

Leadership Imperatives of the Information Age

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Abstract: Information is becoming the engine, resource, and commodity that drives the economy and social institutions, as well as our personal and professional lives. Because we are living in a unique period of human history, we may not appreciate the scope, speed, and impact of Information Age change. Framing six characteristics of the Information Age, this paper suggests resulting imperatives for leaders who must create and lead Information Age organizations. They must leverage human and other resources, and solve today's complex and wicked problems to achieve organizational and cross-boundary goals. Global engagement, no longer limited by time or space, is enabled by worldwide information communication and technology networks that are instant, non-hierarchical, and dynamic. Smaller devices, tagging, and the integration of media and sources foster communication, collaboration, and innovation, along with new expectations for ourselves and others to be "always on" and responsive. In this dense information environment leaders face the danger of heightened decision uncertainty in a sea of meaningless, fragmented but apparently inter-connected data. Increasingly complex, chaotic, fragmented, interdependent wicked problems require new cross-boundary perspectives and deeper understanding. In the Information Age solo action focused on control of resources is giving way for former competitors to create win-win partnerships. Dynamic human networks are replacing, complementing, and competing with hierarchical organizations as powerful systems for communicating, sharing, and organizing. The authors, faculty members at a U.S. Government graduate institution, explore the essential elements of the Information Age and their imperatives for leaders, especially government leaders, who can create and lead organizations in this new environment.

Keywords: Information age, leadership, wicked problems, human networks, globalization, technology

1. Introduction

The challenges of leading government organizations are not changing but the context is. The technological, economic, and social changes of the Information Age bring a host of new imperatives with significant implications for government leaders. Globalization and the continuing rapid development of information and communication technology (ICT) are causing rapid changes in the information and decision environments. The evolving nature of resource control and of human networks requires and enables executives to lead in new and often transformational ways to accomplish organizational goals. This paper explores the essential elements of the Information Age and identifies opportunities and challenges for leaders, especially government leaders, who can create and lead 21st Century organizations.

2. Globalization

Globalization is the driving force behind many challenges and opportunities facing Information Age government leaders. Globalization is "a process of interaction and integration among the people, companies, and governments of different nations, a process driven by international trade and investment and aided by information technology" (Globalization101.org 2008). First, globalization calls into question the very role of the Federal government. In policy areas such as trade and financial regulation, the government has ceded much of its authority to the global marketplace (Lynn 2005). In other policy areas, such as poverty reduction and health care, for-profit and non-profit organizations are taking on what used to be government roles. Companies are now doing a multitude of tasks that used to be performed by government employees. These trends pose challenges for government leaders (Friedman 2000). They must determine the role of the government and how the government can work with other players in furthering the country's interests. A second fundamental challenge for Information Age Leaders relates to how government organizations can work effectively in the new global environment. Two areas in particular provide Information Age Leaders with unique opportunities and challenges: media and human capital. Globalization relies on ICT that enables rapid communications and information dissemination. The result is a dramatic change in the world of media. Intense competition among media outlets creates a 24/7 news culture that is always looking for a new story. Rumor and opinion are gaining credibility while investigative reporting is becoming increasingly scarce. In this environment, government leaders are under tremendous pressure to avoid bad media

exposure and to garner positive media attention. To achieve these goals, Information Age leaders need more training and experience in dealing with the newest set of media tools such as blogs, Internet videos, podcasts, and websites.

Globalization has a tremendous impact on human capital. Demographic trends and immigration flows require government leaders to deal with a changing pool of citizens (or "customers") and employees. Problems that used to be considered purely internal increasingly have an international dimension. Leaders need to become adroit in dealing with different races, cultures, religions, and age groups. They also need to reconsider how work gets done. Many government agencies still use Industrial Age processes to accomplish tasks. These processes are not a good fit for an era of flat structures, cross-boundary collaboration, out-sourcing, and virtual environments. Government agencies need to take the cue from other organizations that are leveraging Web 2.0 technologies, new organizational structures, and more flexible processes to operate effectively in a globalized world. For example, government leaders may wish to consider more flexible work arrangements for people who have reached retirement age but wish to continue contributing. Leaders may also look for more efficient and effective ways to rotate personnel between public and private sectors.

3. Information and communication technology

Pervasive ICT is another imperative in the environment of Information Age leaders. While communication technology is not a 21st Century phenomenon, the instantaneous and global reach of billions of communication devices has reached dramatic proportions (Willis 2008). Information is increasingly obtained via broadband, wireless, and hand-held consumer devices that transmit real-time text, audio, and video. The maturation of RSS [really simple syndication] feeds to push subscribed material, migration to Internet Protocol Version 6 (IPV 6) with its near infinite availability of Internet routing addresses, along with the simultaneous migration to Web 2.0 and beyond, are changing the texture and impact of collaboration. Economic, political, and geographic boundaries are nearly irrelevant, as are age, social status, and positional power. The leadership landscape is being altered by today's smaller devices, the ability to tag individuals as well as the smallest manufactured components, and the integration of various media for all life's activities. The commoditization of technology is witnessed by its omnipresence in back-rooms, board-rooms, and back-packs. In our plug-and-play society, ICT is an invisible enabler that facilitates dialog among the members of the Virtual Generation (Prentice & Sarnier 2008).

Government leaders use a variety of communication channels to get their messages across, to engage their stakeholders in dialog, and to hear and to see the world through the eyes of their constituents. Governmental organizations use extranets and intranets to communicate their missions and priorities to their workforce as well as to various organizational stakeholders including the general public. The White House, political candidates, and the U.S. Department of Navy, for example, communicate their organizational stories and priorities using podcasts and blogs. An array of government websites are interactive, thereby allowing reading, hearing, or viewing of information, as well as asking questions, casting opinions, and commenting on public policy proposals. The rapid downloading via RSS feeds, as well as the 24/7 media cycle, and ubiquitous digital cameras increase opportunities for government transparency as well as the broadcast of leadership missteps and misstatements through pictures such as prisoner mistreatment in Abu Ghraib Prison, Hurricane Katrina victims in New Orleans, and the conditions of Fort Bragg barracks. Today every citizen can have near immediate access to worldwide press and elected leaders. This has implications for the nature of work and accomplishing the mission, as well as the value of effective communication as a leadership competency.

Second, ICT change individual social and organizational relationships. Today, ICT is less about controlling and enabling transactions and more about enabling social interaction (Austin et al. 2007). A decade ago websites provided either information or enabled a transaction; today websites nurture multi-directional dialog. Peer and lateral relationships are becoming, in many cases, more important than hierarchical relationships and centralized control (Willis 2008). ICT is the means by which people "discover, innovate, team, lead, learn, and relate to one another" (Austin 2008 p. 3). It is expanding the reason and expectations of relationship building while broadening opportunities to enrich conversation and collaboration. With increasing peer-to-peer collaboration, and much of this via virtual teams, developing communities of trust with agreed-upon governance are increasingly important (Heiser 2007). For the Virtual Generation, ICT is a means to interact socially through various channels while seeking the ever powerful "we" as opposed to "me" (Prentice & Sarnier 2008).

In the Information Age, leadership is less about being the smartest expert, than being the connector or the trusted mediator for tackling complex critical problems.

Third, omnipresent ICT increasingly blurs work time and work space. The nature and definition of work are changing. Offices are increasingly a source of community, not just a physical location for bounded work. Personnel are increasingly mobile and virtual. Having employees in sight is being replaced by a focus on activities and outcomes facilitated by networks organized to achieve organizational goals. An associated challenge for leaders with virtual networks of employees is to provide flexible access that maintains information security (Morello 2007; Wennergren 2008). Another challenge is the development of appropriate human capital performance measures focused on the organization's mission, rather than industrial measures such as hours in the office.

4. Information environment

In the first two weeks following the September 11th World Trade Center and Pentagon terrorist attacks, the U.S. Federal Bureau of Investigation (FBI) asked the nation to provide potential leads to the case; the response was an avalanche of information. Over 260,000 tips were received from concerned citizens via the Internet and phone calls in the first 21 days. As a result, approximately 4,000 agents were re-assigned nationwide to assist in chasing these leads (Fox News 2001). The FBI found itself immediately jumping from a condition of information under-load to overload, prototypical of the new information environment faced by Information Age leaders.

ICT advancements (e.g. faster processors, larger memories, ubiquitous sensors, wireless channels and next generation Internet) have driven an explosion of data with no foreseeable lessening, because Moore's Law is holding true (Wikipedia 2008). Besides technological pressures, other social, legal and purely emotional drivers contribute to our penchant for amassing greater and greater quantities of data. For instance, estimates are that over 90% of all the scientists (data collectors and knowledge creators) who have ever lived are alive and producing information today (Goodstein 1994). From an Information Age leadership perspective, our information environment is dominated by avalanches of data and populated by consumers with growing information appetites. Many terms are used to describe overload: info-glut, data smog, info-bog and so on. Regardless of the label used, overload (Toffler 1971) can be defined as a syndrome in which the amount of data per unit time subjectively exceeds an individual's, an organization's, or even a government's capability to process it without stress, error, or other performance or decision-making costs. The phenomenon of overload has become a pervasive information danger for Information Age leaders, their organizations, and for governments. Our capacity to create, digitize, and store data may even exceed our ability to process, understand, or make use of it. While the ICT revolution enables nearly instantaneous access to data, enduring human limitations, both individual and collective, constrain the digestion of these data and therefore their ultimate utility. "Where is the wisdom we have lost in knowledge and where is the knowledge we have lost in information?" (Eliot 1934).

Consequently, global demand is growing for meaning-making tools for all of these new data, i.e., transforming data into real, usable information and intelligence. Sophisticated search engines like Google, social networks like Wikipedia or My Space, and video repositories like YouTube are popular because they help individuals make sense of the increasing mass of data. It is essential for Information Age leaders to recognize the insidious dangers posed by overload and to transcend their effects by melding new knowledge tools with cross-boundary organizational models and enhanced information-sharing practices.

5. Changing decision environment

As a result of globalization and the evolving information environment, the decision environment is also changing. The decision environment is the collection of information, alternatives, goals, values, and preferences available at the time of the decision (Harris 1998). Gathering and analyzing such information is always constrained by time and resources resulting in some level of uncertainty about outcomes and unintended consequences of decisions. To reduce uncertainty, leaders develop decision-making processes, structures, and communication channels.

Information Age technical and social developments create opportunities for government leaders to improve the quality and speed of decisions and performance (Morello et al. 2006), if they can overcome outdated decision models resulting from stove-piped organizational structures and restricted information sharing. Authoritarian decision making by single individuals no longer works

because of data overload and increasingly complex, often global, cross-boundary problems. In the flatter inter-connected enterprise, many people have the capacity and power to contribute to decisions by collaborating and sharing information across organizational boundaries. Analytical tools such as data mining, modeling and simulation, and predictive analytics using real-time data feeds (Fenn, McGee & Prentice 2006) allow leaders to make sense of the data available. Leaders need to become as adept at using Information Age tools as they are in performing business functions.

The changing decision environment is also characterized by what are called wicked problems. Wicked problems lack a clear way to define the problem (Conklin 2006; Rittel & Webber 1973). Attempts to describe or clarify the problem involve developing possible solutions to the problem and each attempt at a solution reveals more aspects of the problematic situation, requiring additional solutions. No final solution can be evaluated as either right or wrong. Every wicked problem is unique because of its many factors and perspectives and its dynamic social context. The presence of multiple stakeholders with different views on what the problem is and on what to do about it should be a good indicator to an Information Age leader that a problematic situation is more wicked than tame and requires more resolution than solution.

Wicked problems require leadership (Grint 2005). Neither crisis style command-and-control nor basic management works for problems that cannot be fully defined. A more effective response is to study the wicked problem using active methods such as experiments, pilot projects, and prototypes. This means creating conditions in which underlying patterns can emerge and seek cross-boundary perspectives in order to gain shared understanding and shared commitment to possible solutions (Conklin 2006). Leaders must develop the environment for building shared understanding of the issues and commitment to the process of working out a resolution by asking questions and by listening (Grint 2005). The leader must influence others to face up to their responsibilities in resolving the wicked problem, and keep them focused on the task for as long as it takes. Developing an appreciation for the changing decision environment is clearly one of the imperatives for Information Age leaders.

6. Enterprise resources

For most Industrial Age enterprises, the proven way to maximize the three golden keys to success - reliability, predictability, and stability - has been to secure independent and separate control over necessary resources, people, their intellectual capital, finances, time, etc., and not to give these away at any price. In the Information Age, reliability, predictability and stability are unrealizable goals (nor arguably are wholly desirable given exponential trends in technology). Furthermore, globalization of markets, money, information, ideas and people has created increasingly independent economies, public and private sector activities and results. As an engine of globalization, ICT is disaggregating the boundaries of the enterprise, spawning new networks of partners and forms of collaboration.

The complexity and inter-connectedness of the age means that most government enterprises are regularly engaged with wicked problems in which boundaries are ill-matched to the authorities and resources of agencies charged with managing them (Kettl 2006; Horn 2003). In such operating environments, conventional zero-sum game strategies of fighting for control of resources that may have worked for Industrial Age organizations are increasingly inadequate. In today's dynamic, turbulent, and consumer-driven environment, organizations must develop the capacity to adapt their processes and products and services with quicker cycle times and access counter-intuitive sources of resources. Successful enterprises are those that can constantly reconfigure their resources to build newly-relevant capacities in response to sensed or foreshadowed changes or that can shape the emergent environment. (Haeckel 1999).

Organizational leaders in the Information Age need to be aware of the increasing, broadening resource options, possibilities, and alternatives for their enterprises. Indeed, given the defining environmental characteristics of our age - unpredictability, uncertainty, complexity, interconnectedness, and variability - they need to be open to the idea of leading their enterprises as dynamically changing tailored-to-task combinations of resources. Such resource combinations are being catalyzed and enabled by developments in ICT. In response, leaders must integrate enterprise values, value propositions, structures, and processes that allow the organization to collaborate with obvious and unanticipated partners. It is through such collaborative behavior that sufficient resources are pooled to achieve results shared in common with others.

Opportunities are opening up for enterprises to garner necessary resources by employing increasingly feasible, but nonetheless counter-intuitive strategies. Leaders must rethink the nature of the enterprise to encompass new partners and stakeholders who add value for a whole that is greater than its parts. To leverage resources for the benefit of all participants, they often create innovative coalitions of participants across boundaries, sometimes with traditional competitors, for varying durations. These real-time plug-and-play coalitions seek win-win-win with "easy to do business with" becoming a critical success factor. By sharing and synergizing resources leaders seek to develop adaptable and agile organizations that can respond to the unanticipated. To build agile organizations leaders must systematically develop organizational capacity to sense the environment in a timely manner. They can then re-align resources dynamically to continue to change plans, resources, or products.

Strategic Information Age leaders are pro-active, not just reactive, and are prepared to exploit opportunities to shape the environment as well adapt to it. They focus some attention on the management of today's enterprise, but most of their attention on its future. They build capacity by "shifting the mix" to invest in the future through the organization's people and capabilities through experimentation, blue-skying, anticipating and responding to changes in the environment as they transform the organization. Too often the urgent crowds out the important and future-focused, to the detriment of capacity building. Strategic leaders realize that resources will always be limited, and that they must leverage their precious resources through creative collaboration and investment in future capabilities.

7. Human networks

Leadership in the Information Age requires cross-boundary, inter-agency collaboration with networking as a core strategy. Fluid evolving networks are becoming an organization's lifeblood. They flow formally and informally to internal and external nodes of knowledge that both leaders and followers have cultivated for just-in-time reach. Many new workers entering the government workplace are natural networkers, continuously reaching out in person and electronically, sharing, and collaborating socially and professionally 24/7 (Laurent 2008). They know the power of networking, teaming, dialoging, sharing, and leveraging the virtual world. They thrive in organizations that encourage and reward these strategies, and withdraw from those cultures that control or forbid them. Successful leaders recognize, value, and leverage the talents of the new workers to operate in service to their organizations.

Networking and collaboration challenge the traditional power and role of the hierarchy. While there will always be hierarchies as well as a legitimate need for them, their characteristics are being redefined to meet the challenges of the Information Age. Hierarchies can no longer be so vertical, rigid and dense, but must become right-sized, limber, and lean. Tempo and complexity no longer allow the time for formalized decision packets to pass through myriad wickets up the internal chain for debate, guidance, sign off, and decision. Leaders need to communicate explicitly their intent and develop trust in their followers; followers must understand and embrace the intent, knowing they are empowered to make decisions affecting the entire organization. Information Age hierarchies expect and empower those in their organizations to build their networks, have confidence they can exploit the human and technological levers needed, and take the responsibility associated with the empowerment and expectation. "Flattened hierarchies and networked relationships change the sources and uses of power" (Stewart 2001). Information Age leaders know when and where to distribute the power effectively to foster agility and synergy for responsive decision making, and for attracting and mentoring emerging leaders.

Leaders need to acknowledge that networking promotes transparency. Every public leader and their actions are prime targets for scrutiny at warp speed (Williams & Tapscott 2008). In our wired networked global neighborhood, hierarchy and protocol are no longer effective strategies for maintaining privacy. Technology and the democratization of information keep leaders living in glass houses with lights brightly lit. Leaders who align their organizations and themselves with the mission, hold fast to the highest level of integrity, communicate their intent in both words and actions, and follow through on their promises will take advantage of their glass houses. Today's newest generation of government employees is the first generation weaned on ICT. They are tech savvy networkers (Fritzson, Howell & Zakhelm 2008), innovators and collaborators, who value choice (Williams & Tapscott 2008). Being tech savvy is not just knowing ICT; it is knowing how to leverage the potential of ICT to create and shape. Tech savvy workers are very creative in making ICT work for them in

ways not previously envisioned. They use it to build networks, cross boundaries, collaborate, multi-task, and create. They leverage technology as global workers who demand diversity in thought and product. They will not stay in government if they are not challenged (Ballenstedt 2008). Effective Information Age leaders ensure access to ICT for the new generation of workers, and encourage its exploitation to support the organization's goals.

Freedom and breadth of choice are core values of the members of this generation. The Internet has whetted their insatiable appetite for choices so they can customize their jobs, products, and services. (Williams & Tapscott 2008) The old model, in which today's leaders rose successfully, is characterized by relatively well defined job descriptors and endpoints, buffer time for reactive behavior, risk-averse cultures, and rewards for rule following. Today these same characteristics impede growth, survivability, recruitment, and retention of top talent. Younger workers are constantly searching for ways to improve, with the tenacious drive and talent to maneuver outside the pre-defined lanes. They are global network builders who embrace the power of collaboration, from which comes new ideas, directions, and choices. Leaders face a challenge: stay with the pre-set and lose the new employees who start looking in about six months (Hardy &, Gillies 2007), or entrust the workplace to the innovators to shape and move the organization and engage them.

8. Conclusion

The authors of this paper posit six characteristics of the Information Age, and their associated imperatives for leaders, particularly government leaders who seek to lead in this dynamic environment. The Information Age needs savvy leaders who possess expertise in cross-boundary communication and collaboration, and evolving ICT to face the challenges and opportunities of the future. These Information Age leaders must demonstrate the traditional characteristics of great leaders, such as courage, integrity, and vision, but to create and lead Information Age organizations they must also be adept at leveraging information in complex decision environments, exploit new communication strategies and global influences, and collaborate and expand their perspectives to encompass the broader enterprise.

Disclaimer

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