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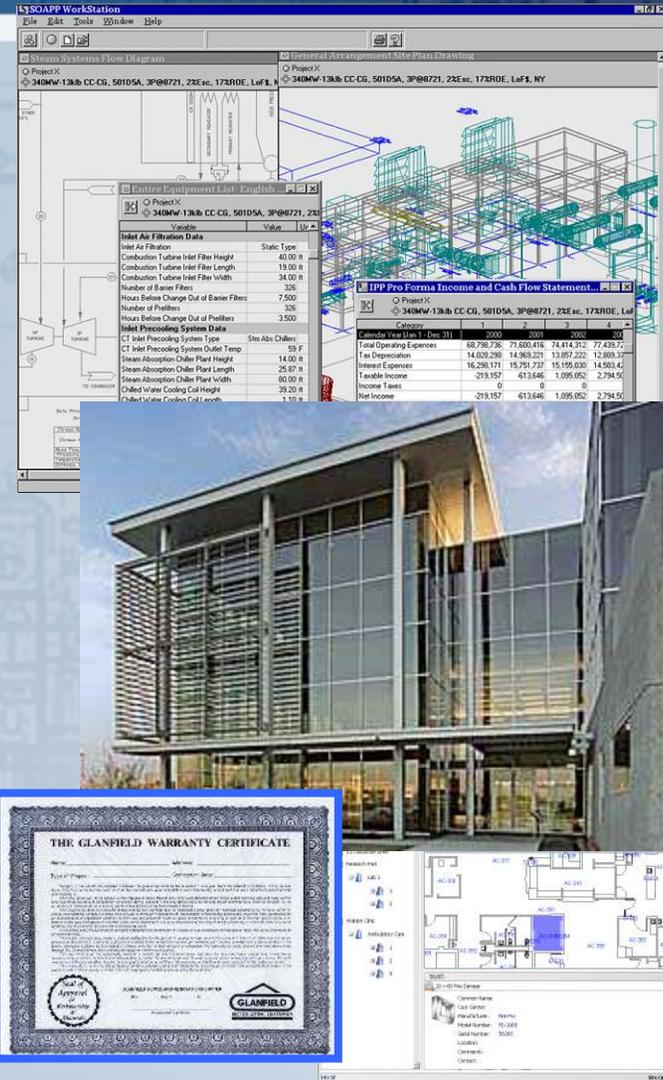
# S305: Business Process Change

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# BIM Buzz is Rather Intense...

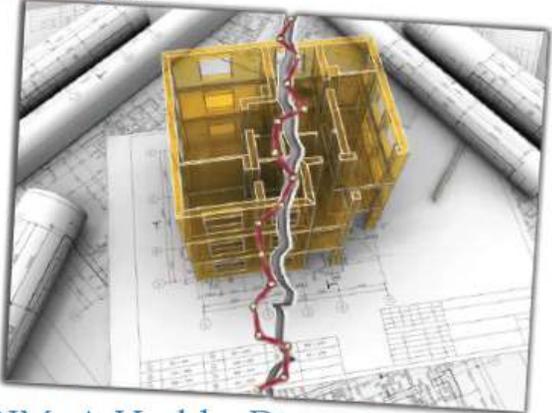
- Promise of major transformation for facility life cycle
  - Shorten development schedule
  - Improve design quality
  - Improve building performance
  - Improve facilities operations & maintenance profile
- Reduce cost of design, construct, operate
- Reduce facility delivery time
- Scent of \$



# BIM - a Disruptive Technology

- Portends realignment in industry
- New business relationships rapidly emerging
- Industry stakeholders scrambling for position
- Catalyst for linking a fragmented industry - silo mentality will not survive
- Different more collaborative processes will emerge

Feature



## BIM: A Healthy Disruption to a Fragmented and Broken Process

By David Jordani, FAIA, Jordani Consulting Group

**I HAVE HEARD THE** terms BIM and disruptive used together quite often lately. Some tend to think of disruption as a sign of trouble. My preferred connotation for the term is unsettling. Is BIM the catalyst to unsettle and shake-up the construction industry? I hope so...and it's about time.

Much has been said and written about the inefficiencies of the construction industry. Fragmented in its makeup and slow to adopt change, statistics from the U.S. Bureau of Labor Statistics suggest that the construction industry productivity not only lags behind other industries, but is also in decline. The costs of these inefficiencies are palpable, costing billions of dollars annually.

Let's be clear, BIM is not the salvation of the construction industry. Efforts on many fronts will be needed to address

issues that have gone unattended for too long. But there's good reason to believe that the introduction of BIM will serve as a catalyst for many of the necessary changes to unfold. The signs are already there.

At its core, a BIM based methodology is built around the notion of collaboration—people and systems exchanging information about a facility throughout its life cycle. Embracing a collaborative model is the most effective way I can think of to address fragmentation. Adopting this approach requires and results in a number of positive changes in the industry. While technology may be the catalyst, business process reform and vision is required to create meaningful change.

So how do we get there, and what kinds of changes will we see along the way?

**OWNERS WILL DEMAND IMPROVEMENTS**

No longer willing to yield to a tradition of inefficiency, building owners will lead the charge for a smarter process. As change agents for the industry, both public and private owners will challenge their providers to deliver facilities faster, better, safer and at lower cost. Owners will require BIM to enable lean practices to identify and eliminate waste in the entire project cycle. They will expect their construction partners to be proactive in applying these concepts looking for early returns—tangible results from bid through implementation at the site.

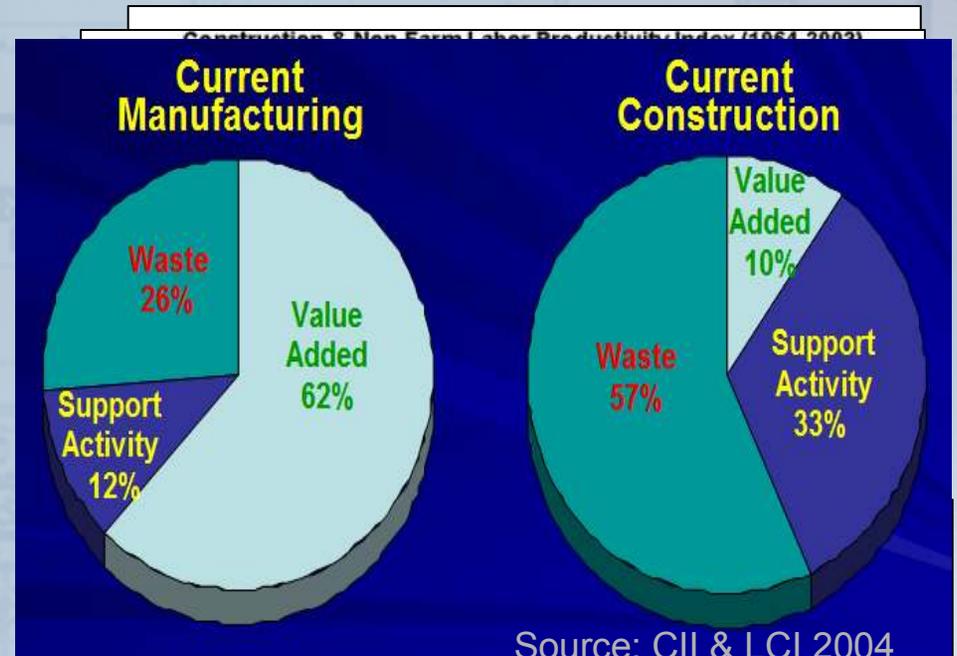
**NEW BUSINESS MODELS WILL EMERGE**

The benefits of consolidating previously disjoint design and construction organizations will lead to mergers and acquisitions

24 Journal of Building Information Modeling

# Business Case

- NIST study identified \$15.8B lost to lack of interoperability
- Construction productivity in decline
- The numbers are significant



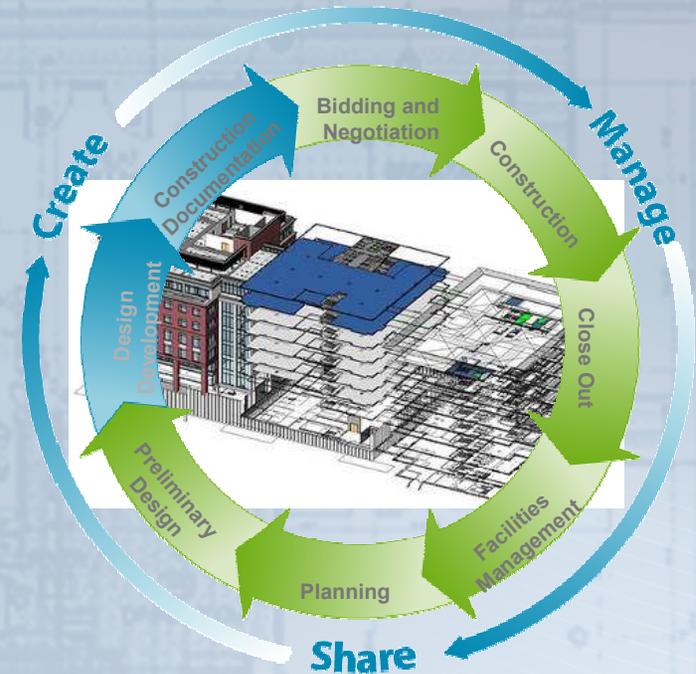
- Worldwide Construction Industry 2008 = \$4.8T (ENR)
- US Construction Industry 2008 = \$1.288T (ENR)
- **57% of \$1.288T = \$734B Annually**
- **2/3rds of \$734B = \$492B Annually**

General Contractors	495.9	1,265.3	50.4	1,801.6
Specialty Fabricators and Suppliers	44.4	1,142.2	15.2	1,602.8
Owners and Operators	722.8	898.0	9,027.2	10,648.0

Source: RTI estimates. Sums may not add to totals due to independent rounding.

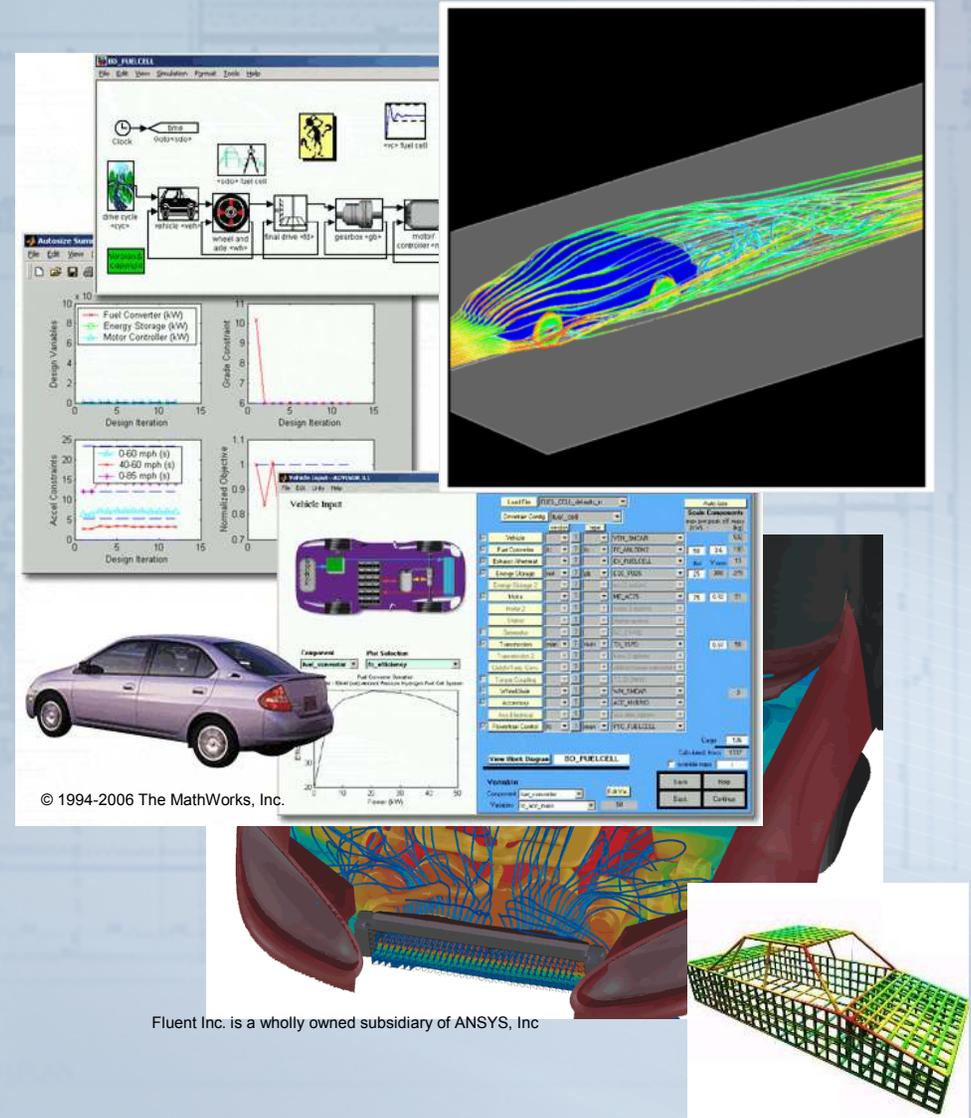
# Owners are Catalysts in the Move to BIM

- No longer willing to yield to a tradition of inefficiency
- Lead the charge for a leaner, smarter process
- Challenge providers to deliver facilities faster, better, safer and at lower cost
- Expect design/construction partners to be proactive in applying concepts
- Looking for early returns—tangible results from bid through implementation at the site
- Require BIM to enable lean practices to identify and eliminate waste in the entire project cycle



# The Move to Lean is not Without Precedent

- Automotive, electronics, aircraft
  - Supply chain automation
  - Compliance with standards entry level for participation - collaborate or out
- Applied to facility projects
  - Better value for their investment
  - More collaboration, all stakeholders, less combative
  - Ability to use information across full design/construct/operations teams
  - Increased focus on life cycle including operations



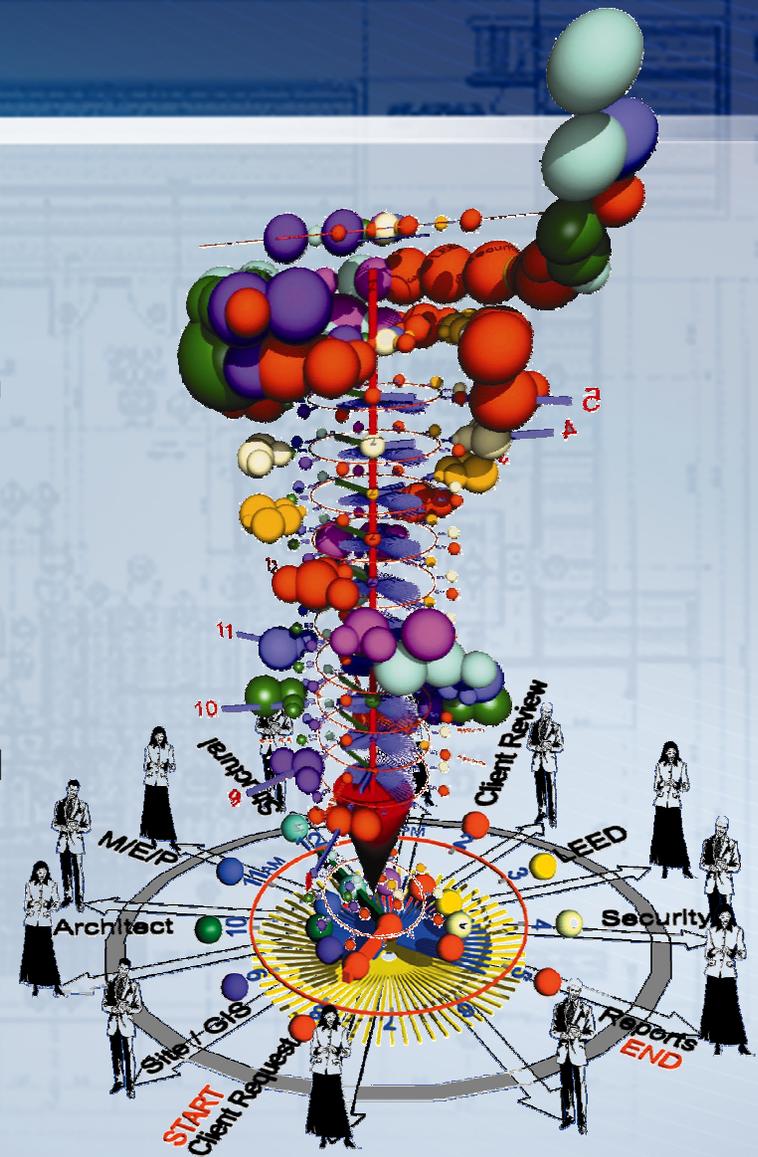
# BIM Defined (NBIMS Project)

A Building Information Model (BIM) is 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 provide, extract, update or modify information in the BIM to support and reflect the role of that stakeholder. The BIM is a shared digital representation founded on open standards for **interoperability**.

The US National BIM Standard promotes the business requirement that this model be interoperable based on open standards.

National Institute of Building Sciences (NIBS)  
buildingSMART alliance  
National BIM Standards Project Committee (NBIMS)



# Challenges Loom

- More questions than answers
- Consensus needed on a host of issues
  - Legal – contracts, liability
  - Ownership and reuse
  - Compensation
  - Digital rights management
  - Life cycle maintenance
- New processes and workflows needed to facilitate and leverage
  - Collaboration
  - Interoperability
  - Culture

*Schinnerer's 45<sup>th</sup> Annual Meeting of Invited Attorneys*

## BUILDING INFORMATION MODELING: A GREAT IDEA IN CONFLICT WITH TRADITIONAL CONCEPTS OF INSURANCE, LIABILITY, AND PROFESSIONAL RESPONSIBILITY

by Howard W. Ashcraft, Jr., Esquire

WHILE THE DESIGN AND CONSTRUCTION INDUSTRY RAVES ABOUT THE BENEFITS OF BUILDING INFORMATION MODELING, DESIGN PROFESSIONALS SHOULD STOP TO CONSIDER THE PROFESSIONAL LIABILITY RISKS INVOLVED. WHAT ARE THE RISKS AND REWARDS OF BUILDING INFORMATION MODELING?

### WHAT IS BUILDING INFORMATION MODELING?

Building information modeling (BIM) broadly encompasses a series of technologies that are transforming design and construction. In essence, BIM uses information rich databases to characterize virtually all aspects of a structure or system. The information can be traditional drawings and specifications, and 3D models that become the design replace even standard CAD drawings. Drawings, specifications, take-offs, and even construction details are not separate documents, but specific manifestations of the model. Because all aspects of a project are driven from a single database, issues of drawing coordination and conflict errors are greatly diminished. Integration of information from multiple disciplines also supports project visualization, simulation, and optimization. The model can even be used to drive computer-controlled fabrication tools, leapfrogging the tedious and error-ridden shop drawing process. Paraphrasing Dr. Pangloss, from Voltaire's *Candide*, "This is indeed the best of all possible worlds."

But will this be realized? Building information modeling assumes centralized information that is broadly accessible. Its utility depends upon being constantly

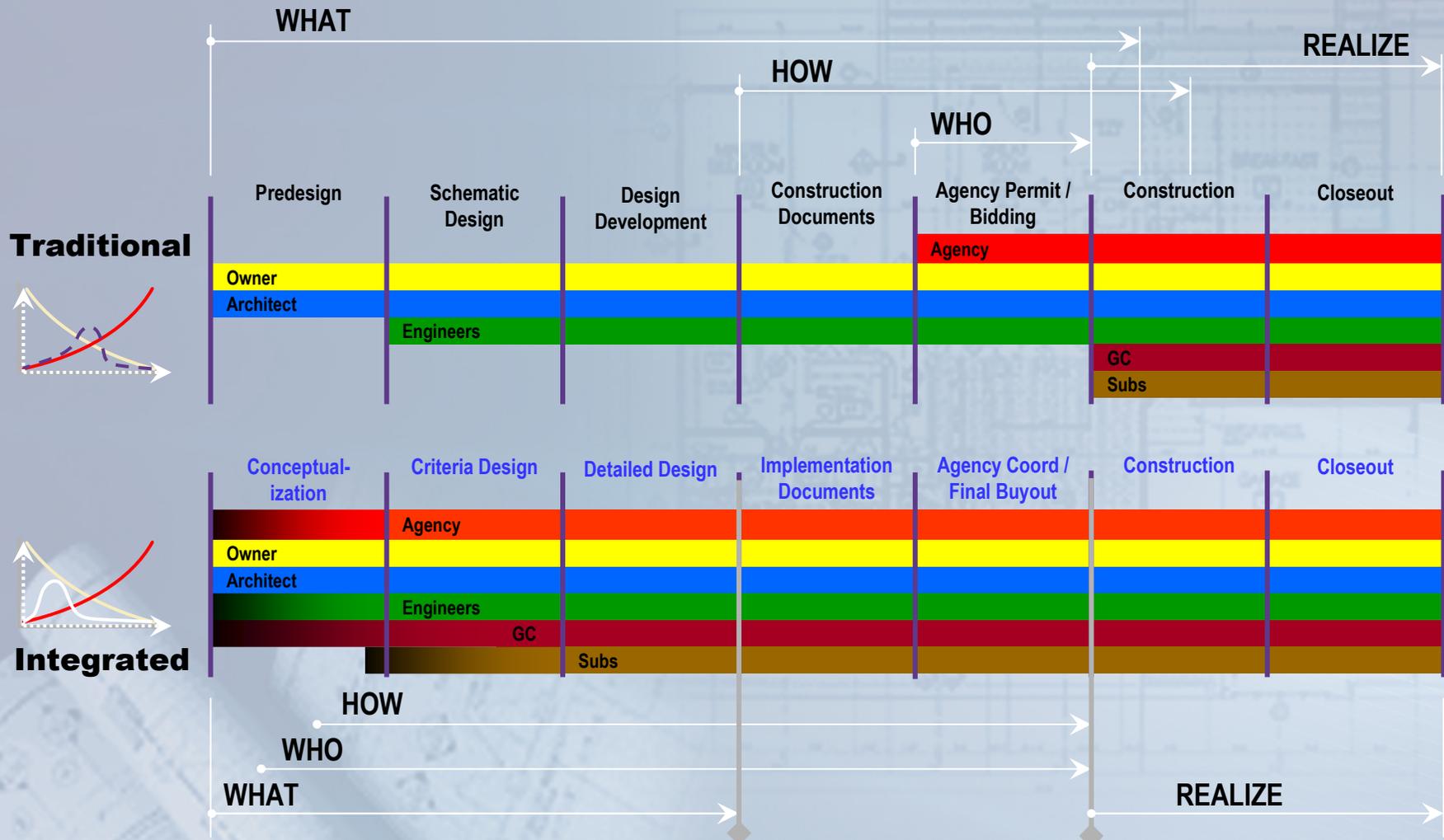
*Mr. Ashcraft is a senior partner in the San Francisco law firm of Hewson, Bridgett, Marcus, Vlahos and Brady. A graduate of Stanford University and the University of California School of Law (Boalt Hall), Mr. Ashcraft represents designers, owners, and contractors in project formation, professional practice, and construction disputes with a focus on public infrastructure and complex private projects. In addition, he is the firm's technology partner and leads its Electronic Evidence Task Force. He is a Fellow and former Governing Board Member of the American College of Construction Lawyers, a former member of the Governing Committee of the American Bar Association's Forum on the Construction Industry, and an arbitrator/mediator in the American Arbitration Association's Large and Complex Case Panel for Construction Disputes. He is a recognized construction lawyer listed by Chambers & Partners, USA, Best Lawyers in America, the Who's Who of International Construction Lawyers, and was listed in 2004 as one of the top ten attorneys in Northern California.*

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1

Howard W. Ashcraft, Jr., Esq.  
Schinnerer 45<sup>th</sup> Annual Meeting of Invited Attorneys

# Process Changes are Profound



# buildingSMART alliance™ – Business Process Team

- Address changing process and delivery requirements for facilities
- Focus on business process adaptation - less concerned with the technology per se, relying on other TTs
- Facilitate dialog and consensus, and provide direction to industry regarding the impact and opportunities



# buildingSMART alliance™ – Business Process Team

- Business Process Team Profile
  - Roster of 90+
  - Large /small design consultants, Product manufacturers, Contractors, Owners – public and private, Vendors, Legal and risk management
- Working Group: Contracts, Risks, and Liabilities
  - Examine legal relationships, liabilities, IP, risk management
  - Resolve conflicts and gaps so that benefits can be achieved
- Working Group: Staffing, Skill Sets & Education
  - Develop staff to meet the demands of a BIM centric process.
  - Expanding need for information specialists in the facility life cycle processes.
  - New models for collaboration, partnering and outsourcing will emerge.

# buildingSMART alliance™ – Business Process Team

- Working Group: Services and Marketing
  - New base and extended services; new business relationships
  - Downstream potential for BIM data will engender a much more consultative process at the front end of projects
  
- Working Group: BIM Process
  - New workflows
  - Best practices
  - Information exchange and handoffs

# buildingSMART alliance™ – Business Process Team

- BIM Execution Planning

John Messner, PhD, Pennsylvania State University

- The buildingSMART Alliance Project
- Effective development of BIM Execution Plans.

# Questions?

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