Leading
In a
VUCA
World

Ron Magnus
“History doesn’t repeat itself, but it rhymes.”

- Mark Twain
The New Euro
12 countries adopt a single currency
Crisis in Iraq & War in Afghanistan
Corporate Scandals
Enron, WorldCom, Merrill Lynch, Arthur Anderson
What would you do differently going into the next 10 years?
It’s a VUCA World

Volatile
Uncertain
Complex
Ambiguous
The value of analysis
The importance of “zooming out”
Trends Impacting Construction

✓ Construction 2.0: productivity +
✓ Increasing Technology
✓ Globalization
✓ Modularization & prefabrication
✓ The war for talent
✓ Industry consolidation
✓ Energy
• Better
• Faster
• Cheaper
Four tech megatrends will dominate the next decade:

- **Mobility**: 91% of organizations expect to spend on mobile devices in 2012. In 2012, mobile devices will outship PCs by more than 2:1 and generate more revenue than PCs for the first time.
- **Social**: Social networking will follow not just people but also appliances, devices and products. 1/2 of companies expect to use internal social network apps in 2012.
- **Cloud**: >80% of new apps in 2012 will be distributed/deployed on clouds. The strategic focus in the cloud will shift from infrastructure to application platforms.
- **Big data**: Total digital content will grow 48% from 2011 to 2.7 zettabytes in 2012. 2/3 of mobile apps developed in 2012 will integrate with analytics offerings. 3/4 of businesses are likely to invest in BI and analytics in 2012.

- **85 BILLION mobile apps will be downloaded in 2012**
- **1/2 of companies expect to use internal social network apps in 2012**
- **The strategic focus in the cloud will shift in 2012 from infrastructure to application platforms**
- **34% of CIOs say technology as a service (cloud) will have the most profound effect on the CIO role in the future**
- **49% of CIOs rank BI as the top project priority for 2012**
Supply and Demand

Number of live births, 1920-2005

Source: National Center for Health Statistics, Center for Disease Control and Prevention
Mitra Toossi, Monthly Labor Review, November 2006
Nearly 1 in 5 members of the construction workforce will have retired between 2012 and 2014.

Construction Business Owner, July 2012

76% of owners 50 or older plan to retire in the next 10 years...

...48% of those owners are currently working on succession plans.
Bifurcation of the Market
The Big Engineering Firms Are Getting Bigger

<table>
<thead>
<tr>
<th>ENR Position</th>
<th>Year 2000 ENR 500 Avg Revenue</th>
<th>Year 2010 ENR 500 Avg Revenue</th>
<th>Revenue Growth Rate (CAGR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top 5</td>
<td>$1562.2</td>
<td>$4382.3</td>
<td>10.9%</td>
</tr>
<tr>
<td>Top 6 - 10</td>
<td>$859.8</td>
<td>$1990.3</td>
<td>8.8%</td>
</tr>
<tr>
<td>Top 11 - 15</td>
<td>$600.4</td>
<td>$1282.4</td>
<td>7.9%</td>
</tr>
<tr>
<td>Top 16 - 20</td>
<td>$432.3</td>
<td>$919.3</td>
<td>7.8%</td>
</tr>
<tr>
<td>Top 21 - 25</td>
<td>$350.3</td>
<td>$613.3</td>
<td>5.8%</td>
</tr>
</tbody>
</table>

Source: Engineering News Record (ENR) Top 500 Design Firms Sourcebook
## 2000 ENR Design 500 - Top 25

<table>
<thead>
<tr>
<th>Rank</th>
<th>Company Name</th>
<th>City, State</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bechtel Group</td>
<td>San Francisco, Calif.</td>
</tr>
<tr>
<td>2</td>
<td>URS</td>
<td>San Francisco, Calif.</td>
</tr>
<tr>
<td>3</td>
<td>Fluor Daniel Inc.</td>
<td>Aliso Viejo, Calif.</td>
</tr>
<tr>
<td>4</td>
<td>Jacobs Engineering Group</td>
<td>Pasadena, Calif.</td>
</tr>
<tr>
<td>5</td>
<td>Foster Wheeler Corp.</td>
<td>Clinton, N.J.</td>
</tr>
<tr>
<td>6</td>
<td>CH2M Hill</td>
<td>Denver, Colo.</td>
</tr>
<tr>
<td>7</td>
<td>Parsons Brinckerhoff</td>
<td>New York, N.Y.</td>
</tr>
<tr>
<td>8</td>
<td>Parsons Corp.</td>
<td>Pasadena, Calif.</td>
</tr>
<tr>
<td>9</td>
<td>Kellog Brown &amp; Root</td>
<td>Houston, Texas</td>
</tr>
<tr>
<td>10</td>
<td>Earth Tech</td>
<td>Long Beach, Calif.</td>
</tr>
<tr>
<td>11</td>
<td>ABB Lummus Global Inc.</td>
<td>Bloomfield, N.J.</td>
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<tr>
<td>12</td>
<td>Tetra Tech Inc.</td>
<td>Pasadena, Calif.</td>
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<tr>
<td>13</td>
<td>Raytheon Engineers &amp; Constructors</td>
<td>Cambridge, Mass.</td>
</tr>
<tr>
<td>14</td>
<td>Duke Engineering &amp; Services</td>
<td>Charlotte, N.C.</td>
</tr>
<tr>
<td>15</td>
<td>The IT Group Inc.</td>
<td>Pittsburgh, Pa.</td>
</tr>
<tr>
<td>16</td>
<td>Stone &amp; Webster</td>
<td>Boston, Mass.</td>
</tr>
<tr>
<td>17</td>
<td>Montgomery Watson</td>
<td>Pasadena, Calif.</td>
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<tr>
<td>18</td>
<td>Kaiser Group</td>
<td>Fairfax, Va.</td>
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<td>20</td>
<td>HNTB Corp</td>
<td>Kansas City, Mo.</td>
</tr>
<tr>
<td>21</td>
<td>The Louis Berger Group</td>
<td>East Orange, N.J.</td>
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<tr>
<td>22</td>
<td>The Kvaerner Group</td>
<td>Tampa, Fla.</td>
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<tr>
<td>23</td>
<td>BE&amp;K Inc.</td>
<td>Birmingham, Ala.</td>
</tr>
<tr>
<td>24</td>
<td>The ERM Group</td>
<td>Exton, Pa.</td>
</tr>
</tbody>
</table>

- Acquired by Balfour Beatty in 2009
- Acquired and subsequently divested by Halliburton
- Acquired by AECOM in 2008 from Tyco
- Acquired by CB&I in 2007
- Acquired by Washington Group, then URS in 2007
- Acquired by Framatome ATP in 2002
- Acquired by Shaw in 2002
- Acquired by Shaw in 2000
- Merged with Harza in 2001
- Acquired by Skanska in 2000
- Acquired by KBR in 2008
How are the trends in the marketplace impacting projects? What do leaders need to be thinking about?
<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
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<tr>
<td><strong>US construction Projects</strong></td>
<td></td>
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<tr>
<td>Project Count</td>
<td>65,737</td>
<td>124,492</td>
<td>125,745</td>
<td>154,675</td>
<td>177,743</td>
<td>184,423</td>
<td>184,422</td>
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<tr>
<td><strong>$ 1 Billion or more</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Project Count</td>
<td>--</td>
<td>8</td>
<td>10</td>
<td>14</td>
<td>55</td>
<td>85</td>
<td>103</td>
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<tr>
<td>Percent of Total</td>
<td>NA</td>
<td>0.0064%</td>
<td>0.0080%</td>
<td>0.0091%</td>
<td>0.0309%</td>
<td>0.0461%</td>
<td>0.0559%</td>
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<tr>
<td><strong>500 Million or more</strong></td>
<td></td>
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<tr>
<td>Project Count</td>
<td>116</td>
<td>157</td>
<td>190</td>
<td>181</td>
<td>158</td>
<td>278</td>
<td>194</td>
</tr>
<tr>
<td>Percent of Total</td>
<td>0.1765%</td>
<td>0.1261%</td>
<td>0.1511%</td>
<td>0.1170%</td>
<td>0.0889%</td>
<td>0.1507%</td>
<td>0.1052%</td>
</tr>
</tbody>
</table>

* partial year
Global is now your backyard
Large Engineering Firms in 5 to 10 years
Will All Be Truly Global

Clients want it
Execution mostly via M&A
American Foreign Corrupt Practices Act
Repatriation of foreign earnings
Complex tax and legal issues
Cultural issues
Federal Construction Sector Trends:

**Government Construction facing a Downturn**

DOD: Looming Budget Cuts Ahead


Pool of firms competing

“Sustainment”, renovation and modernization

Firms with CM- and O&M-type capabilities gain competitive edge
Drive for Net Zero: Federal Push for Clean Energy Innovation

U.S. Military to invest $10 Billion Annually in Renewable Energy by 2030

Policy goals drive adoption of energy-efficient buildings and acquisitions of alt energy solutions.

Knowledgeable of sustainable design and construction.
Federal Construction Sector Trends:

Increasing Opportunities for Small Businesses

- SBA raises “small” business thresholds for E/A firms
- New bills aim to funnel more contracts to small businesses
- Increase in Service-Disabled Veteran-Owned Small Business opps
- HUBZone small business concerns may lose program eligibility
How are you thinking, preparing and acting towards a changing environment?
Become Peak Strategic

Peak Leaders

World View

Set Direction
Think Strategically
Align Resources
Motivate and Inspire
Focus on Others
Execute and Follow Through
Personal Values and Attitudes
Develop Talent
Lead, Unify

Strategic Thinking

Vision

Decision Making
Mental Flexibility
Intellectual Curiosity
Creativity
Intuition
Analysis
Systems Thinking
Information Gathering
Peak Leaders

- Develop Talent
- Set Direction
- Think Strategically
- Align Resources
- Motivate and inspire
- Focus on Others
- Execute and Follow Through
- Lead Within

World View
Shifting Strategies and Leadership

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Living and leading in a VUCA World – what’s required

- Vision
- Adaptive cultures
- Business Intelligence
- Innovation & re-invention
- High *market / client* EQ
- Scenario plans
- Speed & agility
- Strategic leadership depth
Biggest Leadership Mistakes
The outlook... a matter of perspective & understanding what’s necessary to capitalize in VUCA conditions
About FMI

FMI is the largest provider of management consulting, investment banking and research to the engineering and construction industry. We work in all segments of the industry providing clients with value-added business solutions, including:

- Strategy Development
- Market Research and Business Development
- Leadership and Talent Development
- Project and Process Improvement
- Mergers, Acquisitions and Financial Consulting

Founded by Dr. Emol A. Fails in 1953, FMI has professionals in offices across the U.S. FMI delivers innovative, customized solutions to contractors; construction materials producers; manufacturers and suppliers of building materials and equipment; owners and developers; engineers and architects; utilities; and construction industry trade associations. FMI is an advisor you can count on to build and maintain a successful business, from your leadership to your site managers.

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