

Transitioning to BIM for AEC Companies – Challenges and Best Practices

Barry Daitch

Senior Manager, Customer Success Program

Class Summary

The purpose of this session is to:

- Share BIM transformation best practices and lessons learned derived from experience with large Autodesk AEC customers

Learning Objectives

At the end of this class, you should be able to:

- Compare your company's BIM implementation strategy to industry best practices
- Identify commonalities and differences in the transformation to BIM between architecture, engineering, and construction firms
- Cite specific examples from industry where transformation to BIM has been supported by professional consulting

Agenda

Wrap-Up

Barry Daitch

Construction Best Practices

Scott Hammond & Customer

Engineering Best Practices

Chris Stedman & Customer

Architectural Best Practices

Tim Case & Customer

Trends across all industries

Brian Glaze

BIM = Innovation & requires change

Barry Daitch

Biocatalysis Lab building - Dynamic Facade
Architect: Giselbrecht + Partner ZT GmbH
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Audience Questions

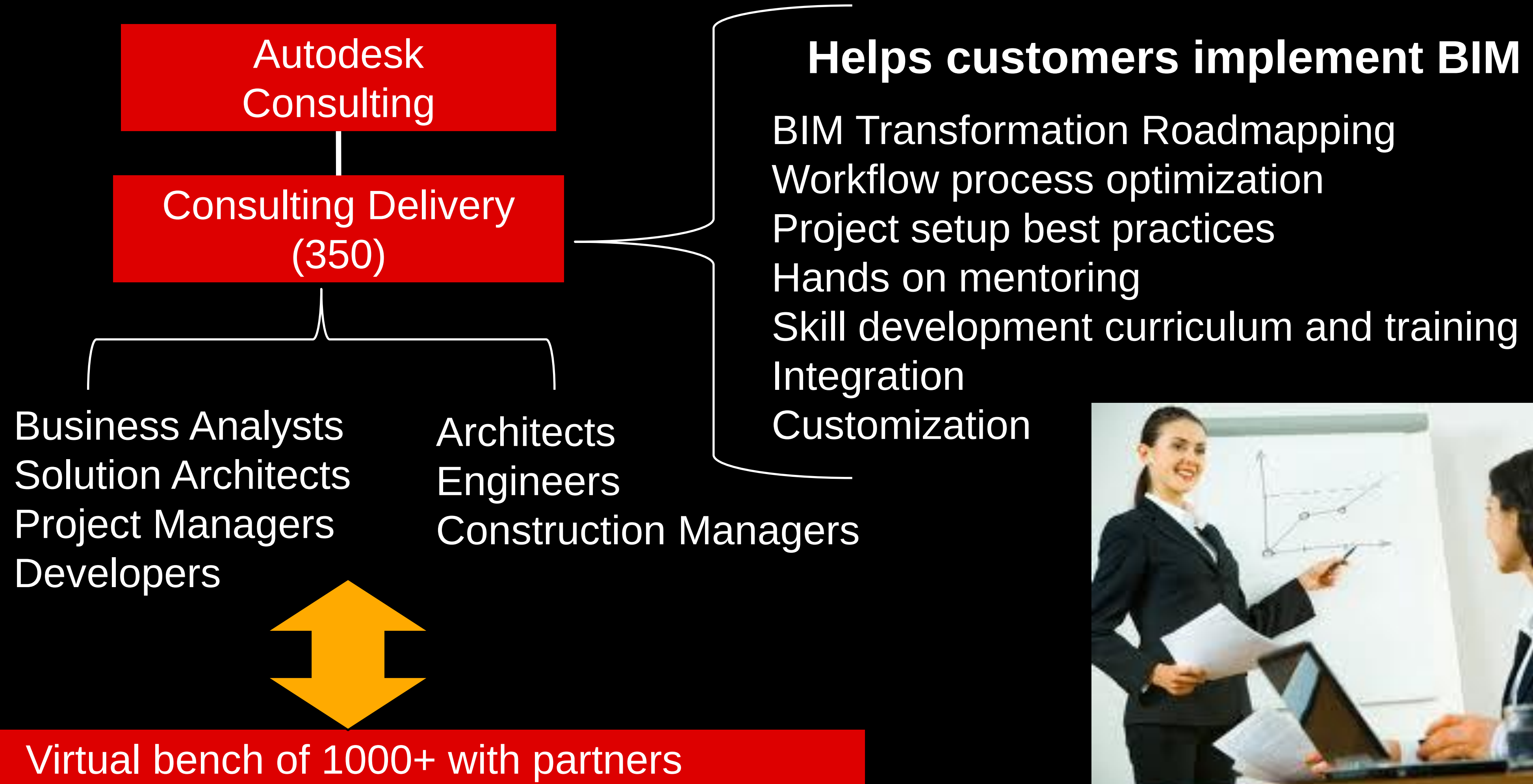
- How many of you would classify your company as:
 - Architecture Firm
 - Construction Company
 - Engineering Company
 - Multi-disciplinary Company
- How many of you consider your company:
 - At the start of your BIM journey
 - Well on your way
 - Nearly there
 - Still determining if we want to take the journey
- What is your 1 biggest challenge with implementing BIM?

Who Are We?

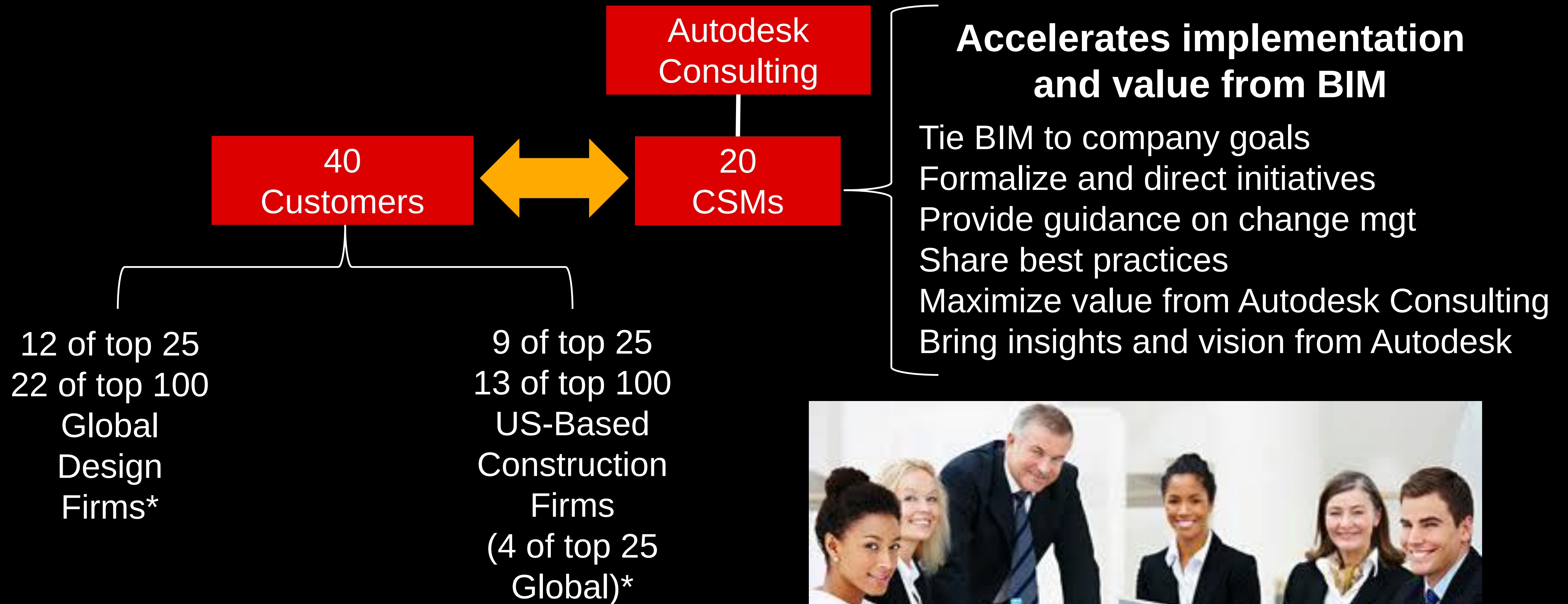
Safe Harbor Statement

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Autodesk Consulting Delivery Organization



Customer Success Managers



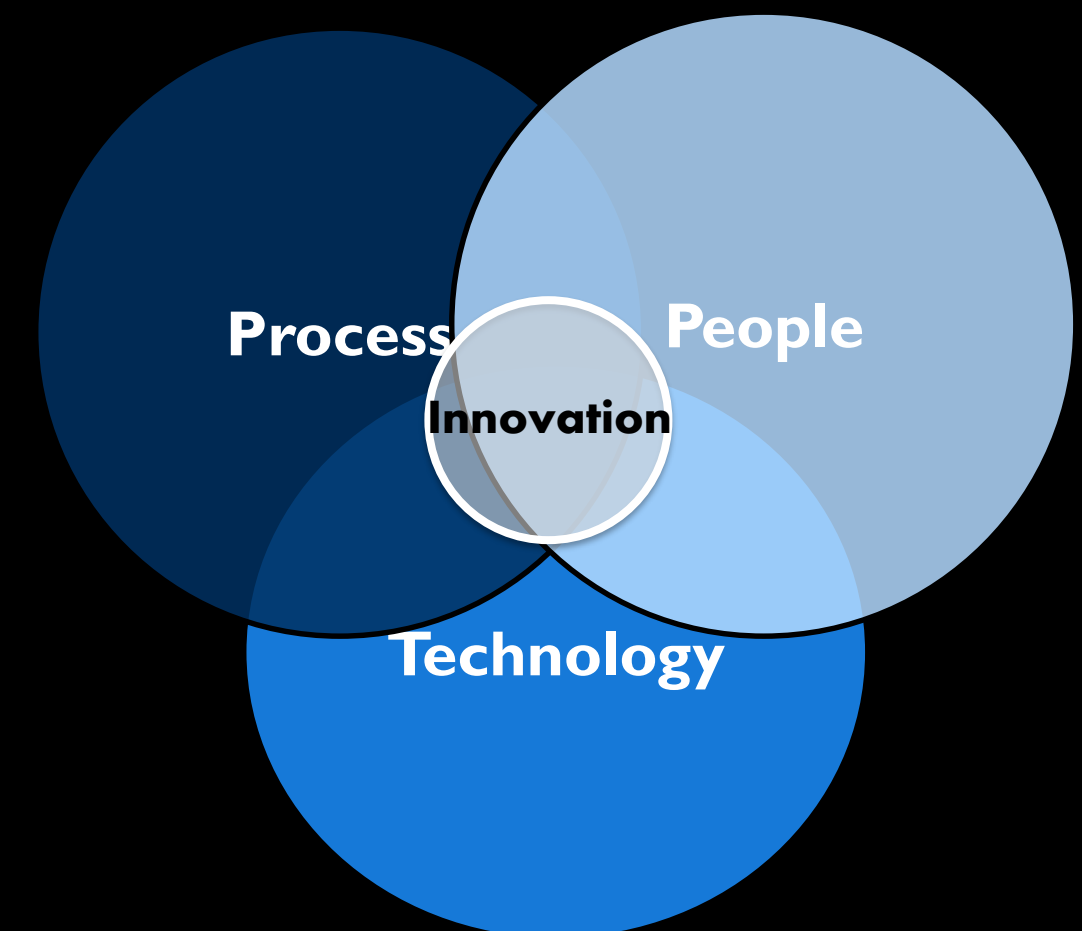
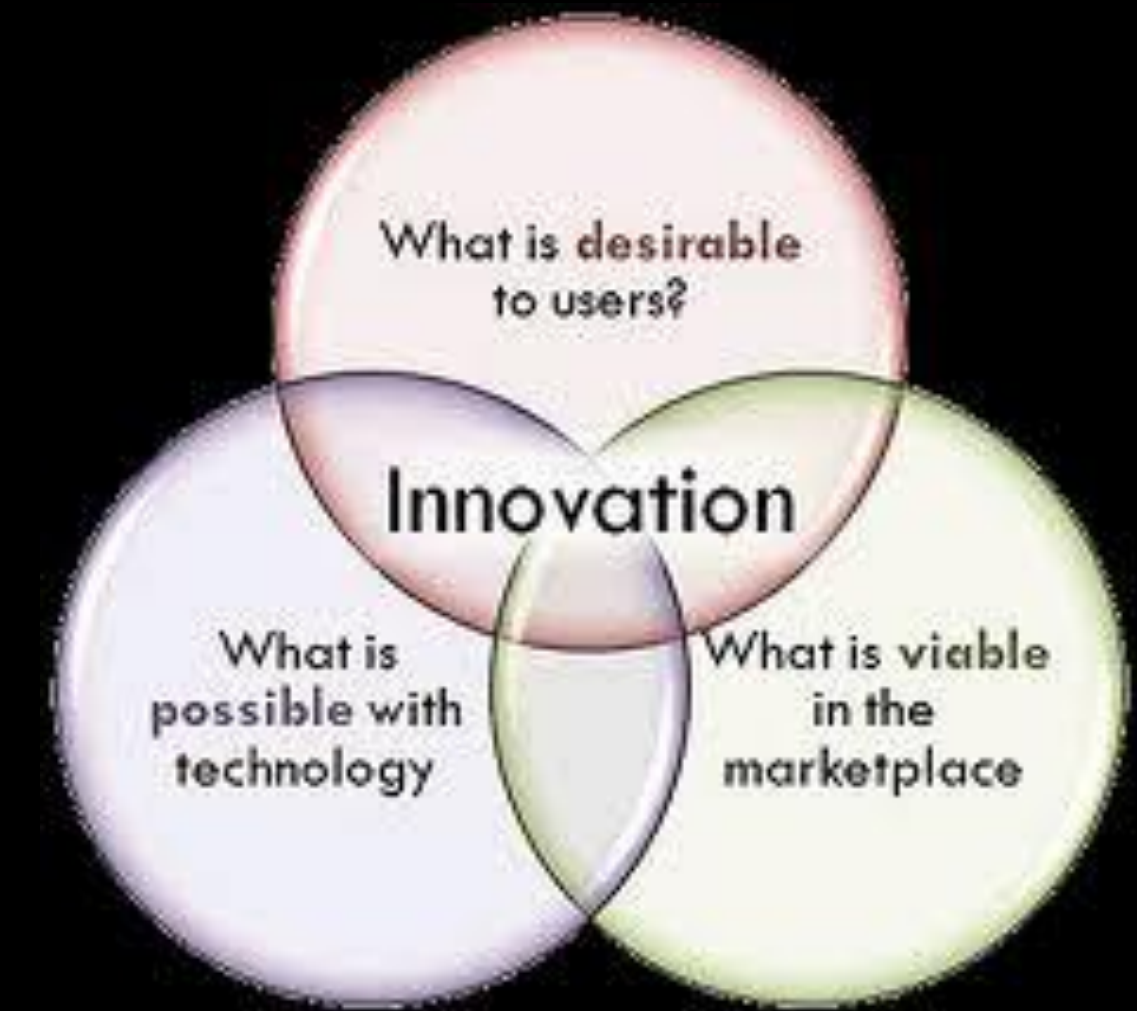
*Per ENR July 2012 report



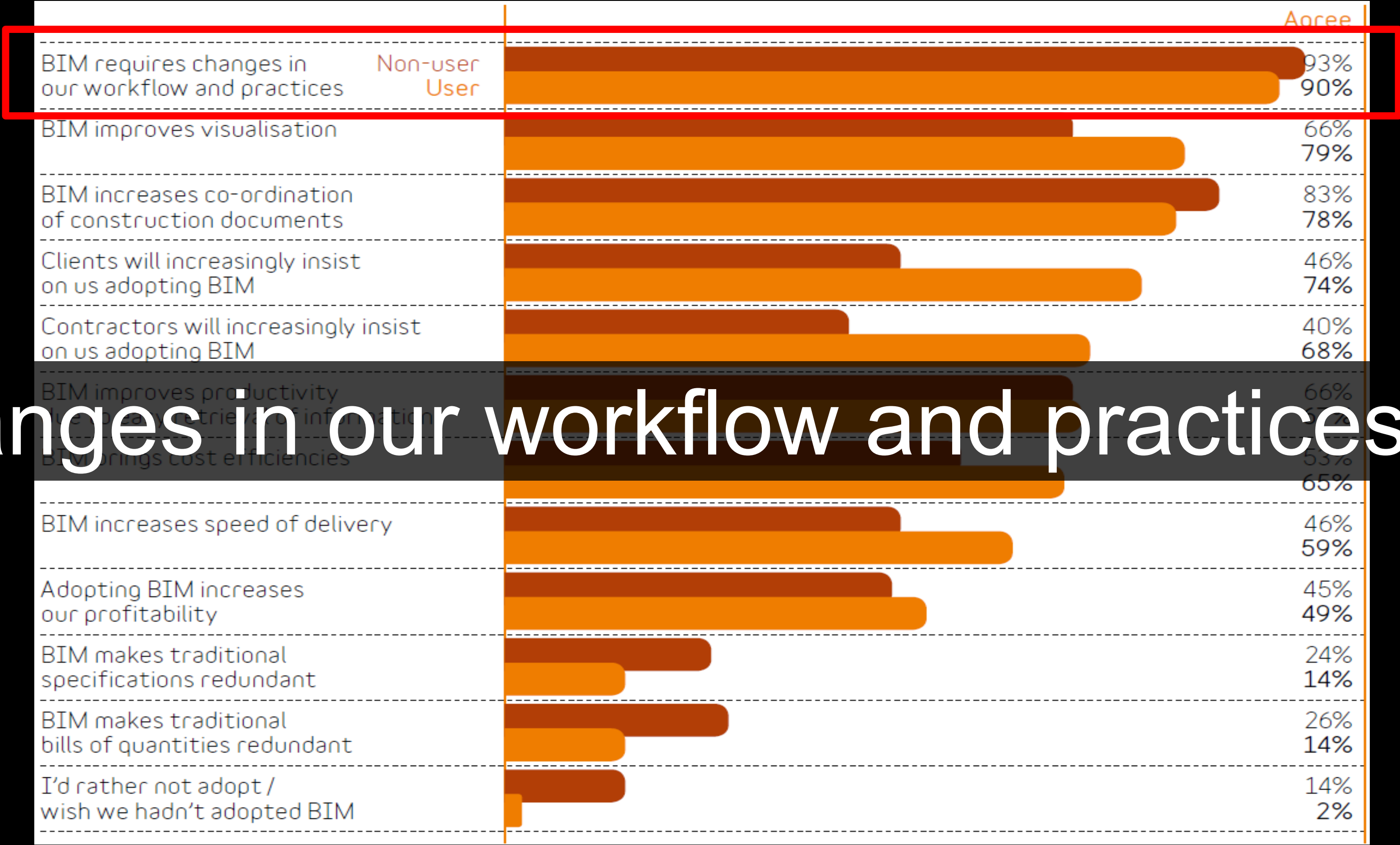
Transitioning to BIM for AEC Companies – Challenges and Best Practices

BIM = Business Innovation

- Innovation
 - Is doing something different, not just doing the same thing better
 - Brings new value to customers through solutions that meet new needs, unarticulated needs, or existing customer or market needs
 - Involves more effective products, processes, services, or technologies
- Software applications can be an enabler of innovation but are not innovation on its own
- Innovation requires change!!!



State of BIM



“BIM Requires changes in our workflow and practices”

Common comments about BIM adoption

“Adopting a BIM **process** requires a **significant adjustment** to the way many tasks are undertaken in the industry”

“BIM is worth the initial **effort**, investment and **training**”

“Adopting BIM is all about the **people and training**”

Agenda

Trends across all industries

Brian Glaze

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Biocatalysis Lab building - Dynamic Facade
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Photos © Paul Ott

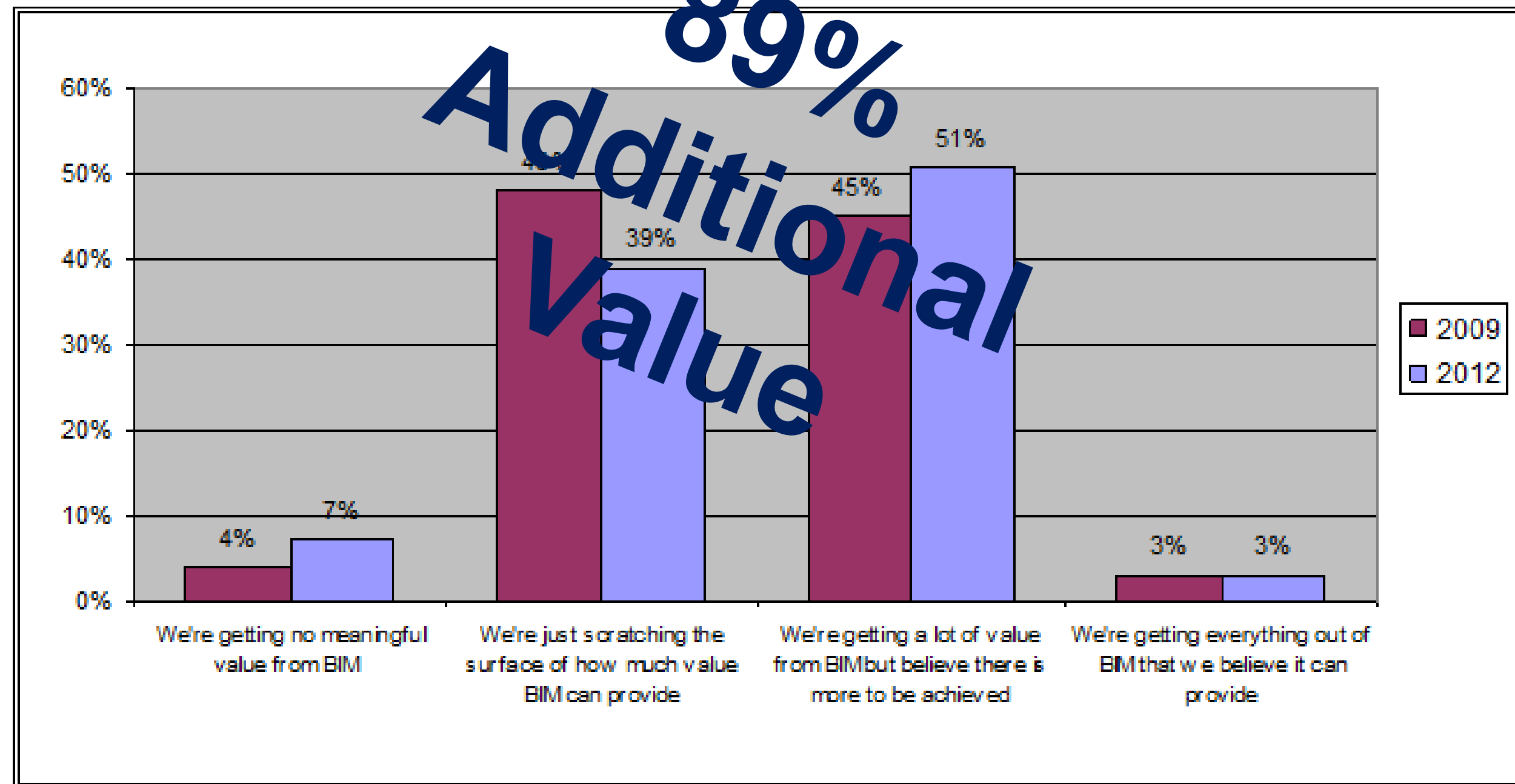
Trends across AEC



Trends across AEC

Business Value Derived from BIM: 2009 and 2012

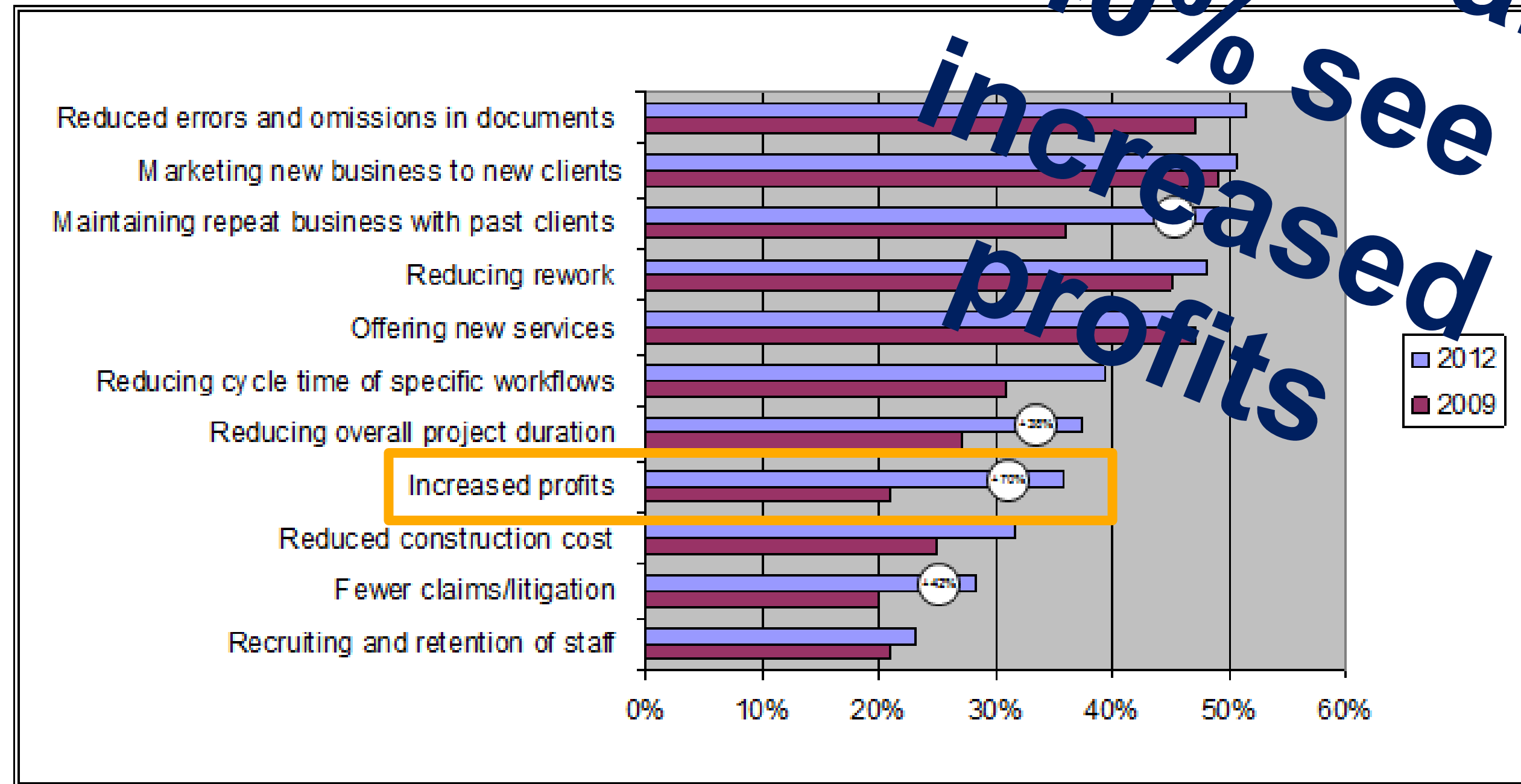
- Generally consistent perception of overall business value from BIM



Trends across AEC

Internal Benefits of BIM Use: 2009 and 2012*

- Higher percentage of users report High/Very High value from leading internal benefits
 - Increased profits, Maintaining clients, Reducing project duration and Fewer claims are greatest percentage gainers



* Top 2 (High or Very High importance)

McGraw Hill
CONSTRUCTION

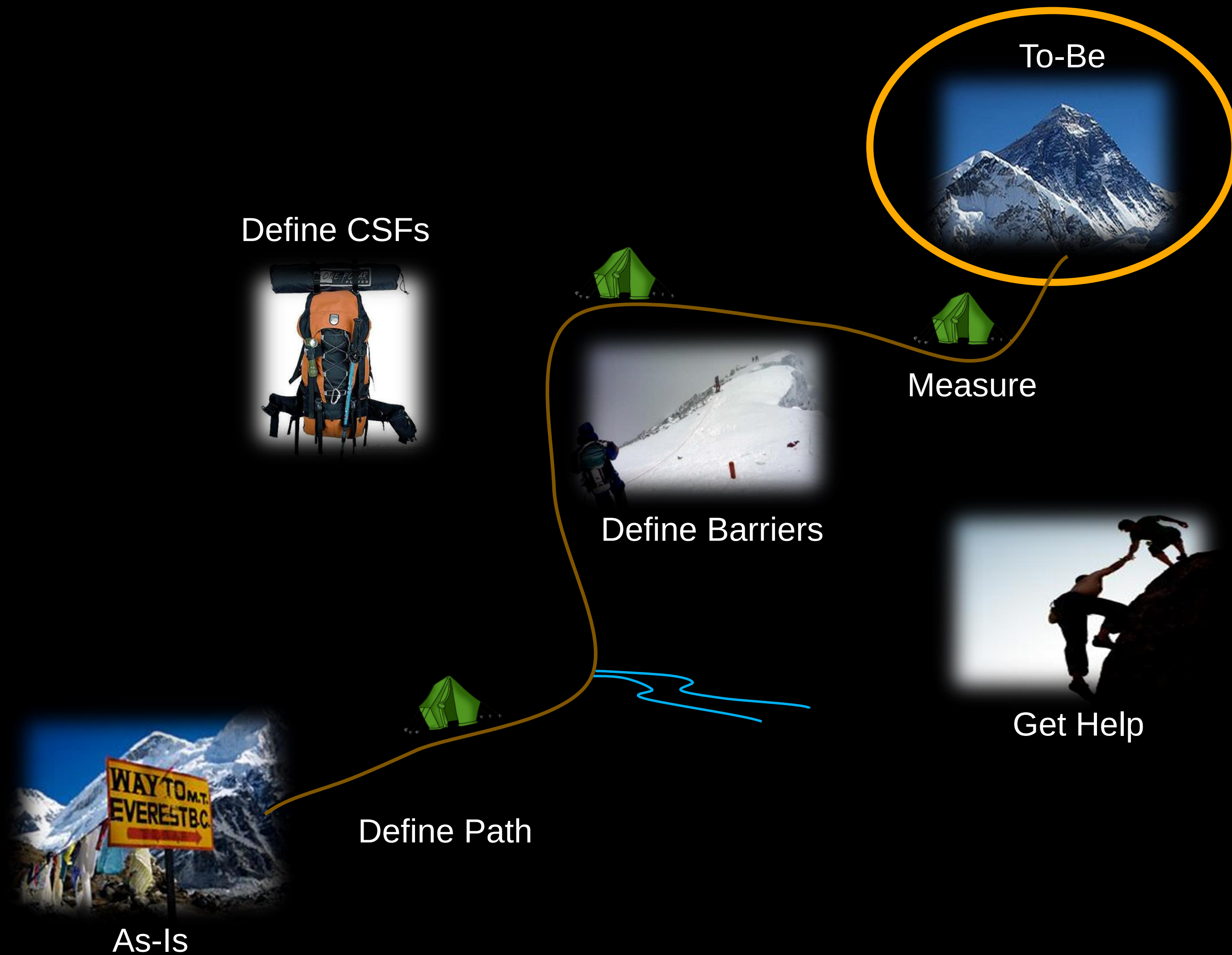
Change Methodology

John P Kotter – Leading Change, 1996

- 8 Common Errors to Change
 - Allowing too much complacency
 - Failing to create a sufficiently powerful guiding coalition
 - Understanding the power of Vision – What success looks like and Why
 - Under-communicating the Vision
 - Permitting obstacles to block the new Vision
 - Failing to create short-term wins – Don't bite off too much
 - Declaring victory too soon
 - Neglecting to anchor changes firmly in the corporate culture

Change Methodology

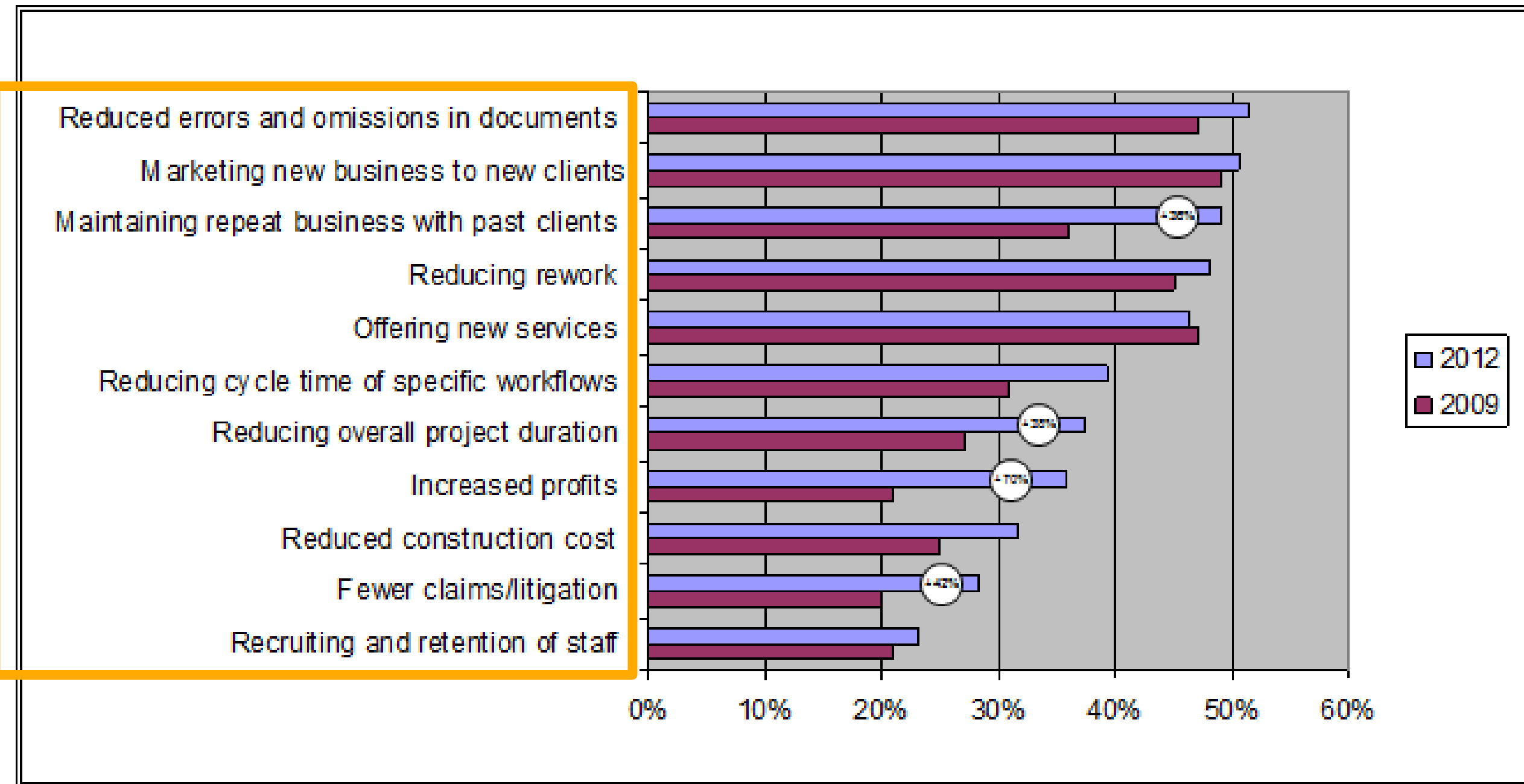
- General methodology...
- Know what success looks like
 - Not just “BIM”
- Know why you are making this Change – Measure!
- Small Wins – Stages
Don't bite off too much



Trends across AEC

Internal Benefits of BIM Use: 2009 and 2012*

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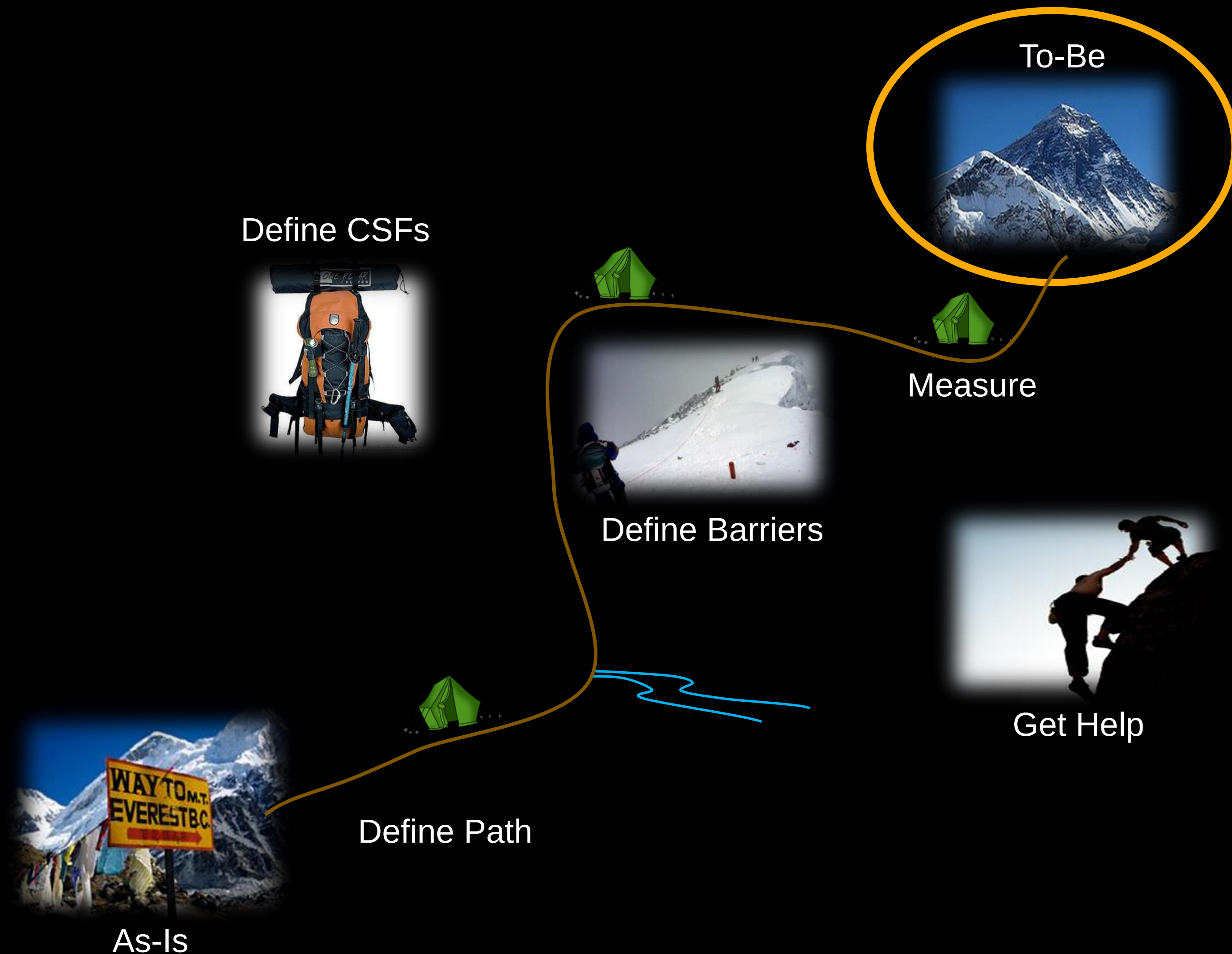


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McGraw Hill
CONSTRUCTION

Change Methodology

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Architectural Best Practices

Tim Case & Customer

Trends across all industries

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BIM = Innovation & requires change

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Biocatalysis Lab building - Dynamic Facade
Architect: Giselbrecht + Partner ZT GmbH
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Architecture Challenges

3 min
(23 min)

- Great Recession = prolonged focus on margin
- Large firms being acquired into global AECO corporations
- Who can deliver greatest value to facility owner?
- Fee based document production & construction administration
- Complex program requirements into conceptual design
- Design Automation

Architecture Best Practices

3 min
(26 min)

- Information Managers
- Moving from document production to information integrators
- Leverage multi-office project teams

Architecture Considerations

3 min
(29 min)

- Standards
- Interoperability
- What special considerations/roadblocks/obstacles do they need to be aware of?

Architecture Customer



1 min
(30 min)

- HOK
 - #1 Design and Construction Ranking
 - Global coordination
 - buildingSMART program
 - BIM Managers and certification program

Agenda

Engineering Best Practices

Chris Stedman & Customer

Architectural Best Practices

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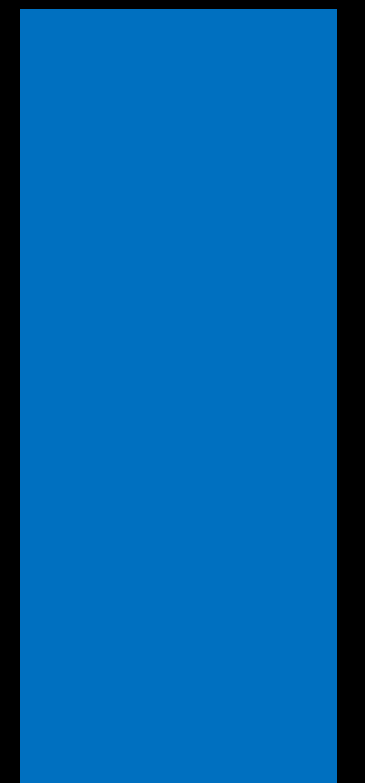
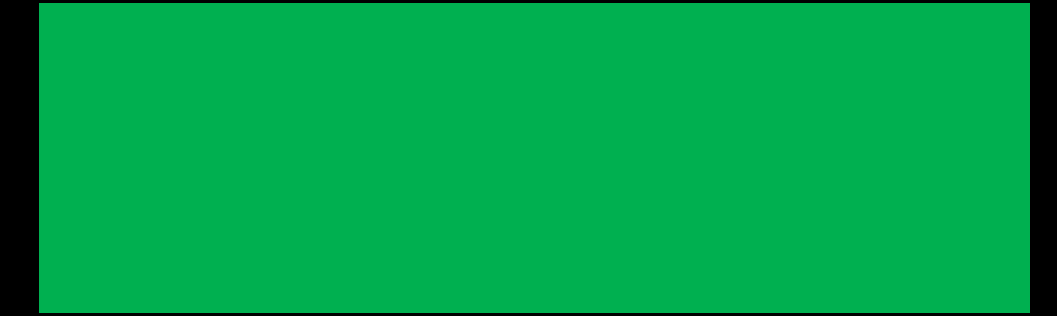
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Engineering Customer

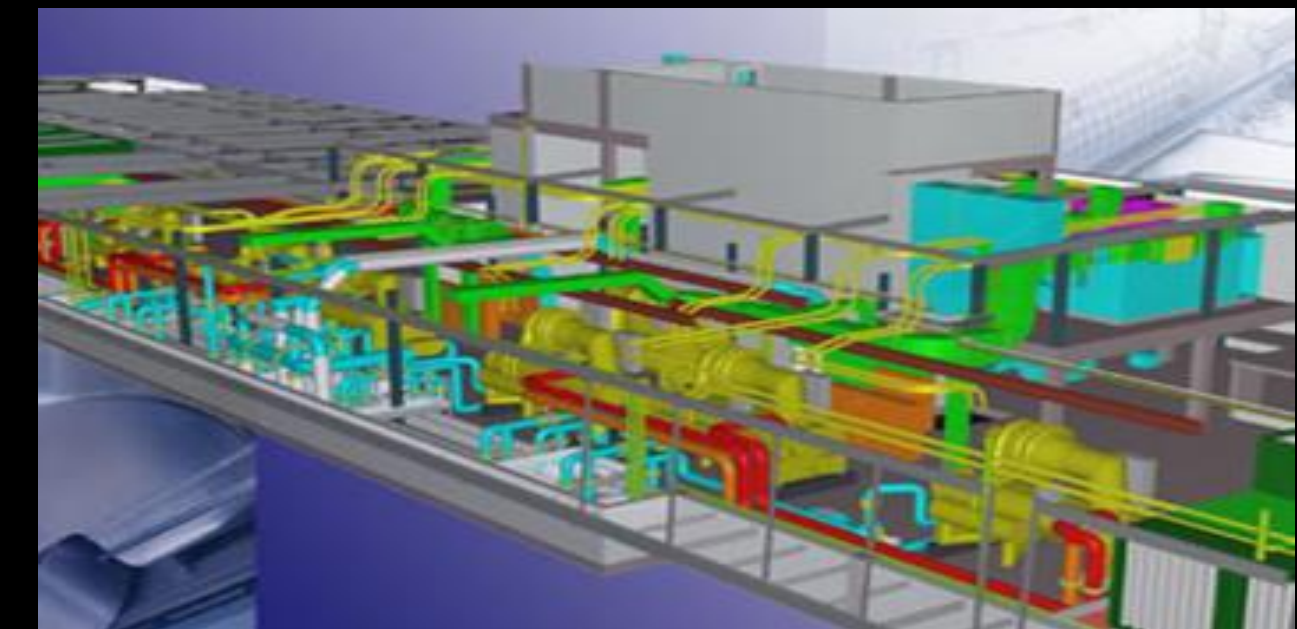
1 min
(50 min)

Balfour Beatty
Engineering Services



BIM Implementation Project Overview

- The Objectives
- The Current & Proposed Processes
- The Project Team
- The Consulting Approach
- Key Events & Activities
- Questions



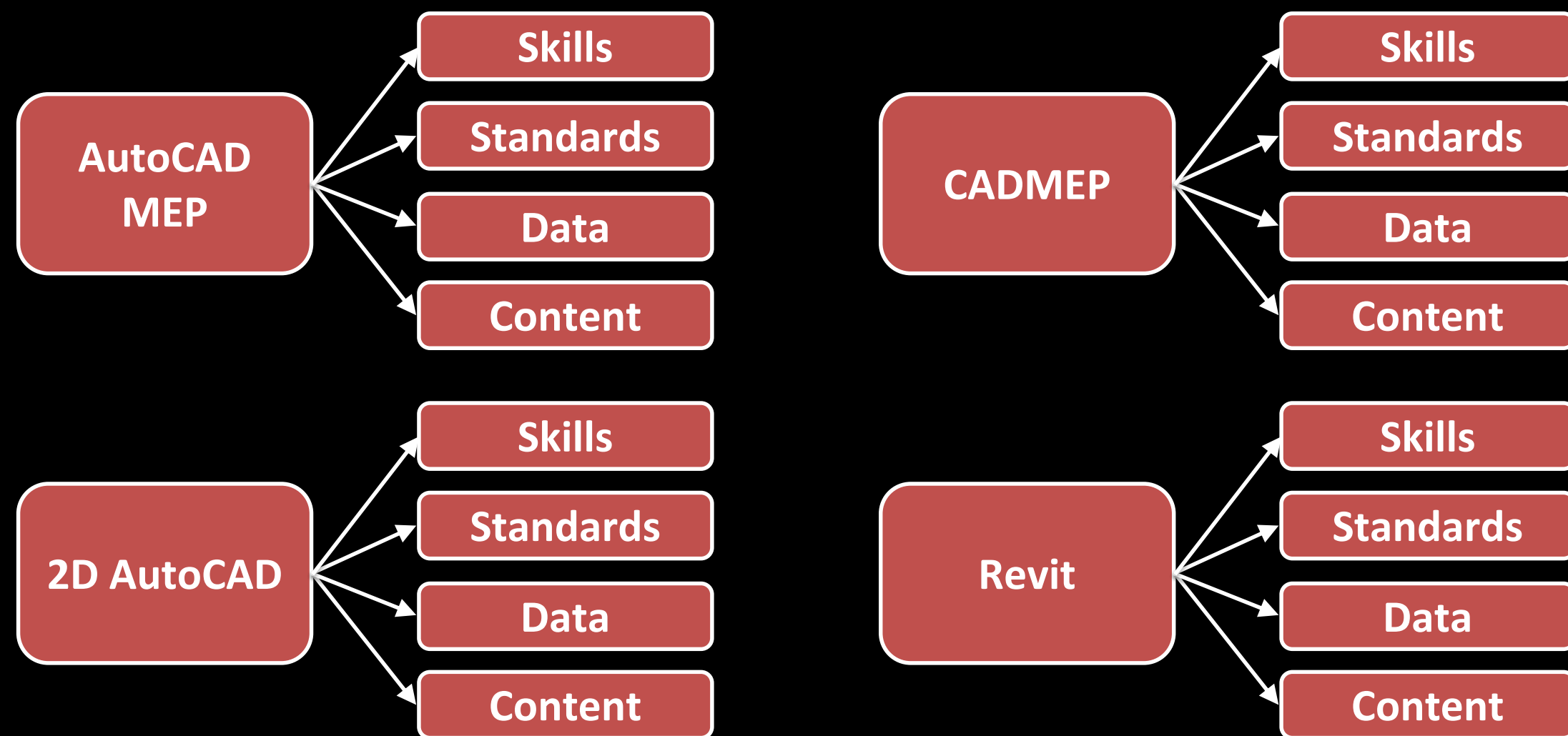
Balfour Beatty Engineering Services

1. Align to industry trends and client/contractor requirements
2. Gain efficiencies in design delivery including flexibility in resource
3. Enhance the “design to manufacture” process
4. Consolidate existing process to achieve predictable outcomes due to a common approach

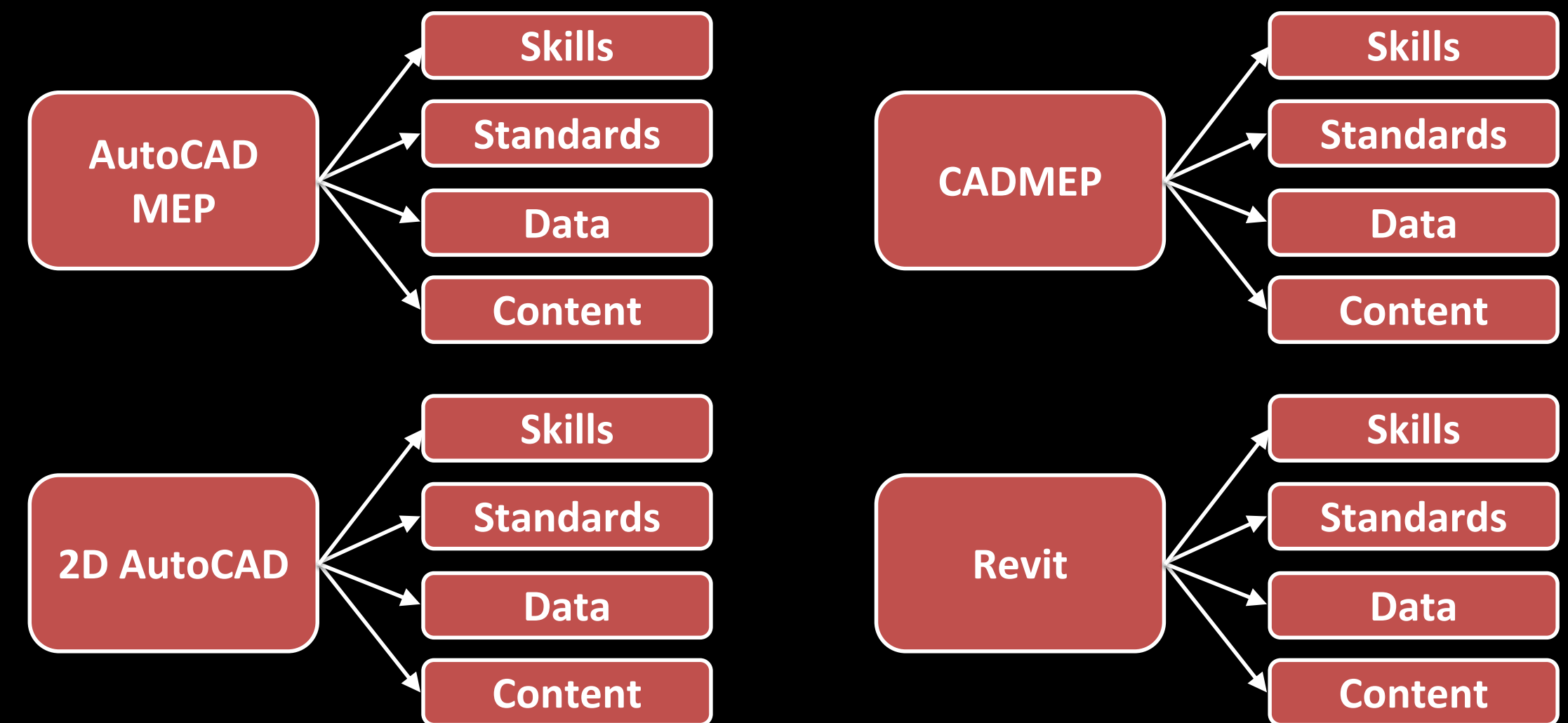
Balfour Beatty Engineering Services

Traditional Design [Current]

BBES Internal Design Offices

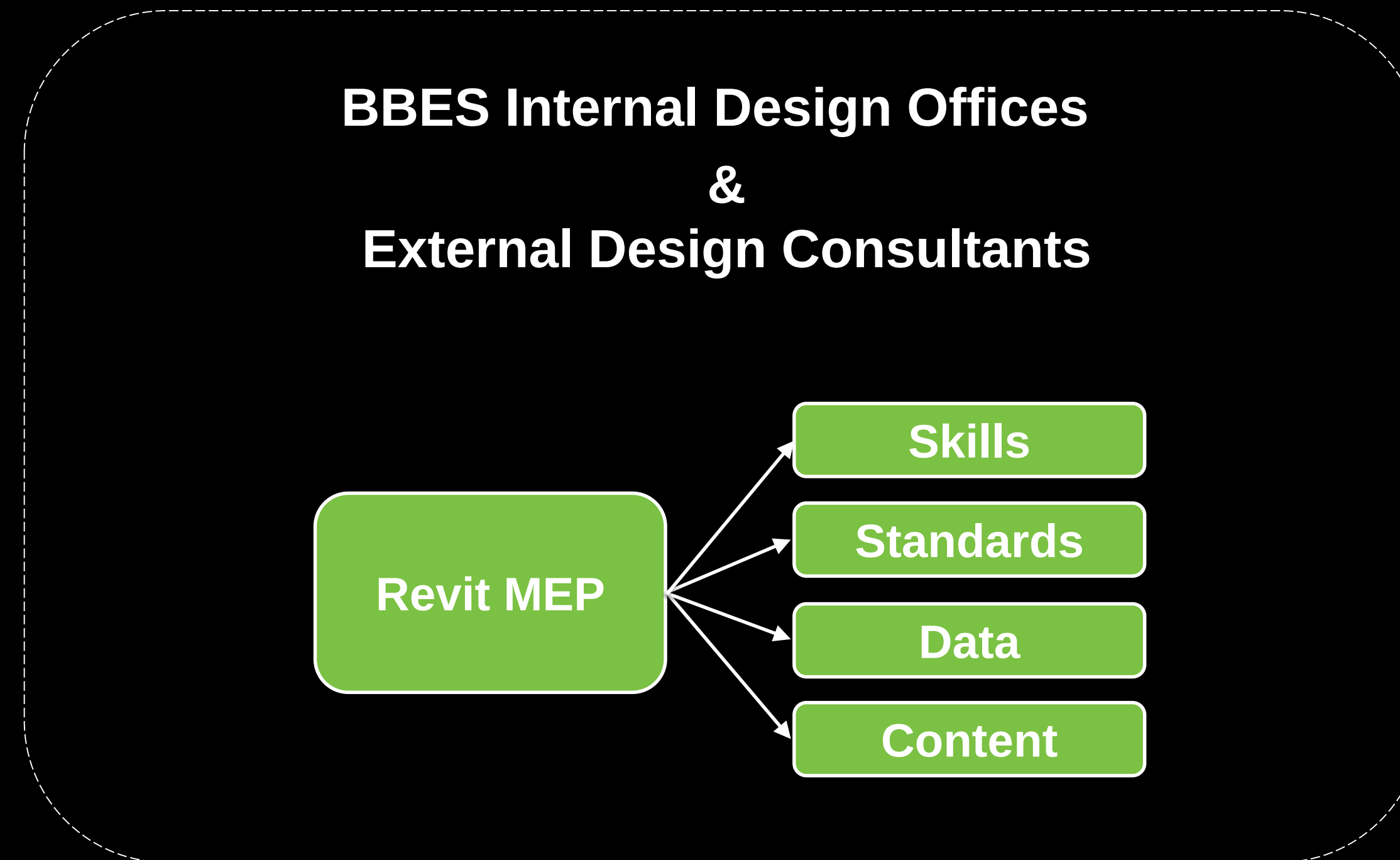


External Design Consultants



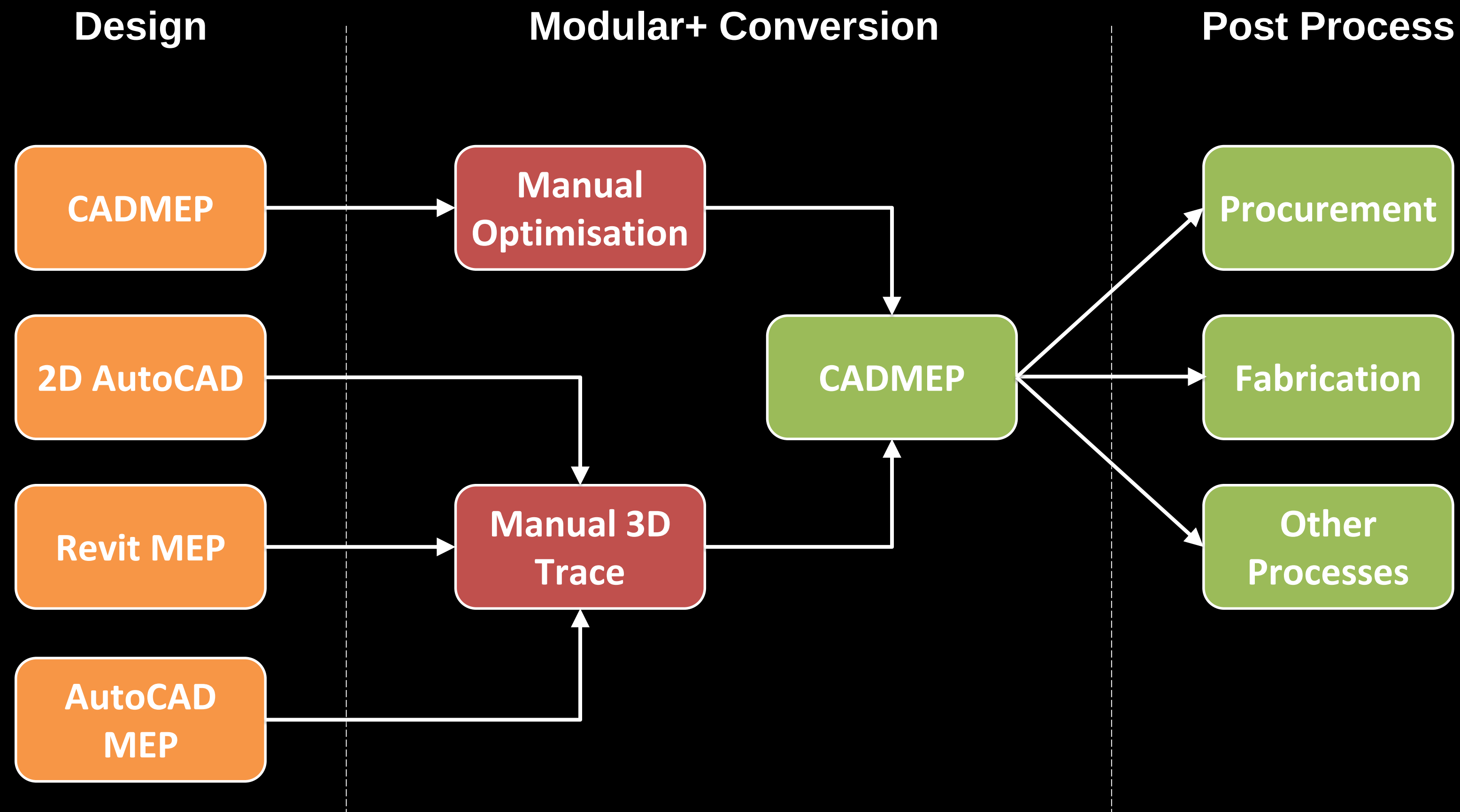
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Traditional Design [Proposed]



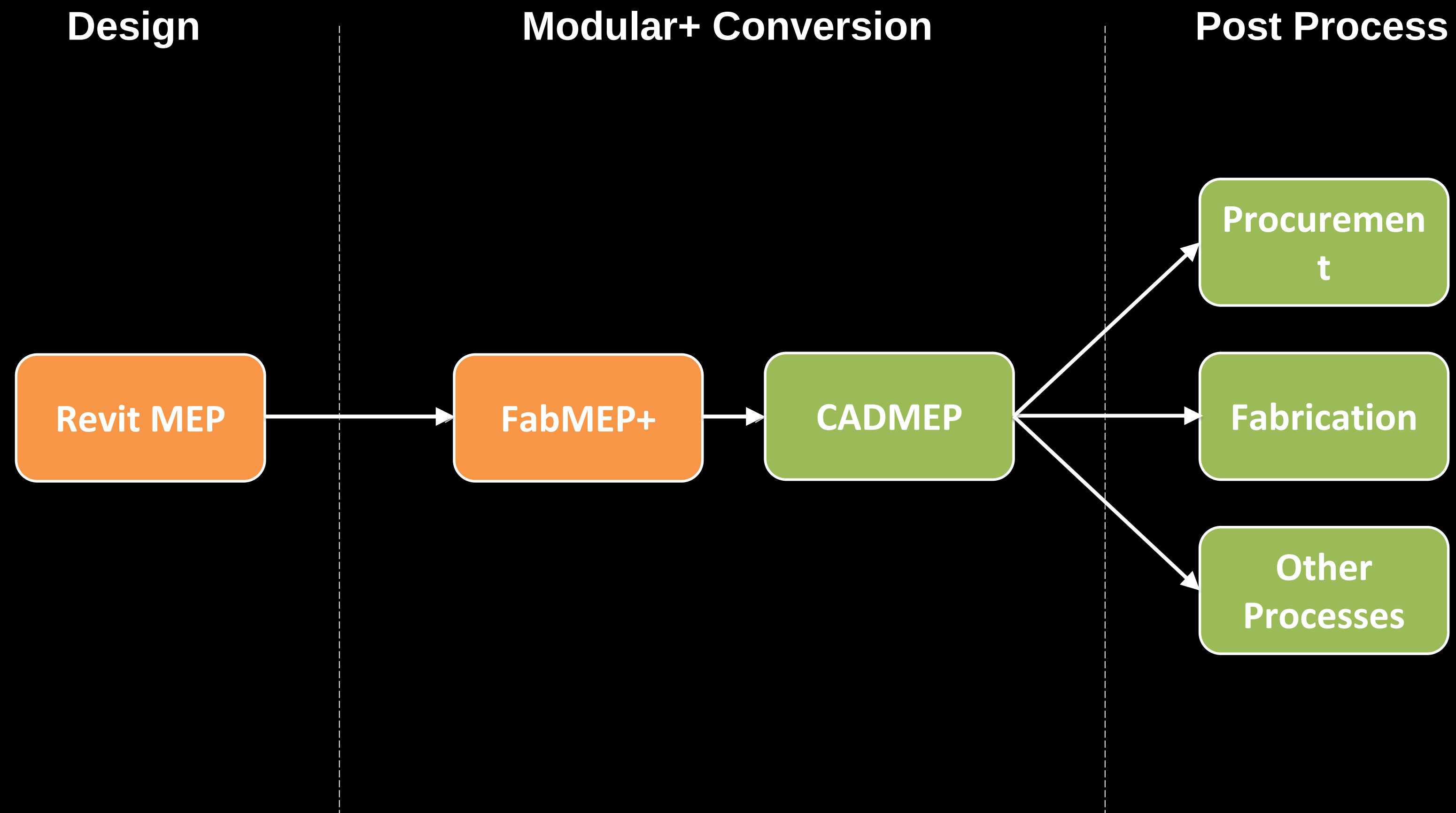
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Modular + Process [Current]



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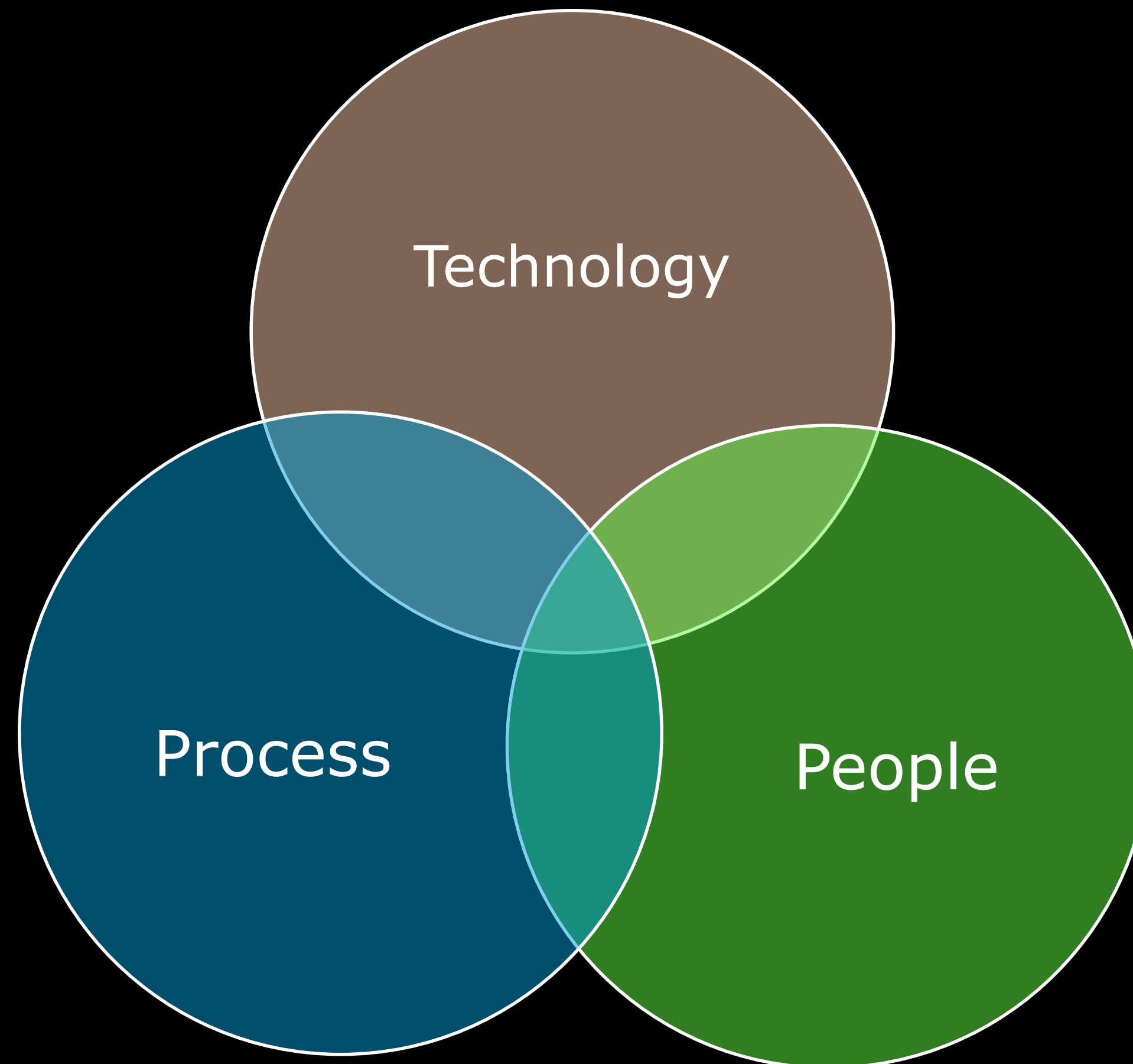
Modular + Process [Proposed]



Balfour Beatty Engineering Services

What Were the Major Considerations

BIM/Revit Standards
FABMEP+ Process
Supply Chain Engagement
Content Management



Revit MEP Adoption
IT Infrastructure
Hardware Investment
Software Installation
Content Creation

Training
- Technology & Process
Awareness Sessions
Non-CAD Stakeholders
Up-skilling

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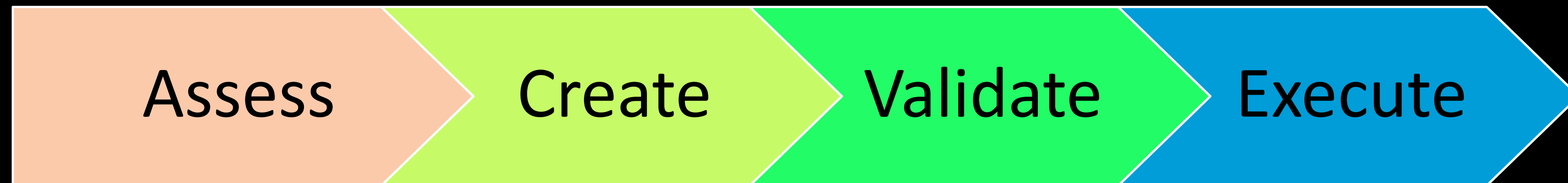
The Project Team [Who]

Name	Role	Company
Chris Stedman	Customer Success Manager	Autodesk Consulting
Matthew Keen	Customer Success Manager	Autodesk Consulting
Shashi Verma	Project Manager	Autodesk Consulting
Miro Schonauer	Lead Technical Consultant	Autodesk Consulting
Thomas Schwaiger	Tech. Consultant (DM & Vault)	Autodesk Consulting
Craig Parish	Tech. Consultant (CAD/FABMEP+)	Autodesk Consulting
Nick Harris	Training Manager	CADLine (Partner)
Chris Hobbs	Tech. Consultant (Revit MEP)	CADLine(Partner)

Ownership was also given to BBES individuals

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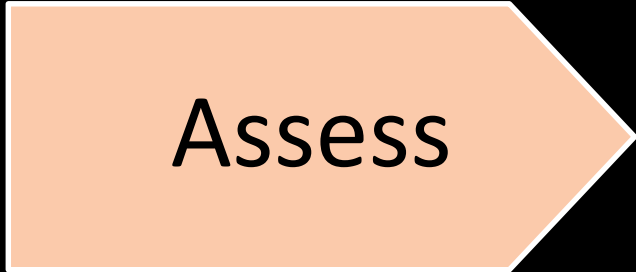
The Consulting Approach [How]



Balfour Beatty Engineering Services

The Consulting Approach [How]

Assess



Assess

- Understand the existing condition and process (the as-is)
- Workshops
- Supply chain engagement
- Discovery sessions
- Data gathering
- Benchmarking

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The Consulting Approach [How]

Create

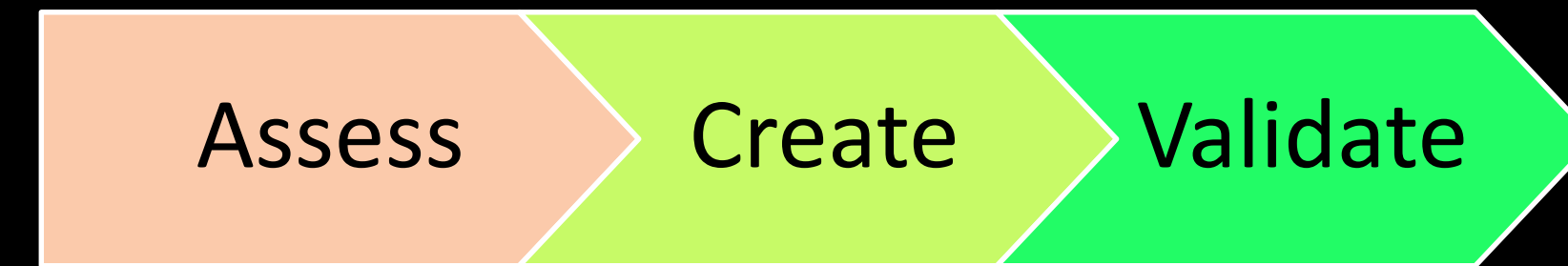
- Collate data from “Assess” stage
- Workflow & process maps
- Recommendations
- Create an improvement & change management plan proposal of how to implement the solution



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The Consulting Approach [How]

Validate



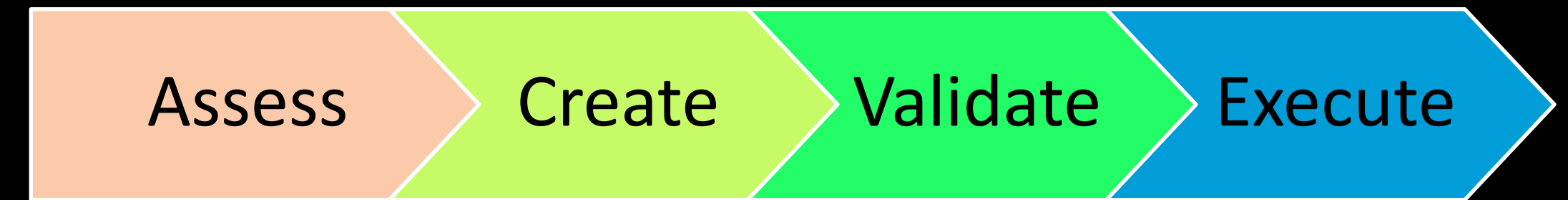
- Fully test and qualify the improvement plan (pilots)
- Estimate the required effort and resource to “Execute” the solution

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The Consulting Approach [How]

Execute

- Deliver and implement the change management plan
- Support the project teams
- Identify exemplar projects
- Measure success
- Maintain and further enhance the process



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Trends across all industries

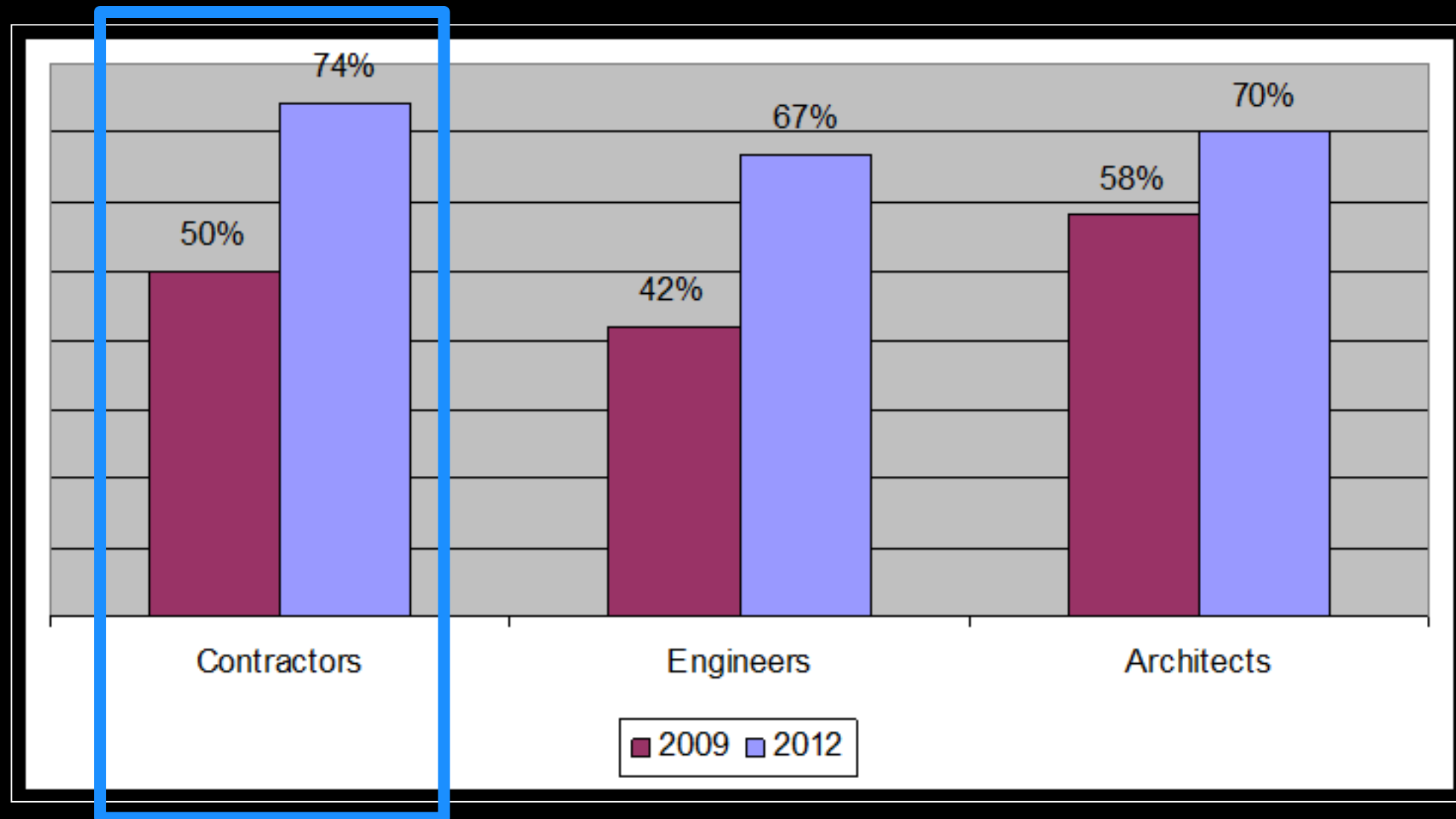
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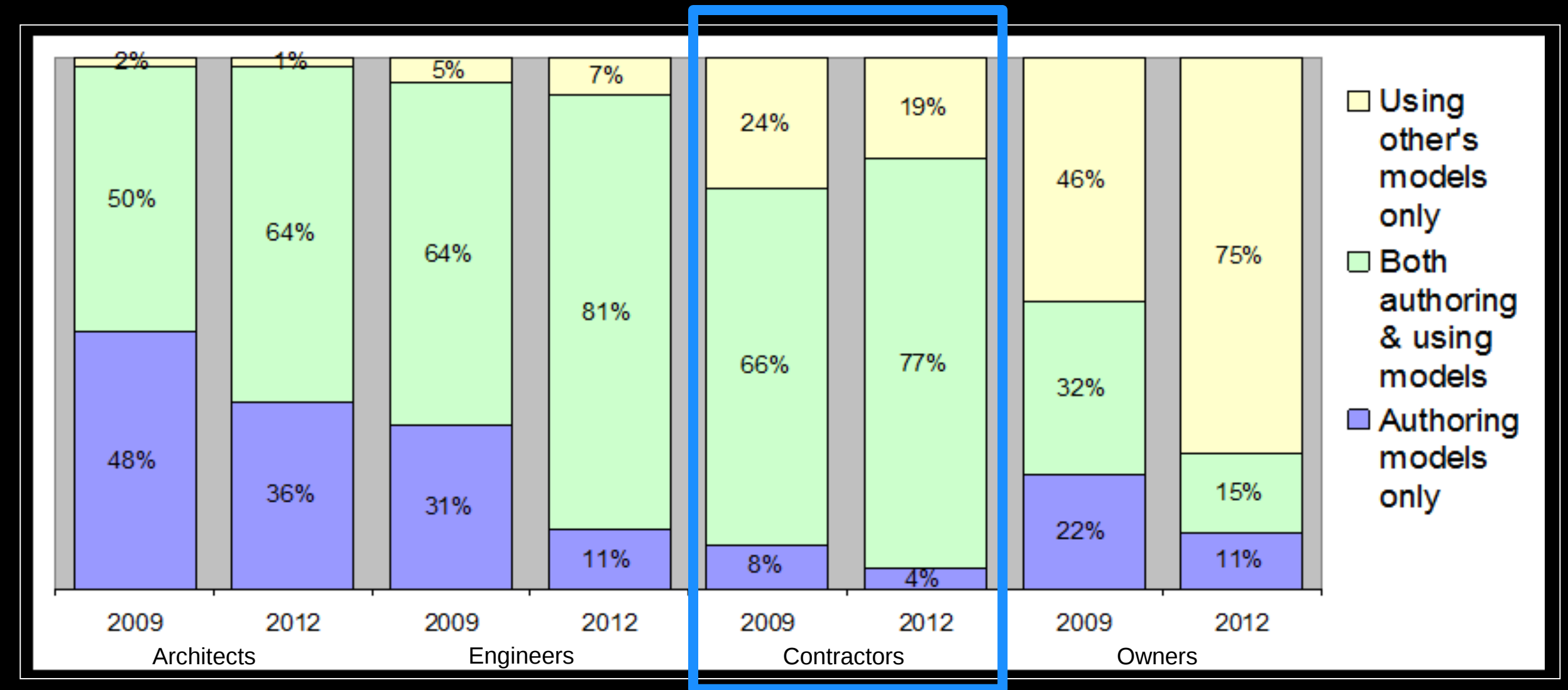
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Construction Industry Snapshot



BIM Adoption: 2009 and 2012

Contractors surpassed Architects and lead both Architects & Engineers

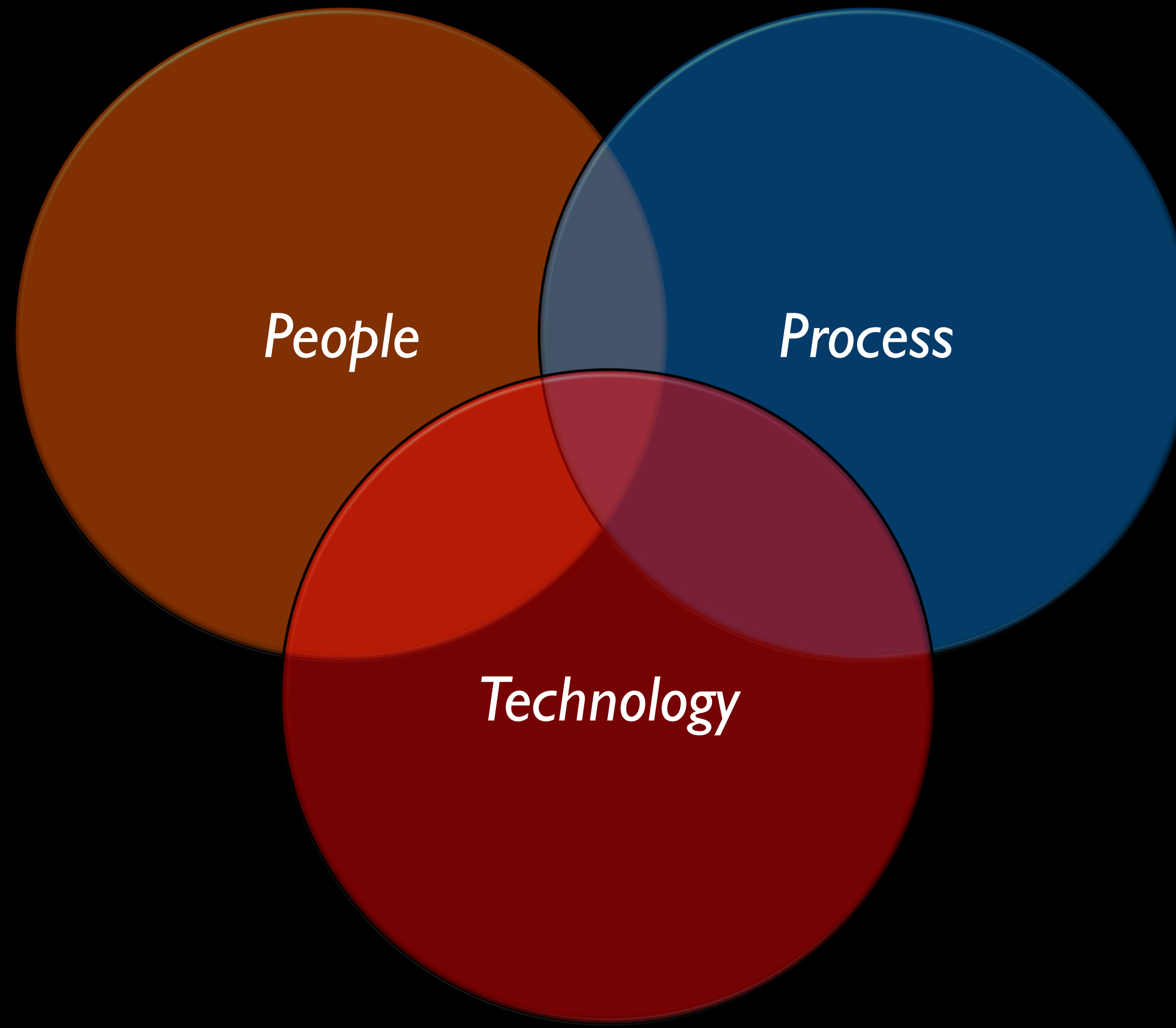


Model Authoring: 2009 and 2012

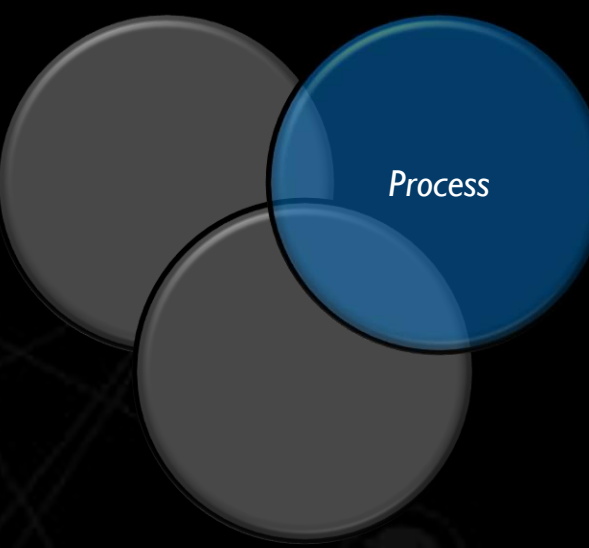
81% of Contractors are authoring models

BIM in North America 2012
McGraw-Hill Research Findings

Considerations for BIM



Construction Processes



Design Coordination

BIM Execution Planning

Site Logistics

Scheduling

Estimating

Sustainable Design

Logistics Phasing & Planning

MEP Coordination

Project Initiation & Start-up

Analysis

Field Execution

Visualization

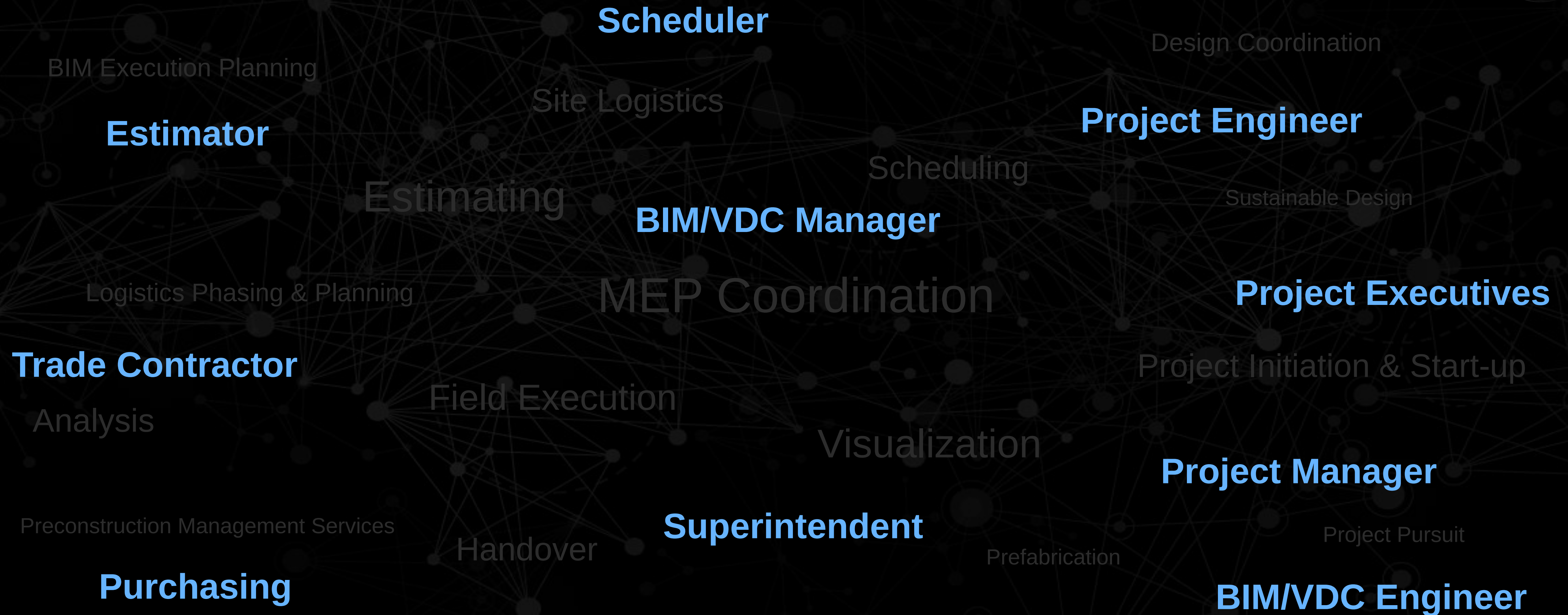
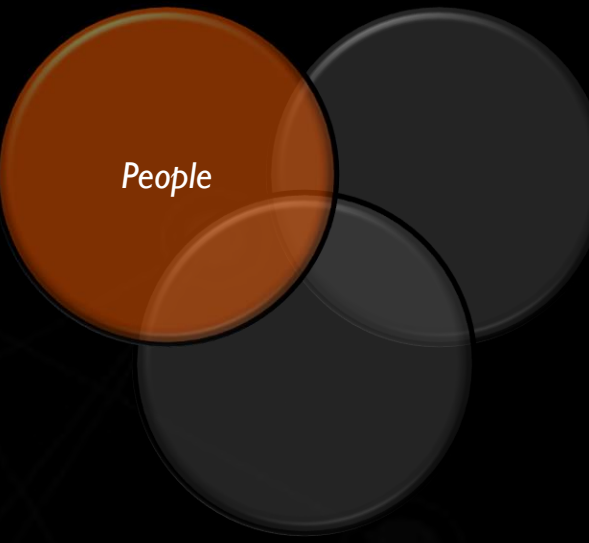
Preconstruction Management Services

Handover

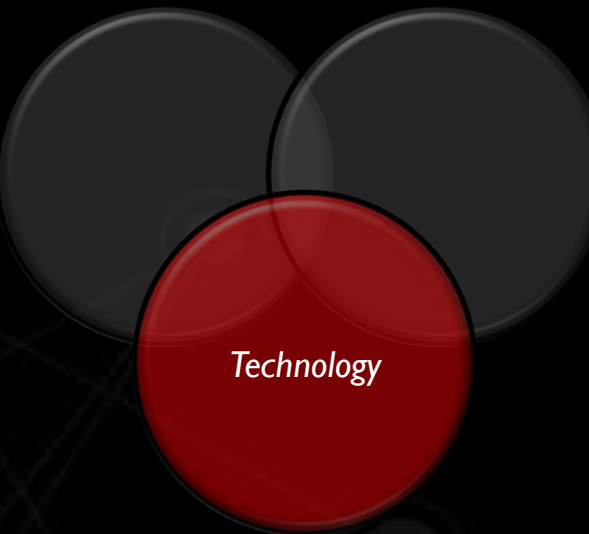
Prefabrication

Project Pursuit

Construction Roles



Construction Technology



Design Coordination



Project Engineer

Sustainable Design

Project Executives

Project Initiation & Start-up

Project Manager

Project Pursuit

BIM/VDC Engineer

Prefabrication

Superintendent



Handover



Visualization

MEP Coordination

BIM/VDC Manager

Scheduling



Site Logistics

Scheduler

Estimating

Estimator



BIM Execution Planning

Logistics Phasing & Planning

Trade Contractor

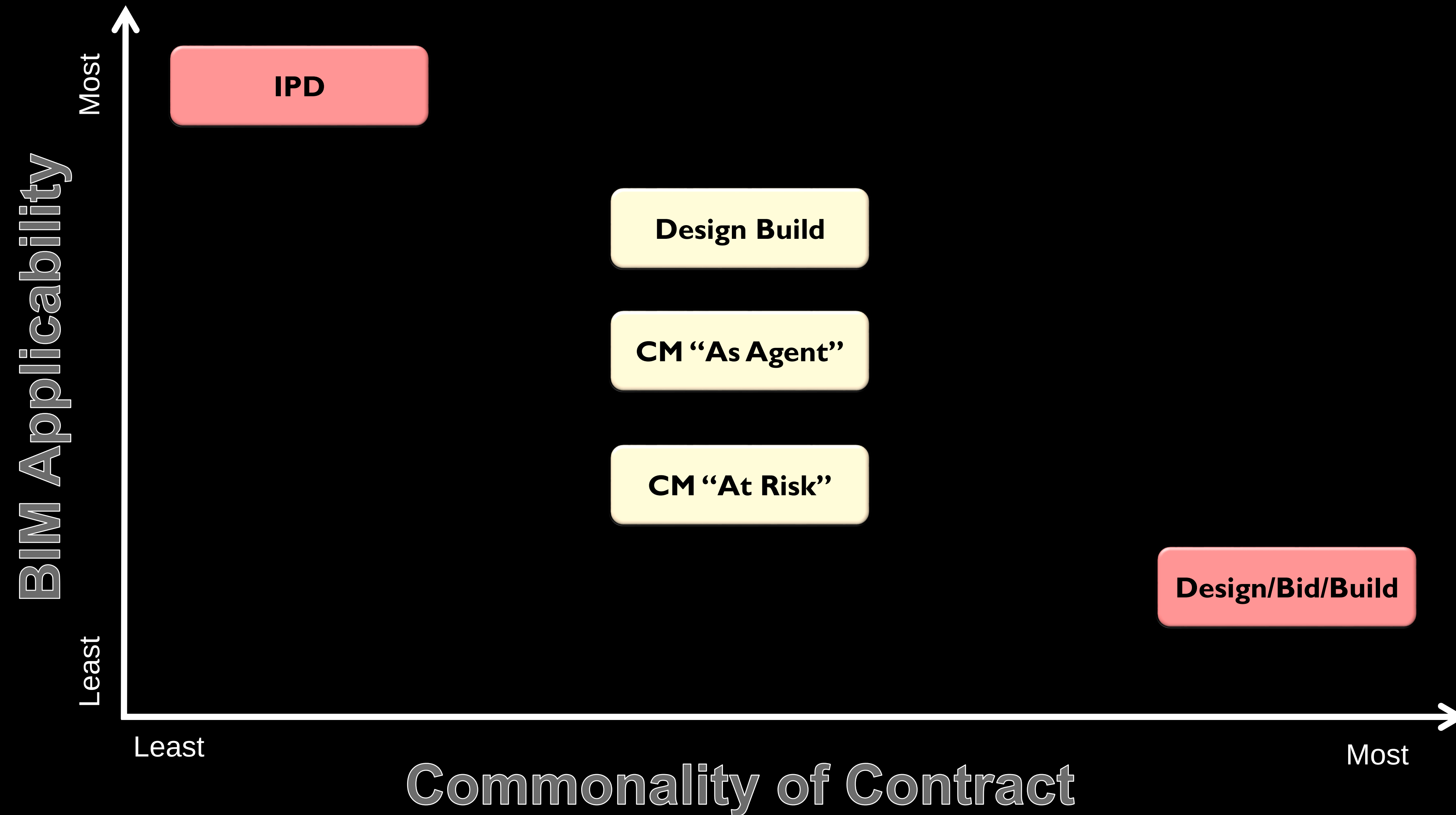
Analysis



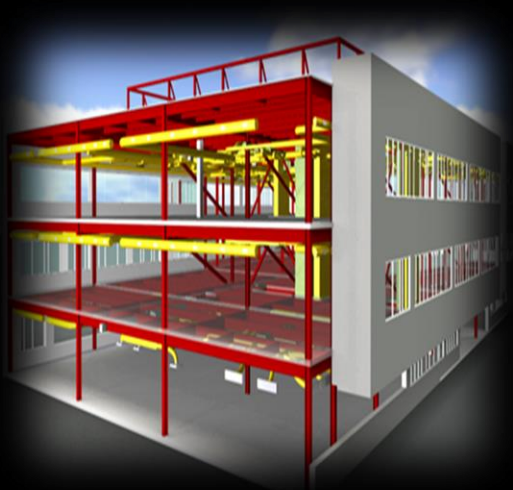
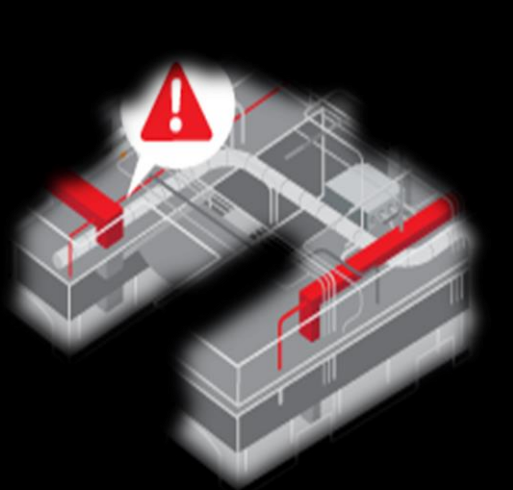
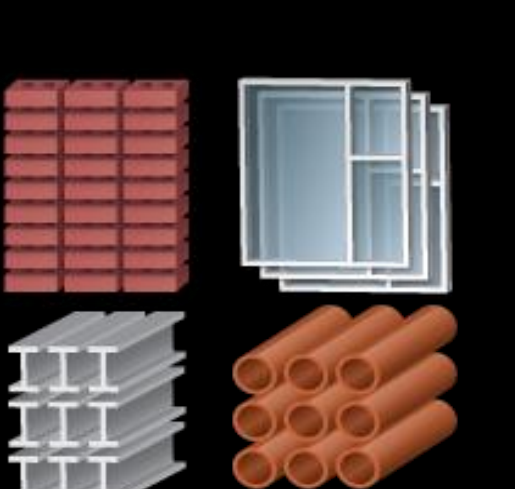
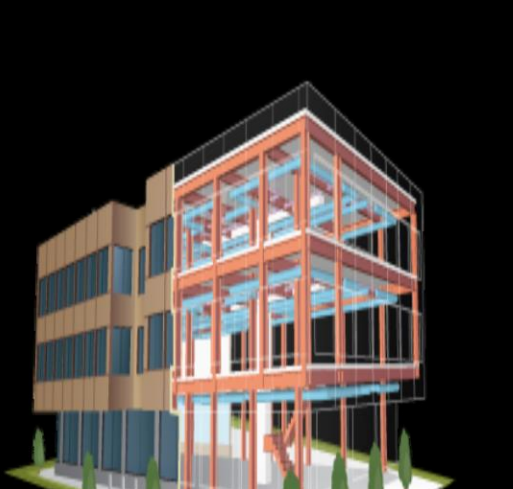
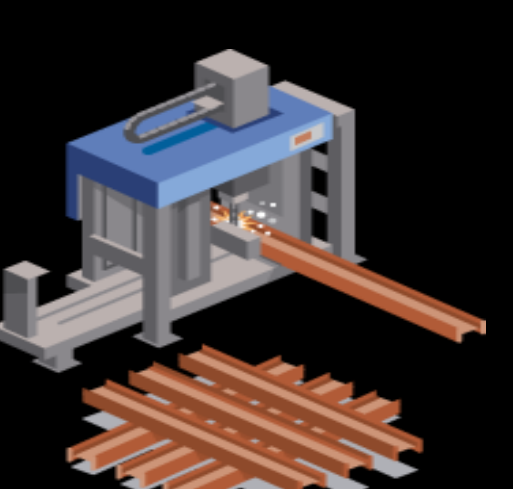
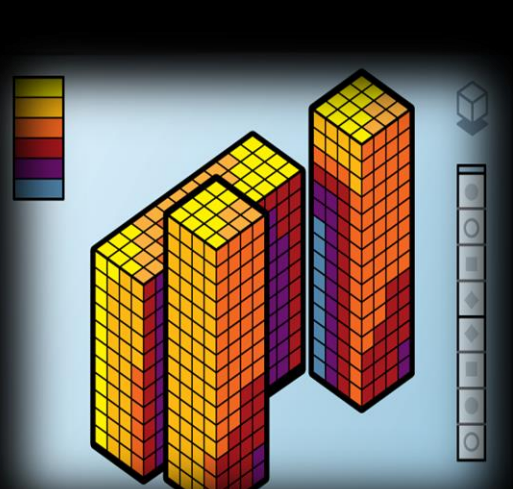
Preconstruction Management Services

Purchasing

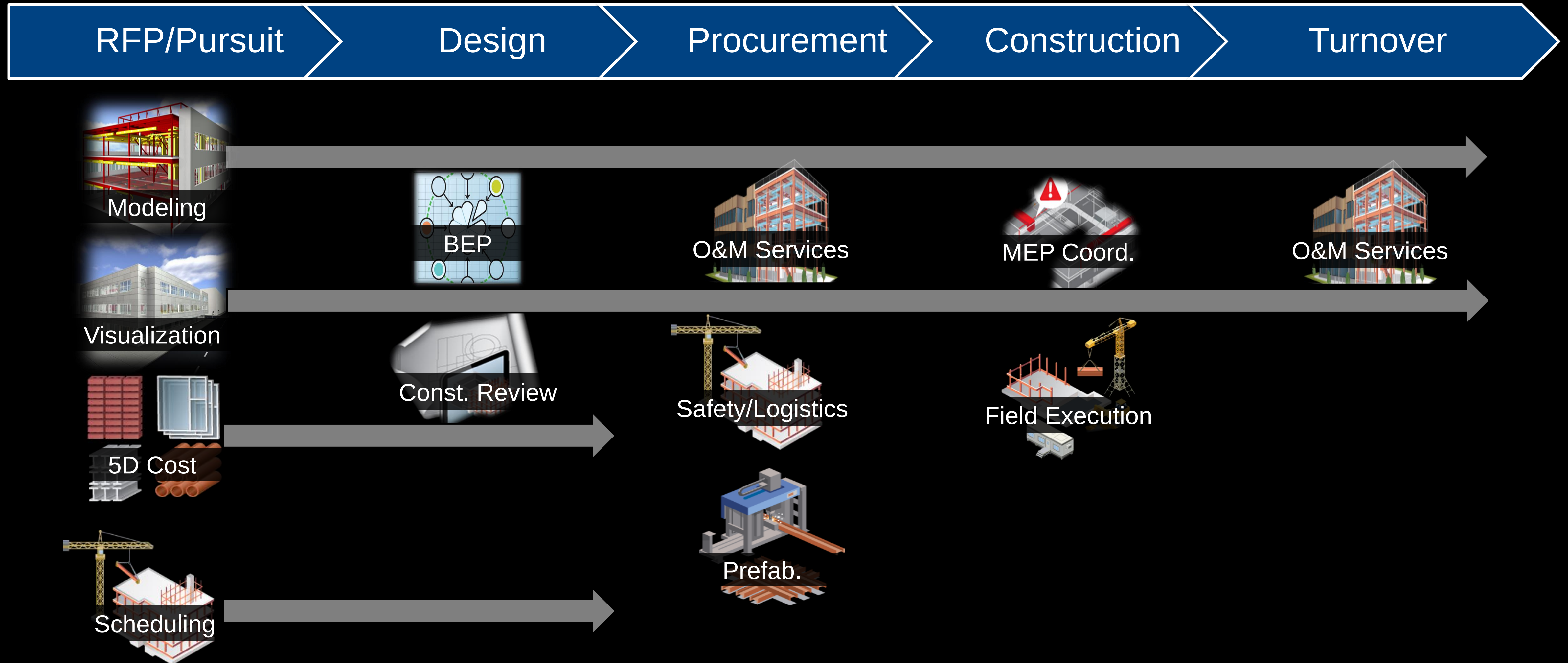
Construction Challenges



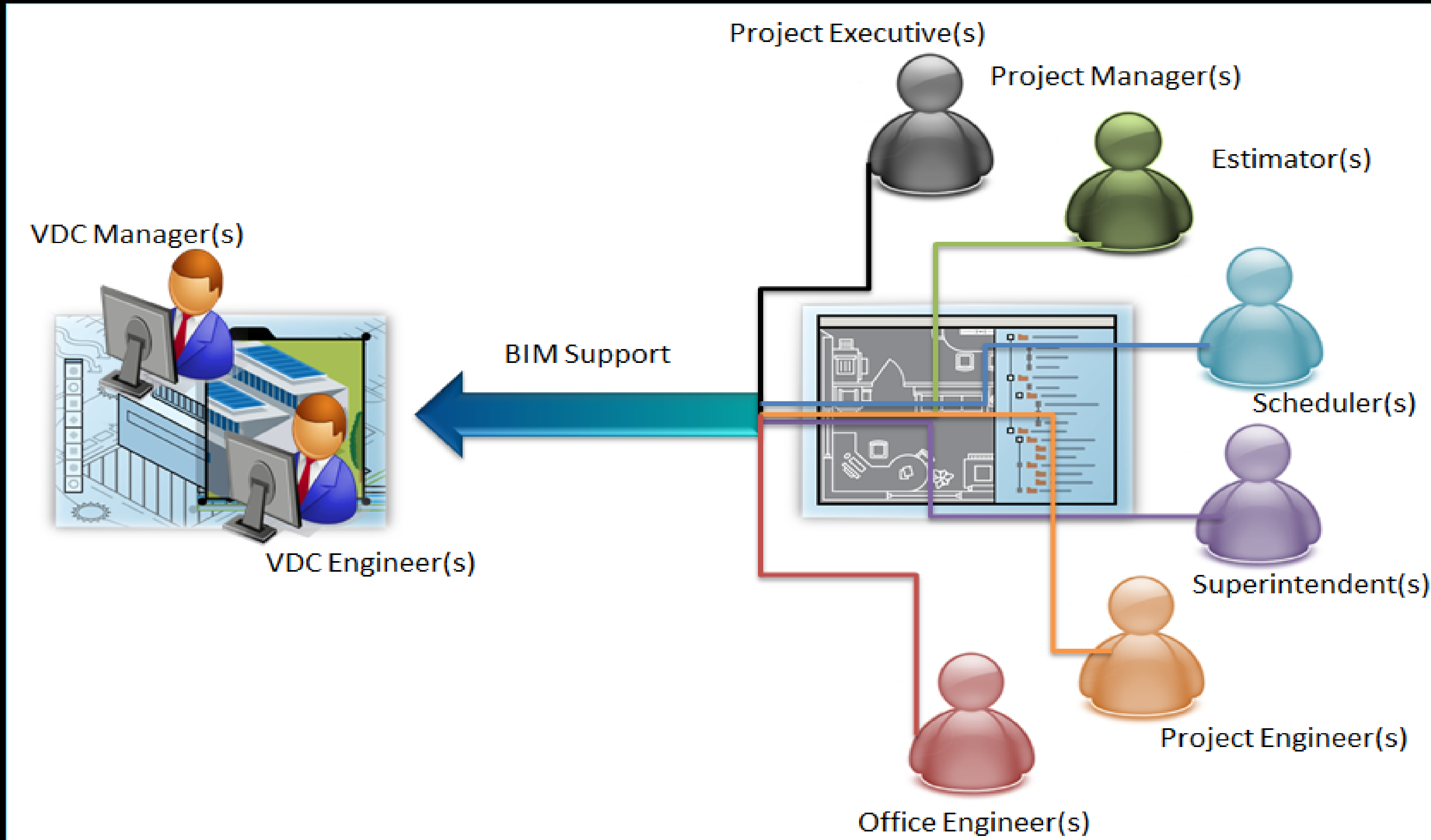
BIM for Construction

3D Execution	3D Modeling	3D Visualization & Logistics	3D Constructability Review	3D MEP Coordination	3D Field Execution
					
4D-5D-6D-XD	4D Planning & Sequencing	5D QTO & Cost	6D O&M Services	3D Based Prefab	EA & LEED
					

BIM Considerations



Avoiding the BIM “Bottleneck”



BIM Leadership in Construction

Optimize BIM Offerings

Industry Leaders will have implemented a **standard of BIM** on all projects
Industry Leaders will make **BIM the norm** and not the exception
Industry Leaders will drive BIM into the **corporate culture**

Improve BIM Skillset

Industry Leaders will leverage BIM as an asset of the **entire organization**
Industry Leaders will have **minimum BIM standards** for all projects
Industry Leaders will have **optimized BIM offerings** and identify trends to adopt

Adopt BIM Technology Now

Industry Leaders will utilize a **central model-based approach** to deliver measurable processes for cost, schedule, and coordination
Industry Leaders will **leverage automation and improve efficiency** through their commitment to BIM

Gilbane BIM Initiative Example

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Wrap-Up

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Biocatalysis Lab building - Dynamic Facade
Architect: Giselbrecht + Partner ZT GmbH
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Closing

5 min
(85 min)

- Compare their company's BIM implementation strategy to industry best practices
- Demonstrate ways the industry is adopting BIM into their business
- Identify commonalities and differences in the transformation to BIM between architecture, engineering, and construction firms
- Cite specific examples from industry where transformation to BIM has been supported by professional consulting

