

Inaugural Address at CONSEG-09
by
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Mr. Mohan, Ananth, Ramesh, Ramasamy and Friends:

Let me add my own welcome to all of you for Conseg – 09 – International Conference on Software Engineering. I deem it a great privilege to give the inaugural address. While this honour has been given to me as President of Computer Society of India, some of you may be puzzled as to how a Chief Financial Officer, oriented towards using a computer for number crunching, can participate and that too inaugurate a Conference on Software Engineering. Let me tell you that I began my career as a Software Programmer in 1970 and I stuck to looking after projects, worrying about software processes, generating demand for our services and developing people in the first 33 years of my 39 years work experience only in IT field. Even in these last 6 years when I have shifted my attention to finance, I am looking at the economics of Software Engineering. Therefore I became the President of CSI, not because CSI had to shore up its Finances, which it sorely needs to do, but because I am an IT professional wanting to do my bit for the profession. I would like to reassure you that I also have my place in this crowd.

In my address today, I will cover the leap that we have made over the years in Software Engineering. My focus will be on the changing software professional. I will then tell you of the effort we are making at Computer Society of India (CSI) towards the development of the IT professional.

Before I get in to my inaugural speech, allow me to express the double gratitude I feel towards the organizers of today's Conference. I have already told you of my connection with Software Engineering and therefore I owe a debt of gratitude to the organizers for inviting me. And more importantly, this Conference leads towards felicitating a person who has had a major influence on bringing the right eco system for the big boom we have had in the IT related business in India. I am talking of Prof. Mahabala. My association with him goes back to 1978 when both of us used to commute daily in a contract bus in Bombay- as it was then known. He and I were argumentative Indians, trying to relate finance to software engineering. I will talk about those days and the subsequent association later in the evening.

My learning of software process started when I read Fred Brook's book "Mythical Mammoth". In these early days in the 1960s and 1970s, we started with bespoke applications and anything which went towards taking drudgery and repetitive codes out of the system development was of a big help. In my own organization, which was led by a renowned engineer – Mr.F.C.Kohli- we went through an introduction to use of structured process in programming and design and we started paying a lot of attention to the building systems, not just writing programmes. Software Engineering as a discipline emerged at that time, and we started our major education activity at TCS. We ran a 18

month programme for new entrants and it was appropriately called Software Engineering Training Programme . The duration was curtailed to 12 months next year and ultimately integrated into our four month training programme. This programme was the brain child of two visionaries – Mr.Kohli and Prof.Mahabala. My own feeling is that our educational institutions, who also participated in it, benefitted a lot. Without this educational initiative, we would not have looked at software development in a wholistic way and a lot of subsequent initiatives, including CMM and Business Excellence Programmes, bebefitted by it.

In the Software field, we have travelled a long way since the early days. After we software engineers thought that we had solved the problem with COTS application or its full form Commercial Off the Shelf Software, we found that the business surrounded COTS with ad-hoc applications and a long tail of small and situational apps. CIOs struggle to manage these applications which run on everything from desktops to ‘under the table servers’, typically written at the individual or department level.

Then the business started asking for collaborative applications around unstructured data and information. In fact, the extent and volume of ‘unstructured’ information today, stored in corporate knowledge management and collaboration repositories as well as the disk drives on our desktops and laptops, is substantially more than the structured information in corporate databases. These applications have grown into the world of Web 2.0 today, and with the ‘internet generation’ now in the workplace, are seen as the forerunner of the shift from top-down corporate IT to a more open model IT inside enterprises.

Then we have domains like engineering, medicine and many others are demanding “device like” or “engineering – like” precision and stability. It is hard for us in software engineering to understand and deliver to these levels. I remember that in the late 1980s, we in TCS delivered certified ‘zero defect’ code for a particularly demanding customer in the hi-tech industry. It came at a cost – and was certainly not capable of being scaled to all projects. The challenge today is that software runs much more than servers and desktops. The typical commercial aircraft or precision medical device may have several million lines of code, and we would certainly not like to see the ‘blue screen of death’ too often!

Many domains like entertainment and communication are richly visual. We are seeing a revolution in user interfaces with touch screens becoming mainstream with devices like the iPhone and haptic interfaces being a natural part of devices like the Nintendo Wii. The clean separation of video being Analog and games like Pacman and Tetris being digital, is truly history – we see as much or more TV on Youtube as we do on Star Plus. To make things interesting, we can edit live television on our PCs and laptops, and we can access the internet thru a Sling box! Convergence is teaching us new rules for user interfaces, as more and more non-traditional users of computers and software are now using very powerful processors on multiple media devices. My little grandson knows the difference between the TV, the laptop and my blackberry – and it is probably not long before he would start writing software for all three!

You know that the business of software has also undergone a major transformation during this period. No longer is money made by releasing Operating System and Database Management products, whose rationale is to satisfy the traditional users in Banking, Telecom and Manufacturing organizations. Money these days is made through producing platforms for Searches and Social Interaction. While business computing with traditional businesses as customers are still important, new businesses oriented towards direct customer contact, and facilitating their social interaction, are also proliferating.

In this kind of transformation, as we have seen, we have moved away from concentrating on only commercial transactions and engineering design to areas closer to individual and his/her needs. At the same time, the demands on the IT professionals have changed.

As I said, we started with engineering like methodologies such as SSAD, Object Orientation and moved on to process rigour. These are necessary steps in the industrialization of Software and making it a more engineering-focused area of knowledge. I am sure we will discuss some of this tomorrow in the context of the open house on curricula in Software Engineering.

We talked of collaborative and industrialization of software. I actually started a software factory to address Y2K problems and therefore relate to assembly line focus to solve problems. This worked extremely well in the context of the specific problem of remediating code for the Y2K bug. We have to learn from such experience and see if we can scale out truly industrialized platforms for software. Let me tell you the story on Software Factory. We conceived it 1996 when we realized that a big hailstorm is going to hit us in the form of requirement for remediation for Y2K problem. The time was limited and while some forms of tools were in place, the extent of manual effort required was huge. The only option was to get a rigorous process in place and get a new set of software professionals who will be guided solely by the discipline of the process. We actually hired space in the Industrial estate of Ambattur and created an assembly like environment. Tools were extensively used. We developed ancillary units in the form of Business associates and we trained the people from those Business Associates on process and tools. And we remediated 600 million lines of code over two years. If I wanted to see the power of discipline in this field, I think back on our experiment.

To get back to the present era, we have tools like Service Orientation, Reuse, Variability Management, Composition and Assurance of Quality. These can make a big difference as to how we are operating as Software Professionals now.

I see a lot more of business focus in the typical software engineer's characteristics. There is a lot of need to understand the customer's domain and to understand the economics of software engineering. Cost, Quality and Time tradeoffs are real in today's world of software engineering.

There are challenges to be overcome as we get into the new paradigm of computing. Questions which I face as CFO are how does an enterprise plan for the workforce needed for its information needs. How do I measure the Return on Investment, which is a question that I as CFO ask of any spending programme. How does the “enterprise software” close the “ease of consumption” gap with “consumer” software? How do we leverage technology revolution itself to change the game? We can take Cloud as an example here.

I will not get into all these areas, since you will be attending the sessions which deal with topics of great relevance to us now. You are fortunate to have eminent speakers. But one topic that I do not see here is on the economics of Software. I am not surprised that it is not discussed here, as very little work is done in that area. Even as Software Professionals, I viewed Process Discipline as essential to reduce wastage, turn repetitive items into assets which can be reused and generally enhance the Value Adding activities. What this year, which is happily getting over- I am saying happily because this year has been a year of economic stress for the whole world – what this year taught us was the need to get higher productivity. We need to start turning the economics of software engineering as a discipline. Another area where I have been experimenting is on the value of Human Capital in the IT field. Traditionally, the more experienced a person is, the greater the value of that person to the company, since he/she brings the maturity out of years of experience. In the software field, where technology changes are constant, the value for experience is limited. Also, for a software division or organization, the value of Human Capital is far higher than the value of physical assets. However, if that division or organization does not keep up with the changing technologies, the value over the years comes down and not up. These are additional topics we need to take up in future conferences on Software Engineering.

I have said all the above to show the technology and the environment in which a software professional works. What I know is that the technologies have changed a lot over the last four decades and methodologies have transformed themselves to keep pace. This field is only for those who can continue to learn. And those who can't learn should hope for promotion, as otherwise they are obsolete! The professional needs institutions which can help him learn and keep up to date. The Educational Institutions have tried to keep up but their results are mixed. There are excellent educational institutions and there are good teaching shops. But there are equally educational institutions with poor vision, inadequate resources and untrained faculty resources. It is in this environment that CSI attempts to bridge the upgradation gap.

This is a good point to turn to the work we are doing in Computer Society of India or CSI as it is called. As all of you know, this is a 45 year old institutions started by what I would call early pioneers in this field. I am delighted to see in the audience Gen. Balasubramanian, another person who has contributed to the creation of this ecosystem in India. He was the founding secretary of this great Association. The unique thing about CSI as a professional association is that it brings together Academics, IT Business Leaders, IT professionals and the Users- all for the purpose of keeping updated on the trends and applications. In order to rejuvenate CSI, we are undertaking three

initiatives this year. The first one is the Development of a Knowledge Management System which should enrich the experience of a professional in CSI. This will enable Virtual rather than just Physical Meetings, enable creation and interaction among many Communities, create Forums for intense collaboration among members to resolve problems, read blogs of eminent members and peruse Digital Library. There are other facilities as well to facilitate better interaction among members. The system would enable members who would like to address the physical meetings to post their areas of interest and it then becomes possible for the Chapters to get speakers of their choice. The system will also carry Chapter Newsletters. We are fundamentally changing the means of interaction. We have almost completed the building of this open source based system which is being hosted on a Cloud. We will be releasing it towards the end of February 2010. We hope that this system will add value that a CSI member is getting.

The second initiative is in the area of Publications. Our CSI Communication, a monthly magazine, fulfills the needs of the members in keeping himself/herself updated. It is also a platform for CSI news. This is ably edited by Prof.T.V.Gopal who is in the audience today and who is also a speaker in this conference. We have brought in a new look to this magazine, which has been appreciated by all the members. We also had a Journal, which has been having troubles keeping a regular frequency. The need is to have publications around interest areas. Therefore, under the guidance of Prof.S.V.Rghavan, who has now gone to Delhi as Secretary to the Scientific Advisor to the PM, We are working towards five publications, each of them having quarterly frequency. These will be in the nature of Transactions and will be called CSI transactions on ICT. The five topics will be Systems Architecture, Software Design and Engineering, Cyber Security, Education and Health Care and last, but not the least, Economics, Practice and Management. We have targeted to start the publications from October 2010. We believe that these regular publications will be of immense value to the professionals in CSI. We are in discussion with eminent publishers. The economics and sponsorships are being worked out. We are also getting an eminent editorial board for each of these Transactions.

Therefore, the accent is on serving members professionally. But for the Association to make a difference, we need to increase the number of members. We have embarked on a Membership Drive. This drive will pick up steam once the Knowledge Management system is up and running and we are able to populate it with useful information to members. I need to add here details on the composition of our members. Currently two thirds of our membership base is made up of Students. The need is to enhance our interaction with students, so that they become members trading their student membership for individual membership after they cease to be students. Given what I have talked about in the changing nature of computing, with social interaction grabbing the limelight away from business computing, we need this community of students to understand their approaches and orientation. There is a generational gap in the use of computing devices and therefore the membership of CSI has to get more broad based.

We are also attempting to enhance our overseas links. We have now got one of our past Presidents as the Vice President of International Federation of Information Professionals or IFIP for short. This body is highly academic nature. We have representation in many

TCs. We are bring in key conferences such as Networks 2010. But we need to do far more to play a more active part in this. There is potentially a lot of benefit we can get from this Association. In addition to IFIP, we are a member of SEARCC. The next SEARCC convention is in Australia and our Past President K.K. Aggarwal is in the convention committee. We see a lot of value in SEARCC. It is made up of both developed countries such as Australia, Japan and Singapore as also developing countries such as Bangladesh and Sri Lanka. Our offer to share our expertise in e Governance was very well received.

In addition to IFIP and SEARCC, CSI is shortly joining BASIS, an association promoted by World Chamber of Commerce to promote Information Society. Our Past Secretary Mr. Satish Babu attended its meeting in Egypt recently. A key component of BASIS is the Internet Governance Forum where as Developing Country, we need to play a very active part.

I have sketched all of the above to stress the role that CSI is performing. But, as a Professional Society, our value proposition has to be strong on the issue of upgrading the professional capability of our members. It is here that conferences such as Conseg play a big part. Papers were selected after reviewing a good number that was submitted. We have eminent speakers, both from India and overseas. The value to the professional is immense. I compliment the organizers for arranging a technically rich programme. I am sure all of you would benefit by it. We need to get beyond our limited workspace to learn what is transforming and Conseg 09 attempts to do just that.