Moulding The Future

Professor Lalith Gamage is the founder CEO of the Sri Lanka Institute of Information Technology (SLIIT). He is also the chairman of the Lanka Software Foundation, is on the board of directors of Serendib Hotels, and actively researches on evolutionary computing. As an academic and professional at the helm of Sri Lanka's corporate sector with keen insights on the niche talent requirements in the IT and hospitality industries, Prof Gamage speaks about moulding Sri Lanka's talent to meet industry needs.

By Keshini de Silva Photography Anurada Perera and Geeth Viduranga

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Could you give us a brief description of the Sri Lanka Institute of Information Technology (SLIIT)?
SLIIT was established in 1999, primarily to produce a sufficient number of Information Technology professionals to support the fast-growing IT industry of the country. When I was at the University of Moratuwa, we were producing something to the effect of 50 IT and related professionals. As a whole, the country was producing 250 professionals in the IT field. One day, Thilan Wijesinghe, the former chairman of BOI who is also a SLIIT board member invited all of us, including university vice-chancellors and directors to a meeting to discuss whether the universities could increase the number of IT professionals produced to 1,000. At the time, India was doing really well in the IT field and it was clear that unless we took steps, we were going to miss the technology wave.

Our aim was not just to produce graduates that the industry could absorb. No, we worked with the industry and if you look at it, we started with IT and then we moved into many other programmes because those were the things the industry wanted. In fact, we have developed programmes with the industry for the industry. For example, the MSc in Enterprise Application Development was developed because as the industry matured, that was something it wanted.

Today we have three faculties: computing, business, and engineering. There are 35 undergraduate programmes and another 25 post-graduate programmes. Once you

take our professional development programmes into account, we offer close to 100 programmes. Currently, we enrol 2,000 students each year into the multitude of programmes that we have, and we have over 7,000 students.

While developing SLIIT, we have been able to produce more than 60 per cent of the workforce for the IT industry. If there was no SLIIT, there would not have been an IT industry in the country.

As one of its founders, what was your vision and mission behind setting up SLIIT?

The vision was to make the IT industry a significant contributor towards the economic development of Sri Lanka. As you can see, it is currently the fifth largest export earner in the country, making a significant contribution to the Sri Lankan economy.

Back in the day, the main education ambition was to become a doctor, engineer or an accountant. But we also wanted to popularise IT as a profession, and we did that. Today a lot of people want to become an IT professional. In the top list of professions, IT engineer or software engineer are also there. Today, kids want to be IT guys.

What pathways are offered for students seeking to study overseas?

From the very beginning, when we started the institution, we wanted to work with the industry and work with foreign universities. When we started the institute, we did not have degree-awarding status. Getting degree-awarding status from the UGC was a very tough task, so we started with a diploma and we wanted foreign universities to award the degrees. We started by working with Curtin University.

Our Aim Was Not Just To Produce Graduates That The Industry Could Absorb… In Fact, We Have Developed Programmes With The Industry For The Industry.

With university affiliations, we have been able to develop a truly international, high-quality and very relevant programme. Today, we have over 25 partnerships with

universities in the UK, Australia, Canada and the USA, and for some of these programmes, the complete course is offered within Sri Lanka. As such students can complete the entire programme within Sri Lanka.

We also have a student exchange programme with Deakin University. This year we had an outbound programme about a month ago. We ran some programmes such as virtual reality, augmented reality, a combination of hardcore subjects as well as soft subjects. These students also travelled around the country. Everything is organised by SLIIT.

As I said earlier, we wanted to develop programmes by looking at the human resource demands of the country and produce professionals to meet those demands. That is why in 2010, after the war ended, we saw a huge tourism boom. At the same time, we realised that Sri Lanka was not producing top-quality tourism and hospitality professionals. I know this because I am also part of a group that has a hotel chain. Some of our CEOs are foreign individuals and some of our chefs are foreign guys. I am not blaming any institutions, but we were not producing top-quality professionals. That is why we were trying to increase, but in Sri Lanka, we did not have the teaching resources to do that.

We partnered with another top Australia university in this field, William Angliss Institute, and started our tourism and hospitality management school. It has state-of-the-art facilities, and it has Sri Lanka’s largest training kitchen, and you name it – patisserie, butchery – everything is there. Coffee lab, and also training rooms, they have resort rooms, city rooms, they have suites, and not just that, but also booking system software – they are trained in all aspects of tourism and hospitality management.

15 years on, could you explain the journey of SLIIT?

SLIIT was started primarily to produce a sufficient number of IT professionals to support the country. To cater for demand, local universities were having trouble meeting. As you know, universities have heavy intertial systems, so they are difficult to change.

I actually wrote a proposal to start this institute. Initially we were planning to have this under the University of Moratuwa, but there were some student issues, because we were going to charge fees. That dual system would not have existed within the university system so we decided to have an independent institution. Although BOI was requesting 1,000 graduates, I just wanted to match the number the local universities were producing; the whole country was producing 250 IT professionals at the time. We set ourselves up at BOC Merchant Tower and invited applications. We received 3,100 applications in 1999. I took one more floor and enrolled 400 students for the first batch, and then for the second batch, we simultaneously started constructing facilities here. Malabe was a jungle: nobody wanted to come this way, and in fact, I had a hard time bringing staff from Metro to the Malabe facility.

The second time around, we enrolled 600 students and after we started this campus, we enrolled 1,000 students. Because we started producing these graduates, the IT industry had a very good growth over the years.

There was also this competitive initiative in the early 2000s funded by USAID. USAID identified several clusters for development such as gems and jewellery, spices and ICT. I was the chairman of the ICT cluster. We developed a strategy, we worked on that strategy, and that strategy really worked. And some of the institutions such as the Information Communication Technology Agency and SLASSCOM were a part of the strategy. That’s how they were born.

Our target was to make one million dollars worth of software and IT services exports by 2016, and we achieved that in 2015, ahead of time. Now we have set up another target for ourselves which is to make five billion dollars worth of software and service exports by 2022, and I must say the industry has matured and we are well on course to do that.

As an institute, we expanded ourselves into other areas in IT and computer science, but then we thought we could do much better, so we developed a new strategy for ourselves. That was Strategy 2020. Basically we want to be one of the top ten institutes or universities in the South Asian region, and that includes the expansion to other programmes, because you can’t be a university with one type of

programme. You have to have a multi-disciplinary university. Secondly, we focused on research and development; third isinternationalisation.

If you look at diversification of programmes, we started with Business Management. Not many people know about it but we have a top business school which we started in 2011. In 2012, we started Engineering. We ventured into Hospitality Management in early 2013. We have expanded our programmes into many disciplines and we are expanding into other areas. This year we started Architecture.

We Have Set Up Another Target For Ourselves, Which Is To Make Five Billion Dollars Worth Of Software Services And Exports By 2022, And I Must Say The Industry Has Matured And We Are Well On Course To Do That.

In terms of internationalisation, we wanted to have international students here to promote multiculturalism and promote cross-cultural learning. We currently have about 100 students, students from the region, including from Bangladesh, Pakistan India, Nepal, Afghanistan, Kazakhstan, Oman and Nigeria.

What are your thoughts on education in Sri Lanka? What more needs to be done?

There is a lot more that we can do. Sometimes we feel sad about it. If you go to any European or any North American university, obviously we have Sri Lankan students, but not only that, we also have Sri Lankan professors. I mean, if you go to any university, you get Sri Lankan professors. Malaysia, for example, can’t say the same. You don’t have as many Malaysian professors in foreign universities, but look at the Malaysian education system. They are ten to fifteen years ahead of us.

When I was a young assistant lecturer in the 1980s, we used to go and teach at Malaysian universities. I went and taught at MARA University of Technology in Malaysia. Unfortunately, for some reason, we have not developed. Obviously, we had other problems, but if you look at a country such as Australia, their fifth largest export earner is education. Why can’t we do it? We have all the ingredients. We have professionals, we have a trainable workforce, a beautiful country to live in and lots of top-level professors who can help us out. Certainly, we have to harness all of

these resources and develop a big education industry for ourselves. Not just the IT industry.

In order for that to happen, we have to do a lot of things, obviously, such as promoting Sri Lanka as an education destination. That's very important. I mean, these issues surrounding private medical institutes. What are we talking about? There are about 200 or so Sri Lankan students in Bangladesh. Do you think that their education system is better than ours? Why do we have to send our children to Bangladesh and Nepal and so on? We have to sort out these issues and if the environment is right, we can develop a beautiful education industry in Sri Lanka.

How do you find Sri Lanka's teaching talent?
When we started, it was very difficult to find lecturers in Sri Lanka. One of the main issues that people in fact highlighted was how we were going to find lecturers. Initially, I wrote most of the material and my secretary typed everything. Subsequently, we were able to get assistance from the existing universities. Then I used my friends network – friends working in overseas universities, who came and helped us. After we started producing our own graduates, we had partnerships with other universities to train them for their PhDs and so on. Little by little, we developed the talent pool for lecturers. Every time you start a programme, it's like that, especially in a new area.

We Have A Trainable Workforce, A Beautiful Country To Live In And Lots Of Top-Level Professors… Certainly, We Have To Harness All Of These Resources And Develop A Big Education Industry.

For engineering, it was not as difficult because we had established engineering universities in Sri Lanka. Yet again, we faced the same difficulties for our hospitality programmes. We are still getting lecturers from Australia to teach lessons as we are right now in that process of developing Sri Lankan teaching talent.

What are your thoughts on Sri Lanka's IT industry and Sri Lankan IT talent?
Sri Lankan IT industry is a very niche industry and it is developing at a rate of almost 25 per cent year on year. There are lots of small and medium, innovative

technology companies. Of course we have the large companies too. We have a good future, using a lot of good professionals with which I think the industry will grow. As I said, we have set a target for ourselves – five billion dollars in software and service exports by 2022.

We are obviously training talent. But in order to attract very large companies, some companies ask for 10,000 graduates, which we are not able to produce because of affordability issues. We have about 150,000 students qualifying to enter universities. That is the size of the pool every year. But government universities are taking about 25,000, the private sector maybe taking in another maximum 10,000 and maybe another 10,000 to 12,000 go overseas for higher studies. Still, you have more than 100,000 left to be trained. What is necessary is a mechanism to support them. That is why even the Prime Minister has encouraged that. But we need to have a handholding mechanism. The Prime Minister is talking about a voucher system. Either way, a proper student loan scheme is required. If you can generate talent, that will in turn lead to getting more and more investment into the country. Not just in IT, but in any industry.

Research is another matter that we have raised with the Higher Education Minister. Organisations such as the National Research Council and National Science Foundation currently only fund university-level research, but we must also encourage them to fund non-state higher education institute’s research too.

The job market is becoming increasingly competitive, especially IT. How does SLIIT ensure its graduates can compete in the international job market?

One of the things that we have achieved where no other university in Sri Lanka has achieved is Institution of Engineering and Technology (IET) accreditation. For any profession you need accreditation, such as Chartered Accountants and Chartered Engineers, but for software engineering and Information Technology, there was nothing. We went to the UK and got our programmes accredited by a professional body and graduates can obtain Chartered Engineer status. This is the first time where any Sri Lankan IT programme has Chartered status. This makes our students globally employable.

But not only that. When our companies bid for jobs, they can always say our engineers are internationally-recognised Chartered Engineers. That will allow them to win competitive bids.

Another unique feature of our programme is mandatory industrial training. Our students will have to go through mandatory training. This was a problem for us. Since I work with the industry, I always say to them, you want 1,000 trained personnel but you cannot give our students industrial training. What did we do? I came up with this idea of having the industry within the institute. I told them, I will give you space and equipment – you only have to bring your projects and staff here so that you can train our students. Now more than ten companies including Brandix i3, IFS, JKCS and Orange IT have set up their companies within the institution.

Speaking of competitiveness, research is very important. Going back to the IT strategy that we developed 15 years ago, initially, we wanted to build an industry based on factors such as human resources, infrastructure, marketing and imagine building, and the legal and business environment. In those days, we used to talk about not having enough internet bandwidth, not having enough professionals and not having data protection laws or even an Electronic Transaction Act and Intellectual Property Act. Those things are necessary factors in order to develop a knowledge-based industry. Competitiveness came from just the presence of those factors, because most of the developing countries did not have these. And then there is the cost of those factors. Although some European countries had these facilities, their cost of production was high. The first part of the strategy is a factor-based strategy. Then the second part of the strategy is the quality and efficiency-based strategy. Factor-based strategy is a time-bound strategy. Other countries may also have these factors – for example, today, Bangladesh is cheaper than Sri Lanka. Then we need to have a different strategy. That is why our education programmes are developed to support this. We developed Master's programmes and research-based programmes with efficiency and quality in mind. This, too, is a time-bound strategy. The third part, which we are getting into now, is how we stay competitive. Unless you constantly innovate, you cannot be cutting edge. Therefore, if you want to be ahead of the curve, you always need to research and develop.

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Looking ahead, what are your plans for SLIIT in the future?
We will be expanding the architecture area with quantity surveying, and we will also be going into healthcare. We will initially probably go into nursing and medical technicians, and obviously we will then look at the whole scope of the life sciences area.

Could you give us a few details about yourself?
I graduated from the University of Mratuwa in electronic and telecom engineering. It was tough to get in. If you ask me to do that again, it would be tough, because at that time only 25 students were selected. I did my Master's in IT in Leicester in the UK and my PhD at the University of British Columbia, in artificial intelligence, robotics and computer vision.

In terms of sports, I was rowing captain at Moratuwa University and I also did some athletics 100-metre and 200-metre running.

Currently, I am also the chairman of the Lanka Software Foundation. I serve on the board of directors of Serendib Hotels and SLCERT. I am an advisory board member of SLASSCOM. Previously, I was chairman of the Arthur C Clarke Institute for Modern Technologies and the chairperson of SLCERT for three years.

I am also an adjunct professor of the University of British Columbia and I am an adjunct professor of Curtin University.

My research and journal articles are mostly in robotics, computer vision, image processing, artificial intelligence, industrial automation and mechatronics. Currently I carry out research in evolutionary computing, and we continue research collaboration with the University of British Columbia.

You have published journals and research articles on IT and electronic engineering. What are your thoughts on research and development in Sri Lanka? Are enough students showing interest in this field?
R&D is very important. As such, we have introduced research projects into our

undergraduate programmes, and have started research level Master's programmes and PhDs. At SLIIT, research is an essential component of career development for academics. Academics cannot receive increments
or promotions unless they publish research papers.

We have over 450 staff, out of which we have about 300 academic staff. We are the largest non-state higher education institute in Sri Lanka to have over 60 PhD holders and around 20 professors. All the other lecturers and senior lecturers have post-graduate qualifications. Each one of them must carry out research. Also, every senior lecturer and above must lead a research team, while each academic must belong to a research team; like in North America, SLIIT funds these research groups annually. And, they get a budget to hire research assistants or purchase equipment. Free reign is given to these lecturers.

Yes, I see a lot of people writing good quality papers. Just recently a group of us wrote the Mechatronics book, which was published in the US. We encourage people to publish books and research papers. One interesting project we carry out is with Bentley. We brought the entire Bentley research lab to Sri Lanka and it was set up at the engineering faculty. We brought Dr Malika Perera who led the team and now he is a permanent lecturer at SLIIT. Bentley cars are so comfortable and you would not imagine that they need further improvement, but they are still focusing on improving the noise levels and vibrations to increase comfort. This is what the research lab is working on right now.

Our Students Also Show Keen Interest In R&D. Just Recently, One Of Our Students Won 500,000 US Dollars For An Intelligent Helmet Research Project… So You Do See Real Earth-Shattering Research At SLIIT.

Then again we have people who have designed the Lotus Tower, the Southern Expressway, Katunayake Expressway and one of the latest things we introduced is the Value Engineering Cell. In Sri Lanka, a lot of construction projects are overestimated. Through the Value Engineering Cell, a lot of costs can be saved. We experienced these savings first hand, when we built our engineering building. We saved more than 10 per cent in cost – that is about 35 million rupees. Now we are building two towers about 14 stories high and are using this system to manage costs efficiently. Well, the reason we are building these two towers is because we

have enrolled 500 students this year to the engineering faculty, as opposed to the usual 250 students per year. We ran out of space in that building. Even through the laying of the foundation, we saved a significant amount. So in various disciplines, we do research at SLIIT. It's not just intuitive stuff – it's proper research and new technology.

Yes, our students also show keen interest in R&D. Just recently, one of our students won 500,000 US dollars for an intelligent helmet research project. Ganindu Nanayakkara carried out the project here during his undergraduate years, and he graduated in February. The iHelmet was designed for soldiers in a war zone to be aware of their surroundings. After the war ended, the project did not have much use, but he modified the project and with the help of NASA, made an intelligent helmet for motorcyclists through which they are aware of what is happening and if they are in danger. He was first runner-up at the Verizon Powerful Answers Award. Therefore, you do see real earth-shattering research at SLIIT.

We push for research at SLIIT. It is also mandatory for students, and they have to do a final year research project to graduate. They are also very keen. In the first year itself, we give them small projects to increase their interest in R&D, and they are very keen to develop these projects and even hold small internal exhibitions for us. From day one, we get them interested in design, research and so on.

Final thoughts?

I believe that soft skills are very important, something we are very focused on. We believe that theoretical knowledge is only 60 per cent, sometimes even less. Students score or get jobs based on their soft skills. This includes communication, teamwork and attitudes. There are various methods of building these skills and one method we have used is incorporating tactics that build these skills into our programmes. Presentations, sports, toastmasters' club and even organising events – these are some of the extra-curricular activities that students engage in. I mean, the SLIIT Walk is something that the students do entirely by themselves and they develop many skills through this project.

Sport is also an important aspect. We have over 15 different types of sports at SLIIT. Our students have done really well at the recent South Asian Games. One of our

girls won three medals. Obviously, we have training programmes targeting these areas as well and we have a very solid foundation and orientation programme. They go through a teaching and learning experience in a campus environment at SLIIT. We don’t just teach students; we ensure that they are complete professionals.