Digital Libraries
September 2010

The 3rd Tamil Nadu Student Convention
Date: 17-18 September 2010 Hosted by: Jayaram College of Engg. & Tech.
Organised by: CSI Trichy Chapter
Venue: Dr. S A Sahaaya Anil Mary, samjessi@gmail.com, Mr. S Ramasamy, sysysys@ndt.vsnl.net.in

National Conference on Emerging Trends in Computing and Communication (ETCC-2010)
Date: 18-19 September, 2010
Organised by: Medi-Caps Institute of Technology and Management, Indore and CSI Indore Chapter.
Venue: Medi-Caps Institute of Technology and Management, Indore

DWDM-2010: 2nd National Conference on “Applications and Trends in Data Warehousing, Data Mining and Data Modeling”
Date: 29-30 September 2010
Hosted by: Thapar University, Patiala
Organised by: CSI Region-I, Division-III and Chandigarh Chapter
For details contact: Dr. R K Sharma at dooa@thapar.edu, Dr. Harish Kumar at harish32us@yahoo.com

October 2010

National Conference on E-Governance
Date: 8 -10 October 2010
Hosted by: Trivendrum chapter
For details contact: Ms. Mini Ulanat, mini.ulanat@gmail.com

National Conference on E-Governance
Date: 18 - 9 October 2010 at Kolkata
For details contact: Dr. A K Roy

Workshop for the Faculty of Technical Institutions
Date: 15 - 16 October 2010
Hosted by: Sona College of Technology
Organised by: CSI and Sona College of Technology
For details contact: Dr. G S Kadhari Nawaz, nawazse@yahoo.com

National Conference on Mobile and Ad Hoc Networks
Date: 22 and 23 October, 2010
Organized by: CSI Div. III, IV, Region-VII and CSI Coimbatore Chapter
For details contact: Mr. S Mahendra Kumar, mkumar@sakthiusugars.com, Mr. Prashant R Nair, prashant@amrita.edu

24th CSI Karnataka Student Convention
Date: 22-23 October 2010
Organized by: Dept. of Information Technology, Anna University Chennai, MIT Campus and IEEE Madras Section and Supported by Computer Society of India Div IV & Chennai Chapter, Centre for Development of Advanced Computing (CDAC) and University Grants Commission (UGC)
For details contact: Dr. S Thamarai Selvi, Professor, Dept. of Information Technology, MIT Campus, Anna University Chennai, Chromepet, Chennai 600044, India. Phone: 91-44-22516319 / 22516015. Email: thamaraiselvis@gmail.com OR Mr. H R Mohan, Chair Div IV at hrmohann.csi@gmail.com Website: www.annauniv.edu/icoac2010

NCMAN-2010: National Conference on Mobile and Ad Hoc Networks
Date: 29-30 October, 2010
Hosted by: SICE Mysore
Organized by: CSI Bangalore Chapter
For details contact: B G Sangameshwara, bg.bgsangam@yahoo.com, Tel.: 0827-2548285, csi_bc@yahoo.com, Tel.: 080-22862215, 22860461

November 2010

5th CSI National Conference on IT for Defence
Date: 12-13 November 2010
Host: CSI Bangalore Chapter
Organized by: SIG-IS-15, DIV-IV, CSI
For details contact: drchakra32@gmail.com, csi_bc@yahoo.com, Tel.: 080-22862215, 22860461

ICoAC 2010: 2nd International Conference on Advanced Computing
Date: 14-16, Dec. 2010 at Chennai, India
Organised by: Dept. of Information Technology, Anna University Chennai, MIT Campus and IEEE Madras Section and Supported by Computer Society of India Div IV & Chennai Chapter, Centre for Development of Advanced Computing (CDAC) and University Grants Commission (UGC)
For details contact: Dr. G S Kadhari Nawaz, nawazse@yahoo.com

CSI-2010: 2nd International Conference on Mobile and Ad Hoc Networks
Date: 22 and 23 October, 2010
Organised by: CSI Div. III, IV, Region-VII and CSI Coimbatore Chapter
For details contact: Mr. S Mahendra Kumar, mkumar@sakthiusugars.com, Mr. Prashant R Nair, prashant@amrita.edu

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December 2010

National Conference on IT for Rural & Agriculture Development
Date: 23-24 November 2010
Host: Indian Institute of Business Management, Patna
Organized by: Patna Chapter
For details contact: Prof. A K Nayak
National Conference on Theoretical Computer Science & Applications
Date: 25-26 Nov. 2010
Hosted by: B S Abdur Rahman Institute of Science and Technology
Organised by: CSI Chennai Chapter and B S Abdur Rahman Institute of Sc. and Tech.
For details contact: Dr. K M Mehata, kmmehta@bsauniv.ac.in

45th Annual Convention
Date: 25-27 Nov. 2010, Mumbai
Venue: Mumbai Host: CSI Mumbai Chapter
For details contact: www.csi-2010.org

January 2011

ConIER-2011: The 4th National Conference on Education & Research
Date: 23-24 January, 2011
Hosted by: Shambhunath Institute of Engineering & Technology, Allahabad
Organized by: CSI Division V, Region-I and Allahabad Chapter
For details contact: Prof. J P Mishra (e-mail: dean_tpo1948@yahoo.com), Mr. Zafar Aslam (e-mail: zafar.aslam@cmtcdt.com)

February 2011

CONSEG-2011: International Conference on Software Engineering
Date: 17-19 February, 2011
Organized by: CSI Div. II (Software) and Bangalore Chapter
For details contact: Dr. Anirban Basu, anirbanbasu@qualitlyplusindia.com
Second International Conference on Emerging Applications of Information Technology (EAIT 2011)*
Date: 18-20 February 2011
Host by: Kolkata Chapter
For details contact: Mr. D P Sinha
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From CSI Chapters
In 1945, Vannevar Bush, President Roosevelt’s science advisor, who played a key role in the development of the National Science Foundation, wrote of the need to develop and use tools to manage mankind’s accumulated knowledge. His proposal for the “Memex” machine was ingeniously designed around bar-coded microfilm. The development of digital computers changed our conception of such machines, and beginning in the 1950s and 1960s a new field emerged, called “information retrieval,” a term invented by Calvin Mooers and popularized by Cyril Cleverdon. Electronic information access is an essential and rapidly growing industry.

“There is a growing mountain of research. But there is increased evidence that we are being bogged down today as specialization extends. The investigator is staggered by the findings and conclusions of thousands of other workers — conclusions which he cannot find time to grasp, much less to remember, as they appear. Yet specialization becomes increasingly necessary for progress, and the effort to bridge between disciplines is correspondingly superficial.

Professionally our methods of transmitting and reviewing the results of research are generations old and by now are totally inadequate for their purpose. If the aggregate time spent in writing scholarly works and in reading them could be evaluated, the ratio between these amounts of time might well be startling. Those who conscientiously attempt to keep abreast of current thought, even in restricted fields, by close and continuous reading might well shy away from an examination calculated to show how much of the previous month’s efforts could be produced on call.”


“Information” and “Knowledge” are distinguished along three axis:

1. **Multiplicity:** Information is piecemeal, fragmented, particular. Knowledge is structured, coherent and universal.
2. **Temporal:** Information is timely, transitory, even ephemeral. Knowledge is enduring and temporally expansive
3. **Spatial:** Information is a flow across spaces. Knowledge is a stock, specifically located, yet spatially expansive.

An information explosion often baffles the user and makes him unsure of his needs. Library and Information sciences understood:

1. Selectively acquiring information and organizing it for efficient retrieval. [Working, Presentation and Archival formats]
2. That by no means all possible future needs can be anticipated for the information being organized.
3. Several models to cater to evolving needs and usage patterns.

Information is going increasingly digital and these resources must be

1. Preservable in formats that are not vulnerable to decay or obsolescence.
2. Intelligible so that content that is easily understood by future scholars.
3. Accessible so that resources are easily discovered and accessed.

They are also interoperable, but this is mostly a concern of archives and services. Digital Libraries started functioning with the following “goal statement”:

“To realize the services necessary for supporting research, education, and commerce by providing ubiquitous access to relevant, high-quality, usable information in all media for all people.”

The following core functionalities were recognized to achieve the above goal.

1. Interconnect, catalog and enhance existing and emerging services and resources
2. Support development of electronic collections
3. Do research and development in Information Retrieval, Compute Supported Collaborative Work, Navigation, Education, and so on
4. Address the social and economic issues

“Perhaps the computer, as well as many other of our machines and techniques, can yet be transformed, following our own authentically revolutionary transformation, into instruments to enable us to live harmoniously with nature and with one another. But one prerequisite will first have to be met: there must be another transformation of man. And it must be one that restores a balance between human knowledge, human aspirations, and an appreciation of human dignity such that man may become worthy of living in nature.”

- Joseph Weizenbaum

Where is the wisdom? Lost in the knowledge.
Where is the knowledge? Lost in the information.

- T S Eliot

On behalf of CSI, I thank Dr. (Ms) Shalini Urs for compiling the content for the theme section.

“I have always imagined that Paradise will be a kind of library”

- Jorge Luis Borges

Dr. Gopal T V
Hon. Chief Editor
gopal@annauniv.edu
Dear Affectionate Members of CSI Family,

It is a great encouragement to the members of CSI when Industry and Academia acknowledge Voluntary contributions of our CSI members, and come forward to join the CSI in promoting the initiatives of CSI.

The National Finals of the SEARCC – Young Talent Search Competition 2010:

The Programming competition for selection of top 2 teams (of three students each from the same school) to represent India at the SEARCC International competitions was held at Rajalakshmi Engineering College, Chennai on August 29, 2010.

Padma Seethadri Bala Bhavan Senior, Secondary School represented by Rishabh Kohli, Ambarsih S.P. Ramnandan S K stood first while the St. Jude’s Public School & Junior College represented by Akash Lodha, Suresh P, and Harish B stood second out of the 10 regional teams that had participated at finals. Congratulations to the students & teachers.

The top team bagged a cash prize of ₹15,000/- and the runner-up team was awarded a cash prize of ₹10,000/-. Dr. (Mrs.) Thangam Meganathan has kindly sponsored both cash prizes in addition to the venue, transportation and meals. M/S Polaris Software Lab, our Silver sponsors have extended employment offer to all the 3 students of the top team. These offer letters were also handed over on this occasion.

Madam Thangam Meganathan has been consistently supporting this event every year. My salute to her and the management of Rajalakshmi Engineering college. Prof. V N Srinivasan has to be remembered for his contributions in making CSI and Rajalakshmi Engg. College as synonyms for conducting NATIONALS with the support of Dr. Thangam Meeghanathan.

We admire the way M/S. Polaris Software Lab Ltd.; have come forward to offer employment to all three members of the Top National team. That action of M/S Polaris Software Lab Ltd., encourages not only the children below the age group of 18 in the country, but also encourages the CSI for our efforts that are put in to promote Quality of Computer Education with competitive spirit in the country. A parallel to this type of togetherness of promoting Talent, is yet to be recorded in the country.

Our grateful gratitude to Dr. Thangam Meganathan, Chairperson, Rajalakshmi Engineering College and Shri V.Balakrishanan, Partner & CIO, Polaris Software Lab Ltd., Chennai for their support to CSI.

Workshop on Cloud Computing

The workshop on Cloud Computing organized by the Div. IV, Chennai Chapter, SIG-D5 of the Computer Society of India and IEEE Computer Society - Madras Chapter at IIT Madras during 18-20 Aug, 2010 was a grand success. As per the expectations, it was aimed at having 150 delegates and it turned out to be closer to 350 delegates. The session presentations were well received and appreciated by the delegates. Many of the participants expressed interest in detailed in-depth sessions on various areas of cloud computing and Division IV Chair Shri H.R.Mohan has promised to organize them in near future.

The glory of CSI would be to meet the expectations of our stack holders. I join all of you, in congratulating the organizers of this event. Special appreciation to all the resource persons, Chennai Chapter, Mr. H R Mohan, Mr. S. Ramasamy, Mr. K Advirarahan, Prof. Janakiram, Dr. P. Saktivel, Mr. G Ramesh and others involved in the event. For a CD (at a nominal cost) containing the white papers, success stories, case studies and presentations, pl. get in touch with Mr. Ramasamy at sypsys@vsnl.com or Mr. H R Mohan at hrmohan.csi@gmail.com

Student Counselors Meet

Prof. K. Rajasekhararao, State Student Coordinator (Andhra Pradesh) has initiated the meetings of Student branch counselors at important locations. That meet is to help in sharing the experiences and for preparing the calendar of events (local, State/Region/National level) that could be organized at Student Branches. The Student Branch counselors meet at Visakhapatnam on 20 Aug 2010 is an excellent initiative for Knowledge sharing. The Meet was promoted and supported by the Visakhapatnam Chapter and coordinated by P. Satyanarayana with the encouragement of Shri Umesh Chandra and Dr. DBV Sarma. This type of meets at state/region level would help in promoting and conducting the desired quality programs for our youth in the country.

Incubation Centers for Student Projects

Hyderabad Chapter lead by the chair person Mr. K Raju has initiated the process of establishing Incubation Centers to promote projects for students at each Student Branch associated with the chapter.

Lists of Projects that can be designed and designed are prepared by the Experts drawn from Industry and Academia. Students are attracted to take up the projects in the corresponding incubation centers at each student branch. Under the Guidance of faculty members and Industry experts, students handle almost all projects. Several experiments of this type are essential to motivate students to take up projects at the final semester so as to develop the problem solving capabilities and to initiate research orientation.

A new CSI Student Branch has been formed at PVP Siddhartha Institute of Technology, Vijayawada with 96 student members, and was inaugurated on 11th August 2010. The student Counselor Prof Sudhirbabu and the HOD, Prof. Nageswara Rao informs that they have established an incubation Centre for projects.

Industry Participation in Academics through CSI:

Efforts for bringing in Industry expertise to Educational Institution have started yielding results. Our Karnataka State Student Coordinator Mr. T. Sabapathy in Bangalore has initiated a dialogue with some of the Industries to conduct value addition programs in the premises of CSI Institutional Members (Student Branches). He informs that M/S Vmware has agreed to conduct workshops in 5 locations; 3 in Karnataka, 1 each in TN & Kerala. 5-6 Vmware engineers will take full day workshop in identified colleges; They will also load necessary software on the client side. Server side software will be hosted on their servers and access will be given during workshop. The focus for this year workshops is on Infrastructure side of Cloud Computing & Virtualization. They will conduct further workshops at other places in the country next year. Mr. T. Sabapathy is COO & VCO, CNPL(Cymfony) Ltd. 91-80-23614370, |And his e-mail: tspathy@cymfony.com.

This is an excellent model that can be initiated involving Industry to design innovative programs and offer in the Educational Institutions, so that the employability is increased.

I am glad that Several Chapters have started encouraging events in several Student branches. I could attend to Lecture programs in CMR College of Engineering & Technology & Gurunanak Group of Institutions.

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It is necessary that the chapters identify ways of encouraging the students’ branches on continuous basis.

Prof. P Thirumurthy
President, Computer Society of India
Shifting Landscapes and Crossing Boundaries of Digital Libraries

Shalini R Urs

Executive Director and Professor, International School of Information Management, University of Mysore
Mysore – 570006, India. E-mail: shalini@isim.ac.in

“The More Things Change, the More They Remain the Same”

Digital Libraries (DLs) as a distinct field of study and research is an emergent field which is at the intersection of many disciplines but primarily information sciences and computer sciences. DLs have evolved from digital collections — accessible anywhere, anytime by anyone, to social and intellectual spaces, often personalized, is reminiscent of good old times! In the ancient times, libraries were essentially places for scholarship, archives of government and business transactions, and places for intellectual discourse, in addition to being social and cultural institutions. The vignettes and vicissitudes in the long and progressive journey of libraries highlight that they are durable and tentative. The post Gutenberg era shifted the focus to “information” and development of tools and technologies for improving the “findability” of information. Access became the “mantra” and took centre stage, while use and usability were considered but not focused. Digital libraries, a field that is coterminal with the Internet, has entered teenage and at cross roads. With the advent and adoption of web 2.0 paradigm and technologies, DLs are crossing borders and are back to being personal and social again. In the first era technical aspects dominated research and discourse, the second era, is witness increasingly to a renaissance of the social dimension of libraries with the realization that DLs are to be usable and engaging. The web 2.0 technologies have helped turn the realization into a reality.

Catherine Marshal [1] defines a boundary—in the context of digital libraries—as, “...something that tends to separate, to interpose; a boundary is a perceptible seam in the social fabric, the technological infrastructure, or a physical setting or may span all three”, and goes on to urge “...we should design creatively to get around the interpretative boundaries like document, collection, and metadata boundaries.” The contemporary digital libraries transcend geographical and disciplinary boundaries, cross over diverse content types from scholarly to trivia and document genres of every kind and embrace digital objects of different hues and formats from manuscripts to maps, from to datasets to courseware, from images to music, from presentation slides to laboratory notes. The notion of metadata itself has transformed and fine grained to include everything from author to annotations to access modes.

In the beginning digital technologies seemed to turn libraries, all digital and impersonal. In the early days researchers were immersed deeply in confronting the technological challenges of building DLs, soon giving way to the issues of social dimensions. Ackerman [2] in one of the early DL94 conference position paper cautioned “... be careful not to carelessly obliterate some of the important features of current libraries... (Do not) remove social exchange and interaction, focusing narrowly on the technical mechanisms of information access. This is not only unwise, it is unnecessary since we could provide mechanisms for social exchange and interaction within our systems.”

The contemporary vision of DLs is suitably reflected in the recent DELOS Digital Reference Model and manifesto [3].

“The DELOS Network of Excellence on Digital Libraries now envisions a Digital Library as a tool at the centre of intellectual activity having no logical, conceptual, physical, temporal, or personal borders or barriers on information. It has moved from a content-centric system that simply organizes and provides access to particular collections of data and information, to a person-centric system that aims to provide interesting, novel, personalized experiences to users. Its main role has moved from static storage and retrieval of information to facilitation of communication, collaboration, and other forms of interaction among scientists, researchers, or the general public on themes that are pertinent to the information stored in the Digital Library.”
Thus in its new “avatar” of digital libraries, the emphasis has shifted from technical to social aspects and personalisation. Interaction, collaboration and co-creation of content characterise the digital library advancements. “Co-creation” model advocated by management gurus C.K. Prahalad and Venkat Ramaswamy exemplifies a landscape where in, “Knowledgeable, web-empowered consumers will usher in … (a system) characterized by “co-creating value through personalized experiences unique to the individual consumer” [4]. From open source and open access movement to wisdom of the crowd movements, today’s world is characterized by mass collaboration. The “Wikinomics” model [5] is the zeitgeist thing. Zeitgeist—a German term meaning “spirit of the time”—refers to the moral and intellectual trends of a given era characteristic of an age or generation. This has some similarities to Thomas Kuhn’s idea of scientific paradigms [6].

An examination of the trends in digital libraries reveals that the boundaries of: file formats; documents; document genres; content and collections; information infrastructures; libraries have given way to a seamless and form-free accessing of information and a information space full of social interactions. With the enmeshing of web 2.0 paradigms and processes to the digital libraries, libraries have become social again. The five features that characterize new digital libraries are—crossing boundaries, co-creation, interaction, personalization, socialization. Interestingly, one of the core functions of the early libraries — “preservation” is once again the fore front of research and steadily becoming a more important topic in the digital libraries domain [7].

In this issue of CSI communications, we purport to provide an overview of

References:

About the Guest Editor

Professor Shalini Urs is an information scientist having interest in all matters of the mind - from creativity to cognitive to cultural. Taking a 360 degree view of information, she has researched on issues ranging from the theoretical foundations of information science to technological aspects of digital libraries. Her areas of research include – Relevance and Information Retrieval, Content Management Systems, Ontology Development, and Social Network Analysis, Data Analytics, and Information Management.

Shalini has been a faculty in the Department of Library and Information Science of the University of Mysore for the last 34 years and specializing in the areas of Information Systems and Management. She was a Fulbright scholar and visiting professor at the Department of Computer Science, Virginia Tech. USA during 2000-2001. She has also been a visiting professor at the Indian Statistical Institute, Bangalore during 2008 and 2009. She has been researching into various aspects of Informatics, and published more than 100 papers in peer reviewed journals and prestigious academic conferences.

Her major accomplishments include—the Vidyanidhi Digital Library project (www.vidyanidhi.org.in), an internationally known Indian digital library. Having led the Electronic Theses and Dissertations (ETD) movement in India, she is the recipient of NDLTD–Adobe Leadership award in 2004. She is on the Board of Directors of the Virginia Tech, based global initiative – NDLTD (Networked Digital Library of Theses and Dissertations). She served on the Governing Board of INFLIBNET – the Inter University Centre of University Grants Commission from 2001 to 2004. She has served as an UNESCO expert on several occasions.

She put India on the global digital library map by bringing the well known international digital library conference series “International Conference on Asian Digital Libraries (ICADL)” to India and organizing the ICADL 2001 in December 2001 in Bangalore. She is currently the Chair of the Asian Digital Library Steering Committee. Widely traveled, invited to speak at various international and national conferences, Shalini has won many awards including the recent Emerald Research Fund Award in Indian Library and Information Science category for 2007-8.

Having conceptualized the International School of Information Management (ISiM), Shalini founded ISiM – the first and only iSchool in India at the University of Mysore with seed funding from Ford Foundation and Informatics India in collaboration with leading Information Schools in the US such as the University of Michigan, Pittsburgh and Syracuse (www.isim.ac.in). As executive director and professor of ISiM in Mysore she is striving towards making ISiM a world class institution. She has led the formation of the Consortium of iSchools of Asia-Pacific (CiSAP) and currently the Vice Chair.
1. **Preamble:**

The past decade (1995-2005) represents one of the fascinating and exciting times. It has also been a period of paradigmatic shifts in the world of scholarship and learning, business and management, governments and society. The field of digital libraries (DL) has been a product of as well as an active participant and a catalyst of the changing times. Coinciding with the decade of INTERNET, the decade old field of DL has emerged as one of the fast developing, continually evolving and the most transformative and consequential domains of study, research and education. The field caught the attention and imagination of policy makers, researchers and educators alike. Digital libraries have evolved into systems; tools and technologies to translate the Utopian dream of universal access to information and knowledge a distinct possibility and a reality. The field has opened up a new frontier of application of technology for information management. The quantity and variety of information available is increasing, the ease and convenience of disseminating and accessing information is being redefined all the time, mainly due to the strides made by the field of digital libraries.

2. **Digital libraries – early visions and conceptualizations**

Though the field of digital libraries that we are all familiar with is only a decade old, early conceptualizations are traced to the early visions of ‘universal access to knowledge’ such as the often cited HG Wells’ essay on the future of world education - ‘World brain: the idea of a permanent encyclopedia’ published in 1937 where in he outlined the core of such an institution as ‘world synthesis of bibliography and documentation with the indexed archives of the world... A great number of workers would be engaged perpetually in perfecting this index of human knowledge and keeping it up to date’. Today we are getting closer to those visions – with one important difference – it is not ‘a great number of workers’ who are engaged in the tasks of indexing but the machines. Another most important early figure but less quoted is Paul Otlet who struggled tirelessly for decades with the central technical, theoretical, and organizational aspects of the problem central to society - making recorded knowledge available to those who need it. The classic ‘Libraries of the future’ by J.C.R. Licklider in 1965 may perhaps be considered as a watershed in the transition from physical libraries to digital libraries. While these thinkers were envisioning the idea of ‘universal access to knowledge’ from the perspective of ‘access’ there were others who were dreaming of systems that would enable and enhance human memory through a personalized and interwoven store of information... Vannevar Bush’s concept of Memex in the 1930s, a microfilm-based “device in which an individual stores all his books, records, and communications, and which is mechanized so that it may be consulted with exceeding speed and flexibility.”. This conceptualization is a significant milestone in the development of digital libraries, as it inspired Ted Nelson and Douglas Engelbart, in their independent formulations of the various ideas that became hypertext – the technology that is at the core of the Web.

3. **Technical evolution**

In terms of technical evolution, one can trace the roots of digital libraries to the Information Retrieval Systems outlined/ developed by Perry, Kent, Taube and others. The automatic indexing and search system developed by Salton, has not only paved the way for the more sophisticated IRS of the seventies and early eighties, which in turn led to the online systems of the eighties. The intellectual lineage of digital libraries is firmly rooted in the field of information retrieval systems. However, digital libraries as we know them today were conceived and built only since the 1990s. Digital libraries, also called “electronic libraries” suddenly changed from the relatively obscure concern of a few people in computer science and the library profession to a very popular topic of many research groups. The emergence of INTERNET as a new medium of not only scientists and scholarship but also of the society at large during the nineties engendered the birth and fuelled the growth of the field of digital libraries.

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libraries. The credit for coining and firmly entrenched the phrase digital libraries goes to Tom Kalil and Mike Nelson, President Clinton and Vice President Gore advisers who liked the idea of access to information. The emergence and growth of the Internet and high bandwidth connectivity, combined with low cost processors and memory, have encouraged the creation and use of digital content on a grand scale. The situation today is one of information-driven endeavors spanning broad areas of human activities. Commercial, academic and public interests were fueled by US government interest including that of Vice President Al Gore, under the National Information Infrastructure label. The last decade has been marked by an explosion of interest, research, and development in the area of digital libraries. Much of the impetus for this surge of interest stems from the large scale funding made available by the Digital Library Initiative 1 and 2 (http://www.dli2.nsf.gov/).

These US initiatives have spawned a global response and ripple effect across the academia, industry, and Governments. Trusting the developments further and afar. The field spans diverse areas including all manner of and new forms of information systems and institutions; all forms of digital media and content; new means of tools and technologies for creating, retrieving, accessing, sharing information. The domain of DL encompasses the varied fields such as natural language processing, cognitive modeling, text mining, information retrieval, data and information security, authentication and assurance, application areas such as bio-informatics, geo-informatics, and others. The field is not only multidisciplinary but multi faculty as well – cutting across the sciences, engineering and technologies and behavioral and management sciences.

4. The Technologies behind digital libraries

Many technologies have been responsible for translating the dream of universal access to knowledge to reality. These different technologies may be categorized as - computing, networking and presentation technologies. The great leaps in the computational and storage capabilities of the digital computers are the key drivers behind digital libraries. Most components of digital computers seem to follow the Moore’s law of doubling every 18 months in terms of exponential growth in performance. While increasing processing power helped handle the large volumes, the multimedia capabilities not only enable us to store, manipulate, and display images, sound, and video, but also make digital library content more expressive and rich with regard to interactions. The secure languages have enabled transactions that maintain privacy and security. Advances in database management have resulted in multiple/alternative approaches to the design and development of DLs. Coupled with advances in computational technologies, the evolution of high-speed networking, the birth and development of the Internet, open protocols, and the ubiquity of TCP/IP - all have helped enormously in advancing global access to the information stored in disparate computers. With the ever expanding bandwidth and low cost of access, digital libraries have been democratized. The digital divide is perhaps replaced by digital dividends. What made digital libraries usable were the presentation technologies. The flexibility and diversity of presenting information to the user in myriad ways is perhaps what makes digital libraries popular, usable, and user-friendly. Dramatic improvements in the world of encoding of ideas, information, and images as well as their presentation of the same to the user were responsible for the increasing acceptance of digital libraries. Developments in mark up languages, e.g., SGML, HTML, and XML; as well as their presentation methods, e.g., hypertext, VR, graphics, sonification, multimedia, document interchange, word/desktop processing & publishing, and scholarly publishing are all part of digital library evolution.

5. Organizational and Societal framework of digital libraries

Technological innovations are propelled by the social forces. Ideas/technologies will not survive without the emergence of appropriate institutional/organizational frameworks. Several institutions and organizations have steered the course of digital libraries. The W3C has been largely responsible for steering the course of the WWW and agencies like the Council on Library and Information Resources (CLIR), Corporation for National Research Initiatives (CNRI), Digital Library Federation (DLF), Coalition for the Networked Information (CNI – http://www.cni.org), and OCLC (http://www.oclc.org) have all shaped the course of development of DLs.

In the UK the Electronic Libraries Programme (eLib) of JISC (Joint Information Systems Committee) initiated in 1994 fostered the development of areas such as digitization, digital library preservation and electronic document delivery. The JISC has played a critical role in providing the framework for digital library movement in the UK. Instrumental to the promotion of the digital library research and development in Europe is the creation of the DELOS Network of Excellence on Digital Libraries. DELOS is an initiative funded by the European Commission’s Information Society Technologies 5th Framework Programme (IST-FP5). And currently the EU IST programme is the major framework for funding and funneling the development of the field of digital libraries in Europe.

6. Digital Library conferences

The digital library movement across the world has spawned three conference series, the Joint Conference of Digital Libraries (JCDL) in North America; the European Conference of Digital Libraries (ECDL) and the ICADL (International Conference of Asian Digital Libraries). JCDL - combined the annual events that the two professional societies ACM and IEEE-CS have sponsored on an annual basis, the ACM Digital Libraries Conferences and the IEEE-CS Advances in Digital Libraries Conferences in 2001. ECDL, now in its 10th year has been a major European conference on digital libraries, and associated technical, practical, and social issues, gathering researchers, developers, content providers and users in the field. The ICADL - initiated in 1998 and rotated among Asian-Pacific countries, has become one of the premiere meetings for the Asian DL community. The three conferences help create stimulating and collegial forums for reporting significant digital library research and development activities and have helped forge a strong and vibrant digital library community.

7. Digital Library Journals

- D-Lib magazine published by the Corporation for National Research Initiatives (CNRI) and supported by Defense Advanced Research Project Agency (DARPA) and NSF
- Journal of Digital Information -a peer reviewed journal publishing papers on the management, presentation and uses of information in digital environments, supported by Texas A & M university libraries
- International Journal on Digital Libraries, a quarterly published by Springer
- ARIADNE a quarterly journal published by the UKOLN based at University of Bath and supported by the Joint Information Systems Committee (JISC) and Museums, Libraries and Archives Council, UK
8. The first decennial and the success stories

Some examples of success stories/outcomes of first decade of DL research:

- The Google search engine (www.google.com), is a spin off of the research projects at the Stanford University database group, one of the six DLI-I projects.
- The Alexandria Digital Library (ADL) (http://www.aixandria.ucsb.edu/) which includes a distributed digital library with collections of location indexed/georeferenced materials. In addition to the operational library, with various nodes and collections, the project has been successful in the development of middleware software components that are modeled, prototyped, and evaluated, gazetteer applications, and educational applications. ADL has also spawned the development of many an eLearning Systems for geography courses.
- Image searching and retrieval systems at the University of California at Berkeley (http://elib.cs.berkeley.edu/vision.html), which is an example of computer vision meeting digital libraries to facilitate access to large image datasets through browsing and search.
- Funding and support from foundations such as Mellon Foundation and others have also resulted in exemplary digital collections, and innovative tools and technologies. Jstor (www.jstor.org) and ArtStor (www.artstor.org) are examples of redefining digitally enabled scholarship – new ways of enabling scholars through technology.
- New genres of documents and collaborative authoring systems are another outcome of the DL research. Mention may be made of Wikipedia (http://en.wikipedia.org/wiki/) a multilingual Web-based free-content encyclopedia that is written collaboratively by volunteers, allowing articles to be changed by anyone with access to a web browser.
- Innovative systems and models for preservation and archiving of digital content and collections. Some global exemplars of Web Archiving Projects include the Internet Archive (http://www.archive.org/), the PANDORA (http://pandora.nla.gov.au/) and others are some of the successful endeavors. Collaborative models for Journal archiving such as LOCKSS (http://lockss.stanford.edu/)
- Creating ripples in the world of scholarly communication system by way of engendering a new scholarly communication model, popularly known as Open Access Publishing including Open Access Initiative, Institutional repositories. There have been many a successful models of Open Access author self archiving such as arXive (www.arxiv.org) (physics and related sciences); RePec (http://repec.org/) (Economics and related fields); CogPrints (http://cogprints.org/) (Psychology, neurosciences and linguistics) and many more.
- Development of DL software such as Greenstone (www.greenstone.org), DSpace (www.dspace.org), Fedora (http://www.fedora.info/) and others
- Standards, Tools and frameworks such as Handle System (http://www.handle.net/); Digital Object Identifier System (www.doi.org); Open URL (http://www.niso.org/committees/committee_ax.html); Dublin Core (www.dublcore.org); OAI-PMH (Open Archives Initiative Protocol for Metadata harvesting) (www.openarchives.org/OAI/openarchivesprotocol.html)
- Commercial organizations have also responded positively by developing new formats and models for digital content and collections. New partnerships and alliances between organizations have also emerged.

9. The Indian digital library scenario

The digital library developments in India may be categorized under five broad classes-digital library conferences and events; the digitization and digital collections building projects; the consortia based approach to enabling access to electronic journals and other digital resources; and the Open Access and institutional repository movements in India.

Indian DL Conferences : One of the early conferences in India that brought together individuals and agencies involved in the what may be called as the Pre Web digital content issues was the InfoTex 93 - An International Conference on Database Production and Distribution: Resources, Technology and Management, held at Bangalore, 28 Nov - 1 Dec 1993 organized by Informatics India Limited. The first digital library conference of India was the SIS 96 – the 15th Annual Convention and Conference, 18-20 Jan 1996, Bangalore organized by the Society for Information Sciences. The major conferences that following the web and the Internet era and events which created the buzz around the field of digital libraries were the ICADL 2001 held in Bangalore (www.icadli2001.org) and the ICDL (International Conference on Digital Libraries) organized by TERI (the Energy Research Institute) during 2004 and 2006.

The digitization and digital library projects: The DL projects that have been able to build a noteworthy test bed of collections include the Digital Library of India (DLI) Initiative that is the Indian part of the Universal Digital Library and the Million Books to the Web projects. The Million Books to the Web project is a collaborative project between the Carnegie Mellon University, Pittsburgh and the Indian Institute of Science, Bangalore and many more organizations across the US, India and China. The Traditional Knowledge Digital Library (TKDL) is a knowledge repository of the traditional knowledge setup by the NISCAIR (National Institute of Science Communication and Information Resources, CSIR (Council of Scientific Research) Government of India, the objective of this library is to protect the ancient and traditional knowledge of the country from exploitation such as biopiracy and unethical patents (http://www.niscair.res.in/). The Muktabodha Digital Library and Archiving Project was begun in 1995 as a manuscript microfilming project focusing mainly on photographing at-risk and rare palm-leaf Vedic Shrauta Ritual manuscripts from both private collections and from libraries. (http://www.muktabodha.org/). Kalasampada: Digital Library- Resource for Indian Cultural Heritage (DL-RICH) project sponsored by Ministry of Communication and Information Technology (MCIT) (http://www.ignca.gov.in/dlrich/) aims to use multimedia computer technology to develop a software package that integrates variety of cultural information and helps the users to interact and explore the subject available in image, audio, text, graphics, animation and video on a computer in a non-linear mode. One of the enduring digital library projects from a university is the Vidyaniidhi digital library and eScholarship portal project at the University of Mysore (www.vidyaniidhi.org.in), which began as a pilot project in 2000 to demonstrate the feasibility of Electronic
Theses and Dissertations (ETD) in India with funding from NISAT (National Information System for Science and Technology), DSIR, Government of India. Today Vidyanidhi funded by the Ford Foundation is one of the largest repositories of Indian theses with more than 5000 full texts and 100,000 metadata records.

Access to E-Journals: The efforts and initiatives to enhance access to electronic journals and digital resources to the academic community in India has resulted in two major consortia based programmes – the Indian National Library in Engineering Science and Technology Consortium (INDEST), IIT-Delhi (http://www.indest.iitd.ac.in) and the Ministry of Human Resource Development (MHRD) funded project for subscription to electronic resources for 37 institutions including IISc, IITs, NITs, IIMs and a few other centrally-funded Government institutions through the consortium headquarters set-up at the IIT Delhi. The other national level consortia is the UGC – Inforinet Programme spearheaded by the INFLIBNET (Information and Library Network, a University Grants Commission’s inter university centre. Under this programme universities across India have been enabled to build information infrastructure for accessing the electronic resources subscribed by the consortia (http://www.inflibnet.ac.in/).

The Open Access movement in India: The OA movement has been a very active one with many proponents, training programmes and initiatives. One of the Institutional repositories is the eprints@iisc (http://eprints.iisc.ernet.in/) at the Indian Institute of Science, Bangalore which currently has more than 6000 publications. The National Centre for Science Information (NCSI) at the IISc has been organizing many training programmes as well. OpenMED (http://openmed.nic.in/) is an Open Access Archive in the area of Medical and Allied Sciences including Bio-Medical, Medical Informatics, Dental, Nursing and Pharmaceutical Sciences. It is international in scope and includes both published (post-prints) and unpublished (pre-prints) documents having relevance to research in these disciplines. It is hosted by Bibliographic Informatics Division of National Informatics Centre (India). Academies of Science in India are also supporting the Open Access movement by making journals available online free. Indian Academy of Sciences and its journals are available open access and are available free and full text is available as PDF files on each journal’s website. Indian National Science Academy is also making its journals available online and is free to access. One significant contribution from the private sector to the Open access movement in India is the Open J-Gate from Informatics India Limited, Bangalore (www.openigate.org). Open J-Gate is an electronic gateway to global open access journal literature. Launched in 2006, Open J-Gate provides seamless access to millions of journal articles available online. Open J-Gate is also a database of journal literature, indexed from 3000+ open access journals, with links to full text at Publisher sites.

10. Issues and Challenges of the first decennial

The euphoria and the hype of the digital library enthusiasts during the early nineties were replaced by the realization that building digital libraries is more than going online with a website. Creating effective digital libraries poses serious challenges. The integration of digital media into traditional collections is not straightforward, like previous new media (e.g., video and audio tapes), because of the unique nature of digital information— it is less fixed, easily copied, and remotely accessible by multiple users simultaneously. Some of the more serious issues faced in the first decade of digital libraries maybe summarized under the following -

10.1 The Technical Issues:

The technical issues centre on digital library infrastructure and architecture such as the following -

- high-speed local networks and fast connections to the Internet
- relational databases that support a variety of digital formats including audio and video
- full text search engines to index and provide access to resources
- a variety of servers, such as Web servers and FTP servers
- Electronic document management functions that will aid in the overall management of digital resources including access control and authentication services.

10.2 Content and collections issues:

One of the largest issues in creating digital libraries is the building of digital collections. Obviously, for any digital library to be viable, it must eventually have a digital collection with the critical mass to make it truly useful. There are essentially three methods of building digital collections - Digitization - converting paper and other media in existing collections to digital form; Subscription to original digital resources - created by publishers and scholars. Example items would be electronic books, journals, and datasets; Access to external materials by providing pointers to Web sites, other library collections, or publishers’ servers.

10.3 Digitization:

The primary methods of digital collection building are digitization. Digitization is the process of conversion of any fixed or analogue media—such as books, journal articles, photos, paintings, microforms-into electronic form through scanning, sampling, other means. An obvious obstacle to digitization is that it is very time consuming and expensive. In fact some of the early digital library efforts began with digitizations projects. For example the Mercury Electronic Library Project at the Carnegie Mellon University was an early attempt to establish a campus based digital library of journal articles in computer science. It was followed by the CORE (Chemistry Online Retrieval Experiment) involving Cornell University and OCLS, American Chemical Society and others. The JStor is one such example of building a huge archive of journals. The first challenge is how do we go about selecting materials for digitization?

- Retrospective conversion of all of the collections - essentially, starting at the beginning and ending up with the last item.
- Digitization of a particular special collection or a selected one
- Showcase collection - digitizing particularly good examples of some collection strength
- Needed collection - digitizing those materials that are in most demand to make them more accessible.
- On demand approach - where one digitizes and stores materials as they are requested.

In addition to these strategies the basis of selection would include the criteria such as their potential for long-term use; their intellectual or cultural value; enabling or enhancing access than possible with original materials (e.g., fragile, rare materials); copyright restrictions or licensing issues.

The digitization issues such as the standards for digitization, tools for effective means of web enabling the digitized materials, Optical Character Recognition (OCR) issues are critical. The common practice followed by most digital library initiatives is to outsource the digitization work to some reliable vendors. However, it is important to realize that outsourcing also demands significant attention in terms of ensuring quality though stringent specifications, proper workflow and quality audit processes. There are many standards

When it comes to Indian Language content digitization, the major obstacle is the non-availability of OCR software for Indian Languages. OCR Systems are software that let us convert scanned images containing texts into computer processable, editable files in a variety of formats such as ASCII, ISICI or UNICODE. A survey of the scenario reveals that, we still have a long way to go in this area and there is tremendous scope for R & D. At this point there is just one complete OCR package for one of the Indian scripts – Devanagari (Hindi) and one for Telugu. Bangla – there is a good research and development effort but still no product. There is couple of prototype level systems for other languages – Assamese, Oriya, Gurumuki, and Malayalam. There is one system by one firm for Tamil and nothing beyond some R & D efforts in respect of Kannada. Another major gap is that none of these systems are extensively tested and evaluated. Given this background, there have been efforts by the Technology Development for Indian Languages (TDIL) division of the Ministry of Information Technology to establish a consortium to develop OCR for Indian Languages. Another recent effort is the setting up of Centre for Indian Language Content Management at the International School of Information Management (ISiM), Mysore (www.isiim.ac.in) supported by the Rediff.com.

10.4 Content Management Issues:

The content management issues include such factors as metadata and digital assets management issues such as persistent indenters and others. Metadata is important in digital libraries because it is the key to resource discovery and use of any document. Anyone who has used Google or any of the other search engines on the Internet knows that simple full-text searches don’t scale in a large usable collection management. One can get thousands of hits, but most of them will be irrelevant or duplicates. While there are formal standards for metadata (Dublin Core) such efforts are very time-consuming to create and require specially trained personnel. Human cataloguing, though superior, is just too labour extensive for the already large and rapidly expanding information environment. Naming, identifiers, and persistence and others are also related to metadata. It is the problem of naming in a digital library. Names are strings that uniquely identify digital objects and are part of any document’s metadata. Names are as important in a digital library and are needed to uniquely identify digital objects for purposes such as: citations; information retrieval; linking and for the purposes of managing copyright. Any system of naming that is developed must be permanent, lasting indefinitely. This means, among other things, that the name can’t be bound up with a specific location. This is very much unlike URLs, the current method for identifying objects on the Internet. A global scheme of unique identifiers is required, one that has persistence beyond the life of the originating organization and that is not tied to specific locations or processes. These names must remain valid whenever documents are moved from one location to another, or are migrated from one storage medium to another. Three examples of schemes proposed to get around the problem of persistent naming are PURLs, URNs, and Digital Object Identifiers (DOI).

10.5 Rights Management Issues:

Rights management has been dubbed as the most perplexing challenges of digital library environment. As libraries move from the physical medium to the digital, library staff are increasingly confronted with the challenges of addressing the copyright and other intellectual property rights issues related to digital information. Copyright has become a hot topic and a vexing issue for all those who have a stake in scholarship and scholarly communication. In the digital world, the very premises and philosophy of copyright are being questioned and voices are being heard to review its very tenets. The issue of rights ownership transgresses into the realm of hairsplitting issues of creativity, work for hire and other equally contentious matters. In the world of scholarship and intellectual heritage, libraries play a very important role. Libraries are the voices for the ‘public good’. But in the digital millennium how do we balance the often conflicting interests? The role that libraries play in the scholarly communication process is shaped by the provisions of the copyright. Copyright laws are an instrument of balancing the interests of creators and the societal obligations to facilitate the free flow of information. Safeguarding the private and public interests has been reduced to a win or lose situation. The Digital Millennium Copyright Act (DMCA) of 1998 in the US is one such example. Retaining the balance between the public and private concerns is the key to addressing the challenge of achieving and equilibrium of intellectual property rights.

10.6 Preservation:

All civilizations have been concerned with the preservation of its artifacts - whether they were stone inscriptions or parchment or manuscripts- whether they were scholarly materials or government or business transactions. This issue is compounded in the case of digital materials as they are not ‘human eye’ readable. Digital Preservation is not a new concern - it has been with us since the introduction of computers into our lives in the sixties. Digital Preservation encompasses a broad range of activities. Activities that are aimed at extending the life and after life of digital materials. It includes digitization as a means of preserving fragile materials. Preservation of digital objects including converted cultural artifacts- such as books, journals and other materials; born digital materials- both ‘published’ and ‘grey materials’. Digital grey materials cover such genres as ‘web sites’ ‘Web logs’ and others. In the context of technological obsolescence preservation of digital objects has become a major concern for the society.

11. The grand challenges and the road ahead

At the end of first decade of the digital libraries, many attempts were made to review the developments of the past and identify the future challenges to chart out a roadmap for the future. Clifford Lynch in a recent paper identifies four compelling areas (http://www.dlib.org/dlib/july05/lynch/07lynch.html). They are - Personal information management; Long term relationships between humans and information collections and systems; Role of digital libraries, digital collections and other information services in supporting teaching, learning, and human development; Active environments for computer supported collaborative work offer the starting point for another research program. In another paper Lorcan Dempsey identifies many different areas and directions such as flat applications and liquid content; new social and service affordances; new business and organizational patterns; the new information hubs, the long tail and attention and others (http://www.ariadne.ac.uk/issue46/dempsey/intro.html). The Larsen report of the NSF Workshop on research directions for the digital libraries held in 2003 identifies the following - expand what can be searched; use context for information retrieval; integrate information spaces into everyday life; Reduce data to actionable information; and Improve productivity through information access(4).

Based on the above I would summarize that the simple challenges of digital libraries for India would be to –

- Build more and more digital content and collections (expand the content base) through digitization as well as
creating and managing born digital materials through a sustained national programme
- Develop, adopt and adapt standards at all phases of life cycle of digital materials, whether born digital or digitized
- Evolve effective digital content management strategies including long term preservation

The Grand challenges are -
- Personalization: Making digital libraries more personal. Developing middleware software for making searching and accessing information more effective and customizable. Life and libraries are moving into ‘personal spaces’ from public spaces. The digital libraries of the future are to be ‘my libraries’ kind.
- Managing convergence: the digital technologies and the communication technologies are witnessing unprecedented convergence. Ubiquitous INTERNET, mobile phones and smart hand held devices are demanding that digital libraries and collections are also move into ubiquitous access
- Effective resource discovery: Managing unstructured digital information by developing tools and technologies for text mining, summarization, and structuring and automatically creating metadata.

The challenges remain the same - ‘Enhancing and Enlarging Access’. But the expectations have risen. The first decade of digital libraries has seen fantastic accomplishments and the future presents exciting possibilities and challenges.

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Nilay Yajnik
The Association of Indian Management Scholars International is based in Texas, USA. It is one of the foremost associations of management scholars of Indian origin based around the world. Dr. Nilay Yajnik was awarded the “AIMS International Distinguished Service Award” at a function at IIM Bangalore on December 21st, 2009. The award was presented in a packed IIM Bangalore main auditorium by Senior Professor Nagadevara of IIM – B and Prof Om Gupta of the University of Houston.

Nilay Yajnik presented several papers at AIMS International Conferences, served as session Chairman, judged several inter-B School contests and was on the International Editorial Board of the AIMS International Journal of Management.

S Sridhar
S Sridhar, CSI life member and Ex-Principal of Lord Venkateshwaraa Engineering College, Chennai got the Best Scholar award with a cash prize of Rs.25,000/- on 24.08.2010 from Dr. K Ponmudi, Hon’ble Minister of Higher Education for his excellence in Academic and research services.”

S. Sridhar holds a Ph.D (1984) from the School of Computers and System Engineering, JNU, Delhi, India, and has guided so far 12 Ph.D’s and the latest one (2000) from Cranfield University, U.K. He has published 80 research papers in international journals, during his total experience of 32 years. Also, he is approved Research Supervisor for Anna University Scholars in Computer Science / IT. He has authored two books, namely ‘Principles of Distributed DBMS’ and ‘DataMining’ under ‘Pearson publications’ jointly with Canadian authors. He has carried out 42 software and hardware projects for Sharjah International airport, 30 R & D projects for ONGC, India. He has been awarded research titles RMR (USA) and RZFM (Germany).
Whence Leadership?*

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“Within the past decade the number and kinds of digital information sources have proliferated. Computing system advances and the continuing networking and communications revolution have resulted in a remarkable expansion in the ability to generate process and disseminate digital information. Together, these developments have made new forms of knowledge repositories and information delivery mechanisms feasible and economical” [1]. Before you check the citation for the source, ask yourself when these words may have been uttered. While they could easily be reporting on the advances of a decade of research in digital libraries, in fact they were the words of Paul Young in 1994 at the initiation of the six projects that comprised the first Digital Library Initiative.

Nearly ten years later, Howard Wactlar and I, reporting on an NSF workshop on research directions for digital libraries, noted that "Our ability to generate and collect digital information continues to grow faster than our means to organize, manage, and effectively use it. This trend is likely to continue without focused research and development" [2]. We went on to observe that “the more that is accomplished exposes the more that remains to be done.” And, indeed, that is the story of digital libraries. The Digital Library Initiative (DLI) launched in 1994 through the collaborative leadership of NSF, NASA, and DARPA provided the means for six exploratory projects. Four years later, additional federal agencies, including ones less traditionally engaged in research support joined with the sponsors of DLI to launch DLI-2, a broad, sweeping program that aspired to catapult laboratory technology into mainstream operations. And in the process, began to scratch deeper into the surface of possibility.

D-Lib Magazine was a spin-off of DLI. Under DARPA sponsorship (initiated by the late Barry Leiner) and leadership from CNRI (as publisher and editor), D-Lib was envisioned as the voice of the D-Lib Forum. The Forum, inspired by the success of the Internet Engineering Task Force (IETF) was to be where the real action was, providing a venue for discussion, debate, and development of ideas. But as with many plans, reality chose a different path. Digital Libraries use the Internet, but they aren’t like the Internet. The community didn’t need the Forum as much as it needed the magazine. D-Lib has reported on digital library projects, collections, standards, and technological advances now for ten years, but there is a human dimension to the story that is rarely reported. It is this human dimension that I reflect on here.

The importance of digital library research and development, while clear to D-Lib readership, is much less obvious to those in Washington who establish research priorities and allocate federal research funds. Further, real collaboration among federal research agencies, in which funding is pooled to achieve a critical mass beyond the capacity of any one agency, is exceedingly rare. Communication and coordination actually occurs rather routinely, thanks largely to the National Coordination Office [3]. It is the collaboration that goes beyond words that is difficult. This collaboration relies on trust and selflessness. Steve Griffin (NSF CISE IIS) provided, and continues to provide, the leadership behind digital libraries research for the federal government. His leadership has built a culture of trust among program managers across agencies that enabled not only much of what is reported in D-Lib, but D-Lib itself.

While Steve has provided inspired leadership both nationally and internationally, progress in digital libraries also depends on leadership in other NSF program offices and other agencies, including but not limited to DARPA, NASA, the Library of Congress, NLM, NEH, NARA, IMLS, and the Smithsonian Institution. A number of these positions are not filled by federal employees, but by academics who find that a 2 - 4 year stint in Washington provides the opportunity for them to expand their individual horizons and influence the directions for federally sponsored research. Digital libraries and D-Lib Magazine both owe much of their success to academics who have “rotated through” Washington.

Just as collaboration among federal agencies is difficult due to the precedence of unique agency missions, active participation by academics in federal agencies is likewise difficult because of seemingly different missions. The federal government is the source of much of the research funding that goes to universities, and rare is the academic who doesn’t appreciate the value and, indeed, the necessity, of monitoring the various agencies’ announcements of
opportunity. But rarer still are those who understand the role played by academics in shaping federal programs. The familiar role is to participate in agencies’ peer review of proposals. As a limited, well-defined activity, and one that all of our proposals are subject to, the value as well as the commitment is understood and clear.

Less well-defined, and surely less clear, is the value and commitment associated with spending a year or more in Washington. But the potential rewards go beyond those that accrue personally, to those that benefit the discipline and the greater research community. The 3 1/2 years I spent at DARPA, on leave from the University of Maryland, were among the most interesting and challenging of my career. My tenure followed Barry Leiner’s and bridged DLI-1 and DLI-2. As with many who come to Washington, it was not my idea, which is not to say I was opposed to the concept, just that it had never really occurred to me. In the end, it turned out to be fun and rewarding, and an education in how much influence the academic community can have on the direction of federally sponsored research. My experience is not atypical.

Upon my arrival at DARPA (1996), I inherited management of the DARPA component of the DLI program (including D-Lib Magazine) and the Tipster program. This provided an immediate base of operation, but also forced me to rapidly learn about people and programs around the country, and other program managers in DARPA and other federal agencies. Most program managers do not derive their greatest joy from managing programs conceived and built by their predecessors, though. The fun and the passion come from working with the research community and the federal government to shape a new direction and to build a program to move in that direction. For me, this entailed working with Steve Griffin and others to shape DLI-2. It also entailed working very closely with CNRI as we sought to ensure continuing support for D-Lib Magazine (which, by the way, has never been fully assured, but owes much to Robert Kahn for his personal commitment to the magazine). And there’s more.

Along the way I also inherited a research program in machine translation and became increasingly conversant with some of the issues confronting intelligence analysts. This led to the conceptualization of an idea for cross-lingual digital libraries that would provide users ready access to materials in multiple languages—even languages in which they had little or no fluency. As I was leaving DARPA in 1999, the Translingual Information Detection, Extraction, and Summarization (TIDES) program was launched, becoming the inheritance of my successor, Gary Strong and, after him, Charles Wayne. That program is now winding down, being replaced by the recently announced Global Autonomous Language Exploitation (GALE) program.

The federal research agenda is malleable. It depends on the engagement of researchers and academics in ways that go beyond their local research interests. It provides an invaluable experience, particularly for those who have employment stability and personal mobility, to advance their own careers by assuming positions of leadership within their discipline at an appropriate agency. NSF and DARPA are the two most obvious, but not the only, destinations appropriate to the readership of D-Lib.

Why might you consider such a step? Funding for digital library research has been and continues to be at risk. That it continues at all is a testament to such leadership, as do many of the nation’s digital libraries projects, either directly or indirectly. Your reading of this 10th anniversary issue of D-Lib serves as evidence of its value to you. Your reading of this article suggests you are interested in leadership. Consider whether there is a point in your career when you will be ready to take on that leadership.

Notes and References


The International Federation of Library Associations and Institutions (IFLA)
[http://www.ifla.org/en/about]

Vision for Digital Libraries:
This vision statement is formulated as follows:
To employ the fullest potential of digital technology in partnership with users by enabling seamless and open access to all types of information without limits to format or geography, and to enhance the ability of libraries, archives and museums to collaborate among themselves and with others to offer the broadest and most complete service possible.

This statement includes the main conclusions:
a) technology is not enough
b) we need cooperation with users
c) we need international cooperation with cultural institutions and partnership with others (publishers, et al.).
1. Introduction

Many countries have aspired to advance its economy via science and technology innovations in the 21st century. Some have done so more successful than others and have begun to become major players in the international intellectual landscape. According to a recent 2007 report from the Committee on Prospering in the Global Economy of the 21st Century: An Agenda for American Science and Technology, sponsored by the National Academy of Sciences, National Academy of Engineering, and Institute of Medicine ("Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future") (The National Academies, 2007), "Americans are feeling the gradual and subtle effects of globalization that challenge the economic and strategic leadership that the United States has enjoyed since World War II…Thanks to globalization, driven by modern communications and other advances, workers in virtually every sector must now face competitors who live just a mouse-click away in Ireland, Finland, China, India, or dozens of other countries whose economies are growing." Based on the study, the Committee made four major recommendations in this 592-page report:

Recommendation A: Increase America’s talent pool by vastly improving K–12 science and mathematics education.

Recommendation B: Sustain and strengthen the nation’s traditional commitment to long-term basic research that has the potential to be transformational to maintain the flow of new ideas that fuel the economy, provide security, and enhance the quality of life.

Recommendation C: Make the United States the most attractive setting in which to study and perform research so that we can develop, recruit, and retain the best and brightest students, scientists, and engineers from within the United States and throughout the world.

Recommendation D: Ensure that the United States is the premier place in the world to innovate; invest in downstream activities such as manufacturing and marketing; and create high-paying jobs based on innovation by such actions as modernizing the patent system, realigning tax policies to encourage innovation, and ensuring affordable broadband access.

Although this report is US-centric, the recommendations and strategies can easily be adapted for any other aspiring countries. In light of these recommendations we believe that global S&T assessment is becoming a critical research topic and much can be contributed with advanced digital library research.

2. Example: China S&T Assessment in Nanotechnology

Among the many countries that are making progress in S&T development China is definitely the one to watch. Many critical S&T areas have been identified by the China government and scholars as priorities. For example, in a recent bibliometric study by Dr. Hsinchun Chen and his Artificial Intelligence (AI) Lab at the University of Arizona (Chen & Roco, 2008), the Chinese Academy of Sciences was identified as the most productive institution in nanotechnology research based on academic papers published in the Thomson SCI Web of Sciences database, 1976-2004 (Li et al., 2008).

Fig. 1 illustrates the publication trend of the top 10 most productive countries in nanotechnology paper publications in the Thomson SCI database. Overall, the United States published the most nanotechnology papers, and growth was faster after 1991 than before 1991. Before 1991, the USA, Japan, Germany, France, and England (the United Kingdom) were the major countries in nanotechnology research. After 1991, several additional countries became involved in this arena. China experienced faster growth in the last ten years than other countries/regions, which made it the second most productive country beginning with 2003. South Korea also showed rapid development.

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* IEEE Intelligent Systems in 2009
after 2000. In four years, it exceeded Italy, Russia, and England to become the sixth most productive country in 2004 (Li, et al., 2008).

Fig. 2 shows the publication trend of the top 10 most productive institutions. Most of the top 10 institutions show an increase over time, which demonstrates the importance of nanotechnology R&D at these institutions. Among the top institutions, the Chinese Academy of Sciences showed the fastest growth rate; it has also been the most productive institution in the nanotechnology domain since 1999. The Russian Academy of Sciences showed a publication growth rate similar to that of the Chinese Academy of Sciences prior to 1999. However, in the 21st century, its growth slowed and it became the second most productive institution (Li, et al., 2008).

In addition to nanotechnology, Chinese researchers and scholars have published a wealth of information about S&T developments. Except for publications in major English journals and meetings, much of this material is difficult for scholars outside of China to locate or access and most of it is not known beyond a small circle of researchers. In one of the most comprehensive Chinese academic databases, the Wanfang Data, there are 13,971,265 articles from 6,065 journals, 918,915 conference articles, and 1,184,412 dissertations (as of July 7, 2008), all of them in Chinese. The breadth and depth of such material offers insight into China regarding everything from industry and agriculture, to technology development and scientific research, to politics and military issues. Exploring these information resources can enable a better understanding of China, its future, and its aspirations in our evolving world.

3. S&T Analytics Challenges

Technology strength is the foundation of a nation’s economic power, which makes it critical to have an effective, automated means to assess such strengths on a continuous basis. To assess global S&T status, there are several critical dimensions to investigate:

- **The participants**: Who are the scientists and developers involved in research and development and which institutions and companies ultimately benefit from these activities?
- **The processes**: What are the funding models/programs and how are the participants linked together and organized around research initiatives?
- **The output**: What ideas, inventions, and innovations result, in which areas of
Many research universities are very active in engaging in research exchanges with universities of other countries by sending visiting scholars to foreign universities and inviting researchers from foreign countries to give seminars/lectures in local universities. We would need to find out how such exchanges enhance the research skill of foreign researchers and how they lead to the development of significant research or technology.

4. **Collection and Computational Challenges**

In addition to the above-mentioned global S&T analytics challenges, several computational research challenges are evident. Many of these areas can benefit from advanced artificial intelligence, knowledge mapping, and intelligence analysis research.

- **The benefits**: What are the economic and military advantages obtained from participation in and outputs from technology development?
- **The barriers**: Do any cultural or political factors hinder the effectiveness of a country’s research and development in its quest to become a power in global economy?

There are many interesting global S&T analytics questions to answer. We include a few below:

- Because many countries have devoted an enormous amount of money to boost university research, we need to study and identify successful funding models and processes. Will S&T research lead to innovative breakthrough research or simply incremental improvements? Will interdisciplinary research and multi-university projects flourish under the current system?
- Many countries’ research organization infrastructures are diverse and complex. In addition to standard university-based research activities, many major universities host national labs or research institutes in different critical technology areas, e.g., Chinese Academy of Sciences (CAS) in nanotechnology research. What is the role of each type of organization in a country's innovation system and process?
- What is the role of the industry in funding and collaboration with technology research projects? For example, many of the large multinationals, including IBM, HP, Intel, Microsoft, and Google, have research labs in China and India. What is the role of the multinationals and foreign direct investment on fostering research in different countries? What collaboration models exist between their labs and universities?
- Many research universities are very active in engaging in research exchanges with universities of other countries by sending visiting scholars to foreign universities and inviting researchers from foreign countries to give seminars/lectures in local universities. We would need to find out how such exchanges enhance the research skill of foreign researchers and how they lead to the development of significant research or technology.

**The benefits**

- In addition to the above-mentioned significant research or technology.
- Many countries have hosted seminars/lectures in local universities. We would need to find out how such exchanges enhance the research skill of foreign researchers and how they lead to the development of significant research or technology.
- Many research universities are very active in engaging in research exchanges with universities of other countries by sending visiting scholars to foreign universities and inviting researchers from foreign countries to give seminars/lectures in local universities. We would need to find out how such exchanges enhance the research skill of foreign researchers and how they lead to the development of significant research or technology.

**The barriers**

- Do any cultural or political factors hinder the effectiveness of a country’s research and development in its quest to become a power in global economy?
- Many research universities are very active in engaging in research exchanges with universities of other countries by sending visiting scholars to foreign universities and inviting researchers from foreign countries to give seminars/lectures in local universities. We would need to find out how such exchanges enhance the research skill of foreign researchers and how they lead to the development of significant research or technology.

**Collection and Computational Challenges**

In addition to the above-mentioned global S&T analytics challenges, several computational research challenges are evident. Many of these areas can benefit from advanced artificial intelligence, knowledge mapping, and intelligence analysis research.

- **Diverse information sources**: Many existing English S&T information sources need to be considered for global S&T assessment, from commercial digital libraries and databases of academic literature, to international patent filings and industry reports.
- **Multilingual content collection and management**: Foreign institutions also produce a significant amount of academic papers, dissertations, reports, etc. in their local languages. Most of them can be accessed via web-based systems. However, significant search and cross-lingual support will be needed to make the contents accessible to researchers in different parts of the world.
- **Multimedia content collection and management**: Much of the S&T research findings are captured in multimedia formats such as: engineering drawings and blueprints, diagrams and photos, instructional videos, etc. Careful metadata creation and multimedia content-based analysis are needed for access of such critical resources.
- **Open source web content collection and management**: In addition to academic publications collected and stored in major commercial databases, many institutions have provided access to their recent working papers and major research findings on their web sites. Such information is often more informal but timely for understanding their research progress and achievements. In addition, web blogs, forums, and bulletin boards often contain the general public’s opinions and sentiments towards government S&T policies and directions. Intelligent spidering (crawling) and collection of open source S&T related web content is needed. A web-based multilingual spidering tool would help with such a collection effort.
- **Global S&T Web portal and meta search engine access and usability**: A lightweight web-based portal will need to be developed for research access. Meta search engines would also facilitate access to multiple data sources. In addition, graphical user interface, visualization systems, and user interface issues all need to be carefully addressed to support system usability by a wide community of international researchers, analysts, and policy makers.
- **Multilingual query and translation support**: A major component in the S&T web portal design is the multilingual support for query translation, cross-lingual information retrieval, query expansion, and name transliteration. Much good work has been done in the multilingual information retrieval (MLIR) community. In addition, web services via online translation tools such as Google Translation can help researchers get a gist of the document under review.
- **Content analysis and visualization**: In addition to basic search and browse capabilities, global S&T analysis needs to support post-retrieval content overview, preview, categorization, and summarization. Knowledge mapping and visualization, citation network analysis, group interaction linkage analysis, and timeline and event visualization tools can also help researchers identify the major topics, entities, trends, and events revealed in the contents retrieved.

**5. The Nano Mapper System**

Much excellent research and advanced global S&T assessment systems have been developed recently. To illustrate, we show below a nanotechnology knowledge mapping system developed by our team based on NSF research (Chen & Roco, 2009), Nano Mapper (http://nanomapper.eller.arizona.edu), which integrates the analysis of nanotechnology patents and grants into a Web-based platform. The Nano Mapper system contains nanotechnology-related patents from the United States Patent and Trademark Office (USPTO), European Patent Office (EPO), and Japanese Patent Office (JPO), and grant documents from the National Science Foundation (NSF). It provides simple search functionalities and makes available a set of analysis and visualization tools that can be applied to different analytical units at different time periods for the patent and grant data. Using the statistics, trend graphs, citation networks, and content maps generated by Nano Mapper, we can easily identify nanotechnology innovations in international patent databases. Nano Mapper simplifies the patent/grant analysis processes and demonstrates the feasibility of building large-scale Web-based cross-database knowledge mapping systems to access and analyze innovations in various S&T disciplines.
Fig. 3 illustrates the advanced search function using the USPTO data set. This interface enables users to input criteria on most data fields. The user can also access the details of any document, including all data fields in our system and the URLs to their original Web sites. Nano Mapper can visualize and compare the annual publication trends of patents and grants at different analytical levels. It also enables users to visualize patent citation networks of different countries and institutions for different time periods, as shown in Fig. 4.

6. Controversies: ITAR and EAR

With the increasing emphasis on science and technology development by different countries and the competitive landscape of innovation and commercialization, “S&T Protectionism” may also become a potential barrier for global knowledge diffusion. Protectionism is nothing new in modern economy and is often administrated by different countries for strategically and socially important areas, ranging from farm products and fishing industry, to advanced information technology and military systems. However, we have witnessed increasingly stricter enforcement of regulations that control the transfer of equipment, technology, and know-how to foreign countries and nationals. Although this problem may be much more alarming on US university campuses recently, it would not be surprising to see other countries adopt similar protective measures.

In US, the two primary statues covering export are the Arms Export Control Act and the Export Administration Act. These Acts authorize two sets of regulations, the International Traffic in Arms Regulations (ITAR) and the Export Administration Regulations (EAR). ITAR covers items that are inherently military in nature. These regulations are administered by the Department of State and contain the Munitions List, which delineates the types of items and technologies controlled. EAR covers “dual-use items,” which can be used for either military or civil purpose. These regulations are administered by the Department of Commerce and contain the Commerce Control List. The EAR defines a “deemed export” as the release of technology or source code subject to the EAR to a foreign national. These situations may include tours of laboratories, foreign students or professors conducting joint research, hosting foreign visitors, and even emails, visual inspection, and oral exchanges. Foreign nationals from selected countries such as Iran and Cuba are particularly targeted. Although research conducted by faculty and students at a university is normally considered fundamental research and is excluded from ITAR and EAR regulations, university based research is not considered fundamental research if the university or its researchers accept restrictions on the publication of the results of the project, e.g., proprietary restrictions, sponsor approval needed prior to publication, etc. Recently many research universities have become vigilant in informing faculty and students about these export regulations and in enforcing due process (Monastersky 2008), especially for many defense or security-related research projects from US federal agencies. Technology Control Plan (TCP) has been frequently suggested by universities for relevant units to outline the procedures needed to secure controlled technology from use and observation by unlicensed non-US citizens. For more information about export control regulations and processes, many universities have begun to provide useful...
Why are such measures of relevance to IEEE digital library researchers? What is the cost of noncompliance?

ITAR violation can result up to $1 million per violation and 10 years of imprisonment. Professor Reece Roth of Electrical and Computer Engineering at the University of Tennessee was recently convicted (on September 3, 2008) and faces up to 160 years in jail and $1.5 million in fines for disclosing restricted US military data about Unmanned Aerial Vehicles (UAVs) to foreign nationals without first obtaining the required US government license or approval (Monastersky 2008). EAR violation can result in $50 thousand or five times the value of export, whichever is greater, per violation, and 10 years of imprisonment. Professor Thomas Butler of the Texas Tech University faces 2 years in prison for making fraudulent claims and unauthorized export (plaque bacteria). Although these may be recent isolated incidents, researchers in academic institutions need to become more knowledgeable about such developments and watchful for future international collaborations. Board debate and evaluation of impacts of such measures, by universities and government agencies, will be needed in light of the unstoppable force of global science and technology development, diffusion, cross-fertilization, and competition.

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Online Training

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Training online, simply put, is – Training provided anytime, anywhere in the world and just when it is needed.

Computer Based Training (CBT) became popular with the emergence of software as an industry. IT training needed computers, as a learning aid, to help learners acquire expertise through application. The computer was a supplement to learning and did not, however, replace the traditional classroom instruction.

For a long time, learning on the machines was purely for technical areas related only to computer technology. As the CBT gained focus, more advantages were discovered in learning on the computers. Use of software packages to facilitate learning helped self directed skills development. The term ‘self paced learning’ was evolved as learning electronically does not require a batch of participants, like in a class room, who will need to go through the same concepts and exercises at the same time. The modules, the jargon for chapters in e-learning, are accessed and learnt at a time that is convenient to the participant. A full time instructor was not required; machines freed, though not necessarily replaced the instructor. Subject Matter Experts (SME) did not have to become itinerant trainers to deliver sessions in different locations. Training material gets standardized thereby minimizing the variants of training styles. Help screens are included in the program to provide guidelines and additional information for learners who are not very tech savvy. CBT also uses multi media to make the learning enriched with audio clips, animation and graphics and interactive videos.

The need for training, and for training across levels, services and functions, is gaining focus in the realm of HR intent. Skill development is pivotal to retention. The recent down trend resulting in several organizations flattening and downsizing, has in a way coerced companies to plan proactively and build competencies if they are to hold on to their best and brightest.

With the world of industry entering global markets, virtual teams in organizations constantly form and function across countries. Content based training, with the objective of imparting knowledge are relatively more ‘e-friendly’. The course material is hosted on the intranet, or even the internet in some instances. Assignments aimed to assess recall and register abilities are administered where measurement is simple and straight. Companies anchor most process and product training in the online method. A one time effort of creating material, evolving assignments and structuring measurement of learning effectiveness, goes a long way in terms of the reach it has within the organization. One standard module with measured learning objectives addresses the organization’s knowledge gap in a swift, simple and stable environment which is not constrained by the human limitations of one trainer, one location, one group, one date and time. In the traditional class room methodology, on the other hand, it is one program replicated several times over thereby giving in to the variations of training style in addition to learning happening in a staggered manner, and the likelihood of the tempo of training slowing down. By the time the last of the sessions happens in a location, training would have become a mere perfunctory exercise, done for the sake of MIS reports.

Stephen Covey’s 7th habit, ‘sharpen the saw’, promotes learning from previous experience. Sharing experiences helps other employees cope with the corporate challenges as well as changes and visibly move to higher levels of competencies. Covey recommends organizations to create a culture where every learner becomes a trainer and every trainer also experiences learning. This way, the organization not only provides individual knowledge but also creates institutional knowledge; this ensures that the organization, irrespective of people exiting, establishes knowledge and has the ownership of the collective expertise and intellectual property. This effort can be captured comprehensively with online training programs.

Online training aids meeting of specific learning objectives. Hitherto, developmental initiatives comprised rolling out a number of courses which were generic and in a broad manner addressed random learning needs. As a group, the learners went through a skill building experience. However, in this method, individual and specific needs were not given importance. The evolving virtual training methods create scope for asking more pointed questions to find out what job knowledge and skills the learner needs to acquire and perform at the workplace. Stand alone modules are developed to address each
Learning online is distance learning. For a long time, several western countries have used video conferencing; VC not only aids remote training, but also helps in bringing the learning environment to as close to the flexibility and spontaneity as that of a traditional classroom. This method is highly interactive, very economical and can address a number of trainees at the same time. Global companies having far flung operations, benefit largely from this technology. And, as discussed before, this method ensures consistency of content and instruction apart from cutting down travel bills.

Satellite broadcasts are also used to deliver product training. Satellite training rooms promote an interactive learning method and can teach to a class of several thousand of learners, something a brick and mortar classroom can never achieve. Companies which find use for this method, but cannot afford the infrastructure hire third party satellite communications agencies to anchor their training modules.

Simulation is a training approach that is simple but yet effective. This calls for programs that replicate tasks away from the job site. The range is wide - from fundamental mock exercise to computerized simulation of a complete work environment. This is relevant for functional training where retail counters, automobiles, operating rooms and so on are created online to help learners use the place without causing damage to any of the aspects. Simulations are even used for management skills development.

As a high tech training platform for leaders and managers, this method assesses the problem-solving and decision making skills of the participants. Business games are also conducted as part of a simulation exercise.

An extension of simulation is the virtual reality training. Again a computer based approach, this method permits learners to gain perspectives that are not possible in a real time training program. For instance, a heavy machine tool can be turned over and viewed to help learn the tool thoroughly. This kind of manipulation is otherwise impractical and impossible.

The most popular methodology elearning, which is in effect, an umbrella term that comprises all computer based methods, is widely used in the new economy. Enough and more has been said about the versatility of online instructional training and yet this can never be over stressed. Online training with its features of simultaneous delivery in different languages anytime and in any part of the world is vivid and appealing due to the care that is taken while creating the modules. Keeping in mind the universal need of addressing large groups anywhere, the content is comprehensive and professionally created by a team of instructional designers and graphic artists. Instructional Designers or ID experts as they are better known can visualize the content format as it appears online and can put together the appropriate session structure, flow and even pitch the level of training to cater to the existing knowledge and skills of the trainees.

Although industries and markets differ in the corporate world, it has been proved that almost 74% of training needs are the same. Sales and customer service, marketing skills, induction programs, cross cultural training, workplace etiquette, communication and presentation skills are indicative common denominator online training modules used by corporates functioning across the globe.

A spin off from online training gaining importance is the emergence of several elearning companies. These companies create training content using domain experts and ID specialists which are sold as off the shelf modules. Elearning companies also develop customized and exclusive training material for a higher fee for their clients. However, the immense use for these modules and the huge target group that they are delivered for, off set the cost incurred as payment to the elearning vendor.

The features, advantages and benefits of online training are tangible. However, the adage `taking the horse to the water’ is never more applicable in any other aspect than here. Classroom training offers a controlled environment where trainees are mentally prepared to sit through a learning experience. The trainer, for his/her part ensures that the learners have some pertinent takeaways from training. Recall, recap and review methods after every session help reinforce the learning aspects. On the other hand, online training calls for personal commitment from the learner. The organization or the boss can provide support for development but cannot in anyway develop the employee. The onus of enhancing competencies is with the learner alone.

Taking complete responsibility for one’s own development is the most important aspect of online training. The success and return on investment in training lies purely in the hands and mind of the learner. A positive approach to learning coupled with a passion for performance has to be inculcated and evolved as an organizational culture before an employee is launched on the path to learning and developing in the cyber space.

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"Many people, other than the authors, contribute to the making of a book, from the first person who had the bright idea of alphabetic writing through the inventor of movable type to the lumberjacks who felled the trees that were pulped for its printing. It is not customary to acknowledge the trees themselves, though their commitment is total."

-- Forsyth and Rada, Machine Learning
Digital Asset Management

1. **Digital Asset**
   A digital asset is any form of content and/or media that have been formatted into a binary source which include the right to use it. A digital file without the right to use it is not an asset. Digital assets are categorised in three major groups which may be defined as textual content (digital assets), images (media assets) and multimedia (media assets) (van Niekerk, A.J. 2006).

   In order to have a clear understanding of digital asset management the definitions of the different types of digital assets need to be defined and the difference must be specified. There are a number of management systems related to digital asset management (Austerberry, 2004) which are:
   1. Digital asset management (DAM)
   2. Digital content management (DCM)
   3. Enterprise content management (ECM)
   4. Digital media management (DMM)
   5. Media asset management (MAM)
   6. WEB content management (WCM)

   An art asset (media assets), in computer graphics and related fields (particularly video game and visual effects production), is an individual piece of digital media used in the creation of a larger production. Art assets include synthetic and photographic bitmaps (often used for texture mapping), 3D models consisting of polygon meshes or curved surfaces, shaders, motion captured or hand-animated animation data, video and audio samples.

   The term “art” is used to distinguish the creative (or real-world) elements from the software or hardware used to create it, but there is no requirement that the data represents anything artistic.

   Digital asset management is expected to be a multi-billion dollar industry as corporations and individuals migrate traditional graphic, broadcast and print assets to the digital format. Companies including Apple, Oracle, Microsoft, Getty Images and others are aggressively expanding their enterprises to provide third-party digital asset management via web-based repositories. This trend will continue as business and consumers evolve from traditional analog materials.

2. **Digital Asset Management**
   Digital asset management (DAM) consists of management tasks and decisions surrounding the ingestion, annotation, cataloguing, storage, retrieval and distribution of digital assets. Digital photographs, animations, videos and music are samples of media asset management (a sub-category of DAM).

   Digital asset management systems includes computer software and/or hardware systems that aid in the process of digital asset management.

   The term “digital asset management” (DAM) also refers to the protocol for downloading, renaming, backing up, rating, grouping, archiving, optimizing, maintaining, thinning, and exporting files.

   Smaller DAM systems are easier to categorize as to content and usage since they would normally operate in a particular operational context. This would hold true for systems attached to audio or video production systems. The key differentiators here are the type of decoders and I/O (input/output) used for the asset ingest, use and outgest. Since the essence (and proxy copies) are described by metadata, the metadata can be used as a guide to the playout decoders, transcoders, and channels as well as an input to access control rules. This means that the essence can be treated as a non-described storage object except when being accessed for viewing or editing. There is relevance to this when considering the overall design and use of larger implementations. The closer the asset is to the ingest/edit/playout tool, the greater the technical architecture needs to accommodate delivery requirements such as bandwidth, latency, capacity, access control, availability of resources, etc.

   The further the asset moves into a general storage architecture (e.g. hierarchical storage management [HSM]) the more it can be treated as a general blob (binary large object) that is typically held in the filesystem, not the database.

2.1 **Types of digital asset management systems**

   The following broad categories of digital asset management systems may be distinguished:

   - Brand asset management systems, with a focus on facilitation of content re-use within large organizations. Here the content is largely marketing- or sales-related, for example, product imagery, logos, marketing collateral or fonts, to give a few examples.

   - Library asset management systems, with a focus on storage and retrieval of large amounts of infrequently changing media assets, for example in video or photo archiving.

   - Production asset management systems, with a focus on storage, organization and revision control of frequently changing digital assets, for example in digital media production.

   - Digital supply chain services, pushing digital content out to digital retailers (e.g. music, videos and games).

   DAM software may be open source or proprietary.

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Teamwork in Software Organizations

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Indian IT Industry has crossed US$ 60 billion mark. There are few Indian IT organizations whose revenues are more than US $5 billion. The industry has seen an average double digit growth rate for more than a decade. Indian IT industry has got significant importance in Indian economy and in employment generation. The Indian IT job market is picking up and young engineers are getting offers from reputed IT firms. The outside world might be wondering about the success of Indian IT industry and its delivery and business models. The hidden strength behind this success is the Indian software development teams. It is the team orientation, delivery approach, processes, customer focus which is giving the repeat customers to the Indian IT organizations. Thus this article is about Indian software teams.

1. Introduction

Basically, team orientation in organizations has come into existence since the studies of Fredric Taylor’s scientific management. However, this has been picked up aggressively in multinational organizations since 1970s. Currently more than 2/3rd of the Fortune 500 organizations are delivering their products and services to the customers using teams. Industries such as Hardware, Software, Pharmaceutical, Construction, Healthcare, Manufacturing and Telecom industries are extensively using teams not only in product development but also in other business functions such as marketing, HR, and finance.

There exist different types of teams in organizations. They are project teams, work teams, parallel teams, and management teams. Usually one can find project teams in software, hardware and telecom companies. These teams have specific objective to achieve in specified time limit with the given budget and acceptable quality to the customer. One can find work teams in manufacturing industries and where assembly line work goes on. Parallel teams can be found in research areas such as drug discovery and bio-technology areas, and also in some IT organizations. Top management team consists of the C-level executives such as CEO, COO, CMO, CTO, and CIO. They work as a team in most of the multinational organizations.

2. Characteristics of Teams

Team is a collection of people working together with complementary skills and for common purpose and objective. Every team in the organization has got an objective to achieve. For example, project teams work towards the project end product, result or service.

A Team may consists of individuals with varied experience levels, different genders, age, different skill set, different educational and organizational backgrounds, different race, religion, and different ethnic backgrounds.

All team members work towards the team objective under the leadership of the team leader. Mutual trust, cooperation, cohesion, respect for others, cultural sensitivity, maturity, and support for others, safety for team participation, having team vision, task orientation, and support for productive environment and having team norms and ground rules are some of the characteristics of teams in organizations.

The members in high performance teams have certain special characteristics. They are collective accountability, collective ownership, mutual trust, support for other team members’ development and welfare, superior customer orientation, task orientation, having great team vision, situational group leadership, group decision making, and respect for others’ culture, language, region and religion.

3. Teams in Software Organizations

One can find many types of teams in software organizations. They are development teams, support teams, testing teams, maintenance teams, quality teams and disaster recovery teams.

As known very well, Development teams develop the product or solution based on customer given requirements or any standard specifications. These development projects have team members and project manager to work on the project. They have fixed time limit to deliver the project product. These teams are given fixed budget and time and required quality limits. It is very rare to find a project team with unlimited
time and money allotted to it. These project development teams do requirements gathering, analysis, designing the solution, and coding.

Support teams in software organizations respond to the customer calls and queries. Technical support can be provided at different levels such as Level 1, 2, and 3. Level 1, 2, and 3 support teams have specified time limits to respond to customer queries. If the support team is not able to solve the customer technical problem, it escalates the issue and sends it to the development team. Or some of the customer problems may result into defects or bugs or new features of the product.

Testing Teams in software organizations usually take care of system testing and integration testing of the project product. Usually test teams are lead by test lead or Test Manager. Writing test cases, executing test cases, reporting defects and tracking defects are the main activities of test teams. Once product build happens, development team hands over the pre-tested product to the test team. Test team tests the product and gives the necessary test summary reports and test statistics.

Maintenance teams in software organizations mainly does fixing of bugs and in some cases developing new features to the product. In some organizations, development team itself handles the product maintenance activities. Maintenance teams may involve in releasing fix packs or patches to the product.

Quality teams in software organizations take care of process related quality assurance activities. They ensure that the intermediate project deliverables are reviewed and meet the organizational quality standards. They help in conducting reviews of deliverables such as design documents and source code and they conduct quarterly and periodic quality audits. Quality team does all the internal process related activities to ensure the delivery of quality product to the customer.

In current days, there are other types of teams in software organizations such as design teams, requirements gathering teams, reengineering teams, product innovation teams, R & D teams and disaster recovery teams. Disaster recovery teams in software organizations handle the cases such as data loss, hard disk failure and network failure, etc.

All these teams do not work in isolated environment. They work in collaboration and cooperation. Coordination between these teams should be there in meeting customer requirements. In some cases, the output of one team becomes the input to other team. For example, development team’s output, the product build, is the input for test team.

4. Managing Software Teams

According to management philosophy, knowledge worker is self-managing and needs little supervision. Same thing applies to software engineers. However based on the complexity of work, software teams needs to be motivated and brought into track if there are any disturbances in the team. Because there is possibility for conflicts between team members, that is, intra group conflicts, and inter group conflicts in software organizations. The reasons for these conflicts can be any shared resources between the teams, profit sharing, costs, administrative issues, project priorities and project dependencies across multiple teams. The program manager has to resolve all these conflicts between the project teams.

To motivate the software teams in the organization, there should be proper reward and recognition system in place, training needs of the teams are to be identified, hardware, software resources need to be provided, and right environment is to be provided to the teams to make them productive. The senior management has to set the objectives to each project team and monitor the progress. They have to communicate and handle the dependencies between the project teams.

5. How to evaluate performance of Software Teams?

In current days, the software organizations are too much worried about how to improve individual as well as team productivity, how to compare one team with another team to take decision of whether to continue the team in the organization or to dissolve the team. Many researchers found different ways of measuring software development team productivity. Those measures include KLOCs, Function Points, Object Points or Use Case points implemented per man hour. Among all these Function Points (FP) measure is the prominent one because it is programming language independent. A team implemented 20 FPs in one man month is more productive than a team implemented 15 FPs in one man month. However this kind of comparison in KLOCs can not be done between teams if the programming language is different. Productivity is the number of units produced per unit of input time.

Similarly test teams’ productivity can be compared by number of test cases executed per unit of time. Similarly support teams’ productivity can be compared by number of customer requests or calls attended during a specified time by the competing teams. These are basically the quantitative measures. However, qualitative measures such as customer satisfaction, project product or service quality, stakeholder satisfaction, or top management satisfaction levels can be used for evaluating performance of different teams in software organizations. Sometimes, audits (both internal and external) and reviews are also used as performance measure instruments for software teams.

Based on this team’s performance appraisal, top management should take corrective actions. There are many factors affecting the productivity and performance of software teams in Indian kind of scenario. Those factors include selection of hardware, software tools, customer behavior, project manager behavior, selection of...
programming language, socio, economic, political and legal environment, lack of specific technical skills, experience and competency of engineers, top management commitment and support, organizational culture, organizational climate, team climate and organizational politics.

6. Conclusion

As one famous saying said unless you measure, you can not improve on it. Thus, one can definitely evaluate the productivity of software teams in the organization and can compare and take necessary actions on the teams based on the organizational needs, strategy and vision.

Using these measures organizations can strive for continuous improvement and make the teams more productive in Indian IT industry, which is very much needed for the economy and well being of the great Indian Programmer.

References

World Academy of Science, Engineering and Technology, Volume 27, 2007


ABOUT THE AUTHOR

G P Sudhakar, PMP with over a decade of experience in IT industry is currently working as Faculty Member at ICFAI School of Information Technology (ISIT), Hyderabad, India. He worked in USA, UK, Ireland, Finland and India. He has B.Sc., MCA, M.Tech. and Executive MBA. He is Project Management Institute, USA certified Project Management Professional (PMP®). He is currently pursuing his PhD in Business Administration from Aligarh Muslim University. He is member of All India Management Association (AIMA). He is adjunct faculty at ICFAI School of HRD, Hyderabad. He worked as employee or Consultant to companies such as IBM, Siemens, Interwoven, Wipro Technologies, Citicorp, Nokia, Salomon Smith Barney, SIAC, DSET Corporation, IONA Technologies, Birla-Horizons International, and PCL Mindware.

He has more than 50 published articles. His articles were published in The Hindu, Indian Management, Businessyan, Business & Management, PMresearch, SmartTechie, The Global Educator, Express Computer, Projects and Profits, www.pmhub.net, Computers Today and *CSI Communications*. He authored *Business Essentials for Software Professionals* and *Project Management: Training Manual* and edited 10 other books.

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Empanelment of PMP Credential holders

CSI has signed an MoU with PMI (Project Management Institute) that offers the prestigious PMP credential. This certification has become the de-facto global standard for employees of IT companies to acquire business. CSI is in the process of enrollment as a PMI REP (Registered Education Provider) to provide the mandatory 35 Hours training to PMP aspirants.

CSI is looking out for volunteers who are PMP certified and have good experience in different knowledge areas of PMBOK ver 4.0, to get empanelled for delivery of this program at CSI chapters. They can be resource persons for selective knowledge areas or the complete program. The volunteers are expected to have course material ready and have good training skills for making the participants successful at the examination. All program logistics inclusive of marketing, registration, arrangement of venue and coordination will be done by the host chapter. Empanelled resource persons may also be utilized to offer PDU earning programs for existing PMPs.

The volunteers will be paid attractive per hour based honorarium and travel plus stay expenses where applicable. Please write to director. edu@csi-india.org with following details:

Full Name, Address, contact phone numbers (L/L with STD code and mobile), e-mail id; Date of PMP certification; details of PM experience (complete list with organization name, month and year from... and month and year to... Role), Knowledge area(s) of expertise, current employment details(organization, designation and date of joining), dates of availability to be a faculty, locations at which faculty services can be rendered, details of past delivery of PMP/PDU training programs (organization that offered the program at which faculty services were rendered, details of PMP knowledge areas covered / PDU programs offered with number of training hours delivered along with dates, beneficiary participants’ organization, qualitative/quantitative feedback obtained) and current knowledge areas of volunteering.

We look forward to enthusiastic volunteering by competent professionals to offer competitively priced quality PMP training to aspirant members and professionals for taking the Nation to the next level.

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A Review of Biometrics Characteristics and their Applications

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1. Introduction

The term Biometrics is derived from the Greek word bio (life) and metrics (to measure). Basically it is a method of identifying a person based on his/her physiological or behavioral characteristics such as Fingerprints, Iris, Face, Hand geometry, Retinal scan, DNA, Signature, Key Stroke, Voice, Gait, Ear, Palm print, Dental radiographs. Biometric technologies are becoming the foundation of an extensive array of highly secure identification and personal verification solutions.

Utilizing biometrics for personal authentication is becoming convenient and considerably more accurate than current methods such as the utilization of passwords or Pins. Biometric is the most secure and convenient authentication tool. It can’t be borrowed, stolen, or forgotten, and forging one is practically impossible.

KEY WORDS: Biometrics, Verification, Identification

2. Identification Vs Verification

Depending on the application context biometric system may operate either in Identification or Verification mode. Identification is determining who a person is. In Identification mode the system recognizes a person by searching the templates of all the users in the database for a match.

Here the system conducts One-to-Many comparisons to establish a person identity with out subject having to claim an identity. Traditional methods for person recognition such as PIN numbers, Passwords may work for positive recognition negative recognition can be established through biometrics.

In Verification mode the system validates a person identity by comparing the captured data with her/his own template stored in the database. An individual who desires to be recognized claims as identity such as Username, PIN, and the system conducts One-to-One comparison to determine whether the claim is true or not. The below fig.1 shows the stages of enrollment and recognition of biometric systems.
3. Characteristics of Biometrics

A biometric characteristic is physical or behavioral property of an individual that can be measured and from which unique features can be extracted for the purpose of recognition of individuals.

In the development of biometric systems, physical and behavioral characteristics for recognition are required

A) **Universality:** It occurs in as many people as possible

B) **Permanence:** Permanence in which biometric features don’t change over time

C) **Uniqueness:** In which do not reappear at any other person

D) **Measurability:** They are measurable with simple technical instruments:

E) **User friendliness:** They are easy and comfortable to measure

Biometric characteristics develop through the following factors they are:

i) **Genetics:** Through genetics (Often called Genotypic).

ii) **Phenotypic:** Through random variations in the early phases of an embryo’s development (Often called phenotypic).

iii) **Training:** Though Behavioral

4. Applications of biometrics

Biometrics applications can be broadly classified into three main categories they are Government applications such as national Id cards, Driver licenses, Social security, Health insurance, passport, Border control etc. Commercial applications such as ATM cards, Credit cards, Medical records, Distance learning, E-commerce, Internet access, computer network login etc. Forensic applications such as Criminal investigation, Parenthood determination, Missing children etc.

5. Types of Biometrics

Biometrics can be broadly classified into two categories as shown in fig.2 they are Physical biometrics and Behavioral biometrics. Physical biometrics is generally used for either identification or verification. Where as behavioral biometrics is used for verification. Examples of Biometric traits as shown in fig.3
5.1. Finger Print Recognition

Finger prints are used for identify a human for many decades. The finger print consists of ridges and valleys on the surface of the fingertip. It is proved that the fingerprints of identical twins are also different. The fingerprint recognition involves taking the image of fingertip and their characteristics like arches, whorls, loops, furrows etc.

Fingerprints of some fraction of people are unsuitable for automatic identification due to genetic factors, aging, environment changes and their occupations. For Example the people working in industries like manual workers have a large number of cuts on their fingerprints that keep changing.

5.1.1 Fingerprint Identification Process

Fingerprint identification process consists of Enrollment and authentication procedures. The fig.4 shows process of finger print identification. Fingerprint identification system compares the input fingerprint image and previously registered data to determine the genuineness of a fingerprint.
Fingerprint matching can be performed based on Minutiae, Correlation based, Ridge feature based. In minutiae based matching it stores minutiae is a set of points in 2 plane and the points are matched in the template and the input minutiae. In correlation based matching two finger print images and correlation between corresponding pixels is computed. Ridge feature based is a advanced technology that capture the ridges.

The technologies used to identify fingerprint are Optical, silicon and ultra sound are the leading technologies.

5.2 Iris Scan

Iris is a angular region of the eye boundary by the pupil and the white of the eye(sclera) on the either side. A very complex texture of iris carries a distinctive information useful for human identification. Iris is distinctive and even the iris of identical twins are different.

5.3 Hand Geometry

It is based on the number of characteristics captured by the human hands like shape, palm size, length of the fingers and width of the fingers as shown in the fig. 6. It is a very simple technique and inexpensive. An individual jewelry (or) limitations from arthritis may pose challenges in extracting the correct hand geometry information.

5.4 Retinal Scan

Imagine that your eye is like a camera, and the retina is the film. The retina is a fine sheet of nerve tissue lining the inside of the eye. Rays of light enter the eye and are focused on the retina by the lens. The retina produces a picture which is sent along the optic nerve for the brain to interpret. It’s rather like the film in the camera being developed so that pictures can be produced.

Retinal scanning analyses the layer of blood vessels at the back of the eye. Retinal scan uses a low-intensity light source and a delicate sensor to scan the pattern of blood vessels at the back of the retina, a pattern unique to each individual. Retina scan is used almost exclusively in high-end security applications.

There is no known way to replicate a retina in human, and a retina from a dead person would deteriorate too fast to be useful, so no extra precautions have been taken with retinal scans to be sure the user is a living human being.

5.5 Gait

Gait refers to the way in which the human walks. It is one of the biometric traits that can be used to recognize a human at a long distance. The fig.7 shows processing steps in a biometric system using Gait. There are some algorithms use the optic flow associated with a set of dynamically extracted moving points on the human body to describe the gait of a person. The gait of the human is affected by different factors like type of cloths used, surface of the floor, the type of footwear used.

5.6 Palm Print

The palm of human hand consists of pattern of ridges and valleys like that of the fingerprint. Human palm also consists of distinctive features like the principle lines, wrinkles that can captures even with a lower resolution scanner.

A high resolution scanner all the features of palm print such as ridges and valleys, principle lines and wrinkles may be combined to build a high accurate biometric system.

Like fingerprint matching palm matching techniques are Minutiae based matching, Correlation based matching, Ridge-based matching. The minutiae based matching is mostly used technique. It is based on the minutiae points especially the location, direction and orientation of each
point. Correlation based matching involves lining of the palm images and subtracting them to determine if the ridges in the two palms correspond. Ridge-based matching in which ridge pattern landmark features such as sweat pores, spatial attributes, and the geometric characteristics of ridges and local texture analysis all of which are alternate to minutiae based technique.

5.7 Ear Identification

Ear is immutable in its form since birth, resistant to the influences of environment changes, this organ remains unchanged during the entire life. The fig. 8 shows different features of ears used for identification. The human consists of familiar rim or helix and ear lobe the ear also has other features like the antihelixes which runs parallel to the helix and a distinctive hairpin -bend shaped just above the lobe called intertragic notch. The central area or concha is named for its shell like appearance.

5.8 DNA (Deoxyribonucleic Acid)

Any type of organism can be identified by examination of DNA sequences unique to that species. To identify individuals, forensic scientists scan 13 DNA regions, or loci, that vary from person to person and use the data to create a DNA profile of that individual (sometimes called a DNA fingerprint). There is an extremely small chance that another person has the same fingerprint. There is an extremely small chance that another person has the same DNA profile for a particular set of 13 regions. The DNA one of the biometric trait used for Racial discrimination, Disaster screening, Body identification, Paternity testing etc. The DNA profile for a particular set of 13 regions.

5.9 Dental Radiographs(Dental X-rays)

Dental Radiographs are one of the most valuable pieces of evidence for identifying a human. There are three common types of dental radiographs as shown in the fig 9.a,9.b,9.c. They are Periapical, Bitewing, Panoramic as show in the figure below.

5.10 Signature Verification:

This is also known as the behavioral biometrics. The way in which the person signs his/he name are known to be characteristics of that individual. Signature is widely used as a means of personal verification emphasizes the need for an automatic verification system. Verification can be performed either Offline or Online based on the application. Online systems use dynamic information of a signature captured at the time the signature is made. Offline systems work on the scanned image of a signature. The fig.10 shows the pre-processing, Feature extraction, similarity score compared with the enrollment models, score normalization and decision whether accepted/rejected steps for online signature verification system. The most common applications of online signature biometrics are medical record protection, cheque and credit card processing and document authentication.

5.11 Voice Recognition

Voice recognition is a combination of both physiological and behavioral biometrics. Voice production is a complex process whose results depend on physiological issues like vocal tract length, shape and the tissues arrangement. The sociolinguistic issues like level of education, linguistic context etc.

We can distinguish three main applications in voice recognition. Voice authentication which includes access control, natural voice checking, speaker detection in which blacklisting detection in call centers and wire trapping also known as speaker spotting. Forensic speaker recognition use of the voice as evidence in courts of law or as intelligence in police investigations.

Voice recognition can utilize various audio capture devices like microphones, telephones etc as shown in the fig.11.a. The performance of voice recognition system may vary depends on the quality of the audio signal. Speech recognition can be divided into two methods are there they are 1) Text dependent relies on a person saying a predetermined phrase. 2) Text independent can be any text or phrase.

The processing steps in a biometrics system using Voice/Speech as shown in fig.11.b. This system consists of two phases Enrollment and Verification. In the enrollment phase the speakers voice is recorded and typically a number of features are extracted to form a voice print, template or model. In the verification phase a speech sample is compared against a previously created voice print.

Conclusion:

A number of biometric characteristics
are being used in various applications. Each biometrics has its advantages and disadvantages. No single biometric is expected to effectively meet all the requirements like accuracy, practically, cost imposed by all applications. Biometrics can be used by different fields to increase security levels and protect their data from unauthorized access.

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Call for Workshops

We thank all individuals / institutions / organizations, which responded to our request for proposals to organize workshops, published in the July 2010 issue of CSI Communications. The proposals were expected to be commercially viable without any sponsorship so that:

- Workshops will be sustainable for repetition at several locations, to aid in CSI mission of “Continuous professional development” and “knowledge dissemination”
- There will be generation of revenue that is sharable between the proposer and the organizing chapter and will motivate the conduct of multiple programs

The other requirement is to have comprehensive details of the proposal in a consistent format to facilitate evaluation and empanelment. To realize these objectives, CSI Education Directorate has hosted the “Workshop proposal form” on our knowledge portal and can be accessed by pointing your browser to:

http://www.csi-india.org/web/csi/workshop-proposal-form

Please download the form, fill-up and send as e-mail attachment to admn.officer@csi-india.org.

We look forward to your continued participation and support in building the knowledge society

Wg Cdr M Murugesan
Director-Education, director.edu@csi-india.org

CSI signs an MoU with eWIT (Empowering Women in IT)

On Sep 3rd, 2010, CSI entered into an agreement with eWIT, a society that stands for empowering women in IT and is registered under Tamil Nadu Societies Registration Act with its registered office at Chennai. It is the intention of CSI to facilitate learning and career enhancement for students, faculty and IT professionals while eWIT specifically focuses on women working in IT, thereby increasing the share and sustainability of women in IT/ITES industry. The overall objective of promoting IT as a profession is accomplished by both parties pursuing their mutual objective. Collaborative working between the two parties augurs well for the target community and this MoU aims at such synergization.

The MOU provides for exchange and sharing of information & publications, mutual invitation and participation in each other’s events, joint organization of events and collaborative development of Research & Education activities. The agreement was signed by Wg Cdr M Murugesan, Director-Education, CSI on behalf of President, CSI and by Ms Vijayalakshmi Rao, President eWIT. Mr S Ramanathan, RVP-Region VII and Dr T V Gopal, Chairman, Division II (Software) were present on the occasion along with other eWIT office bearers.

Further details on eWIT can be obtained from www.ewit.co.in. eWIT can be reached at 6, Kalakshetra Avenue, 2nd street, Thiruvanmiyur, Chennai 600 041; Phone No: +91-44-42120706.

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Dr. R Seshadri was born in Andhra Pradesh, India, in 1959. He received his B.Tech degree from Nagarjuna University in 1981. He received his M.E degree in Control System Engineering from PSG College of Technology, Coimbatore in 1984. He was awarded with PhD from Sri Venkateswara University, Tirupati in 1998. He is currently Director, Computer Center, S.V.University, Tirupati, India. He has published number of papers in national and international conferences, seminars and journals. At present 12 members are doing research work under his guidance in different areas.

Yaswanth Kumar Avulapati received his MCA degree with First class from Sri Venkateswara University, Tirupati. He received his M.Tech Computer Science and Engineering degree with Distinction from Acharya Nagarjuna University, Guntur. He is a research scholar in S.V.University Tirupati, Andhra Pradesh. He has presented number of papers in national and international conferences, seminars. He attended Number of work shops in different fields.
Speech Delivered at the ITU’s fifth World Telecommunication Development Conference (WTDC-10), 24 May to 4 June 2010, Hyderabad, India

Your excellencies, ladies and gentlemen,

As president-elect of IFIP, it is my honour and pleasure to address you at this event, an event that addresses issues that are also close to the heart of IFIP.

The International Federation for Information Processing (IFIP) is an international umbrella organization of computer societies. IFIP’s origin and still very strong basis is in academia and research. We celebrate our 50th anniversary this year and during these many years of our work, we have experienced that the exchange of information and discussions on developments not only in technical areas but also in policy and managerial issues, has been extremely helpful in the advancement of ICT as a tool to achieve welfare and progress. Having these discussions with colleagues in the context of computer societies facilitates overcoming boundaries and obstacles that are sometimes present in formal settings such as government fora or industry meetings. Making use of the large number of volunteers that are active in IFIP’s Technical Committees and Working Groups, IFIP expanded its activities from purely scientific research to include more practical applications. In addition, we have reviewed our strategy and are addressing issues like the digital divide far more than in the past.

I will not bother you with advertising our almost hundred annual scientific events, you can look for those on our website (www.ifip.org). In the context of this WTDC event and it’s themes, I would like to ask your attention for two specific issues / activities.

First of all, I want to emphasize that computer societies can play a very important role in capacity building and strengthening research capabilities in a country. Nowadays this could even be more the case in emerging and developing countries. Unfortunately it is very difficult to establish such societies and to get them active in those countries. If societies are established, it is often very difficult to join their regional international colleagues to share information about developments and also discuss the difficulties they have to overcome. IFIP would like to make a strong appeal to governments and industry in emerging and developing countries to encourage and stimulate the establishment of computer societies in those countries where no such society exists and to support and strengthen the societies where they do exist but where they lack the means to be as effective as they could be. Make use of these mechanisms to share information and use the resources of volunteers. And facilitate participation in international activities. It goes without saying that IFIP is more than willing to cooperate in this effort.

A second activity I would like to bring to your attention is the World IT Forum (WITFOR) that is organized by IFIP and a host country every second year. The overall goal of WITFOR is to assist developing countries in developing and implementing sustainable strategies for the application of ICT and to share experiences that will help to bridge the digital divide and improve the quality of life. The specific goals are:

• To share and discuss experiences in drafting and implementing ICT policies;
• To share and discuss experiences in initiating and implementing ICT projects;
• To present and discuss research concerning the overall goal.

I realize that there are many conferences and events that address the same issues and try to achieve the same. Fortunately I would say because a lot of those are needed. One event every second year is not enough. I will not claim that WITFOR is unique but I do claim that WITFOR has a successful concept by bringing together high level politicians, policymakers, researchers and practitioners from developed, emerging and developing countries together in one event with the aim of discussing together ICT policies and practical experiences. We have succeeded in this in the past four editions in Europe, Africa and Asia, growing from 700 to 1500 participants from around 70 countries and with the intended mixture as mentioned. Numbers are not a measure of success in itself, the reactions of the participants and the level of interaction are more important. Next year WITFOR is scheduled to take place in India. I invite you to participate and contribute in the same active way as many have done before you. Also in this activity IFIP seeks more cooperation with other events and organizations, again in order to make an effective and efficient use of the many volunteers that are willing to contribute to the achievement of the Millennium Development Goals.

Your excellencies, ladies and gentlemen,

Thank you for your attention and I look forward to discussing these issues further with you in the next few days.

Eduard Dundler, Contact: IFIP General Secretary, IFIP, Hofstrasse 3, A-2361 Laxenburg, Austria
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International Federation for Information Processing (IFIP)

Leon Strous
President-Elect
As India’s largest and one of the world’s earliest IT professional organizations, the Computer Society of India has always aimed at promoting education and research activities, especially in advanced technological domains and emerging research areas. It is also committed to take the benefits of technological progress to the masses across India in particular to unrepresented territories. In order to promote research and innovation meeting the grass-root level ICT needs and emphasize the importance of joint research by faculty-students, the CSI has been providing R&D funding for last several years.

The CSI Student Branches and member institutions are requested to motivate the young faculty members and students (including undergraduate and postgraduate) to benefit from this scheme. Proposals for 2010-11 meeting the following aim/objectives, expected outcome, indicative thrust areas for research funding may be submitted to: The Director (Education), Computer Society of India, Education Directorate, CIT Campus, IV Cross Road, Taramani, Chennai 600113. Last date for Receipt of Proposals: 31st January 2011

**Aim and Objectives**
- To provide financial support for research by faculty members, especially for developing innovative techniques and systems to improve teaching-learning and learning management processes.
- To provide financial support to students for developing new systems catering to the needs of socially relevant sectors and/or involving proof of concepts related to emerging technologies
- To facilitate interaction/collaboration among academicians, practitioners and students
- To develop confidence and core competence among faculty/students through research projects
- To foster an ambience of ‘Learning by Doing’ and explore opportunities of industry funding and mentoring for inculcating professionalism and best practices among students and faculty
- To recognize innovation and present excellence awards for path-breaking projects through CSI YITP awards and industry associations, Govt. Agencies and professional societies.

**Expected Outcome**
- Identification of thrust areas, capability assessment, gap analysis, recommendations and future education and research directions
- Integration of research methodologies into the university teaching-learning process and evolving a quality control mechanism for academic programmes and curricula
- Strengthening of industry-institutes interaction through commercialization of technologies and products developed by students and faculty
- Publication of research studies (ICT penetration, technological innovation, diffusion & adaptation), state-of-the-art reports and case studies of education/research initiatives
- Identification of potential new and innovative projects of young faculty, researchers and students for possible business incubation

**Indicative Thrust Areas for Research funding**
The financial assistance up to Rs 50,000/- for hardware projects and up to Rs 30,000/- for software projects would be provided to cover items like equipment, books/journals, field work, questionnaire, computation work and report writing. The indicative thrust areas for funding include (but not limited): Technology - OS, Programming Languages, DBMS, Computer & Communication Networks, Software Engineering, Multimedia & Internet Technologies, Hardware & Embedded Systems


Last date for Receipt of Proposals: 31st January 2011
For further details, please visit [www.csi-india.org](http://www.csi-india.org). The application form can be downloaded from “info-centre” tab on CSI website

**Mr. Shrikant Karode**
CSI National Student Coordinator
Email: nsc@csi-india.org

**Prof. Swarnalatha Rao**
CSI Division V Chairperson
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**Wg Cdr M Murugesan (Retd.)**
Director (Education)
Computer Society of India
Education Directorate
CIT Campus, IV Cross Road
Taramani, Chennai-600113
Email: director.edu@csi-india.org
CSI 2010
AWARDS FOR EXCELLENCE IN IT

To encourage innovation and indigenous development in the field of Information Technology CSI has instituted a number of awards for both members and non-members who are trying to achieve extra ordinary feat in the field of Information Technology. These awards for excellence would be given by the CSI to acknowledge and motivate individuals and organizations working in the field of Information Technology during 45th Annual National Convention 2010.

Sectors of excellence

i. Banking, Financial Services and Insurance (BFSI)
ii. Product Manufacturing
iii. Service Industries
iv. Non Profit Organizations (e.g. Micro Finance, Rural Development etc.)
v. Quality Assurance

Eligibility
Organizations and its team using IT in above Sectors.

Criteria
1. Criticality of IT Usage
2. Improvement of Customer Service
3. Innovation
4. Return on Investment
5. Quality of management
6. Impact : Organisations/ Society / Green IT / CSR

Selection Process
- Short-listing by Selection Committee
- Audit at site of short-listed applications (optional)
- Presentation by short-listed applicants to the Jury
- Recommendations

Time Line
- Last Date of Submission - 10th Oct., 2010
- Short-listing by Selection Committee - 10th-15th Oct., 2010
- Audit at site of short-listed applications (optional) - 20th-30th Oct., 2010
- Presentation by short-listed applicants to the Jury - 13th-15th Nov., 2010
- Awards Distribution - 26th Nov., 2010 at Hotel Taj Lands End, Mumbai

Sponsorship
Awards are sponsored by TCS, Wipro, Infosys and QAI and others who have come together to build a corpus to place these awards on permanent footing. Sponsors are not eligible to participate in the competition.

Submission of Application
Online application to be submitted by 10th October, 2010 on www.itawards.csi-india.org

Award Comprises of
- A Trophy
- Smaller replicas of the Trophy
- Certificates for team members
- Rs. 1,00,000/- cash to the leader
- The awards would be presented during 45th Annual National Convention being organised on 25th - 27th November 2010 at Mumbai.

Computer Society of India
122, TV Indl. Estate, S. K. Ahire Marg, Worli, Mumbai - 400 030
Tel.: +91 22 249 34776
Website: www.csi-india.org

FOR ANY QUERIES ON AWARDS PLEASE CONTACT

Awantika Varma
Awards coordinator
Member Excom, CSI Bhopal Chapter
awantikavarma@csi-india.org
Rozina Parmar
Awards coordinator
CSI Headquarter
rozinap@csi-india.org
CSI INVITES YOU TO
Explore Technologies for the Next Decade...

CSI 2010. 45th Annual National Convention
25th - 27th November 2010
Hotel Taj Lands End, Mumbai

As the world readies itself for the second wave of Information & Communication Technology (ICT), government, industry and society are preparing to embrace a technology that is more penetrative, more inclusive, more enhancing than anything we have hitherto seen. In order to meet the challenges of adopting these new technologies in India, the Computer Society of India (CSI), the nation’s oldest and largest association of IT professionals, is exploring next generation technologies and best practices for adoption in government and industry in its 45th Annual National Convention - iGen.

HIGHLIGHTS
- Insight by more than 80 world-renowned speakers in 8 tracks
- Focus on Innovation, Research & Development
- Thought leadership for transformation of business & society
- ICT Roadmap for India's socio-economic growth & business
- Innovative solutions for cost-effective organizational transformation
- Major IT solution providers & development partners associated with Amazon
- Participation by leading CIOs / CTOs / CEOs, Industry Analysts & Government Officials and Academicians

Registration Fees in INR

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<tr>
<th></th>
<th>CSI Member</th>
<th>Non-Member</th>
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Early Bird Discount for Individuals only:
- Registration before 15th Oct – 1000/- less
- Registration before 31st Oct – 750/- less
- Registration before 10th Nov – 500/- less

Group Discount for organizations only:
- 5 & above – 10%

Conference Chair –
Conference Chair –
Chief Advisor Program –
Program Committee Chair –
Host Chapter Chair –
Program Committee Co-Chair –
Conference Ambassador –

S Mahalingam, CFO, TCS
Prof P Thirumurthy, President, CSI
Prof N L Sarda, IIT, Mumbai
Prof Anu R, IIT, Pune
Dr Vishnu Kanhere, Kanhere Consultants
Prof Manohar Chandwani, IET-DAVV, Indore
M D Agrawal, Vice President, CSI

HOST: CSI - Mumbai Chapter, E-217, Floral Deck Plaza, MIDC Near SEEPZ, Andheri (East), Mumbai - 400093, INDIA
Tel: +91 22 2823 5476; 2823 5548, Fax: +91 22 2823 5546
email: info@csi-2010.org • website: www.csi-2010.org

Track Details CSI 2010

- Architecture/Cloud Computing
- Enterprise
- iSource
- iConnect
- iSociety
- iEntrepreneur

Call for Papers — deadline 30th September 2010
Send to ravieppatun@gmail.com / vivek@csimumbai.org

Special Sessions on:
- e-Governance
- Education & Research
- Students’ Convention
- CED/CIO/IT Secretary Conclave
- CSI National Awards

For Sponsorships & Registrations:
- Ravi Eppatun +91 9867305477
- Vivek Mayekar +91 9821244877
- viviek@csimumbai.org

CSI COMMUNICATIONS | SEPTEMBER 2010

Track Chairs & Co-Chairs:

- Architecture/Cloud Computing – Prof Umesh Bellur, IIT, Mumbai
- Enterprise – Satish Bhat, InApp & Dr Sasikumar, CDAC; iSource – Sunil Mehta, JW Thompson
- iSource – Sumit Choudhury, IBM; iConnect – Prof Karandikar, IIT, Mumbai & Navin Chadha, Vodafone
- iSociety – Prof Aniruddha Joshi, IIT, Mumbai; Aswin Kini, GITCA; iEntrepreneur – Manak Singh, TIE India
- e-Governance Track – Maj Gen (Retd) Dr R K Bajpai, IIT, Hyderabad & Mohan Datar, Consultant, Mumbai
- Students’ Convention – Dr Matthew T J, S N D T University & Rohinton Dumasia, RD TAPS
- Workshops – Dr Manohar Chandwani, IET-DAVV, Indore
A three day workshop on Cloud Computing was organized by the Computer Society of India Div IV on Communication, Chennai Chapter and Special Interest Group on Distributed Systems (SIG-DS) along with the IEEE Computer Society, Madras Chapter during 18-20, Aug 2010 at IIT Madras, Chennai.

This workshop, provided a platform in which experts from top notch organizations that are rewriting computing history such as Yahoo, Google, HP, IBM, Amazon, HCL, TCS, Hitachi, Netmagic, VMware, Novell, CSS Corp, Ramco, Trend Micro, Cognizant, Zscaler and Zoho shared their experiences and demystified the various aspects of cloud computing.

The workshop started with an inaugural session in which Mr. H.R. Mohan, Chairman, Div IV of CSI welcomed the gathering and narrated about the genesis of the workshop and highlighted the overwhelmingly positive response of the cloud vendors and delegates in supporting this workshop. He also gave an outline of the activities of CSI & IEEE CS in popularizing the new technologies. Prof. D. Janakiram, Chairman, SIG-DS, CSI, in his address spoke about the activities of the special interest group on Distributed Systems. Mr. Ramesh Gopalaswamy, Chairman of the programmes highlighted the session details of the three day workshop and the goal of the workshop to provide both the business and technology perspectives of cloud computing. Dr. P. Sathivel, Chairman, CSI Chennai Chapter at the end of the inaugural session proposed the vote of thanks.

Mr. P.W.C. Davidar, IAS, Principal Secretary for Information Technology, Govt. of Tamil Nadu, in his inaugural address said that cloud computing presents opportunities to all sections of IT users and added that the State government is very much interested in the concept of cloud computing where storage and processing are distributed over a network. But some key problems including security of the data, the pricing, sustainability and the legal framework for data access from a country different from the country of its origin needed to be resolved, he said. The government is planning to launch some key IT solutions including a Labour Department application which would enable both the government and the private sector easy access to labour resources throughout the State, he said.

Mr. S. Mahalingam, CFO & ED, TCS, in his keynote address said cloud computing as a technology...
had already “arrived” but its business implications needed to be understood. While hardware, software and networking solutions all would benefit from the arrival of the technology, the creation of an Intellectual Property regime and a legal framework were also important, he added.

Dr. M S Ananth, Director, IIT-Madras, in his presidential address said the institution is divided on the issue of whether cloud computing would benefit the institution. Noting that NPTEL videos on YouTube are seeing the most hits in the country, he said cloud computing in its various forms could help the education sector.

The sessions of the workshop started with an overview presentation on “Cloud Computing Landscape - Opportunities, Challenges & Way Forward” by Mr. Pari Natarajan, Co-Founder & Chief Executive Officer, Zinnov Management Consulting Pvt. Ltd.

The other sessions spread over the three days of the workshop dealt with the various aspects of the cloud computing concepts and practices include: Large Scale Distributed Infrastructures (using Hadoop); Developers, Testers, and Students: The cloud is ready for you right now!: Everything as a Service: HP’s Cloud Computing Vision & Strategy; Smarter Clouds on the Horizon; Private Cloud - A win-win for an organization; Agile Cloud Infrastructure for a Sustainable Future; Security Challenges in the Cloud; On Demand ERP on Cloud; Secure and Fast Internet Experience with Cloud Web Security; Developing a multi-paradigm platform for the Cloud; Build your Cloud using Intelligent Workload Management, CloudTestGo Platform; Next generation work on cloud; Cloud Computing for the SMEs; Research Directions in Cloud Computing; Security Issues in the Cloud Environment; Emerging Trends in Cloud Computing; Amazon Web Services covering Amazon EC2, Amazon S3, Amazon CloudFront, Amazon RDS; User Experience: Cloud Computing as a Leveler -- Success Story in Micro Financing; Selection of Right Cloud Partner; Best Practices & Migration Strategies for Cloud Computing.

An interesting panel on “Are We Ready for Cloud?” was the highlight on the last day. The panel was moderated by, Mr. S. Ramanathan, Vice President (Region - VII), CSI and the eminent panelists debated on the various facets of cloud computing such as Cloud for IT / ITES Segment; Cloud & Security Issues; Cloud for SMEs; Cloud for Corporate Segment; Transformational Leadership and Cloud Computing.

In the feedback session, the participants expressed their appreciation for the workshop. They added that this is the first time they are able to attend a three day workshop at a cost of Rs. 1000 / 1250/ 1500 (depending on the member grade or non member category) and are provided with an excellent book on Cloud Computing (worth Rs. 475/-) plus Amazon Web Services coupon worth USD 25/-, workshop kit and a CD containing the presentations, whitepapers, case studies and success stories by the supporting organizations.

Mr. H R Mohan, Chairman, Div IV said that the registrations had to be closed well in advance since it exceeded the capacity of the hall and with the help of IIT Madras facilities, video streaming was planned on the intranet to accommodate additional 100 delegates. On the whole about 350 delegates attended the workshop. Mr. Mohan further added that multiple in-depth sessions on specific areas of cloud computing with the support of organizations participated in this workshop are being planned in the near future and informed that both industry and academic community will be accommodated. The workshop pictures are hosted at http://bit.ly/amHUod and the presentations are made available at the workshop website at http://www.csi-chennai.org/wcc/

A limited no. of copies of the workshop CD containing the presentations, whitepapers, case studies and success stories by the participating organizations are available at Rs. 200/- For details pl. contact Mr. Mohan at hrmohan.csi@gmail.com or Mr. S. Ramasamy at sypsys@vsnl.com
A two days National Workshop on “Quality Assurance Services for Software and Web Applications (QASSWA-2010)” was organized by Special Interest Groups-Wireless Networks (SIG-WNs) Computer Society of India and Udaipur Chapter, College of Technology and Engineering (CTAE), Unico Management Solutions (UMS) Pvt. Ltd, Udaipur and KGH Solutions, UAE, during 20-21 August, 2010 at Department of Computer Science and Engineering, College of Technology and Engineering (CTAE), Maharana Pratap University of Agriculture and Technology (MPUAT), Udaipur Rajasthan.

Inaugural Session

Inaugurating the workshop, Prof. S.S Chahal, Hon’ble Vice Chancellor of MPUAT, Udaipur and Chief Guest, appreciated the initiative taken by the SIG-WNs CSI and CTAE. He shared his views about the Quality Assurance Services for Software and Web Applications in rural areas. He said in 11th five year plan Government of India allotted budget of six thousand cores for Information and Technology and a lot of work can be done in the rural areas for the development of farmers and their betterment. Guest of Honour Shri C.P. Talesara, President Udaipur Chamber of Commerce & Industry and MD, Pyrotech Electronics Pvt. Ltd expressed his views about the importance of this workshop and emphasised on the practical utility of wireless networks.

Dr.R.B. Mishra, Professor, Reliability Engineering Centre, Indian Institute of Technology Kharagpur presided over the inaugural function. He spoke about the Reliability Assessment of Elementary COTS Software Component. Prof. R.K. Aeron, Director Pacific Institute of Technology, Udaipur delivered the keynote address. Prof. R.C. Purohit, Chairman, OC and Dean, CTAE welcomed the guests, participants and students to the workshop. Dr. R.S Shekhawat, Chairman, CSI, Udaipur gave a brief information about the Computer Society of India. He was of the view that today’s researcher seems to be comfortable with using a wide variety of sources of open sources software. Mr. Akhatar Hussain, MD, UMS shared his views about the UMS and its development in the area of Information Technology.

Organising Secretary Dr. Dharm Singh spelt out in brief the objectives of the workshop and the effectiveness of hands-on-exercises. He gave the brief introduction about the SIG-WNs and workshop. He also invited the nomination from CSI members who are having suitable experience in the field of Wireless Networks and would like to contribute in the various activities of this SIG.

Mr. Akhatar Hussain, UMS presented about the various available IT solutions like application development, web development and configuration management. He also focused on training and recruitment services along with corporate outsourcing services with an aim to provide end-to-end solutions. Dr. Deepak Sharma gave a vote of thanks to delegates, guest and participants

Technical Sessions

The workshop was held in seven technical sessions which included various expert lectures and hand-on exercises from Industries and Academics.

Quality Assurance for Web Applications

Invited talks in technical session I were delivered
by Dr. Manju Mandot- RV University and Mr. Azimuddin Khan, VC- CSI Udaipur. Dr. Manju Mandot delivered lecture on Quality Assurance for Web Applications. Quality Assurance Services Many organizations today face downtime in their applications due to software glitches. Mr. Khan in his presentation aimed on “Software Quality Assurance: FAQ”. He talked about the software quality assurance, quality assurance services required to deliver the good software and also provided details of the certification program available in Software testing as career option.

Software Testing Test Bed for Video Traffic over Wireless Networks

Key note address and hand-on exercises on the Developed testbed for video transmission over wireless networks using network simulator NS2 were presented by Dr. Dharm Singh. This testbed can be used by software developers to test their video streaming media applications without the need of the real infrastructure. The testbed can also be trained and extended to support testing of any streaming media applications. Ms. Heena Rathore, MPUAT showed the various installation steps of Cygwin and NS2 for Windows XP/Vista of this testbed and showed some research results of her BE project work.

Genetic Algorithm

Chirag S Thaker, L D College of Engineering, Ahmedabad delivered expert lecture on Introduction to Game Playing Research with Feature introduction on Genetic Algorithm. In his lecturer he quoted statement of Bill Gates (Business Week, June 27, 1994) “The Gene is by far the most sophisticated program around” and concluded the collected fitness values for 50 generations indicate that the fitness spectrum is large enough and it is in the form of steadily increasing fashion along with the generations which shows positive “learning” of genetic parameters. Average fitness value shows positive learning and no. of pit-falls does decrease along with the progress of generations.

Testing a Website

Invited talk and hands-on training was given to the participants on testing a Website by Ridhima Khemashra, Head CSE, GITS, Udaipur. Consideration before testing should be given to the interactions between html pages, TCP/IP communications, Internet connections, and firewalls, applications that run in web pages and what are the expected loads on the server.

Future of Software Testing

A presentation on Future of software testing as highlighted the need to test the software was given by Ms Surbhi Jain. She covered the software test life cycle and explained the deliverables produced at each step as it happens in the IT industries. It detailed the currently prevalent models and the risk involved. The testing trends are changing because of greater customer expectation, introduction of new technology like mobile computing, new types of testing and increase in outsourcing of testing services.

Software Testing

Invited talk and hands-on exercises on software testing presented by Mr. Talib Hussain, Unico management Solution Pvt. Ltd. The proper testing of software can save an organisation time, effort and money. In this workshop participants gained knowledge of testing approaches that can be integrated into the software life cycle. Through hands-on exercises, they learned how to build testing methods into their work process to correctly design products that are functional and maintainable.

Version Control

Session on version control was taken by Mr. Ojal Suthar, Unico management Solution. This segment provided an introduction to Version Control Systems. It serves as a tutorial for developers who are new to version control, and as a reminder of some finer points for experienced software developers. It also included Admin Management of Subversion (SVN) and Client tasks of SVN.

Valedictory Function

The valedictory function began with the welcome address by Prof. RC Purohit, Dean CTAE and expressed his satisfaction over the excellent conduct and successful closure of the workshop.

Chief Guest Prof. (Dr.) N.S. Rathore, Dean CDFST and Students Welfare Officer of MPUAT, Udaipur, congratulating the grand success of this National Workshop and he said about “the relationship between Department of computer science teachers and researchers and industrialists. That a good relationship is not about understanding but it is how to avoid misunderstanding and this is maintained in this department”. He also addressed that such workshop should be conducing for Industrial updating and New Generation of software and hardware. For the successful achievement Prof. Rathore enjoined upon the audience for a vibrant applaud.

The Valedictory Function was presided over by Prof. G. Soral, Past Chairman CSI, Udaipur. He noted how the software development had changed over the years with the advent of programming languages. He also opined that such workshop and Seminar should have regular occurrence for benefits of research workers.

Guest of Honour Prof. Devendra Johar, Past Chairman CSI emphasised about the importance of topic chosen for the present workshop. She said software of any product needs to control different activities while the production process take place. The two important pillars to obtain quality are just in time (JIT) and flexible manufacturing system (FMS).

Mr. Azimuddin Khan, Vice -Chairman CSI, Udaipur, narrated that the enthusiasm shown by the participants is indicative of the awareness among scientists and scholars who yearn to excel in their fields of specialization. Dr. Dharm Singh, Organising Secretary presented the two day’s workshop report and recommendations and detailing out the resource person who made their presented on the assigned topics and the number of participants who enrich their knowledge on Quality Assurance Services for Software and Web Applications and its practical use. It is pleasure to inform the house about active participation and registration of almost 260 participants, delegates and resource persons from different states: Uttar Pradesh, Gujrat, New Delhi, and Rajasthan.

Among the participants were senior members of CSI Mr. Naveen Choudhary, Mr. Muzzar Hussain and Mr. Bharat Deora; and the Director of Pacific Institute Prof. S. K. Sharma; Dr. Indra Ahlawat, Dr. Gaytri Tiwari and Dr. Poornam Dhaka like wise professors and scientists of MPUAT, to mention a few. The function ended with Dr. Deepak Sharma, Administrative Officer CTAE presenting the Vote of Thanks. While proposing a vote of thanks urged the participants to actively involve in the two days deliberation so that the objectives of the workshop are achieved in full.

Recommendations

1. The open sources wireless testbed and software for video transmission over wireless network should be considering in the curriculum of UG and PG Computer Science students.
2. Workshop and Seminar for the testbed for Wireless Networks should have regular occurrence for benefits of research workers.
The innovation necessary to create economic growth, drive societal change and address challenges related to profitable growth relies on ICT, at the heart of which is software.

A new market paradigm is emerging – Software 2.0 – where the competitive environment and market dynamics are totally different. The Software 2.0 paradigm challenges all current market players and offers huge opportunities for the software industry. This is a new world, with new rules and Software developers must innovate to compete.

On August 7, 2010, Kolkata Chapter in association with Division II (Software) and the Centre for Soft Computing Research (CSCR), Indian Statistical Institute (ISI) had organized a workshop on Software 2.0. The discipline of software engineering is an important yet evolving domain that has relevance both in industry and academia. Very recently, Dr. T V Gopal, Chairman, Division II (Software), is propagating the model of Software 2.0 where the traditional understandings of software engineering are being bridged with the concepts of cybernetics, complexity sciences etc. Given this proposal, Prof. D P Mukherjee, RVP (region 2) had agreed to host the first concept workshop on Software 2.0 at ISI Kolkata in association with CSCR, a national facility in soft computing research in India. Dr. T V Gopal was the lead speaker in the seminar and introduced the concept of Software 2.0. Dr. Anirban Basu of PQR Software, Bangalore and Dr. Subhendu Ghatak of TCS Kolkata had elucidated what the traditional software engineering discipline expects from Software 2.0. The presentation from C-DAC Kolkata included an application where there is potential to apply the tools of Software 2.0. The audience included system developers from TCS, CTS and others. Overall, the workshop could generate awareness on the emerging research directions of software engineering.

The Seminar is planned at three other chapters in the next two months. The contents are fine tuned by the respective organizing chapter.
The 26th National Student Convention was organized by CSI Trivandrum Chapter and hosted by Mar Baselios College of Engineering and Technology (MBCET) during Sep 2-4, 2010. The theme for this year's convention was "IT for Nation Development". The three days event was inaugurated by Capt. Raghu Raman, Head National Intelligence Grid. Addressing the delegates, he said that the future of India is with people who are connected and it’s a challenge for the students to make it a reality. He also said that the present day students are equipped and have the ability to design and dream big things for the society. There are innumerable challenges for any project to be successful in India, given the population, complexity and legacy of our systems but he was confident that these projects would roll out on time.

He explained the process of how to link all data and information of an individual available with different agencies like bank accounts, rail and air travel, income tax and phone calls in a seamless fashion for data mining. Mr. M. D. Agrawal, VP, CSI in his presidential address, opined that students along with their technical skills should improve their soft skills also. They should make use of the platforms provided by the professional bodies like CSI. Mr. Vishwakarma, Secretary, National Council, CSI briefed about the CSI activities and the academic promotions.

Prof. S. Krishnan Kutty, Programme chair, briefed about the events and gave an overview of the convention. Mr. Satish Babu, Chair SIG FOSS facilitated the gathering. Mr. Sasi P.M., Chairman, IEEE Kerala Section stressed the need for cooperation among the professional bodies and assured all the support for the activities. Prof. T.M. George, Principal, Mar Baselios College and organizing chair welcomed the gathering. Mrs. Mini Ulanat, Regional Student Coordinator proposed the vote of thanks. Mr. Prakash Sayini, Global Head, Universities and Developer programmes Nokia Forum delivered the keynote address.

The various events included Paper presentations, project presentations, technical quiz, elocution and some novel events like Dream Big – presenting innovative ideas about technology, Open Mind, etc. This was an event which challenges the participants to capitalize on the advantages of open source software. An assigned task/project need to be completed successfully using software available across the internet. My Company was another event for future IT/ICT entrepreneurs. Technology shoot was a newsreel video about a technology to prepare a brief 5 minute video on Technology/Product/Service.

There was creativity and innovation in the variety of programmes in the convention. Two workshops were also part of the event. FOSS Workshop “Getting started with Word press development in LAMP environment” was conducted by Zyxware Technologies in association with Free Software Users Group, Trivandrum. A mobile workshop showed how to become a Mobile Application developer with your knowledge on HTML, Java Script & CSS and lets you get an understanding on the architecture of Nokia Web Run Time Widgets. This session shares thoughts on creation of a simple widget and deploying it to a mobile device. Both were well received by students. There were about 300 participants from 35 colleges all over India.

The three day convention came to a conclusion with a Valedictory function on 4th Sept 3 p.m. Mr. Brajesh Kaimal, Chairman, CSI Trivandrum chapter presided the function. Dr. R.K. Vyas, RSC-Region-1, Mr. Sabapathy, Karanataka State Student Coordinator, Mr. Ramasamy, Tamilnadu state student coordinator spoke on this occasion. Rev. Fr Wilson Thattaruthundil, Bursar, Mar Baselios College distributed the prizes. Mr. Biju Varghese, Organising Co-chair thanked all stake holders.

The event received wide spread media coverage. A home page http://nsc2010.csitvm.org was designed and maintained. All information were updated and made available at this site. The sponsors of the programme were M/s Forum Nokia, Kerala IT Mission, UST Global & Linknet. In short NSC-2010 was a great success. The organizers place on record their appreciation and gratitude for the whole hearted support of CSI, other well wishers who helped directly and indirectly in making this conference a great success.
The Final Competition of Young Talent Search in Computer Programming 2010 was held on Sunday 29th August 2010 at Rajalakshmi Engineering College, Thandalam, Chennai. The top 10 teams qualified for the Final Competition participated. Rajalakshmi Engineering College, sponsored the venue, Breakfast, Lunch and Transport to pick-up the students and accompanying teachers from Youth Hostel, Indira Nagar, Chennai. The cash award for the National First and Second prizes of ₹15,000/- and ₹10,000/- respectively were also sponsored by Rajalakshmi Engineering College. Prof P. Kumar, Dept of Information Technology, Rajalakshmi Engineering College Coordinated this event. Mr. S Venkatakrishnan, former Director (Education), CSI Education Directorate, Mr. S Ramanathan, Regional Vice President, Region-VII, CSI & Mr. P. Sakthivel, Chairman, CSI Chennai Chapter were the judges. Out of 10 teams the following top 2 teams qualified for the SEARCC International Competition.

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<td>First</td>
<td>Padma Seshadri Bala Bhavan Senior Secondary School 15, Lake First Main Road Nungambakkam, Chennai – 600 034</td>
<td>Rishabh Kohli Ambarish S P Ramnandan S K</td>
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<tr>
<td>Second</td>
<td>St. Jude’s Public School &amp; Junior College Nihung Post, Kotagiri - 643 217 The Nilgiris, Tamil Nadu</td>
<td>Akash Lodha Suresh P Harish B</td>
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After the National Final Competition, a function was organized in the college Auditorium. Wg Cdr M Murugesan, Director-Education welcomed the gathering. Mr. V Balakrishnan, Partner & CIO, Polaris Software Lab, Chennai, who are Silver sponsors of the event was the Chief Guest and distributed open Job offer letters to the three members of the top winning team. Dr. S Renganarayanan, Principal, Rajalakshmi Engineering College distributed the prize money and certificates to the winning teams. Prof. H R Vishwakarma, Hon. Secretary, CSI presided over the function. All dignitaries who attended the function greeted the students on the occasion. Mr. S. Ramanathan, Regional Vice President, Region-VII, CSI proposed the vote of thanks.
1. **Nomination to IFIP Technical Committees**: International Federation for Information Processing (IFIP) is an umbrella body consisting of the leading National Computing/IT Societies in the world including IEEE Computer Society, ACM and SEARCC. Since its inception, the CSI has been representing India in the IFIP and has been striving to bring IFIP events and technical activities to India. The IFCAI conference in Hyderabad, Bio-Informatics conference in Surat, Networking 2010 in Chennai, Working Group meeting on HCI at Pune are the most recent IFIP events held in India. As per the CSI’s set convention, our Immediate Past President Mr. S. Mahalingam is currently the official representative in the IFIP General Assembly. Recently, the IFIP has also approved an additional candidature of our Past President Mr. Lalit Sawhney in his individual capacity acknowledging his strategic contributions. Indeed, this is a testimony of CSI and its senior officials’ international standing and contributions. The CSI President has also approved a list of CSI Representatives to serve on 14 IFIP Technical Committees following a blended approach of continuity and change. The role and responsibilities of these representatives include working at various levels in IFIP TCs, bringing high-quality IFIP events to India and to enhance global visibility for CSI programmes and activities. The Chapters may please use expert services of these representatives and IFIP global resources while organizing conferences and events.

2. **Membership Development Programme**: The President and Membership Committee appeal to the CSI members for volunteering their services in the membership development programme. The newly appointed full-time staff at Mumbai and Chennai is gearing up for a renewed membership drive. The members at the Chapters and Student Branches may prepare action plans for the proposed CSI’s Out Reach Programmes (6 major sectors namely - Business, Industry, Govt., Academic, Research and Consultancy). The volunteers will be provided with the necessary supporting CSI multimedia presentation/PPT slides/brochures and possibly list of potential organizations’ contact details which could be of help.

3. **Impetus for Research and Publication Activities**: The Chapters, Student Branches and members are requested to seek guidance from the Hon. Research Directors nominated by the President. The members may identify potential research areas relevant to CSI objectives and National priorities. The Hon. Research Directors’ vast experience and research credentials will be a great help to young faculty, researchers and students. The CSI Education Directorate has been funding minor research projects of students and young faculty for many years. It is highly desirable to publish the research outcomes of such projects in CSI Publications or other reputed publications with appropriate acknowledgement about CSI funding support. The CSI has also been providing a partial grant for foreign travel by our members to present their technical papers. The members are requested to send their proposals/suggestions towards enhancing CSI research and publication activities.

4. **The Chapter and Student Branch Activities**: The Chapters and Student Branches are the most important constituents of CSI serving its members and reaching out to the unrepresented areas and segments of Indian society. These constituents play crucial role in promoting, ICT education, research and development/deployment among the stakeholders. The Chapters are guided by the Regional Vice President concerned on the operational/execution aspects and by Divisional Chairpersons on the domain-specific matters. In addition to the above, the Chapters may seek support from CSI Special Interest Groups (SIGs), IFIP Technical Committees, partner societies e.g. IEEE, BCS, PMI, C-DAC, DOEACC and professional/industry associations.

5. **Regional Events**: As per the CSI Constitution and Bye-laws, the Regional Vice Presidents (RVPs) facilitate the Chapters, Student Branches and Member Institutions in organizing CSI events catering to the needs of the regions and other entities concerned. The RVPs provide leadership and formulate strategies to organize national/international events in association with CSI Divisions, Special Interest Groups (SIGs) and Partnering professional societies, educational & research organizations and industry associations. It is expected that each region host at least one national/international and four regional events in a year. These events may focus on the aspects relevant to industry verticals and societal needs of the region. The outcomes of these may include conference proceedings, region-specific findings, road-map for ICT deployment, strategic recommendations and prospective HRD programmes. The Chapter Chairpersons and members at large may send their proposals and suggestions to the RVPs concerned for organizing various events.

6. **Activities of Divisions & SIGs**: As per the CSI Constitution and Bye-laws, the fields of relevance to CSI objectives have been grouped into five Divisions. A CSI Division may include a few Special Interest Groups (SIGs) formed by members with the desire to pursue significant technological activities in emerging areas or specialties of CSI interests. The Divisional Chairpersons and SIG Conveners are expected to prepare technology road-map in-line with the national priorities and societal needs. They may also serve as resource persons as well as organize the divisional/SIG events - such as technical seminars, workshops/tutorials, research symposia and FDPs. While the Divisional Chairpersons focus on broad subject matter aspects, the SIG Conveners go deeper within a subject matter. The Divisional Chairpersons and SIG Chairs/Conveners are expected to interact/collaborate with the IFIP TCs, IEEE TCS, ACM SIGs and other subject matter experts at national/ international level.

7. **CSI Events**: Apart from the flagship event the CSI Annual Convention, the RVPs/Divisional Chairpersons/SIG Conveners Divisions/SIGs have been organizing various events with a view to cater to the region/domain-specific needs of members. Most of the CSI Chapters and Student Branches have also been organizing events of different kinds to meet the local needs and aspirations. The critical success factor is the well-understood objectives and target audience so that these events do not substantially overlap in their organizational process and expected outcomes. The Seminars, workshops, conference, symposia, user conferences, summits are the type of events that are usually hosted by professional societies such as the Computer Society of India. Choosing the right description for the event is critical because it communicates volumes about the type of experience the participants can expect. Our Hon. Chief Editor, CSI Communications has provided a quick explanation of each type of event. For more details please visit: http://www.csi-india.org/c/document_library/get_file?uuid=5db2dfaf-b72d-4d3d-8742-f61b0cf10a&groupId=10616

8. **An Appeal from CSI-HQ**: With a view of revitalizing various functions to take CSI programmes and activities to next-higher level, a set of minimum expectations (listed on next page) has been arrived at for the perusal of our members and necessary action.

Prof. H R Vishwakarma
Hon. Secretary, CSI
Announcements

Chapter Chairpersons:
- Coordination with Director (Education) and the nominated Hon.
- Activities of Divisions should also promote and encourage Research/Events.
- Organizing Events- at least one national/international (e.g. COMAD, Conferences) and four divisional events.
- All Activities must be properly budgeted and approved by ExecCom.
- Divisional Chairperson should prepare Calendar of Events for the year.
- Forming a few working groups for education, R&D.
- Organizing one or two technical conferences/ symposia/ workshops.
- Maintenance of Accounts as per the CSI Byelaws and SIG manual.
- Quarterly reporting of activities to ExecCom through CSI HQ.
- Drafting/publishing of one or two technical report, course/workshop.
- Encouraging members to update their details using Portal.
- Submission of Specific reports, if any, required by HQ/Ob's through RVP.

SIG Conveners:
- Interaction with CSI Divisions, IFIP TCs, National/International Societies for enhancing visibility of CSI and SIG programmes.
- Convene at least two meetings of the SIG executive/task committee.
- Publish an up-to-date list of SIG executive/task committee members and subject matter experts for the benefit of CSI members at large.
- Drafting/publishing of one or two technical report, course/workshop content.
- Quarterly reporting of activities to ExecCom through CSI HQ.
- Maintenance of Accounts as per the CSI Byelaws and SIG manual.
- Organizing one or two technical conferences/ symposia/ workshops.
- Forming a few working groups for education, R&D.

Divisional Chairpersons:
- Divisional Chairperson should prepare Calendar of Events for the year in consultation with RVPs, Chapter Chairpersons, SIGs, and SBCs, as applicable.
- All Activities must be properly budgeted and approved by ExecCom.
- Organizing Events- at least one national/international (e.g. COMAD, COMNET, CONSEG, CONFER, BIG and ISEC) and four divisional events.
- Activities of Divisions should also promote and encourage Research/ Publication.
- Coordination with Director (Education) and the nominated Hon.
- Research Directors for framing curricula/syllabi, carrying out research studies and funding of research projects.
- Convene at least one meeting of Division Management Committee comprising of all Convenors of the domain-specific SIGs relevant to the Division.

Regional Vice Presidents:
- Guidance to the Chapters for proper functioning as per the CSI Byelaws.
- Organizing Events- at least one national/international and four regional events.
- Ensure timely conduct/submission of Chapter Elections and Audited accounts to HQ.
- Visiting chapters for initiating activities and sharing ExecCom decisions.
- Convene at least one meeting of Regional Committee consisting of the Regional Vice-President as Chairman and Chapter Chairperson and SBCs as members.
- Reporting to ExecCom on irregularities and non-conformities, if any.
- Encourage Chapters, Student Branches to participate in CSI Activities and Awards.

Regional Student Coordinators:
- Assist the RVP/NSC and Guide the State Student Coordinators of the Region.
- Coordination with Education Directorate for Student related certification programmes, industry-oriented courses and Faculty Development Programmes (FDPs).
- Organizing Events- at least 10 National/Regional/Divisional events (e.g. Student Conventions/Seminars/Workshops/FDPs/ HR Summits/Research Symposia).
- Membership Development Programme – At least 15 new student branches and 1500 members (any categories – students, faculty, working professionals etc.) in the region.
- Motivating students and faculty to benefit from various research funding schemes.
- Motivating students and faculty to take part in various contests and competitions -YITP, Best Student, Best Faculty, Best Institution, Best Branch etc. as and when applicable.
- Help/guide students and young faculty to contribute their technical papers and/or articles in CSI and its sister societies’ publications.
- Submission of activity reports to HQ with the help of RVP/NSC/ED, as applicable.

All the office bearers of CSI are requested to solicit from members and fellow IT professionals quality articles /papers for consideration in the various publications of CSI, CSI Knowledge farm and the proceedings of various conferences of CSI.

Prof. H R Vishwakarma
Hon. Secretary, CSI

Call for Applications for the post of Resident Editor

The CSI HQ requests all eligible Mumbai based candidates to apply for the post of Resident Editor-Mumbai for its Publications Activities.

The consultant designated as Resident Editor - Publications shall be responsible but not limited to the following:
- Creating & Maintaining the database of authors / contributors
- Coordinating with authors / contributors, guest editors and Hon. Chief Editor
- Liaising with authors to get the manuscripts in time
- Copy editing the manuscripts submitted for publication
- Prooofreading the galleys
- Content creation for the web site and co-ordinate with the web master
- Explore and get sponsorship and advertisements for the publications
- Liaise and co-ordinate with the printers

Prospective candidates may send their applications along with latest Resume and expected remunerations to hq@csi-india.org on or before September 30, 2010.

Prof. H R Vishwakarma
Hon. Secretary, CSI
To provide an overview of Data Warehousing and Data Mining and its use for services organizations, CSI – Bangalore Chapter, conducted a course on this topic.

Data Warehousing is a typical platform, which is used by companies to find information about buying behavior of customers. Data Mining comes in handy to unearth hidden buying patterns of customers, which are typically given in the form of a report by data mining algorithms. Businesses can use these patterns to predict future customer behavior, to attract new customers to buy their products and also to retain old customers.

As India is on a growth path, especially in retail and insurance domains, such a platform is very important and provides great potential to businesses in these domains.

Dr. Anirban Basu, Chairman, CSI-BC welcomed the participants. He briefed the participants about CSI and requested them to become members of CSI.

Mr. Rajesh Kumar Shanmugam of Aroha technologies conducted a session on Database and Data warehousing technologies. He can be reached by sending an email to rajesh@aroha.co.in

Totally 23 delegates participated in this course. Mr. Appa Rao, MC Member, CSI-BC, gave vote of thanks.

CSI Cuttack chapter also organized a seminar and a meeting of CSI Cuttack-Bhubaneswar members at Hotel Grand Residency, Cuttack on 18th July 2010. The topic of the seminar was “IT – after recession”.

Mr. Ajit K. Sahoo, Past Treasurer, CSI & Regional Student Counselor of CSI – Region-IV requested members to participate actively in different CSI activities.

Mr. Subhadrashan Kanungo, Immd. Chairman, CSI Cuttack & Sri Jyotirmoy Mohapatra, Chairman, CSI Cuttack Chapter, Mr. Govind Chandra Mohanty & Mr. Sanjay K. Mohanty from CSI Balasore Chapter, Prof. Abhaya K. Samal, from Raipur Chapter, Prof. Bunil from DRIEMS Students Chapter & professor from DIMAT Student Chapter participated in the meeting & presented their chapter activity report.

Mr. Sanjay Mohapatra, RVP-IV presided over the meeting.

A talk was delivered by Prof. G. K. Nayak, Director, IIIT, Bhubaneswar, on the topic of “IT after Recession”. He had the audience in rapt attention all through his 45 minutes address on the topic. Prof. Nayak reiterated that IT is dynamic and required continuous updating while alerting on the present day scenario. He struck an instant rapport with audience, who were seen asking for more from him even after his talk ended.

Mr. Sanjay Mohapatra, RVP-IV, CSI emphasized the importance of CSI in the field of education, business, commerce, law & governance. He touched upon different CSI activates at Region-IV.

The Seminar was presided over by the senior-most member & the Imm. RVP of CSI, Dr. Himansu K Mohanty, Director, DAV Institutions.

The Seminar was attended by Justice P. K. Mohanty, Mr. Akshaya Rath, Prof. A. K. Samal, Mr. Ajit K. Sahu, Imm. Treasurer & RSC of CSI, Faculty members of DRIEMS, DIMAT & ABIT Institutions. More than 125 participants participated in this Seminar.

Mr. Dhaval Dalal, of Equal Experts Inc. UK, called upon the students of Computer Science and Information Technology from all
over the state, who had gathered in large number for the first ever CSI State Annual Student Convention that was held in Mahalasa Hall of Siddharth Bandodkar Bhavan, Panji on 15th August, 2010 to develop a lifelong learning attitude and learn by making mistakes approach. He was speaking as a chief guest after inaugurating the convention. Mr. Shirpad Khedekar, Chairman of CSI Goa Chapter welcomed the guests, while Mr Santosh Katam, State Student Coordinator spoke about the activities that are being organized by CSI for students and also requested the colleges to set up student chapters. The inaugural function was concluded by Mr. Ramrao Wagh.

This was followed by various technical sessions on latest topics in IT and recruitment. The first session was presented by Mr. Dhaval Dalal on “Driving Object Oriented Design using Tests”, in which he demonstrated the power of test-first approach by developing a sample application and showing how good design principles can be applied as we refine the solution. The session was very interesting and there was a lot of interaction from the students. Mr. Ramrao Wagh of Goa University chaired this session.

The second session was conducted by Mr. Satishkumar Dwibhashi of IBM on “Cloud Computing”, in which he demystified the various terms and technologies related to cloud computing, virtualization and utility computing. He stated that currently computing power is made available like other utilities such as electrical and water supplies. He pointed out the issues and challenges in adopting these models. This session was chaired by Ms. Kavita Asnani of PCCE College, Verna.

The third session on “E-governance” was conducted by Mr. Sanjiv Nadkarni, VP (Sales) of NETech, Verna. He showed how IT can simplify the life of common citizen using e-governance applications. The session was chaired by Mr. Ramrao Wagh.

The last session of the convention was delivered by Mr. Kishor Bhalerao, Sr. VP, Human Relations, Persistent Systems, Pune. He gave helpful tips for preparing and appearing for an interview and other modes of selection process followed by IT companies. The session was chaired by Ms. Vanessa Colaco of GEC, Farmagudi.

The certificates were presented to all the 230 students from Goa University, BITS-Pilani, Goa Engineering College, Farmagudi; PCCE college, Verna; RIT, Shirorda; Chowgule College, Margao; and many other colleges in Goa. A large number of faculty members from these institutes also attended the convention. Mr. Abhay Bhamaiakar, Secretary of CSI Goa Chapter proposed vote of thanks.

**MUMBAI**

The chapter conducted one day Workshop on Risk Management – ISO 31000:2009 by Dr. Vishnu Kanhere, on 23rd July 2010. Dr. Kanhere is an expert in fraud examination, computer forensics, information systems security and system audit. His specialties include fraud examination, computer forensics, system audit, information systems security, direct and indirect taxes, internal auditing, accounting, financial management and project planning.

CSI Mumbai Chapter AGM was held on 31st July 2010 at Hotel Rangsharda, Bandra.

AGM was well attended by members. Dr. Vishnu Kanhere, Chapter Chairman, welcomed all the members to the AGM. A presentation on chapter activities & progress during the year 2009–10 was given by Mr. Ravikiran Manikkar. The meeting was presided over by Dr. Vishnu Kanhere, Mr. Rajiv Gerela, Immediate Past Chairman & Mr. Ravikiran Manikkar, Treasurer, Mumbai Chapter. The minutes of the previous AGM & accounts for 2009–10 were presented & approved by members. Senior members Mr. Hemant Sonawala & Mr. M. D Agrawal, Vice President cum President Elect, CSI, gave guidance & words of encouragement to the chapter members.

Dr. S. P. Mudur, Professor and Chair, Computer Science and Software Engineering, Concordia University & Dr. Debashis Sanyal, Dean, School of Business Management, NMIMS University were invited as chief Guests and Key speakers.

Dr. Mudur delivered Keynote Address on “Machine Learning Applications in Computer Games”.

Dr. Sanyal gave a very insightful presentation on “Bridge to Future: Connect your strategies in an Interconnected World”. Both the speakers were felicitated on the occasion.

The Chapter also felicitated Dr. Mathew, Mr. Ashwin Kini, Mr. Ravikiran Manikkar & Mr. Ravi Eppaturi for their achievements in their respective fields.

Winners of the Programming Contest held in February 2010, were presented with the prizes.

The Chapter organized a CIO Club Meet in association with Riverbed Technology Ltd., on 6th August 2010, at Hotel Intercontinental The Lalit, in Mumbai, to create awareness about the criticality of IT Consolidation & how to derive full advantage of IT investments in the organization. The program was well attended by CIOs & IT heads.

The meet started with Mr. Rohinton Dumasia, CSI Mumbai Chapter, welcoming the delegates. The introduction was given by Mr. Vivek Singh, Regional Director, Riverbed, who gave an overview about the organization and its products & services.

Keynote address on “Consolidation is key” was delivered by Mr. Paul Serrano, Senior Director, Marketing, APAC and Japan, Riverbed. Mr. Serrano deliberated on the Macro Trend, WAN Optimization, Consolidation from the branch to the data center, Reducing Bandwidth requirements etc.

Mr. Aragha Basu, VP & Head - Global MPLS & NLD Services, Bharti Airtel gave a case study presentation on how Riverbed’s OptiWAN products have helped Bharti Airtel in smooth business application acceleration & simplified network operation.

A very engrossing & informative panel discussion was held on “Breaking the Business Performance Barrier” to understand the need for WAN optimization in consolidated environment. The session was chaired by Mr. Rajiv Gerela, Vice President, Deutsche Bank. The eminent panelists were Mr. Ravi Sharma, GM – Infotech, Watson Pharma, Mr. Aragha Basu, VP & Head - Global MPLS & NLD Services, Bharti Airtel and Mr. Paul Serrano, Senior Director, Marketing, APAC and Japan, Riverbed. The audience asked knowledgeable questions to the panelists about WAN optimization & panelists satisfied their queries.

The chapter conducted one day Workshop on “Community Initiative: Lean Six Sigma White Belt Certification” by Mr. Pavan Kota, on 6th Aug. 2010.
Mr. Pavan Kota has extensive experience in the field of Business Consulting.

He is also a Lean and Six Sigma Master Black Belt, ISO 20000 Auditor, ISO 27001 Lead Auditor, Assessor - European Foundation for Quality Management (EFQM) and Certified External & Internal Assessor for TATA Business Excellence Model (based on the Malcolm Baldrige National Quality Award).

The workshop included topics such as - Lean Six Sigma Overview, Perspectives of Lean Six Sigma, Recognize Phase, Define Phase, Measure Phase, Analyze Phase, Lean Tools, Improve Phase, Control Phase, Design for Six Sigma, Lean Six Sigma Certification Process and Certification Levels.

Workshop was well attended by delegates & was well received.

The chapter conducted four-day certification course on Project Management 4.0 by Prof. Garg, from 12th to 15th August 2010 at the chapter office.

The training helped the participants learn fundamentals of project management skills, concepts and techniques. It explained how to identify stakeholder needs & requirements, document project scope, develop work breakdown structures, document project management plan, estimate project cost and schedule, understand dynamics of project management including HR and communication aspects of effective team building & management and establish a dependable project monitoring and control system.

The chapter conducted four days hands-on training course on “Developing The Application in PeopleSoft 9.0” by Mr. Bipin Pathare.

The course covered topics like:

The course was well attended & well received by participants.

SPIN meeting was held on “Effective SCRUM” on 17th August 2010, at the chapter office.

The meeting was conducted by Mr. Laxmikant Purohit. He is BE (Electronics), MBA, Project+ certified, CSQA (Certified Software Quality Analyst) and a Certified SCRUM Master. He is a Project Manager with Direction Software Solutions and has more than 10 years industry exposure and has managed development and maintenance projects.

The meeting was well attended & well received by participants.

The chapter conducted a Workshop on Technical Writing for IT Professionals by Mr. Shivram Ayyer.

Mr. Shivram Ayyer is a trained and self taught engineer with more than 35 years of working experience in companies like LARSEN & TOUBRO, IBM, ASEA Ltd., & CMC Ltd., besides others.

The workshop objective was:
- to understand the difference between Non-Technical & Technical writing.
- to learn the usage of right type of English for Technical Writing
- to learn the art of good report writing

The course included following pre-writing preparation aspects such as -
- Language for technical writing
- Principals of Structures
- Examples of good and poor writing
- DOs and DON’Ts
- Art of writing good technical reports

The course was well attended & well received by participants.

THANJAVUR

A two days Faculty Development Program on Windows Apache MySQL PHP (WAMP) was jointly organized by the Department of Software Engineering and CSI, Thanjavur Chapter, on 23rd and 24th July 2010 at Periyar Maniammai University, Vallam, Thanjavur. Prof. E. Ben George, Head of the Department (SE) was the convener and Prof. D. Christy Sujatha and Prof. C. Rajanandhini coordinated the program.

At the inaugural function on the first day i.e. on 23.07.2010, Prof. G Thiruchelvi, Asst. Dean of Computing Sciences and Engineering, Periyar Maniammai University, spoke about the importance of WAMP and the role of WAMP in the current IT industries. The resource person Prof. A. B. Karthick Anand Babu, Department of Software Engineering, handled both theory and practical sessions for two days.

At the valedictory function on the Second day, i.e. on 24.07.2010, Prof. C. Rajanandhini delivered welcome address. The Chief-Guest, Prof. R. Kandhasamy, Dean Academics, Periyar Maniammai University, released the Tutorial and CD on WAMP and delivered a valedictory address. Prof. K Suthurajan, Secretary, CSI, Thanjavur Chapter, in his special address, remarked on the advantages of WAMP in the WEB Designing Technology. Prof. A Satheesh, Asst. Prof. Department of Software Engineering, gave Presidential address. Certificates were distributed to all participants by the chief guest. Finally, vote of thanks was delivered by Prof. Ms. D. Christy Sujatha, Department of Software Engineering.

STUDENT Branches

ANITS, VISAKHPATNAM

ANITS Visakhapatnam : The Speaker Mr. Y V Srinivasa Murthy is delivering lecture on “Advanced Java and Its Applications”.

An Expert lecture on “Advanced Java and Its Application” was
conducted by the CSI Student Branch in Anil Neerukonda Institute of Technology & Sciences (India), Visakhapatnam on 31st July, 2010. Mr. Y. V. Srinivasa Murthy, Assistant Professor, Dept. of CSE, ANITS explained the concepts related to GUI design using Swings & AWT in the first session and JDBC/ODBC Connectivity to Oracle Data Base and Access Data Base in the second session.

**AISMS COLLEGE OF ENGINEERING, PUNE**

The branch organized Bits ‘n’ Bytes National Level Symposium and Exhibition “AISMS Engineering Today 2010” on March 17-18, 2010. In AISMSSET2010 three Competitions viz. - Technical Paper Presentation, Project Exhibition and Techpedia programming competition were organized under the guidance of Prof. Madhavi Pradhan HOD, Computer Engineering. For these three competitions tremendous response was received from all over India. Nearly 215 engineering students attended the Bits ‘n’ Bytes Event in AISMSSET2010.

Prof. D. P. Gaikwad, Prof. A. J. Kadam, Prof. N. R. Talhar, Prof. S. S. Shaikh, Prof. S. V. Athawale, Prof. V. S. Vairale, Prof. N. P. Mawale, Prof. A. S. Deokar, Prof. S. R. Nalamwar, Prof. B. R. Quazi, Prof. A. M. Jagtap, Prof. D. M. Ujalambkar, Prof. M. V. Desai worked as Staff coordinator.

**JAYRAM ENGINEERING COLLEGE, TRICHY**

Jayaram College of Engineering and Technology marked yet another milestone by organizing one day seminar on “Emerging Trends in Cloud Computing” (HOTCLOUD’10) in association with CSI and the CSE department on 20th August 2010 with the aim of exploring the new technology and with the intention to enhance the knowledge of student community with latest technologies.

Participants from various parts of the country actively took part in the seminar. The HOD of CSE Dr. S. A. Sahaaya Arul Mary gave the welcome address and she conveyed her heartfelt thanks to the CSI Tamilnadu Student Coordinator & Immediate past Chairman Mr. Ramasamy and Mr. Aggarwal for their support for executing the national seminar successfully. The function was presided over by the Chairman of the institution Mr. M. Subramaniam and the Principal Dr. N. Kannan and IT head Prof. A. Venkatasubramaniam felicitated the mega event.

The resource person Mr. Subash E.P., Head, Competency development practice, Spring Board, CDC, Chennai inaugurated the function and also released the proceedings and CD of the seminar. He gave an overview about the basis of cloud computing in which he explained cloud computing as “anytime anywhere access to IT resources delivered dynamically” and emphasized that it views everything as a service. He also explained the needs and future of this technology. He also gave practical exercises for easy grasping of concepts.

Almost 100 students from various colleges around the country attended the seminar. Students from Alagappa University, Karaikudi, CIT Coimbatore, Sastra University, Anna University Chennai, and Veltech University also participated.

More than 50 authors presented papers on various areas of cloud computing, such as clouds for extending site resources, storage cloud, security & privacy in clouds. Students and delegates from Bangalore, Vijayawada and other parts of the India participated.

The afternoon session was conducted by Mr. Dinesh Vedharajan, Director, Product Engineering, Orange Scape, Chennai. He gave hands-on session on Google Apps Engine, which builds/hosts web apps of Google infrastructure. He also kindly consented to be the chief guest for the valedictory function at the evening. The President of CSI student’s chapter Mr. S. Siva Rama Krishnan delivered the vote of thanks.

**MBCET, TRIVANDRUM**

The branch in association with the Computer Science & Engineering Department hosted a technical seminar on August 13, 2010.

Dr. R. Narayanan, former Vice President (Learning & Development), Tata Consultancy Services, delivered the lecture on “Trustworthy Software”, which lasted for 45 minutes. An interactive Q&A session followed. The chief guest was greeted with a memento by Rev. Fr. Wilson Thataruthundil. The event was attended by the CSI student members, students of Computer Science department and faculty members of Computer Science and IT departments.

**PVPSIT, VIJAYAWADA**

The Branch with 96 student members at PVP Siddhartha Institute of Technology, Vijayawada, was inaugurated by Prof. P. Thrimurthy, President of CSI, India on 11th August 2010.
Several events were conducted for students under the able guidance of Mr. A. Sudhir Babu, student counselor of PVPSIT Student Branch.

Speaking on the occasion, Mr. D. Sambasiva Rao, Convener of the PVP Siddhartha Institute of Technology asked the students and faculty members to utilize the opportunity of CSI association and develop professionalism while excelling in academics. Mr. D. Sambasiva Rao appreciated CSI for encouragement and recognition of the Institution and for forming the Student Branch.

Inaugurating the CSI Student Branch at PVP Siddhartha Institute of Technology, Prof. P. Thrimurthy appreciated efforts of Mr. A. Sudhir Babu for his efforts in the formation of Student Branch. He gratefully acknowledged the support extended by management of the college and Principal of PVP Siddhartha Institute of Technology for promoting and sponsoring all the events under CSI for the benefit of students and faculty members.

On this occasion, Prof. DBV Sarma, Vice President, CSI Region-V delivered a guest talk on “Evaluation of Software Engineering in 20th and 21st century”, and inspired the students.

The state level Student Branch Coordinator, Dr. K. Rajasekhar Rao graced the occasion and motivated the students about CSI and informed the importance of test cases in design and implementation.

Mr. P. Janardhan, Chairperson of CSI-Vijayawada Chapter, Mr. K. Rajasekhar, Chairperson of CSI-Koneru Chapter, Mr. Siva Nageswara Rao, Vice President of CSI- Vijayawada chapter and Ms. Sobhana, Secretary of CSI- Vijayawada chapter has graced the function and wished the CSI-PVPSIT Student Branch all success and extended full cooperation from their CSI Chapters.

Prof. P. Thrimurthy explained the objectives of CSI and the benefits of being a member and student member of CSI. While encouraging the activities, Prof. P. Thrimurthy administered an oath that students should take up live projects and should not indulge in purchasing dummy projects. He emphasized the need of high quality human resources needed in the industry with sincerity, dedication and commitment for accomplishing the tasks.

Under the CSI banner, Prof. P. Thrimurthy requested the management of PVP Siddhartha Institute of Technology to organize local, regional and national level events for the benefit of students. He advised that short-term programs on soft skills may be initiated at once and seminars on latest and emerging areas of computer science may be planned as a calendar of events in the academic year.

Dr. K. Srinivasu, Principal, PVP Siddhartha Institute of Technology kindly presided over the function and blessed all the students and inspired the participants. The Principal of the Institute asked all the students to join in CSI Student Branch and conduct more events for them to improve communication and soft skills for more employability.

A Paper Presentation Contest, Technical Quiz and Programming Skill Test were conducted for CSI student members. The dignitaries on the dais distributed the prizes for winners and certificates for participants.

Earlier, in welcome address, Dr. K. Nageswara Rao, Head of the CSE department, PVP Siddhartha Institute of Technology, gratefully acknowledged CSI and the cooperation and guidance extended by Prof. P. Thrimurthy in forming Student Branch. He asked the students to utilize the facilities provided by the department like CSI student Branch, Incubation centre, and training in certification courses.

Mr. A. Sudhir Babu, CSI-PVPSIT Student Branch Counselor gave vote of thanks.

CSI student branch of R. V. College of Engineering organized a Workshop on Tuesday, 24-08-2010 for the benefit of faculty members. The workshop started at 10.00 am with an introduction about Outcome Based Education (OBE) Dr. R. S. Kulkarni. He briefed about the importance of learning. He also expressed that it is necessary to cross check with the students ‘What is being taught’ and ‘What is being learnt by the students’. Dr. B. S. Satyanarayana – Principal of RVCE discussed about the ABET (Accreditation Board for Engineering & Technology) process for Teaching-Learning activity. He also stressed the necessity of concentrating on Program Evaluation Objectives. Each one of us have the potential to Local solutions for Global Knowledge. More than 100 faculty members participated & benefited with learning from the discussion.

Later in the afternoon Dr. Ramakanth Kumar gave an overview about “How to prepare effective lesson planning”, Prof. Chandrashekar also joined his hand in making the goal of our teaching process clear. Both the speakers expressed their views and provided an insight to have clear Course Level Objectives (CLO) & Topic Level Objectives (TLO). The workshop ended with a summarization of ABET Process and achieving the objectives.

CSI student branch of R.V. College of Engineering has organized a Workshop on “Software Testing” on Monday, 30.08.2010 for the benefit of faculty members. The workshop started at 11.00 am with an introduction to Software Testing by Mr. Muralidhar – Test Manager, MindTree. Mr. Muralidhar gave a brief introduction about the Freely available Software Testing Tools. He discussed on Selenium family like Selenium IDE, Selenium RC & Selenium Grid. He told the importance of these tools in test automation and also demonstrated the utility of tools. These tools are very much user friendly and can be easily adaptable. Few assignments have been solved by the participants through hands on practice with the tools. It was a very good experience for all the participants. More than 15 faculty members gained hands on training of the tools.
The branch organized its inaugural function on 11.8.2010 at SKCET. Mahesh G. Treasurer, CSI Chapter welcomed the gathering. In his presidential address, Dr. N. K. Karthikeyan, Head of the Department, CSE (PG) and Student Coordinator, CSI, briefed about the objectives of CSI and the benefits of it. The CSI student secretary Mr. Gowtham spoke about CSI Activity plan for the academic year 2010-2011. The speaker of the day Ms. Sudha, HR Manager, Soliton Technologies, Coimbatore delivered a special lecture on the topic “An Outstanding Performer in the IT Corporate”. In her speech, she stressed upon the need for Soft Skills, Communication Skills and Presentation Skills. For the students, she also emphasized about maintaining good academic track record and technical skills. In a brief session on “Employment Opportunities in IT sectors”, the need of mastery in computer languages such as C, C++ and Java was emphasized by the speaker. Finally, Mr. Rajaguganeswaran, CSI student Vice-president delivered vote of thanks. More than 125 staff and student members attended the program. The program was well received by the participants.

TRUBA COLLEGE OF ENGG & TECH, INDORE

A CSI Function “A Step Ahead-2010” was organized on 19/07/2010 by the department of Computer science & Engineering & Information Technology at Truba College of Engineering & Technology, Indore. In this function, chief guest was Dr. M. Chandwani – fellow CSI (Indore Region), who formally renewed CSI student branch and Institutional Membership, Prof. Prashant Lakkadwala – secretary CSI (Indore Region) was also present for this function.

An Inter college Java Programming Competition - “CODE-COMBAT” was organized on 14.08.2010. This technical event “CODE-COMBAT” provided a platform to the students of all the colleges to showcase their technical skills in Java programming.

Digital Library systems have the following characteristics:

- **Person-centric efforts**: Humans are at the center of Digital Libraries and all efforts to develop them should be initiated and motivated by needs to provide interesting and/or novel experiences to users. Furthermore, Digital Library systems should synthesize all information that is available about each person in a cohesive whole, so that they may offer personalized treatment to individuals or classes of individuals based on their profiles.

- **Communication-centric & collaboration-centric functionality**: The main role of Digital Libraries must be to facilitate interaction of scientists, researchers, professionals, government and business workers, and the general public on themes that are pertinent to the information stored. Storage of this information and access to it is only a small (although still essential) part of such functionality.

- **Generic technology systems**: For economy of scale, reusability, and extensibility, generic Digital Library Management Systems (DLMSs) should be developed that capture all common management aspects of Digital Libraries. Supporting any further, environment-specific needs on content manipulation or user interfaces should be developed in a customized fashion on top of DLMSs.

- **Maximum-reuse efforts**: Given the existence of industrial-strength DLMSs, every development effort should depend on them, avoiding much mundane work that is currently necessary, and should only focus on the specialized parts.

- **Globally distributed systems**: Digital Libraries should be managed by widely distributed systems, through which information sources across the world get interconnected to exchange and integrate their contents.

- **Universality of information and application**: Digital Libraries should be put in the service of “all” applications and should comprehensively manage “all” forms of content, from data to information to knowledge.

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**The DELOS Network of Excellence on Digital Libraries, Recommendations and Observations for a European Digital Library (EDL), 2005.**

Dear CSI colleagues:

The elections for various posts of CSI National Executive Committee, Nomination Committee and for management Committees of various chapters of the society are due to be held in November-December 2010. The election process will start by the announcement on Call for Nominations. The process of nominations, issue of ballot paper and the voting will be electronic through online balloting process.

It is our endeavour that the ballots are received in large numbers and only the most competent and suitable candidates are elected.

We, the present members of nomination committee therefore, request you to

i) Make corrections in your email ID nos. available with the CSI.

ii) Help in identifying the correct addresses/email ID’s of persons with whom CSI HQ is unable to contact.

iii) Nominate competent & experienced persons of your choice suitable for the respective positions.

iv) Please do cast your vote as a matter of your right and also a duty.

If you have any question, please contact us by email or through CSI communications.

Yours truly

Dr. S S Agrawal
Dr. S C Bhatia
Prof. U K Singh
(Nomination Committee)

HURRY!

Second International Conference on Emerging Applications of Information Technology
(EAIT 2011)
Organized by
Computer Society of India Kolkata Chapter
February 18-20, 2011, Kolkata, India

Important Dates
(Extended and Final)

Paper Submission : Sep 16, 2010
Acceptance Notification : Oct 15, 2010
Early Bird Registration : Oct 21, 2010
Final Paper Submission : Nov 15, 2010
Tutorial Proposal : Oct 31, 2010

For latest updates and more details:  
Conference Website:  
https://sites.google.com/site/csieait2011  
Paper Submission Website:  

Overwhelming response was received from Academic Institutions, Faculty members and Individuals/organizations for organizing Workshops at all cities. The details of 27 proposals received from various interested stakeholders are available at CSI Web Portal. Please visit http://www.csi-india.org/ and download the document from http://www.csi-india.org/c/document_library/get_file?uuid=213bf8a4-c812-4023-81e5-933a7b9b7086&groupId=10616