the Semantic Web”



See also:
https://www.w3.org/TR/cooluris/

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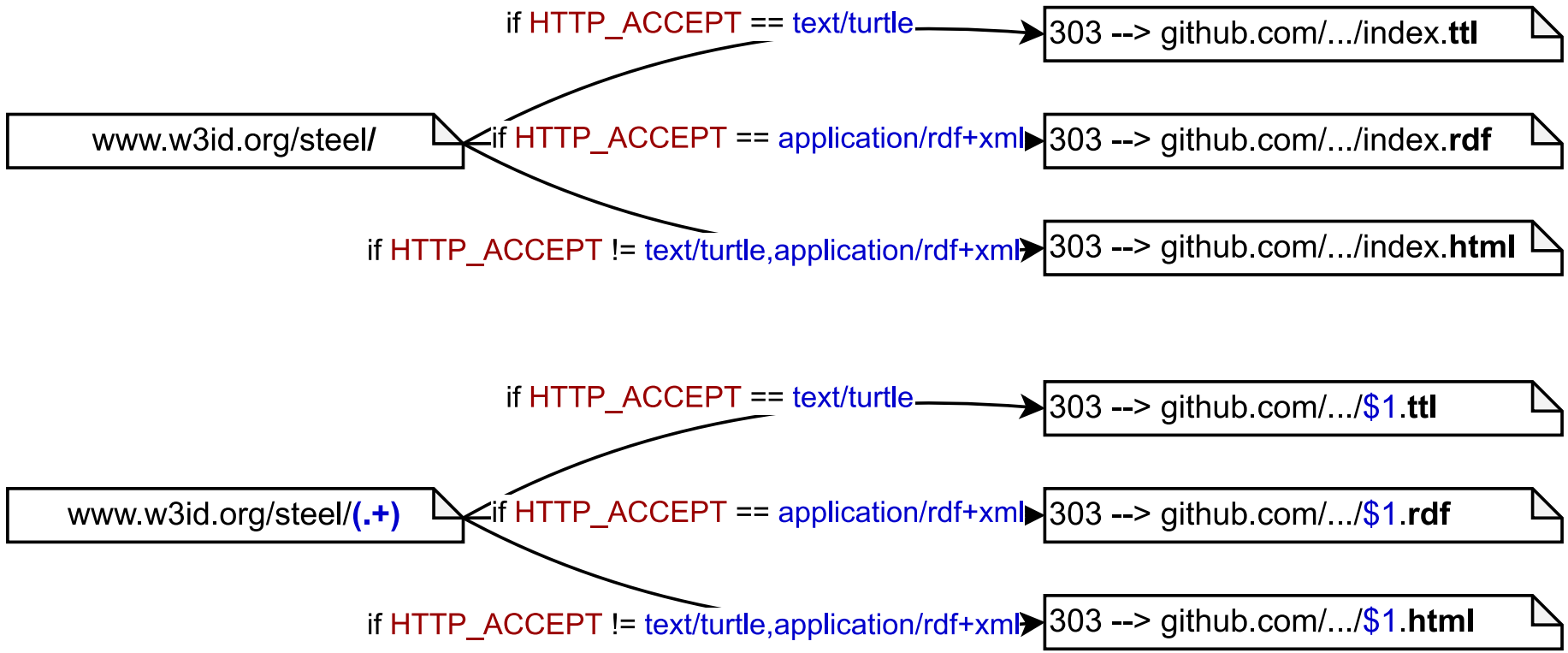

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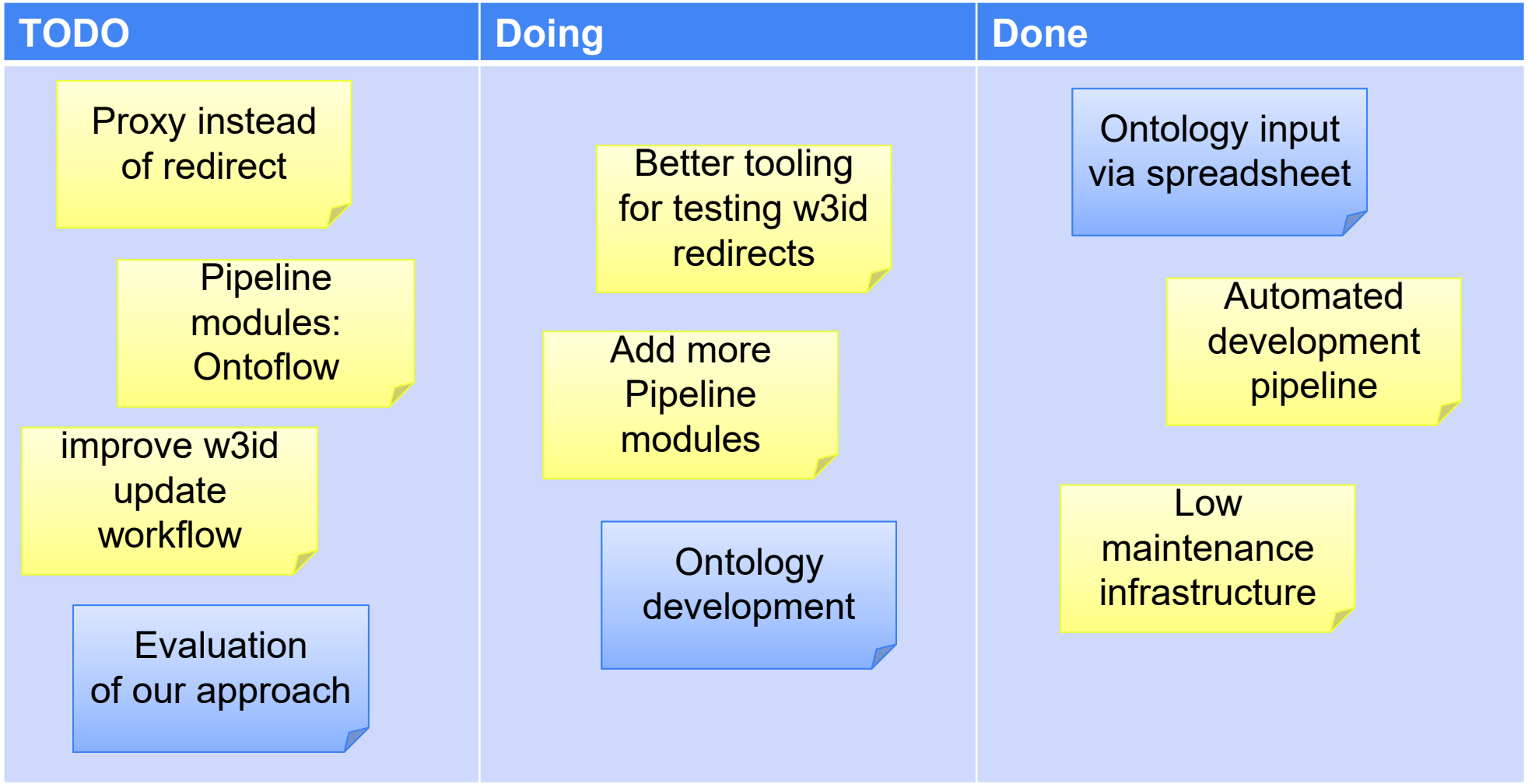
Further work and summary



See also:
https://gitlab.com/infai/ontoflow

Thank you for your attention

Questions?

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