K.S.Rangasamy College of Arts & Science

(Autonomous)

Ksr Kalvi Nagar,Tiruchengode-637215.Namakkal Dist.

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Ishare

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Ishare

Editorial

We would like to wholeheartedly thank our honorable Chairman, Secretary, Executive Director and Principal for their continuous encouragement and constant support for bringing out the magazine. We profoundly thank our Head of Department for encouraging and motivating us to lead the magazine a successful one right from the beginning. Ishare serves as a platform for updating and enhancing upcoming technologies in Information and Communication. We are grateful to all the contributors to this magazine so far. The magazine has been sent to almost 60 institutions in and around Tamilnadu. So far we have received feedbacks and appreciations from various institutions.

We would be very pleased to receive your feedbacks. Please send your feedbacks to ishare@ksrcas.edu

By,

Editorial Board

CONTENT

1. ANDROID TECHNOLOGY

Mrs.A. Anithamalar
Assistant Professor

INTRODUCTION

WHAT IS ANDROID?

- A Software platform and operating system for mobile.
- Based on the Linux kernel.
- Android was found way back in 2003.
- It was developed in Palo Alto, California.
- Android was developed by the Andy Rubin, Rich Miner, Nick Sears and Chris White.
- Android was purchased by the GOOGLE in AUGUST,2005 for 50 million $.

What is OHA?

Open Handset Alliance (OHA)

- It's consortium of several companies.
- These groups of companies are allowed to use source code of Android and develop applications.
- Reason for Nokia not to develop Android Mobiles is Nokia is not part of OHA.

FEATURES OF ANDROID

- Android is not a single piece of hardware.

Android supports wireless communication using:

- 3G Networks
- 4G Networks
- 802.11 Wi-Fi Networks
- Bluetooth Connectivity

- Android is a multi-process system, in which each application (and parts of the system) runs in its own process.
- Interface that is better then the previous touch screen mobiles.
- User gets millions of applications that user can not get in any other mobile operating system.
- Android supports advanced audio/video/still media formats such as MPEG-4, H.264, MP3, and AAC, AMR, JPEG, PNG, GIF.
- Developing an android application is not tough using SDK (standard development kit) and java emulator we can easily develop applications that we want.

COMPARISON WITH OTHER OPERATING SYSTEMS :

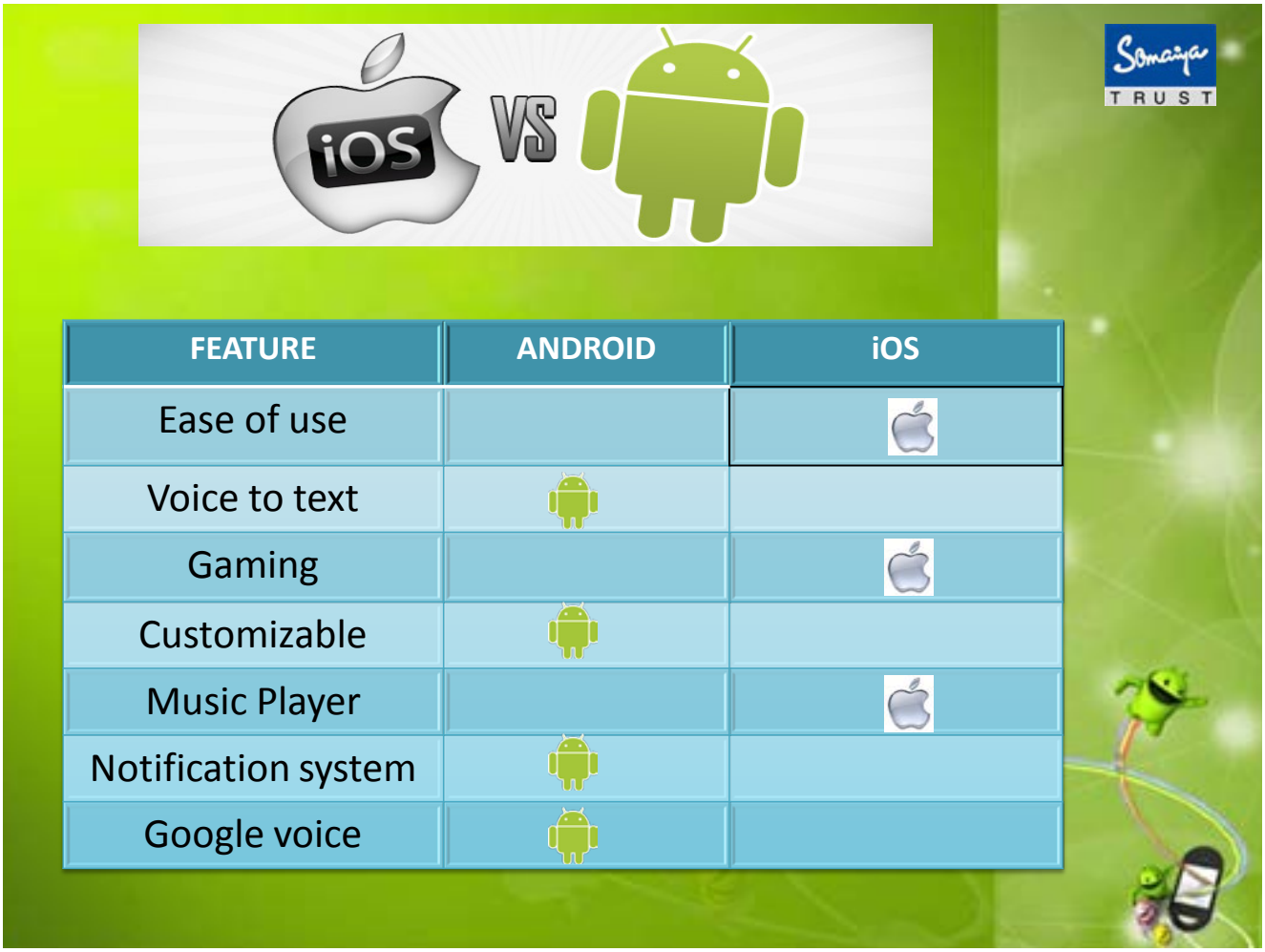
- Other then Android there is several other mobile operating systems which are used.
- Symbian, iOS, windows this are one of the most used mobile operating systems.

Sales comparison of os:-

SALES COMPARISON OF OS:-

Sales

Android os
Windows phone
iOS
Symbian Os
Blackberry os
Others



FEATURE	ANDROID	iOS
Ease of use		
Voice to text		
Gaming		
Customizable		
Music Player		
Notification system		
Google voice		

VERSIONS OF ANDROID :

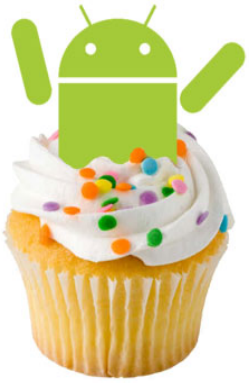
Android Beta

- First Version of Android.
- The focus of Android beta is testing incorporating usability.
- Android beta will generally have many more problems on speed and performance.

Android Astro 1.0:

- First full version of android.
- Released on September 23, 2008.
- Wi-Fi and Bluetooth support.
- Quite slow in operating.
- Copy and paste feature in the web browser is not present.

Android Cupcake 1.5:

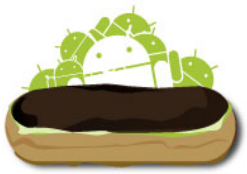


- Released on April 30, 2009.
- Added auto-rotation option.
- Copy and Paste feature added in the web browser.
- Increased speed and performance but not upto required level.

Android Donut 1.6 :

- Released on September 15, 2009.
- Voice search and Search box were added.
- Faster OS boot times and fast web browsing experience.
- Typing is quite slower.

Android Éclair 2.0/2.1 :



- Released on October 26, 2009.
- Bluetooth 2.1 support.
- Improved typing speed on virtual keyboard, with smarter dictionary.
- No Adobe flash media support.

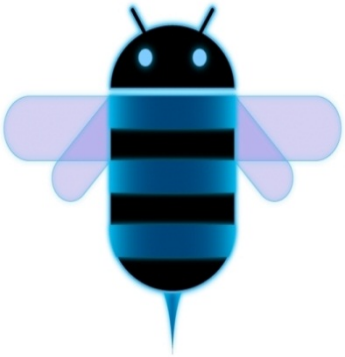
Android Froyo 2.2:

- Released on May 20, 2010.
- Support for Adobe Flash 10.1
- Improved Application launcher with better browser
- No internet calling.

Android Gingerbread 2.3:

- Released on December 6, 2010.
- Updated User Interface with high efficiency and speed
- Internet calling
- One touch word selection and copy/paste.
- New keyboard for faster word input.
- More successful version of Android than previous versions.
- Not supports multi-core processors.

Android Honeycomb 3.0 :



- Released on February 22, 2011.
- Support for multi-core processors
- Ability to encrypt all user data.
- This version of android is only available for tablets.

Android IceCreamSandwich(ICS) 4.0 :

- Released on November 14, 2011.
- Virtual button in the UI.
- A new typeface family for the UI, Robots.
- Ability to shut down apps that are using data in the background.

Android Jellybean 4.1:

- Released on June 27, 2012.
- Latest version of Android.
- Smoother user interface.

Android KitKat 4.4:

- Released on June 25, 2014
- Initial release of Android Wear platform for smartwatches.
- UI updates for Google Maps navigation and

alarms.

- Offline music playback.
- GPS support.

Android Lollipop 5.0 :

- Released on November 12, 2014.
- It has more than 5,000 new APIs added for use by applications.
- It aims to improve battery consumption through a series of optimizations known as "Project Volta".
- Support for 64-bit CPUs.
- OpenGL ES 3.1 and Android Extension Pack (AEP) on supported GPU configurations.

2. CAR GPS TRACKING SYSTEMS

Mr.A. Kesavamoorthy
Assistant Professor

Car Gps Tracking is fairly common in new vehicles, providing drivers with tracking and navigation. However, the latest technology inventions have made car GPS tracking systems more sophisticated, allowing for a wide range of additional uses.

Smart box technology is one example of how car GPS tracking systems are being used to lower car insurance. A comprehensive recording

of a driver's habits allows insurance companies to provide "pay-as-you-drive" car insurance.

City officials in New York City are considering how car GPS tracking could be used as "Drive Smart" technology. Most large cities have a limited capability to change the infrastructure of their roadways.

A car GPS tracking system that integrates with traffic information would give drivers the ability to select routes in real time that were more fuel efficient, less congested, faster or shorter.

A driver's recorded routing selection could then be used to penalize or reward drivers by lowering or increasing their related licensing fees or by calculating mileage based "road-use" fees.

Eventually, such a system would replace gasoline tax since these revenues will decline as more vehicles become less dependent on fossil fuels.

3. CONTENT MANAGEMENT SYSTEM

Ms.S.KAYATHRI
Assistant Professor

CMS is used as a tool to manage website content and depository for information. CMS is a software package that lets you build a website that can be quickly and easily updated by your non-technical staff members. These open source systems are created and supported by a community of

developers, and can be downloaded without cost. A web presence is critical for almost every nonprofit, but creating websites can be daunting.

Content Management Systems (CMS) have evolved into more than just publishing content, but managing your workflow as well. CMS's nowadays allow you to easily conceive, edit, index, and publish content, while giving designers and developers more flexibility in customizing their look and functionality. Although there are many that require advanced skills to operate successfully, this article is going to cover a select few that offer a balance between design, code, and end-user usability.

Different Content Management System

Content Management Systems are traditionally implemented as document/information 'repositories' of information. Generally a content storage location is powered by a database technology, with rigorous security controls on the repository to control and audit access to the information stored within. These controls encompass things like:

- User authentication (login);
- Role-based access (check in /check out, edit, make new versions, create/store new content);
- Workflow (initiate, review, approve, comment);

Wordpress

Wordpress is web software you can use to create a beautiful website or blog. It started in 2003 with a single bit of code to enhance the typography of everyday writing. Since then it has grown to be the largest self-hosted blogging tool in the world, used on millions of sites and seen by tens of millions of people every day.

Wordpress is a free and open source blogging tool and a Content Management System (CMS) based on PHP and MySQL. It has many features including a plug-in architecture and a template system. Wordpress is currently the most popular blogging system in use on the Internet. As a free and open source platform, Wordpress relies on peer support. The primary support website is Wordpress.org

Drupal

Drupal is a free software package that allows anyone to easily publish, manage and organize a wide variety of content on a website. Hundreds of thousands of people and organizations are using Drupal to power an endless variety of sites.

Drupal you can easily build many different types of web pages - from simple web blogs to large online communities. Drupal design is not as fancy as this of Joomla! but it is very easy to customize, has built-in search tool and search-engine friendly URL's as an extra module, discussion capabilities and news aggregator.

Joomla

Joomla is an award-winning content management system, which enables you to build Web sites and powerful online applications. Many aspects, including its ease-of-use and extensibility, have made Joomla the most popular Web site software available. Best of all, Joomla is an open source solution that is freely available to everyone.

Joomla is one of the best and most widely used CMS applications. It is suitable for creating corporate websites or intranets, online magazines, community-based portals and more. It has numerous built-in features as well as a large selection of extra modules and components which will enhance the value of your website and will enrich your visitors' experience.

4. SHORTCUT KEYS IN TALLY

Mr.R. Arun
Assistant Professor

FUNCTIONAL SHORTCUT KEYS

Windows	Functionality	Availability
F1	To select a company	At all masters menu screen
F1	To select the Accounts Button	At the Accounting Voucher creation and alteration screen
F1 (ALT+F1)	To select the Inventory Button	At the Inventory/Payroll Voucher creation and

		alteration screen
F1 (CTRL + F1)	To select Payroll Vouchers to alter	At the Accounting/Inventory voucher creation or alteration screen.
F2	To change the current date To select company inventory features	At almost all screens in TALLY At the F11: Features screen
F3	To select the company To select Company Statutory & Taxation features	At almost all screens in TALLY At F11: Features screen
F4	To select the Contra voucher	At Accounting / Inventory Voucher creation and alteration screen
F5	To select the Payment voucher	At Accounting / Inventory Voucher creation and alteration screen
F6	To select the Receipt voucher	At Accounting / Inventory Voucher creation and alteration screen
F7	To select the Journal voucher	At Accounting / Inventory Voucher creation and alteration screen
F8	To select the Sales voucher	At Accounting / Inventory Voucher creation and alteration screen
F8 (CTRL+F8)	To select the Credit Note voucher	At Accounting / Inventory Voucher creation and alteration screen

F9	To select the Purchase voucher	At Accounting / Inventory Voucher creation and alteration screen
F9 (CTRL+F9)	To select the Debit Note voucher	At Accounting / Inventory Voucher creation and alteration screen
F10	To select the Reversing Journal voucher	At Accounting / Inventory Voucher creation and alteration screen
F10 (Ctrl + F10)	To select the Memorandum voucher	At Accounting / Inventory Voucher creation and alteration screen
F11	To select the Functions and Features screen	At almost all screens in TALLY
F12	To select the Configure screen	At almost all screens in TALLY

SPECIAL KEY COMBINATION

Windows	Functionality	Availability
ALT + 2	To Duplicate a voucher	At List of Vouchers – creates a voucher similar to the one where you positioned the cursor and used this key combination
ALT + A	To Add a voucher To Alter the column in	At List of Vouchers – adds a voucher after the one where you positioned the cursor and used this key combination.

	columnar report	Alters the column in all the reports which can be viewed in columnar format
ALT + C	To create a master at a voucher screen (if it has not been already assigned a different function, as in reports like Balance Sheet, where it adds a new column to the report)	At voucher entry and alteration screens, at a field where you have to select a master from a list. If the necessary account has not been created already, use this key combination to create the master without quitting from the voucher screen.
	To access Auto Value Calculator in the amount field during voucher entry	At all voucher entry screens in the Amount field
ALT + D	To delete a voucher To delete a master To delete a column in any columnar report (if it has not been already assigned a different function, as explained above)	At Voucher and Master (Single) alteration screens. Masters can be deleted subject to conditions, as explained in the manual. All the reports screen which can be viewed in columnar format
ALT + E	To export the report in ASCII, HTML or XML format	At all reports screens in TALLY
ALT + I	To insert a voucher	At List of Vouchers – inserts a voucher before the one where you positioned the cursor and used this key combination.
	To toggle between Item and	

	Accounting invoice	At creation of sales and purchase invoice
ALT + L	To select the Language Configuration	At almost all screens in TALLY.
ALT + K	To select the Keyboard Configuration	At almost all screens in TALLY.
ALT + O	To upload the report at your website	At all reports screens in TALLY
ALT + L	To select language for Tally Interface	At almost all screens of TALLY
ALT + M	To Email the report	At all reports screens in TALLY
ALT + N	To view the report in automatic columns	At all the reports where columns can be added
ALT + P	To print the report	At all reports screens in TALLY
ALT + R	To remove a line in a report	At all reports screens in TALLY
ALT + S	To bring back a line you removed using ALT + R	At all reports screens in TALLY
ALT + U	To retrieve the last line which is deleted using Alt + R	At all reports screens in Tally
ALT+ V	From Invoice screen to bring Stock Journal screen	At Invoice screen à Quantity Field à Press Alt + V to select the Stock Journal.
ALT + W	To view the Tally Web browser.	At all reports screens in TALLY
ALT + X	To cancel a voucher in Day Book/List of Vouchers	At all voucher screens in TALLY
ALT + R	To Register Tally	At almost all screens in TALLY.

CTRL + A	To accept a form – wherever you use this key combination, that screen or report gets accepted as it is.	At almost all screens in TALLY, except where a specific detail has to be given before accepting.
CTRL + B	To select the Budget	At Groups/Ledgers/Cost Centres/ Budgets/Scenarios/Voucher Types/ Currencies (Accounts Info) creation and alteration screen
CTRL + ALT + B	To check the Company Statutory details	At all the menu screens
CTRL + C	To select the Cost Centre To select the Cost Category	At Groups/Ledgers/Cost Centres/ Budgets/Scenarios/Voucher Types/ Currencies (Accounts Info) creation and alteration screen At Stock Groups/ Stock Categories/ Stock Items/ Reorder Levels/ Godowns/ Voucher Types / Units of Measure (Inventory Info) creation/alteration screen
CTRL+ E	To select the Currencies	At Groups/Ledgers/Cost Centres/ Budgets/Scenarios/Voucher Types/ Currencies (Accounts Info) creation and alteration screen

CTRL + G	To select the Group	At Groups/Ledgers/Cost Centres/ Budgets/Scenarios/Voucher Types/ Currencies (Accounts Info) creation and alteration screen
CTRL + I	To select the Stock Items	At Stock Group/ Stock Categories/ Stock Items/ Reorder Levels/ Godowns/ Voucher Types / Units of Measure (Inventory Info) creation/alteration screen
Ctrl + Alt + I	To import statutory masters	At all menu screens
CTRL + L	To select the Ledger To mark a Voucher as Optional	At Groups/Ledgers/Cost Centres/ Budgets/Scenarios/Voucher Types/ Currencies (Accounts Info) creation and alteration screen At the creation and alteration of Vouchers
CTRL + O	To select the Godowns	At Stock Group/ Stock Categories/ Stock Items/ Reorder Levels/ Godowns/ Voucher Types / Units of Measure (Inventory Info) creation/alteration screen
CTRL + Q	To abandon a form – wherever you use this key	At almost all screens in TALLY.

	combination, it quits that screen without making any changes to it.	
CTRL + R	To repeat narration in the same voucher type	At creation/alteration of voucher screen
CTRL + Alt + R	Rewrite data for a Company	From Gateway of Tally screen
CTRL + S	Allows you to alter Stock Item master	At Stock Voucher Report and Godown Voucher Report
CTRL + U	To select the Units	At Stock Groups/ Stock Categories/ Stock Items/ Reorder Levels/ Godowns/ Voucher Types / Units of Measure (Inventory Info) creation/alteration screen
CTRL + V	To select the Voucher Types To toggle between Invoice and Voucher	At Groups/Ledgers/Cost Centres/ Budgets/Scenarios/Voucher Types/ Currencies (Accounts Info) creation and alteration screen At creation of Sales/Purchase Voucher screen

5. NEAR FIELD COMMUNICATION

Ms. R.Sudha
Assistant Professor

Near field communication, abbreviated NFC, is a form of contactless communication between devices like smartphones or tablets. Contactless communication allows a user to wave the smartphone over a NFC compatible device to send information without needing to touch the devices together or go through multiple steps setting up a connection. Fast and convenient, NFC technology is popular in parts of Europe and Asia, and is quickly spreading throughout the United States.

Near field communication maintains interoperability between different wireless communication methods like Bluetooth through the NFC Forum. Founded in 2004 by Sony, Nokia, and Philips, the forum enforces strict standards that manufacturers must meet when designing NFC compatible devices. This ensures that NFC is secure and remains easy-to-use with different versions of the technology. Compatibility is the key to the growth of NFC as a popular payment and data communication method. It must be able to communicate with other wireless technologies and be able to interact with different types of NFC transmissions.

The technology behind NFC allows a device, known as a reader, interrogator, or active device, to create a radio frequency current that communicates with another NFC compatible device or a small NFC tag

holding the information the reader wants. Passive devices, such as the NFC tag in smart posters, store information and communicate with the reader but do not actively read other devices. Peer-to-peer communication through two active devices is also a possibility with NFC. This allows both devices to send and receive information.

Both businesses and individuals benefit from near field communication technology. By integrating credit cards, subway tickets, and paper coupons all into one device, a customer can board a train, pay for groceries, redeem coupons or store loyalty points, and even exchange contact information all with the wave of a smartphone. Faster transaction times mean less waiting in line and happier customers. Fewer physical cards to carry around means the customer is less likely to lose one or have it stolen.

Google has launched Google Wallet that supports MasterCard PayPass, PayPal offers money transfers between smartphones, and other companies are expected to follow suit. As the technology grows, more NFC compatible smartphones will be available and more stores will offer NFC card readers for customer convenience.

How NFC Works

Bluetooth and Wi-Fi seem similar to near field communication on the surface. All three allow wireless communication and data exchange between digital devices like smartphones. Yet near field communication utilizes electromagnetic radio fields while technologies such as Bluetooth and Wi-Fi focus on radio transmissions instead.

Near field communication, or NFC for short, is an offshoot of Radio-Frequency IDentification (RFID) with the exception that NFC is designed for use by devices within close proximity to each other. Three forms of NFC technology exist: Type A, Type B, and FeliCa. All are similar but communicate in slightly different ways. FeliCa is commonly found in Japan.

Devices using NFC may be active or passive. A passive device, such as an NFC tag, contains information that other devices can read but does not read any information itself. Think of a passive device as a sign on a wall. Others can read the information, but the sign itself does nothing except transmit the info to authorized devices.

Active devices can read information and send it. An active NFC device, like a smartphone, would not only be able to collect information from NFC tags, but it would also be able to exchange information with other compatible phones or devices and could even alter the information on the NFC tag if authorized to make such changes.

To ensure security, NFC often establishes a secure channel and uses encryption when sending sensitive information such as credit card numbers. Users can further protect their private data by keeping anti-virus software on their smartphones and adding a password to the phone so a thief cannot use it in the event that the smartphone is lost or stolen.

6. BLUEPROXIMITY

Ms.M. DEEPIKA
Assistant Professor

BlueProximity is an application that lets automatically lock / unlock the computer using a Bluetooth device. This can be a phone, a headset or pretty much anything that pair up with computer using Bluetooth.

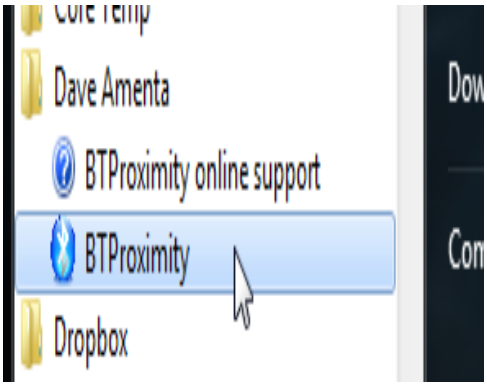
Essentially, you will have to pair your device with computer so that the computer can recognize its MAC address and allow both the computer and your phone to be make discoverable. When your computer loses the Bluetooth signal from your device it assumes you have moved away from the machine and locks it. The application size is 201 KB making it very small and easy to use on any system with Bluetooth.

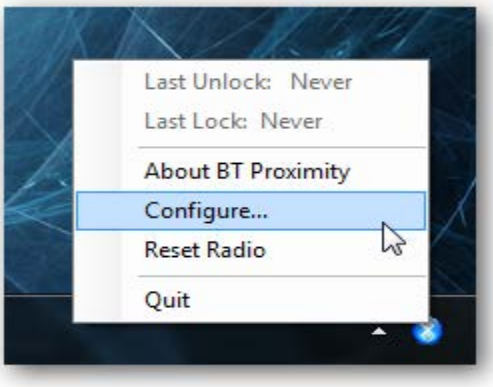
The Windows software, BTProximity only works with the Microsoft operating system. The step-by-step guide for Windows, but it shouldn't be too hard to figure this out on OS X or Linux. The same basic steps should apply.

Configuring BTProximity

STEP1: Make sure Bluetooth stack is running and device is paired properly. After download and install BTProximity, it should be running automatically. If not, find it in the Start menu.

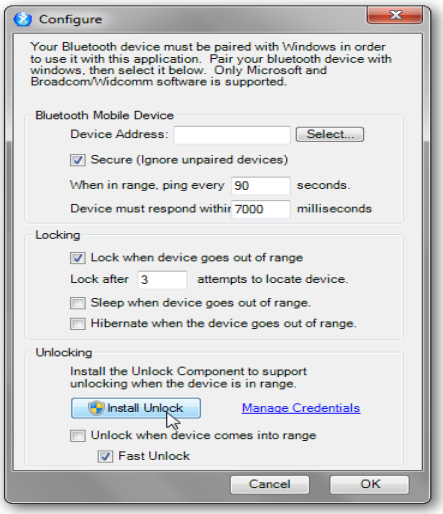
STEP 2: Right-click the icon in the system tray and select "Configure…"



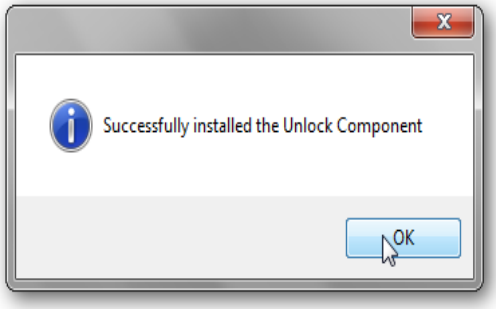


STEP 1 **STEP 2**

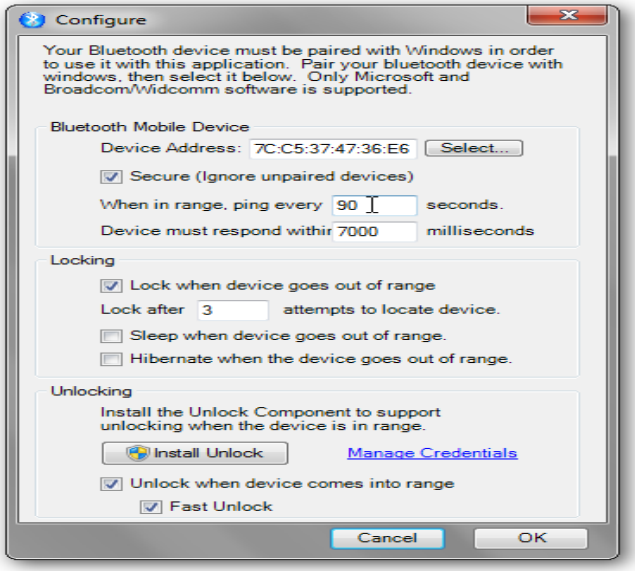
STEP 3: The first thing should do is click the "Install Unlock" button. Not doing this will still allow your computer to lock itself when you leave, but it won't unlock when you get back automatically. The pop-up message will be display when it installs successfully.



STEP 4: Click OK and then click the "Manage Credentials" link in the Configuration window.



STEP 5: To choose your device, click on the "Select…" button in the Configuration window. My computer's Bluetooth device had some problems finding things this way, so I manually typed in the MAC address of my phone in the field. This worked for me without any problems.



Keep in mind that Bluetooth distances can vary depending on your surroundings. If there are any issues, you have to uncheck "Secure (Ignore unpaired devices)" in the Configuration window.

What you need!!

- A computer with a Bluetooth connection.
- A phone or other device that can connect via Bluetooth.
- Either the Microsoft or WIDCOMM Bluetooth stack (for Windows).
- Appropriate software
    - BTProximity for Windows (free)
    - Proximity and an AppleScript for OS X (free)
    - BlueProximity for Linux, packaged for Ubuntu (free)

7. FEMTOCELL

Ms.B. Sowmya
Assistant Professor

In telecommunications, a femtocell is a small, low-power cellular base station, typically designed for use in a home or small business. A broader term which is more widespread in the industry is small cell, with femtocell as a subset. It connects to the service provider's network via broadband (such as DSL or cable); current designs typically support two to four active mobile phones in a residential setting, and eight to 16 active mobile phones in enterprise settings.

A femtocell allows service providers to extend service coverage indoors or at the cell edge, especially where access would otherwise be

limited or unavailable. Although much attention is focused on WCDMA, the concept is applicable to all standards, including GSM, CDMA2000, TD-SCDMA, WiMAX and LTE solutions.

Use of femtocells benefits both the mobile operator and the consumer. For a mobile operator, the attractions of a femtocell are improvements to both coverage, especially indoors, and capacity. Coverage is improved because femtocells can fill in the gaps and eliminate loss of signal through buildings. Capacity is improved by a reduction in the number of phones attempting to use the main network cells and by the off-load of traffic through the user's network (via the internet) to the operator's infrastructure. Instead of using the operator's private network (microwave links, etc.), the internet is used.

Consumers benefit from improved coverage since they have a base-station inside their building. As a result the mobile phone (user equipment) achieves the same or higher data rates using less power, thus battery life is longer. They may also get better voice quality. The carrier may also offer more attractive tariffs, e.g., discounted calls from home.

Many operators have launched femtocell service, including Vodafone, SFR, AT&T, Sprint Nextel, Verizon, Mobile TeleSystems, and Orange.

Operating mode

Femtocells are sold by a mobile network operator (MNO) to its residential or enterprise customers. A femtocell is typically the size of a residential gateway or smaller, and connects to the user’s broadband line. Integrated femtocells (which include both a DSL router and femtocell) also

exist. Once plugged in, the femtocell connects to the MNO's mobile network, and provides extra coverage. From a user's perspective, it is plug and play, there is no specific installation or technical knowledge required—anyone can install a femtocell at home.

In most cases, the user must then declare which mobile phone numbers are allowed to connect to his femtocell, usually via a web interface provided by the MNO. This needs to be done only once. When these mobile phones arrive under coverage of the femtocell, they switch over from the macrocell (outdoor) to the femtocell automatically. Most MNOs provide a way for the user to know this has happened, for example by having a different network name appear on the mobile phone. All communications will then automatically go through the femtocell. When the user leaves the femtocell coverage (whether in a call or not) area, his phone hands over seamlessly to the macro network. Femtocells require specific hardware, so existing WiFi or DSL routers cannot be upgraded to a femtocell.

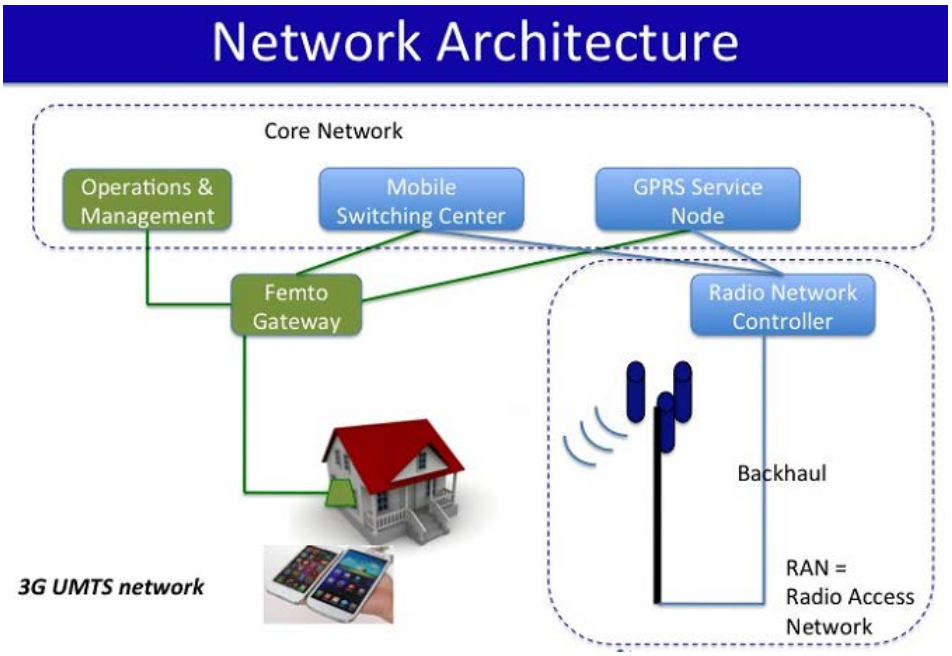
Once installed in a specific location, most femtocells have protection mechanisms so that a location change will be reported to the MNO. Whether the MNO allows femtocells to operate in a different location depends on the MNO's policy. International location change of a femtocell is not permitted because the femtocell transmits licensed frequencies which belong to different network operators in different countries.

Residential Femtocell Architecture

The femtocell appears to the standard 3G phone as just another cellsite from the host mobile operator, and can be used by almost any 3G phone including (where permitted) roamers visiting from other countries.

The mobile operators telephone switch (MSC) and data switch (SGSN) also communicate to the femtocell gateway in the same way as for other mobile calls. Therefore, all services including phone numbers, call diversion, voicemail etc. all operate in exactly the same way and appear the same to the end user.

The connection between the femtocell and the femtocell gateway uses secure IP encryption (IPsec), which avoids interception and there is also authentication of the femtocell itself to ensure it is a valid access point.



Inside the femtocell are the complete workings of a mobile phone base station. Additional functions are also included such as some of the

RNC (Radio Network Controller) processing, which would normally reside at the mobile switching centre. Some femtocells also include core network element so that data sessions can be managed locally without needing to flow back through the operators switching centres.

The key functions are integrated onto a single chip, such as the BCM61670 from Broadcom or TCI6630 from Texas Instruments. These and other chip manufacturers document the different components in more detail in their reference designs. In addition to these highly integrated chips, a radio frontend (such as from Maxim) and a highly accurate frequency reference crystal oscillator (such as from Rakon) are also required.

The extra capabilities of a femtocell demand it to be self-installing and self-configuring. This requires considerable extra software which scans the environment to determine the available frequencies, power level and/or scrambling codes to be used. This is a continuous process to adapt to changing radio conditions, for example if the french windows are opened in a room containing the femtocell.

Within the operators network, femtocell gateways aggregate large numbers of femtocell connections (typically 100,000 to 300,000) which are first securely connected through high capacity IP security firewalls.

Enterprise Small Cells

The same technology and architecture is also used for small to medium businesses. Typically the small cells have higher capacity and slightly higher RF power to give a larger range. Some enterprise small cell vendors have developed solutions where small cells co-operate in clusters

to provide seamless service. For larger enterprises, a small cell controller may be used to provide additional local services including direct connection to the enterprise network.

Urban and Rural Small Cells

Public areas, both inside and out, may use specially designed urban small cells (sometimes called metrocells) which are also based on the same architecture. These can also take advantage of the same small cell/femtocell gateway, sharing its use between residential, enterprise and urban installations. These products must be weather proof and vandal proof, operating in sometimes harsh unsupervised environments with wide temperature fluctuations. Urban small cells are installed by the network operator themselves, and a broadband IP connection back to the regional switching centre (called the backhaul) is also required.

8. NEW DEVELOPMENTS OF HUMAN BRAIN

Mr. T. Vadivel
Assistant Professor

1. Google Glass

Augmented Reality has already gotten into our life in the forms of simulated experiment and education app, but Google is taking it several steps higher with Google Glass. Theoretically, with Google Glass, you are

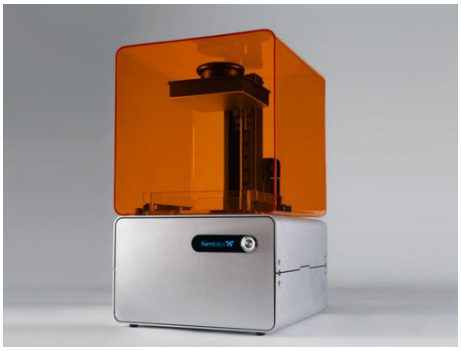
able to view social media feeds, text, Google Maps, as well as navigate with GPS and take photos. You will also get the latest updates while you are on the ground.

It's truly what we called vision, and it is absolutely possible given the fact that the Google's co-founder, Sergey Brin has demonstrated the glass with skydivers and creatives. Currently, the device is only available to some developers with the price tag of $1500, but expects other tech companies trying it out and building an affordable consumer version.

2. 3D PRINTER

Just as the term suggests, 3D printing is the technology that could forge your digital design into a solid real-life product. It's nothing new for the advanced mechanical industry, but a personal 3D printer is definitely a revolutionary idea.

Everybody can create their own physical product based on their custom design, and no approval needed from any giant manufacturer! Even the James Bond's Aston Martin which was crashed in the movie was a 3D printed product!



Form 1 is one such personal 3D printer which can be yours at just $2799. It may sound like a high price but to have the luxury of getting producing your own prototypes, that's a reasonable price.

Imagine a future where every individual professional has the capability to mass produce their own creative physical products without limitation. This is the future where personal productivity and creativity are maximized.

The timing is perfect as the world is currently bombarded with the virtual reality topic that could also be attributed to Sword Art Online, the anime series featuring the characters playing games in an entirely virtual world. While we are getting there, it could take a few more years to reach that level of realism. Oculus Rift is our first step.

3. Leap Motion

Multi-touch desktop is a (miserably) failed product due to the fact that hands could get very tired with prolonged use, but Leap Motion wants to challenge this dark area again with a more advanced idea. It lets you control the desktop with fingers, but without touching the screen.

It's not your typical motion sensor, as Leap Motion allows you to scroll the web page, zoom in the map and photos, sign documents and even play a first person shooter game with only hand and finger movements. The smooth reaction is the most crucial key point here. More importantly, you can own this future with just $70, a price of a premium PS3 game title!

If this device could completely work with Oculus Rift to simulate a real-time gaming experience, gaming is going to get a major make-over.

4. Eye Tribe

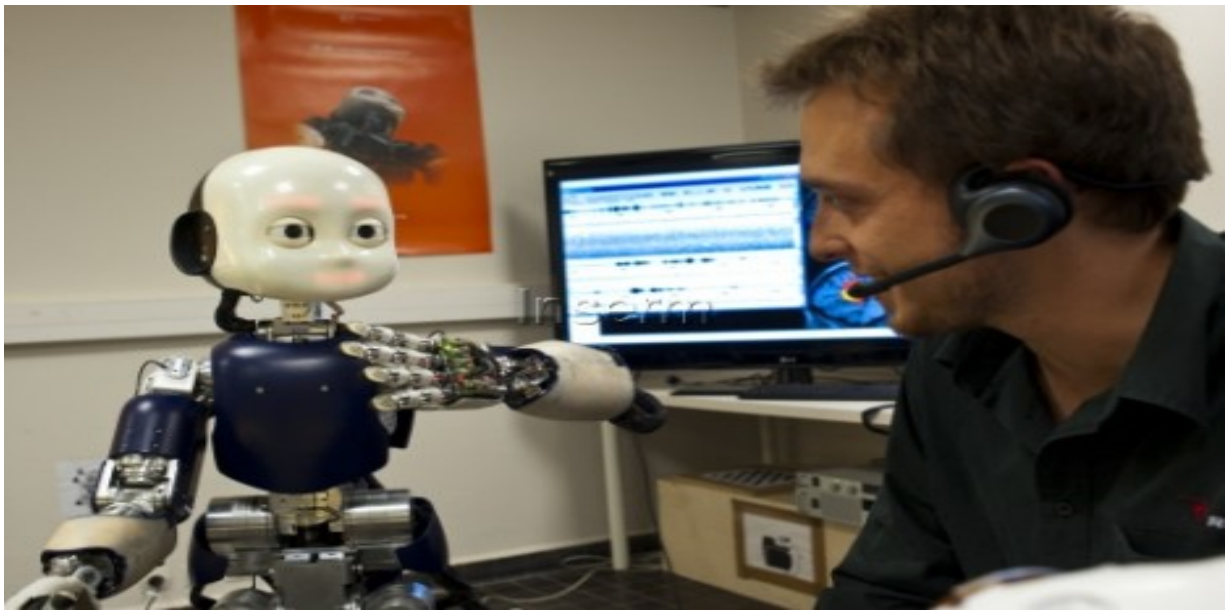
Eye tracking has been actively discussed by technology enthusiasts throughout these years, but it's really challenging to implement. But Eye Tribe actually did this. They successfully created the technology to allow you to control your tablet, play flight simulator, and even slice fruits in Fruit Ninja only with your eye movements.

It's basically taking the common eye-tracking technology and combining it with a front-facing camera plus some serious computer-vision algorithm, and voila, fruit slicing done with the eyes! A live demo was done in LeWeb this year and we may actually be able to see it in in action in mobile devices in 2013.

Currently the company is still seeking partnership to bring this sci-fi tech into the consumer market but all know that this product is simply too awesome to fail.

5. iCub robot

This technological prowess was made possible by the development of a "simplified artificial brain" that reproduces certain types of so-called "recurrent" connections observed in the human brain.



The artificial brain system enables the robot to learn, and subsequently understand, new sentences containing a new grammatical structure. It can link two sentences together and even predict how a sentence will end before it is uttered. This research has been published in the *Plos One* journal.

INSERM and CNRS researchers and the Université Lyon have succeeded in developing an "Artificial Neuronal Network" constructed on the basis of a fundamental principle of the workings of the human brain, namely its ability to learn a new language. The model was developed after years of research in the INSERM 846 Unit through studying the structure of the human brain and understanding the mechanisms used for learning.

MAILING LIST – *To Whom We Send*

- **Dr. R. Ganesan, HOD of CS, PSG college of Arts and Science, Coimbatore- 14.**
- **Dr.T.Devi, HOD of CS, Bharathiyar University, Coimbatore.**
- **Mr.P.Narendran, HOD of CS, Gobi Arts &Science College, Gobichettipalayam-53.**
- **Dr.M.Chandrasekharan,HOD of CS, Erode Arts College (Autonomous), Erode - 09.**
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- **Dr.K.Thangavelu,HOD of CS,Periyar University,Salem-11.**
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- **Dr.JagannathPatil,DeputyAdvisor,National Assessment and Accreditation Council, Bangalore**
- **Dr. Jaganathan,Director, Dept of MCA,PSNA Engineering college, Dindugal-22.**

- **Ms.HannahInbarani,Asst Prof, Dept of CS, Periyar University, Salem-11.**
- **Dr.V.Sadasivam,Prof& HOD of CS, ManonmaniamSundaranar university, Tirunelveli.**
- **Mr.D.Venkatesan, Asst Prof, Deptof CS, School of Computing, SASTRA University, Tanjore-01.**
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- **Mr. B.RajeshKannan, Prof, Dept of Electrical Engineering, Annamalai University, Chidambaram- 02.**
- **N.Jayaveeran, Associate Prof& HOD of CS, KhadirMohideen College, Adirampattinam-01.**
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- **Mr. Rajesh Damodharan, Advisory Project Manager , IBM IndiaPrivateLimited,Bangalore.**
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- **Dr. R. Rajesh, AsstProf,Dept of CS & Engineering, Bharathiyar University, Coimbatore - 46**
- **Dr.R.S.Rajesh , Reader , Computer Science and Engineering, ManonmaniamSundaranar University, Tirunelveli-12.**
- **Dr.L.Arockiam, Reader, Dept of CS, St. Joseph College, Tiruchirapalli-620002**
- **Mr. V. Saravanan, Asst.Professor, PG and Research Dept of CA, Hindustan College of Arts and Science, Coimbatore – 28.**
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- **Dr. R.AmalRaj,Prof, Dept Of CS,SriVasavi College, Erode – 16**
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