DIGCON Construction projects stages and BIM Use Case structure

Skaitmeninė Statyba

Concept Developed by: Lithuanian Public Institution "Digital Construction" 2019 ©

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Version DIGCON_UC_B1912.v2

UC code	DIGCON_LT_Mapped_with_Building Smart Use Cases List (2019)	ISO29481 (IDM) ISO19650 (ER)	S0 Feasibility Study	S1 Project programing	S2 Concept design (Concept)	S3 Desing (Technical project)	S4 Detail Design (Detail project)	S5 Construction	S6 Construction closure	S7 Use and maintenance	Priorities for H2020 NET_UBIEP
A.	Horizontal (General) Use cases										
A01	Planning project stages/Project Management (Missing) (PM)	PIR	S0.A01	S1.A01	S2.A01	S3.A01	S4.A01	S5.A01	S6.A01		1
A02	Quantity Take Off (QTO)	PIR; AIR	S0.A02	S1.A02	S2.A02	S3.A02	S4.A02	S5.A02	S6.A02	S7.A02	1
A03	Cost analysis / Estimation (CA)	PIR; AIR	S0.A03	S1.A03	S2.A03	S3.A03	S4.A03	S5.A03	S6.A03	S7.A03	1
A04	Total Cost of Ownership/ Service Life (TCO)	PIR; AIR	S0.A04	S1.A04	S2.A04	S3.A04	S4.A04	S5.A04	S6.A04	S7.A04	
A05	Laser Scanning (LS)	PIR; AIR	S0.A05	S1.A05	S2.A05	S3.A05	S4.A05	S5.A05	S6.A05	S7.A05	1
B.	Modelling										
B01	Existing Conditions Modeling (ECM)	PIR; AIR		S1.B01	S2.B01	S3.B01	S4.B01	S5.B01	S6.B01	S7.B01	1
B02	Functional, Volumetric and Planing Evaluation. (Missing Scope); Architectural Programming (AP)	PIR; AIR		S1.B02	S2.B02						1
B03	Design/ Modelling (DM) (Missing)	PIR; AIR			S2.B03	S3.B03	S4.B03				1
B04	Construction System Design (CSD)	PIR; AIR				S3.B04	S4.B04	S5.B04	S6.B04		
B05	Specification Production (SP)	PIR; AIR			S2.B05	S3.B05	S4.B05	S5.B05	S6.B05		1
B06	3D Control and Planning (3DP)	PIR; AIR				S3.B06	S4.B06	S5.B06	S6.B06		
C.	Simulations and Analysis										
C01	Spatial Analysis (SPA)	PIR; AIR			S2.C01	S3.C01	S4.C01				
C02	Energy Analysis (EN)	PIR; AIR			S2.C02	S3.C02	S4.C02				1
C03	Lighting Analysis (LA)	PIR; AIR			S2.C03	S3.C03	S4.C03				1
C04	Sustainability Evaluation (SE)	PIR; AIR			S2.C04	S3.C04	S4.C04				
C05	Site Analysis (SA)	PIR; AIR			S2.C05	S3.C05	S4.C05				
C06	Structural Analysis (STR)	PIR; AIR				S3.C06	S4.C06				
C07	Mechanical Analysis (MA)	PIR; AIR				S3.C07	S4.C07				1
C08	Electrical Analysis (ELA)	PIR; AIR				S3.C08	S4.C08				
C09	Building System Analysis (BSA)	PIR; AIR				S3.C09	S4.C09				1
C10	Design to Maintain Analysis (D2M)	PIR; AIR				S3.C10	S4.C10				1
C11	Way finding (WF)	PIR; AIR				S3.C11	S4.C11				
C12	Other Engineering Analysis (OEA) (should be described detailed uses)	PIR; AIR				S3.C12	S4.C12				
C13	Simulations (SIM) (should be described detailed uses)	PIR; AIR				S3.C13	S4.C13	S5.C13	S6.C13		
D.	Communication and Coordination										
D01	Visualization (VIZ)	PIR; AIR; OIR			S2.D01	S3.D01	S4.D01	S5.D01	S6.D01		1
D02	Design Reviews (DR)	PIR			S2.D02	S3.D02	S4.D02				1
D03	3D Coordination (3DC)	PIR			S2.D03	S3.D03	S4.D03	S5.D03	S6.D03		1
E.	Quality Control and Monitoring										
E01	Design Authoring and Briefing (DAB)	PIR			S2.E01	S3.E01	S4.E01	S5.E01			1
E02	Code Validation (CV)	PIR				S3.E02	S4.E02	S5.E02			
E03	QA/QC - Consistency control (CC)	PIR				S3.E03	S4.E03	S5.E03			1
E04	Owner Approval (OA)	OIR; AIR				S3.E04	S4.E04	S5.E04			1
E05	Commissioning (COM)	PIR				S3.E05	S4.E05	S5.E05			1
F.	Construction and Production										
F01	Phase Planning (PP) (4D)	PIR				S3.F01	S4.F01	S5.F01	S6.F01		1
F02	Site Utilization Planning (SUP)	PIR				S3.F02	S4.F02	S5.F02	S6.F02		
F03	Product Library (PL)	PIR; AIR					S4.F03	S5.F03	S6.F03		
F04	Manufacturers Information (MI)	PIR; AIR; OIR					S4.F04	S5.F04	S6.F04		1
F05	Product Selection (PS)	PIR; AIR; OIR					S4.F05	S5.F05	S6.F05		
F06	Perform procurement (PP)	PIR; AIR; OIR						S5.F06	S6.F06		
F07	Digital Fabrication (DF)	PIR; AIR						S5.F07	S6.F07		
F08	Field & Material tracking (FMT)	PIR; AIR						S5.F08	S6.F08		
F09	Digital Layout - BIM 2 Field (B2F)	PIR; AIR						S5.F09	S6.F09		1
F10	Pay Applications (P$A)	PIR						S5.F10	S6.F10		
F11	As Constructed Modeling (ACM)	PIR						S5.F11	S6.F11		1
G.	Operation and Asset Management										
G01	Record Modeling (RM) (Data model for FM)	AIR; OIR							S6.G01	S7.G01	1
G02	Space Management and Tracking (SMT)	AIR; OIR								S7.G02	1
G03	FM Documentation (FMD)	AIR; OIR								S7.G03	
G04	Asset Management (AM)	AIR								S7.G04	1
G05	Security & Key Management (SKM)	OIR								S7.G05	
G06	Maintenance & Repair Information (MRI)	OIR; AIR								S7.G06	1
G07	Disaster Planning / Emergency Preparedness (DRC)	OIR								S7.G07	
G08	Building (Preventative) Maintenance Scheduling (BMS)	OIR								S7.G08	1
G09	Communication move/add/change management (CM)	OIR								S7.G09	
G10	Way finding (WF)	OIR								S7.G10	

Remarks:

1. Within structure were used Buildingsmart International (bSI) BIMAwards 2018-2019 BIMUse cases model and descriptions. (Missing Use Cases were introdused). buildingsmart.org
2. Relations with ISO19650 related with Exchange information requirements domains PIR, AIR and OIR were introduced.
3. New structure were introdused. Use cases were grouped (regrouped) to several functions groups to 2 dimentiontional matrix.
4. Project stages (RIBA aprroach) integrated with Lithuanian desiggn, construction and facility management reglamentation processes were use for 2 dimentional BIMUses cases matrix.
5. Lithuanian Digital Construction 2017 version of BIM use cases 2 dimentional matrix were mapped. Priorities for H2020 projects NET_UBIEP and BIMPlement were setup.

BuildingSmart International (bSI) BIM Use Case Descriptions (used within bSI 2018-2019 BIM awards contest)

www.buildingsmart.org

		Select from list	Description
D E S I	1	Existing Conditions Modeling (ECM)	• A process in which a project team develops BIM(s) of the existing conditions for a site, facilities on a site, or a specific area within a facility. • This model can be developed in multiple ways depending on what is desired and what is most efficient. • Once the model is constructed, it can be queried for information, whether it be for new construction or a modernization project.
	2	Site Utilization Planning (SUP)	• A process in which BIM(s) is used to graphically represent both permanent and temporary facilities on site, often with the construction activity schedule. • Because the 3D model components can be directly linked to the schedule, site management functions such as visualized planning, short-term re-planning, and resource analysis can be analyzed over different spatial and temporal data • Additional information incorporated into the model can include labor resources, materials and associated deliveries, and equipment location.
	3	Site Analysis (SA)	• A process in which BIM/GIS tools are used to evaluate properties in a given area to determine the most optimal site location for a future project. • The site data collected is used to first select the site and then the position the building based on engineering criteria (e.g. solar path, utility availability, hazardous material).
	4	Architectural Programming (AP)	• A process in which an architectural BIM(s) is used to efficiently and accurately assess design performance in regard to spatial requirements. • The developed BIM allows the project team to analyze space and understand the complexity of space standards and regulations, which saves time and provides the team with opportunity of doing more value-adding activities. • Critical decisions are made in this phase of design and brings the most value to the project when needs and options are discussed with the client and the best approach is analyzed.
	5	Visualization (VIZ)	• A process in which BIM(s) is used for creating images, diagrams, or animations to communicate a message. • Used for rendering, understanding natural lighting, supporting site selection and positioning, for the purpose of marketing, understanding design intent and constructability. • Visualization through visual imagery has been an effective way to communicate both abstract and concrete ideas. • The development of augmented and virtual really also supports advance visualization.
	6	Simulation (SIM)	• A process in which BIM(s) is used to simulate the operation of a real-world process or system over time. The act of simulating requires a model to represent the key characteristics or behaviors/functions of the selected physical or abstract system or process. • The model represents the system itself, whereas the simulation represents the operation of the system over time. • Simulation is used in many contexts, such as simulation of technology for performance optimization, safety engineering, testing, training, education, and video gaming. Often, computer experiments are used to study simulation models. • Simulation is also used with scientific modelling of engineering designs, natural systems, or human systems to gain insight into their functioning. • Simulation can be used to show the eventual real effects of alternative conditions and courses of action. • Simulation is also used when the real system cannot be engaged, because it may not be accessible, or it may be dangerous or unacceptable to engage, or it is being designed but not yet built, or it may simply not exist.
	7	Spatial Analysis (SPA)	• A process in which BIM(s) is used to perform spatial analysis on the space by considering the perceivable architectural element by their boundary and stress characteristics and intensity properties. • This type of analysis is capable of taking all sensorial factors into account during analyses in conformably with the perception process of architectural space which is a multi-sensorial act.
	8	Specification Production (SP)	• A process producing data based three-part specification system linked to the objects selected to be included in BIM(s) which responds to any changes or alternative items added or subtracted from the model during design and construction.
	9	Quantity Take Off (QTO)	• A process using BIM(s) to produce accurate Quantity take-off's (QTO). QTO's are the detailed measurement of materials and labor needed to complete a construction project. They are made from the BIM(s) developed by a designer and performed by and estimator during the preconstruction phase and for change orders during construction. • These measurements are used to develop a bid based on the scope of construction identified in the specifications. • Estimators review drawings and specifications and BIM(s) to develop these quantities. Some quantities will be for temporary work needed during construction, such as formwork or trenching.
	10	Cost analysis / Estimation (CA)	• A process in which BIM(s) can, based on an accurate quantity take-off produce a cost estimate early in the design process and provide cost effects of additions and modifications with potential to save time and money and avoid budget overruns. • This process also allows designers to see the cost effects of their changes in a timely manner which can help curb excessive budget overruns due to project modifications. • Cost analysis is the accumulation, examination, and manipulation of cost estimates for comparisons and projections. • It also encompasses the cost engineer's assessment of external impacts on a project to include items such as weather, labor and skill set availability, material availability, economic conditions, etc. • It is ideally done in near real time as objects are selected and decisions made by designers.
	11	Total Cost of Ownership/ Service Life (TCO)	• A process in which BIM(s) are used to produce a financial estimate intended to help buyers and owners determine all direct and indirect costs of a product or system over its life to include end of life cost or value. • It is a management accounting concept that can be used in full cost accounting or even ecological economics where it includes social and skill acquisition costs.
	12	Design Authoring and Briefing (DAB)	• A process in which 3D software is used to develop BIM(s) based on criteria that is important to the translation of the building's design. • Two groups of applications are at the core of a BIM-base design process are design authoring tools and audit and analysis tools. • Authoring tools create models while audit and analysis tools analyze or add to the richness of information in a model. • Most of audit and analysis tools can be used for design review and engineering analysis BIM Uses. • Design authoring tools are a first step towards BIM(s) and the key is connecting a 3D model with a powerful database of properties, quantities, means and methods, costs and schedules.

G N	13	Design Reviews (DR)	• A process in which BIM(s) is used to showcase the design to the stakeholders and evaluate meeting the program and set criteria like layout, sightlines, lighting, security, ergonomics, acoustics, textures and colors, etc. • A virtual mock-up can be accomplished in high detail even on a part of the building like façade to quickly analyze design alternatives and solve design and constructability issues. • If properly executed, these reviews can resolve design issues by offering different options and cutting down the cost and time invested considering basic construction, making modifications after reviews and final demolition and removal expense. • Evaluation of the designed space can be facilitated by high degree of interactivity to get positive feedback from end users and owner. • Some of the top criteria in evaluation are: sightlines, lighting, ADA compliance, safety, security, acoustics, HVAC, ergonomics, aesthetics and millwork tolerances. • Real-time modifications of design are enabled based on the end users feedback. Therefore, decision making time is cut in half since the attention focus is on one issue at a time until consensus is reached.
	14	Sustainability Evaluation (SE)	• A process in which BIM(s) are used on a project to evaluate its sustainable aspects through its life-cycle based on certification categories and criteria such as: • Leadership in Energy and Environmental Design (LEED); • Building Research Establishment Environmental Assessment Method (BREEAM); • or other recognized sustainable criteria programs. • To obtain the desired certification the most common approach is condensing design analysis into a single database. • Evaluations can be applied across all phases of a construction project. • Sustainability evaluation is most effective when it is done in planning and design stages and then applied in construction and operations phase.
	15	Design to Maintain Analysis (D2M)	• An evaluation process where each object selected during design for inclusion in BIM(s) are evaluated for life cycle maintenance issues, such as clearances to perform routine maintenance activates. • In addition, consideration shall be given to include complete replacement of the object or any of its components.
	16	Structural Analysis (STR)	• A process in which intelligent modeling software uses the Structural BIM to determine the most effective engineering method based on design specifications. • These analysis tools and performance simulations can significantly improve the design of the facility.
	17	Lighting Analysis (LA)	• A process in which intelligent modeling software uses the Architectural BIM to determine the most effective engineering method based on design specifications. • Development of this information is the basis for validation of lighting levels and code compliance. • These analysis tools and performance simulations can significantly improve the design of the facility.
	18	Energy Analysis (EN)	• A process in which intelligent modeling software uses the Mechanical BIM to determine the most effective engineering method based on design specifications. • Development of this information is the basis for building's systems energy analysis. • These analysis tools and performance simulations can significantly improve the design of the facility and its energy consumption during its lifecycle in the future.
	19	Mechanical Analysis (MA)	• A process in which the BIM(s) are used to determine the most effective mechanical engineering methods based on design specifications. • These analysis tools and performance simulations can significantly improve the mechanical design of the facility and its energy consumption over its life-cycle. • The information provided from this analysis should be shared the owner and/or operator for use in the building's mechanical systems.
	20	Electrical Analysis (ELA)	• A process in which BIM(s) is used to determine the most effective electrical engineering methods based on design specifications. • These analysis tools and performance simulations can significantly improve the electrical design of the facility and its energy consumption over its life-cycle. • The information provided from this analysis should be shared the owner and/or operator for use in the building's mechanical systems.
	21	Other Engineering Analysis (OEA)	• A process in which BIM(s) are used to determine the most effective engineering method based on design specifications. • Development of this information is the basis for what will be passed on to the owner and/or operator (i.e. emergency evacuation planning, egress planning, ADA,.. etc.). • These analysis tools and performance simulations can significantly improve the design of the facility during its lifecycle in the future.
	22	Building System Analysis (BSA)	• A process that uses the BIMs to optimize a building's performance to the specified design. • This includes how the mechanical system operates and how much energy a building uses. • Other aspects of this analysis may include ventilated facade studies, lighting analysis, internal and external airflows, and solar analysis.
	23	3D Coordination (3DC)	• A process in which BIMs are used during the design and construction process to identify and coordinate potential field conflicts by comparing models of building systems. • During design the goal of clash avoidance is to ensure there is adequate space to fit all designed components. • During construction the intent of clash detection is to resolve major system conflicts prior to installation.
	24	3D Control and Planning (3DP)	• A process that utilizes BIM(s) to help layout the building assemblies and produce lift drawings. • Lift drawings are 2D/3D component drawings used by foremen during on site construction to help with sequencing.
	25	Product Library (PL)	• A process that allows practitioners to access a products BIM information from an external source. • Several organizations are currently developing product libraries with various formats of information to include native formats for existing BIM software as well as open standards-based data in IFC format.

CONSTRUCTION	26	Manufacturers Information (MI)	• A process where BIM(s) facilitate accessing manufacturers information, from a product library in a machine-readable format. • The product library will mature to ultimately include not only graphic and spatial information but also information related to technical specifications, engineering capabilities and tolerances, first cost, Total Cost of Ownership, maintenance and repair, environmental, mean time to failure, as well as installation, warranty, and any other information pertinent to the selection of a product for suitability in a designed facility. • This is detailed information about an object that can be used for accessing all known manufactured product information to potentially include parts list and identifiable nomenclature specific to ordering parts for maintenance and repair of existing objects. It may also include performance information and other information which could support product selections.
	27	Product Selection (PS)	• A process of using BIM(s) to identify objects and use the information provided in product libraries to support the selection one product over another. The more information available the higher quality of the decision. • This process is comparable to comparison charts provided for many products today. • The product library may also include information from users or people who have purchased the products which indicate the products suitability to a specific use.
	28	Perform procurement (PeP)	• A process using BIM(s), where once selected an object is ordered using electronic means to help in planning just in time delivery as well as providing complete documentation of the product lifecycle management (PLM) process. • The process will provide information to the recipient, so the object can potentially be tracked throughout its manufacturer, fabrication and shipping process. • This capability is similar to existing processes in place for many industries and is similar to Amazon Prime or Google Express. • It can be used for initial purchase as well as supporting work orders in existing facilities. • It may even be tied into automatic ordering tools that order, stock, inventory and track availability of routine maintenance parts. • It can also support and link to IWMS systems for scheduled maintenance activities requiring product procurement during operations and maintenance.
	29	Code Validation (CV)	• A process in which code validation software uses a BIM(s) to check model parameters against project specific codes. • It could be considered a spell check for building models. • As model checking tools continue to develop and update the software for compliance with more codes, code validation should become more prevalent within the design industry.
	30	Construction System Design (CSD)	• A process in which BIM(s) are utilized to design and analyze the construction of a complex building system (e.g. congested mechanical rooms, curtain walls, glazing, formwork, tie-backs, seismic restraint systems, hangers, etc.) in order to increase planning and future programming.
	31	Phase Planning (PP)	• A process in which BIM(s) with the added dimension of time is utilized to effectively plan the phased planning to include construction, occupancy in a renovation, retrofit, addition, or to show the construction sequence and space requirements on a building site. • BIM with the time dimension (also known as 4D) is a powerful visualization and communication tool that can give a project team much better understanding of project milestones, schedule, and construction plans.
	32	Digital Fabrication (DF)	• A process that utilizes fabrication machine technology to prefabricate objects directly from models for offsite construction. • This promotes such things as improved levels of quality control of building systems and their components while increasing the overall project safety
	33	Field & Material tracking (FMT)	• Using BIM(s) to keep track of materials delivered for the project tied to scheduling and sequencing of assembly. • Allows the identification of materials following procurement to include delivery, laydown area location, etc. • For off-site construction, the process and be used for tracking progress toward completion and delivery.
	34	Digital Layout - BIM 2 Field (B2F)	• A process that allows information in a BIM to be transferred to digital layout tools allowing use for very accurate layout in conformance to the model. • This information can be used to validate (QA/QC) the physical facility against the model. • The level of accuracy of the tools will allow the location and installation of hangers for pipe and ducts work as well as location of structural members. • The ability also exists to pass information to earth moving equipment to ensure proper grades and elevations are met.
	35	QA/QC - Consistency control (CC)	• A process which incorporates the use of BIM(s) to support QA and QC activities for a project. • Quality assurance (QA) is a way of using a BIM to minimize mistakes or defects in manufactured products being included in the constructed facility to avoid problems when delivering solutions or services to customers; which ISO 9000 defines as "part of quality management focused on providing confidence that quality requirements will be fulfilled". • Quality control (QC) is a process by which the BIM supports entities review of the quality of all factors involved in production. ISO 9000 defines quality control as "A part of quality management focused on fulfilling quality requirements".
	36	Owner Approval (OA)	• A business process which takes advantage of information stored in BIM(s) to help validate progress as well as ensuring that the owners intent for the facility is being honored both conceptually and contractually.
	37	Pay Applications (P$A)	• A process that uses BIM(s) to track work in place for validating work completed and payments made to the contractors and sub-contractors.
	38	Laser Scanning (LS)	• A process using a BIM to control steering of laser beams followed by a distance measurement at every pointing direction to validate that construction is in accordance with the BIM. • This approach is used to rapidly capture shapes of objects, buildings and landscapes. The point cloud generated can be used and interpreted by software to create a BIM of the existing conditions. • This process can be used with a BIM to add objects into an existing space or to automatically run piping ensuring the avoidance of clashes.
	39	Commissioning (COM)	• The process using BIM(s) for verifying all (or some, depending on scope) of all subsystems just prior to handover to ensure the owner's project requirements as intended by the owner and as designed by the building architects and engineers are met. • Recommissioning is the periodic methodical process of testing and adjusting the systems in existing buildings using the original projects BIM(s) to ensure continued efficiencies and to ensure sustainability analysis is in place.

O & M	40	Record Modeling (RM)	• A process in which design intent BIMs revised to more accurately represent the completed facility and its assets. • This has potential to contain information regarding not only the main architectural and MEP elements, but equipment and asset information as well. • The record model may contain information regarding design specifications allowing for validation that the as-constructed BIMs meets or exceeds these specifications. • Furthermore, with the continuous improvement of the record model and the capability to store more information, the model contains a true representation of space with information such as serial numbers, warranties the components in the building.
	41	As Constructed Modeling (ACM)	• A process in which BIMs contain an accurate depiction of the physical conditions and environment of a facility and its assets. • This has potential to contain information regarding not only the main architectural and MEP elements, but equipment and asset information as well. • These models would be a true depiction of space and likely to contain linked to information such as warranties to components in the building. • The as-constructed model differs from the record model as it is not a legal document but a more fluid model identifying changes that have occurred during construction process. • As-built is often used interchangeable with As-constructed.
	42	Asset Management (AM)	• A process using BIM(s) in which an organized management system will efficiently aid in the maintenance and operation of a facility and its assets. • The assets included in BIM(s), consisting of the physical building, systems, surrounding environment, and equipment, must be maintained, upgraded, and operated at an efficiency which will satisfy both the owner and users at the lowest appropriate cost. • It assists in financial decision-making, as well as short-term and long-term planning are also supported by the BIM(s). • Asset Management utilizes the data contained in record BIM(s) to determine cost implications of changing or upgrading building assets, segregate costs of assets for financial tax purposes, and maintain a current comprehensive database that can produce the value of a company's assets.
	43	Space Management and Tracking (SMT)	• A process in which BIM(s) are utilized to effectively allocate, manage, and track assigned workspaces and resources. • BIM(s) will allow the facility management team to analyze the existing use of the space and appropriately manage changes in clientele, use of space, and future changes throughout the facility's lifecycle. • Space management and tracking is an application of the record BIM(s).
	44	Maintenance & Repair Information (MRI)	• A process to allow the collection and storage of maintenance and repair information about objects to be brought into BIM(s). • All information is available electronically at some point in its existence. It is key to be able to receive it in a form that will be usable and can be included in BIM(s). • Product libraries, once available, may be the easiest approach to collecting this information. • The tool will also need to be able to update the BIM(s) as work orders are executed and if specifications about the objects change.
	45	FM Documentation (FMD)	• A process where a facility data schema is developed to ensure information is supplied to the BIM(s) in electronic form so that it can be easily exchanged between the BIM(s) and the organizations selected IWMS tool. • The capability should include textural as well as graphic entities. • The breadth of the facility data is dependent the ability of organization to capture and sustain it.
	46	Building (Preventative) Maintenance Scheduling (BMS)	• A process in which the functionality of the building structure (walls, floors, roof, etc.) and equipment serving the building (mechanical, electrical, plumbing, etc.) are maintained over the operational life of a facility using BIM(s). • A successful maintenance program will improve building performance, reduce energy repairs, and reduce overall maintenance costs.
	47	Disaster Planning / Emergency Preparedness (DRC)	• A process in which emergency responders would have access to critical building information in the form of BIM(s). • The BIM(s) would provide critical building information to the responders, that would improve the efficiency of the response and, more importantly, minimize the safety risks. • The dynamic building information would be provided by a building automation system (BAS), while the static building information, such as floor plans and equipment schematics, would reside in BIM(s). • These two systems would be integrated via a wireless connection and emergency responders would be linked to an overall system. The BIM(s) coupled with the BAS would be able to clearly display where the emergency was located within the building, possible routes to the area, and any harmful equipment or material locations within the building.
	48	Security & Key Management (SKM)	• A process to identify and evaluate the security zones in the facility using BIM(s). The evaluation ensures that there are no "leaks" in the security strategy. • Further the process includes identifying the door keys required for openings through the security perimeters established to ensure that the level of security as designed is maintained.
	49	Communication move/add/change management (CM)	• A process tying the BIM(s) to personnel management to help ensure that telephones are in place and the minimum number of lines are being paid. • This item also ensures that hard wired computers are operational when a person is in a space.
	50	Way finding (WF)	• A process of using the BIM(s) for documenting and aiding facility or site occupants. Wayfinding encompasses all the ways in which people (and animals) orient themselves in physical space and navigate from place to place.
		Aditional to bSI BIM UseCases model few new were introdused. Also Could be Added other on demand. Model Could be also adjusted for Specific sectorial Different Contruction Objects type needs. Additional Group Code could be used this purpose.	
	51	Planning project stages/Project Management (Missing) (PM)	• Overall Construction project management related activities
	52	Functional, Volumetric and Planing Evaluation. (Missing Scope could be added to existing AP, or separate): Architectural Programming (AP).	• Extention to bSI Architectural Programing (AP) Use case related with processes in which together with Architectural model elements part all other Building Internal and External Engineering Networks elements should be introduced at low details level for further initial calculations and analysis and decision making. This is critical for efficiently and accurately assess design performance in regard to spatial requirements. • Critical decisions are made in this phase of design and brings the most value to the project when needs and options are discussed with the client and all Engineering team and the best approaches are analyzed. This should significantly save time and provide the team with opportunity of doing more value-adding activities at next stages.

	53	Design/ Modelling (DM) (Missing)	• A process in which a project team develops 3D representation BIM(s) of Building or Infrastructure objects (Including Design and Detail Design stages) all Functional, Technical systems and Elements of all facilities needed for other . • This models can be developed in multiple ways depending on what is desired and what is most efficient with different representation of Geometric detailing • Once the 3D model part is constructed, it can be queried for initial information, whether it be for new construction or a modernization project, for any other planned Design or Construction stages Use cases needs, or also fo Facility maintenance and Asset management purposes.