Governance in the Open Organization: Components, Principles and Framework

Robert Edson
Analytic Services Inc.
2900 South Quincy Street, Suite 800
Arlington, VA 22206
robert.edson@anser.org

Abstract

Governance of systems and enterprises is an integral part of successful system design and operation. However, with the advent of open systems and open organizations, new more flexible governance models are necessary. Applicable governance models and processes are more than the frameworks developed for information technology systems and more than the simplified rules and regulations of corporate governance. This paper discusses the scope of open organizations and seeks to identify underlying governance elements and principles common to such systems. From this set of principles and components, an analytical framework and model are developed. The research goal is to identify fundamental concepts and tools to assist in the development of governance models for open systems and more specifically, open organizations.

Introduction

Governance within systems engineering and systems design is not a clearly understood concept. When discussed it is too often confused with information technology system governance or the corporate governance of the business world. When addressing open systems and organizations, governance becomes even more difficult to understand. To many systems engineers, governance is simply decision rights and responsibilities, and measures and controls (Cantor 2006). This paper first seeks to provide definition and understanding to the concept of governance and its relationship to open organizations. It summarizes concepts across several open organization examples and provides a set of elements and principles for the analysis and design of open organization governance models.

Definitions

For consistency and clarity, Table 1 defines several key terms used within this paper.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open System</td>
<td>A system that takes or receives input (e.g., influences or resources) from the environment and disposes or sends output to the environment (Derived from (von Bertalanffy 1950)). In some cases, such as open social systems, the resources may also take the form of actual system components which may freely enter and leave the system (e.g., group members).</td>
</tr>
<tr>
<td>Open Organization</td>
<td>An organization operating through the volunteer efforts of a vast, open community of individuals who are contributing, without formal administration, to a demanding public-interest or common-interest project. (Derived from (Jett and Valikangas 2004))</td>
</tr>
</tbody>
</table>
Previous Literature. Governance as an area of study has a rich body of literature in the widely disparate areas of information technology systems (e.g., Webb et al. 2006) and corporate management and oversight (see survey by Shleifer and Vishny 1997). Governance studies are also found in such areas as public utility oversight, environmental management, sustainable development, local municipalities, internet regulation, software development, and community reconstruction.

According to (Cantor 2006) governance is the process of

- Establishing chains of responsibility, authority, and communication (decision rights);
- Establishing measurement, policy, standards, and control mechanisms to enable people to carry out their roles and responsibilities.

Cantor considers the first element of the process to be static, defining how the organization will be structured. The second component is dynamic, providing the feedback loops and control mechanisms for actual operation. This process drives a governance solution which is maintained through the lifecycle of the system. A simplistic, but intellectually satisfying, description of governance was articulated by (Letterman and Stieglitz 2005), where “governance is understood as a toolbox for control, supervision and monitoring.” There is value in both these definitions of governance, but they may not contain the fidelity or precision necessary for an open organization governance model, and a better articulation of appropriate governance components and principles is necessary.

Study Objectives and Methodology

The study discussed here is a three-phase research project with an overall goal of gaining a complete understanding of governance in open organizations. The project has several objectives:

- Develop an understanding of the architecture and operations of the governance of open organizations;
- Develop a conceptual and computer model of open organization governance; and
- Develop tools and methodologies for the design and improvement of governance structures for open organizations.

The study will progress through three phases as depicted in Figure 1. Broadly these phases are literature review and conceptual model development, case study research and conceptual model validation, and computer model development and simulation based research. This paper discusses the results from the first of these three phases – literature review and conceptual model development.
There are many examples to illustrate the growing and evolving phenomenon of open organizations, ranging from the mature to the newly emergent. These examples include open collaboration spaces such as Wikipedia (Tapscott and Williams 2006), civil rights and regulation of the internet (Johnson and Post 1998), the Internet Engineering Task Force, arguably the world’s first open innovation community (Fleming and Waguespack 2007), open organizations in disaster recovery (Jett, 2008), (Peck 2007), (Majchrzak et al. 2007) and organizations centered on reputation based utility management (Picci 2007). All were reviewed for open organization governance models. Two additional examples will be discussed here for illustration: open source communities and open political campaigns.

Open Source Communities. Open source communities initially arose as an approach to the development of software products (whether motivated by feature sets, cost, or simply challenge) through the use of unpaid volunteers (Raymond 2001; Weber 2005). Such efforts have resulted in several state-of-the-art and highly competitive software products such as Linux, Apache, Firefox, and Gimp. As noted on the apache.org website, such communities and projects are “characterized by a collaborative, consensus based development process, an open and pragmatic software license, and a desire to create high quality software that leads the way in its field. We consider ourselves not simply a group of projects sharing a server, but rather a community of developers and users.”

Open source communities differ significantly from traditional development groups in both their coordination and organization structure (Letterman and Stieglitz 2005). Work is done on a voluntary basis and time and work intensity are not dictated or monitored. There are several hybrid open source community models which have developed, where lead agents may be partially remunerated and corporations may detail paid staff to the projects, but for the most part these
communities are “all-volunteer” operations (Shah 2006). How then do these organizations develop highly successful, high quality software products?

Strong motivational goals (self achievement, peer recognition, or hobby value) coupled with a common, shared objective drive the volunteers in these open organizations. The normal models of direct governance, based on inspection of behavior, and indirect governance, based on assessment of output, are not applicable in open source communities (Latterman and Stieglitz 2005). Social governance (social control) becomes the dominant governance paradigm. Social governance is the “comparison of conformity to certain morals and cultural rules” and is based on the concept of trust (Latterman and Stieglitz 2005). This trust requirement results in ethical and behavioural guidelines playing a strong role in the open community activities. Communication and information exchange and intelligent task formulation and distribution are also important parts of open source communities. All these characteristics together enable successful operations and the development of a quality, competitive product.

**Open Political Campaigns.** Political campaigns have historically been hierarchical, rigid operations with a well established organizational structure. Since the mid-1900s, however, political campaigns, and presidential campaigns in particular, have started to take on the characteristics of open organizations with emergent and unstructured activity driving towards a common goal. Much of this new open organizational approach is supported through the growth and sophistication of internet-based tools.

While not definitive, the first examples of websites in support of U.S. presidential campaigns appear to have occurred in the 1996 election (4President 2007). The 4President organization offers extensive summaries of campaign website characteristics and it is interesting to note that even in 1996, support for contributions, organizing, and volunteering were all offered online, though the only electronic communication technology available was email. However, these sites and campaigns did not allow for the emergent open support indicative of a truly open political campaign.

The first true open presidential campaign emerged in 2003, when Howard Dean leveraged all available web and collaboration technologies to stimulate his flagging campaign (Jett and Valikangas 2004). “The Dean for America campaign [was] composed of numerous independent actors who … perform[ed] large scale projects in concert… in reality… like a school of fish.” There was a management team to ensure that certain campaign requirements were met, but the majority of the activity was accomplished by self-directed volunteers targeting the same ultimate goal. The Dean campaign made maximum use of online collaboration tools such as blogs and Meetup.com to help steer the volunteers and mange the campaign. The campaign did not have a rigid hierarchical structure, but rather a nearly limitless resource pool.
The open campaign concept continues to be exploited in the 2008 presidential campaigns. All of the candidates have links to open collaboration communities such as Flickr, YouTube, and Facebook prominently displayed on the opening screen of their official campaign websites (e.g., Figure 2). Virtual rallies are now conducted in online gaming and role playing environments. For example, on 1 January 2008, 257 “guild” members attended the World of Warcraft Ron Paul rally (WanderingGoblin.com 2008). The Ron Paul supporters interacted while working their way through the World of Warcraft environment, essentially playing the game as they “talked politics” (Figure 3). Barak Obama has an unofficial headquarters office in the online environment Second Life where one can pick up virtual hats and t-shirts (Wheaton 2007). Unofficial Second Life Obama rallies have also been held.

Open campaigns are successful because the volunteers and contributors all share the same vision and goal – they are passionate about getting their candidate elected. There is a strong social framework for the volunteers to work within and they have trust in the candidate and his/her organization. Constant feedback to the candidate and the other volunteers regarding the message and activities provides a control loop to help the organization change and improve as needed (Jett and Valikangas 2004).

Open Organization Governance

The preceding discussion, coupled with an analysis of other open organizations not explicitly discussed in this paper, provides a clearer picture of the components and principles of open organization governance. These components become the building blocks when architecting the governance model for other organizations, and possibly open systems as well. Some elements are common to all governance models and are included in Table 2.
Table 2. Elements of open organization governance.

<table>
<thead>
<tr>
<th>Element</th>
<th>Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy, Goals and objectives</td>
<td>The strategies goals and objectives of the organization must be clearly articulated and understood by its members. Strategic alignment is a major constraint on the system. Goals and objectives motivate and steer the volunteer members.</td>
</tr>
<tr>
<td>Roles and Responsibilities</td>
<td>While members of open organizations are volunteers and operate as an unconstrained, often self-directed, resource pool, roles within the organization do need to be established. The responsibilities associated with these roles must be determined and expectations well understood.</td>
</tr>
<tr>
<td>Policies and Procedures</td>
<td>Policies and procedures for operation within the organization must be established, clearly articulated, and promulgated to all members. In an open organization, however, there remains the conflict between a well defined, highly structured system and the open, unconstrained members and their activities, the latter resulting in valuable emergent behavior, activities and results.</td>
</tr>
<tr>
<td>Decision Rights</td>
<td>Strongly coupled to the roles and responsibilities and policies and procedures, decision rights are one of the most important aspects of the governance system. A RACI matrix (Responsible, Accountable, Consulting, and Informed) is invaluable in establishing and monitoring these rights. Clearly defining the rights insures smooth operations. The paradox noted above between structure and openness in these organizations also exists for decision rights.</td>
</tr>
<tr>
<td>Performance Measures and Monitoring (Controllers)</td>
<td>The governance system is a controller on the organization, developing metrics and performance measures, monitoring the system performance, providing feedback to the organization and correcting organization performance and activities to ensure goals and objectives are met. The controller also helps to ensures compliance with policies and procedures.</td>
</tr>
</tbody>
</table>

In addition to these elements, however, there are a number of principles which drive open organization governance, partially derived from (Naidoo 2002). These principles are summarized in Table 3. These principles together represent the basis for the most important aspect of open organization governance – trust. Trust serves as the backbone of governance model and is essential to effect organization operations and success (Latterman and Stieglitz 2005).

**Open Organization Governance Framework**

In moving forward there is value in developing a framework or model which captures the major attributes of governance in the open organization. One useful architectural construct is developed by (Dove and Turkington 2008) in their assessment of the agile software development process. Building on previous work done on agile engineering (e.g., Dove 2001, Dove 2006), this construct portrays a system as group of modules which interface with a common infrastruc-
In addition, system integrity is maintained through roles assigned to system stakeholders and participants, or in some cases system components. This framework then extended to a model and associated toolkit for the formulation and reformulation of governance models appropriate to the specific organization.¹

Table 3. Principles of open organization governance with definitions (Naidoo 2002).

<table>
<thead>
<tr>
<th>Principle</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discipline</td>
<td>All involved parties will have a commitment to adhere to procedures, processes, and authority structures established by the organization.</td>
</tr>
<tr>
<td>Transparency</td>
<td>All actions implemented and their decision support will be available for inspection by authorized organization parties.</td>
</tr>
<tr>
<td>Independence</td>
<td>All processes, decision-making, and mechanisms used will be established so as to minimize or avoid potential conflicts of interest.</td>
</tr>
<tr>
<td>Accountability</td>
<td>Identifiable groups within the organization - e.g., boards, working groups, or committees who take actions or make decisions - are authorized and accountable for their actions.</td>
</tr>
<tr>
<td>Responsibility</td>
<td>Each party is required to act responsibly to the organization and its stakeholders.</td>
</tr>
<tr>
<td>Fairness</td>
<td>All decisions taken, processes used, and their implementation will not be allowed to create unfair advantage to any one particular party.</td>
</tr>
</tbody>
</table>

Based on the attributes, characteristics, and principles delineated in the previous section, the general governance model for open systems can be broken down into the two categories: modules and infrastructure. This breakdown includes both the governance elements (e.g., polices and procedures, decision rights, etc.) and the components of the open organization, or system, itself (e.g., leaders, members, etc.) as illustrated in Table 4.

The various components of the open organization and its governance system are then assembled into a “Drag and Drop/Plug and Play” framework (Dove and Turkington 2008) which can be used for model design and evaluation (Figure 4). The modules are comprised of organization members, technologists, leaders, committees/workgroups, roles and responsibilities, technology tools, and online spaces and are represented as icons across the top of the framework. These resources are the pool of building blocks for each governance system. Integrity management, which is also considered as active infrastructure, is represented as “wires” running through the middle of the figure. The appropriate module icon is associated with the various management functions to denote responsibility. In this case, as Figure 4 denotes, module maintenance and inventory is completed by members and technologists. System assembly is conducted by members, technologists, and leaders. Infrastructure evolution is again conducted by the members.

¹ N.B.: This discussion is not meant to be a full articulation of open organization governance as an agile system, but certainly agile concepts have significant value in this case. This paper is also not a full articulation of agile engineering analysis. See (Dove 2001) and (Dove and Turkington 2008) for a complete methodology in deriving the conceptual model.
The heavy reliance on the members for integrity management is a reflection of the open organizations operating as a resource pool rather than a hierarchical organization. At the bottom of the

Table 4: Components of the open organization governance framework.

<table>
<thead>
<tr>
<th>Modules</th>
<th>Framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Organization Members (i.e., volunteers)</td>
<td>• Trust</td>
</tr>
<tr>
<td>• Technologists (e.g. programmers, systems administrators)</td>
<td>• Policies and Procedures</td>
</tr>
<tr>
<td>• Leaders</td>
<td>• Decision Rights</td>
</tr>
<tr>
<td>• Committees/Workgroups</td>
<td>• Internet (a technology backbone)</td>
</tr>
<tr>
<td>• Online Spaces</td>
<td>• Goals and Objectives</td>
</tr>
<tr>
<td>• Roles/Responsibilities</td>
<td>• Controllers (feed back loops)</td>
</tr>
<tr>
<td>• Technology Tools (e.g., GIS, Databases, Forums, Blogs)</td>
<td></td>
</tr>
</tbody>
</table>

figure are the passive infrastructure components. For open organization governance, there are five passive infrastructure components as noted above. Connections to the active or passive infrastructure are denoted in the figure by solid black squares. Each instantiation of the governance system is a mix of modules plugged into the active and passive infrastructure buses.

Controllers (i.e., feedback loops) are shown as a part of the active infrastructure. The controllers monitor organization performance, typically against the goals and objectives, trust (ethical and social framework), and other passive infrastructure components, and provide feedback-back to the governance system and those responsible for infrastructure evolution and system assembly. This feedback-loop is a critical component of the governance structure, particularly in an open organization which operates in an unconstrained manner and has potential for emergent activities and behavior.

The framework and components encompass both the structure and high level operations of open organization governance. It also allows for an understanding of the agile and reconfigurable nature of the governance model for these types of systems. Such a framework becomes a powerful tool for both analysis and design.

Summary

This paper has discussed several examples of open organizations and their governance characteristics. From this discussion, coupled with other case studies and examples, the common components and principles of open governance were derived. These attributes where used to develop a conceptual model for governance analysis and design, as seen in Figure 4.
Future Research: Now that open organization governance components and principles are identified, it is time to turn the framework back on itself and validate it through analysis of other open organizations. Once validated, this conceptual model will be translated to a functioning computer-based model for further simulations and analysis. Additional research will be conducted to investigate the agility of the open organization governance model – is it reconfigurable (the system may be modified and adjusted by system operators) or reconfiguring (self-adjusts and adapts to outside influences)? A final line of research is planned for the study and analysis of more traditional non-organizationally centric open system such as open architectures of new defense systems and technologies.

References


Naidoo, R., Corporate Governance: An Essential Guide for South African Companies


Raymond, E.S., Cathedral & the Bazaar: Musings on Linux and Open Source by an Accidental Revolutionary, O'Reilly Media, Inc., Sebastopol, 2001.


Biography

Robert Edson is a Principal Analyst and Division Manager within ANSER, responsible for overseeing and conducting science, technical, and engineering support to a variety of programs including ANSER support to the Defense Advanced Research Programs Agency (DARPA). He is also the Deputy Director of the Applied Systems Thinking Institute (ASysT), a collaborative endeavour between Analytic Services Inc. and Stevens Institute of Technology. Mr. Edson has 25 years of program management and scientific research experience including direct science/environmental program management experience within the US Navy and OSD.