



Bringing Android Apps to Tizen

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SVP & GM, Embedded and Core Technologies
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TIZEN[™]
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Session Abstract

- **Enable your Android apps on the Tizen platform with OpenMobile Application Compatibility Layer (ACL™). With our ACL technology, your Android apps can run seamlessly alongside native Tizen and web apps on any Tizen platform.**
- **Getting started is easy, as ACL allows Android apps to execute on the millions of Tizen devices. Tizen is growing and now is the time to embrace the open nature of the platform. You want to be a part of this ecosystem – leverage your investment in Android apps to get them running on a new wave of mobile devices – Don't miss out!**
- **This discussion will be presented by Kevin Menice, OpenMobile's SVP and GM of Embedded and Core Technologies. Kevin will explain how ACL works and what is required to take advantage of this opportunity to enable your Android apps on the Tizen platform. Be sure to attend!**

Today's Speaker – Kevin Menice




- **Kevin Menice is OpenMobile's Senior Vice President and General Manager of Embedded and Core Technologies. He is responsible for direction and strategy of the company's engineering team.**
- **Kevin has over twenty-eight years of senior engineering management experience leading the development of speech recognition platforms, mobile computing, and web-based applications for the consumer and enterprise markets. Kevin has led development, deployment, strategy and explosive growth in many notable technology companies during his professional career.**

How About You? Audience Introduction

Which of the following best describes your interest and/or role in today's presentation?

- (A) I'm an App Developer, and I'm considering porting my App(s) to Tizen.**
- (B) I'm an App Developer, and I've already started porting my App(s) to Tizen.**
- (C) I'm involved directly in the development of the Tizen platform.**
- (D) I'm an App Aggregator/Distributor.**
- (E) I work for a mobile device manufacturer.**
- (F) I work for a company that enables Android or other Apps for Tizen.**



OpenMobile

It's an **apps** world!™

OpenMobile World Wide, Inc.

- **Greater Boston Area start up**
 - Established Dec. 2010
- **Founded by Robert Angelo of Phoenix and SystemSoft**
 - BIOS, PC Card, System Wizard, POWER.EXE
- **OpenMobile is the compatibility company: on a mission to break the “app barrier” by enabling the Android app ecosystem to run seamlessly on non-Android operating systems**
 - **Application Compatibility Layer (ACL)™**: Software technology that enables Android Apps to run on non-Android platforms
 - **AppMall™**: A robust content ecosystem available from a single destination - hundreds of thousands of apps for millions of platforms



A Glimpse at the Exciting Opportunity at Hand

- **New distribution opportunities await for Android app developers**
 - These are distribution channels through which your native Android app can run on non-native platforms with no changes to the app!
 - This is the way to make your app available on the millions of Tizen devices
 - Take advantage of the work you have already done!
- **OpenMobile ACL technology sets the stage for a mutually beneficial opportunity**
 - App Developers and distributors can capture value by extending their apps' user reach on non-Android platforms without developing specifically for the target platform
- **The best part...**
 - No cost to the developer!
 - No developer effort required!
 - More revenue from millions of users on non-Android platforms!

Problem: The “App Barrier”

- The mobile consumer device market is growing exponentially year after year with new platforms rising from mobile OEMs across the globe.
- Consumers expect apps on every mobile device they use and recent failures of devices from well-known companies prove the fact the “app barrier” is real.
- The "app barrier" burdens new platforms coming to the market - they simply do not have the apps that consumers demand and developers are not drawn to develop natively before there is great enough traction.

Solution: OpenMobile’s Technology

- OpenMobile ACL is powerful software that enables Android apps to run on non-Android platforms.
- OEMs can destroy the “app barrier” without having built an app ecosystem when launching a new device. OpenMobile will supply a robust app ecosystem from day one for these platforms.
- We source apps for our AppMall, robust app ecosystem. Our app catalog, constantly growing in size, presents app developers with new distribution opportunities never before possible on these platforms.



- **OpenMobile
ACL &
AppMall**



Application Compatibility Layer (ACL) enables hundreds of thousands of Android apps to run on non-Android platforms.

Smartphones, Tablets, Smart TVs, Set Top Boxes (STB), In-Vehicle Infotainment (IVI), In-Flight Infotainment

Tizen, webOS, Windows, Linux, Ubuntu, Firefox, etc.

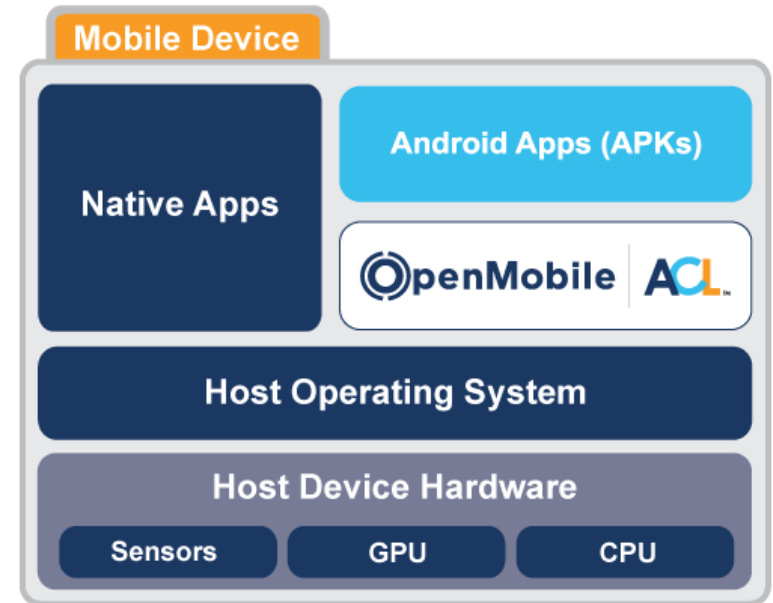
Hundreds of thousands of apps delivered to millions of platforms

The world's largest independent app superstore. A content catalog that provides a robust app ecosystem and new distribution channels.

- **200,000+ Apps to Date**
 - Stand alone product
 - White labeled option
- Direct distribution to enhance your existing store

OpenMobile's Technology

- OpenMobile's ACL uses Android open source project (AOSP) as its base
- ACL utilizes the Dalvik VM and all of the other application management software from AOSP
- Our development team opens up the new target operating system (Tizen, webOS, Windows, Firefox, Ubuntu, etc.) and tightly integrates the AOSP bits/bytes into the target platform
 - High speed graphics
 - Supports multiple Media types
 - Inter-process Communications
 - Notifications
- Ensures complete compatibility
- No virtualization or emulation



OpenMobile ACL Architecture

Tight Integration with the Host Operating System

Integrated Desktop

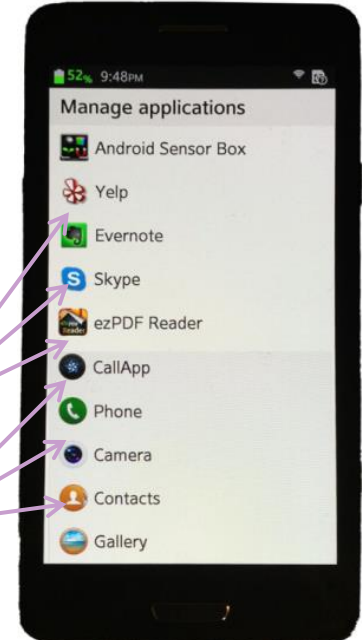


ACL-enabled
Android App

Native Tizen App

- Native platform apps sit as peers side by side with ACL-enabled Android apps
- Integrated desktop proves no virtualization, ensuring seamless user experience
- No difference in appearance of native apps and ACL-enabled Android apps

Task Manager



ACL-enabled
Android Apps

Native Tizen Apps

- Manage all ACL-enabled Android apps with host operating system's task manager
- Control both native and Android apps with same place and process in native OS
- Users are completely immersed in host OS user experience

Tight Integration with the Host Operating System

Android Sensor App



- ACL-enabled devices support all types of sensors required for seamless performance
- Android Sensor Box app serves as proof of which sensors are supported

App Uninstall



- Uninstall ACL-enabled Android apps through the same process and from the same place as user would for native apps
- Users have control over all apps (native and Android) without ever leaving the native platform's user experience

ACL™ for Tizen Basic Operation – App Execution

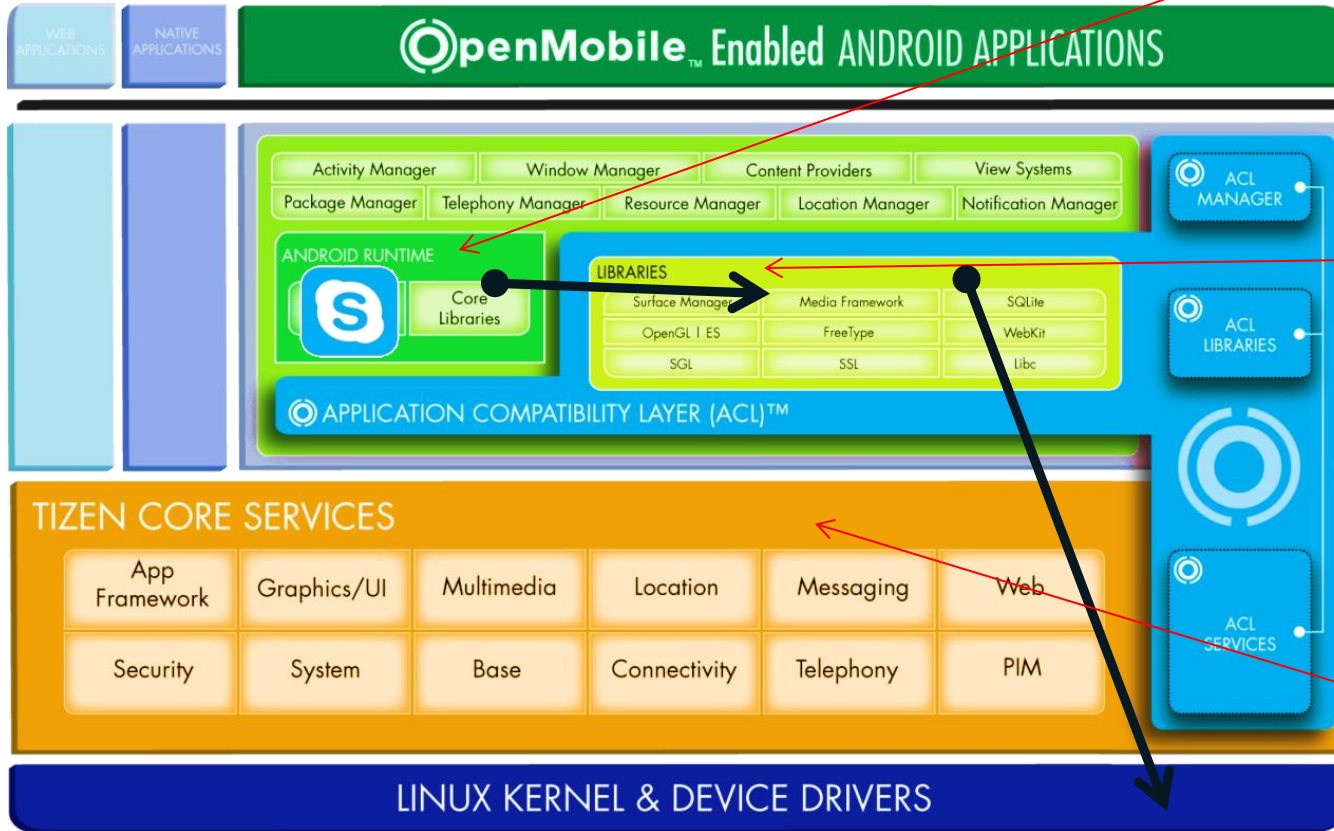
- **The Android runtime (Core libraries, Dalvik Virtual Machine), Android application frameworks, and Android libraries are linked to the native Core Services**
- **When an OpenMobile-enabled Android app is launched by a user icon touch, the app executes within the Dalvik virtual machine just as if it were running on an Android platform**
- **The Android app is linked directly to Android libraries, native libraries, or ACL-supplied libraries depending on functional, performance, or hardware requirements**
 - For example, in order to optimize performance, accelerated 3D graphic support interfaces directly with the graphics accelerator driver
- **App calls to Android libraries are mapped to the linked libraries and execution occurs properly and transparently**

ACL™ for Tizen Architecture Model – Skype Example



Skype App Audio/Video interfaces directly with the audio/video device drivers for optimum performance.

Skype app executes within the Dalvik VM.



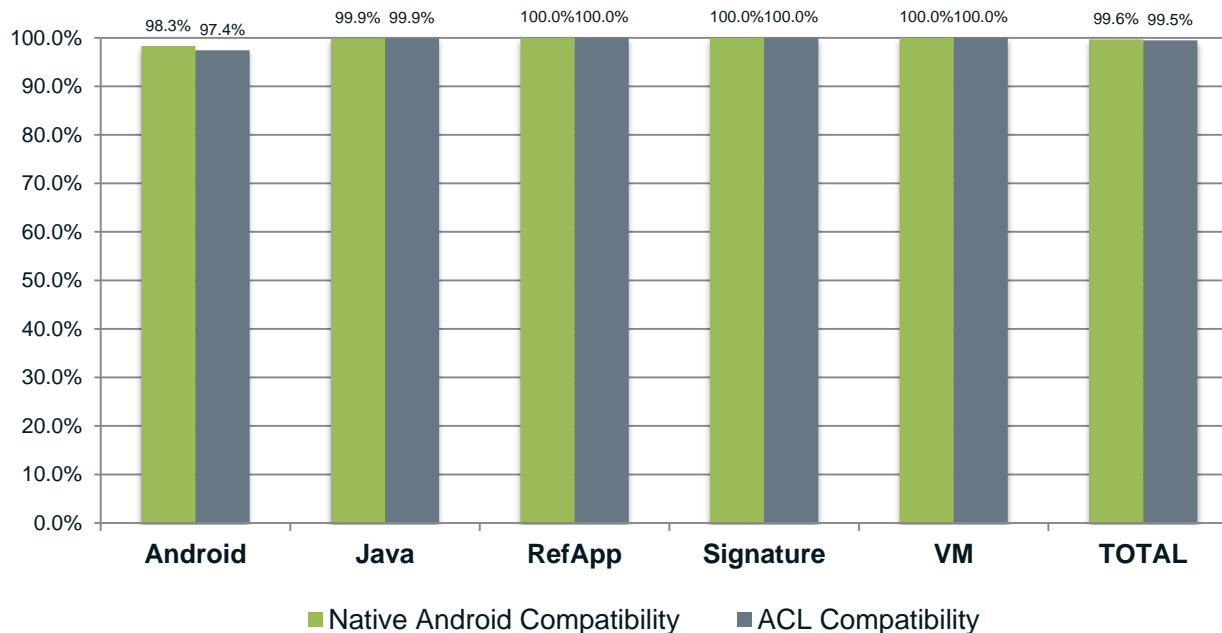
Skype app make audio/video calls through the Android Runtime core libraries to get access to the Android Media Framework, Gstreamer.

GStreamer then makes calls directly to the audio and video device drivers.

ACL vs. Android CTS Tests

- **One glance at the test results: ACL is on Top! We understand compatibility.**
 - Our founders built the IBM-compatible PC industry at Phoenix Technologies and SystemSoft
 - We are continuing to innovate and convey compatibility expertise to the mobile industry

CTS Compatibility Results

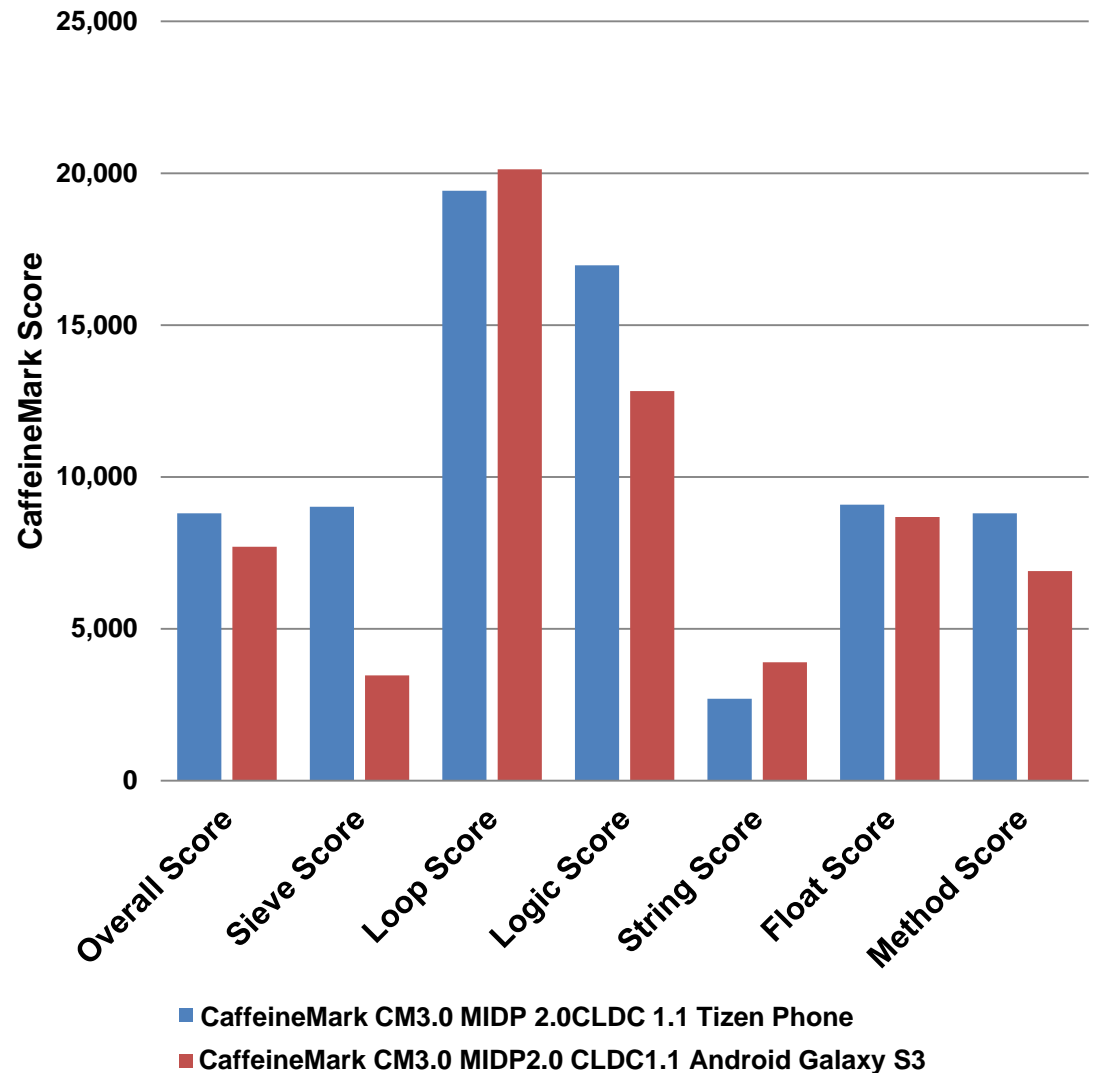



- **Android Compatibility Test Suite (CTS) tests were run to analyze ACL's performance on a non-Android device**
- **The ACL-powered device performed equal to the native Android devices, with the small exception of unsupported hardware – less than 1% difference from the native Android platform's compatibility with Android**

Benchmarks

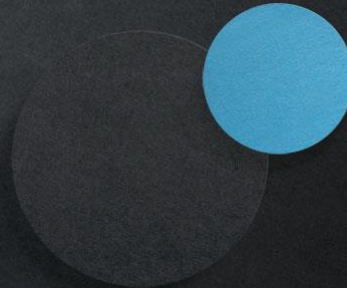
- The OpenMobile team compared benchmark results of Tizen+ACL device to the Samsung Galaxy SIII
- The results were equal to or better than the Android SIII, Samsung's top selling flagship device from 2012!

Performance Benchmark Tests





OpenMobile- Enabled App Ecosystem for Tizen

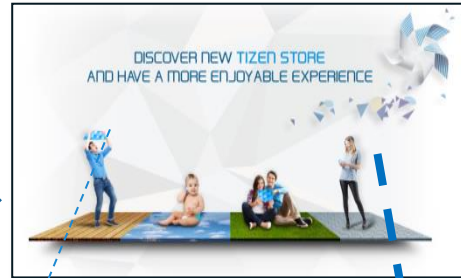


Seamless User Experience

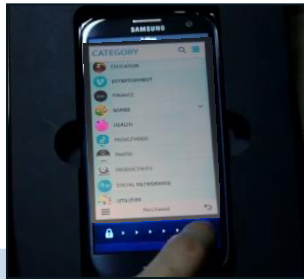


1. ACL submitted to Tizen Store

2. OpenMobile-enabled apps submitted to Tizen Store

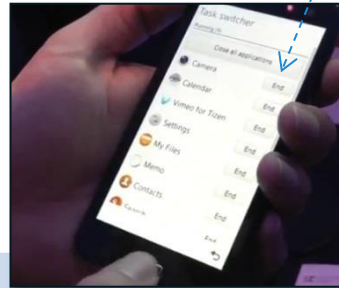


If this is first OpenMobile-enabled app, ACL is downloaded, installed and started here



1

User Visits Tizen Store



2

User Selects and Installs OpenMobile-Enabled App



3

User Launches Newly Installed App



4

User Enjoys Newly Installed App !

OpenMobile-Enabled App Ecosystem for Tizen Details

- **OpenMobile-enabled apps are acquired from app partners**
 - Sourced under contract with app developers and distributors
 - That's you - our content partners! Sign up is easy and free!
 - OpenMobile App Developer Portal: www.bit.ly/appmalldevportal
- **App developer is author/publisher of apps in the Tizen Store**
 - Developer contact information listed for support
 - Developer contact information listed for feedback
- **OpenMobile is seller of record**
 - OpenMobile signs the TPK
 - OpenMobile manages the Tizen Store Seller Office relationship

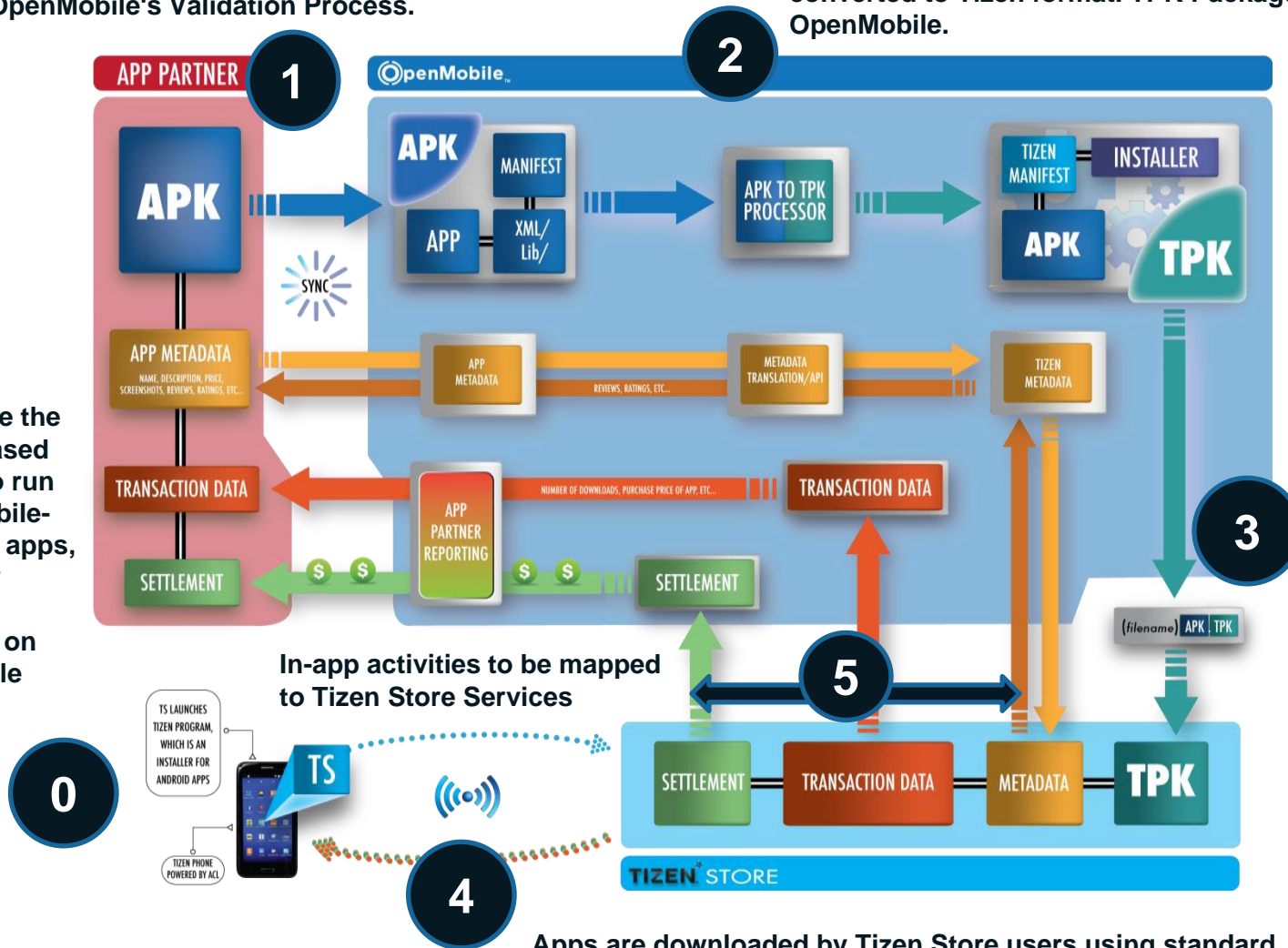
OpenMobile-Enabled App Ecosystem for Tizen Store

OpenMobile acquired apps undergo initial curation, and enter OpenMobile's Validation Process.

Validated & curated apps and associated metadata are converted to Tizen format. TPK Package signed by OpenMobile.

To enable the Tizen-based device to run OpenMobile-supplied apps, "ACL for Tizen" is installed on the mobile device.

Converted apps along with their updated metadata are staged in TPK format, registered and submitted to the Tizen Store for final validation and posting.



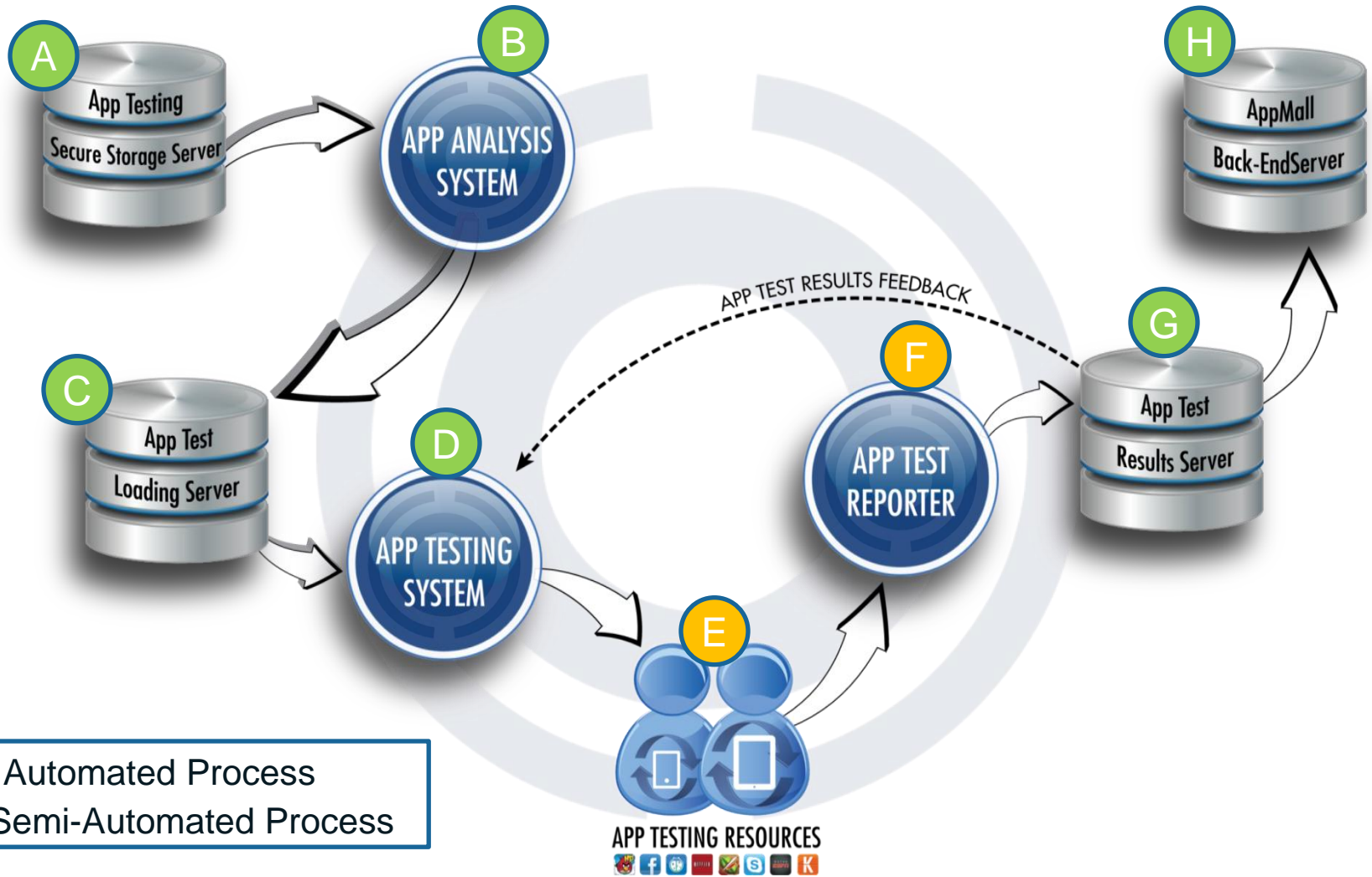
Apps are downloaded by Tizen Store users using standard Tizen app download/install lifecycle processes.

OpenMobile App Validation Process

- **OpenMobile has created an App Validation Process to ensure that apps will pass store validation and will run on the target device(s) providing users with the desired user experience.**
- **Includes the OpenMobile QA team testing your app on Tizen platforms, just as the end user would experience it.**
- **Ensuring the best user experience.**



OpenMobile App Validation Process





● **What's in it
for you?**

More, more... more and more!



Why Include Your App in the OpenMobile Catalog?

Increased Downloads, Ad Impressions, Revenue!

Instantly test a new platform and set downloads benchmark before making your native app development decision

- **ACL Technical Advantages**
 - Expanded sensor support
 - Tizen theming
 - Seamless install/invoke process with/from the Tizen Store
- **App Validation process**
 - OpenMobile's QA team is dedicated to testing your app on Tizen platforms, ensuring the real consumer experience.
 - Ensures that user experience is recreated
- **Developer-Friendly Business Model**
 - Lets you get started with no cost
 - OpenMobile uses the industry-standard revenue model split

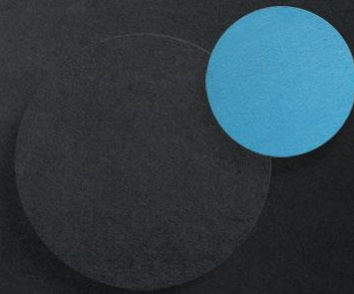
Sign up as an OpenMobile Content Partner!

Go to www.bit.ly/appmalldevportal to sign up!

- **Let OpenMobile convert your APK to a TPK**
 - We'll convert and validate your app
 - We'll handle all the administration with the Tizen Store Seller Office
 - We'll provide you with detailed reports and revenues
- **Submit your Android app to the OpenMobile AppMall app catalog**
 - Easy process! No fee!
 - No changes to your Android apps!



**Have a
question?
Ask away!**



THANK YOU!

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