In the long history of humankind, those who learned to collaborate and improvise most effectively have prevailed.

– Charles Darwin
Meet Presenter(s):

David Trebas
Chief Technology Officer
4Clicks Solutions, LLC
- Born and bred advanced technology veteran
- Instrumental role moving Autodesk into the Windows environment
- Helped Nemetschek Engineering Bureau deliver advanced 3D CAD, and developed RSMeans CostWorks

Peter Cholaklis
Chief Marketing Officer
4Clicks Solutions, LLC
- Career defining capital planning and management solutions
- Expert on facility lifecycle and Total Cost of Ownership
- Passionate about leveraging technology to foster collaboration
Fracturing of the Industry and its Results:

72% of projects over budget
70% of projects over schedule
5% of project costs spent in bidding

Rex Miller, Commercial Real Estate Revolution

Adapted, HOK Architects
Technology Barriers
Technology Barriers

Owner

AE

Contractor

Subs
Technology Barriers– Speed vs. Flexibility

Owner

AE

Contractor

Subs
Technology Barriers

Flexibility

Cloud Computing

Collaboration

Excel Spreadsheets

Relational Database
Catalysts of Change
Environmental:

1. Recognition of building’s role in climate change
2. Challenge of meeting rising Energy Needs and paying for it
3. Government mandates
Economic:

1. Fallout from of a building boom followed by recession
2. Reduced capital expenditures at a time when monumental change to the built environment is needed
3. World economy becoming “flat”
Disruptive Technology is a term coined by Harvard Business School professor Clayton M. Christensen to describe a new technology that unexpectedly displaces an established technology.

Disruptive Technologies:

- BIM
- Cloud Computing

A disruptive technology changes/overturns traditional business methods and practices.
BIM – The “Simple Definition”

BIM is the life-cycle management of the built environment supported by digital technology.

(adapted from NIBS)
Convergence

- Flat World Economy
- Constrained Capital Dollars
- Refocus on O&M

New Project Delivery Methods to Meet New Demands

- Altered Economic Landscape
- Speed of Deployment
- Cloud Computing
- Transparency
- Big Data

- Altered Environmental Landscape
- Rising Energy Costs
- Carbon Footprint
- Government Mandates

Disruptive Technology

BIM

Benchmarking
Big Data:

BIM and sophisticated energy modeling for new construction
Ability to collect building performance metrics for existing buildings
Challenge:
1. How to process it for decision-making and
2. How to leverage team expertise to effect productive change
Need for delivery methods to quickly respond to urgency created by transparent data
Key Characteristics of Emergent Project Delivery Methods

- Qualifications Based or Best Value Selection
- Some form of pricing transparency
- Early and ongoing information-sharing among project stakeholders
- Appropriate distribution of risk
- Some form of financial incentive to drive performance
Integrated Project Delivery

- Alliance Contracts create shared Risk and Reward—shared contingency and shared incentive pool. Liability Waivers mean no ability to sue.
- Entire team on board before design starts—requires Qualifications Based Selection and Full Pricing Transparency
- Deep involvement of key subcontractors and suppliers in design process
- Goal is to reduce duplication of design efforts—shop drawings serve design development
- Utilization of BIM and other forward-thinking technologies to enable collaboration among team members
<table>
<thead>
<tr>
<th>TRADITIONAL PROJECT DELIVERY</th>
<th>INTEGRATED PROJECT DELIVERY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project participants</strong></td>
<td>Team of project constituencies, open, collaborative</td>
</tr>
<tr>
<td>Linear, segregated, silo-oriented, limited information exchange</td>
<td>Process</td>
</tr>
<tr>
<td>Individually managed</td>
<td>Risk</td>
</tr>
<tr>
<td>Cost-based, individually focused</td>
<td>Compensation</td>
</tr>
<tr>
<td>Paper-based and/or digital 2D representations, spreadsheets, domain-centric software silos, email, FTP sites</td>
<td>Technology</td>
</tr>
</tbody>
</table>
Graphic originated by Patrick MacLeamy, AIA / HOK

**KEY**

**PD:** Pre-design  
**SD:** Schematic design  
**CD:** Construction document  
**PR:** Procurement  
**CA:** Construction Administration  
**OP:** Operation
Job Order Contracting

- “IPD Lite” for Existing Buildings
- Consolidates procurement to shorten Project Timelines and reduce procurement costs
- Transparency of pricing and procurement compliance through Unit Price Book
- Long Term Facility Relationship increases productivity and enables reiterative process improvements
- Quality and performance incentivized through IDIQ form of contract with minimal guarantee and clear maximum volume
Shorter Project Timelines

Traditional Construction Procurement Process: 9 to 15 Months

- 4-6 MONTHS: Project Identification, Architectural/Engineering Design
- 2-4 MONTHS: Estimate, Advertisement, Bid Evaluation
- 2 MONTHS: Contract
- 1 MONTH: Pre-Construction Meeting

JOC Construction Procurement Process: 3 to 5 Weeks

- 1-3 WEEKS: Project Identification, Notice to Proceed
- 2 WEEKS: Pre-Construction Meeting
- A/E Design & Scope Definition with Contractor, Proposal Review

CONSTRUCTION
Advantages of JOC for Owners

- Fast and timely delivery of projects.
- Consolidation of procurement creates lower overhead cost and procurement cost
- Contractor and owner efficiencies in prosecution of the work. Development of a partner relationship based on work performance.
- Virtual elimination of legal disputes, claims and change orders.
- Standard pricing and specification utilizing a published unit price book (UPB), resulting in efficient and effective estimating, design, and fixed price construction.
How OWNERS Use JOC & Technology

- Track & Manage each project from inception to completion.
- Manage a single project, your entire contract, or multiple contracts.
- All project milestones, thru warranty period.
- Display status of each project.
- Maintain a complete cost history
- Record all estimates associated with a project.
- Review value of all projects awarded on a specific contract, or to a specific contractor.
- Reports show pre-negotiation strategies and post-negotiation summaries.
Process

BIMF
BIM for FM

- Project Delivery Methods (IPD, JOC, DBB, DB...)
- Sustainability (Green, High Performance Buildings)
- Collaboration & Communications (Document Control)
- Processes (LEAN, Life-cycle, TCO...)
- Standards, (Uniformat, Masterformat, COBIE, Metrics...)
“Facebook” for the Built Environment 2
What is Ceasel?

- Pure Cloud-based Collaborative Architecture
- Premier Cost Estimating and Project Management Solution
- Integrated Efficient Construction Delivery Methods
- Multi-currency and Multi-language
- Anyone, Anywhere, Anytime
- The BEST Representation of RSMeans Cost Data
- Secure
- Full Audit Trail
- Learn More!

How Much for a Gigabyte of Storage?

1981 - Apple 5MB Drive for $700
2004 - Western Digital 250GB for $250

Year

$1 million

Source: http://www.bls.gov/opub/ries/ries05/ries0513.htm
Crystal Ball:
What does the future hold?

Model 1
- Salaries: 80%
- Acquisition/Renewal/Disposal: 10%
- O & M: 10%
- Design/Construction: 10%

Model 2
- Salaries: 80%
- Acquisition/Renewal/Disposal: 10%
- O & M: 10%
- Design/Construction: 10%

2. NIBS 1998. Excellence in Facility Management
Thank You!

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