Aspects of data communication in costa rica and united states

Sociology, Communication

The movement of digital data within a computer is done through copper conductors as two-level electrical and optical signals. When data is needed to be sent beyond local circuitry, which means a computer, exact transmission gets difficult because of the increase in the distance between sending source and the destination of message. Data communication is concerned with transfer of digital messages to external devices. This transfer rate is maximized with high signal power and reduced channel noise. (Strangio, 2003) The advancements in data communications have revolutionized our lives.

It has enabled people all over the globe to acquire and exchange information instantly, even in remote areas. It has also helped in expanding enormously the news and entertainment media. Different mediums of data communication include telegraph, telephone, facsimile (fax), radio, television, global positioning and navigation systems, personal computers, voice over internet protocol, etcetera. Telecommunications and information technologies are constantly merging and converging, triggering changes in the contents available.

Different new multimedia, interactive and digital features are being incorporated into cell phones, computers and television sets. Costa Rica, which is located in southern Central America, between Nicaragua and Panama has a relatively modern and sophisticated telecommunications network. Telecommunications were introduced in Costa Rica in late nineteenth century, with the advent of telegraph and telephone services.

From 1886 to 1925, the private companies and entrepreneurs sought to start telephone service and spread it all over the country.

In 1925, the transnational Electric Bond and Share monopolized telephone services in Costa Rica through its subsidiary. By the mid-twentieth century, amid continuous decadence in quality of service, further expansion of networks became necessary to meet the market demand. This meant changing of manual system to automatic, and incurring very high investment costs. To deal with this issue Instituto Costarricense de Electricidad (ICE), was established in 1963. (Grupo ICE ICE, Racsa, CNFL, n. d.) ICE is a state owned monopoly which provides basic telecommunication services in the country.

Radiografica Costarricense (RASCA) is a subsidiary of ICE which administers the arrangement of data transmission services like telegraphs, fax, internet, online conferencing and other value added services in the country. With the help of Integrated Services Digital Network (ISDN), RASCA's users are able to access internet, exchange data ad have teleconferences. RASCA is also facilitating its neighboring countries like, El-Salvador, Honduras and Nicaragua as a territorial data networking system.

RACSA, being the subsidiary of ICE which is a monopoly, runs the singular national Frame Relay network of the region, spread over the most significant parts of the metropolitan area. RASCA is working on further expansion of this network. (IT Landscape of Costa Rica, n. d.) The Legislative Assembly of Costa Rica has been trying since 1999 to liberalize its telecommunications

industry but has failed in doing so because of massive protests by ICE's trade unions and university students.

In 1989, a US company introduced cellular communication in Costa Rica for the first time. This company was shut down in May 1995 after a legal battle declaring it to be a violation of Costa Rica's constitution. ICE started its own cellular service in August 1994. Since then, paging services are growing in Costa Rica. There are two main cell phone systems used in Costa Rica: TDMA and GSM. TDMA uses old technology, however its performance is much better compared to GSM, which also allows access to internet. The telephone service is also controlled by ICE.

It is generally reliable and cheap. (Ticogrand, 2008) Internet services in Costa Rica fall under the control of ICE, and as with most monopolies, it is said to have poor customer service and charge higher prices. The connectivity of regular modem service is moderately adequate all over Costa Rica. With a phone service available to them, users can easily access the internet; however connection speed may be very slow. Because of poor wiring system in homes, or to the nearest ICE offices, modem connection speeds are typically low.

The email addresses are assigned by RASCA to its users. Various cable TV companies provide the cable modem services. However, this facility is only available to the users in Central Valley or its surrounding areas generally. Two major cable modem service companies of Costa Rica are, CableTica and Amnet. In June 2005, ICE introduced DSL services in Central Valley and some other areas. It has been facing problems regarding IP addresses and low

speed. Integrated Services Digital Network (ISDN) is also offered in few areas.

Internet users in Costa Rica are also much exposed to viruses, Trojan Horses, and Worms as compared to many other countries. The Satellite internet service offered by ICE is very costly and inefficient. There are many other satellite internet services too, but they are all illegal and just as costly. Free Wireless internet services are known to be insecure in Costa Rica when doing confidential work like logging onto bank accounts, checking credit details etcetera. These Wi-Fi connections can be made secure through VPN, but it requires computer professionals to do so.

According to a research conducted in 2002 by MBA students of the American University, Washington DC, USA, Public telecommunication networks, voice telephony and mobile communications are all run by ICE or one of its subsidiaries. The data transmission services however are partially privatized. Paging services are also partially privatized. They are provided by ten different companies. Broadcasting and television is one sector that has been fully liberalized. As reported by the same research there were only 13 local TV stations in Costa Rica in 2002.

AMNET, CableTica and Cable America are the major cable TV providers in the country, who also offer many different channels available to the subscribers in United States. There are 152 different digital TV channels and 33 music channels being offered by different companies. Costa Rica also has 50 AM, 43 FM and 19 short-wave stations as reported in the research. DirecTV is also functional in Costa Rica. (IT Landscape of Costa Rica, n. d.) On the contrary,

United States of America is one of the few pioneering countries who have made significant contributions in progress of data communications.

Between late 1830s and early 1840s, Samuel F. B. Morse and Alfred Vail, invented a transmitter which made it possible to send electronic signals as dots and dashes. In 1844, the first telegraph line was laid down from Baltimore to Washington D. C. The telegraph business expanded progressively from 1850 onwards. Many different fields enjoyed and benefited from this easier and quicker way of transferring information. Journalism became timelier as dispatch of news got easier. Banking sector benefited from relaying of data related to stocks, commodity pricing and placement of orders between markets with the help of ticker tape printers.

In 1866, the transatlantic telegraph cable was set up which greatly encouraged diplomatic dialogue. (Invention of the Telegraph, n. d.) In 1876, Alexander Graham Bell succeeded in acquiring a patent for his invention of telephone. Telephones were designed to communicate sound messages through electric cables. Graham Bell was convinced of great potential in his invention of telephone. He opened up the Bell Telephone Company and started leasing phones. After the expiration of Bell's patents, thousands of autonomous operators became incorporated.

As a result, there was significant fall in telephone prices. By 1920, United States had millions of telephones which provided services to farm households as well as non-farm households. (Bellis, n. d.) The United States' AT&T's Bell Laboratories revolutionized technology with its successive contributions and inventions in this field. These inventions include light

emitted diode (LED), an operating system called UNIX, the transistor, and the C programming language which is used with the UNIX operating system and in development of application software.

The personal computer industry was also set up in Silicon Valley, which is located in Northern California, USA, with the collaboration of Stanford Research Institute International (SRI) and Xerox Palo Alto Research Centre (PARC). In 1969, development of the ARPANET, which later evolved into present day Internet, was also funded by Advanced Research Projects Agency (ARPA) and National Aeronautics and Space Administration (NASA), both based in USA. (Leiner et al, 2003) In 1973, the US initiated a Global Positioning System (GPS), a space-based radio-navigation system to assist the US military.

However, it is also open for use to American citizens. It enabled users to get exact information about their location and velocity in any part of the world. It is one of the three navigation systems in the world today, the other two belonging to Russia and European Union (EU). (Microsoft® Encarta® Online Encyclopedia 2008 - Global Positioning System, 2008) National Telecommunications and Information Administration (NTIA), which was created in 1978, is a US government agency which undertakes myriads of issues relating to data communications.

It is sub-divided into five different branches: Office of Spectrum Management (OSM), Office of Policy Analysis and Development (OPAD), Office of International Affairs (OIA), Institute for Telecommunication Sciences (ITS), and Office of Telecommunications and Information Applications (OTIA). All of

these collectively work for development and implementation of policies to enhance information technologies, encouraging competition in the global telecommunications market, research and innovation in technology, and making sure that these technologies are utilized effectively.

Telecommunications Industry Association (TIA), which is certified by the American National Standards Institute (ANSI), works on developing industry standards for a large chain of telecommunications products. It undertakes ten different technologies including healthcare and medication, mobile private radio and communication systems, satellites, mobile multimedia multicast, premises cabling and steel antenna towers.

There are engineering committees who set up standards for each of these industries so that they may become even more useful in coming years. (Telecommunications Industry Association (TIA), n. d.) TIA also gives an opportunity to private companies for discussing global policy implications in the telecommunication sector regarding technological concurrence and structural changes. The Government Affairs department of TIA helps the member companies and the telecommunication industry in putting forward their concerns before government officials and other authorities, in the United States and in rest of the world.

It has been encouraging policies that would create competition and bring about innovations in the global telecommunication markets. At present, TIA is dealing with issues related to public safety, Broadband services, research, international advocacy, internet content and competitiveness. (Telecommunications Industry Association (TIA), n. d.) The US has been

leading in the field of scientific research and data communication since late

19th century, whereas Costa Rica still has a long way to go.