
Integrated Knowledge Management (IKM) Appendix

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Part I. Appendix

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A. Reference Guide

A.1. Abbreviation Guide

AAFP	American Academy of Family Physicians
ACE	Angiotensin-converting enzyme
ADA	Americans with Disabilities Act
AHIMA	American Health Information Management Association
AHRQ	Agency for Healthcare Research and Quality
AI	Artificial Intelligence
AIDS	Acquired Immunodeficiency Syndrome
AMIA	American Medical Informatics Association
ANF	Analysis Normal Form
ANF RM	Analysis Normal Form Reference Model
ANSI	American National Standards Institute
AST	Abstract Syntax Tree
AOE	At order entry
AOSP	Android Open-Source Project
APAC	Asia-Pacific region featuring East Asia, South Asia, Southeast Asia, and Oceania
API	Application Programming Interface
aPTT	Activated Partial Thromboplastin Time
ARIA	Active Risk Identification and Analysis
AST	Asparate aminotransferase
ASTM	American Society for Testing and Materials
ATC	Anatomical Therapeutic Chemical
AWS	Amazon Web Services
BDD	Behavior Driven Development
BDOH	Broad Determinants of Health
Bld	Whole blood
BPMN	Business Process Modeling Notation
C-CDA	Consolidated Clinical Document Architecture
CAP	College of American Pathologists
CD	Continuous Deployment
CDA	Clinical Document Architecture
CDC	Centers for Disease Control and Prevention
CDM	Common Data Model
CDS	Clinical Decision Support
CER	Clinical Effectiveness Research

Reference Guide

CFTR	Cystic Fibrosis Transmembrane Conductance Regulator
CI	Continuous Integration; or Clinical Improvement
CIF	Clinical Input Form
CIMI	Clinical Information Modeling Initiative
CLI	Clinical Laboratory Improvement
CLIA	Clinical Laboratory Improvement Amendments
CMIO	Chief Medical Information Officers
CMM	Capability Maturity Model
CMS	Centers for Medicare & Medicaid Services
CNN	Convolutional Neural Network
CMT	Convergent Medical Terminology
CEBIO	Chemical Entities of Biological Interest Ontology
COVID	Coronavirus disease
CP	Clinical pathways
CPG	Clinical Practice Guidelines
CQL	Clinical Quality Language
CR	Configuration Requirements
CRICO	Controlled Risk Insurance Company
CRN	Clinical Research Networks
CT	Computerized Tomography
CTS2 TM	Common Terminology Services 2 TM
CUI	Concept Unique Identifiers
CVX	Codes that indicate the product used in a vaccination
DAST	Dynamic Application Security Testing
DCM	Detailed Clinical Model
DevOps	Development and Operation's Collaboration
DevSecOps	Development, Security, and Operations
DI	Dependency Inversion
DLC	Description Logic Classifiers
DMG	A type of installation when using an MSI installer and MacOS
dpGaP	Database of Genotypes and Phenotypes
DrOn	Drug Ontology
DSTU	Draft Standard for Trial Use
DTA	Data Transfer Agreement
DRY	Don't Repeat Yourself
ECA	Event Condition Action
eCQM	Electronic Clinical Quality Measure
ECG	Electrocardiogram
EHR	Electronic Health Records

Reference Guide

eMERGE	Electronic Medical Records and Genomics
ER	Emergency Room
ET	Enterprise Terminology
ETL	Extract, Transform, Load
EL	Existential Logic
ELK	A type of reasoner
FAERS	Food and Drug Administration's Adverse Event Reporting System
FDA	Food and Drug Administration
FDAAA	Food and Drug Administration Amendments Act
FedRAMP	Federal Risk and Authorization Management Program
FHIR	Fast Healthcare Interoperability Resources
FLWOR	For, Let, Where, Order by, Return
FML	FHIR Mapping Language
FSF	Free Software Foundation
GAM	Guidelines and Measures
GDPR	General Data Protection Regulation
GLIP	Guideline Interchange Format
GMDNA	Global Medical Device Nomenclature Agency
GNU GPL	GNU's Not Unix General Public License
GWAS	Genome-wide association studies
HADES	Health Analytics Data-to-Evidence Suite
HDS	Health Data Standards
HHS	Health and Human Services
HIE	Health Information Exchange
HIM	Health Information Management
HIPPA	Health Insurance Portability and Accountability Act
HIT	Health Information Technology
HITECH	Health Information Technology for Economic and Clinical Health
HIV	Human Immunodeficiency Virus
HL7	Health Level 7
HQMF	Home Quality Measure Format
HRO	Highly Reliability Organization
HSC	Health Standards Collaborative
HTA	HL7 Terminology Authority
HTML	Hyper Text Markup Language
ICD-9	International Classification of Diseases, Ninth Revision
ICD-10CM	International Classification of Disease, Tenth Revision Clinical Modification
ICNP	International Classification of Diseases
ICPC	International Classification of Primary Care

Reference Guide

IDE	Integrated Development Environment
IEEE	Institute of Electrical and Electronics Engineers
IICC	IVD Industry Connectivity Consortium
IHTSDO	International Health Terminology Standards Development Organization
IKM	Integrated Knowledge Management
INR	International Normalized Ratio
ISO	International Organization for Standardization (i.e. ISO languages and codes)
ISP	Interface Segregation Principle
IT	Information Technology
IV&V	Independent Validation and Verification
IVD	In vitro Diagnostics
GUI	Graphical User Interface
ISAAC	To be known
JAMA	Journal of the American Medical Association
JSON	JavaScript Object Notation
KM	Knowledge Management
KMP	Knowledge Management Platform
KNART	Knowledge artifacts
Komet	Knowledge Management Environment
KPI	Key Performance Indicators
KRSS	Knowledge Representation System Specification
LAW	Laboratory Analytical Workflow
LBx	Liquid Biopsy
LHBA	Linkage Honest Broker Agreement
LIDR	Laboratory Interoperability Data Repository
LIMS	Laboratory Information Management System
LIS	Laboratory Information System
LIVD	Loinc®-to-IVD
LM	Logical Model
LOI	Logical Observation Identifiers
LOINC®	Logical Observation Identifiers Names and Codes®
LSP	Liskov Substitution Principle
MDMI	Model Driven Message Interoperability
MED-RT	Medication - Reference Terminology
MERS	Middle East Respiratory Syndrome
MeSH	Medical Subject Headings
ML	Machine Learning
MRC	Minimally Required Content
MU	Meaningful Use

Reference Guide

NAM	National Academy of Medicine
NCPDP	National Council for Prescription Drug Program
NDC	National Drug Code
NDF-RT	National Drug File – Reference Terminology
NGC	National Guideline Clearinghouse
NHGRI	National Human Genome Research Institute
NLP	Natural Language Processing
N3C	National COVID Cohort Collaborative
NCAT	National Center for Advancing Translational Sciences
NDC	National Drug Code
NDF	National Drug File
NLM	National Library of Medicine
NQMC	National Quality Measures Clearinghouse
OBR/OBX	Observation/Result Segment; OBR refer to many report headers; OBX to refer to many separate observation segments
OHDSI	Observational Health Data Sciences and Informatics
OMG	Object Management Group
OMOP	Observational Medical Outcomes Partnership
ONC	Office of the National Coordinator for Health Information Technology
OO	Object-oriented
ORDO	Orphanet ontology of rare diseases
OS	Order Sets
OSL	Open-Source Licensing
OSS	Open-Source Software
OTC	Over-the-counter
PASTF Model	Procedural Knowledge, Assertional Knowledge, Statement Model, Terminology Knowledge, and Foundational Architecture
PCORI	Patient-Centered Outcomes Research Institute
PCORnet	The National Patient-Centered Clinical Research Network
PCP	Primary Care Physician
PCR	Polymerase Chain Reaction
PDF	Portable Document Format
PHAMIS	Public Health Automated Medical Information System
PHL	Public Health Lab
PHQ	Patient Health Questionnaire
PII	Personally Identifiable Information
PMD	A source code analyzer
POC	Point of Care
PPRL	Privacy Preserving Record Linkage

Reference Guide

PPP	Platelet-Poor Plasma
PPV	Positive Predictive Value
PRS	Polygenic Risk Scores
PT	Prothrombin Time
PTSD	Post Traumatic Stress Disorder
QA	Quality Assurance
QC	Quality Control
QDM	Quality Data Model
QL	Query Logic
QUICK	Quality Improvement and Clinical Knowledge Model
QVT	Query/View/Transformation
RA	Rheumatoid Arthritis
RA-ILD	Rheumatoid Arthritis related Interstitial lung disease
RBAC	Role Based Access Controls
RCT	Randomized Clinical Trial
RD	Related Dementia
RDFS	RDF Schema Specification
RECOVER Initiative	Researching COVID to Enhance Recovery Initiative
RELMA®	Regenstrief LOINC® Mapping Assistant
RF2	Release Format 2
RFID	Radio-frequency Identification
RIM	Reference Information Model
RL	Rules Logic
RT	Reference Terminology
RxCUI	(Prescription) Concept Unique Identifiers
RNN	Recurrent Neural Network
RRF	Rich Release Format
RWD	Real World Data
RWE	Real World Evidence
SaaS	Software as a Service
SARS1	Severe Acute Respiratory Syndrome Coronavirus 1
SARS-CoV-2	Severe acute Respiratory Syndrome Coronavirus 2
SAST	Static Analysis Security Testing
SC	<i>Please look up SoC in this Abbreviation Guide.</i>
SCA	Software Composition Analysis (SCA)
SCDM	Sentinel Common Data Model
SDO	Standards Development Organization
SDOH	Social Determinants of Health
SGML	Standard generalized markup language

Reference Guide

SHIELD	Systemic Harmonization and Interoperability Enhancement for Laboratory Data
SLA	Service Level Agreement
SNOMED CT®	Systematized Nomenclature of Medicine Clinical Terms®
SNOMED RT	Systematized Nomenclature of Medicine Reference Terminology
SNOP	Systematized Nomenclature of Pathology
SoC	Separation of Concerns
SOLID	Single Responsibility Principle; Open/Closed Principle; Liskov Substitution Principle (LSP); Interface Segregation Principle (ISP); Dependency Inversion (DI)
SOP	Standard Operating Procedures
SPARQL	SPARQL [sparkle] Protocol and RDF Query Language
SPL	Structured Product Labels
ST	Standard Terminology
SWEC	Situation with Explicit Context
STAMP	Status, Time, Author, Module, and Path
STPA	System Theoretic Process Analysis
STU	Standard for Trial Use
TDD	Test Driven Development
THO	Terminology.HL7.org
Tinkar	TermINology Knowledge Architecture
TOPX	Terminal Operation System
TP	Treatment Protocols
TMC	Tinkar Model Concepts
TRM	Tinkar Reference Model
XLST	eXtensible Stylesheet Language Transformation
XML	Extensible Markup Language
UCUM	Unified Code for Units of Measure
UI	User Interface
UML	Unified Modeling Language
UMLS	United Medical Language System
URU	Understandable, Reproducible, Useful
USCDI	United States Core Data for Interoperability
UTG	Unified Terminology Governance
U.K.	United Kingdom
U.S.	United States
UML	Unified Modeling Language
UMLS	United Medical Language System
UNMC	University of Nebraska Medical Center
UUID	Universally Unique Identifiers

UX	User Experience
VCR	Version Control Repository
VHA	Veterans Health Administration
VSAC	Value Set Authority Center
WCAG	Web Content Accessibility Guidelines
WHO	World Health Organization

A.2. IKM Terminology Definitions

Terminology	A set of concept identifiers, descriptors, and relationships used to capture domain information in an information system.
Standard Terminology	A terminology developed and published for use across organizational boundaries.
Enterprise Terminology	The set of terminology assets that are specific to and maintained by a healthcare organization, including, locations and services and their relationships to standard terminologies.
Tinkar	Terminology Knowledge Architecture (Tinkar) is intended to provide an architecture that delivers integrated terminology to the enterprise and its information systems. Tinkar addresses the differences in management and structure across reference terminology, and with local concepts and code lists/value sets.
Logical Model	A model expressed independently of a particular implementation technology.
Tinkar Reference Model	A logical model that describes the standardized model for terminology and change management.
Coordinate	A dimension of context in which a user wishes to view terminology assets.
STAMP	Status, time, author, module, path (STAMP) are the precise version coordinates that govern granular change control for Tinkar assets.
Path	A set of assets under version control that can be managed distinctly from other assets. Paths “branch” from other paths when established, and can be “merged” with other paths as well.
Branch	“Branch” as commonly used in version control, implies a tree structure, where a version configuration is allowed to only have one origin. In many instances, supported version configuration has more than one origin. For example, a mapping configuration may have an origin of T1 on System A, and T2 on System B (based on the release schedules of Systems A and B). A Path, which is more general, allows multiple origins of a version configuration.
Publish	To move a set of assets to a “published” branch and support its export to an interoperable payload technology. Publication implies that the publisher has exercised some editorial judgment and warrants the validity and consistency of the publication.

Export	To serialize a set of content to an interoperable payload technology. Export does not carry the same quality expectations as publication.
Import	To replicate an exported set of content into a repository. This activity implies the implementation of rules and constraints asserted by both native and imported content.
Configuration Requirements	Functionality required to make a Tinkar repository operational.
UML	The Object Management Group (OMG) Unified Modeling Language (UML) specification defines a graphical language for specifying and documenting the artifacts of systems.

Minimally Required Content	The set of minimal content a Tinkar repository must implement to support operations. A Tinkar implementation must be furnished with the following content: (a) One root concept; (b) One module dependency graph; (c) Infrastructure concepts a.k.a Tinkar Model Concepts to support the core patterns listed above; (d) Import rules to support import of standard terminologies.
Tinkar Model Concepts (a.k.a Infrastructure concepts)	Minimally required content that are concepts.
Separation of Concerns	A design principle that allows a complete system to be subdivided into distinct sections or components with well-defined functionality and dependencies. This approach allows individual sections to be reused, as well as worked on and updated independently to address new requirements and use cases.
Foundation Layer of Knowledge Architecture	The Foundation layer provides the common elements of interoperability such as object identity, versioning, modularity, and knowledge representation. It includes the foundation and building blocks of the common model and how the modules of the architecture are tightly version controlled over time.
Terminology Layer of Knowledge Architecture	The Terminology Knowledge Layer provides structured sets of medical terms and codes that define concepts of interest. This includes descriptions, dialects, language, and semantic hierarchy; Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT®), Logical Observation Identifiers, Names, and Codes (LOINC®), and RxNorm are part of this layer.
Solor	System of Logical Representation (SOLOR) is a project sponsored by the Department of Veterans Affairs (VA) and Logica Health that represents and brings together terminology standards in a single model that can encompass any customized content. Solor allows informaticists and developers to convert user-supplied terminologies into a single model using open-source software to produce Solor content.
Komet	Knowledge Management Environment (Komet) is an example implementation of the Tinkar model, and shows how terminologies like SNOMED CT®, LOINC®, RxNorm shall be represented. Using the Komet browser users can view and

	search concepts, view concept details, and navigate hierarchies, among many other functions.
UUID	Universally Unique Identifier (UUID) is a 128-bit number used to identify information in computer systems.
FHIR	Fast Healthcare Interoperability Resource (FHIR) is a standard describing data formats and elements and an application programming interface for exchanging electronic health records.
Capability Maturity Model	A development model that can be viewed as a set of structured levels that describe how well the behaviors, practices, and processes of an organization can reliably and sustainably produce required outcomes. There are five levels defined along the continuum of the capability maturity model and the model provides a theoretical continuum along which process maturity can be developed incrementally from one level to the next.