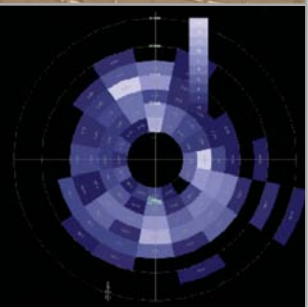
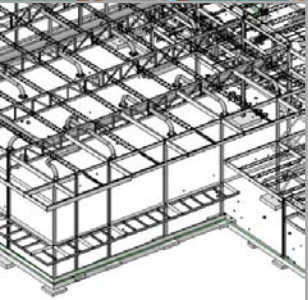
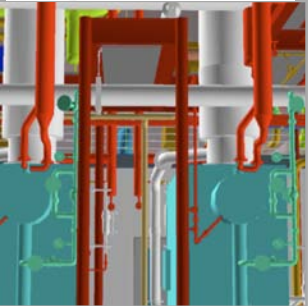


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A PRESENTATION FOR THE
2009

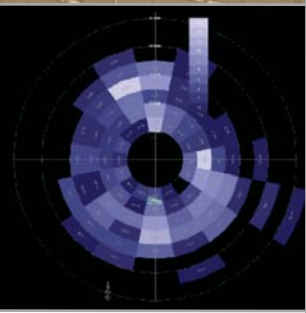
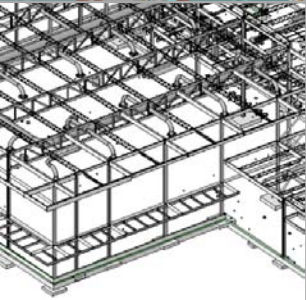
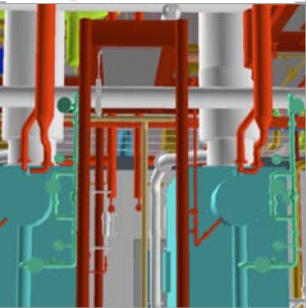
TEXAS COLLEGE & UNIVERSITY
FACILITIES CONFERENCE

BUILDING INFORMATION MODELING
PER-CONFERENCE WORKSHOP

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SURVEY SPONSORS

- AIA HOUSTON – BIM COMMITTEE
- TEXAS SOCIETY OF ARCHITECTS - BIM TASKFORCE

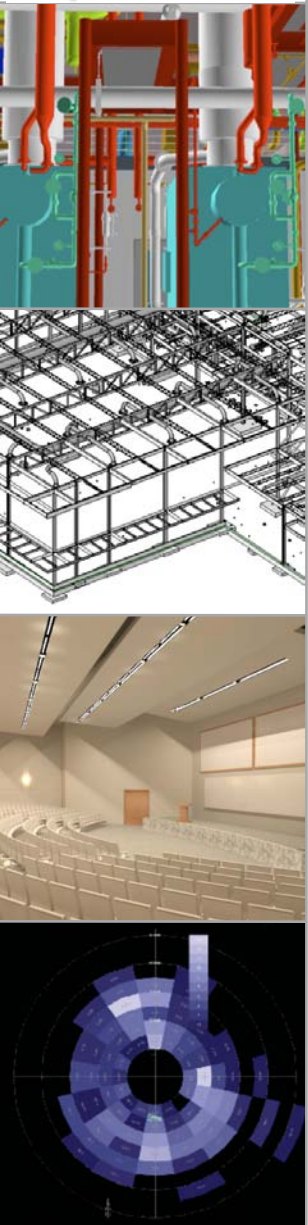


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SURVEY TARGET GROUPS

TEXAS CHAPTERS OF:

- AIA - American Institute of Architects
- SEAoT - Structural Engineers of Texas
- ASHREA – MEP Consulting Engineers
- AGC – Association of General Contractors

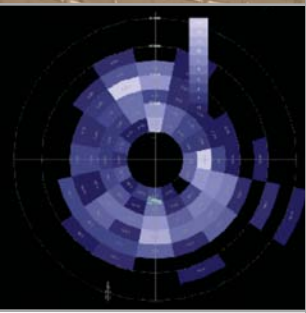
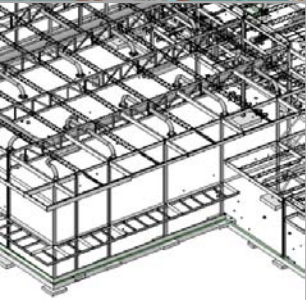
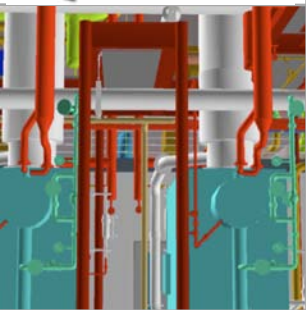


2008 Building Information Modeling AEC Statewide BIM Adoption Survey

SURVEY FORMAT

PART I:

- Primary Business
- Firm Size
- Range of project types
- Experience with 3D BIM Software
- If no 3D BIM experience – what were the reasons for not embracing BIM

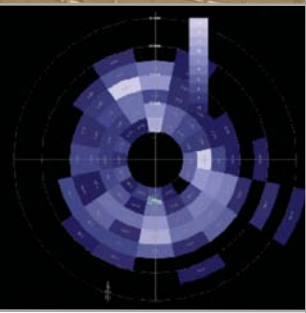
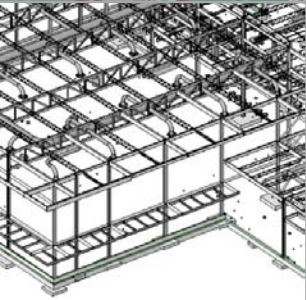
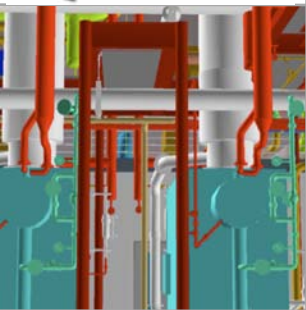


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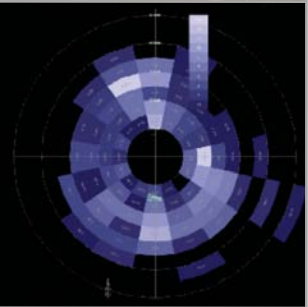
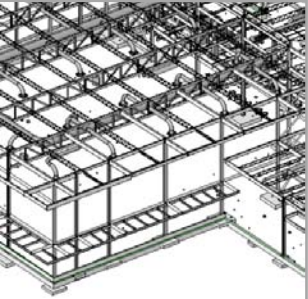
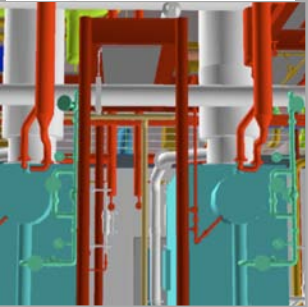
SURVEY FORMAT

PART II:

- Discipline specific questions
- Software use
- Model sharing experience
- Training approach
- Benefits and challenges of BIM
- Survey will be a multi-year effort
- TSA sponsored regional BIM Workshops



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SURVEY OBJECTIVES

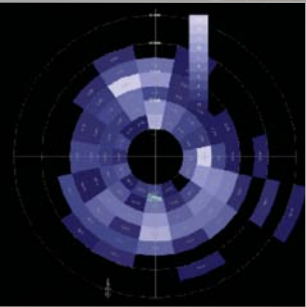
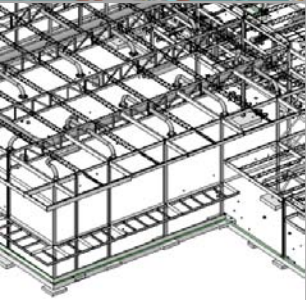
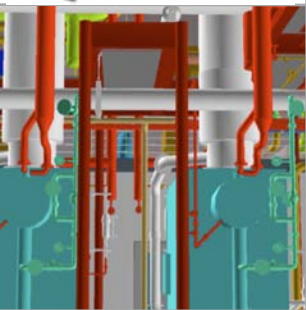
- Benchmark the general level of adoption and use of BIM – by discipline and by region
- Identify BIM skill and experience levels
- Identify the perceived areas of concern and barriers to BIM use & adoption
- Identify current levels of BIM model sharing

2008 Building Information Modeling AEC Statewide BIM Adoption Survey

SURVEY RESULTS

- AIA SURVEY – AIA, ASHREA & AGC
 - 535 “VISITS”
 - 322 “COMPLETES”
- SEAoT SURVEY
 - 153 “COMPLETES”

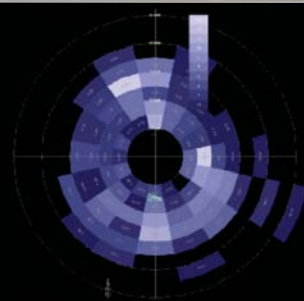
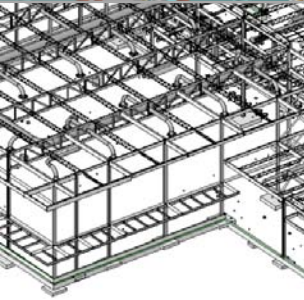
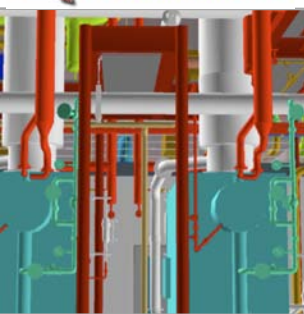
Total completes - 475



2008 Building Information Modeling AEC Statewide BIM Adoption Survey

SURVEY RESULTS

- AIA SURVEY – AIA, ASHREA & AGC
122 – “YES” TO USING BIM
120 – “NO” TO USING BIM
- SEAoT SURVEY
56 – “YES” TO USING BIM
87 – “NO” TO USING BIM

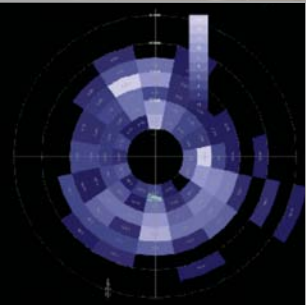
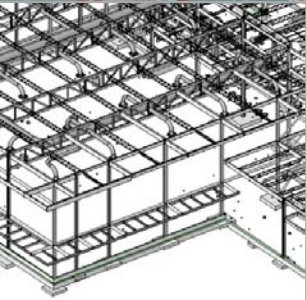
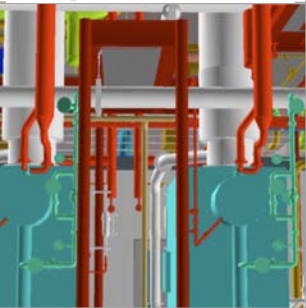


2008 Building Information Modeling AEC Statewide BIM Adoption Survey

“NO” TO USING BIM – ALL GROUPS

Main **internal** focused reasons for not using BIM:

- Learning curve & time to implement 72%
- Cost of Implementation 76%
- Disruption to current delivery process 60%
- Access to information on the challenges of implementation 38%

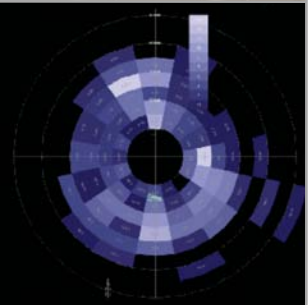
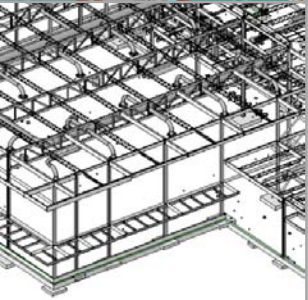
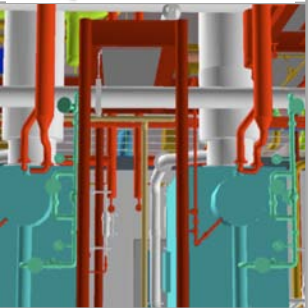


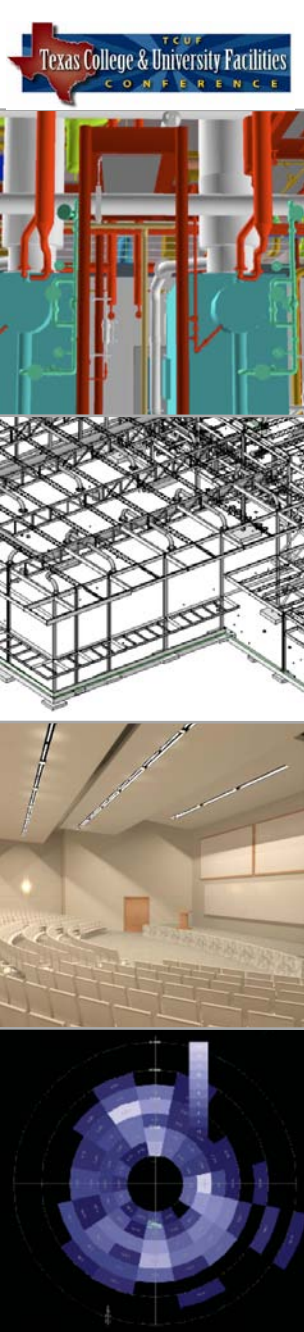
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“NO” TO USING BIM – ALL GROUPS

Main **external** focused reasons for not using BIM:

- Lack of knowledgeable or experienced partners 73%
- Limited adoption in your market 48%
- Concerns about software limitations or complexity 39%
- Concerns about the lack of industry standards 37%





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“NO” TO USING BIM – ALL GROUPS WHICH STATEMENTS APPLY:

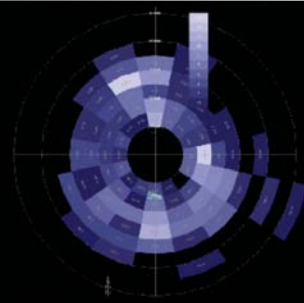
- Firm is aware of BIM but has no current initiatives to adopt 59%
- Firm has taken an active interest and appointed an individual to study 27%
- Firm has established a task force and are planning a pilot project 14%

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SURVEY RESPONSE BY DISCIPLINE

- “YES” TO USING 3D BIM SOFTWARE

- ARCHITECTS 214
- STRUCTURAL ENGINEERS 132
- MEP CONSULTING ENGINEERS 12
- GENERAL CONTRACTORS 24

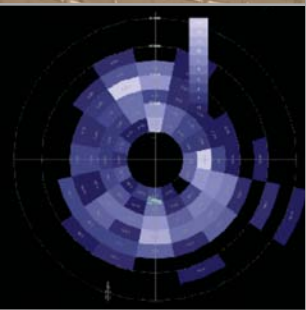
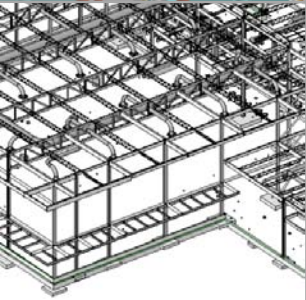
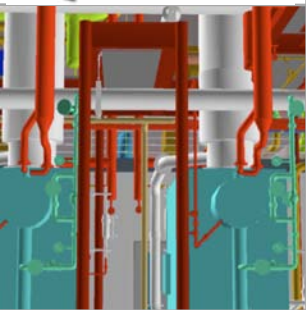


2008 Building Information Modeling AEC Statewide BIM Adoption Survey

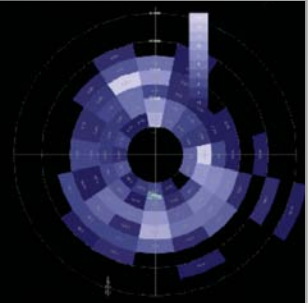
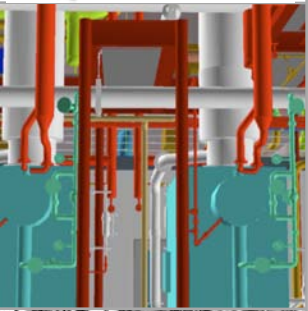
SURVEY RESPONSE – ALL GROUPS

WHAT IS YOUR FIRM SIZE?

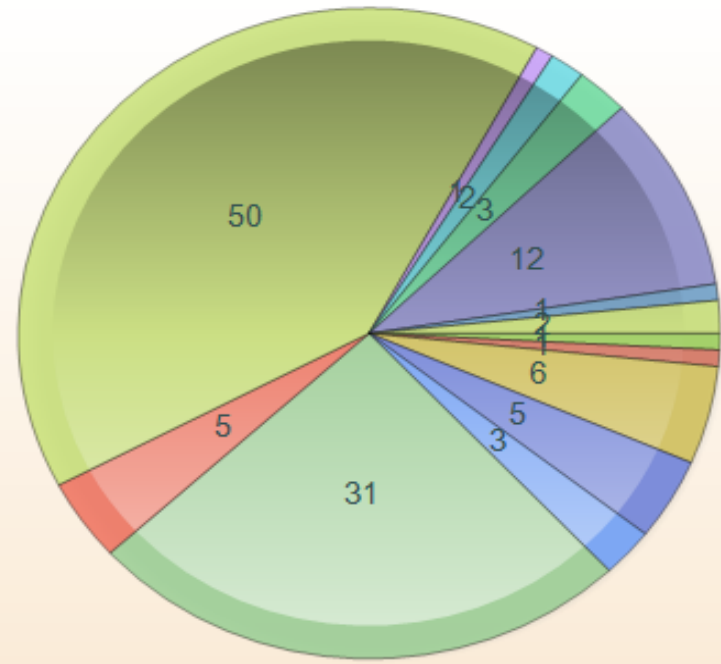
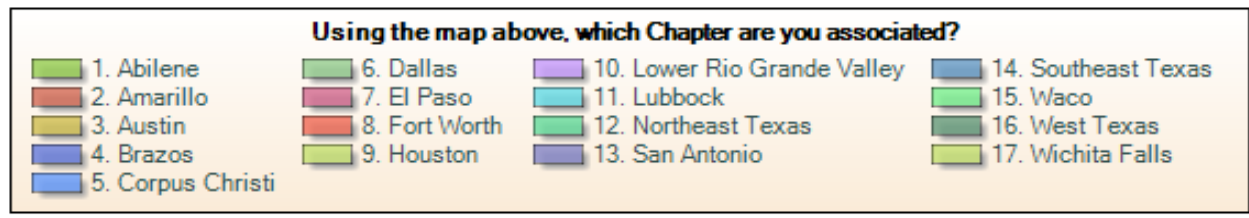
- 10 OR LESS 29%
- 11 - 50 31%
- 51 - 100 12%
- 101 – 200 9%
- 200 Plus 20%



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SURVEY AIA RESPONSES BY CHAPTER

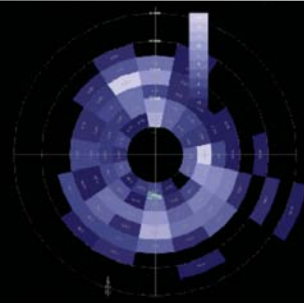


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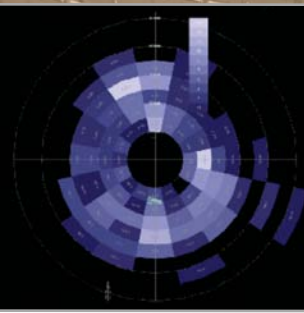
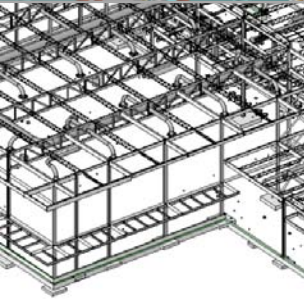
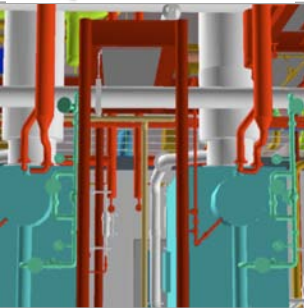
USE OF BIM SOFTWARE

HOW LONG HAS YOUR FIRM BEEN USING BIM SOFTWARE?

- 1 Year 26%
- 2 Years 28%
- 3 Years 21%
- 4 Years or more 24%



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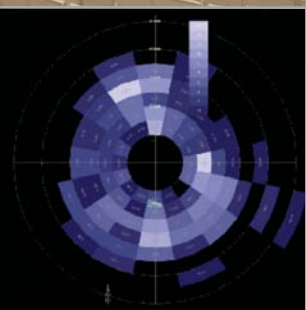
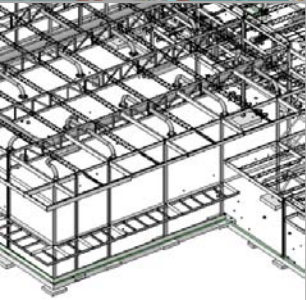
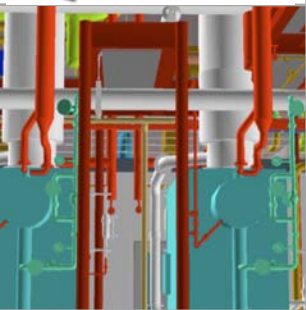
BIM MODEL SHARING

ARCHITECTS

Which other team members do you share your BIM model?

| | |
|--------------------------------|------------|
| No sharing | 25% |
| Structural engineer | 67% |
| Mechanical Electrical Engineer | 53% |
| Civil Engineer | 10% |
| General Contractor | 27% |
| Subcontractor | 13% |
| Suppliers and fabricators | 10% |

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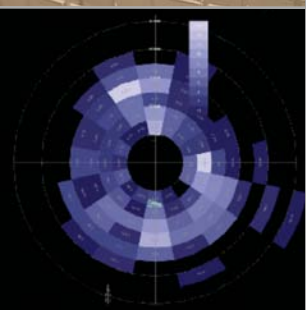
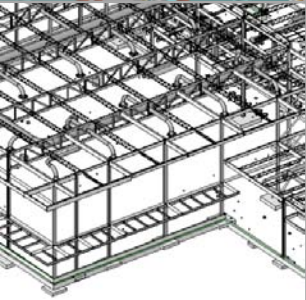
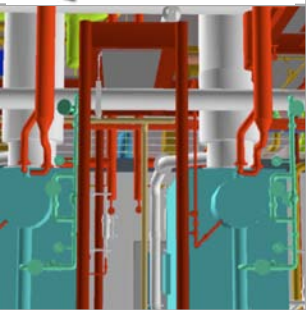
BIM MODEL SHARING

MEP CONSULTING ENGINEERS

Which other team members do you share your BIM model?

| | |
|---------------------------|-----|
| No sharing | 8% |
| Architect | 92% |
| Structural Engineer | 58% |
| Civil Engineer | 8% |
| General Contractor | 42% |
| Subcontractor | 25% |
| Suppliers and fabricators | 8% |

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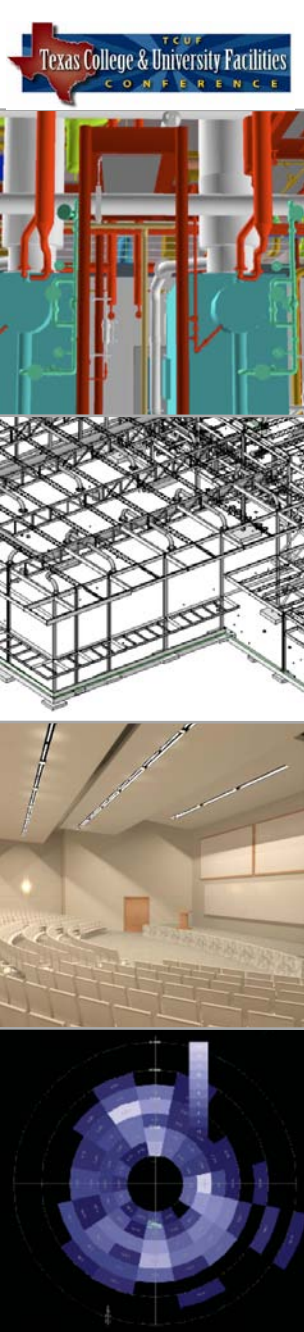


BIM MODEL SHARING

GENERAL CONTRACTOR

Which other team members do you share your BIM model?

| | |
|---------------------------|------------|
| No sharing | 25% |
| Architect | 50% |
| Structural Engineer | 38% |
| Civil Engineer | 12% |
| General Contractor | 25% |
| Subcontractor | 50% |
| Suppliers and fabricators | 50% |



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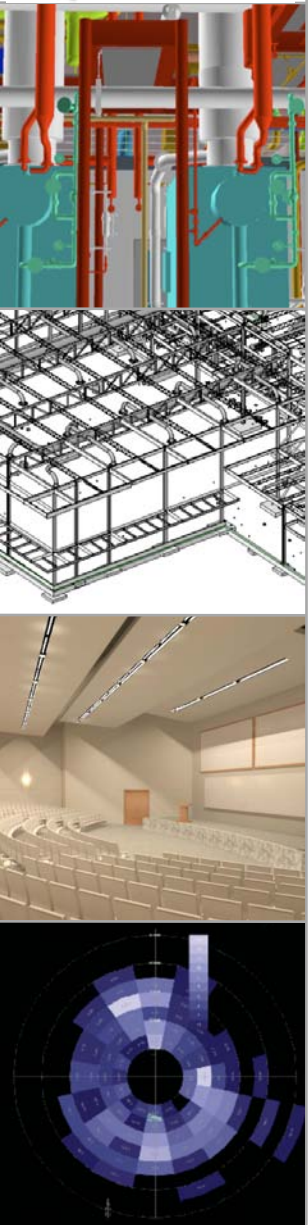
BIM MODEL SHARING

GENERAL CONTRACTORS

If the Design Team creates a BIM model, do you develop your own BIM model anyway?

| | |
|------------|-----|
| Never | 38% |
| Rarely | 12% |
| Often | 38% |
| Very Often | 12% |
| Always | 0% |

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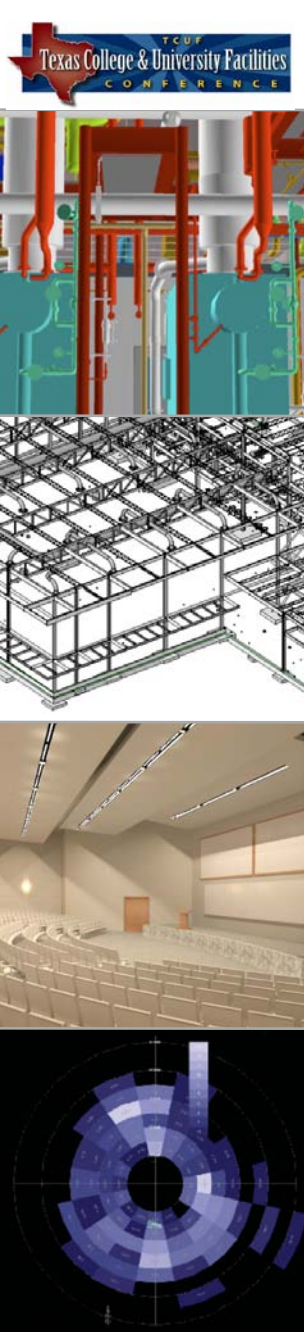


NUMBER OF BIM PROJECTS

ALL GROUPS

Approximately how many projects would you estimate that your firm has completed using 3D BIM software?

| DISCIPLINE | ARCH | STRUCT | MEP | GC |
|---------------------|------|--------|-----|-----|
| 1 project | 13% | 10% | 17% | 0% |
| 5 or less projects | 28% | 38% | 58% | 75% |
| 10 or less projects | 20% | 12% | 0% | 0% |
| More than 10 | 39% | 40% | 25% | 25% |



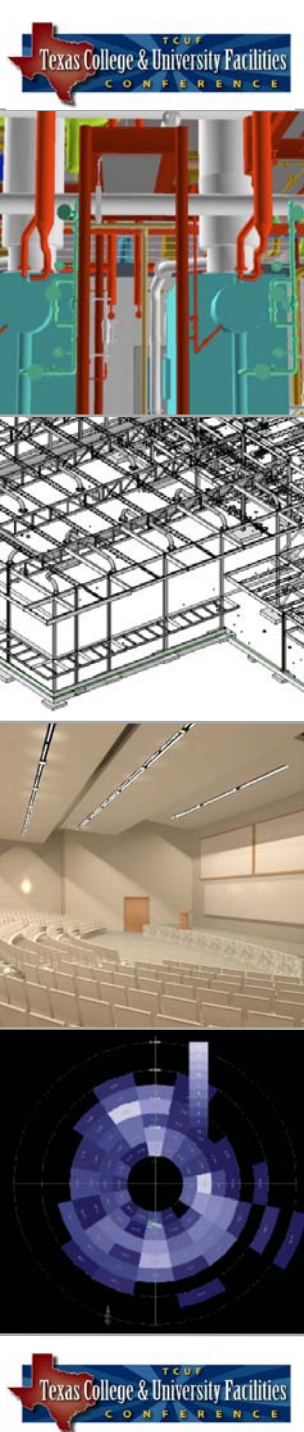
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BIM SOFTWARE

ALL GROUPS

Approximately how many projects would you estimate that your firm has completed using 3D BIM software?

| DISCIPLINE | ARCH | STRUCT | MEP | GC |
|----------------------|------------|------------|------------|------------|
| AutoCAD Family | 4% | 10% | 50% | 0% |
| Revit Family | 87% | 92% | 75% | 86% |
| Bentley Products | 4% | 8% | 17% | 0% |
| ArchiCAD Products | 9% | 0% | 0% | 14% |
| Vectorworks Products | 1% | 2% | 0% | 0% |
| Other | 4% | 8% | 17% | 29% |



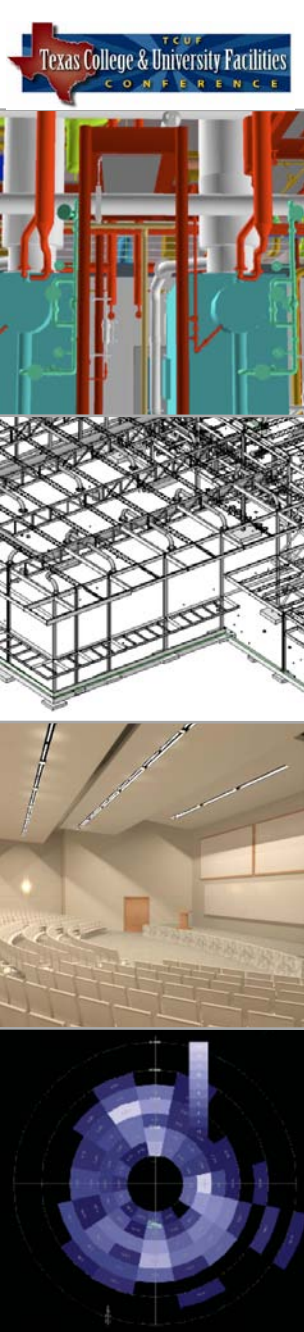
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USE OF ADD-ON SOFTWARE

ALL GROUPS

Approximately how many projects would you estimate that your firm has completed using 3D BIM software?

| DISCIPLINE | ARCH | STRUCT | MEP | GC |
|------------------------------------|------------|------------|------------|------------|
| Clash detection / NavisWorks | 35% | 33% | 57% | 62% |
| Specification / eSpec | 7% | 0% | 0% | 0% |
| Energy Modeling – all types | 35% | 8% | 43% | 38% |
| Lighting Analysis / EIS or Ecotech | 18% | 0% | 0% | % |
| Architectural Building Program | 18% | 2% | 0% | 0% |
| Code Analysis | 4% | 8% | 17% | 12% |
| Analysis software – RAM or RISA | 0% | 62% | 0% | 0% |
| Detailing Software | 0% | 5% | 17% | 0% |
| Other | 0% | 5% | 43% | 12% |



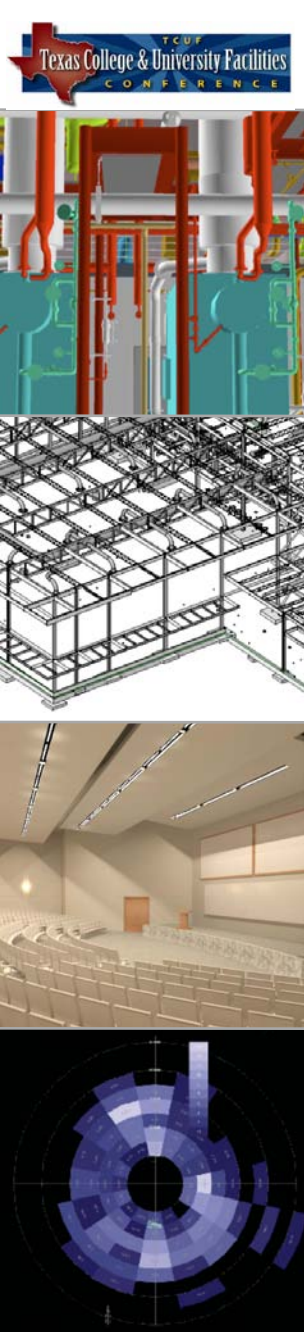
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BIM MODEL SHARING

ARCHITECTS

Approximately how often do you share your BIM model with other team members?

| DISCIPLINE | CIVIL | STRUCT | MEP | GC + |
|------------|------------|------------|------------|------------|
| Never | 58% | 15% | 26% | 46% |
| Rarely | 30% | 27% | 30% | 33% |
| Often | 8% | 31% | 26% | 13% |
| Very Often | 2% | 14% | 5% | 3% |
| Always | 2% | 13% | 12% | 6% |



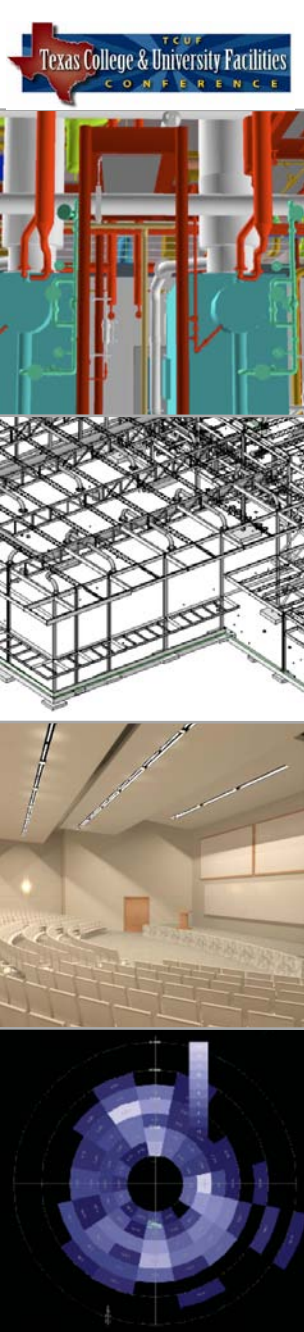
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BIM MODEL SHARING

STRUCTURAL ENGINEERS

Approximately how often do you share your BIM model with other team members?

| DISCIPLINE | ARCH | GC + |
|------------|------------|------------|
| Never | 6% | 26% |
| Rarely | 26% | 53% |
| Often | 37% | 16% |
| Very Often | 12% | 4% |
| Always | 18% | 0% |



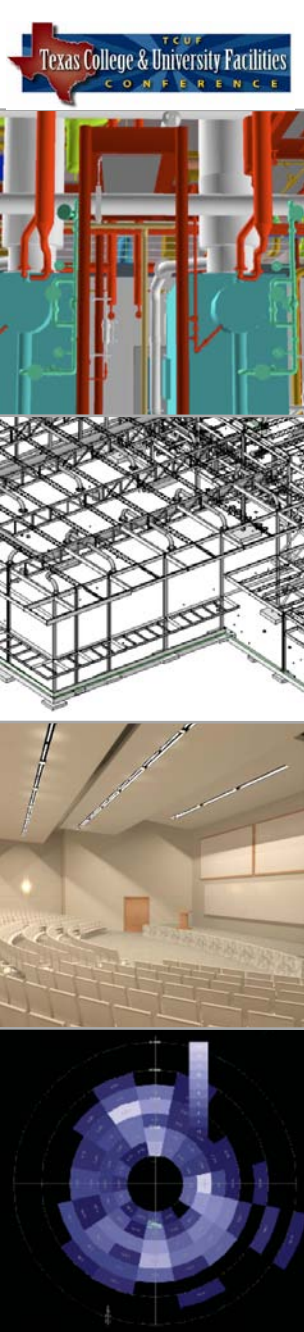
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BIM MODEL SHARING

MEP CONSULTING ENGINEERS

Approximately how often do you share your BIM model with other team members?

| DISCIPLINE | CIVIL | ARCH | STRUCT | GC + |
|------------|------------|------------|------------|------------|
| Never | 58% | 0% | 42% | 50% |
| Rarely | 33% | 33% | 17% | 0% |
| Often | 8% | 33% | 0% | 42% |
| Very Often | 0% | 25% | 17% | 8% |
| Always | 0% | 18% | 25% | 0% |



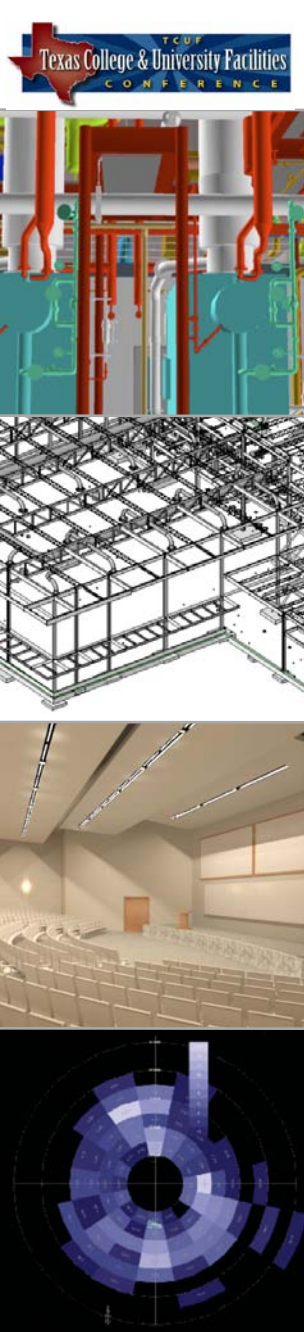
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BIM MODEL SHARING

ALL GROUPS

Approximately how often do you use your BIM model in meetings with **clients**?

| DISCIPLINE | ARCH | STRUCT | MEP | GC + |
|------------|------|--------|-----|------------|
| Never | 16% | 35% | 25% | 12% |
| Rarely | 32% | 37% | 33% | 12% |
| Often | 32% | 24% | 25% | 25% |
| Very Often | 14% | 4% | 17% | 50% |
| Always | 6% | 0% | 0% | 0% |



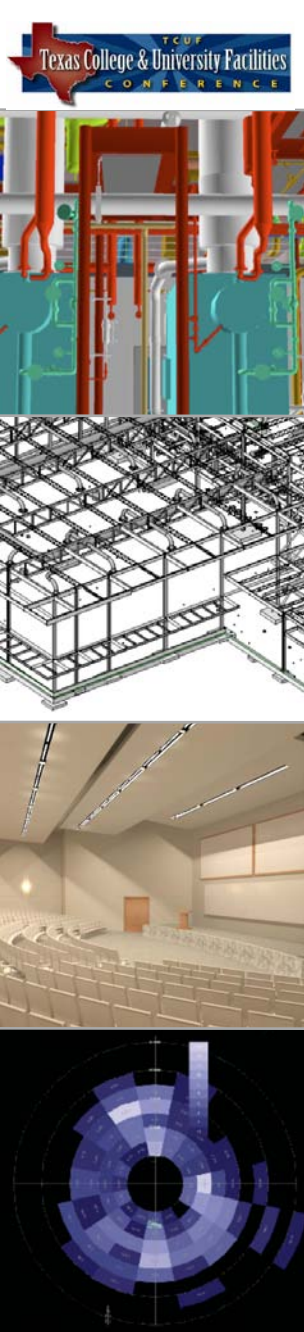
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BIM MODEL SHARING

ALL GROUPS

Approximately how have you provided a BIM model for **record drawings**?

| DISCIPLINE | ARCH | STRUCT | MEP | GC + |
|------------|------------|------------|------------|------------|
| Never | 72% | 75% | 67% | 50% |
| Rarely | 17% | 12% | 17% | 25% |
| Often | 6% | 10% | 8% | 12% |
| Very Often | 5% | 2% | 8% | 12% |
| Always | 6% | 0% | 0% | 0% |



2008 Building Information Modeling AEC Statewide BIM Adoption Survey

BIM IMPACT TO WORK EFFORT

ALL GROUPS

How would you describe BIM's impact on you **manpower** effort as compared to basic CAD documentation?

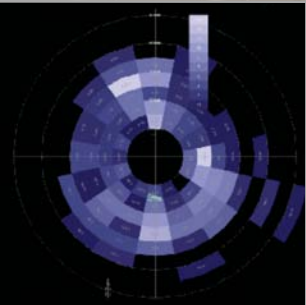
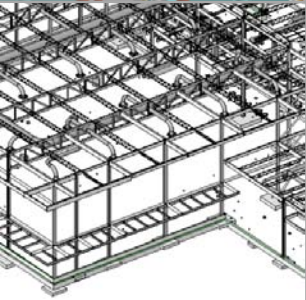
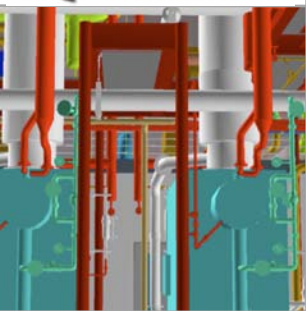
| DISCIPLINE | ARCH | STRUCT | MEP |
|--------------------|------|--------|-----|
| Significantly more | 15% | 31% | 42% |
| Somewhat more | 21% | 39% | 33% |
| About the same | 26% | 14% | 8% |
| Somewhat less | 19% | 16% | 17% |
| Significantly less | 18% | 0% | 0% |

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“YES” TO USING BIM – ARCHITECTS

Main **internal** focused challenges to a complete transition to using BIM:

- Learning curve & time to implement 83%
- Disruption to current delivery process 75%
- Cost of implementation 42%
- Lack of access to good information on the challenges of implementation 42%



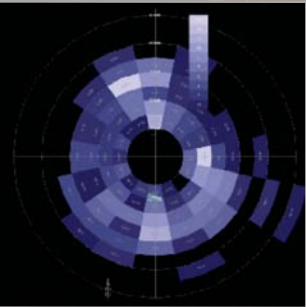
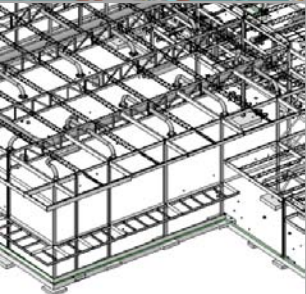
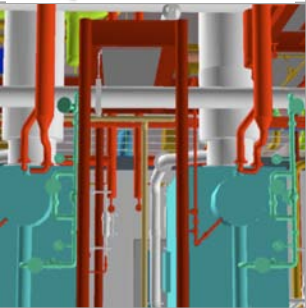
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“YES” TO USING BIM –

STRUCTURAL ENGRS.

Main **internal** focused challenges to a complete transition to using BIM:

- Learning curve & time to implement 83%
- Cost of implementation 50%
- Modifying the design process to accommodate BIM 46%
- Concerns about disruption of the current delivery process 44%

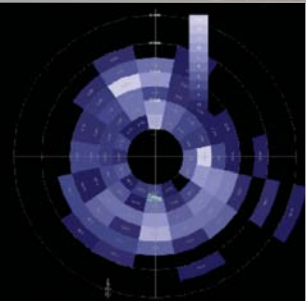
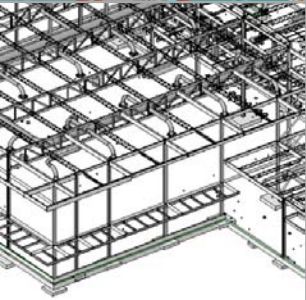
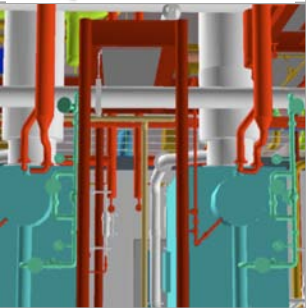


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“YES” TO USING BIM – **MEP ENGRS.**

Main **internal** focused challenges to a complete transition to using BIM:

- Learning curve & time to implement 83%
- Modifying firm’s design approach to accommodate the BIM process 53%
- Cost of implementation 42%
- Concerns about disruption of the current delivery process 42%

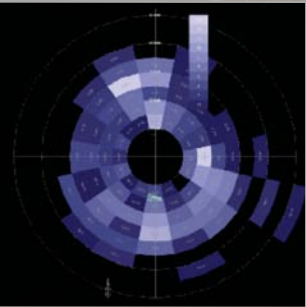
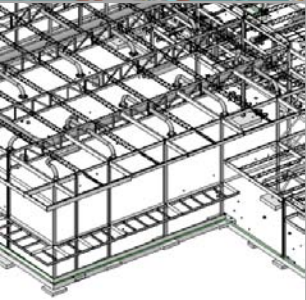
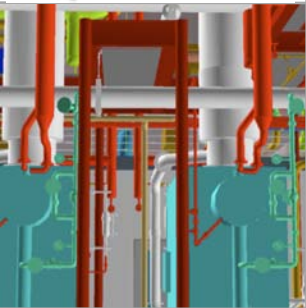


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“YES” TO USING BIM – ARCHITECTS

Main **external** challenges for a complete transition to using BIM:

- Lack of knowledgeable or experienced partners 81%
- Legal / Contractual concerns 49%
- Limited adoption in your markets 37%
- Concerns about the lack of industry standards 36%
- Concerns on software compatibility 36%

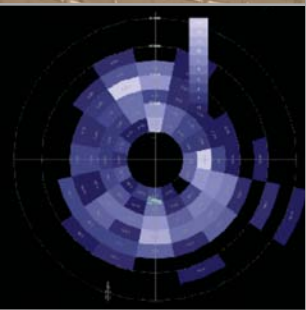
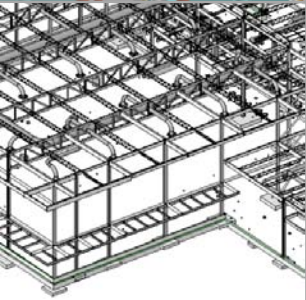
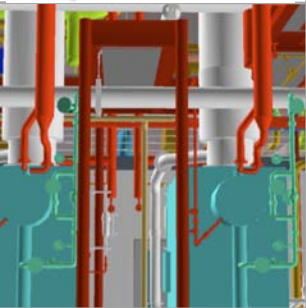


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“YES” TO USING BIM – **MEP ENGRS.**

Main **external** challenges for a complete transition to using BIM:

- Lack of knowledgeable or experienced partners 75%
- Concerns about software limitations or complexity 67%
- Legal / Contractual concerns 50%
- Concerns about the lack of industry standards 37%



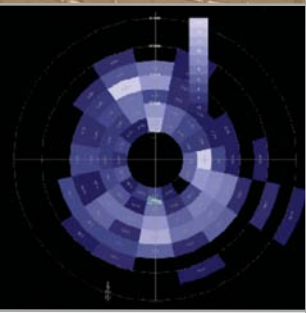
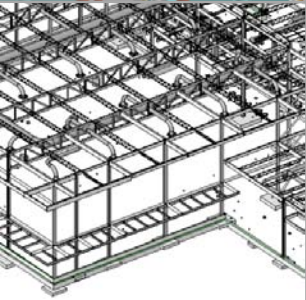
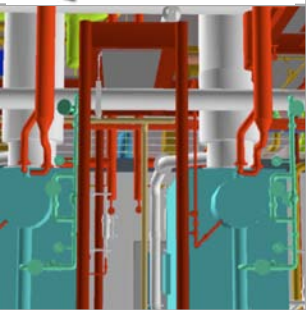
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“YES” TO USING BIM –

STRUCTURAL ENGINEERS

Main **external** challenges for a complete transition to using BIM:

- Lack of knowledgeable or experienced partners 48%
- Legal / Contractual concerns 44%
- Concerns on software compatibility 35%
- Concerns about software limitations and complexity 35%

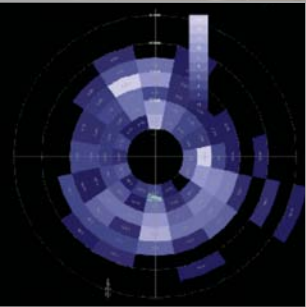
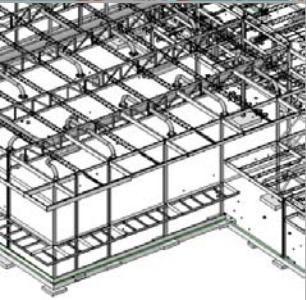
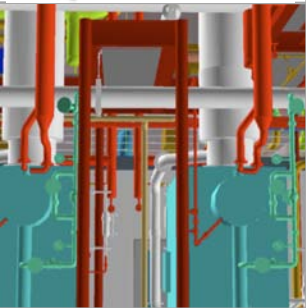


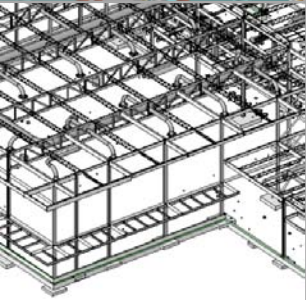
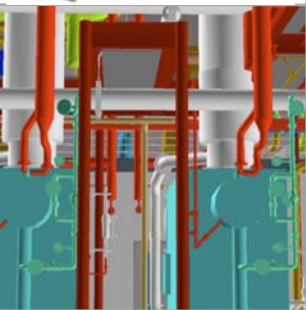
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“YES” TO USING BIM – GC’s

Main **external** challenges for a complete transition to using BIM:

- Lack of knowledgeable or experienced partners 75%
- Legal / Contractual concerns 75%
- Limited adoption in your markets 75%
- Concerns about software limitations 50%
- Concerns on software compatibility 50%





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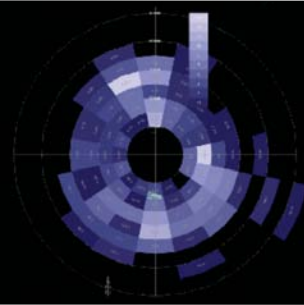
CONCLUSIONS:

- THE TEXAS AEC INDUSTRY IS STILL EARLY IN THE ADOPTION PROCESS / CYCLE
- UNLIKE CADD, THE SUCCESSFUL ADOPTION OF BIM WILL BE BEST ACCOMPLISHED BY FACILITATION OF ALL PARTIES IN THE ADOPTION PROCESS
- SUCCESSFUL ADOPTION WILL REQUIRE THE INVESTMENT OF TIME AND MONEY BY ALL PARTIES
- SUCCESS WILL BEST COME THROUGH SHARED EFFORTS AND COLLABORATION

2008 Building Information Modeling AEC Statewide BIM Adoption Survey

GOALS FOR 2009 SURVEY:

- GREATER PARTICIPATION
- INCLUDE BUILDING OWNERS
- REFINE AND BETTER TARGET QUESTIONS
- TARGET ISSUE IN OCTOBER/NOVEMBER



2008 Building Information Modeling AEC Statewide BIM Adoption Survey

WANT TO HELP IMPLEMENT BIM?

- AIA HOUSTON – BIM COMMITTEE

- Hal Sharp AIA Chair

- hal_sharp@gensler.com

- Andy MacPhillimy BIM Survey

- andy.macphillimy@morrisarchitects.com

- TEXAS SOCIETY OF ARCHITECTS - BIM
TASKFORCE

- Vergel Gay Chair Vgay@tamu.edu

