

## GLOSSARY

3D MODEL	A three-dimensional representation of a building or structure generated by CAD or BIM (authoring) applications.
5S	A disciplined approach to maintaining order in the workplace, using visual controls, to eliminate waste. The 5S words are <i>Sort, Set in Order, Shine/Sweep, Standardize, and Self-Discipline/Sustain.</i>
5 Why Analysis	The problem solving technique used to dig for the root cause of a condition by asking <i>why</i> successively (at least five times) whenever a problem exists in order to get beyond the apparent symptoms. As each answer to the <i>why</i> question is documented, an additional inquiry is made concerning that response.
A3	A one-page report prepared on a single 11 x 17 sheet of paper that adheres to the discipline of <a href="#">PDCA</a> thinking as applied to collaborative problem solving, strategy development or reporting. The A3 includes the background, problem statement, analysis, proposed actions, and the expected results.
A/E	Architect/Engineer (including their sub-consultants)
A/E/C	This sometimes designates Architect/Engineer/Contractor. It most commonly refers to one or more of the disciplines Architecture / Engineering / Construction.
A/E/CFM	Architect/Engineer/Contractor/Facility Manager
A/E/CO	Architect/Engineer/Contractor/Owner, Operator
AGC	Associated General Contractors
AOC	Architect of the Capitol
Activity	An identifiable chunk of work with recognized prerequisites to begin and a recognized state of completion – or conditions of satisfaction. Another way to look at an activity – establish the hand-offs for each chunk of work thus defining the activity. ( <i>see also</i> “task”)

Actual Cost	The sum of the total Cost of the Work as contractually defined and incurred by Architect and contractor in connection with the performance of all Phases of the Project, plus their contractually defined overhead and profit.
Allowable Cost	The absolute maximum Project Cost, as established by the owner.
As-Built Model	Model(s) based on Fabrication Shop Model(s) and installed conditions. Typically, a Navisworks™ file to incorporate multiple file formats from sub-contractors, as-built condition notations, and laser scanning information.
Assembly	A collection of components and/or modeled elements arranged to define part or all of a building model such as groups or sub-models. An assembly typically contains information that can be referenced without repositioning.
Assignment	A request or offer resulting in a Reliable Promise and is ready to be placed on the Weekly Work Plan (WWP) for performance. An assignment must meet the characteristics for a Quality Assignment prior to inclusion on the WWP.
ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers is a professional organization that develops and promulgates system, measurement, and product engineering standards to the industry.
BAS	Building Automation Systems
BI Model BI Modeling BI Management	Building Information {Model, Modeling, and Management}. A BIM is a purpose-driven representation of the project to be constructed. “BIM” includes the work product model, the activity of modeling, and using the work product model to capture and manage the changes that the built structure undergoes during its lifecycle. We consider “BIM Model” to be redundant. The context will usually make clear which sense of BIM is intended.
BIM – Product	A Building Information Model (BIM) is a digital representation of the physical and functional characteristics of a building or structure. The Building Information Model serves as a shared knowledge resource for information about a facility, forming a reliable basis for decisions during its lifecycle from inception to demolition.

BIM – Process	<p>Building Information Modeling (BIM) is the process that results in the creation of a Building Information Model (BIM), used for designing, constructing, managing, and representing a facility throughout its lifecycle. This extends from design to demolition. Typically, BIM starts with a three dimensional model which is developed to progressive levels of completeness. BIM-as-process includes a collection of defined model uses, workflows, and modeling methods used to achieve specific, repeatable, and reliable information results from the model. Modeling methods affect the quality of the information generated from the model. When and why a model is used and shared impacts the effective and efficient use of BIM for desired project outcomes and decision support, including improved design, construction and facility operations.</p>
BIM – Data Definition	<p>Building Information Management supports the data standards and data requirements for BIM use. Data continuity allows for the reliable exchange of information in a context where both sender and receiver understand the information (semantic interoperability), and where automated systems treat the inputted and outputted information as appropriate and expected (i.e., “understand” its form and format).</p>
BIMxP	<p>BIM Execution Plan. A <i>BIMxP</i> is always project specific, so that “<i>BIMxP</i>” is redundant. Elsewhere, <i>BEP</i> may be used. BIMxP is a plan that defines how BIM will be implemented throughout the project’s lifecycle. The BIM Execution Plan is an organized, documented approach to providing an implementation strategy for all parties involved in contributing to model, information, analysis, or consumption of a project that utilizes the BIM process.</p>
BOMA	<p>Building Owners and Managers Association</p>
Buffer	<p>As a verb: “to isolate one activity from the next.” A mechanism for deadening the force of reality unfolding in a manner that is contrary to what was anticipated in the plan. For example, a capacity buffer is created by committing to complete less work than what would be achieved according to the planned capacity of the resource. If production falls behind schedule, there is capacity available for catching up. (Lean production/construction generally prefers capacity buffers to inventory buffers.)</p>
CAD, CADD	<p>Computer-Aided Design. Also formerly “CADD” for “Computer-Aided Design and Drafting.”</p>

CAD/BIM Manager	The person who administers all information rich BIM and 3D CAD models for projects. The BIM Manager is responsible for the management of CAD and BIM information flow, including flow standards, process enforcement, and specifications for reports required by others.
CAFM	Computer-Aided Facilities Management
CAMIS	Capital Asset Management Information System
CBA	Cost-Benefit Analysis
CFAC	Commonwealth Facilities Advisory Council
CMa	Construction Manager as Agent
CMc	Construction Manager as Constructor
CM@R Construction Manager at Risk	The Construction Manager at Risk is a project procurement method used by DCAMM. Constructor or CM@Risk is used for building projects over \$5M as authorized by MGL Ch. 149A.
CMMS	Computerized Maintenance Management System
COBie	Construction Operations Building Information Exchange (COBie) is an information exchange specification for the life-cycle capture and delivery of information needed by facility managers. COBie data can be viewed in design, construction, and maintenance software as well as in simple spreadsheets. COBie is sometimes referred to as “the COBie spreadsheet.” COBie data is all the data that is needed to properly operate the building or facility and traditionally has been handed over to the building Owner (or a designee) in paper format. BIM processes support the COBie philosophy of collecting the relevant information as it is produced and developed during design, construction, and commissioning, rather than re-gathering the required data as the building is being occupied. BIM allows extraction of relevant COBie data from the model into an organized electronic spreadsheet form. The “COBie spreadsheet” that is typically generated by the various BIM-to-COBie utilities is not frozen or static. It can be expanded in a variety of ways to meet the building operator’s information needs.
COS, CoS	Conditions of Satisfaction, the Lean concept

CPTED	Crime Prevention through Environmental Design, Reduced Environmental Design (see <a href="http://www.cpted.net/">http://www.cpted.net/</a> and <a href="http://www.sscsecurity.com">http://www.sscsecurity.com</a> )
CSI	The Construction Specifications Institute publishes authoritative MasterFormat® and Omniclass™ documentation as well as other construction-oriented organizational information tools.
Capacity	The amount of work that can be produced by an individual specialist or work group in a given period.
Co-Location	Assembling the entire BIM design and construction team in a single location (“co-location”) enables almost instant and direct communication and coordination among team members. This co-location of all team members provides the environment, opportunity, and proximity to build trust among teammates, while efficiently designing. The project issues are nearly transparent and solutions start to evolve in near real time because everyone is working in the same physical space. Some costly logistics such as travel to and from an external meeting address are essentially eliminated. Regular whole-team meetings, and more restricted discipline team meetings, can have standing schedules that permit brief broadcasts of information that get everyone in sync. Such “big room” meetings help downstream participants appreciate upstream obstacles and solutions, as well as enabling downstream participants to propose field-level solutions that designers may have underappreciated.
Commissioning Cx	A building has successfully gone through the commissioning process when its equipment and systems have been examined and tested to perform as designed, and its operators have been trained to operate the systems and equipment properly. Lawrence Berkeley National Laboratory cites Hasl and Heinemeier’s “California Commissioning Guide: New Buildings” as an authoritative source. AEC recommends applying a rigorous commissioning process to the BIM as well as to the building for the same operational quality assurance reasons. Note the excellent advice in the cited source that eventual recommissioning should be anticipated in a well-done initial commissioning process. (see also “Retrocommissioning”)
Commitment Based Planning	A planning system that is based on making and securing reliable promises in a team setting

Complete	A performer states that they have completed the work requested and the requester declares it complete (or done) according to the agreed to Conditions of Satisfaction.
Component	A component is an individual element that can be reused in a number of situations. Examples include doors, stair cores, furniture, columns, walls etc. Components are typically inserted and moved/rotated into required position.
Conditions of Satisfaction (CoS)	All projects are a network of promises, commitments, or agreements. The promise to deliver the project is a big commitment that is delivered by people in network of commitments. A promise is not a complete promise unless it has clear, agreed-to “Conditions of Satisfaction” (CoS). Project teams develop written CoS for their project in collaboration with the Owner and Key Stakeholders of the project. CoS are measurable statements that tell the project delivery team what tests a project must pass to be accepted as a success. They should be posted in the Big Room for all to share in understanding. <i>Lean Construction Institute</i>
Consolidated Model	In the <i>DCAMM BIM Guidelines</i> , this is the federated model. The main model and its linked discipline models may be incorporated into one file on a temporary basis, typically for interference checking and model integrity review.
Construction Model	Model(s) based on criteria that are important to the translation and interpretation of the means and methods of a facility's construction processes (LOD Varies)
Constraint	An item or requirement that will prevent an activity from starting, advancing, or completing as planned. A constraint stands in the way of a task execution. Examples of typical constraints include a new client requirement, a contract that must be issued prior to work beginning, approval from an architect to change a design, site configuration, regulatory requirements and prohibitions, and weather. Constraints should be identified by the Screening Process. ( <i>see Screening</i> )
Constraint Log	A constraint log is a list of constraints with identification of an individual promising to resolve or remove the constraint by an agreed date. Typically, constraints will be developed during a review of the Six Week Look-Ahead Plan when it is discovered that activities are not constraint free.
Cx	Commissioning Agent
Customer	The individual engaged in a conversation for action who will receive the results of performance either requested from, or offered by, the Performer.

Cycle Time	The time it takes a product or unit of work (e.g. a room, building, quadrant) to go from the beginning to the completion of a production process; i.e., the time during which it is work-in-process.
Defined Task	A Quality Task must be “Defined.” It must have a beginning and end. The task definition will make clear how to determine when a task has been completed.
Dependence	Dependence occurs where two or more tasks are sufficiently related, that one cannot be started (or finished) without a certain measure of progress or completion having been achieved by the other. Waiting for release of work from Stage 1 until Stage 2 can begin shows Stage 2’s dependence upon Stage 1.
Design-Bid-Build (DBB)	<ul style="list-style-type: none"> <li>(a) There is a sequential award of two separate contracts;</li> <li>(b) the first contract is for design services;</li> <li>(c) the second contract is for construction;</li> <li>(d) design and construction of the project are in sequential phases;</li> <li>(e) finance services, maintenance services and operations services are not included.</li> </ul>
Design Build (DB)	<ul style="list-style-type: none"> <li>(a) There is a single contract for design services and construction services;</li> <li>(b) design and construction of the project may be in sequential phases or concurrent phases;</li> <li>(c) Finance services, maintenance services, operations services, design services, preconstruction services, and other related services may be included.</li> </ul>
Design Intent Model	The coordinated and resolved model representing the final design, ready for construction documentation and handover to a Construction BIM Manager. The A/E typically will be responsible for developing this model.
Discipline Model	There is a discipline model for each of the major disciplines in the project: Architecture, MEP Engineering, FP engineering, Structural engineering, etc. Each consultant is responsible for his or her discipline model accuracy and data reliability.

DOE/DOE-2/DOE2	<p>(U.S.) Department of Energy has produced a standard methodology for calculating energy use in buildings. Several energy analysis software applications implement that methodology and variants thereof. Some can be found at <a href="http://www.doe2.com/">http://www.doe2.com/</a></p> <p>(For underlying assumptions, see <a href="http://hes-documentation.lbl.gov/Home-Energy-Saver/calculation-methodology/calculation-of-energy-consumption/heating-and-cooling-calculation/doe2-inputs-assumptions-and-calculations">http://hes-documentation.lbl.gov/Home-Energy-Saver/calculation-methodology/calculation-of-energy-consumption/heating-and-cooling-calculation/doe2-inputs-assumptions-and-calculations</a>)</p>
DWF	<p>DWF is short for <i>Design Web Format</i>, created by Autodesk. DWF is a compressed, non-editable, vector file format created by CAD and BIM applications. A DWF file can represent sheets for plotting purposes (2D DWF) or the entire 3D Model (3D DWF) for visualization or estimating purposes.</p>
DWG	<p>DWG ("drawing") is a binary file format licensed by Autodesk and used for storing two and limited three-dimensional design data and metadata. It is the native format for several CAD packages, primarily <i>AutoCAD™</i>. In addition, DWG is supported non-natively by many other CAD applications.</p>
Drawing	<p>A drawing is a 2D representation of the intended design for a facility at various phases in its life. Drawings are generated from standard plan-, section-, and elevation-cuts through a model, as well as from non-standard cuts and views required elucidating the design.</p>
EAM	<p><b>Enterprise Asset Management</b> covers the whole life optimal management of the physical assets of an organization to maximize value. "Enterprise" refers to the management of the assets across departments, locations, facilities and, in some cases, business units. By managing assets across the facility, organizations can improve utilization and performance, reduce capital costs, reduce asset-related operating costs, extend asset life and subsequently improve ROA (return on assets).</p>
Expected Cost	<p>An expression of the team's best estimate at the conclusion of the Validation Phase of what current best practice would produce as a price for the facility reflected in the accompanying basis of design documents. Typically, the Expected Cost will also be supported by benchmarking or other market data to calibrate the Expected Cost in light of the market context.</p>
FFE	<p>Furniture, Fixtures, and Equipment</p>

FICM	(Post-Secondary Education) Facilities Inventory and Classification Manual (2006 Edition), U.S. Department of Education Institute of Education Sciences, NCEES 2006-160.
Fabrication Model also Shop Models	Model(s) based on criteria that are important to the translation and interpretation of the facility's elements in order to fabricate and install them.
Facility Attribute Data	Attribute data associated to BIM elements and intelligent objects. This refers to attribute data of interest and importance to Facility Managers for all aspects of building continuity of operations, sustainability, and health, safety, and comfort. COBie data is an example dataset of such attributes.
Facility Lifecycle	This refers to the time span stretching from a building's conception to demolition including the five distinctive phases (Planning, Design, Construction, Operations, and Disposition).
Federated Model	<p>A model is said to be "federated" when a main model geometrically and textually references sub-models in such a way that the main model can display some or all of its sub-models as required in order to:</p> <ul style="list-style-type: none"> <li>a) show context;</li> <li>b) perform analyses;</li> <li>c) provide other visual comparisons; and</li> <li>d) to verify proper integration and coordination of its subsystems with each other.</li> </ul> <p>A federated model is a model management technique that enables limited computing resources to cope with the increasing complexity, higher levels of geometry, and higher Levels of Development needed to represent the built environment.</p>
First-run Study	This is a trial execution of a process in order to determine the best means, methods, sequencing, etc., to perform it. First-run studies are done at least a few weeks ahead of the scheduled process, while there is time to acquire different or additional prerequisites and resources. First-run studies may be performed during design as a basis for evaluating options or designing a portion of work.

Five Big Ideas is a set of organizing concepts that supports Lean Project Delivery.

- Five Big Ideas
- a) Optimize the project not the piece
  - b) Collaborate – really collaborate (this originally implied “specialty contractors involved at schematic design”)
  - c) See projects as networks of commitment
  - d) Increase Relatedness
  - e) Tightly couple action and learning.

Flow	Movement that is smooth and uninterrupted, as in the “flow of work from one crew to the next” or the flow of value at the pull of the customer.
GUID	Globally Unique Identifier
Gemba	The Japanese term for where value is added or where the work takes place.
Geo-referencing	A BIM is said to be geo-referenced when the BIM is located with respect to one of the standard geographic survey coordinate grids established to represent locations on the Earth's surface, such as World Coordinate System 1984 (WCS84)
GUID	Globally Unique ID is a unique identifier that software creates and uses to track entities, elements, data fields, and everything else in a BIM. Every placed instance of every object has a GUID. The GUID may be a long string of characters that tracks the entity, its type, software version, and other BIM entities related to it (a parent object, an enclosing space, e.g.). The GUID is typically hidden from the user. In part, the GUID is what allows the software to know that it is <i>this</i> entity instance whose name was changed, or was resized, or moved. From the BIM perspective, the GUID permits BIM data-round-tripping to other applications and back to the BIM.
Hand-off	The act of releasing an item or activity to the person or group performing the next step or operation on that item or activity.
Hand-off Criteria	The Conditions of Satisfaction discussed and explicitly agreed between the parties to a hand-off.
Heliodon	Still or moving images of studies generated by BIM software showing shadow lines cast by and on a building based upon the geographic location of the building, its orientation with respect to the sun, at a date and time. The images may be vectorial or raster or a combination of both.

IES Illuminating Engineering Society, a professional standards body

---

IES Institute of Educations Sciences

---

Industry Foundation Class. Industry Foundation Class is an open, neutral, and standardized specification for Building Information Models. The foundation classes characterize design and construction objects in an open, non-proprietary way, to facilitate exchange of graphic and non-graphic data among differing BIM authoring software in such a way that reliable analyses can be performed on the model as it passes from one BIM system to another.

IFC

“IFC” is also the filename extension associated with these (text) files. IFC is intended to be software vendor neutral. IFC is an outgrowth of STEP, applied not only to product design and description, but expanded to the architectural built environment. The BuildingSMART Alliance (BSA), a NIBS Council, guides its development. See also <http://buildingsmart.org/openbim>

---

IPD (Integrated Project Delivery)

Integrated Project Delivery (IPD) is a collaboration of all parties, systems and practices to optimize and maximize project success. Defined by the American Institute of Architects, IPD is typically applied to design and construction projects. **NOTE:** True IPD employs various constructs some of which DCAMM may be precluded from using to the extent there may be conflict(s) with the current Commonwealth laws and regulations concerning public procurement and public contracts, including without limitation, the use of multi-party contracts, and profit sharing. DCAMM’s project delivery approach may leverage some aspects of IPD that are allowed by law. (<http://www.aia.org/about/initiatives/AIAS078435?dvid=&recspec=AIAS078435>)

---

Interoperability	<p>The Institute of Electrical and Electronics Engineers (IEEE) defines interoperability as “the ability of two or more systems or components to exchange information and to use the information that has been exchanged.” James A. O'Brien and George M. Marakas, authors of <i>Management Information Systems</i>, further define interoperability as “being able to accomplish end-user applications using different types of computer systems, operating systems, and application software, interconnected by different types of local and wide area networks.” Semantic interoperability refers to the ability to interpret the information exchanged <i>automatically</i> to produce results that are deemed useful by the end users of both systems. (Institute of Electrical and Electronics Engineers, <i>IEEE Standard Computer Dictionary: A Compilation of IEEE Standard Computer Glossaries</i>, New York, NY: 1990)</p>
IWMS	<p>Integrated Workplace Management System. Such systems incorporate powerful database capabilities to capture enterprise-level functions, and serve as decision support tools at all organizational levels and throughout the whole building lifecycle. An IWMS thus reaches into all organizational databases to feed its enterprise level analyses.</p>
JBEP	<p>The Joint BIM Execution Plan defines the uses for BIM on a project along with a detailed process for executing BIM as agreed upon by all members of the project team.</p>
Just-in-Time	<p>A system for producing or delivering the right number of parts or the right amount of product at the time it is needed for production at some subsequent stage. (<i>also</i> “JIT”) Just-in-time pipelines are economical but may represent a weakness in the overall production scheme. The larger scheme becomes fragile when one component is late or missing because its supply chain is not elastic enough to absorb or robust enough to compensate for component process failures.</p>
Kaizen	<p>The Japanese word for continuous improvement. <i>Kaizen</i> has come to mean the philosophy of continuous improvement.</p>
Kanban	<p>Japanese term meaning “a signboard.” A communication tool used in JIT production systems. The signal tells workers to pull parts or refill material to a certain quantity used in production.</p>
LEED	<p>Leadership in Energy and Environmental Design is a rating system for the design, construction and operation of buildings or facilities. Developed by the U.S. Green Building Council (USGBC), LEED provides owners and operators a guide for practical measures for sustainable practices.</p>

LOD	<p>Level of Development is a level of completeness to which a model element is developed at the end of each phase of the facility's life. Completeness ranges across element information and its corresponding geometry. <i>See also</i> "AIA Document E202 Building Information Modeling Protocol Exhibit" at <a href="http://www.aia.org">http://www.aia.org</a>. The document outlines six progressively more detailed levels of model development, their characteristics, and the associated uses appropriate for each of the levels.</p>
Last Planner®	<p>The person or group that makes assignments to direct workers. Project Architect and 'discipline lead' are common names for last planners in design processes. 'Superintendent' or 'foremen' are common names for last planners in construction processes.</p> <p>DCAMM may be precluded from using some aspects of this system to the extent there may be conflict(s) with the current Commonwealth laws and regulations concerning public procurement and public contracts.</p>
Last Planner System® (LPS)	<p>The collaborative, commitment-based planning system that integrates "should-can-will-did planning" (pull planning, make-ready look-ahead planning with constraint analysis, weekly work planning based upon reliable promises, and learning based upon analysis of Percentage of Plan (or Promises) Completed (PPC) and Reasons for Variance.</p>
Lean Project Delivery System	<p>An organized implementation of Lean Principles and Tools combined to allow a team to operate in unison.</p>
Load	<p>The amount of output expected from a production unit or individual worker within a given time.</p>
Look Ahead Planning Look Ahead Plan	<p>The portion of the Last Planner System that focuses on making work ready – assuring that work that should be done, can be done, by identifying and removing constraints in advance of need.</p> <p>A short interval plan, based on the pull/phase plan, that identifies all the activities to be performed in the next 6 (or other) weeks. The 6W Look-Ahead Schedule (LAS) is updated each week – always identifying new activities coming 6 weeks out so that the project management team can make appropriate arrangements to assure that the work will be ready to be performed in the week indicated.</p> <p>DCAMM may be precluded from using some aspects of this system to the extent there may be conflict(s) with the current Commonwealth laws and regulations concerning public procurement and public contracts.</p>

Look Ahead Window	This is the duration associated with Look Ahead Planning. Typically, look-ahead windows extend from 3 to 12 weeks into the future.
MEA	The Model Element Author is the party responsible for developing the BIM content of a specific Model Element to the LOD required for a particular phase of the facility.
MEPF	Mechanical, Electrical, Plumbing and Fire Protection
MSCBA	Massachusetts State College Building Authority, "...finances, plans, designs, constructs and oversees the management of residence halls and student activity facilities on the nine State University campuses." See <a href="http://www.mscba.org/">http://www.mscba.org/</a>
Make Ready Process	To "make ready" is to take actions needed to remove constraints from assignments to ensure the work can be done as planned.
MasterFormat®	MasterFormat, ® published by CSI and CSC, is a master list of numbers and descriptive titles classifying work results. It is primarily used to organize project manuals and detailed cost information, and to relate drawing notations to specifications.
Master Schedule	A schedule that identifies major events or milestones in a project such as significant design events, start- up, turn-over to client, order long lead-time components, mobilize in field, complete design, government reviews, and their timing. It is often the basis for contractual agreements between the owner and other team members.
Milestone	A milestone is an item on the Master Schedule that defines the end or beginning of a phase or a contractually required event.
Model Element	A model element is a portion of the model(s) representing a component, system, or assembly within a building or site.
Native file format	Typically proprietary, this refers to the internally formatted and structured file created or selected by the software developers and produced by their software. The internal organization, format, and structure of such a file is controlled by the software developer, although it can be licensed to other developers if they also select it as their native file format (ZWCAD uses DWG as its native file format, e.g.). Users typically differentiate one file format from another by the 3 or 4 letter Microsoft Windows™ file extension. The native file format of Autodesk Revit™, for example, is designated by ".rvt" while the native file format of Microsoft Office WORD 2010 is ".docx."

NAD	The North American Datum (NAD) is the official horizontal datum used for the primary geodetic network in North America. The latest published network is NAD83; however, the prior version NAD27 is still widely used. Each system is based on a separate set of measurements but is still are geodetic reference systems.
NAVD88	North American Vertical Datum 1988, which is more accurate than NAVD29 and amenable to GPS readings and enables easier comparisons between local Datums.
NBIMS	<i>National BIM Standard – United States Version 2</i> is sponsored by National Institute of Building Sciences (NIBS) under its BuildingSMART Alliance Council
NCS	The <i>United States National CAD Standard Version 5.0</i> is sponsored and created by NIBS. “National CAD Standard® (NCS) V5 consists of The American Institute of Architect's CAD Layer Guidelines, the Construction Specifications Institute's Uniform Drawing System (Modules 1-8), and the National Institute of Building Sciences' Plotting Guidelines.” See <a href="http://www.nibs.org">http://www.nibs.org</a>
NFPA	National Fire Protection Association
NWC	Autodesk <i>Navisworks</i> Cache file. “When you open a CAD file in <i>Navisworks</i> , by default, a corresponding cache file (NWC) is created, which contains all of the conversion details required by <i>Navisworks</i> . When you subsequently open that CAD file in <i>Navisworks</i> , it will check to see whether a cache file is available. If it is, then <i>Navisworks</i> will check to see whether the CAD file has been modified since it was last opened in <i>Navisworks</i> .” (from <a href="http://knowledge.autodesk.com/support/navisworks-products/troubleshooting/caas/sfdcarticles/sfdcarticles/Difference-between-NWD-and-NWF-file-formats.html">http://knowledge.autodesk.com/support/navisworks-products/troubleshooting/caas/sfdcarticles/sfdcarticles/Difference-between-NWD-and-NWF-file-formats.html</a> )
NWD	NWD designates the published version of a <i>Navisworks</i> file with all loaded models, viewpoints, redlines, and comments saved to a single file. This file type can be opened with any of the <i>Navisworks</i> products including <i>Navisworks Freedom</i> (the free viewer).

NWF	When saving to a “Navisworks file format (NWF), only a list with pointers to the files currently loaded is saved, along with the scene's environment, the current view, clash results, if available, and favorite viewpoints (including redlines and comments). To open an NWF file, a <i>Navisworks</i> product is required, such as Review, Simulate, or Manage (not <i>Freedom</i> ), as well as access to the original CAD files.” (from <a href="http://knowledge.autodesk.com/support/navisworks-products/troubleshooting/caas/sfdcarticles/sfdcarticles/Difference-between-NWD-and-NWF-file-formats.html">http://knowledge.autodesk.com/support/navisworks-products/troubleshooting/caas/sfdcarticles/sfdcarticles/Difference-between-NWD-and-NWF-file-formats.html</a> )
Network of Commitments	The web of promises necessary to deliver any project. The role of management is to articulate and activate the unique network of commitments required to deliver each project.
O&M	Operations and Maintenance
OSCRE	Open Standards Consortium for Real Estate
OCCS	<p>The Omniclass Construction Classification System (OCCS) is developed and maintained by the Construction Specifications Institute (CSI). Omniclass is a modern, systematic, extensible classification system for the construction industry that incorporates several legacy classification systems developed by various industry groups under their respective trademarked names. As the basis of its tables, OmniClass incorporates other existing systems currently in use, including Uniclass (used in UK), MasterFormat™ for work results, UniFormat for elements, and EPIC (Electronic Product Information Cooperation) for structuring products.</p> <p>Omiclass is a distillation, refinement, and expansion of classifications from versions of industry, national, and international standards including those created by: the U.S. Government’s General Services Administration (GSA), the International Standards Organization (ISO), International Building Code (IBC), the U.S. Department of Defense, the U.S. Geological Survey (USGS), the Open Standards Consortium for Real Estate (OSCRE), and others. Key tables are <i>Table 13 - Spaces by Function</i>, <i>Table 22 – Work Results</i>, <i>Table 11 – Construction Entities by Function</i>, and <i>Table 23 – Products</i>. See <a href="http://www.omniclass.org">http://www.omniclass.org</a></p>
Owner	The entity that makes the request for a project to be delivered. In the IPD Agreements, they are clearly identified as “Owner” usually on the cover page. This includes the designated representatives of the Owner entity.

PDF	<i>PDF</i> the Portable Document Format file type, created by Adobe Systems. It is an open standard file format for document exchange independent of authoring software that created the source. Most significant BIM software supports saving as, or publishing as, .PDFs.
Performer	The individual engaged in a conversation for action who agrees to undertake performance either requested from or offered to a Customer.
Phase	A period of the project where a specific group of activities is scheduled to be accomplished. A Phase is defined by a goal/milestone.
Phase Plan or Pull Plan	A plan for executing a specific phase of a project using a pull technique to determine hand-offs. It is prepared by the team actually responsible for doing the work through conversation. Work is planned at the “request” of a downstream “customer.”
Plan Reliability	The extent to which a plan is an accurate forecast of future events, measured by Percent Plan (or Promises) Complete (PPC).
Planning	The act of conversation that leads to well-coordinated action.
Plus/Delta Review	A continuous improvement discussion preformed at the end of a meeting, project or event used to evaluate the session or activity. Two questions are asked and discussed. <i>Plus</i> : What produced value during the session? <i>Delta</i> : What could we change to improve the process or outcome?
PPC	(Percent Plan or Promises Complete) A basic measure of how well the planning system is working, calculated as the “number of assignments completed on the day stated,” divided by the “total number of assignments made for the week.” It measures the percentage of assignments that are 100% complete as planned.
Prerequisite work	Work that must be performed by others in order for you to perform your work.
Process mapping	A flowchart identifying all the activities, operations, steps, and work times for a process.
Promise	The action taken by “Performer” to commit to a “Customer” to take some action to produce a mutually understood result (“Conditions of Satisfaction”) by a definite time in the future. ( <i>See Reliable Promise, below</i> ).
Project Team Member	An individual member organization or individual person that is part of the team (depends on context)

“Pull”	A method of advancing work when the next in line customer is ready to use it. A “Request” from the customer signals that the work is needed and is “pulled” from the performer. Pull releases work when the system is ready to use it.
“Push”	“Push” - an “Order” from a central authority based on a schedule; advancing work based on central schedule. Releasing materials, information, or directives possibly according to a plan but irrespective of whether or not the downstream process is ready to process them.
QTO	Quantity take-off. To the extent that the BIM faithfully represents the intended design, and is created to support QTO as a Use Case for the BIM, then counting the material in the model will correspond to counting the material in the proposed building.
Quality	Conformance to a Customer’s valid and agreed upon Conditions of Satisfaction.
Quality assignment	Assignment that meets quality criteria for release to the customer process. The quality criteria are: <ul style="list-style-type: none"> <li>a) definition,</li> <li>b) soundness,</li> <li>c) sequence,</li> <li>d) size, and</li> <li>e) learning.</li> </ul>
Reason for Variance	Factors that prevented an assignment from being completed as promised, used by the team to promote learning concerning the failure of the planning system to produce predictable workflow. By assigning a category of variance to each uncompleted task, a team is able to identify those areas of recurring failure that require additional reflection and analysis.
Record Model	<b>Deliverable</b> - Model(s) based on Design Intent Model(s) updated and representing installed conditions. This is a .rvt model for the DCAMM environment
Request	The action taken by a Customer” to ask a “Performer” to take some action to produce a mutually understood result (“Conditions of Satisfaction”) by a definite time in the future.

Reliable Promise	A <i>Reliable Promise</i> is a promise made by a performer only after self-assuring that the promisor (1) is competent or has access to the competence (both skill and wherewithal); (2) has estimated the amount of time the task will take; (3) has blocked all time needed to perform; (4) is freely committing and is not privately doubting his ability to achieve the outcome; and (5) is prepared to accept any upset that may result from failure to deliver as promised.
Retrocommissioning	This is the process of commissioning an existing building, which has not undergone an initial commissioning process.
Root Cause Analysis	A systematic method of analyzing possible causes to determine the root cause of a problem. See also 5 Why Analysis.
Sequenced	A “sequenced” assignment should release work to another Performer and in no case should it hinder another assignment or cause other crews to do additional work. Quality criterion for selecting assignments among those that are sound in priority order and in constructability order.
Shared parameters	In <i>Revit</i> , shared parameters are parameters that can be added to families or projects and then can be shared with other families and projects. Shared parameters provide the ability to add specific data that is not already predefined in the family file or the project template.
Sheets (Sheet Sets)	A collection of tangible media-based 2D representations of the intended design of a facility at various phases in its life, derived from the Design Intent Model (includes titleblock, etc.). Sheet sets include metadata traditionally found in title block such as author, firm, permit stamps, sheet number, and references to other sheets.
Should-Can-Will-Did	To be effective, production management systems must tell us what we <i>should</i> do and what we <i>can</i> do, so that we can decide what we <i>will</i> do, then compare with what we <i>did</i> to improve our planning.
SMC	<i>Solibri Model Checker</i> is software for rules-based model integrity checking, discipline models coordination checking, quantity takeoff, IFC model comparisons, and space validation. Rules-based checking allows detailed analyses of the BIM, with owner specific requirements that may not be satisfied by other means of BIM checking.

Sub-optimized	Sub-optimization is the understanding that individually optimizing the constituent processes of a much larger process, in isolation of the larger process, will not usually yield optimal results overall. Maximal optimization of the larger process occurs when its output quality is high, its output quantity is just right; its constituent processes have minimal waste.
Target Cost	The cost goal established by the delivery team as the “target” for its design and construction efforts
Target Value Design	A disciplined management practice to be used throughout the project to assure that the facility meets the operational needs and values of its users, is delivered within the target cost, and promotes innovation throughout the process to increase value and eliminate waste.
UMBA	University of Massachusetts Building Authority, see <a href="http://www.massachusetts.edu/buildingauthority/bahome.html">http://www.massachusetts.edu/buildingauthority/bahome.html</a>
UniFormat	UniFormat, a publication of CSI and CSC, is a method of arranging construction information based on functional elements, or parts of a facility characterized by their functions, without regard to the materials and methods used to accomplish them. These elements are often referred to as systems or assemblies.
Use Case or BIM Use	A <i>Use Case</i> is a description of an intended use of the BIM, along with a description of the type(s) of data that must be in the BIM in order to effectively support that use. A BIM is a purpose-driven representation of the building to be constructed. The purposes of the model, its <i>Use Cases</i> , typically center around analyses – ranging from simple visualization (what the building looks like, “what can I see from here?”) to detailed energy analysis (electric usage on a sunny day, the shading effect of trees). Therefore the BIM creators must know how the model will be used – what analyses will be performed on it – so they can include (or link to) the proper data.
Value	What the Customer wants from the process, and will pay for.
Value Stream	Includes all the processes and activities used to design, produce and deliver the product or service to the Customer.
Value Stream Mapping	A diagram of every step involved in the material and information flows needed to bring a product from request to delivery.

Variance	When an assignment is not completed as stated, it is considered a variance from the weekly work plan.
VDC	Virtual Design and Construction (VDC) is the use of design models and project information to apply construction processes in a virtual environment to reduce time, cost, and ensure design intent. The specific concept is to inexpensively prevent, and if necessary, to expose and fix errors and omissions in an electronic representation of a project rather than in the (more expensive) construction phases in the field.
Visual Management	Placing tools, parts, production activities, plans, schedules, measures and performance indicators in plain view, assures that the status of the system can be understood at a glance by everyone involved. Actions can thereby be taken locally in support of system objectives.
WCS84	World Coordinate System 1984, a standard geo-reference framework published in 1984.
WWP	The Weekly Work Plan is the commitment-level (“will”) planning step of LPS (see LPS). It identifies the promised task completions agreed upon by the Performers. The WWP is used to determine the success of the planning effort and to determine what factors limit performance. It is a more detailed level than the <i>Look-ahead</i> and is the basis of measuring PPC (Percent Plan or Promises Complete)
Waste	The opposite of value. There are seven basic types of waste: <ul style="list-style-type: none"> <li>a) defects</li> <li>b) waiting</li> <li>c) transportation of goods</li> <li>d) motion</li> <li>e) inventory</li> <li>f) overproduction</li> <li>g) unnecessary process steps.</li> </ul>
Weekly Work Planning	The process by which the Last Planner establishes the plan for the coming period.
Work Flow	The movement of information and materials through networks of interdependent specialists.
Work In Process	The inventory between the start and end points of a production process.

Work in Progress  
(WIP) Models

The discipline models are considered works in progress even as federated models but before they are reviewed and finalized for integration into the design intent model

---

Work Structuring

Designing the production system to determine who does what, when, where and how, usually by breaking work into pieces, where pieces will likely be different from one production unit to the next. The purpose of work structuring is to promote flow and optimize system throughput by focusing on handoffs and opportunities for moving smaller batches of work through the production system.

---

Workable Backlog

An activity or assignment that is ready to be performed, but is not assigned to be performed during the active week in the WWP. If the team agrees that performance of this activity will not hinder other work then it can be placed on the list of Workable Backlog as part of the WWP. Completion or non-completion of these activities are not recorded or counted in calculation of PPC.

---