Overview of test data

Two terminologies from **intensive care domain**

- OLVG list
  - **List** of reasons for ICU admission

- DICE list
  - **List** of reasons for ICU admission

- DICE hierarchy
  - Additional **hierarchical** knowledge describing the reasons for ICU admission

Overview of test data: OLVG list

- Developed at OLVG hospital
- Size: 1390 problems for ICU admission
- Description
  - **List** of problems for patient admission
  - Each problem is described with **one label**
  - Labels consist of 1.8 words in average

Overview of test data: DICE list

- Developed at AMC hospital
- List of 1460 problems for ICU admission
- Each problem is described using
  5 aspect taxonomies:
    - Abnormality (size: 85)
    - Action taken (size: 55)
    - Body system (size: 13)
    - Location (size: 1512)
    - Cause (size: 255)

Why mapping DICE list ↔ OLVG list?

Specific (DICE ↔ OLVG)

re-use of OLVG data in

- epidemiology,
- quality of care
- data-mining

Generic

- old CS problem ("schema integration")
- still wide open
- has new urgency
  - semantic interoperability
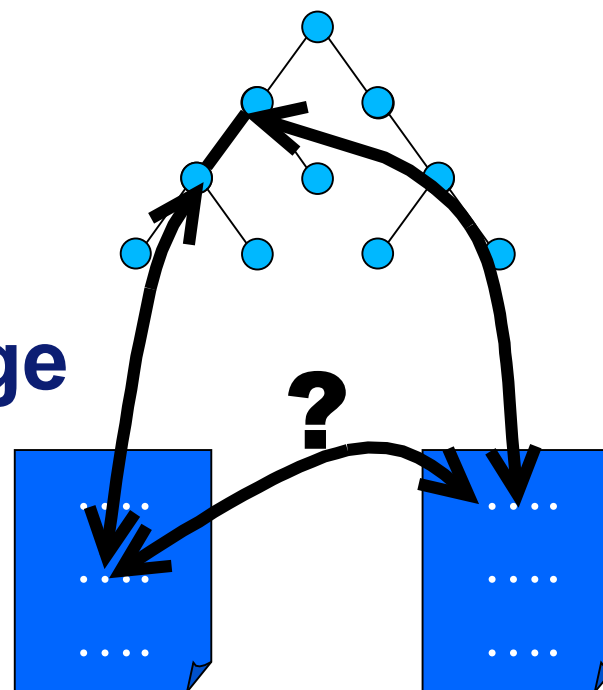 - Semantic Web

Our approach to ontology mapping

- Easy: Lexical matching
  - Matching on labels and synonyms
  - Heuristic method to discover equivalence or subclass relation

- **New: Semantic matching using additional knowledge**
  - Use properties of concepts
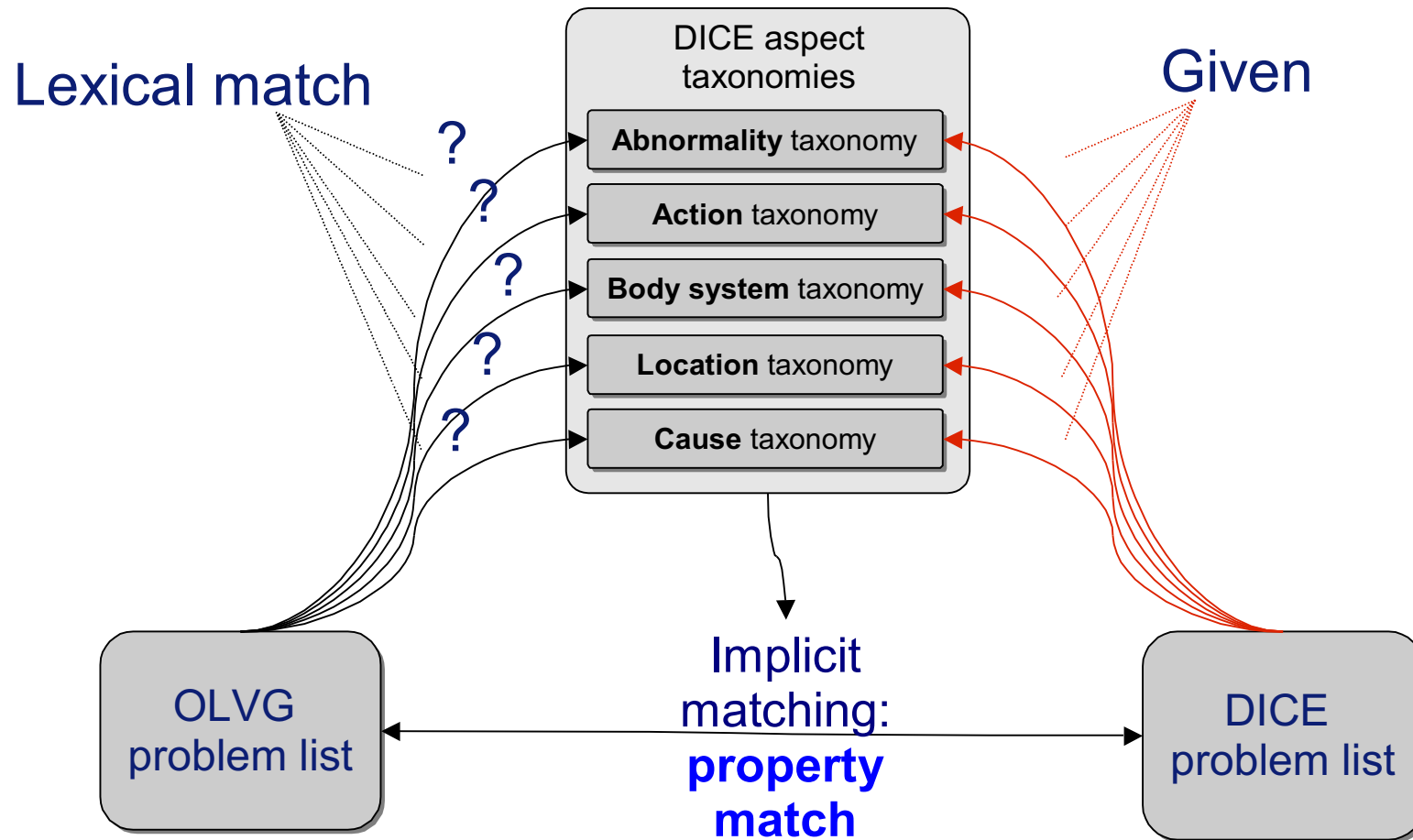 - Use other ontologies to discover relation between properties

Easy: Lexical match of term lists

- Compare each pair of concepts
- Use labels and synonyms of concepts
- Heuristic method to discover equivalence and subclass relations

Semantic match

Taxonomy of body parts

Blood vessel

is more general   is more general

Vein

Artery

is more general

Aorta

Lexical match:
has location

Reasoning:
implies

Lexical match:
has location

Aorta thoracalis dissection   Dissection of artery

Location match:
**has more
specific location**
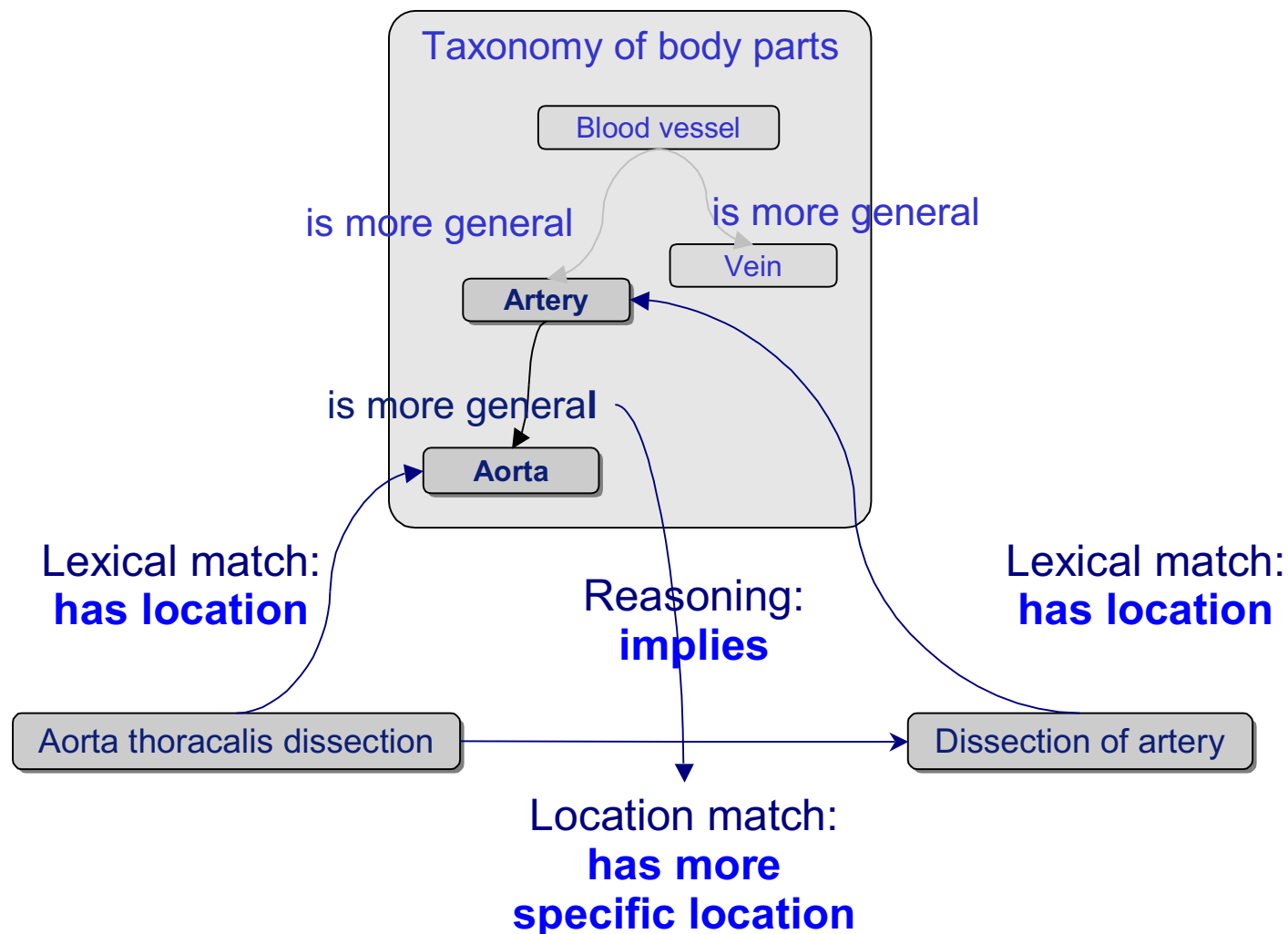
Results
Example matchings discovered

- *OLVG: Acute respiratory failure*
  DICE: Asthma cardiale   cardiale

- *OLVG: Aspergillus fumigatus*
  DICE: Aspergilloom   cause

- *OLVG: duodenum perforation*
  DICE: Gut perforation   abnormality

- *OLVG: HIV*
  DICE: AIDS   cause

- *OLVG: Aorta thoracalis dissectie type B*
  DICE: Dissection of artery   location

Example: *"Heroin intoxication"* – *"drugs overdose"*

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Cause taxonomy

Drugs

is more general

Heroine

Lexical match: **cause**

Cause match: **has more specific cause**

Lexical match: **cause**

Heroin intoxication

Drugs overdosis

Abnormality match: **has more general abnormality**

Lexical match: **abnormality**

Lexical match: **abnormality**

Abnormality taxonomy

Intoxicatie

is more general

Overdosis

Research

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