US Department of Defense (DoD) Knowledge Management (KM) and Contemporary Organizational Communication in a Generational Workforce

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October 24, 2012

Abstract: This essay examines the generational workforce and their perspectives in adopting new Information Communication Technology (ICT). It addresses and compares the issue of older generations retiring from the US workforce. It focuses on the need for organizational communication practices to examine the changing demographics caused by both the Baby Boomer retirements and rapidly changing ICTs. This essay compares the DoD, academic, and business KM definitions to R.T. Craig's communication metamodel and Alavi and Leidner's KM support systems and argues that the focus of KM is more on systems and procedures rather than interpersonal, motivational, or empathetic communication traditions. Furthermore, KM as an applied theoretical concept may not adequately address communication traditions transferable to the older cohorts' communication methods. The cultural approach is applicable at all levels and with each generational cohort. This essay briefly discusses key office tools, web and database technology, and argues that computer literacy level should not be assumed based on the generational cohort, but computer literacy training should be embraced as part of the organizational communication system. Finally, this essay argues that the standardization of software makes it possible to: create a manageable set of tasks to both teach and train to by using a common set of hardware and software to meet common standards.

Introduction:

Baby Boomers are starting to retire, which will not only shrink the overall workforce, but threatens to remove decades of institutional knowledge from the organizations to which they belong. Generational cohorts have distinct characteristics based on age, phase of life, and the political, social, and economic historical context. The technology boom in recent years has created a new generational distinction characterized by an ICT comfort gap. In general, older generations are less comfortable with technology and the younger generations can't imagine a world without modern ICTs (Ayoub, & Blodgett, 2010). Baby Boomers born in the years following World War II, make up around one third of today's US workforce and are starting to leave the workforce (Bureau of Labor Statistics, 2010). The US active duty military consists mostly of younger people born after 1980, but the DoD as a whole including civilians relies heavily on older generations and will face the same shortage problems when the Baby Boomers in DoD retire. Good organizational communication methods are needed to both understand the issue and look for ways of mitigating this tremendous loss of institutional knowledge in the US.

KM is an increasingly popular organizational communication concept with the US DoD, academia, and business. KM and KM support systems tend to focus more on communication involving systems, process, and integration of ICT and rely less on rhetorical, non-verbal, and emotional means. From a generational perspective, overreliance on procedures older generations are unfamiliar with could alienate them and potentially lose personal and organizational knowledge when the Baby Boomers retire.

Communication approaches vary inside organizations depending on management style and purpose of the organization. By taking the Lippert and Aust five-spoked model (2004), and applying it to the military, we see that each approach has an appropriate application and that the cultural approach is strongly rooted at all levels of the organization. The cultural approach also has the ability to transcend each generational cohort providing a common ground.

ICTs will likely improve for the anticipated future with transistor power increasing every 18 months to two years (Hiremane, 2005). Computer software, however, is becoming more standardized

with the compatibility of major web browsers and Microsoft and Microsoft-like office products becoming increasingly similar and compatible with other programs. As communication technologies increase and improve, older generations risk being left behind. Younger generations, although overall more technically savvy, may not necessarily possess ICT skills that schools and employers need. Technical competence should not be assumed for any generation.

As older generations retire, it is helpful to understand the communication approaches and traditions that work best in each cohort to find a common ground and ensure maximum continuity for organizational and individual knowledge over the coming years.

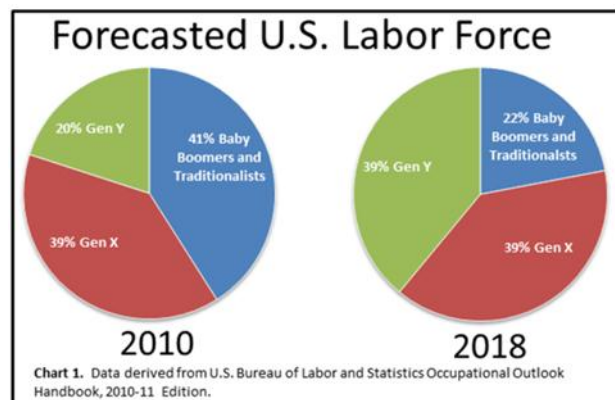**Training and Technology Gap:**

Generational Workforce

Rapid advancement and diffusion of technology over recent decades has created a new challenge. Generational differences exist in the way that they approach family values, work style, leadership, recognition, company loyalty, and technology (Salopek, 2006). However, young and old people have always had different points of view based on stages of life. Age can define generations by significant life milestones for example being a child, grandparent, boss, retiree etc. The following two quotes illustrate generational differences not necessarily interconnected with technology but from unique generational perspective (Novis, 2006; Lydon, n.d.):

> *"The young people of today think of nothing but themselves. They have no reverence for parents or old age. They are impatient of all restraint. They talk as if they alone knew everything and what passes for wisdom with us is foolishness with them …"* – Socrates, 4th Century BC philosopher.
>
> *vs.*
>
> *"It's no good being nice and young and naive. There's no good in that at all. You've got to do it all yourself, and you've gotta learn quick. And you can't look for sympathy either."* – Jonny Rotten (Lydon), 20th Century punk rock singer.

The US generational workforce today is generally broken down into four, generally accepted, cohort groups: The traditionals (also known as Matures, Veterans, or Silients), born from about 1928-1945, the Baby Boomers, born from 1946-1964, Generation X, born from 1965-1979, and Generation Y (also known as Millennials) born from 1980-2000 (Ayoub, & Blodgett, 2010). Baby Boomers and Traditionalists comprise the largest portion of the workforce and are fast reaching retirement age. According the U.S. Bureau of Labor and Statistics, the 2010 workforce was separated by approximately 41% Baby Boomers and traditionals, 39% Generation X, and 20% Generation Y, see chart 1, 2010 (Ayoub, & Blodgett, 2010).

Forecasted U.S. Labor Force

20% Gen Y | 41% Baby Boomers and Traditionalists | 39% Gen X — 2010

22% Baby Boomers and Traditionalsts | 39% Gen Y | 39% Gen X — 2018

Chart 1. Data derived from U.S. Bureau of Labor and Statistics Occupational Outlook Handbook, 2010-11 Edition.

The Traditionals highly believe in duty, honor, country and place high value on personal dedication and self-sacrifice (Stefaniak & Vetter, 2007).   They are known for dependability and have experienced long term employment in their careers (Miller, 2009, p. 9). Traditionals are comfortable

with top down management styles and have strong loyalties to the organizations they work for (Stevens, 2010; Stefaniak & Vetter, 2007).
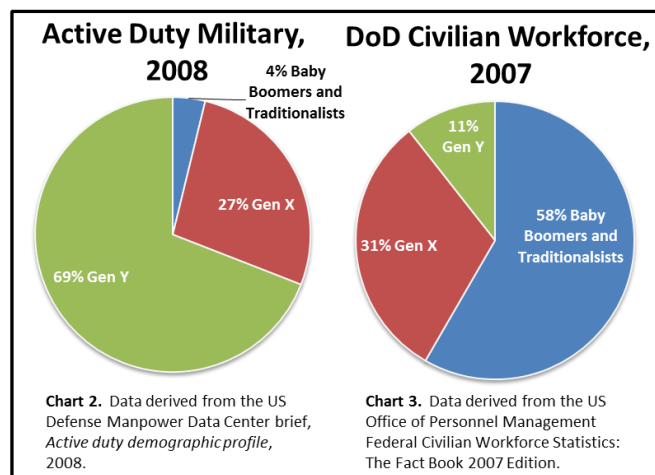
Baby Boomers are known for their ambition and cynicism (Miller, 2009, p. 9). They were born during the post war stress after World War II and were not prone to conformity as the traditionalist generation (Stevens, 2010). Job related stress and the requirement for child care are also a common trait among Baby Boomers (Phillips & Addicks, 2010). Rather than loyalty to the organization, Baby Boomers place loyalty into work itself and are generally proud to be called workaholics (Stevens, 2010).

Generation X is characterized as being more independent than Traditionals and Baby Boomers (Stevens, 2010). Instead of being brought up with the military victories and American dominance after World War II as the Baby Boomers, Generation X was born after the military and political failures of the Vietnam War (Stefaniak & Vetter, 2007). They were the first latch-key generation (Stevens, 2010). Generation X is also the first generation that is expected to not do as well financially as their parents (Stefaniak & Vetter, 2007).

Generation Y is characterized as being ambitious, but not necessarily focused (Stefaniak & Vetter, 2007). They are individualistic, but are also group orientated (Stefaniak & Vetter, 2007). Generation Y is more technically savvy, but typically have somewhat of a spoiled work ethic (Miller, 2009, p. 9). They have been raised largely by the Baby Boomers to be independent thinkers and possess technical competency with computers and the internet (Phillips & Addicks, 2010). They expect assistance and mentorship from their supervisors in achieving their professional goals (Stefaniak & Vetter, 2007).

As the baby boomer cohort continues to age and retire, Generation Y will increase to comprise around 39% of the total workforce (Ayoub, & Blodgett, 2010), see chart 1. In 1965, Baby Boomers made a large entry into the workforce and their participation increased sharply from 59% to 65% (Beinhocker, Farrell, & Greenberg, 2008). The trend continued to increase to 67% where it remained from 1995 to 2000 (Beinhocker, et. al., 2008). The total labor force in the U.S. is currently in a slow but steady decline and is predicted to steadily decrease to 60% by 2035 (Beinhocker, et. al., 2008).

Trends in the age of the workforce in the U.S. military are more artificially fixed due to the pyramid nature of the force structure. In 2009, the Department of Defense reported just over 3.6 million total employees including all the services, active and reserve force, and civilian employees (IFC International, 2009). In the uniformed services, Generation Y composes the majority of the population with active duty members taking up about 69% of the total force (IFC International, 2009). Baby Boomers and Traditionals make up less than 5% of active duty force, see chart 2 (IFC International, 2009).

Chart 2. Data derived from the US Defense Manpower Data Center brief, *Active duty demographic profile*, 2008.

Chart 3. Data derived from the US Office of Personnel Management Federal Civilian Workforce Statistics: The Fact Book 2007 Edition.

DoD civilians, to include non-appropriated funds civilian employees [contractors], make up a total of about 24.2% (IFC International, 2009). The DoD civilians are much older than the uniformed services, Baby Boomers and Traditionals comprise 58%, see chart 3 (The Fact Book, 2007). This is partly due to retirees taking advantage of veteran's hiring preference benefits to obtain government jobs after uniformed service (OPM, 2010).

The differing trends of each generational cohort are perceived both advantages and disadvantages in the transitional workforce. Traditionals, Baby Boomers, as well as Generation X, often perceive that Generation Y is given preference in developmental and training opportunities (James,

Swanberg, & McKechnie, 2007). Generation Y believes they are not as likely to be considered for promotions due to their age (James et. al, 2007).   As Duncan and Loretto summarize, all ages suffer from some sort of age discrimination but it is difficult in determining who is discriminating and who is being discriminated against (James, et. al, 2007).

Recruiting younger workers while retaining older employees is becoming increasingly necessary (Salopek, 2006). Companies with an increased number of retirees and potentially shrinking labor pools are at risk in maintaining a productive workforce through the generational transition (Stevens, 2010). Diverse industries such as electric, oil, gas, healthcare, as well as government are affected by Baby Boomers and Traditionals leaving the workforce and taking their decades of experience with them (Stevens, 2010). Financial loss estimates of losing employees in the civilian sector range from 50% to 300% of the individual's salary (Salopeck, 2006). Replacing the retiring labor population is more complicated than simply finding new people to hire with similar skills because generations have different distinct trends within their demographic.

Keeping up organizational training level with Moore's Law

The generation that raised the Traditionals grew up without the airplane, the telephone, or refrigeration technologies: almost incomprehensible today. The staggering pace of growth of ICTs can be captured in Moore's Law. In 1965, Gordon Moore, co-founder of the Intel corporation made the prediction that "transistor density on integrated circuits doubles about every two years" (Moore's Law, 2005). The prediction, true thus far, also addresses transistor prices dropping just as dramatically as transistor density increases (Moore's Law, 2005).

With decreasing prices and increasing micro-processor power, the past 40 years have seen the expansion of new affordable technologies of various shapes, sizes, and capabilities (Hiremane, 2005). According to the Bureau of Labor and Statistics, computer ownership has increased with each generational cohort; however, percentages decline with age (Bureau of Labor Statistic, 2008). Despite younger people having more computers, the Baby Boomers and Traditionals have shown the greatest increase in computer purchases in the US from 2000-2008, see chart 4, (Bureau of Labor Statistic, 2008).   Not surprisingly, increased use of the internet shows a similar trend as Baby Boomers and Traditionals lead Generations X and Y, with usage rising approximately 6% from 2005-2008 (Jones & Fox, 2009).

Chart 4. Retrieved from US Bureau of Labor Statistics, *Consumer expenditures* 1(4), 2008.
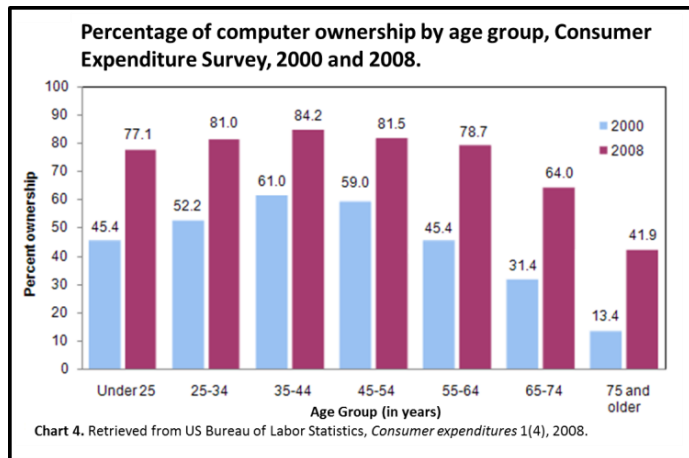
Each generation approaches technology from a unique perspective. Traditionalists see technology as massive monumental structures such as the Hoover Dam and are generally not comfortable with emerging ICTs (Stefaniak & Vetter, 2007); however, they are increasingly using the internet for search, email, and researching health information with an increase of approximately 20% from 2005-2008 (Jones & Fox, 2009). Baby Boomers are generally competent with ICT necessary for work, but may require additional help and training as with the traditionalist cohort (Stefaniak & Vetter, 2007). Ayoub and Blodgett found that Baby Boomers require a strong argument or reason before they agree to adopt new ICTs (2010).

Generation X is generally better at adopting ICTs than Baby Boomers and Traditionals (Stefaniak & Vetter, 2007). They are counted as having the most computers from 2000-2008, see chart 4, (Bureau

of Labor Statistics, 2008), and made up approximately 28% of total US internet users in 2010 (Jones & Fox, 2009). They grew up playing the first video games, lived through the dramatic changes that technology brought, and developed an ease with new technologies that transferred into the workplace (Stefaniak & Vetter, 2007).

Technology is intangible to Generation Y: they do not know of a time without the conveniences of computers and the internet (Stefaniak & Vetter, 2007). Generation Y is generally more comfortable with instant messaging, blogs, podcasts, and other digital data transfer methods and are likely to be better suited to learn to communicate work-related content through increasingly more sophisticated means (Stevens, 2010). However, Generation Y predominantly uses the internet for communication with friends or family and playing games (Jones & Fox, 2009).

ICT multitasking is a characteristic of Generation Y, but is not necessarily beneficial. Brain scans on Generation Y, by Clifford Nass, found that multitasking can be detrimental to prolonged focus and solid thinking (Dresden, 2010). Gary Small, another noted brain researcher, suggests that over prolonged computer use, the brain can become accustomed to web browsing and require less mental activity (Dresden, 2010). Both scientists are concerned about the possible adverse long term effects of prolonged internet use (Dresden, 2010). Small cites tobacco use as an example of how long it can take to determine a problem and gain support for corrective change (Dresden, 2010).

The promise of new technologies such as multi-core processors, improved cooling, hyper-threading, execution trace cache, and ultra-violet lithography give support that Moore's Law will continue for the foreseeable future (Hiremane, 2005).   Whether or not generational approaches to adopting new ICTs are influenced by age and stage of life or by degree of technology exposure, comprehensive ICT training approaches should not assume older generations won't learn and younger generations are automatic ICT masters.

Theory and key concepts:

Communication Metamodel

As the Traditionals and Baby Boomers leave the workforce, they take decades of experience with them. Emerging ICTs transform methods and expectations for communication potentially disrupting the organizational continuity and tradition as older workers retire. DoD and several civilian organizations have adopted KM as a strategy of organizational communication due to transient employees and Baby Boomer retirements (Jennex, 2008, p. 1).

The overall communication needs of an organization can vary depending on the communication requirements and the characteristic of the people. Organizations are created to accomplish some type of objective and if the organization is to be effective and survive, "…it must be as complicated as its problems" (Miller, 2009, p. 10). R.T. Craig developed seven communication traditions to form a

R.T. Craig's Communication Metamodel

Communication Tradition	Short Description
Rhetorical: Communication as a practical art of discourse	The collaborative art of addressing and guiding decision and judgment usually public judgment that cannot be decided by force or expertise.
Semiotic: Communication as intersubjective meditation by signs.	How people convey meaning with use of language, nonverbal communication, and signs.
Phenomenological: Communication as the Experience of Otherness	Empathy, interplay of identity and sustainment of relationships.
Cybernetic: Communication as information processing	Brains process information like machines.
Sociopsychological: Communication as expression, interaction, and influence	Psychological traits to influence one another through cognitive, emotional, and behavioral effects.
Sociocultural: Communication as the (re)production of social order	Symbolic process that produces and reproduces shared sociocultural patterns.
Critical: Communication as a discursive reflection	Focus on reflection of the meaning rather than the physical acts associated with communication.

Chart 5. Adapted from R.T. Craig, Communication Theory as a Field. *Communication Theory*, 9, 119-161. (1999).

communication metamodel out of three communication requirements: linear, shared understanding is not the goal; shared understanding is the goal; and persuasion and motivation, chart 5 (Miller, 2009, p. 12). The purpose of Craig's metamodel is to provide a disciplined matrix of diverse theoretical first order models to "engage with the practical discourse of everyday life" (Craig, 1999, pp. 11-12).

R.T. Craig's communication traditions can be applied to both civilian and military organizational communication requirements as well as generational communication as seen below.

Knowledge Management (KM)

Civilian and military organizations in recent decades have appreciated the importance of the concept of KM and have created several definitions to meet he communication needs (Nevo & Chan, 2005). However, the concept is so broadly defined that it can become ambiguous. The definition of knowledge, in particular, has both a philosophical meaning and a tangible meaning. Perspectives can range from a state of mind, the ability to gain access to information, a process, or an actual object (Alavi & Leidner, 2001). For the purpose of this paper knowledge in the organizational context is the sum of both tacit and explicit knowledge accessible to the organization: contextual information that is available from the background of its members as well as storage and retrieval systems. R.T. Craig's seven metamodel traditions can be applied in an organizational context to gain a better understanding in how organizations communicate (Miller, 2009, p. 12).

By taking a small representative sample of 14 KM definitions from DoD, private business, and academic sources, we can view the priority of communication traditions, see chart 6. Note: In creating chart 6, it is possible and likely that the authors deliberately used general language to infer differing communication methods possibly associated with the communication traditions; however, "Xs" were marked only when specific mention was made. The DoD and civilian KM definitions were similar in their overall emphasis: the cybernetic tradition had 12 of 14, sociocultural tradition had 11 of 14, and critical tradition had 11 of 14. This emphasizes communication through established rules and procedures either for decision making or contemplative meaning. Semiotic, phenomenological, and sociophychological, as a group only rated 4 or less each showing a tendency to have less emphasis on non-verbal, emotive, and symbolic communication. The rhetorical domain rated 6 of 14 indicating a de-emphasis on verbal discourse. This method of looking at KM reveals that the function of KM as a communication concept relates closer to a systems approach, either human or automated, rather than information transfer by means that require interpersonal, non-verbal, or otherwise emotive or motivationally driven communication methods.

Alavi and Leidner, divide the utility of KM functional systems into knowledge creation, storage and retrieval, transfer, and application (2001). These applications are commonly defined as functions of KM support systems (Nevo & Chan, 2005). Organizational emphasis on KM support systems can be generalized by comparing the KM support systems to the same sample of 14 KM definitions. The DoD sources show a greater emphasis on systems rather than the civilian counterparts with almost each system mentioned in the definition. 4 out of the 5 DoD definitions had all 4 KM support systems included. This is perhaps largely due to the function of KM in DoD, in its idealistic sense, is a continuous process from commander to individual. Civilian organizations may not necessarily require each KM system for their particular activity or organizational objective. Knowledge storage/retrieval and transfer were the most heavily emphasized knowledge systems in 12 of 14 KM definitions. Knowledge creation was also high with 11 out of 14 KM definitions emphasizing the importance of learning and compiling knowledge. The least emphasized system was knowledge application that was included in 8 of the 14 definitions. This could be due to the reluctance of managers to delegate decision making authority or to represent the organization to external entities.

Knowledge Management Communication Metadiscursive Crosswalk with Communication Metamodel from R.T. Craig (1999)

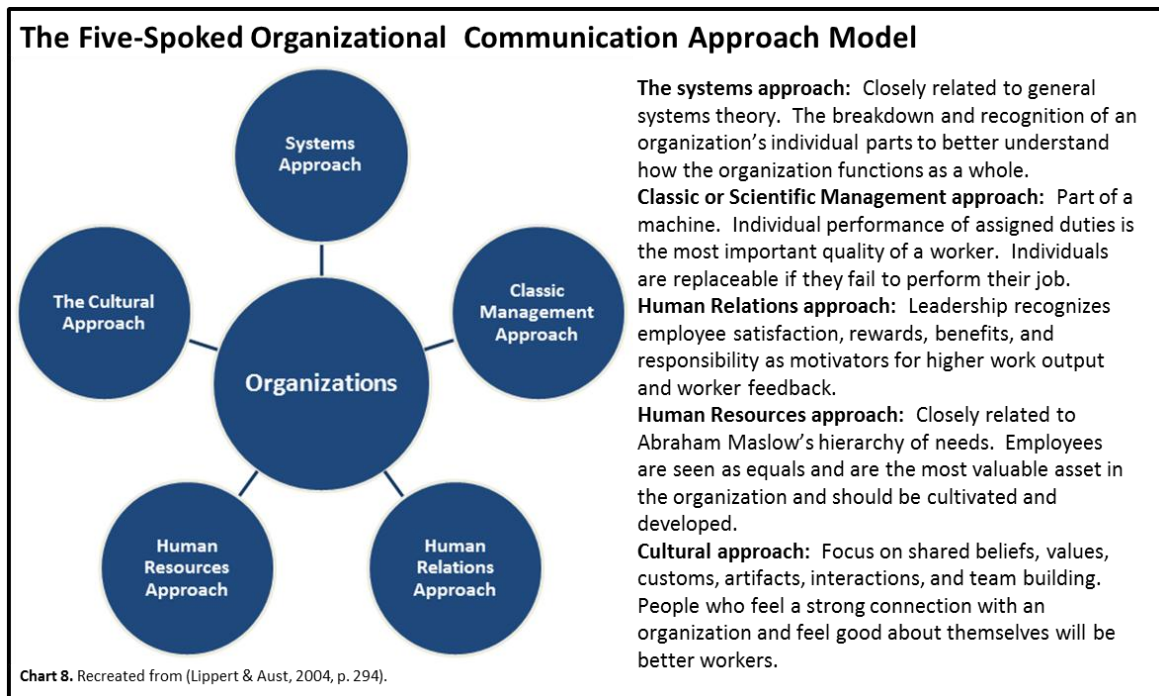|		Rhetorical	Semiotic	Phenomenological	Cybernetic	Sociopsychological	Sociocultural	Critical	Source and Year
Academic and Business Sources	… knowledge management is a conceptual framework that encompasses all activities and perspectives required to making the organization intelligent-acting on a sustained basis. KM includes activities to gaining overview of, dealing with, and benefiting from the areas that require management attention by identifying salient alternatives, suggesting methods for dealing with them, and conducting activities to achieve desired results'' (Nevo & Chan, 2007).	X		X				X	A.H. Van de Ven (1994)
	A term which has now come to be used to describe everything from organizational learning efforts to database management tools (Nevo & Chan, 2007).			X				X	R. Ruggles, (1998)
	Managing knowledge is a multidimensional process. It requires the effective concurrent management of four domains: content, culture, process, and infrastructure (Nevo & Chan, 2007).		X	X	X	X			L.P. Chait, (1999)
	A systematic and integrative process of deploying knowledge by individuals and groups in pursuit of major organizational goals. It is the process through which organizations create and use their institutional and collective knowledge.	X		X			X	X	Rastogi, (2000)
	Knowledge management is a conscious effort to gain from the knowledge that lies within an organization by using it to achieve the organizations mission (Stevens, 2010).						X		McInerney, (2002)
	The creation, transfer and retention of knowledge by organizations (Stevens, 2010).						X	X	Martin de Holan & Philips, (2004)
	The practice of selectively applying knowledge from previous experiences of decision-making to current and future decision-making activities with the express purpose of improving the organization's effectiveness.			X			X	x	Jennex, M. (2005)
	Identifying and leveraging the collective knowledge in an organization for facing the competition. KM focuses on systematic and innovative methods, practices and tools for managing the generation, acquisition, exchange, protection, distribution and utilization of knowledge, intellectual capital and intangible assets.	X		X	X		X	X	Sen, S. (2009)
	The process of collecting, codifying, accessing and transferring the totality of an organization's knowledge.			X			X		Stevens, R (2010)
DoD Sources	KM seeks to make the best use of the knowledge that is available to an organization, creating new knowledge, and increasing awareness and understanding in the process. KM can also be defined as the capturing, organizing, and storing of knowledge and experiences of individual workers and groups within an organization and making this information available to others in the organization.	X		X			X	X	Air Force Policy Directive 33-3, (2006).
	The ability to systematically discover, select, organize, distill, share, develop, and use information in a social domain context to improve warfighter effectiveness.	X		X	X	X	X		Joint Net-Centric Operations (JNO) Capability Portfolio Management (CPM). (2007)
	Knowledge management is the art of creating, organizing, applying, and transferring knowledge to facilitate situational understanding and decision making.			X				X	Headquarters, Department of the Army. (2008)
	The systematic process of discovering, selecting, organizing, distilling, sharing, developing and using information, will provide the basis from which decisions are made and actions are taken.	X		X			X	X	Department of Defense, Chief Information Officer, (2008).
	The handling, directing, governing, or controlling of natural knowledge processes (acquire/validate, produce, transfer/integrate knowledge) within an organization in order to achieve the goals and objectives of the organization.		X	X	X	X	X	X	Joint Publication 6.0 Communication Systems as cited in Air Force Policy Directive 33-3, (2006)

Knowledge Management Theory and Knowledge Management Systems Crosswalk	Creation	Storage/Retrieval	Transfer	Application	Source and Year
Academic and Business Sources ... knowledge management is a conceptual framework that encompasses all activities and perspectives required to making the organization intelligent-acting on a sustained basis. KM includes activities to gaining overview of, dealing with, and benefiting from the areas that require management attention by identifying salient alternatives, suggesting methods for dealing with them, and conducting activities to achieve desired results'' (Nevo & Chan, 2007).	X	X	X	X	A.H. Van de Ven (1994)
A term which has now come to be used to describe everything from organizational learning efforts to database management tools (Nevo & Chan, 2007).	X	X			R. Ruggles, (1998)
Managing knowledge is a multidimensional process. It requires the effective concurrent management of four domains: content, culture, process, and infrastructure (Nevo & Chan, 2007).		X	X		L.P. Chait, (1999)
A systematic and integrative process of deploying knowledge by individuals and groups in pursuit of major organizational goals. It is the process through which organizations create and use their institutional and collective knowledge.	X		X	X	Rastogi, (2000)
Knowledge management is a conscious effort to gain from the knowledge that lies within an organization by using it to achieve the organizations mission (Stevens, 2010).			X	X	McInerney, (2002)
The creation, transfer and retention of knowledge by organizations (Stevens, 2010).	X		X		Martin de Holan & Philips, (2004)
The practice of selectively applying knowledge from previous experiences of decision-making to current and future decision-making activities with the express purpose of improving the organization's effectiveness.		X		X	Jennex, M. (2005)
Identifying and leveraging the collective knowledge in an organization for facing the competition. KM focuses on systematic and innovative methods, practices and tools for managing the generation, acquisition, exchange, protection, distribution and utilization of knowledge, intellectual capital and intangible assets.	X	X	X		Sen, S. (2009)
The process of collecting, codifying, accessing and transferring the totality of an organization's knowledge.	X	X	X		Stevens, R (2010)
DoD Sources KM seeks to make the best use of the knowledge that is available to an organization, creating new knowledge, and increasing awareness and understanding in the process. KM can also be defined as the capturing, organizing, and storing of knowledge and experiences of individual workers and groups within an organization and making this information available to others in the organization.	X	X	X		Air Force Policy Directive 33-3, (2006).
The ability to systematically discover, select, organize, distill, share, develop, and use information in a social domain context to improve warfighter effectiveness.	X	X	X	X	Joint Net-Centric Operations (JNO) Capability Portfolio Management (CPM). (2007)
Knowledge management is the art of creating, organizing, applying, and transferring knowledge to facilitate situational understanding and decision making.	X	X	X	X	Headquarters, Department of the Army. (2008)
The systematic process of discovering, selecting, organizing, distilling, sharing, developing and using information, will provide the basis from which decisions are made and actions are taken.	X	X	X	X	Department of Defense, Chief Information Officer, (2008).
The handling, directing, governing, or controlling of natural knowledge processes (acquire/validate, produce, transfer/integrate knowledge) within an organization in order to achieve the goals and objectives of the organization.	X	X	X	X	Joint Publication 6.0 Communication Systems as cited in Air Force Policy Directive 33-3, (2006)

Examining KM as a communication concept shows emphasis towards systems, organizational pattern reproduction, and contemplative meaning rather than interpersonal communication or rhetorical discourse. Many KM definitions included most or all of the KM support system characteristics especially with the DoD. Ensuring the transfer of knowledge between generations is a necessary goal of organizations in the near future and the focus of KM appears to be in methods that are less readily adaptive to the characteristics of Baby Boomers and Traditionals. The older generations are least likely to use ICT that make up a large part of KM support systems. Therefore, communication strategies disregard the benefits of rhetorical, phenomenological, intersubjective, or an appreciation of the historic sociophychological atmosphere risk losing valuable organizational knowledge when the older generations retire. KM as a process of processes underscores the value and applicability of technology, but it does not address forms of communication that are inherent in people born before 1965.

Business and DoD communication approaches

Civilian organizations are broken into organizational types in contemporary studies: these are the traditional businesses that sell goods or services for a profit, non-profit, and non-governmental organizations (Miller, 2009, p. 10).   A communication approach depends on the organizational goals and missions. The mission of the Department of Defense is "to provide the military forces needed to deter war and to protect the security of our country" (2011). Despite the broad mission statement of the DoD and the very different goals of the of the institutions, organizations can still categorize their communication approaches as in L.R. Lippert and P.J. Aust's five-spoked organizational communication approach model, chart 8 (2004, pp. 293-305).

The Five-Spoked Organizational Communication Approach Model

Systems Approach

The Cultural Approach

Organizations

Classic Management Approach

Human Resources Approach

Human Relations Approach

The systems approach: Closely related to general systems theory. The breakdown and recognition of an organization's individual parts to better understand how the organization functions as a whole.
Classic or Scientific Management approach: Part of a machine. Individual performance of assigned duties is the most important quality of a worker. Individuals are replaceable if they fail to perform their job.
Human Relations approach: Leadership recognizes employee satisfaction, rewards, benefits, and responsibility as motivators for higher work output and worker feedback.
Human Resources approach: Closely related to Abraham Maslow's hierarchy of needs. Employees are seen as equals and are the most valuable asset in the organization and should be cultivated and developed.
Cultural approach: Focus on shared beliefs, values, customs, artifacts, interactions, and team building. People who feel a strong connection with an organization and feel good about themselves will be better workers.

Chart 8. Recreated from (Lippert & Aust, 2004, p. 294).

This set of approaches is a culmination of different theories over the past 100 years by scholars and practitioners to define the role of communication in organizations (Lippert & Aust, 2004, pp. 288-289). The approaches are based on three principles: first, how employees fit and communicate within an organization, second, how business communication and business relationships affect the organization and the outside environment, and finally, a focus on maturity and innovation where unique groups have different communication requirements (Lippert & Aust, 2004, p. 289).

These approaches, although developed to describe civilian communications can also be used to define military organizational communication. One obvious example with the systems and classic management approaches is the Marine Corps drill instructor played by R. Lee Ermey in the film *Full metal jacket*: "…you will not laugh, you will not cry, you will learn by the numbers!" (Scott, 1987). Although this is extreme, most initial entry service members are placed through some type of stress induced situations to test and reinforce skills necessary to fulfill their duties. Individual feelings or opinions from initial entry service members about the organization are not as emphasized as they are later in their career.

In contrast, senior leaders, officers and civilians on high level staffs function less "by the numbers" and more closely based on the concept of operational art, defined in Joint Publication 3-0, *Joint Operations*, as: "the application of creative imagination by commanders and staffs supported by their skill, knowledge, and experience to design strategies …" (2010). This doctrinal example stresses "creative imagination" as the most valued asset of the organization. The human relations and human resources approaches are much better suited at this level in organization.

Cultural Bond

The greater military organization that includes the uniformed service members, civilian employees, and families make up a non-geographic community that shares a bond of defending its nation. The cultural approach in the military transcends the generational workforce. A key component to service entry mainly for Generation Y is the notion of joining a community which can be seen in the recruiting design: "The few, The proud, The Marines," or the Navy's "Global force for good." Generation X, Baby Boomers, and Traditionals who have retired remain part of the culture. They retain a military identification card, receive health care, a pension, and are allowed to wear their uniform on special occasions among other benefits. Many remain active participants by obtaining government jobs as previously discussed. There are also several layers of cultures within the military such as the services, for example: The Electronic Warfare community is a subset of the aviation community which is a subset of the Navy which falls under the DoD. Regardless of grade, gender, or age, people in the military remain a part of the culture regardless of the generation or position of authority, therefore the military has one tremendous communication advantage over the civilian workforce due to the strongly held cultural bond.

Information communication technologies:

Information Security

Joint Publication 6-0, *Joint Communication System*, stresses the importance of two-way communication through all levels of command: "human beings — from the senior commander framing a strategic concept to a junior service member calling in a situation report — are integral components of the C2 [command and control] system and not merely users" (2010, p. I-1). Spencer Ackerman, Wired Magazine, describes the prevailing strategy of military information management as "the lower you push the information, the more you empower your people, the greater the strategic benefit …" (Gavira, 2011). This approach, while good in achieving the objectives of KM, it can create greater risk to the institution's information.

As information technology continues to influence and improve the way organizations communicate, the vulnerability also increases (Sebastian, 2009). It has overlapping issues of personal privacy, national security, and corporate knowledge. Information security is not a new concept, but increased reliance on networked information systems creates new vulnerabilities. Richard Clark, a former U.S. National Security Advisor has coined three layers of subversive cyber activity: cyber-crime,

cyber terrorism, and cyber war (2010). Each layer is different in terms of the goals of the attacker, but the technology can be used against an individual, a business, or a government and the difference is only in "a few keystrokes" (Clark, 2010). Attacks can be worms, viruses, financial theft, and data theft which can be measured in petabytes and exabytes or in "Libraries of Congress" (Clark, 2010).

One recent example is with the incidents surrounding Army Private Bradley Manning and Wikileaks.org. Manning was granted access to classified information and allegedly sent military reports and US State Department telegrams to the public whistleblower site Wikileaks.org, run by Julian Assange (Gavira, 2011). This showed a failure of both ICT systems of detection and organizational vetting of individuals for access to sensitive information (Gavira, 2011).

Information security in a generational context can be seen in terms of intent versus carelessness. Older generations who are not as net savvy may have the tendency to unintentionally open viruses, access passwords, or leave data in places where it can be compromised or stolen. For Generation Y, lack of maturity combined with technical competency can become a risky combination for organizational information security.   Well known hacker and philosopher, Eric Raymond, claims that "a secret system is only as secure as its secrets" (1997).

Microsoft, Web Browsers, and Data Bases

Computing capabilities are becoming increasingly more standardized. Most computers in the United States and the world run on Microsoft operating systems, chart 9 (StatCounter, 2011). Word processing programs, calculation, and presentation programs have a similar behavior to the end users and tremendous capability. For example, the open source program Libre and Google Docs are replications of Microsoft PowerPoint, Word, and Excel in capability, look & feel, and compatible with the Microsoft programs that they emulate.

Another example is with the compatibility of browsers. Internet Explorer, Firefox, Safari, Chrome, and Opera make up most of the web browsers in the US and the world, chart 9 (StatCounter, 2011). Meta languages like html, xml, and the styling language CSS work on all the main browsers. Advances in JavaScript, Silverlight, and Adobe Flash both require additional plug-ins, but make web-surfing richly interactive, colorful, and most importantly work in all the major browsers.

As the standardization of computing occurs with computer languages and applications, the need for a standardization of training should exist to ensure future employees are prepared for the workplace. Several computer literacy tests exist; however, the ETS ICT Literacy Assessment is most likely the only widely standardized test for information technology (Perez & Murray, 2010).

Most modern organizations require workers to have a basic level of computer literacy due to increased dependency for accomplishing work related objectives on standardized systems (Grant, Malloy, & Murphy, 2009, p. 145). Microsoft offers comprehensive training, certification, and testing so that "managers who hire candidates with a Microsoft Office Specialist certification are helping minimize [their] training costs" (2011). In one North Carolina study, incoming undergraduate students, most having already received computer training from high school, scored poorly against both their own perceptions and the school's computer literacy requirements on Microsoft Word, Excel, and PowerPoint
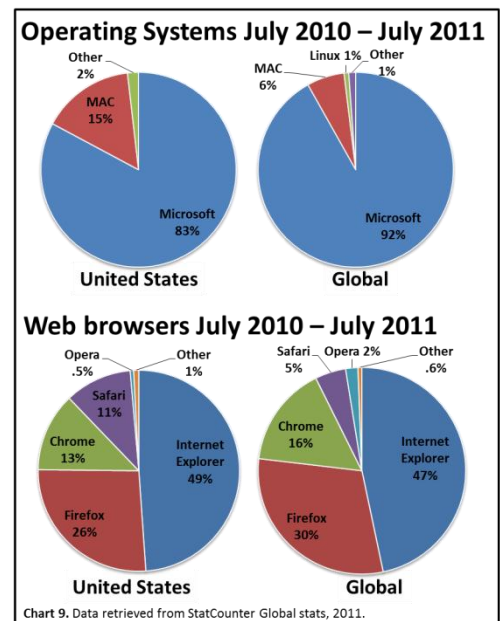
(Grant et. al, 2009, pp. 154-155). Further showing that computer literacy should not be assumed in a generational context.

People from each generational cohort will most likely require training in some computer function at some point in their academic or work careers. Standardization of user interfaces and capabilities make it possible to create a manageable set of tasks to teach and train to, conditions or a standardization of hardware and software, and achievable standards that can be trained and tested with a reasonable expectation of success. Understanding the full capabilities of basic programs like Microsoft Excel should not be assumed from any generational cohort. Training should be integrated into the communication system as a required task and not as an assumption in organizations with complex communication requirements.

Portal/Data Base/Social Networking

Social networking and web 2.0 significantly decrease barriers to entry in both expense and computer literacy. Hal Varian, chief economist at Google, stated that "SQL [structured query language] is the new HTML" (O'Reilly, 2005). Data bases such as SQL, have given web technology much more power over the past decade because it relies on dynamic object relationships rather than static links to other static sites: a vastly superior and quicker method to bound and associate data. Most major web services such as Google, Wikipedia, Amazon, and Facebook all depend on data bases with bounded data. Data base management combined with sophisticated algorithms provides a comprehensive approach to data management, making the web much easier and much more useful for the end user (O'Reilly, 2005).

The DoD has heavily invested in knowledge systems for internal and external communications as well as for training. Each of the services has a separate web based portal for service internal communication. Altogether, DoD has 17 different service specific portals for training and internal communication (Hoopengardner & Hague, 2009). Many higher level commands host their own file and email servers, and utilize collaborative tools such as Microsoft SharePoint or Customer Relations Management for secure internal organizational communication and project collaboration. Furthermore, organizations within DoD utilize commercial social media or blogs like Facebook, or Wordpress for internal and external communication to provide a conduit to the military families. The DoD website has approximately 600 different social media sites registered on their official page (2011b).

Li and Bernoff have developed a system for creating groundswell, or more specifically understanding it and using it to corporate advantage (2008). Li and Bernoff stress "to start with people and objectives before entering into the blogsphere" (2008, p. 115). Time away from home is almost a certainty for most military members today, creating a need for communication with friends and family. Generation Y, which makes up most of the military (see chart 3), is also the most likely to use the internet for communicating with friends and family (Jones & Fox, 2009, p. 7). This creates ideal circumstances for the use of social media in the military with a clear objective and population.

The standardization of common software applications and the power of databases have made communication easier and faster but not necessarily safer. The younger generations have grown up with computers, the internet, and texting with hand held devices, but are not necessarily savvy with the kinds ICTs that help professional organizations. However, social media is ideal for non-sensitive organizational communication within the military because of its ease of use and the experience of Generation Y in the use of social media.

Summary:

As Baby Boomers and Traditionals leave the workforce in the US, the institutional knowledge may be lost with them without communication programs in place that that rely on continuity (Jannex, 2008). Both the DoD and US civilian population face similar shortages of experienced people leaving

when the Baby Boomers retire. Age characteristics throughout history have separated generations due to life perspectives, but the technological growth rate of the past four decades have created distinct attitudes towards ICT from each generation. Computer and internet use is highest for Generation Y, but Baby Boomers and Traditionals have been closing the gap in recent years (Jones & Fox, 2009). The challenge is to ensure that institutional knowledge is maintained when the Baby Boomers leave the workforce.

KM is a widely studied and utilized term that focuses more on the systematic and procedural aspects of communication rather than the interpersonal, empathetic, or emotional traditions. KM communication strategies generally disregard the benefits of rhetorical, phenomenological, and intersubjective traditions. KM as an organizational communication concept underscores the value and applicability of systems and procedures primarily with technological augmentation, but it does not address forms of communication that are inherent in people born before 1965. Organizations should resist the urge to adopt the latest ICTs without understanding the communication methods best suited to their employee demographic.

The generational differences should be embraced and not polarized. Standardization of computer programs and the internet in general brought on by increasingly more powerful and less expensive computer technology has and will continue to reduce the barrier to entry into modern ICT. Each generational cohort has something to gain from the others at both the organizational and the individual level despite the different attitudes towards technology. Communication methods that emphasize cultural ties and traditions can transcend generations, gender differences, race, and most other categorizations that affect the organizational structure.

Recommendation for further research:

The basic end user computer skills required for Excel, Word, and PowerPoint have not significantly changes in over a decade.   Future research to attain a broadly accepted standardized computer literacy test based on requirements from major employers as well as educational institutions could be beneficial to teachers, employers, and employees.

As employers increasingly need user level computer skills, it would be beneficial for academia and employers to have an accepted standardized test to measure and train future citizens. Several companies specialize in training and testing in computer skills, but these efforts are independent of each other. The National Assessment Governing Board has added ICT literacy to the list of tested competencies in the US and will test elementary and high school students beginning in 2012 (Perez & Murray, 2010). This educational initiative leaves out the older generations not in school. A common ICT literacy exam would ensure that education programs, both private and public, are training people to the same tasks, under the same conditions, and to the same standards. Age and other forms of discrimination can be mitigated as well as achieving a better balanced more efficient workforce if a computer standardized literacy scale that only rewards technical competence is researched, developed, widely agreed upon, and broadly implemented.

References:

Alavi, M., and Leidner,D.E. (2001). Review: knowledge management and knowledge management systems: conceptual foundations and research issues, *MIS Quarterly* 25(1), pp. 107-136. Retrieved on July 22, 2011 from http://selab.iecs.fcu.edu.tw/course/96/km/class/paper_03_01.pdf.

Ayoub, P. J. and Blodgett, B.M.W. (2010). More savvy than we can hope to be: A generational lens on ICTs in the changing workplace. Proceedings of the American Society for Information Science and Technology, 47: 1–4. doi: 10.1002/meet.14504701289.

Beinhocker, E.D., Farell, D., and Greenberg, E. (2008). Why baby boomers will need to work longer. *The McKinsey quarterly; economic studies*, November 2008. Retrieved on July 18, 2011 from http://moodyinvestmentadvisors.com/McKinsey%20Baby%20Boomers.pdf.

Bureau of Labor Statistics (2010). Overview of the 2008-18 Projections. Occupational Outlook Handbook 2010-11 Edition. Retrieved on July 18, 2011 from http://www.bls.gov/oco/oco2003.htm.

Bureau of Labor Statistics. (2008). More than 75 percent of American households own computers. *Focus on prices And spending. Consumer expenditures: 2008*, 1(4). Retrieved on July 23, 2011 from http://www.bls.gov/opub/focus/volume1_number4/cex_1_4.htm.

Clarke, R, A. (2010, October 22). Cyber security. American Bar Association. *C-SPAN Video library.* Retrieved from http://www.cspanvideo.org/program/296174-1.

Craig, R. T. (1999), Communication Theory as a Field. *Communication Theory*, 9: 119–161. doi: 10.1111/j.1468 2885.1999.tb00355.x.

Department of Defense, Chief Information Officer. (2008). *Department of Defense information management and information technology strategic plan 2008-2009.* Washington, DC: Office of the DoD CIO.

Department of Defense. (2011, a). *About the Department of Defense*. Retrieved on August 5, 2011 from http://www.defense.gov/about/dod101.aspx#bottomline.

Department of Defense. (2011, b). Social media sites. Retrieved on August 9, 2011 from http://www.defense.gov/registeredsites/socialmediasites.aspx.

Dresden, R. (Producer). (2010). Digital nation. *Frontline.* Viewed on July 22, 2010 from http://www.pbs.org/wgbh /pages/frontline/digitalnation/view/.

England, G. (2009). Management of the Department of Defense Information Enterprise. Department of Defense Directive. DoDD 8000.01. Washington DC. Retrieved on July 5, 2011 from http://www.dtic.mil/whs/ directives/corres/pdf/800001p.pdf.

Gates, R. (2010). Quadrennial Defense Review. The Office of the Secretary of Defense. Washington DC. Retrieved on July, 5 2011 from http://www.defense.gov/qdr/images/QDR_as_of_ 12Feb10_1000.pdf.

Gavira, M. (Writer and Director). (2011). WikiSecrets. *Frontline.* [Documentary]. Boston, MA: WGBH Educational Foundation.   Retrieved from http://www.pbs.org/wgbh/pages/frontline/wikileaks/.

Grant, D.M., Malloy, A.D., and Murphy, M.C. (2009). A comparison of student perceptions of their computer skills to their actual abilities. *Journal of information technology education*, vol 8, pp. 141-160. Durham, NC: Informing Science Institute. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/ download?doi=10.1.1.148.2856&rep=rep1&type=pdf.

Headquarters, Department of the Army. (2008). *Knowledge Management Section*, (FM 6-01.1). Washington DC: GPO.

Hoopengardner, D., and Hague, J. (2009). *Knowledge management in the DoD: The future is now.* Retrieved on July 13, 2011 from http://archive.asmconline.org/files/PDI /workshop110.pdf.

Hiremane, R., (2005). From Moore's Law to Intel innovation – prediction to reality. *Technology at Intell Magazine*. Retrieved on July 20, 2011 from http://www.diit.unict.it/users/mpalesi/ COURSES/CE_07-08/DOWNLOAD/moores-law-0405.pdf.

IFC International (2009). *Demographics 2009 profiles of the military community.* Report. Washington DC: Office of the Deputy Under Secretary of Defense, Military Community and Family Policy.

Jennex, M. (2008). *Current issues in knowledge management*. Hershey, PA: Information Science Reference.

James, B.J., Swanberg, E.J., and McKechnie, S.P. (2007). Generational differences in perceptions of the older workers' capabilities. *The Center on aging and work*, issue brief 12.

Joint Net-Centric Operations (JNO) Capability Portfolio Management (CPM). (2007). *Business plan: version 1.0.*
Washington, DC: Thrush, L. and Meyers, K.

Joint Publication (JP) 3-0, Doctrine for joint operations, change 2. (2010). Washington, D.C.: Department of
Defense.

Joint Publication (JP) 6-0, Joint Communication System. (2010). Washington, D.C: Department of Defense.

Jones, S., and Fox, S. (2009). *Generations online in 2009*. Retrieved from the Pew Internet & American Life Project
website on July 22, 2011 at http://pewinternet.org/Reports/2009/Generations-Online-in-
2009/Generational-Differences-in-Online-Activities/2-Internet-use-and-email.aspx?r=1.

King, W.R, and Marks, P.V., (2004). Motivating knowledge sharing through a knowledge
management system, 2008. (pp. 131-146). *Omega: the international journal of management science.*
Retrieve on 7 July 2011 from http://www.katzis.org/wiki/images/8/80/King_2008.pdf.

Li, C., and Bernoff, J., (2008). *Groundswell: winning in a world transformed by social technologies.*
Boston: Harvard business review press.

Lippert, L. R., and Aust, P.J. (2004). Introduction and history of organizational communication. In
J.R. Baldwin, S.D. Perry , & M.A. Mottitt (Eds.) *Communication theories for everyday life* (pp. 287-306).
Boston, MA: Pearson.

Lydon, J. (n.d.). 1-Famous-Quotes.com. Retrieved on Jul 22 2011, from 1-Famous-Quotes.com Web site:
http://www.1-famous-quotes.com/quote/52115.

McGrath, E.A. (2010). U.S. Department of Defense open government plan version 1.1. The
Office of the Deputy Chief Management Officer. Washington DC. Retrieved on July 6, 2011 from
http://open.dodlive.mil/files/2010/06/DoD-Open-Gov-Plan-v1-1.pdf.

McCarthy, J. and Kellog, K. (2007). Defense Science Board 2006 Summer study of information
management for net-centric operations. Volume II. Operations panel report. Office of
the Secretary of Defense, Defense Science Board. Washington DC.

Moore's Law (2005). Intel. Retrieved from http://download.intel.com/museum/Moores_
Law/Printed_Materials/Moores_Law_2pg.pdf.

Microsoft. (2011). *Microsoft Office Specialist Certification: Microsoft Learning.* Retrieved on August, 7 2011 from
http://www.microsoft.com/learning/en/us/certification/mos.aspx#faq.

Miller, K. (2009). The challenge of organizational communication. In *Organizational communication: approaches
and processes*, 5th ed., pp. 1-15. Belmont, CA: Wadsworth.

Nevo, D., & Chan, Y. (2007). A Delphi study of knowledge management systems: Scope and requirements.
Information & Management, 44(6), pp. 583-597. Retrieved on July, 22 2011 from http://se
ab.iecs.fcu.edu.tw/course/96/km/class/paper_03_01.pdf.

Novice, D.A. (2006). Managing Conflict: Bridging the Generational Gap. Retrieved on July 19, 2010 from
http://davidnovis.com/docs/ManagingConflictA3.ppt.

The Fact Book. (2007). Federal civilian workforce statistics, 2007 edition. Washington DC: Office of Personnel
Management (OPM).

Employment of Veterans in the Federal Executive Branch (2010). Employee Services Agency and Veterans Support.
Washington D.C.: Office of Personnel Management (OPM).

O'Reilly, T. (2005). What is web 2.0. Design Patterns and Business Models for the Next Generation of Software.
Retrieved on July, 22 2011 from http://oreilly.com/lpt/a/6228.

Perse, E. M. (2001). Introduction: Do media have effects? In E. M. Perse. *Media effects and society*, pp. 1-52.
Mahwah, NJ: Lawrence Erlbaum.

Perez, J., and Murray, M.C. (2010). Generativity: The New Frontier for Information and Communication
Technology Literacy. *Interdisciplinary Journal of Information, Knowledge, and Management*, vol 5, pp.
127-137. Retrieved on July 23, 2011 from http://www.ictliteracy.info/rf.pdf/Generativity%20The%20
New%20Frontier%20for%20ICT.pdf.

Phillips, D.R., and Addicks, L.K. (2010). Engaging a multi-generational workforce –a strategic framework for
success. *International journal of facility management*, 1(1), pp. 1-10.

Raymond, R,. (1997). Eric S. Raymond's Home Page. *The cathedral and the bazaar.* Retrieved
on April 11, 2011 from http://www.catb.org/~esr/writings/cathedral-bazaar/cathedral-
bazaar/ar01s06.html.

Salopek, J.J. (2006). Leadership for a new age. American society for training and development, 2006, (pp. 22-23).
Retrieved on July 18, 2011 from http://www.ngenperformance.com/pdf/articles/TandD.pdf.

Scott, R. [director & producer], (1987). *Full metal jacket* [film]. Warner Brothers: Burbank.

Sebastian, R. (2009). *The Federal Government's Role in preserving cybersecurity for critical infrastructure.* Office of Senator Mark R. Warner of Virgina Subcommittee on Communications, Technology, and the Internet Committee on Commerce, Science, and Transportation United States   Senate Washington, D.C. Retrieved from http://www.sts.virginia.edu/pip/docs/papers/Sebastian_09_r.pdf.

Sen, S. (2009). Knowledge management and learning organizations: a case study on Private Computer Training Institutes. *Global journal of e-business & knowledge management 2009*, Vol. 5, No. 1, pp. 27-32.

StatCounter. (2011). *StatCounter Global Stats*. Retrieved on August 8, 2011 from http://gs.statcounter.com/#os-ww-monthly-201007-201107.

Stefaniack, A., and Vetter, C. (2007). Policy Brief: Black hole or window of opportunity? Understanding the generation gap in today's workplace. Retrieved on July 19, 2011 from http://www.cppa.utah.edu/publications/workforce/Generations.pdf.

Stevens, S. H. (2010). Managing Human Capitol: How to Use Knowledge Management to Transfer Knowledge in Today's Multi-Generational Workforce. *International Business Research*, Vol. 3, No. 3, (pp. 77-83).

Secretary of the Air Force. (2006). *Information management*. Air Force Policy Directive 33-3, 28 March 2006. Washington DC: http://www.e-publishing.af.mil.