Information Technology
Strategy for Smart Builders

How Information Gives You
Competitive Advantage

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Company
What problem are We Trying to Solve - Strategic Level?

About the Construction Industry:

Characteristics
- Huge - $4 tr worldwide
- Local
- Project Based
- Unique end product
- Hundreds of firms all working with dozens of firms
- Low barriers to entry
- High barriers to exit

Traditional Implications
- Few economies of scale
- Fragmentation
  - (ENR 400 in aggregate < 25% of US market)
- Low margins
- High risk
- Same in related sectors - A/E, RE
Strategic approach to IT in FAECOM

Who are you?

What are you trying to do?
## Who are You?
*(Company Role, Your Rank)*

<table>
<thead>
<tr>
<th>Role</th>
<th>Building Products Manufacturer</th>
<th>Subcontractor Consultant Engineer or Distributor</th>
<th>Designer</th>
<th>Constructor</th>
<th>Sponsor/Developer</th>
<th>Owner/Operator or Investor/Owner</th>
<th>Tenant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investor</td>
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<td>C - Suite (CEO, COO, CFO, CIO)</td>
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<tr>
<td>Executive</td>
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<td>(Office leadership)</td>
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<td>Project Manager</td>
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<tr>
<td>(field leadership)</td>
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</tbody>
</table>
What are You Trying to Do?

<table>
<thead>
<tr>
<th>Who are you?</th>
<th>How ambitious is the strategy?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Helping a large “at risk” company compete</td>
<td>• Restructure the Industry</td>
</tr>
<tr>
<td>• Helping an existing service provider compete</td>
<td>• Build Sustainable Advantage</td>
</tr>
<tr>
<td>• Starting a new company</td>
<td>• Increase Revenue</td>
</tr>
<tr>
<td>• Playing with computers</td>
<td>• Reduce Cost</td>
</tr>
</tbody>
</table>

Analytical Framework - Technology Strategies

Scope of IT Initiative:

<table>
<thead>
<tr>
<th>External Advantage</th>
<th>Internal Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELL</td>
<td>WALMART</td>
</tr>
<tr>
<td>L.L. Bean</td>
<td>BECHTEL</td>
</tr>
</tbody>
</table>

Intent of IT Initiative:

- Change Industry Structure
- Compete in Same Arenas

November 24, 2003  Smart Builders - MIT E-Business  John Macomber  6
Why Bother? Who Retains the Value Created by Innovation?

<table>
<thead>
<tr>
<th>Form of Contract:</th>
<th>Basis of Payment:</th>
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</thead>
<tbody>
<tr>
<td>Non Traditional:</td>
<td>Closed Book</td>
</tr>
<tr>
<td>• Design - Build</td>
<td>Open Book</td>
</tr>
<tr>
<td>• Build - Operate - Transfer</td>
<td></td>
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<tr>
<td>• Design - Build - Finance</td>
<td></td>
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<tr>
<td>• Engineer - Procure - Construct - Operate - Maintain</td>
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<tr>
<td>Traditional:</td>
<td>e.g. ChipFab</td>
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<tr>
<td>Design - Bid - Build - Claim</td>
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</table>

Capture the Value
Opportunity for higher margins
User trend???

Objectives: Optimize; coordinate system
Objectives: Control; look out for single firms
What “Big Wins” do:

- Overcome fragmentation
- Manage vertical integration
- Create barriers to entry
- Use economies of scale
- Change negotiating power
- Retain people
- Increase margins
! But Most Firms are Not Trying to Restructure the Industry.

So: How Information Technology Gives You Competitive Advantage

(Michael Porter, Harvard Business School)

1. Grow the top line (IT investment helps you get more work)
2. Grow the bottom line (IT reduces cost structure)

That’s it.

Remember, customers won’t pay for differentiation that they don’t value!
My Personal Vision:

- 3D solid models
- tied to databases
- acting to optimize the system across material and labor
- with multi-firm visibility into constraints
- with compensation based on a multiparty agreement and coordinated by a profit-based algorithm

Reduce time 50% and reduce cost 25%
E-Business Strategies

• MIT 1.464 (and 1.961)
• Spring 2003
• Topics in implementing e-business strategies, including:
  – Supply chain
  – 3D modeling
  – Auctions and procurement