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Mobile Technology: The Strategic Impact Of Mobile Communications Within An Organization

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Abstract: *Mobile Technology is a growing field converging mobile computing with telecommunications in a wireless environment that has become more robust in its own right. This convergence of mobile communications enables an organization and its individual workforce to become more flexible in communication as well as work structure. Mobile technology is enabling an organization to work together or separately on a global basis while maintaining its collaborative information sharing capabilities. This allows for a near-seamless work environment to maintain its operational tempo as a work force is dispersed temporarily or on a permanent basis globally. With the evolution of faster, more robust mobile technologies, organizations and the workforce are breaking out of the traditional work environment and moving into the global community allowing them to be continually tied into the virtual office. This thesis is intended to show how mobile technology has reshaped the strategic vision of an organization and has affected society on a global scale.*

As society moves forward, mobile technology will continue to play a greater role in the strategic direction of organizations and on individual lives. People always strive for the perfect work/life balance based on an individual's perceived notion of how that balance is defined. Mobile technology plays a significant role in today's society increasing an organization's productivity as it relates to its strategic goal, but also enhancing the lives of individuals outside of work. Organizations are realizing the benefits mobile communications bring and the results of successfully leveraging mobile technology. Each new generation of people grow up more mobile savvy and more comfortable with technology. This drives the ability of an organization to more successfully implement and use mobile technology to its advantage.

Keywords: *Communication, Generation, Mobile, Organization, Technology.*

Introduction:-Mobile Technology is a growing field converging mobile computing with telecommunications in a wireless environment that has become more robust in its own right. This convergence of mobile communications enables an organization and its individual workforce to become more flexible in communication as well as work structure. Mobile technology is enabling an organization to work together or separately on a global basis while maintaining its collaborative information sharing capabilities. This allows for a near-seamless work environment to maintain its operational tempo as a work force is dispersed temporarily or on a permanent basis globally. With the evolution of faster, more robust mobile technologies, organizations and the workforce are breaking out of the traditional work environment and moving into the global community allowing them to be continually tied into the virtual office. This thesis is intended to show how mobile technology has reshaped the strategic vision of an organization and has affected society on a global scale.

As society moves forward, mobile technology will continue to play a greater role in the strategic direction of organizations and on individual lives. People always strive for the perfect work/life balance based on an individual's perceived notion of how that balance is defined. Mobile technology plays a significant role in today's society increasing an organization's productivity as it relates to its strategic goal, but also enhancing the lives of individuals outside of work. Organizations are realizing the benefits mobile communications bring and the results of successfully leveraging mobile technology. Each new generation of people grow up more mobile savvy and more comfortable with technology. This drives the ability of an organization to more successfully implement and use mobile technology to its advantage. The primary benefits of deploying mobile technologies in an organizational setting include:

- Revenue growth
- Reduction of operating costs
- Streamlined processes and procedures
- Competitive edge over other organizations
- Increased face time with customers
- Improved stakeholder relationships

These benefits are only realized when the mobile technology leveraged is customized to an organizations unique strategic vision and direction driven by requirements. An organization must take a good internal look at its business model and outwardly at its strategic direction, its mission, and the overall goals it wishes to achieve. Whether an organization is a looking to add to its bottom line and increase profits, save lives and assist in disaster recovery or serve the public, or protect and defend an country's way of life through military defence and action, the organization must clearly understand their strategic focus and direction and how mobile communications and technology can support this strategic vision.

Getting closer to the customer is the goal of most organizations today. No matter what type of organization, close interaction with the customer is what drives organizations to have a deployed workforce. Of course, a deployed workforce has a requirement to be tied into the organizational infrastructure to connect to critical resources. Increased diffusion of mobile networks and technologies enables geographically separated entities and nomadic workers to utilize mobile communications to be closer to their customer base while remaining constantly connected to the critical resources needed to support the customer. This pushes organizations to rely on mobile technology to drive their strategic direction and goals in today's mobile environment.

The Technology of Mobile Communications:-

The evolution of mobile technologies is driven by user requirements and the increased demands for converged mobility anywhere and at anytime. Users require access to voice, data, and multimedia applications while staying connected to an organization's infrastructure, which is vital for the successful and fully equipped nomadic worker. As the technology that enables mobility is still growing, a significant change has been seen in the use of wireless systems. Between 1990 and 2005, Global System for Mobile Communication, or GSM, enabled the transition from first generation analog wireless systems with a very small user base, to a subscriber base of over 1.5 billion. This fifteen year span experienced the explosion of robust wireless and mobile architectures and the significant price reduction of mobile and wireless equipment.

The underlying theme with mobility is low cost access. Though the equipment may vary in price, it is important to enable a large envelope of access and a standard rate, varying only when service is transitioned to a distant network, say in another country or region of the world. Universal Mobile Telecommunications System, or UMTS, is a third generation technology developed to bring together telecommunications and information technology into a converged, mobile solution for people on the go. As mobile multi-media applications and services become more accessible, the development and demand for new, more robust and better equipped mobile devices will grow along with it. Organizations requiring mobile workers to have access to all of the resources a wired desktop system has residing in the office space. This demand drives the telecommunications market to create more converged mobile technology such as smart phones and other personal digital assistant-like devices.

Wireless technology standards are the backbone of the mobile industry and shape the way mobile systems are developed and how they are supported. The cyclic effect of wireless standards development is a cause and effect relationship that is traced back to the first generation of wireless standards

First Generation (1G)

First Generation, or 1G, mobile technology was developed in from the late 1970's to the mid-1980s introducing analog mobile phone standards to the telecommunications industry. Examples of these analog standards include (ICT Regulation Toolkit, 2008):

Advanced Mobile Phone System (AMPS) used in the United States
• Total Access Communications System (TACS) used in the United Kingdom
• Nordic Mobile Telephone (NMT) used in Norway, Sweden, Finland, Switzerland, and Russia
• C-450 was used in West Germany, Portugal, and South Africa
• Radiocom 2000 used in France

Second Generation (2G)

Second Generation, or 2G, mobile technology was developed to improve on the 1G technology and make mobile technology digital. The primary digital standards include (ICT Regulation Toolkit, 2008):

• GSM – Global System Mobile Communications, or GSM, is a Time Division Multiple Access (TDMA) based standard is used in most of the world.

• IS-95 – This Code Division Multiple Access (CDMA) based standard was used mainly in North, Central and South America before most carriers moved to the GSM standard.

• PDC – (TDMA-based) is used in Japan.

2.5G, the extension of second generation mobile technology, offers connection rates of up to 384 Kbps. Enhanced Data for GSM Environment, or EDGE, is considered to be a 2.5G network technology that is based on the GSM cell phone standard and, with vendors such as Nokia Siemens, software upgrades doubling the download speeds of up 592 Kbps of these 2.5G networks extend the life of this already deployed technology (Reardon, 2008).

Third Generation, or 3G, mobile technology

Third Generation, or 3G, mobile technology was developed to improve on the 2.5G technology and make mobile technology digital. The 3G digital standards include (ICT Regulation Toolkit, 2008):

• W-CDMA – Wideband Code Division Multiple Access is the scheme defined by the ITU as the main platform for UMTS.

• CDMA2000 – Code Division Multiple Access 2000 is the family of technologies that included:

o CDMA2000 1X – Doubles voice capacity of CDMAOne networks and delivers data speeds of 307 kbps in mobile environments.

o CDMA2000 1xEV – This includes:

CDMA2000 1xEV-DO – delivering data speeds of 2.4Mpbs and supports applications such as MP3 transfers and video conferencing.

CDMA2000 1xEV-DV – provides integrated voice and simulations high-speed
Packet data multimedia services up to 3.09Mbps.

• TD-CDMA – Time Division – Code Division Multiple Access.

Fourth Generation, or 4G, mobile technology

Fourth Generation, or 4G, mobile technology is the next generation of wireless technology that is still being developed to fully replace 3G technology. 4G mobile technology brings data-transmissions speeds into the 100 Mbps and above range along with quality of service QoS and traffic prioritization. This combination of speed and traffic prioritization will enable the mobile worker to have the ability to join a video teleconference and other bandwidth intensive applications from virtually anywhere using their 4G supported mobile devices, thus bringing yet another capability normally reserved for the desktop office workforce.

The technology standards that will help shape 4G mobile technology include:

• OFDM – Orthogonal Frequency Division Multiplexing

• OFDMA – Orthogonal Frequency Division Multiple Access

• Mobile MiMAX – 802.16e IEEE specification designed to support up to 12Mbps transmission speeds using OFDMA

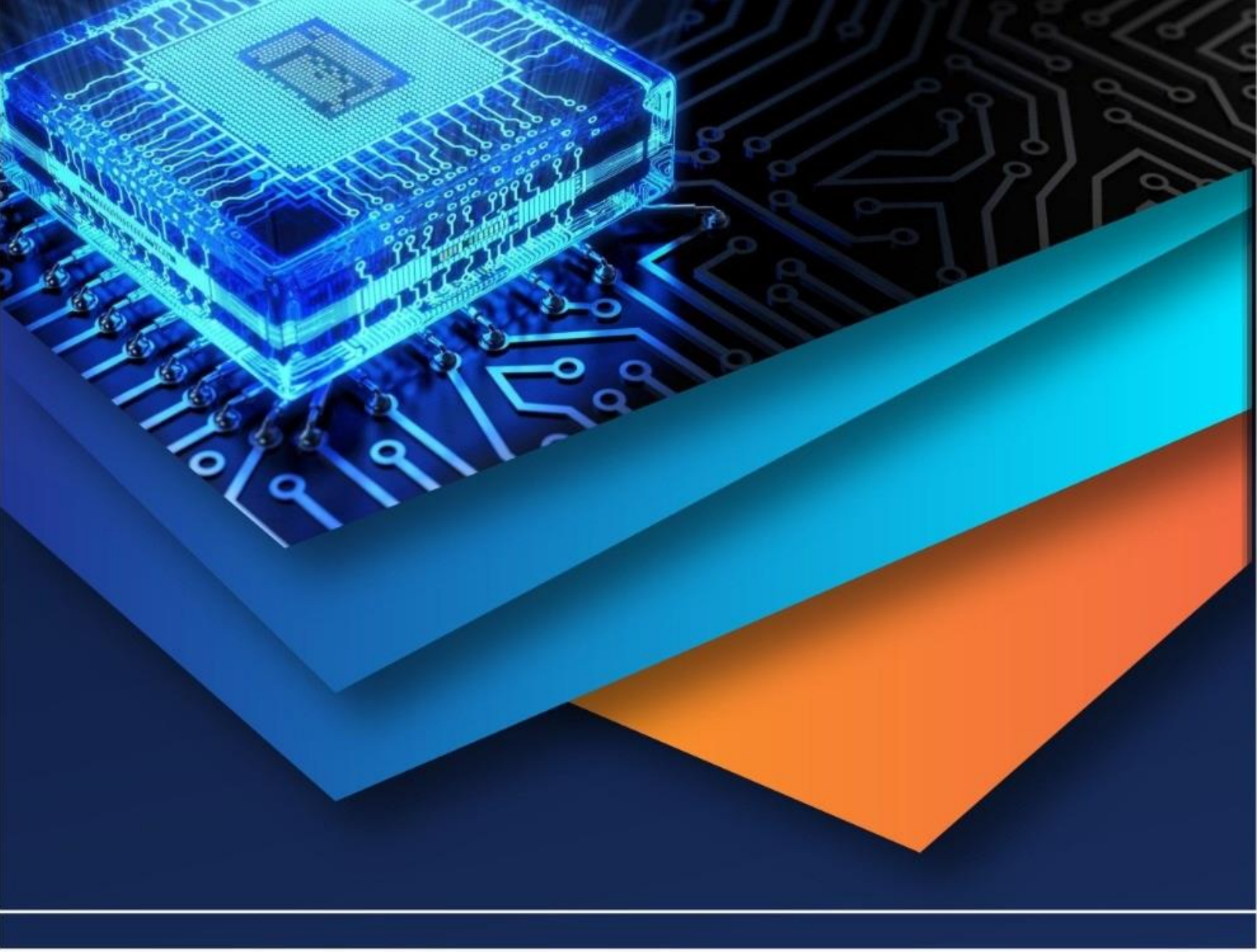
• UMB - Ultra Mobile Broadband (also known as CDMA2000 EV-DO)

• MIMO – Multiple-input multiple-output wireless LAN technology

4G will be designed as an IP-based, heterogeneous network enabling mobile users to be connected and have access to any mobile device at anywhere and at anytime. 4G will provide mobile users with flexible, fast, sharp quality, global coverage. One of the big benefits of 4G is the support for resource intensive applications such as video teleconferencing.

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