



# Organizing for a Complex World: The Way Ahead

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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



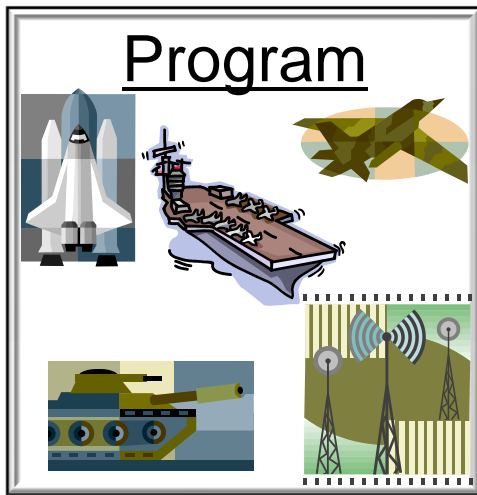
## ...and it's difficult

- **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**

# The governance / management model links the organization to the program

Understand both of these....



...in order to select this

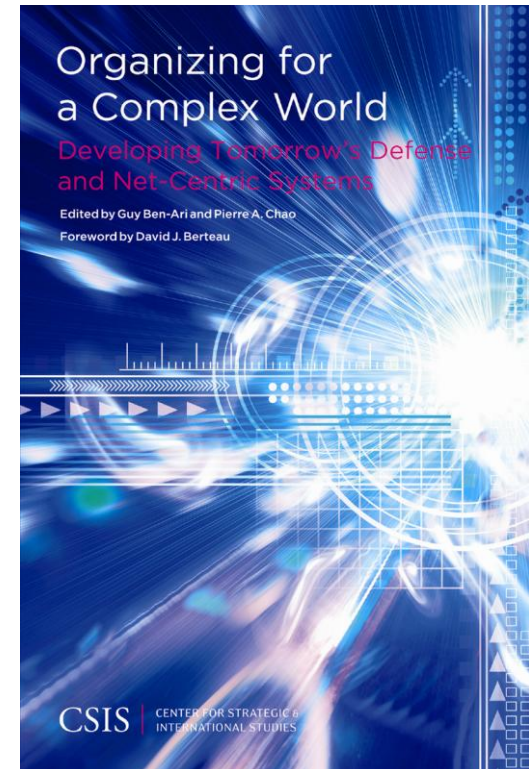
# A short history of governance models

	Arsenal	Contract	Weapon system manager	Private arsenal (outsourcing)	Lead System Integrator
Program requirements	Gov't	Gov't	Gov't	Gov't	Industry
Technical direction	Gov't	Gov't	Gov't	Industry	Industry
Program management	Gov't	Gov't	Industry	Industry	Industry
Technical execution	Gov't	Industry	Industry	Industry	Industry

**Government does less, forgets how!**

## January 2009: publication of book

- Clarify the operating environment
- Lay groundwork for new models, such as:
  - Models from other industries
  - Network-centric organization
  - Operational value assessment
  - “Improved” LSI
  - ...
- However, different programs require different models



## To govern and manage complex programs you must:

- **Choose a suitable governance/management model**
  - Understand attributes important to your program's success
  - Understand organizational attributes that meet program requirements
- **Insure against possible future need to change that model**
  - Because inappropriate model was initially chosen
  - Because circumstances changed

## To understand the organization, you must measure / compare its key attributes

- **Premises:**
  - Different organization types offer different attributes
  - We can measure – relatively if not absolutely – the degree to which an organization demonstrates a given attribute
- **Compare organization types for ability to manage complex programs**
  - For example: assess organization types for access to knowledge and ability to share it

## Some key attributes by organization type

	Government lab	Industry	FFRDC/UARC
Technical awareness	-	+	+
Project management skill	-	+	+ / -
Customer understanding	+ / -	+	+
Organizational longevity	+	-	+
Manufacturing expertise	-	+	-
Organizational independence	-	-	+

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

## Choosing the governance / management model

- **The model must align program needs with what the organization can provide**
  - **Examples:**
    - LSI may be best approach for multi-platform network-oriented system
    - WSM may be best approach for upgrade to existing system
- **Assess governance / management models for their ability to deliver the necessary organizational attributes**

## Flexibility and resilience (F&R) insure against possible future need to change model

- Address complexity by anticipating it
  - Be ready for anything, not plan for everything
- Build 'fault-tolerant' organizations
  - Flexibility: adapt and respond to anticipated, but unpredictable changes
  - Resilience: withstand effects of changes while adapting and responding to them
- Applicable at any stage, in any organization type

# Flexibility & resilience in key organization types

	Government lab	Industry	FFRDC / UARC
Flexibility	<ul style="list-style-type: none"> <li>• Range of collaborative efforts with academia and industry</li> </ul>	<ul style="list-style-type: none"> <li>• Ability to manage relationships with customers as well as with partners / suppliers</li> <li>• Ability to attract talent</li> <li>• Strong (financial) incentive to adapt to changing conditions</li> </ul>	<ul style="list-style-type: none"> <li>• Independence (incl. ability to verify performance) and lack of conflict of interest</li> <li>• Ability to attract talent</li> <li>• Work on long-term contracts</li> <li>• Institutional memory</li> </ul>
Resilience	<ul style="list-style-type: none"> <li>• Long-term customer relationships</li> <li>• Organizational longevity</li> </ul>	<ul style="list-style-type: none"> <li>• High level of customer understanding</li> </ul>	<ul style="list-style-type: none"> <li>• Technical expertise across wide range of topics</li> <li>• Ability to retain talent</li> </ul>

# The governance / management model links the organization to the program

Understand both of these....

Program

- Understand critical risks
- Understand what organizational attributes best address these risks

Governance / management model

- Historical
- LSI, arsenal, WSM, ...
- New

Organization

- Understand what attributes the organization type offers
- Government lab, industry, FFRDC / UARC

...in order to select this

## What's next?

- **Continue work on new governance / management models**
  - Re-assess existing models within measurement / F&R frameworks
- **How to ensure that both program and organization attributes are taken into account when choosing a governance / management model?**
- **Develop mechanisms for better measuring / comparing organization types**
- **Devise approach to better measure flexibility and resilience across organization types**
  - FFRDC/UARC, government lab, private contractor
- **How to institute / cultivate / perpetuate F&R?**

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