

# கணனியம் KANANIYAM

A newsletter of the Computer Society,  
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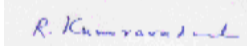
எப்பொருள் யார் யார் வாய்க்கேட்பினும் அப்பொருள் மெய்ப்பொருள் காண்பதறிவு

## Message from the Patron

During the past few years we have seen an unprecedented development in the field of Information and Communication Technology. This field has become important in almost every area of National Development. Therefore the young Computer Science students and graduates of our University have to make special effort to disseminate knowledge about computers and Information Technology through seminars, workshops and publications. This will greatly assist the promotion of Information and Communication Technology among the student community at university and school levels.

It gives me great pleasure to learn that the Computer Society in the Faculty of Science is engaged in the dissemination of scientific knowledge through the publication of a newsletter named KANANIYAM. I hope Kananiyam will cover a wide area of technology including personal computers, hardware, software, Internet, web, data communication and the latest development in technology such as voice transmission.

The efforts of the Society are commendable and I wish the Society success in its endeavors.

  
Prof. R. Kumaravadivel  
Dean/Science



*S. Suthakar, Lecturer, Department of  
Computer Science.*

What is Bluetooth? Is it a technology? Is it an application? Is there compatibility amongst itself and other standards? Are there products?

Think of a connected world of electronic devices and appliances around you! Bluetooth technology eliminates the need for numerous and inconvenient cable attachments for connecting fixed computers, mobile phones, mobile computers, handheld devices, digital cameras and even new breed of digital appliances. It will enable users to connect a wide range of computing and telecommunications devices easily and simply, without the need to buy, carry, or connect cables - quite often proprietary to a specific device. It delivers opportunities for rapid ad hoc connections, and the possibility of automatic, unconscious, connections between devices. It creates the possibility of using mobile data in a variety of applications.

### Editorial

due to various vicissitudes the newsletter wasn't published For about three years. As this is after a prolonged silence we intend to include many more of immense interest. There is also special feature articles by our own department staff.

I must stress the point that this newsletter caters to a wide reading public and is valid for students of any field of study.

Thank you everybody for helping to make this newsletter a reality and I look forward to their co-operation towards this "KANANIYAM" in the future too.

**-Editor-**



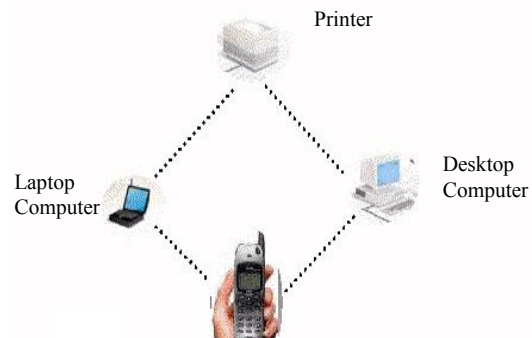
Bluetooth makes wireless communication and networking between devices in a small-localized area of a room or a small office as easy as switching on the light. In Bluetooth, all the connections between devices are instantaneous and invisible and the devices can talk even if they are not in line of sight because Bluetooth utilizes a radio-based link. Your laptop could send information to a printer in the next room, or your microwave could send a message to your mobile phone telling you that your meal is ready. A group of Bluetooth devices like a mobile phone, a digital camera, a hand held device etc. can instantly form a network with each other as soon as they are switched on. You could have a mobile phone in your pocket and you could be sending e-mails using your laptop without

making any connection between your laptop and the mobile. Your refrigerator could be placing an order with the supermarket if your milk supply has been exhausted using your mobile phone.

By the way if, you're wondering where the Bluetooth name originally came from, it named after a Danish Viking and King, Harald Blåtand (translated as Harold Bluetooth in English), who lived in the latter part of the 10th century. Harald Blåtand united and controlled Denmark and Norway who was very famous for his traveling exploits (hence the inspiration on the name: uniting devices through Bluetooth). He got his name from his very dark hair which was unusual for Vikings, Blåtand means dark complexion. However a more popular, (but less likely reason), was that Old Harald had a inclination towards eating Blueberries, so much so his teeth became stained with the colour, leaving Harald with a rather unique set of molars.



The logo for Bluetooth is based on Runes surrounding the legend of Harald Bluetooth.



Bluetooth, the technology, is based on communications central to man's own personal space. Fundamentally Bluetooth operates within the Industrial, Scientific and Medical (ISM) band at 2.4 GHz. It is a short-range (around 10meters) wireless communication standard defined as cable replacement for a Personal Area Network (PAN).

A cable replacement standard has been defined because cables limit mobility of the consumer; they are cumbersome to carry

around, are easily lost or broken. Often connectors are prone to difficult to diagnose failures; or are proprietary. To counteract these limitations, Bluetooth is designed to be light and portable. It can be embedded to take the riggers of physical knocks and shocks. It includes standards and protocols to make it mobile, robust, reliable and not limited to one manufacturer.

#### ***Briefly, Bluetooth technology***

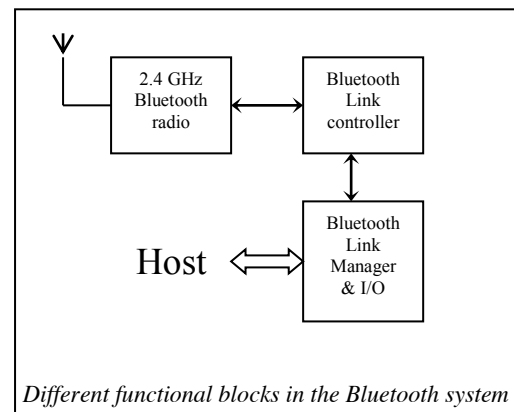
- *Uses radio waves in 2.4 GHz band - therefore, no line of sight is required*
- *Supports multipoint, not just point to point*
- *Works in a small confined area - 10 to 15 meters apart*
- *Is able to support speeds of 1-2 Mbps today but will offer higher speeds in future*
- *Chip sets are relatively inexpensive - \$10 to \$20 today in large quantities - will go down in future*

#### **How Bluetooth Technology Works?**

Bluetooth is a high-speed, low-power microwave wireless link technology, designed to connect phones, laptops, and other portable equipment together with little or no work by the user. Unlike infrared, Bluetooth does not require line-of-sight positioning of connected units. The technology uses modifications of existing wireless LAN techniques but is most notable for its small size and low cost. It is envisioned that Bluetooth will be included within equipment rather than being an optional extra. When one Bluetooth product comes within range of another, (this can be set to between 10cm and 100m) they automatically exchange address and capability details. They can then establish a 1 megabit/s link (up to 2 Mbps in the second generation of the technology) with security and error correction, to use as required. The protocols will handle both voice and data, with very flexible network topography.

This technology achieves its goal by embedding tiny, inexpensive, short-range transceivers into the electronic devices that

are available today. The radio operates on the globally available unlicensed radio band, 2.45 GHz (meaning there will be no hindrance for international travellers using Bluetooth-enabled equipment.), and supports data speeds of up to 721 Kbps, as well as three voice channels. The Bluetooth modules can be either built into electronic devices or used as an adaptor. For instance in a PC they can be built in as a PC card or externally attached via the USB port.



The maximum range is 10 meters but can be extended to 100 meters by increasing the power. Bluetooth devices are protected from radio interference by changing their frequencies arbitrarily up to a maximum of 1600 times a second, a technique known as frequency hopping. They also use three different but complimentary error correction schemes. Built-in encryption and verification is provided.

Moreover, Bluetooth devices won't drain precious battery life. The Bluetooth specification targets power consumption of the device from a "hold" mode consuming 30 micro amps to the active transmitting range of 8-30 milliamps (or less than 1/10th of a watt). The radio chip consumers only 0.3mA in standby mode, which is less than 3 % of the power used by a standard mobile phone. The chips also have excellent power-saving features, as they will automatically shift to a low-power mode as soon as traffic volume lessens or stops.

Bluetooth devices are classified according to three different power classes, as shown in the following table.

Power Class	Maximum Output	Power
1	100 mW	(20 dBm)
2	2.5 mW	(4 dBm)
3	1 mW	(0 dBm)

Bluetooth guarantees security at the bit level. Authentication is controlled by the user by using a 128-bit key. Radio signals can be coded with 8 bits or anything up to 128 bits. The Bluetooth radio transmissions will conform to the safety standards required by the countries where the technology will be used with respect to the

affects of radio transmissions on the human body. Emissions from Bluetooth enabled devices will be no greater than emissions from industry-standard cordless phones. The Bluetooth module will not interfere or cause harm to public or private telecommunications network.

And finally, we must all remember, as the founder of the Porsche cars, Dr.Ferdinand Porsche says, "Change is easy... improvement is far more difficult." It is just the beginning. Look out for more innovations in Bluetooth in the future. Seeing the trend of the upcoming generation, don't be surprised if it becomes a part of your vanity box!

Reference:- [http://www.mobileinfo/Bluetooth/What\\_is.htm](http://www.mobileinfo/Bluetooth/What_is.htm)  
[http://www.mobileinfo.com/Bluetooth/how\\_works.htm](http://www.mobileinfo.com/Bluetooth/how_works.htm)  
<http://www.apple.com/hardware/>

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### **Introduction of Grid Databases for Web Service Discovery**

*M.Sabesan, Lecturer, Department of Computer Science.*

Grids are collaborative distributed Internet systems characterized by large scale, heterogeneity, lack of central control, multiple autonomous administrative domains, unreliable components and frequent dynamic change. Grid technology attempts to support flexible, secure, coordinated information sharing among dynamic collections of individuals, institutions and resources. This includes data sharing but also includes access to computers, software and devices required by computation and data rich collaborative problem solving. These and other advances of distributed computing are necessary to increasingly make it possible to join loosely coupled people and resources from multiple organizations. The core technologies used to build grids fall into several

categories such as Distributed object technologies, Data Management systems, task scheduling systems and so on.

In such systems, it is desirable to maintain and query dynamic and timely information about active participants such as services, resources and user communities. The *web services* vision promises that programs are made more flexible, adaptive and powerful by querying Internet databases (registries) at runtime in order to discover information and network attached building blocks, enabling the assembly of distributed higher-level components.

In support of this vision, the *Web Service Discovery Architecture (WSDA)* was introduced, which subsumes an

array of disparate concepts, interfaces and protocols under a single semi-transparent umbrella. WSDA specifies a small set of orthogonal multi-purpose communication primitives (building blocks) for discovery, covering service identification, service description retrieval, data publication as well as minimal and powerful query support.

However, in a large cross-organizational system, the set of information tuples is partitioned over many such distributed nodes, for reasons including autonomy, scalability, availability, performance and security. This suggests the use of Peer-to-Peer (P2P) query technology. Consequently, the WSDA based *Unified Peer-to-Peer Database Framework (UPDF)* and its corresponding *Peer Database Protocol (PDP)* were proposed. They are unified in the sense that they allow to express specific discovery applications for a wide range of data types, node topologies (e.g. ring, tree, graph), query languages (e.g. Xquery (XQuery is the standard XML query language), SQL), query response modes (e.g. Routed, Direct and Referral Response), neighbour selection policies, pipelining, timeout and scope policies.

Distributed (relational) database systems assume tight and consistent central control and hence are infeasible in Grid environments, which are characterized by heterogeneity, scale, lack of central control, multiple autonomous administrative domains, unreliable components and frequent dynamic change. It appears that a Peer-to-Peer (P2P) database network may be well suited to support dynamic distributed database search, for example for service discovery. This is normally known as **Grid Data Bases**.

The overall P2P idea is as follows. Rather than have a centralized database,

a distributed framework is used where there exist one or more autonomous database nodes, each maintaining its own, potentially heterogeneous, data. Queries are no longer posed to a central database; instead, they are recursively propagated over the network to some or all database nodes, and results are collected and send back to the client. A node holds a set of tuples in its database. Nodes are interconnected with links in any arbitrary way. A link enables a node to query another node. A *link topology* describes the link structure among nodes. The centralized model has a single node only.

For example, in a service discovery system, a link topology can tie together a distributed set of administrative domains, each hosting a registry node holding descriptions of services local to the domain. Several link topology models covering the spectrum from centralized models to fine-grained fully distributed models can be envisaged, among them single node, star, ring, tree, graph and hybrid models. Figure [1] depicts some example topologies.

In any kind of P2P network, nodes may publish themselves to other nodes, thereby forming a topology. In a P2P network for service discovery, a *node* is a service that exposes *at least* interfaces for publication and P2P queries. Here, nodes, services and other content providers may publish (their) service descriptions and/or other metadata to one or more nodes. Publication enables distributed node topology construction (e.g. ring, tree or graph) and at the same time constructs the federated database searchable by queries. In other examples, nodes may support replica location, replica management and optimization, interoperable access to grid-enabled relational databases, gene sequencing or multi-lingual translation, actively using the network to discover services such as replica catalogs, remote gene mappers or language dictionaries.

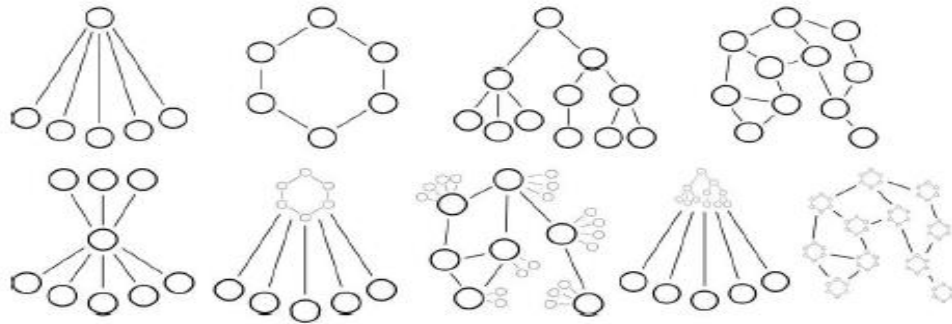


Figure 1. Example Link Topologies [18].

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### Unsolicited E-mails

*P.Parasukan, Instructor, Department of computer science*

Nowadays most people are using email to run their daily life. But they have faced many difficulties from unsolicited email. This article gives advice on recognizing unsolicited email and viruses so you can delete them quickly.

Unsolicited email commonly known as SPAM, is a growing problem across the Internet at large. You are recommended to delete it .If the email looks suspicious, do not even read it. Viruses are often hidden inside attachments (if you are unsure check with the sender first). SPAM and virus emails can be disguised to trick you into reading the email and/or performing an action. Mere are examples of some techniques to help you recognize them:

- **Faked email addresses:** mails can appear to be from people you know or even from your self. Your own email address can appear in mails, which you did not send, resulting in non-delivery messages or unexpected replies.
- **Enticing subjects:** the mail subject uses words to make you curious, believe the email is important, or specific to you, so that you will read it.
- **Asking you to forward email to people you knows:** this is probably a viruses or false information\_ do not forward such email.

- **Join a petition or support a cause:** the petition or cause rarely exists; it is more likely that your email address will be collected and used for further SPAM mail (as sender or receiver). References to recent of topical events are common techniques to make the false information look more realistic.
- **Click on a web site:** if you click you could be downloading a virus. Click “cancel” (instead of “ok”) or close unexpected dialogue boxes when using the web. This can also be a technique to validate your email address and increase your changes of receiving more unwanted emails.
- **Money scams:** one of many examples of false information - do not believe them just delete them.
- **Response to your request:** The mail may pretend that you made a request so that you will take it more seriously.
- **Remove from a list:** asking you take action to remove yourself from a list you did not join can be used to validate your address for use in the same way as petitions and causes.

<http://cern.ch/MailServices/docs/problems/span/span.html>.

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## **POWER-LINE NETWORKING**

*Shakeela.S, Fourth Year (2002), Department of Computer Science.*

Networking, as many people know, can be quite a complex and cumbersome job more often than not. But did you know that you could actually use your power line to put up your own “home computer network”? Power-line networking is one of several ways to connect the computers in your home. It uses the electrical wiring in your house to create a network! Don’t you think the news itself is “electrocuting”?

The convenience is even more obvious because while not every room has a phone jack, you will always have an electrical outlet near a computer. In power-line networking, you connect your computers to one another through the same outlet, because it requires no new wiring, and the network adds no cost to your electric bill. Power-line networking is the cheapest method of connecting computers in different rooms.

There are two competing power-line technologies. The original technology is called Passport, by a company named Intelogis. A newer technology is called PowerPacket, by Intellon. PowerPacket has been chosen as the standard for power-line networking.

With a power-line network in place, a printer or any other device does not have to be directly connected to a computer or physically near any of the computers in the network.

It doesn’t require a card to be installed in the computer although there are companies working on PCI-based systems.

Power-line networks are fast, rated at 14 megabits per second (Mbps). This speed allows for new applications, such as audio and video streaming, to be available throughout the house. Furthermore, it “avoids” disruptions in the power-line, maintaining the network’s connections and speed. It does not limit the features of your printer and can be compatible with many

operating systems (depending on driver availability).

Intellon’s Power Packet technology, which serves as the standard, uses an enhanced form of “orthogonal frequency-division multiplexing” (OFDM) with forward error correction, similar to the technology found in DSL modems.

If noise or surge in power usage disrupts one of the frequencies, the PowerPacket chip will sense in and switch that data to another carrier. This rate-adaptive design allows PowerPacket to maintain an Ethernet-class connection through out the power-line network without losing any data.

Along these lines, Intellon’s approach to power-line networking is highly scalable, eventually allowing the technology to surpass 100Mbps.

The physical connection between each computer and the Intellogis power-line network uses the computer’s parallel port. A wall device is plugged directly into the electrical outlet (it will not operate properly if plugged into a surge protector).

A parallel cable is plugged into the wall device and into the parallel port of the computer. The power-line network must be the last item connected to the parallel port. For this reason, if you have anything else connected to the parallel port, such as the scanner or Zip drive, it must have a pass through for the parallel port. Unless you have a second parallel port on your computer, your printer must be connected to the network through a wall device of its own. Something to keep in mind is that current power-line networks do not support bi-directional printing. “ Bidirectional ” means that data is sent in both directions, allowing your printer to send information back to your computer, such as how much ink is left and if there is a paper jam. This



will not keep your printer from working, but is worth noting that you will lose the use of such features.

Initial PowerPacket devices will connect via a USB or Ethernet cord from the computer to a small wall adapter. Subsequent devices will have the circuitry built in, meaning the only connection needed would be the power cord. Once the physical connections are made, installation of the software is quite easy. The software automatically detects all nodes (computers and printers) on the network. The included proxy server software allows you to share the Internet with your other computers. You can easily add computers by simply plugging a new adapter in and installing the software. Additional printers can be added using the printer plug-in adapter. File and printer sharing is done through Windows.

There are two common types of home networks: peer-to-peer and client/server. Client/server networks have a centralised administrative system that provides information to all of the other devices. Peer-to-peer means that each device can talk directly to each other device on the network without consulting a central system speed and capabilities. So get your multi-player games ready and plug yourselves in

first. Intelogies' Passport technology uses a client/server network. The first computer that you install the software on becomes the Application Server. In essence, it is the director of the network, controlling the flow of data and telling each device on the network where to find the other devices. Intellon's Power Packet technology uses a peer-to-peer network.

Intellon's PowerPacket technology is compatible with wireless solutions, making power-line an ideal option to serve as the backbone for a multi technology home network. In this case, you will not have to discard any existing network solution in favour of a new standard. The one common thread among all of the networking option is the need for power. While a wireless solution may indeed eliminate the need for wires, its access point is still going to be plugged in at some point. That power cord, for example, can tie the wireless network into the home's overarching power-line network.

Even with Intellon's 14-Mbps solution, PowerPacket technology is expected to achieve even greater

through the electrifying world of power line networks.

Source of information CNET.COM .

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## **.NET (dot NET)**

*Mehala.L, Fourth year (2002), Department of Computer Science.*

.NET is an entirely new platform and technology, which introduces a host of new products.

It offers support for 27 programming languages, which share a hierarchy of classes providing basic services. .NET applications no longer run in native machine code or the popular WinTel (Windows and Intel) Platform, having abandoned Intel x86 code in favor of an intermediate language called MSIL (Microsoft Intermediate Language) which

runs in a sort of virtual machine called the Common Language Runtime (CLR). These changes are moving towards a looser coupling between the operating system and upper layers offering application services. From a strategic point of view, Microsoft has found a way to occupy a position of predominance on the Internet.

With .NET, Microsoft is sending us a vision of an Internet made up of an infinite number of interoperable Web applications, which together form a global service exchange network. These Web Services are based on the Simple Object Access Protocol (SOAP) and XML. SOAP was initially submitted to the IETF by DevelopMentor, Microsoft and Userland Software. Today, a number of vendors, including IBM, is greatly involved in SOAP.

### ☐ **.NET is multi - language**

With the .NET platform, Microsoft will provide several languages and the associated compilers, such as C++, JScript, VB.NET (alias VB 7) and C#, a new language which emerged with .NET. Third party vendors working in partnership with Microsoft are currently developing compilers for a broad range of other languages, including Cobol, Eiffel, CAML, Lisp, Python and Smalltalk. Rational, vendor of the famous UML tool Rose, is also

understood to be finalizing a Java compiler for .NET.

### ☐ **Applications are hardware-independent**

All these languages are compiled via an intermediate binary code, which is independent of hardware and operating systems. This language is MSIL: Microsoft Intermediate Language. MSIL is then executed in the Common Language Runtime (CLR), which basically fulfills the same role as the JVM in the Java platform. MSIL is then translated into machine code by a Just in Time (JiT) compiler.

### ☐ **Applications are portable**

Applications compiled as intermediate code are presented as Portable Executables (PEs). Microsoft will thereby be able to offer full or partial implementations of the .NET platform over a vast range of hardware and software architectures: Intel PCs with Windows 9x, Windows NT4, Windows 2000 or future 64 bit Windows versions, microcontroller-based PDAs with PocketPC (e.g. Windows CE), and other operating systems too, no doubt.

### ☐ **CLS (Common Language Specification)**

For a language to be eligible for the range of languages supported by the .NET platform, it must provide a set of possibilities and constructions listed in an agreement called the Common Language Specification, or CLS. To add a language to .NET, all that is required in theory is for it to meet the requirements of the CLS, and for someone to develop a compiler from this language into MSIL. This seems fairly innocuous at first

glance, but the restrictions imposed by CLS-compliance on the different .NET languages mean that, for example, Visual Basic .NET ends up becoming a new language, which retains little more than the syntax of Visual Basic 6. The fact that all the .NET languages are compiled in the form of an intermediate code also means that a class written in a language may be derived in another language, and it is possible to instantiate in one language an object of a class written in another language.

☐ **All the languages use a coherent set of basic services**

A hierarchical set of classes provides all the services and APIs necessary for application development.

API's for I/O, File System, Data Access, Remoting etc are a part of the Base Services.

☐ **Close-up on the CLR**

The CLR is, like the Java virtual machine, a runtime environment that takes charge of resource management tasks (memory allocation and garbage collection) and ensures the necessary abstraction between the application and the underlying operating system.

☐ **Web Services**

Web Services is something, which Microsoft is expecting to generate huge revenues, Web Service are components running on the server, which provide their services through HTTP. Web Service make way for the concept of "renting software from the web".

☐ **New Language C# (Pronounced as C-Sharp)**

The programming language C# derives from C and C++, This new language is said to be as simple and flexible as Visual Basic and as powerful as C++. Current C++ programmer will not have to take a steep learning curve to learn and master C#.

### Architecture Overview

In Microsoft marketing speak, all forthcoming versions of desktop and server software will carry the ".NET" label; this will be the case for the Office suite, the SQL Server database, and other Enterprise servers.

We can describe the .NET architecture as follows:

- ☐ It is a set of common services, which can be used from a number of object languages.
- ☐ These services are executed in the form of intermediate code that is independent of the underlying architecture.
- ☐ They operate in a runtime (Common Language Runtime) which manages resources and monitors application execution.

Indeed, Microsoft drew its inspiration from JAVA, which has a similar kind of architecture.

### Known Issues

☐ **Performance Issues**

This monitoring of the execution of managed codes by the CLR comes at a price; we can expect performance to slip by at least 10%, as Microsoft admits. Of course, we might ask whether a 10% reduction in performance is such a bad thing if it leads to new levels of reliability and availability.

☐ **Cross-Platform Support**

CLR will be compatible across all Microsoft platforms viz. Windows 2000, Windows NT, Windows ME etc. Microsoft makes no commitment for running the CLR on Microsoft Platforms though technically the CLR should work on Linux based boxes.

☐ **Transparency of Source Code**

The bytecode in the IL are very much high level then the Native Language, the disassembled IL would look more closer to actual source code making it difficult to protect intellectual property. Microsoft will eventually built some kind of encryption to remedy this problem.

□ **Compatibility**

Compatibility issues may arise while porting the existing DNA based application to the .NET platform. Microsoft points out that tools and assistants to help with migration will be provided with the .NET platform.

□ **Vendors Support**

.NET includes support for multiple languages, but other language vendors are still in the development

stage for customizing their language for .NET and it is to the vendor to decide what level of support to offer for .NET.

□ **Other Dependencies**

.NET will run across all Windows platform, but initially the benefits may only be reaped by OS like Windows XP and Windows 2000.

Reference: -

<http://www.dotnetextreme.com/>

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# சர்வதேச அளவில்

ISO 2002 அங்கீகாரம் பெற்றதும்,  
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## **Secrets to building a successful web site**

*A.Ramanan, Instructor, Department of Computer Science.*

If you're doing business on the Internet, one of the most important aspects of your success is your web site. If your web site doesn't look professional, no matter what product you're offering your chances of success are minimal.

### **15 Tips for designing a successful web site:**

1. The main page of your web site should load in 8 seconds or less with a 56K modem. If a page takes too long to load, your potential customer will not wait. Ultimately costing you business.
2. Make sure you include proper META tags in the HTML of each page of your web site. META tags are HTML code that enables the search engines to determine what keywords are relevant to a specific site.
3. Be cautious when selecting your background and text colours. Busy backgrounds make text difficult to read and draw the attention away from the text. Always be consistent with your background theme on each page of your site. Your site should be nicely organized and uniform throughout. Keep in mind, colours affect your mood and will have an affect on your visitors as well. Bright colours such as yellow and orange, cause you to become more cheerful or happy, while colours such as blue and purple have a calming effect. Dark colours such as brown and black have a depressing effect. A good rule of thumb would be to use colours based upon the type of effect you're trying to achieve.
4. Use minimal animated graphics. These can be very distracting and can cause your page to look unprofessional. In addition, animated graphics cause your page to load more slowly. Fancy graphics won't make the sale.
5. Your main page should specifically let your visitors know exactly what you're offering. How many times have you visited a site and never figured out exactly what they were selling? If your potential customer can't find your product or service, they definitely won't wait a lot of time looking for it. They'll go on to the next site and probably never return. They're visiting your site for a specific purpose. They want something your site offers. Whether it is information, a product or service.
6. Try to avoid placing banner exchange banners at the top of your page. These can instantly take your customers or even be indexed by search engine robots. Limit the number of banners on your site to no more than two per page. One is ideal.
7. Always, include your contact information on each page of your site and try to reply to all comments and suggestions within 48 hours. This will help promote good business relationships. Your business relationships are the key to your success.
8. ALWAYS check and double-check your site for spelling errors and make sure your images and links are all working properly. If you have several errors, this will make your site appear to be unprofessional. If you are designing your site using an HTML editor, use spell check. Proper grammar is also very important.
9. Design your site to be easily navigated. Place your navigation links together at the top, bottom, left or right side of the page. Use tables to neatly align your links. If you are planning on using graphic buttons to navigate your site, keep in mind that with each graphic you

add to your page, it will take that much longer for your page to load. If you only have a handful of navigational links, using graphic buttons will be fine. If you have over six links, it would be wise to simply use text links to keep your load time down.

10. If you must use frames, use them sparingly. Frames, if not properly used, can make your site look unprofessional. Avoid making your visitors have to scroll from side to side to view your content. This can be very irritating and cause your visitors to leave. If you must use frames, offer your visitors a choice.
11. Try to keep the number of clicks required to get from your main page to any other page on your site down to four. Keep in mind; your visitors may enter your site from pages other than your main. Always have good navigational links on every page and place your company logo on each page.
12. If you must use Java on your site, use it sparingly. Offer your visitors a choice. Java can be slow and has a tendency to crash browsers. Try to avoid using those pop up boxes asking for your visitor's name, etc. Those pop up messages are very unprofessional and can be very frustrating to your visitors when they're trying to view your site.
13. Do not set sound to "auto play" when someone visits your site. This can be very distracting.
14. All web browsers are not created equally. View your site through different browsers and screen resolutions so you will see how your visitors will view your site. Visit:-  
<http://www.netmechanic.com/>  
which provides a variety of free services for your web site including; browser compatibility testing, graphic file size reduction, link check, HTML check, load time check, spell check and more.
15. Continually add new content to your site. Give your visitors a reason to keep coming back.
  - Design a quality e-book to give to your visitors. The focus of your e-book should compliment your web site. Simply write about your passion.
  - Provide your visitors with quality, informative articles. Everybody loves free information. It's the top-selling product online, so use it to your advantage. Before using any articles, make sure you view the author's copyrights and make certain the article may be published. The simple, well-designed, professional looking web sites make the sales.

***“ Knowledge is the key to success”.***

Reference: - <http://www.web-source.net>

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- ⊕ Units in measuring memory size
  - 1 Byte = 8 bit (b)
  - 1 Kilobyte =  $2^{10}$  Byte (B)
  - 1 Megabyte =  $2^{10}$  Kilobyte (KB)
  - 1 Gigabyte =  $2^{10}$  Megabyte (MB)
  - 1 Terabyte =  $2^{10}$  Gigabyte (GB)
- ⊕ Internet time
  - 1 day = 1000 beats
  - 1 beat = 1 minute 26.4 seconds

- ⊕ VIRUS stands for,  
Very Important Resources Under Siege.
- ⊕ VIRUS programs that was discovered at the beginning,  
Ashar, Brain from Pakistan  
Happy Birthday to Josi from India
- ⊕ IBM stands for,  
International Business Machines

## Digital Imaging Device

*T.Ketheesan, Instructor, Department of Computer Science.*

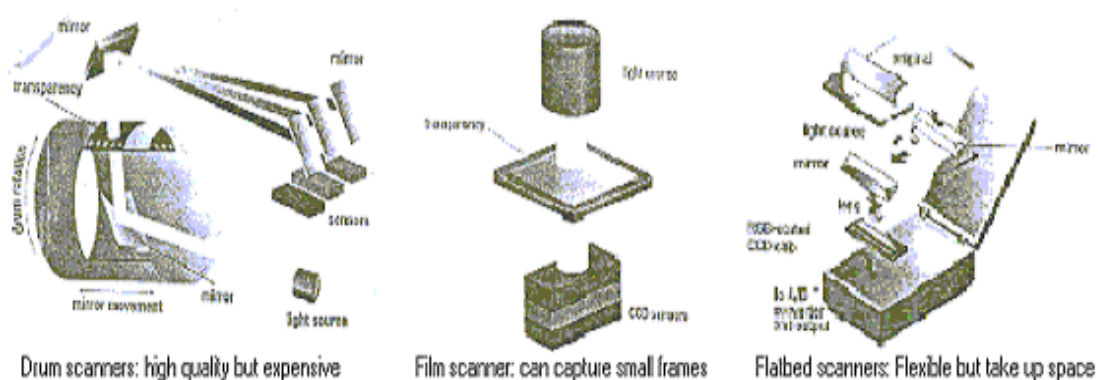
All digital imaging devices work on the same principle of reflection or transmission. The subject is placed before the imaging device, consisting of light source, optic and a sensor. The amount of light reflected by or transmitted through the subject is gathered by the optics and focused on to the sensor, then converted to a voltage proportional to the light intensity. This voltage is changed by an analog-to-digital converter into bits of information the computer can understand.

So many different scanners have been developed, Drum scanner, Film scanner and Flatbed scanner. Flatbed scanners are currently the most widespread. While scanners and cameras seem, on the surface, to be very different, their purpose is the same: to capture a subject and present a computer with a bitmapped digital image file.

In the case of the camera, you simply point it at your subject and expose the entire sensor in one go, using natural or man made light source. The scanner on the other hand, operates in an almost clinical environment, encompassing the subject and using its own light source for consistent illumination.

The most common sensor in digital imaging is the Charge Couple Device (CCD), which is at the heart of most scanners, digital still cameras and camcorders. A CCD consists of many tiny photosensitive elements arranged in a rectangular grid in the case of digital camera, or in a long, thin line in desktop scanners. Sensors absorb the photons in the light and converted into electrical charge.

Modern scanners are increasingly using an array of illuminating LEDs and contact image sensor instead of a florescent tube and CCD for capturing images.



Reference: - Personal Computer World  
September 2000.

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**Tomorrow's MP3 models**

*S.Emilton, Instructor, Department of Computer Science.*

The next generation of **MP3** is known as **MP3 PRO**. In this **MP3 PRO** technology, the compression rate and the sound quality is more than it should be. In this **MP3 PRO** encoder system the audio data is divided into two: One part of the sound data gets analysed by the low frequency band and is changed to equal the **MP3** player. The other part of sound data gets analysed by the high frequency band and is changed to negative sign. The sound data which analysis the low frequency band and high frequency band jointly gives out a distinct sound clearly.

However, the music tracks are being encoded at a low bit rate. This takes very low file size, which cannot be imagined and gives good standard sound. For e.g.: One way file for **MP3** takes 128 kbps and acts at 44.1 KHz wave band. At the same time, in **MP3 PRO** file at 44.1 KHz wave band takes a place at 64 kbps and act as sound encoded form and saved.

The other form of **MP3** is **ogg vorbis** system. Even though this is not a very popular one, Sound could be divided or saved and is acceptable. This **ogg** system is being used in beta standard in **LINUX**, **UNIX**, and **WINDOWS**. Even though in the **ogg** system, Compression cannot be done in audio file, this too gives a good standard sound.

Here let us compare the **MP3**, **ogg vorbis**, and **MP3 PRO** sound system. The sound which was in Net regarding bit rate, wave change, the size of file, the time taken to indicate is shown in the table given below:

**30 GB MP3 players take 540 Hrs Music**

The Apple and Compaq companies have released the MP3 player in the commercial name PBJ 100. The 30 GB Hard drive in MP3 player could record 540 hrs sounds. The cost of the MP3 player with 6 button controls is 32 thousands.

For further details :  
[www.mp3factorvdirect.com](http://www.mp3factorvdirect.com)

In [www.rca.com](http://www.rca.com), you could take **RCA MP3 PRO** audio player details to know **MP3 PRO** encoding. In the case of **ogg vorbis** encoding you could find **ogg drop** in [www.vorbis.com](http://www.vorbis.com). The latest publication beta in respect of **Razor Lame**, which is **MP3** encoding. This is available in [www.dors.de/razorlame](http://www.dors.de/razorlame) and obtained in open source system.

Sound format	Bit rate (kbps)	Sample wave change(KHz)	The size of file required(MB)	Time taken for encoding(min.)
MP3	128	44	3.51	2.15
Mp3 PRO	64	44	1.75	2.31
Ogg vorbis	128	44	3.54	3.48

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## **Intel Technology Promises 20-GHz Chips**

*S.Sivaraj, Fourth year (2002), Department of Computer Science.*

Intel has announced a new chip-packaging technique that could lead to faster, smaller, and more energy-efficient chips. Intel said its bumpless build-up layer (BBUL) approach would let the company build microprocessors that have 1 billion transistors and run at 20GHz within the next six years. Intel's fastest Pentium currently has 42 million transistors and runs at 2GHz.

BBUL technology would eliminate the solder balls, called bumps that currently connect a processor core to wires on the packaging material. This permits electrical connects to and from the chip.

The BBUL approach would build the packaging layers and the chip itself concurrently, said Koushik Banerjee, technical advisor for Intel's Assembly Technology Development Department. Intel would thus build chips as an entire unit, with electrically flowing directly between layers, he explained. This approach would replace the current technique of building the packaging material and chip core separately and then attaching them, which requires the use of bumps for electrical connections.

The BBUL method would also let Intel build a microprocessor in one, more efficient process flow. Meanwhile, the chip would be thin about the thickness of a credit card. Therefore, Banerjee said the circuit interconnects would be shorter and communications would be faster and offer better data quality with less noise. The transistor would thus need less voltage to overcome noise, and heat production.

BBUL would also eliminate the use of lead, which is a toxic substance. And by

eliminating the need to make circuit interconnections only at solder bumps, the new technique would permit a more complex set of interconnections, thereby enabling higher performance. Moreover, multiple chips could be combined within one BBUL package, which would be smaller than other multi chip, approaches, an important factor for handheld devices.

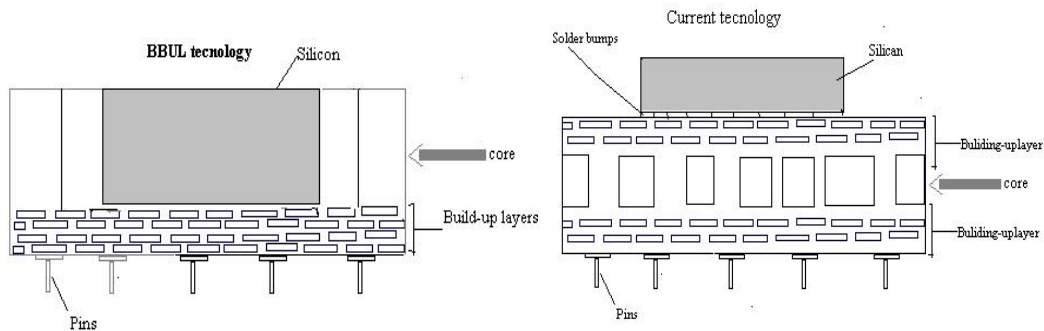
In addition, Intel's new technique would reduce the risk that future chips with more circuits would short-circuit if the higher numbers of solder balls touch.

The BBUL approach of building the core and substrate together is innovative, according to Jim Walker, principal analyst for semiconductor packaging and assembly-research firm Garner Inc.

No one has yet come up with such an approach, which will require considerable time and expense to develop and implement, because the current technology will for number of years, Banarjee said. Therefore, Intel plans to cost-effective by the time it is needed, perhaps in 2006 or 2007.

According to Banarjee, BBUL's challenge for Intel is not technological but instead is that the technique would necessitate a new manufacturing process.

"It's early to tell. There are a lot of positives," Walker said. "But someone could come along in this five-year period with something new that might displace [BBUL]."



With current chip-making technology, vendors build the packaging material and chip core separately. To provide electrical connections, solder bumps connect the core to wires on the packaging material. With Intel's newly developed bumpless build-up layer (BBUL) approach, vendors would build the packaging layers and chip concurrently, with electricity flowing directly between layers. By eliminating the bumps, this technique would shorten circuit interconnects and permit a more complex set of interconnections, leading to faster, smaller, and more energy-efficient chips.

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Internet Browsing Center

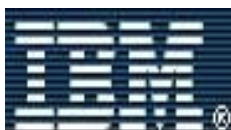


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## An Introduction to the Internet

*S.Thirukumaran, Fourth year (2002), Department of Computer Science*

- What is Internet?

Before answering that, let us see what a network is. A network is two or more computers with connected together. In its simplest form, **the Internet is a network of networks**. If that is too complicated for you, think of it as a large collection of interconnected computers.

For example, suppose you want to find some data about the Biology Department at University of Cornell, U.S.A. Suppose you are sitting in front of the computer in a computer network at Jaffna. Your Computer and the Computers at Cornell get connected through the Internet. Then you can access Cornell Computer for the information that you want.

- What are the tools available on the Internet?

The tools, which are most commonly used, are

- E-Mail.
- WWW (World Wide Web).
- FTP (File Transfer Protocol).
- Telnet.

- The World Wide Web

The web is a vast collection of (electronic) pages that contain information ranging from baby foods to rocket technology. These pages lie in computers, which are connected to the Internet, scattered all over the world. Each of these pages has an address. You can access these pages in two ways.

- Giving the address of the page directly. or
- Using a link from another page.

(Suppose you want to access a web page on Sigiriya. The Anuradhapura web page might have a "link" to the Sigiriya web page).

You can start from one page and use a link to another page, and then you can use a link there to jump to another page. This way, you get a seemingly endless collection of pages. That's why it is called the web.

- Who writes these pages? How?

Well, even you can write one. They are written in a format called HTML (Hyper Text Markup Language). It is a very easy language. Suppose you are an expert on a certain area (say bird watching). Then you can share your knowledge with the rest of the world by making a web page with HTML. You can put text, pictures, audio clips, video clips, animations, (you name it) in your page. Then you must put it in a machine connected to the Internet (called a web server). This server is on 24 hours. (Otherwise, when you go to sleep, people cannot access your page). Once your page is in a server, people all over the world may access it and if you leave your E-Mail address on it, will also contact you.

- How do we read these pages?

These pages are written in a boring language called HTML. However, when you want to see this page, you want it to look nice with pictures, video clips etc. To do this, there is software called web browsers. Just like the way, a video deck translates video tape into nice looking film, these browsers translate the HTML written document into a beautiful web page. There are two popular browser brands in the market.

- Netscape Communicator.
- Internet Explorer.

- How do we use a browser?

On the top part of the browser, there is space in

which,(says "GO TO") you simply write the address (called a URL) of the page you want and press Enter. Your requested page will travel through the Internet and arrive at your browser. For example, if you want to see CNN, type in the address of that page, which is [www.cnn.com](http://www.cnn.com).

- What on earth is that " WWW " in front of the address?

WWW, which means the World Wide Web, is a common heading for all addresses (like " Mr " in a letter addressed to a male).

- What I do to see a picture, if I don't know any addresses?

Enter the address [www.yahoo.com](http://www.yahoo.com). This will take you to the " Yahoo Search Engine " (This is just a page in which, you can search for anything that you want). On that page, you will see a box. In that type the picture name you want. Then hit Enter. You will then get a listing of all the web pages connected to this address.

- What can we use the web for?

- To retrieve information

- ✓ News
- ✓ Science
- ✓ Sports
- Etc.

- For shopping

You can do a lot of shopping if you have an Internet account and a credit card. Most of the famous shopping malls in the different countries now have on line shopping. All you need to do is to visit their web page, select a product give your credit card number and your address, the company will send it home to you (from New York to Colombo, if necessary). (Try [www.amazon.com](http://www.amazon.com) to access the world's largest bookshop).

- For advertising  
Suppose you are an exporter of (say spices). You need to tap the world market. Put all the information (nice pictures, prices, etc.) of your spices into web page and put it inside a server. Your page is now open to the whole world via the Internet.

- Of course, there are many other uses.

- What is FTP?

It is a system (a set of commands) that let you exchange files (big ones, diskettes are of no use) between computers. If your aunt is in England and is demanding to see your graduation photographs that you took yesterday, scan them into the computer, and then, using FTP the photo files are transferred to aunt's machine in England. She will get them immediately (almost). FTP software now usually comes with the Operating System.

- What is Telnet?

It is software that enables you to enter another computer on the Internet from your machine. Why do we want to do this? Suppose you travel to U.S. and want to check your E-Mail, but it comes to your computer in Jaffna. Using Telnet you can see your E-Mali from a computer in U.S.

Another example: Suppose you want to perform a highly complicated task, only a super computer can achieve. Using Telnet, you can connect your PC into a super computer. The point is, once you use Telnet, you are physically inside the other computer. So you may use all its facilities.