12th Transformation Tool Contest
TTC 2019, Eindhoven, July 19th

Intro to live case

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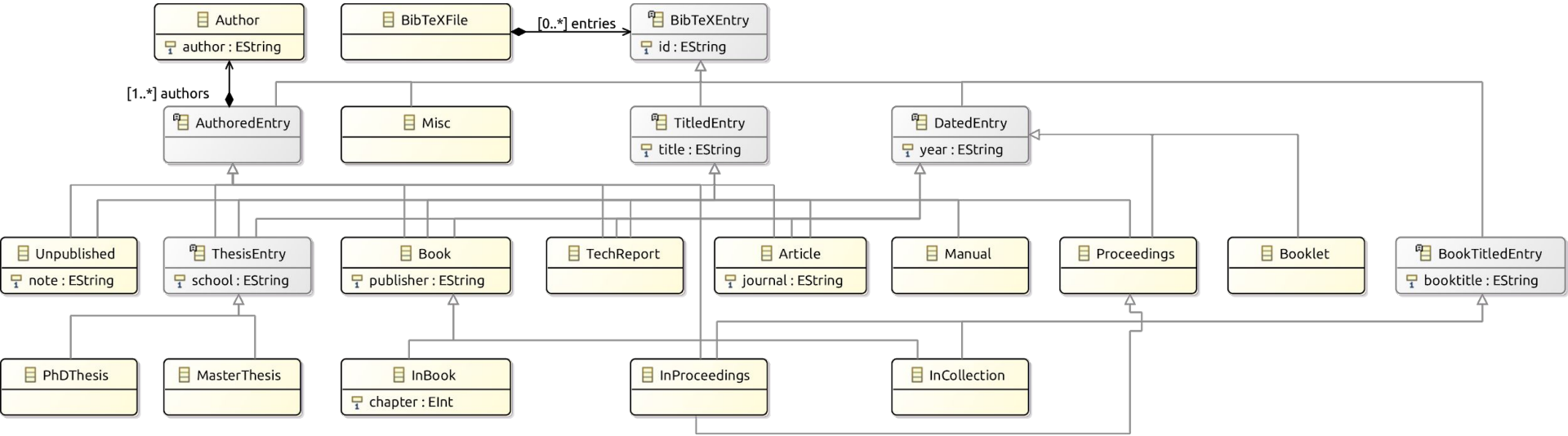
Why this transformation?

- Audience feedback from 2018:
  - Revisit ATL Zoo transformations (need updating!)
  - Research is going beyond "just performance"
  - (But that's still important!)
- Consistency as a concern:
  - M2M produces model, and then I edit it
  - M2M knows about the correspondence, though
  - Can we check later if we did not break it?
- Many approaches require separate checkers

Transformation summary

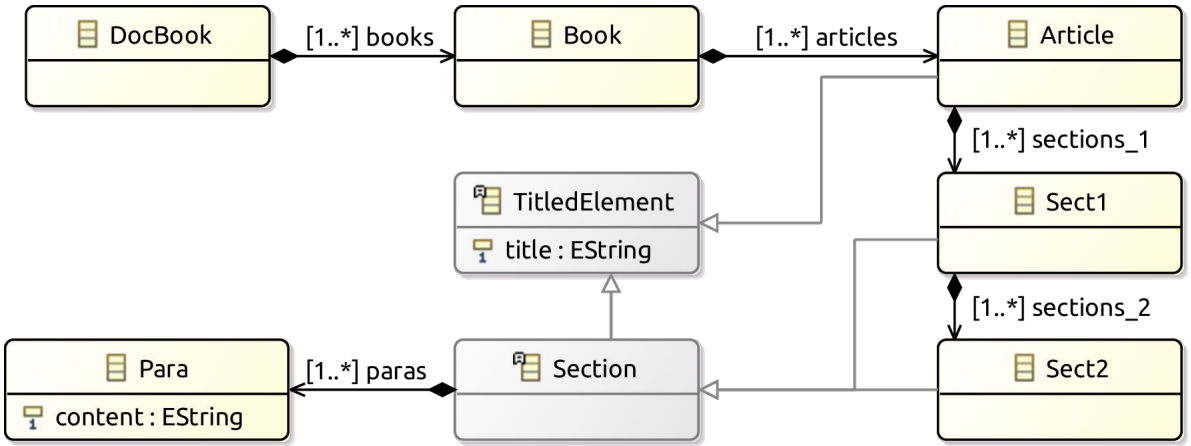
- We started from a set of bibliography entries
- We generated a Docbook document, like this:
  - 1 Book, with 1 Article inside
  - Four sections:
    - References List
    - Titles List (sorted)
    - Authors List (sorted)
    - Journals List (sorted)
- Our editors made some changes to the Docbook:
  - Swapped entries, added paragraphs, tweaked text…
- Does the Docbook still represent the original BibTeXML?

Input metamodel: BibTeXML



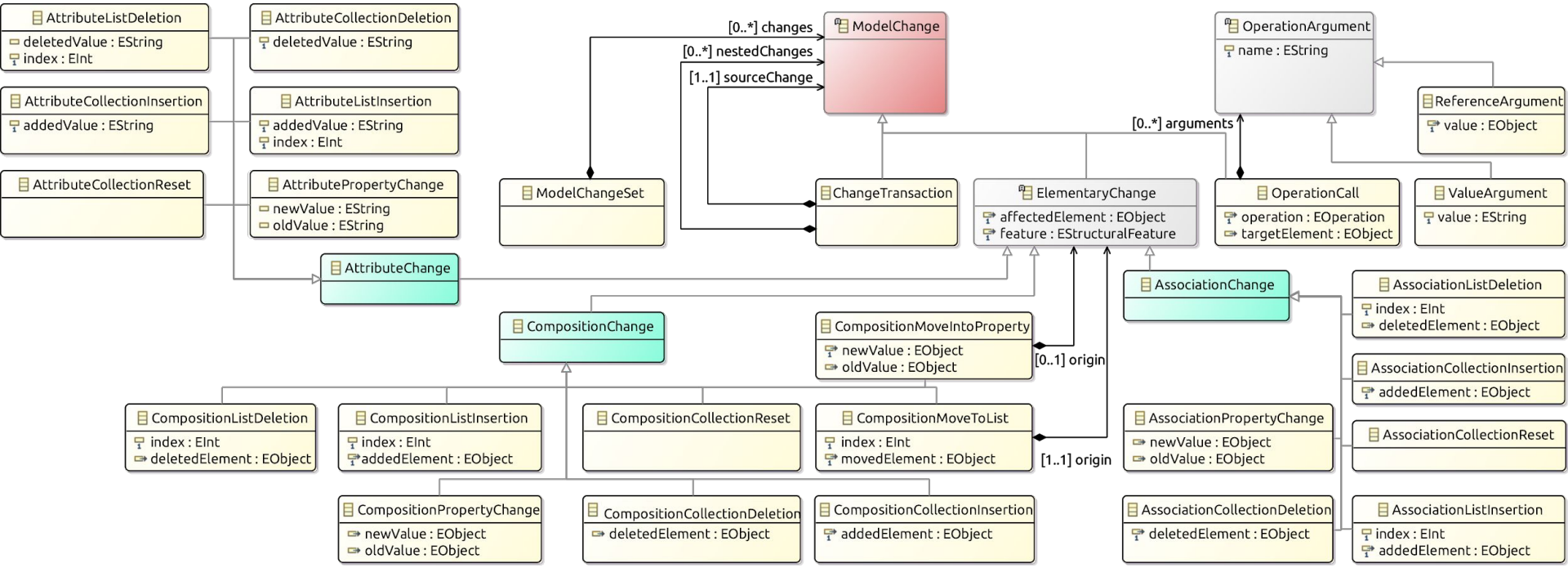
- BibTeXFile contains BibTexEntry instances of various types
- Types use multiple inheritance extensively:
  - AuthoredEntry, TitledEntry, DatedEntry, BookeTitledEntry

Output metamodel: Docbook



- DocBook has Book
- Book has Articles
- Three levels:
  - Sect1 (has Para)
  - Sect2 (has Para)
- Sect1 and Sect2 have titles

Extra metamodel: Changes (optional)



ModelChangeSet has ModelChange instances of various types.

Containment is used for addition of elements (keeping the change model standalone)

Concerns for this case

- Performance:
  - Of the transformation - reference struggles with 10k!
  - Of the consistency checking itself
- Convenience
  - Ideally, the tx should provide consistency checking
- "Noisiness"
  - Do we want *all* inconsistencies, or a reduced set?
- Conciseness, usability, understandability...

Tooling for the case

- Generator
  - Can produce BibTeX of arbitrary size
  - Random titles, journals, authors, paragraphs...
- Mutator
  - Applies a number of random changes to the Docbook
  - Add Para, swap Para/Sect1, remove Para/Sect1, extend Para
- Reference solution (Epsilon Validation Language)
  - Checks for consistency between documents
  - Source for expected results
  - May be a bit noisy: dropped Sect1 produces many inconsistencies instead of only one (issue #4 on Github)

Performance figures

Too many figures to put here!

Let's go through the diagrams folder.

Note: Epsilon results are in n1-standard-2 machines due to lack of time.
Currently re-running in c2-standard-4...

Time for the presentations!

http://bit.ly/ttc19-bib2doc