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
Photos © Paul Ott

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

The following descriptions of an Autodesk Customer Success Manager (CSM) is intended for information purposes only, and may not be incorporated into any contract. The development, release, and timing of any features or functionality described for Autodesk's products or services remains at the sole discretion of Autodesk, Inc. There is no dependence between the role of a CSM and the ability for a customer to use Autodesk's products.

Autodesk Consulting Delivery Organization

Autodesk Consulting

Consulting Delivery (350)

Business Analysts
Solution Architects
Project Managers
Developers

Architects
Engineers
Construction Managers

Virtual bench of 1000+ with partners

Helps customers implement BIM

BIM Transformation Roadmapping
Workflow process optimization
Project setup best practices
Hands on mentoring
Skill development curriculum and training
Integration
Customization

Customer Success Managers

Autodesk Consulting

40 Customers

20 CSMs

12 of top 25
22 of top 100
Global
Design
Firms*

9 of top 25
13 of top 100
US-Based
Construction
Firms
(4 of top 25
Global)*

Accelerates implementation and value from BIM

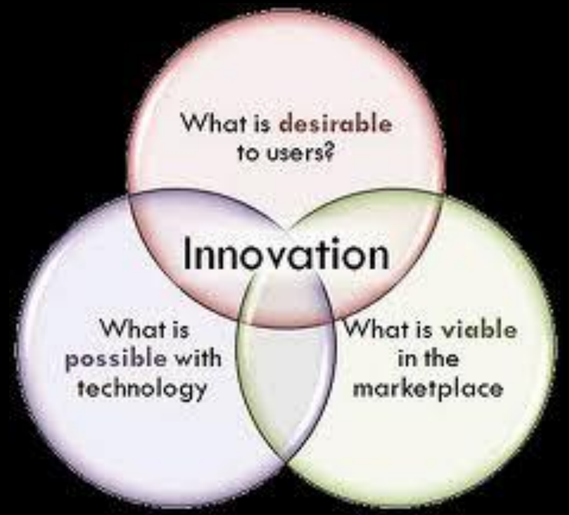
Tie BIM to company goals
Formalize and direct initiatives
Provide guidance on change mgt
Share best practices
Maximize value from Autodesk Consulting
Bring insights and vision from Autodesk

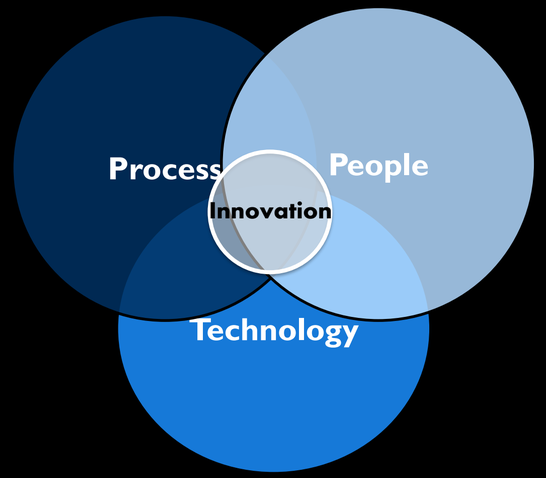
*Per ENR July 2012 report

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

BIM = Innovation & requires change
Barry Daitch

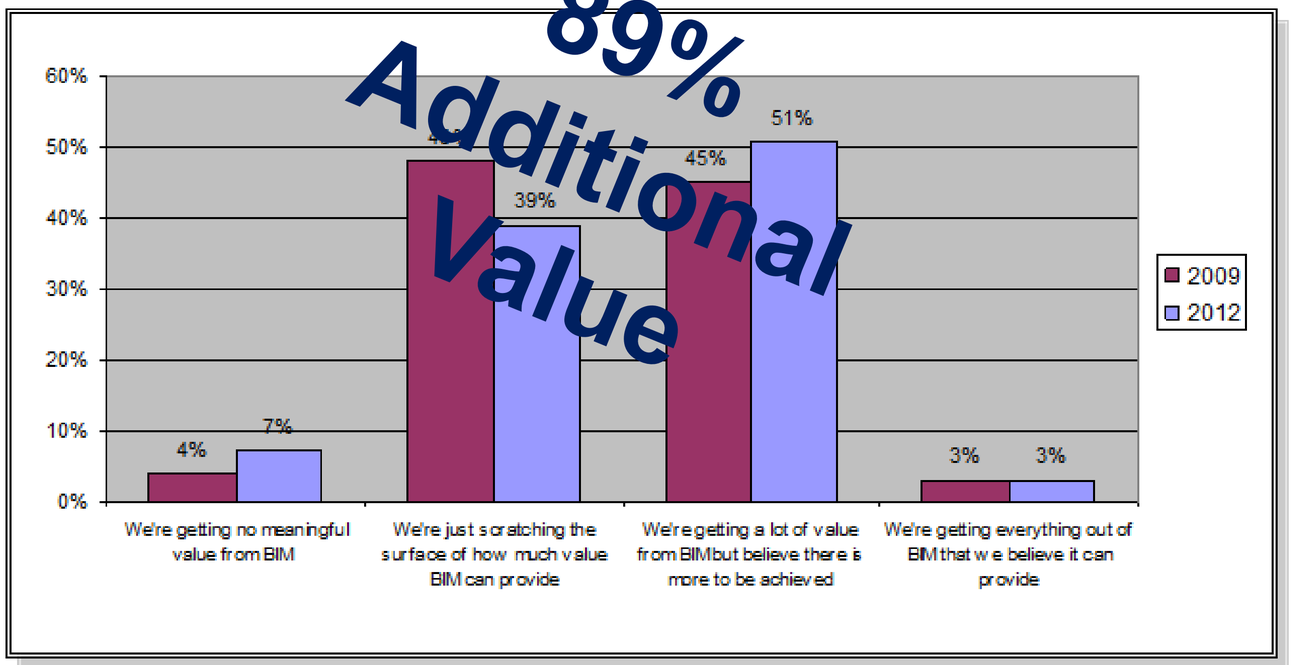
Biocatalysis Lab building - Dynamic Facade
Architect: Giselbrecht + Partner ZT GmbH
Photos © Paul Ott

Trends across AEC

Trends across AEC

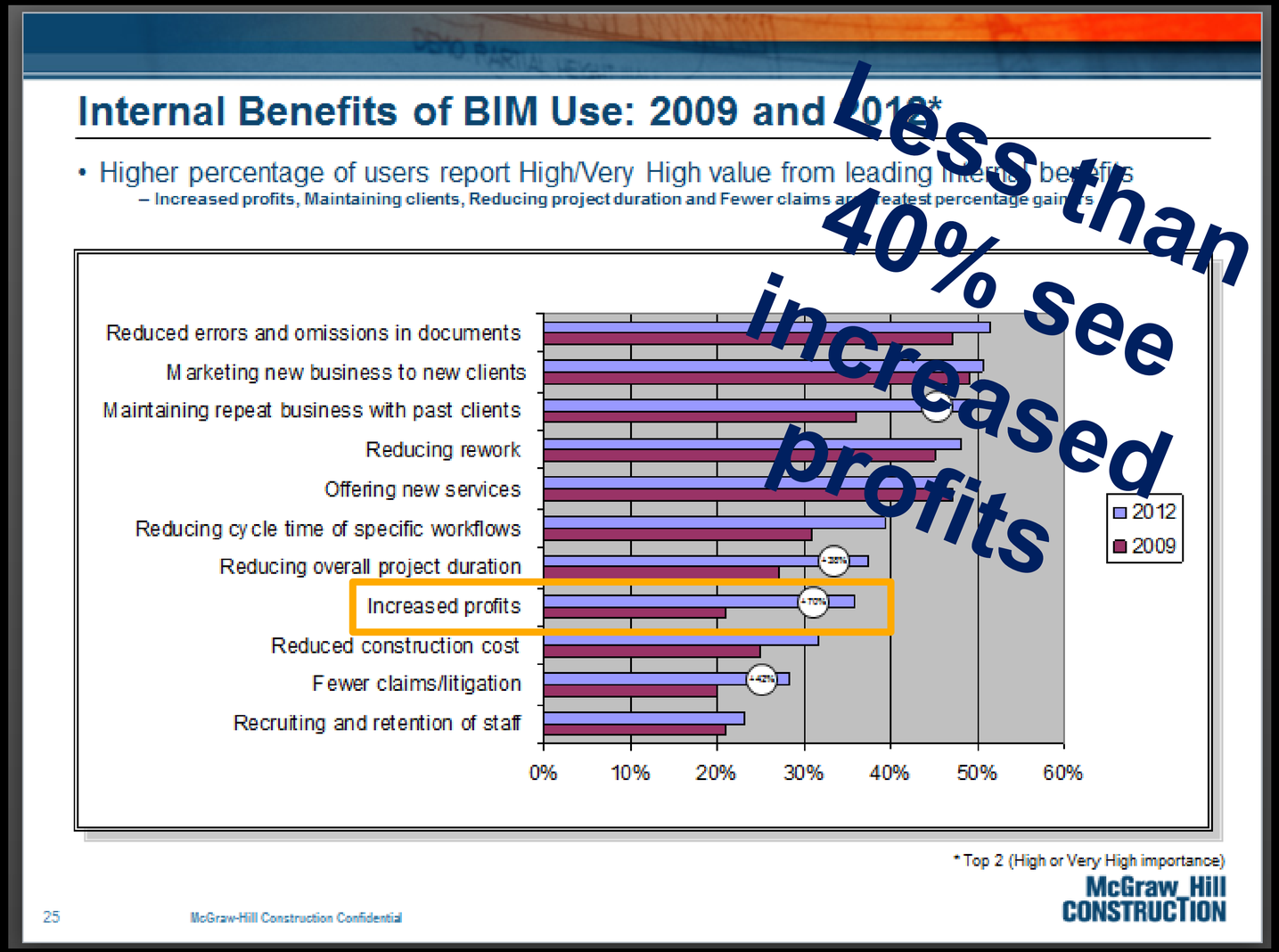
Business Value Derived from BIM: 2009 and 2012

- Generally consistent perception of overall business value from BIM



McGraw Hill CONSTRUCTION

Trends across AEC



Less than 40% see increased profits

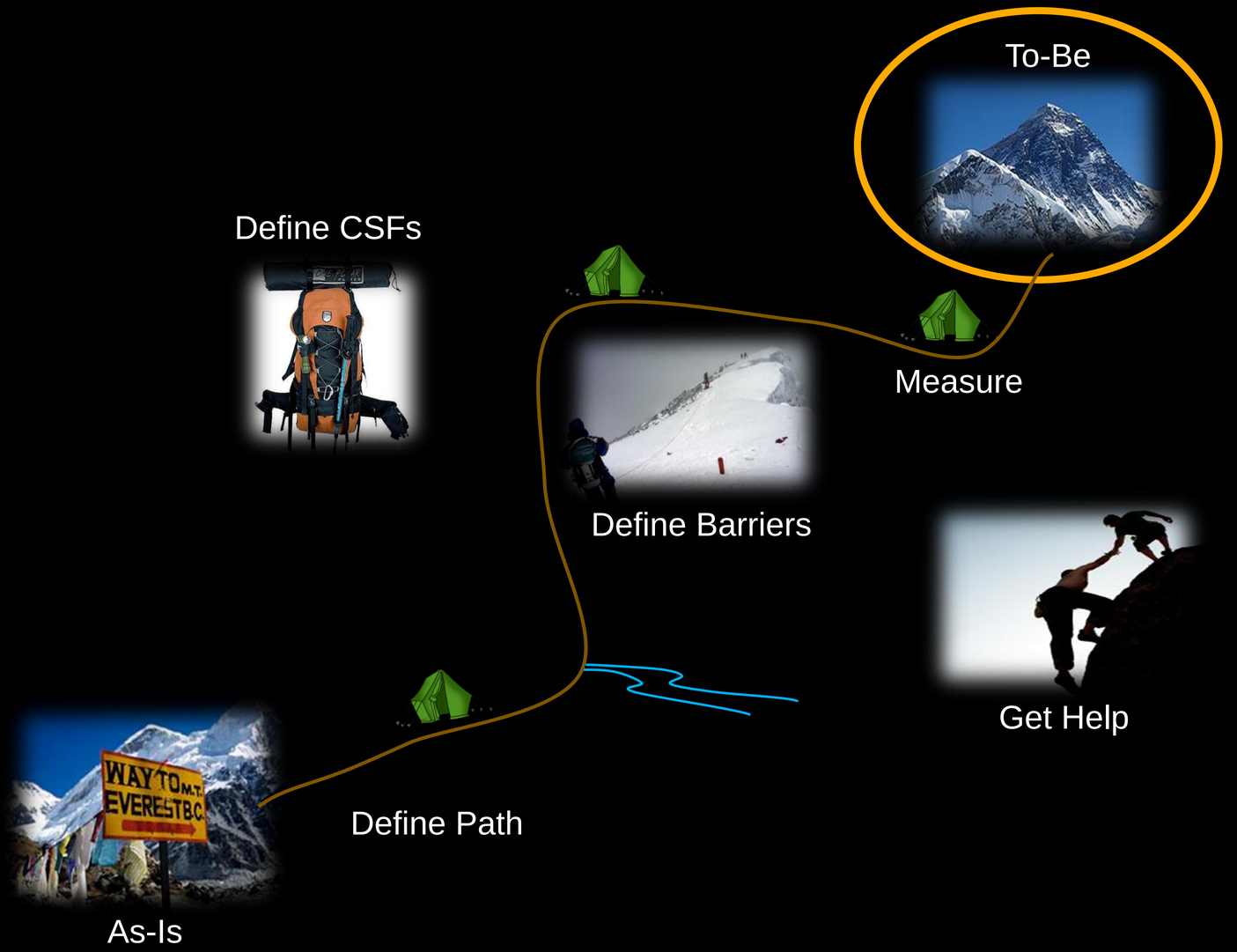
Change Methodology

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

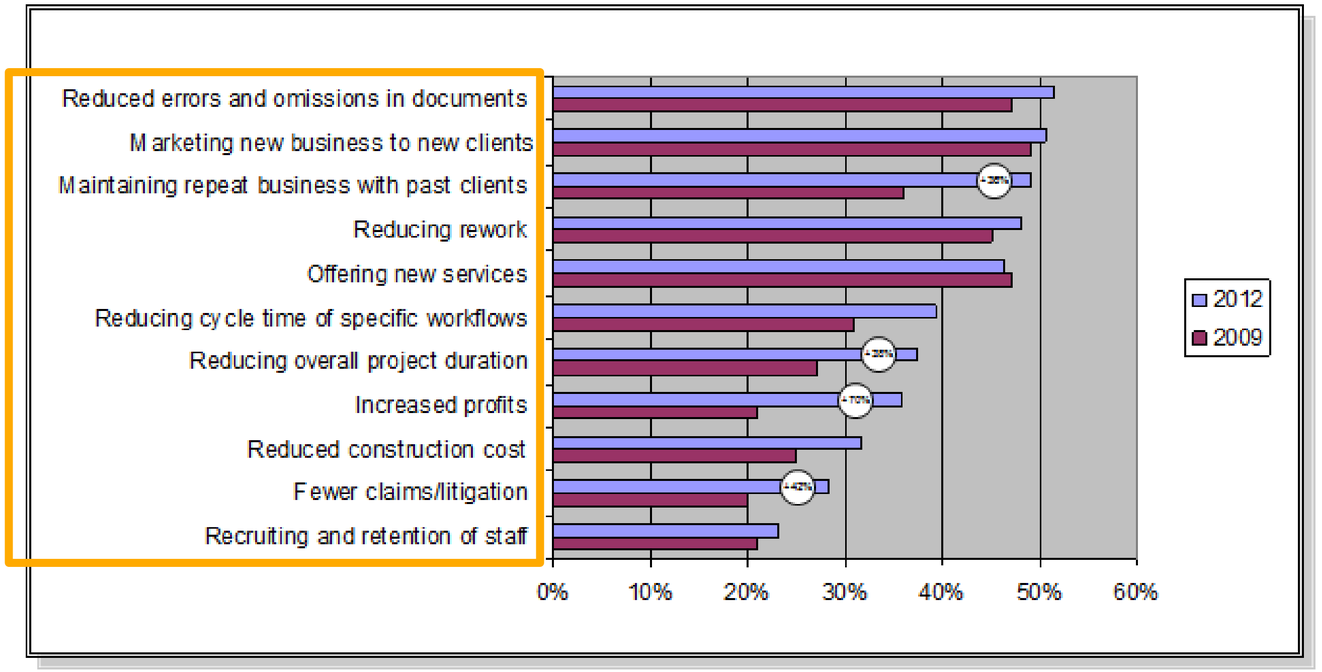
- General methodology...
- Know what success looks like
  - Not just “BIM”
- Know why you are making this Change – Measure!
- Small Wins – Stages
  Don’t bite off too much



Trends across AEC

Internal Benefits of BIM Use: 2009 and 2012*

- 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

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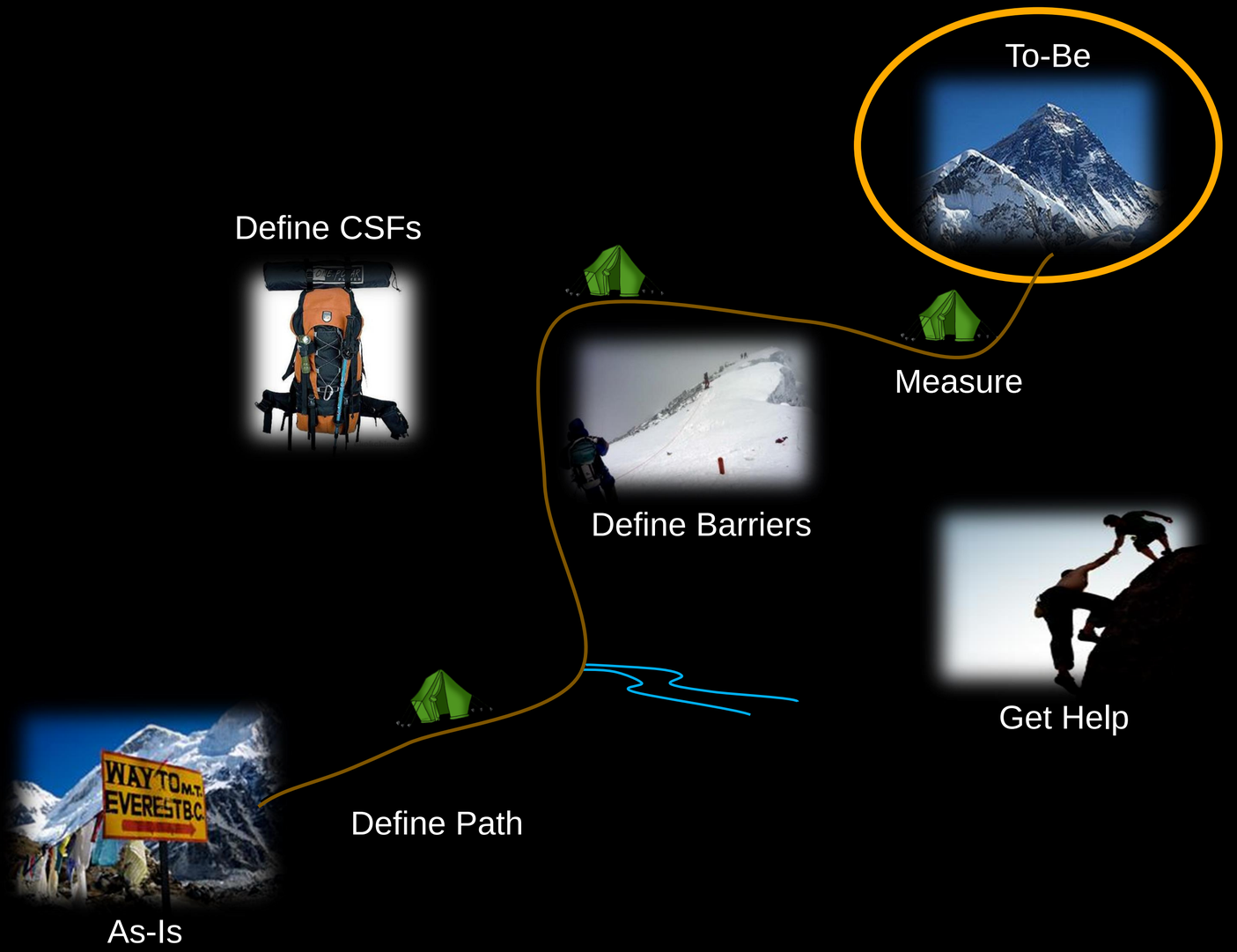

Agenda

Architectural Best Practices
Tim Case & Customer

Trends across all industries
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BIM = Innovation & requires change
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Photos © Paul Ott

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

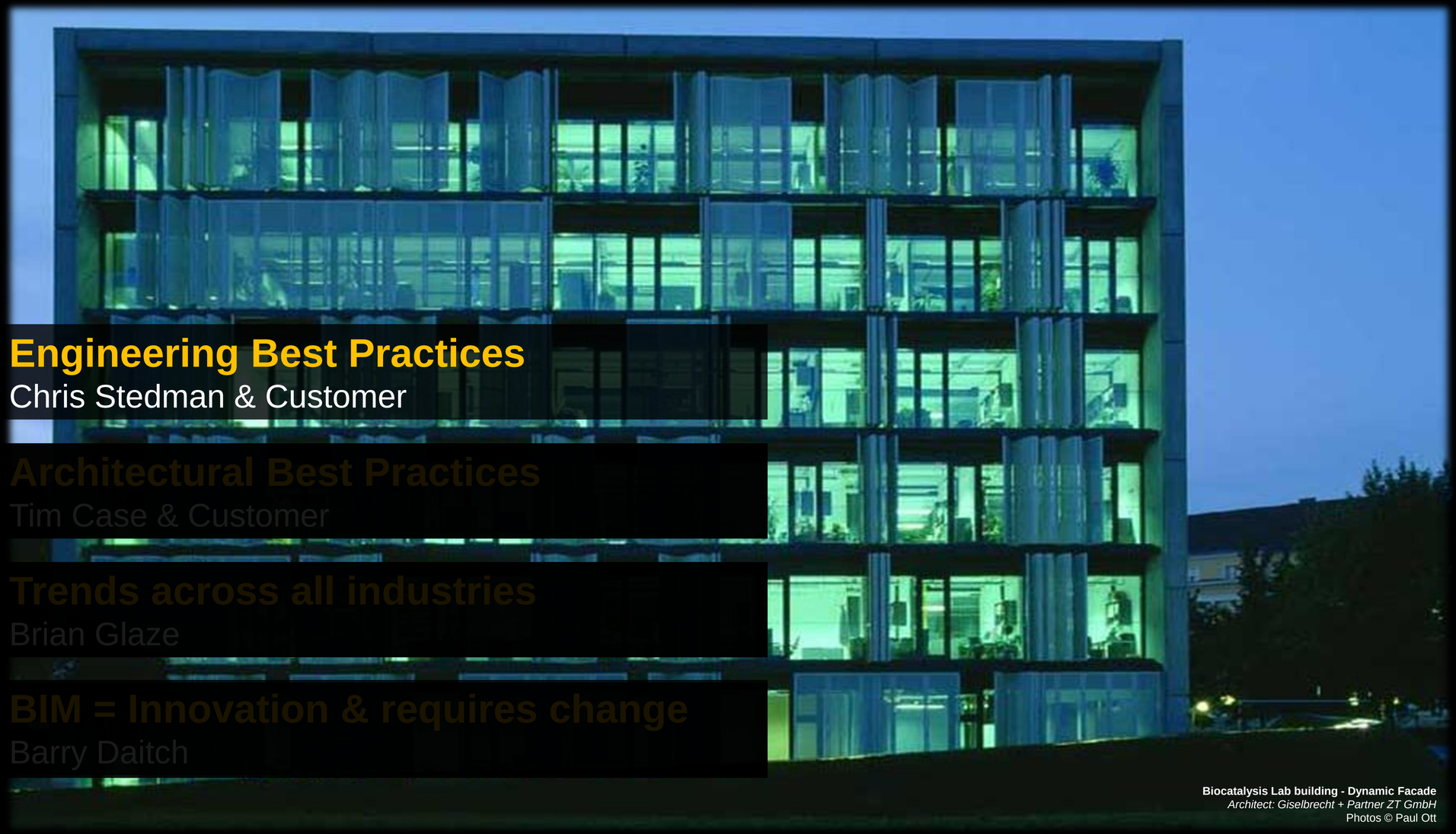
- What special considerations/roadblocks/obstacles do they need to be aware of?

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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Engineering Customer

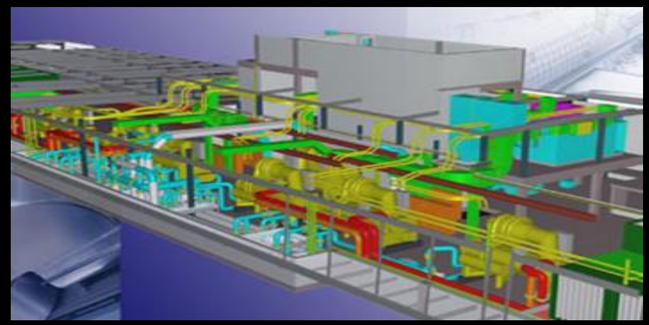
1 min
(50 min)

Balfour Beatty
Engineering Services

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

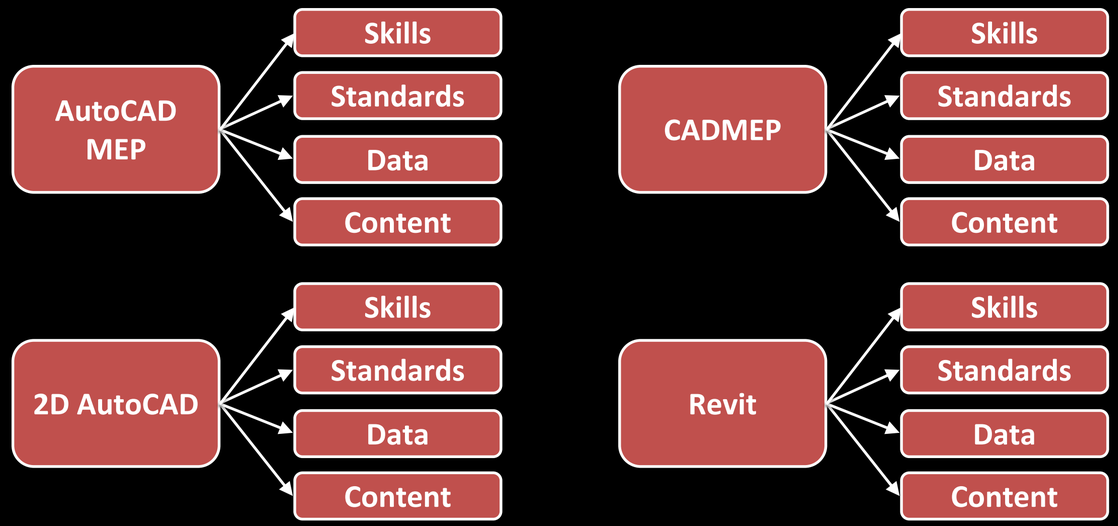
Balfour Beatty
Engineering Services

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

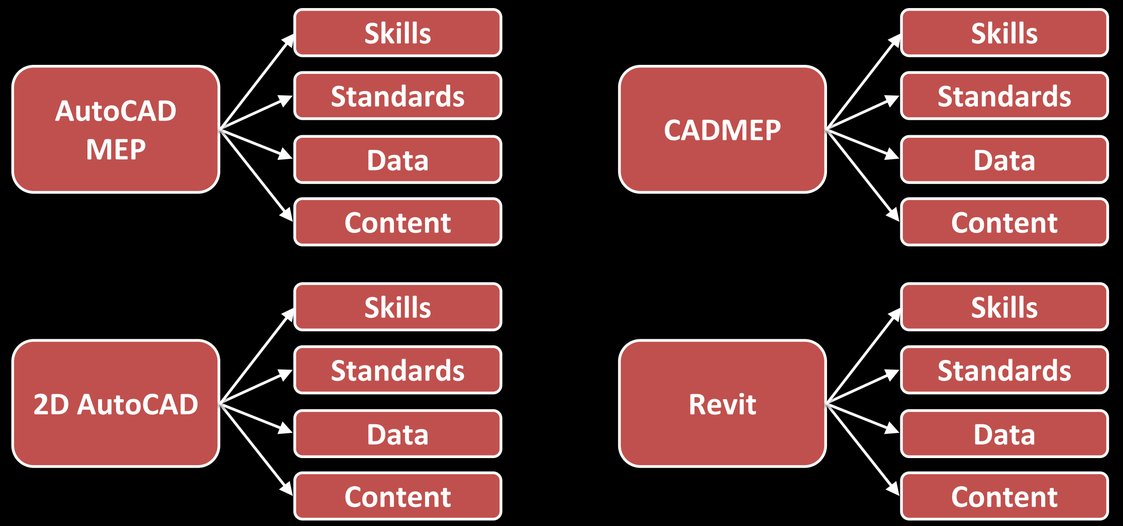
Balfour Beatty Engineering Services

Traditional Design [Current]

BBES Internal Design Offices



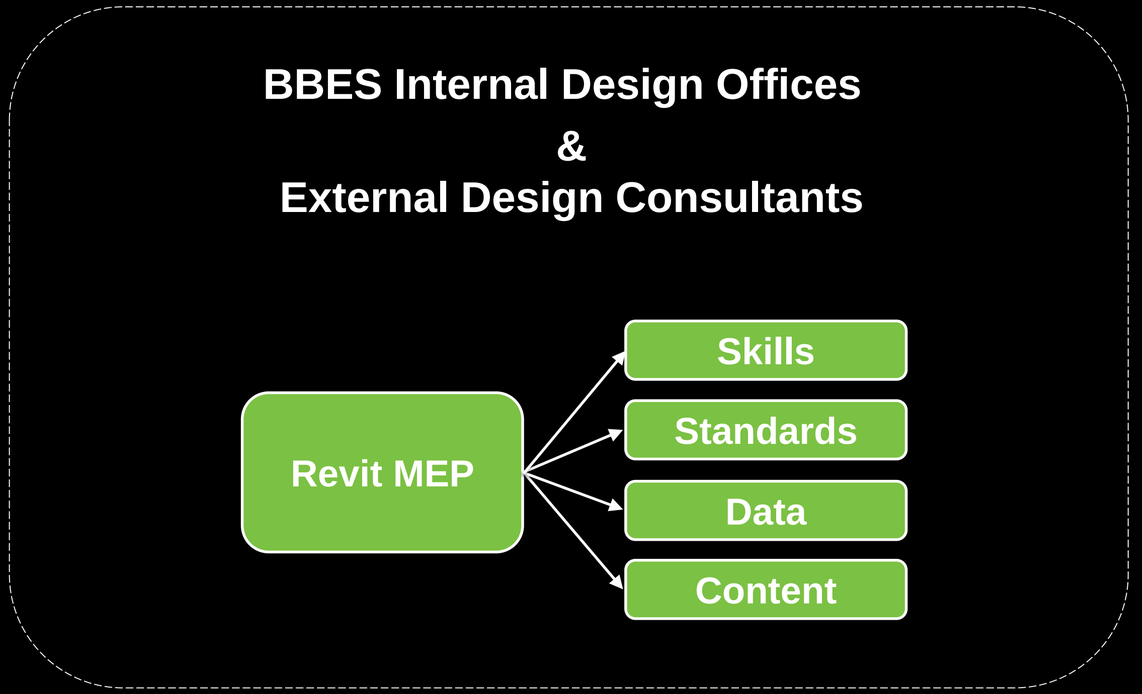
External Design Consultants



Balfour Beatty Engineering Services

Balfour Beatty
Engineering Services

Traditional Design [Proposed]



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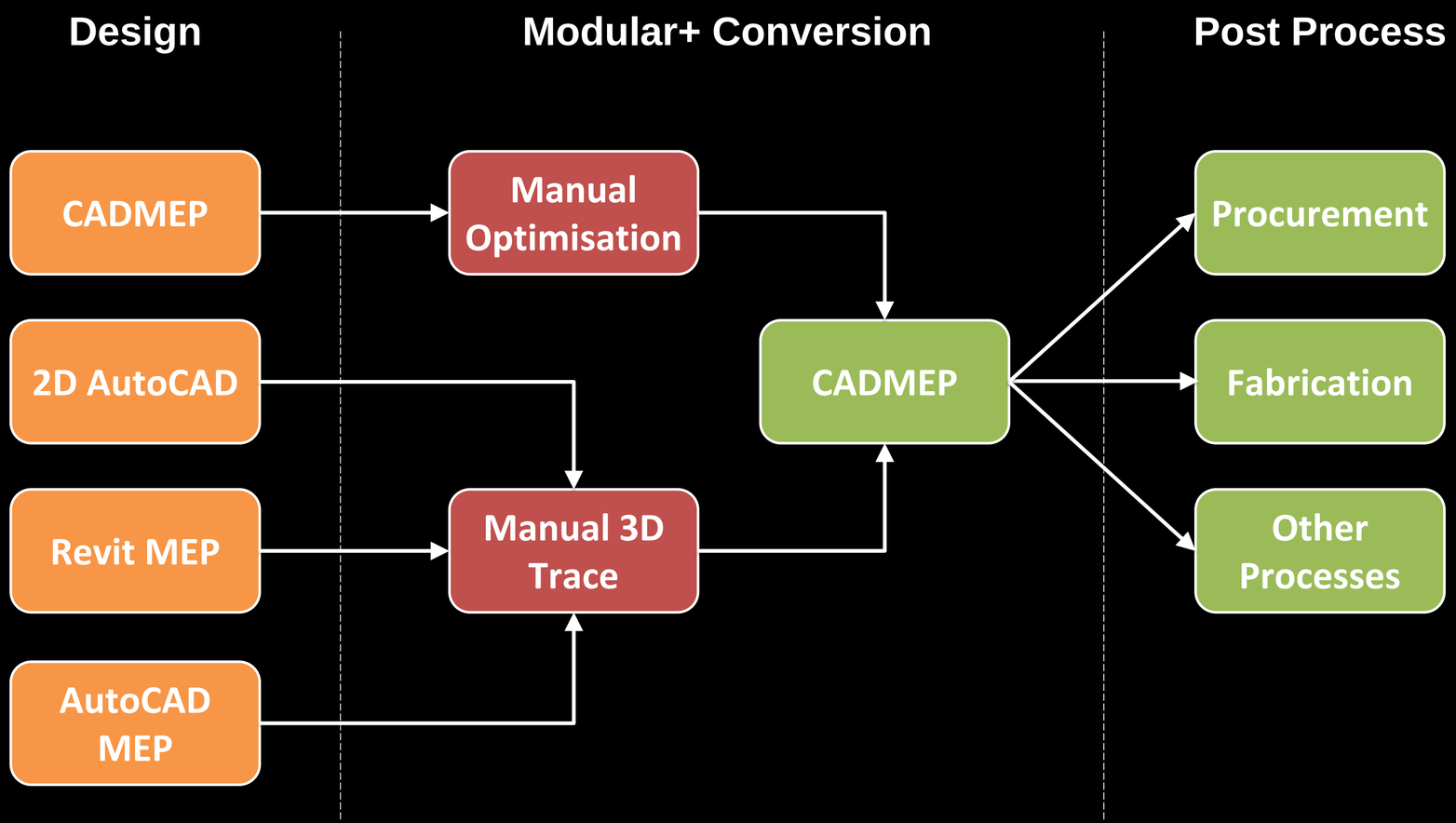
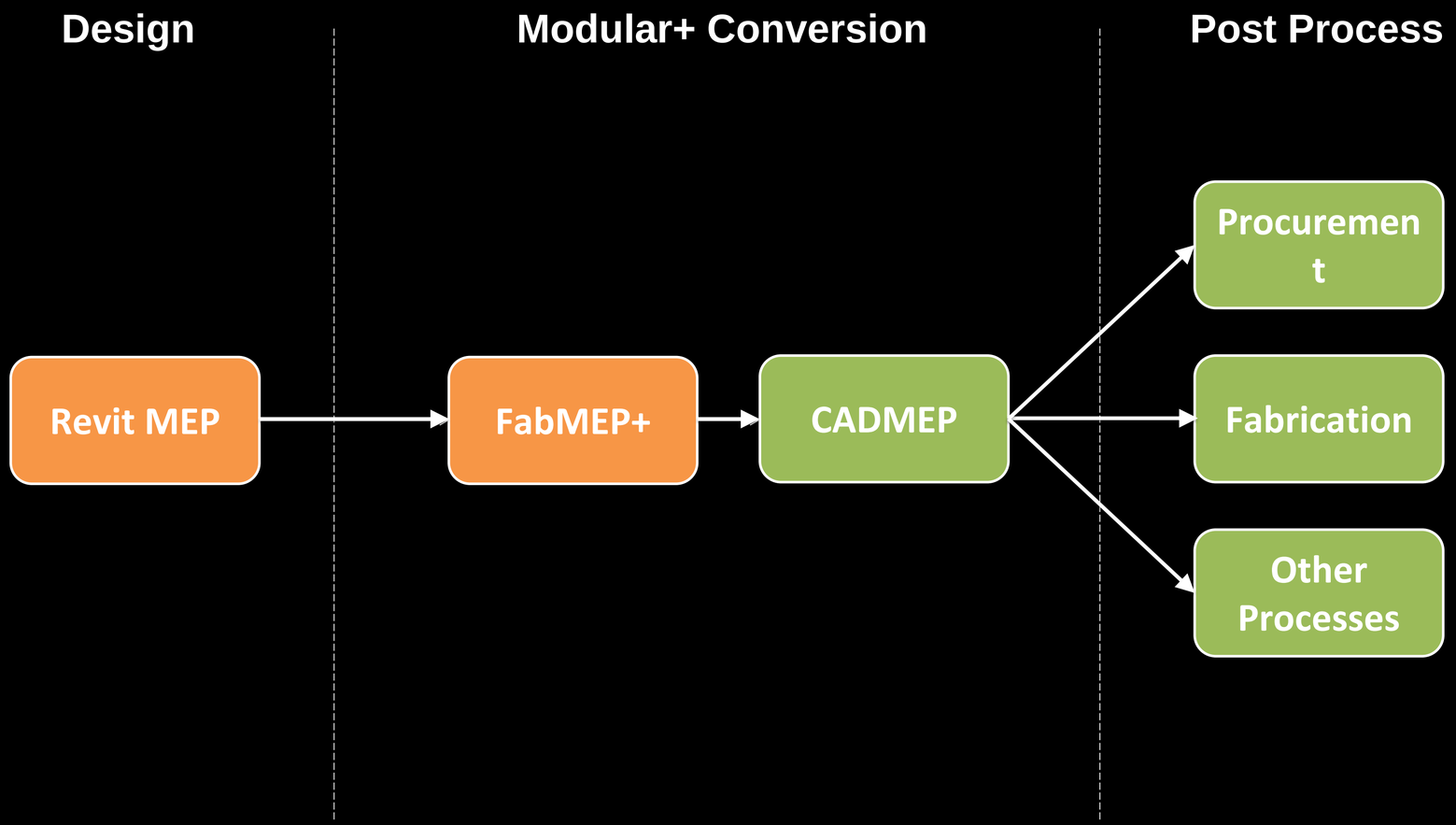
Modular + Process [Current]



Balfour Beatty Engineering Services

Balfour Beatty
Engineering Services

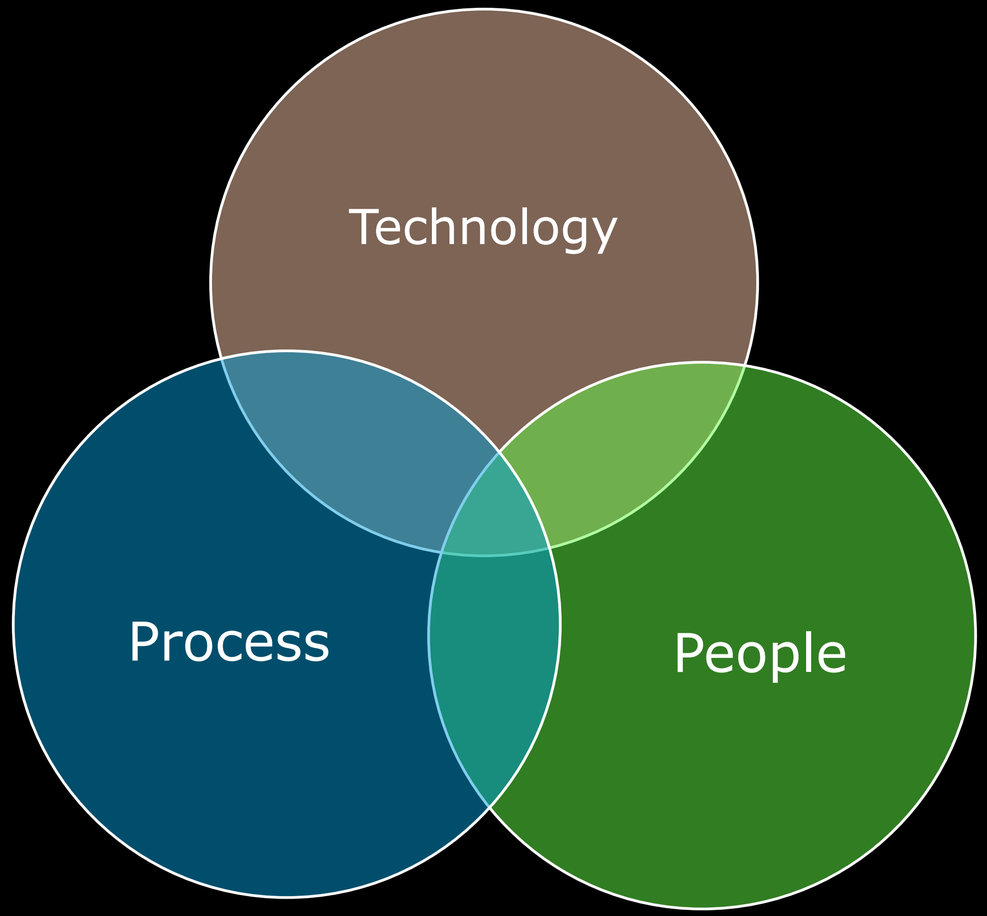
Modular + Process [Proposed]



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

Balfour Beatty Engineering Services

The Project Team [Who]

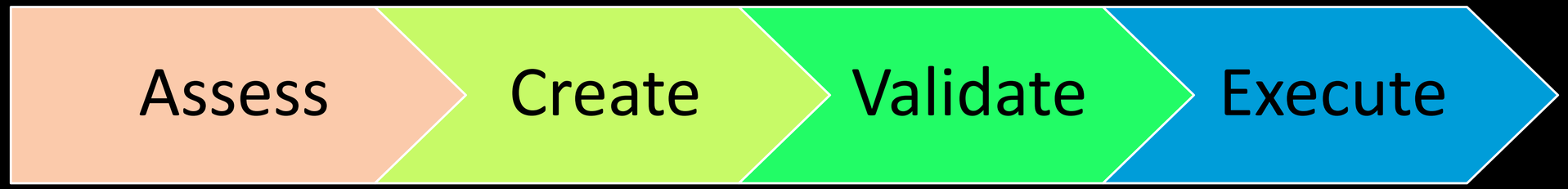
Name	Role	Company
Chris Stedman	Customer Success Manager	Autodesk Consulting
Matthew Keen	Customer Success Manager	Autodesk Consulting
Shashi Verma	Project Manager	Autodesk Consulting
Miro Schonauer	Lead Technical Consultant	Autodesk Consulting
Thomas Schwaiger	Tech. Consultant (DM & Vault)	Autodesk 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

Balfour Beatty Engineering Services

Balfour Beatty
Engineering Services

The Consulting Approach [How]



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The Consulting Approach [How]

Assess

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

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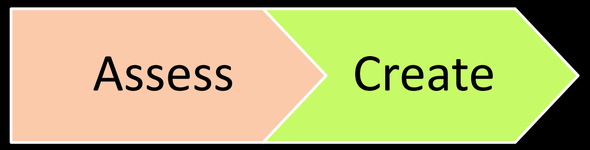
The Consulting Approach [How]



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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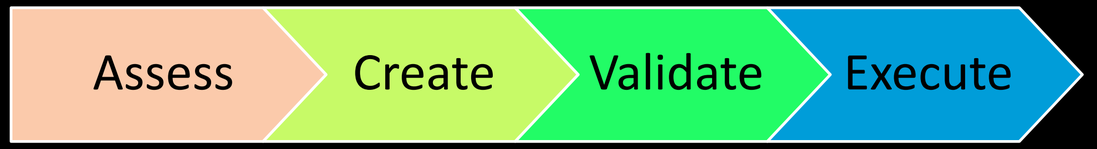
The Consulting Approach [How]

Validate

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

Balfour Beatty Engineering Services

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

Agenda

Construction Best Practices
Scott Hammond & Customer

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Trends across all industries
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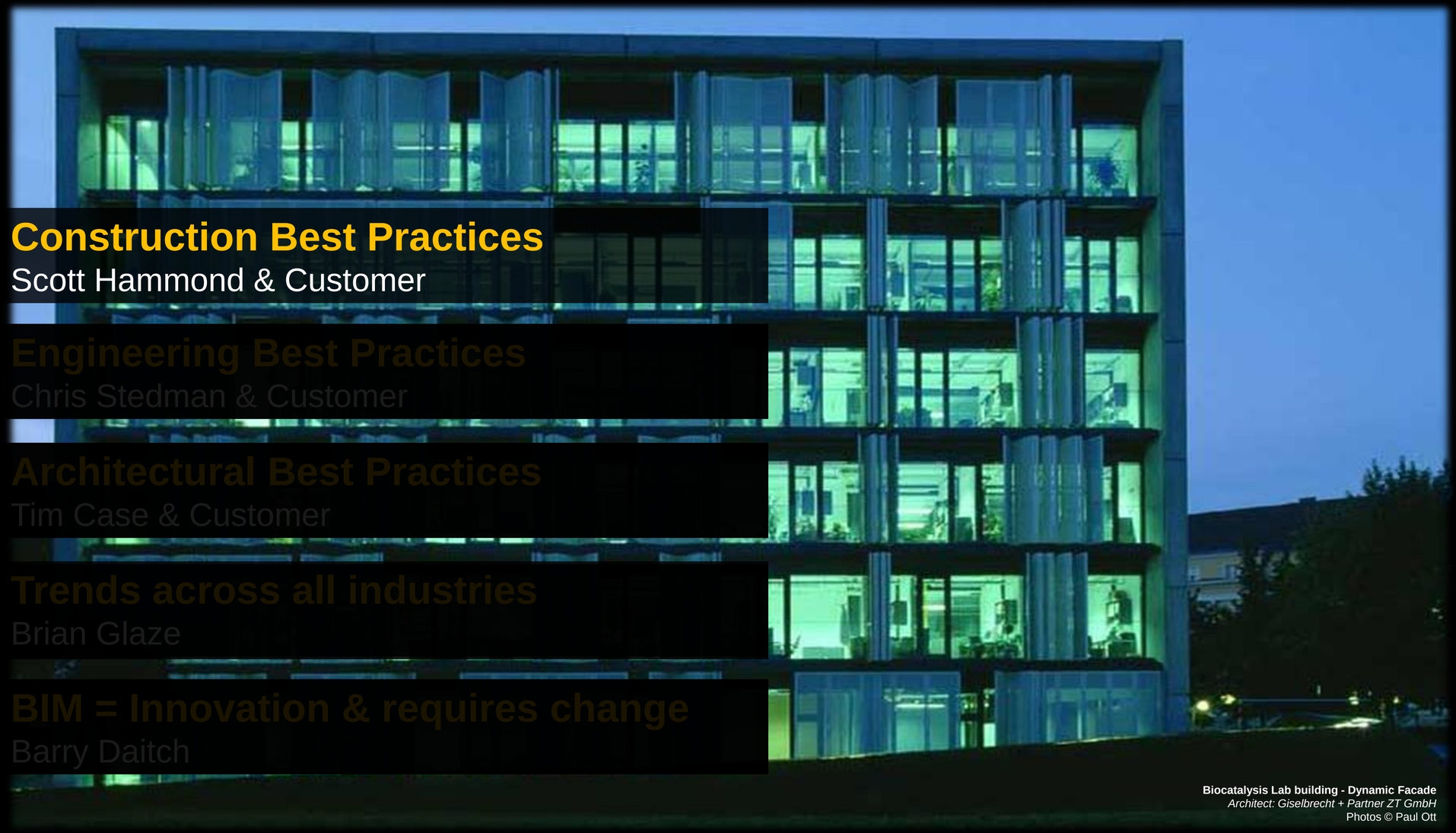
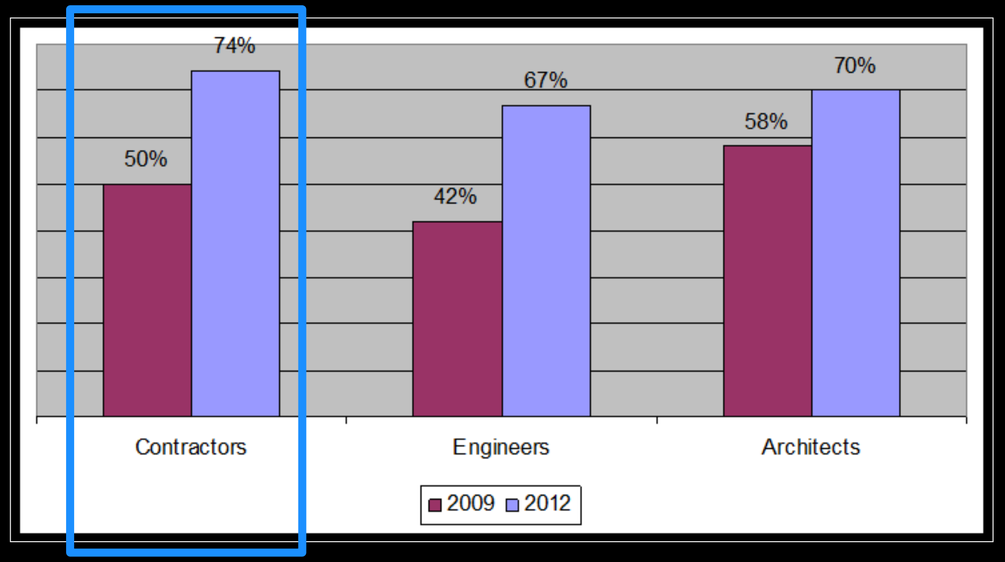


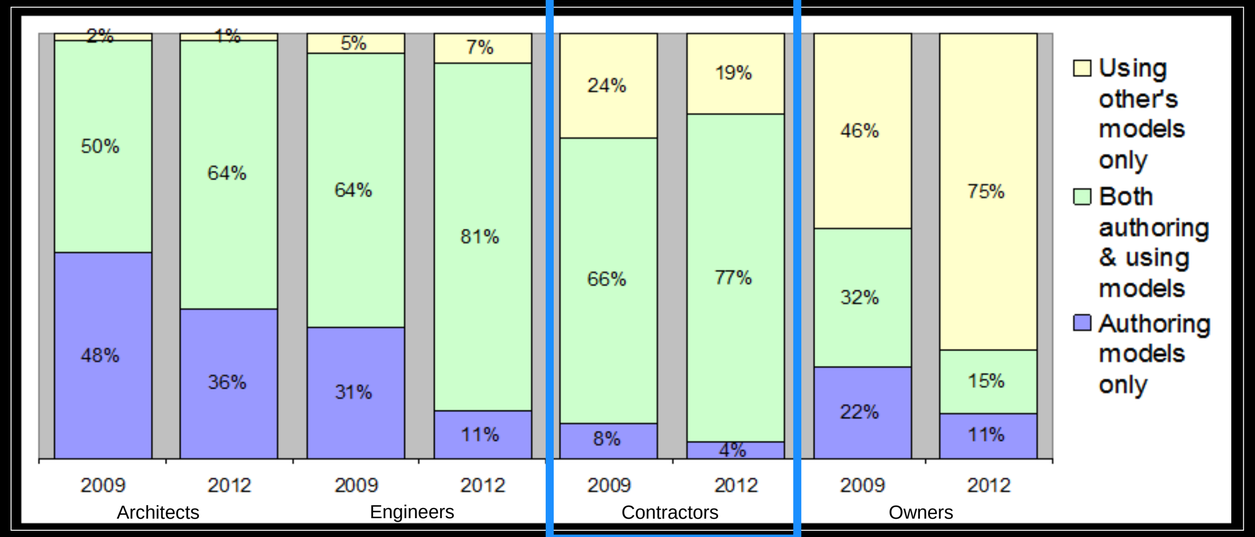
Biocatalysis Lab building - Dynamic Facade
Architect: Giselbrecht + Partner ZT GmbH
Photos © Paul Ott

Construction Industry Snapshot



BIM Adoption: 2009 and 2012

Contractors surpassed Architects and lead both Architects & Engineers



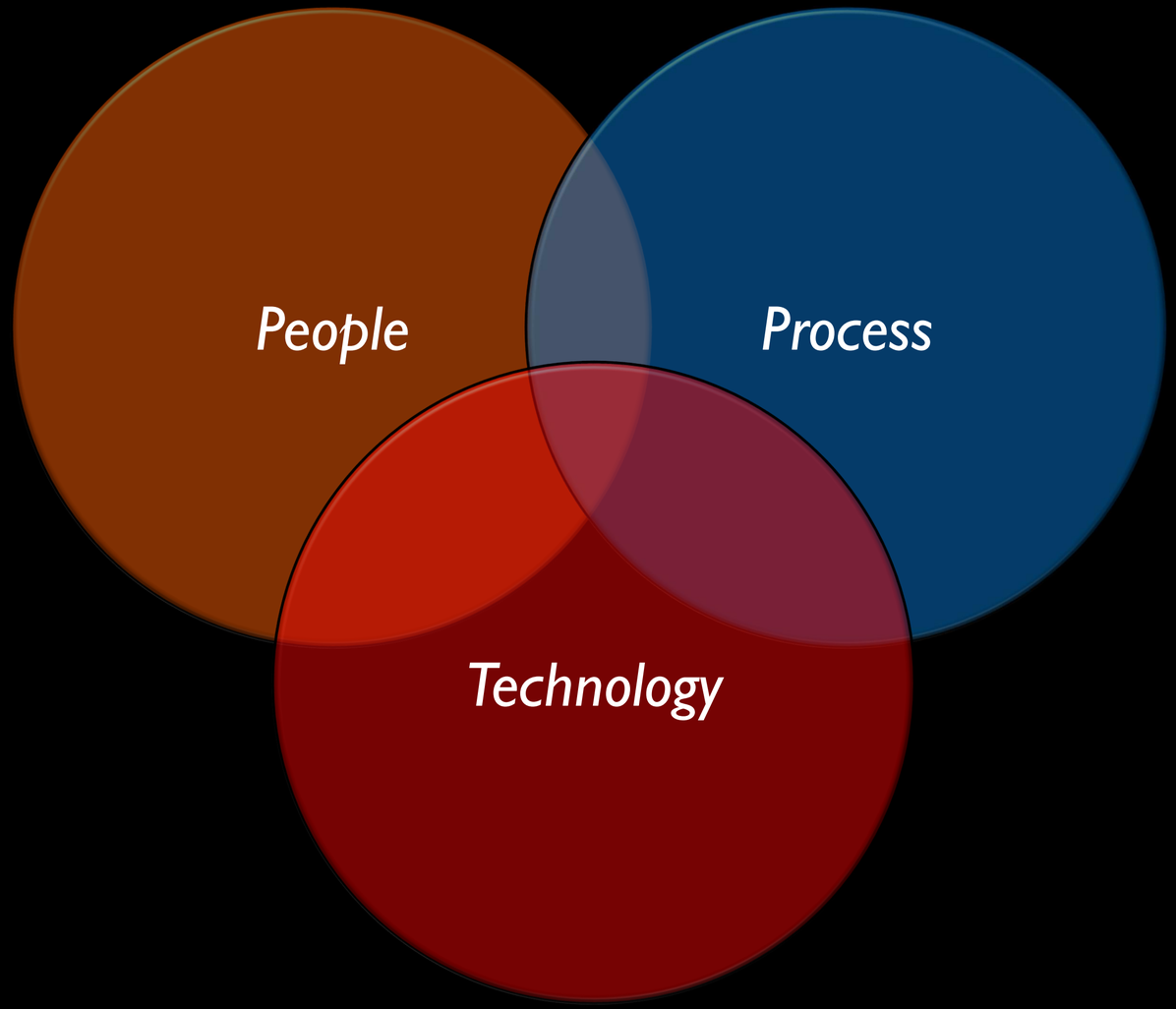
Model Authoring: 2009 and 2012

81% of Contractors are authoring models

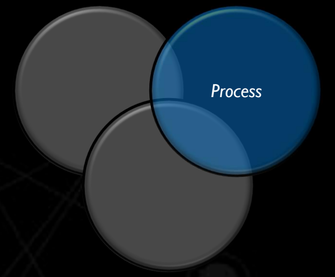
BIM in North America 2012

McGraw-Hill Research Findings

Considerations for BIM



Construction Processes



BIM Execution Planning

Site Logistics

Design Coordination

Scheduling

Estimating

Sustainable Design

Logistics Phasing & Planning

MEP Coordination

Project Initiation & Start-up

Field Execution

Analysis

Visualization

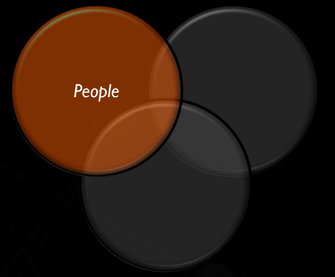
Preconstruction Management Services

Handover

Prefabrication

Project Pursuit

Construction Roles



Scheduler

Design Coordination

BIM Execution Planning

Site Logistics

Project Engineer

Estimator

Scheduling

Estimating

Sustainable Design

BIM/VDC Manager

MEP Coordination

Project Executives

Logistics Phasing & Planning

Trade Contractor

Project Initiation & Start-up

Field Execution

Analysis

Visualization

Project Manager

Preconstruction Management Services

Superintendent

Project Pursuit

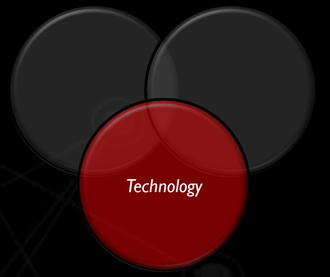
Handover

Prefabrication

Purchasing

BIM/VDC Engineer

Construction Technology



innovaya

Design Coordination

Scheduler

Bentley Sustaining Infrastructure

BIM Execution Planning

Site Logistics

Project Engineer

sage

Estimator

Scheduling

Synchro Explore options. Manage solutions.

Estimating

Sustainable Design

BIM/VDC Manager

Logistics Phasing & Planning

MEP Coordination

Project Executives

Trade Contractor

Autodesk

Project Initiation & Start-up

Field Execution

Analysis

GRAPHISOFT

Visualization

Project Manager

Preconstruction Management Services

Superintendent

Project Pursuit

Handover

Prefabrication

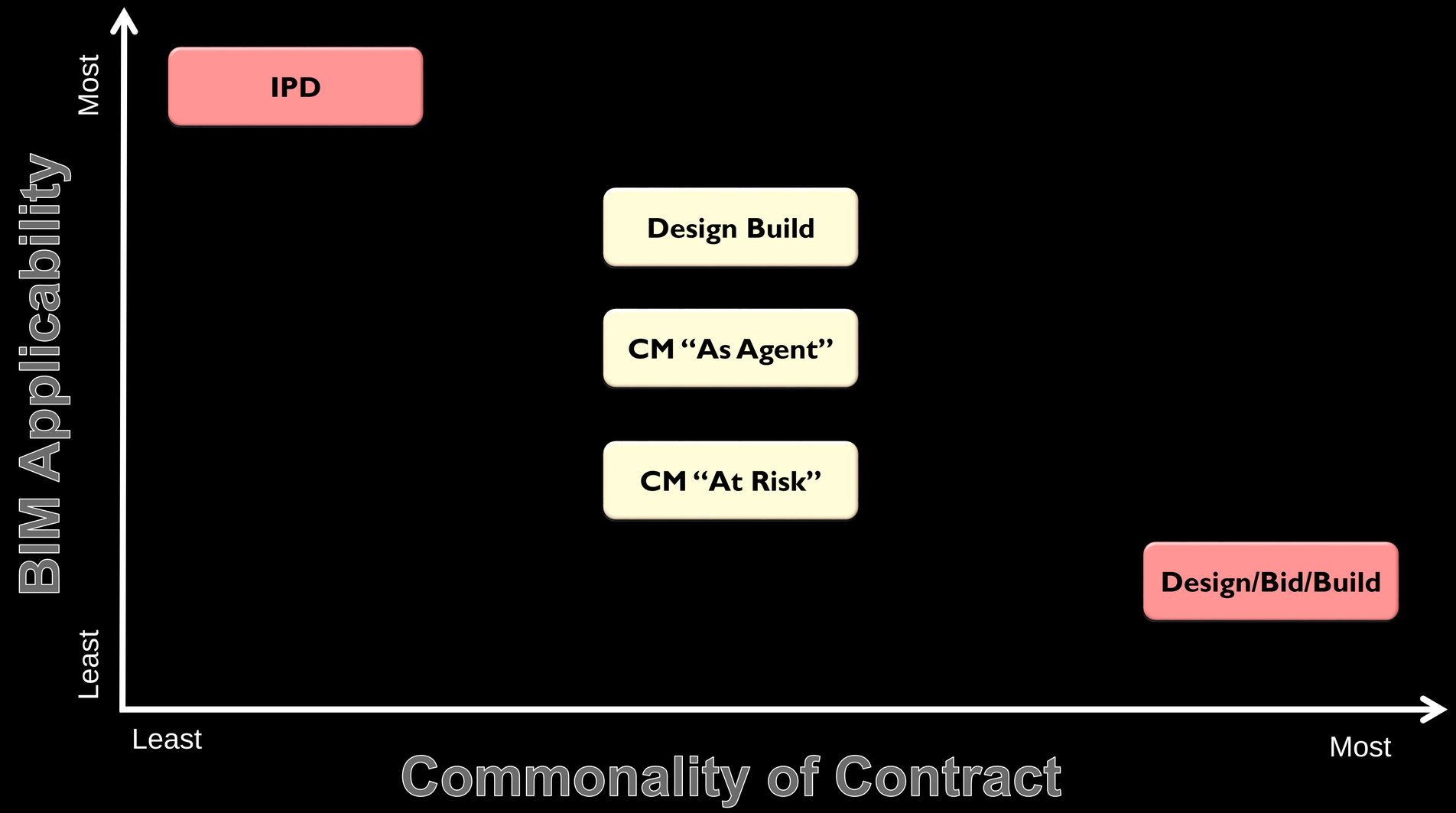
Purchasing

TEKLA

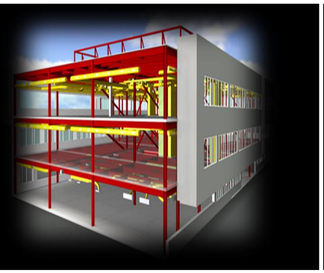
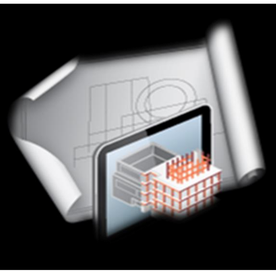
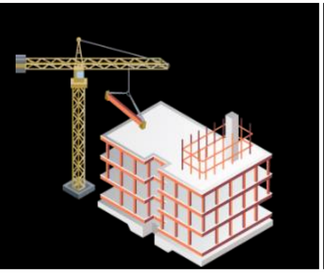
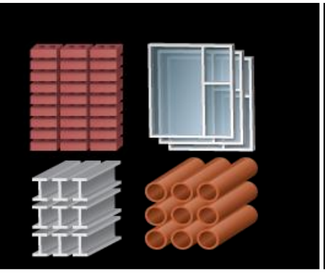
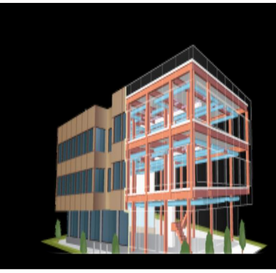
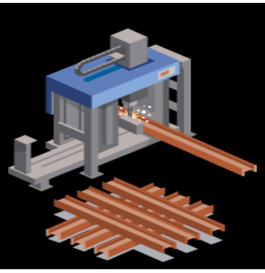
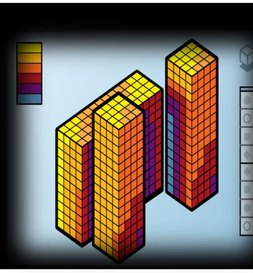
SOLIBRI

BIM/VDC Engineer

Construction Challenges

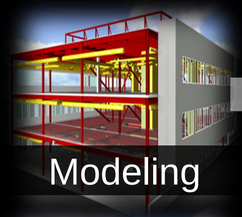


BIM for Construction

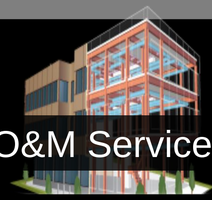
3D Execution	3D Modeling	3D Visualization & Logistics	3D Constructability Review	3D MEP Coordination	3D Field Execution
					
4D-5D-6D-XD	4D Planning & Sequencing	5D QTO & Cost	6D O&M Services	3D Based Prefab	EA & LEED
					

BIM Considerations

RFP/Pursuit | Design | Procurement | Construction | Turnover


Modeling


BEP


O&M Services


MEP Coord.

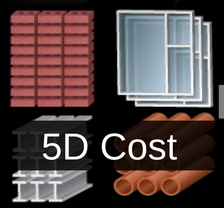

O&M Services

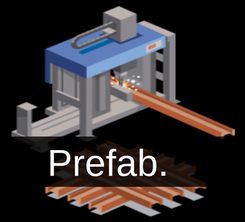

Visualization


Const. Review


Safety/Logistics

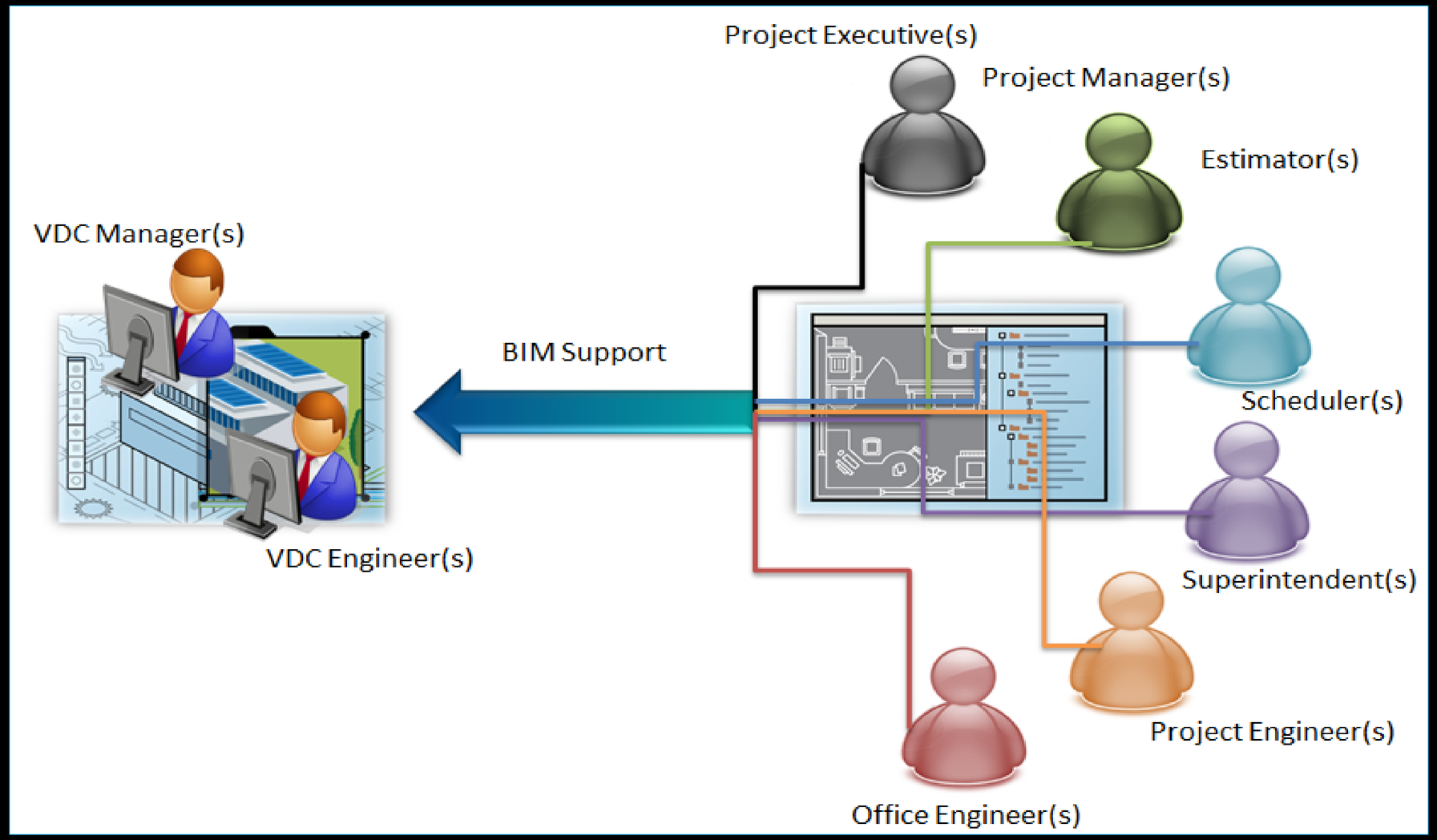

Field Execution


5D Cost


Prefab.


Scheduling

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

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
Photos © Paul Ott

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