

9.5.3 Mobile Communications Facts

Some of the key features of mobile devices are shown in the following table:

| Feature | Description |
|---------------------------------|---|
| Accelerometer | An accelerometer is also called a g-sensor. It detects a tablet's physical movements by measuring its linear acceleration in one dimension. The user interface can be automatically rotated to portrait or landscape mode, depending on the unit's orientation. |
| Apps | Applications must be written to run on mobile devices based on the operating system and system architecture. App distribution is provided online by platform: <ul style="list-style-type: none"> Google: Play Store iOS: AppStore MS: Windows Store |
| Architecture | Two computer architectures are used by mobile devices: <ul style="list-style-type: none"> x86: The x86 architecture is compatible with standard x86 PC hardware and software, which allows the device to run operating systems such as Windows. Some newer versions of Android can also run on the x86 architecture. ARM: Some tablets, such as the iPad, use the ARM architecture. ARM is more power-efficient and less expensive to manufacture than x86. Android runs primarily on ARM. |
| Emergency Notification | An emergency notification system is a method of facilitating one-way message broadcasts to one or many groups of people, alerting them to a pending or existing emergency. |
| Geotracking | Geotracking is the ability to identify a person's current physical location by obtaining GPS data from their smart phones or other GPS-enabled devices. |
| Global Positioning System (GPS) | GPS is a space-based navigation system that provides location and time information in all weather conditions anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites. Mobile devices use GPS chips in order to calculate the device's location information. This is helpful for things like navigation applications and device location services. |
| Gyroscope | A gyroscope measures the vertical and horizontal orientation of the device. This essentially creates a user input mechanism. The tablet can detect changes in vertical and horizontal acceleration and respond programmatically. For example, changes in vertical and horizontal acceleration detected by the gyroscope can be used as input for a gaming app. |
| IMEI vs. IMSI | IMEI stands for International Mobile Equipment Identity. It is a unique number given to every single mobile phone. It is typically located behind the battery. IMEI numbers of cellular phones connected to a GSM network are stored in the Equipment Identity Register database containing all valid mobile phone equipment. When a phone is reported stolen or is not type approved, the number is marked invalid. IMSI stands for International Mobile Subscriber Identity. This is a unique identifier that defines a subscriber in the wireless world, including the country and mobile network to which the subscriber belongs. The IMSI is one of the pieces of information stored on a SIM card. |
| Internal Storage | Internal storage is a hardware component located inside the device and used to store data. Some tablets use solid state drives (SSD). Others may use on-board flash memory (such as the iPad). Some also have external USB ports for removable storage. |
| Launcher | Launcher is the name for the part of the GUI that lets users customize the home screen (the phone's desktop), launch mobile apps, make phone calls, and perform other tasks on Android devices. |
| Mobile Payment Service | Mobile payment services operated under financial regulation and are performed using a mobile device. Instead of paying with cash, check, or credit cards, a consumer can use a mobile phone to pay for a wide range of services and digital or hard goods. |
| Networking Capabilities | Mobile devices implement 802.11b/g/n networking to provide networking connectivity. Bluetooth is also commonly implemented for connecting peripherals in place of wired USB connections. |
| Operating System | Three operating systems are commonly used with mobile devices: <ul style="list-style-type: none"> Android (open source) <ul style="list-style-type: none"> The stock version of Android contains a home screen where you can put app shortcuts and widgets. There is a button on the Home screen that will lead you to the App Drawer. Customization possibilities are endless. Android can even be made to look like Windows or iOS. All the high-end Android phones are as responsive as other operating system. If it is a device with specifications from Google, which is the case with the Nexus series and the Android One series, then it is completely lag-free and fairly responsive. Android has the most number of applications in its Google Play Store. |

| | |
|-----------------------|---|
| | <ul style="list-style-type: none"> Many Android manufacturers like Samsung, Sony, HTC, LG, and Motorola. iOS (closed source/vendor specific) <ul style="list-style-type: none"> iOS looks very similar to Android. It has a home screen and a button to enter the App Drawer. iOS is lightweight and provides lag-performance free. Since iOS software and hardware are built by Apple alone, it is well-balanced. iOS devices or iPhones are solely designed and developed by Apple. Windows (closed source/vendor specific) <ul style="list-style-type: none"> Apps on the home screen are tiles. Swiping the tile to the left gives a list of apps installed on the device. Customization options are limited to changing colors and resizing the tiles. Windows Phone is lightweight and provides a lag-free OS. The Windows store has the least number of applications of the three major operating systems. Microsoft Mobiles, formerly Nokia, is the leading Windows Phone provider. |
| PRI Updates | The Primary Rate Interface (PRI) is a telecommunications interface standard used on an Integrated Services Digital Network (ISDN) for carrying multiple DS0 voice and data transmissions between the network and a user. The PRI is a level of service assigned by the ISDN sometimes referred to as an ISDN PRI. The PRI provides businesses with digital access to the PSTN. While ISDN PRI is usually associated with only voice transmission, it is capable of transmitting data, video, and faxes as well. To upgrade PRI, you need to purchase an additional PRI line. |
| PRL Updates | The Preferred Roaming List (PRL) is a database residing in a wireless device that contains information used during the system selection and acquisition process. Without a PRL, the device may not be able to roam. In some cases, having a missing or corrupt PRL can lead to a customer not having service at all. On many networks, regularly updating the PRL is advised if the subscriber uses the device outside the home area frequently, particularly if they do so in multiple different areas. This allows the phone to choose the best roaming carriers, particularly roaming partners with whom the home carrier has a cost-saving roaming agreement, rather than using non-affiliated carriers. PRL files can also be used to identify home networks along with roaming partners, making the PRL an actual list that determines the total coverage of the subscriber, both home and roaming coverage. |
| Radio Firmware | Radio firmware controls basic low-level functions like network connectivity, Wi-Fi, and GPS. For several years, radio meant baseband, and controlled network connectivity aspects only, while Wi-Fi and GPS were governed by OS drivers like any other devices. Baseband updates may improve or diminish battery performance, network signal strength, and roaming capability. |
| SDK/APK | <p>A software development kit (SDK) is a set of software development tools that allow the creation of applications for a certain software package, software framework, hardware platform, computer system, video game console, operating system, or similar development platform. To create applications, you have to download a specific software development kit. For example, the development of an Android app requires an SDK with Java, for iOS apps an iOS SDK with Swift, and for MS Windows the .NET Framework SDK with .NET. There are also SDKs that are installed in apps to provide analytics and data about activity. Prominent examples include Google and Facebook.</p> <p>Android application package (APK) is the package file format the Android OS uses to distribute and install mobile apps and middleware.</p> |
| Smart Camera | A smart camera is a self-contained standalone vision system with a built-in image sensor in the housing of an industrial video camera. It contains all necessary communication interfaces, such as Ethernet, as well as industry-proof 24V I/O lines for connection to a PLC, actuators, relays or pneumatic valves. |
| Touchscreen Interface | A touchscreen is an input device normally layered on the top of an electronic visual display of an information processing system. A user can give input or control the information processing system through simple or multi-touch gestures by touching the screen with a special stylus and/or one or more fingers. The touchscreen enables the user to interact directly with what is displayed rather than using a mouse, touchpad, or any other intermediate device, like a stylus. |
| Virtual Assistant | A virtual assistant is a program that understands your conversation, replies to you, and carries out many daily tasks for you like sending mail, making a search, opening apps, reporting the news and weather, and more. You can initiate these tasks using your voice. Some examples of a virtual assistant include AIVIC, Skyvi, and iris. |
| Wi-Fi Calling | Wi-Fi calling allows your iPhone to place and receive phone calls and text messages over a Wi-Fi network. If you have a weak cellular signal but a solid Wi-Fi signal, your iPhone will automatically switch over and route calls and texts using Wi-Fi. You can only use this if your cellular carrier supports it. |