

# al-Qaeda as an Adaptive Organization: a Case Study

Trina Powell  
Analytic Services Inc.  
[trina.powell@anser.org](mailto:trina.powell@anser.org)

Nicole Hutchison  
Analytic Services Inc.  
[nicole.hutchison@anser.org](mailto:nicole.hutchison@anser.org)

Dr. Art Pyster  
Stevens Institute of Technology  
[art.pyster@stevens.edu](mailto:art.pyster@stevens.edu)

Copyright © 2010 by Analytic Services Inc. Published and used by INCOSE with permission.

**Abstract.** Since September 11, 2001, al-Qaeda has proven itself to be an organization capable of surviving in a hostile environment where they are consistently targeted by the U.S. in political and military actions. Their survival is due, in large part, to their ability to adapt to the environment in which they operate. This level of adaptability—or agility—makes them an excellent target for a case study on adaptability. In ongoing research, the authors explain that by studying the organization and identifying elements which make them agile, some recommendation can be made for strategies to increase agility in similar, open organizations. Some potential implications for other types of organizations are also discussed.

## Background

**Why al-Qaeda?** According to Robertson and Sribar, an adaptive organization is one whose infrastructure “should be be ready to scale, adapt, change, or grow to deal with challenges already looming on the horizon.” (2009) Since September 11, 2001, open source media has discussed the actions taken by the U.S in the global war on terror (GWOT), and yet al-Qaeda has continued to exist and have some success inflicting damage to both U.S. and allied forces in the Middle East. This ability to function despite an actively hostile environment indicates that the al-Qaeda organization is able to adapt to “looming challenges”. But, perhaps more importantly, al-Qaeda also appears, in open sources, to possess some intrinsic properties which make them uniquely suited to deal with uncertainty and unanticipated threats and to quickly take advantages of opportunities as they arise. Therefore, the authors theorize that by studying al-Qaeda and discerning some organizational characteristics which seem to support this level of adaptation, it is possible to develop lessons learned that may be applied to other organizations to foster adaptability.

**Adaptability and Agility.** A Google search for “adaptability” yields many different definitions—and over 5 million results. (Robertson and Sribar, 2004) The previously-mentioned definition of an adapted organization provided by Robertson and Sribar seems to be a typical example. But, as also mentioned, al-Qaeda appears to transcend this concept of adaptability. In fact, this definition of adaptability also aligns with many

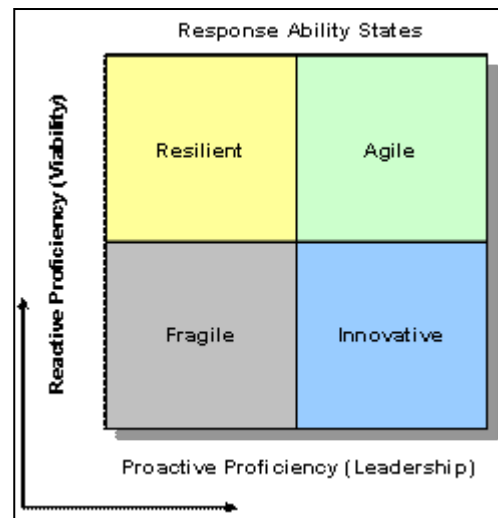


Figure 1. Rick Dove's conceptual model for agility. (2001).

definitions of resilience, though often “resilience” includes the ability to respond appropriately to unforeseen actions, as well as those which are anticipated. Rick Dove’s definition of resilience as “reactive change proficiency” is one such example; however, Dove takes this concept further by also defining “proactive change proficiency”, or “innovation” (see Figure 1). (Dove, 2001) According to Dove’s model, the combination of resilience and innovation is what creates agility. Because this construct more fully addresses the behaviors of al-Qaeda often described in open sources, the authors determined that Dove’s agility model would be an appropriate construct for examining the organization.

## Methodology

**Approach.** The authors took a typical research approach to the examination of al-Qaeda as an agile enterprise. The approach began with a literature review, which was used to develop the view of the al-Qaeda extended enterprise (Long et. al, 2007). This enterprise view formed the basis of additional analysis, which included the techniques described by Peter Checkland (1999), Rick Dove (2001), and John Boardman (2007). These tools and analysis techniques helped define the agile components of the al-Qaeda extended enterprise for focused analysis

To gain insight into al-Qaeda’s agility, the team’s initial efforts focused on gaining a picture of the as-is of al-Qaeda as a resilient organization. Though popular media sources produce numerous reports on the organization and their activities, the team primarily developed the as-is through first-hand accounts of researchers, including Gunaratna (2002, 2005), Burke (2006), Sageman (2004), and Wright (2006) as well as sources produced by al-Qaeda, such as their manifesto (Laqueur, 2004). This picture of the as-is included not only the structure of the organization but also examined their tactics, strategies, and ideology.

**Application of the Systems Perspective.** The first challenge to understanding al-Qaeda’s agility was defining what al-Qaeda “is” and “is not”. Though facilities, materiel, and monetary resources are important, al-Qaeda is principally an organization of individuals bound by a common ideology. Accounts of the organization’s size range from as few as 300 to as many as 50,000 members. (Burke, 2006; and MIPT 2008, respectively) Clearly, for the team to develop a useful and realistic view of al-Qaeda as a system, it first had to define the system’s boundaries. Given the range of perspectives on al-Qaeda available, this was not simple. However, Boardman (2007) developed a series of views that provide multiple perspectives on a system as an extended enterprise and provided a mechanism to establish the boundaries of the system of interest. Viewing a system as an extended enterprise provides an understanding of the entities and systems with which the system-of-interest interacts. (Long et al., 2008). Clarifying al-Qaeda’s enterprise boundaries and components enabled better understanding of the scope of the enterprise and illuminated the functional elements that would provide insights into their agility. To do this, the authors used the agility construct defined by Dove as previously described.

## al-Qaeda Functional Construct

The enterprise views helped to identify the different roles seen in the al-Qaeda organization: operational cells, support cells, autonomous cells, adjacent/supportive organizations, and the core group which serves as the executive function of al-Qaeda. (Hutchison and Pyster, 2010) Additional groups, which influence al-Qaeda’s operations, but which are not within the system boundary were also defined as the extended enterprise and included: supportive, sympathetic,

opportunistic, and hostile entities. (Long et al., 2008) After the analysis of the enterprise views of al-Qaeda, the team was able to develop a construct which shows the primary functions of the al-Qaeda enterprise, and how they interact. As shown in Figure 2, there are multiple interactions between these functions, and multiple facets of the al-Qaeda organization are involved. The figure also demonstrates how al-Qaeda's functions, as well as groups within the environment, support or detract from al-Qaeda's primary objective.

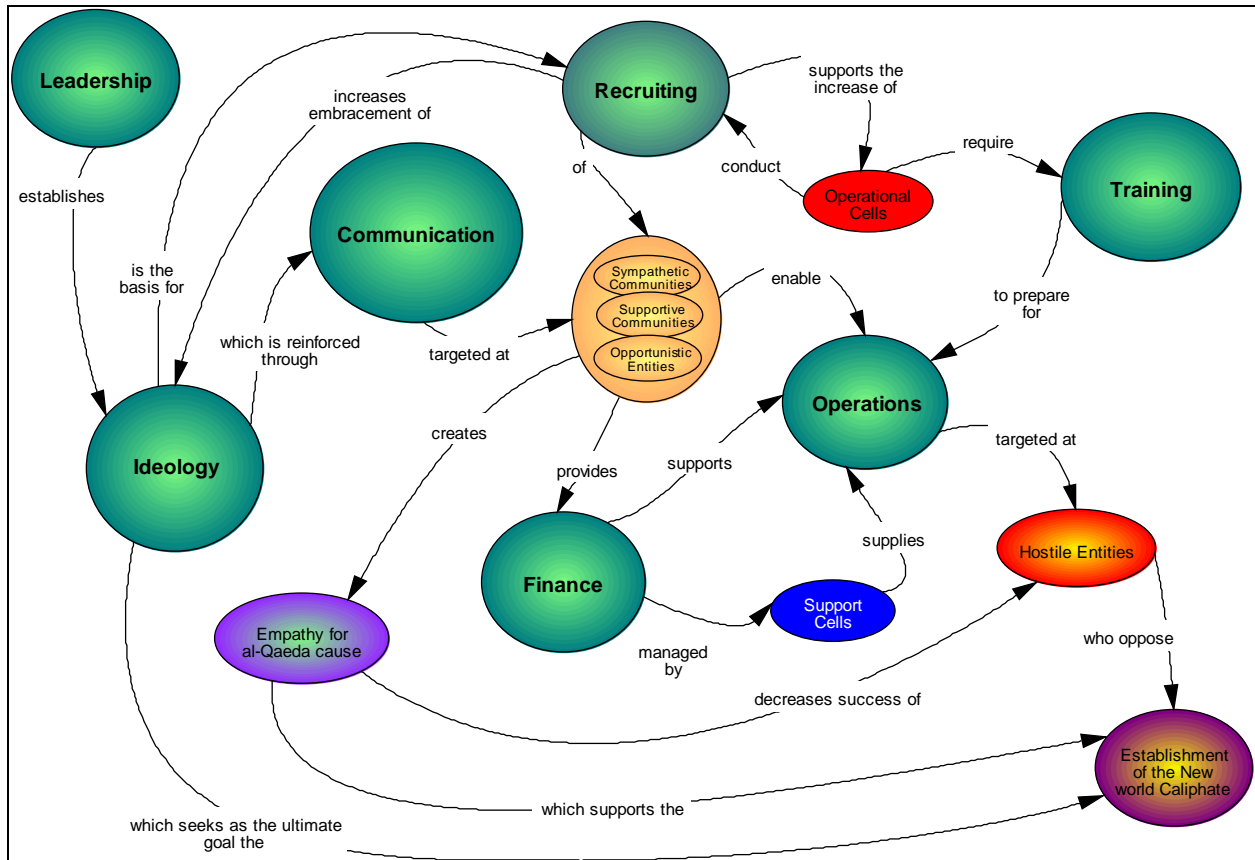


Figure 2. Major functions of al-Qaeda, including functional interactions and relation to al-Qaeda's primary goal.

For each of the functional elements identified, the authors initiated new research efforts, and attempted to ascertain what aspects of these functions were particularly resilient and/or innovative. It was assumed by the team that by identifying the characteristics which enabled agility at the functional level, insight could be gained into what makes the overall organization agile. However, the authors acknowledge that without understanding the system-level implications, a complete picture of agility cannot be gained.

## Observations and Findings

The primary findings of the authors' analysis can be found in Table 1.

Table 1. Conclusions regarding the functional agility of al-Qaeda.

Functional Construct	Summary Conclusions
<b>Ideology</b>	<b>Agile.</b> Al-Qaeda has demonstrated innovation in its reinterpretation of

Functional Construct	Summary Conclusions
	<p>ideology to enable emerging strategies as well as to respond to threats and opportunities in the environment.</p> <p><b>Innovative.</b> Upon the end of the conflict in Afghanistan, Al-Qaeda began to look for ways to impact the areas beyond the Middle East. Understanding that globalization was a growing trend, al-Qaeda reinterpreted its ideology in a way that enabled the organization to spring from locally-focused to global strategies.</p> <p><b>Resilient.</b> While the basic tenets of al-Qaeda's ideology have remained the same, the goals, objectives, and acceptable practices have changed to meet the challenges of the current environment.</p>
<b>Operations</b>	<p><b>Agile.</b> Al-Qaeda has demonstrated the ability to conduct high-impact, distributed operations at will, allowing them to take advantage of opportunities or vulnerabilities.</p> <p><b>Innovative.</b> Al-Qaeda effectively uses infrastructure components as weapons and enhancements. Swarming techniques have been used to develop new improvised explosive device technologies and triggering systems.</p> <p><b>Resilient.</b> Al-Qaeda's macro-level organization is a distributed network, allowing operating cells to function independently. Loss of or damage to an operating cell has minimal impact on the organization.</p>
<b>Leadership</b>	<p><b>Agile.</b> Al-Qaeda contains many distributed cells with local-level leadership, which are decentralized and autonomous. However, al-Qaeda's core group is the least agile aspect of the organization in that it has a hierarchical structure that can be defined and its members are readily identified.</p> <p><b>Innovative.</b> Anticipated vulnerability of core group to GWOT and distributed command and control responsibilities to autonomous cells.</p> <p><b>Resilient.</b> There is no structured appointee system within the leadership's core group, in case a member is caught or killed. This allows members to be replaced quickly without leaving leadership gaps.</p>
<b>Communications</b>	<p><b>Agile.</b> Al-Qaeda has demonstrated its ability to adapt its organization to enable new communication strategies and these strategies, in turn, are rapidly updated to meet the operational and security challenges of the environment.</p> <p><b>Innovative.</b> Al-Qaeda has demonstrated the proactive restructuring of day-to-day operations to enable the organization to take advantage of emerging communication abilities.</p> <p><b>Resilient.</b> Al-Qaeda is able to quickly adapt communication strategies to their environment, which enables them to improve security while maintaining operations and sharing their goals and objectives with their target audience.</p>
<b>Recruiting</b>	<p><b>Agile.</b> Al-Qaeda displays self-organizing system of systems attributes</p>

Functional Construct	Summary Conclusions
	<p>in its recruiting and is bound only by ideology; leads to decentralized, complex, self-adapting processes without guidance or management from outside sources.</p> <p><b>Innovative.</b> Recruitment process produces al-Qaeda members that can survive and accomplish missions in a hostile environment because it establishes conditions that allow only the most ideologically committed recruits to become members.</p> <p><b>Resilient.</b> Al-Qaeda uses numerous methods for recruiting which they modify based on the environment in which they are operating—from sympathetic to hostile—and who they may be targeting.</p>
<b>Training</b>	<p><b>Agile.</b> Training is conducted in a decentralized, <i>ad hoc</i> fashion, often using virtual resources; this reduces funding requirements and susceptibility of members as targets in GWOT as well as the added benefit of reaching a wider audience.</p> <p><b>Innovative.</b> Al-Qaeda seeks techniques and tactics to support and get reinforcement through the other functional components in order to improve tactics and operational capabilities of individuals supporting operational missions.</p> <p><b>Resilient.</b> As an initial key target in the GWOT, al-Qaeda evolved from the use of organized training at training camps, to a more decentralized, <i>ad-hoc</i> approach.</p>
<b>Finance</b>	<p><b>Agile.</b> Al-Qaeda sources funds through exploitation of the <i>umma</i>; protects funds through secrecy and redundancy; and distributes funds through ancient methods, which are untraceable.</p> <p><b>Innovative.</b> In order to generate funds without self-funding or reliance on direct donations, the al-Qaeda core group directed the creation of businesses and shell organizations such as illegal drug sales, illicit hospital donation programs and numerous other scams.</p> <p><b>Resilient.</b> Following 9/11, al-Qaeda quickly adapted to protect, and reliably continue distribution and allocation of funds.</p>

The lynchpin of al-Qaeda’s agility appears to be the ideology of the organization. This ideology is the basis for the Global Islamic jihad movement. The goals of al-Qaeda include the removal of apostate rulers from traditionally Muslim countries, the destruction of the West, the killing of infidels, and the creation of a new Islamic Caliphate. (Lacquer, 2004) But the ideology, at its core, requires the enforcement of the ideals of the Qur’an, primarily self-sacrifice for the good of Islam. This ideology attracts a certain set of individuals who can then be recruited for specific functions within the enterprise. It provides the basis for training and is reinforced in all operational members. It is the basis for determining what tactics are appropriate for members to use, what operations will help al-Qaeda meet its objectives, and, eventually, how to achieve its goals.

Identifying and examining the response ability of the functional areas which allow al-Qaeda to recover and restore operations, despite the GWOT, highlights the reactive elements of the al-Qaeda enterprise which enable agility. The ability to expand and contract their operational footprint based on evolving needs is an example of al-Qaeda’s response ability. Examining their

ability to anticipate and take advantage of changes and challenges in the environment provides insight into the proactive aspects of al-Qaeda's agility such as their inherent ability to take advantage of new and evolving technologies. The analysis examines the agility of the al-Qaeda enterprise and the extended enterprise, as well as important differences between them. It also includes preliminary insights into the relationship between decentralization and agility.

**Agility and Organizations.** All organizations perform the seven functions discussed above to some degree, though they may be referred to differently. For example, a corporation may not have an ideology, but it will have a mission, vision, goals and objectives, and standard operating practices which define the character of the organization.

By reviewing the characteristics of these functions which foster agility, the authors have developed a set of principles which an organization may wish to utilize in order to increase its ability to adapt to a changing environment and deal with uncertainty:

- Build an organizational "ideology" which provides a common ground for all individuals within the organization, but which is not so rigid that it cannot meet changing conditions. For example, the ideology may set a minimum standard of work for an organization, but it should not necessarily try to develop a rigid approach for all projects.
- Consider the level to which individuals within an organization can be empowered and the necessary levels of oversight for these individuals. The al-Qaeda case study indicates that when some level of decision-making authority resides at the individual level, with only the minimal oversight required to ensure that actions will align with organizational goals, that the organization may more quickly mitigate risks and take advantages of opportunities.
- Recruitment should occur in many ways, with the organizational "brand" used as the primary attractor for potential new organizational members. Recruitment strategies should be modified as changes in the potential pool of members are observed.

These findings are supported by observations made by Dove (2001), Alberts and Hayes (2003), and others. Obviously, these strategies will not be appropriate for every organization. For example, regulatory requirements within an industrial sector may require multi-tiered oversight, which would limit the ability to push decision-making abilities to the lower echelons of an organization. Likewise, recruitment strategies may be limited by opportunities available in the market segment for an organization. However, by applying these principles to the extent possible, the authors hypothesize that an organization may be able to improve their adaptability.

## Way Ahead

The observations and findings discussed here are the result of a primarily academic study of the al-Qaeda organization. The authors hope to continue this line of inquiry in several ways:

- Interviews with practitioners who deal with al-Qaeda to verify and update the current model of the organization;
- Additional study of the interaction between decentralization and agility;
- Creation of a working model of the al-Qaeda "system", which can be used to run fairly realistic simulations that can help predict the possible reactions of the organization to U.S. actions;

- Application of the principles identified to other organizations to test their validity (initially, another Islamic terrorist organization, then a non-Islamic terrorist organization, and finally a volunteer-based non-terrorist organization).

## References

- Alberts, D. and Hayes, R. 2003. *Power to the Edge: Command Control in the Information Age*. U.S. Department of Defense (DoD) Command and Control Research Program (CCRP). Information Age Transformation Series.
- Boardman, J. (2007) *Architecting the Extended Enterprise*, Stevens Institute of Technology, Systems Design and Operational Effectiveness Program, course number SDOE 679, lecture materials, delivered Oct-Dec 2007.
- Burke, J. 2006. *Al-Qaeda: The True Story of Radical Islam*. I.B. Tauris. London, England.
- Checkland, P. 1999. *Systems Thinking, Systems Practice*, John Wiley & Sons, Inc., New York.
- Dove, R. 2001. *Response Ability: The Language, Structure, and Culture of the Agile Enterprise*, John Wiley and Sons, Inc., New York, NY.
- Gunaratna, R. 2002. *Inside al-Qaeda—Global Network of Terror*. Berkley Books. New York NY.
- Gunaratna, R. 2005. “Al-Qaeda’s Ideology”, *Current Trends in Islamist Ideology*, vol. 1. Center on Islam, Democracy and the Figure of the Muslim World online. [http://www.futureofmuslimworld.com/printVersion/print\\_pub.asp?pubID=34](http://www.futureofmuslimworld.com/printVersion/print_pub.asp?pubID=34)
- Hutchison, N. and Pyster, A. 2010. *al-Qaeda: Study of Decentralized Organization*. In the proceedings of the Conference on Systems Engineering Research (CSER). Hoboken, NJ.
- Laqueur, W. 2004. *Voices of Terror: Manifestos, Writings, and Manuals of al-Qaeda, Hamas, and Other Terrorists from Around the World and Throughout the Ages*. Reed Press. New York, NY.
- Long, N. et al. 2008. *al-Qaeda: An Agile Enterprise*. In the proceedings of the Conference on Systems Engineering Research (CSER). Redondo Beach, CA.
- Memorial Institute for the Prevention of Terrorism (MIPT), Jan. 14, 2008. *Terrorism Knowledge Base*, “al-Qaeda” Group Profile, available at <http://www.tkb.org/Group.jsp?groupID=6>.
- Robertson, B. and Sribar, V. 2004. *The Adaptive Enterprise: IT Infrastructure Strategies to Manage Change and Enable Growth*, Intel Press IT Best Practices Series.
- Sageman, M. 2004. *Understanding Terror Networks*. University of Pennsylvania Press. Philadelphia, PA.
- Wright, L. 2004. *The Looming Tower: al-Qaeda and the Road to 9/11*. Vintage Books. New York, NY.

## BIOGRAPHY

Trina Powell is a senior analyst for Analytic Services Inc., Arlington, VA, providing a broad range of technical, analytical, and management support to the Departments of Defense and Homeland Security. She holds an M.S. in Systems Engineering from the Stevens Institute of Technology,

and a B.S. in Environmental Science from Texas Christina University. Previously, she was a Captain in the U.S. Army Medical Services Corps and managed an environmental health risk assessment program supporting U.S. and Allied Forces in Europe and Southwest Asia.

Nicole Hutchison is an analyst for Analytic Services, Inc., Arlington, VA, providing systems and research analysis for the Departments of Defense, Homeland Security, Justice, and Health and Human Services. She also supports the Applied Systems Thinking Institute (ASysT). She holds an M.E. in Systems Engineering from the Stevens Institute of Technology and an M.S. in Biohazardous Threat Agents and Emerging Infectious Disease from Georgetown University. She is currently pursuing a PhD in Systems Engineering from the Stevens Institute of Technology.

Dr. Art Pyster is a distinguished research professor at the Stevens Institute of Technology and the Deputy Executive Director of the Systems Engineering Research Center, which is a Department of Defense's University Affiliated Research Center. Previously, he served in executive and lead management and technical roles for SAIC, the Federal Aviation Administration, the Software Productivity Consortium, Digital Sound Corporation and TRW. During his career, Art directed the creation of three Capability Maturity Models, oversaw more than \$10 billion in system investments, delivered commercial telecommunications products, directed numerous research and development projects, and has authored many papers and one textbook. He is an INCOSE Fellow, former Chairman of the INCOSE Corporate Advisory Board, current INCOSE Director of Academic Matters, and has served on the INCOSE Board of Directors since 2008.