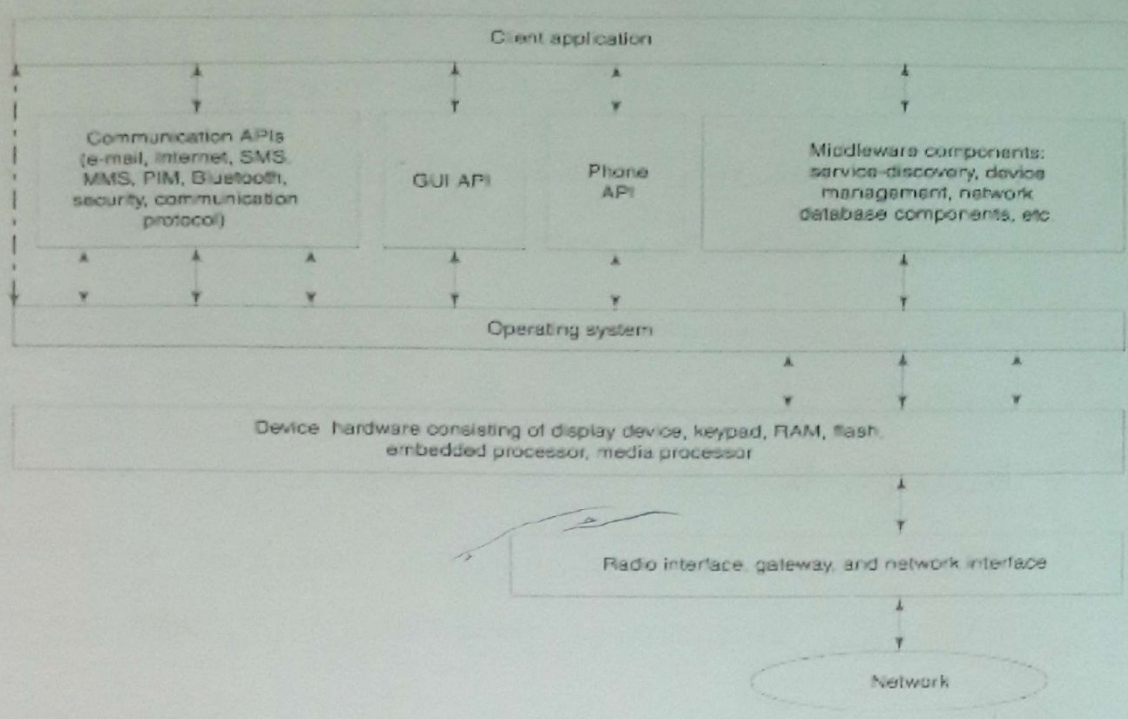


# Mobile Computing Architecture:



The following concepts involved in mobile computing Architecture :

1. Programming languages used for mobile System Software
2. Operating system functions to run the software components on to the software.
3. Middleware components deployment.
4. Layered structure arrangement of mobile computing components
5. Protocols and layers used for transmission and reception

## Programming languages

1. Java - J2SE
2. J2ME (Java 2 micro edition)
3. J2EE (Enterprise edition) used for web and enterprise server based applications of mobile service
4. JavaCard (Java for smart card)
5. C and C++
6. Visual C++
7. Visual basic

## Operating Systems:

1. Symbian OS, Windows CE, MacOS . . . .
- 1 offers the user to run an application without considering the hardware specifications and functionalities
- 2 Provides functions which are used for ~~scheduling~~<sup>ch</sup> scheduling the multiple tasks in a system
- 3 Provides the functions required for the synchronization of multiple tasks in the system
- 4 Multiple threads synchronization and priority allocation.
- 5 Management functions (such as creation, activation, deletion, suspension and delay) for tasks and memory.
- 6 Provides Interfaces for communication between software components of the application layer, middleware layers and hardware devices
- 7 Facilities execution of software components on diversified hardware
- 8 Provides configurable libraries for the GUI (Graphic user Interface) in the device
- 9 Provides user application GUI'S, VUI (Voice user Interface) components and phone API.
- 10 Provides the device drivers for the Keyboard, display, USB and other devices.



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## Middleware for mobile systems:

- 1 Software components that link the application components with the network - distributed components
- 2 To discover the nearby device such as bluetooth
- 3 To discover the nearby hotspot
- 4 For achieving device synchronization with the server or an enterprise server
- 5 For retrieving data (which may be Oracle or DB2) from a network database
- 6 For service discovery at network
- 7 For adaption of the application to the platform and service availability.

## Mobile Computing services Protocols:

- Such as GSM 900, GSM 900/1800/1900, UMTS, and I-Mode
- WPAN protocols - Bluetooth, IrDA, and Zigbee
- WLAN protocols - 802.11a, 802.11b
- WAP

## Mobile computing system layers

1. Physical for sending and receiving signals (TDMA & CDMA coding)
2. Data link (for ex. multiplexing)
3. Networking (for linking to the destination)
4. Wireless transport layer security (for establishing end to end connectivity)
5. Wireless transaction protocol
6. Wireless session protocol
7. Wireless application environment (for running a web application, for example, mobile-e-business)