



Textbook about the “Reference Terminology SNOMED CT” (in German language)

Josef Ingenerf
Cora Drenkhahn

IT Center for Clinical Research, University of Lübeck
Institute of Medical Informatics, University of Lübeck

Introduction

Background

2021: Germany becomes 40th member of SNOMED International

Ongoing initiatives introduce SNOMED CT

German translation in progress

BUT:

Long way to successful adoption

Lack of expertise regarding SNOMED CT

Huge existing fundus of information (see Guides, Confluence, ...)

Extensive literature, ...

BUT:

Pooled knowledge in one place?

Comprehensive explanation of underlying essentials?

Consideration of current developments and German idiosyncrasies?

Chapters
1 - 4

Chapters
5 - 7

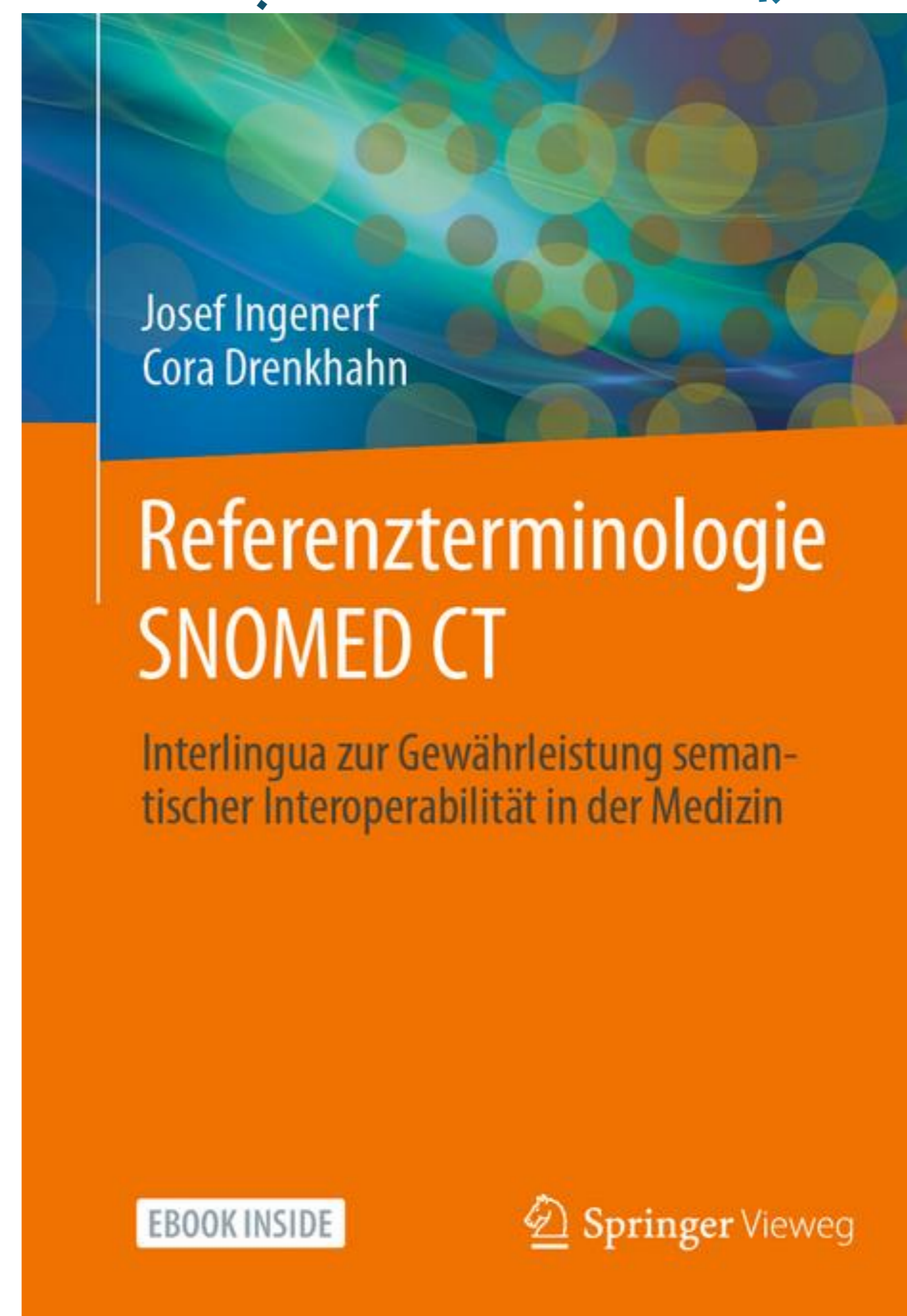
Discussion

Approach

Textbook written in
German

510
pages

7
chapters



261 illustrations
& numerous
examples

Profound SNOMED
CT knowledge for
software developers
and users

snomedexpo.org

SNOMED CT
EXPO 2022
Sept 29-30, 2022 ✕ Lisbon, Portugal

Introduction

ePosters sponsored by:





Introduction

Chapters
1 - 4

Chapters
5 - 7

Discussion

1 Introduction and Motivation

In the style of a “Frequently Asked Questions” section some of the reader’s most common or urgent topics are addressed. These include basic facts about SNOMED CT as well as questions of national relevance like licensing and current usage.

SNOMED CT: A Concept System Founded on Formal Logic (Ontology)

- | | |
|---|-------------------------------|
| 4.1 Introduction and Motivation | 4.4 First-Order Logic |
| 4.2 Natural Language vs.
Formal Language | 4.5 Description Logic |
| 4.3 Deductive Formal Logic:
Basic Principles | 4.6 OWL 2 Profile “EL” |
| | 4.7 SNOMED CT Logic Profile |
| | 4.8 Semantic Web Applications |

According to the SNOMED CT Glossary, a reference terminology is defined as “a terminology in which each term has a formal, computer-processable definition of its meaning”. This can be rephrased as “ontology-based terminology” where the ontology part focuses primarily on the use of logic (although there are other interpretations). With that in mind, the fundamentals for SNOMED CT’s ontological properties are presented by explaining the basic principles of formal logic in general, and of first-order logic and description logic in particular. In this regard, the specific logic profile used for SNOMED CT is discussed as well.

4

2 SNOMED CT: A Historical View

- 2.1 General Development from SNOP to SNOMED CT
- 2.2 Decision Process Towards Licensing in Germany

Starting with its precursor SNOP in 1965 a short summary of SNOMED’s evolution throughout the years is outlined, thereby explaining the underlying historical background. Germany’s path to the national license is briefly discussed as well.

3 Medical Documentation, Sublanguage and Terminology

- 3.1 Medical Documentation: Usability of Clinical Data for Research
- 3.2 Medical Sublanguage (Linguistics)
- 3.3. Concepts and Terms (Terminology)
- 3.4 Terminologies (Terminological Systems) in Distinction to
Other Vocabulary Types

Motivated by the goals and principles of medical documentation, typical characteristics of medical data are outlined. Drawing on language phenomena along syntax, semantics, and pragmatics as linguistic subfields, terminology as a science is addressed, i.e. introducing terms, concepts and concept systems. From here, terminologies or terminological systems are characterized and distinguished from other types of vocabularies such as statistical classifications, thesauri, or interface terminologies.

3





Introduction

Chapters
1 - 4

Chapters
5 - 7

Discussion

5

SNOMED CT: Usage in the Context of Information Models

- 5.1 Proprietary Data Models and Master Tables
- 5.2 Semantic Interoperability
- 5.3 Standardized Information Models and Vocabularies
- 5.4 Information versus Terminology Model: TermInfo
- 5.5 Required Infrastructure Components or Software Services

To achieve semantic interoperability, a terminology needs to be used in the context of a (standardized) information model. In this chapter, legacy standards as well as current alternatives are addressed with a focus on HL7 FHIR. Furthermore, the interplay of terminology and information model, and the corresponding issue of overlapping responsibilities between both sides are discussed. Finally, several infrastructural aspects like (cascaded) terminology servers are addressed.

6

SNOMED CT: The Reference Terminology's Current State

- 6.1 SNOMED CT's Concept System
- 6.2 Design Decisions in Detail
- 6.3 Technical Implementation and Usage
- 6.4 Applications

This longest chapter yields a detailed look at SNOMED CT itself in its current state. Therefore, the basic components, such as Concepts, Descriptions and Relationships are explained thoroughly as well as the specific computational languages that make SNOMED CT the most expressive machine-understandable interlingua in medicine by employing postcoordination and ECL queries. These and numerous adjacent features are detailed both in theoretical structure as well as in practical handling.

Conclusion and Summary

The different aspects touched upon in each chapter are brought together and set into perspective of current developments and how to proceed from here.

7



Introduction

Lessons Learned

The **inconsistent meta-terminology** in the subject area found in existing literature and the general debate hinders the unambiguous communication of relevant content. To mitigate this, we introduced technical terms via **precise definitions** according to ISO standards and the SNOMED Glossary.

SNOMED CT and its eco-system is **rapidly evolving**. Introduction of new features and tools as well as changes made to individual concepts between versions entailed a constant need to adjust textual explanations and examples.

Similarly, **Germany’s membership fuels projects and initiatives** dealing with SNOMED CT, which needed repeated consideration as well.

There are multiple perspectives to approach the reference terminology SNOMED CT (e.g. software developer, terminologist, user) which correlate with **different knowledge requirements**. Collating and writing down the necessary information for everyone has proven to be challenging, and resulted in a far larger volume than anticipated.

Chapters
1 - 4

Chapters
5 - 7

Discussion

Future Directions

! Finalizing of corrections
& printing / online publication

Promotion of textbook on
(inter)national conferences & events !

! Useful knowledge base for ongoing national
tutorials & workshops

? Possibility of revised edition(s)
in the future

? Providing additional exercises
as a course book for users ?

? Examine current interest
for international edition in community



To be published
soon.

