

The Merging of Telecommunication and Information Processing: The Technological Undertiming

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Abstract: This study present, the harmonization of telecommunication and information processing as it effects the development and provision of efficient, accessible and affordable services. Emphasis on concept of telecommunication starting from the most archaic forms to the most recent forms, keeping in mind the use of internet and GSM as it affect us today was presented. Finally, the technological effect on ICT development on the merger of telecommunication and information processing was reviewed.

Key words: ICT technology, merging and technological undertiming, telecommunication and information

INTRODUCTION

Telecommunication, one of the present rapid growing sectors today has been defined over the years in many ways as that part of technology that is principally concerned with communicating from a distance. As the field of study concerned with transmission of information through various means. As the technology employed in transmitting message. It can also be defined as the inter-transmitting the content of data (speech, signal, pulses etc.) from one mode to another (Tarmo, 2003; Wikipedia.org, 2007).

In general, information processing is the changing or processing of information in any manner detectable by an observer (wwwdis.wa.gov/portfolio, 2007).

This research is geared towards the study of the harmony of telecommunication and information processing as it affects the development and provision of efficient, accessible and affordable services. The link between telecommunication and information processing is in the collection and transfer of data. The merger of these two vast and fast growing sectors of the economy gave birth to what is known as ICT (information and communication technology). ICT plays an essential role in many areas of everyday living. Everyday life is dependent on telecommunications. Each of us uses telecommunication services and services relating to the processing of information daily. ICT provides the following services:

- Banking automatic teller machines, Tele-banking and mobile banking.
- Airline booking of tickets.
- Sales, wholesales and order handling.
- Paying of school fees over the internet.
- Booking of hotel rooms by travel agencies.
- Material purchasing by industry.
- Government operation such as taxation.

THE TECHNOLOGICAL UNDERTIMING IN THE MERGER OF TELECOMMUNICATION AND INFORMATION PROCESSING

Remarkable progress in telecommunications technology has had and will continue to have an enormous impact on telecommunication, manufacturing and service industries. In particular, digital technology that integrates transmission, switching, processing and retrieval of information provides opportunities to merge various service modes into an integrated whole. This digitalization, merging the communications and computation functions has been made possible by dramatic advances as device and material technology, including integrated circuits and optical fibers. As the role of information processing increases, systems and services becomes more intelligent and labor saving in the one hand and become more software-intensive on the other, (Inose and Pierce, 1984). Satellites and optical fiber, among other technologies contributed significantly to the

Table 1: Production of Electronic Equipment in 1985 (Billion of U.S Dollar (Frances, 1997))

Industry	Data processing	Communications	Industrial	Consumer	Military	Transportation	Total
United State	80.4	28.6	34.9	16.2	49.2	8.5	217.8
Western Europe	21.2	17.7	17.8	10.1	11.0	2.0	79.8
Japan	17.3	7.5	9.5	36.1	-	-	73.2
Rest of the world	9.9	4.6	4.3	12.4	1.0	3.0	35.2
Total	128.8	58.4	66.5	74.8	61.2	16.2	406.0

Table 2: Consumption of semiconductor components in 1985 (billion of us dollars) (Frances, 1997)

Industry	Data processing	Communication	Industrial	Consumer	Military	Transportation	Total
United	3.7	1.4	1.5	0.7	1.5	0.8	9.6

globalization of telecommunication services. Standardization and inter operability of systems have become global issues as have compatibility of regulatory measure that ensure free trade in telecommunications are now indispensable to socioeconomic activities, reliability and security of telecommunications services have emerged as central issues. In our information age, information retrieval is gaining importance, while concerns are surfacing about the integrity and authenticity of information to be provided as well as the protection of privacy. These diverse issues are important to the future of telecommunication industries (Alfred, 1983).

INFORMATION TECHNOLOGY IN INDUSTRY AND SOCIETY

Benjamin Disraeli once said “The most successful man is the one who has the best information”. This remark summarizes the business of information technologies: the production, processing storing, communication and the use of information. Information technologies have resulted in the development of one of the worlds largest industries. Global production of electronic equipments in 1985 exceeded \$ 400 million as consumption of semi conductors, neared \$25 billion (Table 1 and 2). By 1990 this production and consumption figures were expected to expand to \$600 billion and \$65 billion, respectively. Today, cutting-edge technologies such as computers, software and artificial intelligence, fiber optics, networks and standards have an immense impact on information technologies. Among the many applications of information technologies, three of particular importances are telephony, mobile cellular telephony and data processing and communication. Information technologies in turn affect many industries and society as a whole, (Robert, 2001).

THE INFLUENCE OF CUTTING-EDGE TECHNOLOGIES

Recent achievements show that the development of chip technologies for example, very-large -scale-

integration technology has been exceptional over the last three decades. Today a million or more transistors can be included in one chip. In fact the number of devices has increased by hundred per decade since 1958. If this pace of development could be applied to the auto mobile industry it has been estimated that six Rolls Royce could be put on the head of a pin and that each of them would cost about \$3:00, gives over 3,000 miles to gallon of gas and have enough power to drive the queen Elizabeth, (Frances, 1997).

In very large scale integration (VLSI) technology at the cutting-edge of development, there are challenges in features size design, complexity and facilities for production. VLSI technology today includes feature sizes of less than 1micrometers on the chip. On a biological scale this is in the range of red blood cells and yeast cells to the smallest bacteria. However, feature dimension as small as the human immunodeficiency (HIV) virus which is about 1000 microns has still not been reached. The smaller the feature size the faster the processing capacity and design complexity of the chip. Thus, the feature size is critical for the price-performance development in microelectronics.

IMPACT OF INFROMATION AND COMMIUNCATION TECHNOLOGY

The impact of information technology on differentiation strategies is equally dramatic as noted earlier the role of a company and its product in the buyers value chain is the key determinant in differentiation. Using automation for instance, sulzer brother has increased from 5-8 the number of cylinder bore size of new low-speed marine diesel engines. Ship owners now choose an engine that is more precisely suited to their needs and thereby recoup significant fuel savings. Similarly, digital equipments, artificial intelligence system, XCON, uses decisions rules to develop custom computer configurations, this dramatically reduces the time required to fill orders and increases accuracy which enhances digital’ image as a quality provider.

RELATIONSHIP BETWEEN DIGITAL REVOLUTION AND ICT

The digital and ICT revolutions are twin revolutions. To understand their relationship, let us look at the history of voice telephony. According to Robert W Lucky, "the crux of (Alexander Graham) Bell's invention of telephony in 1875 was the use of analogue transmission, the voltage impressed on the line was proportional to the sound pressure at the microphone. "The growth of the microphone was relatively slow. It was not until the 1920s that a national telephony network was established in the U.S in the late 1940s an alternative to analogue transmission was considered with pulse-code modulation (an encoded signal of pulses). This marked the start of digitization in telecommunications (Shelly, 2000).

However, it was only in 1961 that the first digital carrier system was installed. Digitization meant the wide spread replacement of telephone operators with digital switches. In 1971 the first fiber optic cable suitable for communication were made leading to effort to send communication signals via light waves. By about 1989 "ones and zeros had become the language of telephone networks in the US. Digitization was a critical development because with digital transmission "noise and distortion were not allowed to accumulate since the ones and zeros could be regularly restored (i.e., regenerated) by a succession repeater sites along the transmission lines. The outcome was clearer communication over long distance at lower costs (Lehrl and Fischer, 1990).

Today voice is translated into data packets, sent over networks to remote locations, sometimes thousands of kilometers away and upon receipt translated back to voice television is not immune to digitization. In the near future, television sets will be digital. It will also be possible to use the television to surf the internet. The digital TV will allow people from different locations to chat with each other while watching a programme. With everything becoming digital, television, voice telephony and internet can use similar networks. The transmission of hither to different services (telephony, television and internet) via the same digital network is also known as convergence.

THE INFORMATION SOCIETY

How will the internet affect the individual?: The internet and the ICT revolution have created survey individuals:- individuals who are empowered to new learning opportunities are able to sell their own ideas services and products directly to others and can access medical information to make their own choices about health care. These survey individuals also have reliable and up-to-

date information about government policies and programmes that allow them to become better citizens.

Moreover, the convenience and the anonymity provided by the internet have led some people to turn to the method not only for doing business, but also for reaching people on a social and personal level the latter has elicited some concerns in the filed of psychiatry. The Addiction Research Foundation in Toronto now accepts internet with IAD are called internet more with their PCs than with real people. Psychiatrist consider this not just addiction but dependence, which is characterized by obsession, a loss of control and an inability to step even if person wants to and understands the dangers.

Technology is not sole the culprit. Robert Putnam has documented a decline in civic engagement and social participation in the US in the past 35 years, resulting in major consequences on both the societal and the individual level. This is major concern. As Putnam writes, the quality of governance is determined by longstanding traditions of civic engagement or its absence. Voter turn out, newspaper readership, membership in choral societies and football clubs. Are the hallmarks of a successful region. Infact, historical analysis suggested that these networks of organized reciprocity and civic solidarity far from being an epiphenomenon of socioeconomic modernization, was a precondition for it ([HTTP://computer.howstuffworks.com/internet-infrastructure.htm](http://computer.howstuffworks.com/internet-infrastructure.htm)).

Technology, particularly the internet is definitely helping change social relations, but not in ways that its critics suggest. Castells describes the impact of the internet as people who organized themselves into a social work. "Networked Individualism," as he describes it, "is a pattern not a collection of isolated individuals," Individuals will build networks, both online and offline, based on their interest, values affinities and projects. Due to the capabilities of the internet for communications, people will build virtual communities that are different from physical communities. These communities however are necessarily less intense or less effective in binding and mobilizing people. Furthermore, a communication hybrid is now developing in our society, bringing together as the material support of networked individualism.

HOW WILL THE INTERNET AFFECT THE FAMILY

Technology allows families living in different locations to stay in touch with each other. Filipinos are now able to send text (sms) messages to their relatives in the United States and Europe. Singaporeans who are working overseas are able to keep in touch with their families back home via the internet. Children of expatriate

Lao are able to learn more about their parent's home country via the internet. But it also cannot be denied that in recent years that people are spending less time with their families' because of information and work overload. Work takes more and more time and even if a family member is physically present, work is intrusive, preoccupying and unpredictable Reich believes that the new family that requires a complex set of logistical arrangements for the various members to responds to economy's new demand.

Nevertheless, although the emerging economy is more stressful it generates more opportunities to earn more money for talented men and women alike. Almost all women now have the option of having a job and need not be entirely dependent on a male breadwinner.

CONCLUSION

Developing country recognizes the need to harness ICTs for development. However, the ICT uptake has been largely unequal. The digital divide is a problem that both government and private sector must work together to address. Without doubt the ICT revolution is changing the course of history and developing countries must equip themselves with better information and policies that will enable them to join the digital revolution.

The aim of this primer and the series on the information economy, society and polity is to provided policy makers and opinion leaders in developing countries of the Asia-Pacific with a clear understanding of the various terminologies, definitions, trends and issues surrounding the information age. The other primers in the series are:

- Nets webs and information infrastructure.
- E- commerce and e-business.
- Legal and regulatory issues on the information economy.
- E-government.
- ICT and education.

- Genes technology and policy: An introduction to biotechnology.

It is our hope that these primers will spur the continuing effort of developing countries to prepare for the information age. Much has been written about the information revolution. Many initiatives have been undertaken and some are to be applauded for their success while others further support and guidance. The signs of the times digitization, convergences, globalization, as well as their various impacts on politics, economics, social structure and culture-all foreshadow a future in which information is the key component. We must heed these signs if the future, the new ear of information and progress is to be ours.

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