"We cannot escape from the technological pull by the developed world"

-Prof. Abhaya Induruwa

Prof. Abhaya Induruwa needs no introduction to the Sri Lankan IT community. Better known as the founder head of the Computer Science and Engineering Department of the University of Moratuwa, which still remains to be the only local university that offers degree courses in Computer Engineering, he was also the exuberant force behind Lanka Experimental Academic and Research Network (LEARN) the pioneering Internet and E-Mail service provider in Sri Lanka. Apart from these distinguished contributions he has also played different roles as a consultant to many IT projects. Prof. Induruwa, who is out of the island presently, talked to ***Business Today*** through E-Mail on the past, present and future of the Sri Lankan IT industry.

BT: Prof. Induruwa, you belong to the first generation of the Sri Lankan IT professionals and have witnessed the evolution of the local IT industry since the age of early mainframes. In your opinion what are the most significant developments that have taken place within these three decades?

AI: I think the most significant fact is that Sri Lanka has accepted IT both as an industry and as a business tool. In the private sector the most significant developments have taken place in the areas of banking, education & training, communications & networking, trade & commerce, and in Internet Service provision. But we have not seen the same enthusiastic growth in the public sector except for, perhaps, education. This is also true for the manufacturing industries in the private sector.

The software industry has not made a visible impact as a major economic sector in the country. A number of companies have sprung up to cater to the IT needs of the public. Although the public awareness is increasing, the public sector has been slow in embracing this new technology to provide a timely and efficient service to the public at large.

BT: I understand Wide Area Networking is your pet subject. You were the first to emphasise the need of building a single islandwide and well spread data communication network in Sri Lanka joining the main provincial capitals. However, the present trend is not to go for a massive single network. At least five telecommunication companies are currently in the process of building their own datacom networks using different technologies. (Frame Relay, ISDN, VSAT etc) How far this complies with your initial suggestion?

AI: This is somewhat similar to the transport system in a country. There are different modes of transportation such as road, rail, air, sea and usually you find a mix of these. It also means that you must have the ability to transfer goods from one mode to another if necessary. The different modes taken together form the country's transport backbone.

In communication too, different transport technologies based on different transmission protocols are available and have been used although they differ in their

level of maturity and application. Some technologies have been conceived either as extensions or interim solutions until more robust techniques are developed. Therefore a certain amount of caution must be exercised before a particular technology is chosen. This is specially important to a country like Sri Lanka which almost entirely depends on the developed world for technological break throughs.

However, the investment on infrastructure development, specially the deployment of good quality high bandwidth optical fibre, should be encouraged as this investment is protected to some extent. To benefit from newer transmission technologies, you only need to change the end equipment.

So, in short, these developments are in line with my proposal for a country wide backbone, because collectively they will perform this function. However, conversion between some technologies can be quite expensive and can become a bottleneck.

BT: Do you think the Sri Lankan business sector is advanced enough technically, to meet the challenges of the next millennium?

AI: I am confident that Sri Lankans are quite capable of mastering any technology. This they have proved on more than one occasion and is sufficiently evident from the way the Internet technology was integrated into the socio-economic sector in Sri Lanka. Besides there is little choice as already many countries threaten not to do business with countries which are not suitably equipped with appropriate tools such as EDI to facilitate e-trade and e-banking.

Sri Lanka has already made considerable progress in putting in place the necessary legal, monetary, trade, technical and policy framework, in preparation for the business challenges of the next millennium.

BT: From an academic's point of view how do you rate the business relationship between the academic community and the IT industry in Sri Lanka?

AI: If I confine my comments to the academic community in the IT sector, there is a healthy and growing relationship with the IT industry. Many IT departments get the industry involved at various levels. These interactions take the form of industrial sponsorship for projects, visiting lecturers and examiners from the industry, industrial training placements, etc. For a long time the academics have provided consultancy and advisory services to the IT industry.

This relationship is very important for both parties and the industry has an important role to play in moulding the shape of graduates produced by the universities to match their own pecifications. I am pleased that this is happening to a great extent and some of the industries invest heavily, both in terms of time and money, to foster this relationship. This has without doubt helped to turn out an IT graduate much sought after in the IT industry, both locally and overseas.

BT: As the head of the Computer Science and Engineering (CSE) Department of University of Moratuwa, you were the mastermind behind 'LEARN'. After half a decade of successful operation, how do you recollect the challenges you and the rest of your team faced in making 'LEARN' a reality?

AI: LEARN is of three different ages depending on how you look at it. It is 10 years from its inception (1989), LEARNmail will be 10 years in year 2000 and it has completed 5 years from the time it got its full Internet connectivity in 1994.

One of the salient features of LEARN is that it was started with no committed funds except for Rs 50,000 from the UGC to pay international email transfer costs and Rs 13,500 from the CINTEC towards the cost of an IDD line. The rest of the contributions came as voluntary support from the staff and students of Moratuwa University, and some of our own students and well wishers in various overseas universities. The email relay was hosted at Purdue University and Stanford University. At this time an organisation called LAcNet was created in the US which footed the IDD bill for email transfer until the full Internet connectivity was obtained with CINTEC funding in 1994.

As with many pioneering projects, LEARN also had its difficult moments, specially because of its very wide scope and implications. LEARN was proposed in 1992 as the academic Internet in Sri Lanka, at a time when Internet was not considered a commercial proposition. So it was difficult at times to convince relevant parties, specially Sri Lanka Telecom, who were the only telecom operator in the country at that time, to provide necessary high speed connectivity. LEARN was also conceived as a test bed for new communication technologies. I am glad that it survived all the pressures and has served a useful purpose in paving the way to the development of commercial Internet in Sri Lanka.

BT: University of Moratuwa started offering CSE degree programmes as early as 1985. Considering the modest size of the local IT job market then, why it was felt necessary to introduce a separate degree programme on CSE instead of allowing the Electronic and Electrical Engineering students to specialise on Computers?

AI: This was certainly one option but this was the time the world was beginning to recognise that Computer Science & Engineering as a profession is broad enough to stand on its own as a discipline and not as an extension of Electronics or Electrical Engineering. There was also the realisation that the relevant subject matter could not be adequately covered in such an extended course. Much of the early work on the CSE curriculum development was done by the IEEE Computer Society which published its recommendations in 1983. The CSE curriculum at UoM benefited much from this and aims to produce an IT graduate with a solid foundation in Computer Science fundamentals and Engineering principles.

This has been found to be very satisfactory as our graduates can easily fit equally well in the industry as well as in the research and development sector. They are capable of running today's IT industry as well as working in the frontiers of technology for tomorrow.

The IEEE Computer Society has recently published its recommendations for CSE curricula for the next millennium and UoM will find it easy to tune its course structure to be at the leading edge in the next century.

BT: The career development paths available for the Sri Lankan Computer

Engineers are almost nil. No Sri Lanka University offers a Master or Doctoral degree programmes in Computer Engineering. There is no way for a Computer Engineer to obtain a Charter. Shouldn't this situation change?

I agree to some extent that there are only few opportunities for career development in Sri Lanka. This is always true for any new discipline as it takes time for suitably qualified professionals to appear at managerial levels who can then undertake to supervise others who aspire to become professionals in that particular field.

It must also be said that in such situations the professional bodies consider applications on a case by case basis giving due consideration to the fact that only limited opportunities exist in a country for career development.

BT: Compared to the state in the other countries, do you think the Sri Lankan IT professionals have received the recognition they deserve in the industry?

So far the IT professionals have belonged to a group whose voice was not strong enough to be heard. Although the Computer Society of Sri Lanka had been in existence for more than two decades, its professional membership of few hundred is not large enough to be considered a major force. This is bound to see a major change in the next few years when hundreds of young IT professionals join the IT industry. When this happens their presence will be noticed and their voice will be heard. They will then become an invaluable part in the socio-political decision making process.

BT: The general belief is that most of the graduates, particularly the Arts graduates from Sri Lankan universities are not fit enough to be employed in the private sector. On the other hand, many private organisations find it difficult to hunt skilled professionals to fill the ever increasing number of executive level vacancies in the IT field. Hasn't the time come to change our university structure to overcome this 'square peg in the round role' circumstance?

AI: This is a situation not uncommon in other countries in the world. In the developed world, there is a constant effort to retrain the workforce and to impart new knowledge and professional skills. In the UK, there are two major initiatives namely, Life Long Learning (LLL) and University for Industry (UFI). Both these aim to enhance the numeracy and IT skills of the workforce, so that the short fall between the demand and the supply of traditionally trained IT professionals can be covered.

Sri Lanka has progressed in this to some extent by introducing IT training at post graduate level, initially with JICA and UNESCO funding. More recently ADB has promised funding to accelerate this process.

As a result of the very limited number of places available and due to the belief that less effort is needed to retrain a person with science based first degree, the opportunities have been restricted to science graduates. This is unfortunate and the IT training opportunities must be made equally available for graduates in other fields such as humanities and social sciences. Contrary to the popular belief graduates in music, history, sociology, etc have proved to be equally competent in IT and this is a fact that educators and planners in Sri Lanka have to bear in mind.

BT: Finally, what's there in for us in the future? What new developments you expect to happen in the Wide Area Networking field in Sri Lanka within the next ten years?

AI: A small nation and a not so strong economy such as Sri Lanka is influenced to a great extent by the technological purturbations in the developed world. In the next ten years we will see the proliferation of the Internet and all its services. Already e-commerce, e-banking, and its associated services such as digital cash are beginning to be accepted in developed countries. Tele-working, tele-medicine, tele-education, tele-banking, tele-trade, etc will become common place. As most aspects of life become network centric there will be a heavy dependency on networks.

The cross over to mobile telephony and cable based TV will be completed (in effect correcting a technological mistake made more than 150 years ago). Easy and competitive access to the Internet will be made possible by the deployment of LEO satellites thereby transforming the shape of the Wide Area Network as we know today.

Sri Lanka is by no means an exception and there will be no escape from the technological pull by the developed world. It will be difficult to resist change and in fact we should not do so.

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