IT DNA (Devices, Networks & Apps) Mutation in Governance

Ravi Sahai Saxena,
Additional Chief Secretary, Govt of Gujarat

Recalling my early years of posting in Government of Gujarat in 1980, staff used the humble typewriters–first manual and then electronic versions for typing documents. This was the time when Apple Mac was just introduced worldwide, Windows 1.0 was two years old and Government in India had limited research-based computing application. Back then, if documents had to be typed, one had to leave them in the typing pool and couldn't expect to see the typewritten version before 3 or 4 days. While electronic typewriters let you type a line first and edit it before printing, the manual typewriters required a page to be retyped if even a single mistake was to be rectified.

The computers that one came across in India prior to this period were large machines (IBM Mainframes) that occupied more than a couple of rooms and used thousands of vacuum tubes. When operating, these vacuum tubes generated so much heat that they could only be operated in specially designed rooms with their own heavy duty air conditioning systems. Gujarat Govt had set up a computer centre way back in early 70s, and some applications like school exams tabulation and compilation was done there in addition to some jobs of the Bureau of Economics and Statistics. While serving a Central Medical stores Organisation in the Government in 1982, my problem of purchase of approx. 400 items of medical inventory from approximately 400 vendors and then dispatched to almost 400 destinations in different combinations was an exercise ideally suited for computerization, and was developed on the mainframe Computer of IBM through an inventory and purchase management software. Of course its operationalization

meant making frequent visits to the mainframe computer centre with data daily for processing different stages of the program. Absence of dedicated staff in the department for commuting and processing while sitting in the computer centre 35 kilometres away made this exercise gradually in fructuous.

By the 1980s, integrated circuit technology made producing a small and relatively inexpensive personal computer possible. This meant computers were getting in shape from large size main frames to personal & commercial usage. Technological advances did help make computers smaller, faster, and extremely capable information handlers. When these desktops were introduced in India, it was amazing to imagine that huge computers of earlier years could then be fitted on a small desk and yet perform brilliantly like their massive versions.

That was the Defining Moment. That was the time when computers moved from the separate rooms to office desks. The Simple PC with Intel extended 8088 was seen with both fear as well as awe. Much that in the absence of meaningful applications, PC began mainly as an efficient typing device and, therefore, the stuff being used by the junior clerical staff. However, in contradistinction, PC was also considered to be a smart device, to be housed in an air-conditioned room, and therefore not something which could be left on a stenographer's desk. It was not supposed to be used where dust could enter, and therefore to be housed in specially and smartly created glass partitioned rooms, where people could enter only after removing their shoes. On the other hand, It was also a time when officers up to a pretty senior level were not entitled to air conditioning of their cabins, while a PC was entitled to be housed with one. As a result many such officers decided to renovate their office rooms to smart rooms with computer housed in their room itself with a view to avail of the air conditioning benefit associated with it. This turned to be the watershed of the ivory tower school of administration created by the British and a civil services officer apologetically put his hands on the keyboard, a menial thing hitherto.

Gradually Officers who were with technical background, had some technical exposure or the ones who loved to lead and experiment, they began using computers – to project a cutting-edge and impressive working style. These PCs didn't even have hard disks. There used to be floppies – one for operating system, other for the application.

The operating system used in these computers was DOS . BASIC was used for language editing and FORTRAN (Formula Translator) was used for doing calculations. Before using the computers, the users had to undergo compulsory training. Soon GUI based Operating System – Windows was introduced and documents could now be typed using the word processor much faster. It made the task of using computers did the Personal Computers begin to gain popularity in the market. Machines with Motorolla chip 60386 and the 60486 also moved simultaneously in the technology space and led to little larger UNIX based "mini" computers, even though

these mini were much larger than the desktop and were not meant to be kept on the office tables. The Natural Resources data Management System of the Deptt of Electronics implemented in 5 districts in 1987 required such Minis to be installed in a district computer centre. It remained a complication to relate MS DOS based PCs with such UNIX based MINIs until a utility called ZENIX was deployed to demonstrate that such connection was possible. Motorolla gradually exited the chip sector and one did not hear about their computers later.

It remains to be stated, however, that possessing a computer irrespective of its usage or otherwise, remained the main objective for departments for quite a few years. In the absence of either the network, or the programs, or the capacity of the officers to operate and use the computers, these adorned the tables of each officer, some time to be replaced by the next generation computer even without its cover being removed at all. This was a fall out also of the over enthusiastic policies of the Governments to earmark anywhere from 1% to 3% of the annual budget to "Computerization" irrespective of the entire process of using that not being in place.

The race for miniaturization of storage and other components and that for increasing the processing speeds of the chips culminated in the shape of Laptop, which was yet another watershed in the history of computing devices. It is this single step, which launched a thousand mile journey in the field of convergence of Communication of Voice, Data and Video through small handheld devices, known as smart Mobiles. The sheer mobility and affordability of these devices is leading the Governments at all levels today to adopt Mobile applications with innovative usages involving GPS and GIS technologies suitable typically for Government usages. It is now the stated policy of both Central and State Govts to establish Mobile Services Delivery Gateways with a view to create a seamless backbone across the whole country's Govt establishments for delivery of public services.

The mobile ultimately is in vision to be the instrument of empowerment for people in the country – the device which will not only help people to communicate, to transact financially, and to do a variety of things. All this while many things changed – devices improved, networks improved and so did the applications – LAN and then WAN.

Telecom Networks

It was developments in telecommunications sector, however, which caused a shift in the very paradigm of administration, rendering the traditional British system redundant. A district administrator until early 80s could never depend on telephonic communication for matters of urgent importance, even within his own district. Most of communication went through VHF wireless infrastructure owned by the Police .

Prior to the eighth Five Year Plan, and till the year 1988, India was among the large number of Asian and African countries that had a tele-density of less than one, at 0.52. In 1984, under the aegis of Mr Sam Pitroda, C-DOT was established for indigenous development and production of digital exchanges. By 1987, within the three year target that we had set for ourselves, we had delivered a 128-line rural exchange, a 128-line private automatic branch exchange for businesses, a small central exchange with a capacity of 512 lines and all of this was being manufactured in India.

The telecom sector in India was a government monopoly until the year 1994 when liberalization was gradually unrolled. Latest technical innovations like GSM(Global System for Mobile Communications), CDMA(Code Division Multiple Access), PMRTS (Public Mobile Radio Trunking Services), Fixed Line and WLL(Wireless Local Loop) were rolled out thereafter. Especially, India has a flourishing market in GSM mobile service, while the number of subscribers is on rapid and dramatic increase reaching a total of 903 million mobile connections as of today.

Applications for E-Governance in Gujarat

In the last decade alone, the Governments have seen their e-Governance mechanism progress manifold. In an otherwise late starter state like Gujarat also major strides, pioneering in nature, were made in e-Governance following the legacy of Mainframe Computer centre in 70s. The first State Wide Area Network (GSWAN) was created in 2001 connecting up to Taluka level a whopping 35,000 nodes today on this single intranet. Simultaneously another intranet with bandwith from a hub of service provider was pumped through a VSAT based network across 14000 villages of the state. When joined in near future, this would form a 50,000 nodes, fully Govt owned, secured , IP based intranet at its disposal making complete unified communication for Governments usage independent of any private service provider. With bandwidth of 34MBPS from State Center to each District and 10MBPS from districts to each Taluka, a large number of video conferences, voice and data flows round the clock on its network. Many functions of the state are completely online now in Gujarat.

E-governance initiatives in India

Establishment of the National Informatics centre (NIc) in 1975 was the first major step towards e-Governance in India as it brought 'information' and its communication in focus.

Between 1986-1987, the Indian government embarked upon the creation of three wide-area computer networking schemes: INDONET (intended to serve the IBM mainframes in India), NICNET (the network for India's National Informatics Centre), and the academic research oriented Education and Research Network (ERNET).This was followed by the launch of the District Information System of the National Informatics centre (DISNIc) programme to computerize all district offices in the country for which free hardware and software was offered to the State Governments.

By 2000, a 12-point minimum agenda for e-Governance was identified by Govt of India for implementation in all the Union Gov Ministries/Departments. This emphasized essentially upon provision of PCs to every officer, creation of LANs in organizations, training, small applications developed by NIC like workflow or paper tracking, pay roll, housekeeping, emailing simple communications like notices for meetings etc, grievance redressal software etc.Further Ministries were to have their websites, and provide electronic copy of the laws, rules, regulations of their Ministry.

 * With Special Reference To Govt. of Gujarat