We plan to address.....

- The importance of procurement leadership
- The ability to source globally and understand associated risks
- The criticality of proper material management and logistics services on our projects
- The importance of supplier integration and the complexities faced by our suppliers
- The need for better supply chain education in our industry
Capital Project Complexity – Panelist

Jim Nyquist

President PlantWeb Solutions - Emerson
- Responsible for several businesses including Process Systems and Solutions, Asset Optimization, Power and Water Solutions, and Remote Automation Solutions businesses.
- Instrumental in the global sales launch of Emerson’s Smart Wireless technology.
- Leader in driving Emerson Process Management’s “Think Customer” global customer loyalty program.

Jim Scotti

Senior Vice President and Chief Procurement Officer – Fluor
- Led the transition to a center-led global procurement organization.
- Responsible for a new Fluor supply chain entity dedicated to selling stand-alone procurement services to clients.
- Led the development of a Fluor endowed supply chain master’s degree program that emphasizes global sourcing and early supplier integration on projects.

Capital Project Complexity Panelists
My Job as a Chief Procurement Officer

What my friends think I do

What my mom thinks I do

What society thinks I do

What my boss thinks I do

What I think I do

What I actually do
What Procurement Leadership Should Look Like

- Fully engaged company wide
- One company face to the supply base
- Single point of responsibility for acquisition of material, equipment and services across company
- Leverages supplier relationships as well as spend across capital project execution
Procurement Leadership in the EPC Industry

- Establishes supply chain strategies for projects and the entire organization
- Collaborates with client & other industry CPOs
- Has a real seat at the table within their company!
Ask Yourself…

• Does your company have a senior level procurement or supply chain executive?

• Do you personally know that individual?

• Does your procurement leader(s) have a seat at the table?  **OR**…

• Is it all smoke & mirrors?
Project Complexity

• 60 – 70% of project TIC is what we buy & deliver to our projects

• Take your *engineering* is king hat off!

• Take your *construction* is king hat off!

• Think of the *entire project as the supply chain...*not just the procurement piece

• Examine the many project supply chain complexities that we are faced with today
What do you see as the biggest supply chain challenge in your business?
Q: How critical is the supply chain to project success in your business on a scale of 1 to 10, with 10 being extremely critical?
Sourcing Globally
### Emerging Market Sourcing – Global Price Comparisons

#### Material Prices Pipe and Plate*

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Western Europe / USA</th>
<th>Eastern Europe</th>
<th>S Korea</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS Pipe</td>
<td>$1500/MT</td>
<td>$1250/MT</td>
<td>$1000/MT</td>
<td>$800/MT</td>
</tr>
<tr>
<td>CS Plate</td>
<td>$742/MT</td>
<td>$640/MT</td>
<td>$585/MT</td>
<td>$551/MT</td>
</tr>
</tbody>
</table>

*All amounts shown in USD

#### Fabricated Structural Steel – Sample Project Bid Comparison*

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Western Europe/ USA</th>
<th>Eastern Europe</th>
<th>South Korea</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural Steel</td>
<td>$12MM</td>
<td>$10MM</td>
<td>$7.5MM</td>
<td>$6.2MM</td>
</tr>
</tbody>
</table>

*All amounts shown in USD
Project Case Study

- Traditional Sourcing
- Direct Mills/Non-AML supplier
- Best Country Sourcing, incl. China

<table>
<thead>
<tr>
<th>Category</th>
<th>Traditional Sourcing</th>
<th>Direct Mills/Non-AML supplier</th>
<th>Best Country Sourcing, incl. China</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piping</td>
<td>$250</td>
<td>$150</td>
<td>$100</td>
</tr>
<tr>
<td>Structural Steel</td>
<td>$200</td>
<td>$100</td>
<td>$150</td>
</tr>
<tr>
<td>Electrical Bulks</td>
<td>$150</td>
<td>$200</td>
<td>$250</td>
</tr>
<tr>
<td>Instrumentation Bulks</td>
<td>$100</td>
<td>$150</td>
<td>$200</td>
</tr>
<tr>
<td>Vessels</td>
<td>$250</td>
<td>$200</td>
<td>$250</td>
</tr>
<tr>
<td>Exchangers</td>
<td>$200</td>
<td>$150</td>
<td>$100</td>
</tr>
</tbody>
</table>

Price reductions:
- Piping: -25%
- Structural Steel: -35%
- Electrical Bulks: -25%
- Instrumentation Bulks: -15%
- Vessels: -30%
- Exchangers: -32%
Sometimes” Owner AMLs are too narrow

No shortcuts to sourcing globally

Requires investment of in-country resources

Qualification of shops

Ongoing monitoring of shop loads and quality…and QUALITY!
Q: Does your company have an emerging market sourcing strategy?

A) Yes
B) No
C) I don’t know
The ability to influence the cost of a project is greatest at the beginning of a project – bringing strategic suppliers in early is essential to success.
Q: Does your company have an early supplier engagement strategy?

A) Yes
B) No
My Job in Supplier Leadership

What EPC's HOPE I do

What Owners HOPE I do

What Employees HOPE I do

What my boss HOPES I do

What I WANT I do

Still just a simple job in it
Project Characteristics – What our Customers Need

• We need to be able to count on you as one of our strategic suppliers
• We need you to be innovative
• We need a more seamless handoff from sales to execution
• We need to be able to rely on your promises
• We need for you to be fast and flexible
Project Supply Chain Complexities

- Local content requirements
- Multiple EPC/client specs
- 3rd Party Vendor packages/sub suppliers
- Pace of technology change
Automation Projects are Becoming More Complex

Characteristics of a Main Automation Contractor (MAC) Project

- Multiple EPC interfaces
- 220K engineering hours
- 1,000 personnel involved
- 30,000 field devices
- 20 3rd party subsystem suppliers

- 19 Global Locations
- 9 EPC Companies
Involves the entire organization

Accounts for differences in MRO (OPEX) and project supply (CAPEX) characteristics

Incorporates simpler product designs that increase speed and flexibility through modularization and late customization

Employs global and regional sourcing to balance cost with robust risk mitigation strategies

Targets long term strategic relationships focused on value creation
Q: Does your company have a formal strategic supplier program?

A) Yes
B) No
C) I don’t know
Perfect Execution Strategy

**Understand** the different demands between CAPEX (project) and OPEX (MRO) purchases and what the customer values...

**Execute** to promise through sub-supplier management, lean practices and real time metrics...

**Design** innovative products and processes to reduce project complexity...

**Plan** value chains for best cost sourcing, local content, risk mitigation, and speed & flexibility...

“The Capital Project environment is far different from a typical manufacturing game.”
“Ease of Use” Technology to Reduce Project Complexity

Historically DCS systems required marshalling
- Engineering, labor, and equipment intensive

Electronic Marshalling

“Electronic Marshalling” is transformational technology
- Entire subsystems eliminated
- Ultimate flexibility

- Products designed to reduce project complexity
- Eliminates work
- Reduces cost and schedule risk
- Innovative, Simple, Ease of Use
Tradeoffs in Global vs. Regional vs. Best Cost

Regional Sourcing:
- Local Content
- Speed
- Higher Cost
- Supply / Demand Variations

Global / Best Cost Sourcing:
- Best Cost
- Risk Mitigation
- Consistent Quality
- Lacks Localization
The 5 Questions You Should Ask Your Supplier

- Do your early engagement processes enable you to be a **strategic supplier**?
- Does your manufacturing and Supply Chain strategy **differentiate** between OPEX and **CAPEX project supply**?
- Does your technology development program emphasize designing products that **reduce project complexity**?
- Do you hold your regional and global suppliers to the **same performance and quality standards**?
- Do you have a supply chain **risk mitigation strategy** especially with sub suppliers?
We need more supply chain programs tailored to our industry!

Our procurement resources, as well as our project managers, engineering, and construction personnel need this education.

So what are we doing about it?
• Fluor Foundation endowment to Clemson University
• Unique focus on capital project supply chain
• Fully accredited Master of Engineering
• Distance learning – no on-campus requirements
• 53 graduates to date, 139 enrolled
• New global focus initiative
• Some employers of current/past students include: ABB, BASF, Bechtel, BMW, Boeing, CH2M Hill, ExxonMobil, Fluor, GE, Jacobs, Luminant, Sandvik, URS
So...

What supply chain complexities does your company need to work on to conquer the summit?
Questions?