Jumie Yuventi. PhD. PE
Product & Engineering Executive

13 years
AEC industry

$8B
Electrical EOR

$1B
AEC SW+HW

- Multiple patents for AEC tech
- Created UL & NEC standards

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Fragmentation in Construction networks

Different teams or companies in subsequent projects

results

Lagging innovation

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<table>
<thead>
<tr>
<th><strong>Developer-Owner</strong></th>
<th><strong>Design-Build</strong></th>
<th><strong>One-Stop shop</strong></th>
<th><strong>EPM (prefab) supplier</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Some vertical integration.</td>
<td>Vertically integrated pre-operation.</td>
<td>Vertical, Horizontal, and Longitudinal integration.</td>
<td>Provides assemblies to reduce field time.</td>
</tr>
<tr>
<td>Involved in all phases, but mainly in definition and operations.</td>
<td>Can make decisions that improve constructability, costs, and schedule for specific discipline.</td>
<td>Has full control over all phases of a project and can drive innovation as sees fit.</td>
<td>Borrows techniques from DB and often have ongoing partners like one-stops to create longitudinal synergy.</td>
</tr>
<tr>
<td>Can make decisions based on long term operations.</td>
<td></td>
<td>Difficult to create.</td>
<td>Sweet spot when done right.</td>
</tr>
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</table>
Where do "Modular Companies" fit?

Most (majority of modular startups) don’t know themselves.

Am I: EPM supplier? OR One-Stop Shop?

All have a common goals:

- Reduce time
- Reduce cost
- Improve quality
How does this impact engineers?

Think like the integrated companies throughout design.

**How can I:**

- **Reduce time?**
  - In the field through:
    - Clarity and precision
    - Incorporate feedback on constructability.

- **Reduce cost?**
  - Of the project through:
    - Value engineering.
    - Design with cost metrics in mind.

- **Improve quality?**
  - Of the product through:
    - Engineer not copying
    - Understanding life cycle of systems
Construction Innovations as a case study

US Utility-scale renewable energy

- CI
- Others

15%

Reduce Field time 50%+

Take

Make

Skids

Combiners

Harnesses

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