

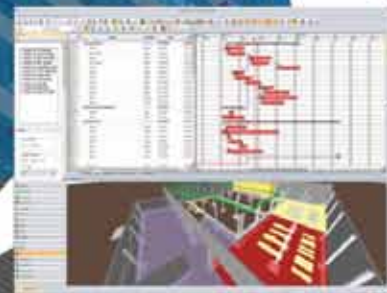
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# No BIM for You: The Case for Not Doing BIM



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# No BIM for You: The Case for Not Doing BIM

## Leverage Points, Reframing and Key Decision Factors in BIM Transformation

By Michael LeFevre

WHILE MORE LEADING ARCHITECTURE, engineering and construction (AEC) firms are making the switch to building information modeling (BIM), the chasm continues to widen. In many instances, BIM pioneers advance to greater BIM uses, benefits and heights while a growing number of “BIM have nots” are left farther behind. Despite the growing momentum in BIM and virtual design and construction (VDC) circles, there is concern that BIM evangelists may be

preaching to the choir. While we “get it” and readily share “it” with each other, are we still missing the majority who have not yet seen the light? How do we connect with owners, for instance, who, in all but a few notable exceptions, could care less about BIM?

While there has been much discussion about the positive BIM return on investment (ROI) and the proof of economic return, the answer may be more clearly shown in reverse: BIM’s value

may be better demonstrated by assessing the cost of **not** doing BIM. And the most powerful reason (and pre-requisite) for BIM may, in fact, be non-quantifiable—simply a leap of faith, an intrinsic motivation, a paradigm shift.

If BIM value needs proving to you, you’re not ready (and you may be doomed to suffer the consequences and costs of a non-BIM future). Like the patrons of the *Seinfeld* sitcom’s soup vendor, if you’re not ready to speak the language and follow the protocols—if you’re waffling or indecisive—then, “no BIM for you!”

This paper presents two untried, contrarian approaches for BIM persuasion: the cost of **not** doing BIM and the mindset change required **before** considering changing to BIM.

### RE-FRAMING THE DISCUSSION?

BIM advocates have nobly argued their case over the past 5 to 35 years. But frustratingly, the BIM proof burden still seems to be in their (our) court. We’ve tried to defend and demonstrate BIM value from a positive perspective (for example, “BIM and you’ll save X”). To play intentional provocateur, what if we take a dimensionally different approach? What if we investigate the cost of NOT doing BIM? You have that data, you say? That’s how you’re doing it now? Well, if you like how things are going in your non-BIM way, read no further. You’re done. But if you think there’s a chance that a fresh perspective, a new toolset and changes to people and processes could improve things, read on.

If I were an economist or systems analyst, this paper might be different. Rather than a paradigmatic plea for attitude and philosophical change, it would be rife with mathematical calculations, direct, indirect and third wave effects to,



*BIM offers information in many forms: 3D geometry, infinite views and perspectives, drawings, attributes, schedule data, and facility management and operational data for the building life. You can have this to run your business (or choose not to) but here’s my question: “Why wouldn’t you?”*

once and for all, numerically substantiate BIM's benefits. But I'm not, so it's not. Instead, I'll cite different influences to frame the discussion anew.

Management **starts** with the numbers. You've got to have all of the numbers and they've got to be correct; but that doesn't conclude your efforts, it starts them. That's where analysis, judgment, experience, context, validation and decision-making come in. But, before you can begin to manage anything, you need direction. Paraphrasing Henry Ford: "There is nothing worse than doing with high-efficiency and absolute accuracy, that which should never have been done at all."

## BIM CHANGE APPROACHES

### Positive: demonstrating BIM savings

To satisfy those who refuse to entertain the discussion solely based on paradigm shifts and beliefs, following are the positive BIM savings methods we've used.

**Direct savings (collision detection):** The most attempted metric has been direct collision detection savings. Direct BIM collision detection savings are measured exactly like other construction cost estimates: quantities, times, unit costs, labor and materials. We use collision detection logs to reach project totals and a database to track all projects. Holder's historical savings have been three to five times the direct BIM cost.

**Indirect savings:** Although harder to measure, far greater savings are potentially realizable indirectly than via direct hard-cost savings. Consider BIM's impact on design team integration and the convergence of lean, green, integrated project delivery (IPD) and other process change and delivery method improvements. In indirect savings, one of the easiest things to measure is time. For example, to calculate indirect savings in time:

# people in attendance X # of meetings  
X average hourly rate

If using BIM to present a 4D schedule reduced your meeting from 4 hours to 1, this equals 3 hours saved X 10 attendees X \$100/hr = \$3,000.

Indirect savings can also be figured into the design, administrative and

management time that is saved as a result of sharing data. Other factors such as reduced general condition costs, escalation avoidance and additional fees from change orders can also be included.

### Negative: the case for not doing BIM?

For those not convinced by the earlier positive savings methods, consider this: What is it costing you and your entire team **not** to BIM? **TABLE 1**, on page 16, outlines hypothetical audiences and scenarios to consider.

While the sample scenarios described in **TABLE 1** are generic and hypothetical, they reflect many real life examples of the kinds of benefits and savings that have occurred in recently published projects. Conversely, in this negatively presented view, they show the kinds of economic loss being absorbed every day by owners, projects and teams not engaged in BIM.

## OTHER COSTS AND KEY FACTORS: BIM FORCE ANALYSIS

Beyond positive and negative approaches, other factors should be considered. Does having a pleasant experience during design, construction and operation mean that a client will come back? If not, what does the loss of business cost and how can this loss be calculated?

To make the BIM decision, a great practice is to create a BIM Force Analysis (courtesy of John Kunz and Martin Fischer at the Center for Integrated Facility Engineering). On the left side of a page, list things in favor of a change to BIM. Consider staff (for example, are they young? BIM-enthusiastic?), funding, management support, experience, training, market, customers, competition ramping up, hardware and software. On the right side, list roadblocks, obstacles and forces against BIM change, such as curmudgeonly staff, current computer-aided design (CAD) software investment, company culture and current business processes. Now, weight these forces relatively and work to remove the obstacles and build on the strengths. This exercise can be an enlightening way to assess your organization's position and change readiness mindset.

## BIM LEVERAGE POINTS

In her seminal 1997 article, *Leverage Points: Places to intervene in a system*,

environmentalist and systems thinker Donella Meadows notes that in trying to make change, the most important of 12 key factors is changing the *mindset* of the decision makers—their *paradigm* or rule set by which they make decisions. At the bottom of this list are metrics, numbers and constants. While this seems contrary to business practice, I believe it to be true. If an individual or an organization is not viewing their potential change decision (for example, BIM) from the proper perspective, they are not ready to consider numbers. Rather than considering software, hardware and process change cost, BIM deciders must consider their entire enterprise and those of their partners and customers.

## LEVERAGE POINTS

From *Places to Intervene in a System* by Donella Meadows (in decreasing order of effectiveness):

1. The power to transcend paradigms.
2. The mindset or paradigm out of which the system, its goals, structure, rules, delays and parameters arise.
3. The goals of the system.
4. The power to add, change, evolve or self-organize system structure.
5. The rules of the system (such as incentives, punishments and constraints).
6. The structure of information flows (who does and does not have access to what kinds of information).
7. The gain around driving positive feedback loops.
8. The strength of negative feedback loops, relative to the impacts they are trying to connect against.
9. The lengths of delays, relative to the rate of system change.
10. The structure of material stocks and flows (such as transport networks and population age structures).
11. The sizes of buffers and other stabilizing stocks relative to their flows.
12. Constants, parameters and numbers (such as subsidies, taxes and standards).

While the impact from this may be measurable by trained economists and systems analysts, for most of us in the design and construction industry the ability to think about or measure these second and third wave ripple effects is beyond our skillset. Reframing is required. The BIM decision requires leadership, leaps of faith and intrinsic motivation. Potential BIM converts

must want to do it for their own reasons, not because anyone proved it to them beforehand. For those that have made the leap, there has been no turning back. For the “show me” crowd, perhaps a fitting result is, “No BIM for you!”

#### ON CHANGING MINDS

For all of the preaching, educating and cajoling we BIMerati do, changing

mindsets is the biggest challenge. These techniques may help:

- Identify political forces and focus on creating a key ally.
- Associate with like-minded (change-ready) trusted peers. They’ll share their evidence.
- Associate with new, different types than you have been. Hire or talk to a BIM guru.

**Table 1**

<b>Audience</b>	<b>No BIM</b>	<b>BIM</b>	<b>Cost of Not Doing BIM</b>
<b>Owner</b>	Your company’s IT system goes down for two minutes because you couldn’t find the facility management (FM) data you needed to test the generator in time. <i>Business cost: \$3,000,000</i>	You use BIM to create a digital FM tool. Your FM staff accesses data in seconds. Completes generator test. Your business stays up. <i>BIM / FM system cost: \$300,000</i>	\$2,700,000 million business loss
<b>Architect/engineer</b>	A team designs a standard glazing and HVAC system without the benefit of BIM modeling or simulation energy analysis. First cost: 0 (included in standard AE services) <i>30 year life operating cost: +\$800,000</i>	A team performs optimized energy analysis using visual BIM interface with the owner and FM staff buy in. <i>First cost: Add \$20,000</i> <i>30 year life operating cost: \$100,000</i>	30-year lifecycle operating cost: Premium \$680,000
<b>Construction manager</b>	CM finds typical errors, omissions and conflicts in documents on \$100 million project. Change orders result. Funded via three percent construction contingency. <i>First cost: \$3,000,000</i>	CM, design team and subcontractors use BIM to resolve conflict pre-field. <i>BIM cost: \$500,000</i> <i>Contingency saved: \$1,500,000</i>	Potential net owner benefit lost: \$1,000,000
<b>Construction manager</b>	CM sets up and de-mobilizes three cranes and four sets of scaffolding by individual subs. Costs included in subcontractor cost of work to owner. <i>First cost: \$100,000 included in subcontract costs and general requirements</i>	CM uses BIM in scope meetings to visualize one shared crane and one set of shared scaffolding. Subcontractors reduce cost. <i>BIM cost: +\$50,000</i> <i>Shared scaffolding first cost saved: -\$50,000</i> <i>Schedule reduction yields 1 week general conditions cost reduction: -\$50,000 saved</i>	\$50,000 net savings missed
<b>Trade contractor</b>	Trade contractor includes contingency in curtainwall bid based on 2D unclear construction documents. Submits higher bid proposal and loses job. <i>Added cost included in owner cost of work: \$450,000</i>	After seeing AE/CM’s BIM in scope meeting with verified quantities, trade contractor increases certainty and confidence, reduces bid, uses cost-effective, unitized, prefab approach, wins project. <i>First cost curtainwall savings to owner’s contingency: \$450,000</i>	Subcontractor loses \$200,000 profit opportunity from project award. \$450,000 additional cost of work to owner without BIM
<b>Building product manufacturer</b>	Use road trip office visits, faxes and manual catalog updates. Sales revenues decline. <i>Business cost: \$1 million</i>	With online digital BIM and integral product data and live simulation/ analysis tools, AE’s and owners download smart objects. Sales reps spend time building relationships and helping customers in value-added, context-specific, customized ways. <i>Business savings: \$1 million</i>	\$1,000,000 impact to BPM
<b>Building users, business, stockholders</b>	Viewing 2D drawings and cardboard models, users are disconnected from the design and project. After move in, space does not function well for intended use. Morale and productivity suffer. Employee attrition increases to 10 percent. <i>Business cost: 5 percent drop in company-wide profits. Replacement cost of 2.5 times each employee lost. -\$2M annual impact.</i>	BIM visualizations and walk-throughs are used to achieve user buy-in and understanding. A state-of-the-art, green design, quality construction and a high-performance building enable a high-performing business for the next 30 years. After move in, company employee retention increases 5 percent. Profits increase 5 percent. <i>Business profits: \$2 million above previous year.</i>	\$4,000,000 profit swing in one year

- Speak “their” language. Find and remove the fear, uncertainty and discomfort of the new. Ask what keeps them up at night then translate their problem into BIM solution terms.
- Do the opposite: if you’re using CAD, try BIM. If you’re on a short-term budget basis, spread costs over a longer period.
- Think differently. Consider the enterprise-wide impact that BIM could have, not just its information technology, design, construction, facility management or BIM department-scaled view.
- Try something. Start now, with a small investment. Learn BIM language and processes.
- Look for (and celebrate) small wins you may experience from working in new ways using BIM.

**PROOF? YOU CAN'T HANDLE THE PROOF. OR, CAN YOU? PROVE IT TO YOURSELF**

Subject to scalability, context, appropriateness and business case, it has been the experience of early adopters that **there is no case for not doing BIM**. If, after reading this, you remain unconvinced and still require proof that your investment in BIM will pay back, I hope that you get it. If, in digesting this essay, we’ve cracked open the door to your “change mindset,” then we’ve made progress.

Good luck to you and your organization in your decisions and approaches to managing facility information during the full project and business life-cycle. Changing to BIM is a choice. We’re learning that it’s not about the BIM—it’s about you, your business processes and the results and experiences you have along the way. But in these times of still-early-change, we continue to need to push discussions, education and creative means of persuasion to grow the pool of tech-savvy contributors. Whether you’re ready or not, there are plenty of folks in line for BIM. But if BIM is not your thing then, “No BIM for you!” ■

*By Michael LeFevre, Vice President, Building Information Modeling, Holder Construction Company.*

# Archidata: The Only BIM Solution for Existing Buildings

Area	0.12	Area (sq. ft.)	1311.21
Volume	0.00	Volume (cu. ft.)	1111.21
Name of Project	000010	Owner/Client/Company	000000
Location	0000	Project No.	000000
Area of Site	00000000	Area (sq. ft.)	000000
Project	000000	Project No.	000000
Year	0000	Year	0000
Area of Site	000000	Area (sq. ft.)	000000
Project	000000	Project No.	000000
Year	0000	Year	0000

**CONVERTS** your CAD or scanned paper plans into the IFC standard and BIM  
**PROVIDES** a standardized IFC file to professionals to start projects in Revit, NavisWorks, D-Profiler, etc.  
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