-re'		Data	Model	Matrix	Layer:	Source	Delivery abstraction	Validation		Central Facts		Generic D	ata Access	Tool Access
Dat Levels of representa	a logistics & Access tion	Generic Concerns	Specific Concerns	Concern Artefacts	<u>N</u> otation <u>A</u> pproach <u>T</u> heory	Information (Source) Systems	Data Delivery abstraction	Logical Validation	External Facts model	Integration models	Enhancement models	(Target) Information Realities	Target Perspectives	Data Mart/ Analysis Tool
Data definition level concerns		Data delivery process / data layer concerns				 Source System/ platform Formal delivery specification 	 Data exchange Data format Validation Data delivery abstraction Data representation Data packaging 	 Source System or data delivery validation against logical model Data standardization (for transformation) 	 Collection of all UoD's Structure stability Fact uniformity Minimally constrained Temporally flexible 	 Data Integration Data correlation Data homogenization Unification of concepts and context 	 Plausibility Cross model validation Data enrichment & correlation Source model IST to SOLL (model repair) 	 Representation (Access) Manipulation (CRUD) Integrity (Constraints) Derivation/ transformation 	 (Temporal) filtering and selection Language Type transformation Data Application Processing Interface (DAPI) 	 Queryable Navigation Aggregation Tooling Execution Performance Scalability
Narrative Reference	Compendium Dossier Cabinet Bus. Program Concept Guide Dictionary Vocabulary Glossary	Comprehension Narration Context Definition	 Legal Financial Social Process Production Definition Description Terminology Illocution/Elocution 	Reports, Dossiers Portfolio's, Business requirements template Terms Definitions Term-relations	Informal language Storyboarding/Narration Storytelling investigative journalism Sketching/Drawing Informal language Dictionary Compilation	Model Canvas Storyboarding Inf. Mgmt. Frame Proj. start Arch. Source system/ application terminology		- Informal definition - Validation narrative		Data Integration sketch Data Integration Canvas Data Integration Architecture Cross namespace reference Cross domain glossary global glossary	Enhancement Narrative Enhancement Reference	Composed reality canvas Compiled reality canvas Sourced reality Composition model reference		Kimball Bus Matrix ADAPT Model storming Data artefact & Information product definitions
- Formal defini Cogni- tive	ition - Taxonomy Full Taxonomy Folksonomy Lower ontology Full Ontology	Definition Representation Formalization	 Conceptualization Reification Classification Timeline conceptualization 	Classes Attributes Inheritance Classification constraints	ER/VOWL Ontologies	Souce system concepts model				Concept integration list Integration & unification folksonomy Integration & standardization (upper) ontology Full Ontology harmonization		Composition model ontology		Data artefact & Information product ontology
Formal Linguistic	Concept sketch Concept map CogNIAM ORM FCO-IM	Representation Communication Model Validatior Integrity	 Verbalizations Elicitation Examples Timeline reification Schema stability Temporal integrity Simple integrity 	Fact types Constraints Sentences	Notation: Fact Based Modeling Notation: ORM2, FCO-IM, verbalizations Approach: FCO-IM, Cogniam Theory: Predicator Set Models	Source system fact model		Fact based validation model (no concept maps)	Full constrained facts Full Temporal Integrity Functional non	Concept Integration fact model Temporal Concept Integration fact model context Integration fact Model	Fact based cross model rule model Temporal enhancement model	Facts Composition model Facts compilation model	Filtered & translated facts context model	Fact based Snowflake Fact based Star
	FBM-ext FBM-ext(Δ)	Definition Derivation	 Business transaction 	IS	Notation: CD/UN4L Math				Technical Integrity only	Temporal context Integration fact Model	Fact based model repair (IST-SOLL)	Sourced facts model		Fact based OASI
	Sketch Unconstrained Weakly constrained	Integrity manipulation Derivation	Completeness Consistency Derivability Weakly normalized Partial Updatable	Relations & Operators Types (Transactions) (Multi) assignment	Verbalizations Technical Approach: Theory : Relational Algebra & Types (TTM)	Technology driven source model Application driven source model	Unconstrained, Unnormalized, nested,	Logical Validation Model (Weakly constrained to	Fully constrained facts Full Temporal Integrity	Logical integration model	Logical enhancement	Logical Facts Composition Model Logical facts compilation		Logical Snowflake
	5NF Constrained 5NF Constrained		 Non-normalized Non-updatable Timeline constr. operationalization Logical transactions 			Access driven source model Manipulation driven source model	(multi) logical access layer model	tightly constrained 6NF(Δ)	Functional non temporal integrity Technical Integrity only	Logical temporal integration model	models	Source Abstraction model Delivery Abstraction Model	Filtered & translated logical context model	Logical Star
- Implementati	on - Transrelational	Representation	(multi assignment) Executable Deployeble	Hubs/Links/Sats	Theory: Predicator Set	model			Head Detail Modeling					Snowflake
tation	BAT Algebra	Manipulation Derivation	OptimizationOperation	Heads/Details Entities/Context	would be a set of a printine of y				Data Vault 1.0/2.0 HANS DV x.x	Key Integration				Star Schema
	Semantic equivalent Fact based Fransformation	Persistence Performance	 Timeline implementation Implementation- model transactions 						Anchor Modeling Fact-Based L	Anchor "integration" Modeling				Flat star
- Technological Technology Abstraction	Abstraction - SQL (DBMS) DAPI	Representation Manipulation Derivation Persistence Computation	 Execution Operation Persistence Optimization Technology(DBMS)- transactions 	Tables Views Constraints		Source Database model	SQL/ Data Virtualization/File system		Tables Views Constraints			SQL views/ Data Virtualization	SQL views/ Data Virtualization	SQL views/ Data Virtualization/ Tool
Database System	Oracle SQL Server HADOOP 	Storage Execution Resilience Performance	 Optimization Availability Scalability Operation System transactions 	Indexes Partitions Databases Table-spaces	Poster versio	Source Database on 0.1j by mart For	XML schema/ JSON schema, CSV definition, SDMX, XBRL ijn.evers@i-refact.c digital copies & mo	om © 2018 l-Refact re visit i-refact.com	SQL DBMS Graph database B.V. all rights rese	erved Modelin method	g Approach / Only s	Model sketch	Target detailed so entropy leve	Hadoop, DBMS, BI tool chema el 또