

Commoditisation of Connectivity

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If there is a success story in the 60 year of independence which has metamorphosed India on to the world stage and has benefited the common man, knowledge based services as well as the elite of the society; **it is the fourth dimension of transportation TELECOMM; after Land Sea and Air.**

Not only is telecom connectivity an important part of the effort to upgrade the national infrastructure but it is also required to establish India on the global map. The telecomm industry is capitalised at mind boggling US\$300 Billion when about 40% of geographical area, 60% of addressable market and yet only 25% of the population is the beneficiary, compared to the world average of around 50% (some 3 billion phones world wide). What has caused this explosion which was inconceivable even about ten years back?

Technology, Applications, and Regulation

The constellation of these three has brought in competition, bringing in affordability, increasing usage, there by resulting in the commoditisation of telecomm.

From an abysmally low tele-density of less than a tenth of a percent at the time of independence it has touched 25% (most of it, though, in the last 15 years). I remember as a child that having a phone at home meant that you were some one of very high standing in the society or a very senior government executive. From “AAp Qatar mein Hain, kripya pratiksha kijiye” literally translated means “you are in a queue, please wait”; we now have Qatars (queue’s) of telemarketers bending over backwards to offer you mobile phones.

All this Commoditisation is the end product of the evolution or emergence of Regulation, Technology and Applications in telecomm.

In the days gone by it was pretty normal to wait for 12 hours for a phone call from Delhi to Jaipur or calling my fiancé from the jungles of Assam, Hilltops and



valleys of J&K (while installing microwave stations in the mid 60s) to Calcutta or any other place and that too after walking some few miles either to a post office or to the high and mighty. **The joke used to be that if you wanted a phone for your ward, book it when you got married; 10 to 15 years was the norm.**

It is all changed and changed for the benefit of common man, the society and India. Connectivity has brought jobs and increased knowledge based export of services. **For example in 1991 the knowledge based export used to be about US \$ 40 million and today it is about US\$ 40 billion. Knowledge based industry has generated employment for millions of our youths.**



How did all this happen, Emerging Technologies, miniaturisation and their applications? We moved away from wires strung on poles, to coaxial cables, satellites, fibre and from Analogue to Digital connectivity resulting in many fold increases in capacities for both domestic and international digital connectivity? Internet, international connectivity has increased from some 2000 simultaneous conversations to god alone knows how many!! From a meagre few megahertz (bits)

in 1991 to terahertz (bits) today resulting in from hours of wait time to get connected, we get connected in the blink of an eye. The connectivity has evolved from 90 bits per second in the 19th century to 90 terabits or so in the 21st century.



Rural Connectivity-The Future



Applying Technology to reach out to the Masses

However, it is still a concern that the connectivity has not yet reached the depth and breadth of India and many parts of the world as much as we would like it to have connected. There exists a significant rural-urban divide to date, in addition to the digital divide. There were plans to provide for a phone in every village; some thing that has been talked about for nearly two decades; however it is my belief that this has still not been achieved in its entirety. The government has stated that under the Bharat Nirman Programme, it will be ensured that over 65,000 revenue villages in the country, which have not yet been provided with a Village Public Telephone (VPT), shall be covered and assistance for both capital as well as operational expenditure for these VPTs will be met out of the Universal Services Obligation Fund (USOF). The goal was to achieve this by the end of 2007. I think we still have some way to go. The technology exists, but the will to apply technology to reach out to the rural and agro masses does not. This is entirely due to a warped regulatory mindset of the policy makers.

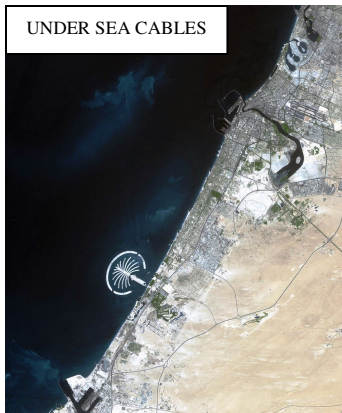


Rural connectivity has the potential to bring enormous benefits to the telecoms sector on its own and to the economy of India on the whole. 70% of India is rural. Giving access to a human being of any kind has the potential to unravel the power of human innovation and entrepreneurship. Rural connectivity will not only provide a growth engine for the telecoms industry but at the same time **there will be improved opportunities for our rural people.** Telecoms connectivity will act as a catalyst to better education; bring improved market access for their products; provide improved employment prospects and provide for greater purchasing power in their hands. As an example, connectivity sent quality grapes of **Narayangaon**, an obscure village in Maharashtra, to the shelves of **Sainsbury** in the UK in 1993. **All this is because of the conversion of telecomm from being an elitist's tool to common man's support.**

Connectivity has become that vital tool in the hands of every discipline, health, medicine, agriculture, entertainment and technology. Connectivity has provided that flow or transportation of information at speeds of light, which has changed the way we live, think and execute; yearning for more of the same with each passing second. One may live without food, but without connectivity every body feels helpless.

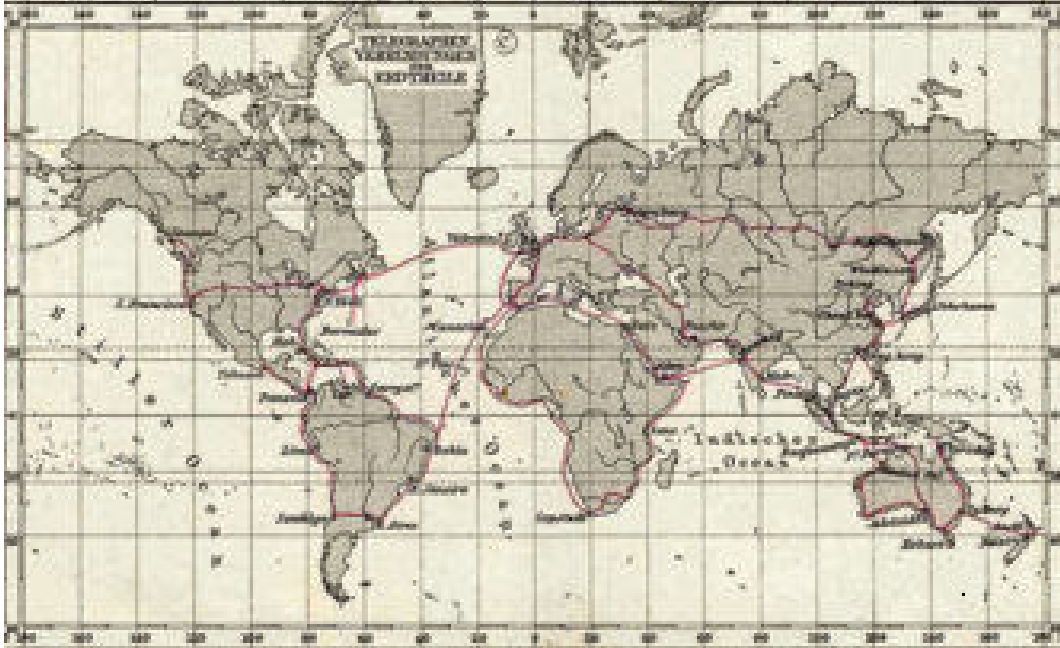


International Connectivity- The Bridge to Globalisation



We at VSNL had the foresight and vision of the need to bridge the digital divide in early 90s when India decided to open up. Against all odds, VSNL invested in state of the art digital undersea cables SEA-ME-WE 2, FLAG and conceived a cable system Optical Amplifiers Submarine India System (OASIS) to skirt around India from (Gujarat Coast to Kolkata) with access to Bangladesh, Sri Lanka, Myanmar, Pakistan and UAE. That project would have provided international access to entire country and all these countries mentioned above. Alas, the bureaucracy and the private sector in unison killed the project, because they saw immense opportunities in the project. The same has been picked up in bits and pieces by the private sector in putting together the project OASIS or Jalmala. Leading on from that the following is what ensued.

The global telecoms industry went through a period of turmoil during the early part of the new millennium. The domestic Indian market was largely protected from this due to the growth phase that it was in. However, as an example some very large undersea optical fiber network players got overextended and in financial trouble. A number of Indian giants saw these distressed assets as an opportunity for India and they bought them at reasonable prices. Reliance ADA Group bought FLAG Telecom, of the UK; and Tata, through its VSNL subsidiary, bought Teleglobe of Canada and Tyco Global Network of the US.



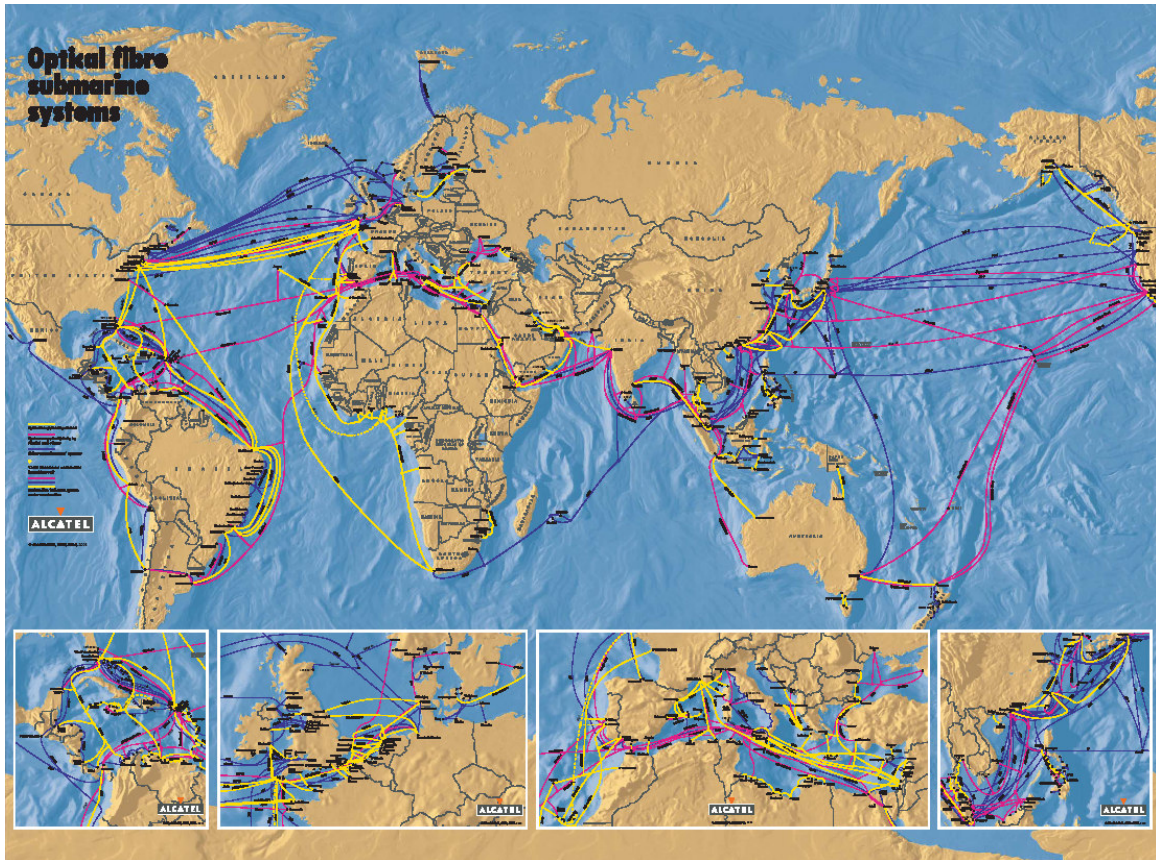
90 bits per second cable system of the 19th century

These acquired companies are now once again major players in global networks. Now that the global capacity glut has been worked off, prices for bandwidth are once again on the rise. This means that the Indian telecom has the opportunity to have the same kind of disruptive effect on the global telecom industry that the country's software industry is having on tech services.

The potential for Indian companies to connect countries in SE Asia and Africa that so far have been on the other side of the digital divide with global connectivity encircling the whole globe with fiber loops has huge implications for developing nations. This means everybody gets equal access to bandwidth. Indian companies are contributing to the global economy as now there will be an opportunity for other emerging nations to have a shot at the global economy just like India did a decade ago.

With high quality international and national telecommunication network, and world class IT and management professionals, India has become one of the most preferred destinations for sourcing software and IT enabled services. In comparison to other low cost locations, India ranks high in several critical parameters including the level of government support; quality of the labour pool; English language skills; cost advantage; project management skills, entrepreneurial culture, strong customer relationships and exposure to new technologies, industry's strong focus on quality software and processes, Institutes of Science and Technology, R&D Laboratories. However more needs to be done to develop the R&D environment. Enabling further industry collaboration with our premier institutions of higher learning will augment the talent pool for R&D and in turn facilitate development of state-of-the-art

technology. This is needed not just to benefit the global economy but to also promote country specific innovation.



90 Terabits per second cable system of the 21st century

We are on the brink of a revolution in India. Indian companies are enhancing their global service delivery capabilities through a combination of green field initiatives, cross-border mergers and acquisitions, partnerships and alliances with local players. Telecoms connectivity is at the heart of this revolution.

Regulation-The all Pervasive Essential

Proper regulation is especially important in telecom as is the importance of intellectual property and industry standards. Global rules of the game have traditionally been set largely by the U.S., together with Europe, with others coerced and cajoled to go along. But the developing countries are beginning to resist and this is leading to increasing divisions within the developed world about what should be the rules of the game. Success has always entailed trying to shape, understand, and take advantage of "regulatory" environment. This will continue to be case in the future. However it will be more complex both politically and economically. There are risks and uncertainties about future directions of the

global economy and this will require diversified approaches. The guiding principles will still be around more openness, less protection, more competition.

This is an area that India has been slow to react to. **Technology evolution or emergence is irrelevant in the absence of proper regulation. For close to fifty years we suffered from no regulation because of government monopoly and a vice like control in telecomm sector. It was in 1997 when the Telecomm Regulatory Authority of India (TRAI) was set up to strike a balance between a government monopoly and private sector companies. Had that not been done, the fruits of technology and applications would not have been possible for bringing in commoditisation of telecomm connectivity.**

At present, regulatory issues related to telecom in India are in the process of maturation, most tariffs are forborne providing healthy competition. There are remnant issues of spectrum pricing which are getting resolved to be in line with international best practices to establish the true economical value of this scare national resource. Hitherto, 2G spectrum has been allocated along with the license and seems to be leading to huge losses to the public exchequer. The low price at which the spectrum has been available has led to huge qatars of companies wanting to join the telecom race and make huge profits overnight. This anomaly, some policy skew and a large number of applicants have also led to uncalled for battles on who is first in the queue to get spectrum from amongst the new applicants.

Nonetheless, this seems to be set to change in the backdrop of a clarion call by none other than the Prime Minister to allocate this national resource in an equitable, fair and transparent manner keeping an eye on the revenue generation potential. Pressures from various quarters are turning the policy on its head and 3G spectrum is headed towards auctions, a well established global practice. This would indicate maturation of the Indian telecom sector and also lead to the true economic value of spectrum to



accrue to the public exchequer, which can be further used by the government for social purposes. Success has always entailed combining local and global knowledge and best practice. As the Indian telecom industry and the regulatory environment develops and matures, Indian policy

makers should push for a larger say in global matters.

Conclusions

Can I say that I have seen it all in my 67 years of life, perhaps not having been at DOT, always at the cutting edge of technology to provide connectivity since the 60s in Assam, J&K and Rajasthan, at Inmarsat for providing connectivity to ships, trucks and aeroplanes, at VSNL to bridge the digital divide, at Reliance for creating their Infocom blue print and finally at BPL for final commoditisation of the connectivity.

This scorching pace of commoditisation will continue because of the unquenched thirst for the acquisition of information. Therefore, have not seen anything yet in these 45 years of providing connectivity, what connectivity will look like in the next decade and what it will do more for the society; it is anybody's guess, may be the proverbial tip of the ice berg for what is yet to come to stay connected in future!

For me I had seen the tip of the iceberg about 50 years ago to the day, when I took up Electronics and Telecomm as my chosen subject of study when every one went after mechanical, civil, electrical and metallurgy. Those were days of thermionic valves and the impact of William Shockley's discovery of transistor had just about started making waves.



The Thermionic Valve and Transistor

The Chip (millions of Transistors)

The Old Telephone

I think that I saw the tip of the iceberg then. In these fifty year either the tip of the iceberg has grown or the iceberg beneath has grown or both, because the growth in telecomm and its application in every day life seem to be increasing with each passing day at unrelenting pace. What future holds for connectivity; only those connected perhaps can tell. Even the best of crystal balls is cloudy!

All I would say is Laage Raho Connected for the next stage of prosperity to be fuelled by Regulation, Technology and Applications. Telecomm is that mean or dimension which alone will bring in an all round inclusive growth

in all our strata of society not only India but those unconnected parts of the world across continents.