LIVE Autodesk ® Revit ® Building
Technical Webcast Series

Today's Topic:
Transitioning to BIM from Autodesk ® AutoCAD LT ®

December 20, 2006
2:00 PM Eastern / 11:00 AM Pacific

- https://www.gotomeeting.com/join/115230173
- Conference Call: 888-447-7153
- HOST: 6821410
- Meeting ID: 115-230-173

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Agenda

DLT Intro

Power Point: 30 min

Revit Demo: 15 min

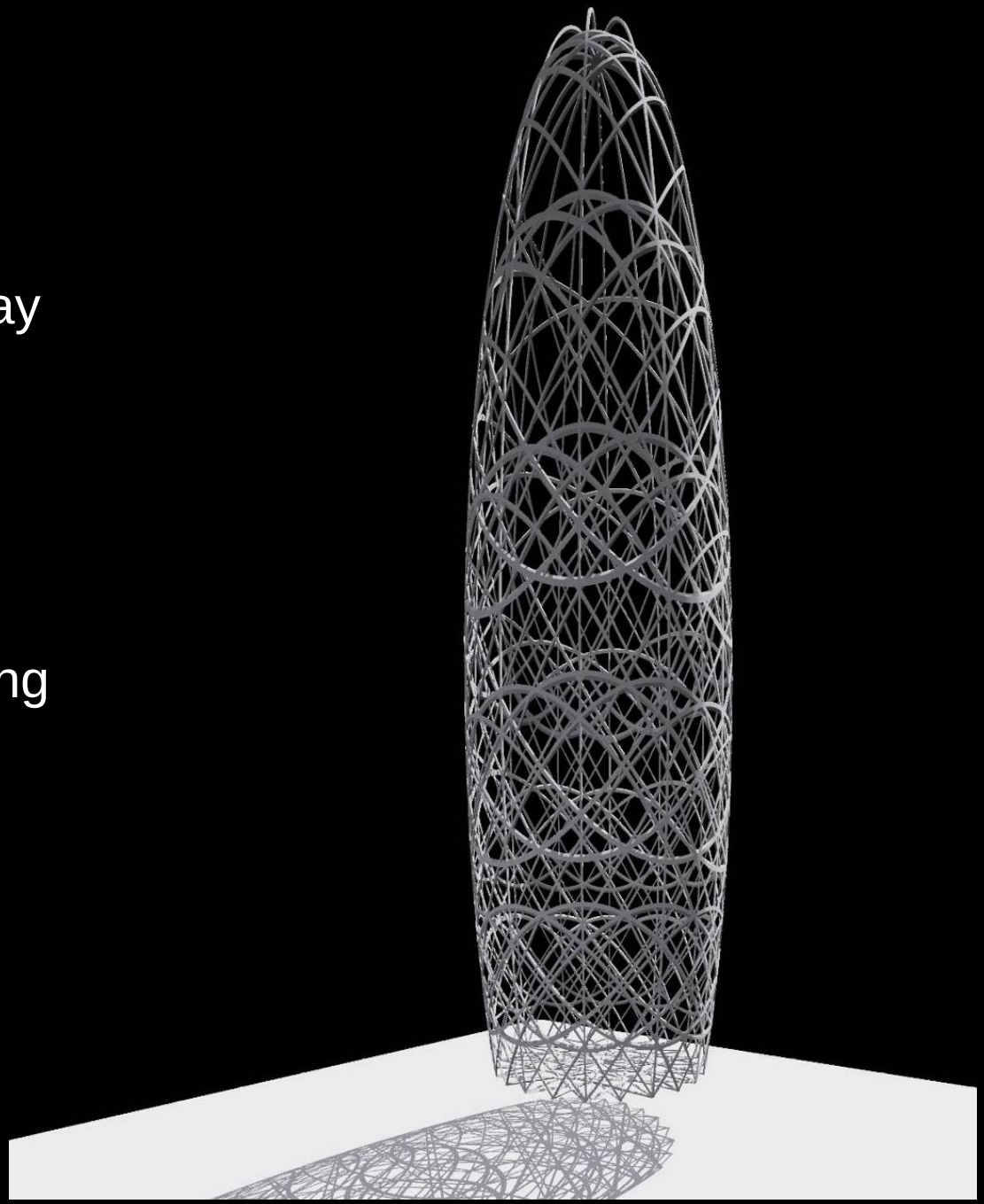
Q&A: 15 min

DLT Closing

Follow-Up & Next Steps

Industry Trends

- Importance of Building Today
- Sustainable Design
- Globalized Building
- Integrated Practice
- Client Satisfaction
- Building Information Modeling



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Industry Trends

Importance of Building Today

- "A Nation of Villages", New York Times columnist David Brooks writes, 01/15/06
  - Between now and 2025, the population of the US will increase by **70 million**. That's the populations of California, New York and Florida put together
  - To accommodate these new people, **100 billion square feet** of new residential space will have to be constructed.

- **Half of the buildings** in which Americans will live, play and work in the year 2030 don't even exist yet

Image Courtesy of Zaha Hadid (Lower)

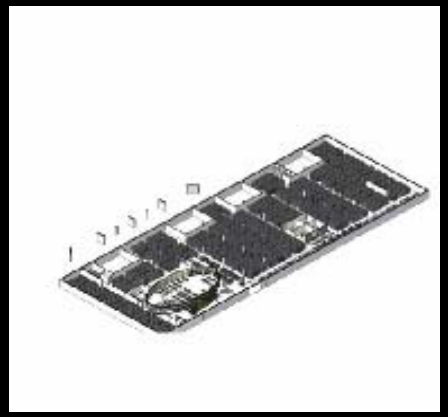

Image Courtesy of SOM (Upper)

Image Courtesy of Hillier Architecture (Lower)

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Industry Trends

Sustainable Design

- Building energy consumption: 40% -70%
- 40% of raw materials
- 12% of fresh water
- 30% of greenhouse gases
- 136T/Y of waste
- Emerging International Standards

[1] U.S. Department of Energy, Energy Efficiency and Renewable Energy Network (EREN). Center of Excellence for Sustainable Development, 2003

Image Courtesy of The Beddington Zero Energy Development

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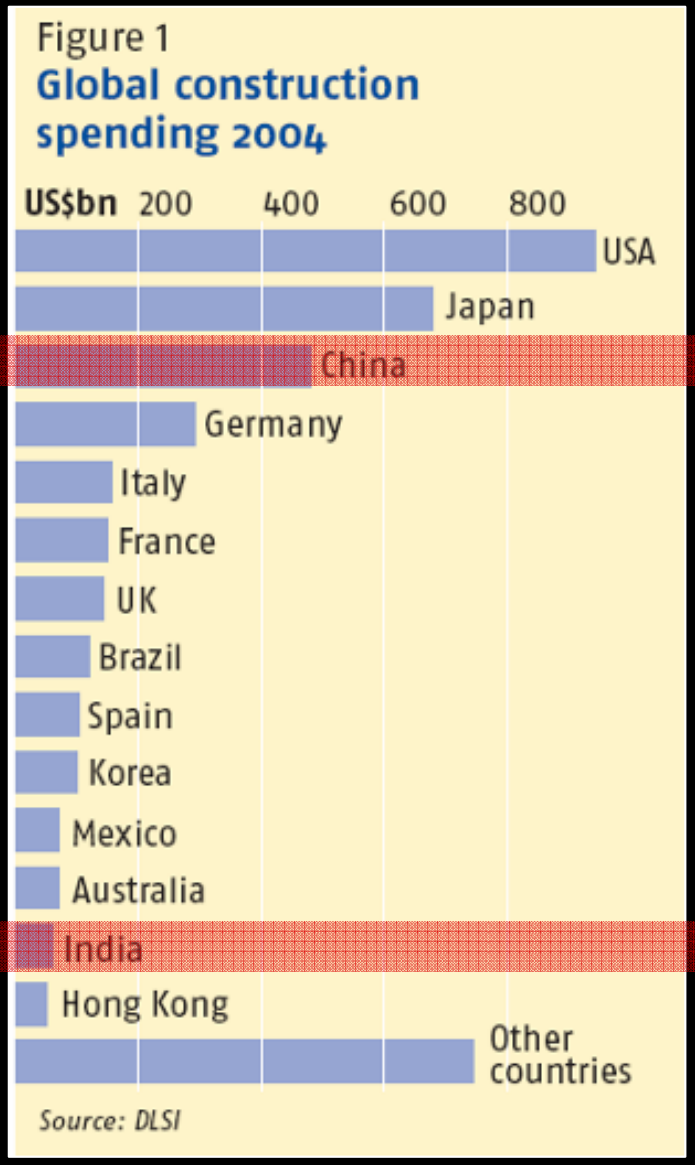
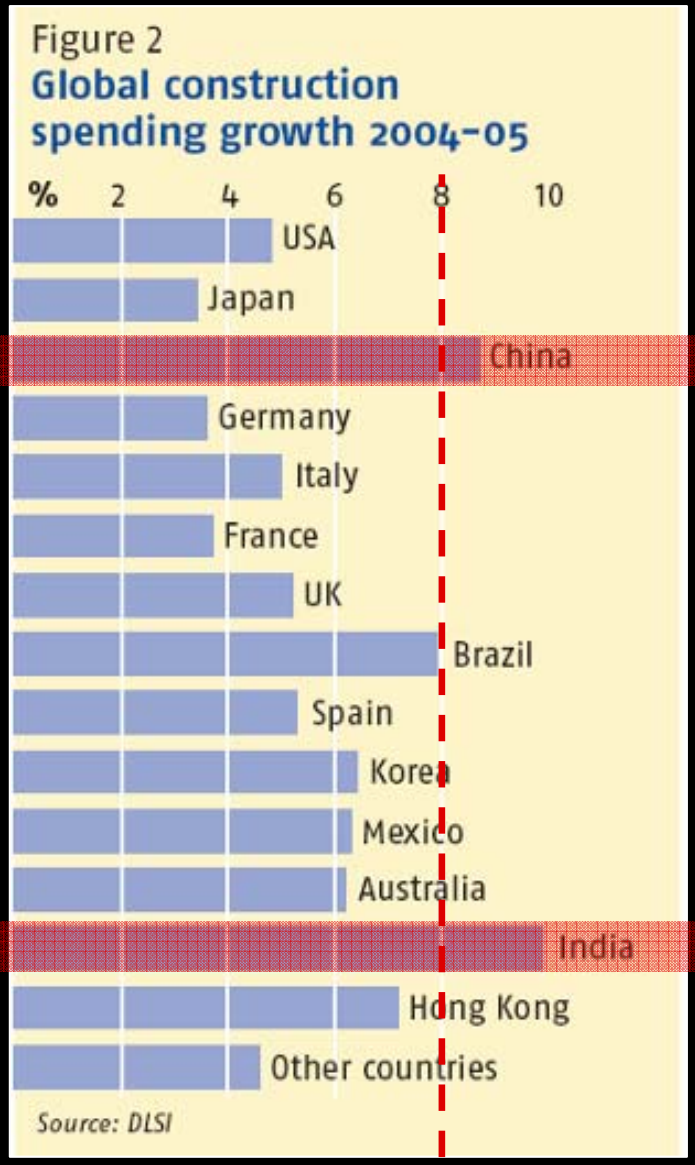
Industry Trends

Globalized Building





Davis Langdon & Seah International - World Construction Review/Outlook 2004/5

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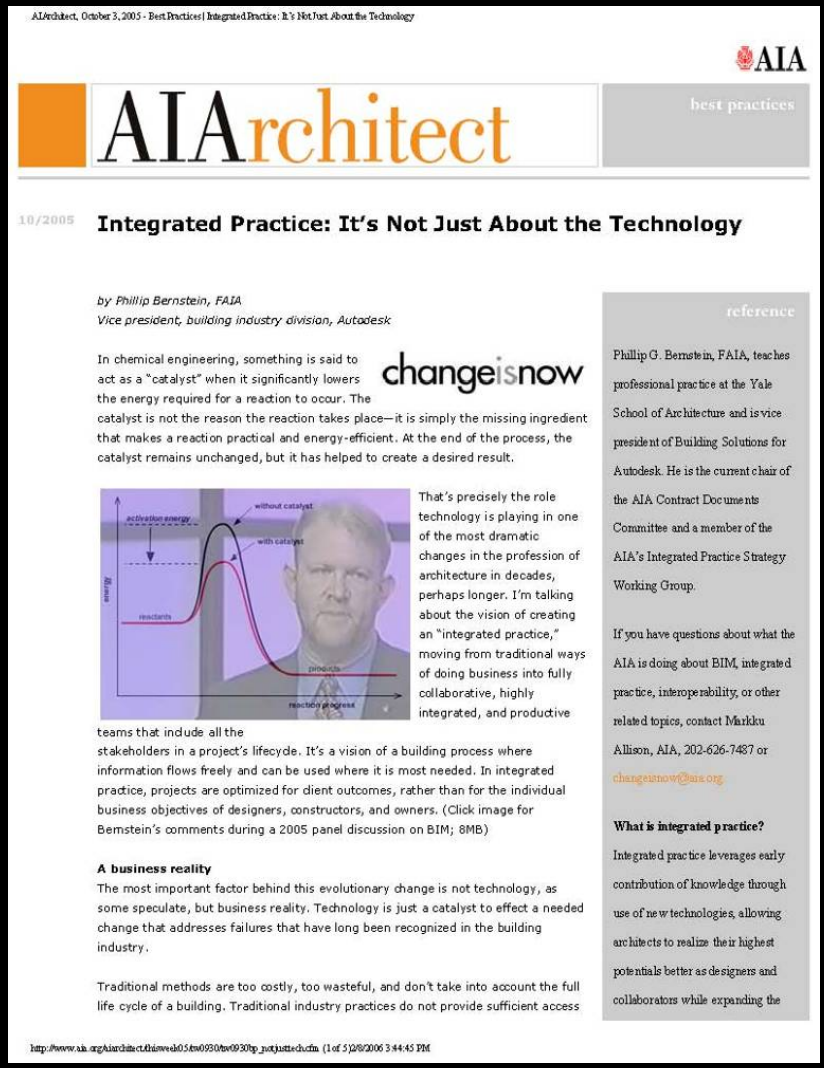
Industry Trends

Integrated Practice

- Fully Collaborative
- Highly Integrated
- Productive teams that include all the stakeholders in the project's lifecycle



AIArchitect, October 3, 2005 - Best Practices | Integrated Practice: It's Not Just About the Technology

AIA

AIArchitect

best practices

10/2005

Integrated Practice: It's Not Just About the Technology

by Phillip Bernstein, FAIA
Vice president, building industry division, Autodesk

changeisnow

In chemical engineering, something is said to act as a "catalyst" when it significantly lowers the energy required for a reaction to occur. The catalyst is not the reason the reaction takes place—it is simply the missing ingredient that makes a reaction practical and energy-efficient. At the end of the process, the catalyst remains unchanged, but it has helped to create a desired result.

That's precisely the role technology is playing in one of the most dramatic changes in the profession of architecture in decades, perhaps longer. I'm talking about the vision of creating an "integrated practice," moving from traditional ways of doing business into fully collaborative, highly integrated, and productive teams that include all the stakeholders in a project's lifecycle. It's a vision of a building process where information flows freely and can be used where it is most needed. In integrated practice, projects are optimized for client outcomes, rather than for the individual business objectives of designers, constructors, and owners. (Click image for Bernstein's comments during a 2005 panel discussion on BIM; 8MB)

A business reality

The most important factor behind this evolutionary change is not technology, as some speculate, but business reality. Technology is just a catalyst to effect a needed change that addresses failures that have long been recognized in the building industry.

Traditional methods are too costly, too wasteful, and don't take into account the full life cycle of a building. Traditional industry practices do not provide sufficient access

reference

Phillip G. Bernstein, FAIA, teaches professional practice at the Yale School of Architecture and is vice president of Building Solutions for Autodesk. He is the current chair of the AIA Contract Documents Committee and a member of the AIA's Integrated Practice Strategy Working Group.

If you have questions about what the AIA is doing about BIM, integrated practice, interoperability, or other related topics, contact Markku Allison, AIA, 202-626-7487 or changeisnow@aia.org.

What is integrated practice?

Integrated practice leverages early contribution of knowledge through use of new technologies, allowing architects to realize their highest potentials better as designers and collaborators while expanding the

http://www.aia.org/aiarchitect/thisweek05/tw0930/tw0930bp_notjusttech.cfm (1 of 5) 2/8/2006 3:44:45 PM

Image Courtesy of the American Institute of Architects – "changeisnow"

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Industry Trends

Client Satisfaction

Owners:

Declining document quality	**70%**
A/Es should be held more responsible for quality documents	**98%**

Contractors:

Poor technical documents by architects	**60%**
Slow responses to questions	**51%**

Source: FMI/CMAA Owners' Survey 5 2004
FMI Contractor Survey 2005

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Industry Trends

Definition

Building Information Modeling (BIM) – The creation and use of coordinated, internally consistent, computable information about a building project in design and construction and beyond…....

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Industry Trends

Building Information Modeling

- BIM ≠ 3D
- BIM ≠ Data
- BIM ≠ 3D + Data

- BIM = Computable Building Information

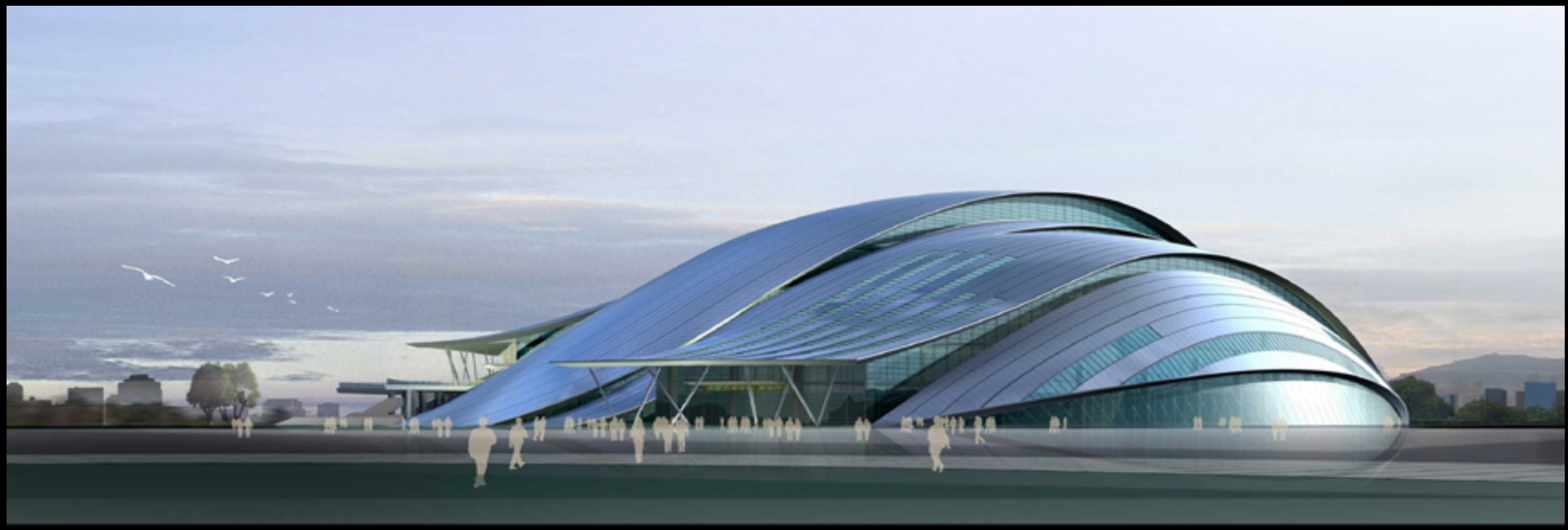

Image Courtesy of DDB Architectural International Ltd.

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Making BIM Work for YOUR Team

- Transparency
- Design Insight and Analysis
- Better Coordination
- Risk Management

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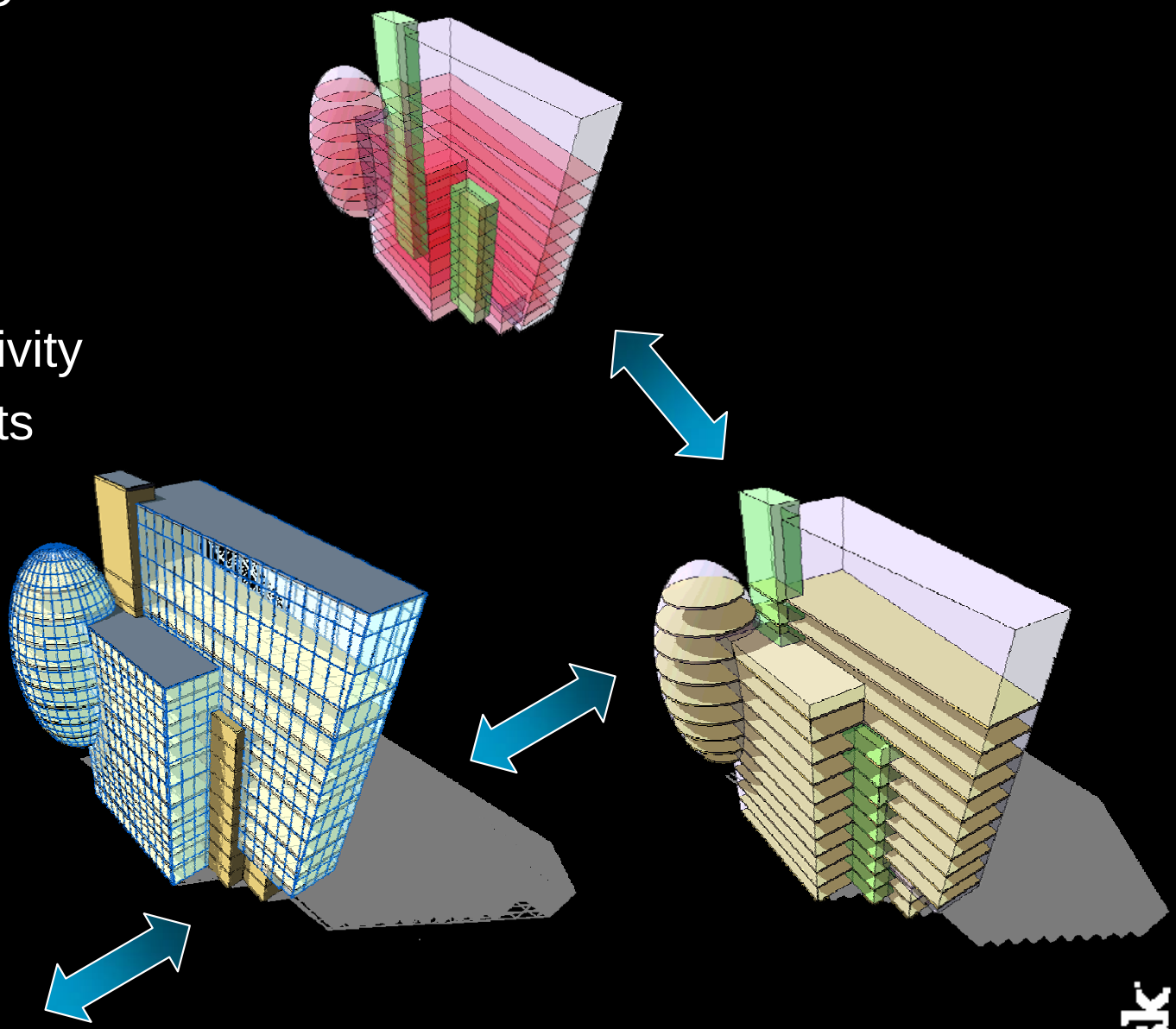
Making BIM Work for YOU

Transparency

- 3D Visualization
- Bi-Directional Associativity
- Parametric Components
- Intuitive Interface
- Scheduling



Gross Area Schedule

Description	Gross Floor Area	Gross Volume
General Office	55910 SF	602892.19 CF
Entry Atrium	13116 SF	130899.67 CF
Core	3744 SF	45134.30 CF
Core	2592 SF	25295.32 CF
Grand total: 4	75362 SF	804221.48 CF

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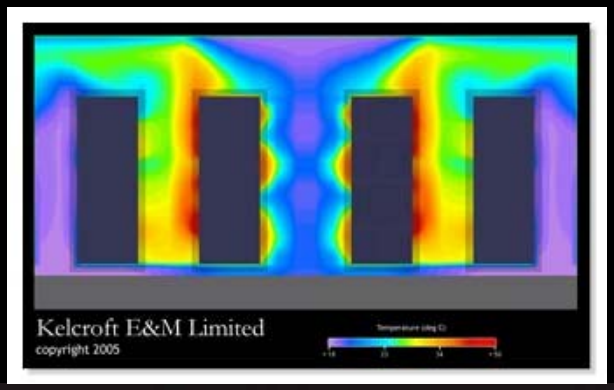
Making BIM Work for YOU

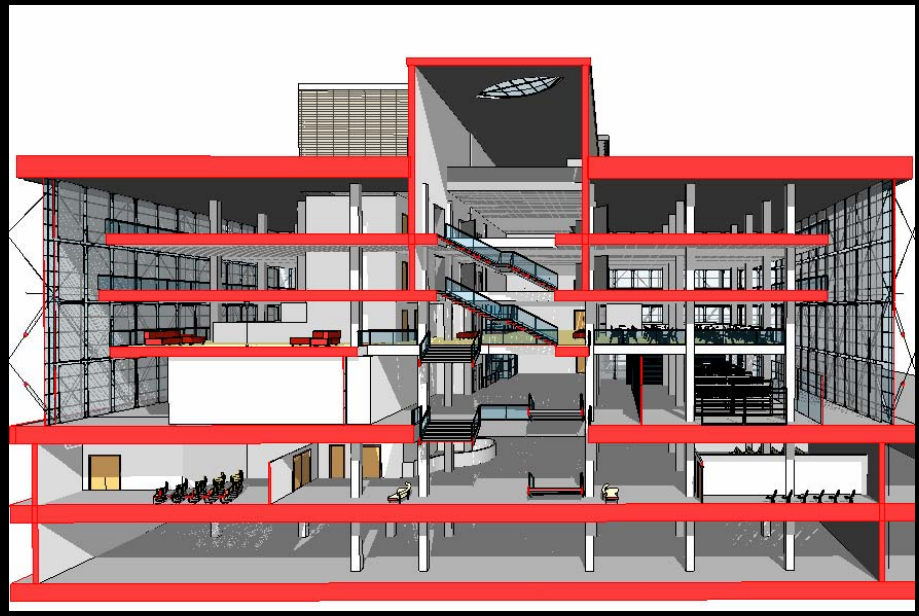
Design Insight and Analysis



- Solar and Shadow Studies
- gbXML Export
- Virtually unlimited views of graphic and non-graphic building information

GREEN BUILDING STUDIO

TRANE



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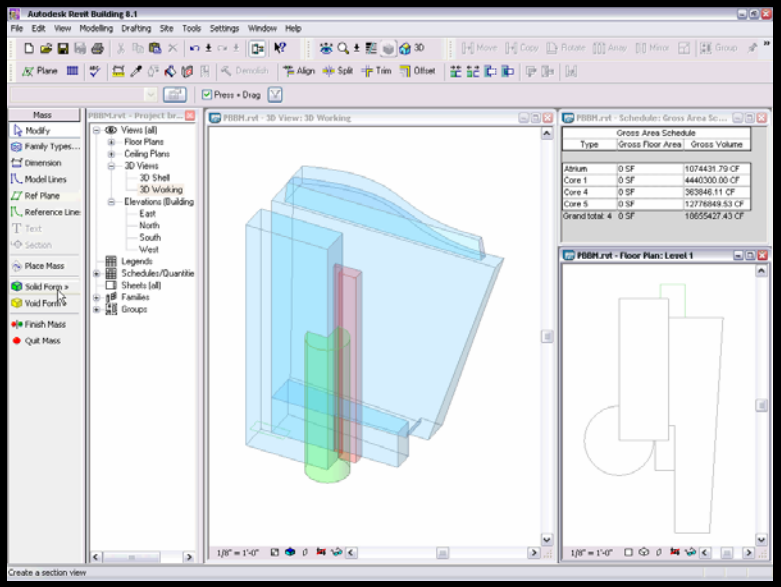
Making BIM Work for YOU

Better Coordination

- Effortlessly coordinate your entire project.
- Enhance client communications
- Accelerate decision making



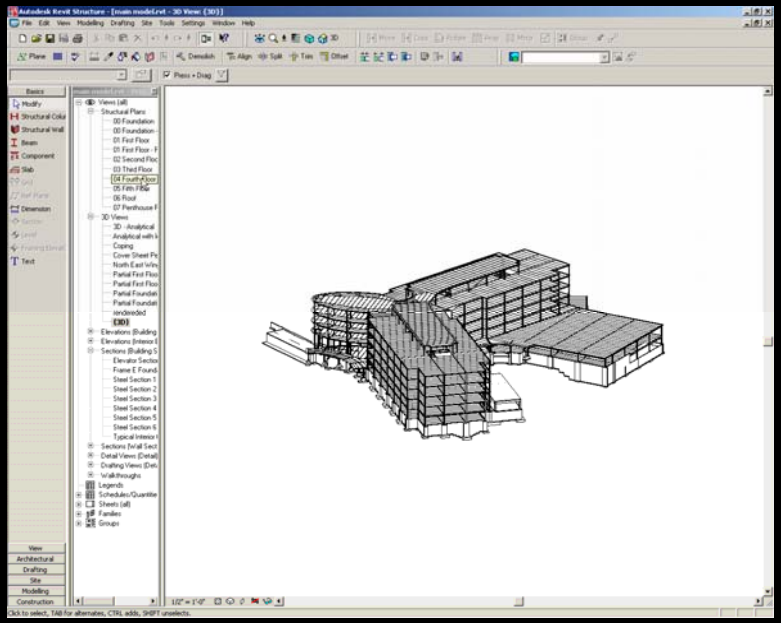


Image Courtesy of GASAI

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Making BIM Work for YOU

Risk Management

- Receive timely feedback:
  - Design
  - Scope
  - Schedule
  - Budget
  - Validation
- Minimize the cost of mistakes and wasted effort

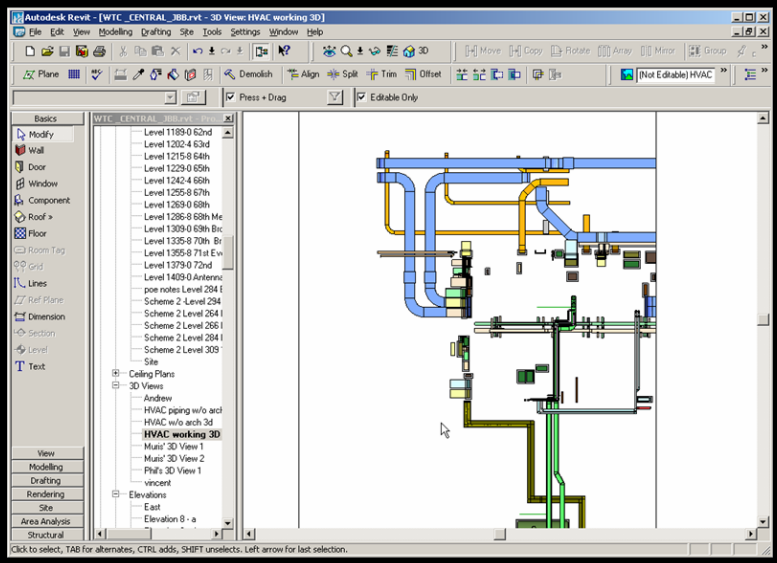

Image Courtesy of JBB

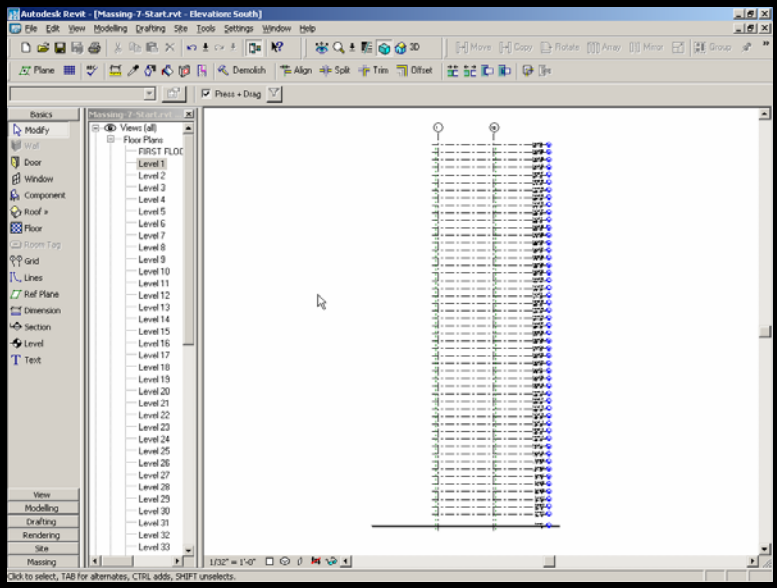

Image Courtesy of SOM

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Transitioning Your Team to BIM

- Checklist for Success
- A New Way of Working
- The BIM Team
- Training for Change
- Productivity Payback

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Transitioning Your Team to BIM

Checklist for Success

- Develop a sound, comprehensive implementation strategy
- Assemble the right team
- Select a suitable starting project
  - Something that your firm already knows how to do
  - A single dimension of learning
  - Select a project with known metrics – relatively easy to measure

Images Courtesy of Hillier 2005

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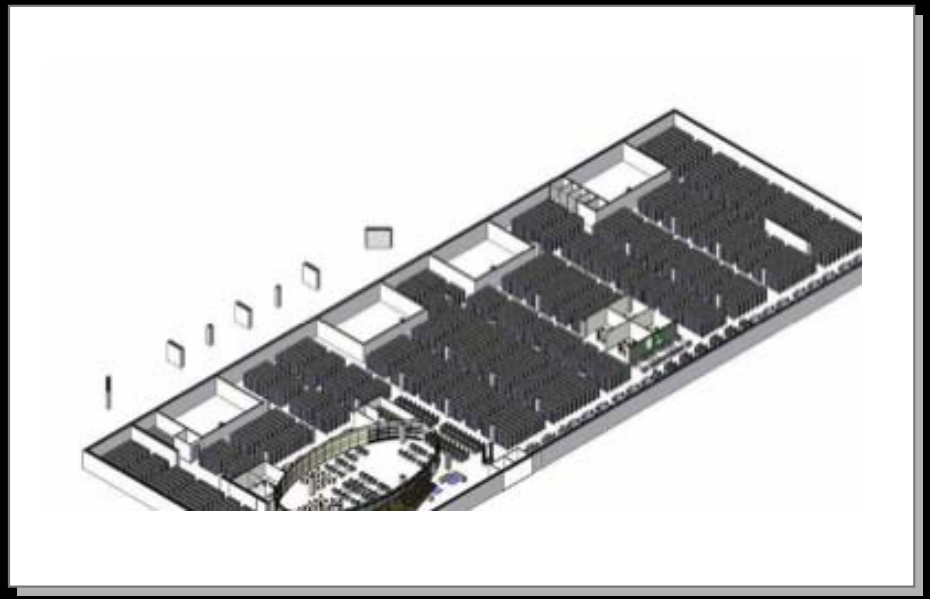
Transitioning Your Team to BIM

A New Way of Working

- Re-Balance team efforts around design phases
- Avoid over-documenting
- Use more visualizations for client communications
- Consider expanded services to users



Images Courtesy of Hillier 2005

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Transitioning Your Team to BIM

The BIM Team

- Select progressive individuals who understand the big picture
- Select evangelists for BIM
- Put your best building designers and architects on the project – NOT your best CAD operators
- Organize your project team around functions content creation, building design, documentation, etc…
- Budget for much smaller teams – documentation effort is reduced
- Smaller teams (3-5 people) encourage agility and sets expectations.

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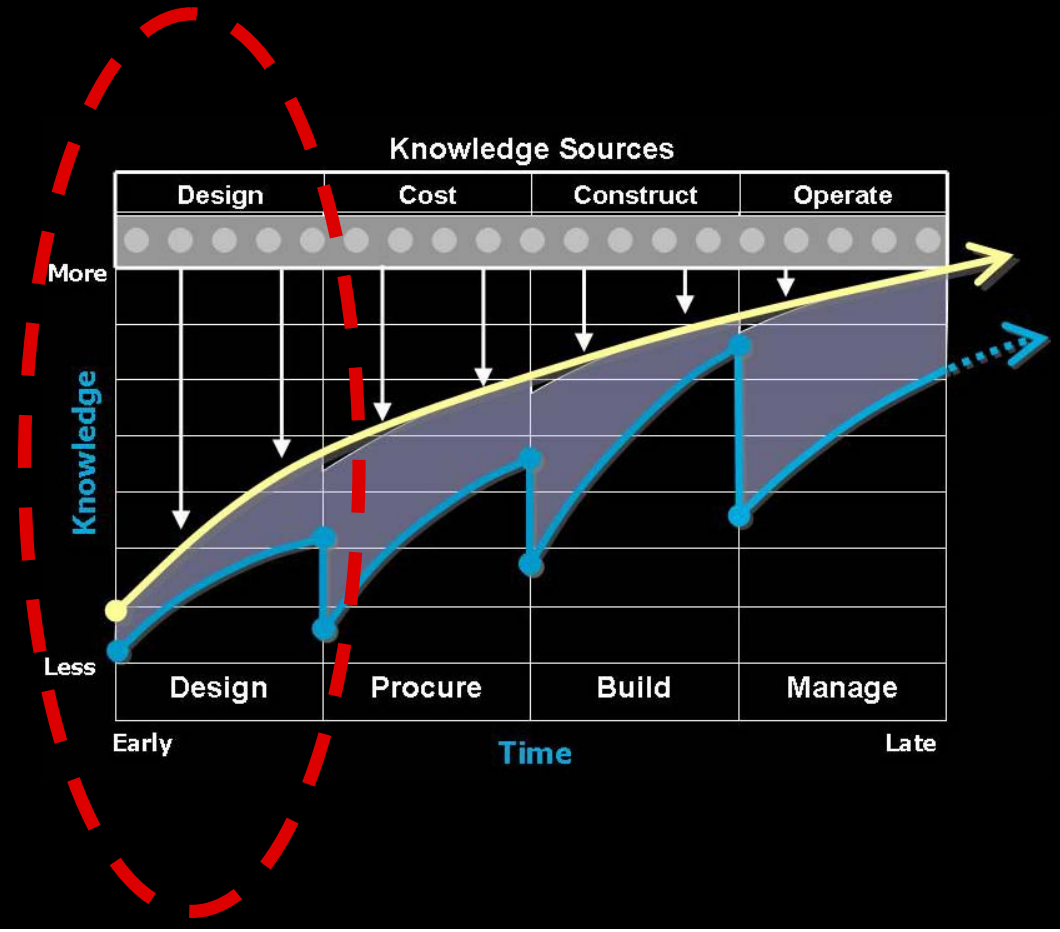
Transitioning Your Team to BIM

Training for Change

- Changes in ways of working
- Changes in staffing needs
- Changes in project organization

highlighting benefits and inherent positive changes



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Transitioning Your Team to BIM

Productivity Payback

- Loss of billable hours (concern)
- Expect 25%-50% productivity loss during initial training period
- Expect to regain the same level of productivity within 3-4 months

- Recent Survey - estimated increase in productivity ranged from 10% to 100%
- > 50% saw productivity gains over 50%
- ~ 20% realized productivity gains over 100%

"Autodesk Revit Building probably gives us a two-to-one advantage over other firms using traditional design software," says Lott. "We are standardizing on Autodesk Revit Building for all new construction."

—**Forrest Lott,** Founder, Lott & Barber Architects

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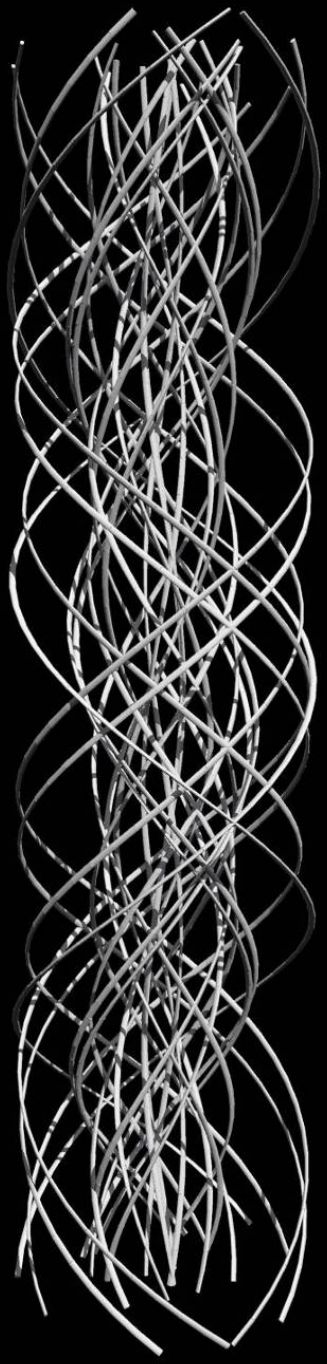
BIM Because …

- Better Quality
- Greater Performance
- BIM is Ready
- Competitive Advantage



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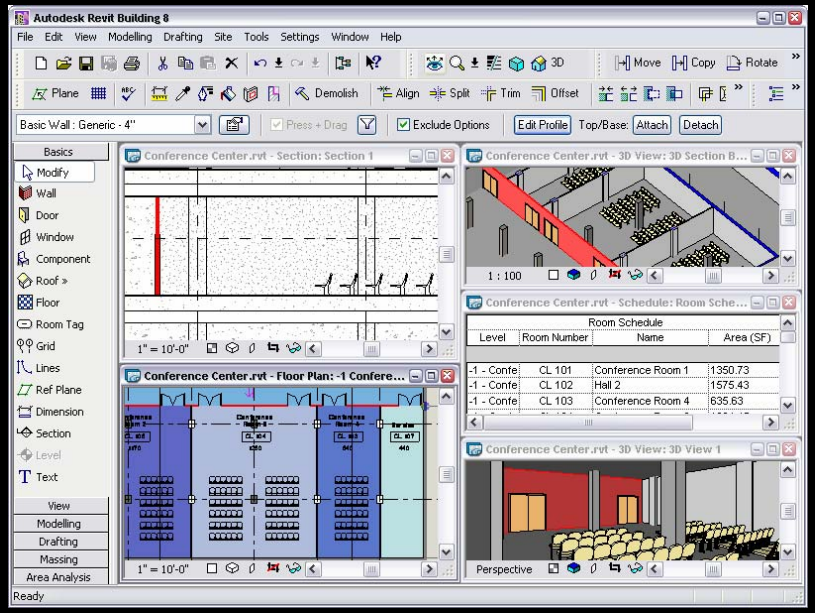
BIM Because …

Better Quality

- Bi-Directional Associativity
  - Change it once
  - Changes everywhere



- Select items to check
- Identify problems before it's too late

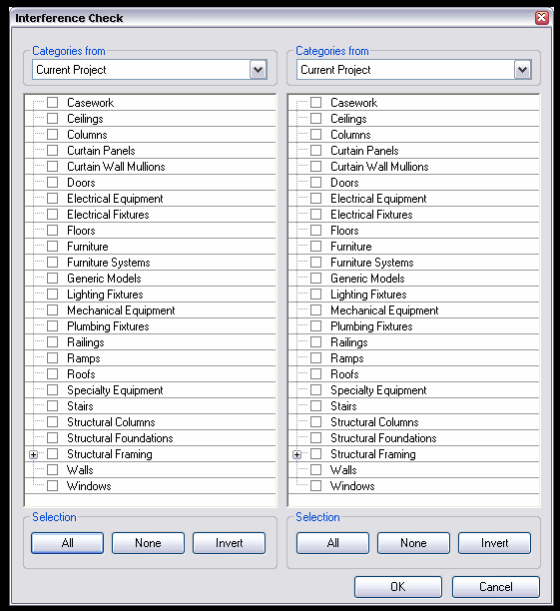


Image Courtesy of Burt Hill

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Autodesk® AutoCAD to Revit® Terminology Comparison / Demo

- Autodesk Revit Parametric Components
- Families vs. Blocks
- Alignment vs. Object snaps
- Multiple design Views
- No Command Line or Layers
- Single File, Multiple-User projects
- Intelligent Components
- Read/Write DWG
- Producing Paper Drawings

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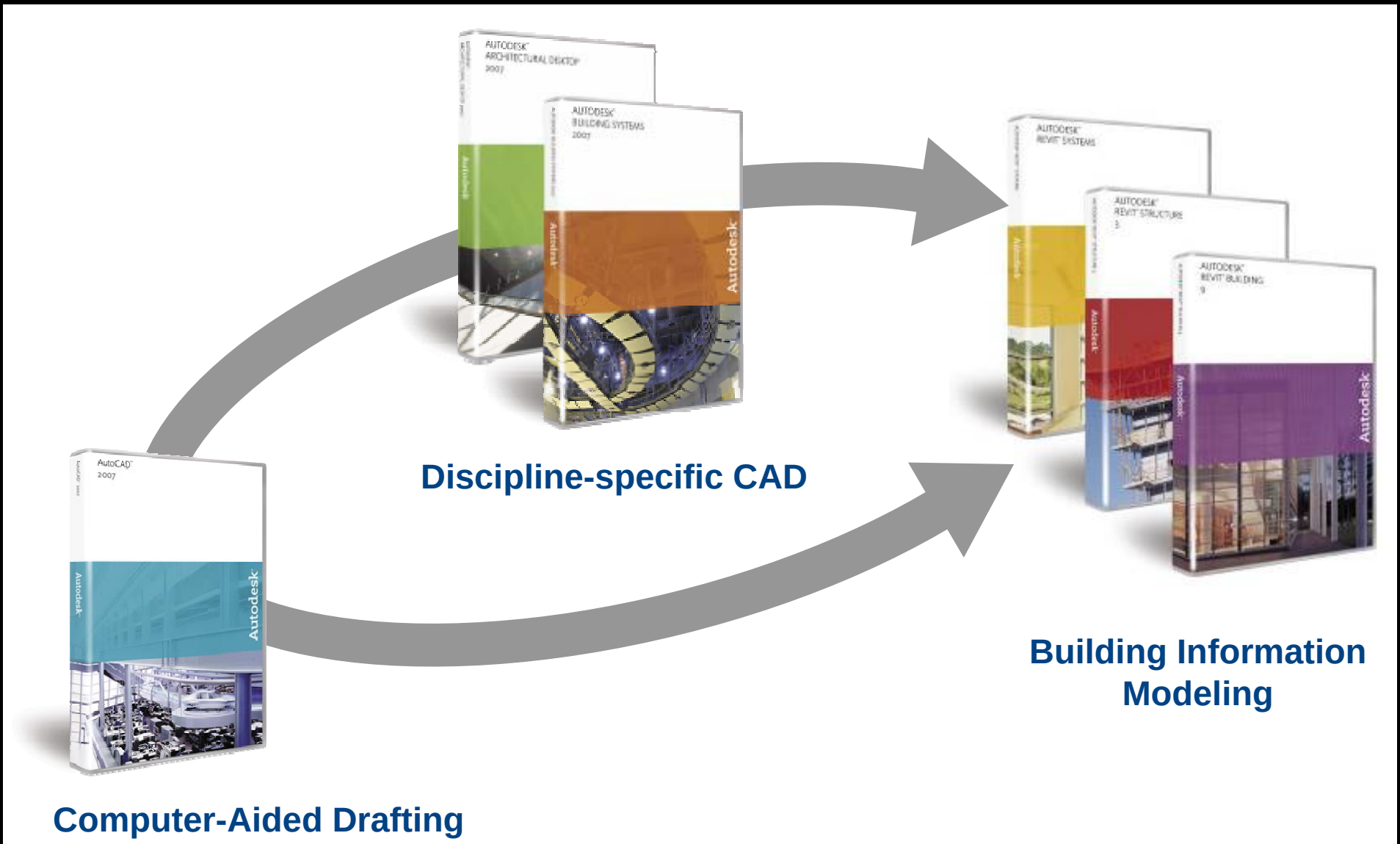
The Roads to BIM



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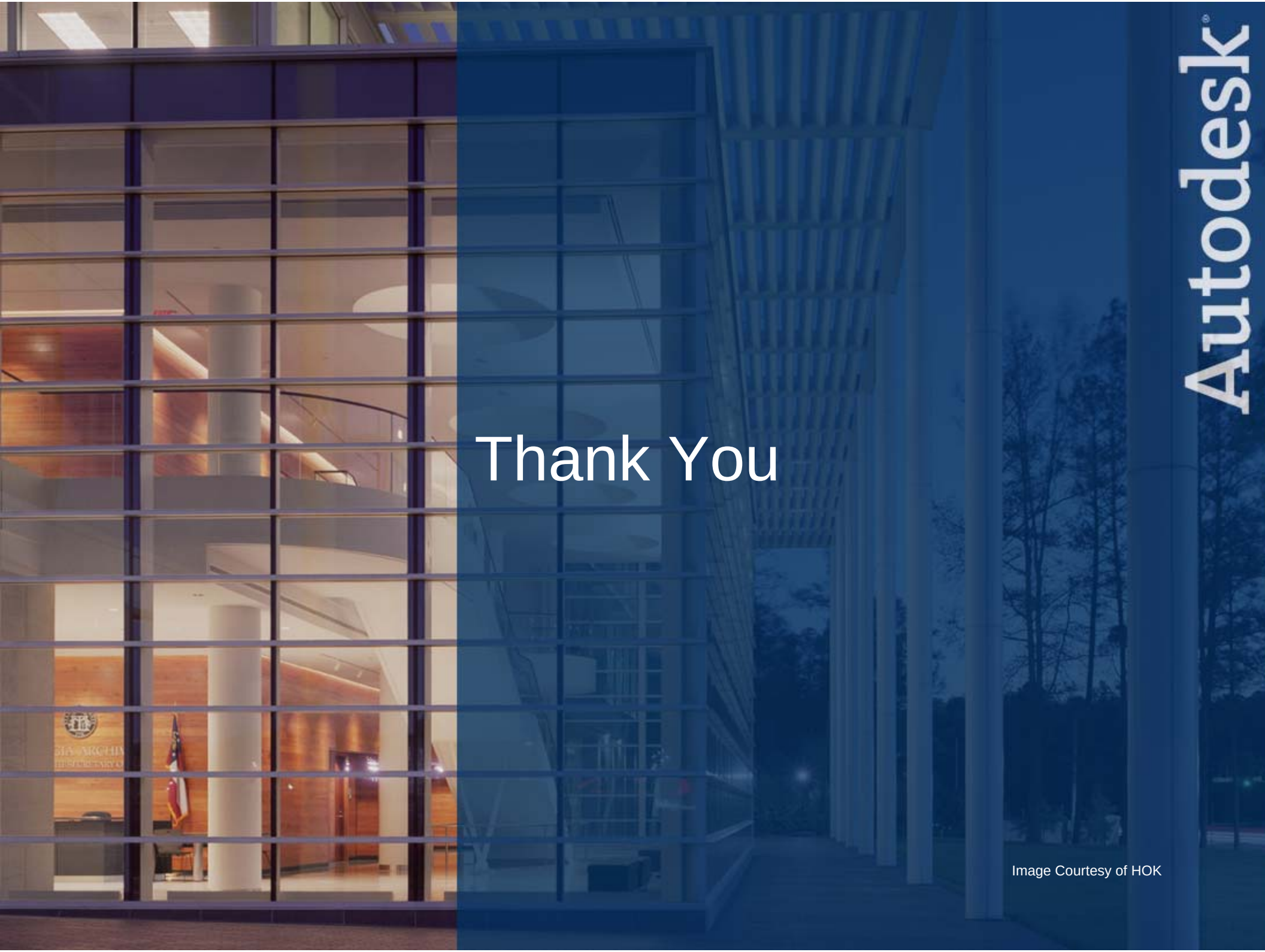
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Thank You
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