DATASPACE
4HEALTH
LUXEMBOURG

Interoperable Harmonized Data Model for Colorectal and Lung Cancers

Document ID : DS4H_WP5_D5.2

Author

Dataspace4Health Consortium

Date: 23/07/2025

Funding

This project has received funding from the Ministry of the Economy of Grand Duchy of Luxembourg under Grant agreement no 20230505RDI170010392869.

Disclaimer

The documents published by the consortium are intended solely for informational purposes and reflect the views and opinions of the consortium members at the time of publication and within the scope of the Dataspace4Health project (DS4H).

The ideas expressed herein do not necessarily reflect the official policy or position of the funding entity.

Efforts have been made to achieve the relevance of the content; however, the consortium does not make any representation regarding its completeness and accuracy.

This document may be subject to further revision.

This document is intended to be published on the Dataspace4Health website.

Table of Versions

Version n°	Issue Date	Reason for change
0.0	20/03/2025	First draft.
0.1	04/04/2025	Internally reviewed and then the 0.1 version is shared with all partners.
0.2	16/04/2025	Scripts are elaborated. Potential data sources for mapping are suggested.
0.3	22/04/2025	Description for OncoBox is revised.
0.4	25/04/2025	Data mapping is validated. Corresponding scripts are revised.
1.0	20/05/2025	Final version has been sent to the coordinator.

TABLE OF CONTENTS

TABLE OF FIGURES

TABLE OF TABLES

Glossary

Abbreviation	Expression
EHDS	European Health Data Space
EHR	Electronic Health Record
LIH	Luxembourg Institute of Health
MII	Medical Informatics Initiative
OnkoZert	German Oncology Certification Body
UML	Unified Modeling Language

1. INTRODUCTION

Data mapping is essential for bridging heterogeneous healthcare data systems and ensuring seamless data exchange under the European Health Data Space Regulation (EHDS) [1]. This document provides guidelines for mapping data specifically for colorectal and lung cancers. The source data is the OncoBox [2], while the target is the oncology data model developed by the German Medical Informatics Initiative (MII) [3].

OncoBox offers data models that encapsulate clinical, diagnostic, and treatment data for specific cancer types. These models are certified by the German OnkoZert [4] association. Section 2 provides an overview of the OncoBox data model for colorectal and lung cancer, including the relationship between data entities in the UML diagram. In contrast, the German MII oncology data model was developed to standardize data across the German healthcare system. Section 3 offers an overview of this model. Note that comprehensive and in-depth description of MII oncology data model can be found in Dataspace4Health Deliverable 5.1 [5]. Finally, Section 4 outlines a mapping strategy to align OncoBox data with the German MII Oncology data model. This section compares the source data and the target data and identifies commonality and gaps in data elements for each data entity.

2. SOURCE DATA: ONCOBOX

Currently, HRS has the possibility to - through its Hospital Information System Orbis - extract structured clinical data essential for oncological analysis in the OncoBox format. OncoBox data models capture some of common data elements such as demographics, clinical history, and treatment outcomes across cancer types. However, the medical guidelines and clinical workflows are cancer-specific, meaning diagnostic criteria, staging systems (e.g., TNM [6] for solid tumors, WHO for hematological cancers [7]), treatment protocols, and follow-up requirements differ significantly. Therefore, each cancer type requires a different structured data model.

2.1. COLORECTAL CANCER

Colorectal cancer treatment follows a structured and phase-based approach guided by predefined treatment pathways. For instance, the objective of preoperative therapy is to shrink tumors before surgery, while postoperative treatment focuses on eliminating residual cancer cells and preventing metastasis. These phases involve different treatment remedies and monitoring strategies, and corresponding data requirements, demanding distinct data entities. This division of treatment tables reflects the distinct objectives and responses associated with each treatment phase. Similarly, the tumor board table is divided into two phases. While pre-therapeutic tumor board evaluates initial diagnosis based on imaging and biopsy results to plan the optimal preoperative strategy, the postoperative tumor board aims to guide further postoperative therapy and follow-up plans based on surgical outcomes, histopathology of resected tissue, and preoperative treatment responses. Figure 1 illustrates the relationship within the data model for colorectal cancer.

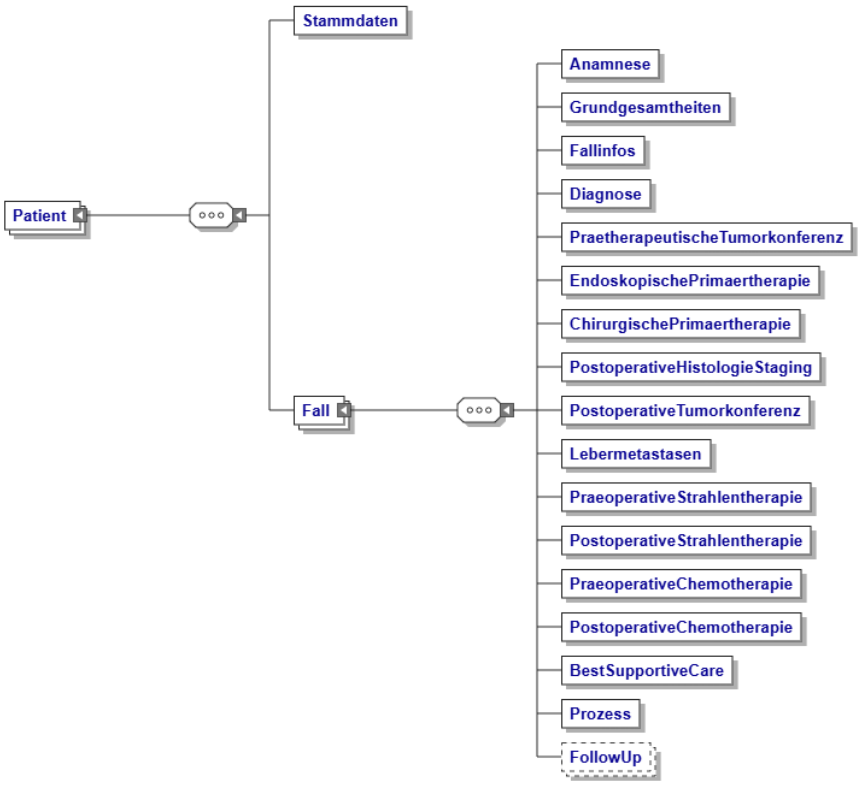

Figure 1 : Relation of data model for colorectal cancer, consisting of 18 tables. Patient and Fall tables are the base tables for interfacing other tables.

OncoBox data model consists of 18 tables with 121 fields in total and the field dimensions for each table are listed as follows:

- Stammdaten: Demographic data (7 fields)
- Anamnese: Patient history (6 fields)
- Grundgesamtheit: Basic statistical population (1 field)
- Fallinfos: General case information (6 fields)
- Diagnose (15 fields)
- Praetherapeutische Tumorkonferenz: Pre-therapeutic tumor board (2 fields)
- Endoskopische Primärtherapie: Endoscopic primary therapy (2 fields)
- Chirurgische Therapie: Surgical treatment (17 fields)
- Postoperative Histologie: Postoperative histology (11 fields)
- Postoperative Tumorkonferenz: Postoperative tumor board (2 fields)
- Lebermetastasen: Hepatic metastases (5 fields)
- Praeoperative Strahlentherapie: Preoperative radiotherapy (8 fields)
- Postoperative Strahlentherapie: Postoperative radiotherapy (8 fields)
- Praeoperative Chemotherapie: Preoperative chemotherapy (8 fields)
- Postoperative Chemotherapie: Postoperative chemotherapy (8 fields)
- Sonstige Therapie: Other treatment (1 field)
- Prozess: Process (7 fields)
- Follow-Up: Follow-up data (tumor status, vital status) (7 fields)

2.2. LUNG CANCER

While the data model for colorectal cancer structures data based on protocol-driven and phase-based care, the lung cancer model has higher granularity in tables like histology and operations because treatment in lung cancer is highly histology-dependent. For instance, immunotherapy works better for squamous cell carcinoma, while targeted therapy is more effective for adenocarcinoma. The complexity of surgery for lung cancer is higher than that of colorectal cancer. For instance, resections of colorectal cancer are more standardized (e.g., colectomy, proctectomy) with fewer surgical techniques, whereas lung cancer surgeries depend on tumor location, pulmonary function, and stage and vary by resection techniques (e.g., wedge resection, segmentectomy, lobectomy, pneumonectomy) and surgical approach (open vs. robotic), requiring granular documentation for operation. The relationships of the data entities for lung cancer is shown in Figure 2.

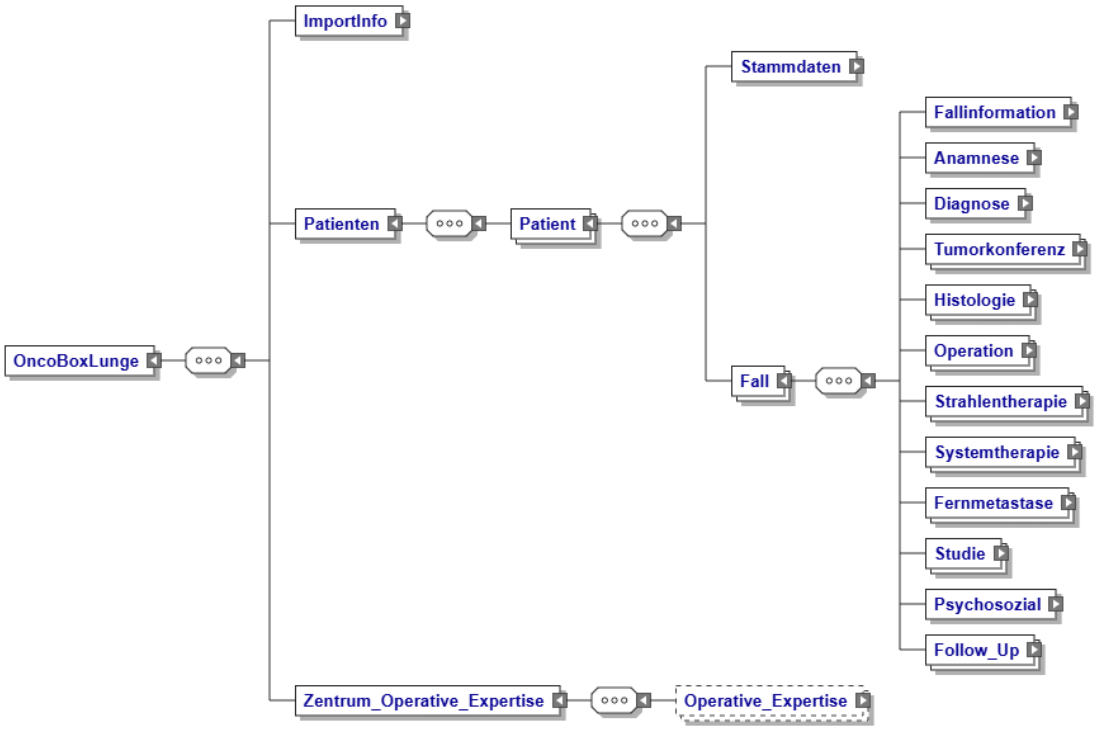

Figure 2 : Figure 2. Relation of data model for lung cancer, consisting of 14 tables. Patienten, Patient and Fall tables are the base tables for interfacing other tables, while OncoBoxLunge and ImportInfo are not clinical data but stores metadata.

OncoBox data model consists of 14 tables with 140 fields in total and the field dimensions for each table are listed as follows:

- Stammdaten: Demographic data (8 fields)
- Fallinformation: General case information (3 fields)
- Anamnese: Case-specific history (sent once per case) (3 fields)
- Diagnose: Diagnostic details, including tumor info and staging (25 fields)
- Tumorkonferenz: Tumor board meeting details (4 fields)
- Histologie: Histological findings and molecular markers (41 fields)
- Operation: Surgical procedure details (9 fields)
- Strahlentherapie: Radiation therapy information (8 fields)
- Systemtherapie: Systemic therapies (e.g., chemotherapy) (11 fields)
- Fernmetastase: Distant metastasis details (5 fields)

- Studie: Clinical study information (4 fields)
- Psychosozial: Psychosocial data, including distress screening (2 fields)
- Follow-Up: Follow-up data (tumor status, vital status) (10 fields)
- Operative_Expertise: Surgical expertise of the Lung Centre (7 fields)

3. TARGET DATA: GERMAN MII ONCOLOGY DATA MODEL

The German MII has established a standardized data structure of clinical data designed to be compatible with international standards like HL7 FHIR [8], ensuring interoperability and enabling data can be shared across medical institutions. The MII model consists of core data modules and extension modules, including the oncology module. The oncology module is specifically designed to capture data for oncology-related use cases. It encompasses various data resources such as patient demographics (e.g., age, gender, comorbidities, family history), tumor characteristics (e.g., primary site, histology, stage, molecular markers), treatment information, and outcomes (response criteria, survival metrics). The overview of the relationships between data entities is illustrated in Figure 3 and the entities include:

- Diagnose
- Histology (Histologie)
- TNM Classification (TNM Klassifikation)
- Additional Classification (Weidere Klassifikation)
- Residual Status (Residualstatus)
- Metastases (Fernmetastasen)
- General Performance (Allgemeiner Leistungszustand)
- Operation
- Radiotherapy (Strahlentherapie)
- Chemotherapy (Systemische Therapie)
- Side Effects (Nebenwirkung)
- Follow Up (Verlauf)
- Tumorboard (Tumorkonferenz)
- Death (Tod)
- Genetic Variant (Genetische Variante)
- Study Participation (Studienteilnahme)
- Associated Data Entities

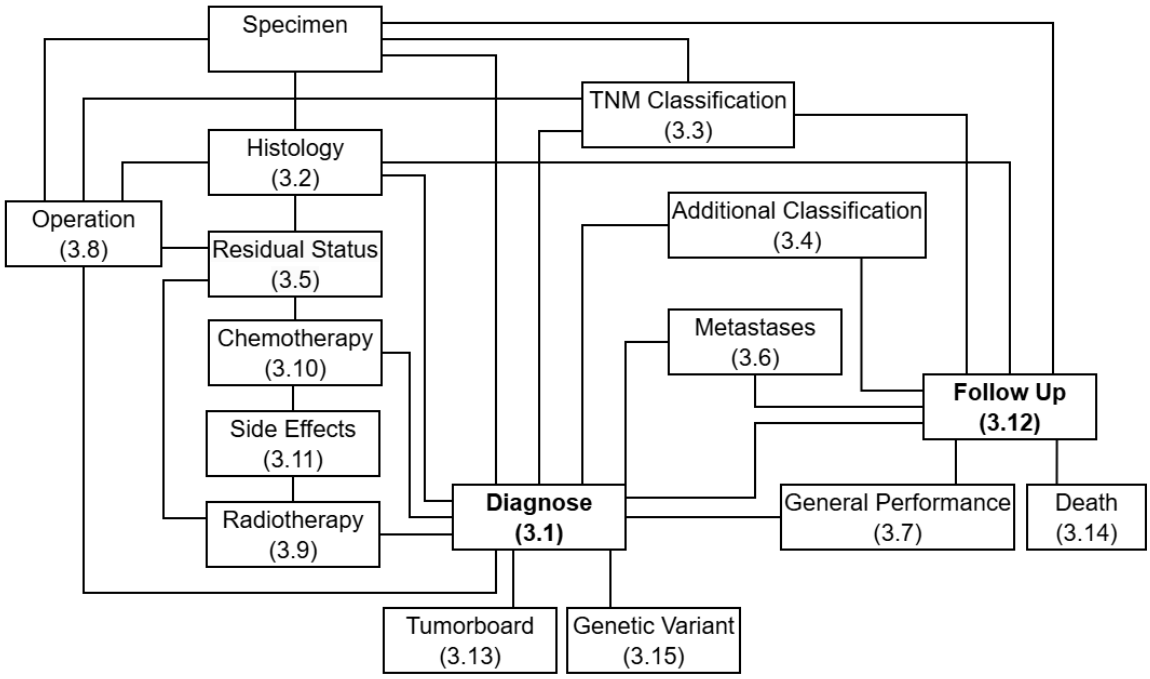

Figure 3 : Overview of relationship of the data entities for oncology. The associated subsections to each entity taken from the Dataspace4Health Deliverable 5.1 are shown in parentheses.

4. MAPPING FROM ONCOBOX TO THE GERMAN MII ONCOLOGY

To align OncoBox data with the German MII oncology module, a mapping strategy needs to be developed. The mapping process begins with aligning OncoBox data elements with their corresponding elements in the German MII Oncology Module. However, there are several challenges in data mapping. OncoBox lacks many data fields required to map to the MII oncology data model. Table 1 shows the overview of mapping coverage for OncoBox colorectal cancer and OncoBox lung cancer, while the detailed point-by-point mapping guideline is available in Appendices 1 and 2. The current coverage rates are 50.5% and 59.3% respectively. Compared to colorectal cancer, lung cancer has fewer tables but deeper dimensions with more fields, resulting in a higher mapping rate. Mapping all data fields to the MII model is not mandated, nonetheless, we aim to increase the mapping rate for both core data entities to at least 65%. Highlighted fields in Appendices 1 and 2 indicate those that can be mapped from other data sources such as the ORBIS EHR system.

Table 1 : Mapping coverage of core data entities for OncoBox colorectal cancer and for OncoBox lung cancer.

Sink Data	**OncoBox Colorectal Cancer**	**OncoBox Lung Cancer**
Diagnose	Mapped: 6 / Missing:34	Mapped: 7 / Missing: 2
Histology	Mapped: 4 / Missing: 7	Mapped: 5 / Missing: 6
TNM Classification	Mapped: 9 / Missing: 8	Mapped: 9 / Missing: 8

Additional Classification	Mapped: 0 / Missing: 3	Mapped: 0 / Missing: 3
Residual Status	Mapped: 2 / Missing: 0	Mapped: 2 / Missing: 0
Metastases	Mapped: 2 / Missing: 0	Mapped: 2 / Missing: 0
General Performance	Mapped: 1 / Missing: 0	Mapped: 1 / Missing: 0
Operation	Mapped: 3 / Missing: 2	Mapped: 4 / Missing: 1
Radiotherapy	Mapped: 5 / Missing: 8	Mapped: 5 / Missing: 8
Chemotherapy	Mapped: 5 / Missing: 3	Mapped: 6 / Missing: 2
Side Effects	Mapped: 0 / Missing: 3	Mapped: 1 / Missing: 2
Follow Up	Mapped: 4 / Missing: 1	Mapped: 5 / Missing: 0
Tumor Board	Mapped: 3 / Missing: 1	Mapped: 2 / Missing: 2
Death	Mapped: 1 / Missing: 3	Mapped: 4 / Missing: 0
Genetic Variant	Mapped: 0 / Missing: 2	Mapped: 0 / Missing: 2
Study Participation	Mapped: 1 / Missing: 1	Mapped: 1 / Missing: 1
Current Status	Mapped: 46 / Missing: 45 **Mapped: 50.5%**	Mapped: 54 / Missing: 37 **Mapped: 59.3%**

Beyond the core data entities for capturing oncology data, German MII consortia also proposes five base data entities: Patient consent data, Patient master data, Hospital master data, Caregiver data, and Additional Contacts. Currently, OncoBox is missing most of these data elements, however, complementary data such as ORBIS EHR system can fill the missing data fields. Finally, it is worth noting that code systems may differ between OncoBox and MII. German MII uses SNOMED CT [9], while OncoBox may use custom codes. Thus, it may require an additional step for code mapping to match the value pairs.

Table 2 : Mapping coverage of base data entities for OncoBox colorectal cancer and for OncoBox lung cancer.

Sink Data	**OncoBox Colorectal Cancer**	**OncoBox Lung Cancer**
Patient consent data	Mapped: 1 / Missing: 1	Mapped: 0 / Missing: 2
Patient master data	Mapped: 2 / Missing: 13	Mapped: 2 / Missing: 13
Hospital master data	Mapped: 0 / Missing: 9	Mapped: 0 / Missing: 9
Caregiver data	Mapped: 0 / Missing: 1	Mapped: 0 / Missing: 1
Additional Contacts	Mapped: 1 / Missing: 2	Mapped: 1 / Missing: 2
Total	Mapped: 4 / Missing: 26 **Mapped: 13%**	Mapped: 3 / Missing: 27 **Mapped: 10%**

5. CONCLUSION

This document provides guidelines to map data from OncoBox to the German MII Oncology Data Model. These guidelines are essential for enabling seamless data exchange and integration across healthcare systems and ensuring the infrastructure is ready for the EHDS and molecular tumor board use cases in the future. Due to missing data fields and structural differences, only 50.5% of the colorectal cancer data and 59.3% of the lung cancer data were mapped successfully. These limitations suggest the need for complementary data sources such as the ORBIS EHR system. Future work should focus on improving data model completeness and developing tools to automate data mapping from source to the target data.

APPENDIX 1: MAPPING CORE DATA ENTITIES

Table 3 : Diagnose table captures information about the cancer diagnosis, including the type of cancer (e.g., Colorectal cancer or Lung cancer), date of diagnosis, assurance, and evidence.

Field (English)	Field (German)	OncoBox Colorectal Cancer	OncoBox Lung Cancer
Primary tumor Tumor diagnosis ICD code	Primärtumor Tumordiagnose ICD Code	D3.ICDOHistologieDiagnose	D06.ICD_10 D07.ICD_11
Primary tumor Tumor diagnosis ICD version	Primärtumor Tumordiagnose ICD-Version	“ICD-10-CM”	D05.Version
Primary tumor Tumor diagnosis Text	Primärtumor Tumordiagnose Text		
Primary tumor topography ICD-O	Primärtumor Topographie ICD-O	D5.ICDOLokalisation	F03.Tumortyp (ICD-0-3)
Primary tumor topography ICD-O version	Primärtumor Topographie ICD-O-Version		F03.Tumortyp (ICD-0-3)
Primary tumor diagnosis date	Primärtumor Diagnosedatum	D1.DatumErstdiagnosePrimaertumor	D09.Diagnosedatum
Primary tumor diagnosis confirmation	Primärtumor Diagnosesicherung		
Primary tumor site localization	Primärtumor Seitenlokalisation	D6.Diagnose – Kolon oder Rektum D7.Diagnose – Spezifikation Tumorlokalisation Rektum	D04.Seitenlokalisation

Previous tumor diseases	Frühere Tumorerkrankungen	B1.RelevanteKrebsvorerkrankungen	C01.Krebsvorerkrankungen

Table 4 : Histology (Histologie) describes a biosample in the context of oncology.

Field (English)	**Field (German)**	**OncoBox Colorectal Cancer**	**OncoBox Lung Cancer**
Tumor Histology date	Tumor Histologiedatum	D2.DatumHistologischeSicherung	F02.Tumor_Histologiedatum
Histology submission number	Histologie-Einsendenummer		
Morphology code	Morphologie-Code	D3.ICDOHistologieDiagnose	F03.Tumortyp
Morphology ICD-O/Blue Book version	Morphologie ICD-O/Blue Book Version		
Morphology free text	Morphologie-Freitext		
Grading	Grading	H4.Grading	F04.Grading
Number of lymph nodes examined	Anzahl der untersuchten Lymphknoten	H9.AnzahlDerUntersuchtenLymphknoten	F39.LK_untersucht
Number of affected lymph nodes	Anzahl der befallenen Lymphknoten		F40.LK_befallen
Number of sentinel lymph nodes examined	Anzahl der untersuchten Sentinel-Lymphknoten		
Number of affected sentinel lymph nodes	Anzahl der befallenen Sentinel-Lymphknoten		

Findings	Befund		

Table 5 : TNM Classification (TNM Klassifikation).

Field (English)	**Field (German)**	**OncoBox Colorectal Cancer**	**OncoBox Lung Cancer**
TNM date	TNM Datum	D1.DatumErstdiagnosePrimaertumor	D09.Diagnosedatum
TNM version	TNM Version	“fixed value”	“fixed value”
TNM y symbol	TNM y-Symbol		
TNM r symbol	TNM r-Symbol		
TNM a symbol	TNM a-Symbol		
TNM c/p prefix T	TNM c/p-Präfix T	“Conditional value” based on “TNM T category” field below	“Conditional value” based on “TNM T category” field below
TNM c/p prefix N	TNM c/p-Präfix N	“Conditional value” based on “TNM N category” field below	“Conditional value” based on “TNM N category” field below
TNM c/p prefix M	TNM c/p-Präfix M	“Conditional value” based on “TNM M category” field below	“Conditional value” based on “TNM M category” field below
TNM T category	TNM T-Kategorie	D8.PraeT H1.pT	D13.Praeth_T D17.Postop_T
TNM m symbol	TNM m-Symbol		

TNM N category	TNM N-Kategorie	D9.PraeN H2.pN	D14.Praeth_N D18.Postop_N
TNM M category	TNM M-Kategorie	D10.PraeM H3.postM	D15.Praeth_M D19.Postop_M
TNM L category	TNM L-Kategorie		
TNM V category	TNM V-Kategorie		
TNM Pn category	TNM Pn-Kategorie		
TNM S category	TNM S-Kategorie		
UICC stage	UICC Stadium	D13.UICCStadium	D16.Praeth_Stadium D20.Postop_Stadium

Table 6 : Additional Classification (Weidere Klassifikation).

Field (English)	**Field (German)**	**OncoBox Colorectal Cancer**	**OncoBox Lung Cancer**
Hematooncological and other classifications Date	Hämatoonkologische und sonstige Klassifikationen Datum		
Hemato-oncological and other classifications Name	Hämatoonkologische und sonstige Klassifikationen Name		
Hemato-oncological and other classifications	Hämatoonkologische und sonstige Klassifikationen Einstufung		

Table 7 : Residual Status (Residualstatus).

Field (English)	Field (German)	OncoBox Colorectal Cancer	OncoBox Lung Cancer
Assessment of the local residual status after completion of the operation	Beurteilung des lokalen Residualstatus nach Abschluss der Operation	H6.PSRLokalNachAllenOPs	F05.Lokale_Beurteilung_Residualstatus
Overall assessment of the residual status	Gesamtbeurteilung des Residualstatus	H7.PSRGesamtNachPrimaertherapie	D22.Gesamtbeurteilung_Residualstatus

Table 8 : Metastases (Fernmetastasen).

Field (English)	Field (German)	OncoBox Colorectal Cancer	OncoBox Lung Cancer
Localization of distant metastasis(es)	Lokalisation von Fernmetastase(n)	D4.Tumorauspraegung ==2	J01.Fernmetastase_Lokalisation
Date of diagnostic confirmation of distant metastases	Datum der diagnostischen Sicherung von Fernmetastasen	D2.DatumHistologischeSicherung	J02.Fernmetastase_Diagnosedatum

Table 9 : General Performance (Allgemeiner Leistungszustand).

Field (English)	Field (German)	OncoBox Colorectal Cancer	OncoBox Lung Cancer
General performance status	Allgemeiner Leistungszustand	G1.ASAKlassifikation	D11.Allgemeiner_Leistungszustand

Table 10 : Operation.

Field (English)	Field (German)	OncoBox Colorectal Cancer	OncoBox Lung Cancer
Intention of the operation	Intention der Operation		G02.OP_Intention
Date of surgery	OP Datum	G2.DatumOperativeTumorentfernung	G01.OP_Datum
OPS	OPS	G3.OPSCodesChirurgischePrimaertherapie	G03.OPS
OPS version	OPS Version		
OP complications	OP Komplikationen	G9.PostoperativeWundinfektion G11.AufgetretenAnastomoseninsuffizienz G15.Revisionseingriff	G05.OP_Komplikationen_Art

Table 11 : Radiotherapy (Strahlentherapie).

Field (English)	Field (German)	OncoBox Colorectal Cancer	OncoBox Lung Cancer
Intention of radiotherapy	Intention der Strahlentherapie	K4.TherapieintentionPraeoperativeStrahlentherapie L4.TherapieintentionPostoperativeStrahlentherapie	H05.Strahlentherapie_Intention

Radiotherapy position regarding surgical treatment	Strahlentherapie Stellung zu operativer Therapie	K3.TherapiezeitpunktPraeoperativeStrahlentherapie L3.TherapiezeitpunktPostoperativeStrahlentherapie	H06.Strahlentherapie_Stellung_OP
Radiotherapy target area	Strahlentherapie Zielgebiet		
Radiotherapy side target area	Strahlentherapie Seite Zielgebiet		
Radiotherapy start	Strahlentherapie Beginn	K6.DatumBeginnPraeoperativeStrahlentherapie L6.DatumBeginnPostoperativeStrahlentherapie	H01.Strahlentherapie_Beginn
Radiotherapy end	Strahlentherapie Ende	K7.DatumEndePraeoperativeStrahlentherapie L7.DatumEndePostoperativeStrahlentherapie	H02.Strahlentherapie_Ende
Radiotherapy application type	Strahlentherapie Applikationsart		H04.Strahlentherapie_Applikationsart
Radiation type	Strahlenart		
Radiotherapy total dose (dose)	Strahlentherapie Gesamtdosis (Dosis)		

Radiotherapy single dose per day (dose)	Strahlentherapie Einzeldosis pro Tag (Dosis)		
Radiotherapy unit	Strahlentherapie Einheit		
Boost	Boost		
Radiotherapy end reason	Strahlentherapie Ende Grund	K8.GrundDerBeendigungDerPraeoperativeStrahlentherapie L8.GrundDerBeendigungDerPostoperativeStrahlentherapie	

Table 12 : Chemotherapy (Systemische Therapie).

Field (English)	**Field (German)**	**OncoBox Colorectal Cancer**	**OncoBox Lung Cancer**
Intention of systemic therapy	Intention der systemischen Therapie	M4.TherapieintentionPraeoperativeChemotherapie N4.TherapieintentionPostoperativeChemotherapie	I05.Systemtherapie_Intention
Position regarding surgical treatment	Systemische Therapie Stellung zu operativer Therapie	M3.TherapiezeitpunktPraeoperativeChemotherapie N3.TherapiezeitpunktPostoperativeChemotherapie	I06.Systemtherapie_Stellung_OP

Type of systemic or expectant therapy	Art der systemischen oder abwartenden Therapie		I01.Systemtherapie_Therapieart
Systemic therapy protocol	Systemische Therapie Protokoll		
Systemic therapy start	Systemische Therapie Beginn	M6.DatumBeginnPraeoperativeChemotherapie N6.DatumBeginnPostoperativeChemotherapie	I03.Systemtherapie_Beginn
Systemic therapy substance	Systemische Therapie Substanz		I07.CHT_Substanzen
Systemic therapy end: Reason	Systemische Therapie Ende Grund	M8.GrundDerBeendigungDerPraeoperativeChemotherapie N8.GrundDerBeendigungDerPostoperativeChemotherapie	
Systemic therapy end	Systemische Therapie Ende	M7.DatumEndePraeoperativeChemotherapie N7.DatumEndePostoperativeChemotherapie	I04.Systemtherapie_Ende

Table 13 : Side Effects (Nebenwirkung).

Field (English)	Field (German)	OncoBox Colorectal Cancer	OncoBox Lung Cancer
Adverse Reactions by CTCAE Grade	Nebenwirkungen nach CTCAE-Grad		I10.Nebenwirkung_Typ
Adverse Reactions by CTCAE Type	Nebenwirkungen nach CTCAE Art		
Adverse Reactions by CTCAE Version	Nebenwirkungen nach CTCAE Version		

Table 14 : Follow Up (Verlauf).

Field (English)	Field (German)	OncoBox Colorectal Cancer	OncoBox Lung Cancer
Examination Date Course	Untersuchungsdatum Verlauf	Q1.DatumFollowUp	M03.
Overall Assessment of Tumor Status	Gesamtbeurteilung des Tumorstatus		M06.Gesamtbeurteilung_Tumorstatus
Primary Tumor Status	Tumorstatus Primärtumor	Q2.LokoregionaeresRezidiv	M07.Verlauf_Lokaler_Tumorstatus
Lymph Node Tumor Status	Tumorstatus Lymphknoten	Q3.LymphknotenRezidiv	M08.Verlauf_Tumorstatus_Lymphknoten
Distant Metastases Tumor Status	Tumorstatus Fernmetastasen	Q4.Fernmetastasen	M09.Verlauf_Tumorstatus_Fernmetastasen

Table 15 : Tumorboard (Tumorkonferenz).

Field (English)	Field (German)	OncoBox Colorectal Cancer	OncoBox Lung Cancer
Therapy Planning Date	Tumorkonferenz Therapieplanung Datum		E01.Tumorkonferenz_ Datum
Therapy Planning Type	Tumorkonferenz Therapieplanung Typ	E1.VorstellungPraetherapeutischeTumorkonferenz I1.VorstellungPostoperativeTumorkonferenz	E02.Tumorkonferenz_ Typ
Treatment Recommendation Type	Therapieempfehlung Typ	E2.EmpfehlungPraetherapeutischeTumorkonferenz I2.EmpfehlungPostoperativeTumorkonferenz	
Treatment Deviation	Therapieabweichung auf Wunsch des Patienten	K5.GruendeFuerNichtdurchfuehrungPraeoperativeStrahlentherapie L5.GruendeFuerNichtdurchfuehrungPostoperativeStrahlentherapie N5.GruendeFuerNichtdurchfuehrungPostoperativeChemotherapie	

Table 16 : Death (Tod).

Field (English)	Field (German)	OncoBox Colorectal Cancer	OncoBox Lung Cancer
Date of death	Sterbedatum		A05.Sterbedatum
Death due to cancer	Tod tumorbedingt	Q6.Died	A06.Tod_tumorbedingt
Cause of death ICD	Todesursache ICD		A07.Todesursache_ICD
Cause of death ICD version	Todesursache ICD-Version		A08.Todesursache_ICD_Version

Table 17 : Genetic Variant (Genetische Variante).

Field (English)	Field (German)	OncoBox Colorectal Cancer	OncoBox Lung Cancer
Genetic Variante Name	Genetische Variante Name		
Genetic Variant Expression	Genetische Variante Ausprägung		

Table 18 : Study Participation (Studienteilnahme).

Field (English)	Field (German)	OncoBox Colorectal Cancer	OncoBox Lung Cancer
Study Participation Status	Studienteilnahme Status		
Study Participation Date	Studienteilnahme Datum	P1.DatumStudie	K04.Studienteilnahme

APPENDIX 2: MAPPING BASE DATA ENTITIES

Table 19 : Patient consent data (Meldung)

Field (English)	Field (German)	OncoBox Colorectal Cancer	OncoBox Lung Cancer
Reason for reporting	Meldebegründung	A6.EinwilligungTumordoku A7.EinwilligungExterne Stelle	
Reporting date	Meldedatum		

Table 20 : Patient master data (Patienten Stammdaten)

Field (English)	Field (German)	OncoBox Colorectal Cancer	OncoBox Lung Cancer
Patient insurance number	Krankenversichertennummer		
Insurance company number	Krankenkassennummer		
Patient last name	Patienten Nachname		
Patient title	Patienten Titel		
Patient suffix	Patienten Namenszusatz		
Patient first name	Patienten Vornamen		

Patient maiden name	Patienten Geburtsname		
Patient previous names	Patienten frühere Namen		
Patient gender	Patienten Geschlecht	A5.Geschlecht	A03.Geschlecht
Patient date of birth	Patienten Geburtsdatum	A2.GeburtsTag A3.GeburtsMonat A4.GeburtsJahr	A02.Geburtsjahr
Patient street	Patienten Straße		
Patient house number	Patienten Hausnummer		
Patient country	Patienten Land		
Patient postal code	Patienten PLZ		
Patient city	Patienten Ort		

Table 21 : Hospital master data (Melder Stammdaten)

Field (English)	**Field (German)**	**OncoBox Colorectal Cancer**	**OncoBox Lung Cancer**
Sender ID	MelderID		
Sender Hospital/Department/ Ward/Practice	Melder Krankenhaus/Abteilung/Station/Praxis		

Sender Doctor's Name	Melder Name Arzt		
Sender Address	Melder Anschrift		
Sender Postal Code	Melder PLZ		
Sender City	Melder Ort		
Sender Account Holder	Melder Kontoinhaber		
Sender BIC	Melder BIC		
Sender IBAN	Melder IBAN		

Table 22 : Caregiver data (Operateur)

Field (English)	Field (German)	OncoBox Colorectal Cancer	OncoBox Lung Cancer
Operator name	Operateur Name		

Table 23 : Referrer (Einsender)

Field (English)	Field (German)	OncoBox Colorectal Cancer	OncoBox Lung Cancer
Name of the sending physician	Name des einsendenden Arztes		
Name of the institution	Name Einrichtung		
Name of the department	Name der Fachabteilung		

ICNR/BSNR/LANR	IKNR/BSNR/LANR		
Address of the institution	Adresse der Einrichtung		

Table 24 : Additional Contacts (Zusätzliche Kontakte)

Field (English)	**Field (German)**	**OncoBox Colorectal Cancer**	**OncoBox Lung Cancer**
Contact Type	Kontakt Art	P3.PsychoonkologischeBetreuung P5.BeratungSozialdienst	L01.DistressScreening L02.Sozialdienstkontakt
Contact Status	Kontakt Status		
Contact Date	Kontakt Datum		

REFERENCES

1. European Health Data Space Regulation (EHDS). (2025). REGULATION (EU) 2025/327 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 February 2025 on the European Health Data Space and amending Directive 2011/24/EU and Regulation (EU) 2024/2847. Official Journal of the European Union. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202500327
2. XML-OncoBox. Retrieved April 1, 2025, from https://www.xml-oncobox.de/de/Home/FuerZentren
3. Medizininformatik Initiative. (n.d.). Medizininformatik Initiative – Start. Retrieved March 21, 2025, from https://www.medizininformatik-initiative.de/en/start
4. OnkoZert by the German Cancer Society (DKG). Retrieved April 1, 2025, from https://www.onkozert.de/en/
5. Dataspace4Health Deliverable 5.1 Requirement Analysis for Data Modeling of Colorectal and Lung Cancers. Dataspace4Health April. 2025.
6. Brierley JD, Gospodarowicz MK, Wittekind C, editors. TNM classification of malignant tumours. John Wiley & Sons; 2017 Jan 17.

7. Harris NL, Jaffe ES, Diebold J, Flandrin G, Muller-Hermelink HK, Vardiman J, Lister TA, Bloomfield CD. The World Health Organization classification of hematological malignancies report of the clinical advisory committee meeting, Airlie House, Virginia, November 1997. Modern Pathology. 2000 Feb 1;13(2):193-207.

8. HL7 International. (n.d.). FHIR®: Fast Healthcare Interoperability Resources. Retrieved March 21, 2025, from https://www.hl7.org/fhir/index.html

9. Vuokko, R., Vakkuri, A., & Palojoki, S. (2023). Systematized Nomenclature of Medicine-Clinical Terminology (SNOMED CT) Clinical Use Cases in the Context of Electronic Health Record Systems: Systematic Literature Review. JMIR medical informatics, 11, e43750. https://doi.org/10.2196/43750