

Title: edenceMapper

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BACKGROUND:
Tools like Athena can support manual mapping of small non-standard codesets to standardized medical vocabularies, but large-scale mapping requires an automated and efficient workflow. To address this challenge, we developed a containerized mapping framework called edenceMapper, which uses multiple matching algorithms to generate ranked lists of suggested mappings towards standard vocabularies.

METHODS
Semantic mapping (Figure 1) is an iterative process that involves aligning source terms with target vocabulary based on semantic similarity:

- 1. Refinement:** Prioritization of standard concepts, incorporation of user-defined subsets and alignment of non-standard codes to database schema
- 2. Framework mapping:** Provision of best-matching standard concepts using various pre-defined mapping algorithms. The AWS translator is implemented and can handle multilingual input processing.
- 3. Rank:** Rank and storage of results in database
- 4. Validation with edenceReviewer:** Validation and confirmation of mappings accuracy by clinical expert via a web-based collaborative review tool

Mapping Suggestion Framework for Non-Standard medical vocabularies to Standard Codes

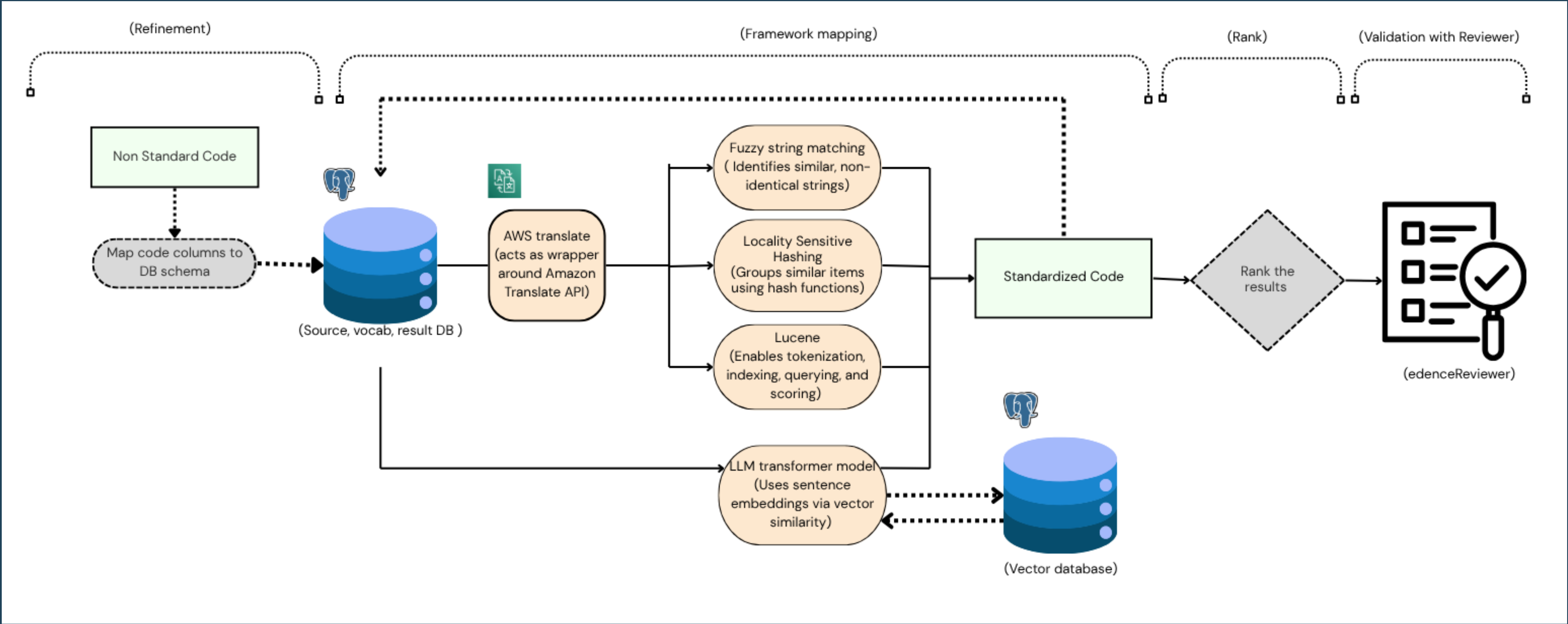


Figure 1: The workflow of mapping source codes to standard codes using various mappers.

RESULTS

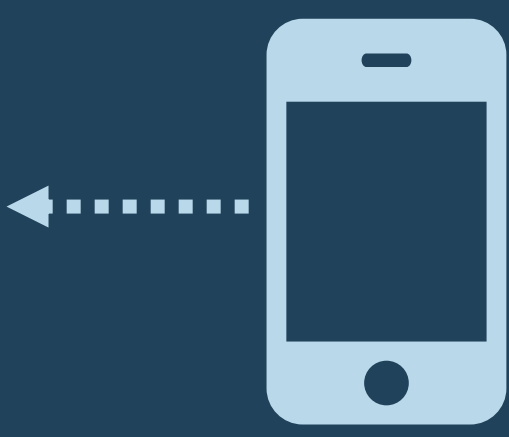
Table 1: Mapping outputs for different source terms are generated based on ranked results, with the top-ranked output shown. Each model uses a distinct technique to identify the best match within the standard. The user can then select the preferred mapping via edenceReviewer.

Source code	Suggested mapping per model (concept_id [concept_name])		
	Lucene	Fuzzy	Multilingual LLM
Haemodialysis	4120120 [Hemodialysis]	4120120 [Hemodialysis]	4120120 [Hemodialysis]
Packed cell transfusion	4125928 [Packed blood cell transfusion]	4125928 [Packed blood cell transfusion]	4125928 [Packed blood cell transfusion]
Ven cath renal dialysis	4146536 [Renal dialysis]	4289454 [Venous catheterization for renal dialysis]	4289454 [Venous catheterization for renal dialysis]

CONCLUSION

The edenceMapper framework is an ongoing project aimed at optimizing mapping of non-standard terms, regardless of language, to standardized vocabularies. By leveraging advanced NLP techniques and mapping algorithms, it offers automated suggestions while enabling expert validation for precise and reliable healthcare data standardization

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