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**14th ICCRTS
“C2 and Agility”**

Title of Paper:

Composable Organizations, Mission Self Discovery and Mission Self Nomination

Topics

C2 Approaches and Organization; C2 Concepts, Theory, and Policy

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Abstract

We are interested in examining whether integrating command and control (C2) concepts with novel organizational constructs will improve C2 agility. This paper addresses the C2 issues which arise while attempting to share enterprise assets with diverse organizational ownership. Stovepipe federal organizations cannot easily participate in collective assistance activities for a given mission requirement. This is exacerbated by an enterprise lack of awareness of mission requirements. But how one would repair or re-align these stovepipes to be made more flexible yet maintain stability, appears to be the issue of primary concern. There has been serious research on this issue conducted by Williamson. Williamson succinctly stated his premise as follows: we must design new adaptable organizations by attempting to construct and “design workable order-preserving mechanisms for adapting to disturbances in the service of mutual gains”¹, these mechanisms must also avoid contractual incompleteness².

We believe that these goals can be accomplished by establishing enterprise (cross organization) mission publication mechanisms; supported by composable organizations, mission self discovery and self nomination.

Introduction

Much has been written concerning the future of command and control (C2). C2 is the exercise of authority and direction by a commander over assigned and attached forces in the accomplishment of the mission. The spectrum of alternatives advocated, range from the traditional to no C2. This debate has been exacerbated by the following issue. There is a desire by many members of the federal enterprise, that in order to be more effective in the war on terror and in operations other than war, that all the resources of the federal enterprise should be available for any mission. Others have expanded this notion to include nongovernmental organizations or so called NGOs.

A hotly debated question arises immediately: how would one attempt to apply traditional C2 to resources composed of military and non military components? Why would an FBI agent obey the orders of a Coast Guard commander? Why would a Coast Guard commander obey the orders of an FBI agent? If the Red Cross or Doctors without Borders are included from the NGO pool of assets, will they follow the orders of the FBI or Coast Guard? Must the Red Cross or Doctors without Borders follow anyone's orders? The authors believe that this question has been a diversion from resolving the fundamental problem of how to share and manage enterprise level resources. This paper addresses the issues which arise while attempting to share enterprise assets with diverse organizational ownership, including a strategy to maintain unity of command and some level of control over operational and tactical situations.

Background

The need for analyzing why one should consider sharing assets across the federal enterprise becomes apparent if one looks at the number and types of missions that the U.S. military is expected to support. The graphic below illustrates the scope of modern military operations.



Figure 1 – The Spectrum of Modern Military Operations³

This spectrum of mission types complicates DoD portfolio assessment and increases the diversity of skill sets and training required to be successful if only U.S. military assets were involved. Thus, one should be able to see from this diagram why access to assets other than DoD assets would be advantageous. This issue was formalized in the 2006 Quadrennial Defense Review. The graphic below depicts the desire by then Secretary of Defense Rumsfeld to expand the role of the U.S. military.

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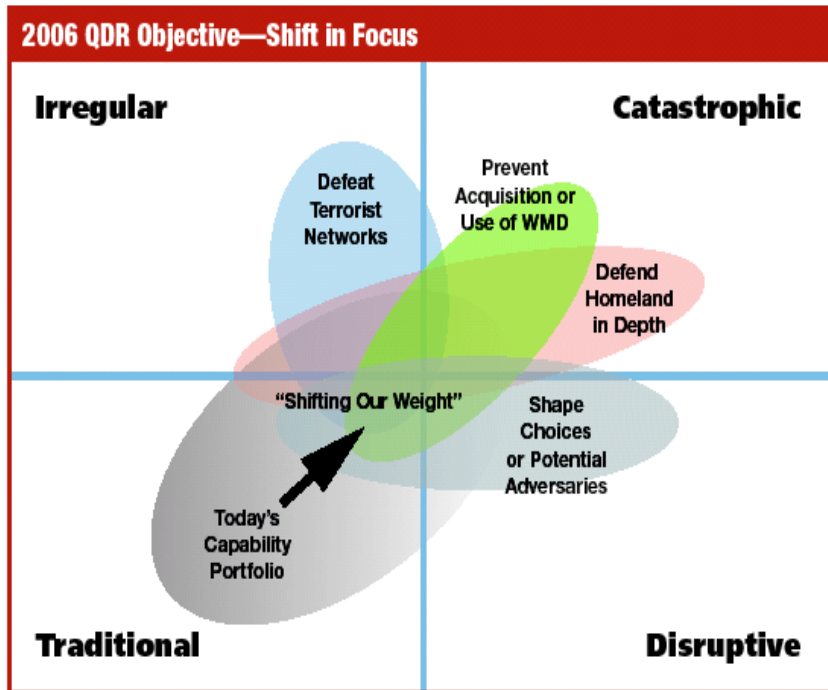


Figure 2 – QDR Mission Focus Shift⁴

As indicated in figure 2, the emphasis is shifting from traditional major combat operations to other types of missions such as combating insurgencies and guerilla warfare, protecting the homeland from catastrophic CBRN attack, and responding to disruptive attacks. Thus given these new missions one would need more assets. But one of the fundamental aspects of NCW is that perhaps these assets already exist in non-DoD federal agencies, state governmental agencies or NGO organizations. The question then becomes, how does one exploit these assets?

Our research indicates that a possible answer to the question of how to properly utilize federal, state, NGO, and foreign assets is to implement the concepts proposed by Cebrowski et.al known as innovative organizations but operating under a process of mission self discovery and self nomination.



Meeting Warfighter Information Needs: Levels of Network-Centricity

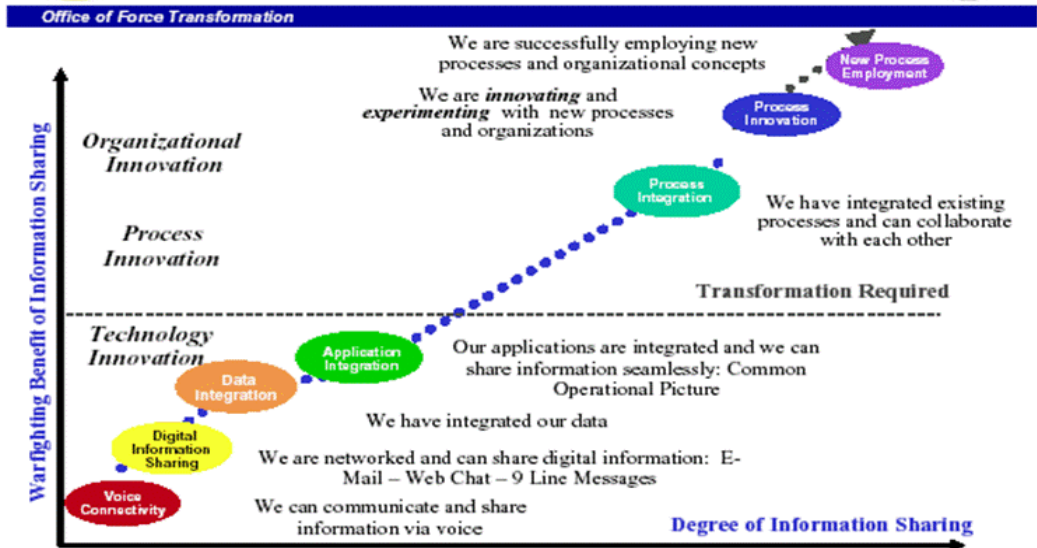


Figure 3 – The Cebrowski Model of Force Transformation⁵

Figure 3 depicts the evolutionary growth in warfighter benefit by category of innovation. Notice that the highest degree of warfighter benefit derived from information sharing occurs only when organizations and processes can be dynamically improved. Admiral Cebrowski was saying that if we can be innovative at the process and organizational levels, we can significantly improve warfighter benefit.

Our research suggests that we can best innovate at the organizational level by composing new organizations from existing organizations on a temporary basis (the life of a mission). Then, create plans and processes relevant and reflective of the newly formed organizations, permitting tactical C2 of the assets to be maintained by the current asset owners, and move operational control of the assets to the newly composed organization's leadership of which the asset owners are members of by definition, if their self nominations are selected.

Problem Statement

Stovepipe organizations combined with an enterprise lack of awareness of missions and mission requirements impedes the ability of federal enterprise organizations and NGOs to respond effectively and share resources which could have been used to provide collective assistance for a given requirement.

Hypothesis: Enterprise mission publication, mission self discovery and mission self nomination will expose federal enterprise mission requirements, improving awareness of missions. Composeable organizations will improve C2 agility by sharing operational control of enterprise assets while maintaining parental organization tactical control. This will improve the quality of operational planning, and still maintain unity of command.

Simple Process Overview

Approved requests for assistance will be published to the GIG for discovery by planning communities of interest (COI). Planning COI members, will self nominate in order to participate in the planning of mission or assistance requests. The planning adjudicators will select a planning team from the self nominees and authorize planning to commence. The winning planning team will publish the finished plan for approval. Approved plans and their corresponding missions will be published for discovery by operational organizations and the owners of assets, forces, and platforms.

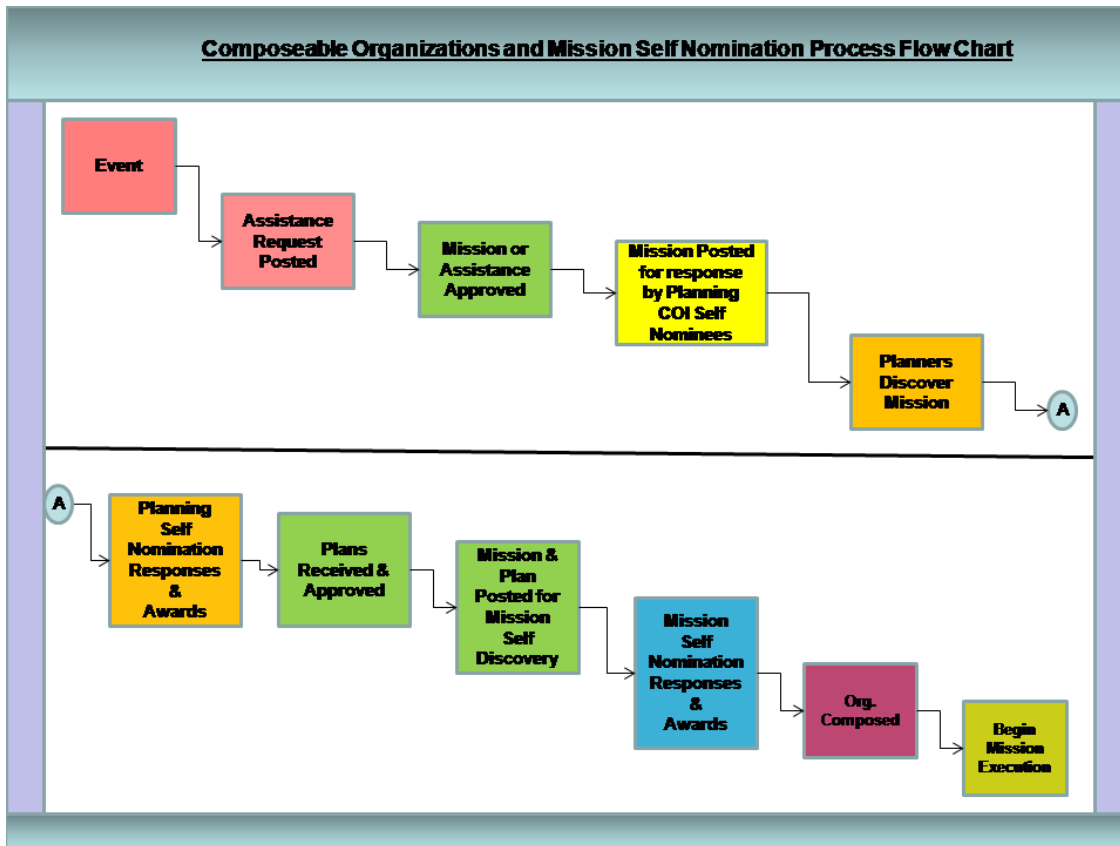


Figure 4 – Mission Self Nomination and Composeable Organizations Flow Chart

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Operational asset owners and other subscribing communities of interest who wish to participate through a process of self nomination, will self nominate their assets and forces for the mission. An operational adjudication team will select the 'winners'. The 'winners' will constitute an operational cell and will be free to form a composed organization and volunteer their assets for edge mission participation. Once the temporary organization has been formed and the assets are available, the new organization will select a task force commander from among the operational participants and begin mission execution.

Detailed Discussion of the Model

In our model, a mission or request for assistance is posted on the GIG for approval. We believe that any authorized agent from any agency in the federal government, state and local governments, non-governmental organizations or authorized foreign entities should be allowed to publish mission or assistance requests. An approving committee, which would subscribe to these requests, will either reject or approve the mission.

At that time, the newly approved mission is posted to the GIG for planning volunteers. The planning will be accomplished by a COI of planning specialists for the type of mission or assistance request posted, nominating themselves to plan for this mission. Potential members of a composed planning cell will nominate themselves to be a part of an overall planning activity for this mission. This constitutes a distributed 'self nominating planning activity', hopefully composed of all potentially available organizations involved in mission execution. After the planners self nominate, a planning adjudication cell will select the winners and authorize the planning activity to begin and the distributed planning cell to form. The adjudication cell may accept only completed plans or in the case of time critical activities, it may accept abbreviated plans, with final planning to be accomplished by the actual mission self nominees in a control free C2 style⁶. After the adjudicator is satisfied that the plan accurately reflects the goals of the mission, the adjudicator then publishes the mission and plan to the GIG where subscribing COI members may respond by self nominating their platforms and other assets. At this time, anyone with operational control of assets, platforms, or forces, may self nominate for the mission. As the platform, forces, and asset self nominations arrive at the adjudication cell, the adjudicators begin to compose an organization consisting of the winners of the self nomination process. It is necessary to compose the organizations based upon the plan from the asset owners so that tactical control can be maintained by the volunteers. This is a crucial difference in our approach, the newly composed organization will select a task force commander who will be given operational control of the volunteered assets from all organizations but tactical control of the assets will remain with the parent organization. But in volunteering or nominating one's resources to participate, the commanders of military assets or governing bodies or their secretaries of non-military assets willingly temporarily place operational control of their assets and subordinates under the agreed upon "commander" or person in charge for the good of and the goals of a temporary mission. This appears to satisfy Williamson's concerns about contractual completeness and designing workable order-preserving mechanisms for adapting to disturbances in the service of mutual gains. After the mission, all operational authority returns to the originating organization. Thus, one might say that the participants in such an endeavor have formed an organization on the fly. We have dubbed this activity a composeable organization.

To repeat, local tactical control of the nominated assets remains in place; organization wide, operational C2 is exercised by the agreed upon or appointed leader of the composed

organization. For example, tactical control of Red Cross assets will remain with the Red Cross. Tactical control of U.S. Navy assets will remain with the Navy. The Louisiana National Guard will remain under tactical command of its own officers. In the case of hurricane Katrina, the Katrina Task Force Commander would retain operational control of all assets. It should be noted that while the actual Katrina Task Force Commander was military, in our design for composable organizations, the members of the planning and operational cells could just as well select a FEMA, DHS, or any other experienced leader to exercise operational C2 over the task force but not tactical level control.

Benefits

The following benefits should be achievable from this design:

1. An increased enterprise understanding of all operational requirements
2. A common, shared, prioritized list of all assistance and mission requests will be available to the entire federal enterprise.
3. More effective allocation of federal resources across the entire list of required tasks
4. Improve planning cycle times by rapidly building dynamic, integrated, and coordinated plans that are focused on emerging requirements.
5. *Improved organizational shared understanding* of each organization's capabilities, and available resources thus improving and ensuring *economy of force*
6. *Enterprise Unity of Command, and Unity of Purpose*
7. *Enterprise Unity of Effort* through coordination and cooperation toward common objectives, even if the participants are not necessarily part of the same command
8. *Improved Flexibility* - The adaptive composable – self nomination model provides mechanisms which are adaptive and flexible enough to support a rapidly changing operational environment.

At this time we would like to attempt a formal set of definitions which will hopefully bound these issues.

Basic definitions

Composed Organizations

A temporary organization, comprising units of already existing organizational structures, (DoD, FBI, NYPD, Red Cross, etc.), formed to oversee the proper resolution of a published request for assistance or a published mission. Please note that this requires that a base organizational infrastructure or 'organizational backplane' exist which can be used to 'plug in' new organizational units and facilitate the newly composed organization. The 'organizational backplane' must be maintained as required infrastructure similar to the GIG infrastructure which must be maintained so that the requests for assistance can be published. *In a sense, this is a 'competency aligned' temporary organizational construct, based upon the composed mission plan.*

Control of Assets

- a. First, asset owners (from a broad set of enterprises or a federated enterprise) agree to participate in an adjudication team which will create a ‘composed’ operational organization on the fly.
- b. Asset operational control (decision rights) will be moved to the composed organization, but only after the asset owners have “volunteered particular assets” to participate in the mission through a process of mission self discovery and self nomination. After the mission has been completed, operational control returns to the original asset owners.
- c. Tactical control of the assets. We are recommending that tactical control of assets and local C2 be maintained by the nominating command. We believe that this design will function best using the people and assets who have trained and exercised together. Divorcing tactical C2 from the original trained team members will introduce chaos in terms of deconfliction and mission execution. This approach solves that problem by permitting traditional C2 to exist at the tactical level while pushing operational control further towards the edge by composing organizations on the fly.
- d. The composed organizational construct should be frequently exercised
- e. The composed organization C2 processes and assets must be able to co-exist and interoperate with organizational models used by NGO’s

Who can form an organization?

The adjudication cell responsible for naming a task force commander may form an organization consisting of volunteered departments of already existing organizations. For example, a random volunteer who happens to own a helicopter should not be selected to form an organization of himself, but a Coast Guard helicopter squadron under the control of its owning organization can nominate itself for participation of assets and participation in the organization and it’s decision making structure. A Red Cross chapter can nominate itself for membership in the organization, etc.

Who has authority within the composed organization?

Operational Authority will be distributed among the task force commanders and leadership membership. This means that the membership of the composed organization may vote on critical questions such as mission funding levels, the number and adequacy of volunteered resources, mission initiation, mission conclusion criteria, and mission cancellation. But the task force commander will have tie breaking authority or may assume full operational control. The team members comprising the operational cell that formed the composed organization will elect a task force commander. Criteria for task force commander selection may include largest resource contributions, largest financial contributions, most experience commanding similar mission types, etc.

Mission publication – The publication of approved missions sent to the GIG for discovery and self nomination in response to an event or incident.

- These missions can be published by any approved DoD authority, other approved federal agency mission publishers (FEMA, DHS, DoS, DoJ, FBI, Treasury, DEA, CIA, NSA, etc.), approved coalition partners (NATO, non-NATO allies, Taiwan, Israel, Korea, Japan, etc.), or approved NGO publishers Les Medicins Sans Frontieres , Turkish Red Crescent, American Red Cross, or the Philippines Red Cross.

Authority to publish these missions is pre-negotiated with all the relevant players but such authority may be constructed on the fly in case of national emergencies.

Mission Self-Nomination (MSN): A network enabled capability that permits commanders to volunteer to commit resources, in response to missions and objectives posted on the GIG by their superiors. MSN is the act of proposing one's assigned resources (a platform, a weapon system, etc) as a suitable candidate for allocation to a published and planned (defined) mission.

- **What happens if no one self nominates?** The published missions are tantamount to orders. Someone must nominate themselves for the missions or someone will be ordered to perform the mission, but only in the case of the U.S. federal agencies. State and local governments and NGOs will not be ordered to participate. If the mission is not a serious mission or objective it should not be posted on the GIG

Mission Self Discovery (MSD): A network enabled capability that permits commanders to find missions and objectives posted on the GIG by their superiors. The set of these participants constitutes membership in an operational cell dedicated to responding to these missions. A particular operational cell, assembled only for a particular mission, will retain tactical control of its volunteered assets but grant operational control of its assets to the composed organizational task force commander. After successful mission completion, operational control of the volunteered assets will be returned to the original organization.

Please note that missions posted for discovery on the GIG are for the consumption of COI subscribers. This is structurally different from the following:

1. It does not mean that after a mission has been assigned to an asset, that the asset "discovers" other missions while he is active on the current mission and then publishes the new missions himself, causing delays in response time. For example, if a helicopter has been assigned to perform search and rescue operations during Katrina, each new victim on a roof top is not a publishable new mission. The helicopter pilot does not have to publish the fact that another victim has been located as a new mission. Normal operations for search and rescue should already cover these events. Only authorized assistance request publishers can publish a new mission for discovery.
2. For JOINT targeting, it only means target selections from the published target list, not finding new targets of opportunity. E.g., an F/18 may be assigned to blow a bridge and use his weapons against this primary target, but after engaging the target, if other targets appear they will not be published as missions to the GIG to be discovered, but they will be engaged if opportunity permits by the F/18

Adjudicator – the adjudicators consist of subject matter experts residing in task specific distributed cells who will perform the following functions which map to the flow chart depicted in figure 4.

- **Mission request approval or assistance request approval adjudication cell.** These teams of adjudicators will decide which requests for missions or assistance will be formally published to the GIG. They will use a formal set of criteria in deciding the merits of each request. This adjudication cell will consist of members of the NCA, senior staff membership from state and local governments, and NGOs.
- **Planning adjudication cell.** These teams will be comprised of subject matter experts capable of evaluating the planning needs of a particular mission and assessing the

planning team self nominees as they respond. This cell must be constructed with sufficient diversity to support the selection of the detailed planners who will actually develop a plan for the selected mission.

- **Asset selection and Organizational Composition cell.** This cell will perform the critical tasks of selecting the ‘winning’ self nominated assets and composing an appropriate organization to manage the operational direction of the ‘winning’ self nominated assets. This cell must maintain operational C2 of the diverse composed organization, select a task force commander, and still permit tactical control of assets to be maintained by the asset providers, based upon the plan
- **Do we really need an adjudicator?** Yes, adjudicators must make decisions among the players, perform air and surface asset deconfliction, and resolve potential disputes among the composed organization’s players.
- **What happens if everyone comes?** If all possible assets are nominated but not required, then the adjudicators select the best possible mix of resources and declines the self nominations of the excess volunteers based upon the plan.
- **What happens if no one self nominates?** If no one volunteers or an insufficient mix of assets occurs, then the adjudicators will refer the assistance request or mission to the DoD for traditional mission preparation.
- **Who issues the traditional C2 orders if no one comes?** The NCA will order the Joint Chiefs of Staff to plan the mission as if it were the military only. Or use a Katrina style model. But this takes much more time than a composed organization with all volunteers.

Example

We now offer an analysis of these concepts by viewing a mission which did not change after initiation. Katrina was a simple mission in terms of assignment and lack of change in mission type after the start of mission execution.

Actual Hurricane Katrina Joint Task Force Organization

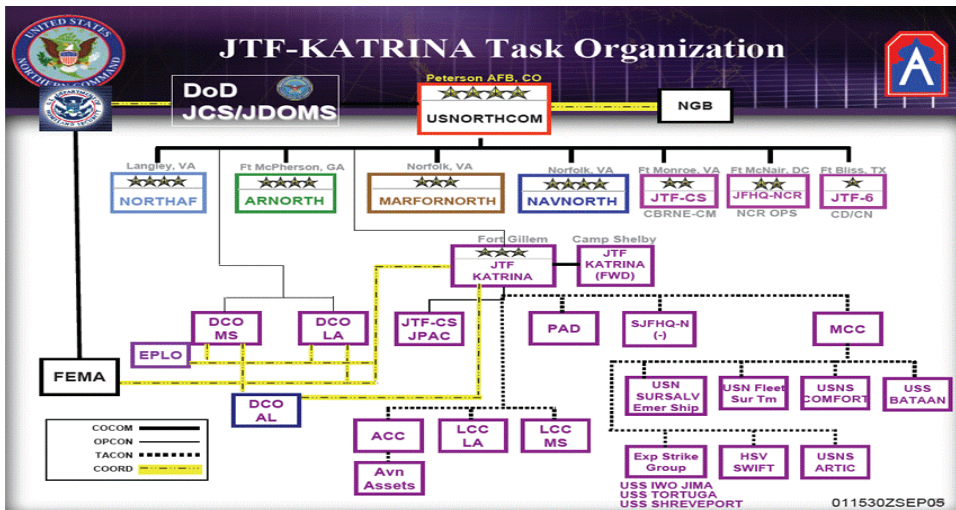


Figure 5 – Actual Hurricane Katrina Organization with JTF Katrina being Similar to a Composed Organization⁷

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Notional Katrina Composed Organization

We will construct an organization similar to the one built for task force Katrina. Please note that the above diagram is the actual organization used to support relief efforts for hurricane Katrina. The DoD, FEMA, and National Guard units formed an organizational infrastructure that would permit the formation or “standing up” of “Joint Task Forces” with pledged assets committed in a traditional C2 structure. The defense coordinating office (DCO) interacts with FEMA, state and local governments, the National Guard, and the department of defense. The assignment of the Iwo Jima, USS Tortuga, USS Shreveport, USNS Comfort, USS Bataan, and the salvage ships occurred as a kind of composed organization. But in this case, the participating platforms were ordered to go and did not self nominate. We believe that this type of organizational model can be easily modified to support the more rapid organizational constructs offered by mission self nomination.

Katrina Notional Composed Organizations Using Self Nominated Planners and Mission Participants

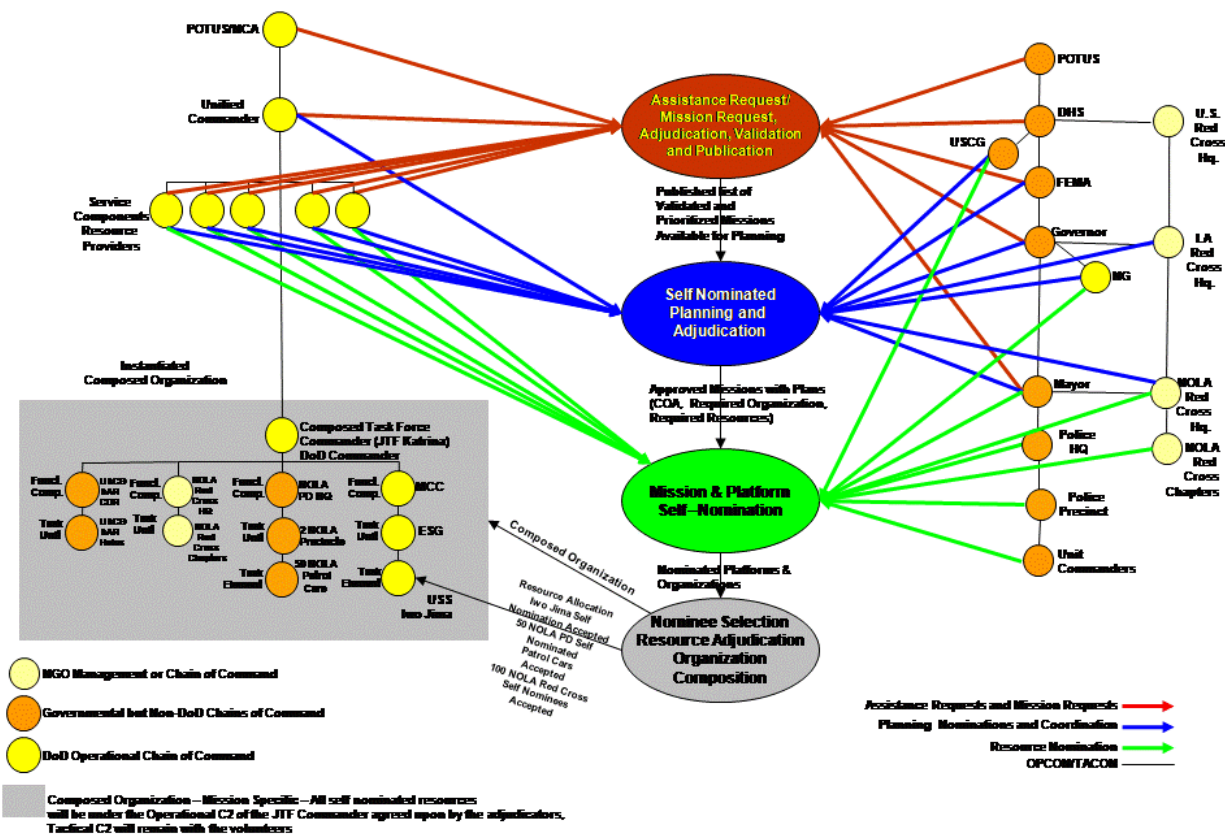


Figure 6 – Composed Organization using mission self nomination with a DoD Commanding officer as the selected JTF Katrina Commander

The above graphic depicts our proposal. The left side of the graphic depicts the chain of command for the composed organization. Please note that the gray box above the color coded legend indicates a notional composed organization comprised of the Coast Guard, New Orleans Statement A: Approved for public release; Distribution is unlimited (16 January 2009)

(NOLA) Red Cross chapters, New Orleans Police precincts, and the U.S. Navy's Maritime Component Commander. These organizations are placed under the operational control of the Joint Task Force Katrina Commander, but their assets, personnel, and platforms operate under the command of their originating units who retain tactical control, Thus the Coast Guard obeys Coast Guard orders, the Red Cross obeys Red Cross officials, the U.S. Navy follows navy C2, etc. The center of the graphic depicts the high level processes required to publish missions or assistance requests, post planning requests for self nomination by planners, mission self nomination, and finally nominee selection and organization composition. The right side of the graphic depicts the original chain of command of the asset providers.

It must be pointed out that the composed operational command structure of the new organization, led by a military Joint Task Force Commander, depicted in the gray box on the left side of the graphic, could have been anyone. The FEMA director, the Louisiana Governor, or a Red Cross official could have been selected as the Joint Task Force Commander. These nuances of how to precisely select the most appropriate commander of a newly composed organization should be the subject of further research. A list of other topics for future research follows.

Future Research

Our team believes that the following research is needed to seriously pursue the concepts described in this paper.

1. Tactical Decision Aids that assist adjudicators in evaluating composed plans, and associated nominated resources required to support the plan. These TDAs must include extensive modeling and simulation capabilities.
2. Rules of Engagement research which will focus on the development of rules of engagement packaged to support the diverse membership of composed organizations.
3. Maturity models to guide a phased implementation of these concepts:
 - Composeable Organization Maturity Model
 - Distributed Operational Planning Maturity Model
 - COI GIG services Maturity Model to support distributed collaboration and self nomination
 - Composed organization exercises and simulation maturity model

Summary

This paper has attempted to describe an approach to command and control which will permit access to governmental enterprise assets and NGO assets. Novel organizational constructs were proposed to improve C2 agility. This paper addressed the issues which arise while attempting to share enterprise assets with diverse organizational ownership. We examined a strategy to maintain unity of command and some level of control over operational and tactical situations.

The recommended approach is based upon the following concepts:

- Distributed operational planning in response to posted requests for assistance or posted missions
- Mission self discovery and mission self nomination
- Composing organizations on the fly
- Moving asset operational decisions further to the edge by transferring operational control of the assets to the commander of the composed organizations such that unity of command, unity of effort, unity of purpose, and economy of force can be maintained.
- Keeping tactical control of the self nominated assets with the parent organization.

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We believe that we have begun to address the concerns raised by Williamson regarding organizations, while wishing to improve, must “design workable order-preserving mechanisms for adapting to disturbances in the service of mutual gains”

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