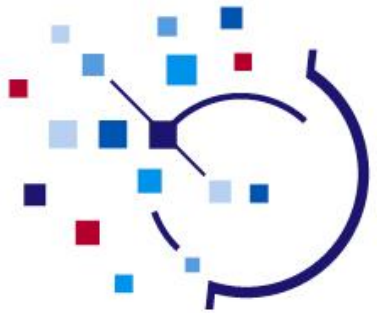
INTERNATIONAL HEALTH TERMINOLOGY
STANDARDS DEVELOPMENT ORGANISATION



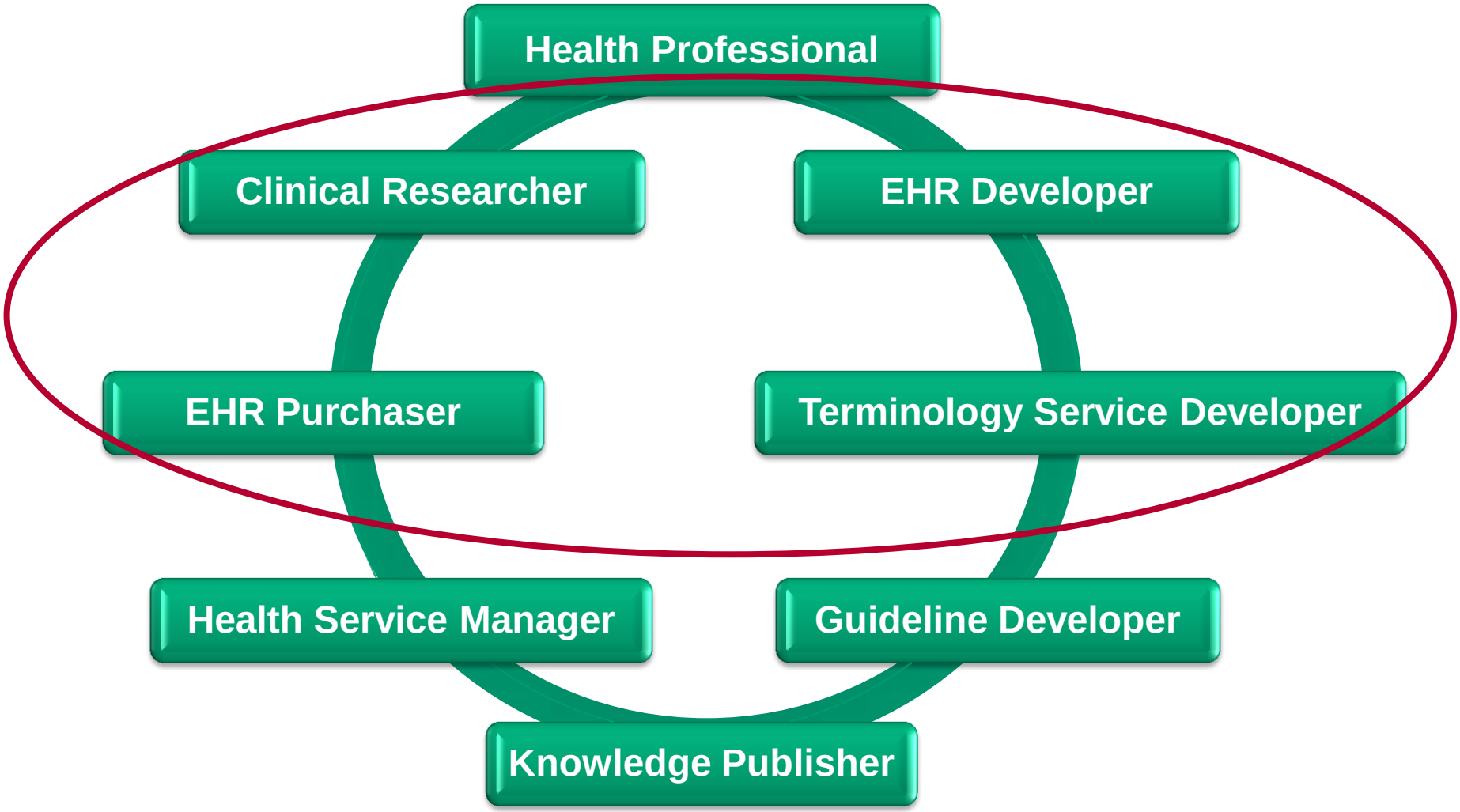
SNOMED CT Implementation Route Planner

David Markwell
IHTSDO - Chief Implementation & Innovation Officer

Overview of the route

- Who are you?
- Where are you trying to get to?
- Why are you travelling?
- Where are you starting from?
- Who needs to come with you?
- What will you need on the journey?
- Are there roadblocks, shortcuts or worthwhile detours?
- Where can you get help?
- How can you help others along the way?
- How long will it take?
- What about making a simpler route?

Who are you?


Health Professional
Clinical Researcher
EHR Developer
EHR Purchaser
Terminology Service Developer
Health Service Manager
Guideline Developer
Knowledge Publisher

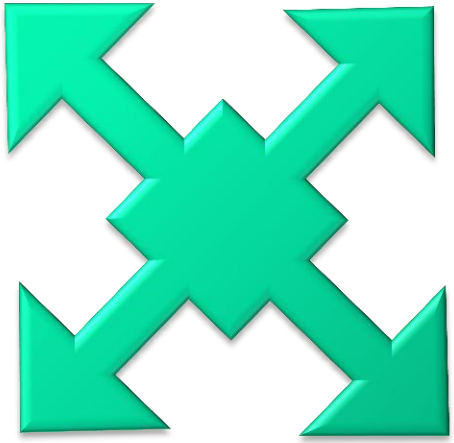
Implementation perspectives

- Organisational perspective
  - Adoption and roll-out in an organisation
- Technical perspective
  - Application design and development
- Technical requirements and realisation
  - Identifying required services
  - Delivering and optimising required services
- Different types of technical implementation
  - SNOMED CT-enabled health record system
  - SNOMED CT terminology services
  - SNOMED CT-enabled knowledge representation

Where are you trying to get to?

Clinical Record System
EHR, EPR, EMR …

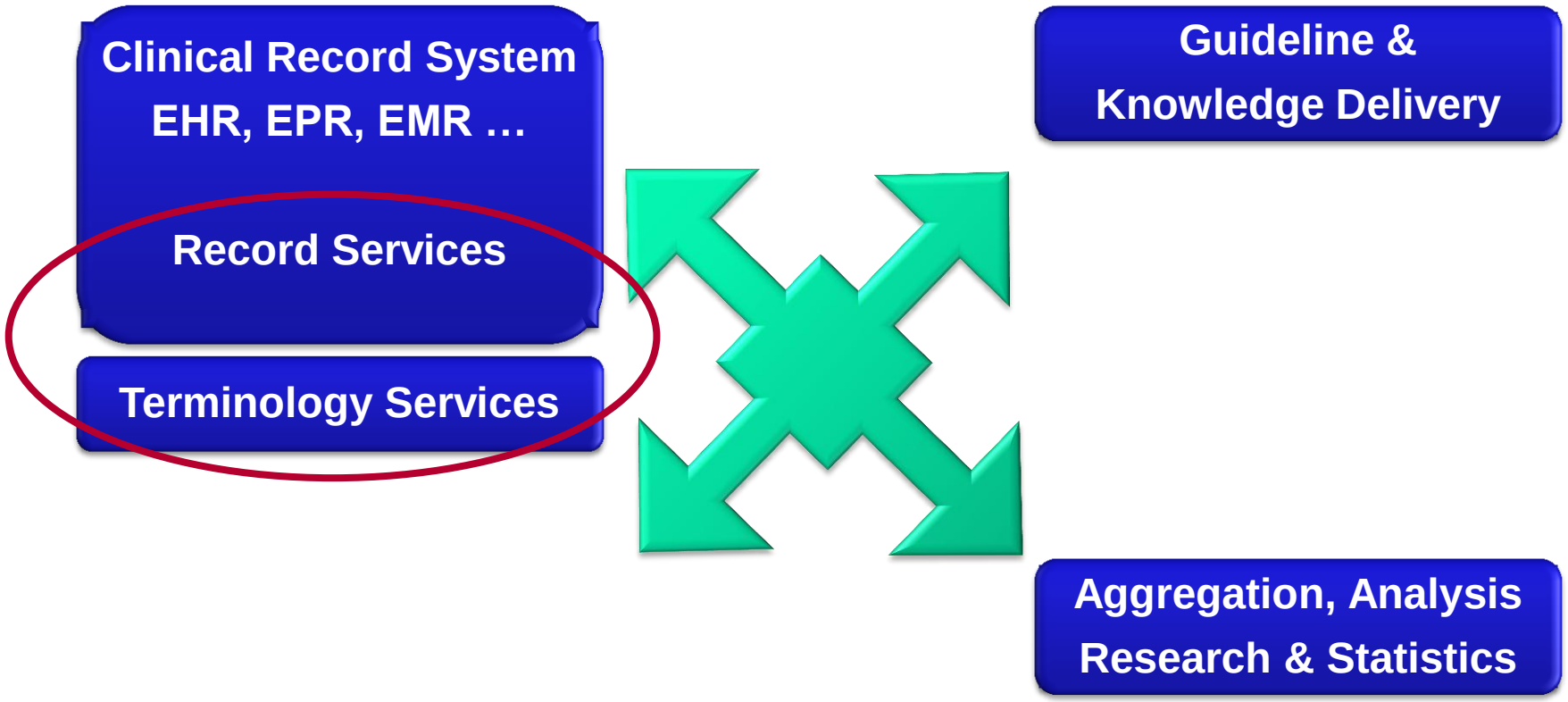
Guideline &
Knowledge Delivery



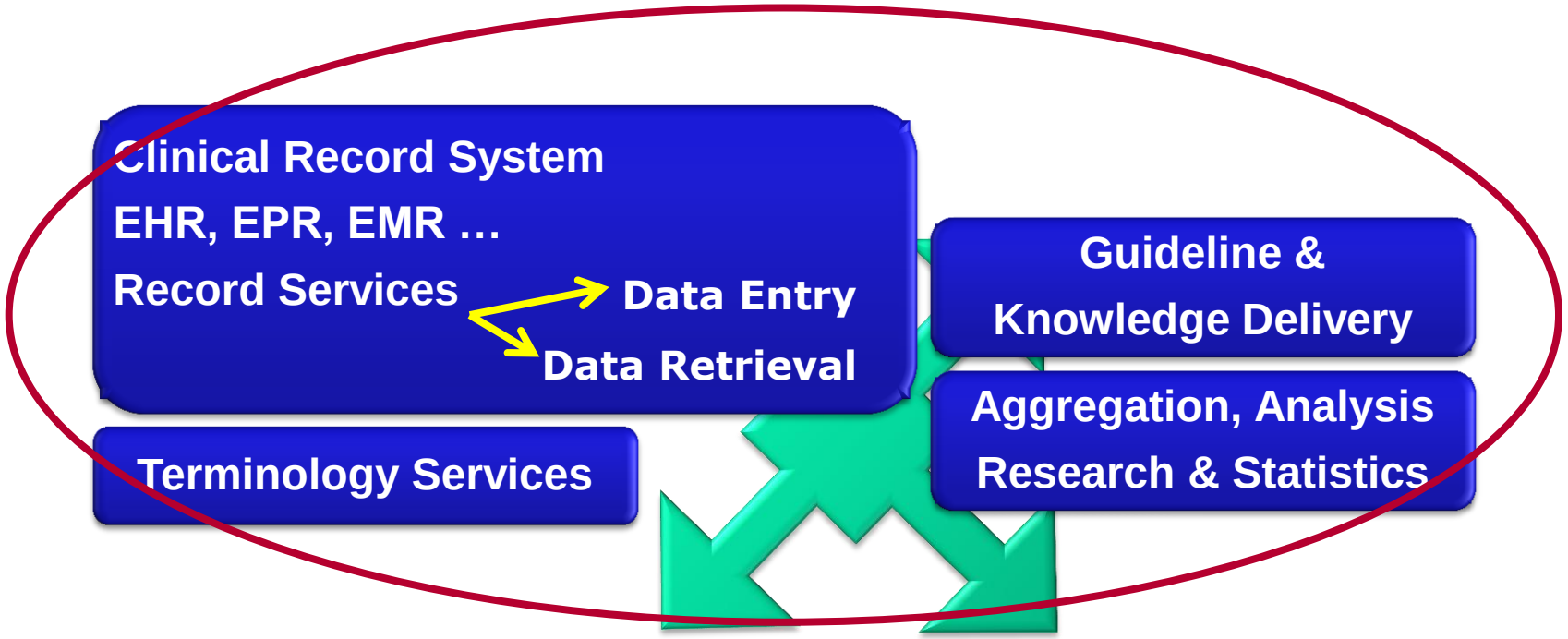
Terminology Services

Aggregation, Analysis
Research & Statistics

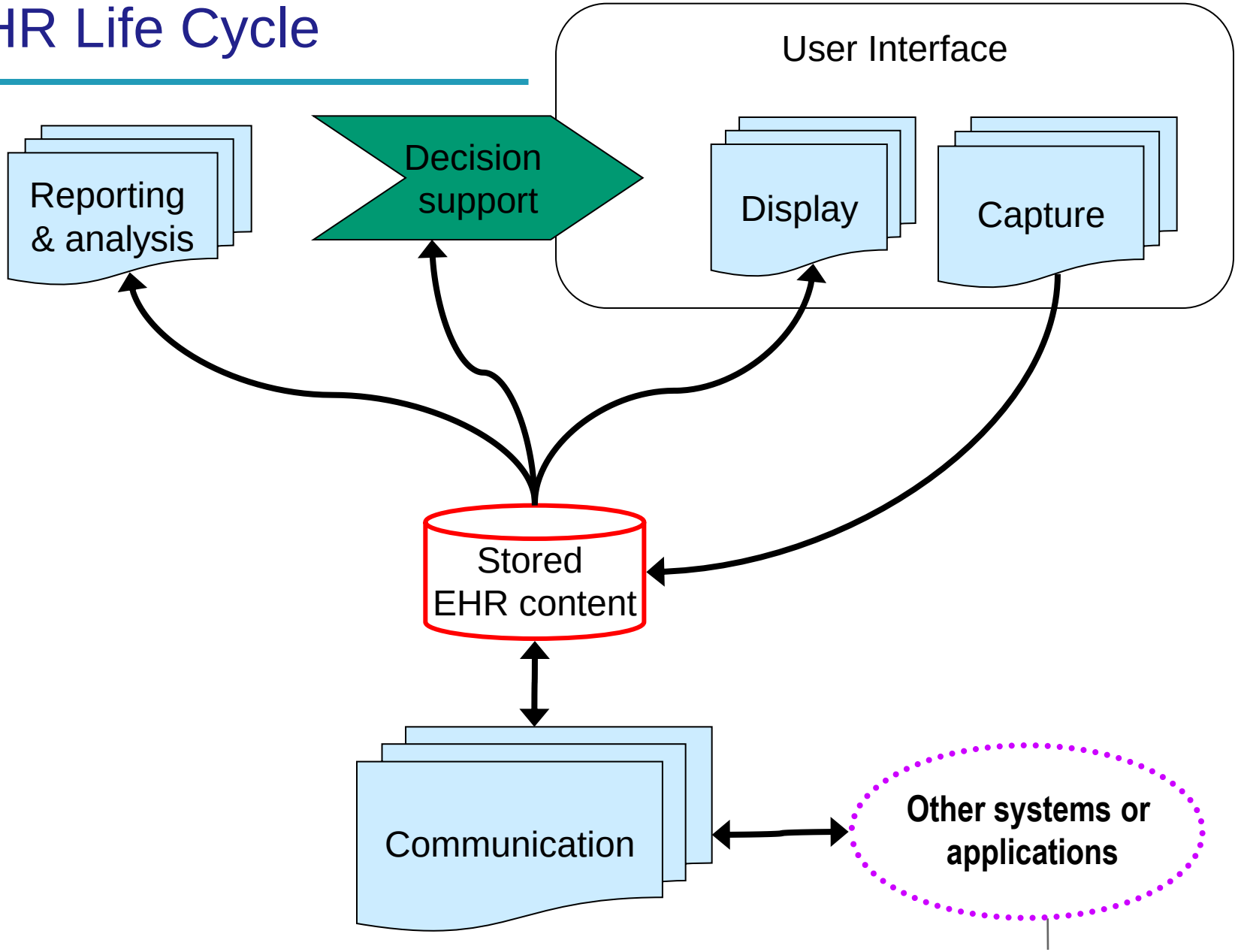
Where are you trying to get to?



Where are you trying to get to?



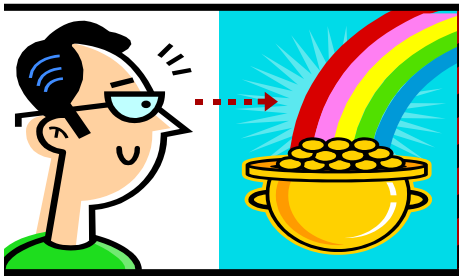
EHR Life Cycle



Why are you travelling?

- To deliver your organization's priorities
  - Specific requirements you need to identify
- To deliver the general benefits of SNOMED CT
  - General requirements that SNOMED CT addresses

- Understand the potential benefit of using SNOMED CT
- Recognize limitations of some implementation types
- Set realistic goals for delivery of specific benefits
- Avoid unrealistic expectations



EHR Benefits of SNOMED CT

- Enhancing the care of individual patients:
  - Display of appropriate information
  - Guideline and decision support integration
  - Communicating, sharing relevant information throughout a care team in different disciplines and geographical locations
- Enhancing the care of populations of patients:
  - Epidemiology monitoring and reporting
  - Research into the causes and management of diseases
- Supporting cost-effective delivery of care:
  - Guidelines to minimize the risk of costly errors
  - Reducing duplication of investigation and interventions
  - Auditing the delivery of clinical services with opportunities for detailed analysis of outliers and exceptions
  - Planning service delivery based on emerging health trends

Other Benefits of SNOMED CT

- Logical definitions
  - Allows computation of equivalence and subsumption for clinically relevant retrieval
- Post-coordination
  - Allows refinement of meaning without need for combinatorial explosion of code dictionary
- Version representation (in RF2)
  - Allows full view of all versions of SNOMED CT ever released
  - Permits tracking of component history
  - Enable updating using small “delta” files
- Extensible design
  - Allows addition of local Extension content
  - Enables representation of derivatives such as subsets, alternative views and cross-maps using a standard mechanism

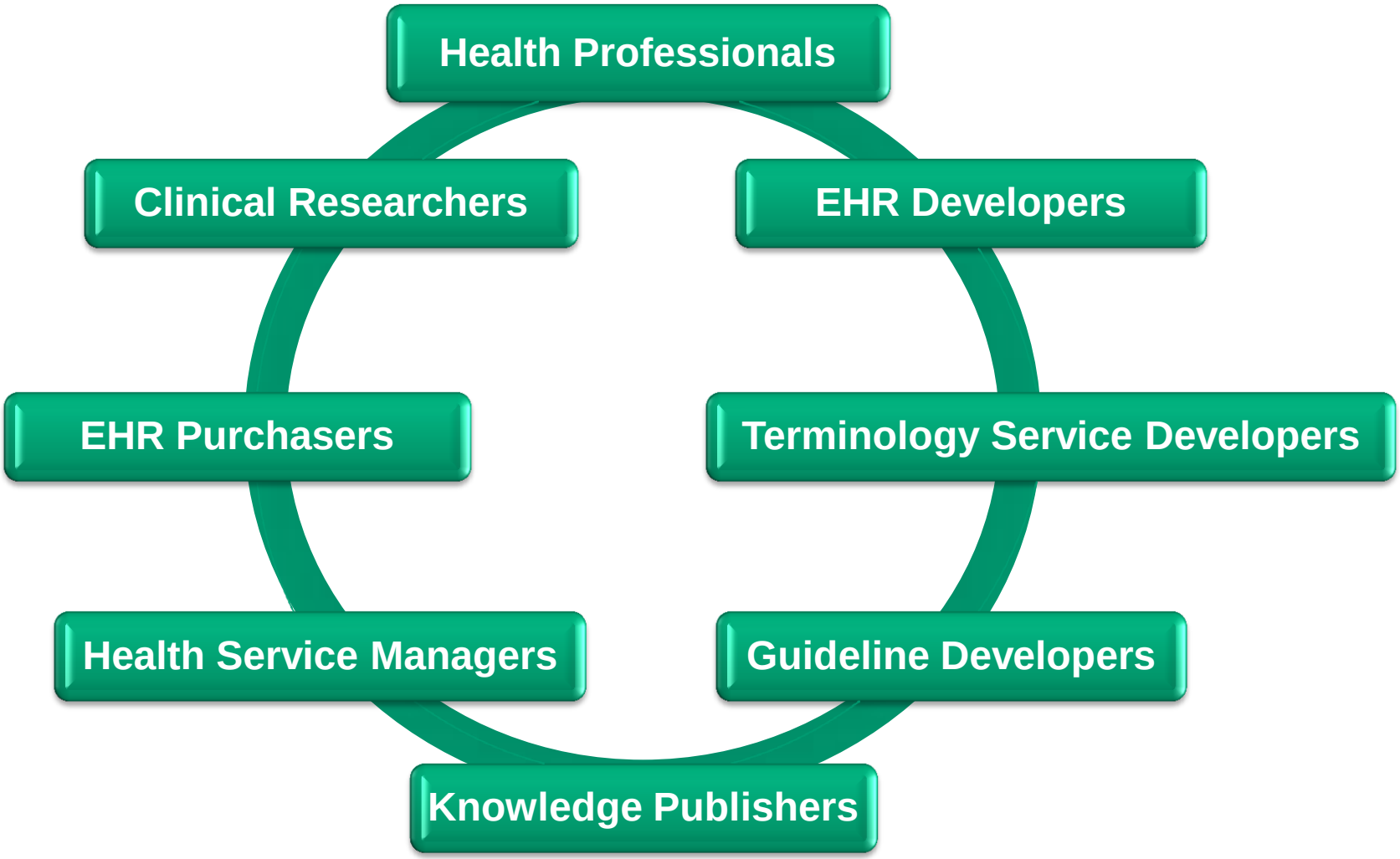
Other Benefits of SNOMED CT

- Broad scope of content
  - Minimizes or removes the need to support multiple different code systems for each speciality
  - Provides a common semantic framework for consistent retrieval and processing
- IHTSDO ownership
  - Removes dependencies on proprietary coding schemes
  - Shares development and maintenance costs between Members in a fair manner dependent on national wealth
  - Removes code system licence costs for implementers and end-users
- Global approach
  - Provides a standard International representation for clinical and clinically related concepts
  - Supports development of translations to national languages

Where are you starting from?

- A green field site
  - Addressing a new requirement with SNOMED CT as a part of the new foundations
- A relic of an earlier generation
  - Replacing a legacy system that partially addressed these requirements without using SNOMED CT
- An evolving system
  - Updating a system that is able to mutate to address new requirements by accommodating SNOMED CT

Who needs to come with you?



EHR implementation is a team effort

- Clinical input needed to design system
  - Safe & fit for purpose for all specialties and environments
  - Compatible with clinical practice and local processes
- Technical input to design architecture and functionality
  - The system must be usable, reliable and efficient
  - Able to support data entry, storage, retrieval and communication
  - Compliant with relevant technical standards
- Guidelines and decision support developers
  - Enabling the EHR to apply and interact with relevant guidance
- Management
  - Compliance with requirements for activity reporting, etc.
- Epidemiology and Clinical Research
  - Ensure availability of required information for statistical reporting and other studies

What will you need on the journey?

- Involvement of motivated users
  - To help design or configure a system to meet the requirements and expectations of all interested parties
- Guidance Documents
  - http://www.ihtsdo.org/fileadmin/user_upload/doc

  and
  - http://www.ihtsdo.org/publications/
- Education & Training & Expertise
  - Different members of the team need different types of knowledge and different levels of detailed understanding
- SNOMED CT Enabled software application(s)
  - Develop, procure and integrate
- Commitment & Patience
  - Focus on ensuring that benefits are delivered

Involvement of motivated users

- Input from Clinical Users on input and display design
  - “In a well designed SNOMED CT enabled application the presence of SNOMED CT is felt rather than seen”
- Data user awareness of SNOMED CT
  - “An understanding of SNOMED CT logical definitions and the way these relate to clinical user perceptions is necessary to enable the power of SNOMED CT to be used effectively when analyzing data”

Education & Training requirements

- Health professional end-users
  - General understanding of how to use the application
  - Short SNOMED CT overview and relevance to their use
- People doing analysis and aggregation
  - Understanding of SNOMED CT logical model including its use of “description logic” definitions of concepts
  - How SNOMED CT is used within the record structure
  - Effective ways to use SNOMED CT for retrieval
- Knowledge publishers
  - Understanding of SNOMED CT logical model including its use of “description logic” definitions of concepts
  - How SNOMED CT can be used in knowledge representations including guidelines and decisions support rules

Education & Training requirements

- **Health professional end-users**
  - General understanding of how to use the application
  - Short SNOMED CT overview and relevance to their use

- Summary
  - If the application is well-designed the SNOMED CT specific element of training may be a brief overview
  - Additional training may be needed if the application exposes “raw” SNOMED CT structures to the user
  - Users who wish to run their own reports and analyses require additional training on the impact of SNOMED CT logical definitions on the overall “model of meaning”

Education & Training requirements

- **Epidemiologists and those doing detailed analysis and aggregation**
  - Understanding of SNOMED CT logical model including its use of “description logic” definitions of concepts
  - How SNOMED CT is used within the record structure and how the combined “model of meaning” can be most effectively queried and analyzed

- Summary
  - Typically requires at least two-days training and further practical experience for someone with existing knowledge of clinical data analysis and retrieval

Education & Training requirements

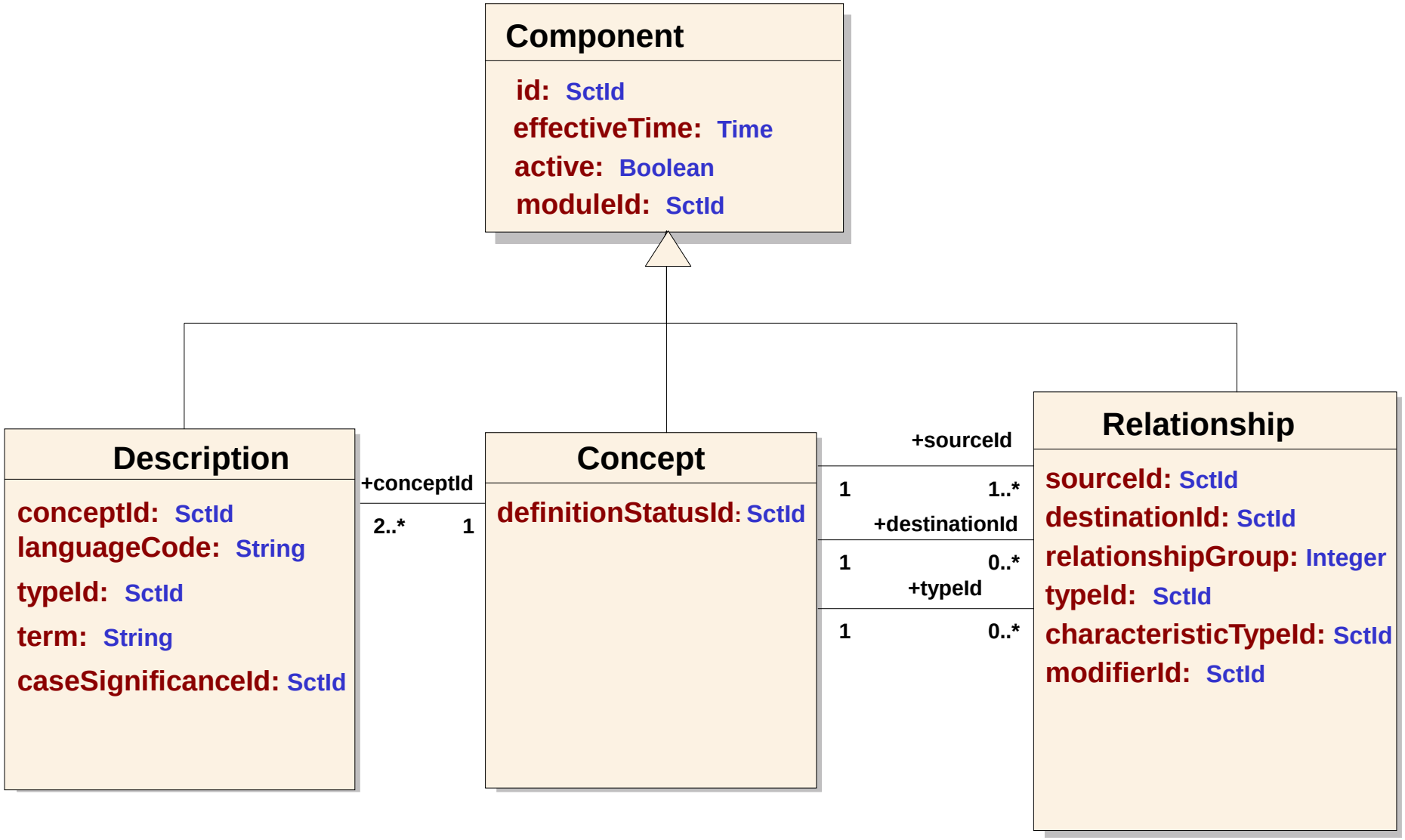
- System Designers and Developers
  - SNOMED CT technical knowledge
  - Terminology service knowledge and skills
  - Record service knowledge and skills
  - Legacy data migration
  - Change Management
  - Cross Mapping to classifications
  - Supporting development of derivatives
  - Supporting development of extensions

- Summary
  - There is a lot of ground to cover
  - Typically 3-5 days training and several days of practical experience working with SNOMED CT documentation is needed

A satellite level view of the route (part 1)

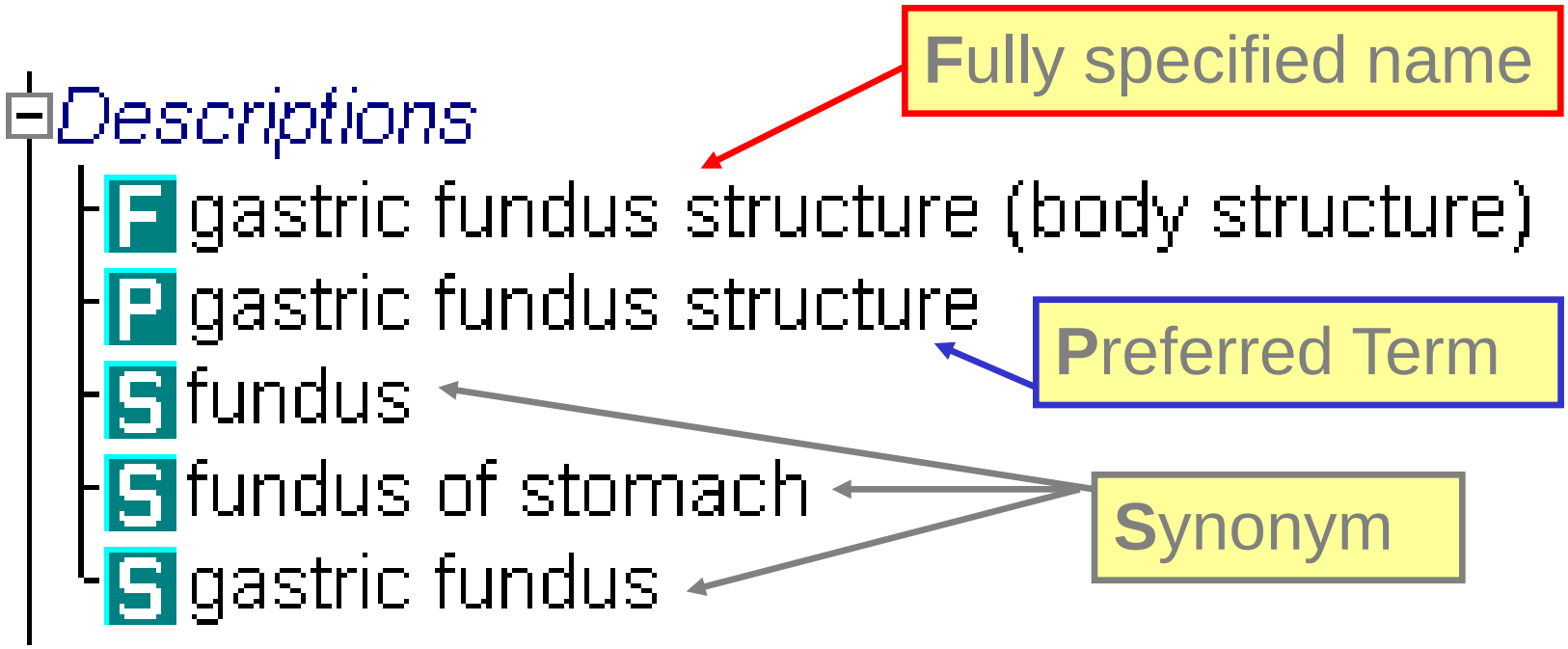
- Basic technical knowledge
  - SNOMED CT logical design
  - Role of Description Logic in SNOMED CT
  - Release file structures
    - Including version snapshots and delta updates using RF2
  - Requirements for supporting Extensions
  - SNOMED expressions - including post-coordination

Logical Model of SNOMED CT Components



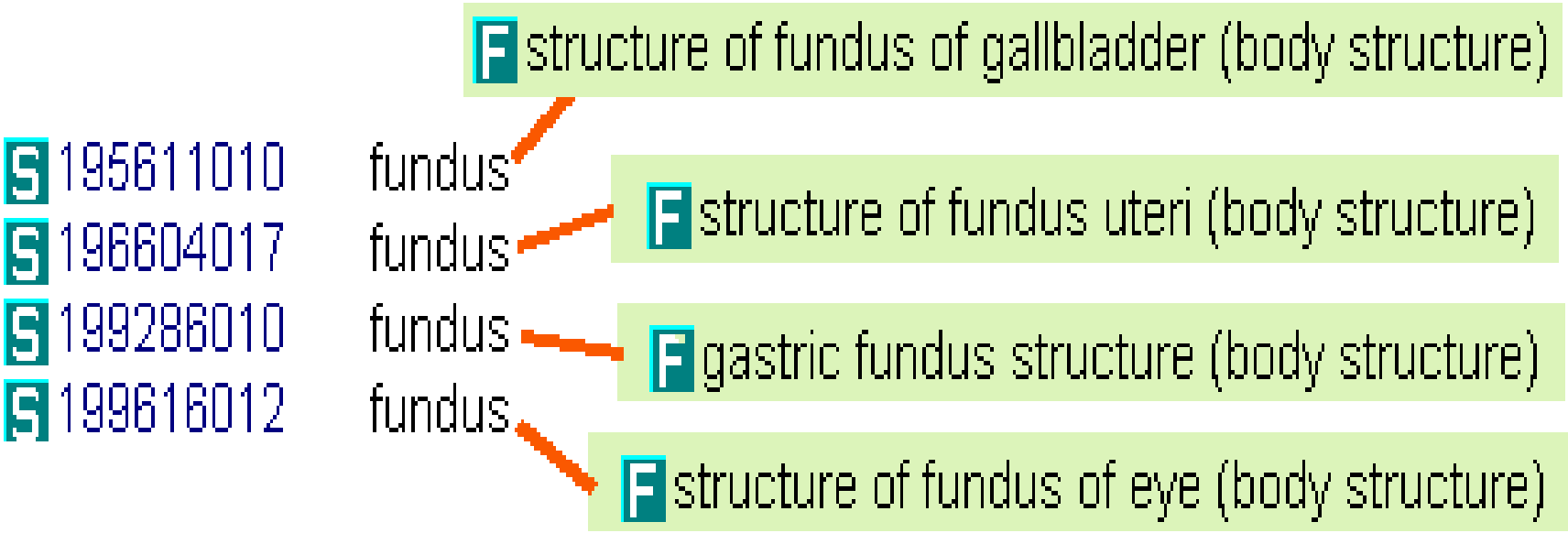
Concepts and Descriptions (1)

- A **concept** may have many different **descriptions**
- Each **description** is associated with only one **concept**
- Every **concept** and every **description** has a unique **Id**

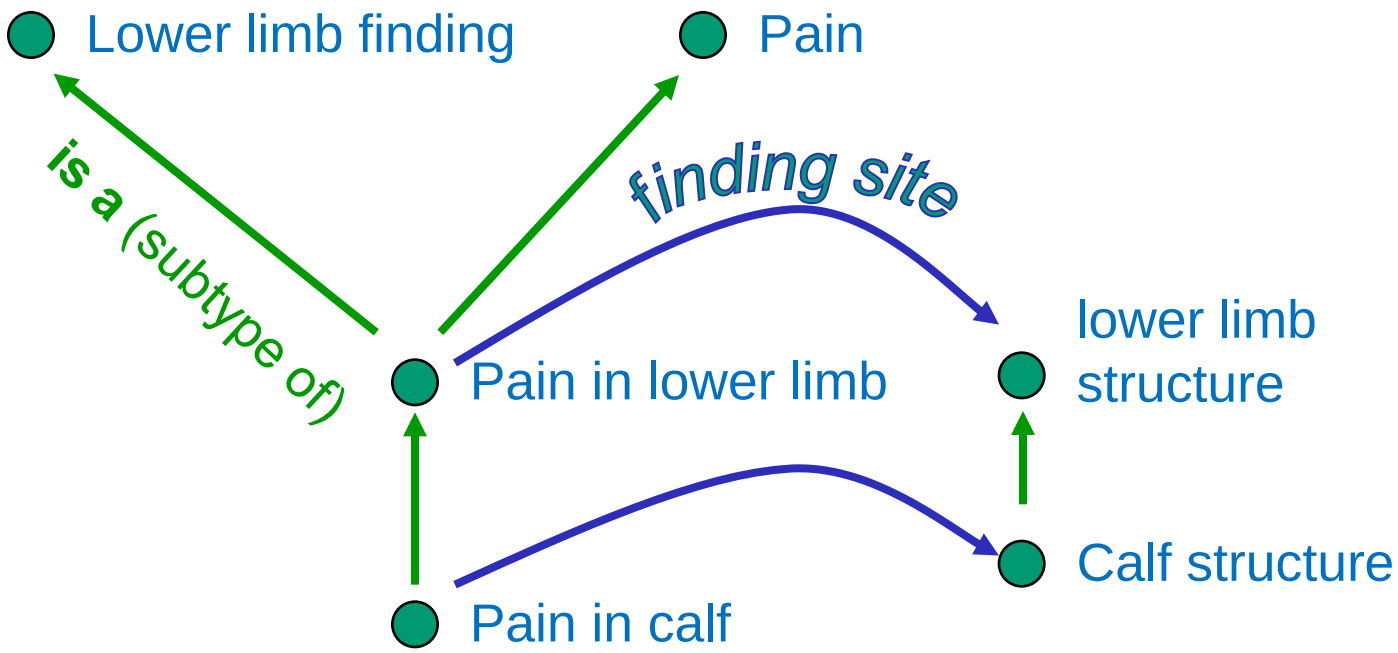


Concepts and Descriptions (2)

- Each **description** links a term to only one **concept**
- Several **concepts** may have a **description** that includes the same **term**
- Each of these **descriptions** has a different unique **Id** even though the **term** contained is identical



Concepts and Relationships



A pain in the calf *has finding site* calf
Pain in the lower limb *has finding site* lower limb

Limits to explicit enumeration of clinical ideas

The range of possible clinical ideas is enormous

- If every nuance of every symptom of condition at every possible location is considered, the scale becomes unmanageable
- A common way to construct representations of clinical ideas by combining concepts can solve this problem
- The common construction used by SNOMED CT is called “post-coordination”

Post-coordinated expressions allow refinement

- Post-coordinated expressions enable additional detail to be added when required.
  - For example:
    - Laterality = [Left or Right]
    - Causative agent = [Substance causing allergy, poisoning, etc]
- The SNOMED CT Concept model ensures that these refinements are processed logically
  - “Description logic” is used to compute equivalence between different ways of representing similar information

Reference Sets

- Sets of references to SNOMED CT components
  - The name ‘Reference Set’ is abbreviated to ‘Refset’
  - Refsets are a flexible extensibility mechanism which can ...
    - Mark or annotate SNOMED CT concepts or descriptions
    - Link SNOMED CT concepts to other information
- Refsets are used for different purposes
  - To represent subsets
  - To indicate language/dialect preference for terms
  - To prioritize particular items in a search list
  - To specify alternative hierarchies
  - To attach metadata to a component
  - To attach annotations or other information to a component
  - To represent cross-maps to classifications such as ICD10

A satellite level view of the route (part 2)

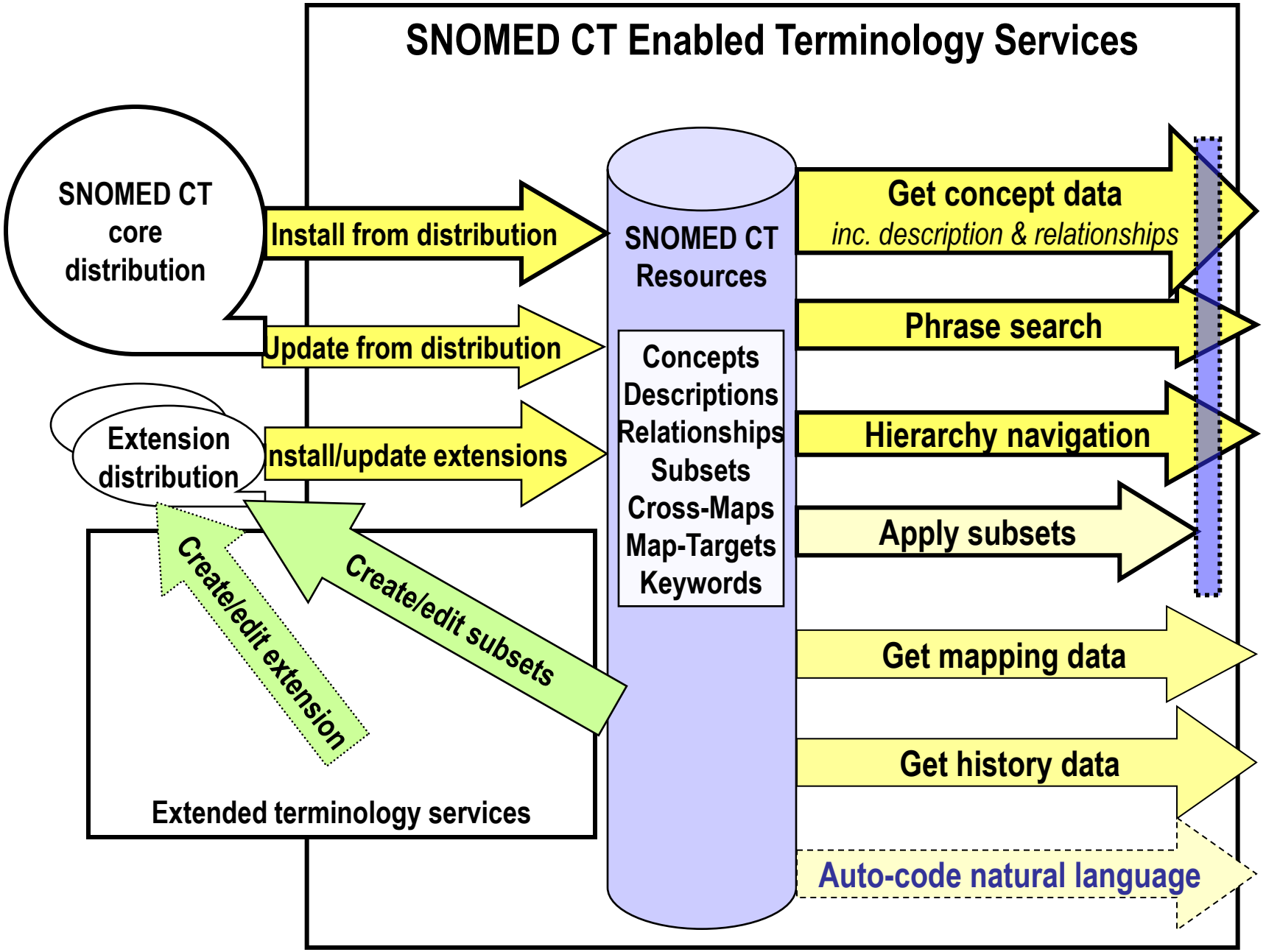
- Terminology service knowledge and skills
  - Representation and optimization of SNOMED CT
    - Database schemas and other options
  - Basic terminology services
    - Component data, versioned views
  - Intermediate terminology services
    - Searches, hierarchies, filtering with reference sets, etc
  - Advanced terminology services
    - Subtype testing and expression equivalence testing
  - Language specific search and display services

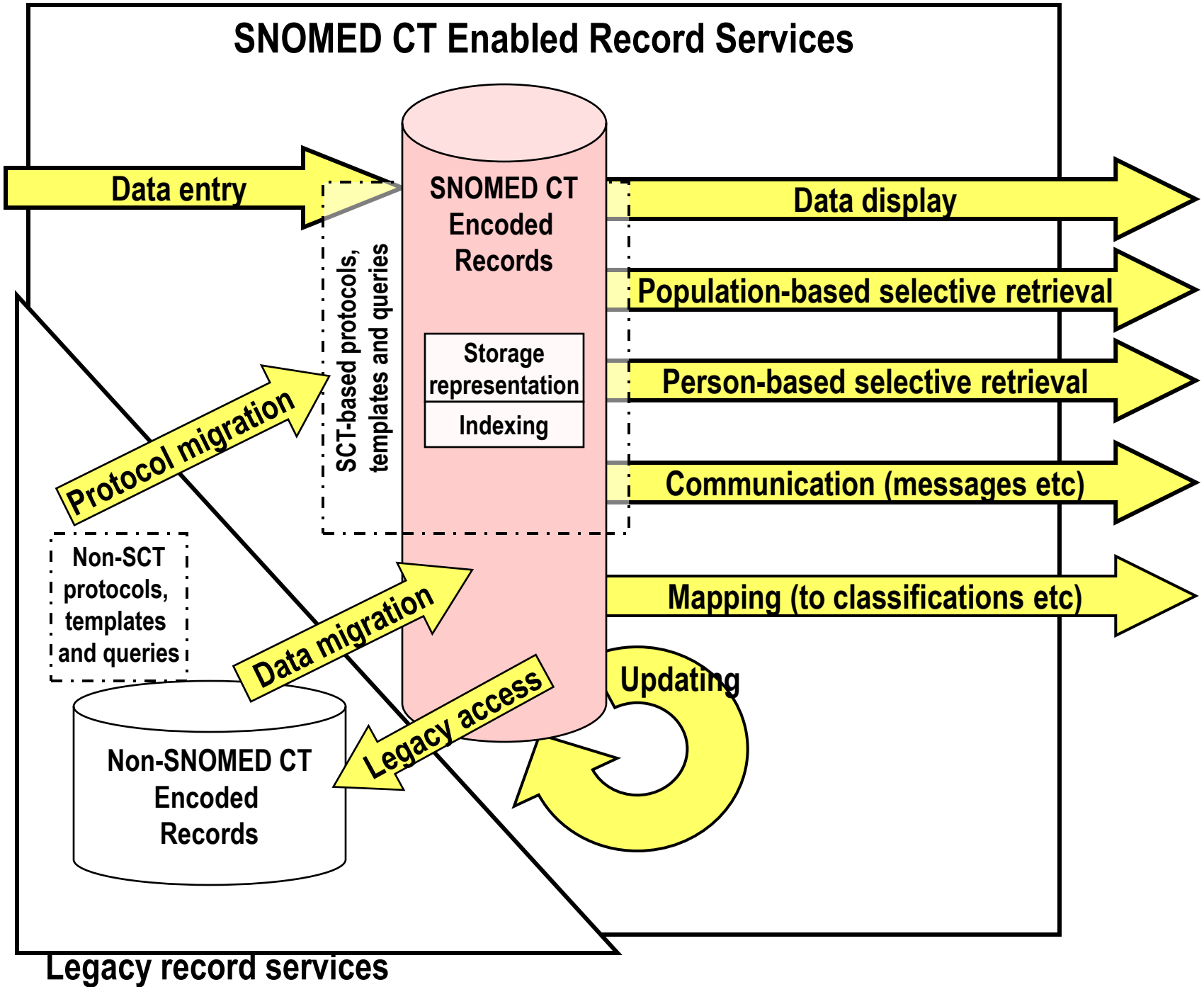
SNOMED CT Enabled applications

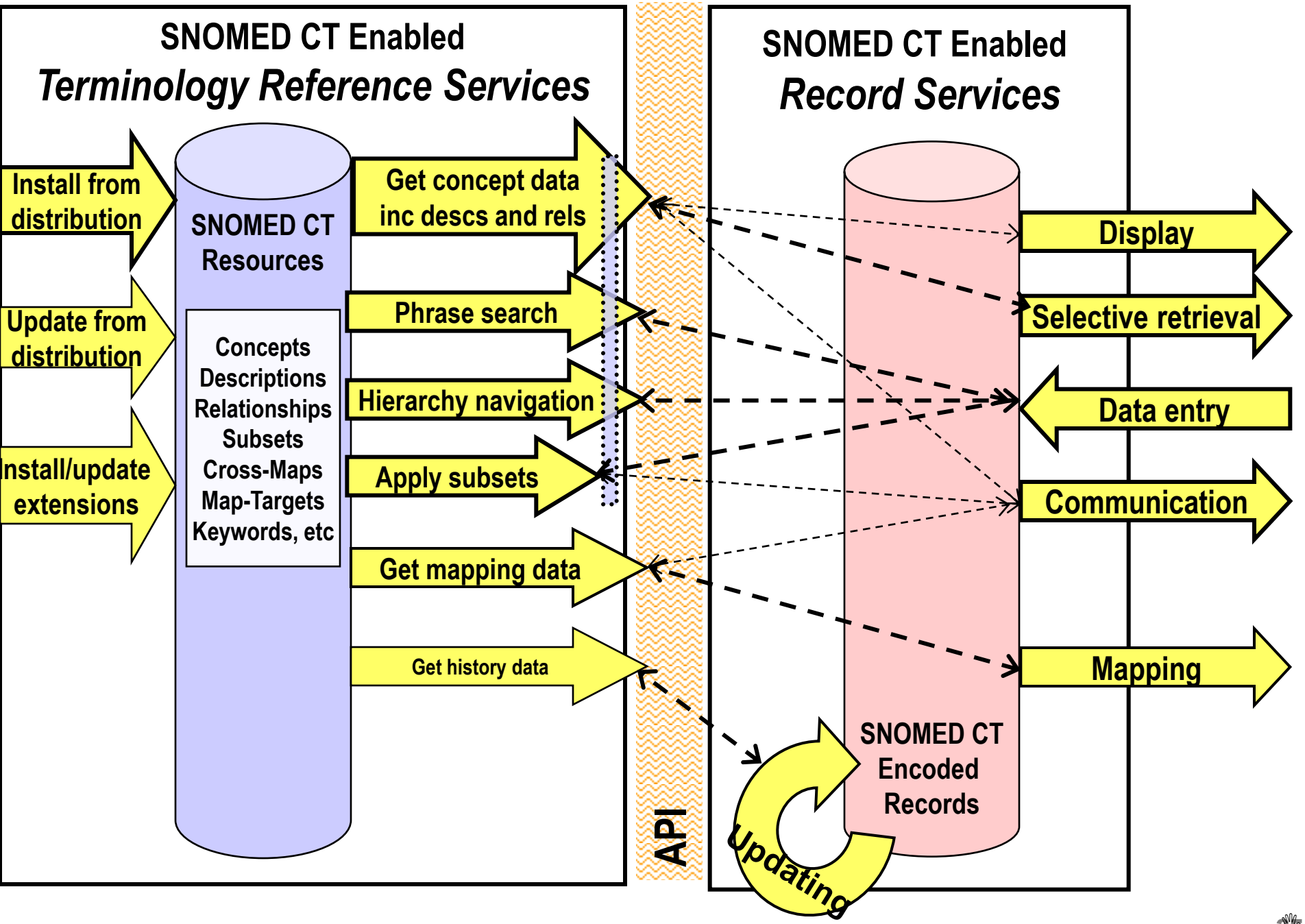
- Two distinct type of service
  - Terminology services
  - Record services
- Developing
  - Design it and do it all yourselves; or
  - Include components from others.
- Buying
  - “Off the peg” or “made to measure”?
  - Ideal is usually an off the peg solution that can be configured to meet specific requirements
- Integrating
  - Fitting the SNOMED CT Enabled applications into an overall health information system architecture

SNOMED CT-enabled application architecture

- Terminology services
  - Reference services
    - Foundation services
    - Data installation and updating
    - Finding terms and concepts
  - User interface services
- Record services
  - Entry
  - Storage
  - Retrieval
  - Communication
  - Migration


SNOMED CT Enabled Terminology Services
SNOMED CT core distribution
Install from distribution
Update from distribution
Extension distribution
nstall/update extensions
Create/edit extension
Create/edit subsets
Extended terminology services
SNOMED CT Resources
Concepts
Descriptions
Relationships
Subsets
Cross-Maps
Map-Targets
Keywords
Get concept data
inc. description & relationships
Phrase search
Hierarchy navigation
Apply subsets
Get mapping data
Get history data
Auto-code natural language

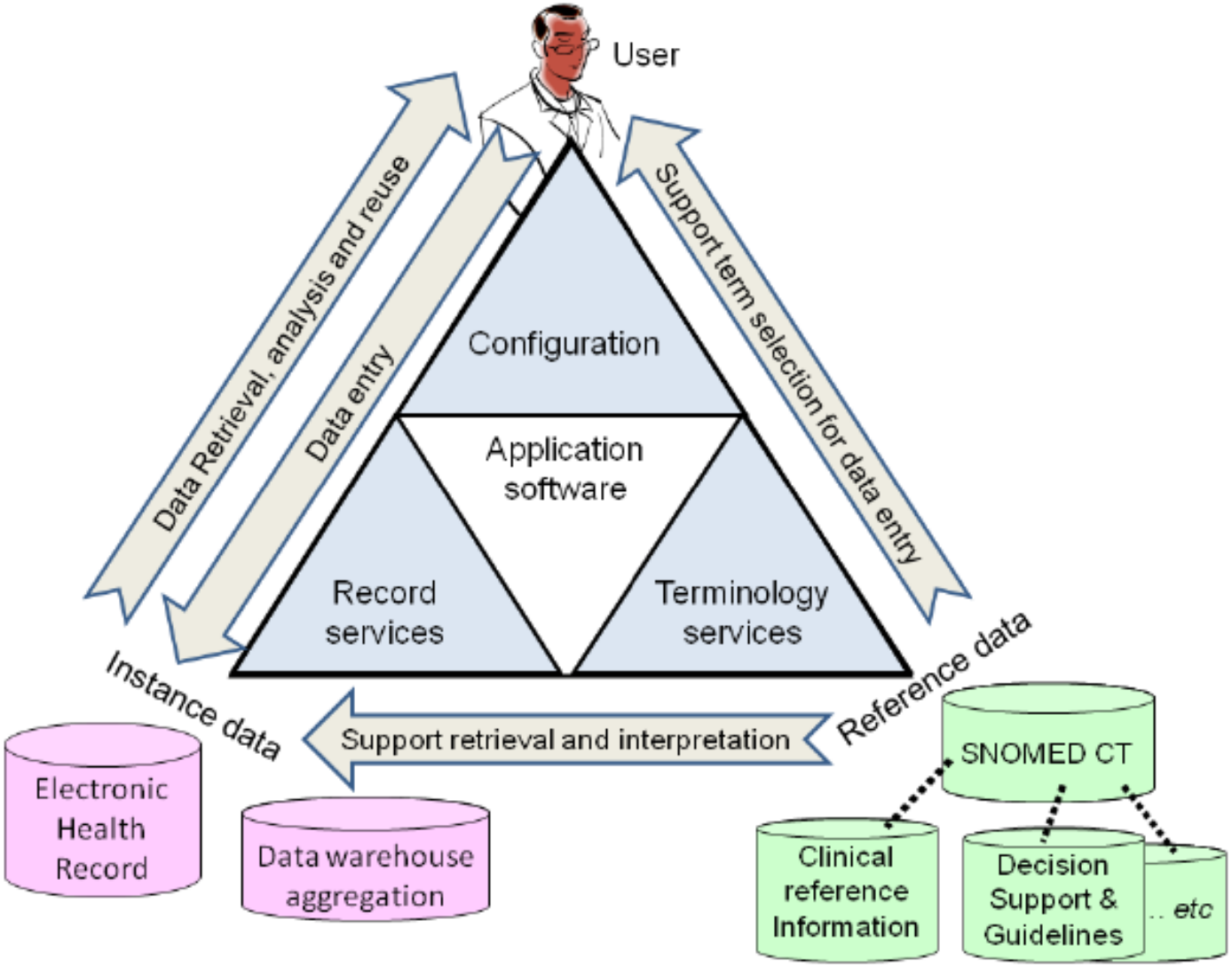

SNOMED CT Enabled Record Services
Data entry
SNOMED CT Encoded Records
Storage representation
Indexing
SCT-based protocols, templates and queries
Data display
Population-based selective retrieval
Person-based selective retrieval
Communication (messages etc)
Mapping (to classifications etc)
Protocol migration
Non-SCT protocols, templates and queries
Data migration
Legacy access
Updating
Non-SNOMED CT Encoded Records
Legacy record services


SNOMED CT Enabled
Terminology Reference Services
SNOMED CT Enabled
Record Services
Install from distribution
Update from distribution
install/update extensions
SNOMED CT Resources
Concepts
Descriptions
Relationships
Subsets
Cross-Maps
Map-Targets
Keywords, etc
Get concept data inc descs and rels
Phrase search
Hierarchy navigation
Apply subsets
Get mapping data
Get history data
API
Updating
SNOMED CT Encoded Records
Display
Selective retrieval
Data entry
Communication
Mapping

Terminology services

- Significance
  - Terminology services can be logically separated from application data specific record services
- Development options
  - Build the service as an integral part of you application
  - Build your own server with a clear API
  - Use a third party server

Relationship between users, software & SNOMED CT



Overview of terminology services

- Importing and updating release files
- Accessing information about identified components
  - Concepts, Descriptions and Relationships
- Traversing the associations between components
  - Concept → Description(s)
  - Description → Concept
  - Concept →Relationship(s)
  - Relationship → Concept
- Pre-coordinated subsumption testing
  - Testing whether a concept is a subtype descendant of another concept
- Supporting post-coordinated expressions
  - Including post-coordinated equivalence and subsumption testing

Working with ‘is a’ relationships

- Access to hierarchically related concepts
  - Subtype children
  - Subtype descendents
  - Supertype parents
  - Supertype ancestors
  - Identifying “special” concepts
- Subsumption testing
  - Top-level ancestor checking
  - Retrieval of concepts that are subtypes of a specified concept
  - Restricting search scope to subtypes of a specified concept

What is subsumption testing?

- A subsumption test determines whether one concept or expression is a subtype of another concept or expression
- A subtype implies its supertypes
  - This means if ‘A’ is true all supertypes of ‘A’ are also true
  - For example:
    - ‘**fracture of neck of femur**’ is a subtype of ‘*fracture of femur*’, which is a subtype of ‘*fracture of bone*’ which is a subtype of ‘*disorder*’
    - If someone has a ‘**fracture of neck of femur**’ it is also true that they have a ‘*fracture of femur*’ a ‘*fracture of bone*’ and a ‘*disorder*’

Importance of subsumption testing (1)

- Selective data retrieval
  - Many clinical information retrieval criteria specify a clinical condition and its subtypes

  For example,
  - A request for ‘all record entries referring to fractured bones’
    - This must include ‘fracture of neck of femur’, ‘fracture of femur’, ‘fracture of tibia’, etc.
  - In short, it includes all records that represent subtypes of ‘fracture of bone’

Importance of subsumption testing (2)

- Data entry requires subtype testing to:
  - Apply appropriate constraints to searches
    - E.g. So clinical findings are not listed when searching for a procedure
  - Organise and rationalise search lists
    - E.g. To minimise repetition by nesting subtypes rather than showing them all in a flat list
  - Apply concept model constraints to post-coordination
    - E.g. To display refinable attributes when a concept is selected and to restrict the values to those applicable to that type of concept.

Subsumption testing conclusions

- Most live implementations should use a transitive closure table to optimise testing
- If storage or distribution file size is an issue then the branch range approach is a good alternative
  - Note: This approach is used in the CliniClue Browser
- In future releases the IHTSDO plans to:
  - Distribute a transitive closure table
  - Make available a script for generating this table
- Queries for deriving the transitive closure have an advantage over the raw table when extensions are used
  - The following slides show MS SQL Server scripts that create this table and populate it from current SNOMED CT distribution tables

Searches

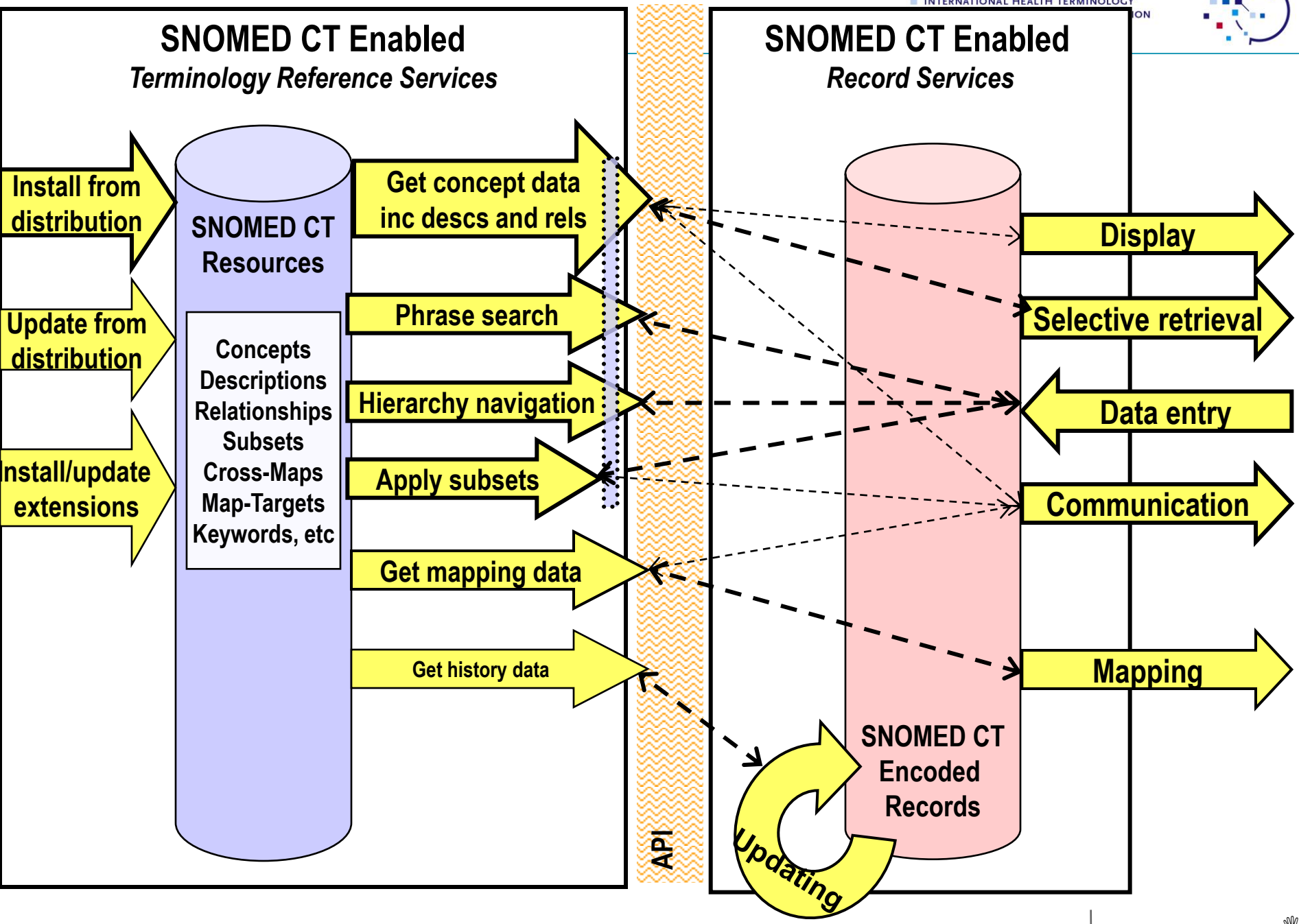
- Requirements
  - Performance
  - Flexibility
- Using SNOMED CT resources
  - Word Key
  - Dual Key
  - Excluded Words
  - Word Equivalents
- Constraining and modifying searches
  - Excluding inactive components
  - Constraints based on subsumption
  - Language Refsets
  - Simple Refsets (subset, display orders and prioritisation)

Supporting rational post-coordination

- Refining defining relationships
  - Enabling selection of a more specific value for a defining relationship
- Applying the Machine Readable Concept Model
  - Enabling selection of an attribute permitted for type of focus concept
  - Enabling selection of permitted values for a chosen attribute
- Post-coordination expression constraints
  - Supporting use of more specific constraints to limit or require post-coordination in particular fields

A satellite level view of the route (part 3)

- Record service knowledge and skills
  - Interface between record structure and use of terminology and the idea of a “model of meaning”
  - Pros and cons of using pre and post-coordinated data
  - Effective approaches to storage of SNOMED CT expressions in different record structures
  - Range of SNOMED CT data entry methods appropriate for different circumstances:
    - Searches, reference set filtering, hierarchical refinement , refinement using post-coordination, templates and protocols linked to pre-assigned expressions, short-cut abbreviations, NLP applied to text, graphical selection of body sites, etc, etc.
  - Challenges and solutions for effective retrieval of SNOMED CT expressions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Get history data
API
SNOMED CT Encoded Records
Updating
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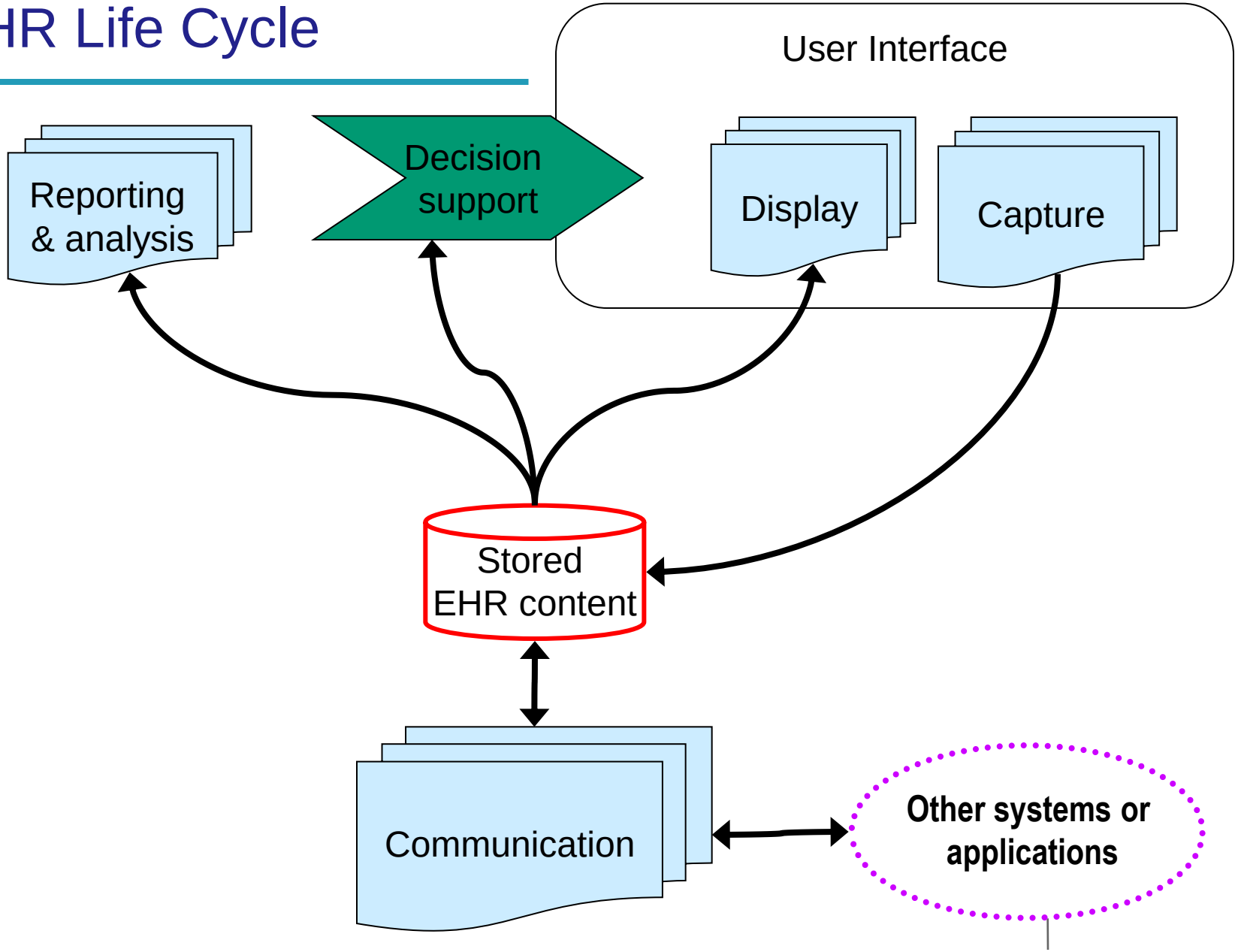
Mapping

Record service requirements

- Enable effective use of SNOMED CT as part of a software application that provides a defined set of services
- The sets of services provided include
  - Electronic Health Records
    - Ranging from individual departmental records systems to comprehensive enterprise-wide electronic record systems
  - Knowledge resource representation
    - Including guideline representation and decision support tools
  - Aggregation and retrieval
    - Including data warehousing

EHR Life Cycle



Data capture and data representation

- Effective data capture is vitally important
  - It needs to be easy in terms both of
    - the time and effort required; and
    - the way it fits in with working practices

- Data capture is only worthwhile if the data captured can be usefully reused

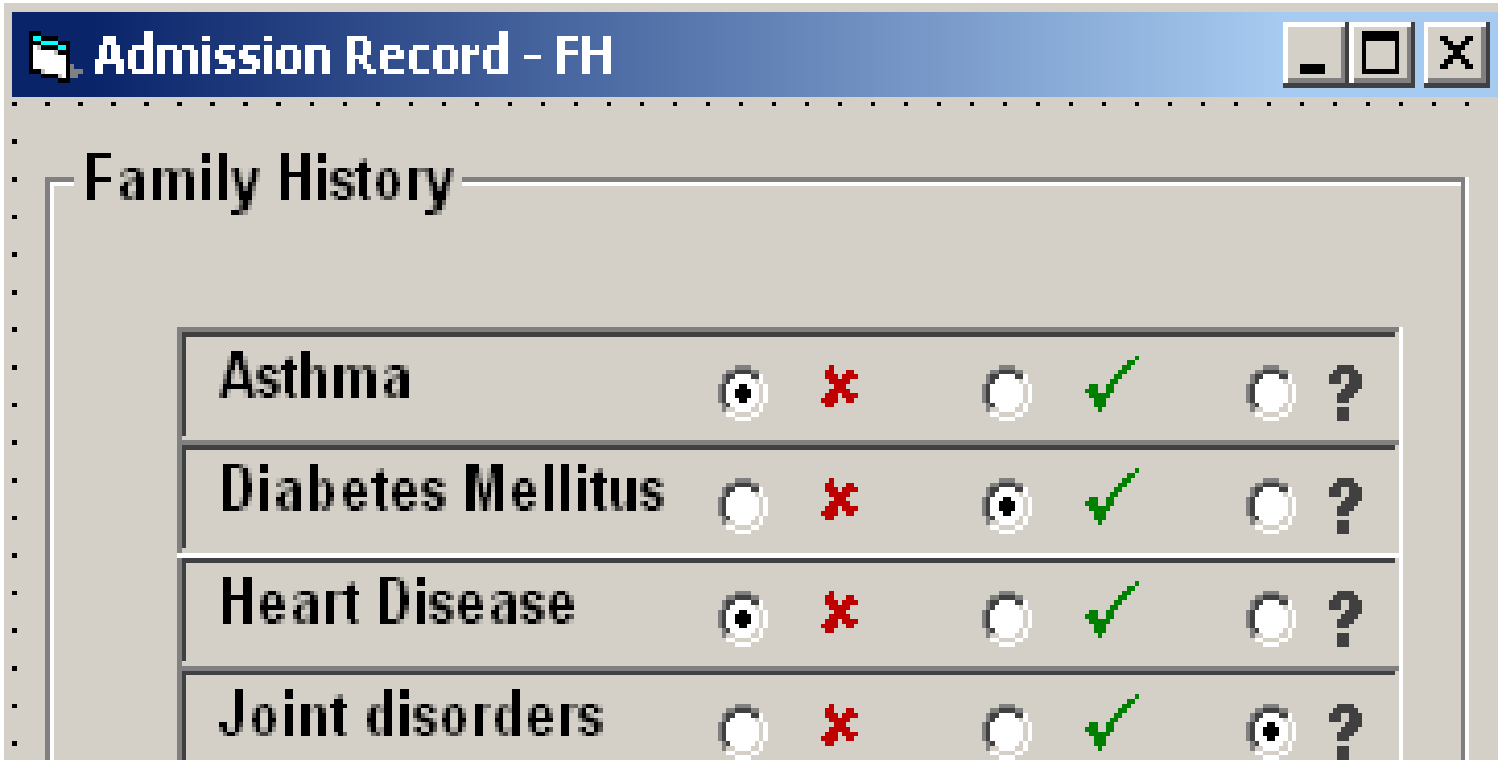
  Therefore
  - Data capture does not define the requirements for data content and representation
  - Data capture needs to be designed to meet requirements for subsequent retrieval

Data entry modes are good servants but poor masters

- Approaches to data entry need to be tailored to the way different groups of clinicians work and think
  - A common approach to the user interface
  - But not one size fits all

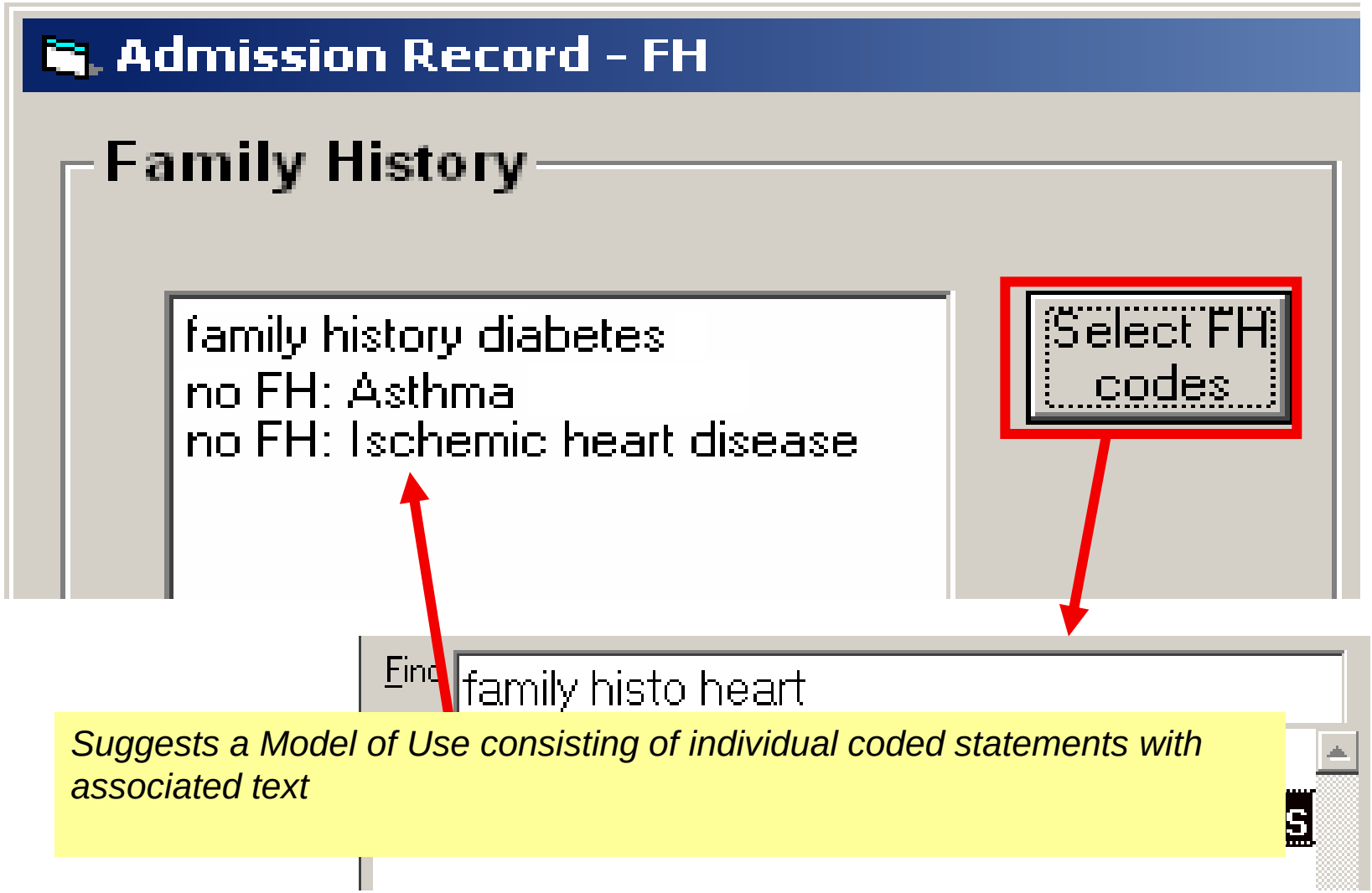
- As the following examples illustrate the same information may be captured in different ways
  - How does this affect content and representation?

Different ways to capture the same meaning (1)
Simple check-boxes



Suggests a Model of Use consisting of codes assigned values of "true", "false" or "unknown".

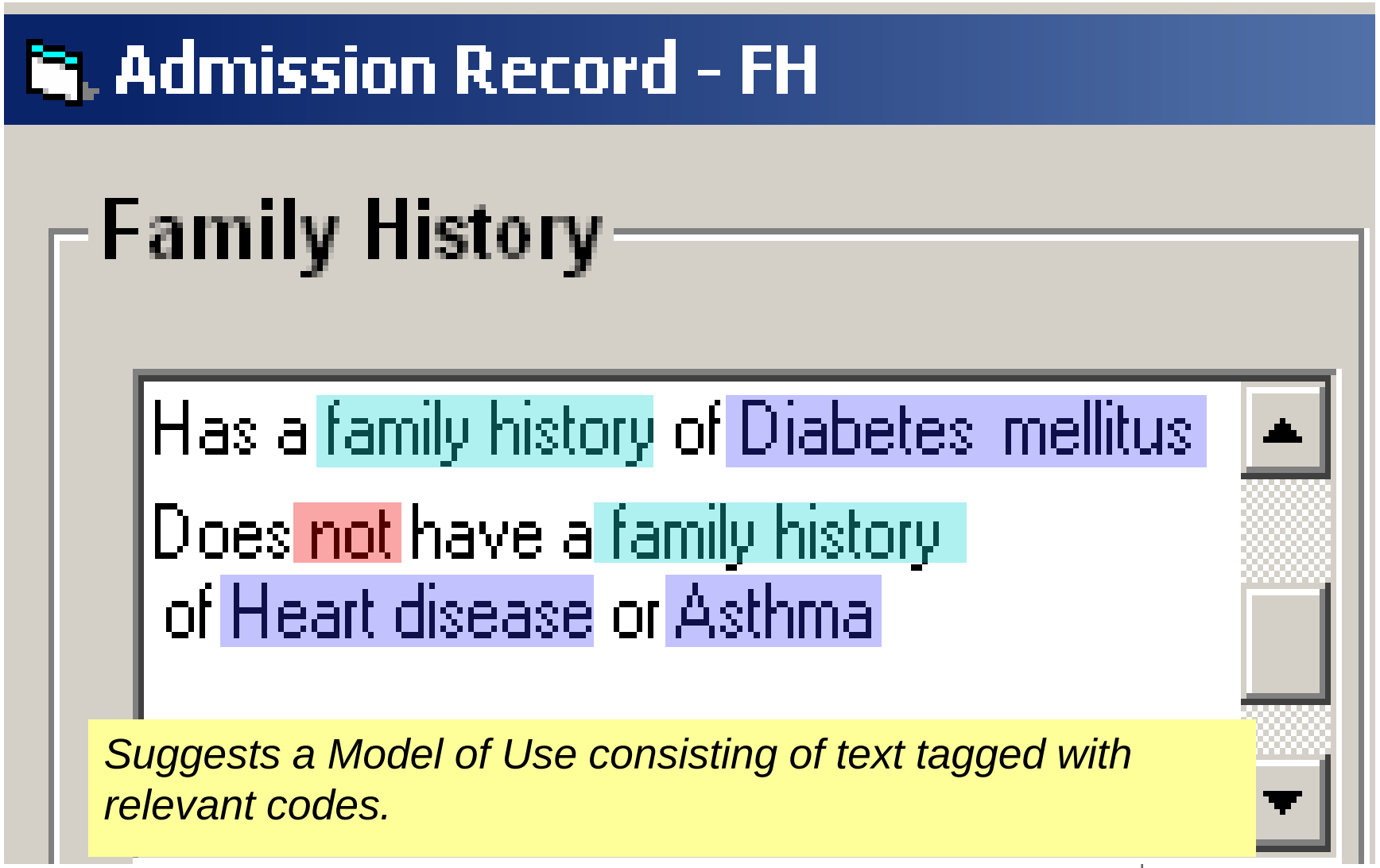
Different ways to capture the same meaning (2)
Selection of terms



Suggests a Model of Use consisting of individual coded statements with associated text

Different ways to capture the same meaning (3)

Free text with natural language processing



Suggests a Model of Use consisting of text tagged with relevant codes.

Answering questions based on data capture mode

If information is represented according to the way it is captured it may be difficult to answer simple questions

Does the patient have a family history of diabetes mellitus? *… expands to …*

- Do they have a family history form in which 'diabetes mellitus' is checked as present?
- Do they have a family history record in which the code for 'FH diabetes mellitus' is present?
- Do they have text that is tagged with the code for 'diabetes mellitus' in the context of a section of text tagged as 'family history'?
- ... there are also other data capture representations to consider

Retrieval as a determiner of data content & representation

- To support effective reuse a health record must make it possible to answer **relevant** questions **accurately** and **efficiently**
- To answer relevant questions information must be selectively retrieved so it can be displayed or analysed
- Therefore, retrieval requirements are an important determiner of requirements for data content and representation

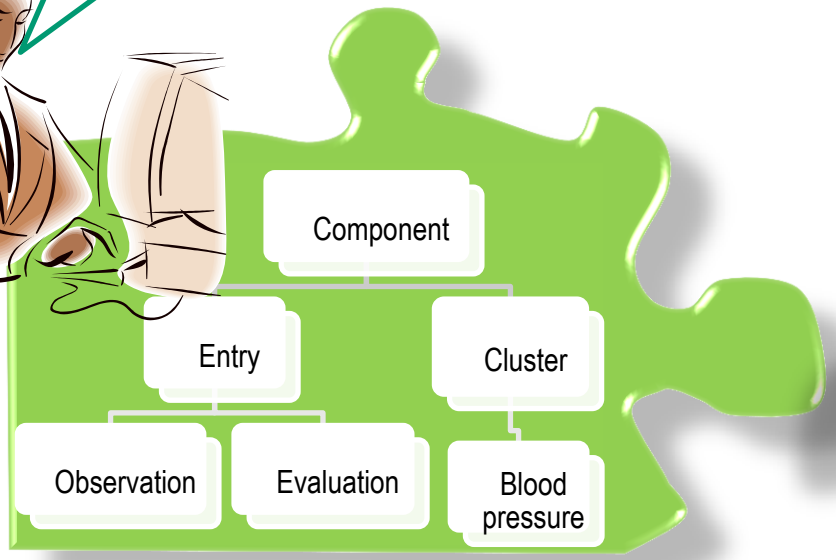
Approaches to health record structure

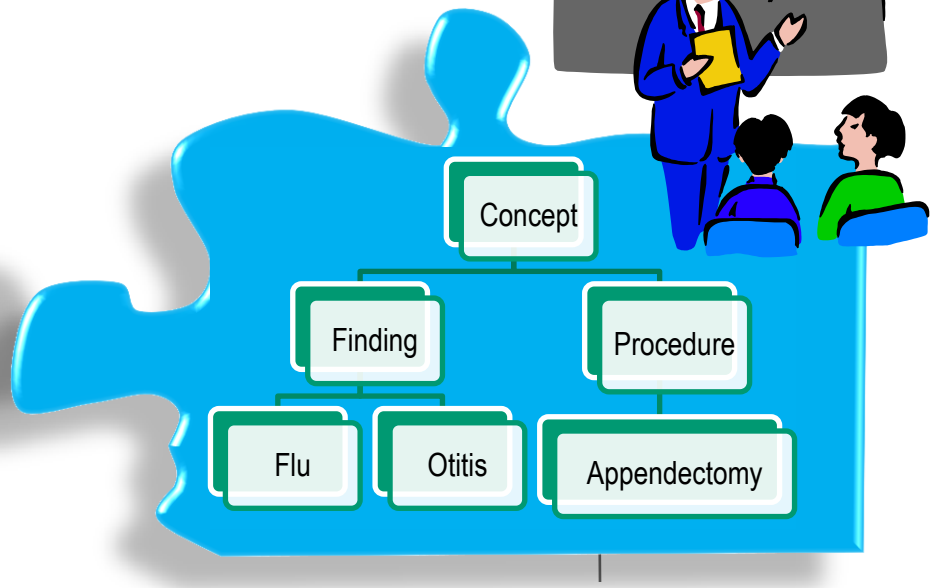
- Proprietary database designs
  - Many and varied
- Standards
  - HL7 Version 3 based models
    - Including – HL7 CDA and HL7 Clinical Statements
  - EN13606 based models
    - Including – openEHR

Historical misconceptions about terminology and structure

Our information model is terminology independent

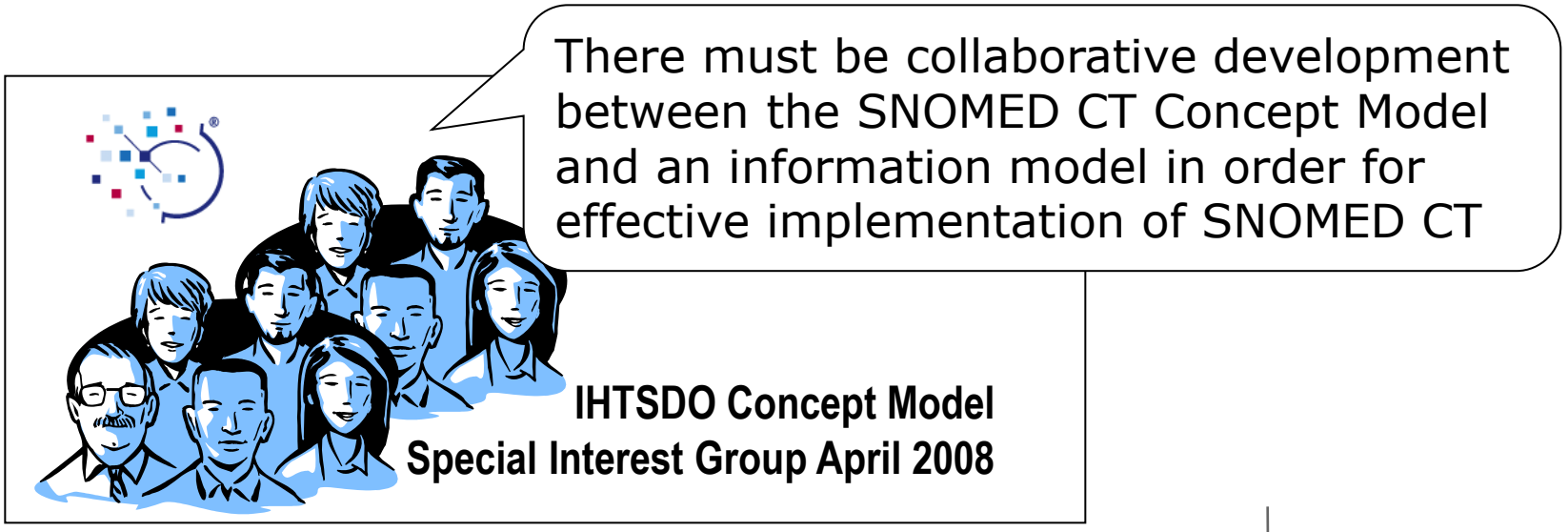
Our terminology can be used in any health record information model





Recognising interdependencies

- Practical consequences of interdependency between terminology and structural information models are often underestimated
  - Information models cannot be terminology neutral
  - SNOMED CT implementation is dependent on tight integration with standard information models
- Developers of clinical terminologies and clinical information models should adopt policies that facilitate 'dependency aware evolution' of their contributions



Entry of post-coordinated expressions

- Consistent representation is essential for retrieval
- User interfaces need to be tailored by use case
  - Therefore
    - The relationship between user-interface and representation cannot be one-to-one
- Using post-coordinated expressions to represent data need not mean more mouse-clicks or key presses
- A well designed user interface
  - Should not slavishly follow the structure of expressions and their possible refinements
  - Should apply a mix-and-match of techniques data entry techniques that suit users
  - Should record information consistently using post-coordinated expressions to support retrieval

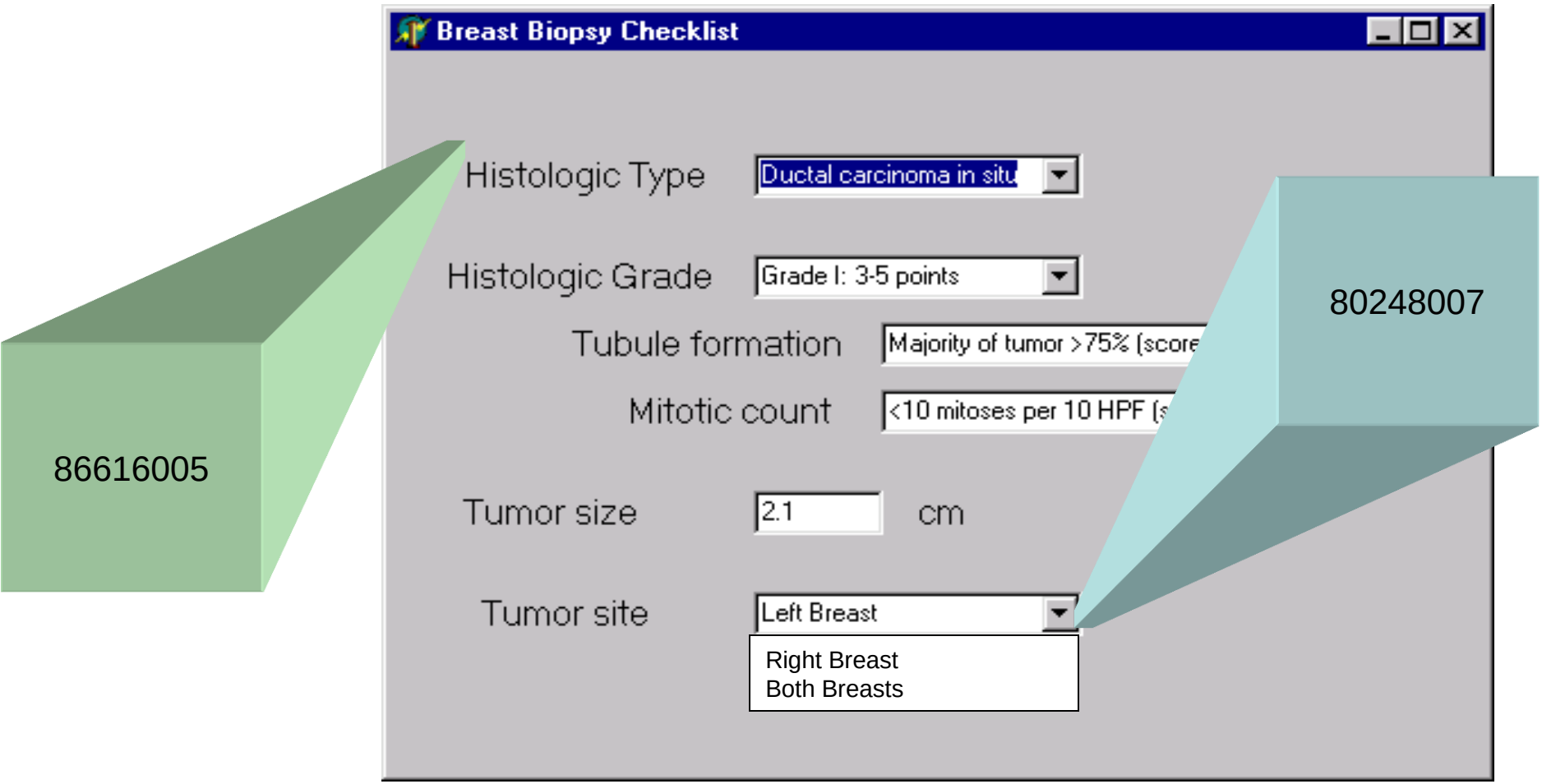
Favourites and shortcuts

- A good user interface should allow commonly used expressions to be entered using shortcuts
  - Some of these may be built into the application
  - Others should be user or department configurable
- Examples
  - TET1→ "**170330007**"
    - *First tetanus vaccination*
  - #LTIB → "**31978002 : 272741003 = 7771000**"
    - *Fracture of left tibia*

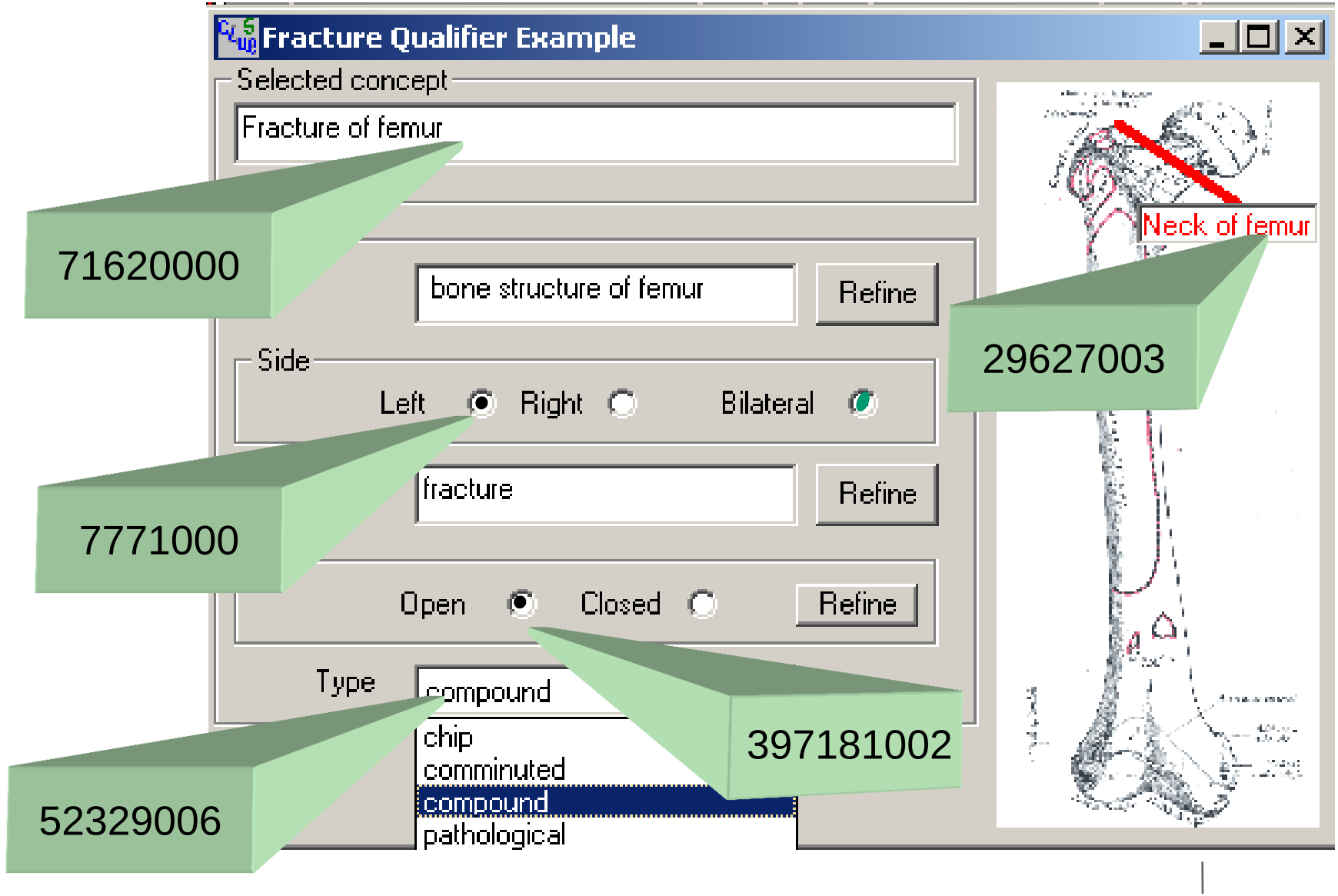
Structured data entry forms

- User selection from a small list of possible descriptions
- A context subset may specify a list of options for a field
  - Very short list – drop-down user selection
  - Longer lists require constrained search facility
- Check boxes and other screen devices may be associated with hidden coding options
- Entries of numeric or other values may be labelled with appropriate concept identifiers

Structured data entry forms

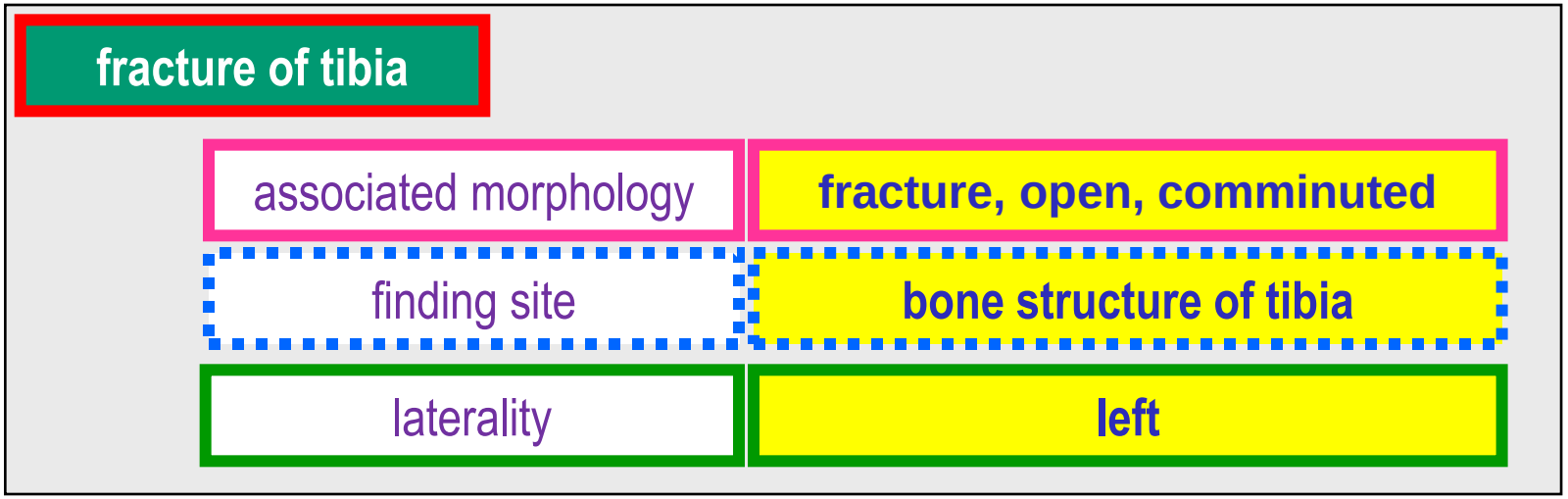


Enhanced interfaces for refinement



Auto-encoded indexing of text

Open comminuted fracture of the left tibia



- Concepts chosen to index text
- Computer program matches text to concepts via key word search
- Human intervention needed to resolve ambiguities

A satellite level view of the route (part 4)

- Change Management
  - Options for migrating data from legacy systems
  - Dealing with updates to the terminology and managing the impact of these on existing data, queries and protocols
- Cross Mapping to classifications (e.g. ICD10)
  - Using SNOMED CT Cross maps files
- Supporting development of derivatives
  - Allowing system integrators to configure systems by adding localized Reference Sets.
- Supporting development of extensions

Where can you get help?

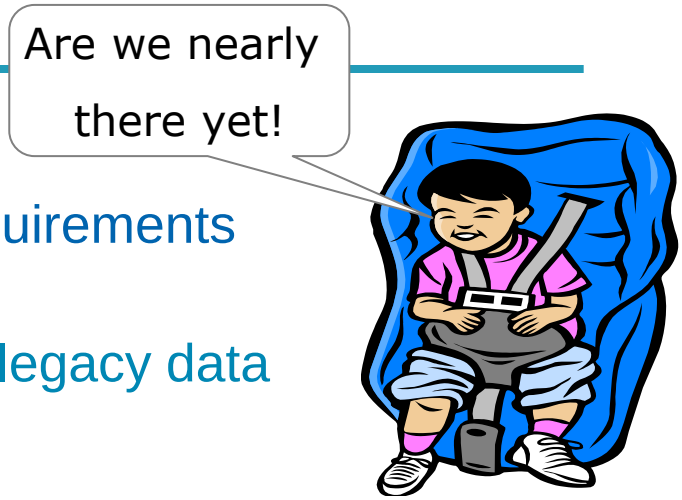
- IHTSDO Members
  - Check with the Member organization in your country
    See http://www.ihtsdo.org/members/
- IHTSDO Support (support@ihtsdo.org)
- IHTSDO Special Interest Groups (SIG)
  - Implementation SIG
  - Other SIGs relevant to particular specialties and topics
    Including …
    - Anatomy
    - Anesthetics
    - Family Practice / General Practice
    - Mapping
    - Nursing
    - Observables and Investigations
    - Pathology (IPaLM SIG)
    - Pharmacy

http://www.ihtsdo.org/about-ihtsdo/governance-and-advisory/working-groups/special-interest-groups/

How can you help others?

- The IHTSDO is a collaborative community
  - No one has all the answers to all the questions
  - Each implementation is a learning experience
  - Pass on what you have learnt to those who follow
  - Join and contribute to the Implementation SIG
- Implementation Special Interest Group (SIG)
  - Join the regular discussion meetings and add you experience
  - Submit a short paper summarizing
    - An issue you faced
    - Options you considered,
    - Chosen approach
    - Experience while applying that approach
  - Provide the solutions that worked for you as input to discussions
  - Volunteer to present your implementation to the group

How long will it take?

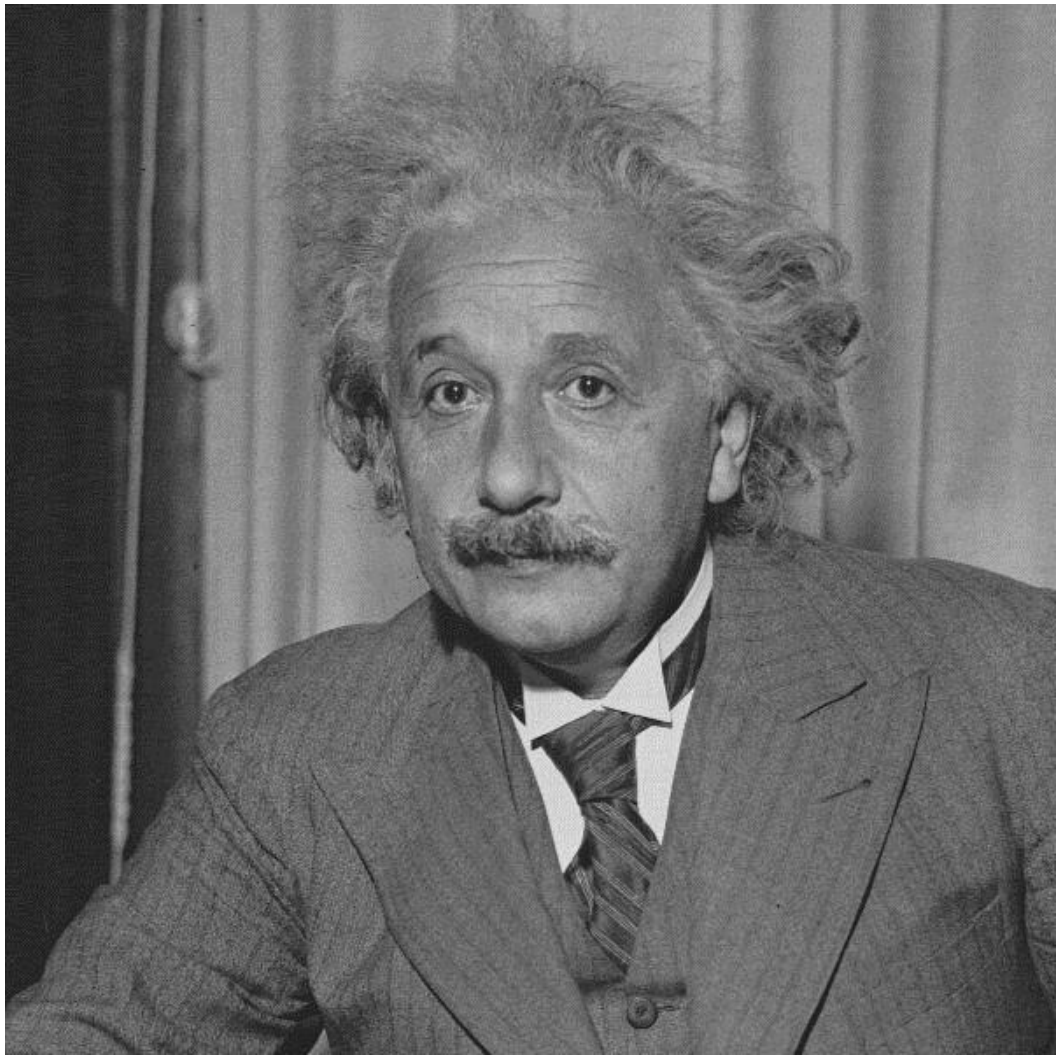


- It depends
  - How far you intend to go – breadth of requirements
  - How much baggage you take with you
    - Scale of implementation & volume of legacy data
- Set a realistic pace
  - Impatience and corner cutting have risks
  - More haste – less speed
- Sensible check-points with measurable achievements
  - For example,
    - Test key components in the proposed solution before committing to full scale implementation
    - Field test prototypes that provide end-to-end demonstrations addressing each part of the requirement
    - Implementing in one department initially rather than a big bang

Why not make a simpler route?

- KISS
  - ‘Keep It Simple Stupid’
- A delightful acronym but not a universal truth
  - It presumes it is ‘simple’ in the first place
  - If something is complex, you cannot keep it simple

Dealing with inherent complexity



‘Everything should be made as simple as possible, but no simpler.’

Albert Einstein

Making it as simple as possible - but no simpler

Clinical information is inherently complex

- It consists of interwoven threads …
  - The stories of individual patients
  - Current knowledge based on previous stories
  - Interconnections at anatomical, physiological and psychological levels
  - Perceptions of individual clinicians and patients and the cultures within which they live and work

- The challenge is to make it as simple as possible
  - SNOMED CT must be made simple for end-users
  - That simplification requires engineering
  - That engineering is necessarily complex

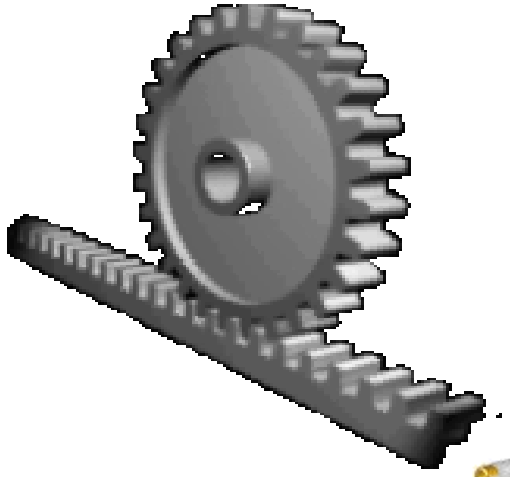
Misconceptions about SNOMED CT

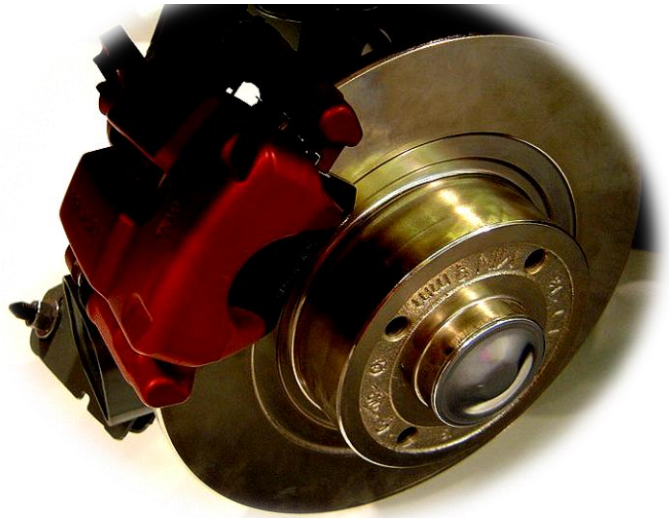
I must understand how SNOMED CT works before I agree to use it

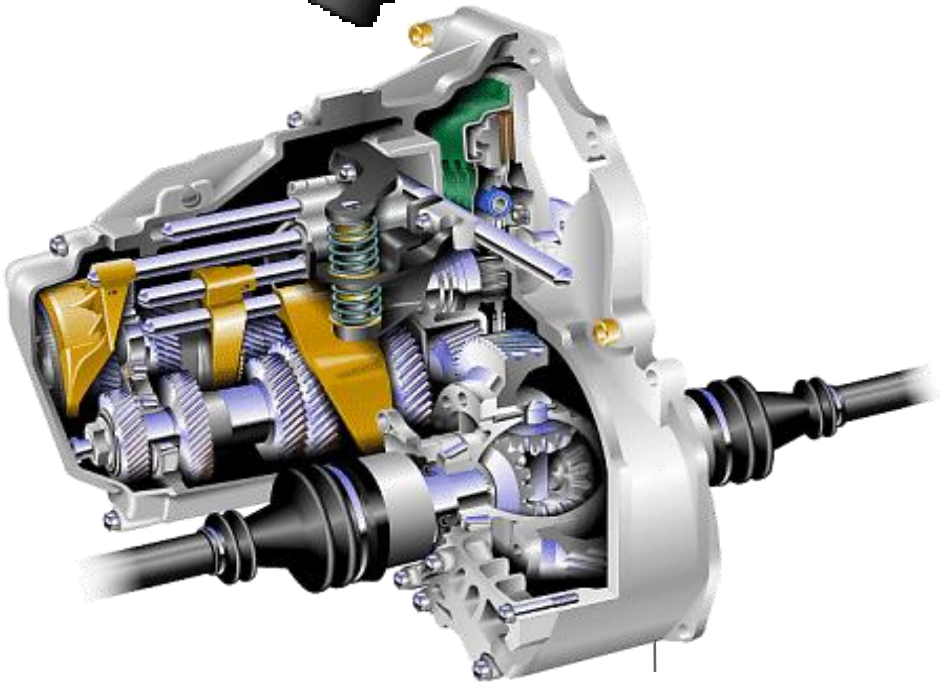
It is too complex for me to understand. Therefore, I do not need it.

To do this …

… do you need to understand this …



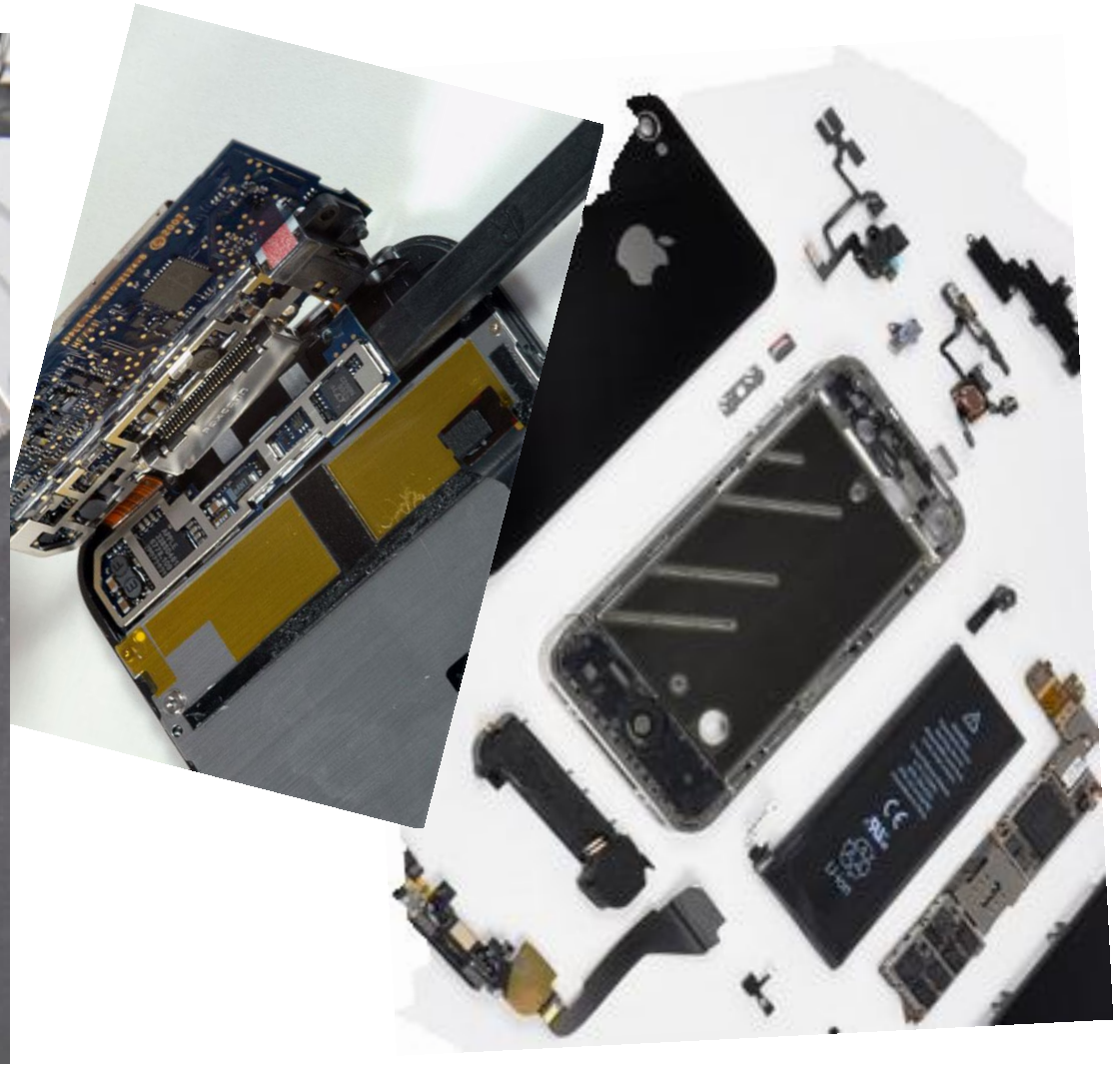




… or just this

To use these …

Do you need to understand these …



SNOMED CT is not so complex after all …

- SNOMED CT uses three types of component
- A simple way to linking them to one another

- The rules represented by the relationship match knowledge
  - **Appendectomy**
    - is a **procedure**,
    - which **excises** (… the method)
    - the **appendix** (… the procedure site)

- A post-coordinated expression has a syntax that is simpler than the way we post-coordinate words in everyday speech

- The algorithms for processing SNOMED CT expressions are repeatable, reusable and rather simpler many now taken for granted in commodity electronics

Benefits of an effective EHR using SNOMED CT

- Decision support
  - Reduction of risk from inappropriate treatment
  - Enhancements in care from earlier effective treatment
  - Reduced duplication of investigations
  - Reductions in cost from applying best-practice guidelines
  - Care audit and recall of patients requiring follow-up
  - Linkages to knowledge sources and relevant research
- Analysis and retrieval
  - Epidemiology – research into causes of illness and monitoring of epidemics
  - Research into impact of alternative treatments
  - Planning and monitoring care to make best use of resources
  - Statutory reporting based more closely on primary clinical information

A summary of the progress required

Typical first step

- Existing systems modified to support limited SNOMED CT encoding
- Data entry screens designed for batch entry using limited local code lists
- Storage based on existing non-SNOMED CT coding schemes
- Ability to display and store textual information (with a few codes) from inbound messages
- Limited semantic operability characterised by limited selective retrieval options
- Requirements to support existing non-SNOMED coded statutory reporting requirements

Development goal

- Systems designed to use the features of SNOMED CT effectively
- Usable point-of-care data entry appropriately configured to meet differing specialty requirements
- Optimized storage of SNOMED CT expressions
- Ability to store, display & process SNOMED CT coded clinical information in inbound messages
- Effective retrieval using the richness of SNOMED CT to provide flexible data retrieval
- Meeting statutory reporting requirements specified using SNOMED CT

INTERNATIONAL HEALTH TERMINOLOGY
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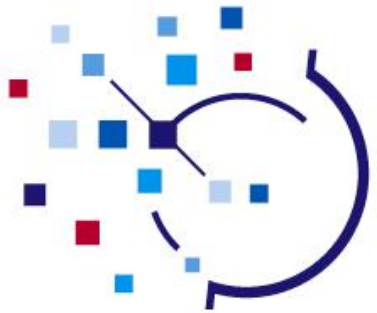

Thank you for your interest

Any Questions?

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