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Mapping Legacy Terms to SNOMED CT® Challenges and Lessons Learned

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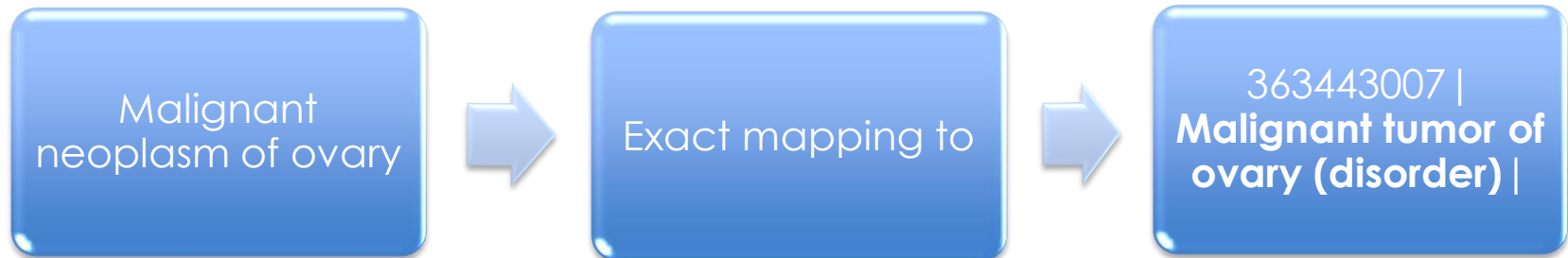
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Objectives

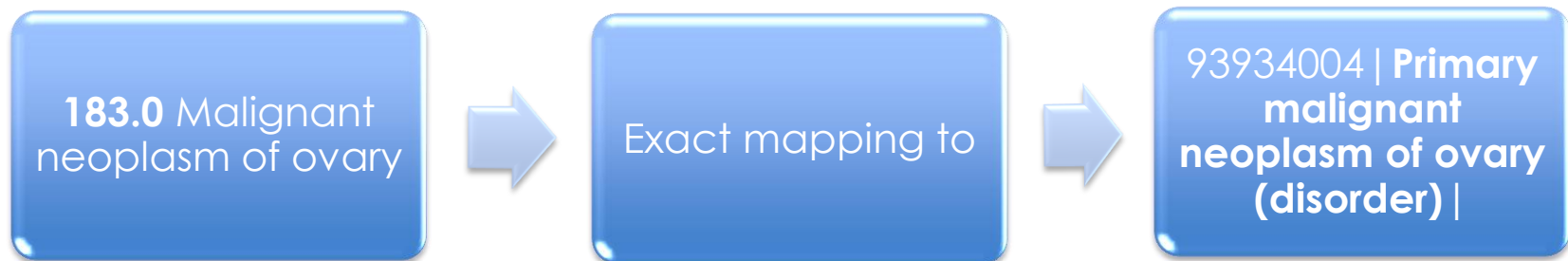
- **Overview of formal methodology for mapping client legacy content**
 - **Development of use case specific heuristics**
 - **Rigorous QA processes**
- **Development of Master Database containing multiple client mappings**
 - **Reasons for development**
 - **Analysis of variances**
 - *Across projects for lexically identical terms*
 - *Determine cause of variance*

Mapping Use Case

- **Mapping the client term**



- **Mapping the client term based on link to external code system (ICD-9)**



Pilot Mapping

- **Determine overall heuristics for project**
- **Small sample identified**
- **Heuristic document for initial discussion prior to pilot mapping**
- **Output is a draft heuristics document signed off by client**
 - **Heuristics document modified as new issues are identified**

Mapping Complexity

- **Exact Match mappings**
 - **One to One**

Rett's
Syndrome

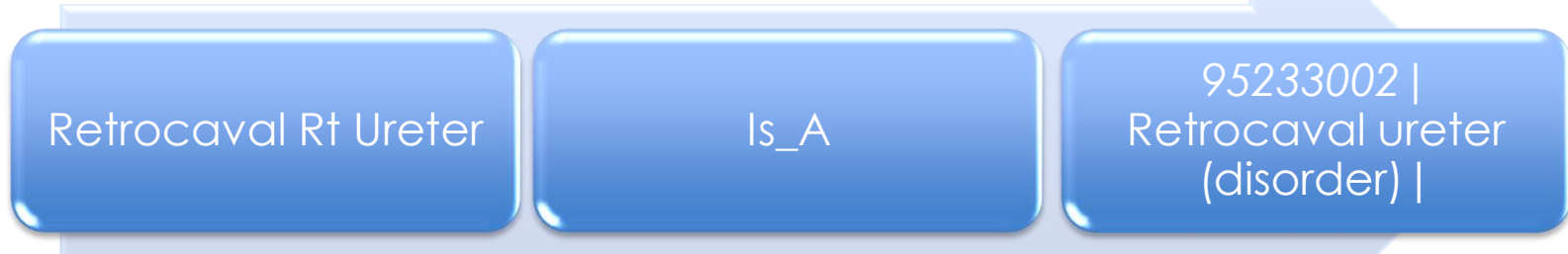
Exact
mapping

68618008 |
Rett's
disorder
(disorder) |

Mapping Complexity

- **Broader than mappings**

- **Is_A**



- **Post-coordination**



Benefit of Broader Than Mapping

- **Data aggregation**
- **Maintenance using new subtype query**

Release Date	Client Term	Mapping Type	SNOMED CT mapping
Jan 2009	Mandibular hyperplasia	Broader than	Disorder of mandible (disorder)
July 2010	Mandibular hyperplasia	Exact	Hyperplasia of mandibular bone (disorder)

Technical Pre-processing

- **Eliminate redundant client terms**
- **Modify client data to fit in CAP mapping tools**
 - **if not using standard client data import file**
- **Load data**
- **Run automated mapping tools**
- **Create assignments**

Mapping and Review Strategies

- **Sequential Mapping and Review**
 - **Mapper**
 - *Reviews automated mappings*
 - *Creates primary mapping for review*
 - **Reviewer evaluates mapper's work and discusses the changes with the mapper**
- **Dual independent mapping with conflict resolution**
 - **Two mappers map the term independently and any conflicts are resolved between them**

Mapping Process

MONITOR

MAPPER

REVIEWER

Assign Mapper to specific assignment

Notify assigned Mapper by email or phone

Accept assignment

Map concepts

No Document questions

Assignment complete

Yes

Assign reviewer

Set assign COMPLETE and reassign to monitor. Notify by email or phone

Accept assignment

Review mappings

Mapping contain disagreement

No

No

Resolve disagreement

Yes

Set assign INCOMPLETE and reassign to mapper. Notify by email or phone

Assignment complete

Ready for export

Set assign COMPLETE and reassign to monitor. Notify by email or phone

Technical Post-processing

- **Confirm everything has been mapped or marked as unmappable**
- **Confirm “One-to-One” mappings have only one target**
- **Confirm all mappings are current for the specified terminology version and within the appropriate domain**
- **Perform additional metadata checks as specified in the heuristics document for the project**



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SNOMED CT Mapping Warehouse

SNOMED CT Mapping Warehouse

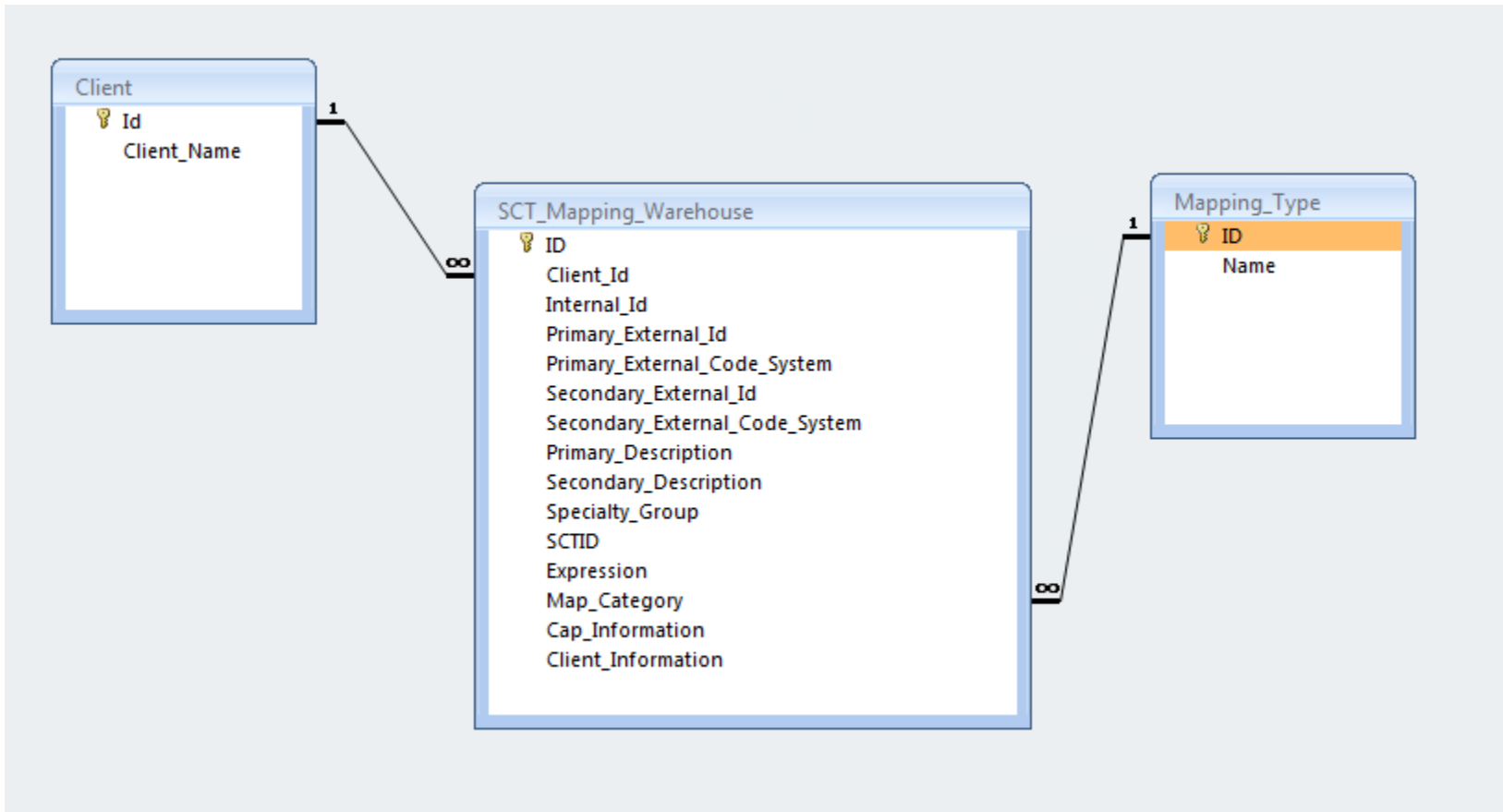
- **Common data format for research and future mapping guidance**
 - **Based on combination of previous client mappings**
- **Imported data from the last 4 years**
- **Spans multiple releases**
 - **Starting with January 2008 SNOMED CT Release**
- **Provides additional check to verify mapping consistency across clients,**
 - **Or identify reasons for variance**

SNOMED CT Mapping Warehouse

Data Input

- **Problem list mappings**
- **Not all client fields were used**
- **Client terms with outstanding unanswered questions for clients were excluded**
- **One client split into 3 separate client entries because of 3 separate mapping use cases**

SNOMED CT Mapping Warehouse Tables



Types of Mapping

62%

- Exact mappings

34%

- Broader than (Is_A) mappings

3%

- Required expert review

1%

- Not mappable

Preliminary Analysis

- **0.3% of mappings are to retired concepts**
- **7% have the same description**
- **0.4% have the same descriptions but different mappings**
 - **SNOMED concept did not exist at time of mapping**
 - **Different mapping heuristics**
 - **Incorrect mappings**
 - **Duplication in SNOMED**
 - **Ambiguity in SNOMED**
 - **Broader than choice**

Same Description Different Mapping

Concept did not exist at time of mapping

Mandibular hyperplasia

Client Term	Mapping Type	SNOMED CT
Mandibular hyperplasia	Broader Than	Disorder of mandible (disorder)
Mandibular hyperplasia	Exact	Hyperplasia of mandibular bone (disorder)

Facial Scar

Client Term	Mapping Type	SNOMED CT
Facial Scar	Broader Than	Scar (disorder)
Facial Scar	Broader Than	Scar conditions and fibrosis of skin (disorder)
Facial Scar	Exact	Scar of face (disorder)

Number of better mappings for Broader Than maps is probably much larger than the Description discrepancies

Same Description Different Mapping

Different mapping heuristics

Map to context of the code vs. map to description

Client Term	Mapping Type	SNOMED CT
Malignant neoplasm of ovary	Exact	Malignant tumor of ovary (disorder)
183.0 Malignant neoplasm of ovary	Exact	Primary malignant neoplasm of ovary (disorder)

Mapping to different hierarchies

Client Term	Mapping Type	SNOMED CT
Ileostomy	Exact	Ileostomy procedure (procedure)
Ileostomy	Exact	History of - ileostomy (situation)
Dog Bite	Exact	Dog bite (event)
Dog Bite	Exact	Dog bite - wound (disorder)

Same Description Different Mapping

Incorrect mappings

Enuresis

Client Term	Mapping Type	SNOMED CT
Enuresis	Exact	Urinary incontinence (finding)
Enuresis	Exact	Nocturnal enuresis (finding)

Tumor

Client Term	Mapping Type	SNOMED CT
Tumor	Exact	Tumor finding (finding)
Tumor	Exact	Neoplastic disease (disorder)

Same Description Different Mapping

Duplication in SNOMED

Growth hormone deficiency

Client Term	Mapping Type	SNOMED CT
Growth hormone deficiency	Exact	Somatotropin deficiency (disorder)
Growth hormone deficiency	Exact	Growth hormone deficiency (disorder)

Pyuria

Client Term	Mapping Type	SNOMED CT
Pyuria	Exact	Pyuria (finding)
Pyuria	Exact	Pus cells in urine (finding)

Same Description Different Mapping

Ambiguity in SNOMED

Thoracic spine pain

Client Term	Mapping Type	SNOMED CT
Thoracic spine pain	Exact	Dorsalgia (finding)
Thoracic spine pain	Exact	Pain in thoracic spine (finding)

Same Description Different Mapping

Broader than choice

Palatal Mass

Client Term	Mapping Type	SNOMED CT
Palatal Mass	Broader than	Mass of Oral cavity (finding)
Palatal Mass	Broader than	Palate finding (finding)

Sinus Pressure

Client Term	Mapping Type	SNOMED CT
Sinus Pressure	Broader than	Nasal sinus problem (finding)
Sinus Pressure	Broader than	Pressure (finding)

Lessons Learned to Improve Mapping Process

- **Standardize guidance on how to handle common heuristics**
 - **Eliminate different ways of mapping the same description**
- **Recommended improvements to tooling and training for mappers**
- **Provides previous mappings to guide mappers**
- **Identifies duplicates and ambiguous terms in SNOMED CT**
- **Heuristic guidance to help make consistent broader than choices**

Future of Mapping Warehouse

- Utilize the mappings in future projects for suggestions and QA
- Need to update mappings with new releases to fix retired mappings and updates for broader than mappings
- Representation of one to many mappings
- Add functionality to represent heuristics used for mapping
- Representation of use case for mappings

Questions



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