



# Android Platform - Workshop

## Introduction

Android is an open source and free mobile platform built on Linux kernel and backed by the strong consumer brand of Google. Google announced the formation of the Open Handset Alliance (OHA) in Nov 2007 to further the development of Android. OHA includes 45 diverse companies (mobile operators, handset manufacturers, semiconductor companies, commercialization companies, and software companies). Android was “open sourced” as a project in Oct 2008.

Android is proliferating rapidly due to open, fast and easy development of applications. Developers write managed code in Java language using Android Java libraries. Android is not limited to mobile applications. Android can be used in consumer electronic devices, net books, automotive units, among other devices.

Phones from Google, Motorola, AT&T, Sprint-Nextel, and Verizon-Wireless run on the Android platform. Broadcom have ported Android to their advanced navigation processor. MIPS Technologies have ported Android to their 32-bit version of the MIPS architecture. This architecture is used in set-top boxes, digital TV sets, home media players, Internet telephony systems and mobile internet devices (MIDs). Intel has demonstrated an Atom-based Net book running Google's Android operating system at Computex. CES 2010 showcased set top boxes and automotive units which use Android.

## Purpose of the Workshop

With Android poised for wide spread adoption, it is important to develop skills in the Android space to address the ever demanding needs of the mobile, consumer electronics, automotive and other industries in the year 2010 and beyond.

FAER in association with Integra and Motorola have planned a comprehensive workshop on the Android platform. This is an initiative to enable the potential student and teaching community to learn and enhance their skills on this platform. Pre-requisites would include basic computing knowledge and core Java development skills.

Participants of this workshop will be able to install, operate and further take up design and development activities on the Android platform independently, in their respective environments and colleges. FAER will award a certificate to all participants.

Further on completion of the workshop, Integra shall setup a technical helpdesk to facilitate remote support, promote a forum for technical discussions, queries etc. to the students and faculty of the participating colleges for a period of three to six months.

Apart from the above, the workshop is expected to provide a strong launch base for participants to build expertise and compete in challenging and rewarding programs like the Google Android Developer Contest.



## Android Workshop Details

FAER in association with Integra and Motorola will conduct workshops in Engineering Colleges all over Karnataka and South India. The initial plan envisages conducting at least four workshops and covering overall about twenty colleges. Each session will cater to at least five colleges wherein each college can nominate a mix of potential students and faculty for participation in the workshop. The session will be conducted on-site at any of college premises which should provide adequate training room facilities besides at least 10 workstations with high end desktop computers. Each session will span three days and will comprise of both theory and lab sessions.

## Workshop Course Content

### • Introduction

- Introduction to Mobile Platforms
- Introduction to Android Platform
- Introduction to Android Application Project Structure and Compiling a Sample Application

### • Development Environment

- Eclipse IDE
- Android Emulator: Design, Debug and Test applications
- Dalvik Debug Monitor Service (DDMS):
- Android Debug Bridge (ADB): install your application's .apk files on an emulator or device
- Android Development Tools (ADT) Plug-in: Extension to Eclipse to debug applications.
- Android Virtual Devices (AVD): Create virtual device configuration to model device characteristics in the Android emulator
- DX: Generate Android byte code from .class files

### • User Interface- Create a user interface with the following components:

- Activity
- Layout
- Widget
- Menu
- Dialog
- Notification
- Intent

### • Working with Services

- What is a service?
- Creating a service
- Registering a Service with Android application
- Invoking a Service
- Exploring Service lifecycle methods
- Define and use a Service Interface

### • Content Providers

- What is a Content Provider?
- Creating and registering a Content Provider
- Accessing data from Content Providers using content resolvers

### • Broadcast Receivers

- What are Broadcast Receivers?
- Creating and registering Broadcast Receivers
- Invoking Broadcast Receiver
- Exploring Broadcast Receiver lifecycle methods

### • SQLite Database

- Creating SQLite Database
- Using database in Android application

### • Future of Android

### • Demo / Walk through of Sample programs



### **About FAER**

Foundation for Advancement of Education and Research (FAER) ([www.f aer.ac.in](http://www.f aer.ac.in)) is a non-governmental, non-profit initiative open to all. Several educational institutions and industries can and have become associate partners of the foundation. The foundation aims to conduct: faculty development programs, facilitate in the running of long term degree / diploma programs in new areas and take up, in general, several activities related to quality education at all levels.



### **About Integra Micro Software Services (P) Ltd**

Integra is a twenty nine year old company with core skills in systems software development. With a proven track record of product development and project execution using tried and tested ISO certified processes, Integra can reduce time and cost to market for its customers products by utilizing its rich experience in bringing quality products to users.

Integra has been involved in the design, development and testing of several systems related products and projects over the last several years. Projects typically of the R&D nature are Integra's strength. Expertise has been built up with the experience of several projects in the areas of imaging, networking, Windows and mobile application development, web based applications, firmware and device interface software development, real time systems, industrial automation with PLCs and telecommunication.

Integra has often invested in R&D in the course of project execution or product development. This is necessitated by the fact that the technologies involved in many projects are often at the cutting edge, with little or no precedent to follow.

Integra is also actively involved in application development on all the popular mobile platforms. With this confidence comes the strength to be able to offer expertise on the Android platform in the following areas:

- Customizing the mobile platform
- Android operating system
- Android middleware
- Mobile application development
- Android