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"The true sign of intelligence is not knowledge but imagination"
-Albert Einstein

Department of Information Technology
RAJAGIRI SCHOOL OF ENGINEERING & TECHNOLOGY
Rajagiri Valley, Cochin - 39

Need for innovation

Kuttyamma A.J, Professor & HOD

Innovation is more important than ever before because of growing global competition, rising opportunities and economic slowdown. Economic slowdown will force companies to innovate and do things at a lesser cost.

Innovation is an ongoing process and not a onetime affair because any innovation will soon be copied by others. One has to innovate constantly not only to better oneself but also to have the edge on his competitor.

All kinds of technologies are rapidly growing because of innovation. There are unending opportunities to innovate profitably in various technical fields including IT. Innovation in developing technology will help in making products and services affordable to mass. Today innovation like SMS, e-mail, and mobile telephony are providing simple solutions in communication to people all over the world.

The current popular top down approach to innovation may undergo change and companies may look outside for the next source of innovation. This innovation structure will involve investing in external innovative forums, partnership with education institutions and investing in smaller startup firms. Education institutions have a major role to play in enhancing innovative ecosystem. India has a huge pool of talents, which is competent enough to generate good ideas. An eco system that pushes these ideas to innovation orbit needs to be enhanced and developed to its potential. Innovation is not the responsibility of few people or department in a company; it is a mindset and must be embedded in the DNA of the firm.

There has to be a change in cultural and social mindset. Failure in business or experiment cannot be look down upon. It is a part of an entrepreneur's / investor's learning process and stepping stone to future successes. We must let younger generation pursue areas of learning / endeavor they are interested in, rather than forcing them to follow what is socially accepted.

Innovation helps individuals and companies to thrive and is very important to success and so we must imbibe that in our thoughts and actions.

"The number one benefit of information technology is that it empowers people to do what they want to do. It lets people be creative. It lets people be productive. It lets people learn things they didn't think they could learn before, and so in a sense it is all about potential."

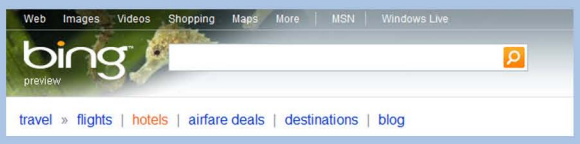
- Steve Ballmer

Sun touts virtualization for tape drives

Sun is injecting one o f the newest storage technologies into one of the oldest storage methods still in use. The company revealed that it would be updating its line of StorageTek tape drive systems with a new virtualisation manager.The StorageTek Virtual Systems Manager tool will allow companies to manage and operate data stored on tape backup for use in such tasks as archiving and disaster recovery situations. The company said that the latest version of the Storage Tek drives would support tape capacities of up to 1TB and overall system capacity of some 90TB. Sun hopes that the systems will appeal to companies looking to handle growing capacity while navigating the economic crisis.

The company noted that its tape storage units have maintained strong growth rates in recent months. "As the amount of user-generated data continues to grow exponentially, there is a need for customers to implement storage solutions that can store more in a shrinking footprint," said Jon Benson, Sun's senior vice president of storage. "The use of Sun's tape virtualization offers customers up to a ten times cost savings versus traditional storage products, reduced management time, less physical systems needed to store data, and risk mitigation through the industry's best disaster recovery options

Microsoft unveils Bing, new Internet search engine



San Francisco: Microsoft has unveiled a new search engine named Bing, renewing its efforts to challenge the dominance of G oogle in the Internet search market. The company said the new service will begin to roll out over the coming days and will be fully deployed worldwide on June 3. "Today, search engines do a decent job of helping people navigate the web and find information, but they don't do a very good job of enabling people to use the information they find," Steve Ballmer, Microsoft's chief executive officer, said in a statement. "Bing is an important first step forward in our long-term effort to deliver innovations in search that enable people to find information quickly and use the information they've found to accomplish tasks and make smart decisions," he added. Microsoft said the Bing service, billed by the company as a Decision Engine, will initially focus on shopping, travel, local business and information, and health-related research - areas in which people want more assistance in making key decisions. The software giant still has a long way to go to increase its share in the search market. According to latest analysis by market research firm comScore, in April this year, Google led the US search market with 64.2 percent of the searches conducted, followed by Yahoo with 20.4 percent, with ---Microsoft a distant third with 8.2 percent.(IANS)

Google backs new era of HTML5 web apps

Powerful web applications are a key theme at Google's biggest developer conference of the year taking place in San Francisco. Nearly one billion people are using browsers rooted in open source technology, which have quintupled their processing power in less than a year, according to Google. New functionality in the nascent HTML 5 specification, which includes improved local storage and background processing, is also spurring powerful web applications."Bet on the web, " Vic Gundotra, vice-president of developer products at Google told attendees on the opening day of the conference."Its rate of innovation has dramatically accelerated over the past 12 months, giving rise to an open web platform that is more capable and more sophisticated than even a year ago," he said. Google is using the I/O 2009 conference, attended by around 3,000 developers, to announce new products and initiatives to promote application development on the web.Google Web Elements gives developers an easy way to incorporate Google products onto a website or blog. This includes content such as Maps, News and YouTube videos, as well as social comments functionality by Google Friend Connect. New Java language support in Google App Engine provides developers with tools to build Ajax web applications. More than 10,000 Java language applications have been deployed on App Engine since a preview of Java support was released to a limited number of developers in April, said Google.Google has also launched the second phase of the Android Developer Challenge, which rewards developers for building applications for the Android mobile platform. For Android Developer Challenge 2 (ADC 2), Google will let users of Android-powered phones take part in the judging process through the use of an on-phone judging application.

Akamai tackles inefficiencies of cloud computing

Akamai Technologies, which specialises in caching web pages so that users can access them more quickly, is tackling the inefficiencies of cloud computing.Cloud computing is a style of computing in which dynamically scalable and often virtualized resources are provided as a service over the Internet.The concept incorporates infrastructure as a service (IaaS), platform as a service (PaaS) and software as a service (SaaS) as well as other recent (ca. 2007–2009) technology buzzwords that have the common theme of reliance on the Internet for satisfying the computing needs of the users. Cloud computing services usually provide common business applications online that are accessed from a web browser, while the software and data are stored on the servers.

Today, the company's content delivery network is used to cache web pages closer to where they are being accessed, which is an important consideration for companies that are expecting their website to be accessed millions of times, such as a broadcaster streaming a big sports event.But the content delivery network can also be used to optimize applications for cloud computing.Tom Leighton, chief scientist and co-founder of Akamai, said, "Services for cloud optimization are a vital part of our total offering, and go well beyond Content Delivery Network (CDN) cache-based technologies. Akamai addresses the inefficiencies in application, transport, and routing layer protocols, and offers products for enterprises designed to ensure the security and continuity of their cloud-based strategies."

Real time Operating System
for Embedded Development

How to choose an RTOS ??

Jimmy Mathew, Lecturer

There are numerous RTOSs exist in embedded domain with varying features. My attempt here is to describe the approach we would take to select one of these RTOSs for our application.

Some of the existing and popular RTOSs such as uC/OSII, RTEMS, ThreadX, VxWorks, Windows CE etc., have distinct properties and areas of operation. For example Windows CE would be the best choice for a graphics intensive application. But for a sensor network, your design intentions may differ. The RTOSs come in commercial packages and as free licenses. One must be very careful to test the freely available RTOSs for any critical operations before actual implementation.

Do you need an RTOS??

In most cases No. The most unknown factor in embedded world is that, many of the applications, such as simple control system does not require an RTOS. It can be best implemented by simple recursive call to the required functions.

Constraints in RTOSs selection

Which factor is important?

If you have decided that your application requires an RTOS to manage critical events, to schedule various task and to meet your deadlines, then it is time for you to think about the critical parameters of the application. Some of the applications such as remote deployment of a transmitter in underwater operation would require the least power consumption as first priority. Other application, such as tiny devices would require least code space. Some of other applications, such as auto-pilot in aero-planes would require response speed as a design goal. In many cases, the most common factors are power consumption, memory footage (both code and data), speed and accuracy of operations. Decide on which is the most important factor for you.

What you really need?

Each of the features in RTOS comes with a cost in money, code size and performance degradation. So, the use of features such as multi tasking, semaphores, message queues, mail boxes, Rate Monotonic functions, timers, threads, etc. should be considered before your application development.

Do you require generic or specific RTOS?

Some RTOSs are meant for some particular applications. For example Contiki RTOS is designed for low power smart sensor networks. SymbianOS recently acquired by Nokia is optimized for mobile platforms. Use of such proven RTOS for special domains would help you to develop the end application much faster.

Commercial and open license

The freely available RTOSs are given a public license for anyone to use on any device. It may not have tested well, and in many cases, such testing and debugging are on the shoulders of the application developer. You may find difficult to get the technical support for such freeware. However, if you want a licensed RTOS with a test certificate and industrial standard, probably you should go for commercially available RTOS. For example, the applications in aerospace control has a constraint that the RTOS should be qualified a quality standard (DO-178B) to have any application build on it. Alternatively, you may build a brand new RTOS if you have enough resources and time.

Features and support

In addition to the above said factors, some of the run-time features of an RTOS should be considered for long term operation of our application, such as maintainability, tool chain support, reliability, predictability and scalability. Sometimes, the features such as TCP/IP stack implementation, radio communication protocol implementation, multi-core processor support, etc. are also major concerns to choose an RTOS.

A Tale of Genius

Swapna C. Babu, Associate Lecturer

George Boole is a little-known professor of mathematics, Boole left behind a curious form of algebra, of interest to his peers but of no known practical value: until, that is, it was stumbled across many years later, outside the realm of pure mathematics and almost by accident. For Boole's "algebra of logic" and its associated laws were to become fundamental to the design of digital circuits. While it is untrue to say that digital computing and communications would not have existed but for Boole's work, it's difficult to imagine how, without it, complex binary circuits could operate reliably. In Boolean logic, the symbols used – for example 'p' and 'q' - are not variables in the same sense that 'x' and 'y' are often used to represent numbers in conventional algebra. Boole defined a set of rules that specify the result of the permitted operations on the symbols, but without any regard to what they actually represent. The symbols can of course be interpreted, for example in terms of the black and white balls mentioned above, but logic that results in accepting the equation "1+ 1 = 1" is certainly not true of conventional algebra! The three basic "operators" in Boolean algebra are 'AND', 'OR' and 'NOT'.

With the exception of students of symbolic logic, Boole's work was to remain largely unknown and unused for over 80 years after his death until a research student at the Massachusetts Institute of Technology, who just happened to have studied both logic and electrical engineering, applied it to the construction of switching circuits. Reflecting on events some 50 years later, Claude Shannon's comment "it just happened that no one else was familiar with both fields at the same time" portrays commendable modesty.

Before the coming of the digital computer, analogue machines were the only computational aides available for attacking such complex problems as current flows in the newly emerging national power networks, where the mathematical equations involved were too difficult to solve manually, assuming that they could be defined. Bush's Differential Analyser was a further example. Unlike other analogue computers, which were generally single purpose devices, the Differential Analyser was designed to attack a range of scientific and engineering problems that could be specified in terms of differential equations. It performed its calculations in decimal, rather than in binary. Charles Babbage had planned to power his computer with a steam engine a century before, the only part that electricity played in the Differential Analyser was to drive its shafts. But despite looking back to the Babbage era, Bush's brainchild was in its time a marvel of scientific engineering, and several examples were built.

The Differential Analyser required a lot of maintenance. Shannon considered ways to improve the existing arrangements by replacing the purely mechanical parts with electric circuits laid out using the Boolean principles that he'd learned as an undergraduate. Shannon completed his thesis in 1937 and in the following year published a paper based on it - "A Symbolic Analysis of Relay and Switching Circuits" - in which he demonstrated how to build logic circuits from electromechanical relays. Simply stringing gates together to perform a logical function would lead to complexity and the wasteful use of components. The rules of Boolean logic can be used to avoid creating these problems by allowing complex logical unctions derived from truth tables to be greatly simplified. Whereas Shannon worked with relays, vacuum tube circuits soon followed , then discrete transistors and finally microchips, which seem continually to break new barriers of miniaturization - according to a recent IBM research notice, scientists are now building logic circuits at the molecular level. Claude Shannon came to be widely regarded not just for his work on logic circuitry, but for solving technical and engineering problems within the telecommunications industry. After making the link between Boolean logic and switching circuits, he went on to undertake research at the Bell Telephone Laboratories on the problem of transmitting information more efficiently. Shannon's work at Bell Labs led him to be regarded in his lifetime as the founding father of the digital communications age, but George Boole was less fortunate. Taking account of the essential part played by digital circuitry in placing men on the Moon, it's a fitting tribute to George Boole that a lunar crater now bears his name.

Human Identification Using GAIT

Dhanya Sudarsan, Associate Lecturer

There is increasing interest in automatic recognition by gait given its unique capability to recognize people at a distance when other biometrics are obscured. Application domains are those of any noninvasive biometric, but with particular advantage in surveillance scenarios. Its recognition capability is supported by studies in other domains such as medicine (biomechanics), mathematics and psychology which also suggest that gait is unique. Further, examples of recognition by gait can be found in literature, with early reference by Shakespeare concerning recognition by the way people walk. Many of the current approaches confirm the early results that suggested gait could be used for identification, and now on much larger databases. This has been especially influenced by DARPA's Human ID at a Distance research program with its wide scenario of data and approaches. Gait has benefited from the developments in other biometrics and has led to new insight particularly in view of covariates.

Equally, gait-recognition approaches concern extraction and description of moving articulated shapes and this has wider implications than just in biometrics. A unique advantage of gait as a biometric is that it offers potential for recognition at a distance or at low resolution, when other biometrics might not be perceivable. Further, it is difficult to disguise gait without hampering progress, which is of particular interest in scene of crime analysis. Recognition can be based on the (static) human shape as well as on movement, suggesting a richer recognition cue. Further, gait can be used when other biometrics are obscured – criminal intent might motivate concealment of the face, but it is difficult to conceal and/or disguise motion as this generally impedes movement.

Anti-phishing

Jis Mary Jacob, Associate Lecturer

Anti-phishing technology plays an important role in your security environment. Phishing is a particularly insidious attack that is complex. Anti-phishing technology can prevent attacks from happening. The most effective anti-phishing strategy is education. When users get wise to the types of attacks that occur, they can be proactive. Always be suspicious of emails that ask for information such as account numbers or passwords. A simple anti-phishing technique is just to hover your mouse above the link to see the true URL. Better yet, if an email asks you to click on a link to be taken to a trusted source, instead, open up your browser and enter in the proper URL manually.

Phishing is the practice of distributing and publishing e-mail messages and Web sites that are designed to look like those of legitimate businesses, financial institutions, and government agencies in order to deceive Internet users, usually for criminal purposes.

Social responses

One strategy for combating phishing is to train people to recognize phishing attempts, and to deal with them. Education can be effective, especially where training provides direct feedback.

Technical responses

Anti-phishing measures have been implemented as features embedded in browsers, as extensions or toolbars for browsers, and as part of website login procedures.

Monitoring and takedown

Anti-phishing software consists of computer programs that attempt to identify phishing content contained in websites and e-mail. It is often integrated with web browsers and email clients as a toolbar that displays the real domain name for the website the viewer is visiting, in an attempt to prevent fraudulent websites from masquerading as other legitimate web sites. Anti-phishing functionality may also be included as a built-in capability of some web browsers.

Anti-Phishing Effectiveness

A study conducted by 3Sharp released on September 27, 2006 tested the ability of eight anti-phishing solutions to block known phishing sites, warn about phishing sites, and allow good sites. The study, which was commissioned by Microsoft and titled "Gone Phishing: Evaluating Anti-Phishing Tools for Windows", concluded that Internet Explorer and Netcraft Toolbar were the most effective anti-phishing tools.

WEB 3.0 Adding a new Dimension to the 'WWW'

Bobby Sebastian S1S2 IT

History of the web:

The web or the World Wide Web began as a CERN project called ENQUIRE initiated by Sir Tim Berners-Lee in 1989 and Robert Cailliau in 1990. Based on the concept of Hypertext, the project was confined to serve the purposes of sharing information among the researchers at CERN. The first web site went online in 1991. Two years later, CERN announced that the Web would be free two anyone.

The need for the Web:

The computers first began to appear only by 1980-1990. In this era, the computer was basically remote and was confined to that particular room in which it was kept i.e. it had no contact with the outside world or to more specific it could not make any.In 1991 CERN brought the world before a milestone in the field of Computer Science and Information Technology. And that milestone was WEB 1.0. In the early stages, the web was only equipped with technologies like SQL, gopher, small databases and file servers, etc. But the introductions of various new scripts like Java, HTML, http, P2P, XML, etc gave the Web a better outlook and also gave it a new dimension. And thus WEB 2.0 was evolved. The web 2.0 came equipped with various new features like websites, Keyword Search, social networking, weblogs, directory portals, etc. which is the reason why it became indispensable to man.

The Web 3.0:

Now with the introductionof Web 3.0 by 2010, the web would get a new makeover and outlook. Also known as the Semantic Web, the Web 3.0 of is still under process. It is scheduled to be released by 2010. It is basically the way in which data is categorized and kept so that both computer and human can understand it perfectly. Many view this as a combination of artificial intelligence and the semantic web. The semantic web will teach the computer what the data means, and this will evolve into artificial intelligence that can utilize that information.

Features:

The main feature of Web 3.0 is that the keyword search in Web 2.0 will be replaced by a new search engine known as The Semantic Search. The main difference between the Keyword search and the Semantic search is that the keyword searches by matches the keywords given to it with the document it is searching i.e. when a person for example wants to know about cars and types 'cars' into the search engine, the search engine tries to match the word 'cars' in all the documents it is searching at gives the result.But the semantic web uses the interests of the person to fuel its search engine. It keep a regular track of the persons Web history and tries to understand the need of the user correctly before it begins the search i.e. if a person wants to go for a movie and after that to French restaurant for dinner, all needs to do is to type "I want to go for a movie and have dinner at French restaurant after that". The search engine searches and provides him the results of movie theatres which are playing the movie and also supplies him with the French restaurants nearby along with suggestions taken from other web users and customers.

Advantages:

The main advantage of the web 3.0 is that it understands the interests of the person using it. And thus it provides him with the results which are more accurate. The next advantage is that web 3.0 will add fuel in the making of the Virtual world which would help people use the web for purchasing, exploration and interaction among themselves.

Disadvantages:

The main disadvantage of the web 3.0 is that, it is not backward compatible like Web 2.0. There is a leap in technology. So once the web 3.0 is introduced, the web 2.0 will be phased out immediately. Besides this, the upgrade to web 3.0 is an expensive affair which many small time companies cannot afford to do. Thus they lose their space on the web.

IT for Society

Department of Computer Science & Engineering and Department of Information Technology organized a one-day workshop [May 6th 2009] on Computer Fundamentals for women (who passed X) in rural areas of Thrikkakara in association with Thrikkakara Grama Panchayat. 22 women took part in the programme which was co-ordinated by Preetha K G of IT Department. Various sessions were planned on Fundamentals of Computer, MS-Word ,MS-Excel,Internet and Email. Jis Mary and Dhanya Sudarshan were the faculty -In-charges for the same.

Events

A one-week programme was organized by 'Rajagiri Centre for Continuing Education' for school students on Hardware Components of a computer, Operating System Installation, Familiarization with Windows, Linux, Solaris and PC Assembling & Networking from 18th -22nd May 2009. Swapna C Babu and Binu A , faculty members of Information Technology Department handled sessions for the programme.

Archit C Cherian

You will appreciate that pursuing a professional career in a software firm is entirely different from college life. Its challenges are enumerable. The environment many a times need not be totally friendly. At the same time, it always challenge us to bring out the best out of us, in case we are serious about it. And in today's context one cannot take career in any lighter mood. We need to be innovative, productive and our output should be quality tested. The environment is highly time sensitive also.

Interpersonal relationship has a more important dimension in a working environment. It may be difficult to please your colleagues or your boss at times. We have to have patience and calmness. In our pursuit to be innovative, we may try to tap the effectiveness of fresh ideas in a theme. But when it comes to the practical aspect, it may not be easy to convince everyone about your ideas. We have to very diplomatic while putting forward such ideas. We have to remember that we are a member of a team and hence we have to learn to be a part of the group, and thrive to have good relationship with our colleagues, as they could be of a great help to you. Again in our pursuit to achieve grater heights, we should never get contented with what we have achieved, but we have to try to do more in a challenging manner with the required amount of flexibility and perseverance.

The guidance, experience received from Rajagiri has contributed in a great way in my pursuit in my new role. My confidence level has never been lower, thanks to a total practical approach to problems and exercises I received in my college. The assignments given by our respectful lecturers has improved my time management capabilities (which is very important feature required for the profession).




On Desk: Kuttyamma A.J, Biju Paul, Nithya Joy, Neethu Josemon
Rose Mary Justin, Jithin Nazeer P C
Illustrations: Deepu M