Organizing for a Complex World: The Way Ahead

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## Organizing for a Complex World: The Way Ahead

### Center for Strategic and International Studies (CSIS), International Security Program, Washington, DC, 20006

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   - 11

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Standard Form 298 (Rev. 8-98)
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What do we mean by “complexity”?

- **Different from “complicated”**
  - Large scale / multiple elements / non-linear

- **Whole different than sum of parts**
  - Changes to (interaction of) elements cannot be accurately predicted
  - Integration brings additional capability not otherwise achievable

- **Organizational politics internal to complexity**
  - Programs implemented in pluralist environment with divergent views
It’s pervasive...

- **Technology**
  - More sophisticated devices
  - High pace of change / innovation

- **Environment: tactical / operational / strategic**
  - Platforms must be capable of multiple roles / missions
  - More elements / less predictability

- **Organizations (public and private)**
  - Bigger
  - More constraints
...and it’s difficult

- Staying on budget, on schedule and meeting requirements becomes harder
- Traditional approach (deconstruction) not applicable
  - Too many moving parts and unclear relations between them
  - Too difficult to anticipate everything in advance
  - Lose added value from system-of-systems / net-centricity

It’s just as much about governance and organization as it is about technology and engineering
A short history of governance models

<table>
<thead>
<tr>
<th></th>
<th>Arsenal</th>
<th>Contract</th>
<th>Weapon system manager</th>
<th>Private arsenal (outsourcing)</th>
<th>Lead System Integrator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program requirements</td>
<td>Gov’t</td>
<td>Gov’t</td>
<td>Gov’t</td>
<td>Gov’t</td>
<td>Industry</td>
</tr>
<tr>
<td>Technical direction</td>
<td>Gov’t</td>
<td>Gov’t</td>
<td>Gov’t</td>
<td>Industry</td>
<td>Industry</td>
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<tr>
<td>Program management</td>
<td>Gov’t</td>
<td>Gov’t</td>
<td>Industry</td>
<td>Industry</td>
<td>Industry</td>
</tr>
<tr>
<td>Technical execution</td>
<td>Gov’t</td>
<td>Industry</td>
<td>Industry</td>
<td>Industry</td>
<td>Industry</td>
</tr>
</tbody>
</table>

Government does less, forgets how!

To govern and manage, you must measure

- Premises:
  - Complexity inhibits making design and production tradeoffs
  - The clash of ideas permits better tradeoffs, if an organization is flexible enough to allow and respond to it
  - Access to information promotes the clash
  - Cultivating & sharing information is prerequisite to making good tradeoffs

- Assess organization types for access to knowledge, ability to share it
  - Compare organization types for ability to manage complex development programs
**Governance models today**

<table>
<thead>
<tr>
<th></th>
<th>Government laboratory</th>
<th>Industry</th>
<th>FFRDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical awareness</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Project management skill</td>
<td>-</td>
<td>+</td>
<td>+ / -</td>
</tr>
<tr>
<td>Customer understanding</td>
<td>+ / -</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Organizational longevity</td>
<td>+</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Manufacturing expertise</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Organizational independence</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
</tbody>
</table>

+ = strong performance; - = weak performance; +/- = mixed capabilities

Flexibility & resilience (F&R)

- **Address complexity by anticipating it**
  - Be ready for anything, not plan for everything

- **Build ‘fault-tolerant’ organizations**
  - Adapt and respond to anticipated, but unpredictable changes

- **Applicable at any stage, in any organization type**
### Flexibility & resilience in various models

<table>
<thead>
<tr>
<th>Flexibility</th>
<th>Government laboratory</th>
<th>Industry</th>
<th>FFRDC / UARC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Range of collaborative efforts with academia and industry</td>
<td>• Ability to manage relationships with customers as well as with partners / suppliers</td>
<td>• Independence (incl. ability to verify performance) and lack of conflict of interest</td>
</tr>
<tr>
<td></td>
<td>• Ability to attract talent</td>
<td>• Strong (financial) incentive to adapt to changing conditions</td>
<td>• Ability to retain talent</td>
</tr>
<tr>
<td></td>
<td>• Strong (financial) incentive to adapt to changing conditions</td>
<td></td>
<td>• Work on long-term contracts</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Institutional memory</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Resilience</th>
<th>Government laboratory</th>
<th>Industry</th>
<th>FFRDC / UARC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Long-term customer relationships</td>
<td>• High level of customer understanding</td>
<td>• Technical expertise across wide range of topics</td>
</tr>
<tr>
<td></td>
<td>• Organizational longevity</td>
<td></td>
<td>• Ability to attract talent</td>
</tr>
</tbody>
</table>
What’s next?

- Devise approach to measure flexibility and resilience across organization types
  - FFRDC, UARC, government lab, private contractor
- Consider applicability of private-sector approaches
- How to institute / cultivate / perpetuate F&R?
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