"Big data makes common schemas even more necessary."
Working Agenda Outline

- OKN & Session: Overview and Recap
- Contextualizing knowledge involved in OKN
- Deep/heavy and Shallow/Lightweight approaches
- RDF ++ and OKN HealthCare exercises
Overview – Towards Open Knowledge and Apps

• Entity-oriented knowledge bases in the form of “graphs” now seem ubiquitous

• More structured “knowledge” is in personal assistants & consumer/search “Apps”

• Various companies have a version of a Knowledge Graph (KG)

  But they are private & thus maybe hard to extend for other uses

• Can we expand the use of knowledge graphs to build a large, open KG for diverse public applications?

• How do we do this? How deep are the semantics needed? What is the role of context?
Contextualizing Knowledge involved in OKN

From Craig Knoblock’s *Artwork to Cyber Attacks: Lessons Learned in Building Knowledge Graphs using Semantic Web Technologies*

**Steps To Build a KG**

- Extract from the WWW/SW using NLP/ML/AI
- Assisted by templates ID things people, places processes.
- Alignment Context.
- Ontology Context.
- KG Construction Context.
- Mapping attributes in data sources to classes in Ontologies.
- Extraction Context.

Diagram:

- Data Acquisition
- Feature Extraction
- Feature Alignment
- Entity Resolution
- Graph Construction
- Elastic Search
- Graph DB
- User Interface

Diagram shows the process of building a Knowledge Graph (KG) with steps including data acquisition, feature extraction, feature alignment, entity resolution, and graph construction, assisted by templates and using NLP/ML/AI.
Deep/heavy approach - Microtheories

The Cyc KB is divided into many (currently thousands of) “contexts” (or MTs)

MT essentially a collection of assertions that share a common set of assumptions -their facts are true (IST) in this assumed context;

Some MTs are focused on a particular

• domain of knowledge, interval in time, level of detail, etc.

Value:

Knowledge free from monotonic contradictions in its scope

assertions must be mutually consistent so no hard contradictions are allowed.

MTs allow us to focus development of the KB by gathering the most relevant information together.

MTs help the a knowledge engineer (KE) to focus on a coherent subset of information, rather than exhaustively searching through a vast KB field of knowledge.
Medium Deep/heavy approach ODP