Aspects of intelligent Legal Research Solutions
Evolutions of Semantic Search in the Legal Domain

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Andreas Geyrecker
Overview

- LexisNexis - Brief Overview
- The State of Legal Research
- Knowledge Graphs
  - Why?
  - Use Cases
- Natural Language Processing
  - How it works
  - Use Cases
• Leading global provider of legal research and workflow solutions.
• Legal & Professional Solutions
• Risk Solutions
• Part of RELX Group, a global provider of information and analytics
• Offices in about 40 countries
• Customers in more than 180 countries
• Employs approximately 30,000 people
The State of Digital Legal Research

1970s

**Good At**
- Storing huge amounts of information
- Offering all the resources you may need
- Retrieving results quickly
- Locating every reference to your search string

**Working On**
- Providing an easy to use system
- Retrieving highly relevant results
- Retrieving the right amount of results
- Surfacing Connections and Cross References
- Recommending Documents
- Better understand Query Intent
- Improve Query understanding (NLU)
- Providing Answers

Today
The State of Digital Legal Research
Digital Legal Research - Directives

Understand my “natural language”

Give me suggestions

Give me answers, not results lists

Compute answers: Don’t give me search strings

Personalize my experience: Know me

Guide me

Give me a more human interaction

Help me navigate the data

Show me insights and analytics

Help me make winning arguments

Help me know when I’m done
Semantic Data Workflow

Content Repository

Data Sources

Classification
NLP Tools
Entity Extraction

Knowledge Graph

Search Index

APIs

Products

LexisNexis®
Knowledge Graph

- Represents a Knowledge Domain
- Nodes, Relationships, Labels, Properties
- Fast
- Easy to understand
- Schema-less for rapid, iterative development
- Good for doing complex traversal
- Can be enriched with ML assets
- Takes time to build a comprehensive, high precision graph

Use Cases:
Lexis SmartSearch, Visualizations/Analytics, Monitoring Legislation
Knowledge Graph
Use Case - Understanding Query Intent

Lexis 360 SmartSearch

QueryAnalyzer

GraphSearch
Use Case – Visualizations/Analytics

Lexis Advance – Ravel Integration

Quickly spot important cases and how other cases have treated them.

Lexis 360
Other Use Cases

- Recent important Cases
- Legislation Versioning
- Monitoring Legislation

MATCH (n:Dokument)-[:zitiert]- (d:Legislatur) <-[:voriger]-(f:Fassung) RETURN n,d,f
NLP – How it works

1. Texts are processed with NLP algorithms to identify parts of speech AND grammatical relationships
   - Noun (Kontaktrecht, Anspannung)
   - Adjective-noun (übereinstimmende Willenserklärung)
   - Noun-noun (Landesgericht Linz)
2. Stem/lemmatize and group terms with same meaning
3. Apply Statistical Measures \( tf/\text{idf} \), Page Rank – weight based on text corpus
4. Include Legal Analysis (Entity/Citation Extraction)
5. Query Knowledge Graph and Fulltext Search Index
6. Recommend Documents

Use Cases:
Recommendation Engine, Semi-automated Keyword Annotation, Natural Language Search
"Dritten kann keine Einsicht in den Sachwalterschaftsakt gewährt werden, auch wenn sie ein rechtliches Interesse darlegen. Ob eine Akteneinsicht ausnahmsweise möglich ist, wenn damit auch oder ausschließlich Interessen... OGH 20. 12. 2017, 10 Ob 66/17d"
Use Case - Natural Language Search

Lexis Answers

Results for: What is the statute of limitations for medical malpractice?

Medical malpractice

The statute of limitations, 28 U.S.C.S. § 2401(b), bars a claim for medical malpractice unless it is presented within two years after such claim accrues.

Read more at: Sexton v. United States, 832 F.2d 629

U.S. Federal | US Court of Appeals for the D.C. Circuit | Nov 6, 1987

ROSS Intelligence

When is secondary liability with respect to copyright infringement established?

Blank Productions, Inc. v. Warner/Chappell Music, Inc.
S.D.N.Y. | January 2, 2013 | 11 Civ. 7927 (KMW)

"Secondary liability for copyright infringement may be imposed where a party has not committed direct infringement, but nonetheless played a significant role in direct infringement..."
Conclusion

• Innovation and Technology must serve the User
• Converting Data into Knowledge is a complex Task
• Our Solutions are never ‘done’

• It’s worth it