STRATEGIC PLAN 2013-2017

University of Colombo School of Computing

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Foreword by the Director

The University of Colombo School of Computing (UCSC) is a Centre of Higher Learning setup under the University of Colombo for achieving excellence in Research and the dissemination of knowledge in Computing in Sri Lanka. Far too much of what passes off as *education* in this modern 'market driven' economy is little more than an accumulation of *facts* for facing examinations. At the UCSC we believe such efforts only scratch at the *recall (of data)* level of Bloom's taxonomy of the kinds of human learning. This *data* arranged in context becomes useful *information*. Information interpreted correctly turns into *knowledge*. However, it is the appropriate use of knowledge which we call *wisdom*. It is towards helping our students realize this ultimate goal, that we strive at the UCSC to realize the motto of the University of Colombo, *Wisdom Enlightens*.

In striving for excellence in education, the UCSC has always attempted to foresee the needs of the country as a whole. Computer Science as a field of specialization in 1980s has now branched into other computing disciplines as defined in ACM/IEEE curricular guidelines. To align with these guidelines the UCSC now offers four fields of specialization in Computing namely: Computer Science, Software Engineering, Information Systems and Information Technology.

The UCSC is at a stage of its evolution in which it has been able to secure high donor confidence as evidenced by no less than 10 simultaneous foreign funded projects were carried out during 2005-2010. In 2011 staff secured several local funding from NRC, NSF and the local industry. It also has gained the recognition from the local ICT industry with many partners willing to take part in student placement, collaborative research and job placement activities. Holding down the most qualified set of Academics and Researchers in the field, the UCSC is currently engaged in mobilizing its vast research potential in order to clearly distinguish itself from the rest of the ICT education industry in Sri Lanka and the Region as a whole.

In the final analysis however, there is something far more important than both past performance and present potential in ensuring the continued success of the UCSC: a clear

strategic plan and a mechanism for ensuring its regular updating for moving forward in the quest of pioneering in the field of ICT. This document embodies the initial corporate effort put in by the entire organization to enumerate the main strategies to be pursued over the years by the UCSC.

In the coming 7 strategy strands was identified along the themes of, educational process, research innovation, consultancy, social responsibility, human and physical resource expansion, good governance, and administrative infrastructure. Some of the key developments envisaged during this period include, the setting up of a research facility outside Colombo, attracting international researchers through an endowment fund, expanding the teaching-learning infrastructure available to students and staff by acquiring more physical space, launching consultancy services through the new company, reaching out to the less privileged within and outside the university through relevant training, enhancing visibility nationally and internationally and setting up effective management and strategic information systems.

An effort such as that taken to compile this plan incorporating the views of the entire organization was done in 2007 with the help of the members of the Board of Management and Academic and Administrative staff. Recent HETC proposals initiated new directions to move forward. The Academic Faculty of the UCSC, in particular the 'strategy owners' who did the bulk of the hard work of doing SWOT and Gap analysis, reflecting on past successes and failures and dreaming of what might be; my heartfelt gratitude. To all other staff of the institution from the senior administrators to the contract staff who ensure smooth functioning of daily and project activities; a very big thank you for your involvement in this endeavour.

Description of the UCSC

A Brief History

The teaching of Computing in the University of Colombo first started way back in 1967 by the setting up of the Statistical Unit as a separate unit of the Department of Mathematics. Later with the initial guidance of Professor V.K. Samaranayake, the statistical unit was enhanced as the Statistical Consultancy and Data Processing Service Centre. This had paved the way to many future developments. By 1985, this Centre had grown into the Department of Statistics and Computer Science (DSCS). The major function of this department was to conduct special degree programmes in Statistics and in Computer Science. The DSCS offered Computer Science specialization programme, producing just 40 students per batch, in no way sufficient to meet the growing demand in the field of Computer Science (CS).

In 1997, a batch of 50 students was taken directly to study Computer Science, through the University Grants Commission, however, by this time, it was realized by many that the Computer Science subdivision of the DSCS need to be expanded as a separate department to meet the growing demand in the field of Computer Science. As a result, in 2001, the DSCS was separated into two departments namely Department of Computer Science and Department of Statistics.

The Department of Computer Science identified its own limitations of operating in the restrictive framework of a Faculty and at the same time it understood the importance of having a strong industry relationship for exploiting future growth potential. The university understood the importance of a strategic merger between the industry focused Institute of Computer Technology (ICT) and the more theoretically oriented Department of Computer Science of the University of Colombo.

The ICT had a strong relationship with the industry at the same time a high institutional profile among foreign donor agencies. The ICT also enjoyed much more autonomy in their business operations making it easier for receiving large amounts of resources from Japan International Cooperation Agency (JICA), Swedish International Development Agency (Sida) and several other donors. The ICT was offering Postgraduate Diploma programmes to train those entering the IT industry with non-IT degrees. ICT also responded to the ever increasing

demand for IT professionals by the ICT industry at the end of the millennium by introducing the first external IT degree in the form of the BIT in 2000.

This merger gave birth to the University of Colombo School of Computing (UCSC) on 1st September 2002. Prof. V.K Samaranayake became the founder Director of the UCSC, whose proactive thinking set the path to achieve success in several succeeding endeavours of the UCSC. Through all this, the UCSC has been able to position itself as a Centre of Excellence in ICT in the university system of Sri Lanka.

In 2005, UCSC took a bold initiative and introduced a new Information and Communication Technology programme, the BICT, to fill a widely felt gap in the industry for Information Systems specialists – in recognition of the maturing of the field of Computer Science and Information and Communication Technology. In 2010/11 UCSC aligned all undergraduate curricular to meet the ACM/IEEE guidelines. With this in mind the Information and Communication Technology degree was renamed as Information Systems and the Computer Science intake was provided an option to branch into Software Engineering degree from the 2012/13 intake.

Key Distinctives

Highly Qualified Academic Staff

Competency of the academic staff is one of the crucial factors in determining the quality of the educational process. The UCSC presently has two professors, 19 academics with doctoral qualifications and a further 11 with Masters Qualifications. About 25 temporary graduates and another five with Masters also assist with the academic activities. None of the other local universities have such a human resource in IT/CS, owing to the high staff turnover rates in the field. This valuable resource has been built up over a long period of time with foresight and long-term investment and is now bearing rich dividends. As such, the UCSC can definitely claim an advantage over its competition in computing in Sri Lanka and the region.

Strong Research Potential

With the strong research training investment over the past 2 decades, the UCSC now possesses arguably the strongest research potential in computing in Sri Lanka – one which matches that available in the best of international universities. In the past, owing to the less

mature status of the ICT industry, some of this resource was not fully exploitable. More recently however, this research force at the UCSC has become increasingly more engaged in collaborating with the software industry in particular, and is the single most identifiable distinctive that sets the UCSC apart from its competition in the industry. Several recent research outcomes at UCSC have local and international awards.

Healthy Industry-University Relationship

The Professional Development Centre (PDC) of the UCSC develops and promotes strategic relationships with key organizations in the IT industry. This gives the UCSC an advantage over other universities in fulfilling the industrial training requirements of its undergraduate students among others. The PDC has managed to increase both the period (from 3 to 6 months) and the numbers of students placed in industry (from 40 until 2005, to 120 in the year 2006 and 240 from 2008) as part of their mandatory internships. In addition to this, the Computing Services Centre of the UCSC undertakes consultancy on IT for state and private sector organizations while also conducting training in new areas of technology.

Funding and Facilities

One of the cornerstones of the success of the UCSC and its predecessors has been the international level facilities available to faculty and students. It has been one of the chief means through which staff retention has been possible. This resource has been strengthened over the years through donor support which has been readily forthcoming owing to our past track record. In addition to this, the UCSC's policy of earning through consultancy and research has made it self-sufficient with respect to operational expenses and the purchase of key technologies. Besides income generated by the UCSC is much higher than most universities and higher education institutes.

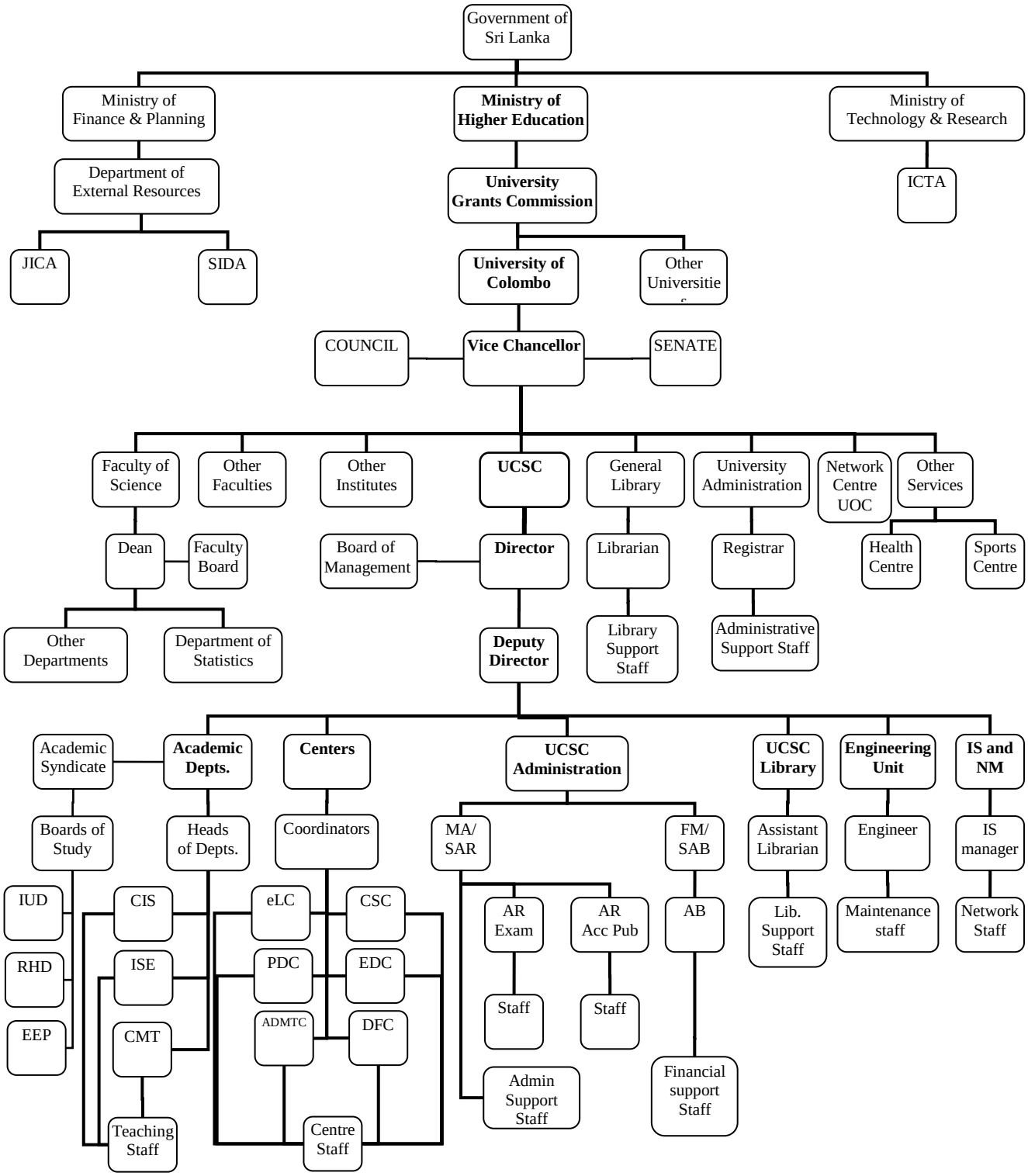
VISION

Creating new knowledge,
sustaining a culture of critical inquiry,
and fostering a spirit of service
and commitment to the nation
in the context of the global knowledge economy.

MISSION

Producing men and women
of the highest technical competency
with uncompromising integrity and social accountability;
who are capable of creative, analytical
and independent thinking,
and who contribute actively to national development
from a global perspective.

ORGANIZATIONAL CHART OF UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING



ADMTC-Advanced Digital Media Technology; **eLC** -E- Learning; **DFC** – Digital Forensic
EDC -External Degrees; **PDC** -Professional Development; **CSC** -Computing Services

RHD-Research & Higher Degrees
IUD -Internal undergraduate Degrees
EEP-External & Extension Programmes

Organization of the UCSC

For the undergraduate academic programme, government funding is directly received by the UCSC through the UGC. The UCSC has three academic departments and the academic staff is allocated to these departments based on their specialization and teaching expertise. The departments are,

1. Information Systems Engineering (ISE),
2. Computation and Intelligent Systems (CIS) and,
3. Communication and Media Technologies (CMT).

Centres of the UCSC

UCSC also performs many secondary activities. These activities are organized under six separate centres with the last set up in 2011. Each centre has a coordinator who manages the day-to-day operations of the centre. The five centres are as follows:

1. Computing Services Centre (CSC)
2. External Degrees Centre (EDC)
3. Advanced Digital Multimedia Centre (ADMTC)
4. Professional Development Centre (PDC)
5. e-Leaning Centre (eLC)
6. Digital Forensic Centre (DFC)

Computing Services Centre (CSC)

The Computing Services Centre, which is the Consultancy arm of the UCSC was established in 1990 to provide Consultancy Services to the IT and related industries. Centre took over activities that were then carried out by the Statistical Consultancy and Data Processing Centre of the Dept of Statistics & Computer Science. There are many projects undertaken by the CSC such as Systems Design and Development, Software Project Consulting, Tender Evaluations, Systems Recommendations, Web Publishing, Feasibility Studies, Systems Design, Desktop Publishing & Printing, Statistical Analysis, Recruitment Testing, Evaluation of Computer Software and Hardware, Processing of Election Results for Commissioner of Elections, etc.

External Degree Centre (EDC)

The UCSC having the most advanced training resources and experience in Sri Lanka in the field of ICT training set up the External Degree Centre (EDC) to conduct the Degree of Bachelor of Information Technology (External). EDC has been functioning since 2000. The UCSC conducts the examinations leading to the first-ever External Degree in IT in Sri Lanka and the University of Colombo awards the degree.

Advanced Digital Multimedia Technology Centre (ADMTC)

Advanced Digital Media Technology Centre (ADMTC) was set up to carry out training for trainers of web-based training and content development at its state-of-art digital studio, teaching and development laboratories. The facilities of the ADMTC consist of two technologically enhanced teaching laboratories/ classrooms, a development lab, Digital studio with non linear editing equipment.

Professional Development Centre (PDC)

The mission of the Professional Development Centre (PDC) is to produce Computing graduates having extracurricular skills such as professional skills, business skills, communication skills, community service skills, innovative capacity and entrepreneurship to pursue successful careers thereby contributing to the socio-economic development of Sri Lanka.

PDC was setup for keeping a close liaison with the IT industry and for improvement of the academic programmes through industry partnership thereby enhancing the quality of the undergraduates and staff. PDC is responsible for Industrial placements for undergraduates.

e-Learning Centre (eLC)

Having identified that e Learning – the provision of learning through the electronic media – has enormous potential as an educational tool, an e-Learning Centre (eLC) was established in 2002 to provide e-learning service to both BIT external degree programme and all internal degree programmes (both undergraduate and postgraduate). Sida funded e-learning project helped to build the human and physical resources of the centre and to convert the BIT external degree programme of the UCSC into an online degree.

The vision of the eLC is to become a National e-Learning Centre (NeLC) which provides its service to all Sri Lankan one day. It has already achieved this objective first by expanding e-learning service to BIT programme to make a fully-fledged distance learning programme called eBIT and conducting ICT training and testing for over 16,000 university students in 2011.

Digital Forensic Centre (DFC)

Digital Forensics Centre of the UCSC was established in 2011. One UCSC and two international academics are advisors of the centre. Centre facilities is been strengthen using a generous donation of US$ 25,000.00 by a UOC Alumni. Centre has taken over the role of assisting the Sri Lanka Police and the Criminal investigation department which the UCSC undertook since 2003. Requests to support in finding evidence for digital crime cases have been consistently increased during last few years with over 50 court cases in the form of Forgery, Frauds, Illegal, Pornography and Terrorist handled annually at cost.

Facilities at the UCSC

Library

The library has a large collection of over 5000 titles with over 10,000 copies of those titles. The majority of these materials are less than 5 years old. The library has a reference area with a seating capacity of 137 and it also provides an electronic catalogue. Further, it has a collection of e-books [CDs] and dissertations.

Laboratories

The UCSC is in possession of a large number of PC/Linux laboratories equipped with modern and up to date technologies enabling it to deliver successful computer science study programmes. UCSC also has a few dedicated laboratories for external courses that serve as a cushion during the peak demand times.

Maintenance Unit

The maintenance unit of the UCSC gives the helping hand whenever technical support is required for computer laboratories, upgrading and installations of software and hardware, and other resources such as central A/C system, water supply, power supply and PC maintenance.

Network Operating Centre

With the view of centralizing the operations of the computer network of the University of Colombo the Network Operating Centre (NOC) was established in 2002 under the approval of the Vice Chancellor. NOC is physically located at UCSC and it is the central position, which provides the network connections to all the other faculties and centres in the university. The Internet facility to the university through the LEARN network is also channelled via the NOC. NOC is well equipped with modern networking equipment including Servers, Switches, Routers and test equipment received under the financial support of Sida and ADB. The entire backbone cable system of the campus wide network is centred at the NOC providing the connectivity to over 2000 users.

Digital Studio

An advanced digital studio is equipped with state-of-the-art digital equipments such as digital video cameras, video switcher, editing control unit, audio mixer, lighting system and non-linear editing system. It is one of the best studios in Sri Lanka and is playing a central role in providing distance-learning materials. UCSC also has latest video conferencing equipment.

Other facilities and Services Available

Sports Facilities

Sports facilities, such as, the Gymnasium and Tennis Courts are made available by the Department of Physical Education of the University of Colombo. Those facilities can be accessed by the UCSC students. Furthermore students can participate in the events organized by the University.

Healthcare Facilities

In the event of sickness or injury, students can obtain medical assistance from the Health Centre of the University of Colombo.

Career Guidance

The Professional Development Centre with contacts in the IT industry is in a position to provide guidance on job opportunities.

Student Counselling

Every student has the opportunity of seeking advice and assistance from the Student Counsellor in relation to academic matters as well as, personal matters. Academic staff members have been assigned two specific time slots per week for student interaction, and the students are encouraged to meet the staff during these time periods.

Societies and Student Unions

As per the by–laws for internal undergraduates, elections are held at the beginning of each academic year to elect office bearers to the student union of UCSC. Acceptance of nominations and election dates are notified through a public notice. As a tradition office bearers of the UCSC Student Union are appointed unanimously through the consensus of the students.

Academic Programmes at the UCSC

Undergraduate Education

Structure of the Degree Programme

The UCSC offers two Computer Science Degree Programmes and two Information and Communication Technology Degree Programmes where each of the degree programmes is of three or four year duration. Annual intake is 160 and 80 respectively.

Initially all students will be enrolled for a 3 year Degree Programme. 60 students who excel in the first three years and satisfy all the relevant requirements stipulated will be given the opportunity to enrol for a 4 year Degree Programme.

The academic programmes of the UCSC are based on a semester system with 2 semesters per academic year and operate on a course basis. The UCSC offers two types of courses namely Academic Courses and Enhancement Courses. Academic courses provide subject knowledge and enhancement courses provide knowledge on a wide range of disciplines that are required for a holistic education. In each year UCSC may offer a number of mandatory and optional courses. Each course is assigned a credit value. A credit is equal to 15 hours of lectures or 30 hours of practical or an equivalent combination of lectures and practical. Each student is required to register for a minimum of 30 academic credits and possibly a prescribed number of enhancement credits per year.

Name of the Degrees

The 3-year and 4-year Computer Science Degrees are named the Degree of Bachelor of Computer Science, BCSc and the Degree of Bachelor of Science in Computer Science, BSc (CS) and Degree of Bachelor of Science in Software Engineering, BSc (SE) from 2016 respectively. The 3-year and 4-year Information Systems Degrees are named the Degree of Bachelor of Information and Communication Technology, BICT (until 2014) and Degree of Bachelor of Information Systems, BIS (from 2015); and the Degree of Bachelor Science in Information and Communication Technology, BSc (ICT) until 2015 and Degree of Bachelor of Science in Information Systems Engineering, BSc (ISE) from 2016 respectively.

Postgraduate Education

Masters Programmes

The Masters programme has a long history at UCSC; starting with the initiation of the original programme over two decades ago. This programme was conducted by the Department of Computer Science – a previous incarnation of the UCSC. Annual intake is around 175 students.

The UCSC conducts three different Masters Programmes to cater towards three distinct categories of people:

- The Master of Information Technology is a programme targeted at graduates in disciplines other than computing who wish to pursue a career in an IT related area. This is also suitable for those who wish to specialize in a multidisciplinary field overlapping with IT such as Management, Networking or Multimedia technology.
- The Master of Computer Science programme is designed for CS/IT professionals who already possess a degree in Computing and who wish to acquire a postgraduate qualification in CS/IT with research exposure.
- The Master of Science in Information Security programme is designed for graduates who wish to acquire a postgraduate qualification in the area of Information Security. This programme offers mid-career opportunities for those working in the areas of information technology, information system audit and information security.

Beside UCSC together with the Institute of Biochemistry, Molecular Biology and Biotechnology (IBMBB) offers a fulltime Masters degree in Bioinformatics. This programme is administered by the IBMBB.

M. Phil. Programme

UCSC admits graduates with good first degree results in Computing for its full/part time M.Phil programme mainly centred on research projects in progress. Students can apply for the programme by forwarding an initial research proposal and preliminary application form together with certified copies of the necessary educational certificates.

Ph.D. Programme

Prospective Ph.D. candidates are first required to register for a two year full-time MPhil at the UCSC. Based on their performance in the M.Phil, the higher degrees committee decides based on an examiners report if the work is of a sufficient standard to be extended to a PhD. In addition to this, many Split-PhD students who are registered in foreign countries currently work at the UCSC during their period(s) in Sri Lanka.

External Degree Programme

The main purpose of establishing the External Degrees Centre (EDC) and the three–year external degree programme, Bachelor of Information Technology (BIT), is to widen the higher educational opportunities of the students who have been unsuccessful in meeting the competitive eligibility criteria for admission to the state university system.

Another reason has been the massive demand from the ICT industry for high quality human resources far exceeding the number provided by the state universities. The BIT degree programme commenced in the year 2000 and has so far produced over 1000 graduates and almost all have been absorbed by the ICT industry. Minimum entry qualification for this programme is three passes in GCE Advanced Level Examination. Over 2000 new students enrol for this programme annually.

UCSC provides a well-defined detailed syllabus that would help to lay a solid foundation on which, a student can build his career in ICT. The syllabi will be constantly updated to meet the industry requirements. Model question papers, a list of recommended textbooks are provided to the students. In the year 2003, e-Learning was introduced to the Year one BIT students through a Learning Management System (LMS). This was possible through

assistance given by Sida (Swedish International Development Agency). LMS assists the students in learning through self-evaluating quizzes, collaborative learning using group assignments, etc. UCSC gradually extend the e-Learning facility to all the BIT students to make it online. Further support is given to BIT students by the regular TV programme telecast over TV Lanka. Recommended text books have been made available in many public libraries throughout the country in response to student requests.

The programme is designed to:

- produce qualified ICT professionals in addition to the traditional University output
- set professional standards and encourage students to obtain skills in commercial ICT applications and in the usage of necessary tools
- enable those who could not enter the university due to severe competition to work towards obtaining a degree
- give an opportunity to those non-graduates already working in ICT to obtain a formal qualification in ICT through self-study.

Foreign students

Foreign students, too, can register in the programme but currently they have no facility to sit for semester examinations outside Sri Lanka. Since 2007 UCSC conducts the BIT semester examinations in Dubai and as a result over 50 Sri Lankans working in the Middle East have benefitted. First graduates from this programme were produced in 2011. 2011 also saw the first internal foreign student category intake.

Short Term Courses at the UCSC

The UCSC conducts specialized, short-term training programmes in the most advanced and up to date topics that are in demand in the industry. These programmes are designed with a view to enable a participant to learn about a particular programming language, a design methodology, new technologies or the use of specialized packages in small groups with close supervision. These courses are designed by the staff of UCSC to closely follow the industry needs and standards. Many of these courses are conducted over 5 or 10 days. Annually over 800 candidates participate in these programmes. Special programmes for individual groups from companies are arranged on demand. Some of the programmes are:

(1) 3D Modeling and Animation

(2) Advanced Java Application Development using J2EE
(3) Advanced Multimedia Web Design & Development Techniques
(4) Digital Video Production and Animation
(5) Dynamic Web Application Development with PHP & MySQL
(6) Forensic Investigation Techniques
(7) Foundation of e-Learning
(8) Graphic Designing & Creativity Development
(9) Intensive Training Course on Office Applications
(10) Instructional Design for e-Learning
(11) Java Application Development
(12) Training Course on Computer Aided Drafting Using AutoCAD 2008
(13) Training Course on Upgrading and Maintenance of Personal Computer Environment
(14) Unix/Linux Fundamentals, Network & Systems Administration

Other Academic Activities conducted by the UCSC

International Training Programmes

International Olympiad in Informatics (IOI)

The International Olympiad in Informatics (IOI) is one of the six international science Olympiads. It is an algorithmic programming competition for school students under 20 years of age. In the IOI the contestants compete individually to solve a set of programming problems. The main goals of the IOI are to stimulate interest in Informatics and to encourage exceptionally talented secondary students from various countries to share their scientific and cultural experiences.

Sri Lanka has been sending a national team of four students accompanied by a Manager and a Deputy to the International Olympiad in Informatics each year since 1992. Sri Lanka has won so far to 3 Gold, 7 Silver and 16 Bronze medals. The team was trained at the UCSC by a team of volunteers under the guidance of the Main Organising Committee, the Team Manager & his Deputy.

The responsibility of sending a Sri Lankan team was originally with the Council for Information Technology (CINTEC) and since 2004 has been entrusted to the UCSC by the ICT Agency. Funding is from ICT Agency and the income of the International IT conference IITC held annually organized by INFOTEL Society and Managed by the UCSC through a

representative Management Committee. In 2011 Sri Lanka Olympiad Federation was set up to coordinate all Olympiads and UCSC became a founder member of it.

International Conference/Journal on Advances in ICT for Emerging Regions (ICTer)

International Information Technology Conference (IITC) was first launched in 1998 as a key event connected with the declaration of 1998 as the Year of IT. Its success led to its continuation as an extremely successful annual event. In 2010, IITC has been renamed as International Conference on Advances in ICT for Emerging Regions (ICTer) to broad base the conference and to link it with the related International Journal ICTer which was launched in 2008 as some of the research in the emerging regions gets little or no global exposure. ICTer conference seeks to bring together international researchers to present papers and generate discussions on current research in all aspects of the role of IT in National Development. The conference and workshops focus on important problems and potential solutions in important areas of ICT. UCSC also have hosted other international conferences/workshops such as REALWSN Workshop 2010.

Other International Programmes

Through JICA funding UCSC was able to conduct Third Country Training Programme (TCTP) in Information Systems Engineering and e-Learning Technology during 1998 and 2009. UCSC also conducted Design, Installation, Administration and Maintenance of Network Systems (DIAMIN) programme under the Ministry of Higher Education of the Government of Socialist Republic of Sri Lanka. UCSC plans to conduct similar programmes after securing appropriate funding.

Research Activities at the UCSC

Distributed Computing Research Group

One of the earliest virtual research groups, the Distributed Computing group gathers together researchers from the UCSC with others from other universities and the industry periodically over the years. The most recent project undertaken is the GRID Computing project in collaboration with Uppsala University in Sweden.

3D Graphics and Virtual Reality Research Group

This group is concentrating on research on 3D Computer Graphics, Virtual and Augmented Reality and Computer Vision Research. The recent research projects includes Interactive Environment for Virtual Heritage using Augmented Reality, Use of SIFT features for human

face recognition, Image compression techniques, Vehicle Number Plate Recognition, Perception Enhanced Virtual Environment for Maritime Applications, Hair simulation for 3D modelling and Interactive 3D serious game development.

Distributed and Parallel Computing Group

Three staff members: DNR, MCJ, KPMKS. One researcher recently completed the MPhil and has found placement in a Canadian university. One potential candidate from University of Ruhuna. Several final year CS students completed projects in the areas concerned. Research conducted into programming models for multicore architectures. Resources include two clusters, 7 nodes and 14 nodes provided by a SPIDER grant. In the process of acquiring a brand new 8-node cluster with nvidia multicore cards under Sida funding. Apart from research, we also intend to provide HPC services to scientists for molecular modelling (Dept. Chemistry, UoC) and sea bed modelling (NARA). Hope to provide e-science services to the whole scientific community of Sri Lanka via the LEARN and also with access to TIEN-3, the research Internet.

eHealth Group

There is a strong group of Professionals in the UCSC engaged in the eHealth Research Group. It has been active for the past 3 years and the group consists of UCSC staff who are professionals on ICT and external medical consultants to get expert knowledge on the domain of health. They have carried out many projects on Telemedicine (Vidusuwa), Communicable disease surveillance (Nivarana), ICU bed integration (Sathkaara), eHealth eLearning Portal (saukya.lk) and many other research and development on image processing and ayurvedic solutions. This group has many publications in IEEE and other recognised International conferences and has also won other International Awards. Vidusuwa (www.vidusuwa.lk) - the Patient Centric Telemedicine Solution won the eSwabhimani Award for best e-Content for eHealth in Sri Lanka in 2009 and the Manthan Award for best eContent in South Asia for eHealth in 2009. Vidusuwa was also selected by the NBQSA (National Best Quality Software Awards in Sri Lanka) to represent Sri Lanka in the field of eHealth in the International APICTA (Asia Pacific ICT Alliance Awards) in 2010 in Malaysia.

e-Learning Research Group

Research and development work of e-Learning was started when the UCSC was formed in 2002. Since this work was very important for the development and sustainability of UCSC, a separate centre was established as the e-Learning Centre (eLC) to promote research work in

addition to providing e-Learning services to degree programmes of the institute. Sida (Swedish International Development Agency) Sida gave a planning grant to UCSC to initiate these work in 2002. Later, a comprehensive project was started in 2006 to carry out research and development study in e-Learning to contribute the national development in Sri Lanka. Under this project, 3 staff members started their doctoral studies based on e-Learning in collaboration with Swedish Universities and several other students started local MPhil degrees in e-Learning. E-learning Research works covers basically 4 sectors of education, namely Higher Education, School Education, Community Education and Professional Education. This research group specially considers how ICT infrastructure and facilities can be enhanced and integrated to provide e-Enabled learning environment. During last 5 years, more than 50 research papers have been published in International Conferences and Journals by this research group.

Game Based Learning

Game based learning is one of the most recent teaching methodologies, which provides a virtual learning environment to the students. This research group is involved in creating virtual learning environments to provide the opportunities for the students to learn by experience. It is a well known fact that, learning by experience is more efficient than learning by studying. The students get the opportunity to make observations depending on the experiments in an imaginary world through such approaches, rather than studying the theory and imagining what would happen. This innovative education paradigm called "Game based learning" helps the students of various age levels to enhance their learning process. No matter it is primary, secondary or higher education, we can apply this concept for any educational system to enhance it.

Geographic Information System (GIS) Research Group

The Geographic Information System (GIS) research group at UCSC works on contemporary geospatial technologies with the aim of enhancing existing GIS solutions and developing new geospatial solutions. The main emphasis of the research group is on Location Based Services (LBS) and on the use of remotely sensed data to develop algorithms and techniques to identify different types of land parcels and their characteristic to improve resource management. The group also research on using satellite data to improve the accuracy of existing vector data.

Language Technology Research Laboratory

The Language Technology Research group undertakes research in most aspect of Localization and Language Processing, particularly in Sinhala and Tamil languages. It is also involved in building linguistic resources for these languages which are much needed for carrying out such research. Finally, it also publishes its benchmarks in order that other researchers will be able to improve on work already done in this area.

Some of the work planned for the period under review include, the enhancement of a Text to Speech system together with a Screen Reader for blind access to digital content, the development of a Speech Recognition system in collaboration with an international agency, the localization of several key resources including the Wikipedia, and developing mobile tools for local language access to information services.

Sustainable Computing Research (ScoRe) Group

The Sustainable Computing Research Group (SCoRe) at UCSC has conducted research covering various aspects of wireless sensor networks, embedded systems, digital forensic, information security, mobile applications and e-learning. The goal of our research is to generate computing solutions through identifying low cost methodologies and strategies that lead to sustainability.

At present, the SCoRe group is at a stage of its evolution in which it has been able to secure high donor confidence as evidenced by no less than 5 simultaneous foreign funded projects underway since 2005. SCoRe group has been a pioneer in cooperating with Internet Society (ISOC), Swedish Agency for International Development Cooperation (Sida)/The Department for Research Cooperation (SAREC), The Swedish Program for Information and Communication Technology in Developing Regions (Spider) and Information Society Innovation Fund (ISIF) in the area of computer science by establishing several interesting ICT research projects. These projects are considered to be the benchmarks of such projects in the world.

Vehicular sensor network which is called BusNet, Multiseat computer which is called PokuruPC and Forensic Investigation Toolkit were our big success which received wide international acceptance.

SCoRe group successfully hosted the REALWSN Workshop in 2011.

Modelling & Simulation Group

This group focuses on mathematically modeling certain physical systems using the laws of physics and build simulators to allow users to interact with the virtual worlds so created. A ship handling simulator, Vidusayura, is the flagship project of this group. It was developed in

collaboration with the Sri Lanka Navy. Vidusayura is currently used by the Sri Lanka navy on experimental basis. Other current projects include an Artillery Simulator and a Ground vehicle Simulator to train novice users.

Social Life Networks

This group aims to provide real-time information to support activities related to livelihood delivered using mobile phone applications targeted to meet the needs of people in developing countries. This research is carried out as an international collaborative research program. The group currently focus on applications in the areas of agriculture to harness the rich information available in social networks, public data sources including spatio-temporal sensor data as well as the emerging cloud infrastructure.

Other Foreign Funded Projects of the UCSC

In addition to the above research project, several foreign funded projects have also been undertaken by the UCSC. Most of them came to an end during the last two years with rest coming to an end within the next six months. Among these, the Swedish Sida funded Networking and PhD projects are handled by the UCSC on behalf of the entire university system of Sri Lanka.

Sida Networking Project

The general purpose of the project is to improve the networking infrastructure in Sri Lankan Universities. Under this programme campus-wide networks have been constructed at the University of Colombo, University of Peradeniya, University of Ruhuna, while the inter-university backbone network (LEARN) was enhanced in its first phase, 1999-2002. During the 2nd phase, 2003-2010, the University of Jaffna network was setup while each of the networks in the first phase is being upgraded for increased bandwidth requirements. All these networks are now self-financed and continue to serve the academic and research community in the country. Funding for this project ended in August 2010 with administration and few installation activities remaining.

Sida PhD Project

Through the PhD programme 20 Ph.D. students - all members of the academic staff of Sri Lankan universities conduct their studies towards their Doctorate degrees at Swedish universities. Half of the year they are at their home universities in Sri Lanka, and the other half in Sweden. This project was completed 2010.

Sida e-Learning Project

Sida funded e-Learning project, 2005-2010, focussed on enhancing the present e-Learning Centre of the UCSC to a full National e-Learning Centre. Staff of the centre was trained to develop and deploy pedagogically designed learning material for various stakeholder groups ranging from schools, universities, telecentres and government to private sector companies. The BIT external degree programme was made online through this project.

A Low Cost Digital Forensic Laboratory for a Developing Country (DFLab4D)

Due to the increased number of ICT related crimes reported in Sri Lanka, within the past few years, digital forensics has become a key area in law enforcement. A digital forensic investigation laboratory compatible with a country's legislation is a must when digital forensics is used in investigating ICT crimes.

UCSC has been assisting the Sri Lanka Police and the Criminal Investigation Department, over 100 court cases starting from the year 2003. Each of these cases has been unique and several ad-hoc tools and forensic models have been used in order to solve them.

Known as a leader in applied computer research/education, UCSC has started a national investigation center for Computer Forensic Investigation since there are no such centers available in Sri Lanka. However, purchasing the equipment and commercial software tools for the center is very expensive. Therefore we implemented a low cost Digital Forensic Laboratory suitable for a Developing Country. This project is funded by Information Society Innovation Fund (www.isif.asia).

In general, the current vision for the Digital Forensic Laboratory at UCSC is to establish itself as a leading research center for digital forensic investigation in the South Asian region. Thus, the Digital Forensic Investigation course is also planned to be started in June 2011 under the Master of Science in Information Security program. The development of course materials will be planned together with Stockholm University, Sweden.

Mobile ATMs for Developing Countries

At present, remote villages and cities in Sri Lanka do not have ATM facilities and people must travel to larger cities in order to withdraw money. This discourages rural people to deposit their earnings to banks and thus affects the rural economy. GSM networks specially provide their services to remote cities and villages in Sri Lanka. Since fixed telephone lines are not available in these areas, most of the rural people use mobile phones. Based on that technology in this project, we developed an innovative application, called Mobile ATM (M-

ATM), which provides standard ATM functions based on the GSM network and mobile phones. This will help more than four million mobile uses in Sri Lanka to handle money in their bank accounts and encourage people to save their earnings in a bank.

Three key components in the MATM system are a bank, bank agent and a customer. Bank agent is registered and certified by the bank. A customer has an account with the bank. Both, bank agent and a customer have mobile phones, suitably modified to perform functions of the M–ATM in a secure way. The bank has M–ATM server as the front–end, connected to the bank's back–end financial system.

In order to perform a transaction, a customer with a mobile phone comes to the bank agent with a mobile phone. The customer sends SMS to the bank requesting the money, together with his/her PIN and bank agent's mobile number. The bank verifies both and sends confirmations simultaneously to the bank agent and a customer. The bank agent gets an approval, comprising transaction number (a random number) and the customer gets a confirmation number (a random number). The customer tells the confirmation number to the bank agent. The bank agent sends the transaction and confirmation numbers back to the bank. When the bank receives the confirmation by its agent, money will be deducted from the customer's account and credited to the agents' account. Finally, bank agent pays the money to the customer, who confirms the receipt and in that way completes the transaction.

This approach is all based on using Mobile Phones as financial transaction terminals. It does not need special devices and ATM cards. Anybody who has a phone can participate in the system.

BusNet – A Sensor Network Built Over a Public Transport System

BusNet is a sensor network to be built on a public transport system to monitor environmental pollution. BusNet uses only a few sensors mounted on public transport buses to gather data on air pollution levels in a large geographical area in contrast to a large number of sensors required in a conventional sensor network deployed for such a purpose. The public transport network also acts as the communication network in BusNet. Because only a few sensors are needed for the BusNet it is less costly to build and easy to manage. Even though we present BusNet with respect to one particular application the idea is generic enough to be used in other systems in which a large number of sensors can be replaced by a few moving sensors mounted on public transport vehicles.

Air pollution changes considerably in different areas of a city and even from building to building. Data gathered from a single point are not representative of air pollution levels in different parts of the city and therefore a large number of data gathering points spread over the city is needed. While for a small city it may be feasible to deploy such a system; it would be prohibitively expensive to deploy a system over a larger geographical area such as a large city or a country.

We observe that most countries have a public transport system that spans the country. Buses and train networks have central points (such as regional bus/train stations) from which regional transport networks span out. There are bus and train routes inter-connecting these regional stations as well as central hubs in capital cities. This forms a large public transport network. We propose to use several sensors mounted on the vehicles of the public transport system as a replacement for a network consisting of large number of sensors. These vehicle mounted moving sensors would be able to gather data that covers a large geographical area. When the buses arrive at bus stations, which also function as data collection centres, gathered data are transferred over a wireless link to the collection point. Data gathered in regional collection points are transferred to buses travelling between the regional centres and the main collection centre. In this scenario the public transport system functions as a data delivery network as well as the data collection network. Therefore, it is quite different from vehicle assisted data delivery networks, where vehicles form an ad hoc network to deliver data.

In our system data travel in vehicles and also vehicles facilitate data gathering by hosting sensors. We assume that the gathered data are not required in real time in this particular application. We name this network BusNet and we have commenced building a prototype to be deployed using the public transport system in Sri Lanka.

Automated Pothole Detection System

Potholes (also known as chuckholes) on the road surface are detested by all motorists and pedestrians alike but for different reasons. It is well known fact that the officials responsible for maintaining roads usually turn a blind eye to this problem, sometimes until the road in question becomes no longer travelable. On the other hand, whoever has tried to collect information regarding the surface condition of heavily travelled roads is well aware of its Herculean nature. Such a task may call for number of persons to travel along roads for several days inspecting and recording surface irregularities. Besides, the drudging nature of this task forces participants to taint the collected data with errors rendering them inaccurate.

The main objective of this research is to devise an automated information gathering and analyzing technique that saves time, manpower and money while increasing the accuracy compared to the conventional method of pothole detection. In the information gathering phase, a vehicle with a sensors mounted on it travels along the road in question recording its vibration patterns. Subsequently in the analyzing phase, these data will be scanned by an algorithm to detect potholes along the path traversed earlier by the vehicle. The effectiveness of this process depends on the ability of the detection algorithm to pinpoint the potholes accurately. For this purpose, the algorithm has to identify vibration peaks that are caused exclusively by potholes on the road. However, disturbances such as the noise caused by the vibration of the vehicle's engine interfere with the signal output generated by the mounted sensor. Therefore the data has to be pre-processed (i.e. filtered) before the algorithm can use it to detect potholes. Consequently the filtering technique also has a significant bearing on the accuracy of the final outcome of this process. Experiments conducted thus far have shown that the employed methods of filtering and pothole detection are capable of meeting the rigorous requirements towards achieving a reasonable accuracy. It is also possible to build a low-cost, road-surface-monitoring kit employing these techniques to define and evaluate an index, which gives an indication how travelable a road is. Such an index can be used to continuously caution motorists and alert the road maintenance crews to take actions as soon as it falls below a predetermined level.

Pokuru PC: A Low Cost Multi-Terminal

This project delivered a low cost computer laboratory to primary school kids at the Dharmashoka College, Ambalangoda in Sri Lanka. During the project period, Ubuntu operating system was customized to support multiple dummy terminals. School teachers and school kids were trained to use the terminals.

Coming into software terms in the multi terminal, we have come up with a re-mastered Ubuntu Linux distribution which could configure itself automatically as a multi terminal depending upon the hardware devices attached to the systems unit.

As mentioned, our multi terminal solution where we could incorporate many users at once in one systems unit. In turn it is important to mention that we have created such a solution without using any specific hardware or networking technologies.

All in all our multi terminal setup would suit ideally for school laboratories. The main reason could be stated that most of the school going children would not be using complex applications that need huge amount of processing power.

Ten multi terminals could serve up to 40-60 students depending upon the number of dummy terminals they contain. Thus each school could come up with a computer lab with much less costs. Also there would not be any licensing needed for the software. Each computer would not need any virus guards as Ubuntu is virus free. Thus maintaining the system would be much easy.

Consultancy at the UCSC

UCSC has a very vibrant consultancy arm and consultancies are presently channelled through Computing Services Centre (CSC) and Theekshana: its company. Consultancies requested by Government entities are handled by CSC and projects of donor funded and of some private sector organizations are channelled through the UCSC Company. Theekshana, the UCSC Company, has won several projects which are of national and international importance. In 2009, Theekshana won a World Bank project to implement "eLearning in Bhutan". Under this project, UCSC setup servers at eleven campuses of University of Royal Bhutan. These eleven servers was connected through Virtual Private Networks (VPNS) to central servers which will be established at Central Network Operating Centre which is located at the Vice Chancellor's office of the University in Thimpu; the capital of Bhutan. This became the very first international project to be channelled through the UCSC Company. The project was successfully completed in 2011. Telecentre.org Foundation which is located in Manila Philippines contracted Theekshana to host and maintain its eLearning Platform on behalf of Telecentre.org Academy in May 2010. Telecentre.org was setup originally by IDRC of Canada and Telecentre.org Academy is the flagship project of Telecentre.Org. Theekshana will undertake to produce Learning Objects for initially 12 Telecentre management certificate courses which will be offered in 14 different languages worldwide. Theekshana will also help localization of BrainHoney the LMS of the Telecentre.org Academy and 12 courses. In August 2010, Theekshana held an International Training program at Cinnamon Grand for course directors from five countries: India, Malaysia, Philippines, Thailand, and Sri Lanka. It is expected to enrol more than million telecentre workers in these courses worldwide by 2011. Theekshana also has carried out several other local project are of national importance which were funded by Information and Communication Technology Agency of Sri Lanka (ICTA), IRQUE and HETC Projects. Secure Document Management System (DMS) for the Government of Sri Lanka which was developed by Theekshana has become the platform for Birth Certificate Issuance System which has been implemented throughout the Island.

National Higher Education Information System (NHEMIS) which is a repository of data on primary, secondary and tertiary Education in Sri Lanka. nHemis was funded by IRQUE project and in 2011 Theekshana automated the student selection process of the University Grant Commission (UGC).

It is expected that Theekshana to grow further and it has been planned to market some of the products which were developed by Software Development Unit (SDU) of UCSC. These products include Inventory Control, fully fledged Accounting system, Human Resource Management System and Salaries. Theekshana will play a major role in Software Development in the area of Tertiary Education such as Management Information System for Tertiary Institutes. Theekshana will hold patents and copyrights for some of UCSC research and it is expected Theekshana to market some of the outcome of research carried out by UCSC.

The UCSC, through the Computing Services Centre (CSC) has designed and implemented the highly secure Intranets for various elections including the Presidential Elections of 2000, 2005, 2010 and the General Elections of December 2001, 2010. Through the CSC UCSC also been involved in designing, implementing and developing Management Information Systems, databases, websites, the fiber networks as well as Local Area Networks and Wide Area Networks in many organizations some of which are, Department of Information, The Policy Research Information Unit of the Presidential Secretariat, The Ministry of Foreign Affairs, The Kothmale Internet Community Radio Project, The Archaeology Department, The Department of External Resources, ICT Agency e-Sri Lanka Pilot Projects, Ministry of Agriculture-Live stock Lands and Irrigation, International Development Research Institute (IDRC), Plantation Human Development Trust.

Under CSC, Software Development Unit (SDU) which was established in the early 2000 has managed to sustain a team of software engineers through this work. SDU was instrumental in developing an integrated Management Information System for Agriculture and Agrarian Insurance Board. UCSC through this project has managed to clean the past data of Farmers Insurance and was able to help the Ministry of Finance to plan the disbursement of Insurance more optimally. In addition to this project, SDU has developed an integrated system to handle Accounting, Inventory, Human Resource and Salaries which were initially deployed successfully at Transport board of Western Province with a Routing Permit Issuance System which will be officially launched in November 2010. The same packages were customized for Nuwara Eliya Municipal Council where UCSC has managed to develop an integrated system

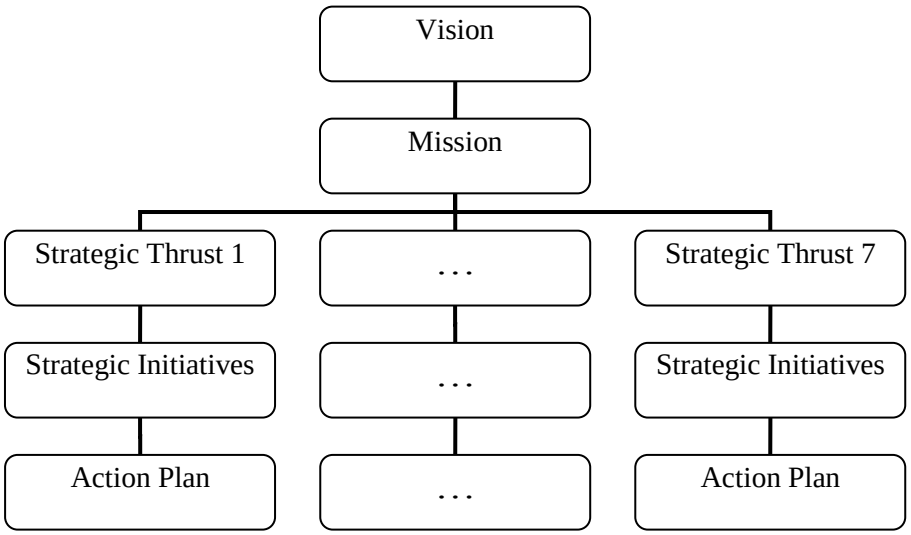
for Property taxes which will be marketed soon to other Municipal Councils country wide. Other systems which have been developed by SDU are House Holder Database which is deployed in all most all of Divisional Secretariats throughout the country and Land Registry System for Government Land and Management information System for Central Environmental Authority.

For some of these projects, UCSC has won many accolades. www.news.lk which was designed and implemented by UCSC won over seven eSwabimani awards during the last three years.

A Guide to the Strategic Plan

The UCSC strategic plan has been structured using the guidelines set by internationally reputed universities such as the Oxford University which emphasises the strategic initiatives of the institution for the period under consideration, and the challenges activities flowing out of them. The emphasis is much more on how such strategies can be actualized through the activities identified which result in the activity plans of the succeeding years. The UCSC strategic plan has been developed by carrying out extensive consultations, discussions, arguments and brainstorming sessions by many senior and junior personnel from the academic, administrative and other areas to represent the functioning of the whole organization. It took many months and many tedious workshops, meetings and discussion sessions to come to agreement with the importance, priority, validity and relevance of the strategies mentioned in the plan.

The format of the UCSC strategic plan is for the UCSC to achieve its vision by following the strategies in order to reach higher strategic levels among the university systems not only in Sri Lanka but, in the region. It also attempts to make explicit the underpinning values that the UCSC has been built on and believed in since its inception. The UCSC strategic plan uses the following structure in common with many of the internationally reputed academic institutions.



CORE VALUES

The following core set of values are what has guided the decision making process of the UCSC since its inception.

- A commitment to freedom of thought and expression
- Imparting a quality education which enhances the ability of students to learn from life
- The encouragement of curiosity driven research and innovation among students and staff
- An inclusive culture based on dignity and respect with a commitment to equality and diversity
- Recognition of excellence in teamwork as well as individual achievement
- A commitment to the professional development of all staff
- An open, effective and efficient governance and management structure, and transparent communication with all stakeholders
- Inculcating the highest standards of integrity, ethics and conduct in research, teaching and administration
- A focus on contributing to national development and a commitment to rural empowerment
- An Acknowledgment of the importance of opportunities for broadening the experience of students and staff through participation in sport, music, drama, the visual arts, and other cultural activities

Core Strategic Initiatives

There are 4 major pillars which define the core areas of activity of the UCSC, namely, Education, Research, Consultancy and Social Responsibility. Of these, Research has been recognized as the central pillar which sets the UCSC apart from the rest of the ICT Education sector, and which contributes in turn to the other three pillars.

These pillars themselves are supported by two main sources; the Human and Physical Infrastructure/Resources and the Administrative/Financial services. In addition, all these aspects are held together and directed for optimal efficacy by a 'roof' of Good Governance.

These then form the 7 areas in which strategic interventions are planned for the period under consideration:

1. Education
2. Research
3. Consultancy
4. Social Responsibility
5. Physical and Human Resources
6. Administrative/Financial Services and
7. Governance

There are strategic initiatives identified under each of these seven (7) strategic thrust areas. The following section outlines these strategic initiatives.

1 Education

1.1 Attracting good students in SL and overseas

Current perceptions of IT careers are not in line with global trends and demands. Success of the academic programmes embarked upon by the UCSC depends on attracting high quality students away from other programmes and franchised foreign degrees.

In the short to medium term of this plan period a focused approach to changing these traditional perceptions is to be undertaken with respect to internal undergraduate programmes. In addition, specific initiatives aimed at marketing the BIT programme

overseas as a quality but affordable IT degree of international repute is planned during the entire period. Emphasis would be put into attracting the target group to participate at Open Day and Research Symposium.

First staff exchange programme was initiated in 2011 with Umea University, Sweden and a UCSC staff member conducted a computer science programme in Umea, while a staff member from Umea is currently teaching the corresponding course in Sri Lanka.

Once the physical space expansion outside the UCSC achieved lateral entry to the UCSC four year degrees would be made available. This will help good students from other institutions to get involved in research activities of the UCSC and obtain University of Colombo degrees.

1.2 Enhancing ICT skills

As a course provider in ICT all our students possess high level of software design and development skills. However, their ability to use emerging tools is relatively not strong. This issue was taken up few years back and our objective was to make sure that the graduates produced by the local universities be competent in effective use of ICT in their day-today activities. One simply cannot be happy with those graduates just being competent in general use of ICT and our students are expected to be aware of new tools and technologies in their domain. Hence it demands continuous upgrade of their knowledge at least during the degree programme.

Beside UCSC will support all government initiatives to promote ICT among all university students and the public. ICT online programmes and evaluation systems will be used widely to enable to citizens of Sri Lanka to be trained in ICT. Technical support will be provided to implement the Sri Lanka Computer Driving License of National Apprentice and Industrial Training Authority (NAITA). Similar initiatives will be exploited with the Ministry of Sports and the Telecentre.org Sri Lanka to take ICT to rural areas. Using UCSC students, workshops would be conducted to assist students and teachers in secondary schools. ICT initiatives by the Ministry of Education to introduce ICT as a subject to schools would be supported through curriculum design, textbook writing, teacher training and technical support for projects such as one Laptop per Child (OLPC).

1.3 Improving English Language Skills

From the two internal undergraduate programmes, the ICT programme has an eligibility criteria of having a minimum of a ‘C’ grade for the English Language in GCE (O/L) and passing an aptitude test conducted in English which include a component in English. Hence students of ICT programme have a better command in English than the students of CS programme. Both these programmes are totally conducted in the English medium. Using a placement test during enrolment current level of English knowledge is measured for all new entrants. Appropriate orientation programme is conducted for needy students and they are required to pass the English test during the period of the degree programme. For selected CS students two hour weekly English classes are conducted during the first semester. For the ICT students a Communication Skills is one of the courses offered. This is taught in both semesters of the first year. In the 3rd year, depending on the availability of resources, the Toast Masters – Speech Craft programme is conducted for 20 selected students. Participants pay a subsidised fee a fraction of which is reimbursed by the UCSC after completion of the programme.

1.4 Strengthening Soft Skills

Soft skills get little respect but can make or break ones career. They are acquired and experienced on the spot and cannot be developed by merely reading textbooks. The soft skills gained will equip to excel in ones professional life as well as in personal life. Soft skills can be broken down into two categories: personal attributes that enhance an individual's interactions, job performance and career prospects, and interpersonal abilities such as leadership, communication, good manners, sociability and the ability to teach. Some of these skills are part of courses that include presentations and group work. Less importance is put into soft skills as measuring them is very is hard and time consuming.

Most progressive companies, managers are looking for people's ability to communicate clearly and openly, and to listen and respond empathetically. They also want them to have equally well-honed written skills so that their correspondence doesn't undo all the good work their face-to-face communication creates. Good soft skills also include the ability of people to balance the commercial needs of their company with the individual needs of their staff. Being flexible and able to adapt to the changing needs of an organization also qualify as soft skills, as do being able to

collaborate with others and influence situations through lateral and more creative thinking. The ability to deal with differences, multiculturalism and diversity is needed more than ever.

1.5 Promoting Ethnic Cohesion

Both student and staff of UCSC comprises of those belonging to different ethnicities, although the majority is represented by Sinhalese. Within the UCSC, so far incidents related to ethnicity have not been reported. The student and staff communities have been working together to achieve individual as well as organizational goals without considering individual's background. Special events are periodically organised to commemorate religious and ethnic event. However, no special emphasis has been put into this aspect until now.

2 Research

2.1 Setting up mechanisms for identifying and carrying out relevant research

A key distinctive of the UCSC is its research potential. While some of it has been expressed through various forums, their outcomes have been less than ideal. The plan over the period under consideration is to realize the full extent of this potential by engaging more fully with the local industry and international researchers in the region and beyond.

A research fund has been set up using generated funds to sustain research initiatives and to provide opportunities for staff to participate at local and international conferences. As short-term plans, workshops are planned for assisting students and the faculty to draft and submit better quality research papers and grant proposals. In the medium-term, small grants from UCSC's research fund are to be offered through an internal competition. This strategy is aimed at fostering relevant and collaborative research at national and international level leading to schemes of recruitment and promotion for researchers.

2.2 Creating a collaborative inter-disciplinary research culture

Much of the significant research being carried out globally is in inter-disciplinary areas. Traditionally, Sri Lanka has been slow to get into these areas. The UCSC can play a significant role in national development by undertaking true inter-disciplinary research in collaboration with other faculties in the University and other universities

in the country and overseas. Already some staff has got involved in areas such as local language, agriculture, simulator based training and medicine.

The medium-term small grants scheme planned using UCSC's research funds are to give preference to projects involving expertise outside the UCSC. This strategy is aimed at fostering relevant and collaborative research both nationally and internationally.

3 Consultancy

3.1 Rationalizing consultancy services to public and private sector

UCSC's Consultancy, though channelled through a centralized mechanism, has increasingly become an independent activity as opposed to being an integral part of its academic and research life.

It is planned to involve greater active involvement of academics in this activity in order to source their expertise and at the same time stretching their skills to apply to the local context within which problems need to be solved.

It is planned to market some of the outputs of UCSC research through its Consultancy arms and it is further planned that to acquire copy rights and patents for this work.

3.2 Making strategic partnerships with key stakeholders

The UCSC's consultancy arm, the CSC, has been undertaking training and software development for over a decade. It has however been constrained in recruitment and expansion by the tight regulations under which it operates.

4 Social Responsibility

4.1 Taking IT education and products to the periphery

While the UCSC has always considered its social responsibility seriously in taking the benefits of ICT to the periphery, many of the activities undertaken in its pursuit have been sporadic and not deliberate.

This is an important area for development in this period and will have the side effect of improving our social visibility and thus feeding the strategies which seek to attract good quality students to our undergraduate programmes.

The IT Exhibition initiative already underway and its associated workshop series is the largest single investment planned in this strategy. In addition to the other public events including the newspaper, radio and TV programmes the UCSC plans to continue, a specific initiative to provide a conduit to the BPO industry through awareness creation and programme design is planned in the short to medium term.

4.2 Mobilizing students to discharge social responsibility

One of the key under-utilized resources the UCSC possesses is its undergraduate population. They also constitute the single most potent agent of executing the UCSC's social responsibility.

The UCSC has already been proactive in carrying out exhibitions with the help of students to mark special occasions. The UCSC has adopted the use of students as a suitable vehicle through which its outreach to the schools can be realized. In addition to this, community IT projects and local language content creation are areas of activity identified to better serve the society we are part of.

5 Physical and Human Resources

5.1 Expanding physical space and investing in physical resources

While investing in a high quality human resource base has been the overwhelming preoccupation of the UCSC, it has now outgrown the space available to it for effective expansion. During the plan period a high priority is to be given to expanding the UCSC's physical resources in terms of space for academic, research and consultancy activities.

In the short-term extending the existing facility to accommodate some of the immediate needs commenced in 2010. In the medium to long term growth of the UCSC, these developments require the physical spaces. While innovative research is being encouraged, the necessary atmosphere for innovative ideas to grow into research projects and see fruition is not available in the present circumstances of the UCSC. The present location does not also allow for such expansions that require the creation of a spatial transformation that is imbued with a sense of the IT industry. As it is located in the hustle of urban life, it cannot be transformed into such a space beyond a certain point. Thus in the medium term two strategies are to be pursued: to optimally use the existing space through extra floor levels and to build outside the

University of Colombo premises and to setup a research facility away from Colombo. In addition to this, it is planned to accommodate an incubator facility in order to take the research results from the lab to the real world and to foster entrepreneurship among students.

5.2 Attracting international human resources

The UCSC has been able to increasingly catch the attention of international donor agencies and collaborators especially through the collaboration platform provided by the Internet.

The global playing field opened up by the Internet however also demands an aggressive and agile research agenda. During the plan period, the UCSC expects to improve its international profile by attracting both researchers and projects from overseas – both from among Sri Lankan expatriates as well as foreigners.

A key initiative in this direction is to strengthen the Prof. V. K. Samaranayake Endowment Fund for funding distinguished professorships and research fellows to spend up to 1 year at the UCSC in collaborative academic and research activities. Other initiatives include the working out of a staff industry placement programme and improvement of Non-Academic staff quality to international levels.

6 Administrative/Financial Services

6.1 Rationalizing support staff recruitment

A key weakness in the present support staff recruitment system is that it is mostly reactive rather than proactive. In order to excel in the competitive scenario we find ourselves today, it is crucial that support staff should also be of the highest quality possible.

While the recruitment of permanent executive staff is not within the complete control of the UCSC, several strategies for ensuring we attract the best have been identified. Proactive identification of staff development needs, setting clear job descriptions for staff, online access to documented processes and procedures are all strategies identified to address this situation.

6.2 Setting up effective Management and Strategic Information Systems

The absence of an integrated information system to provide much needed management information as well as to aid in strategic decision making has been identified as a key weakness.

The internally developed student and examination information system is to be expanded to accommodate other strategic information sources in order to provide information essential for making considered decisions. In the longer term, human resource and customer relationship management components are to be integrated into the system.

7 Governance

7.1 Developing agile and responsive governance structures

While the strategies identified in this plan may have various levels of success during the period under consideration, in order to ensure that the process of continually identifying such strategies in a principled way, the governance structure of the UCSC must be aligned to this task.

During the period of this plan it is envisaged that an agile and responsive set of mechanisms will be put in place to guarantee that the strategic initiatives of the UCSC remain relevant and forward looking. In particular its pioneering spirit is to be maintained as one of its key distinctive through this mechanism.

7.2 Enhancing visibility locally and internationally

One of the key deficiencies identified in the present state of the UCSC is its lack of visibility. While traditionally universities in Sri Lanka could afford to pay scant regard to this aspect, modern realities dictate that marketing is of as crucial importance as delivering high quality education.

This strategy is aimed at addressing the issue of enhancing local and global visibility during the short and medium term, and setting up mechanisms which would routinise this important aspect of our activities. Periodic reporting of UCSC activities through the Internet and print media will be part of this routine activity.

Apart from brochures, website and video clips being produced as promotional material, a mechanism for the constant updating of these is also planned.

Participating in annual events in the industry is also part of this initiative which encompasses both the university level and the wider industry.

The strategic initiatives outlined above will in turn be realized through the activities detailed in the annual Action Plan and the Budget.

Summary

Strategy	
Education	Attract good students in SL and overseas. Improve skills in ICT, English, Soft skills and Ethnic cohesion.
Research	Setup mechanism for identifying and carrying out relevant research. Create a collaborative inter-disciplinary research culture.
Consultancy	Rationalise consultancy services to public and private sector. Make strategic partnerships with key stakeholders.
Social Responsibility	Take IT education and products to the periphery. Mobilise students to take social responsibility seriously.
Resources	Invest in physical resources in and outside Colombo. Attract international human resource.
Admin/Finance	Rationalise support staff recruitment. Setup effective MIS.
Governance	Develop agile and responsive governance structures. Enhance visibility locally and internationally.