Université de Montréal

GOFAISUM
A Symbolic Summarizer

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Originality of our approach

- Symbolic approach
  - Syntactic parser that produces an XML file
  - Tree transformations using only XSLT rules (700 lines) no Java, no C++, no Perl, no Python...
- No *outside* language information
  - no gazeeter, no Wordnet
  - ROUGE only used for evaluation not within the system itself

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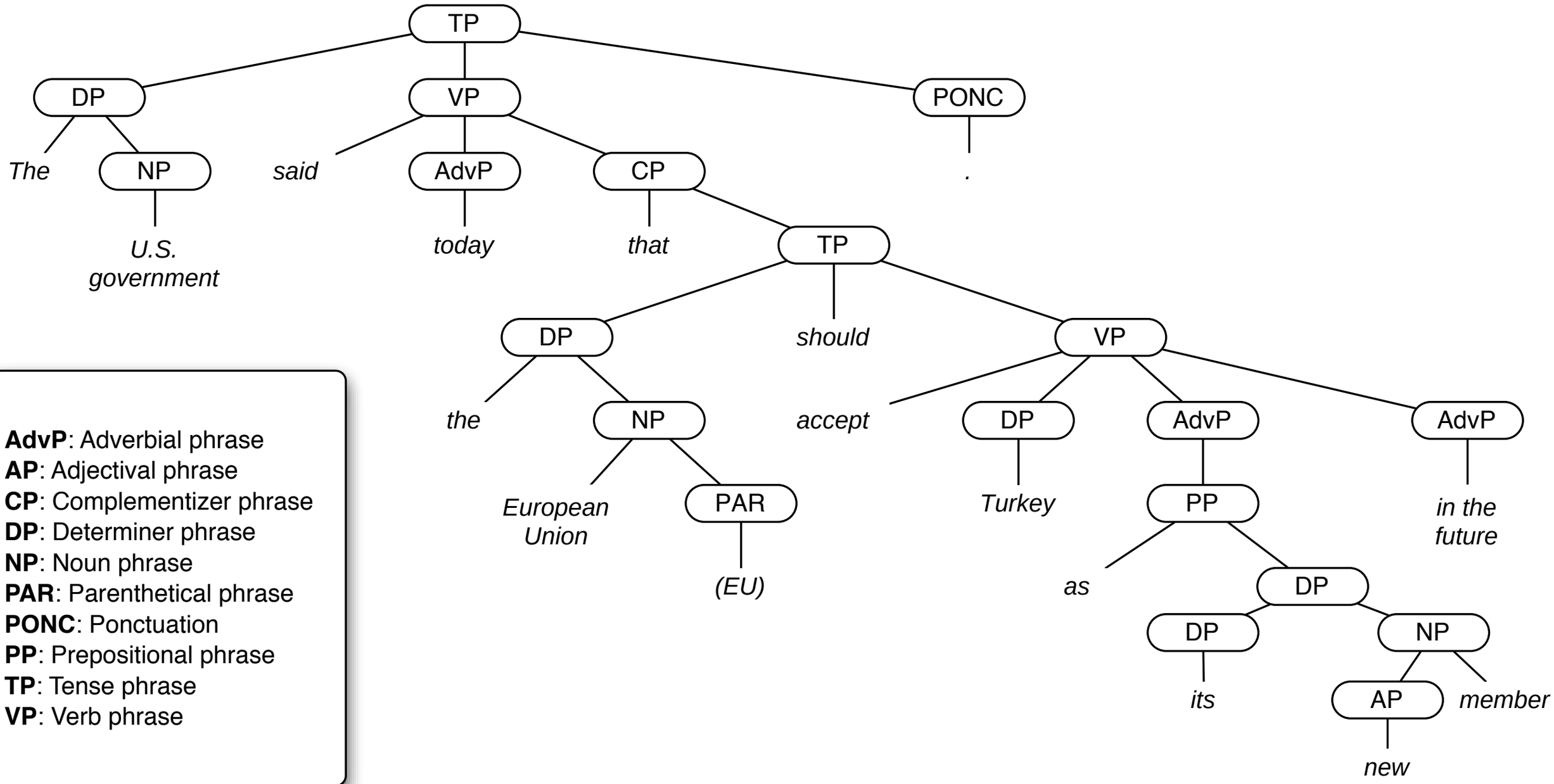
FIPS output for

The U.S. government said today that the European Union (EU) should accept Turkey as its new member in the future.



AdvP: Adverbial phrase
AP: Adjectival phrase
CP: Complementizer phrase
DP: Determiner phrase
NP: Noun phrase
PAR: Parenthetical phrase
PONC: Ponctuation
PP: Prepositional phrase
TP: Tense phrase
VP: Verb phrase

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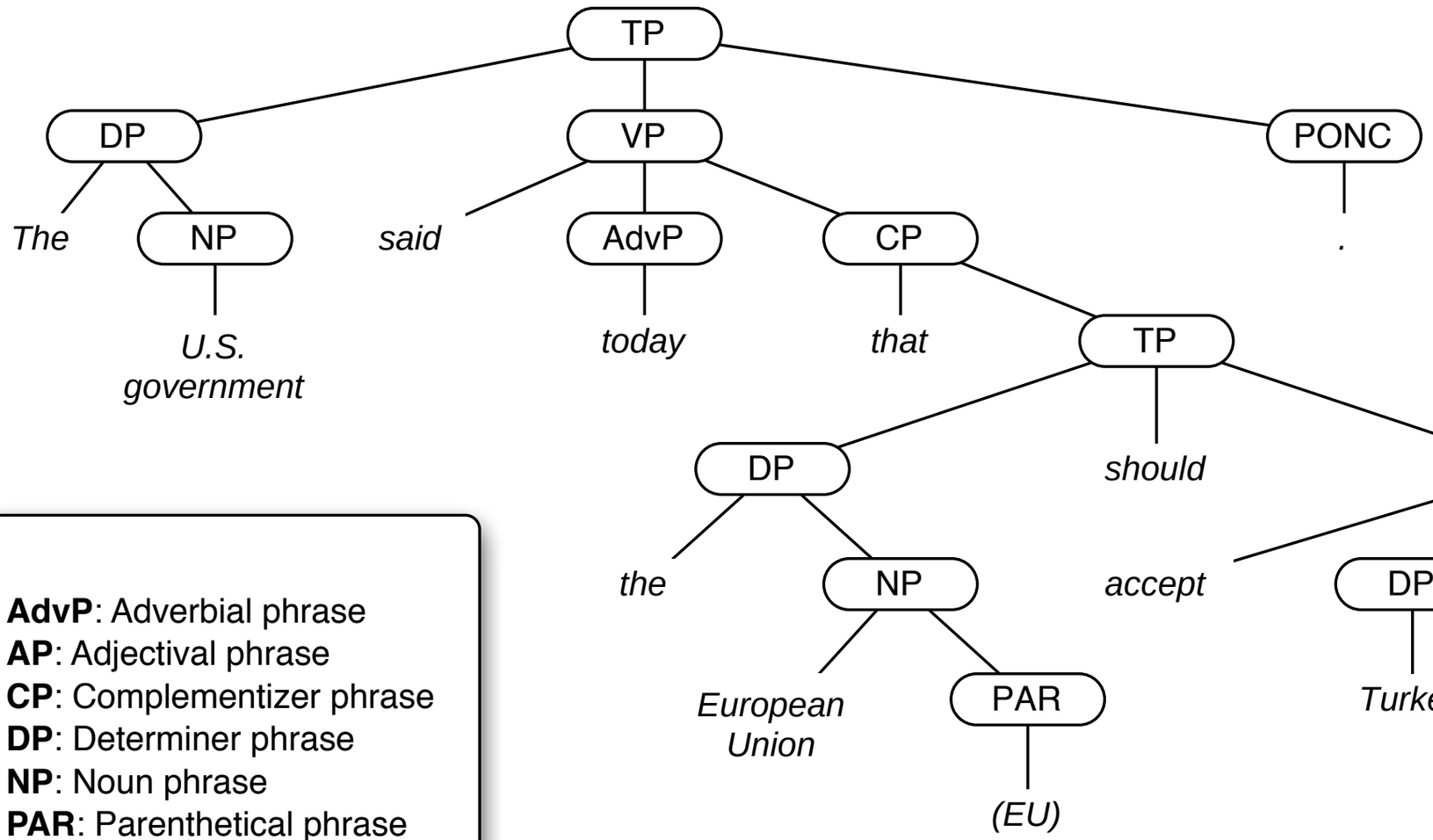

Full parse of sentences
71% for docs
93% for topics

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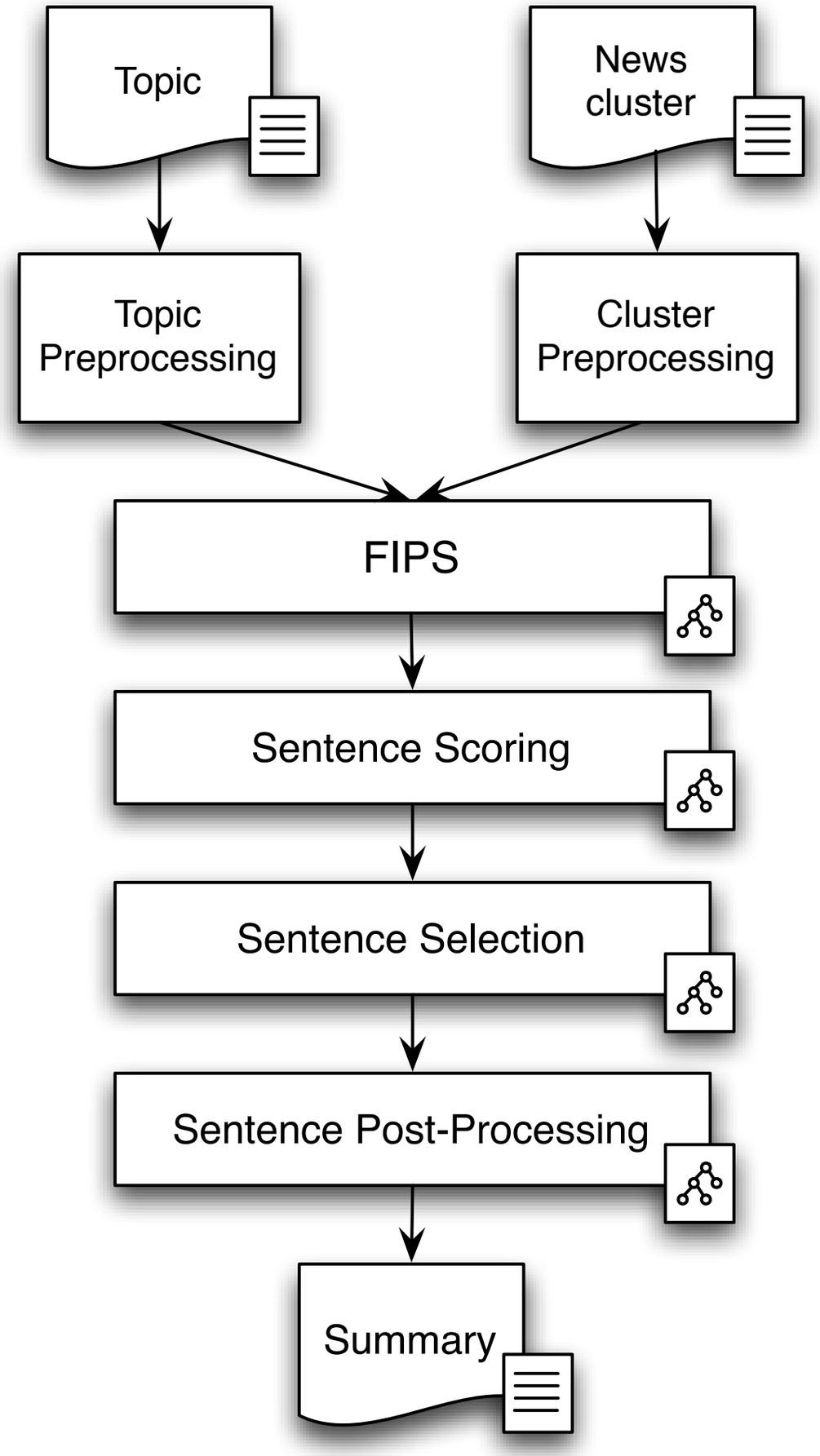
Topic
News cluster
Topic Preprocessing
Cluster Preprocessing
FIPS
Sentence Scoring
Sentence Selection
Sentence Post-Processing
Summary

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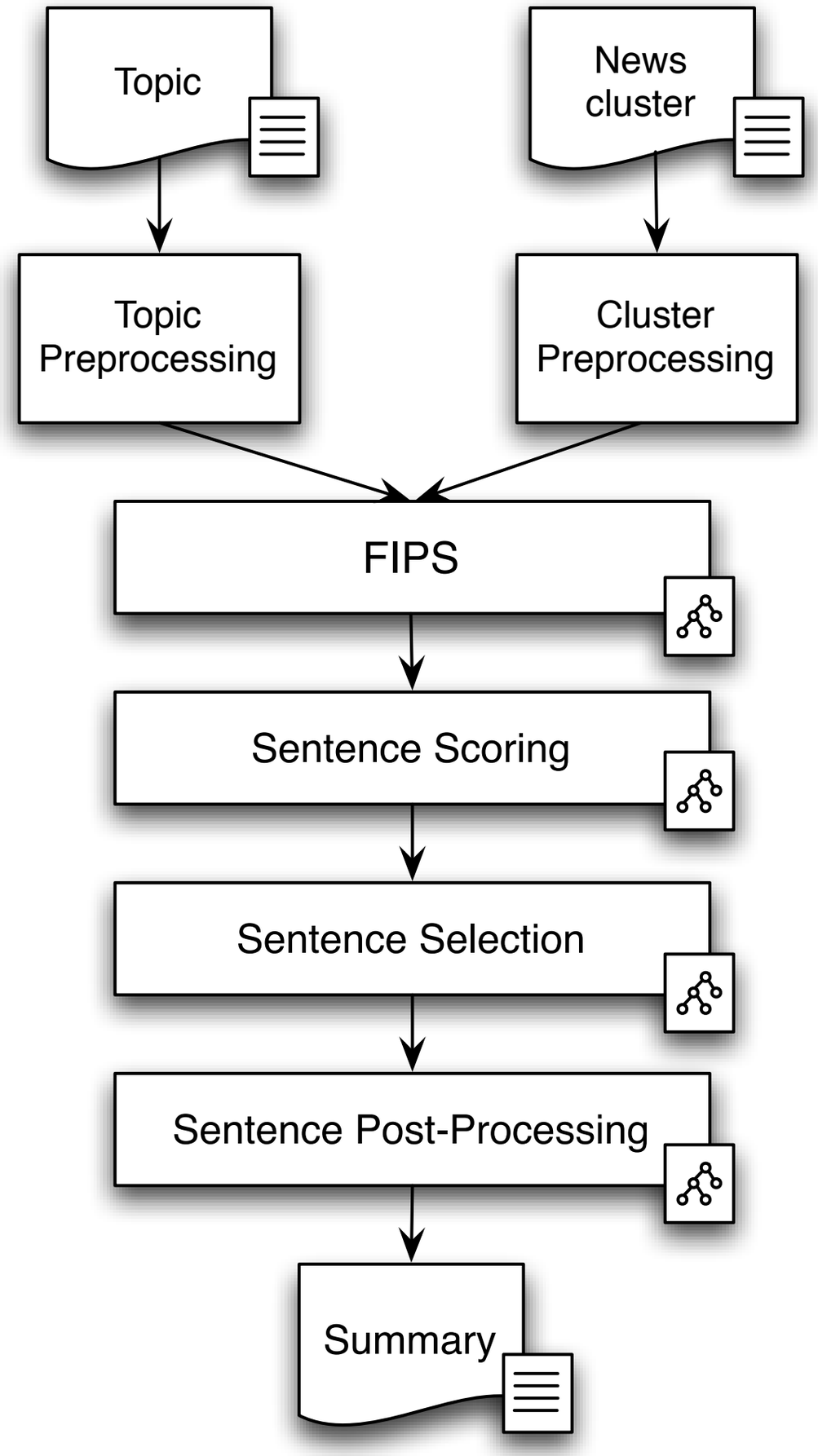

Minutes per cluster (25 articles)

0.1

4.0

4.0

0.1

Total: 8.2

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Sentence scoring

- Word-based *tf·idf* similarity score (15%)
- Lemma-based *tf·idf* similarity score (50%)
- Lemma-based *tf·idf* similarity score with node depth (5%)
- Sentence weight (20%)
- Absolute sentence position (10%)

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Sentence selection

- Keep sentences with the highest scores
- Sentences are dismissed (regardless of score) if
  - they cannot be parsed by FIPS (29%)
  - duplicate from different documents (4%)
  - without a verb (5%)
  - with the « I » pronoun (3%)
  - ending with « : » or « ? » (2%)
  - with all upper case words or with less than 5 words (4%)

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Sentence post-processing

- Referential clarity
  - some pronouns are removed
    Climate is changing, he said ⇒ *Climate is changing*
  - ambiguous temporal references are fixed
    - Reference to the present day ⇒ date of document
    - Day of the week ⇒ month and year of document
    - No repetition of a date within a summary
- Sentence compression by pruning *non-essential* subtrees (e.g. parenthetical expressions)

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Results

- Content (11th)
- Linguistic quality (5th)
- Bad non-redundancy (23rd)
- Pyramid: 8th over 11

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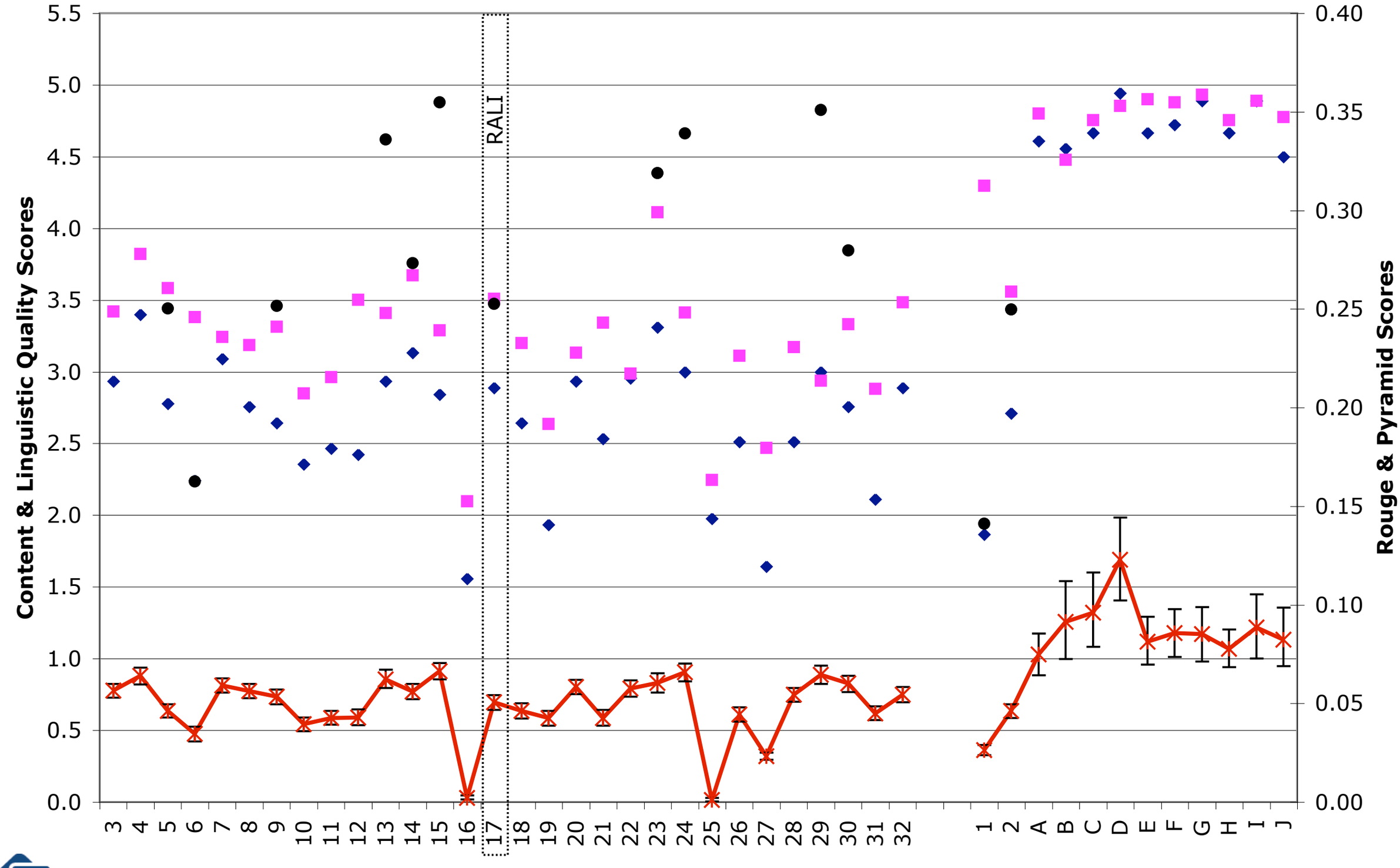
DUC 2007 Average Scores



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Possible Improvements

- Parsing : dedicated lexicons
- Anaphora resolution with pronoun resolutions
- Reduce redundancy with internal *tf·idf*
- Better pruning of subordinate clauses, adjectival and adverbial modifiers

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Combine with Wordnet, Gazetteers, etc

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Conclusion

- Simple and powerful
- Back to the roots of AI
- Modern tools and reliable syntactic parsers open new possibilities for principled summarization

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