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Article

The drawing is dead

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Here we are, in 2020...and we're still debating the importance of the drawing within the Architectural, Engineering and Construction (AEC) industry.

Architects and engineers have been using drawings for over 4,000 years. One of the earliest known examples includes a plan within the statue of Gudea, the ruler of Lagash in Mesopotamia (c.2200 B.C.). The plan within the statue itself looks to represent a building he had commissioned or built.

Drawings and illustrations continued throughout history, from the Plan of St. Gall in the 9th century, to DaVinci's drawings in the Renaissance period, all the way up to the latest part of the 20th century. Within the AEC community, drawings and plan sets are used to convey and communicate the design of a building.

CAD is here

When Computer Aided Drafting (CAD) was invented and mainstreamed in the 1980s and 1990s, it was about replicating drafting electronically and making the drawing process go faster for the creation of a construction plan set. It was not necessarily about removing the construction drawing from the project.

As computer technology advanced, so did the advent of using 3D modeling within the building industry. At that point in time, 3D modeling was about securing a visualization of the building, while some were starting to use "slices" from the 3D model to create the main 2D representations of a construction drawing. The combination of better computers and advanced modeling led to the promise of the Building Information Model (BIM).

Here comes BIM

The U.S. National Institute of Building Sciences (NIBS) defines BIM as, "a digital representation of physical and functional characteristics of a facility. As such it serves as a shared knowledge resource for information about a facility, forming a reliable basis for decisions during its lifecycle from inception onward." The definition also led to using the BIM acronym as a verb: Building Information Modeling. The U.K. National Building Specification (NBS) defines BIM as "a process for creating and managing information on a construction project across the project lifecycle. One of the key outputs of this process is the BIM, the digital description of every aspect of the built asset."

In 2004, the U.S. National Institute of Standards and Technology (NIST) commissioned a report titled, 'Cost Analysis of Inadequate Interoperability in the U.S. Capital Facilities Industry.' The report illustrates $15.8 billion in annual efficiency losses generated from process waste in 2002. The report attributes the waste to the inadequate operability between CAD technologies, engineering, and software systems facility operation and maintenance (O&M). The NIST report lit a spark and fanned a fire for the AEC industry to come up with a better way to design and construct building projects. This report directly led to the widespread adoption of BIM-based processes. At the time, many in the AEC industry thought that BIM would signal the death-knell for CAD, and ultimately the drawing.

Yet here we are, in 2020... and we still have CAD, and we still have construction drawings.

So, why do we still use drawings?

Drawings, specifically construction drawings, are still relevant for many reasons. Drawings facilitate the viewing of complex data in a simple format for all to see and

use. Representing every single shape of every object (e.g., walls, doors, windows, steel and duct work) in a building is a daunting task, and while it can be done to a point, it may not be the best way to relay that information to everyone involved. A drawing can be used to represent those complex systems: a line on a sheet of paper can represent a wall and a line with a curve can represent a door.

Drawings are an easy way to orient everyone to the same space, especially those who aren't necessarily in the construction industry. When going into a hotel room or into a commercial building, there is a fire evacuation plan on the back of the door to guide you out in case of an emergency. A 2D plan. A representation of the building in a simple and easy-to-use format for all to see.

One definition of a construction drawing is an instruction with supporting information on how a building should be constructed. Drawings can also be a focused representation of a BIM. In this case, the model and the drawing are linked and bound together, both conceptually (as one is a simpler representation of the other) and electronically (as most model processes continue to use the 'slice' technique to create drawings.)

Drawings are also the legal tender in many parts of the world, including all 50 states. When building projects are designed, construction drawings are issued. It doesn't mean that models aren't used and issued. However, most US states do not necessarily provide the means to "stamp and seal" a model. An architect or engineer doesn't put their registration and license on the line over a model: they do so over the issued construction drawing.

A drawing can be considered the common currency.

Case in action: Why Overtur is drawing based

When Overtur was first conceived as a platform through which project members collaborate on the security design, construction and operation of door openings, the decision was clear: be plan-based. That is, use 2D construction drawings as the method of communication. As construction drawings continue to be an important part of the industry, it was incumbent upon the Overtur team to ensure all members of the building's life cycle are considered as a project team member. Not everyone in a building's life cycle will have knowledge of how to read or interpret a 3D model; however, they can read and may be more readily able to orient themselves to a plan.

By being plan-based, we ensure inclusion of all who work on and around an opening for its lifetime.

Use the drawing process that fits your project

By no means do cloud-based project collaboration tools dictate how that drawing is made. Whether or not the team uses a BIM process to create a drawing, a CAD process to do so, or a napkin sketch from the field, that choice is up to the need of the project.

The Overtur process takes the drawings and door schedule information from the project team and combines that information with the hardware information on each individual opening. Once combined, Overtur acts as the single source-of-truth for the project for door opening information and presents it to all project team members in an easy-to-read and understand method: the drawing.

As technology evolves and the industry advances, the drawing is not dead; it's digital and continues to remain essential to architects, building owners, construction teams, inspectors, engineers and designers alike.

Allegion has a team of more than 150 specification writers located around the world who would be happy to assist on your next project. Contact an Allegion specification writer, or check out the iDig Hardware blog for information and updates on door hardware codes.