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## **Notes**

### ✓ **Mobile Ecosystem**

- Mobile is an entirely unique ecosystem and is made up of many different parts that must all work seamlessly together.
- The mobile ecosystem has a system of layers.
- Each layer is reliant on the others to create a seamless, end-to-end experience.

<b>Services</b>
<b>Applications</b>
<b>Application Frameworks</b>
<b>Operating System</b>
<b>Platforms</b>
<b>Devices</b>
<b>Aggregators</b>
<b>Network</b>
<b>Operators</b>

### ✓ **Operators**

- The base layer in the mobile ecosystem is the operator.
- Operators can be referred to as Mobile Network Operators (MNOs); mobile service providers, wireless carriers, or simply carriers; mobile phone operators; or cellular companies.

✓ **Networks**

- Operators operate wireless networks.
- The type of radio and antenna determines the capability of the network and the services that can enable on it.

✓ **Devices**

- The phones, in the mobile industry are called as handsets or terminals.

✓ **Platforms**

- A mobile platform's primary duty is to provide access to the device.
- To run software & services on each of these devices, there is a need of a "platform" or a core programming language in which all of the software is written.
- Software platforms are divided into three categories:
  - **Licensed**
  - **Proprietary**
  - **Open Source**
- **Licensed**
  - Licensed platforms are sold to device makers for nonexclusive distribution on devices.
  - Used to create a common platform of development Application Programming Interfaces(APIs).

**1) Java Micro Edition (Java ME)**

- Formerly known as J2ME.
- Java ME is the most predominant software platform.
- It is a licensed subset of the Java platform which provides a collection of Java APIs for the development of software for resource-constrained devices such as phones.

**2) Binary Runtime Environment for Wireless (BREW)**

- BREW is a licensed platform created by Qualcomm for mobile devices, mostly for the U.S. market.
- It is an interface-independent platform which runs a variety of application frameworks.

**3) Windows Mobile**

- Windows Mobile is a licensable & compact version of the Windows OS.
- It combined with a suite of basic applications for mobile devices that is based on the Microsoft Win32 API.

**4) LiMo**

- LiMo is a Linux-based mobile platform created by the LiMo Foundation.
- LiMo includes SDKs for creating Java, native, or mobile web applications using the WebKit browser framework.

➤ **Proprietary**

- Proprietary platforms are designed and developed by device makers for use on their devices.

**1) Palm**

- Uses three different proprietary platforms - **Palm OS** platform based on the C/C++ programming language, **Windows Mobile-based platform** and **WebOS** based on the WebKit browser framework.

**2) BlackBerry**

- Research in Motion maintains their own proprietary Java-based platform, used exclusively by their BlackBerry devices.

**3) iPhone**

- Apple uses a proprietary version of Mac OS X as a platform for their iPhone and iPod touch line of devices, which is based on Unix.

➤ **Open Source**

- Open source platforms are mobile platforms that are freely available for users to download, alter, and edit.
- Open source mobile platforms are newer and slightly controversial, but they are increasingly gaining attraction with device makers and developers.
- Example :- **Android**.

✓ **Application Frameworks**

- The first layer the developer can access is the application framework or Application Programming Interface (API).
- Application frameworks run on top of operating system.
- These frameworks share core services such as communications, messaging, graphics, location, security, authentication, and many others.

✓ **Some Examples of Application Frameworks:-**

**1) Java**

- Java Applications written in the Java ME framework can be deployed across the majority of Java-based devices

**2) S60**

- The S60 platform, formerly known as Series 60, is the application platform for devices that run the Symbian OS.

**3) BREW**

- Applications written in the BREW application framework can be deployed across the majority of BREW-based devices, with slightly less cross-device adaption than other frameworks.

#### **4) Flash Lite**

- Adobe Flash Lite is an application framework that uses the Flash Lite and ActionScript frameworks to create vector-based applications.

#### **5) Windows Mobile**

- Applications written using the Win32 API can be deployed across the majority of Windows Mobile-based devices.
- Windows Mobile applications can be downloaded and installed over the air or loaded via a cable-connected computer.

#### **6) Cocoa Touch**

- Cocoa Touch is the API used to create native applications for the iPhone and iPod touch.

#### **7) Android SDK**

- It writes applications in C/C++ or use a Java virtual machine which allows developers to create native applications for any device that runs the Android platform.

#### **8) Web Runtimes (WRTs)**

- Web Runtimes are meant to be mini-frameworks, based on web standards, to create mobile widgets.

#### **9) WebKit**

- It is a browser technology, so applications can be created simply by using web technologies such as HTML, CSS, and JavaScript.

#### **10) The Web**

- The Web is the only application framework that works across virtually all devices and all platforms.

#### ✓ **Operating systems**

- Operating systems often have core services or toolkits that enable applications to talk to each other and share data or services.

#### ✓ **Applications**

- Application frameworks are used to create applications, such as a game, a web browser, a camera, or media player.

#### ✓ **Services**

- Services include tasks such as accessing the Internet, sending a text message, or being able to get a location—basically, anything the user is trying to do.