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gopal@annauniv.edu

Director (Education)
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director.edu@csi-india.org

Executive Secretary
Mr. Suchit Gogwekar
hq@csi-india.org

Published by
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“People relate to people, not companies”
— Tony Hsieh, CEO, Zappos.

“I think the primary difference here is not in big or small company. But the difference is in how close you are to your customers”.
— Sandy Carter, Marketing Head, IBM

Excellent customer service is rapidly becoming rare. This is despite the fact that many companies tout their focus on service in advertising. Diane Berenbaum, Senior Vice-President of Communico, a Westport (Conn.) customer service consultancy and her colleague Tom Larkin wrote a book “How to Talk to Customers” [Jossey-Bass, 2007]. A global benchmarking study covered in this book showed a reduction in customer service satisfaction from 82% to 68% in one single year. Additional studies show that 68% of customers leave a business relationship because of a perceived attitude of indifference on the part of the company. It’s not that the associates are actually indifferent - it’s the perception that they are.

So a customer may get what she needs from the company, but if it was delivered with indifference, that interaction still won’t leave a positive impression. 63% of consumers opine that the last time they stopped doing business with a company it was partly or wholly due to a poor customer service experience. It is a fact that customers are not as easily satisfied as they used to be. They have much higher expectations for service as they face far greater demands in their own lives.

Even today, many entrepreneurs don’t realize they need to make connections with their clients, and that they need to do that with courtesy, empathy, and professionalism.

The Customer Relations Group [http://customerrelations.com/] is an internationally known and respected firm that works with companies many of which are fortune 500 in their efforts to achieve zero customer defections and increase customer retention. David Schreiber who heads the Customer Relations Group suggests the following ten critical keys to success.

1. Emphasize Teamwork
2. Communication
3. Encourage and Reward Innovation
4. Reduce and Simplify Internal Bureaucracy
5. Always Be Honest
6. Devotion to Urgency
7. Be A Person of Integrity
8. Be Positive at All Times
9. Involve Everyone in Everything
10. Train, Train, Train, and Re-train

Banking, Financial, Securities, Insurance, IT Enabled Services are virtually dependent on high quality customer relations for their survival.

For example:

Standard Chartered Bank has over 2.2 million retail customers and over 1.3 million credit card customers nationwide. Its products and services include cash management, custody, lending, foreign exchange, interest rate management, and debt capital markets. The bank needed to manage and analyze the huge volumes of data captured by its On-Line Transaction Processing (OLTP) systems. It had to get the right information, to the right people, at the right time, in order to carry out a number of critical business activities and sustain excellent customer service and relations.

It is important to note that most organizations are investing in customizable Customer Relationship Management (CRM) solutions that can [http://www.sas.com]

- Integrate information from multiple sources, eliminate data errors and redundancies, tailor data for efficient access and analysis, and reduce the complexity of data management.
- Anticipate customer expectations and predict customer behavior like, propensity to purchase, lifetime profitability, and credit risk.
- Allow to cross-sell and up-sell. It can help identify the best candidates for purchasing particular combinations of products and services, and focus the marketing efforts on a more receptive audience.
- Combine business rules and analytic models to accurately segment and profile customers, and construct a personalized strategy for each group.
- Deliver customer intelligence into front office systems to enable smarter customer interactions through various channels.
- Combine behavioral insights derived from analytics with attitudinal data obtained from online and offline customer surveys.

On behalf of CSI, I thank Cmde Shekhar for readily agreeing to Guest Edit the theme section on this important theme.

Dr. Gopal T V
Hon. Chief Editor
gopal@annauniv.edu
FROM THE PRESIDENT’S DESK

From: president@csi-india.org
Subject: President’s Desk
Date: 1st March, 2010

Dear Members,

Feb. 16, 2010 was a momentous day for us in Computer Society of India. CSI extended itself as a virtual society, making IT knowledge accessible to all the members. The dream is to have all members engaged extensively in CSI activities.

Please access www.csi-india.org for the Knowledge Management Portal. The membership benefits exponentially improve by the active involvement of all of us in building communities, in answering queries of other members and in writing our blogs if we have something worthwhile to say. My colleague G.Kameshwar – Software Architecture Guru, a Poet and Author- coined the word “Knowledge Farm”, as it allows each of us to harvest the Knowledge, while taking active steps to grow it. This term appears to capture the essence of our endeavors. However, knowledge will not grow on its own. To repeat, this will merely remain an entry gate unless all of us build the edifice behind it. Come – let us use the new Portal.

We were fortunate to have the Portal launched by Shri Sachin Pilot, the highly educated, articulate and genuinely interested IT Minister. He is also the leader of the new generation who will benefit by this transformation. The launch event brought together a large number of CSI professionals, including Past Presidents and Office Bearers. Thought leaders who led the discussion on Professional Development and Knowledge Management introduced us to the exciting platform of National Knowledge Network and to the issues concerning formal and informal education framework. Come and access the presentations in the Knowledge Management Portal.

In the meeting, we also formally announced CSI’s intention to bring out Publications that I have been writing about. We will bring out five CSI Transactions on ICT each quarter dealing with Software, Hardware, Security, Education and Health, and Economics and Management.

This issue of CSI Communications deals with Customer Relationship Management as its theme. Following the last issue dealing with Cyber Laws, the theme of this issue takes us to the critical non technical issues shaping our professional life. We are introduced to the “soft” issues of customer orientation. I hope you find the mixture of “hard” and “soft” issues dealt with in these issues of CSI Communications educative.

The Finance Minister announced his budget proposals on February 26. The IT industry in India is again on a growth trajectory, with campus recruitments back in vogue. In this state of business optimism, we were anxious that the Finance Minister continued to bestow benefits on the professionals and companies in this industry who have contributed so extensively to the recent transformation of India. The reduction in effective tax rate for individuals should please all the professionals working in the IT field. This puts more money in the hands of IT professionals, bringing about another CSI – Consumption, Savings and Investment – so necessary for the economic growth of this country.

The budget proposal has been viewed as positive by the IT industry. While he has not extended STPI “sunset” clause, he has removed the anomaly in the SEZ related tax provisions. More importantly, he has focused on improving the tax administration through extensive computerization. He has acknowledged the benefits that computerization has brought about and has announced extensions to these efforts. He has also created a committee to oversee the progress. Given this experience and given higher allocations to UID, I expect to find the Government leading the way through e Governance systems, making the interaction between the agencies of the Government and the Citizens easy.

From a macro economic viewpoint, the budget has attempted to address the issue of inflation, through reduction in deficit and importantly, through a commitment to continue this path of balancing the budget. He has also attempted to increase the allocation to social sector and for education to all. There is an attempt to divert the resources to create an inclusive society, and we in the Computer Society of India should formulate plans to participate in it. India is blessed with a huge number of entrepreneurs and builders of industry. The Budget is built on the confidence in the growth of the economy and we at CSI will help in the creation of a Knowledge Society so essential for taking us to the next level of growth.

S. Mahalingam
Executive Director & Chief Financial Officer
Tata Consultancy Services Limited
Customer Relationships

Commodore (Retd) S Shekhar

JMPS Sanjivini Consultants Pvt. Ltd., Flat ‘A’ Ground Floor, 53/24, Varun Apartments, 2nd Main Road, R A Puram, Chennai - 600 028. E-mail: jmps.shri@gmail.com

With the Union budget just out, everyone but everyone is talking of fiscal deficits, growth rates, GDP et al.

And everyone but everyone is conscious of the fact that perhaps the single most significant contributor to our GDP is the services sector, and in that, the reputation India has earned as the most preferred destination for what used to be called the “BPO sector”.

If we look more closely at this well earned reputation, what emerges is that “our customers” have placed a great deal of faith in our – i.e India’s - ability to satisfy “their customers”!

What then is “customer satisfaction” all about?

Are we really living up to our reputation?

Is this applicable only to the Services or the BPO sector?

In this issue, we attempt to find some basic answers.

When we talk of “Customer satisfaction”, we need to look at two specific aspects-Who is the “Customer”? and What is the customer “satisfied” with.

Let’s start with the first question first.

In broad terms, anyone who is “affected” by a transaction on the receiving side is a “customer”. In its broadest concept, therefore, this includes every sphere of human endeavour, and hence the term “customer relationship”.

In practice, while we go out of the way to “satisfy” the external customer, in many cases we are not even conscious of the “internal” customer.

This is mostly because, we associate the word “customer” only with someone who pays in some form or the other – mostly in financial terms - for goods and services rendered.

On the other hand if we accept the concept that the “customer” is anyone who is “affected” by a “relationship” our complete approach undergoes a sea change.

Let us just look at the academic field as an example.

Who really is the “customer”?

The student? The parents? The profession, career, institution which the student may join? Society at large?

And internally, if we examine the “relationship” of the educational institution amongst its management, Heads of departments, teaching and non teaching staff, etc., what is the picture which emerges?

Let us take one step further inwards, and look at the family. Is the concept of “customer relationship” applicable here? How many of us are on our best behavior when dealing with outsiders, but take one’s own parents, siblings, off spring for granted!!!!

It is here that the concepts and practices of “customer relationship” must begin and be nurtured.

Moving on the “what is the customer satisfied with”, some interesting factors arise.

Broader speaking this is what “quality” is all about.

When you pay hard earned money for some good or service, you want that to perform as you expect it to perform, or has been promised to perform. This is “functional quality”.

How many of us have exploded in disgust, when you want to note down an important telephone number, and the fancy looking ball point pen which you bought only last week fails to write? This brings us to the expectation that the goods or services which you pay for must perform over a reasonable period.

This is the “quality of reliability”.

We then move on to another interesting question- Is a Mercedes car of better quality than a Maruti? While one tends to jump to a positive response, closer reflection reveals that both are of good quality considering the price you pay. In other words both are expected to deliver ‘value for money’. This is the “quality of cost”.

Here’s another food for thought. How many of us have suffered at the hands of a tailor, dhobhi, mechanic, plumber, electrician, news paper vendor, train, bus, flight or other means of transport, because the expected or promised service was not available when you wanted it? This is the “quality of delivery schedule”.

Let us now consider the most important but the most neglected aspect of quality. Most of our readers of this esteemed journal are owners of some sort of vehicle or the other, and have used the ubiquitous petrol bunk. You drive into one. The petrol bunk assistant is chatting with his colleague about the latest sensational news on TV. It takes a while for him to realize or concede your presence. Even thereafter, he gives you a surly look for having interrupted his routine, grumbles when you offer to pay by cash instead of credit card or vice versa, and even before you could secure the fuel cap is back to his gossip.

You drive into another petrol bunk. The assistant here springs to attention with alacrity, greets you not only with a smile, but accosts you by your name,
enquires solicitously as to what you want, cleans your windshield or mud guard as the case may be with a flourish, thanks you profusely for your custom and asks you to return whenever you need to fill up.

Given that fuel costs the same, wherever you buy it, which bunk would you prefer? This then is the ultimate test of quality--the “quality of pleasant interaction” -- and this is what Customer relationships are all about!

So, whichever field of human endeavour you may be in -- even just being a “human being” -- customer relationships will provide you the cutting edge in achieving what you want. And all that it takes is:

- Good understanding of human behavior
- Pleasant demeanor
- Positive attitude
- Flexibility of approach
- Good communication skills, especially of listening
- Willingness to accept the highs and lows of life

Thank you for your attention.

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**Commodore (Retd.) S Shekhar, Indian Navy**

Commodore S Shekhar, is a graduate of the National Defence Academy, Kharakwasla, and has qualified in Electrical and Electronic Engineering from the Naval Engineering College, Lonavla, with a post graduate specialization in Electrical and Weapons System Engineering from the Naval Electrical and Weapons Systems Establishment, Jamnagar. He also has a Master’s Degree in Defence and Strategic Studies from Allahabad University, through the National Defence College, New Delhi.

Commodore Shekhar has specialized in Submarines, and has occupied various positions of increasing responsibility & authority in the Indian Navy including a diplomatic assignment at Moscow, Commanding Officer of INS Valsura, the Naval Electrical and Weapons Systems establishment, Joint Director, Submarine Acquisition at Naval Headquarters, and General Manager of Naval Dockyard, Mumbai.

After his voluntary retirement from the Navy in 1993, Commodore Shekhar has been the Chief Executive Officer of manufacturing divisions of two All India organizations. He has been Vice President (Operations) of EWS Finance and Investments Ltd, Chennai for six years.

Commodore Shekhar is the Promoter and Managing Director of JMPS Sanjivini Consultants (Pvt) Limited, which specializes in Management consulting, Marketing relationships and Human Resource development, and Director and Head of Faculty of the Sanjivini Human Resources Institute. In this capacity, Commodore Shekhar has participated not only in the conduct of numerous Personality and Soft skills development programmes but also in high level interactions towards organizational change in both public as well as private sector enterprises.

During his professional career both in the Indian Navy and in the Private sector, Commodore Shekhar has been responsible for conceptualization, execution and management of high value multi-disciplinary projects both in India and abroad.

Commodore Shekhar is the founder Secretary of the National Defence College Alumni Association, Chennai chapter. He is also the current President of the Navy Foundation, Chennai Charter, Regional Coordinator of the Tamil Nadu Chapter of the National Maritime Foundation, and the Coordinator, SAFE Chennai Steering Committee of CII.

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**Customer Service**

*Excerpted From http://en.wikipedia.org/wiki/Customer_service*

A challenge working with Customer Service is to ensure that you have focused your attention on the right key areas, measured by the right Key Performance Indicator. There is no challenge to come up with a lot of meaningful KPIs, but the challenge is to select a few which reflects your overall strategy. In addition to reflecting your strategy it should also enable staff to limit their focus to the areas that really matter. The focus must be of those KPIs, which will deliver the most value to the overall objective, e.g. cost saving, service improving etc. It must also be done in such a way that staff sincerely believe that they can make a difference with the effort.

One of the most important aspects of a customer service KPI is that of what is often referred to as the “Feel Good Factor”. Basically the goal is to not only help the customer have a good experience, but to offer them an experience that exceeds their expectations. Several key points are listed as follows:

1. **Know your product** - Know what products/service you are offering back to front. In other words be an information expert. It is okay to say “I don’t know”, but it should always be followed up by “...but let me find out” or possibly “but my friend knows!” Whatever the situation may be, make sure that you don’t leave your customer with an unanswered question.

2. **Body Language/Communication** - Most of the communication that we relay to others is done through body language. If we have a negative body language when we interact with others it can show our lack of care. Two of the most important parts of positive body language are smiling, and eye contact. Make sure to look your customers in the eye. It shows that we are listening to them, not at them. And then of course smiling is just more inviting than someone who has a blank look on their face.

3. **Anticipate Guest Needs** - Nothing surprises your customer more than an employee going the extra mile to help them. Always look for ways to serve your customer more than they expect. In doing so it helps them to know that you care and it will leave them with the “Feel Good Factor” that we are searching for.

**ISO Standard For Satisfying Dissatisfied Customers**

*Excerpted From: http://www.iso.org/iso/pressrelease?Refid=Ref925*

ISO 10002, Quality management - Customer Satisfaction - Guidelines for complaints handling in organizations, synergizes the best thinking of international experts from two domains: quality management and consumer issues.

It details a complaints-handling process that can easily be integrated with the implementation of a quality management system based on ISO 9001:2000, which requires the top management of the organization to focus on customer satisfaction and continual improvement.
My two pennies worth! I presume, you want to know what this is in my business!

Customer Relationship has come to be addressed as a key issue in a formal way, more because enterprises have started taking things for granted.

**Why Customer Relationship**

Business is all about proposing a product, service or idea and making a customer accept it and pay for it.

Business is not about making a ‘one off deal’ with any customer and then looking for some new guy to enter into a ‘one off deal’. Rather having a large group of customers hooked on to the product, service or idea and have them paying for it.

The challenge exists because the word ‘monopoly’ has become extinct.

It has no place in today’s world of globalization and competition.

The Challenge also exists because over time, the customer has become educated and makes choice based on factors beyond ‘need’.

Elements to build a strong customer relationship:

1. **Educate yourself about the prospective customer.**
   Answer these questions:
   - Who is he/she? What is her standing in community?
   - What will my product or service do for customer—demonstrable cost benefit, productivity increase or better convenience?
   - Who is the decision maker in the business?
   - Can I get to meeting him first?
   - Your answer must be positive for all of the above.

2. **First Contact:** Your chance to create the best impression.
   Ensure you are meeting the decision maker with a prior appointment and be on time.
   Speak about the prospects success factors if already available in the public domain, even if it were not very significant.

As you talk look for prospects interest factor. Keep modifying till you think both of your are in the same plane.

Ask prospect to speak about his business and look for hooks onto which you can peg your offer.

Seek information about customer need and propose a quantity and price.

Satisfy yourself that your product or service will definitely benefit prospect.

Get a feel for prospect’s comfort with the proposal and commercials.

Estimate the time frame within which customer is likely to enter into a business relationship.

If it is urgent, propose to close the order on the spot. Else offer to send him a detailed proposal asap and do it.

Before you walk away from meeting, ask prospect, if he has any doubts or clarifications to seek. Respond to them.

3. **Make a clean written offer** confirming discussions, product or service features, and clarifying doubts and indicate a firm price – i.e. cost of ownership. Delivering it in person, affords a second chance to make body contact.

4. **Deliver on time without defects** and help him experience the product or service at the earliest. Provide product training at a convenient time of customer.

5. **Maintaining Relationship:**
   Initially be prepared to hand hold customer to gain the intended experience of the product or service. Attend promptly on all customer complaints however small.

6. **Watch out for competitor’s action.** Collect market intelligence from time to time and take actions according to situation.

7. **Promote your company’s image** through proper PR professionals
   Watch for customer success news and call up to congratulate.
CRM – A Personal View

R Ramamurthy

Chairman, Cyber Society of India [www.cysi.in], No.7 First Main Road, Bharat Nagar, Madipakkam, Chennai - 600091. E-mail: geminirama@gmail.com

The very concept of Customer Relationship as practiced by Indian companies today smacks more of blindly following rules and procedures and filling up forms generated by the many software programmes which have proliferated in the market. Indeed, the need to review and assess CRM practices surfaces usually before the periodic inspections for certification or maintenance of certification according to one or the other of the various quality management standards. Alas, forms and registers are merely tools for ensuring compliance to procedures and adequacy of best practices in the industry.

Ideally, in order to qualify as “best practices” in CRM, many perspectives need to be considered. These would include quality of the product, adequate and ready product information, prompt after sales service, effective customer complaint registry and redressal mechanism, etc., etc.,

All other things being equal, from the CRM perspective, all above have one critical factor, which is more often than not ignored – Employee Excellence!

Excellence in employees like in all other traits, characteristics or parameters, is, to borrow a cliché, a journey and not a destination. Again, as is natural, we are surrounded by oceans of mediocrity in which float islands of excellence. And the problem is that, organizations, rather than concentrating in spotting excellence, and nurturing it, rather find it easier to smother Excellence by importance to procedures and established practices, rather than in encouraging initiative and creative thinking. And strangely the very availability and adherence to such modern practices as “Quality Management Systems” etc, while definitely enabling standardization, cannot distinguish from bad and good standards, except by the enlightened higher management. This is further compounded by mindless application of so called “custom built software programmes” which claim to reduce human defects but in the process also reduce the human touch.

In the bargain, “Processes” have become the primary focus of organizations, and employees are required to follow them without question. Given such a restrictive environment, it’s no wonder that even the most motivated employees are giving up. They are forced to playing the obedient soldier while surrendering any initiative or innovation. They do what they are told and try not to think too much. After years of this, how can employees even consider the pursuit of excellence? They just want to survive. Management’s eagerness to control everything and everyone has created a new form of employee: obedient, cynical, and devoid of any initiative.

Let us now look at one more paradox. Competition is in fact meant to be the driver for excellence, as one’s ability to face competition, lies one’s very survival. Competition has presented us with a simple challenge: excellence or nothing. We live in times where “good enough” simply doesn’t cut ice anymore. We need every piece of excellence we can gather and every employee’s commitment to excellence in order to forge a tough response to the new competitive forces. The new competitors, both major Indian companies and multi national corporations are ready to pump in huge investments and demonstrated ambitious spirit and drive to succeed at any cost. While some may not yet have reached a genuine level of excellence, it is s clear that the pursuit of excellence is a main focus.

If this is indeed so, we should reflect on why Indian companies are really unable to make a mark while competing with their global counterparts. Are we really willing and ready to compete? Are we pursuing excellence with everything we have, ready to fight back and claim our rightful place? Do we have a fully committed organization, with employees who are dedicated to delivering excellence in order to differentiate our products, services, and experiences— and win the customer’s heart in the process? Do our employees have the freedom to get around controlling processes and to make the types of personal choices that will let us rise to the challenge of excellence and win this critical battle?

Sadly, the answer to these questions is “No.” With a culture of ineptitude developing among us, created by top-down management we are methodically stripping away our ability to win. While some may say, “I’m realistic, not pessimistic,” it does not dilute the damaging impact of this new direction in our business culture. The harbingers of mediocrity are sending a clear message: “Don’t try too hard. After all, what’s the point?” “You’re helpless.” “You’re a small screw in a huge machine.” “Nothing you do will make a difference, anyway, so you might as well quit trying,” “You do not have job satisfaction”, “ Just go on, you have a family to support”, etc.
Steeped in this growing “Why bother?” culture, we buy deeper and deeper into the message of our own incompetence and insignificance. The cynicism is affecting our long-term competitiveness. We reinforce the message that we are useless and incapable of impacting the big machine we call our organization. After all, it was management that discouraged any initiative and required blind obedience. What is the point of striving for excellence, after all? No one will notice, no one will see the difference, and, besides, they don’t deserve my best.

Forget about the organization for a minute. Do you deserve your best? At the end of the day, if you haven’t performed to your potential, you may penalize your boss, but first and foremost, you’ve penalized yourself. It’s your career, your track record, and your reputation on the line.

In light of emerging competitive forces, the market has been flooded with books on CRM, proposing faster innovation, greater creativity, more intimate relationships with customers, and an entire slew of strategic and tactical solutions to the threat from the global marketplace. I have read many of these books, and one question lingers in my mind: Who will execute these legendary ideas? Who will be there to innovate products or care for customers? Are we talking about the same people? Are we expecting controlling, process-centric managers to allow this type of performance? Are we expecting employees who are afflicted by Dilbertism to go and create excellence that makes a difference?

This intensified competitive landscape requires employees and organizations to be at the top of their game—to genuinely care about the customer and to deliver innovation and distinguished service. In short, it requires us to achieve excellence. “Consistency” doesn’t provide differentiation anymore. Consistency is necessary, but it’s insufficient. Consistency is far from interesting; if that’s all we’re offering, customers are likely to seek more exciting options at a competitor’s shop. The new reality is that organizations today need to be at peak performance all the time. To achieve this, they can only depend on one thing: employee excellence. We need all the innovation, creativity, and risk taking we can muster. But we can’t get any of this from top-down, executive-mandated decisions. The decisions must come from the employees themselves.

Excellence or nothing is the survival choice of every organization or individual today. “Good enough” and consistency are simply not going to cut it anymore. Achieving excellence is our only chance for growth and success. Inaction is a self-defeating state that results in miserable mediocrity. It has greater negative impact on each and every one of us than most of us are willing to recognize or accept.

With each new day, we are given opportunities to make conscious choices for either mediocrity or excellence. Any time we choose mediocrity, we get further away from competitive advantage and the chance to win in the marketplace. Each choice should be viewed as an opportunity for organizations and individuals to unleash our employee’s abilities to maximize performance, to be competitive, to win in the marketplace, and to be the best we can be. Choice for excellence increases our overall excellence capacity and capability. Because the competitive battleground is in the field and not at the top, every employee’s choice for excellence matters. Together, the choices of our employees for excellence in their respective areas can create an amazing differentiation and a huge competitive advantage.

Unless the present culture is changed by design by the management, it will certainly damage our productivity and competitiveness also. It is time to empower every employee to make the choice for excellence. Managers need to shift from a focus on process to a focus on enabling employee excellence. By giving employees permission to perform, managers allow employees to unleash their excellence capacity and make a difference.

We urgently need to regain our capacity for excellence and deliver it every day. We need to redefine excellence as positive and thoughtful, looking for everyday action that is capable of being delivered by each and every employee at all levels. In doing so, we must defy the misconception that excellence is once-in-a-lifetime happening in the domain of the rare and the few. We must make excellence a personal matter and define it as a personal commitment. We must make it as a daily habit to keep the employees reminded that they have to choose it every day and execute excellence in everything we do. To get started, we must work to regain an attitude of aptitude. Care must also be taken that the excellence drive should be understood in an appropriate manner by each company. Faulty definition of excellence can cause individuals and organizations to miss the mark when it comes to meeting and exceeding customer expectations. Self-centric definitions of excellence can place organizations and customers on completely different paths that are not destined to meet. As a result, individuals often miss opportunities to perform to their excellence potential, and organizations fail to remain competitive. Excellence or nothing is the choice we face every day. Only when we learn to make a conscious choice for excellence will we stand a chance of winning.

In our pursuit of becoming global companies and in view of the competition, let us do our best and bring out the untapped embedded excellence that has remained dormant among our executives and employees. CRM is not restricted to our external customers just because by concept it is addressed to our customers; it covers our own employees and work force also.

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**PDCA Cycle**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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<tbody>
<tr>
<td>1.</td>
<td>Act</td>
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<td></td>
<td>Management review and revise strategy</td>
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<td>2.</td>
<td>Do</td>
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<td>Develop and provide products and services</td>
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<td>3.</td>
<td>Plan</td>
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<td>Establish targets and policies based on customer needs</td>
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<td>4.</td>
<td>Check</td>
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<td>Customer evaluation and internal audits</td>
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<td></td>
<td>Customer feedback</td>
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**Raising Customer Satisfaction, Mitsubishi UFJ Trust and Banking Corporation (MUTB)**
Customer/consumer Relations has always been at the heart of the retail and consumer goods industry. But the changing behavior and expectations of customer/consumers today demands constant monitoring, measuring and managing through a highly effective Customer/consumer Relationship Management strategy. At the same time, the Internet is extending the customer/customer relationship and transforming it into a vast, networked community to provide opinion / feedbacks, which is set to play a major role in spreading the reputation of the business.

As a consequence, retail & customer/consumer companies must become more sophisticated in data mining, quick change over to customer-centric design, improve quality, use of alternative sales channels, direct customer/consumer interactions etc.,

Successful “Best practice” companies make every effort to continually monitor the ways in which customer/consumer expectations are changing. They choose technology approaches that bring them closer to their customer/consumers, which in turn give them more immediate reliable feedback. But the moment of truth comes when a client comes into contact with your company at a cash-register, on the Internet, or at the end of a telephone or at the first sight of seeing the product on the shelf or at the immediate moment of usage of the product. At those moments, it’s vitally important to have a reliable quality of the product and / or that the point of contact be managed by competent people who can adequately represent your company’s culture and values. Loyalty programs again have allowed retailers to collect and analyze vast quantities of data on purchases by individuals. E-retailing has also added to the avalanche of data. While this information is essential to understanding changing customer/consumer needs and expectations, it’s imperative that the systems used to gather this information are also efficient and cost-effective, for the business to go ahead.

Today the industry is forced to harness the power of intelligent customer/consumer interactions. For customer/consumer product manufacturers, the days of simple operational cost savings are over. In today’s economy, you have deeper and more critical customer/consumer-centric problems to solve. It seems every day you see a new article about customer/consumer’s dislike of the service / goods they receive at traditional store locations and hear family & friends talk about going directly to manufacturers to resolve product issues. The message is clear: Customer/consumer relationship management is shifting off retailers’ shoulders directly onto the manufacturers. The good news is, today you have the opportunity to interact with the customer/consumers who are reaching out to you on a daily basis, and to realize the full revenue potential of your current customer/consumer base.

On time supplies of quality products, effective presentation and delighted customer/consumers are the lifeblood of the customer/consumer goods industry. Time sensitivity in business is so essential, hence, the faster you react, the better your customer/consumers like it. Having spent an excessive amount of time and money, collecting, analyzing and trying to utilize customer/consumer data by turning it into information and knowledge; these data’s if actioned promptly should result in the following essential measurables for successful sustenance of the business

- Attractive / Visually Competitive / Turn On effect
- Presentation of goods / service
- Quality of goods / service
- Reliability / Durability
- Sensitive to Customer/consumer needs
- Price Factor
- After Sales / Service – Customer/consumer learning’s

There has to be a system of reverting back to the customers/consumers on the actions implemented and improvements achieved based on the feedbacks derived from the customer/consumer, as this can also form a gesture of thanking the consumer / customer, which may result again in loyalty build up.
Patient relationship management improves patient health and satisfaction

It’s nearly impossible to go a week without seeing a news story about alarming increases in the rates of chronic diseases, or about the need to increase focus on disease prevention. As much as clinicians want to assist in proactively addressing the overall well-being of their patients, they’re hindered by silos of electronic information stored in multiple systems or even cumbersome paper-based records.

Increased pressure to contain costs has put an even greater strain on under-funded healthcare information technology (IT) budgets, putting large-scale system overhauls out of reach for most healthcare organizations. More and more, healthcare IT professionals are looking to commercial applications that can integrate with current systems to make significant incremental improvements in patient care and satisfaction.

For years, public sector businesses have realized the benefits of deploying customer relationship management (CRM) systems that help them build long-term customer relationships. In turn, consumers have grown accustomed to dealing with businesses that proactively understand and serve their needs. Microsoft Dynamics CRM can seamlessly address patient relationship management (PRM) needs as well. Using PRM software applications, healthcare providers can move beyond treating episodes of illness to enabling proactive care by establishing productive, long-term relationships with patients. PRM applications can:

- **Help prevent additional illness.** With a 360-degree view of the patient, physicians can more easily identify relationships between current symptoms and future health concerns.
- **Improve the quality and consistency of care.** Automated processes can be created to ensure critical safety procedures are followed, and that the organization is in compliance with privacy and other regulatory policies.
- **Speed routine processes, such as admissions, referrals, and discharges.** By analyzing the performance of routine processes over time, improvements can be made that eliminate unnecessary steps and increase patient satisfaction.
- **Eliminate time wasted accessing information.** By electronically storing indexed documents, such as treatment plans, symptom-and-diagnoses relationships, and reference articles, less time is spent searching for information needed to deliver quality care.
- **Automate proactive communications.** By viewing patient data sorted by certain characteristics, targeted proactive communications can easily be sent. For example, mailings to diabetic patients can inform them of new information, treatment options, or upcoming educational offerings.
- **Reduce the number of missed appointments.** Tasks can easily be set up to streamline appointment reminder calls. Automated processes can be put in place for follow-up and rescheduling should appointments be missed.

CRM for Health and Social Services

Health and social services organizations can reduce inefficiencies, optimize care plans, and improve financial management with Microsoft Dynamics CRM.

- Get a 360-degree view of each client, whether your organization serves family, children, the elderly, people with disabilities, or other clients.
- Automate processes and systems to reduce administrative burdens.
Customer Relationship Management


Customer relationship management is a broadly recognized, widely-implemented strategy for managing and nurturing a company’s interactions with customers and sales prospects. It involves using technology to organize, automate, and synchronize business processes—principally sales related activities, but also those for marketing, customer service, and technical support. The overall goals are to find, attract, and win new customers, nurture and retain those the company already has, entice former customers back into the fold, and reduce the costs of marketing and customer service.

According to Forrester Research, spending on customer relationship management is expected to top $11 billion annually by 2010, as enterprises seek to grow top-line revenues, improve the customer experience, and boost the productivity of customer-facing staff.

Once simply a label for a category of software tools, customer relationship management has matured and broadened as a concept over the years; today, it generally denotes a company-wide business strategy embracing all customer-facing departments and even beyond. When an implementation is effective, people, processes, and technology work in synergy to develop and strengthen relationships, increase profitability, and reduce operational costs.

Benefits

Customer relationship management tools have been shown to help companies attain these objectives:

- Streamlined sales and marketing processes
- Higher sales productivity
- Added cross-selling and up-selling opportunities
- Improved customer service, loyalty, and retention
- Increased call center efficiency
- Higher close rates
- Better customer profiling and targeting
- Reduced expenses
- Increased market share
- Higher overall profitability
- Marginal costing

Challenges

Customer relationship management technology has been, and still is, offered as on-premises software that companies purchase and run on their own IT infrastructure. Perhaps the most notable trend has been the growth of tools delivered via the Web, also known as cloud computing and software as a service (SaaS). In contrast with conventional on-premises software, cloud-computing applications are sold by subscription, accessed via a secure Internet connection, and displayed on a Web browser. Companies don’t incur the initial capital expense of purchasing software; neither must they buy and maintain IT hardware to run it on. In 2009, SaaS represented approximately 20% of all customer relationship management spending, and continues its trajectory of outselling on-premises software by a ratio of 3-to-1.

Social Media

Social media sites like Twitter and Facebook are greatly amplifying the customer voice in the marketplace, and are predicted to have profound and far-reaching effects on the ways companies manage their customer relationships. This is because customers are using these social media sites to share opinions and experiences on companies, products, and services. As social media isn’t moderated or censored, individuals can say anything they want about a company or brand, whether pro or con. Increasingly, companies are looking to gain access to these conversations and take part in the dialogue. More than a few systems are now integrating to social networking sites. Social media promoters cite a number of business advantages, such as using online communities as a source of high-quality leads and a vehicle for crowd sourcing solutions to customer-support problems. Companies can also leverage customers’ stated habits and preferences to personalize and even “hyper-target” their sales and marketing communications.

Some analysts take the view that business-to-business marketers should proceed cautiously when weaving social media into their business processes. These observers recommend careful market research to determine if and where the phenomenon can provide measurable benefits for customer interactions, sales, and support.
Educational Entertainment and its uses in the Millennium Development to reduce Stress

A Punitha¹, G Savithiri², S Augustina Mary³

¹³ Velammal Engineering College, Surapet, Red Hills Road, Ambattur, Chennai, Tamilnadu 600095
² Velammal College of Management and Computer Studies, Ambattur – Red Hills Road, Chennai 600066
E-mail: hepaug_2005@yahoo.co.in; hepaug@gmail.com

Learning is more likely when people can see the usefulness of the knowledge they are given. Learning is most effective when people can learn at their own pace. Different people learn in different ways over different periods of time. It is important to present information differently so that people can absorb it. Social influences affect behavior, including beliefs and perceived. People learn by observing others and the consequences of their behavior. Educational play facilities as well as hands-on children’s museums are considered to be “edutainment” where children actively play in engaging environments, and learning in the process.

Introduction

As the students are given with many work pressures like doing home works, projects, Charts, Examinations etc they undergo a lot of stress which leads to suicides and psychological problems.

Entertainment-education is a communication strategy consisting of the insertion of educational or motivational information into entertainment media. [1] The entertainment-education strategy is based on Bandura’s social cognitive theory, which posits that individuals learn new behaviors by observing and imitating the behavior of others, who serve as role models. [2]

Another underlying principle is that individuals may increase their self-efficacy, or sense of their ability to carry out a task, by seeing individuals similar to themselves perform the task successfully. This makes entertainment education a suitable approach for efforts to increase concentration and practical knowledge about the subject.

Common Stressors in College Life Include:

Greater academic demands
- Substance abuse
- Awareness of one’s sexual identity and orientation
- Preparing for life after graduation
- Psychological make-up can also play a role in vulnerability to depression. People who have low self-esteem, who consistently view themselves and the world with pessimism, or are readily overwhelmed by stress may be especially prone to depression.

Edutainment

Edutainment is also a growing paradigm within the science museum community in the United States. This approach emphasizes fun and enjoyment, often at the expense of educational content. The idea is that people are used to flashy, polished entertainment venues like movie theaters and theme parks that they demand similar experiences at science centers and museums. Thus, a museum is seen as just another business competing for entertainment dollars from the public, rather than as an institution that serves the public welfare through education or historical preservation.

Simon Egenfeldt-Nielsen (PhD, Psychologist) has spent a great deal of time researching The Educational use and potential of computer games and has written many articles on the subject. The most specific paper [12] dealing with Edutainment breaks it down into 3 generational categories to separate the cognitive methods most predominantly used to teach.
Entertainment-education often uses story-telling. Story-telling may be the oldest form of education. It remains a powerful way to communicate knowledge and experience. Stories can transmit knowledge that would be difficult to translate into explicit statements.

Some college professors have adopted the practice of edutainment in order to keep the interest of adult students in long classroom lectures [11]. Here the instructor entertains the students while meeting course objectives. An important teaching technique of education is to use variety, by utilizing various mediums such as video, in-class skits, demonstrations, and Power Point slides along with lectures. Within the lecture, the instructor can add comedy and discussions of personal experiences of the professor or students.

The "classroom of the future" will probably contain several kinds of simulators, in addition to textual and visual learning tools. This will allow students to enter the clinical years better prepared, and with a higher skill level. The advanced student or postgraduate will have a more concise and comprehensive method of retraining or of incorporating new clinical procedures into their skill set and regulatory bodies and medical institutions will find it easier to assess the proficiency and competency of individuals.

The classroom of the future will also form the basis of a clinical skills unit for continuing education of medical personnel; and in the same way that the use of periodic flight training assists airline pilots, this technology will assist practitioners throughout their career.

Simulation is often used in the training of civilian and military personnel. This usually occurs when it is prohibitively expensive or simply too dangerous to allow trainees to use the real equipment in the real world. In such situations they will spend time learning valuable lessons in a "safe" virtual environment. Often the convenience is to permit mistakes during training for a safety-critical system. For example, in simSchool teachers practice classroom management and teaching techniques on simulated students, which avoids "learning on the job" that can damage real students. There is a distinction, though, between simulations used for training and Instructional simulation.

Training simulations typically come in one of three categories:

- "live" simulation (where real people use simulated (or "dummy") equipment in the real world);
- "virtual" simulation (where real people use simulated equipment in a simulated world, or virtual environment), or
- "constructive" simulation (where simulated people use simulated equipment in a simulated environment).

Constructive simulation is often referred to as "wargaming" since it bears some resemblance to table-top war games in which players command armies of soldiers and equipment that move around a board.

Simulations in education are somewhat like training simulations. They focus on specific tasks. The term 'microworld' is used to refer to educational simulations which model some abstract concept rather than simulating a realistic object or environment, or in some cases model a real world environment in a simplistic way so as to help a learner develop an understanding of the key concepts. Normally, a user can create some sort of construction within the microworld that will behave in a way consistent with the concepts being modeled.

The simulator will be more than a “living” textbook, it will become an integral part of the practice of medicine. The simulator environment will also provide a standard platform for curriculum development in institutions of medical education.

Social simulations may be used in social science classrooms to illustrate social and political processes in anthropology, economics, history, political science, or sociology courses, typically at the high school or university level. These may, for example, take the form of civics simulations, in which participants assume roles in a simulated society, or international relations simulations in which participants engage in negotiations, alliance formation, trade, diplomacy, and the use of force. Such simulations might be based on fictitious political systems, or be based on current or historical events. An example of the latter would be Barnard College’s "Reacting to the Past" series of educational simulations [9].

Programs are characterized by an ongoing story line with several concurrent plots linked together by the characters’ personal relationships. Another underlying principle is that individuals may increase their self-efficacy, or sense of their ability to carry out a task, by seeing individuals similar to themselves performs the task successfully.

Mental health problems can negatively impact students’ ability to learn, function, and interact within families, schools, and communities and result in financial and social costs to society [3].

A number of recent articles in the lay professional press have drawn attention to the growing number of students with serious psychological problems and the increase among those seeking counseling on campuses [4].

"Learning is basically an interplay between two challenging processes—getting knowledge that is inside to move out, and getting knowledge that is outside to move in." [5].

Now it is established from various sources that entertainment is an essential element for most age groups, what is it that provides entertainment within an e-learning program? Here are some pointers from the survey [6]:

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<table>
<thead>
<tr>
<th>Performance of entertainment in learning age groups (8-18)</th>
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<tr>
<td>High</td>
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</tr>
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<td>15</td>
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<td>85</td>
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<th>Performance of entertainment in learning age groups (18-25)</th>
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<tr>
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<table>
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<th>Performance of entertainment in learning age groups (25-35)</th>
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<tr>
<td>High</td>
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<td>23</td>
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<td>73</td>
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The top ‘engagers’ almost all have elements of ‘fun’ or ‘entertainment’ in them. 96% voted for scenarios, 91% for games, 87% for stories. One of the conclusions then is that all entertainers engage though all engagers may not be entertaining.

The interesting aspect is the focus on ‘mental’ interactivity as opposed to mere physical interactivity (see the dismal results for pop-ups). This is significant in relation to the kind of entertainment suitable for e-learning that is intrinsic, e.g. challenge in a game as opposed to mere trappings like clicking of buttons [10].

**Connection between entertainment and Engagement**

To delve further into the relationship between entertainment and engagement in e-learning, the following questions were asked.

The overall feedback on the above game-based training on different parameters:

**Level of Entertainment**

In a nutshell, choice of solution and the level of entertainment therein, are dependent primarily on the audience and also on the content being taught. Boring, difficult to remember content often demands a higher level solution; learners with short attention span, lesser education often respond better to games; at the same time, complex content involving decision making and targeting an evolved audience (management trainees & senior leaders) is best dealt with using games, simulations and stories.

**Conclusion**

Entertainment is an important element in learning programs and is needed for all age groups. It is Pervasive, Popular, Personal, Participatory, Passionate, Persuasive, Practical, Proven effective. The relationship between entertainment and engagement seems to emerge strongly, and the strongest common thread is the ‘retention of learning’. Entertainment in e-learning is most effective when it is not merely delivered through external trappings. While taking training into the e-learning mode, it’s not enough to just digitize the offline material; one needs to design with the medium in mind. Choice of solution and the level of entertainment therein, are dependent primarily on the audience and also on the content being taught. The level of entertainment should be decided after thorough analysis of audience, task, content and historical data. The idea behind the entertainment strategies should be geared towards delivering a learning objective.
The Overall Feedback On The Above Game-Based Training on Different Parameters

<table>
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<th>Feedback type</th>
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<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
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<td>116</td>
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<td>360</td>
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<td>279</td>
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<td>2</td>
<td>2</td>
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</tbody>
</table>

References


6. Entertainment, Engagement & Education - a survey on e-learning approaches in corporate training (Respondents from USA, UK and India);


11. http://professormbird.com/id15.html Professor Teaching Model


Computer Society to vend India’s e-Gov model

Amrit Tripathi / DNA
Tuesday, February 23, 2010 3:29 IST
Mumbai: India’s oldest IT body — Computer Society of India (CSI) — will take the country’s e-governance model to emerging economies such as Bangladesh and Nepal and to countries in Latin America and Africa, its president S Mahalingam said.

“We are working with the South East Asian Regional Computing Confederation (SEARCC), of which CSI is a prominent member, to take our e-governance model to some of the emerging countries in Asia, Latin America and Africa.

“We have developed a bouquet of case studies of successful e-governance projects in India that we would share with governments of countries such as Bangladesh, Pakistan and others to start with,” Mahalingam, who is also CFO of Tata Consultancy Services, told DNA Money.

The body is initiating steps to develop a complete ecosystem for development of IT professionals in India. Mahalingam said development of such an ecosystem needs greater focus from the computer bodies in India, given the requirement of such professionals in the upcoming government to citizen services.

“Take the Unique Identity (UID) project, for instance. When it takes off in a big way, the kind of database it will have will need IT experts in huge numbers. Thus, professional development is important,” he said.

So far, India’s more popular IT body — Nasscom — has focused on the business side of IT. However, the IT industry has been demanding more industry-ready IT professionals for some time.

“Nasscom is more business driven. We had left the professional development to educational institutes. But along the way, we thought there has to be greater focus on IT professional development, on accreditation and so on, and that has to be done with a greater zeal. So, some of us thought of reviving that in CSI. When India is developing standards for e-governance, Nasscom cannot play as big a role as CSI,” said Mahalingam.

The body is now creating an ecosystem that will allow IT professionals to build local language interfaces, promote research and development for technology usage for mass development in the country, assist various government bodies for better governance through usage of IT systems and expand greater use of IT by firms in India.

In January, CSI signed an agreement with the British Computer Society (BCS) to share services, publications and qualifications for their respective members.

Some BCS courses, such as those on business analysis, software testing, green IT and the EU code of conduct for data centres, will be introduced in India.

“One of the concerns we have is how we should keep upgrading the capability of members. Not just their qualifications, but on an ongoing basis, how do we introduce them to new areas and technology changes?

“Since education activities are a very critical component of professional development of CSI,” she added Mahalingam.
Study of System Behaviour for Object Oriented Systems using Metrics

Kulwant Kaur*, Hardeep Singh**

* Apeejay Institute of Management, Jalandhar - 144007. Email: kulwant.kaur@apjim.org
** Department of Computer Science & Engineering, Guru Nanak Dev University, Amritsar-1443005, India.
   Email : hardeep_gndu@rediffmail.com

Over last three decades, the software development methodologies are evolved as object-oriented methodologies of new era. Object-oriented software development methodologies (OOSDM) are aimed at viewing, modelling and implementing the system as a collection of interacting objects, using the dedicated modelling languages, activities and techniques needed to address the specific issues of the object-oriented paradigm. The increasing importance of Software measurement has led to development of new software measures. In this paper, we will discuss only one system which is implemented in two Object Oriented languages (i.e. C++ and Java). Finally, a review of empirical study will evaluate system behaviour.

1. Introduction

The Software Engineering makes an effort to improve performance and lower cost of the software through implementing of both formal and informal principles of design and analysis as well project management. The modern large computer system posses both large number of functional elements as well as high degree of inter dependency among them leading to loss of transparency of both system and behaviour. Therefore, principle objective of system development process is to establish a design which will satisfy system requirements and constraints will also optimize issues associated with system functionality, behaviour and implementation.

System Behaviours are small modules/objects that add functionality to parent modules/objects. The parent has a reference to the behaviour and the behaviour has reference to the parent. In this case study, we will discuss only one system which will implemented in two Object Oriented languages C++ and Java. Evolution will be done on Procedural Metrics which include measures like lines of code, lines of comment, McCabe's cyclomatic complexity etc.; Object Oriented Design metrics like Weighted methods per class, Depth of inheritance tree, Number of children and Coupling between objects The number of other modules; and Structural measures like fan-out, and the Information Flow.

This paper presents a review of related work in the following section. Section 3 describes the design phase of chosen system. Section 4 explains Object-Oriented Paradigms. In section 5 we describe the set of metrics and data chosen for analysis. The explanation and utility of metrics is described in section 6. The results of analysis in presented in section 7. Section 8 presents the conclusion.

2. Related Work

According to previous research undertaken, the approach was to represent complex real time system behaviour (Krangelen N.E. and Hoan N. T. (1994)) included
1. Top level system behaviour as observed externally (i.e. system act as Black Box)
2. Real time behaviour of system functional design
3. Real time behaviour implementation design options
   This approach partitioning system behaviour capture provides a mechanism for representing key aspects of system behaviour at various points in design process,
   Kim J. and Hsu Y. (2000) discuss the issues related Memory system behavior of Java programs in which they traces information using a tool and examined the cache performance, the lifetime characteristics of Java objects and performance impact of garbage collection and heap size.

   A study was taken with on class imbalances vs class overlapping (Prati, et. al. (2004.) to check the performance of system.
   The modelling method proceeds (Glinz M. (2004)) in approximately following steps
   1. Classify components of system
   2. Model external behaviour of components
   3. Model internal behaviour of components
   4. Integrate the resulting state chart
   These steps are not considered to be strict like
waterfall life cycle model but it is necessary that a step must be completed before the start of next. For any model development, modelling of event behaviour is followed by internal behaviour and then both specifications are integrated.

3. Object-oriented Design

Over last three decades, the software development methodologies are evolved as object-oriented methodologies of new era. Object-oriented software development methodologies (OOSDM) are aimed at viewing, modelling and implementing the system as a collection of interacting objects, using the dedicated modelling languages, activities and techniques needed to address the specific issues of the object-oriented paradigm. In order to analyze a system, we discuss its design phase of case study provided in “Object Oriented and Classical Software Engineering” authored by S.R. Schach (Schach 2002). Their respective codes are available on Internet. The proposed system is implemented in C++ and Java.

There are two aspects of a product. They are Actions which operate on data and Data on which actions operate. There are three basic ways of designing a product are
a. Action-oriented design
b. Data-oriented design
c. Hybrid methods i.e. object-oriented design

Object-Oriented paradigm has three features: inheritance, polymorphism and encapsulation. Object-Oriented requirement analysis and design is important in software life cycles. Modern operating systems handle multi-tasks concurrently. In order to synchronize these tasks simultaneously, the operating system has to ensure process mutual exclusion and synchronization.

Software testing is an internal part in software life cycle. In fact testing starts from the beginning of life cycle and ends when the software retires. Testing includes execution-based testing and non-execution-based testing. A system must have a certain degree of fault tolerance. The modeling method include components of the system, Model the external behavior & internal behavior components and Integrate the resulting state charts. These steps are meant as a sequence of thinking.

Object Oriented Design (Schach 2002) broadly consists of four steps:

A. Construct interaction diagrams for each scenario
a. Sequence diagrams: The sequence diagram does solve problem of inter-object messaging, but proves inadequate in visualizing system logic. There is no way of knowing how a decision was executed. The visualization of one message caught by multiple objects and handled simultaneously is also awkward.

b. Collaboration diagrams: Apart from object identification and inter-object messaging the collaboration diagram will also show parallel processing, but it will give no clue of the process logic. Both diagrams show the same thing of Objects and messages passed between them but in a different way.

B. Construct the detailed class diagram

Class diagram depicts the classes and their attributed with their actions / methods. Here we assign an action to a class or to a client of that class. The Criteria used Criteria
a. Information hiding : The state variables of a class should be declared private (accessible only within an object of that class) or protected (accessible only within an object of that or a subclass of that class)
b. Reducing number of copies of action: Even if no information hiding is required, in case a particular action is performed by number of clients of an object, it makes to have a single copy.
c. Responsibility-driven design
A detailed design is developed for all the classes. Implementing a complete product and then proving it correct is hard. However, use of formal techniques during detailed design can help:

- Correctness proving can be applied to module-sized pieces
- The design should have fewer faults if it is developed in parallel with a correctness proof
- If the same programmer does the detailed design and implementation
  - The programmer will have a positive attitude to the detailed design
  - Should lead to fewer faults

Real-Time Design Methods are generally extensions of non real-time methods to real-time. In order to design Real-Time Systems, difficulties associated with real-time systems are:

- Inputs come from real world and the Software has no control over timing of inputs
- Applications are frequently implemented on distributed software that have Communications implications and Timing issues
- Problems of synchronization include Race conditions, Deadlock (deadly embrace)

Major difficulty in design of real-time systems is determining whether the timing constraints are met by the design.

Testing during the Design Phase should include design reviews which must design must reflect correct specifications and Transaction-driven inspections. The design must have no logic faults and all interfaces must be correctly defined. Metrics for the Design Phase are:

A. Design team should not do too much and it should not become code
B. Design team should not do too little and it is essential for the design team to produce a complete detailed design

4. Object-Oriented Paradigms

Early procedural programming is analogous to the 'waterfall' model. As the problems to be addressed became more complex, procedural languages and programming techniques became more sophisticated to deal with them. Techniques of structured systems analysis and design were developed. There are almost two dozen major object-oriented programming languages in use today. C++ and Java are the most popular object-oriented languages today. The Java programming language is designed especially for use in distributed applications on corporate networks and the Internet.

The concepts and rules used in object-oriented programming provide these important benefits:

- The concept of a data class makes it possible to define subclasses of data objects that share some or all of the main class characteristics. Inheritance is property of OOP forces a more thorough data analysis, reduces development time, and ensures more accurate coding.
- Since a class defines only the data it needs to be concerned with, when an instance of that class (an object) is run, the code will not be able to accidentally access other program...
data. This characteristic of data hiding provides greater system security and avoids unintended data corruption.

- The definition of a class is reusable not only by the program for which it is initially created but also by other object-oriented programs.
- The concept of data classes allows a programmer to create any new data type that is not already defined in the language itself.
- In order to maintain and modify existing code, new objects can be created with small differences to existing ones. The typical programmer’s advantages are
  - Multiple-inheritance, where classes can inherit from multiple super classes.
  - Method combination, in which the means by which several applicable operations to a particular set of arguments can be combined, is itself an object-oriented specification, definable by the programmer.
  - Shared class variables (slots, attributes) that are shared by all instances of a class, in addition to instance variables which are unique to each instance.

The behaviour of operations on objects (methods) is themselves defined as first-class objects, which can be specialized by the programmer and access to classes themselves as first-class objects. The objects which define the behaviour of classes are themselves classes, usable directly by the programmer.

5. Metrics set and Empirical Data Collection

The list of metrics chosen for this study is given in Table 2. To analyze proposed metrics for this work, their values are computed on above discussed case study. Their respective codes are C++ and Java.

6. Metrics and their utility

In this section, measures are described in with respect to their utility. The metrics chosen for analysis are divided into three categories Procedural, Object Oriented and Structural measures.

Procedural Metrics

For procedural measures, lines of code, lines of comment, McCabe’s cyclomatic complexity are summed over each module.

- NOM (Number of modules): It counts number of methods defined in a class.
- LOC (Lines of Code): It counts number of non-blank, non-comment lines of source code.
- COM (Lines of Comments): It counts number of lines of comment.
- MVG (McCabe’s Cyclomatic Complexity): MVG is measure of the decision complexity of the functions which make up the program. In other words, it is the number of linearly independent routes through a directed acyclic graph which maps the flow of control of a subprogram.

Object Oriented Design

For present case study, four out of the six metrics proposed by Chidamber and Kemper (Chidamber S.R. and Kamere C.F. (1994)) are considered:

- WMC (Weighted methods per class): WMC is a weighting function over the functions of the module. Two different weighting functions are applied: WMC1 uses the nominal weight of 1 for each function, and hence measures the number of functions; WMCv uses a weighting function which is 1 for functions accessible to other modules, 0 for private functions.
- DIT (Depth of inheritance tree): DIT is described as the length of the longest path of inheritance ending at the current module. The deeper the inheritance tree for a module, the harder it may be to predict its behaviour. On the other hand, increasing depth gives the potential of greater reuse by the current module of behaviour defined for ancestor classes.
- NOC (Number of children): NOC is the number of modules inherited directly from the current module. Moderate values of this measure indicate scope for reuse, however high values may indicate an inappropriate abstraction in the design.
- CBO (Coupling between objects): It is the number of other modules which are coupled to the current module as

### Table 1: Programming Language Comparison

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Java</th>
<th>Java C++</th>
</tr>
</thead>
<tbody>
<tr>
<td>Object-Oriented</td>
<td>Hybrid</td>
<td>Hybrid / Multi-Paradigm</td>
</tr>
<tr>
<td>Static / Dynamic Typing</td>
<td>Static</td>
<td>Static</td>
</tr>
<tr>
<td>Generic Classes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Inheritance</td>
<td>Single</td>
<td>Multiple</td>
</tr>
<tr>
<td>Method Overloading</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Operator Overloading</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Garbage Collection</td>
<td>Mark</td>
<td>None</td>
</tr>
<tr>
<td>Class Variables/Methods</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Reflection</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Access Control</td>
<td>public,</td>
<td>public, protected, “package”, private</td>
</tr>
<tr>
<td></td>
<td>protected, “package”, private</td>
<td>public, protected, private, “friends”</td>
</tr>
<tr>
<td>Multithreading</td>
<td>Yes</td>
<td>Libraries</td>
</tr>
<tr>
<td>Regular Expressions</td>
<td>Standard Library</td>
<td>No</td>
</tr>
<tr>
<td>Pointer Arithmetic</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Language Integration</td>
<td>C, some C++</td>
<td>C, Assembler</td>
</tr>
</tbody>
</table>

Note: Based on number of source code lines per function point

### Table 2: Metrics for Software Evaluation

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Metrics Attribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>NOM (Number of modules)</td>
</tr>
<tr>
<td>2.</td>
<td>LOC (Lines of Code)</td>
</tr>
<tr>
<td>3.</td>
<td>COM (Lines of Comments)</td>
</tr>
<tr>
<td>4.</td>
<td>MVG (McCabe’s Cyclomatic Complexity)</td>
</tr>
<tr>
<td>5.</td>
<td>WMC (Weighted methods per class)</td>
</tr>
<tr>
<td>6.</td>
<td>DIT (Depth of inheritance tree)</td>
</tr>
<tr>
<td>7.</td>
<td>NOC (Number of children)</td>
</tr>
<tr>
<td>8.</td>
<td>CBO (Coupling between objects)</td>
</tr>
<tr>
<td>9.</td>
<td>Fan-in</td>
</tr>
<tr>
<td>10.</td>
<td>Fan-out</td>
</tr>
<tr>
<td>11.</td>
<td>IF4 (Information Flow measure)</td>
</tr>
</tbody>
</table>

Note: Based on number of source code lines per function point
a client. Excessive coupling indicates weakness of module encapsulation and may inhibit reuse.

**Structural Metrics**

Structural metrics based on the relationships of each module with others. Includes fan-out (i.e. number of other modules the current module uses), fan-in (number of other modules which use the current module), and the Information Flow measure suggested by Henry and Kafura, which combines these to give a measure of coupling for the module.

**I. Fan-in:** The fan-in of a module can be defined as the number of flows into the module plus the number of global data structures accessed by the module.

**J. Fan-out:** The fan-out of a module is the number of flows out of the module plus the number of global data structures updated by the module.

**K. IF4 (Information Flow measure):** A composite measure of structural complexity is given by length X (fan-in X fan-out)2 where length is a measure of the size of the module.

7. Analysis of Software metrics on Empirical Data

To analyze proposed metrics their values are computed on same system whose case study is discussed in provided section. The proposed system is implemented in C++ and Java.

Table 2 shows measures over the project as a whole for both the systems. Besides NOM, LOC, COM and MVG measures, three more measures are also considered. They are:

- **L_C** (Lines of code per line of comment) which indicates density of comments with respect to textual size of program
- **M_C** (Cyclomatic Complexity per line of comment) which indicates density of comments with respect to logical complexity of program
- **IF4** (Information Flow measure) which measures the information of flow between modules suggested by Henry and Kafura. The analyser makes an approximate count of this by counting inter-module couplings identified in the module interfaces. IF4 is further divided into two variants. One IF4v is used for calculating only relationships in the visible part of the module interface, and the second IF4c used for calculating only those relationships which imply that changes to the client must be recompiled of the supplier’s definition changes.

<table>
<thead>
<tr>
<th>Metrics</th>
<th>Min.</th>
<th>Max.</th>
<th>Mean</th>
<th>σ</th>
<th>Min.</th>
<th>Max.</th>
<th>Mean</th>
<th>σ</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOC</td>
<td>0</td>
<td>466</td>
<td>51.14</td>
<td>99.52</td>
<td>0</td>
<td>544</td>
<td>101.2</td>
<td>144.07</td>
</tr>
<tr>
<td>MVG</td>
<td>0</td>
<td>80</td>
<td>9.71</td>
<td>18.3</td>
<td>0</td>
<td>57</td>
<td>12.4</td>
<td>16.71</td>
</tr>
<tr>
<td>COM</td>
<td>0</td>
<td>231</td>
<td>29.43</td>
<td>52.83</td>
<td>0</td>
<td>208</td>
<td>42.86</td>
<td>55.07</td>
</tr>
</tbody>
</table>

**Table 3 : Comparison of two system with respect to overall and per module measures**

<table>
<thead>
<tr>
<th>Metrics</th>
<th>C++</th>
<th>Java</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOM</td>
<td>28</td>
<td>15</td>
</tr>
<tr>
<td>LOC</td>
<td>1450</td>
<td>1522</td>
</tr>
<tr>
<td>MVG</td>
<td>272</td>
<td>186</td>
</tr>
<tr>
<td>COM</td>
<td>841</td>
<td>648</td>
</tr>
<tr>
<td>L_C</td>
<td>1.72</td>
<td>2.35</td>
</tr>
<tr>
<td>M_C</td>
<td>0.32</td>
<td>0.29</td>
</tr>
<tr>
<td>IF4</td>
<td>4905</td>
<td>765</td>
</tr>
<tr>
<td>IF4v</td>
<td>961</td>
<td>765</td>
</tr>
<tr>
<td>IF4c</td>
<td>3305</td>
<td>510</td>
</tr>
</tbody>
</table>

**Table 4: Descriptive Statistics for Procedural, Object Oriented and Structural Metrics**

<table>
<thead>
<tr>
<th>Metrics</th>
<th>C++</th>
<th>Java</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOC</td>
<td>0</td>
<td>466</td>
</tr>
<tr>
<td>MVG</td>
<td>0</td>
<td>80</td>
</tr>
<tr>
<td>COM</td>
<td>0</td>
<td>231</td>
</tr>
</tbody>
</table>

**Descriptive statistics (min, max, mean, median and standard deviation) calculated are presented in this section. Table 3 represents descriptive statistics for Procedural Metrics, Object Oriented Design Metrics and Structural Metrics.** Following are observations:

- **The DIT and NOC values are medium in both cases; this shows that inheritance is at optimum level.**
- **McCabe’s Cyclomatic Complexity is a measure purely of control complexity, data complexity is ignored. These two modules are equivalent in functionality.**
- **CBO value is less in this analysis, which indicates values are easy to understand, reuse and maintain.**
- **Fan-in and fan-out incorporate global data; this metric has a data dependant component. This metric is no better measure of complexity than simpler metrics such as Cyclomatic Complexity.**
- **The values for WMC and NOM are same as method complexities are generally weight is considered to be unity.**
- **NOC having moderate values indicate scope for reuse.**

Table 5 shows correlation coefficient calculated between metrics for C++ program results that

- There is strong correlation exists between LOC, COM, WMC and CBO except with NOC.
- DIT has strong correlation with all parameters except NOC and CBO.
- NOC has no correlation with any metrics.
Table 6: Spearman’s rho Correlations for Java Program

<table>
<thead>
<tr>
<th></th>
<th>LOC</th>
<th>MVG</th>
<th>COM</th>
<th>WMC1</th>
<th>WMCV</th>
<th>DIT</th>
<th>NOC</th>
<th>CBO</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOC</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MVG</td>
<td>.947*</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COM</td>
<td>.955**</td>
<td>.988**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WMC1</td>
<td>.963**</td>
<td>.968**</td>
<td>.998**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WMCV</td>
<td>.891**</td>
<td>.911**</td>
<td>.924**</td>
<td>.912**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIT</td>
<td>.465*</td>
<td>.465*</td>
<td>.477*</td>
<td>.440*</td>
<td>.529**</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOC</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>CBO</td>
<td>.552**</td>
<td>.567**</td>
<td>.602**</td>
<td>.587**</td>
<td>.727**</td>
<td>—</td>
<td>—</td>
<td>1.000</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).
* . Correlation is significant at the 0.05 level (2-tailed).

Table 5: Spearman’s rho Correlations for C++ Program

<table>
<thead>
<tr>
<th></th>
<th>LOC</th>
<th>MVG</th>
<th>COM</th>
<th>WMC1</th>
<th>WMCV</th>
<th>DIT</th>
<th>NOC</th>
<th>CBO</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOC</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MVG</td>
<td>.947**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COM</td>
<td>.982**</td>
<td>.903**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WMC1</td>
<td>.978**</td>
<td>.893**</td>
<td>.998**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WMCV</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1.000</td>
</tr>
<tr>
<td>DIT</td>
<td>.531*</td>
<td>.535*</td>
<td>.531*</td>
<td>.532*</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOC</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>CBO</td>
<td>.552**</td>
<td>.567**</td>
<td>.602**</td>
<td>.587**</td>
<td>.727**</td>
<td>—</td>
<td>—</td>
<td>1.000</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).
* . Correlation is significant at the 0.05 level (2-tailed).

Table 6 shows correlation coefficient calculated between metrics for Java program results that:

- There is strong correlation between LOC, COM and WMCWMC except with NOC and CBO.
- NOC and CBO have no correlation with any metrics.

Analysis of correlation of Procedural and Object Oriented Metrics:

- In C++ and Java program, correlation between LOC (Lines of Code) and COM (Lines of Comments) are strongly correlated. This indicates that more code inside methods (a higher LOC) performs some functionality by calling methods.
- WMC affects class complexity and this affect is transferred to inheriting classes. Consequently more effort and time are needed to maintenance and testing. Table 4 shows that WMC1 and WMCV for C++ are less than equal to 8 but for Java programs WMC1 is approximately 9 and WMCV is zero. In both the cases, cut-off value is very high and number of methods should trigger designer’s attention for rework. Correlation of WMC (Weighted methods per class) with LOC and COM is strong in both the cases which indicates classes with large number of methods are likely to be more application specific and limiting the possibility of reuse.
- Correlation between DIT (Depth of inheritance tree) and LOC is moderate in above discussed case study, which specifies trees consist of average design complexity since less number of classes are involved.
- CBO (Coupling between objects) for a class is a count of number of other classes to which it is coupled. In C++, CBO has better correlation with WMC but moderate with LOC, MVG and COM and no correlation with NOC and DIT. This gives indication that module coupling between object classes is determined to modular design and slight reuse is possible. The more independent a class is the easier it is to use it in another application. In case of Java programs, there is no correlation with any of metrics indicates the more the inter object class coupling, the more rigorous the testing is needed.
- There is no correlation of NOC with any of Procedural and Object Oriented metrics. In both case, NOC (Number of children) also shows similar distribution as compared to DIT rather a higher percentage of class tend to have a zero NOC. A higher number of children mean a higher reuse but on the other hand it also shows an improper observation. Classes having higher NOC value are more critical to design and need rigorous testing.

Analysis of Structural Metrics:

Information flow Complexity is described by IF4. In case either of the value of fan-in and fan-out is low, indicate low Complexity. System lacks complexity if any value of fan-in and fan-out is zero. In Java program, zero value indicates lack of complexity which is real concerned to take action but in other case fan-in and fan-out is low which indicate low complexity. In C++, value of fan-in and fan-out are very high which indicate it needs maintenance. Structural metrics based on the relationships of each module with others. In C++ and Java, value are almost in same domain indicates behaviour is almost similar for fan-out and fan-in. But the Information Flow measure which combines these to give a measure of coupling for the module, values is varying in both the cases.

8. Conclusion and Future Work

In design phase, the design team should be good at programming to write detail design in the particular high level language in which project is to be implemented instead of pseudo code. It is very important that design team should provide adequate design which should not be too long or too short which hinders understandability. The issue of design metrics is more complicated when object oriented paradigm is used. Cyclomatic complexity is problematic as in this data complexity is ignored and it has little use with object-oriented paradigm.

The results indicate that depth of inheritance tree is quite small for most of the classes in both the cases. Inheritance has been found to be correlated to maintainability. Number of children also shows similar distribution as compared to DIT, rather than higher percentage of class tend to zero NOC value. Classes having higher NOC value are more critical to design and need rigorous testing.

This study can be elaborated on large data sets and industrial Object Oriented Software System to give generalized results.

References:


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### CSI Calendar 2010

**March 2010**

**National Conference on Innovation and Entrepreneurship in Information & Communication Technology**

**Date**: 12-13 March 2010  
**Venue**: GNIT Girls Institute of Technology  
**Organized by**: CSI Ghaziabad Chapter & GNIT Girls Institute of Technology  
**For details contact**: Dr. Anil Pandey • Mobile: 98711 71695 OR Vijay Rastogi

**National Seminar on Computational Science and Engineering**

**Date**: 19-20 March 2010, VIT University Vellore  
**Host**: Academic Staff College, VIT University, Vellore  
**Organized by**: CSI Division II and Vellore Chapter  
**For details contact**: hrvishwakarma@vit.ac.in, asc@vit.ac.in

**April 2010**

**NCSVESC-10:**  
3rd National Conference on VLSI, Embedded Systems, Signal Processing and Communication Technologies  
**Date**: 2-3, April 2010 at Chennai  
**Organized by**: Department of Electronics & Communications Engg. Aarupadai Veedu Institute of Technology, Vinayaka Missions University and supported by Div II (Software) & Div IV (Communications) - Computer Society of India, IEEE Computer Society - Madras Chapter.  
**For details contact**: Mr. R. Vijaya Arjunan, Organizing Secretary – NCSVESC-10 at ncvescom2010@gmail.com Ph: 044-27443802 / +91 9943368609 OR Mr. H.R. Mohan, Chair, Div II at hrmohan@gmail.com  
**Website**: www.avit.ac.in

**CSI Radiance 2010**:  
Seminar on Radical Innovation in Academics for Next-generation Computing Education  
**Date**: 6 April 2010, VIT University, Vellore  
**Organized by**: CSI VIT Student Branch  
**For details contact**: ggadeesh@vit.ac.in, pswaralatha@vit.ac.in

**ICEG 2010**:  
The 7th International Conference on e-Governance  
**Date**: 22-24 April 2010  
**Organized by**: Indian Institute of Management Bangalore • IIM Bangalore  
**Co-hosted**: CSI-SIGe-GOV  
**For details contact**: Dr. Ashok Agarwal CSI-SIGeGov Chair. Tel.: 9848053024. Email: agarwalashok.k@gmail.com

**NCSOFT-10**:  
National Conference on Software Engineering  
**Date**: 20-21, April 2010 at Cochin

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**Organized by**: Dept. of Computer Science, Cochin University of Science & Technology in association with CSI Div II on Software and Cochin Chapter.  
**For details contact**: Ms. Mini Ullamat, Conf. Coordinator at ncsoft10@gmail.com or mini_u@cusat.ac.in Mobile: 098477 89382 or Mr. H R Mohan, Chair, Div II at hrmohan@gmail.com

**May 2010**

**IFIP Networking 2009 - Conference**

**Date**: 10-14, May 2010  
**Venue**: Indian Institute of Technology Madras, Chennai, India  
**For details contact**: Prof. S V Raghavan Email: sver@cs.iitm.ernet.in

**June 2010**

**Sharing Summing 2010**

**Date**: 5-6, June 2010.  
**For details contact**: Dr. Ashok Agarwal CSI-SIGeGov Chairman Email: agarwalashok.k@gmail.com, Tel.: 91-9848053024, K.Govinda Rao, Email: k_govinda_r@yahoo.co.in Tel.: 91-9440077277.

**ICAET-10**:  
International Conference on Advances and Emerging Trends in Computing Technologies  
**Date**: 21 – 24, Jun 2010 at Chennai, India,  
**Organised by**: School of Computer Science & Engineering, SRM University in association with University of Arkansas, Little Rock, USA, Div II & Div IV, Computer Society of India, IEEE Computer Society, Madras Chapter.  
**For details contact**: Dr. S. Chellaiah, Conference Chair ICAET-10 at icaet10@srmuniv.ac.in OR Mr. H.R. Mohan, Chair, Div II at hrmohan@gmail.com Website: http://www.srmuniv.ac.in/events.php?page=icaet10

**AutoInfo-2010**:  
National Conference on Automotive Infotronics  
**Date**: 24-26 June 2010  
**Organized by**: TIFAC-CORE, Infotronics and CSI Vellore Chapter  
**For details contact**: hrvishwakarma@vit.ac.in, kgesanag@vit.ac.in

**November 2010**

**4th National Convention**

**Date**: 25-27 Nov, 2010, Mumbai  
**Venue**: Mumbai  
**Host**: CSI Mumbai Chapter  
**For details contact**: www.cssi-2010.org  
**Prof. P Thirumurthy**  
Vice President & Chair, Conference Committee, CSI
Performance Evaluation of e-governance web portals
(www.india.gov.in & www.denmark.dk)

Subhash Chander* & Ashwani Kush**

* Govt College Karnal, Sector 14, Karnal, Haryana, India, Email: subhashjg@rediffmail.com
** Dept. of Comp. Science, University College, Kurukshetra University, India UCK, Email: akush20@gmail.com

All countries including developing ones are providing services to its citizens online covering under e-governance. These services may be business services, social services for its native citizens for the social and economic upliftment. Some services are the basic responsibilities of government and it has become necessary for the governments now to provide some of them online. The number of such services may differ from country to country and it depends on various factors existing in a particular country. The factors may be the economic, social, religious, Information & Communication Technology [ICT] related factors. This paper is an effort to analyse these factors and generalize the concept by evaluating some web portals providing e-governance.

KEYWORDS e-government, e-readiness, e-governance

1. Introduction

It is a great challenge for the business organizations to provide information about its firm online with low prices in this era of competition. In today’s business customers are globally located. Hence to provide relevant information at right time to customers is a great challenge. This challenge can be met with Internet providing online business. In this global world each country needs to explore and show new areas, ventures, fields where they can invest and to know various facilities available in that country. That is possible only if the information of particular country is freely available to every nook and corner of this world. It is possible with the advent of Internet and having a website by that country itself. The Information can be stored and displayed as web pages that can contain text, graphics, animation, sound and video. These web pages can be linked electronically to other web pages regardless of location of the computer. Various related web pages can be linked by clicking on highlighted words or buttons created on web pages to find more additional information. All the web pages maintained by an organization or individual is called a website [1]. Businesses have created their websites with stylish typography, colorful graphics, push button interactivity, and sound and video to disseminate product information widely, to broadcast advertising and messages to customers, to collect electronic orders and customer’s data and to coordinate far-flung sales forces and organizations on a global scale. Similarly countries also perform these business activities with other nations of the world. In this technological world it has become necessary for every country whether big or small, developed or undeveloped, more populated or less populated to have its own website to interact with its own people as well as with people of other countries. It has been tried to analyse various differences available on the website of two different countries Denmark and India. Out of these two countries Denmark is best e-governed country whereas India is at 58th Position (out of 70 countries) as per e-readiness ranking report 2009 by Economist Intelligence Unit Limited, 2009[2]. Some reasons to select these two sites are to compare whether more services are provided online to its citizens by Denmark as compared to India. E-Readiness is defined as the degree to which a community is prepared to participate in the information age. It is measured by assessing a community’s relative advancement in the areas that are most critical for ICT adoption and the most important applications of ICT. E-Readiness assessment is meant to guide development efforts by providing benchmarks for comparison and gauging progress [12]. As per executive summary of this report e-readiness scores of 9 countries out of 70 countries have decreased in the 2009. Denmark has reclaimed its world’s e-readiness leadership in 2009, a position it relinquished to US last year. Other north European countries such as Sweden, Netherlands and Norway have reaffirmed their places among top ten e-readiness countries. Some other countries like China and Russia
have retained their position as 56th and 59th respectively. This concept of e-readiness becomes complex when one attach numbers to its components to compare different countries [3].

2. Recent studies:
A portal is broader term than website. Rather a portal is gateway to enter into the sea of information for the clients of an organization. In case of country portals citizens are clients. Portal provides services like search engine, e-mail facility, latest news etc on the main page of the web portal. These two are citizen portals because here the main concern / relation is between government and its citizen. Citizens must have knowledge of services provided by the government and which particular deptt. is providing a particular service. The establishment of portals may be cost efficient for governmental agencies, and they can introduce a higher service level for the citizens. Portal can play a role in making the department known to citizens. The citizen on the other hand, may first and foremost want to find information or carry out a service, without necessarily knowing who is offering the service. Desire to co-ordinate and simplify aspects of government, has led to many countries establishing a national citizen portal. The establishment of a citizen portal is a comprehensive task. A well developed infrastructure, culture and resources to undertake

the task is among other things necessary to get it done. In addition, internal organizational changes in the departments may be required to gain full benefit from offering electronic services and information to the customer, i.e. the citizens. Citizen portals can be pure information portals that give citizens access to public information and links to services. At the other end of the scale one finds portals requiring authentication and providing access to personalized services. Various views of Denmark.dk are shown in Fig.1-7

It is our opinion that most citizen portals are somewhere between these extremities and offers a combination of information and services requiring authentication. The establishment of a citizen portal may have both a democratic perspective and the perspective of the participant. The portal may create opportunities for easy contact and communication between citizen and government. A citizen portal can also be a step in improving privacy protection, because it can give citizens opportunities to access information and administrative processes concerning themselves. There may be various ways to compare two portals but here it has been stressed on the some of the parameters.

Fig. 1 : Web page of Denmark e-governance

Fig. 2 : ICT statistics of Denmark

Fig. 3 : Live and work in Denmark

Fig. 4 : Local authorities in Denmark

Fig. 5 : live and work in Denmark

Fig. 6 : Public administration in Denmark
Some of the information available from web portals are:

**Denmark:**
Area of Denmark is 43,098 square kilometers, it is among the ten richest countries of the world, popular for its ICT implementation in various fields, and has topped the list of e-ready countries in the world [10]. In Denmark, there is certain important information on the website like to visit, to study, to invest, and to live and work in Denmark. The main modules are easily accessible to each and everyone visiting the website. Moreover, one can change the language option here to change the language which is beneficial for every type of user. Furthermore, by having a look at the map of Denmark, one can know about the policies and government of Denmark, about various designs and architecture, various traditions and food available, and also about the ancestors of the people of Denmark. Denmark is a democracy with constitutionally guaranteed liberties. That is why there is a freedom of expression, assembly, and religion. Out of 100 Danish households in 2006, 59 owned their house or flat, 11 also had a holiday home, 81 a washing machine, 63 a dishwasher, 71 a microwave oven, 19 a flat screen television, 83 a video player, 94 a CD player, 83 a DVD player, 85 a home computer, 51 an answer-phone, 94 a mobile phone, and 80 access to the internet. There is also free internet access in all libraries [10]. Denmark has a high quality of life as per international standards. Average life expectancy is more than 75 years. Public duties are shared by state, counties, and local authorities. Thus, the state is responsible for the police and the judicial system, the counties for hospitals, secondary schools, and public transport, and the local authorities, among other things, for elementary schools and care for the elderly. Danish counties and local authorities are entitled to collect income tax due to local autonomy.

**India:**
National Portal of India, developed with an objective to enable a single window access to information and services being provided by various Indian Government entities. The content in this Portal is the result of a collaborative effort of various Indian Government Ministries and Departments, at the Central/State/District level. This Portal is Mission Mode Project under the National E-Governance Plan, designed and maintained by National Informatics Centre (NIC), DIT, MoCIT, Government of India. Figures [8-14] below are showing various views of India.gov.in.
India has an area of 32,87,2631 square kilometers & 7th largest country in the world, having the literacy rate in the Country 64.84 percent. A stress on ICT sectors of both these countries has been given. India has 28 States and 7 Union Territories. 63.9 years (Males); 66.9 years (Females)(As of Sep 2005). India has become self-sufficient in agricultural production and is now the tenth industrialised country in the world and the sixth nation to have gone into outer space to conquer nature for the benefit of the people. The government section of website introduces you to the Government of India, its origin, and the governance process being followed in the Country. Also it lets you know “Who’s Who”, the Policies and Schemes offered by the Government. The citizen section of website is for Indian Citizen residing within the Country. One can find out all the information on Health, Education, Housing, Employment, information and links to services being offered by Indian government. Overseas section at website is an useful resource for NRIs, foreigners and offers a wide range of options to travel or study in India. In the More about India section of website ancient land of India portrays a landscape of vibrant cultural heritage and spiritual mysticism. This particular section takes you to a journey through the fascinating lanes of the country, which reflect its numerous national traits. In the “how do I” section of the website one can get information about how to get a certificate like birth certificate, driving licence, ration Card & how can lodge a public grievence online. In the contents of fortnight section information about travel and tours and various states of India, NGO partnership system, RTI complaints and appeals latest information about states, illness, achievements, various news, various greetings, webcasts and announcements can be seen from this portal [5].

3. Evaluation parameters:

The first and foremost parameter has taken is e-readiness. E-readiness is a medium to know the status of ICT adaption of a particular country. With the help of e-readiness ranking one can know at an e-ready scale where a country stands. Here ICT infrastructure and other IT related rules and regulations and their effect on e-readiness have been taken into account. Other parameters taken into account include accessibility options, use of website by people, creation of website, lookup of a website, language options available, site map and reliability of included information, services, size of information, and language options in a website.

a) Accessibility of websites: Various government over the past several years have required agencies to create websites, put services on the sites, and make them accessible to citizens. If a website is not accessible to the intended target users, it will not be successful [7]. Denmark has not taken care of the difficulties of physically disabled people. Hence while designing websites every class of users should be taken care of whether physically handicapped or not. Persons having different type of disabilities must have facilities to listen, touch, and look at the sites easily. Indian portal can be viewed from a variety of devices, such as web-enabled mobile devices, wap phones, PDAs, and so on. Best efforts have been put to ensure that all information on this Portal is accessible to people with disabilities. For example, a user with visual disability can access this Portal using assistive technologies, such as screen readers and magnifiers [5].

b) Use of websites: Many government agencies are viewing online interaction as their primary method for interacting with citizens. There is lack of awareness among Indians as government websites are not very much utilized by people of India as compared to Danish people. People in India prefer to rely on information received from unreliable sources; may be from neighborhood, asking from their friends, rather visiting certain offices to gather information instead of checking that at website. Lack of awareness impedes the use of websites. Citizens still show a strong preference for phone-based or in person interactions with government representatives when they have questions or are seeking services.

c) Creation/look of websites: A good and effective website should be easy on the eyes, easy to understand and easy to maintain. A website will be more effective if it simple. It takes a lot of planning and work to make simple website. To make a good and simple website look for someone with plenty of experience, common sense and with a respectful attitude towards you and your audience & is designed by National Informatics Centre (NIC). Indian web portal (India.gov.in) is pleasing to the eyes and better lookwise as compared to Denmark website (Denmark.dk). Main page of any website is the center of complete site. You have 3 seconds to convince your visitors that this site is worth any more of their time [6]. It is the only medium to create first impression among users of the website. Also make sure the main page has the words or pictures that are already on the person’s mind. Make sure the main page delivers on any promise your external advertising or search engine description makes. A Look at Main page of these two websites provide clearly that India.gov.in is much better on the issues mentioned above. It provides more information as compared to Denmark website.

d) Services at websites: More useful and necessary services are available at Indian website. In the name of How do I, feedback, visitors summary to show popularity of website. Whereas such type of services are not available on the Denmark site. A website can be evaluated qualitatively or quantitatively. In either case one will have to choose adequate instruments and parameters for evaluation. One can monitor website traffic by keeping a count of the actions initiated by users on your server within specific periods of time. But very precise statistics cannot be provided with this tool. Transactions, visibility, awareness, user activity
and awareness, cost and cost-effectiveness can be monitored. But it requires a lot of time for data collection and analysis of that and would be future plan for further research.

e) Reliability of websites: Reliable, timely, comparable and available information on social, economic and environmental conditions are key factors for the development of a country. This type of information is based on the statistics of a nation. Statistics provide the information or evidence needed for government daily administration and policy analyses, policy makers planning, business decisions and citizen’s possibility to hold their government accountable. Reliable, independent and available information lays the foundation for a democratic society. Policies made on evidence will be better at targeting their purpose, increasing efficiency and financial sustainability. Timely and reliable information can help governments improve the life of people by planning developments more correctly. The availability of information is an important element for good governance in a democratic country like India. Information on society should be free of charge, user friendly and easily accessible for everyone. Online delivery of government service may appear to be more user friendly than delivered by traditional means and there is a need to give careful consideration to perceptions and expectations of its users [9]. Reliable information helps the private sector companies to invest in a country more confidently. More investment will lead to new employment opportunities, income generation and paves the way for poverty reduction and improves the lives of people [4]. Both the websites provide the reliable information. But information provided on the Indian website is sufficient hence more reliable for performing a particular task. It also explains which type of information is being updated in how much time. Certain information like news, announcements, press release, natural calamity and latest who’s who is reviewed immediately, some other information like services, forms, acts & rules are reviewed every fortnightly, whereas programmes, schemes, policies, acts, rules documents etc. are reviewed once in a quarter as a policy. Content review policy is available on the Indian website which provides reliability of information available on the website. Such type of information is not available on the Denmark website.

f) Size & complete information: The information available at main page is very large in Indian website. There are so many modules as compared to Denmark website. Indian portal also provides information about guidelines for government websites. Here in Indian website one can have information about whom to contact if there is any query/problem/providing new information about the portal. Complete process for publishing information on this website is easily available on this website itself. Also site map is also available on Indian website which provide’s complete map of the website whereas Denmark website lacks it. Whereas the official website Denmark.dk has mainly six modules namely about Denmark in which one can have information about brief history, society, culture, dances government and politics etc. other options include visit, live and work, study, invest and climate and energy in Denmark. One can also access map, traditions and food, can trace your ancestors in denmark. can access various latest news, , blogging, videos and pictures about denmark.

g) Language: Language options available On India.gov.in is one only that is HINDI, the national official language of India except English language in which the website is available. Also fonts of ten Indian languages are available on this Indian Portal. In the Denmark.dk website anyone can have option of three more languages i.e. Spanish, French, German except the English language. Hence Denmark.dk is much better as compared to Indian website for this parameter.

h) Server side analysis: A server-side analysis that includes features such as visibility assessment, hit counts, page-loading speed, and interface design will be beneficial in the technical arrangements of the e-government Web sites [11]. Server side analysis has been taken into account by Indian website and monthly report of no. of visits & visitors along with list of countries and states can be taken. Also peak load time is also taken into account i.e. 9.00 A.M to 5P.M.. This type of analysis is not available on the site of Denmark.

i) e-ready : An e-ready society should have necessary strong physical infrastructure. E-ready country has great use of computers in schools business, Government working and houses. E-readiness measures the nation’s capacity to participate in digital economy. E-Readiness indicators include mainly four fronts namely policy, infrastructure, resources and usage. Policy includes policies of ICT, e-governance, rules and regulations, architecture and standards. Infrastructure includes network, access and hardware. Resources include political, human, employee, ICT and financial resources. Usage includes usage by citizens, business, and government. In order to reap e-governance benefits, policy makers should conduct regular evaluation on electronic government readiness to pinpoint weaknesses and provide appropriate solutions [8]. In the above scenario Indian website support low awareness among the employees about e-governance strategy whereas Denmark shows various steps taken by it regarding effective implementation of e-governance in various departments. Hence Denmark is more e-ready as compared to India. The above facts can also be confirmed by the e-readiness ranking report [2].

4. Results and conclusion: Although the functional determinants used in the study may not have been completely exhaustive, they can at least serve in summarizing the overall impression of government web sites in India & Denmark. The global information revolution might have exorted the government to go online. The site designers should heed that electronic information dissemination channels are more than static notice boards – they are dynamic, ubiquitous, interactive, customizable, searchable, and networkable. These features allow all geographically dispersed citizens 24x7x365 services. G2G communication, and citizen participation and satisfaction are absent in government web sites. Lack of these features is likely to dissuade citizens from participating in the e-government processes. Likewise, citizens can participate in policy-making, reach their constituents, and obtain information and services for daily activities from any location if the web sites are favorable to their needs. Due to the high impact of people in affecting e-readiness, it is recommended that more awareness should be provided to employees about e-governance strategy in the organization. In case of accessibility India has at least provided some care by providing accessibility options at the main page of the website whereas Denmark lacks it. As both the countries are democratic and in every democratic country every person has equal rights to utilize the information. Denmark is small country in size but technological it is strong hence good ICT infrastructure is available and more people have computers, laptops, palm tops for communication and hence website is more utilized proportionately as compared to India. Regarding services and lookwise Indian website is much better as compared to Denmark. More, complete & reliable information is available on Indian website as compared to Denmark. More language options & e-readiness is available in the Denmark site as compared to Indian one. Whereas server side analysis is available on Indian website as compared to Danish website. Conclusively Indian web Portal India.gov.in is much better as compared to Denmark website Denmark.dk
Table 1: comparative analysis of India & Denmark

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Website 1(India)</th>
<th>Website (Denmark)</th>
</tr>
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<tbody>
<tr>
<td>Accessibility</td>
<td>√</td>
<td>×</td>
</tr>
<tr>
<td>Use</td>
<td>×</td>
<td>√</td>
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<tr>
<td>Creation/look</td>
<td>√</td>
<td>×</td>
</tr>
<tr>
<td>Services</td>
<td>√</td>
<td>×</td>
</tr>
<tr>
<td>Reliability</td>
<td>√</td>
<td>×</td>
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<tr>
<td>Size of information</td>
<td>√</td>
<td>×</td>
</tr>
<tr>
<td>Language</td>
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<td>e-ready</td>
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5. Future plans:

Ultimate determinant of website quality are the users themselves, and interesting future direction for this research lies in providing a comparison of the subjective and objective views of government portal quality. There is a need to extend this study to assess e-government initiatives from government’s perspective. It has been focused on only two citizen portals, and these two have many similarities also. Our focus has been to compare only parts of the portals, excluding other aspects such as infrastructure, technical construction, and the transition from development to administration. One can in no way generalize these findings to be valid for anything other than the two specific citizen portals. With more time and resources available to compare a larger number of citizen portals it is possible to create a more comprehensive and credible research result. In future research it is therefore recommend that a larger study with comparison of a larger number of portals can be conducted. In doing so one might receive findings that can be generalized in a broader way. Future research may be a study with focus on portal users. Possible research questions might be: Are there differences in the number of users, frequency of use, the attitude of the users and/or the various services used? What might be the reasons behind differences discovered? It could also be interesting to find out if there are connections between development and initial deploying activities, and citizens’ adoption of the portals. It has been an impression that there has not been any comprehensive study of citizen portals earlier. Future research should therefore focus on specific public services and different aspects of these services.

6. References:


2] Available at www.eiu.com


4] Available at website www.dst.dk

5] Available at website www.india.gov.in

6] Available at www.mcmanuscreative.com


10] Available at www.Denmark.dk.


Bridging the Gap between Design Constructs and Reliability Factors

A. Yadav* & R. A. Khan**

* Department of Information Technology, Babasaheb Bhimrao Ambedkar University, Lucknow, India, amitabha.engg@yahoo.com
** Department of Information Technology, Babasaheb Bhimrao Ambedkar University, Lucknow, India, khanraees@yahoo.com

This paper describes reliability factors for the assessment of software reliability of object oriented design. A relation has been established between design constructs and reliability attributes. An effort has been made to pin-point the effectiveness of design constructs in reliability improvement.

KEYWORDS
Reliability, Coupling, Cohesion, Encapsulation, Polymorphism, Inheritance.

1. Introduction

There is a plenty of noticed literature survey reveals that, there are several incidents because of unreliable software. Most of the incidences happened are due to the software failures. In some cases these failures met with serious accidents or even several lost their lives [1]. Lee reported Tharc 25 radiation therapy machine incidences in his book in 1992 [2]. Machine was hit by software error and several people were lost their lives in the year of 1985 and 1986. One of the major incidences was occurred on 26 October 1992 in a London ambulance service in case when the computer systems were installed. Just after the installation of computer system, ambulance service broken down [3]. The ambulance was unable to carry patients in emergency situations. Change in the three lines of code in a single program in 1991, the telephone system was collapsed in California & eastern parts [4].

In order to protect mission-critical information stored on disc drives, there appears a need of reliability prevision technology. System reliability depends on the length of considered time. Aircraft flight-control computer met with failure due to the failure in reliability and result in the loss of the aircraft, the desired reliability is at least 0.999999 (1- for a 5-hour mission) [5]. For spacecraft, the requirement might be much looser - for example, 0.99 for a mission instead of 0.999999. But mission time for spacecraft is often years rather than hours, so the design requirements are just as difficult to meet [5]. Software failures have contributed dangerous effects in business, health and space industry. Mostly all of the tragedies are only due to unreliable software.

Reliability is continuity for use. IEEE defines reliability as the ability of a system or component to perform its required functions under stated conditions for a specified period of time [6]. Software Reliability is one of the important attribute of quality. It improves software quality. Musa indicates that reliability can be well defined while quality is a larger super set which is difficult to define [7].

Object oriented design provides a novel approach for problem solving using models around real world entities. Most of the software projects are shifting towards object oriented design [8]. Today, object oriented languages stands in a very high peak due to the increase in the productivity of software and the need for the higher reliability of the developed system [9]. It has been well defended by the experts that object oriented design provides the most appropriate structure to improve quality of software by improving its factors. Therefore, reliability, a key factor to software quality can also be improved at the stage. To do so, there appears a need to establish a correlation between object oriented design constructs with reliability factors. An effort has been made in this paper for the same.

The paper presents identified software reliability factors in section 2. Design constructs are covered in section 3. Section 4 describes a relationship between reliability attributes and design principals. Impact of design principal on reliability factors is covered in section 5. Findings and future work are covered in section 6. At last paper concluded in section 7.

2. Reliability Factors

Software reliability can be a probabilistic measure. It has been argued by various researchers and practitioners to define reliability in terms of its low level attributes. It is advised to get directly measurable
attributes to quantify software reliability. Figure 1 shows reliability factors. Some of them have positive impact on reliability whereas some negative. Factor is a property or characteristic of something that has its own positive or negative impact.


3. Design Constructs

Object oriented design overcome the drawback of procedure oriented programming. Procedure oriented programming is a conventional programming approach in which the problem is viewed as a sequence of things to be done. The primary focus is on functions and very little attention is given to the data. In a multi function program data are placed as global so that they may be accessed by all functions. Global data are more vulnerable to an accidental change by a function. Procedural approach also does not model real world problems [14]. The flaws encountered in the procedural approach are removed through object oriented approach.

Object oriented design treats data as a critical element in the program development and does not allow it to flow freely around the system. Object oriented approach protect data from accidental modification from outside functions through the mechanism known as encapsulation. Object, classes, data abstraction and encapsulation, inheritance, polymorphism, dynamic binding and message passing are some of the concepts that are used extensively in object oriented approach [15]. Inheritance, polymorphism, coupling, cohesion and encapsulation are taken as a major construct for relating with reliability attributes.

4. Relationship between Attributes and Design Principals

In the circumstance of software reliability, software reliability growth models have been used to detect and describe failure and faults of software systems. Software failures are caused by unpredictable events [16]. As faults are found and fixed it is assumed to increase reliability of a system.

There are several approaches to estimate reliability of software. Reliability can be estimated for procedural software; object oriented and also for component oriented software. Here reliability has been taken in context of object oriented software.

Object oriented software is a demand for every industry, education sector, medical field, banking systems and so many organizations. Today, most of the software is developing on the basis of object oriented concepts. Coupling, Cohesion, Polymorphism, Encapsulation, Inheritance is the most important object oriented design principals. In order to establish a relationship between design principals and attributes of reliability, the influence of design principal and reliability attributes are being examined through critical review on McCall’s, ISO 9126:200Q, Dromey’s and Boehm’s quality factors [10-13]. It was observed that each design constructs affects certain reliability attributes as shown in Fig.2.

5. Impact of Design Constructs on Attributes

Object oriented design and development are popular conceptions in today’s software development scenario. Object oriented design herald itself as an important tool for solving most of the software problems [17]. In an object oriented approach, the data is treated as the most important element and it cannot flow freely around the system. Restrictions are placed that can manipulate the data. Object oriented approach binds the data and the methods to prevent by unauthorized access. Object oriented design supports design principal such as abstraction, encapsulation, inheritance, polymorphism, coupling and cohesion [14].

The attributes and operations are encapsulated with in a class and interaction among with the attributes is done only through the interface provided by encapsulation whether it is public or private or protected. Reusability of classes is the main feature of object oriented approach. Due to these object oriented design principals it is easy to design a class hierarchy, easy to understand, and easy to make a design structure. This is all done by minimizing or maximizing the design principals according to the requirement of software [18]. It is possible to get good software which is good in quality, feasible with cost wise, less effort and reliable. Impact of design principal on reliability attributes has been shown in table 1.
Fig. 2: Relationship between Factors & Design Constructs

Table 1: Impact of design constructs on attributes

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6. Findings & Future Work

The paper presents some advances towards the correlation of design constructs of object-oriented software system with reliability attributes. This design constructs (Coupling, Cohesion, Inheritance, Polymorphism, and Encapsulation) can express the reliability of a structure which are being strongly connected with reliability attributes like complexity, fault tolerance, maturity, recoverability, consistency, robustness, compliance, device dependence, error tolerance and so on as shown in fig 1. It is important to software developers and maintainers.

The contribution of the work is summarized as follows:
• Sixteen reliability factors have been investigated in this paper.
• A correlation between design principals and reliability factor has been established.
• Impact of reliability attributes on design principals is shown.
• Software can be controlled by controlling design constructs including encapsulation, abstraction, inheritance, polymorphism, coupling and cohesion.

To develop a reliability model using given reliability factors that are shown in fig 1. Models will develop on the basis of those factors which has greater impact on reliability. Impact of factors on reliability will be judged on the basis of there positive and negative behaviors. After that one attribute will be chosen as a key factor to quantify reliability with help of design principals.

7. Conclusion

Software reliability plays a very important role in improving software quality. Design means the developer has to provide a blueprint for a solution, so it is relatively easy to implement reliability in design phase. At the same time when reliability aspects are ignored in design phase, the new developed design makes the software unreliable. Software reliability defines as the probability of failure free software operation for a specified period of time in a specified environment. Less work has been done to quantify reliability in design phase using object oriented design principals. Reliability of software has been strongly influenced by several attributes in which complexity will be taken as major factor. Sixteen attributes has been discovered through critical review. Design principals are correlated with reliability attribute and have positive or negative impact on software reliability attributes.

References

Is there a Downside to Social Media Metrics?

Posted by Mark Stuart in Customer intelligence, Social CRM on Fri, 05.03.2010 - 12:05

• Fan pages on Facebook, or special offer alerts on Twitter, can be measured so that you can see how many of your followers become sales leads.
• Dell reportedly made $3.5m in under six months from Twitter.
• 17% of the companies surveyed in the latest wave of the Marketing Trends Survey say that online spend has overtaken offline, and a further third expect it to do so in the next three years.

Businesses are increasingly imposing metrics on social media activity to make it measurable. But is there a danger that this will ultimately undermine its real value? Mark Stuart explores.

One of the key advantages of the internet is how measurable it is. You know exactly how many people visit your website, and you can tell exactly how many of these visits convert into sales. The same theory applies to social media. Fan pages on Facebook, or special offer alerts on Twitter, can be measured so that you can see how many of your followers become sales leads. Dell reportedly made $3.5m in under six months from Twitter; its DellOutlet page has almost 1.5 million followers, which the company uses as a viral system. Discount offers are posted daily, and these posts are often re-tweeted.
ITBI-2010: The 9th National Conference on

Information Technology & Business Intelligence

(May 06, 2010)

Organized by: Pioneer Institute Of Professional Studies, Indore

In Association with: Indian Society of Technical Education (ISTE) & Computer Society of India (CSI), Division III (Applications)

Prelude:
Information Technology and its use in organizations become a determinant of competitive advantage for many organizations. IT has transformed the basic nature of business. It allows business to exchange information among basic constantly changing sets of customers, suppliers and research collaborators in government and academia on a global basis. With technological capability and changing economic conditions, the IT tools such as e-commerce, ERP, e-SCM has become very important for Business Intelligence.

In the above backdrop, the ITBI-2010: The 9th National Conference on Information Technology & Business Intelligence is being hosted by Pioneer Institute Of Professional Studies, Indore and being jointly organized by Indian Society of Technical Education (ISTE) and Computer Society of India, Division III (Application).

Aim and Objective:
This conference aims at elucidating new and emerging ideas and solutions from the Business, Technology, empirical and theoretical perspectives. It will provide a forum for researchers, practitioners and educators to present and discuss the recent invocations, trends, experiences and concerns in the field of IT. The invited and contributed papers dealing with the following topics shall be presented during the conference:

- Data Warehousing and Embedded Systems
- Data Mining and Web Application
- Artificial Intelligence and Robotics & Neural Networks
- Web Mining and Web Application
- CRM
- Object Oriented Data Modelling
- e-SCM
- Parallel Processing
- Information and Data Analysis
- VLSI Design
- Software Engineering
- Bluetooth Technology
- Data Re-Engineering
- Expert System
- EDI
- ERP
- e-Commerce
- Nano Technology
- Cloud Computing
- Grid Computing

Target Audience:
- Academicians
- IT Consultants
- Industry Professionals
- Consultants
- Research Scholars
- Students

For registrations and conference details, please e-mail at itconferencepips2010@gmail.com

Advisory Committee:
Prof. H R Vishwakarma, Hon. Secretary, CSI
Prof. S Subramanian, Chairman, CSI Division III
Prof. M Chandwani, Director, DAVV, Indore

Conference Chairman
Dr. V K Jain, Director-MCA
98262-04118

Conference-Secretary
Nilesh Jain, Lecturer
98272-42911

Conference-Secretary
98272-42911
About the Convention

The future is already here. It’s just unevenly distributed”-William Gibson

Inequality in the use & application of digital technologies is a new driver of social exclusion in the 21st century, which risks alert in existing social divides and creating new ones. The dividing lines of social equality are closely aligned to those associated with digital explosion-age, gender, geography, educational attainment, income, motivation & skills, disability, ethnic minority. Every National Government in the World committed itself to build a people-centered, inclusive & development oriented information society.

Inclusion is one of the most difficult challenges faced in our society today. The “Prize” of digital inclusion is not the technology itself, but the capability of that technology to connect individuals to new life-enhancing opportunities, to develop stronger communities, & deliver better, more efficient & effective services. ICT’s in general – specifically designed applications & services even more so make it possible to diminish inequalities within & between societies that are based on economic, socio-demographic & cultural differences, e-Inclusion, & improve economic performance, employment opportunities, equality of life, social participation & cohesion.

This convention mainly focuses on the technological aspects of realizing digital inclusion.

The features of the Regional Convention

1) Paper Presentation Contest
2) Guest Lectures & Video conferences
3) Panel Discussions
4) Computer Programming Contests:
   Events like Marathon, Rectify & Kode Kombat will test abilities in Operating Systems, Programming Languages, Data Structures, Design & Analysis of Algorithms, Networks Debugging, Coding & Microprocessors.
5) Web Design
6) Ethical Hacking
7) C / C++ Programming Contests
8) Workshops
9) Expos

For further details: look into website www.csinitk.org

The main theme of the convention “E-Inclusion: Empowerment of society through technology” is subdivided into sub-themes to address the following issues:

Call for Papers:

Sub Themes:
• Human Computer Interaction
• Human Language Technology (HLT)
• Large scale data challenges
• Social Networks
• Artificial Intelligence
• Open source, Software Engineering & Software Architecture
• Mobile, Wireless & Satellite technologies
• High performance & Distributed Computing
• Intelligence on the web
• Next Generation Networks
• Information Security
• eServices & e-Inclusion
• e-Accessibility for the disability
• E-learning for E-inclusion

The papers will be passed through a review process to ensure quality & authenticity ok work. The above sub themes are only suggestive & authors may submit papers in any of the relative areas. Accepted papers would be presented in the convention & would be part of the proceedings. The event comprises of pre-conference tutorials, paper presentations, poster presentations, plenary sessions, panel discussions, & invited lectures by renowned speakers of National & International repute.

Important Dates:

Registration : 13th March, 2010. Register online at www.csinitk.org

For further details please contact: Dr. Dr Santhi Tilagam, Associate Professor & Head, Department of CSE
NITK, Surathkal, Karnataka, India. Ph: 0824-2474053 • Fax: 0824-2474060 • Email: csi.nitksb@gmail.com

Prof. H R Vishwakarma
National Student Coordinator, CSI
E-mail: nsc@csi-india.org

Prof. Sharada Udaya Shenoy
Regional Student Coordinator, CSI
E-mail: sharudivardhan@gmail.com
February 16, 2010, New Delhi: Computer Society of India (CSI), the premier and largest association of IT professionals in the country, today unveiled its roadmap for a professional development ecosystem to groom and nurture talent in IT. Mr. Sachin Pilot, Hon’ble Minister of State for Communications & IT launched the CSI Knowledge Management Portal.

Mr. Sachin Pilot, Hon’ble Minister of State for Communications & IT, Govt. of India expressed satisfaction on CSI initiatives to cater the need of IT Professionals in the country. Minister of State said that the support of Central Government to IT sector will continue with the extension of exemption and benefits given to the IT firms. "The sector currently employs about 2.5 million people directly and about 8 million indirectly. It is expected that another 1 lac people will be added this year", the Minister of State said. Mr. Pilot further expressed that Government will foster investment and create job opportunities in IT sector. He also presented mementos to representatives of TCS, Zenith, MIEL and CDAC for their enormous support to develop and host the Knowledge Portal.

The Indian IT industry - both domestic and software exports - is carving its next phase of growth. With renewed value proposition to customers globally, Indian IT is estimated to clock double digit growth going forward. This optimism is further fuelled by increased Government spending in IT. This creates tremendous opportunities for both IT professionals and entrepreneurs in IT.

Besides driving economic growth, technology has become entrenched in our modern lifestyle enabling every aspect of commerce, government, education, communications and entertainment. Increased penetration of IT and Communication technologies is playing a key role in closing the urban-rural divide. Indian IT professionals are working in areas that have far reaching impact on the society.

"The IT sector is playing a predominant role in driving economic growth. It is an imperative to raise professional standards to meet this growth. The roadmap would be a key driver of individual excellence and talent development in Indian IT’s future growth charter and the government’s vision of better governance" said S. Mahalingam, President, CSI.

CSI’s roadmap for the Professional Development Ecosystem for IT professionals include:

- Enlarge the pool of employable IT professionals through focused industry-driven training programmes
- Build international alliances to drive talent exchange programmes
- Use the power of IT to build local language interfaces and connect with and reach rural citizens
- Assist Government through IT System for better Governance
- Expand the domestic use of IT in business
- Facilitate and promote research and development to drive larger societal impact

The newly launched CSI Knowledge Management Portal would be the repository of intellectual capital for IT professionals. The portal allows professionals...
To discuss, debate and exchange information on technical and management issues enabling competency development. "I would urge professionals to leverage this opportunity to pursue individual growth. We would also like to attract students and work closely with them to enhance the suitability of aspiring IT professionals and help meet the talent needs of tomorrow," added S Mahalingam.

During launching of CSI Knowledge Management Portal, Prof. S V Raghavan, Chairman Publications Committee of CSI and Scientific Secretary, office of Principal Scientific Advisor to Govt. of India made presentation on another important initiative of CSI i.e. Specialised Publications called CSI Transactions on ICT addressing 5 areas viz. Software Engineering, Education, Finance, Management and Healthcare.

Later Prof. Raghavan presented the India’s National Knowledge Network Programme on high bandwidth connectivity. Prof. Raghavan emphasised the need to develop central depository of Project work of engineering students in digital format. Prof. Raghavan stated the need to create backbone for learning process empowering India with innovation, affordability and sustainability. The NKN will provide healthcare modernisation, quality education with countrywide classroom and exchange of information on research and Farm care.

The programme concluded with interesting Panel discussion on “Professional Development for the New Age” by Prof. Pankaj Jalote, IIT, Delhi, Ms. Neelam Dhawan, MD HP India and Prof. K K Aggarwal, Former Vice Chancellor, Guru Gobind Singh Indraprathra University and Past President, CSI. The panelist stress the importance of the professional development based on ethics, innovation and creating new environment to facilitate the use of knowledge of Eco System. The panelist also felt that innovation sharing and bringing new ideas built into the formal education system. Mr. Mahalingam also presented mementos to Mr. Ravi Raman, Mr. Shankaraiah and Mr. Suresh Rane for their valuable contributions for CSI K M Portal.

Mr. Saurabh Sonawala, Treasurer, CSI proposed Vote of Thanks.

To enable the Knowledge Economy by promoting wider social and economic progress through the advancement of information technology science and practice.

To achieve this we need to ensure that our profession has the skills and capabilities to meet the IT demands of a changing world.
National Conference on Intelligent Computing

Report Prepared by: Mr. Ranga Rajgopal, Chairman, CSI Coimbatore Chapter

Inauguration
The conference got off to a colorful start on 12th Feb 2010. The Chief Guest, Dr. P Thrimurthy, National Vice President of CSI lauded the efforts of Computer Society of India, Coimbatore Chapter. He also briefly referred to some new CSI initiatives like the new knowledge portal developed for CSI, which is due to be launched shortly. Mr. Bipin Mehta, Secretary of CSI and Mr. S Ramanathan, RVP VII also addressed the gathering. The Guest of Honour, Mr. Lakshmi Narayanan, Vice Chairman, Cognizant congratulated the Coimbatore Chapter on its Silver Jubilee and spoke of some industry-led initiatives, innovations & collaboration in IT applications for academia like the ICT Academy of Tamil Nadu.

FOSS
The Opening Technical session on FOSS was by Mr.Satish Babu, Past National Secretary, CSI on the advantages of FOSS applications being robust, secure and finding global acceptance. He also said that the community-orientation of FOSS has resulted in FOSS gaining good market in Enterprise, Web & Proxy Server Markets. Another session on FOSS was conducted by Mr. R Sundaram, Director-Technology, KGSL Group who conducted a presentation on Open-Source Solutions for Hospitals, Learning/Campus Management and e-mail solutions. Mr. Ramadoss M, Consultant, Gemini Communications Ltd. shed light on open-source solutions for application development like PHP, Ruby, Perl, Moodle, Python, Open Bravo etc. Companies could get substantial savings by building applications using open-source, he said.

Cloud Computing (HP-Microsoft-IBM)
The 1st technical session on Cloud Computing by Mr. Anish Joseph, Senior Architect, HP threw light on cloud services & delivery models available in the market. He predicted that cloud services would shift from a Build-To-Order (BTO) to a Configure-To-Order (CTO) format. In the next session, Mr. Subhash Sharma, Technical Consultant, Microsoft presented the Windows Azure Cloud Platform and also provided an overview of Cloud trends like SaaS, SOA etc. Mr. Srinivas Chidurala, Cloud Consultant, IBM India showcased various IBM Cloud Solutions & initiatives like smart planet, cloud burst. He also cited successful use cases like iTricity & Wuxi in Netherlands & China

Video Conference
In the true spirit of the central theme of BIG 2010, HCL provided a presentation and technical demo of its Video Conferencing Technology, which could be of great benefit to Industries. HCL was represented by Mr. K Natarajan, Zonal Manager & Mr. Anurag Kumar, GM Sales, who presented from Noida through Video Conference. They spoke about how this technology could be widely deployed in Media, Telemedicine, & Distance Education.

Business Analytics
Prof. Dinesh Kumar of IIM Bangalore pointed out that Business Analytics was the hottest IT Trend, empowering effectiveness in business processes. He also suggested usage of Mathematical models for BI. Mr. Saji Thoppil, Senior Executive, Wipro gave an insight into technologies like Web3.0, Semantic Web and Next Generation Data centers which could ensure optimal use of IT Assets, Technology and systems critical to business success. The concluding session by Mr. Colin Dawson, Practice Head, Siemens IT solutions brought out the need for Enterprise Performance Management for generating actionable intelligence from an organization’s most valuable asset, its data. He cited the use of the Siemens broadcast Media BI (BMBI) solution.

Panel Discussion
A panel discussion on “How to make Coimbatore an attractive IT destination” provided a platform to discuss strategies to build the Coimbatore IT brand. The active role to be adopted by professional bodies like CSI was stressed by panel members from leading industry associations in Coimbatore like South Indian Engineering Manufacturers Association and Coimbatore MSME association. The participants for the panel discussion included:

- Mr. Ram Kumar, VP, Cognizant
- Mr. Niranjan Kumar, Sr VP, Keane
- Mr. Venugopal R, Centre Head, Robert Bosch, Coimbatore
- Mr. Ilango R, President, CODISSIA
- Mr. Jayakumar Ramadas, President, SIEM

Prof. R Nadarajan, Head of Computer Applications at PSG College of Tech., Coimbatore moderated the proceedings.

Valediction
The valedictory session of the conference on 13th February 2010 was graced by the presence of Mr. C.R. Swaminathan, Chief Executive of PSG Institutions and Chair of the Southern Regional Council of Confederation of Indian Industry (CII). Dr. P Thrimurthy, National Vice President of CSI presided over the valediction. Dr. S Subramanian, Chairman, CSI Division 3 (Applications) also addressed the gathering.

Silver Jubilee Celebration
Dr. P Thrimurthy, National Vice President of CSI honored all the Past Chairmen and Secretaries of the CSI Coimbatore in the silver jubilee celebrations. 20 of the past 25 Past Chairmen attended the celebrations. The highlight of the evening was an address by our President Mr. S Mahalingam, who spoke to the audience over Video conference and also interacted with some of the past Chairmen. Mr. Ranga Rajagopal, Chairman of CSI Coimbatore welcomed the august gathering and Mr. A Sivabalan, Secretary proposed the vote of thanks. Mr. S Prem Kumar, President, HCL interacted with all the senior members over dinner. A presentation on “25 years of the CSI Coimbatore chapter” was a trip down memory lane providing moments of nostalgia.
The First Network Email

Ray Tomlinson: [http://openmap.bbn.com/~tomlinso/ray/firstemailframe.html]

During the summer and autumn of 1971, I was part of a small group of programmers who were developing a time-sharing system called TENEX that ran on Digital PDP-10 computers. We were supporting a larger group working on natural language. Earlier, I had worked on the Network Control Protocol (NCP) for TENEX and network programs such as an experimental file transfer program called CPYNET.

I was making improvements to the local inter-user mail program called SNDMSG. Single-computer electronic mail had existed since at least the early 1960’s and SNDMSG was an example of that. SNDMSG allowed a user to compose, address, and send a message to other users’ mailboxes.

A mailbox was simply a file with a particular name. It’s only special property was its protection which only allowed other users to append to the file. That is, they could write more material onto the end of the mailbox, but they couldn’t read or overwrite what was already there. The idea occurred to me that CPYNET could append material to a mailbox file just as readily as SNDMSG could. SNDMSG could easily incorporate the code from CPYNET and direct messages through a network connection to remote mailboxes in addition to appending messages to local mailbox files.

The missing piece was that the experimental CPYNET protocol had no provision for appending to a file; it could just send and receive files. Adding the missing piece was a no-brainer - just a minor addition to the protocol. I don’t recall the protocol details, but appending to a file was the same as writing to a file except for the mode in which the file was opened.

Next, the CPYNET code was incorporated into SNDMSG. It remained to provide a way to distinguish local mail from network mail. I chose to append an at sign and the host name to the user’s (login) name. I am frequently asked why I chose the at sign, but the at sign just makes sense. The purpose of the at sign (in English) was to indicate a unit price (for example, 10 items @ $1.95). I used the at sign to indicate that the user was “at” some other host rather than being local.

The first message was sent between two machines that were literally side by side. The only physical connection they had (aside from the floor they sat on) was through the ARPANET. I sent a number of test messages to myself from one machine to the other. The test messages were entirely forgettable and I have, therefore, forgotten them.

At first, his email messaging system wasn’t thought to be a big deal. When Tomlinson showed it to his colleague Jerry Burchfiel, he said “Don’t tell anyone! This isn’t what we’re supposed to be working on.”

Awards and honors

In 2000 he received the George R. Stibitz Computer Pioneer Award from the American Computer Museum (with the Computer Science Department of Montana State University). In 2001 he received a Webby Award from the International Academy of Digital Arts and Sciences for lifetime achievement. Also in 2001 he was inducted into the Rensselaer Alumni Hall of Fame. In 2002 Discover Magazine awarded him its Innovation Award. In 2004, he received the IEEE Internet Award along with Dave Crocker. In 2009, he along with Martin Cooper was awarded the Prince of Asturias award for scientific and technical research.
NCAC-10: National Conference on Advanced Computing

Report Prepared by: Ms. Mini Ulanat, RSC (Reg. VII) and Mr. H R Mohan, Chair Div. II

Dr. T V Gopal addressing a session

Inauguration of NCAC-10 by Prof. Ajith Abraham, Dr. Varghese John, Dr. A.M. Chacko, Prof. P.C. Cherian, Prof. Sunny Kuriakose, Prof. Shyru P.G., Ms. Mini Ulanat

Department of Computer Applications, Union Christian College, Aluva organized a three-day NCAC-10: National Conference on ‘Advanced Computing’ during January 20th-22nd, 2010 in association with Computer Society of India (CSI Div II on Software and CSI Cochin Chapter). The event was co-sponsored by Kerala State Council for Science, Technology and Environment (KSCSTE), Govt. of Kerala. NCAC-10 provided a stimulating forum for academicians, scientists, engineers and students from all over the country to disseminate their new research findings and exchange information on emerging areas of research in the advanced computing. The conference has enlightened the participants, the state of the art of research in the advanced computing. The conference and exchange information on emerging areas of research in the advanced computing technologies today.

The conference was inaugurated by Dr. Ajith Abraham (Research Professor, Norwegian University of Science and Technology, Norway & Director, M I R Labs Washington, USA) on 20th January. Dr. Sunny Kuriakose (Convener, NCAC-10) welcomed the gathering. Dr. Varghese John (Principal, U.C College) presided the function and Dr. A.M. Chacko (Manager, U.C College), Prof. P.C Cherian (HoD) and Mrs. Mini Ulanat (Regional Student Coordinator, Region-VII, CSI) had delivered felicitations. The Coordinator of the NCAC-10, Mr. Shyru P.G., delivered the vote of thanks.

Following the inaugural session, Dr. Ajith Abraham, in his technical talk on “Combating Terrorism: Intelligent Tools and Challenges” explained the challenges involved in counter-terrorism and some computational intelligent tools to discover terrorist threats and also presented some tools to combat cyber terrorism. He illustrated the role of online risk assessment for intrusion prevention systems that could combine both intrusion detection and risk assessment and easily deployed in a mobile environment. Dr. Elizabeth Sherly [Director-in-charge and Associate Professor, IIITM-K, Thiruvananthapuram] in her invited talk on “Fractal Neural Networks” discussed the importance of fractal Neural Network (FNN) to tackle the limitations of traditional ANN and other models in representing higher cognitive functions. Dr. T V Gopal (Professor, Department of Computer Science & Engineering, Anna University Chennai), in his invited talk on “Nano Computing”, explained nano computing technology and discussed the current research trends in this area.

The second day started with an invited talk by Dr. K. Paulose Jacob, (HoD, Dept. of Computer Science, CUSAT) on “Cloud Computing”, covering the issues, characteristics, architecture, challenges and research trends in the cloud computing scenario. In the invited talk on “Computing with Biological Models”, Dr. V Rajkumar Dare (Head, Dept of Mathematics, Madras Christian College, Chennai) covered the various biological computing models and their benefits. This was followed by an invited talk relating to e-governance plans in India, “National e-Governance Plan, Government Initiatives” by Mr. V. T. Santhosh [Technical Director & District Informatics Officer, NIC Ernakulam District, Cochin].

Final day of the NCAC-10, started with the technical talk on “Human Behaviour Analysis” by Dr. R. Baskaran [Asst. Professor, Department of Computer Science and Engineering, Anna University, Chennai] explaining how to analyze and understand the human activities (behaviour) using multi-state scenario based approach and by involving the human activities derived from postures, motion trace and their surrounding contextual interaction so that abnormal activities with respect to context and anomalies in behaviour could be alerted for further actions. Mr. Srinivasan Desikan [Senior Systems Architect, Hewlet Packard, Bangalore] in his invited talk on “Agile methodologies as Software engineering practice for the fast changing world” pointed out that if we use the predictive, heavy weight methodologies for developing software, it will be very difficult to incorporate the changing business needs of our customers. Many software development organizations in India have started moving towards agile development methodologies, as it helps the organizations to respond to changing business environments very quickly and provide better customer satisfaction.

24 papers were presented in the conference and 75 participants from all over the country attended the conference. During the valedictory session, the participants provided an excellent feedback on the quality of presentations and the overall organization of the conference. The organizers place on record the excellent support extended by Computer Society of India and especially Mr. H.R. Mohan, Chairman, Div II and his colleagues. The event was well covered in the media.
I had called for a meet of the Chapter office bearers in Region VII on 12th Feb. in Coimbatore. There were many issues to be discussed. Quite a few chapters have not completed the election process for more than one year and accounts have not been submitted. We also wanted to use this opportunity to plan for the events in the coming year. Prof. Thrimurthi, our Vice-President has been the inspiration for this initiative.

I would have liked a wider participation; it did not happen. Even active chapters like Chennai and Trichy did not send their representatives due to other preoccupations. In any case, a small beginning has been made.

Participation by Annamalai Nagar Chapter was a good augury. We had been concerned with the inactivity of the Chapter since its inception. Prof. Ramalingam, who represented the chapter said that they have been conducting quite a few activities silently. We wanted them to conduct the Regional Convention in the current year, but that could not take place.

Some concrete suggestions were put forth by participants, which included senior colleagues like Ranagasamy and Satish Babu, for revival of dormant chapters. One of them was to write to the members directly. I thought this was a good suggestion. If current office-bearers are inactive, could we go directly to the members? I am planning to do this in case of Calicut and Pondicherry.

The ever active Cochin Chapter has gone into a limbo for the past one year and in my meeting with senior members of the Chapter they have shown a lot of concern to revive the chapter. I proposed in the meet that we form an ad-hoc committee to conduct the elections in the chapter. I wanted to use this as a last resort, but time was running out. Fortunately before I could initiate action, the Chapter has called for elections. I am waiting for the new committee to be formed and the chapter regaining its old glory under the benign guidance of senior members. Once the chapter office-bearers settle, we would start the revival with a high profile activity in Cochin.

Coimbatore has always been an active chapter. Their meticulous planning is something other chapters should emulate. They were ready with a full set of activities planned for the next year. They are bidding for the Regional Convention; alternately a divisional conference. With everything in place in the Chapter, I am sure they would do a great job.

One of their activities that attracted everybody’s attention was the IT Quiz for school students. This activity has generated a lot of interest in schools in and around Coimbatore. Why should we not replicate this activity in other chapters? Then we could bring the winners of each of these chapter contests to a regional level contest. I hope the other chapters would come forward.

With technical sessions being planned by different chapters, would it not be a better idea that we make facilities for other chapters to listen to these lectures? Should not a society that prides itself in pioneering computerization initiatives in the country do this for its members? Prof. Thrimurthi was receptive to the idea that we should have videoconferencing facilities in the chapters. We may start this initiative in select chapters in the first leg and slowly expand the network.

Mr. Srinivasan of Trivandrum chapter is proud of its activities – rightly so. Every week they have a program. (The only other chapter that is so regular in its activities is Trichy). The Chapter works closely with the government in Kerala. This is a chapter with potential to conduct large events. Divisions should come forward to plan some event here. They are currently planning for the National Student Convention and Ranga Rajagopal’s team from Coimbatore is coaching them on do’s and donts – a worthy model of collaboration between chapters.

On the whole the meet helped us understand the viewpoints of the chapters and I believe motivated them to work harder for the betterment of the chapters. I hope that our next regional meet would have better participation and larger content. I am waiting for the chapters to respond.
A program on Role of Communication and Information Technology was organized by Dr. Sujata Kanhere, jointly with the Medical Education Technology Cell at the K J Somaiya Medical College and Hospital on Wednesday 30th December, 2009. The Hon Secretary gave a presentation on role and importance of IT in Medical Education and Practice with live examples, videos clips and case studies. The talk was followed by interactive question and answer session.

The program was well attended by 80 participants, faculty, senior doctors and students. The Dean of K J Somaiya Hospital, Prof Dr. Geeta Niyoji and Prof Dr. Nilay Chakrabarti, in charge MET Cell graced the occasion. The attendees evinced keen interest in the subject and expressed a wish for more such value added programs on IT for doctors.

The chapter organized two-day training on Business Analysis on 15-16 Jan. 2010 at the chapter office. The training was conducted by Prof. Pradeep Pendse. The training helped the participants get an Overview of Business Analysis and reference to standard frameworks such as Zachmann and the International Institute of Business Analysts (IIBA), Role of a BA in articulating Project Goal/Vision –Understanding the client’s perspective.

Under the SPIN activity, the Chapter organized a lecture on Creating effective work breakdown structures on 20th Jan 2010. The speaker Mr. Laxmikant Purohit discussed the role of WBS in different stages of Project Life Cycle. Best Practices for Optimum use of WBS, Level of detailing in WBS & its application for estimation.

The lecture was very productive for the attendees and a good value add for the participants.

Under the Security Technology Forum Series of Lectures the Chapter conducted a talk on Future of Information Security. The speaker Mr. L S Subramanian though his talk outlined the opportunities and trends in Information Security and the massive changes in the Information Security landscape which calls for professionals with enhance and new skills sets in the new decade.

The chapter conducted four-day certification course on Project Management 4.0 from 28th to 31st Jan 2010 at the chapter office. The training helped the participants learn the Fundamentals of project management skills, concepts and techniques, Identity stakeholder needs requirements and 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 inaugural ceremony started with lighting of the lamp at International Conference on Green IT and Open Source” by the Chief Guest Mr. Prashant Katikar, V.P. Strategic Accounts Cybage Software, India, Guest of Honour, Mr. Deepak Shikarpur, Chairman, Computer Society of India, Special Invitee, Mr. N R Patil, Delivery Manager, Cognizant Technology, Special Distinguished Guest, Dr. Micheal Ogembo Kachieng’a, Professor, University of Pretoria, South Africa.

Dr. stressed that Green IT and Open Source is needed at every level of National Economic Development. If Green IT is incorporated at all levels it will help to stabilize National Income in turn National Markets and Global Markets.

Session 1 on “Green IT-Web Technology and SOA” was by Ms Anuraddda Sardesai. She gave presentation on web technologies and new trends in web technologies. Presentation covered on various fields like soft web services, service object architecture, cloud computing and many such web technology related topics.
Session 2 on “Open Source with Regards to Mobile Technology” Mr. Vinay Sathe, CEO Softspin said that IT has reduced the human effort and helped human mind to be more creative and fruitful. He added that mobile has entered the life of everyone and is going to be so for a long time. He explained the various mobile components like chips, network elements (base stations), sim cards, cables etc.

He also explained that Open Source implies anything available to use freely. The concept of open source goes in contradiction with what people go on Intellectual property but there is a good synergy in it.

Session 3 on “Green IT—Technological Changes at World Level” by C V Pattanshetti. He started his presentation by the quotes “The World is shrinking”. He explained this by saying that earlier the process of communication was slow mechanism but today it is at a very fast pace due to IT which has got the world closer.

He pointed out that the areas of the use of IT are innumerable like in case of e-mail and video conferencing it helps in increasing the efficiency of people.

He touched various areas where IT has emerged in developing it but at the same time bought disgrace. The areas explained by him include manufacturing industries, entertainment industry, health care and economy.

Due to IT, the economy is booming due to better infrastructure, better products, less price and easy money but it has also caused pollution and ruthless competition. Thus corporate government need to control these unscrupulous activities.

Session 4 on “Green IT and Recent Developments in Managements” by Mr. Prakash Vasekar presented two sides of IT. Greener side (Advantages) and darker side (disadvantages) i.e.

Advantages of IT : First Communication, Saves Time, Redue Paper wastage, Job opportunities, Ample of money / High packages

Disadvantages of IT : Cyber wastage, Financial crimes, Personal defaming, International terror, Cultural relations

Session 4 on “IT Governance” was taken Dr. Mrs. Smita Totade a professor at National Insurance Academy, Pune.

Professor talk on IT Governance. She started her talk with the explanation of term “Corporate Governance”. The principles of corporate governance are transparency, accountability and risk management.

She listed the various Business risks.

She explained each of the risk and discussed the pillars of IT Governance viz. (1) IS alignment (2) Value delivery (3) Risk management (4) Resource management (5) Performance management.

The next topic covered in the talk was Cyber security and IT Risk management. IT Risk management includes Risk allocation, Risk mitigation, Risk transfer etc.

Valedictory function : The valedictory function was inaugurated by Mr. Daniel Penkar.

In total 300 research papers were submitted on “Green IT and Open Source”, out of which 172 papers were selected for the publication. The research papers were selected considering the innovation in them. The papers were broadly categorised in six different segments like web technology, service oriented technology, net security, object oriented technology etc.

Dr. Deepak Shikarpur share his views over the seminar. He emphasised on making more use of technology. He asked the organising committee to upload all the lectures of last three days so that everyone can be benefited. He advised the educational institutes to do less paperwork and make most use of the technology.

Dr.(Capt.) C.M.Chitale, who has years of experience in conducting training programmes at various companies, talked about optimum use of resources. He urged everyone to change the attitude towards the environment. He stressed on the need for recycling of goods and total quality management.

Mr. M.N. Navale, who is the founder president of STES, explained the need of technology in various government departments. He thanked everyone for making this conference a grand success.

Hon. Shree. Mahesh Zagade, commissioner, PMC, told everyone that he came to this conference out of curiosity and need of attention towards saving the planet earth. He said that USA was the first country to recognise the need of Green IT. He also congratulated the organisers for arranging such a conference.

Awards were given to the best research papers.

The vote thanks was given by none other than Dr. V. D. Nandavdekar, Director (MCA), SIOM.

SOLAPUR

The chapter this year had arranged a mega-exhibition cum fair for IT & Telecommunication industry - CSI IT COM Trade Fair 2010 on 13 th & 14th February 2010 at Harbhai Deokaran Highschool Ground, in the heart of Solapur city. This was a first of it’s kind of a fair in Solapur & a unique event in history of Solapur. It was a customer oriented commercial display of all these products & services under one roof. The Chapter manage to get 30 stalls for this event including giants like Dell, BSNL, Intel, Quickheal etc. IT Major’s like H.P., Infosys, L&T., T.C.S. have contributed to the success of this event. College of Engineering, Solapur. More than five thousand citizens of Solapur, students from various engineering colleges & schools, various professionals visited this exhibition & this has definitely lead to major financial turnover.
various degree & diploma engineering colleges in Solapur district at Hotel City Park, which was very well attended. Mr. Abhinav Kohli, Senior Officer from HP, had a chat with select corporate people from Solapur on future of critical business computing.

**TRIVANDRUM**

The Chapter organized the following technical talks for the public:

- On 20-01-2010 Technical talk on “Ground Water Depletion at Plachimada by Coca Cola Factory” by Dr. P. R. Sreemahadevan Pillai, Principal, PA Aziz Engineering College & Technology, Karakulam, Trivandrum.
- On 27-01-2010 Technical talk on “Exercise is Medicine” by Dr. R. Sankar Ram, Medical Officer, Rajiv Gandhi Sports Medicine Centre, Directorate of Sports, Government of Kerala, Trivandrum.
- On 2-2-2010 arranged a Civic Reception to Dr. K. Radhakrishnan, Secretary, Department of Space, Government of India and Chairman, ISRO.
- On 3-2-2010 Technical talk on “Common Sense in Geotechnical Engineering” by Dr. Balu Iyer, Geotechnical Specialist, Trivandrum.
- On 17-2-2010 Technical talk on “Case Studies In Renewable Energy Practice: Crossing The Cost Barrier” by Prof. V. K. Damodaran, Vice Chairman, EMC and Director General, INCORE.

**DIET, YAVATMAL**

The branch organized event of felicitation to the winners of competitions like SpellChamps, Web capms along with the toppers of all branches with a shining future on 5th Jan. 2010. Principal in his presidential address said that the students should make the use of CSI Student’s branch to expose their hidden talents. Branch Councilor of CSI Student Branch & Head Comp. Sci. & Engg. Deptt., Prof. P M Jawandia, Prof. R. MTugnayat Head Information Technology Deptt., Prof. A D Raut appreciated winners.

After appreciating the success of winners & toppers, Debate competition was organized on the burning issue of “Separate Vidharbha State”. The response of the student was overwhelming. By overcoming the cut-throat competition Mr. Ankit Tugnayat was declared as winner. The winners were awarded by judges Prof. M D Jadhav & Prof. R J Memon.

The branch organized a workshop Lonritrix on a Line Follower Robot from date 29th Jan to 31st Jan. This workshop was conducted by Think Labs IIT Bombay.

There was an excellent response from the students of different colleges for the workshop in JDIE. Aradan Roy, Mr. Dadasaheb, Mr. Rahul and Mr. Jay guided students to manufacture Line Follower Robot.

**GGITM, Bhopal**

The GGITM – Student Branch was inaugurated on 9th of Feb. 2010 in the presence of Dr. P P Khare. The chief guest for the function was Dr. Sanjay Silakari, Dean, Board of Studies in Rajiv Gandhi Proudyogiki Vishwavidyalaya. The chief patron of the group Mr. V K Jain and Dr. P S Venkataramu, Principal, were also present on the occasion. The Head of CSE, Prof. Ujjwal Nigam, Head of IT, Prof. Dileep Singh and the Student Branch Counselor coordinated the event.

The conveyor of student branch Piyush Shrivastava introduced the office bearers for the year 2010-2011 and gave a brief outline of the activities planned for the upcoming year.

Dr. P S Venkataramu, Principal, addressed the gathering by highlighting the importance of such Technical Societies in facilitating all round development of students. He emphasized on the fact that to run such chapters in the college the college faculty has also taken membership of CSI and IEEE. After the Principal’s message, Dr. P P
Khare motivated the students to actively participate in the seminars and conferences sponsored by CSI to enhance their knowledge base. The Chief Guest, Dr. Sanjay Silakari appreciated the efforts of Computer Society of India in establishing student chapters all over the nation. He said that such collaborative initiatives from Technical Societies and College makes it easy for the students to keep abreast of the Technology Trends.

Mr. V K Jain presented Mementos to the guests and the function concluded as Prof. Dileep Singh delivered Vote of Thanks.

**GIT, GITAM UNIVERSITY**

17th February, 2010 was a great day for the branch, GITAM Institute of Technology, GITAM University. The chapter has 227 student members, 5 faculty advisors and the coordinator.

The valedictory function was presided by Prof. D Prasada Rao, the principal of GITAM Institute of technology, GITAM University, chief guest Mr. D Kameswar Rao, General Manager IT, Steel Plant, Guest of honor Prof.M.Shashi, head of computer science and systems engineering department, Andhra university, Prof. D Rajyalakshmi, the coordinator of the branch, GITAM Institute of technology and the student president Mr. Shiva Prasad.

Various events were conducted for the academic year 2009-2010. It had debates, Situational intelligence test, online events, workshops and seminars by eminent personalities.

The dignitaries awarded the prize winners in the above conducted events.

**MBCET, THIRUVANANTHAPURAM**

An Industrial visit to the Techno Park office of software services company UST-Global was organized by the CSI Student Branch of Mar Baselios College of Engineering & Technology (MBCET) on 15.02.2010. CSI members and Faculty members of the Computer Science and Information Technology departments participated in the visit. A brief introduction about the company and the programme for the day was given by Mr. Pradeep Madhusudanan, Campus Relationship Team Member, UST-Global. This was followed by a session by two members of the sourcing team Mr. Praveen Kumar, Sourcing-Head, UST-Global and Mr. Ajay Krishnankutty, Resource Management Group-Head, UST-Global. They emphasized the importance of domain knowledge, business skills and soft skills that a software professional should have in addition to the technical knowledge. The students also gained an insight about how the company selected its clients and how they focused on quality by restricting their clients to only Fortune 500 companies. The visit ended with a brief facility visit which helped the students understand the working environment of software professionals in UST Global.

**RVCE, BANGALORE**

Departments of CSE & ISE (PG Studies), RVCE, Bangalore had organized a Two Day Workshop for Faculty Members on “DATAWAREHOUSING AND DATAMINING TECHNIQUES” during 5th and 6th of February, 2010. Mr.Krishnendu from StatSoft was the resource person, who is a statistician, conducted the workshop in the department laboratory.

This workshop was organized by Dr.Shobha G - Dean of PG Studies for CSE & ISE and Prof. Srinivasan G.N. from the ISE dept. Workshop started with formal inauguration, presided by our Dr.Satyanarayana - Principal of RVCE. The other dignitaries present in the inauguration are Dr.Srinath N.K - HOD CSE, Dr. Ramakanth Kumar HOD ISE and Dr. K N Subramany – Director Admin(RVCE). The participants for this workshop are the faculty members from various department, whose area of research are based either on Data-mining or Data-warehousing. The workshop involved training and Hands on sessions for all the attendees. The workshop focused on how to use this Data Mining tool to organize data in a particular fashion. It also dealt with study & modeling of the system. Total of 20 faculty members have participated and benefited from this seminar.

**PATKAR-VARDE COLLEGE, MUMBAI**

Department of Information Technology and Computer Science, Patkar College CSI- student Branch in association with Rediff.com, under the aegis of University of Mumbai, had come together to offer a dynamic, interactive intercollegiate One-Day Seminar on 23rd January 2010. The Objective of the seminar “Research in IT- Present & Future” was to stimulate research attitude, by exchanging ideas among students, researchers, practitioners and policy makers. The
Seminar witnessed an overwhelming response of 225 participants from different IT sectors; 160 PG students, 52 Teaching faculties, 05 dignitaries from University of Mumbai & 08 Professionals from IT industry. The seminar began with formal welcome by Mrs. Mala Kharkar, Vice-Principal, Self Finance Department followed by felicitation of special invitees, honorable speakers, Chief Guest and Guest of Honor.

Guest of honor Mr. Suhas Ajgaonkar, Vice-President, MASTEK, emphasized on avenues open for basic research and applied technology research. Chief Guest, Mr. Ajit Balakrishnan, CEO, Rediff.com, elaborated on how breakthroughs happen in Information Technology, by giving real-life examples.

Mr. Sumit Rajwade, VP-Technology, Rediff.com, very dynamically delivered a talk on upcoming challenges in IT sector and the pre-requisites to match up with the IT sectors research demands. Dr. Arun Pande, Head, Innovative Labs, TCS, gave a brief insight to “Relevance of IT in Agriculture”. Dr. Chelpa Lingam, Principal, MGM College of Engg., delivered a talk on ‘Research Perspective in Software Engineering’ for EMO-Metric. Dr. Vijay Raisinghani, Head, IT, Mukesh Patel School of Engineering, NMIMS, delivered a talk on “Research Trends in Mobile Computing”

Prof. (Mrs.) Mala Kharkar, Vice-Principal & CSI-Student Branch Coordinator, narrated the whole day session to inspire the participants towards research attitude to achieve our goal, in her valedictory note.

Prof. Arun Dalvi, Faculty, IT Dept, has given a VOTE OF THANKS to all participants, Chief Guest, Guest of Honor, Honorable Speakers and a Special Thank to the Trio, Mr. Ram Iyer, Mr. Sameer Sahastrabuddhe, & Dr. Gurunath Pandit, Secretary, Chikitsak Samuha, for their unforgettable and valuable contribution to make this seminar a Grand SUCCESS!!!!.

**SBBSIET, JALANDHAR**

The Branch organized seminar on “Web technology” on February 8, 2010.

Prof. Jagmohan Singh had presented this seminar The first session include Introduction to Web Technologies in which the evolution of Web and various technologies like HTML, XML, Java, JavaScript and ASP.NET was given. The concept of static language (like HTML) and dynamic language (like DHTML) was also introduced. Information regarding Web Servers and freeware available on the internet was also an integral part of the session in which the students were suggested to concentrate on open sources available like Linux, Firebird, and MySQL etc. In second session the advance technologies like AJAX, DOJO etc. were introduced which are meant for creation of more interactive Web Pages. He Emphasised on Database Management and also provides the links for getting tutorials about database languages. The reference sites were quoted so that students could go for further studies in the interested areas. The presentation was meant for exposing students to Web Technology and the upcoming trends in this field so that they could be more comfortable to adopt this technology for project works.

**RAJAGIRI SCHOOL OF ENGG. AND TECHNOLOGY**

Mr. Manu Zacharia an Information security evangelist was the speaker for the day. He explained what is hacking and the various types of hacking. The speaker also discussed about the different real time issues happening in hacking. He showed some demo, which really impressed the participants. Mr. Manu Zacharia is a system security expert. The feedback was that participants thoroughly enjoyed the session and more of these kind are expected. Workshop started with a welcome speech by Ms. Meera Tom (convener -CSI) .Around 180 CSI members attended the workshop. Prof. Sabu Tambi presented a memento to the speaker.

**SIESTG, MUMBAI**

The branch was officially inaugurated on 6th of February 2010. The occasion was graced by Mr. Rajiv Gerela, Chapter Chairman of Mumbai, VP-IT, Duetsche Bank and Mr. Ravi Eppaturi, Member of managing committee, CSI and AVP-TCS.

The function commenced with a prayer followed by a speech by Mr. Rajiv Gerela. Congratulating SIESTG on becoming a student branch of the CSI, Mr. Rajiv further went on to describe as to how time and technology have changed and developed together. He stressed upon the fact as to how the younger generation including toddlers are catching up with the technology bug. Mr. Ravi substantiated Mr. Rajiv’s views by pointing out as to how computers seem to have entered every house and recently even peoples’ pockets via PDAs and other modern technologies. He stressed upon the necessity for the younger generation to use technology constructively to keep themselves motivated and focused. He further urged the students to think out of the box and come up with innovative and challenging ideas that shall finally revolutionize the outlook of various fields.

The inauguration was followed by a seminar on “Virtual Lab using Cloud Computing” by Mr. Deven Shah HOD of IT Dept., SPIT. The seminar covered in depth details of how a private cloud can be created and technologies and concepts used for the same. The private cloud can be created as virtual lab for students, which can be accessed at home without having the need to install all the software’s. The seminar was useful for students and faculties as the practical implementation of the private cloud was covered.

**SVEC, TADEPALLIGUDEM**

CSI student branch of Sri Vasavi Engineering College in association with IIIT- Hyderabad organized a two day workshop on
“TECHNOLOGY TOOL KIT” which covered importance and usage of the open source software tools in educational environment, on February 25-26, 2010 in the college campus. CSI members of CSE, IT and MCA participated in the workshop. 50 student member and many faculties from various departments of SVEC have participated in the workshop.

On 25th In the First session how to install UBUNTU and configure it are discussed. Followed by the second session on Version Control System (SVN) and its usage in project development process.

On 26th First session started with the Content Management System(MEDIAWIKI) through which the participants developed wiki for the institution. Followed by a session on Learning Management System (MOODLE) to create and manage courses. In the final session the participants worked with Project Management System(REDMINE). All the participants had a rich hands on experience in the two days workshop.