

Guest Editorial

Prof. P C P Bhatt
Vidha Software Solutions



On Usability: An important software engineering concept

From the time humans learned to develop tools usability has been a major design consideration. It has manifested in our dwellings, the way we plan and use our utilities like water, electricity and communication etc. With universal adaptation of computers and its use in our daily life usability has emerged as a major consideration in software engineering and software design principles for software products.

In computers, the first notions of usability evolved in the design of operating systems. The computer systems usability has witnessed enhancements with the conveniences offered in input devices like a key-board, mouse, joystick, and even touch screen or output devices like monitor, printer, facsimile machines, CD or VCD writers and even pen-drive. Often, therefore, usability is not considered beyond the usual notion of human-computer interface. In fact, usability does not even get covered adequately in software engineering teaching. As a result, the developers often consider putting some form of usability as an after-thought or when some criticism of product manifests. This is because the developers often work with “system centric” focus as opposed to “user centric” focus. Come to think of it usability can make or mar a product’s success. Operating system as a product has to create a balance between system centricity and user centricity. In applications like word processing the user centricity is primary. So, a natural question that arises: Is usability measurable?

Usability can in fact be fairly closely measured and adapted as the development comes along. For that to happen some imperatives need to be borne in mind if one has to achieve usability in tangible terms. Usability can be defined using three key considerations:

1. Discovery: How long does it take to figure out a feature
2. Learning: How long does it take to learn an identified feature
3. Efficiency: How easy it is to efficiently combine features to enhance the utility of the product.

To illustrate the point, let us consider a product like the Excel sheet. Much of its success lies in the fact that it scores high on all the three counts.

- Discovery: In fact on using the Excel sheet user almost wants to explore more features.
- Learning: The first steps are very easy and the graduation to using a formula is seen as a natural instinctive extension.
- Efficiency: Need I point to the multiple ways it is used by accountants or by managers for personnel deployment.

So, if one were to compare two products how does one measure the usability and go about rating these products for usability. Well one has to get two controlled groups and each is given to explore one product. They operate in isolation and some measures are obtained. One may follow the following steps:

1. How long did it take to find the basic utility features
2. How long did it take to learn the basic features
3. How long did it take to discover advanced features
4. How long did it take to learn the advanced features
5. How long did it take to get used to use the system effortlessly
6. How long did it take to call one self efficient user who can combine features and use these feature to obtain integrated functional utility.

One can keep a score in 1-5 range for each of the above steps and find an aggregate to be able to compare the packages.

Teachers who are engaged in teaching software design or software engineering may like to consider emphasizing the following to introduce usability concepts.

- a. Visibility of system: How does one invoke a degree of visibility of what system is doing. The examples of “install” details and internet protocol comes to my mind where the state is visible. One can clearly identify with such a system.
- b. Workflow: How close it follows the work-flow. This is indeed the case for all the accounting and pay-roll packages. Also, all transaction processing would demand this form of usability.
- c. User freedom: How much navigation and control options are given to the users. Word processing demands this immensely.
- d. Recognition or recall: It is important to incorporate recognition where some cognitive prompt would enhance utility. Recall may be invoked in case it is an imperative. The mail tool prompts are mostly recognition based on regular expression capabilities.
- e. Aesthetics and minimalist approach: A balance that is required on how much exposition or hiding needs to be done. Often an “on demand available” approach leads to better acceptance and less clutter. Google is a great example for this. The opening page hides all the complexity. The opening page is minimalist. The querying is also extremely simplistic.
- f. Help and support: These abundantly enhance the usability of a software package.

One can enumerate several practices from established organizations like IBM, Microsoft, SAP and others who actually have major usability groups. The software teachers are urged to explore the Web for the guide lines on usability. It is important that we produce candidates who are industry ready and incorporation of usability in software engineering and design can go along way to achieve this.

Prof. P C P Bhatt

From Chairman’s Desk



Peter Farrell, Founder: Res Med Inc., quotes Goethe (1749 – 1832): “Knowing is not enough; we must apply. Willing is not enough; we must do.” This aptly describes the essence and substance of Engineering. The term “entrepreneur” was coined by Jean-Baptiste Say (1767-1832), a French contemporary of Goethe.

He stated that “entrepreneurial success is not only sought after by the individual, but also essential to society as a whole”. “The essence of entrepreneurship is not risk-taking, but opportunity-seeking”.

Innovation is often based on technology, and although the individuals who drive innovation are entrepreneurs, Michael Hammer, a former professor of computer science at MIT suggested that engineers make optimal entrepreneurs. In an article in Fortune, he wrote: “The best qualification for innovation is a basic training in engineering”. Engineers are taught: that design matters; that most things are part of a system in which everything interacts; that their job is to worry about trade-offs; that they must continually be measuring the robustness of the systems they set up. Such a frame of mind fosters innovation”.

Many of the most successful corporate leaders in America, Europe and Japan, past and present, trained first as engineers. Examples are: Jack Welch, past Chairman and CEO of GE, is a Ph.D. in chemical engineering (Illinois); Andy Grove, founder and long-standing chairman and CEO of Intel, is also a Ph.D. in chemical engineering (UC, Berkeley); the past chairman and CEO of Exxon Mobil, Lee Raymond is also a Ph.D. in chemical engineering (Minnesota); Chairman and CEO of Dow Chemicals, Andrew Liveris, is a chemical engineer (Queensland); Henry Nicholas III, founder of the communications and semi-conductor giant Broadcom is a Ph.D. in electrical engineering from UCLA.

Some Indian Examples are: S Gopalakrishnan of Infosys has an M Tech from IIT Madras; N.R.Narayanamurthi of Infosys is an electrical engineer (NIE BE and IIT Kanpur M.Tech.); Nandan Nilekani of Infosys has an undergraduate degree from IIT Bombay; S.Ramadorai of TCS has a degree in electrical engineering from Indian Institute of Science, Bangalore; Ravi Venkatesan, Chairman of Microsoft (India) has a mechanical engineering degree from IIT Bombay.

Prof. R. Natarajan

BITES PhD Awards

BITES is pleased to announce the Best PhD Thesis Awards for the year 2008 in Electronics & Communication and Computer Science disciplines. A distinguished committee comprising of academia and industry members set up by BITES has recommended following faculty members for the awards

1. Dr. Uma Mudengudi, BVBCET, Hubli (Electronics & Communication Category)
2. Dr. K. V. Suresh, SIT, Tumkur (Computer Science Category)

Our heartiest congratulations to the winners.

Honors



Our heartiest congratulations for the recent Honors and Recognition bestowed upon Shri S. Gopalakrishnan, CEO & MD, Infosys Technologies who has been featured in India Today's special issue as one of the forty key drivers of India's growth machine.

We wish many more laurels to come his way.

IIIT-B is BITES New Institutional Member

On 5th October, Indian Institute of Information Technology, Bangalore (IIIT-B) joined the elite club of BITES institutional members. BITES extends a hearty welcome to IIIT-B on the occasion of their becoming BITES institutional member and wishes IIIT-B good luck in all their future endeavours. We look forward keenly to network with IIIT-B in our activities.

Dr. Selvan Dorairaj joins BITES Governing Board



Dr. Selvan Dorairaj, Senior vice president – Talent Transformation, Wipro Ltd. Joined BITES governing board as a distinguished member in place of Dr. A.L. Rao who has since retired from Wipro.

After his Engineering from IIT Madras, Dr. Selvan completed his post graduation in Management from IIM Ahmedabad and Research in the Humanities area from Symbiosis International University. For the last 24 years he has been in the IT Services Industry of which he has been with Wipro for the last 17 years.

He has been a Head of a Business Unit and championed Six Sigma across the Organization before moving into the current role.

For over the last six years, Dr. Selvan Heads the learning initiative at Wipro globally. Talent Transformation, as this function is called in Wipro today has grown significantly to provide classroom training to 5000 employees on a given day with a team that has grown 6 times over the past 6 years. Dr. Selvan has taken Wipro to global heights in the field of learning and education by establishing strong academic tie ups with global bodies of Education like Harvard, U21 Global, IIMs, IISc etc. He has authored research papers in the area of employability and presented them in many forums. His papers are published both in the national and international journals.

During Dr. Selvan's leadership the Talent Transformation team at Wipro has won the coveted ASTD, American Society for Training & Development BEST award six times in a row, the only company in the world to have this distinction and the Dale Carnegie Global Leadership Award for 2007, the only Indian company to win this award.

BITES extends a very warm welcome to Dr. Selvan Dorairaj.

We record our deepest appreciation to Dr. A.L. Rao for his support, encouragement and guidance during his tenure as BITES governing board member for last three years. We wish him and his family the very best in the years to come and success in all his future endeavours.

District workshop on Funding Opportunities for Sponsored Research and Collaboration with IT industry

BITES has started a new series of district workshops to address the needs of engineering colleges outside Bangalore. The first in this series was conducted at Guru Nanak Dev Engineering College at Bidar. The second in the series will be held at KVG college of Engineering, Sulia on 11th of December.

BITES would like to help build a strong research culture in our engineering institutions and also create a symbiotic relationship between academia and IT Industry for mutual benefit. This workshop is an awareness workshop which provides information about programs and schemes available for sponsored research from various funding agencies. The second part of the workshop gives details of various opportunities available for collaboration with twelve major IT industries.

Fifty faculty members from sixteen engineering colleges belonging to the districts of Udupi and Dakshina Kannada are participating in the workshop.

The participants will receive a virtual class room CD comprising of Audio-Video presentations made by the directors of various funding agencies and also a compendium of schemes, formats, how to make proposals, evaluation criteria and best practices to be followed for getting funds for sponsored research.