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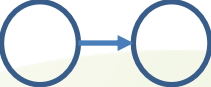

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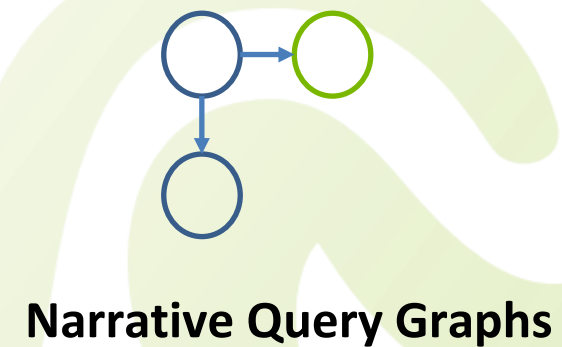
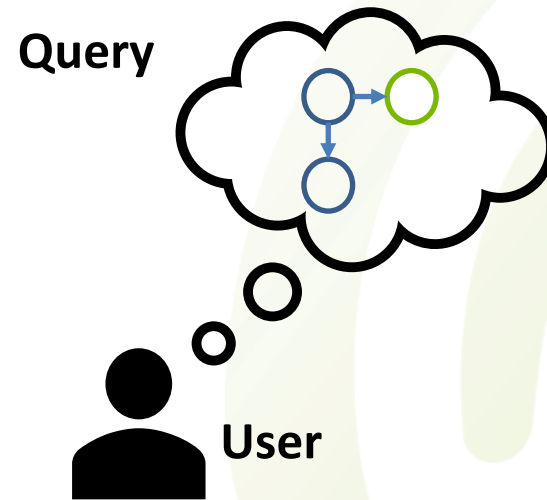
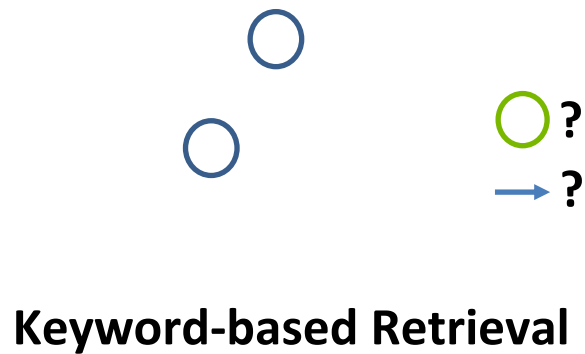
What a Publication Tells You – Benefits of Narrative Information Access in Digital Libraries at JCDL2022

**Hermann Kroll, Florian Plötzky,
Jan Pirklbauer and Wolf-Tilo Balke**
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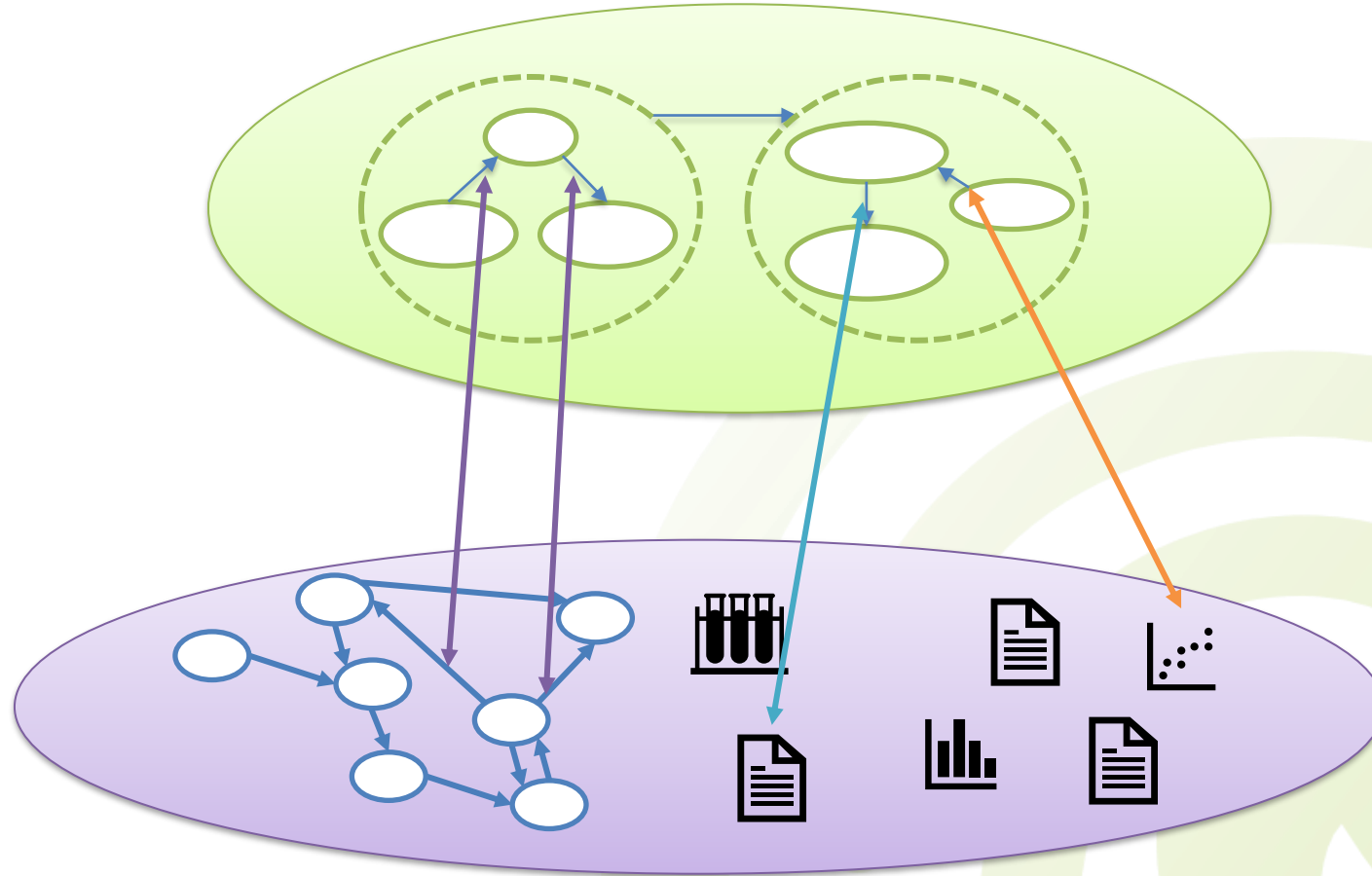
Why Narrative Information Access?

- Limitations of keyword-based retrieval:
 - **Challenging** to specify **interactions** between keywords 
 - **Do not feature placeholders/variables** 



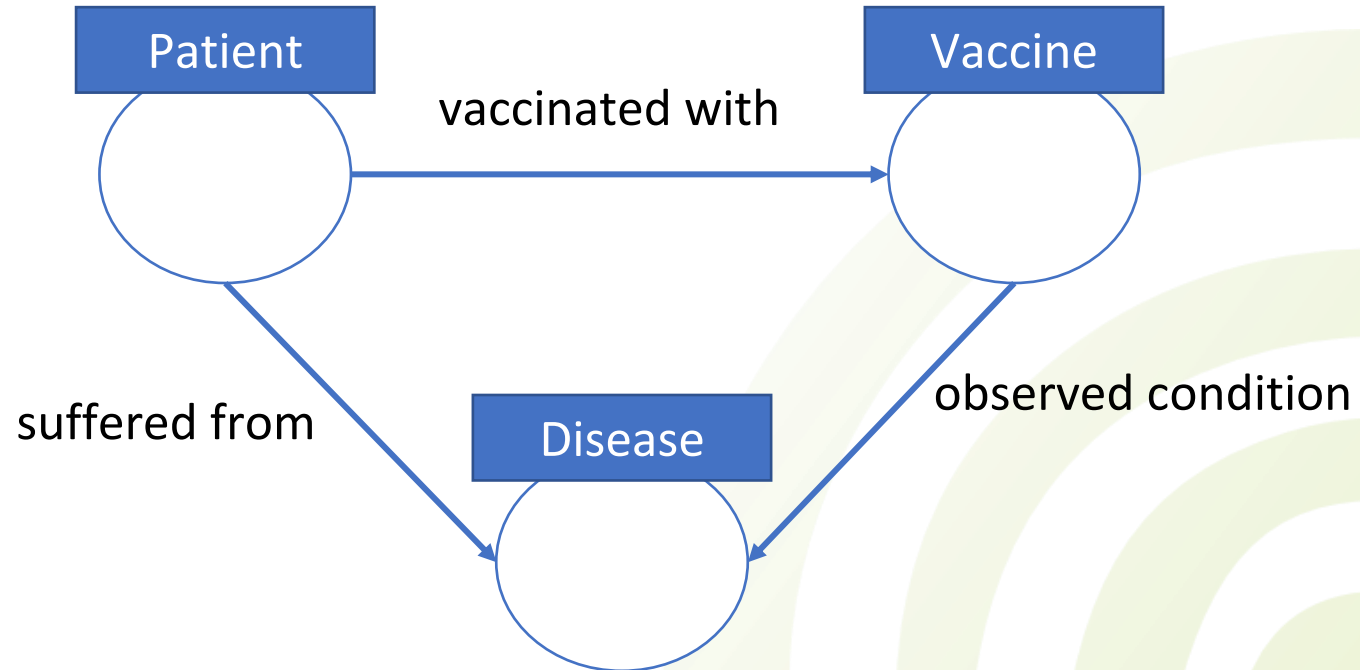


Why Narrative Information Access?



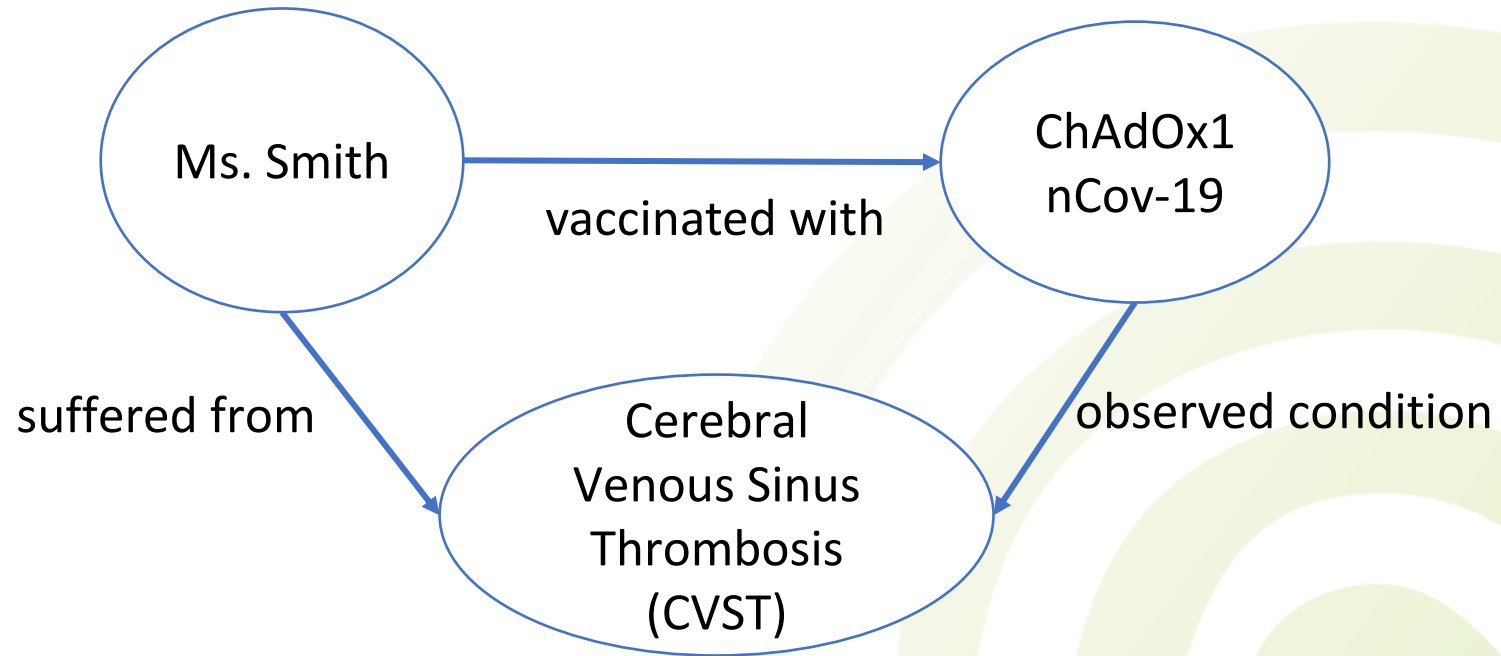


Narrative Pattern



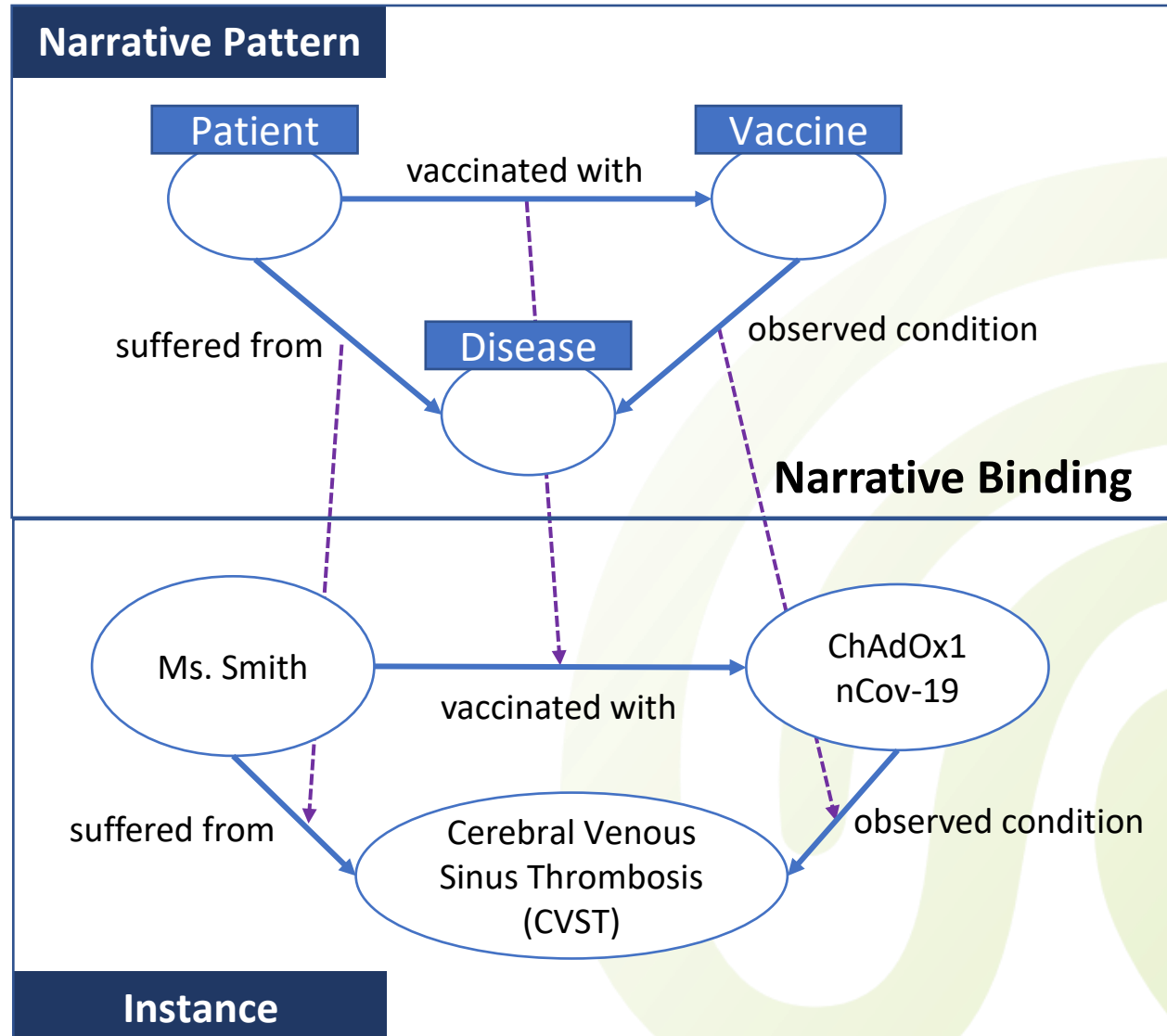


Instances of Narrative Patterns



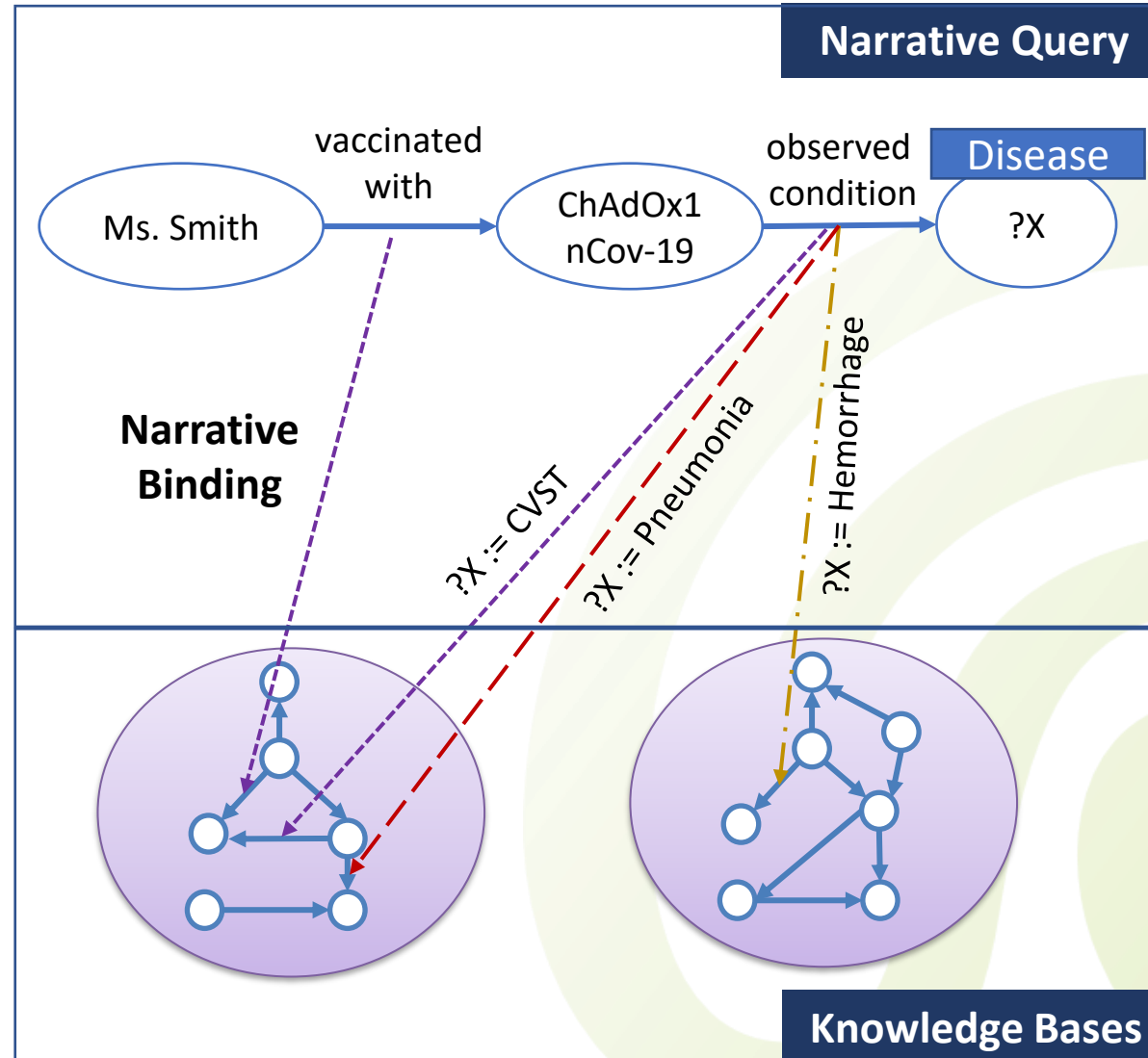


Instances of Narrative Patterns





Narrative Query Processing





Narrative Query Processing

- “Given a narrative query and a set of knowledge bases, the query processing has to:
 - a) **bind each individual query statement** against underlying data of the knowledge base(s) and
 - b) check the **context-compatibility** of the computed bindings.

The result of the query process is thus a set of valid bindings, individually binding all query statements and being context-compatible.”



Constraining Context

- *“We report a case of a 62-year-old man who developed cerebral venous sinus thrombosis with subarachnoid hemorrhage and concomitant thrombocytopenia, which occurred 13 days after ChAdOx1 nCov-19 injection.”*
 - *(patient, vaccinated by, ChAdOx1 nCov-19)*
 - *(patient, suffered from, cerebral venous sinus thrombosis)*



Corresponding Context

- *“Secondary analyses found increased risk of CVST after ChAdOx1 nCoV-19 vaccination (4.01, 2.08 to 7.71 at 8-14 days), after BNT162b2 mRNA vaccination (3.58, 1.39 to 9.27 at 15-21 days), and after a positive SARS-CoV-2 test.”*
 - *(ChAdOx1 nCov-19, observed condition, CVST)*
 - *(BNT162 Vaccine, observed condition, CVST)*
 - *(CVST, risk after vaccination, 4.01)*
 - *(CVST, risk after vaccination, 3.58)*



Is it a Domain-Specific Problem?

- Wikidata:
 - (Barack Obama, born in, Kenya)
 - Qualifier: „Stated in a Conspiracy Theory”
- DBpedia:
 - (Barack Obama, was, Senator of Illinois)
 - (Barack Obama, predecessor, Peter G. Fitzgerald)
 - (Barack Obama, was, U.S. President)
 - (Barack Obama, predecessor, George W. Bush)



Retaining Contexts

- N-Ary Relations:
 - *vaccinated_patients_suffer*: (*patient*, *suffered from*, *cerebral venous sinus thrombosis*, **ChAdOx1 nCov-19**)
- Explicit Context and Provenance Models:
 - *Context*: (*old man*, *vaccinated by*, *ChAdOx1 nCov-19*)
For: (*patient*, *suffered from*, *cerebral venous sinus thrombosis*)
- Implicit Contexts Models:
 - (*patient*, *suffered from*, *cerebral venous sinus thrombosis*)
Stated in source X which implicitly describes the context

PROV ○ Reification
Named Graphs
Qualifier





Context-Compatibility

- **Explicit** context models:
 - + High quality
 - + Explainability (Also for Compatibility)
 - + May build upon existing methods
 - Require manual curation
 - Require rules to determine compatibility
- **Implicit** context models:
 - Low/moderate quality
 - Not easy to explain (Compatibility may be based on textual measures)
 - + Cheap & Easy (reference to a source)
 - + Compatibility based on sim. measures



Narrative Information Access to Pharmacy

- Implemented NIA in pharmacy:
 - www.narrative.pubpharm.de
- Extension for Long Covid questions:
 - Which diseases are associated with Long Covid?
 - Which adverse effects are observed when vaccinating patients?



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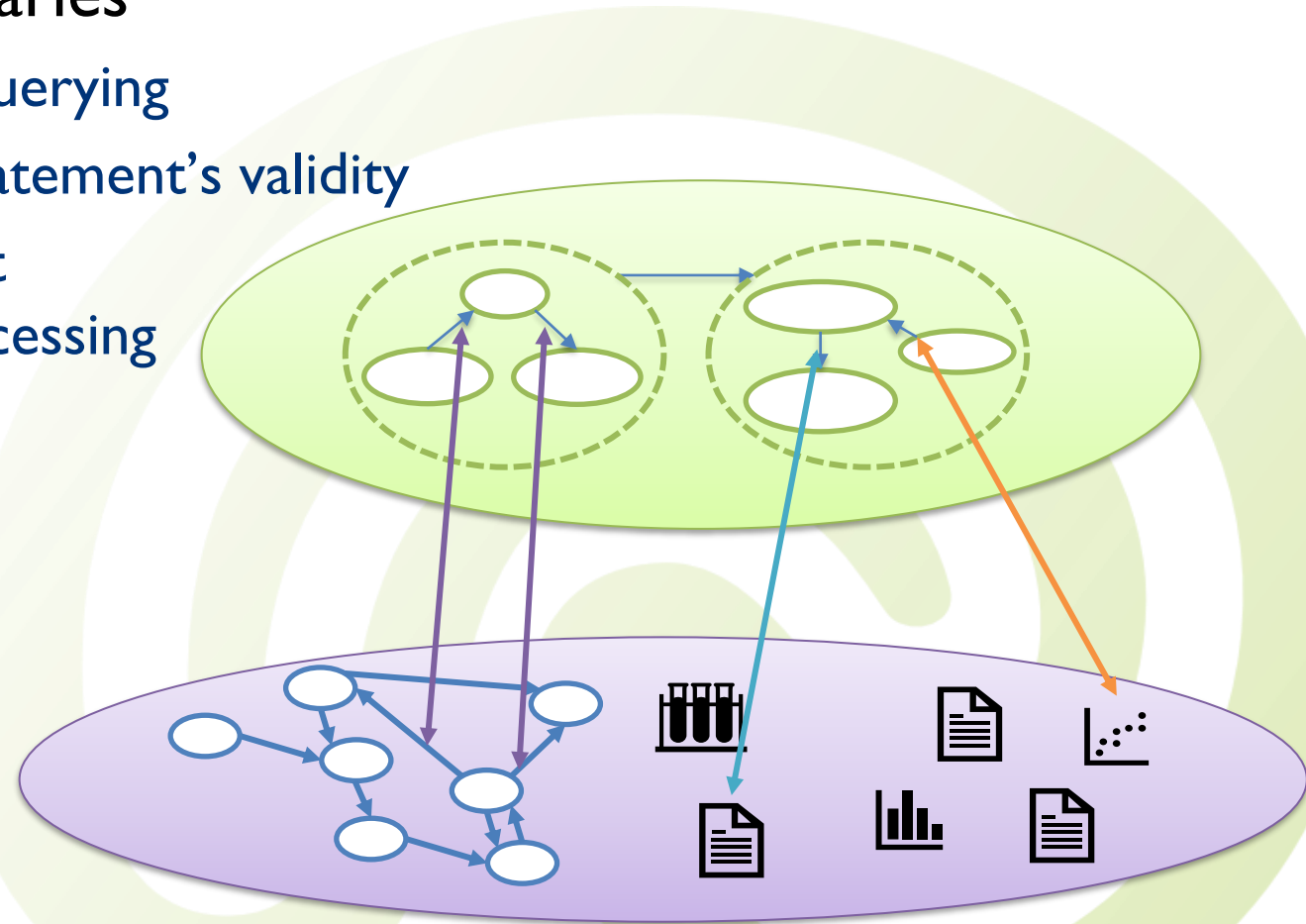
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Conclusion

- Narrative Information Access allows **precise** and **structured searches** in digital libraries
 - It is an extension to knowledge base querying
 - **Contexts** are **vital** to determine a statement's validity
 - Explicit & implicit context models exist
BUT must be considered in query processing





Thank You!



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If you have any questions,
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