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Organizational Effectiveness in the Tanker Airlift Control Center

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14. ABSTRACT

The Tanker Airlift Control Center (TACC) controls more than 1200 aircraft and over 600 missions across 50 countries per day. This complex organization organically adapts to a constantly changing set of missions including wartime efforts, humanitarian relief, response to natural disasters, presidential movement, and many others. As such, the TACC represents a particularly fertile ground for studying organizational change. The research team drew from management and psychology literatures, and from operational experience to implement a range of strategies for facilitating change management and assessing the impact of organizational change. Methods included surveys, interviews, observations, focus groups, and facilitated workshops. The research team addressed a broad range of issues in the TACC and US Transportation Command (USTRANSCOM) over the course of this project. This project successfully demonstrated the benefits of a multidisciplinary team in furthering our understanding of how organizational change occurs in a complex socio-technical system such as the TACC.

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Executive Summary

Introduction. The Tanker Airlift Control Center (TACC) controls more than 1200 aircraft and over 600 missions per day across 50 countries. This complex organization organically adapts to a constantly changing set of missions including wartime efforts, humanitarian relief, response to natural disasters, presidential movement, and many others. As such, the TACC represents a particularly fertile ground for studying organizational change. The research team was invited to participate in ongoing change management efforts in the TACC, with a specific emphasis on efforts to support the formation of a Fusion Center, combining functions from the TACC with functions from US Transportation Command (USTRANSCOM) to create a more integrated workflow.

This multidisciplinary research team was made up of a former Director of Operations in the TACC, a management consultant, two psychologists with a concentration in psychometrics, and a human factors psychologist. This team came together with complementary skills to meet the following objectives.

- Explore **methods for facilitating change management** that are congruent with the framework developed during the Team-based Assessment of Socio-technical Logistics (TASL) project.
- Develop **strategies for developing and applying organizational metrics** in the context of the proposed Fusion Center.
- Provide **real-time support to the TACC and USTRANSCOM** in ongoing and proposed re-organization efforts.

This report documents a series of related efforts accomplished under a single project.

Methods. The research team drew from management and psychology literatures, and from operational experience to implement a range of strategies for facilitating change management and assessing the impact of organizational change. Methods included surveys, interviews, observations, focus groups, and facilitated workshops.

Accomplishments. The research team addressed a broad range of issues in the TACC and USTRANSCOM. Accomplishments can be grouped into four categories:

- *Fusion Center Support*. The research team made themselves available to participate in a range of organizational change efforts in the TACC, including participation in meetings of the Joint Operations Center resulting in a better articulated vision for the Fusion Center. Change management workshops were conducted to aid leadership in introducing, managing, and monitoring change throughout the organization. The research team provided input to targeted efforts related to the Fusion Center vision including the transition of the air refueling function from the TACC to USTRANSCOM and the redesign of the Deployment

and Distribution Operations Center layout. Other efforts include benchmarking site visits and process mapping workshops.

- *Aeromedical Evacuation Reorganization.* As the TACC implemented a re-organization of the Aeromedical Evacuation function within the TACC, the research team participated in efforts to facilitate this change and assess its impact.
- *Surveys.* The research team aided in the administration and analysis of cultural surveys within the TACC. As part of this effort, the team developed an exploratory metric for measuring organizational collaboration.
- *Conferences and Publications.* Interim findings throughout the project were presented at relevant venues such as the International Symposium on Aviation Psychology and the European Conference on Cognitive Ergonomics.

Conclusions. This project successfully demonstrated the benefits of a multidisciplinary team in furthering our understanding of how organizational change occurs in a complex socio-technical system such as the TACC. Many similarities with the successful organizational change in the commercial sector were observed, including:

- Leadership dedicated to thoughtful and effective change management,
- Deliberate efforts to provide clear and meaningful communication at all levels of the organization,
- Identification of mid-level leaders and project teams selected because of their ability to motivate and persuade others, and
- Consistent monitoring of the impact of change throughout the organization.

Elements that may be specific to the TACC were also identified, including the evolution of a work culture where change is the rule rather than the exception. The very nature of the TACC requires that the organization constantly be poised to adapt and re-form to meet the ever-changing missions of the Air Force. The make-up of the workforce is quite different from most commercial sector organizations in that one portion is made up of civilian employees who tend to have very low turnover, and another portion is made up of active-duty personnel who shift jobs every three to four years. These elements of the work culture have a definite impact on strategies used to implement and accommodate change and the perception of change by different factions within the organization.

All three objectives were met over the course of this project. The objectives served as a framework that allowed for opportunistic participation in a range of TACC initiatives, resulting in a symbiotic relationship benefiting both the TACC and the research team. This report represents the culmination of these efforts toward the three objectives listed above.

1.0 Introduction

The Organizational Effectiveness in the Tanker Airlift Control Center project (also known as *Cognitive Systems Engineering in Command and Control Environments*) represents a continuation of the *Team-Based Assessment of Socio-technical Logistics (TASL)* [FA8650-04-6546] project led by Northrop Grumman Information Technology (NGIT). Under the TASL contract, a research team comprised of NGIT, Air Force Research Laboratory – Logistics Readiness Branch (AFRL/RHAL), and the University of Dayton Research Institute (UDRI) participated in a domain analysis of the Tanker Airlift Control Center (TACC).

One outcome of the exploratory research conducted under TASL was an invitation from the TACC to participate in ongoing change management efforts throughout the organization. These operational needs converged well with interests of the research team and, thus, created the impetus for the current project. In particular, the merger of a subset of TACC and US Transportation Command (USTRANSCOM) personnel into a Fused Operational Center was identified as an ongoing project that would benefit from the perspective of the research team. At the inception of the *Cognitive Systems Engineering in Command and Control Environments* project, the Fusion Center became the focus of the research and the project came to be referred to as the Fusion Center project.

This report documents several related research efforts conducted under the Fusion Center project. Although efforts focused on a range of distinct cells within the TACC and the USTRANSCOM, and seeming disparate functions, all are components of the ongoing large-scale reorganization effort currently taking place at Scott Air Force Base. For reporting purposes, each effort is described separately to increase clarity and highlight accomplishments and contributions of the Fusion Center research team.

1.1 Research Team

The research team was made up of a group with complementary expertise. C5T Corporation, contracted by Air Mobility Command (AMC), provided extensive experience with Air Force (AF) logistics and operations, supplying a team member who had served as the TACC Director of Operations during large-scale transformation. C5T Corporation provided domain-specific expertise, guiding the research team in making necessary contacts and offering insights regarding the work culture and functions within the TACC. Offner and Associates, contracted by UDRI, brought extensive experience with management consulting in both military and commercial organizations. Offner and Associate's broad real-world experiences and knowledge of the management literatures provided important context and counterpoint to observations of work within the TACC. Two team members from AFRL/RHAL provided expertise in psychometrics, which allowed the research team to extend existing survey efforts within the TACC, increasing the efficiency with which surveys were administered, providing a more-thorough analysis of the data, and providing more-targeted discussion of findings. UDRI provided human factors personnel with experience using qualitative methods, such as interviews and observations. UDRI provided support in early observations of workflow and functions in the TACC, as well as conducting individual interviews with personnel regarding their

perceptions of ongoing change within the TACC. UDRI also provided project management, coordinating subcontracts, and facilitating collaboration across the team.

1.2 Objectives

A set of three objectives guided this research effort:

- Explore **methods for facilitating change management** that are congruent with the framework developed during the TASL project.
- Develop **strategies for developing and applying organizational metrics** in the context of the proposed Fusion Center.
- Provide **real-time support to the TACC and USTRANSCOM** in ongoing and proposed re-organization efforts.

These high-level objectives allowed the research team to take an opportunistic approach, participating in a range of TACC initiatives upon invitation from the TACC.

1.3 Organization of this Report

This report documents the activities of the Fusion Center research team from June 2006 to October 2007. Section 2.0 provides an overview of the TACC, written primarily by a C5T Corporation employee who served as Director of Operations for the TACC and led transformation efforts in the late 1990s and early 2000s. Section 3.0 presents an overview of change management principles written by Offner and Associates personnel, highlighting relevant findings from the literature based on consulting experience with military and commercial organizations. Section 4.0 highlights the major accomplishments of the Fusion Center research team. Section 5.0 summarizes important discoveries resulting from this effort and points the way toward future research.

2.0 TACC Overview

The section below is taken largely from Padula (2007). This excerpt from Padula's International Symposium on Aviation Psychology (ISAP) proceedings paper conveys the sense of urgency and dynamic complexity pervasive in the TACC. The recent history described here illustrates the context within which the Fusion Center research team continues to address real-world needs as part of ongoing research efforts.

The TACC commands and controls 1200+ aircraft and 600+ missions to 50 plus countries per day. The command and control (C2) functions are diverse; from regularly scheduled missions much like an airline, to "irregular operations", such as contingency missions, training missions, scientific missions, rescue missions, presidential support, air refueling missions, and numerous classified missions.

In the late 1990's, a small group of visionary TACC and AMC commanders set the TACC and the AMC on a transformation venture called TACC 2000 (M2K) and continues as TACC Mobility 21 (M21). These efforts leveraged the best practices of industry through collaboration with various airline and distribution operations centers and

continued with the hiring of Delta Airlines to help lay the ground work. The current reorganization efforts in the TACC can be viewed as a continuation of this foundational work set in motion a decade ago. Ascertaining the perceived organizational barriers and enablers of change can provide important background for this report. The first step toward this end is to better understand the context within which the TACC operates.

2.1 The Problem

The problem that drove the transformation stems mainly from the need to work in a peace and wartime global environment – dynamically. Dynamic operations became imperative with the changing threat and the requirement to adapt to civilian Air Traffic Management (ATM) constraints. But with the changing threat, international airspace congestion, and reduced manning of our aircrews, all coupled with the need to better use our resources (aircraft, aircrews, and other assets), it was clear that obstacles to obtaining our operational goals had to be addressed.

2.2 The Catalyst

In the past, many within AMC had recognized that becoming more efficient was good, but not imperative (because of the tremendous success record of AMC and the TACC). The new studies of airspace and AMC leadership made it a must-do. Then Brig Gen William Welser (now retired Lt Gen) hired Delta Airlines for a short study of the TACC. The study produced what they expected – findings suggested room for improvement. Specific goals included moving from a reactive mode of operating to "proactive" Real-Time Integrated Flight Management. This was driven by a need to operate in a more collaborative way, and to have better connections to the aircraft used to fly missions.

Then Brig Gen Duncan McNabb (now AMC Commander) assumed command of the TACC and said "the planets are aligning;" it is time to move out on a transformation path. He hired Delta Airlines back for phase 2 and appointed Greg Padula as the operational project lead in the TACC transformation. Lt Gen (ret) Woody Hogle supported many hard decisions such as whether to include a data link from the flight manager in the TACC directly to the pilot and aircrew. The high-level support for the TACC-aircraft data link and other large-scale transformation initiatives provided a fertile backdrop for innovation and change.

2.3 The TACC Today

The same issues drive transformation in the TACC as they did 10 years ago: The TACC must be prepared to ramp-up and re-form at a moment's notice – yet respond to increasing pressure to operate more efficiently. The TACC has risen to the challenge of supplying airlift for Operation Enduring Freedom and Operation Iraqi Freedom, as well as response to Hurricane Katrina and other natural disasters. The ability to expand and flex to meet any challenge that comes along is a highly-valued and enduring trait of the TACC. Yet this inherent adaptability which resonates with the mission and vision of the TACC has a concurrent cost on the organization. The TACC is constantly stretching the

boundary of its capacity, both in terms of airframes available and manpower to plan, allocate, and execute missions. This coupled with the impending manpower cuts, which are characteristic of the modern-day AF, has created a compelling need to streamline and improve efficiency in all aspects of the TACC. In this context, the TACC has been asked to explore strategies for merging key TACC functions with related USTRANSCOM functions in the form of a Fusion Center and to also explore mechanisms to facilitate culture change aligned with the vision of the Air Force Smart Operations for the Twenty-First Century (AFSO21) program.

The Air Force has also recently embarked on a large-scale initiative called Air Force Smart Operations for the Twenty-First Century (AFSO21). The AFSO21 program seeks to drive culture changes by empowering every Air Force airman to improve daily operations through waste reduction, improved innovation, and a pervasive culture that values and engages in continuous process improvement. While the AFSO21 program ultimately aims to improve mission operations at multiple levels, it targets the AF culture as one mechanism to achieve these desired effects.

3.0 Change Management Overview

This section, contributed by Offner and Associates, provides a brief overview of change management principles instantiated largely in the commercial sector. The Fusion Center research team has used these principles as a starting point, seeking opportunities to observe, apply, and extend these principles in the context of the TACC.

3.1 Change Management in the Commercial Sector

Organizations are merging, restructuring, and selling off parts of their business to prepare for the future. They are becoming more flexible and fast moving in order to accommodate the demands of a rapidly changing business environment – and they are learning how to make large-scale changes while still producing revenue and growing their business.

During the 1980-1990s, most mergers did not realize the financial success anticipated. Corporate leadership lacked attention to how the merger-related changes would impact employees, productivity and implementation of the merger. A recent study by London's Cass Business School and Towers Perrin reports a trend of greater success with merger deals (Towers Perin HR Services, 2006). The results show an increase in general knowledge and competence among senior-level management, HR leaders and project teams, as a reason for the improved success. Organizations in the study now demonstrate a greater awareness of the direct impact that retention and engagement have on operational success during and following a merger. Because operational success is a key driver for the financial success of a merger, "people issues" are being taken more seriously in recent mergers and acquisitions.

In one case study, the merger of several smaller organizations resulted in an organization now known as the Health Protection Agency (HPA), part of the United Kingdom's healthcare system. This study identified three lessons-learned that focused primarily on

people-related variables (Bamford & Daniel, 2005). Specifically, the study concluded that (1) effective and consistent communication channels should be used to clearly state the reasons for the change, and a vision for the future; (2) effective, positive leadership is a key lever in developing a culture that is actively supportive of change; and (3) those who are managing the organizational change process need to do so in a way that is sensitive to the impact of the change on the whole organization and its employees, appropriate to environmental conditions at the time.

Beyond mergers and acquisitions, the business imperative for some organizations has been to examine their core business model. Home Depot has made significant changes to their organization in the last few years by addressing their "social architecture" (i.e., the way people work together across departments in support of their business model) (Charan, 2006). Beginning in 2000, their CEO, Bob Nardelli, led a large-scale culture change that impacted multiple levels within the organization. This involved changing their business metrics, internal processes, organizational structures, and training and development programs. They made changes to their Purchasing and Human Resource functions and standardized certain elements of their store offerings. They fundamentally changed the way in which departments worked together. While Home Depot's stock price is currently down, a recent report showed profits were up 19 percent and sales had risen 13 percent. (http://money.cnn/2006/05/16/news/companies/copmsales_analysis/).

Rockwell International, another organization that recognized the need to adjust to the demands of their industry and business environment, simplified its organization in the 1980s-1990s. They eliminated five layers of management and allocated all staff to either corporate or business unit functions and cut corporate staffing in half while doubling revenues. Beyond the structural and strategic aspects of the business, they built internal mechanisms for developing their staff and encouraging collaboration across the company. Their talent management process was centrally managed and allowed them to match their top 200 managers to appropriate positions across the organization and deploy talent where needed. Additionally their systems allowed all parts of the organization to share information and develop potential business opportunities collaboratively (Galbraith, 1994). In fact they showed 14 consecutive years of earnings growth through 1991 (Galbraith, 1994). Rockwell International later continued to evaluate their strategy and industry demands and sold parts of their defense and aerospace business to Boeing in 1996 to become Rockwell Automation.

Other examples related to change management cover the topic of installing a technical application, such as Customer Relationship Management (CRM) or database systems. Whether the change involves reorganization, technology, a merger or process changes, change management is not just on the minds of Executive Leadership Teams, Organization Development practitioners or Human Resources professionals. It is also of professional interest to Information Technology and other Service departments. This makes it even more essential that professionals work together across business silos to conceptualize and implement changes from a broad systems-thinking perspective, allowing those involved to consider how a change in one area will impact changes in another area. To maintain a systems-thinking perspective, it's important to focus on four

strategic types of change and how it will impact: (1) individual employees, customers, or other stakeholders; (2) structure and systems within the organization; (3) products and services offered by the organization and (4) technology that supports every facet of the organization.[1]

Change management is typically studied via case study and research in this area is still developing. Todnem (2005) gives a critical review of the current models and theories of change management. In this article, Todnem calls for further investigation of change as a research construct and the development of a framework for change management. While such research adds to our knowledge about change management, applied research studies also assist organizations to successfully implement a change. In these studies, the data that is collected helps the organization to better understand a variety of factors that will prepare its leaders to make informed decisions during the change process. For example, the following information is often helpful to understand:

- Readiness level of employees to commit to a change;
- Level of preparation necessary for key support groups to drive the change;
- Barriers to the change, such as discontented groups or inadequate resources;
- Clarity of the strategy and logic behind the change initiative;
- Skill gaps and development needs of employees;
- Experience level of management teams or other key groups;
- Personal conflicts among key executives or groups of employees;
- Policy and procedure issues that need to be addressed as part of the change initiative;
- Competency level of the management staff; and
- How the organization motivates, recruits, and retains its employees.

When applied research is undertaken, an Action Research Model (Cummings & Worley, 1993) often provides benefits to both the researcher and the organization. In this model, the researcher and client organization work collaboratively to identify the areas of interest or "pain" within the organization. Action Research typically involves eight steps:

1. Problem Identification
2. Consultation With A Behavioral Science Expert
3. Data Gathering And Preliminary Diagnosis
4. Feedback To The Client Or Group
5. Joint Diagnosis Of The Problem
6. Joint Action Planning
7. Taking Action
8. Data Gathering After the Action

The literature on Planned Change initiatives provides some guidance for action researchers who become involved in change efforts. Planned change initiatives are

[1] These can also be referred to as People, Process, Organizational and Technology. See The Conference Board's Executive Overview of Effecting Change in Business Enterprises: Current Trends in Change Management.

systematic efforts in the organization's processes that aim to improve organizational performance, as well as employee effectiveness and satisfaction using behavioral-science knowledge (Cummings & Worley, 1993). Highlights from this research suggest that the effectiveness of the intervention increases when employees participate (e.g., goal setting, decision making, job design); team building is incorporated to build collaboration, the change is accompanied by a structural reorganization, the intervention is directed at all levels in the organization rather than one or a few levels; and multiple interventions are used to reinforce the change (Nicholas, 1982).

A variety of management tools are used in organizations to support and reinforce change. For example, these may include online tools such as an intranet site that employees can access to get information about the change initiative and progress toward goals or build skills needed to support the change. Additionally, a variety of leadership and employee development tools are often used, such as workshops for supervisors/managers that build skills in communicating to employees; handling difficult situations or problem employees, motivating and maximizing performance; periodic and timely briefings for supervisors/managers to provide updated information on the change process; town hall meetings in which all employees hear information from senior leadership in an open forum.

In the actual implementation of change, several factors have been identified that either impede or facilitate the process. Some of the barriers to a successful planned change effort include the following (Matheson & Matheson, 1998; Guy, Beaman & Weinstein, 2005):

- An unclear rationale for change;
- Employees lack proper skills;
- Employees or leader are reluctant to change;
- Inadequate employee mobilization and engagement;
- Inadequate resources to implement the change;
- Influential leaders or employee groups have conflicting power-based agendas;
- Leadership lacks discipline and follow through;
- Metrics are misunderstood or misused by leaders or employees;
- Mixed messages from top and middle management;
- Poor communications;
- Poor market analysis;
- Poor planning;
- The reason for the change lacks credibility with employees or leaders;
- The strategy is poorly developed; or
- Too many initiatives are introduced at one time.

Critical success factors for change initiatives have also been discussed in the literature on change management (Guy, Beaman, & Weinstein, 2005; Fedor, Caldwell, & Herold, 2006):

- Competent and knowledgeable leadership team is actively involved,
- Commitment and involvement of employees,
- Getting mid-level managers to believe in and take action toward the "new way" during a change is a critical element to the success of a change effort because they are gatekeepers and can create bottlenecks or stall changes. They are also in a position to engage their own direct reports in the change. Key methods for bringing middle-level managers into the "new way" include:

    - ✓ Present a clear, consistent, and compelling message for why the change must occur so that the mid-level managers can take the message and comfortably repeat it to their direct reports.
    - ✓ Show evidence that the "new way" is really going to happen or is currently underway.
    - ✓ Involve the mid-level managers in the process. Further, their direct reports need evidence that their managers are involved and not just "floundering" or "going along with it".
    - ✓ The mid-level managers also need to be reinforced and rewarded for the "new" behaviors you want to see.

- In some situations, a change effort may impact different parts of the organization differently. In these cases, the following factors can also support the change effort:

    - ✓ The "new way" does not threaten an employee's current employment status, role, and power in the organization;
    - ✓ The "new way" does not negatively affect the employee's co-workers or direct reports.

3.2 Change Management in Government Agencies

In an essay aimed at the role of leadership in the Department of Army Resource Management, Harbison (2003) suggests that change management and transformation require three components: People and Leadership, Process Views, and Technology. This high-level characterization is congruent with lessons learned offered by Col. David Coker (2006) in his assessment of the Army's Logistics Modernization Program. This large-scale transformation deployed 4,000 users, responsible for $4.5 billion in inventory, processes, and transactions with 50,000 vendors. The Logistics Modernization Program integrates more than 80 Department of Defense systems. Key lessons learned documented by Coker (2006) include:

- Communication is critical to managing expectations of users and stakeholders.
- Training that includes complete business process documentation and addresses trainee's needs to know how the system operates as well as the underlying reasons for making changes to the system.
- Comprehensive data cleansing in order to ensure that the legacy systems are understood and procedures are carefully followed to prepare the data.
- Ensure system support is well-matched to user's needs.

Taking a broad view, Ostroff (2006) offers a set of five principles for managing change in government organizations. The first principle, *improve performance against agency mission,* means that organizations should be aware that "effective and efficient execution of their mission is what taxpayers pay for" and what motivates staffers. He believes that agency employees can become estranged from an agency's mission and strategy and therefore lose sight of their relevance to that agency or operate in a way that "protects turf" or reduces performance.

Ostroff's second principle is to *win over stakeholders.* He discusses the broad array of internal and external stakeholders an agency leader must build relationships with. He discusses an example of the Special Operations Forces building support among stakeholders in the military and political circles.

The third principle is *create a road map*. Ostroff advocates using a change effort road map that is made up of identifying performance objectives, setting priorities, and rolling out the program.

Take a comprehensive approach is the fourth principle. Any change effort must be multi-faceted, including attention to leadership, structure, processes, infrastructure, people, and performance management. In government, Harbison (2003) has observed a tendency to focus on one of these facets rather than look at a comprehensive plan.

In the fifth principle, Ostroff advises *be a leader, not a bureaucrat*. Problems with government leaders can include being a bureaucrat who respects barriers instead of seeing over and around them. Also, he believes that some agency leaders may face skepticism because they are appointees and therefore may not be seen as sincere in their efforts to improve performance against mission.

These principles guided the research team, paving the way for the accomplishments documented in the following section.

4.0 Accomplishments

The research team successfully collaborated by exploiting the expertise of each team member and benefitting from cross-fertilization as different perspectives were brought to bear on a range of organizational issues examined in the TACC. Perhaps the most noteworthy of these accomplishments is the establishment of the Fusion Center research team as a working partner with the TACC. The TACC has generously opened its doors to research observations, interviews, and surveys. The Fusion Center research team members made themselves available to provide input to change management initiatives as desired by the TACC. This could be characterized as a symbiotic relationship in which the Fusion Center research team provided input to change management initiatives and the TACC allows access to their environment for research purposes, resulting in a "living lab." The collaboration has been mutually beneficial, resulting in a diverse set of accomplishments.

4.1 Fusion Center Support

In the process of exploring team process and organizational effectiveness structures in the TACC, the Fusion Center research team has had the opportunity to support the TACC and USTRANSCOM in a range of capacities as they move toward an integrated Fusion Center. Representative examples are described below.

4.1.1 Mapping of core TACC functions

Previous work on the TASL project resulted in large set of descriptive data including process, organizational structure, and interview data from the TACC. The research team analyzed and integrated this data into a high-level representation of the TACC including critical functions, key characteristics, and organizational structure (Figure 1) which were later presented at the International Symposium on Aviation Psychology (ISAP) in April 2007. The TACC was characterized as an organization with distributed cognition that organically adapts to a continuously changing mission. This high-level overview of the TACC provides an accessible advanced organizer for researchers new to the TACC (for additional information see Appendix A).

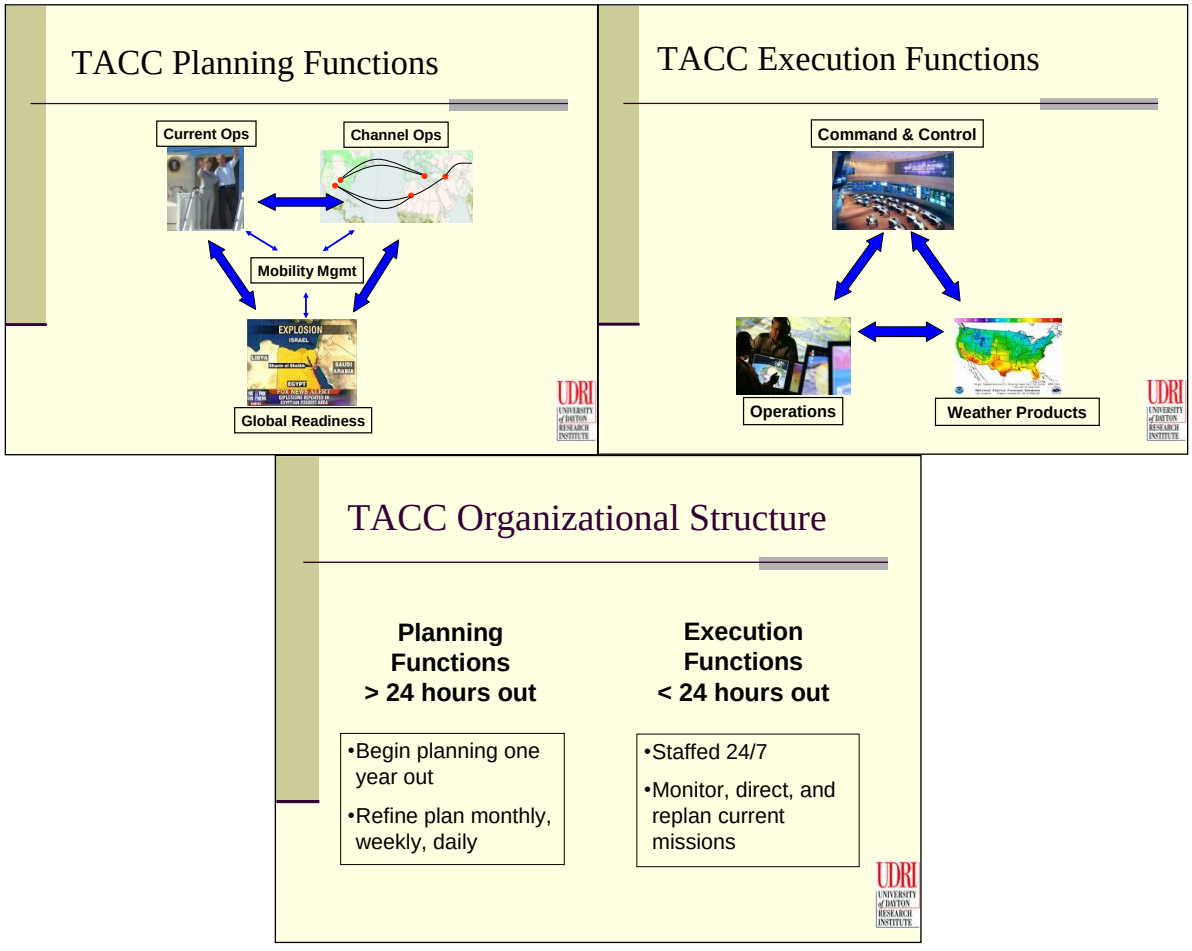

Figure 1. Overview of TACC functional organization

4.1.2 Joint Operations Center (JOC) meeting participation

A Joint Operations Center (JOC) committee made up of TACC and USTRANSCOM personnel was formed at Scott AFB to plan for and discuss workflow and staffing issues related to the formation of the Fusion Center. The research team regularly participated in these meetings and helped facilitate them from a human effectiveness perspective. The research team provided constructive support in their research of the different cultures and perspectives between the Combatant Command (COCOM) and the TACC, and between the Army and the AF. These weekly meetings provided the research team an opportunity to observe first-hand early discussions with regard to the goals of the Fusion Center, as well as how to best achieve these goals. From a research perspective, these meetings provided a rich, real-world example of change as it occurs in natural settings. Challenges observed include:

- Identifying and assembling the right people.
- Establishing shared goals.
- Managing conflicting goals.
- Developing a process for information flow, decision making, etc.
- Determining what information is available, and what is needed but not yet available.
- Articulating barriers to change.
- Managing often hidden or unspoken factors such as political concerns, turf issues, personality conflicts, etc.

In addition to research concerns, the research team was able to provide input to the JOC, including information on change management, a memo on integrating team/matrixed structures, and a memo on possible organizational structures for the Fusion Center.

4.1.3 Change management workshops

The research team hosted a number of change management workshops over the course project. The first of these was facilitated by Offner and Associates and was held at Wright-Patterson AFB for the Fusion Center research team and other researchers at AFRL on 1 August 2006. The initial workshop served as an important calibration exercise for the team, providing a knowledge structure and vocabulary for the entire team moving forward. Subsequent change management workshops were held at Scott AFB for members of the TACC and USTRANSCOM to aid them in managing and implementing change within their organizations. These workshops include:

- Oct 06 presentation on change management principles to the air refueling validation working group.
- May 07 change management workshop for the Agile Transportation 21 source selection team. Workshop participants were responsible for developing training for the Agile Transportation 21 source selection team.

4.1.4 Air Refueling transition from TACC to USTRANSCOM

In October 2006, a decision was made to explore the movement of the air refueling function from the TACC into USTRANSCOM. Although providing command and

control for air refueling missions has traditionally been considered an AF function (and therefore housed within the TACC), there are strong arguments for shifting this function to USTRANSCOM. For example, one limitation of the current process is that the TACC (at the AF level) must often request support of tanker movements from the COCOMs who operate at a cross-service level. Moving the tasking/requirements process to USTRANSCOM would increase the authority level of the organization requesting support, so that requester and provider are both at the COCOM level. In addition to a more direct link to customers and better alignment within the chain of command, there is also interest in increasing transparency of the process to promote better planning and analysis of the use of air refueling assets worldwide. However, moving the air refueling function to USTRANSCOM is not straightforward. Legal issues such as how tankers are funded must be taken into account (i.e., with 'Appropriated' monies versus USTRANSCOM controlled monies such as the Transportation Working Capital Fund). The research team participated in briefings and met with personnel in the air refueling cell in order to provide input to both the organizational and technological support for this function.

4.1.5 Re-design of Deployment and Distribution Operations Center layout

In an effort to streamline workflow in the Deployment and Distribution Operations Center (DDOC) at Scott AFB, the research team provided input to a re-design of the physical layout. There are inherent strengths/limitations of different organizational structures. For example, functional alignments tend to be more efficient while divisional alignments tend to be more adaptable to contextual/customer demands. Contemporary organizations must be creative in their strategies while ensuring that their strategies match the structures/processes that they have in place. One way to promote adaptability and improve organizational communication is by creating lateral organizational structures (Galbraith, 1994). The Fusion Center research team suggested that the future DDOC organizational structure be a hybrid structure (Figure 2) which could: 1) maximize efficiencies through functional teams where appropriate, 2) maximize adaptability in geographical teams where needed, and 3) promote lateral communication through knowledge managers. Further analyses and recommendations for organizational structure improvement are ongoing (for additional information see Appendix B).

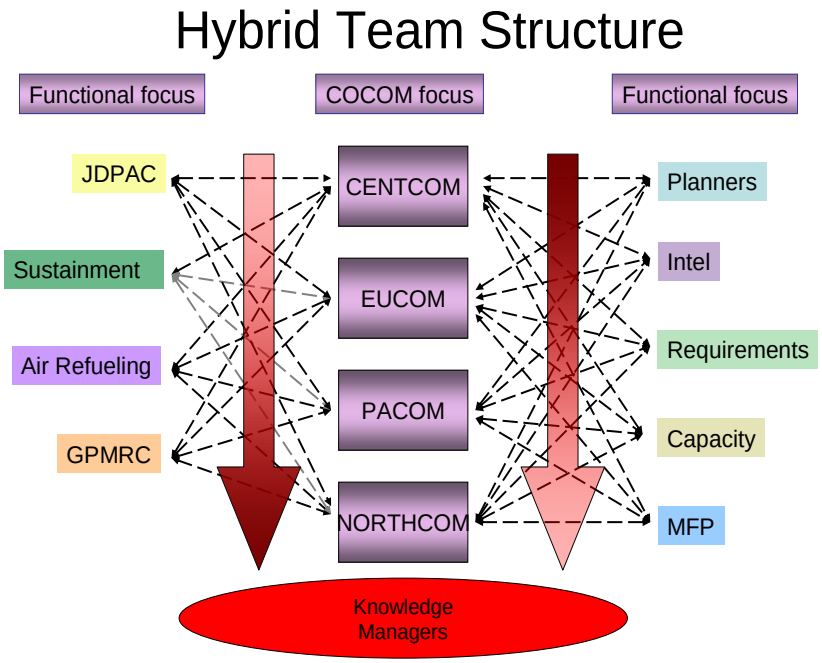

Figure 2. Sample hybrid organizational design

4.1.6 Benchmarking site visits

In July 2007, the TACC leadership and AFRL/RHAL personnel initiated a series of site visits to companies in related industries that have recently implemented organizational change. Prior to the first site visit to Dell, Offner and Associates provided a briefing suggesting a framework and questions that observers from Scott AFB might use to guide their site visit observations and discussions. The research team participated in a post-brief meeting in which TACC personnel discussed their observations from the Dell site visit and implications for change management in the TACC. The following recommendations were generated as a result of this post-brief (S. Swindler, A. Offner, G. Padula, personal communication August 13, 2007):

- Clarify and communicate what is changing and is expected to continue to change at the TACC.
- Identify what practices observed at Dell are relevant for and capable of being effectively implemented in the TACC.
- Leverage lessons learned – Prepare list of questions that will focus on the objectives to be learned during future trips and conduct post-briefs to discuss what was learned.
- Review the Rapid Improvement Event (RIE) process and determine if it can be focused in a way that will better help the TACC move forward.

- Identify a compelling message for TACC stakeholders that will resonate among the TACC personnel and help establish their psychological 'buy-in'.
- Create a communications plan that identifies key messages and an action plan for delivering these messages.

The research team also led a debrief session immediately following the Dell site visit. Representatives from the research team also participated in the second site visit, held at FedEx Corporation in October 2007. Key observations from the FedEx visit included:

- Extensive use of automation in the sorting process.
- Extensive use of real-time and historical performance metrics.
- Presence of a strong service culture.
- Use of organizational metrics.
- Resistance to change perceived as the biggest roadblock to implementing lean business process re-engineering paradigms.

These observations became key discussion points for the TACC team. FedEx strategies for measuring performance and for overcoming resistance to change were of particular interest. Although critical differences between FedEx and the TACC exist, these observations have important implications for supporting organizational change in the TACC.

4.1.7 Fusion Center process mapping workshop

Members of the research team participated in a process mapping workshop held by the Fusion Center team at Scott AFB. The workshop included subject matter experts from the TACC and the DDOC. The research team observed information exchanges between the different subject matter experts participating in the workshop and provided suggestions based on the data. Notable suggestions included: 1) define key terms upfront to reduce barriers associated with differences in language/symbols, 2) base strategic decisions regarding organizational structure on empirical data such as job analysis, organizational simulation, and other research tools, and 3) conduct organizational assessments to gauge change readiness and barriers to change prior to engaging in change.

4.2 Aeromedical Evacuation Re-organization

Prior to June 2006, the Aeromedical Evacuation (AE) function spanned four different divisions within the TACC. Although the AE function was and continues to be a high visibility, high priority, and highly successful mission, the distribution of the function across divisions in the TACC led to role confusion, redundancy, and in some cases, conflict within the team. In June 2006, the four AE branches were merged into one division with the intent of providing a central repository for outside customers, and to strengthen teamwork within the AE function. The research team had an opportunity to observe the AE function both before and after this merge (for additional information see Appendix C).

Figure 3 depicts a timeline slide summarizing the research team involvement with AE as of March 2007. The research team had interviewed AE personnel prior to the merger as part of an effort to better understand functions within the TACC. Soon after the merger was announced, the research team was asked to help facilitate a workshop designed to examine overlap and conflicting roles between two AE branches. The report and briefing resulting from this workshop outlined a new process for obtaining AE crews to staff missions.

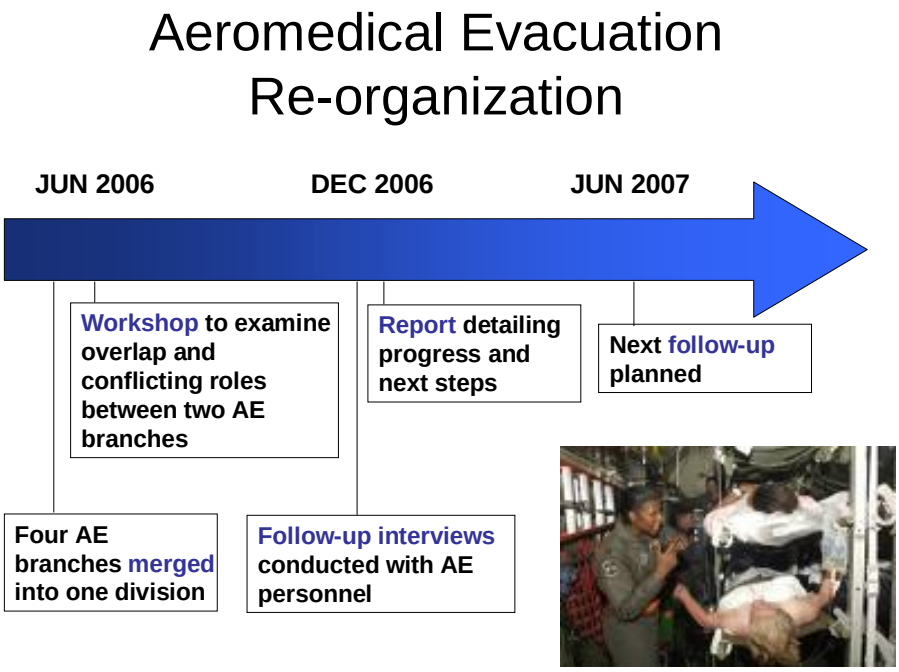

Figure 3. Research team involvement in Aeromedical Evacuation reorganization

By December 2006, AE personnel had physically moved into a shared workspace, begun cross-training, and attempted to implement new agreed-upon processes. The research team conducted a set of follow-up interviews with twelve AE personnel to obtain first-hand, individual impressions of the success of the merger and associated changes (i.e., physical re-location, cross-training, etc.). Results of these interviews indicated that although personnel generally found the merger to be a step in the right direction, many continued to experience conflict based on a seemingly contradictory chain of command, and legacy loyalties to the former AE branches and associated leadership chains.

A report detailing findings from the interviews was delivered in December 2006 and telephone discussions were conducted with the AE division chief regarding what steps should be taken next. However, before these steps were implemented, a change in leadership took place. The research team was invited to visit the AE division during the transition period in which the outgoing and ingoing AE division chiefs were present in the TACC. This provided the incoming AE division chief an opportunity to leverage the

experience of the prior division chief and develop a plan to implement the next step recommendations.

By June 2007, the new AE leadership was in place and had taken steps to continue efforts to improve service to AE customers and strengthen teamwork within the AE function. These efforts included clarification of the chain of command and organizational structure, re-location of personnel to better support collaboration across and within AE functions, and specific team building activities.

4.3 Surveys

AFRL/RHAL personnel brought their knowledge of psychometric principles to the use of the surveys in the TACC. Mainstream Management, LLC, a management consulting firm, had been contracted by TACC to administer a series of cultural surveys and introduce Lean strategies within the TACC. AFRL/RHAL personnel led the Fusion Center research team in collaborating with Mainstream Management, LLC to introduce additional academic rigor to the survey process. The result was a more-efficient and more-thorough survey and analysis process.

4.3.1 Platypus

Early in this project, the research team anticipated the need for a robust and inexpensive online survey tool to support data collection. The Platypus tool was developed and tailored to the needs of the research team. The tool is currently hosted on the UDRI server, and available to the public at no cost. Platypus has been used to collect data for several other AFRL and university-based research projects.

4.3.2 Initial cultural survey

In August 2006, Mainstream Management, LLC administered a cultural survey to the TACC at Scott AFB consisting of a combination of a paper-based survey and facilitated focus groups. Mainstream shared the cultural survey data with the Fusion Center research team who then conducted additional analyses. A set of 20 questions addressing collaborative readiness were included in the survey and analyzed by the Fusion Center research team (Lyons, Swindler, Wolf, Vincent, 2007a). This represented an initial attempt to assess collaborative readiness via survey data. Psychometric analyses were conducted to ascertain the factor structure of the construct. These initial analyses revealed a four-factor solution which accounted for 65% of the variance for this construct. The four dimensions that emerged were labeled collaboration attitudes, technology adaptation, collaboration enablers, and job characteristics. Subsequent reliability analyses found that each of the dimensions had adequate reliability. These quantitative findings were interpreted along with qualitative responses from the focus groups. The focus group data were coded into response categories and an inter-rater agreement was established. The combination of survey and focus group data provided a more complete picture of collaborative readiness of the TACC and it established an exploratory metric to explore collaboration at the organizational level (for additional information see Appendix D).

A report and briefing summarizing findings from the perspective of the Fusion Center research team was delivered to TACC leadership (Lyons, White, Swindler, Offner, Militello, Snead, Sinks 2007b). Key findings included:

- There are disparities between how civilians, enlisted personnel, and officers rated their organization.
- Civilians tended toward lower ratings of organizational change readiness and team effectiveness compared to their military counterparts.
- TACC personnel perceive that existing communication processes and practices are inefficient (both top-down and bottom-up).
- TACC personnel perceive that collaboration between management and personnel is lacking.
- Feedback about and monitoring of change initiatives could be improved.
- Trust among co-workers (particularly among the enlisted and civilians) is low.
- TACC personnel have very high levels of personal pride.
- TACC personnel believe that the TACC does an outstanding job accomplishing its missions, despite having to overcome obstacles in many situations.

4.3.3 Additional cultural surveys

A second cultural survey was administered to the TACC in October 2007. For this effort, the Fusion Center research team took the lead, refining the previous survey and converting it from paper-based to an online format thus reducing the time spent on the assessment from 2 hours (including the group interviews) to about 10 minutes. In addition, the research team plans to administer a tailored version of this cultural survey to the 463rd Airlift Group at Little Rock AFB and the 43rd Airlift Wing at Pope AFB in the near future (for additional information see Appendix E).

4.4 Conferences and Publications

In spite of the ongoing nature of the Fusion Center research, interim findings have been published and presented at relevant conferences in recent months in an effort to keep pace with the latest related research.

4.4.1 International Symposium on Aviation Psychology

In April 2007, the Fusion Center research team facilitated a symposium session titled *Innovations in the Tanker Airlift Control Center* at the International Symposium on Aviation Psychology (ISAP) held in Dayton, OH. Four papers were presented:

- An overview of the TACC intended to set the stage for the rest of the papers in the session (Militello, Vincent, Gaydon, Swindler, 2007).

- A case study of large-scale transformation efforts in the TACC that began as Mobility 2000 and continues as Mobility 21 (Padula, 2007).

- An ongoing effort to establish a metric to assess readiness for collaboration to be instantiated in the TACC (Lyons et al., 2007a). This metric is intended to predict how well employees are prepared for organizational change initiatives that aim to introduce new forms of collaborative tools and that seek to enhance collaboration through organizational re-design.

- A system design project to develop a tool to aid TACC personnel in re-planning when existing missions are disrupted due to weather, maintenance, or any unpredictable real-time event (Roth et al., 2007).

The session was well-received. Most in the audience had some experience with the TACC, either as researchers or as former TACC personnel.

4.4.2 European Conference on Cognitive Ergonomics

In July 2007, AFRL/RHAL attended the European Conference on Cognitive Ergonomics (ECCE) in London, England. A paper titled, "Studying Organizational Collaboration: Lessons Learned" (Swindler, Militello, Lyons 2007) was presented. The paper summarized experiences of the research team in applying a combination of qualitative and quantitative methods to the study of collaboration in the TACC. A second paper titled "Organizational Collaboration: Effects of Rank on Collaboration" (White, Lyons, Swindler, 2007) was also presented. This paper described the effects rank had on perceptions of organizational collaboration. Basically, junior ranking personnel reported lower organizational collaboration perceptions compared to senior ranking personnel.

5.0 Conclusions

The Fusion Center project represents an important opportunity to study change management in a military organization characterized by distributed cognition that organically adapts to a continuously changing mission. Much of the change management literature focuses on commercial organizations. The Fusion Center research team has, thus, had an opportunity to explore similarities and differences between change management principles articulated in the literature and change management as it has occurred in the TACC and USTRANSCOM over the last eighteen months.

Many similarities to the commercial sector have been observed. For example, in the TACC, the research team has observed an experienced leadership team that takes change management seriously. In an organization in which change is a constant, researchers observed leadership making a concerted and thoughtful effort to communicate effectively. This included providing verbal messages via commander's calls and other information sharing sessions, as well as written communications via email and an internal intranet. These communications tend to provide high-level guidance, intent statements,

and priorities, while leaving it to mid-level managers and focused project teams to provide detailed plans for implementation target to segments of the organization.

Researchers have also observed TACC leadership efforts to identify and involve charismatic, motivated personnel in change management. In addition to existing mid-level managers, project teams have been established to aid in planning and implementing specific aspects of change.

A third important strategy observed in both commercial settings and the TACC is the consistent monitoring of the impact of change throughout the organization via climate surveys, focus groups, interviews and regular meetings with mid-level management.

We suspect that the effectiveness with which change is managed in the TACC is due largely to the fact that the organization is designed to constantly evolve. The work culture in the TACC rewards leadership and a workforce that is able to adapt to a range of unpredictable world events. Organization structures have thus developed to support leadership in executing change effectively.

It is also important to note deviations from change management as described in the literature. One distinct characteristic of the TACC is that a portion of the workforce, including the high-level leadership, is active duty military personnel and therefore generally stays in a specific job for only three years before moving on to another assignment. This revolving staff is complemented by the civilian sector of the workforce which tends to have very little turnover.

One observation that is perhaps distinctive of military organizations is that personnel are more willing to wait for a change of personnel rather than directly address issues of resistance to change or personality conflicts. It is often perceived to be more effective to simply wait until the individual or individuals have rotated out of the role in question than to implement efforts to resolve issues. There is a general belief that as new personnel move into the role, often personality conflicts or legacy turf issues disappear. We do not have data to support or refute this belief. Anecdotal accounts suggest that in other settings personality conflicts and turf issues may linger and gain momentum if they are not addressed.

One implication of the two distinct populations within the workforce is that the short-term, active-duty personnel tend to be more open to change (Lyons et al., 2007a). The long-term civilian personnel, on the other hand, are more likely to express pessimism about change. This is not surprising given that the long-term civilian personnel are likely to have more invested in the TACC in terms of both immediate and long-term career impact.

With regard to the objectives the research team set out to fulfill, each has guided this project. The first objective, *explore* ***methods for facilitating change management*** *that are congruent with the framework developed during the TASL project*, led the team to explore a range of approaches in the context of the TACC. A facilitated workshop was

used to aid the Aeromedical Evacuation leadership to articulate new processes to go with new organizational structures. Online surveys and focus groups were used to obtain information about the work culture across the TACC. In-depth, individual interview sessions were used to gauge perceptions of and reactions to deep change within the Aeromedical Evacuation function. Change management workshops were held to guide and encourage TACC leadership in steering change within the organization. Models of organizational change were provided to TACC leadership to help prepare them to make the most from benchmarking site visits to Dell and FedEx.

The second objective referred to *developing* ***strategies for developing and applying organizational metrics*** *in the context of the proposed Fusion Center*. The Fusion Center research team was able to support and improve ongoing measurement strategies such as the Cultural Surveys. As part of this effort, an exploratory metric to explore collaboration at the organizational level was introduced. This metric for predicting how well employees are prepared for organizational change initiatives holds promise for future efforts. In addition, more labor-intensive qualitative methods were used to obtain a richer, more specific assessment of the impact of organizational change on a small group of AE personnel. One advantage of this multi-disciplinary research team was the ability to apply a combination of large-scale quantitative approaches coupled with small-scale in-depth qualitative approaches to measuring the impact of organizational change.

The third objective, *provide* ***real-time support to the TACC and USTRANSCOM*** *in ongoing and proposed re-organization efforts,* is perhaps the one that made this research most compelling. By becoming involved in real-time re-organization efforts, the research team was able to apply psychological and management theory and methods to real-world challenges. In this context the research team has been able to provide support to targeted efforts such as the re-organization of the AE function, movement of the air refueling function from the TACC to USTRANSCOM, and the re-design of the DDOC layout. In addition, the research team has been an involved in ongoing discussions of the vision for the TACC/USTRANSCOM Fusion Center, as well as dialog about implementation and strategies for assessing the impact of large-scale change (both positive and negative).

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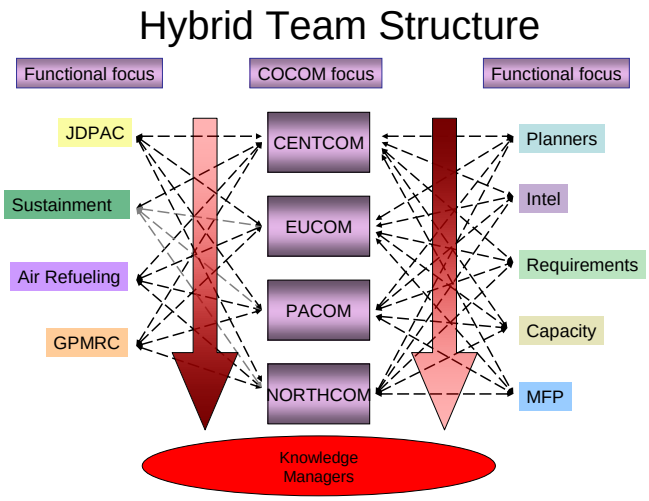
Appendix A

AFRL Organizational Effectiveness Research:
Analyzing Organizational Collaboration to Identify "Low-Hanging Fruit" for Process/Structure Change

Business process re-engineering and organizational structure changes often leverage quick opportunities for success to generate confidence and momentum for the change efforts. An AFRL/RHAL-led research team conducted a domain analysis to explore the collaborative exchanges between the TACC and DDOC in an effort to identify capability gaps and opportunities for organizational change. RHAL researchers spent several weeks embedded in both the TACC and the DDOC to understand the domain and information exchanges that occur between the two organizations. These researchers used a combination of interviews and observations to understand mission planning, airlift allocation, and to a lesser extent the execution of airlift missions while assessing the barriers to collaboration present in aspects of these organizations. Several areas were identified as "low-hanging" fruit for both process improvements and structural changes. Example recommendations included 1) consolidation of the Prior Permission Required request process, 2) consolidation of the requirement validation process by moving aspects of the TACC (i.e., XOPC-Future Operations and Contingency Verifications) into the DDOC, and 3) instituting a USTRANSCOM-level broker for the air refueling process. Currently two of the three example recommendations are being implemented. The air refueling process has been re-engineered to include USTRANSCOM as a COCOM broker for the process. Additionally, the first TACC personnel to move to the DDOC (i.e., future Fusion Center) represent the activities that would be accomplished by XOPC-Future Operations and Contingency Verifications.

Appendix B

AFRL Organizational Effectiveness Research:
Using Best Business Practices and Organizational Theory to Support the Vision and Implementation of the Fusion Center



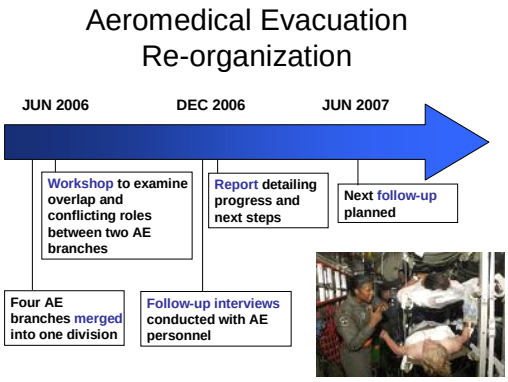
Organizational change is commonplace in today's military. However, many of these changes are not successful because organizations fail to consider the influence of several change management principles. One critical aspect of organizational change involves the vision for the change initiative. During the early stages of the Fusion Center planning, personnel from USTRANCSOM had difficulty communicating the vision of the Fusion Center to the transportation component commands (TCCs). As a direct result, the TCCs put up a great deal of resistance to the Fusion Center planning and critical time was lost due to organizational barriers, adversarial relationships, ineffective communication, lack of participation, and dwindling TCC support. Researchers from AFRL/RHAL helped personnel from USTRANSCOM to understand the importance of an effective vision statement and supported the creation of the Fusion Center vision. Currently, the relationships between USTRANSCOM and the TCCs have transitioned from adversarial to more collaborative in nature. Communication and participation in the Fusion Center project has improved and plans are currently being executed toward synergistic actions between USTRANSCOM and the TCCs.

In addition to supporting strategic visioning and communication activities in USTRANSCOM, researchers from RHAL have also engaged in creative planning for alternative organizational structures for the "to-be" Fusion Center. Organizational structures have inherent costs and benefits. Some of these characteristics have emerged through trial and error while others are driven by theory. For example, when USTRANSCOM was functionally-aligned, they expressed concern about not being responsive to customer needs. While their current divisional-alignment appears to have positive impact of customer relations, it also seems to be non-optimal regarding situational awareness and personnel efficiency. RHAL researchers are in the process of evaluating these constraints in the context of the Fusion Center to propose the most effective organizational structure for the "to-be" Fusion Center.

Appendix C

AFRL Organizational Effectiveness Research: Re-Engineering Aeromedical Evacuation Functions

Aeromedical Evacuation (AE) is a high-profile, high-priority task within the TACC. Staffed by a combination of clinical personnel, medical service corps, and highly experienced civilian personnel, AE personnel in the TACC plan for, schedule, and coordinate the movement of sick and injured personnel world-wide. Because AE cuts across so many functions, it has been difficult to find how best to integrate it into the larger TACC and USTRANSCOM organizations.



A research team led by AFRL/RHAL was engaged to help implement and monitor the organizational re-structuring. As the new organizational structure was unveiled and physical re-structuring began in June 2006, researchers met with the new AE leadership to discuss the vision for AE. This vision included a more streamlined process within the TACC, reduced redundancy and role confusion, as well as a stronger sense of team cohesion. UDRI helped facilitate a workshop to explore existing processes and articulate a new process for tasking AE crews. Approximately six months after the re-organization was put into place, researchers conducted one-on-one interviews with AE personnel to explore progress and identify areas for additional improvements. The resulting report provided AE leadership concrete examples of improvements resulting from the re-organization, as well as specific areas requiring additional attention (Militello 2006). This report further served as an important transition document as a change in AE leadership occurred, providing important background and historical information for the new leadership in addition to a vision for moving forward.

Successful re-engineering relies on a combination of clear vision based on a deep understanding of key functions, as well as thoughtful implementation and careful monitoring. This research team was able to provide strategies for facilitating discussion and creating a vision for new processes. In addition, researchers offered methods for conducting one-on-one interviews with personnel as part of efforts to monitor the effectiveness of the re-organization. Researchers looked across interview data collected from a range of AE personnel and integrated the findings into a set of meaningful recommendations. This research team has been privileged to work as partners in the re-engineering of AE in the TACC and observe first-hand the success of these efforts.

Appendix D

AFRL Organizational Effectiveness Research: Mining Meaning from Cultural Survey Data

Cultural Surveys are commonly implemented in organizations to help leadership know more about employees. Perhaps the most common complaint about Cultural Surveys is that management is not sure what to do with the feedback obtained. In the TACC, the AFRL/RHAL research team was able to work with the internal *Air Force Smart Operations for the 21st Century* (AFSO21) team to leverage additional insight from Cultural Survey data about "readiness for change" in the TACC and delivered clear, actionable recommendations. The AFSO21 team developed and implemented a state-of-the art Cultural Survey instrument in the context of Lean/Six Sigma efforts within the Air Force -- from which the AFRL research team conducted additional analyses, teasing out key information about "readiness for change" within the TACC.

Researchers from AFRL conducted additional analysis on qualitative data collected by the AFSO21 team via focus group. The data were sorted for themes, and then categorized and coded. Findings from this analysis highlighted segments of the TACC population who perceived the most barriers to change, as well as those most open. This was further broken down into component issues such as communication, trust, and active resistance to change, each of which was raised by focus group participants. ARFL researchers briefed these findings directly to the TACC Commander, Vice Commander, and Directors so that they could become a part of the TACC leaderships' vision for the future, and strategies for bringing that vision to reality. Based on these analyses, the TACC leadership has targeted key elements of the findings (e.g., internal communication) as opportunities for process improvement for the internal AFSO21 team. Additionally, the TACC leadership has actively sought to improve the change readiness of the TACC personnel and notably, its leadership cadre, by engaging in strategic visits and meetings to discuss organizational change issues, observing exemplars in industry, and facilitating communication and trust within the TACC.

Appendix E

AFRL Organizational Effectiveness Research: Applying Cutting-Edge Assessments to Gauge Change Effectiveness and Culture

Web-based organizational surveys are a common tool used by organizational consultants to evaluate organizational factors such climate, culture, employee engagement, and morale. Researchers from AFRL/RHAL expanded the assessment capabilities of the internal AFSO21 team at the TACC to include a web-based platform for conducting organizational surveys. The web-based platform will shorten administration time and will allow organizational researchers to collect vital perceptions, attitudes, and beliefs from the entire organization rather than a select sample. This expanded reach will allow all TACC employees to provide feedback about ongoing organizational changes thus giving the employees a "voice" and an opportunity to engage in the change process. The AFSO21 team and the TACC leadership plan to use this capability for future organizational assessments. The AFSO21 office under the Secretary of the Air Force has also expressed interest in this capability to provide a standardized assessment tool for the larger Air Force AFSO21 evaluation.

Researchers at AFRL/RHAL also developed organizational metrics for use in evaluating specific elements of the AFSO21 initiative at the TACC. Prior to this capability, the AFSO21 team had no standard metrics to evaluate the impact of the AFSO21 program on the TACC personnel. These metrics will inform the TACC leadership and the AFSO21 team about present and future organizational barriers to the AFSO21 program, individual attitudes and beliefs toward AFSO21, and the benefits and or limitations of past Lean Events.