BIM Excellence Initiative Ontology 251211

The BIMei Ontology underlies the BIMei Knowledgebase (BIMei KB). It is composed of a number of components

1. BIMei Topics and Specialties – refer to **Table 1**
2. BIMei Projects and Microprojects – refer to **Table 2** for a more detailed list
   - 2.1. Project A: BIM Dictionary
   - 2.2. Project B: Knwoledge Sharing
   - 2.3. Project C: Competence and Learning
   - 2.4. Project D: Performance Improvement
   - 2.5. Project E: Macro Adoption
   - 2.6. Project F: Integrated Information
3. BIMei Conceptual Hierarchy – refer to **Figure 1** or **List 1**
   - 3.1. Frameworks
   - 3.2. Models
   - 3.3. Taxonomies – examples:
     - 3.3.1. Information Uses – refer to **211in Model Uses**
     - 3.3.2. Competency Items – refer to **201in Competency Table**
   - 3.4. Classifications and Lists
   - 3.5. Dictionaries – terms and their descriptions as defined in:
     - 3.5.1. Across BIMexcellence.org
     - 3.5.2. In BIMdictionary.com
     - 3.5.3. Within BIMei resources
4. BIMei Tools and Microtools – examples:
   - 4.1. Adaptive Maturity Indicators (Vercel.app)
   - 4.2. Individual Awareness Survey (hosted on assessor.io)
   - 4.3. Knowledge Graph (hosted on streamlit.app)
5. BIMei Websites
   - 5.1. BIM Excellence Initiative Hub (BIMexcellence.org)
     - 5.1.1. BIM ThinkSpace Section (post type)
     - 5.1.2. BIM Framework Blog (page type)
     - 5.1.3. Macro Adoption (group of pages)
   - 5.2. BIM Dictionary Platform (BIMdictionary.com)
   - 5.3. BIM Dictionary Instagram (instagram.com/bimdictionary/)
6. BIMei Publications
   - 6.1. Peer Reviewed Papers by BIMei Founders of relevance to the BIMei KB
   - 6.2. Collaborative Publications (in collaboration with other entities) published on BIMei websites
     - 6.2.1. Reports (e.g. Macro Adoption Reports in Spain and Ireland)
     - 6.2.2. Studies (e.g. BIM Roles and Profiles)
   - 6.3. BIMei Published Resources (e.g. 201in Competency Table)
7. BIMei Contributors - examples
   - 7.1. Authors and co-authors (e.g. autors of BIM ThinkSpace posts or peer-reviewed articles)
   - 7.2. BIM Dictionary Project editors, co-editors and reviewers
   - 7.3. Macro Adoption Project leaders, facilitators and study coordinators
   - 7.4. App and microtool developers
8. BIMei Supporters
   - 8.1. Collaborating Partners (e.g. Not For Profit entities)
   - 8.2. Sponsors
9. BIMei KB Sources (e.g. referenced materials)

Table 1. BIMei Topics and Specialties

No.	Topics	Specialty 1	Specialty 2
TP01	Additive Manufacturing	3D Printing in Construction	
TP02	Algorithms	Algorithmic architecture	
TP03	Artificial Intelligence	Large Language Models (LLM)s	Machine Learning (ML)
TP04	Asset Information Lifecycle	Asset Coupling	Digital Twins
TP05	Asset Management	Facility Management	Asset Operations
TP06	Capturing and Representing	Laser Scanning	Lidar
TP07	Circular Economy	ReUse, Refurbish	

TP08	Competence Modelling	Roles & Responsibilities	
TP09	Concurrent Engineering	Cross-functional teams	
TP10	Conceptual Constructs	Framework, Model	Taxonomy, Classification
TP11	Constructing and Fabricating	Construction Technique	Prefabrication
TP12	Disaster and Recovery		
TP13	Environment Protection	Decarbonization	
TP14	Infrastructure Modelling	InfraBIM	RailBIM
TP15	Interoperability	Open BIM	
TP16	Norms and Standards	TP 16.1 | ISO 19650	
TP17	Internet of Things	Radio Frequency IDentification (RFID)	
TP18	Knowledge Management	Knowledge Organisation	Knowledge Transfer
TP19	Lean Methodology	Lean Construction	Lean Design
TP20	Learning, Training, and Education	Curriculum Design	Gamification
TP21	Linking and Extending	Connected Systems	
TP22	Logistics	Site Logistics	Transportation Logistics
TP23	Macro Policy	Governance/Mandates	Incentives
TP24	Metrics	Indices	Indicators
TP25	Model Management	Modelling Techniques	Modelling Specialties
TP26	Monitoring and Controlling	Remote Sensing	
TP27	Hardware and Equipment	Computers and Peripherals	Site Machinery
TP28	Operating and Maintaining	Facility Management	
TP29	Performance (Actors)	Performance Management	Assurance/Certification
TP30	Planning and Designing	Architecture	Interior Design
TP31	Process Management		
TP32	Procurement	Contracts	Insurance
TP33	Product Management	Product Data	Product Lifecycle Management (PLM)
TP34	Productivity (Artefacts)	Productivity Measurement	
TP35	Project Management	Location-based Management System (LBMS)	Agile/SCRUM
TP36	Blockchain	Smart Contracts	
TP37	Quality Management	Quality Assurance	
TP38	Security	Cybersecurity	

Table 2. BIMei Projects and Microprojects

Projects	Project Description
A Dictionary	This project aims to facilitate a common understanding of frequently used terms across the construction industry, connect these terms to vetted learning material, and act as a reference to current and future online tools
A1 Project Admin	Managing project scope, resources and timeline. Development of protocols; instigating and managing relationships with 3rd parties; and continuous alignment with other BIMe Initiative projects.
A2 Canonical English	Development and updating of Dictionary Items covering all common international terms within Noteworthy BIM Publications plus those identified within national and international standards in English.
A2.16 ISO Standards	Topic Curation - inclusion and alignment of ISO terms and definitions witin the dictionary
A3 Extended Descriptions	Identification and invitation of subject matter experts to contribute texts, charts and videos to extend the summary description of specific terms into short encyclopedic entries. Each Extended Description is a separate Work Package within the Microproject.
A4 LOTE Translations	Translation and continuous updating of Language Other Than English (LOTE) terms. Each Language Team will have its own Microproject Code - assigned by chronological order (e.g. A4.01 Spanish Language).
A4.01 Spanish	Spanish Translation of terms and descriptions
A4.02 French	French Translation of terms and descriptions
A4.03 Arabic	Arabic Translation of terms and descriptions
A4.04 Lithuanian	Lithuanian Translation of terms and descriptions
A4.05 Russian	Russian Translation of terms and descriptions
A4.06 Chinese	Chinese Translation of terms and descriptions
A4.07 German	German Translation of terms and descriptions
A4.08 Catalan	Catalan Translation of terms and descriptions

A4.09 Persian	Persian Translation of terms and descriptions
A4.10 Croatian	Croatian Translation of terms and descriptions
A4.11 Greek	Greek Translation of terms and descriptions
A4.12 Italian	Italian Translation of terms and descriptions
A4.13 Czech	Czech Translation of terms and descriptions
A4.14 Portuguese	Portuguese Translation of terms and descriptions
A4.15 Bulgarian	Bulgarian Translation of terms and descriptions
A4.16 Turkish	Turkish Translation of terms and descriptions
A4.17 Hungarian	Hungarian Translation of terms and descriptions
A4.18 Slovenian	Slovenian Translation of terms and descriptions
A4.19 Romanian	Romanian Translation of terms and descriptions
A4.20 Albanian	Albanian Translation of terms and descriptions
A4.21 Serbian	Serbian Translation of terms and descriptions
A4.22 Estonian	Estonian Translation of terms and descriptions
A4.23 Polish	Polish Translation of terms and descriptions
A4.24 Danish	Danish Translation of terms and descriptions
A4.25 Ukrainian	Ukrainian Translation of terms and descriptions
A4.26 Azerbaijani	Azerbaijani Translation of terms and descriptions
A5 Localisations	Localisation of terms and descriptions based on jurisdictions and geographical locations.
A7 Tool Development	Development of varied tools as needed by the BIMei Community.
A7.1 Tool Development - Front End	Continuous improvement of the online UI/UX. Generation of a Terminology Explorer (interactive map); Custom Terms List; built-in Commenting Engine; and printing, exporting and linking features.
A7.2 Tool Development - Backend	Development of an Editorial Dashboard to manage translations/updates and communication amongst Editors.Improvement of versioning and version control (allowing external links to a specific version). Database optimisation. Improvement and documentation of the API.
A8 Outreach Programme	Establishing collaboration agreements and promoting the use of the BIM Dictionary by varied organisations.
A8.1 Outreach to Educational Institutions	Connecting with universities and other technical institutes to encourage adoption of the BIM Dictionary in educational settings.
A8.2 Outreach to Industry Associations	Connecting with membership-based organisations to encourage adoption of the BIM Dictionary in their CPD programmes.
A8.3 Outreach to Policy Makers	Connecting with authorities to develop country-specific addendums to materials within the BIM Dictionary.
B Knowledge Sharing	This project aims to facilitate knowledge-sharing between BIMe Members/Volunteers and the wider community.
B1 Project Admin	Project Management activities
B2 Knowledge Organisation	Ontologies, Taxonomies and Topics (applicable across BIMei)
B3 Websites & Webtools	Management of the BIMexcellence.org website
B4 Community Forums	Management of forums.bimexcellence.org (stopped, to be replaced)
B5 Social Media	Management of social media accounts
B6 Seminars	Preparation and delivery of public events including conferences, online seminars, and similar activities.
B7 Rich Media	Development of videos, podcasts and interactive content covering the BIMe Initiative as a whole
B8 Translations & Localisations	Translation and localisation of resources and webpages; each is a Workpackage
B9 Publications	Publications of varied types (peer-reviewed papers, printable books, and newsletters)
C Competence & Learning	This project focuses on assessing and improving the competency of current and future practitioners across the built environment.
C1 Project Admin	Project Management activities.
C2 Conceptual Components	Delivery of conceptual components leading to the development of practical template and online modules.
C3 Competence Inventories	Collating and maintaining an inventory of Competence Items
D Performance Improvement	This project aims to assist Design, Construction, and Operation (DCO) organisations in assessing and developing their Digital Capability/Maturity.
D1 Project Admin	Project Management activities.
D2 Conceptual Components	Delivery of conceptual components leading to the development of practical template and online modules.
D3 Performance Improvement Templates	The development and continuous update of the performance improvement templates and matrices.
D3.1 Maturity Matrix GL1	The development and continuous update of the BIM Maturity Matrix at Granularity Level 1 - currently available as 301in BIM Maturity Matrix.

D3.2 Maturity Matrix GL2	The development and continuous update of the BIM Maturity Matrix at Granularity Level 2.
E Macro Adoption	This project aims to assist policy makers to develop (and assess) the macro BIM diffusion policies, strategies and plans within their respective markets.
E1 Project Admin	Managing project scope, resources and timeline; development of protocols; instigating and managing relationships with 3rd party collaborators (by country or by region); and continuous alignment with other BIMe Initiative projects.
E2 Concepts, Methods, and Metrics	Development, adaptation and testing of new macro-focused adoption frameworks, models, taxonomies, metrics, and their composite templates
E3 Macro Adoption Studies	Launching a Macro Adoption assessment campaign within a selected country or region. Each Macro Assessment project will be led by a local player.
E4 Macro Adoption Guide	The development of a guide (an edited book or booklet) to help policy makers develop, implement, or improve their BIM policies and/or national initiatives.
E5 Macro Adoption Report	Design and delivery of the BIMe Initiative biannual report that discusses the state of BIM Adoption worldwide.
E6 Macro Adoption Library	Mapping useful macro adoption resources and international Noteworthy Publications.
E7 Macro Adoption Dashboard	Development of an online interactive dashboard to display Macro Adoption data with functionalities allowing users to: explore datasets; create custom views; export anonymised data; and print partial reports.
F Integrated Information	This project is intended to facilitate the delivery of open-access Integrated Information Platforms (platforms) that can guide the proper generation, capture, use, sharing, storage, and reuse of asset information throughout their lifecycle.
F1 Project Admin	Project Management activities.
F2 Model Use Templates	Online template for each of the Domain Model Uses (73-80 total). Each Model Use Template (MUT) will be exceptionally conducted as a Microproject.
F3 Software Classifications	The development of a list, tool, and guide as needed to collate, classify, and maintain a comprehensive list of software tools used for designing, constructing, and operating all types of assets across their lifecycle.
F10 LITE Framework	Development and extension of the theoretical structure needed to represent information as it transforms and gets exchanged across an asset's lifecycle.
F50 Modular Language	Development and maintenance of the Modular Language (e.g. Information Uses, Activity Statements, and Defined Roles) that enable more efficient information exchanges between actors.
F60 Indices and Matrices	Development of measurement indices and decision support matrices for use across the asset lifecycle
F70 Alignment Studies	Studies investigating and/or facilitating alignments between the LITE approach and existing methodologies (e.g. Agile, Lean, and Concurrent Engineering)
X Initiative General	Efforts across projects

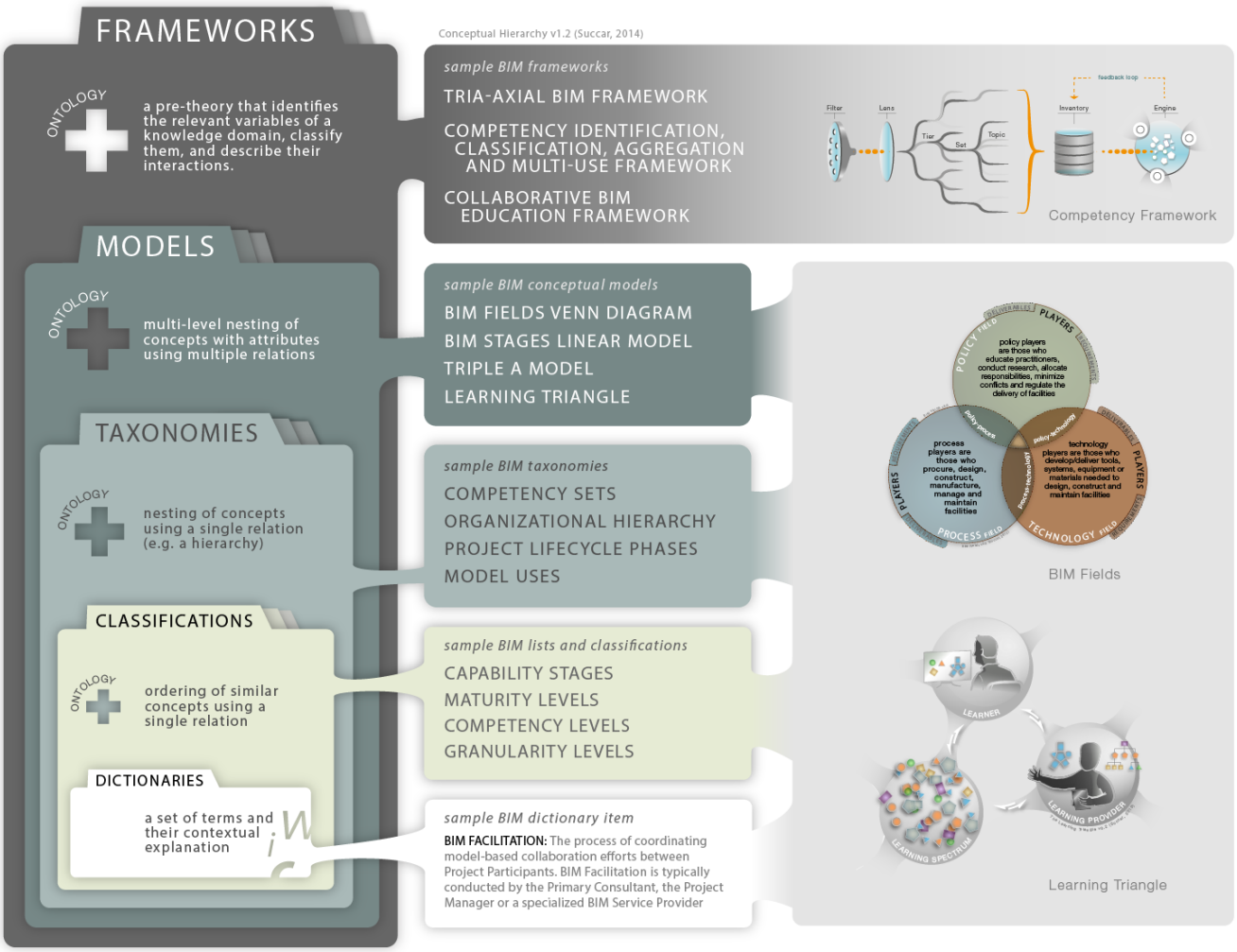

Figure 1. Conceptual Hierarchy

List 1. Conceptual Hierarchies

1. **Frameworks** show "the gestalt, the structure, the anatomy or the morphology of a field of knowledge or the links between seemingly disparate fields or sub-disciplines" (Reisman, 1994, p. 92).
2. **Models** (conceptual models) are simplified representations and abstractions of the "enormous richness of this world" (Ritter, 2010, p. 360) (Lave & March, 1993).
3. **Taxonomies** are an efficient and effective way to organize and consolidate knowledge (Reisman, 2005) (Hedden, 2010). A well-structured taxonomy allows "the meaningful clustering of experience" (Kwasnik, 1999, p. 24).
4. **Classifications** are the "meaningful clustering of experience" (Kwasnik, 1999, p. 24) and "lies at the heart of every scientific field" (Lohse, Biolsi, Walker, & Rueter, 1994, p. 36). Classification is also a heuristic tool useful during the formative stages of discovery, analysis and theorizing (Davies, 1989).
5. **Dictionaries** constitute a *web of meaning* (Cristea, 2004) connecting terms to each other and to other knowledge bases.