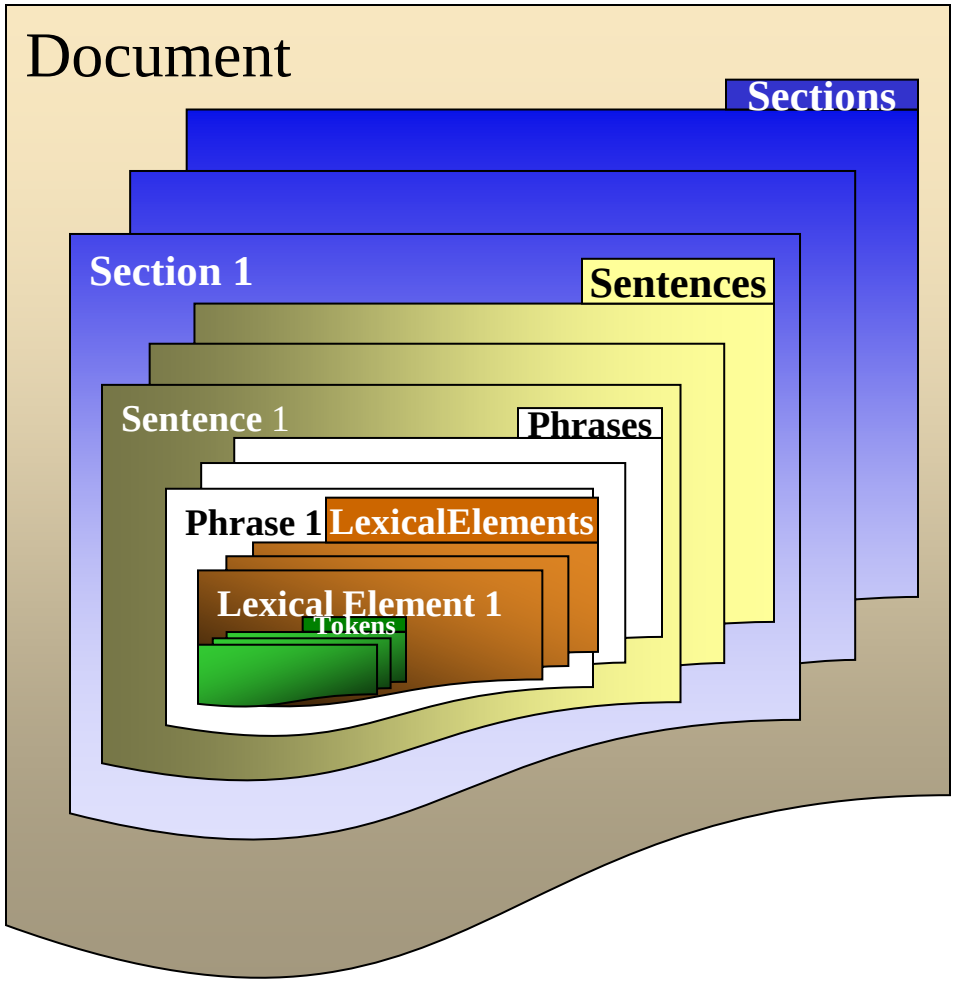
Additional NLS Tools

- NLS's Java NLP tools
- MMTx
- GSpell

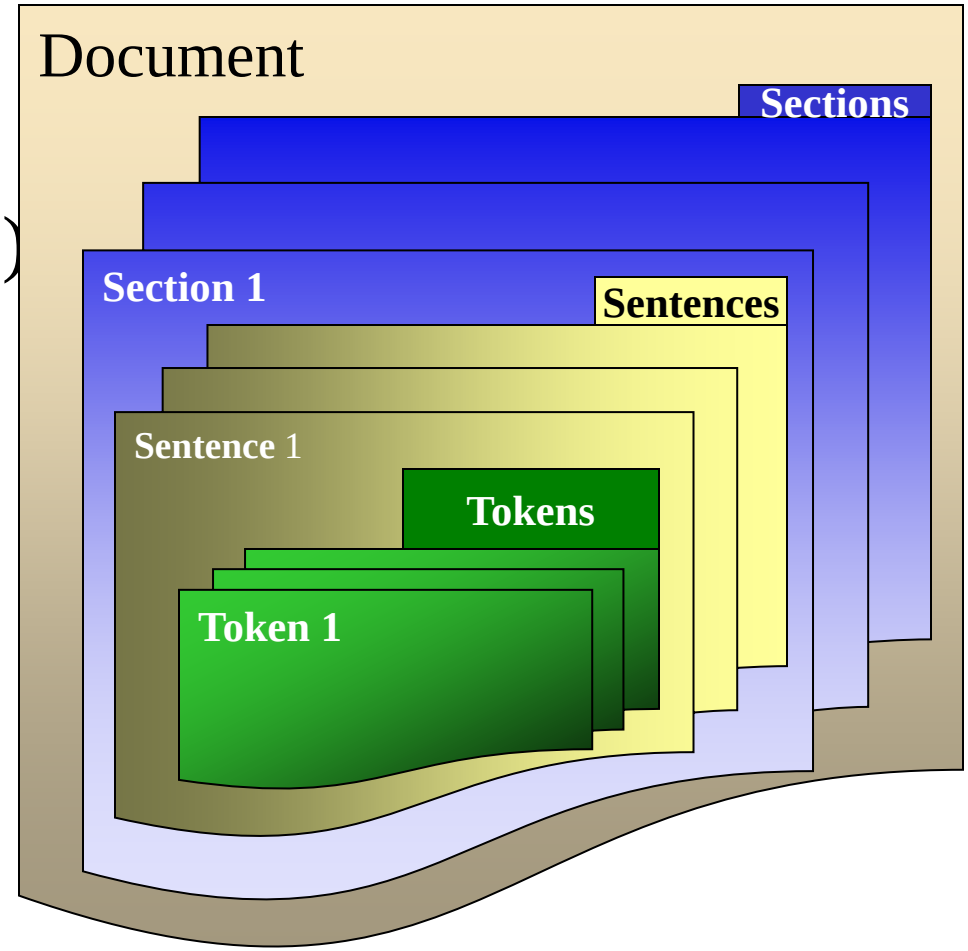
NLS Java NLP Tools

- Tokenizer
- Lexical Lookup
- NP Parser
  - Document Centric
  - Java Programs and API's



Java NLP Tools: Tokenizer

- Tokenizes text into
  - Sections (paragraphs)
  - Sentences
  - Tokens
- Can handle
  - FreeText
  - HTML
  - MedLINE Abstracts



Java NLP Tools: Tokenizer

Usage

tokenize.[*bat*|*sh*] [*Options*]

--fileName=*fileName*

--outputFileName=*fileName*

--inputType=[*freeText*|*HTML*|*medlineCitations*]

--sections

--sentences

--tokens

--pipedOutput

--indicate_citation_end

Java NLP Tools: Tokenizer

```
tokenize.bat --inputFile=5.txt --inputType=freeText --sentences --tokens
             --pipedOutput
```

Sentence|1|97|182|But those follow-up tests have been inconclusive, state and federal officials said.

Token|16|97|99|0|0|**But**|||

Token|17|101|105|1|0|**those**|||

Token|18|108|113|2|0|**follow**|||

Token|19|114|114|2|0|**-**|||

Token|20|115|116|3|0|**up**|||

Token|21|118|122|4|0|**tests**|||

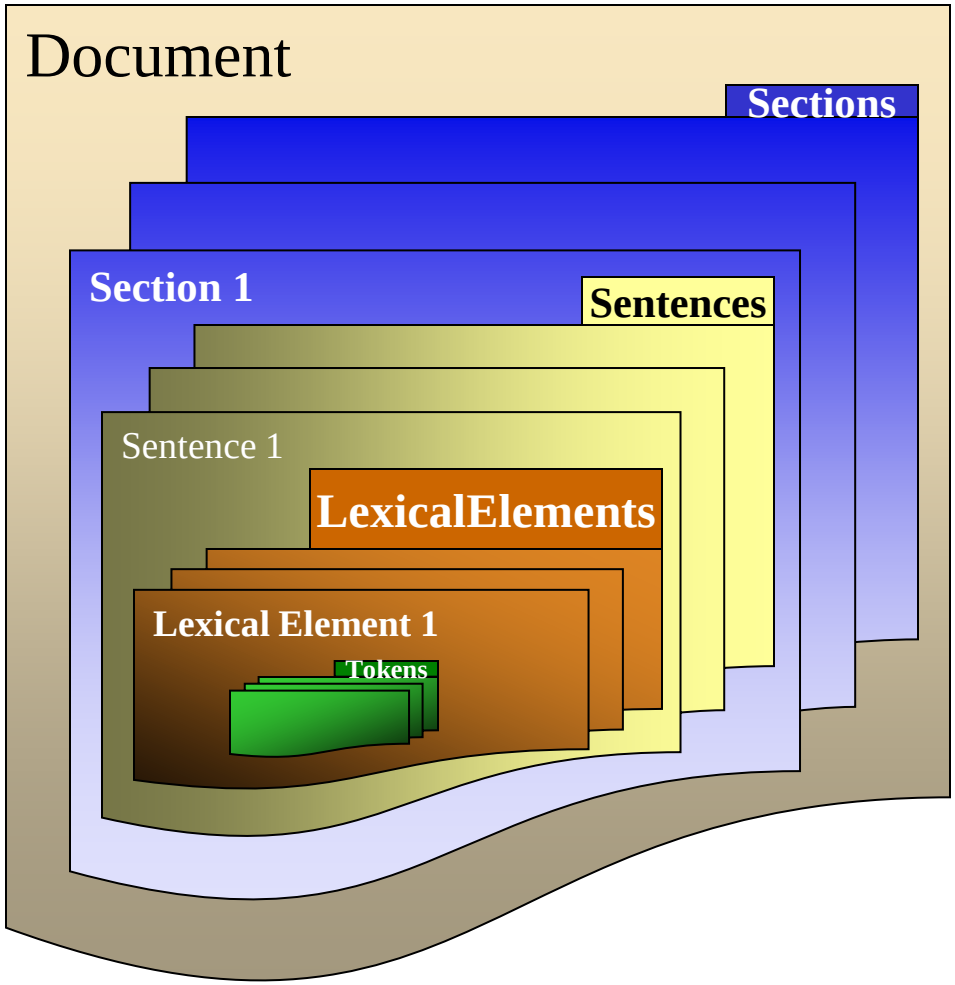
Token|22|124|127|5|0|**have**|||

Token|23|129|132|6|0|**been**|||

Token|24|134|145|7|0|**inconclusive**|||

NLP Tools: Lexical Lookup

- Chunks tokens into terms
  - From SPECIALIST Lexicon
  - From regular expressions



Java NLP Tools: Lexical Lookup

Usage

LexicalLookup.[*bat*|*sh*] [*Options*]

--fileName=*fileName*

--outputFileName=*fileName*

--inputType=[*freeText*|*HTML*|*medlineCitations*]

--sections

--sentences

--lexicalElements

--lexicalEntries

--tokens

--pipedOutput

Java NLP Tools: Lexical Lookup

```
LexicalLookup.bat --inputFile=5.txt --inputType=freeText
                  --lexicalElements --lexicalEntries --pipedOutput
```

Lexical Element|17|LEXICON|prep|**But**|97|99

LexicalEntry|but|conj|base|E0014465

LexicalEntry|but|prep|base|E0014464

Lexical Element|18|LEXICON|det|**those**|101|105

LexicalEntry|those|det|plural|E0060728

LexicalEntry|those|pron|base|E0060729

Lexical Element|20|LEXICON|adj|**follow-up**|108|116

LexicalEntry|follow-up|adj|base|E0028422

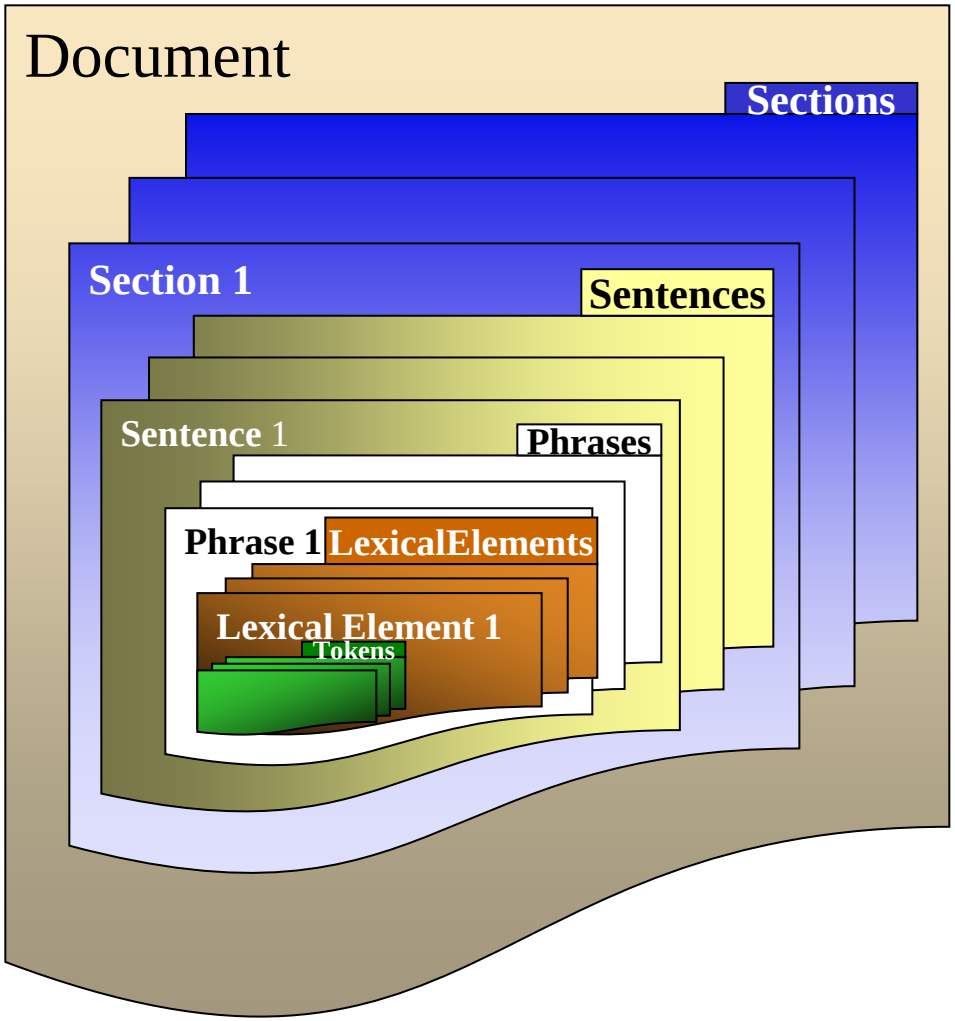
Lexical Element|23|LEXICON|noun|**tests**|118|122

LexicalEntry|tests|verb|pres3s|E0060349

LexicalEntry|tests|noun|plural|E0060348

NLP Tools: NpParser

- Chunks sentences into simple phrases



Java NLP Tools: NpParser

Usage

npParser.[*bat*|*sh*] [*Options*]

--**fileName**=*fileName*

--**outputFileName**=*fileName*

--**inputType**=[*freeText*|*HTML*|*medlineCitations*]

--**sections**

--**sentences**

--**phrases**|--**nps**|--**mincoMan**

--**lexicalElements**

--**lexicalEntries**

--**tokens**

--**pipedOutput**

Java NLP Tools: NpParser

```
npParser.bat --inputFile=5.txt --inputType=freeText --phrases
                    --pipedOutput
```

Phrase|0|0|10|**The company**|*company*

Phrase|1|12|14|**has**|

Phrase|2|16|24|**forwarded**|

Phrase|3|26|39|**some materials**|*materials*

Phrase|4|41|62|**to a state laboratory**|*state laboratory*

Phrase|5|64|74|**in Richmond**|*Richmond*

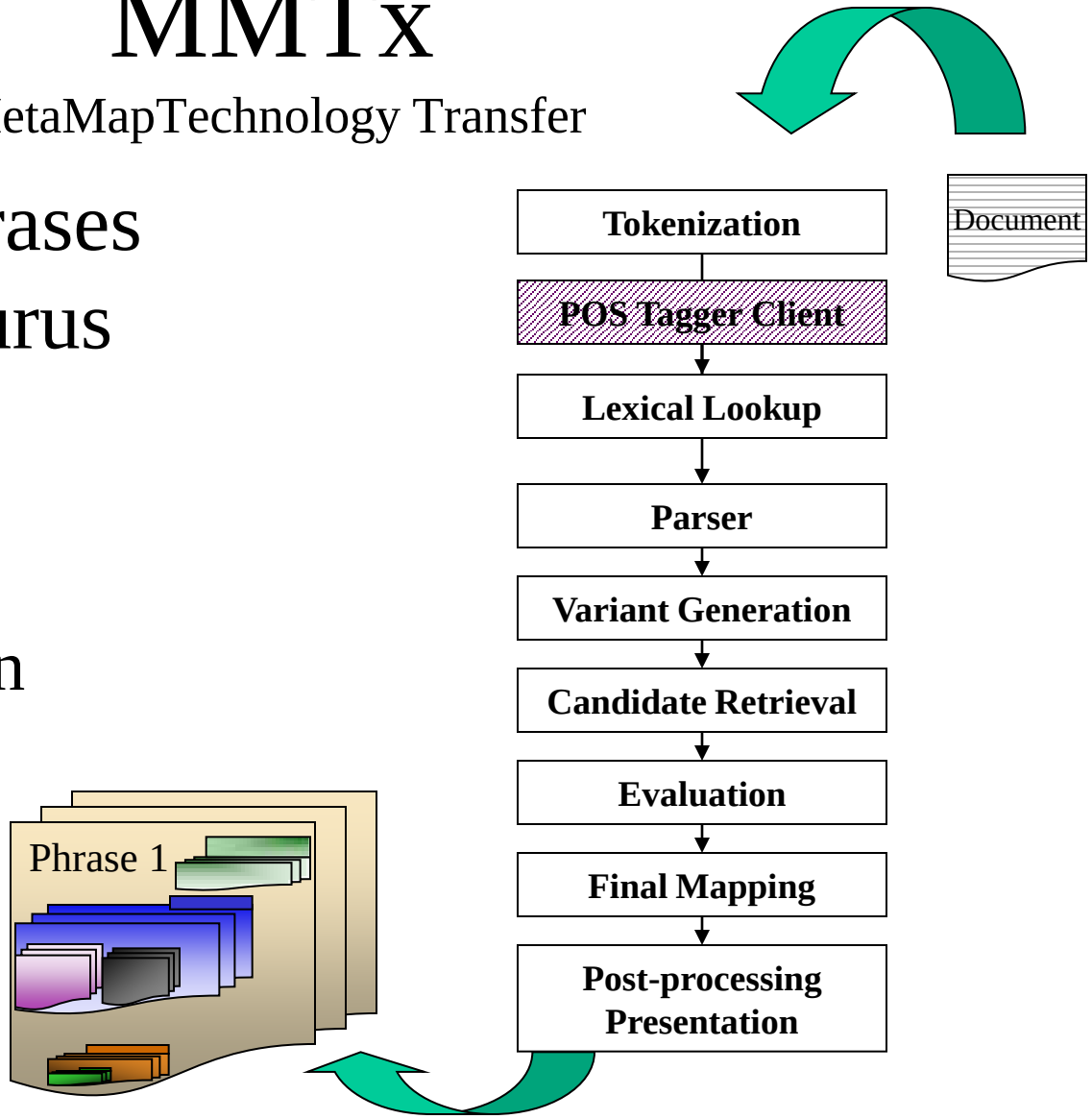
Phrase|6|76|86|**for further**|*further*

Phrase|7|88|94|**testing**|

MMTx

MetaMapTechnology Transfer

- Maps text phrases to Metathesaurus concepts
- Java Implementation of MetaMap



MMTx

Usage

MMTx [<*options*>] [**--fileName**=*infile*]
[**outputFileName**=*outfile*]
--strict_model|**--moderate_model**|**--relaxed_model**
--KSYear=*year*|**--mm_data_version**=*customName*
--threshold=*lowestScore*
--truncate_candidates_mappings
--term_processing|**--allow_overmatches**|**--allow_concept_gaps**
--composite_phrases
--prefer_multiple_concepts
--fielded_output

MMTx

```
MMTx --inputFile=5.txt --inputType=freeText
```

Processing 00000000.tx.3: ***One problem*** *is caused by the VecTest itself, which uses a* ***dipstick*** *to* ***measure*** *the* ***presence*** *of a* ***protein*** *associated with the* ***parasite*** *that causes* ***malaria****.*

Phrase: "**One problem**"
Meta Candidates (2)
  861 Problem, NOS [Finding,Pathologic Function]
  694 One [Quantitative Concept]
Meta Mapping (888)
  694 One [Quantitative Concept]
  861 Problem, NOS [Finding,Pathologic Function]

GSpell

"Gottlieb, I think I know why we've been receiving so few commissions."

GSpell

- Spelling suggestion tool
- Pure Java application with Java API’s
- Support for multi word dictionary entries

GSpell: Usage

Usage

GSpellFind.[*sh*|*bat*]

--**dictionary**=*NameOfDictionary*

[--**inputFile**=*Source*] [--**outputFile**=*target*]

[--**truncate**=*N*] [--**considerNCandidates**=*N*]

[--**maxEditDistance**=*N*]

[--**fieldedText**] [--**termField**=*X*] [--**correctField**=*Y*]

[--reportTime] [--version][--help]

GSpell: Example

Input Term	Suggestion	Edit Distance	Rank	Method	Message

anonomous|**anonymous**|1.0|0.873423016018023 6|NGrams|

anonomous|**allonomous**|2.0|0.581967226738810 8|NGrams|

anonomous|**autonomous**|2.0|0.581967226738810 8|NGrams|

anonomous|**anadromous**|3.0|0.29581601920820 48|NGrams|

anonomous|**analogous**|3.0|0.29581601920820 48|NGrams|

anonomous|**anomalous**|3.0|0.29581601920820 48|NGrams|

anonomous|**anonymously**|3.0|0.29581601920824 8|NGrams|

anonomous|**anonymes**|3.0|0.29581601920820 48|Metaphone|

anonomous|**anonyms**|3.0|0.29581601920820 48|Metaphone|

anonomous|**acoprous**|4.0|0.11470810702102521|NGrams|

GSpell: Indexing

Usage

GSpellIndex.[*sh*|*bat*]

--dictionary=*NameOfDictionary*

--inputFile=*SourceFile*

[--reportTime] [--version][--help]

- Format for the input file
  - One word per line

Downloadable Resources

- umlslex.nlm.nih.gov
  - Lvg
  - Java NLP Tools
  - GSpell
- mmtx.nlm.nih.gov

Lexical Tools for UMLS Developers

Allen C. Browne, Guy Divita, Chris Lu
Lister Hill National Center for Biomedical Communications

National Library of Medicine

Lexical Systems: umlsLex.nlm.nih.gov

Email: umlslex@nlm.nih.gov

Knowledge Source Server: http://umlsks.nlm.nih.gov

UMLS Information: http://umlsInfo.nlm.nih.gov