



More Than Words: Why Clinical Terminology Matters

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Speaker biography



A specialist in controlled clinical vocabularies with near 20 years' experience in health classification, terminology, and information standards.

Joined SNOMED International in 2023 as a map specialist and terminology author, focused on semantic interoperability and terminology integration to enhance global clinical data quality and promote the meaningful use of our health information.

Background

- Previously worked as a **clinical coding auditor** and **data assurance specialist**, gaining an extensive knowledge of structured data in **NHS acute providers** and the broader health sector.
- Previous adviser to the Royal College of Physicians and the Professional Record Standards Body on matters of coding and classification

 **Associate Director of Education at IHRIM** (2016–2023), managing the UK's **National Clinical Coding Qualification**.

 Guest lecturer at the University of Liverpool Institute of Population Health.



Illustration by VectorElements on UnSplash, <https://unsplash.com/@vectorelements>

The Invisible Backbone of Healthcare Data



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Terminology and Classification Standards | Clinical Data Modelling |
Semantic Interoperability | AdvFEDIP FHRIM MBCS |



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A Legacy of Language

From Hippocrates to the EHR

Medical terminology began 2,000 years ago to move medicine from narrative belief to **structured observation**.

Today, we document in digital infrastructures, but the requirement for shared clinical meaning remains.

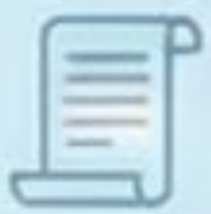
"If names are not rectified, speech will not accord with reality."
— Confucius



From Fragmented “State of Nature” to a Stable “Digital Commonwealth”

Healthcare data is trapped in fragmented systems. Without standardized semantics, clinical data is “messy” and difficult to compute.

Semantic Interoperability ensures that clinical intent remains unambiguous across IT systems and international borders.



“But the most noble and profitable invention of all other, was that of Speech, consisting of Names or Appellations, and their Connexion whereby men register their Thoughts; recall them when they are past, and also declare them one to another for mutual utility and conversation”
– Leviathan, Thomas Hobbes

Standardised Terminologies: Interface vs. Reference

Providing a common, computer-processable language across IT systems, healthcare settings, and countries.



Interface Terminologies

- Support clinicians in quickly entering precise patient details into EHRs.
- Display data using commonly used entry points.
- Allow customisation and translation for real-world usage (e.g., patient-friendly terms).
- Map back to a canonical reference terminology.



Reference Terminologies

- Standardised resource representing concepts from broad clinical domains.
- Act as a framework for aggregating and comparing data across systems.
- Provide formal computer-processable definitions.
- Represent maps to and from other code systems.
- Function as a 'hub' for comprehensive clinical content.



Key Note: SNOMED CT is a reference terminology. It can be used as an interface terminology but requires deep customisation, not designed for this 'out of the box'.

The Semantic Foundation of Modern Healthcare

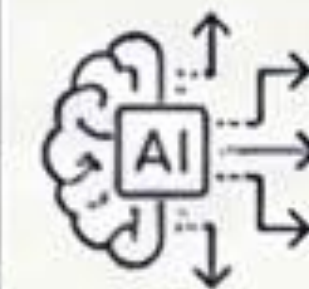
SNOMED CT: The Global Standard

SNOMED CT: The Global Language of Healthcare



Dual Function

Comprehensive reference terminology can that can function as an interface for clinical systems



Machine-Ready

Logic-based structure enables AI reasoning, decision support, and cross-border data sharing.



Clinical Depth

Created by medical experts for highly granular, point-of-care documentation (diagnoses, procedures, medications).



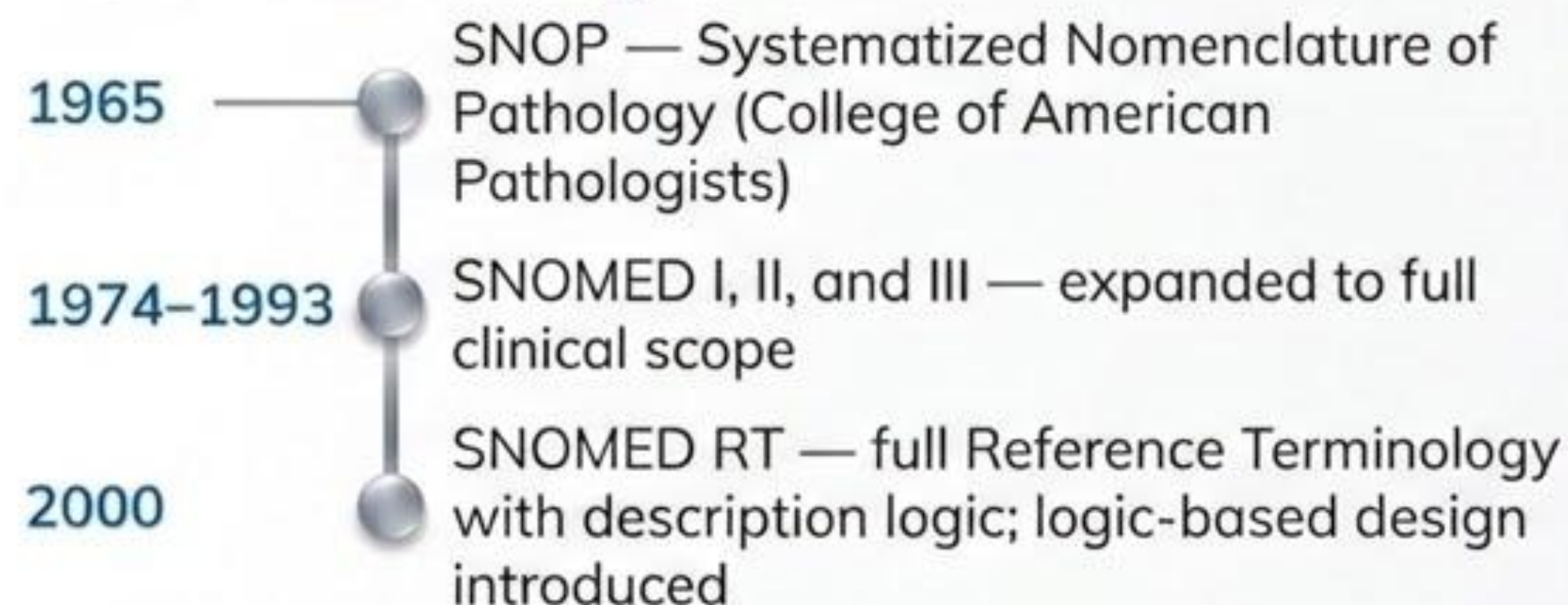
Global Reach

The most comprehensive clinical health terminology in the world. Available in multiple languages, bridging international systems.

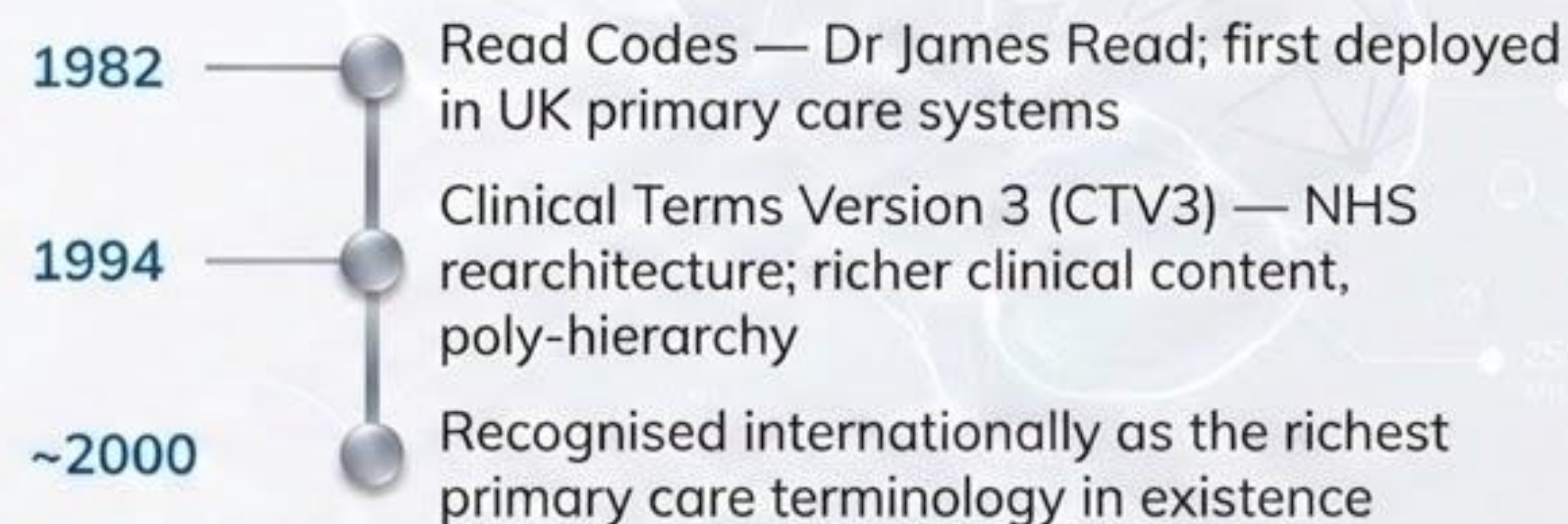
SNOMED CT: A Convergence Story

Two terminologies. One merger. Global standard.

The SNOMED lineage



The Read / CTV3 lineage



2002 → SNOMED CT released: SNOMED RT's logical framework + CTV3's primary care content depth

IHTSDO formed

2007 — nine founding member nations, including Sweden, establish governance body.



SNOMED International

Rebranded 2017. 40+ member countries and affiliates; 37 National Release Centres. Sweden has operated an NRC since the founding.



Why the merger mattered

SNOMED RT brought description logic. CTV3 brought clinical granularity, especially in primary care. Neither alone was sufficient.



How does SNOMED CT work?

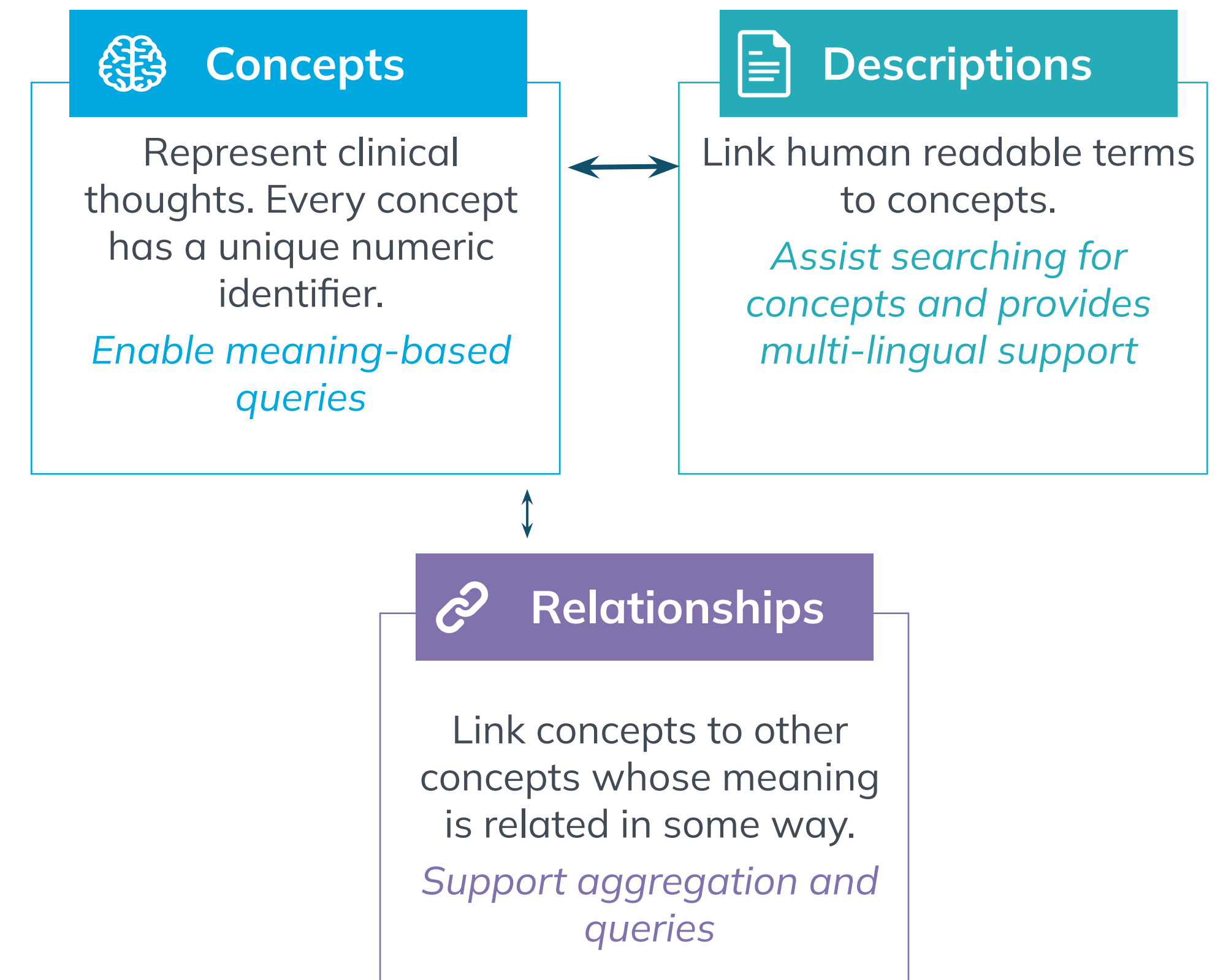
A consistent means to index, store, retrieve, and aggregate clinical data, reducing the variability in how data are captured, encoded and used.

Concepts – numerical codes that represent clinical terms organized in hierarchies

Descriptions – text descriptions of Concepts

Relationships – relationships between Concepts

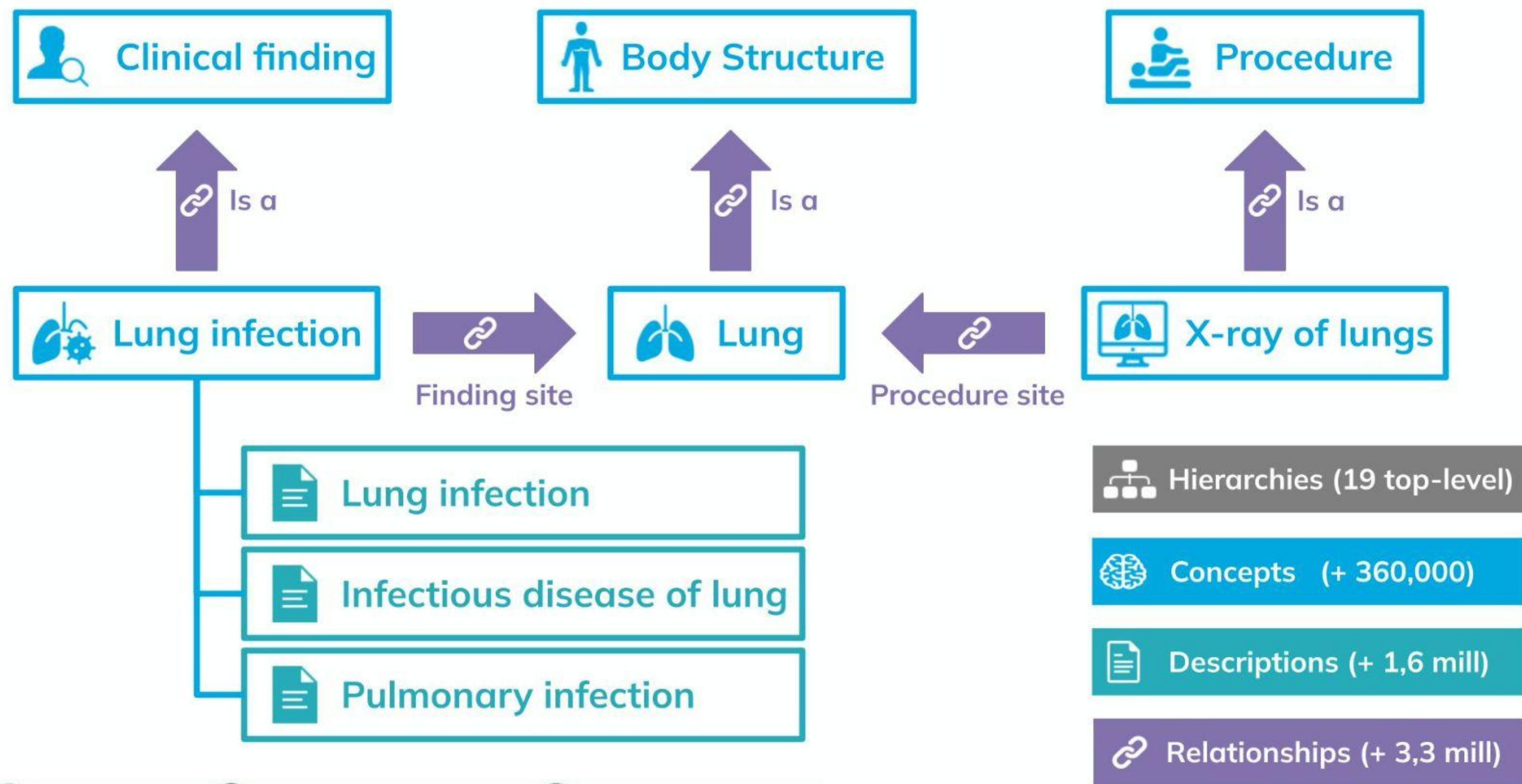
[Click here to learn more >](#)



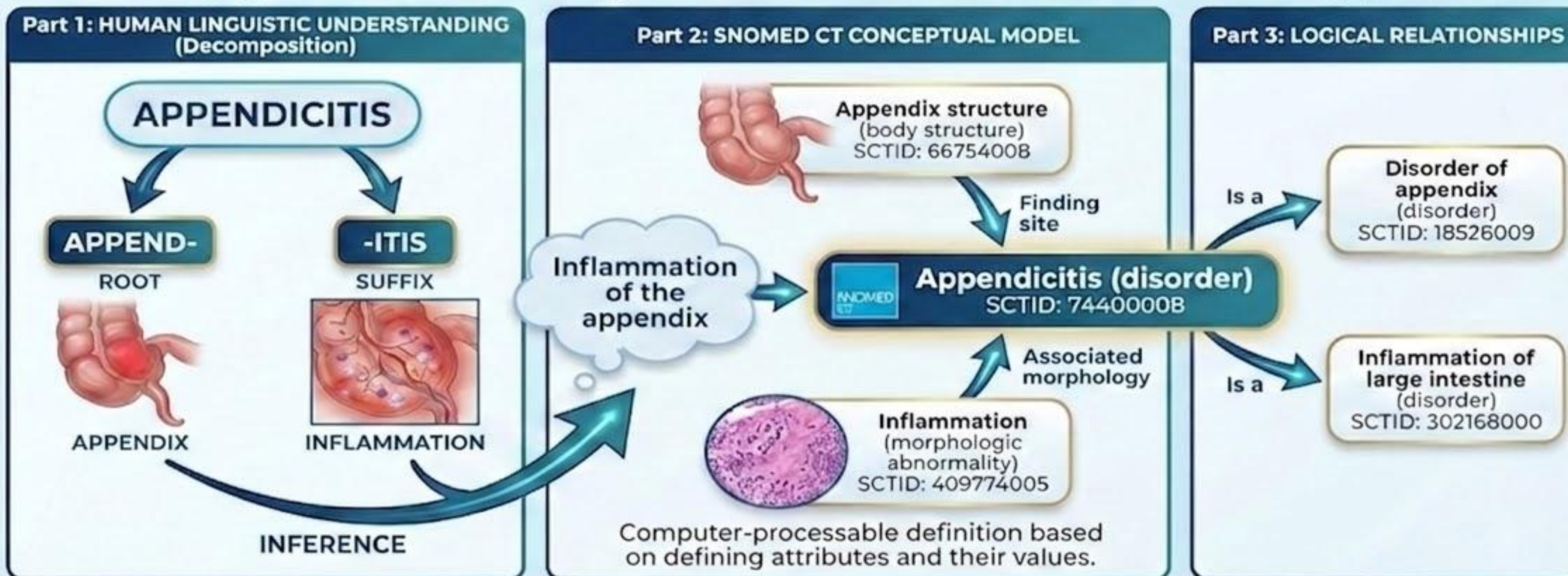
SNOMED CT

A consistent means to index, store, retrieve, and aggregate clinical data, reducing the variability in how data are captured, encoded and used.

A semantic network of clinical meanings



Formalising Medical Meanings with SNOMED CT: The Case of 'Appendicitis'



SNOMED CT is key to ensuring that health data are not just collected, but meaningfully connected.

SNOMED CT top hierarchies

Clinical finding	Disorders, symptoms／signs
Procedure	Surgical procedures, exams, lab tests, nursing care, mgmt procedures
Body structure	Systems, tissues, organs
Observable	Height, weight, blood pressure
Pharmaceutical/ biological products	Antibiotics, vitamins, hormones, anaesthetics
Specimen	Blood, urine, biopsy specimen
Organism	Bacteria, virus, animal, plant
Substance	Biological／chemical substance, plasma, protein
Environment or geographical location	Countries, languages, hospital, department, clinics, community environment

Translation & Localization



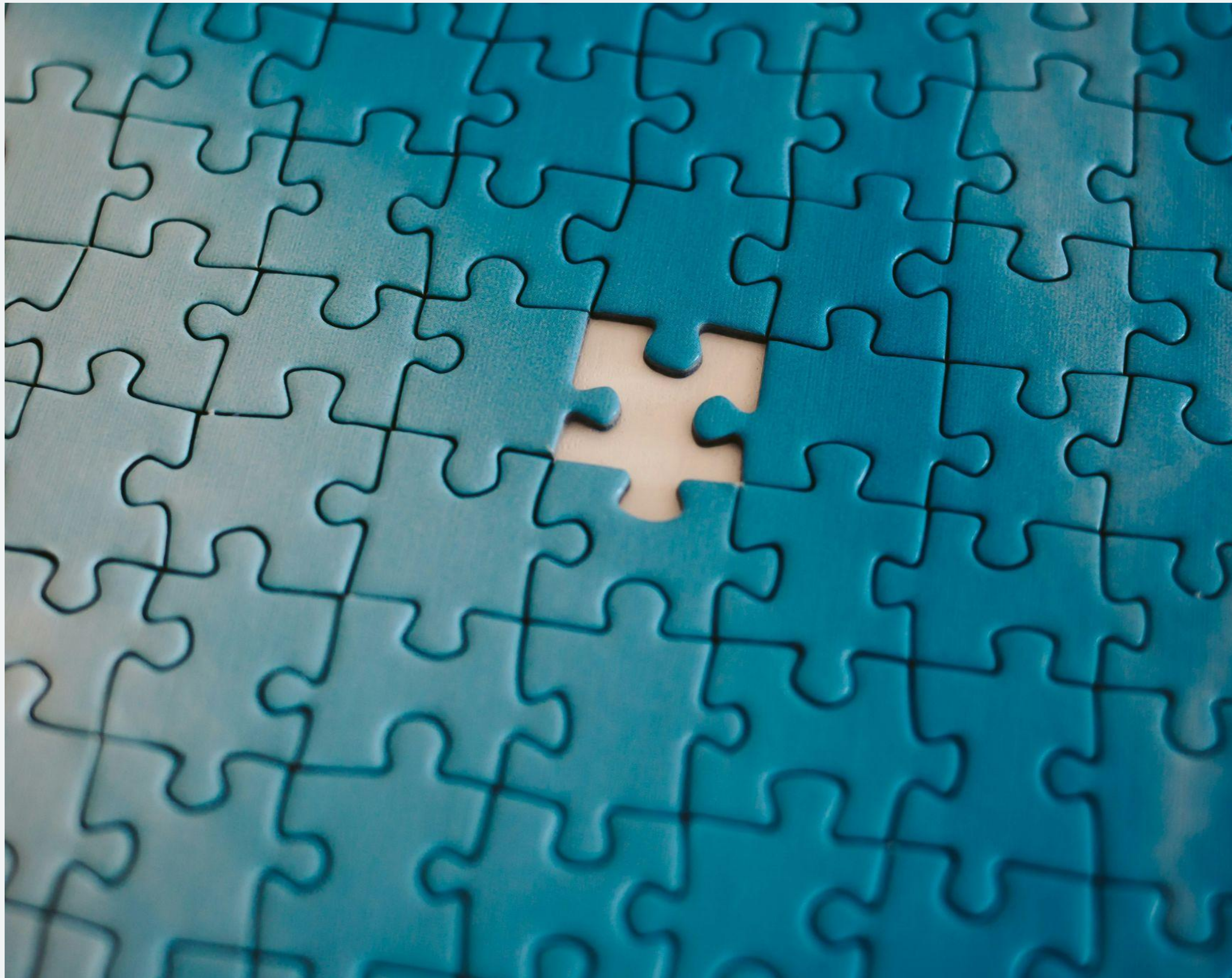
Language reference sets mark which description is preferred in a given dialect or national edition.

Sweden's edition uses an sv-SE reference set — Swedish preferred terms attached to international SCTIDs.

The SCTID is universal. The preferred term is local.

This is how SNOMED CT supports multilingual implementations without duplicating concept identifiers: one concept, many preferred languages.

National Extensions



A SNOMED CT extension is a set of components and reference set members that add to the SNOMED CT International Edition.

An extension is created, structured, maintained and distributed in accordance with SNOMED CT specifications and guidelines.

An extension is not a standalone terminology. The content in an extension depends on the SNOMED CT International Edition, and must be used together with the International Edition and any other extension module on which it depends.

Who are the Clinical Terminologists?

WHO IS THE TERMINOLOGIST?

Defined by ISO 22287:2024, they are specialists operating at the intersection of clinical practice, data science, and digital technology.

“They translate complex medical concepts into computable formats, enabling consistent data capture and reliable semantic interoperability across IT systems.”



THE UNIQUE SKILL MIX

-  **Clinical Understanding:** Insight into workflows, medical language, and anatomy.
-  **Terminology Standards:** Applying Cimino's Desiderata and ISO 704:2022 principles.
-  **Technical Capability:** SQL, FHIR APIs, and Terminology Server management.
-  **Stakeholder Engagement:** Bridging the gap between clinicians and developers.

MAIN AREAS OF WORK



Authoring

Creating and maintaining clinical building blocks.



Mapping

Validating links between legacy systems and standards.



Release Mgmt

Governing the evolution of change requests.



Implementation

Building value sets and decision-support artifacts.



QA

Monitoring coding quality and reducing ambiguity.

The Mapping Process

Translating meaning across code systems

Mapping is the mechanism by which data can travel between environments.

EXACT MATCH

1:1 correspondence. The preferred outcome; represents no information loss.

NARROW TO BROAD

The source is more specific than the target. Most common in SNOMED → ICD-10. Some information is lost.

BROAD TO NARROW

The source is less specific. Rare and acceptable only with clinical justification.

NOT MAPPABLE

No appropriate target exists. Recorded explicitly rather than silently omitted.

Maps to

ICD-10 / ICD-11

MedDRA

LOINC

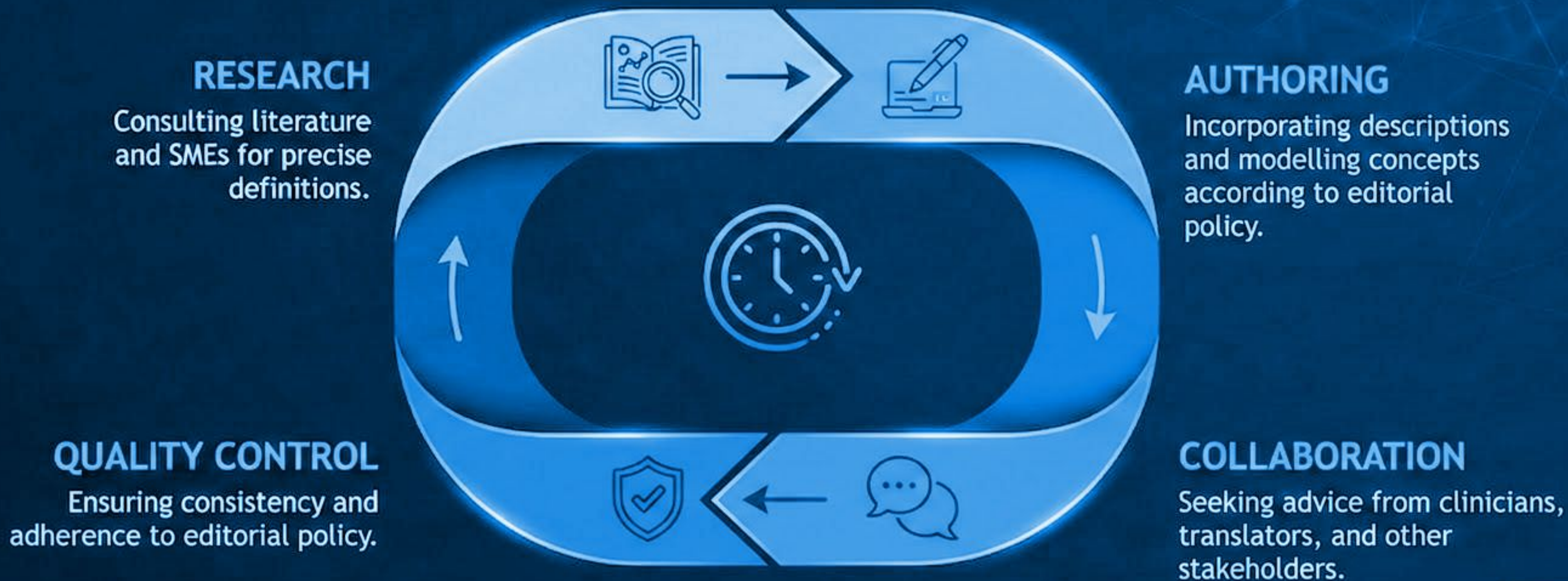
ICNP

OMOP CDM

GMDN

A DAY IN THE LIFE

of a Clinical Terminologist



Language Change

01

Disambiguation

Two conditions share a name.
Ambiguity creates clinical risk.

02

Eponym Retirement

A condition is renamed when its
eponym should not be honoured.

03

De-stigmatisation

Harmful language is replaced
with neutral, person-centred terms.

04

Meaning Drift

The underlying concept changes
whilst the word stays the same.

80%

of patients with central diabetes insipidus
had experienced confusion with diabetes
mellitus

Lancet, 2022

A patient died on an NHS ward in 2009 —
due to nomenclature ambiguity.

TYPE 1

Disambiguation

SNOMED
International

Diabetes Insipidus



AVP Deficiency (AVP-D)
AVP Resistance (AVP-R)

European Society of Endocrinology · Adopted in ICD-11

Terminology implications:

Create new FSN concepts

Inactivate old → DUPLICATE

Add SAME AS historical link

Update map artefacts

"Unambiguous language is not a stylistic preference. It is a patient safety intervention."

Eponym Retirement

BEFORE

**Wegener's
Granulomatosis**

Reiter's Syndrome



AFTER

**Granulomatosis with
Polyangiitis (GPA)**

Reactive Arthritis

*Descriptive — tells you what the disease is.
No ethical baggage. Better clinical utility.*

Every retirement triggers concept inactivation, new FSN authoring, and map updates across all downstream artefacts.

De-stigmatisation

Clinical language is not neutral. The words we use shape how patients are seen and treated.

Mental retardation



Intellectual disability

The image displays two screenshots of the SNOMED CT web interface, illustrating the process of de-stigmatising terminology.

Left Screenshot (Mental retardation (disorder) details):

- Concept Details:** Shows the concept 'Mental retardation (disorder)' with SCTID: 91138005.
- Parents:** No parents.
- Children:** No children.
- Refsets:** A list of reference sets associated with the concept:
 - CTV3 to SNOMED CT simple map (XUNW8)
 - Concept inactivation indicator reference set (Outdated)
 - REPLACED BY association reference set (Intellectual disability)

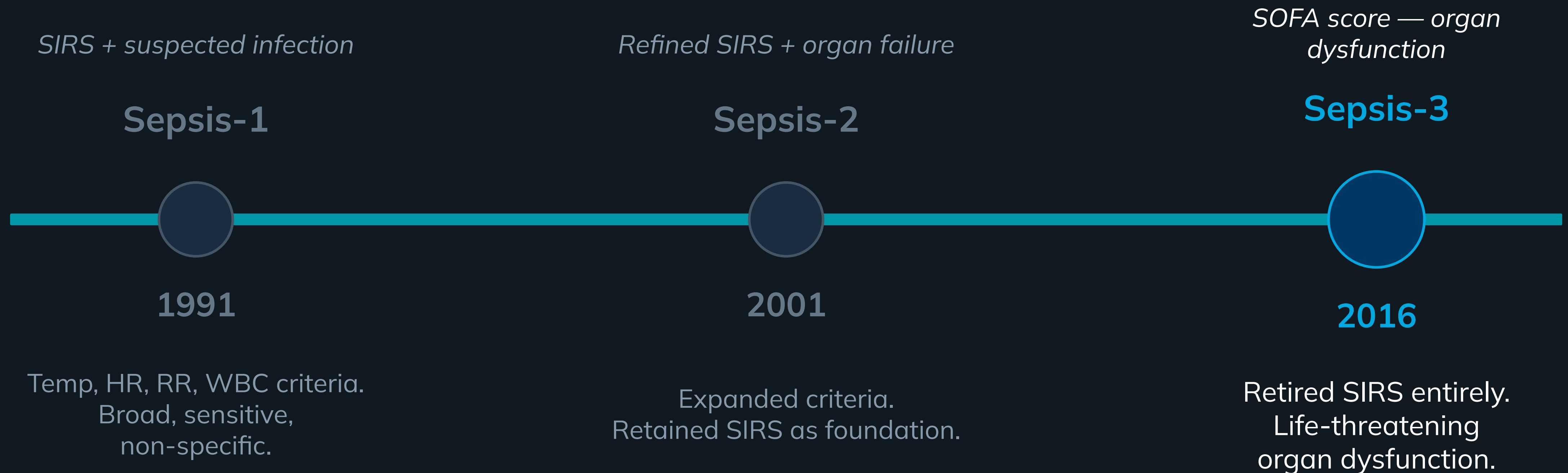
Right Screenshot (Intellectual disability details):

- Concept Details:** Shows the concept '91138005 [Mental retardation (disorder)]'.
- Simple Refsets Memberships:** No memberships.
- Map Refset name:** CTV3 to SNOMED CT simple map (XUNW8).
- Attribute Value Refset name:** Concept inactivation indicator reference set (Outdated).
- Association Refset name:** REPLACED BY association reference set (Intellectual disability).

SNOMED CT must inactivate the old term, replace with the current accepted terminology, and update all associated maps.

Meaning Drift

Same word. Three entirely different clinical concepts.



"Sepsis" in a 2010 record does not describe the same clinical entity as "sepsis" in 2018. Terminology must version its own understanding — not merely update it.

Concepts are never deleted. They are inactivated.

DUPLICATE



SAME AS

The concept already exists under another SCTID.

OUTDATED



REPLACED BY

The concept is no longer clinically current.

AMBIGUOUS



**POSSIBLY EQUIVALENT
TO X**

The concept conflates multiple distinct clinical ideas.

ERRONEOUS



REPLACED BY

The concept was authored incorrectly.

Meaning drift requires a new concept — the old remains, versioned, so that historical cohort studies retain integrity.

The Cost of Silence



FINANCIAL BURDEN OF ERRORS

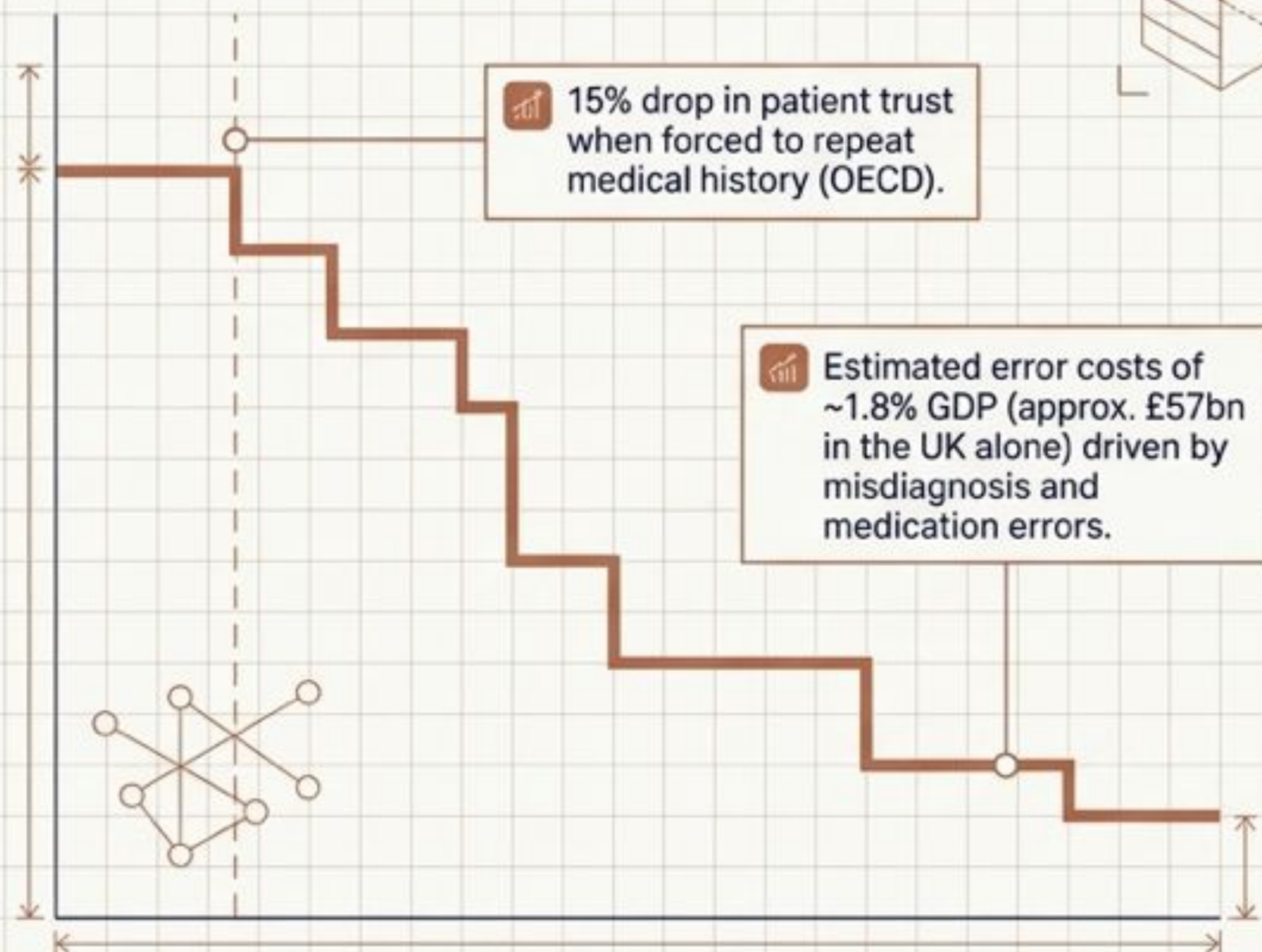
The estimated combined cost of healthcare errors due to lack of interoperability and ambiguous language.

Terminologists prevent "**Garbage In, Garbage Out**", ensuring data is reliable, safe, and ready for analytics.

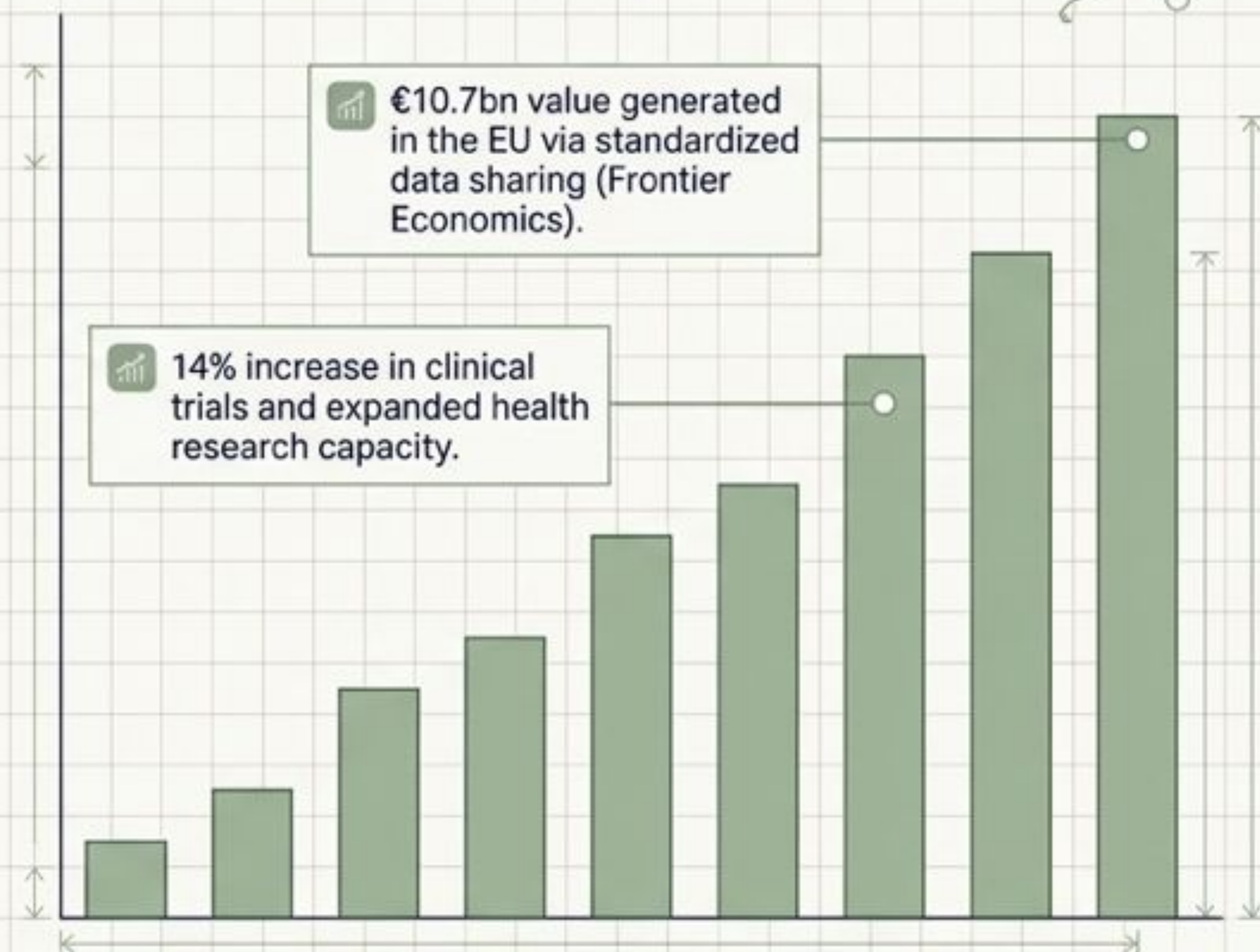
The Economics of Clarity



The Cost of Ambiguity



The Value of Sharing



The ROI in Practice: Using SNOMED CT-assisted coding identifies missing conditions in 35% of hospital spells, directly improving billing accuracy and reducing long-term costs (Roberts et al., 2023).

Future-ready Healthcare: The Value of Clinical Terminologists

snomed.org



x.com/SnomedCT



linkedin.com/company/ihtsdo

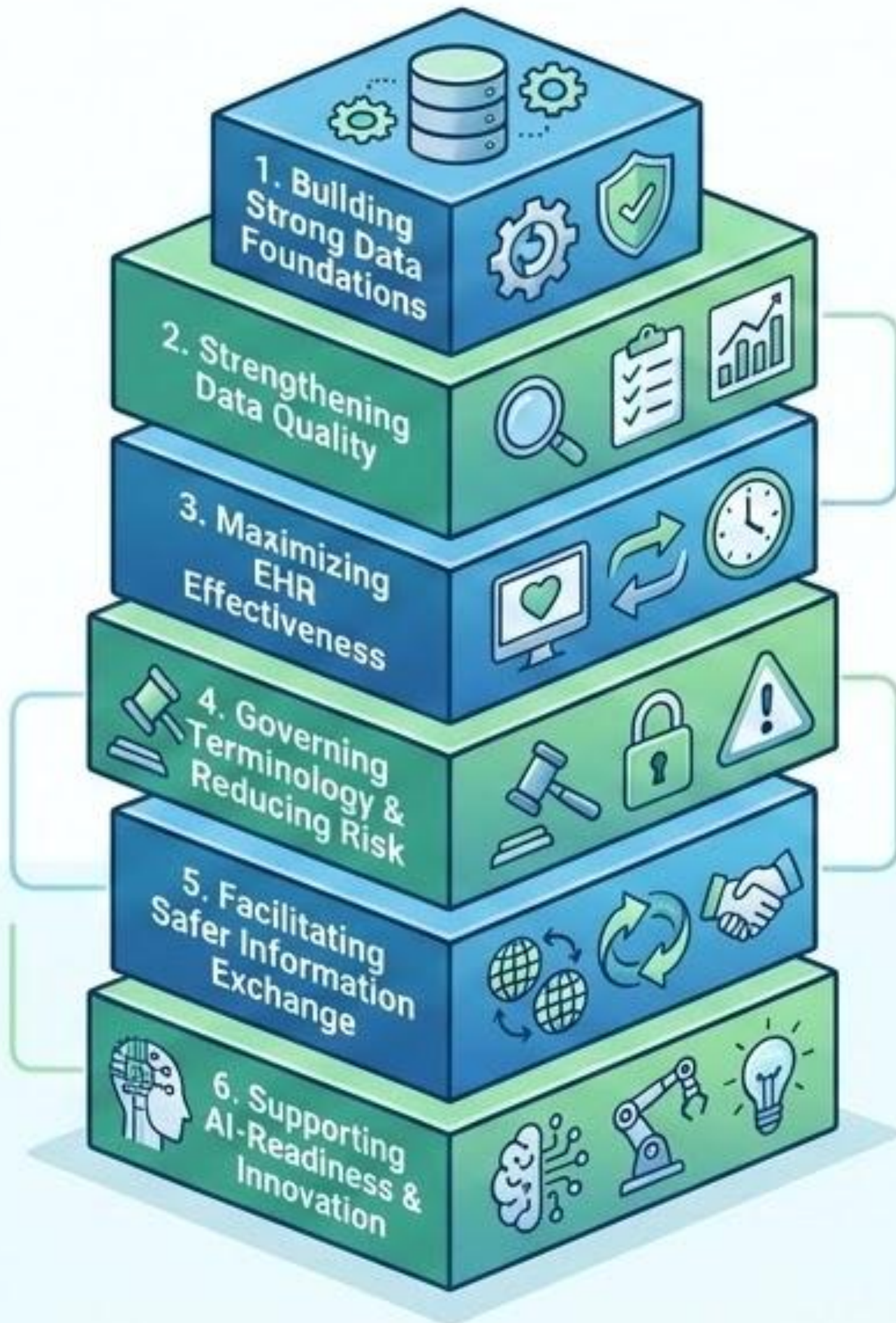


youtube.com/@snomedct

SNOMED
International

Preventing “Garbage In, Garbage Out”

- 1. Building Strong Data Foundations:** Ensuring semantic interoperability and safe data flow.
- 2. Strengthening Data Quality:** Resolving ambiguity and improving reporting accuracy.
- 3. Maximizing EHR Effectiveness:** Supporting safer workflows and high-quality records from the start.
- 4. Governing Terminology & Reducing Risk:** Preventing costly rework and data errors through robust management.
- 5. Facilitating Safer Information Exchange:** Enabling seamless, reliable cross-organizational data sharing.
- 6. Supporting AI-Readiness & Innovation:** Creating structured, computable data necessary for safe AI deployment.



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Landscape

The 10 Year Health Plan for England sets out three big shifts:

from hospital to community



from analogue to digital



from sickness to prevention



“A lack of structured data, combined with poor design of observation charts and dashboards, makes it harder to identify patients at risk. Without standardisation in the EPR for structured data entry, each clinician can record patient information differently and for different purposes. In this way EPRs are used as ‘digital paper’, where clinicians record digital notes in the same way as they would on paper. This lack of standardised data entry means that data cannot be easily shared between systems, making it harder for clinicians to get a full picture of a patient’s condition.”



What is SNOMED CT?

*The world's most comprehensive
multilingual clinical language*



A resource with comprehensive, scientifically
validated clinical content



Maps to many international standards,
including but not limited to ICD-10, MedDRA,
GMDN, LOINC, ICNP etc.

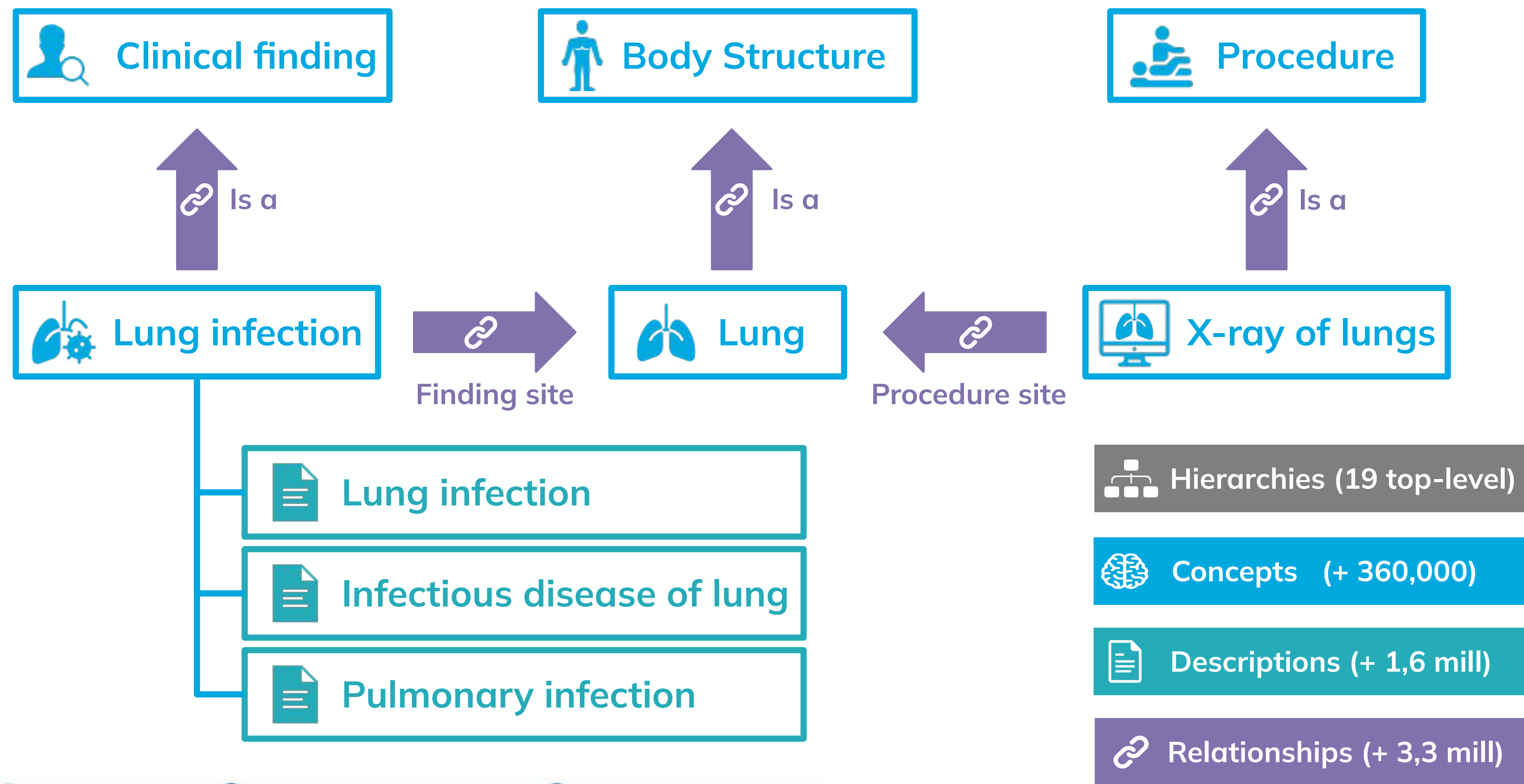


Enables consistent representation of clinical
content for processing in electronic health records

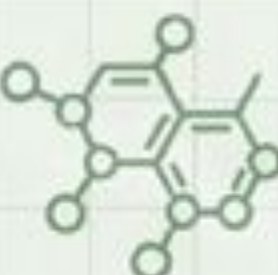


Used in more than eighty countries

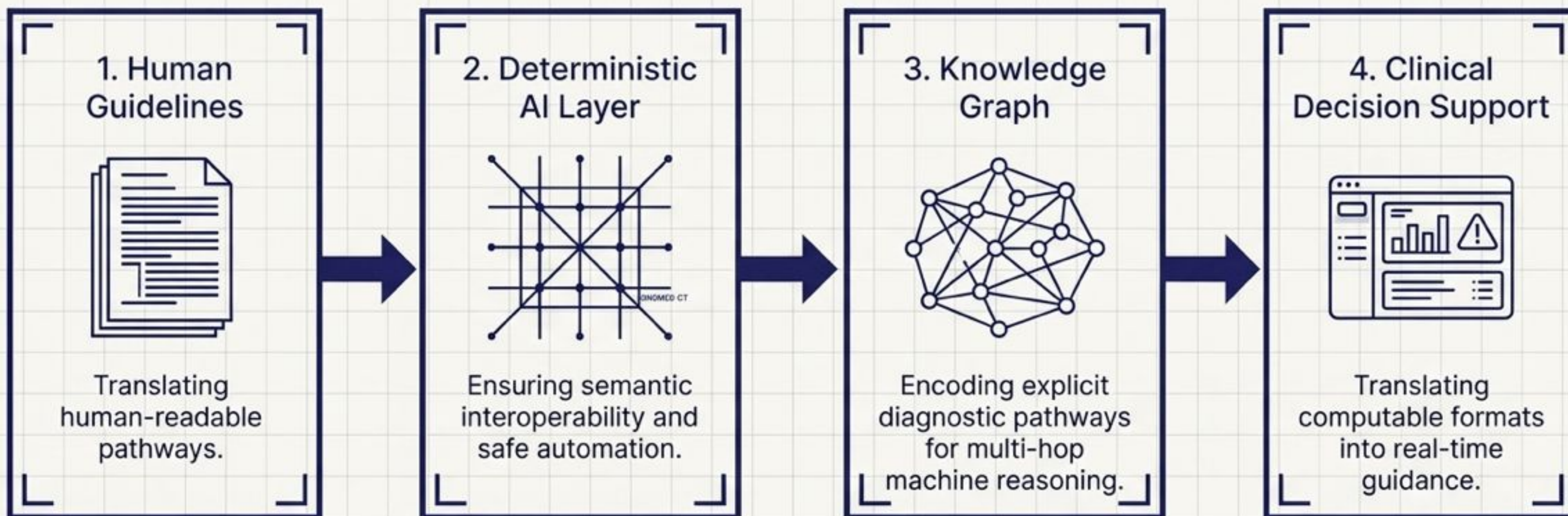
A semantic network of clinical meanings



Distinct Functions: Terminology vs. Clinical Coding

Dimension		Clinical Terminology	Clinical Coding
 Design Purpose	 Capturing clinical reality	 Summarizing past events	
 Timing	 Point-of-care / Real-time	 Retrospective / Post-discharge	
 Granularity	 High specificity of symptoms & interventions	 Broad, mutually exclusive categories	
 Primary Use Case	 Semantic interoperability & Clinical Decision Support	 Secondary uses (accounting, statistics)	
 Global Standard	 SNOMED CT	 ICD-10	

Mobilising Computable Biomedical Knowledge



This continuous loop of converting messy clinical reality into computable formats is the engine of the Learning Health System.