INTEGRATED BUILDING PRACTICE & TECHNOLOGY

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Do we need change in the construction industry?
A Very Brief History of Design & Construction

Collaboration & Complexity

Time

Cave Dweller
Early Shelter Builder
King’s Builder
Master Builder
Architect
Construction Documents
Public design process
Listen to the affluent!
Listen to the king!
Talk to few!
Just do it!

Improved data & process
Better documentation
Document it!

Hamid Omidvar, 2018
• *Economist* article from 2000 identifies 30% waste in the US construction industry;
• a NIST study from 2004 targets lack of AEC software interoperability as costing the industry $15.8B annually;
• US Bureau of Labor Statistics study shows construction alone, out of all non-farm industries, as decreasing in productivity since 1964, while all other non-farm industries have increased productivity by over 200% during the same period.
• The United Kingdom’s Office of Government Commerce (UKOGC) estimates that savings of up to 30% in the cost of construction can be achieved where integrated teams promote continuous improvement.

• UKOGC further estimates that single projects employing integrated supply teams can achieve savings of 2-10% in the cost of construction.

Factors impacting building design and construction success:

- Cost Overrun
- Delays
- Lack of Collaboration
- Needed Technology
- Flexibility of Design
- Interoperability of Systems
- Quality of Product
- Obsolescence of Systems
- Desired Outcome
In Search of Best Management System

- Scientific Management
- Systematic Approach
- Process-Based Management
- Total Management
- Lean Project Management
- Product-Based Planning
- Team Management
- 6 Sigma
- Phased Approach
- Dynamic Project Management
- Scientific Management
- Benefit Realization Management
- Earned Value Management
- Gant Charting
- Critical Chain System
- CPM Scheduling
- Integrated Management
## Traditional Vs. Integrated Approach

<table>
<thead>
<tr>
<th>Traditional Process</th>
<th>Integrated Process</th>
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<tbody>
<tr>
<td>Compartmented approach</td>
<td>System approach</td>
</tr>
<tr>
<td>Value of upfront cost</td>
<td>Value of life-cycle costs</td>
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<tr>
<td>Plan as you go</td>
<td>Comprehensive process plan</td>
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<tr>
<td>Fewer people make decision</td>
<td>Collaboration between all stakeholders</td>
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<tr>
<td>Build now, maintain later</td>
<td>Build with building life cycle in mind</td>
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<tr>
<td>Frequent expensive modification</td>
<td>More coordinated error free process</td>
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### Stages
- Planning
- Design
- Construction
- Operation
- Decommission
• What are the components of the best process to achieve our project goals?

• What is the best practice for collaboration between stakeholders?

• What technologies are there to support the best practice?