Unified Data Modelling for Presenting Lexical Data: the Case of EKILEX

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Recurring problem: disconnected dictionaries

Disconnected dictionaries

- 140 dictionaries
- 3 separate DWSs
- different data models and formats
- inconsistencies
- duplication

EKILEX project:
new DWS, import legacy data

EKILEX project

- Institute of the Estonian Language (EKI)
- Developer OÜ Tripledev
- 2017-2018 (2021)
- End user products are separate projects
  - WordWeb, Dec 2018
  - TermWeb, applying for funding

EKILEX design choices in brief

- Merge dictionaries into one
- Centralise common data elements
- Relational database
- Graph structure with n:m between word and meaning

Merge dictionaries (instead of linking)

- information about language, not about dictionaries
- remove duplication of work
- resolve existing conflicts

How is this possible?

- as a single publisher, we can afford it
- before, during or after import
- tolerate duplicates while not yet merged

Centralise common data (instead of linking or copying)

- morphology
- collocations
- etymology
- example sentences
- quantitative data
- etc

How is this possible?

- most data elements are independent of dictionary
- new process guidelines in the institute
  - do definitions, not the Explanatory Dictionary
- data elements may still be specialised for use cases
  - do definitions for learners, not the Learners' Dictionary

Relational database (instead of rdf or json)

- developers available
- tried and tested, robust
- standards are needed for data exchange, not storage

How is this possible?

- export to any existing or future standard format
  - rdf
  - json
  - NB: as needed

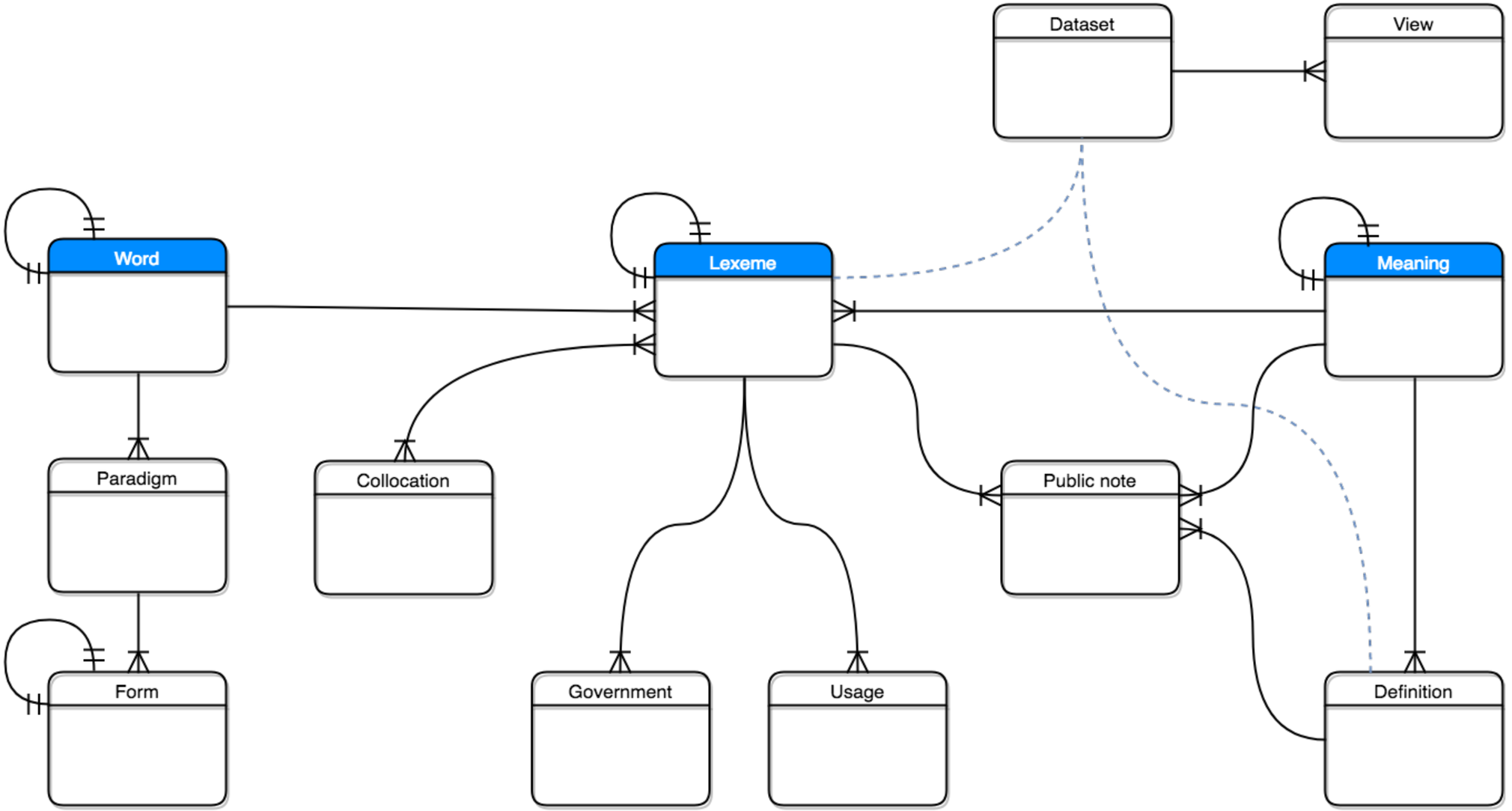
Graph structure (instead of tree)

- n:m between word and meaning
- semasiology *or* onomasiology
- nothing is repeated

How is this possible?

- show as a tree if the user so prefers
  - lexicographers: senses of a word
  - terminologists: terms denoting a concept

n:m between word and meaning



n:m between word and meaning

- common word list
- common meaning list

The link table we call the lexeme:

- this word in this meaning in this dataset
- a dictionary is a mapping between words and meanings
  - (while we still have dictionaries)

Expected challenges

- Data quality issues
  - duplicates, inconsistencies
- Merging words
  - 1300 homonyms in Estonian
  - 2 person/days per dictionary
- Merging meanings
  - much more labour-intensive
  - differences intentional

Unexpected challenges

- Differences between datasets even bigger than expected
- User resistance even bigger than expected
- Many differences intentional
- Unification tends to flatten valid distinctions
- Machine-readable data looks redundant to human readers
- Conflicts are explicit in the new system
  - not (yet) resolved
  - painfully evident to the user

Conclusions, lessons and plans

- More courage to depart from status quo
  - dictionaries
  - data formats and standards
  - data elements
- Import lexical data, not dictionaries
- Empirical quantification
  - from corpora
  - from users: crowdsourcing, experiments, games
- Export for ELEXIS etc as needed