

Mobile Technology

Introduction

Mobile technology is changing the way people do business. It increases the ability to stay connected, work from any location and be productive on the go.

While making it easier to conduct business, mobile technology improves business processes, such as customer service or company productivity, and the likelihood of growing your business.

This guide explains how you can use mobile technologies - including smartphones, laptops and tablets - to benefit your business. This guide also describes the **advantages and disadvantages of mobile technology** and the different types of **mobile networking devices**.

Finally, it examines the 'bring your own device' trend – looking at the **BYOD benefits and risks** and offering best practice tips on how to **use mobile technology to improve your business**.

Advantages and disadvantages of mobile technology

Mobile technology is indispensable in the modern workplace. Due to its versatility, it offers a range of benefits, but also comes with considerable risks to the business. It is essential to consider both advantages and disadvantages of using mobile technology in business.

What is mobile technology?

Mobile technology is exactly what the name implies - technology that is portable. Examples of mobile IT devices include:

- laptop, tablets and netbook computers
- smartphones
- global positioning system (GPS) devices
- wireless debit/credit card payment terminals

Portable devices utilise many different communications technologies, including:

- wireless fidelity (Wi-Fi) - a type of wireless local area network technology
- bluetooth - connects mobile devices wirelessly
- data networking services for mobile phones - such as 3G, 4G and 5G wireless cellular technologies, global system for mobile communications (GSM) and general packet radio service (GPRS) data services
- dial-up services - data networking services using modems and telephone lines
- virtual private networks - secure access to a private network

These technologies enable us to network mobile devices, such as phones and laptops, to our offices or the internet while travelling.

Advantages of mobile technology

Benefits of using mobile technology for business can manifest in:

- higher efficiency and productivity of staff
- the quality and flexibility of service you offer your customers
- the ability to accept payments wirelessly
- increased ability to communicate in and out of the workplace
- greater access to modern apps and services
- improved networking capabilities

Mobile devices can link you directly into the office network while working off-site. For example, you could remotely:

- set up a new customer's account
- access existing customer records
- check prices and stock availability
- place an order online

Rapid developments in cloud technologies are boosting the use of mobile devices in business, supporting more flexible working practices and accessing services over the internet. For more information, see **cloud computing**.

Disadvantages of mobile technology

Main disadvantages that come with the use of mobile technology in business include:

- Costs - new technologies and devices are often costly to purchase and require ongoing maintenance and upkeep.
- Workplace distractions - as the range of technologies and devices increases, so does the potential for them to disrupt productivity and workflow in the business.
- Additional training needs - staff may need instructions and training on how to use new technology.
- Increased IT security needs - portable devices are vulnerable to security risks, especially if they contain sensitive or critical business data.

If you are using mobile devices for business, you should take precautions to ensure that the devices, and the data they can access, remain safe. See more on **cyber security for business** and **securing your wireless systems**.

Mobile telephony devices

Mobile phones and smartphones are a familiar feature of business life. The ability to make, receive and divert calls, and receive voicemail is important to business users.

What are the mobile services?

As well as telephony on the go, mobile devices also offer data transmission services through:

- **global system for mobile communications (GSM)**
- **(link is external)**
- - the first global standard for mobile communication that allows mobile devices to exchange digitised and compressed data
- **general packet radio service (GPRS)**
- **(link is external)**
- - an 'always-on' data service similar to broadband, but at slower transfer rates sometimes known as 2G
- **'third generation' (3G) and 'fourth generation' (4G) cellular data services**
- **(link is external)**
- , also offering always-on connection at rates comparable to broadband
- **'fifth generation' (5G)**
- **(link is external)**
- – currently under development, it denotes the next major phase of telecommunications standards

Many mobile handsets are capable of accessing these data services and include functions such as email and web access, and simplified office applications. These handsets are often known as smartphones.

Importance of mobile phones in business communication

- A mobile handset can provide a network connection for other devices, such as tablet computers and laptops using Bluetooth. However, most new laptops and tablets have wireless capability built in making this method virtually redundant.
- Smartphones such as the iPhone, Google Android handsets, Windows phone and BlackBerry phones can combine phone and a pocket-sized computer into a single device. This is a versatile business tool - handling email, offering diary functions, providing data connection for a laptop along with conventional mobile phone use.
- Near-universal availability of cellular networks and the established billing systems between operators, which allow you to use your device outside your service provider's network, make these services very useful for keeping in contact while travelling.

Disadvantages of mobile telephony services in business

- The new data services can be expensive, so it is important to get the right tariff.
- Although improving rapidly, data transmission rates are not as good as wireless local area networks using wireless fidelity (Wi-Fi). See more on **wireless technology**.
- Smartphones can have disadvantages - the keyboard may be small and therefore difficult to use, and their size also makes them easier to lose or damage.

Mobile Technology Question and

Answer:

Question 1. Define Sama?

Answer :

Spread Aloha Multiple Access is a combination of CDMA and TDMA. The CDMA better suits for connection oriented services only and not for connection less bursty data traffic because it requires to program both sender and receiver to access different users with different codes.

Question 2. Define Cdma?

Answer :

Code Division Multiple Access systems use codes with certain characteristics to separate different users. To enable access to the shared medium without interference. The users use the same frequency and time to transmit data. The main problem is to find good codes and to separate this signal from noise. The good code can be found the following 2 characteristic

-
- Orthogonal.
 - AutoCorrelation.
-

Question 3. What Are The Several Versions In Csma?

Answer :

There are several versions in CSMA, they are as follows

- non-persistent CSMA
 - p-persistent CSMA
 - 1-persistent CSMA
-

Question 4. What Is Meant By Non-persistent Csma?

Answer :

In, non-persistent CSMA, stations sense the carrier and start sending immediately if the medium is idle., if the medium is busy, the station pauses a random amount of time before sensing the medium again and repeating this pattern.

Question 5. What Is Meant By P-persistent Csma?

Answer :

In p-persistent CSMA system nodes also sense the medium, but only transmit with a probability of p . With the station deferring to the next slot with the probability $1-p$, i.e. access is slotted in addition.

Question 6. What Is Sdma?

Answer :

Space Division Multiple Access (SDMA) is used for allocating separated spaces to users in wireless networks. The basis for the SDMA algorithm is formed by cells and sectorized antennas which constitute the infrastructure implementing space division multiplexing (SDM)

Question 7. What Is Fdd?**Answer :**

In FDMA, the base station and the mobile station establish a duplex channel. The two directions, mobile station to base station and vice versa are separated using different frequencies. This Scheme is called Frequency Division Duplex (FDD)

Question 8. What Are The 2 Sub Layers In Dlc?**Answer :**

Logical Link Control(LLC)

Media Access Control(MAC)

Question 9. What Is Ey-nmpa?**Answer :**

Elimination yield –Non Pre-emptive Multiple Access (EY-NMPA) is a scheme which uses several phases to sense the medium. Access the medium and for contention resolution... Priority schemes can also be included. This is actually used in HIPERLAN1 specification.

Question 10. What Do You Mean By Polling?**Answer :**

Polling is a strictly centralized scheme with one master and several slave stations. The master can collect the list of stations during the contention phase and can poll these slaves according to many schemes like round robin, random access, reservation scheme etc.

Question 11. What Are The Four Types Of Handover Available In Gsm?

Answer :

- Intra cell Handover
 - Inter cell Intra BSC Handover
 - Inter BSC Intra MSC handover
 - Inter MSC Handover
-

Question 12. What Is Tetra?

Answer :

TETRA (Terrestrial Trunked Radio) systems use different radio carrier frequencies, but they assign a specific carrier frequencies for a short period of time according to demand.

Question 13. What Are The Categories Of Mobile Services?

Answer :

- Bearer services
 - Tele services
 - Supplementary services
-

Question 14. What Are The Services Provided By Supplementary Services?

Answer :

- User identification
 - Call redirection
 - Call forwarding
 - Closed user groups
 - Multiparty Communication
-

Question 15. What Are Types Of Handover?

Answer :

- Intra-cell handover
 - Inter-cell ,intra- BSC handover
 - Inter-BSC, intra-MSC handover
 - Inter MSC handover
-

Question 16. What Is Meant By Gprs?

Answer :

The General Packet Radio Service provides packet mode transfer for applications that exhibit traffic patterns such as frequent transmission of small volumes.

Question 17. What Are Subsystems In Gsm System?

Answer :

- Radio subsystem (RSS)
 - Network & Switching subsystem(NSS)
 - Operation subsystem(OSS)
-

Question 18. What Are The Information In Sim?

Answer :

- card type, serial no, list of subscribed services
 - Personal Identity Number (PIN)
 - Pin Unlocking Key (PUK)
 - An Authentication Key (KI)
-

Question 19. Define Normal Burst?

Answer :

The frame used for normal data transmission within a time slot is called Normal Burst.

Question 20. What Are The Logical Channels In Gsm?

Answer :

- Traffic channel (TCH)
 - Control channel (CCH)
-

Question 21. What Is The Function Of Medium Access Control Layer?

Answer :

The function of Medium Access Control Layer is responsible for establishes, maintains, and releases channels for higher layers by activating and deactivating physical channels.

Question 22. What Is Meant By Geo?

Answer :

GEO means Geostationary or Geosynchronous earth orbit. GEO satellites have a distance of almost 36000 km to the earth.

Examples are almost all TV and radio broadcast satellites, many weather satellites and satellites operating as backbone for the telephone network.

Question 23. What Are The Advantages Of Geo?

Answer :

Three GEO satellites are enough for a complete coverage of almost any spot on earth, senders and receivers can use fixed antennas positions, and no adjusting is needed. Therefore GEO's are ideal for T.V and radio broadcasting.

Question 24. What Is Handover?**Answer :**

The satellite is the base station in satellite communication systems and that it self is moving. So, additional instance of handover are necessary due to the movement of the satellite

- Intra Satellite handover:
 - Inter Satellite handover.
 - Gateway handover.
 - Inter System handover.
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Question 25. What Are The Registers Maintained By The Gateway Of Satellite?**Answer :**

- Home Location Register (HLR).
 - Visitor Location Register (VLR).
 - Satellite User Mapping Register (SUMR).
-

Question 26. Advantages Of Meo?**Answer :**

Using Orbits around 10,000Km, the system only requires a dozen satellites which is more than the GEO system, but much less than a LEO system. Further more these satellites move slower relative to the earth's rotation allowing a simpler system design. Depending on the inclination a MEO can cover larger populations, thus requiring less handovers.

Question 27. Applications Of Satellite?

Answer :

Satellites can be used in the Following Areas

- Weather Forecasting
 - Radio and TV broadcast Satellites
 - Military Satellites
 - Satellites for Navigation
-

Question 28. What Are The Applications In Satellites?

Answer :

- Weather forecasting satellites
 - Radio & TV broadcast satellites
 - Military satellites
 - Satellites for navigation
 - Mobile communication
-

Question 29. What Are The Advantages Of Leo?

Answer :

- Data rate is 2400 bit/s
 - Packet delay is relatively low
 - Smaller footprints of LEO allows frequency reuse
 - Provide high elevations
-

Question 30. Define The Inclination Angle And Perigee?

Answer :

The inclination angle is defined as the angle between the equatorial plane and the plane described by the satellite orbit. An inclination angle of 0 degrees means that the satellite is exactly above the equator. If the satellite does not have a circular orbit, the closest point to the earth is called the perigee.

Question 31. Define The Elevation Angle And Footprint?

Answer :

The elevation angle is defined as the angle between the centre of satellite beam and the plane tangential to the earth's surface. The foot-print can be defined as the area on earth where the signals of the satellite can be received.

Question 32. Define Header Core?

Answer :

Seven bytes field contains the sizes of the header and the body, the content type of the object. Depending on this header information, the receiver may decide if it has enough resources(memory, cpu, power, display etc) available to decode and further process the object.

Question 33. What Is Msc?

Answer :

Main Service Channel(MSC) carries all user data. eg. Audio, multimedia data.

Question 34. What Is Fic?**Answer :**

The Fast Information Channel(FIC) contains Fast Information Block(FIB) with 256bits each(16 bit checksum). An FIC carries all control information which is required for interpreting the configuration and content of the MSC.

Question 35. What Are The Different Types Of Disk?**Answer :**

- A flat disks
 - Skewed disks
 - Multi disks
-

Question 36. What Are The Goals Of Dvb?**Answer :**

The goal of DVB is to introduce digital TV broadcasting using satellite transmission (DVB-5) cable technology (DVB-c) and terrestrial transmission (DVB-7).

Question 37. Name Some Of The Formats Supported By Mot?

Answer :

- Multimedia and Hypermedia information coding experts group(MHEG)
 - Joint photograph's experts group(JPEG)
 - American standard code for information interchange(ASCII)
 - Moving pictures expert group(MPEG)
 - Hypertext markup language(HTML)
 - Hypertext transfer protocol(HTTP)
 - Bitmap(BMP)
 - Graphics interchange format(GIF)
-

Question 38. What Are Different Interleaving And Repetition Schemes Applied By Dab To Objects And Segments?

Answer :

- Object Repetition.
 - Interleaved Objects.
 - Segment repetition.
 - Header repetition.
-

Question 39. What Are The Advantages Of Dab?

Answer :

- DAB can offer sound in CD like quality.
 - DAB can use single frequency network where all senders transmitting the same radio program can operate at the same frequency.
 - DAB use VHF and UHF frequency bands.
 - DAB uses DQPSK modulation scheme.
 - DAB user COFDM and FEC.
 - DAB can transmit up to six stereo audio programmes with a data rate of 192kbit/s each.
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Question 40. What Is Object Repetition?

Answer :

DAB can repeat objects several times. If an object A consists of four segments (A1, A2, A3, A4) a single repetition pattern would be A1A2A3A4A1A2A3A4A1A2A3A4.....

Question 41. What Is Eit?

Answer :

Event Information Table (EIT) contains status information about the current transmission and some additional information for set-top boxes.

Question 42. What Are The Service Information Sent By Dvb?

Answer :

Digital Video Broadcast Containers are basically MPEG-2 frames. DVB sends service information. This information is,

- Network information table(NIT).
 - Service Description Table(SDT).
 - Event Information Table(EIT).
 - Time and Date Table(TDT)
-

Question 43. What Are The Advantages Of Dvb?

Answer :

- Data rates planned for users are 6-38mbit/s for the downlink and 33-100kbit/s for the uplink.
 - Transmitted along with TV programmes and doesn't require additional lines or hardware per customer.
 - Can be used in remote areas and developing countries where there is no high band width wired network.
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Question 44. What Is Meant By Beacon?

Answer :

A beacon contains a timestamp and other management information used for power management and roaming. e.g., identification of the base station subsystem (BSS).

Question 45. What Is Active Scanning?

Answer :

Active scanning comprises sending a probe on each channel and waiting for response. Beacon and Probe response contain the information necessary to join the new BSS.

Question 46. What Is Passive Scanning?

Answer :

Passive Scanning Simply means listening into the medium to find other networks, i.e. receiving the beacon of another network issued by the synchronization function within an access point.

Question 47. What Is The Primary Goal Of IEEE 802.11?

Answer :

The primary goal of the standard was the specification of a simple, robust, WLAN which offers time bounded and asynchronous services also it should be able to operate with multiple physical layers.

Question 48. What Is Meant By SIFS?

Answer :

SIFS means Short Inter Frame Spacing. The shortest waiting time defined for short control message such as acknowledgements or polling response.

Question 49. What Are Advantages Of Wireless Lan?

Answer :

- Flexibility,
 - Planning,
 - Design,
 - Robustness,
 - Quality Service,
 - Cost,
 - Proprietary Solution,
 - Restriction,
 - Safety and Security
-

Question 50. What Are Design Goals Of Wireless Lan?

Answer :

- Global Operation
 - Low Power
 - License-free Operation
 - Robust transmission technology
 - Simplified spontaneous co-operation
 - Easy to use
 - protection of investment
 - Safety and Security
 - Transparency for application
-

Question 51. What Are The Three Low Power States Provided By Bluetooth?

Answer :

- PARK state
 - HOLD state
 - SNIFF state
-

Question 52. What Is Sco?

Answer :

SCO-stands for Synchronous Connection Oriented Link Standard telephone (voice) connection require symmetrical, circuit-switched, point-to-point connections. For this type of link, the master reserves two consecutive slots at fixed intervals.

Question 53. What Are The Three Phases In Ey-npma?

Answer :

- Prioritization: Determine the highest priority of a data packet ready to be sent on competing nodes.
 - Contention: Eliminate all but one of the contenders, if more than one sender has the highest current priority.
 - Transmission: Finally, transmit the packet of the remaining node.
-

Question 54. What Are Advantages And Disadvantages Of Infrared?

Answer :

Advantages:

- Simple and extremely cheap senders and receivers which integrated in almost all mobile devices
 - No licenses are needed for infrared technology and shielding is very simple.
 - Electrical devices do not interfere with infrared transmission.
-

Disadvantages:

- Low bandwidth
 - Quite easily shielded
 - Cannot Penetrate
-

Question 55. What Are The System Integration Functions Of Mac Management?

Answer :

- Synchronization
 - Power management
 - Roaming
 - Management information base (MIB)
-

Question 56. What Do You Meant By Roaming?**Answer :**

Moving between access point is called roaming. Even wireless networks may require more than one access point to cover all rooms. In order to provide uninterrupted service, we require roaming when the user moves from one access point to another.

Question 57. What Is Mobile Routing?**Answer :**

Even if the location of a terminal is known to the system, it still has to route the traffic through the network to the access point currently responsible for the wireless terminal. Each time a user moves to a new access point, the system must reroute traffic. This is known as mobile routing.

Question 58. What Are The Functions Which Support Service And Connection Control?**Answer :**

-
- Access point control function
 - Call control and connection control function
 - Network security agent
 - Service control function
 - Mobility management function
-

Question 59. Describe Localization And Calling In Gsm?

Answer :

Worldwide localization of users and roaming are the main service provided by the GSM network system. The system always knows where a user currently is, and the same phone number is valid worldwide. For providing this service GSM updates the user location periodically. The HLR always contains information about the current location. VLR responsible for the MS informs the HLR about location changes. As soon as an MS moves into the new location area (range of new VLR), the HLR sends all user information needed to the new VLR.

To locate an MS and to address the MS, following numbers are needed:

-
- Mobile station international ISDN number (MSISDN).
 - International mobile subscriber identity (IMSI).
 - Temporary mobile subscriber identity (TMSI).
 - Mobile station7 roaming number (MSRN).
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References Links

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