“Emerging Technologies from Smart Phones to Internet of Things”

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Topics

1. Smart Phone

2. IoT
1. Smart Phone

- A **Smartphone** is a mobile phone with an advanced mobile operating system which combines features of a personal computer operating system with other features useful for mobile or handheld use.
Basic features of Smartphone

1. Software Applications
2. Keyboard feature (Qwerty)
3. Messaging Features
4. Operating System
5. Audio & Video Capability
6. Camera feature
7. Internet Access

Smartphone act as a communication device, multimedia device, and mini application operating platform.
Mobile Operating Systems

- Android
- iOS
- Windows Phone
- BlackBerry OS
- Sailfish OS
- Tizen
- Ubuntu Touch
Worldwide Smartphone OS Market Share
(Share in Unit Shipments)

Source: IDC, Aug 2015

- Android
- iOS
- Windows Phone
- BlackBerry OS
- Others
List of Android Mobiles/Companies:

- Acer
- Asus
- Htc
- Huawei
- LG
- Kyocera
- Motorola
- Samsung
- Sony
- ZTE
Indian Smart Phone Companies:

• Celkon
• iball
• Intex
• Karbonn
• Lava
• Micromax
France launches ‘terror alert’ smartphone app

PARIS: A new smartphone app to alert users to possible terror attacks was launched by the French government on Wednesday in time for the start of Euro 2016, amid growing security concerns over the tournament.

The application, which is free to download in both French and English, will send users a warning “in case of a suspected attack,” said the Interior Ministry, which has piloted and introduced the service.

It will also alert users — who must agree to be geolocated — about “unexpected events” such as the breaching of flood defences.

Alerts will appear on the app less than 15 minutes after the incident has been confirmed by authorities, and will be customised according to the user’s exact location.

The logo of the Population Alert and Information System. — PHOTO: AFP

The month-long Euro tournament kicks off on Friday and is expected to attract two million visitors to France. Users of the app will also be able monitor alerts for up to eight different geographical zones, allowing them to check on family members or friends.

It will also provide advice on how to stay safe, with information tailored to each particular situation, the Ministry added. — AFP
India outshines USA in net usage

E.T.B. SIVAPRIYAN | DC
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India has overtaken the United States in terms of Internet usage and now stands next only to China after witnessing a phenomenal 40 per cent year-on-year growth. On the other hand, global Internet user base is shrinking.

With 277 million Internet users in 2015, India is the only big country to have registered an increase in the number of Internet users, the Mary Meeker’s 2016 Internet Trends report released on Wednesday night says. “From 33 per cent in 2014 to 40 per cent in 2015, the country has witnessed nearly 40 per cent year-on-year increase in those taking to the medium,” the report by Mary Meeker of Kleiner Perkins Caufield & Byers, an investment firm, said. The report says the global Internet user base grew only 9 per cent in 2015, reaching 3 billion or 42 per cent of the world’s population and goes on to add that if India is excluded from this list, the growth would come down to 7 per cent year-on-year.

The report also suggests India has huge potential to continue its phenomenal growth when it comes to Internet usage as only a little over 22 per cent of the Indian market is penetrated by the new medium. Experts say this offers scope for huge growth, particularly in the mobile sector. “The excitement about the Indian Net explosion is due to the booming market in smartphones, which are no more the prerogative of the rich. With prices as low as ₹5,000-6,000, even middle and lower-middle urban employees or students and a rural artisan is able to possess one. For farmers and other urban artisans, the smartphones also help find better farm markets and jobs on the Net. All this makes India a fast growing Net terrain on the globe,” Kiruba Shankar, CEO, Business Blogging, told this newspaper.

“It is a wonderful thing that India has taken over the US in Internet usage and the report says there is huge scope for growth in smartphone market as well. Not just the urban population, even the rural masses are taking to the Internet. The number of people using Internet and smartphones is zooming and that is a good sign,” he said. The report said the smartphone market is witnessing a slump as it registered at least 10 per cent reduction in growth with 21 percent year-on-year as opposed to 31 per cent year-on-year in 2014. Asia Pacific, which includes countries like India, accounted for 52 per cent of total smartphone market, which also saw a drop.

The growth that India has witnessed is not driven just by an existing low penetration, but also due to availability of low-cost smartphones as one could buy a smartphone for just $158, which is among the lowest in the world.

Yet another bright spot on the Net is the booming revenue it has been generating, as global giants like Google and Facebook gobble up almost 76 per cent of online advertisement in the US.
Apps on Smart Phones

• Gmail
• Google Maps
• YouTube
• Facebook
• WhatsApp Messenger
• Google Play Books
• Google Chrome
• Google Drive

• MyGov app
• NarendraModi app
• IRCTC connect
• MEAIndia
• mPassPort Seva
• RTI India
• Incredible India
• Rakshak app
Smart Agriculture

Mount Kilimanjaro, Tanzania
Preserving the agro-forestry system on Mount Kilimanjaro

Sub-Saharan Africa
Sub-Saharan Africa uses much less fertilizer per hectare than any other region

India, South Asia
Developing capacity to understand and address the gender dimensions of climate change and agriculture in India

Burundi, Rwanda, Uganda and Tanzania
A landscape approach for policy making, planning, and monitoring in the Kagera River Basin

China, Asia
Sustainable grazing for better livelihoods in China

Kenya and Tanzania
Climate-smart agriculture for smallholder farmers in Kenya and Tanzania

Cusco and Puno in Peru
Andean agriculture: the importance of genetic diversity

Malawi, Vietnam and Zambia
A readiness project in Malawi, Vietnam and Zambia

Andhra Pradesh Human Resource Development Institute
Smart Phone Do’s

• Turn your handset off at least once per week for a few hours.
• Back up your data on a regular basis (at least once per month). This will avoid loss of contacts, photos etc. when problems occur.
• Install a data monitoring application. (Recommended “My Data Manager” for IOS and Android, “Data Sense” for Windows Phone).
• Use Wifi whenever available.
• Avoid downloading attachments over mobile data where possible.
• Set email download to timed intervals instead of “push” (i.e every 15 minutes).
Smart Phone Do’s

- Use the supplied charger.
- Avoid fully discharging your battery.
- Turn off vibration.
- Reduce screen brightness.
- Shorten screen timeout.
- Close unnecessary apps.
- Minimize notifications.
Smart Phone Don’ts

• Use your phone in the bathroom. Steam is one of the biggest causes of water damage.

• Leave the device in your car. Cars can get warm in sunlight and this will damage both the battery and circuitry of the device.

• Use in the rain.

• Let young children play with your device. This can lead to many problems from high data usage to water damage.

• Leave apps running in the background. Many apps constantly download updates in the background.
Smart Phone Don’t’s

- Stream video over mobile data.
- Upload / download photos over mobile data.
- Update apps over mobile data (use Wifi as many app updates can be large).
- Store in warm / moist environments.
- Leave GPS enabled (disable it when not required).
- Leave Wi-Fi or Bluetooth enabled (disable it when not required).

contd...
Mobile Phone radiation

• **Specific Absorption Rate (SAR)** – is a measure of the rate at which energy is absorbed by the human body when exposed to a radio frequency electromagnetic field.

• **India & US** – below 1.6 Watts / Kilogram.

• **Telecommunication Engineering Center (TEC) SAR Laboratory.**
Internet of Things (IoT)

• The term “Internet of Things” (IoT) denotes a trend where a large number of embedded devices employ communication services offered by the Internet protocols.

• Many of these devices, often called “smart objects”, are not directly operated by humans, but exist as components in buildings or vehicles, or are spread out in the environment.

• The interconnection is via the internet of computing devices embedded in everyday objects, enabling them to send and receive data.
Applications of IoT

• Devices attached to or inside the human body.
• Buildings where people live.
• Spaces where consumers engage in commerce.
• Spaces where knowledge workers work.
• Standardized production environments.
• Systems inside moving vehicles.
• Urban environments.
IoT – Communication Models

1.

**Figure 1**
Example Of Device-To-Device Communication Model

Light Bulb From Manufacturer A

*WIRELESS NETWORK*

Bluetooth, Z-Wave, Zigbee

Light Switch From Manufacturer B

2.

https://nest.com/thermostat/meet-nest-thermostat/

http://www.samsung.com/sg/info/privacy/smarttv.html
3.

**FIGURE 3**
Example Of Device-To-Gateway Communication Model

- **APPLICATION SERVICE PROVIDER**
  - IPv4/IPv6

- **LOCAL GATEWAY**
  - CoAP
  - DTLS
  - UDP
  - IPv6

- **Layer 1 Protocol**
  - Bluetooth Smart
  - IEEE 802.11 (Wi-Fi)
  - IEEE 802.15.4 (LR-WPAN)

- **Protocol Stack**
  - HTTP
  - TLS
  - TCP
  - IPv6

- **Device with Temperature Sensor**
- **Device with Carbon Monoxide Sensor**

4.

**Figure 4**

Back-End Data-Sharing Model

![Diagram showing back-end data-sharing model with protocol stack and service providers.]

Issues raised by IoT


• Interoperability and Standards

• Legal, Regulatory and Rights

• Emerging Economies and Development
Department of Electronics and Information Technology, (DeiTY) has come out with a draft IOT Policy document which focuses on following objectives:

- To create an IoT industry in India of USD 15 billion by 2020. It has been assumed that India would have a share of 5-6% of global IoT industry.
- To undertake capacity development (Human & Technology) for IoT specific skill-sets for domestic and international markets.
- To undertake Research & development for all the assisting technologies.
- To develop IoT products specific to Indian needs in all possible domains.
mGovernent

• **Mobile government**, mGovernment refers to collection of services as the strategic use of government services and applications which are only possible using mobiles, laptops, personal digital assistants (PDAs) and wireless internet infrastructure.
mGovernment - India

India's Ministry of Communication and Information Technology, Department of Electronics and Information Technology (DeitY) has announced plans for all its department and agencies to develop and deploy mobile applications to provide all their services through mobile devices.

Following are the main measures laid down by DeitY:

• Web sites of all Government Departments and Agencies shall be made mobile-compliant, using the “One Web” approach.

• Open standards shall be adopted for mobile applications for ensuring the interoperability of applications across various operating systems and devices as per the Government Policy on Open Standards for e-Governance.
mGovernment – India

• Uniform/ single pre-designated numbers (long and short codes) shall be used for mobile-based services to ensure convenience.

• All Government Departments and Agencies shall develop and deploy mobile applications for providing all their public services through mobile devices to the extent feasible on the mobile platform. They shall also specify the service levels for such services.

• To ensure adoption and implementation of the framework in time bound manner the government will develop Mobile Service Delivery Gateway (MSDG) that is the core infrastructure for enabling the availability of public services in through mobile devices.
Thank U & Questions?