EUROPEAN LANGUAGE GRID

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Extracting Terminological Concept Systems from Natural Language Text (Text2TCS)

Text2TCS

Terminological Concept Systems (TCS)

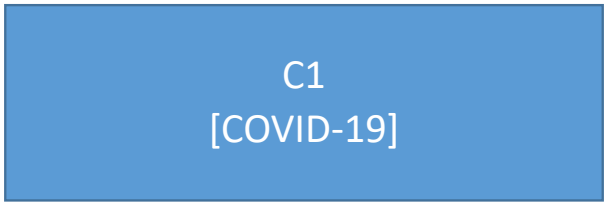
- Concept: abstractions of a set of physical or abstract entities
- Term: their designation by linguistic means
- Relation: hierarchical and semantic relations between concepts that structure and organize the TCS

TCS From Text

Text Coronavirus disease 2019 (COVID-19) is a disease that has been spreading through Europe.

Terms <term>*Coronavirus disease 2019*</term>
<term>*COVID-19*</term> <term>*disease*</term>
<term>*spreading*</term> <term>*Europe*</term>

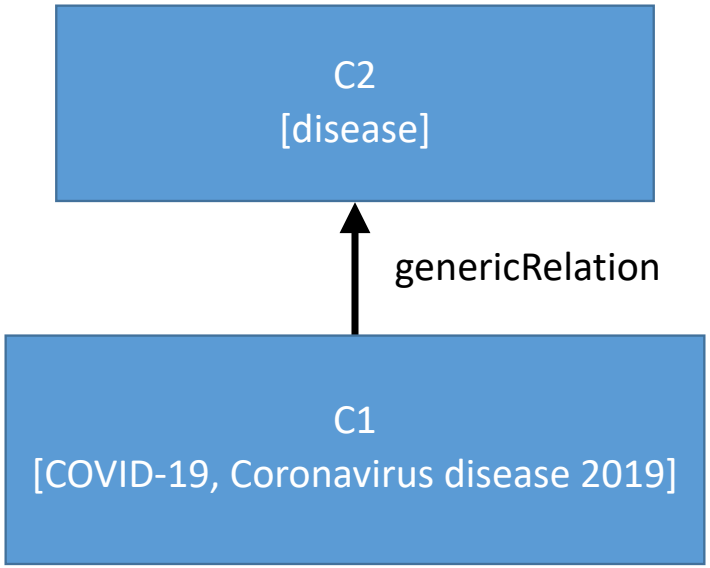
TCS From Text



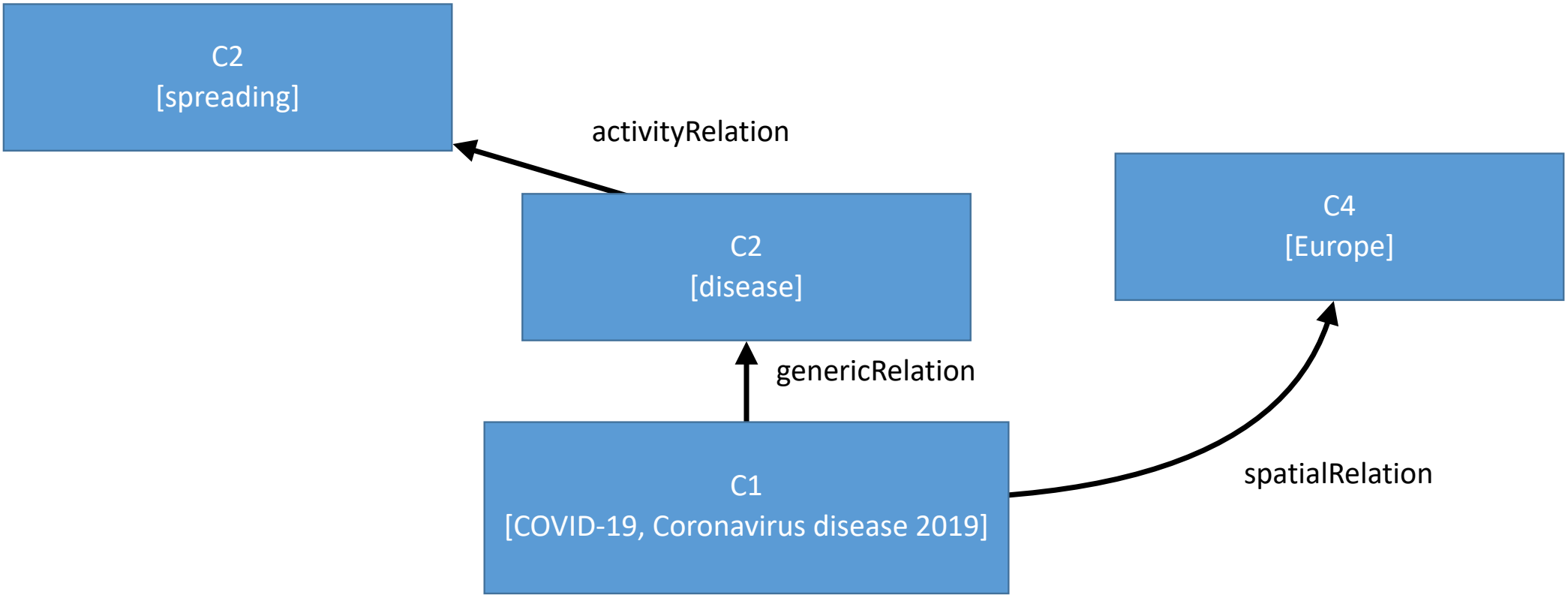
TCS From Text

C1
[COVID-19, Coronavirus disease 2019]

TCS From Text



TCS From Text

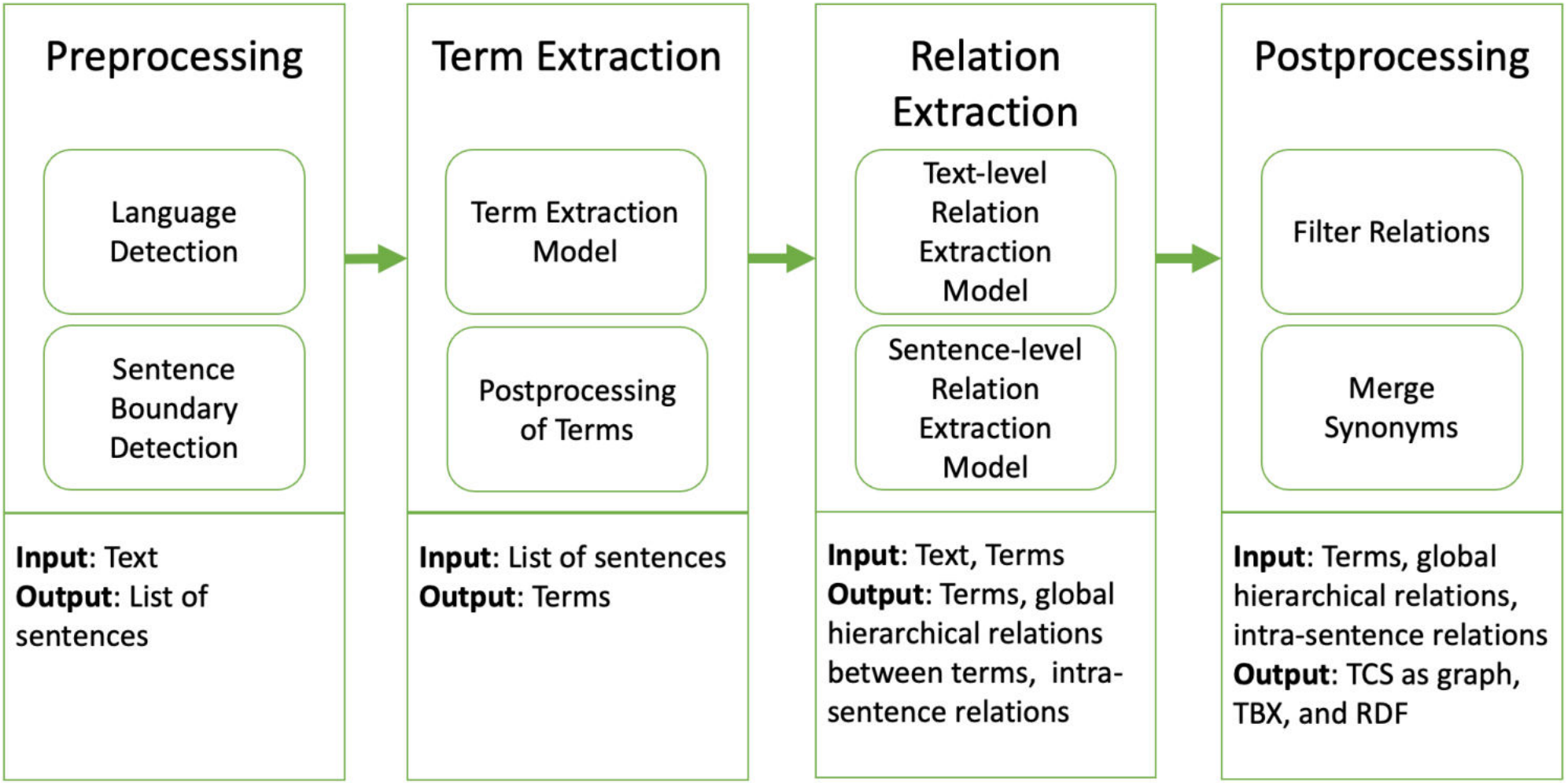


Motivation

- Specialized communication needs to be able to rely on a consistent usage of terminology by different parties
- A TCS alleviates that problem, but manually curating a TCS is cumbersome

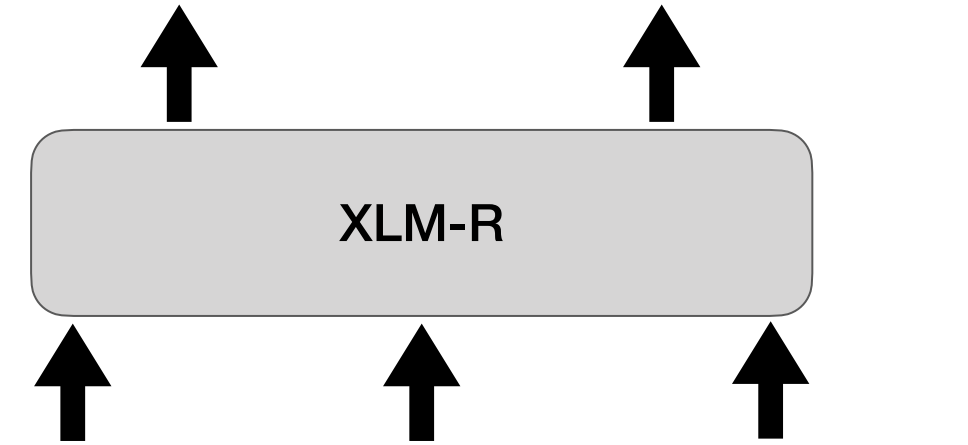
→ **Automated approaches are needed**

Text2TCS — the Pipeline

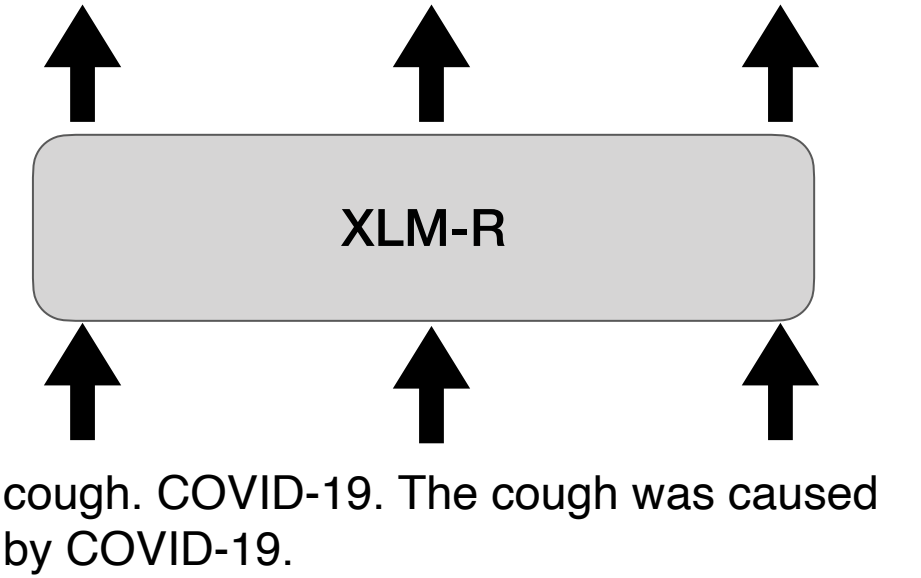


Method - Multilingual BERT models (XLM-R)

Term Extraction



Relation Extraction



Lang C. et al (2021) Transforming Term Extraction: Transformer-Based Approaches to Multilingual Term Extraction Across Domains. Findings of the Association for Computational Linguistics: ACL-IJCNLP 2021.

Wachowiak L. et al. (2021) Towards Learning Terminological Concept Systems from Multilingual Natural Language Text. in LDK 2021

Text2TCS on ELG

https://live.european-language-grid.eu/catalogue/tool-service/8122

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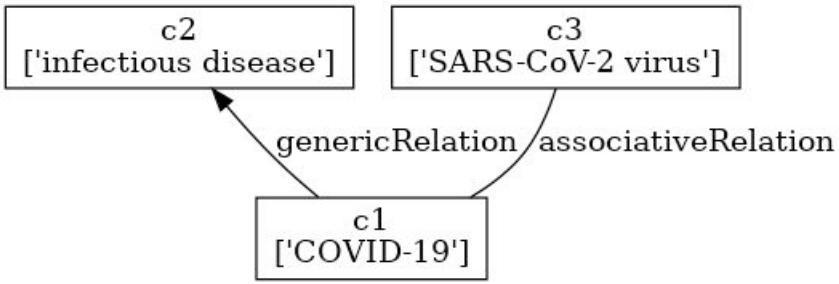
Concept Map



TBX/XML

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Major findings

- Fine-tuning pre-trained neural language models works well on this TCS extraction task
- Works also well with Neural Machine Translation models - even for joint term and relation extraction (but too slow and big for ELG)
- Coordination between sentence- and text-level output challenging - which model to trust more?
- Pre-annotated data still needed
- All depends on good team work…

TEAM

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Text2TCS

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Text2TCS

Thank you for listening!

More information on:

https://text2tcs.univie.ac.at/

Text2TCS on ELG:

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Any feedback very welcome:

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