Information Technology

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It gives me a great pleasure to be a Special Editor for the special issue of *DESIDOC Bulletin of Information Technology* dealing with information technology (IT). IT has made India proud in a number of ways. It is a major export earner. Companies of many developed countries look to India as the destination of their IT industry and also as a source for IT applications. A large number of young men and women have found better lives for themselves and their families by going the IT route. Common public in India too have started deriving the benefits of IT applications through the computerisation of railway bookings, announcement of results of competitive examinations etc. IT has revolutionised business through its induction in the banking and financial sectors. However India has to go a long way to realise the full potential of IT.

We have just made a beginning. The National Task Force on Information Technology and Software set up by the authority of the Prime Minister's Office has made many specific recommendations to remove the fetters that have prevented the growth of IT industry in India, namely, administrative procedures derived from the past; unnecessary and outdated regulatory and inspection regimes; etc. In addition, it has identified many enabling measures to make India an IT Superpower by 2010 or earlier.

IT revolution is also catching up in the security systems of the country: defence services, paramilitary forces, intelligence services, etc. A quote from the book titled 'India 2020: A Vision for the New Millennium' by Dr APJ Abdul Kalam with YS Rajan is in order:

"Future defence operations are going to be based on multiple networks of Army, Navy, Air Force and space systems. Information technology is going to be used in unprecedented ways, in the planning stages, in various simulation exercises, as well as during actual operations when the need arises. Continual surveillance is going to be another feature in the years to come. This is done through remote sensing, communications and several other means. Continual improvement of systems with higher precision, speed and manoeuvrability would also be a part of this complex picture. All the critical elements are driven by advances in materials, electronics, advanced sensors, information processing, robotics and artificial intelligence."

Traditionally, defence services, by their direct projects as well as through the demands they place on other support services, have given a special fillip to many technologies, particularly to IT. The Internet of today had its origin in the information network set up for advanced research for defence services in the US. In India, defence research laboratories have played a crucial role in the use and development of crucial IT technologies—supercomputers, robotics, encryption, computer-aided designs, and virtual reality—to name a few. It is, therefore, natural that DESIDOC has taken a special

initiative in bringing out a special issue of *DESIDOC Bulletin of Information Technology*, giving a glimpse of the multi-dimensional nature of IT and its applications. I am also particularly happy that the issue coincides with the completion of 60th year by Dr SS Murthy, Ex-Director DESIDOC, who has made remarkable life-time contributions to the field of library and information sciences in India.

This special issue comprises seven papers covering various roles of IT. Five papers cover defence, industry, business, and welfare of rural communities. One paper covers the issues on Intellectual Property Rights (IPR) for IT sector, as IPR will be crucial and one cannot afford to ignore it. One paper addresses the crucial resource for IT—training of human resources.

We are fortunate to have the first paper by Dr Abdul Kalam. He has dealt with IT strategy in the defence environment and explained briefly how IT enhances the capabilities of weapons. He has also briefly described the technology modules and has called for a DRDO-Industry partnership in IT to meet the requirements of the defence forces in the country. The brief paper is supported by several figures, which describe the complex future scenarios in simple understandable form, including how unified battle strategies are enabled by IT. One figure illustrates the linkages between various forms of communications, from personal to banking and to very secure military communications—showing some common threads of IT applications.

The second paper is contributed by Dr MS Vijayaraghavan, Director (Techology Interface), DRDO. He describes in detail how IT is an extraordinary force multiplier in different situations, not merely for defence applications but also for other areas of socio-economic development. The paper is written in a simple language with a powerful thrust of ideas. He has also discussed some of crucial generic technologies that are a part of the contemporary information revolution. The readers would have to give special attention to their own contributions in these areas in the near future in order that their own efforts will have multiplier effects. He has also touched upon the possible future directions of information warfare.

The third paper in the series is by Shri V Raghuraman, Senior Adviser (Energy), Confederation of Indian Industry. He beautifully traces the background and evolution of computers and IT, in the whole world at large, and within India, in particular. Several tables in the paper would be of help for speedier understanding. The IT applications described briefly span almost all conceivable sectors: home, education, business and industries, services sectors, hotel industry, etc. Applications of IT in the manufacturing sector, which provide crucial productivity increases, are dealt with in some detail, as also those in banking and finance and oil and power sectors. Some case studies of Enterprise Resources Planning (ERP) applications are given. The author has also addressed IT applications for defence from the viewpoint of Indian IT industry, thus supplementing the earlier two papers.

Dr N Vijayaditya, Dy Director General, National Informatics Centre (NIC), whose contributions to the growth of IT are well known, takes us to a new dimension of IT application. He discusses how IT could be an enabler by synchronising the investments made so far and trigger the multiplier effects in the areas of rural community development, so crucial for India to proudly march as a developed country. The concepts of telekiosks and wired village are discussed. He also describes in detail a pilot project being executed in Maharashtra. The experience gained could become a model for many others, and in fact, may turn out to be a major IT domestic business for India. He also touches upon the elements of human resources development required for success of such projects.

The fifth paper is by two young engineers, Shri Dhruba J Sarma from the Technology Information Centre, Confederation of Indian Industry and Ms Susmita G Sarma from Triune Projects Pvt. Ltd. The paper describes in some detail a crucial emerging breakthrough application technology—Neural Networks and their Applications to Industry. The paper can also serve as a primer for those who are interested in understanding neural networks, especially from the application viewpoint, to almost all areas: business, real estate, document and form processing, financial industry, etc. The authors describe briefly the world scenario and a few examples from India. This is an area full of potential for Indian technologists and business persons, if they start bold ventures for software products.

The paper by Shri R Saha, Director, Patent Facilitating Centre, TIFAC, explains the newly emerging compulsions to protect IPR in IT business. He describes various forms of IPR business and the relationship of IPR and Internet operations, including e-commerce, citing concrete examples. All Indian technologists and business persons should be familiar with different aspects of IPR given in this paper. They also have to be alert in shaping Government policies in future to make a better India, and not just have knee-jerk reactions.

The last paper by Commodore Premchand, Additional Director General and Shri Praveen M Jabali, Weapons & Electronics Systems Engineering Establishment, Ministry of Defence, addresses comprehensively the IT training requirements. The growth of IT industry is literally 'sucking in' all talents around the world; acute shortages are felt all over the world. Of course, this surge has given India a unique opportunity not only to maintain the rate of growth but also to accelerate it. The fast changing nature of IT makes the skills obsolete within 3 to 5 years. Hence, life-long learning is the *mantra* required now and in future. Therefore, many issues raised in this paper are to be internalised by the IT professionals and other policy makers.

Through these seven papers, we have attempted to give a glimpse of the complex emerging technology closely linked to business. The future belongs to those who grasp the changes, constantly strive to create new knowledge and rapidly convert these into good global business. We are confident that many young Indians will rise to the challenge.

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