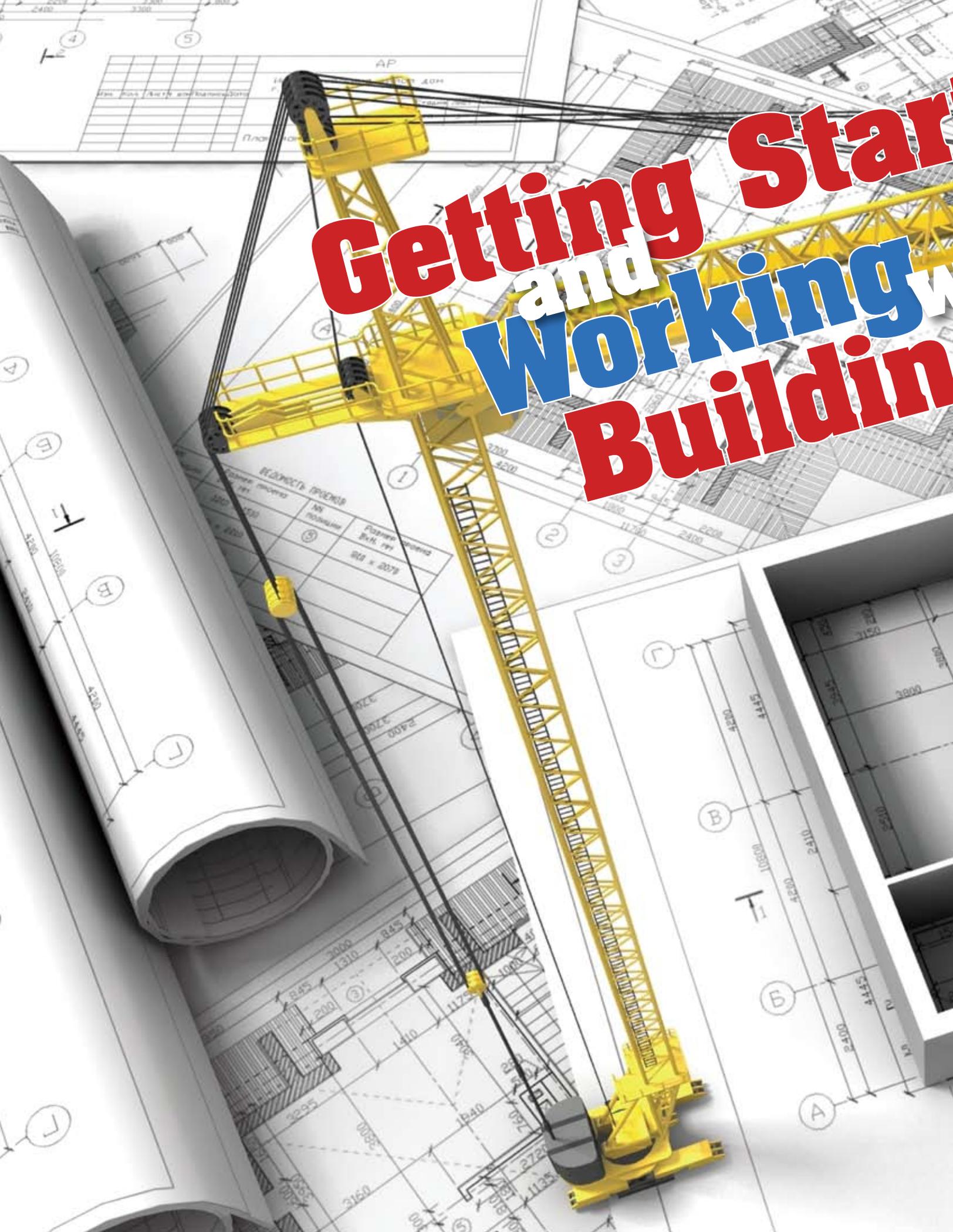


# Getting Started and Working with Building

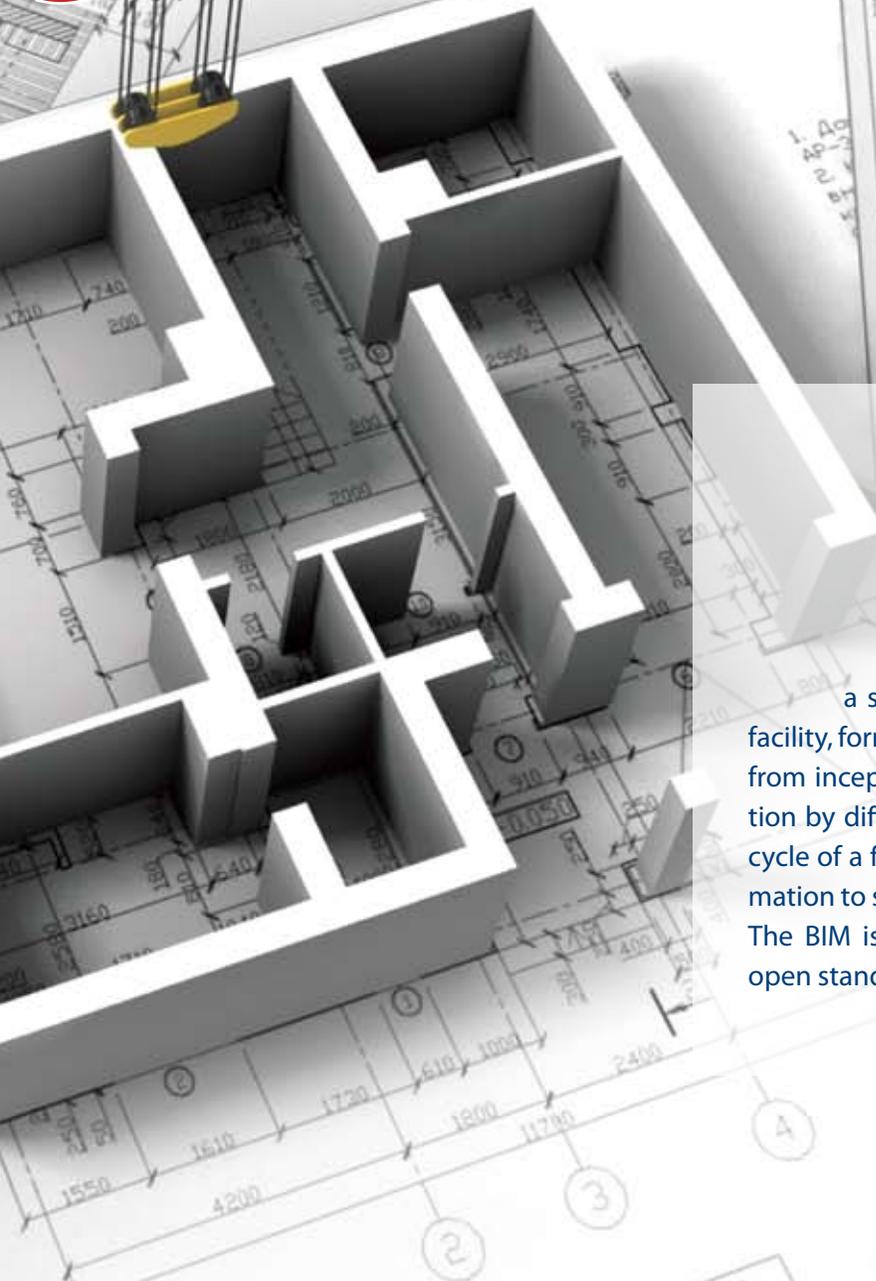


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# Information Modeling

By Dana K. Smith, FAIA



**T**his article will assume that you have heard of Building Information Modeling or BIM but have not developed a strategy as to how to get the most out of it.

The National BIM Standard (NBIMS) has defined 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 life cycle from inception onward. A basic premise of BIM is collaboration by different stakeholders at different phases of the life cycle of a facility to insert, extract, update, or modify information to support and reflect the roles of that stakeholder. The BIM is a shared digital representation founded on open standards for interoperability.



## About NIBS

The National Institute of Building Sciences (NIBS) is an entity originally established by the U.S. Congress to bridge gaps on both the private and public sides of the industry. NIBS legislation identified that they must support the full range of stakeholders in the facilities industry to include architects, engineers, contractors, insurers, unions, manufacturers, legal, housing, vendors, owners, consumers, state & federal government, codes & standards, and testing. More information can be found at [www.nibs.org](http://www.nibs.org).

### THE "I" IN BIM

Vendors are extolling the virtues of the new 3D modeling capabilities, and many contractors have embraced the idea and are using it for clash detection, scheduling to include coordination with sub-contractors and fabricators. Some fabricators are using the information to drive their equipment for cutting steel, bending sheet metal, and other preconstruction tasks.

Some designers are using BIM for 3D visualization and simulation.

Typically, that is about where it ends for most people today. In fact, one could say that today we are really only doing Building Modeling. The Information part has been largely left out to this point, and certainly there is little passing of information from planner to designer to contractor and to facility operator. This is where information and interoperability comes in.

So what should your BIM implementation look like and how will you know you are truly doing BIM and not just building modeling? The NBIMS has a capability maturity model that you should visit to determine just where you currently stand and then determine where you want to be. Then for each category develop a strategic plan for how you plan to get there.

McGraw-Hill recently produced a document identifying the results of interviews with over 300 BIM implementers. Findings were dramatic as to the growth over just the past year in the use of BIM. What was also interesting but probably predictable was that the more people became involved and experienced the far

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better the results. It is anticipated that this will continue for quite a few years. Another interesting result was that those who measured return on investment (ROI) found that their results were higher than anticipated. As you can imagine, this is not typical as most overestimate the results and when attempting to validate find the results are often lower. The entire report can be viewed on the buildingSMART alliance website at [www.buildingsmartalliance.org/news/20081203.php](http://www.buildingsmartalliance.org/news/20081203.php).

The NBIMS plays a key supporting role in ensuring long-term success for BIM. Standards are a necessary ingredient in interoperability and are at the heart of any successful implementation strategy. Therefore, you need to demand open standards based building information modeling using NBIMS as the foundation of your implementation strategy.

One option for getting started on the right foot is a tool called the Construction Operations Building Information Exchange (COBIE). This tool begins by identifying items in the design specification that will need warranty information. During construction, information about the products is collected and stored in COBIE. This information is then provided, used, *and sustained* by the facility manager and operator. Some are beginning to implement COBIE, but the information is still difficult to input and sustain because the business processes are not yet in place. There is one project at USC where Lucas Films has donated the funds for a facility and have mandated that BIM be used throughout the 100+ year life cycle. This approach causes the designer, contractor, and physical plant folks to work as a team to provide the best possible facility. Is this not a great goal to ensure optimizing the business process and eliminating non-value added effort? However, this type of advanced thinking needs to be far more prevalent for us to claim any level of victory.

#### GETTING INVOLVED

We see Building Information Modeling as being a benefit first to large portfolio owners, and we anticipate that those are the first who will get involved. Obviously, colleges and universities are some of the largest portfolio holders, along with PreK-12 and government/military. Most design and construction firms will also have this type of client in their portfolio. However, this effort is grassroots, involves everyone, and is far more successful if there is strong

## About the buildingSMART alliance

The buildingSMART alliance is the North American Chapter of a larger effort called buildingSMART International. A coalition of some 30 countries who share the same belief that we need to overhaul significantly the facilities industry and that BIM and interoperability are at the center of the solution. This organization, previously known as the International Alliance for Interoperability, has been working on this problem for over ten years. The name was changed and the focus has shifted from a primarily technical solution—which developed an international standard—to a total business solution, still embodying the technical, but widening the scope to better ensure success. It was ultimately determined that the change we are seeking is cultural and far more inclusive than technical. Visit the Alliance website at [www.buildingsmartalliance.org](http://www.buildingsmartalliance.org).

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## Waste and Overlap

The Construction Industry Institute and Lean Construction estimated in 2004 that there is up to 57 percent waste, or non-value added effort, in the construction industry today. Compare that with 26 percent waste in manufacturing and you see that conservatively we have a 31 percent target of opportunity. Applying that number to a \$1.288 trillion design and construction industry, as estimated by *Engineering News Record*, and you have nearly \$400 billion in waste annually.

leadership from the top. BIM implementation is a corporate change and not just one person's transformation. Therefore, we are expecting many individual memberships to convert to corporate memberships in the near future as one of the metrics of our success.

As you consider developing a BIM strategy, take some solace from the fact that there have been many who came before you. You should also not expect to be masters of BIM on your first

time out. Start small and focus on what you think you can accomplish. If it is simply building modeling the first time out, then so be it. That is certainly an acceptable start as better communications with your campus and business stakeholders is a critical step for planners and designers.

Just be aware that that is only the starting point. Do not limit yourself to what any one vendor can provide either. Multiple tools can be used. COBIE, for example, has capabilities to work as an Excel spreadsheet, XML interface, as well as IFC (ISO/PAS 16739). BIM will offer you the opportunity to offer more services and potentially take back some of the responsibility (and fee) that have been shed in the past by the designer. It is your choice as to how aggressive you can ultimately become. Just do not bite off more than you can chew of that elephant. ☺

Deke Smith is an author of a Strategic Implementation Guide for BIM and is the executive director of the building SMART alliance, a council of the National Institute of Building Sciences. He is based in Washington, DC and can be reached at [deke@dksic.net](mailto:deke@dksic.net); this is his first article for *Facilities Manager*.

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