Bringing Android Apps to Tizen

Mike Paquette
OpenMobile World Wide
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DEVELOPER
CONFERENCE
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SAN FRANCISCO

Session Abstract

- Enable your Android Apps on the Tizen platform with OpenMobile's 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 unmodified Android Apps to execute on the millions of Tizen devices expected to ship in 2013. Don't miss out – enable your Android Apps for the Tizen ecosystem now! 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!

- We 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 this discussion to learn how to broaden your App's reach by enabling your Apps on Tizen devices in 2013.

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Today's Speaker – Mike Paquette

- Mike Paquette is OpenMobi[...] [...]nagement & Technical Operations. He joined Open[...] [...]ponsible for Product Management, Customer Se[...] [...]Infrastructure.

- Before joining OpenMobile, [...] [...]at eIQnetworks, a developer of IT Security and Compliance so[...] [...]ke held a series of executive roles at Top Layer Security, (acqu[...] [...]in 2011) including Engineering, Product Management, Mark[...] [...]mpany Strategy.

- Mike has a technical backg[...] [...]re, hardware, and ASIC engineer. He has a BSEE from Bosto[...] [...]raduate work on computer networks at Worcester Poly[...] [...]of a patent on DDoS Defense.

- Mike has been quoted as a [...] [...]ness Daily, USA Today, Wall Street Journal, Time Magazine, an[...] [...]has published articles in Health Management Technology M[...] [...]industry publications.

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OpenMobile Company Introduction

OpenMobile World Wide

- **Boston-based Start Up**
- **Established 2010**
- **Founded by Exec from Phoenix BIOS and SystemSoft**
- **Two Product Lines**
  - AppMall™ App/Content Store
  - Application Compatibility Layer (ACL™) middleware that enables Android Apps to run on non-Android platforms

Audience Introductions

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.

G) Presentation?? I thought this was Foley's Irish Pub!!

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OpenMobile Mission: Breaking The App Barrier

- **In the cutthroat marketplace for mobile devices, it's virtually impossible to attract millions of customers without a vibrant apps ecosystem with hundreds of thousands of apps.**

- **Global mobile OEMs are aware of the App Barrier, and understand they need a robust App ecosystem when launching their new devices.**

Breaking the App Barrier with ACL™

Today's App Ecosystems

ACL™ Introduction

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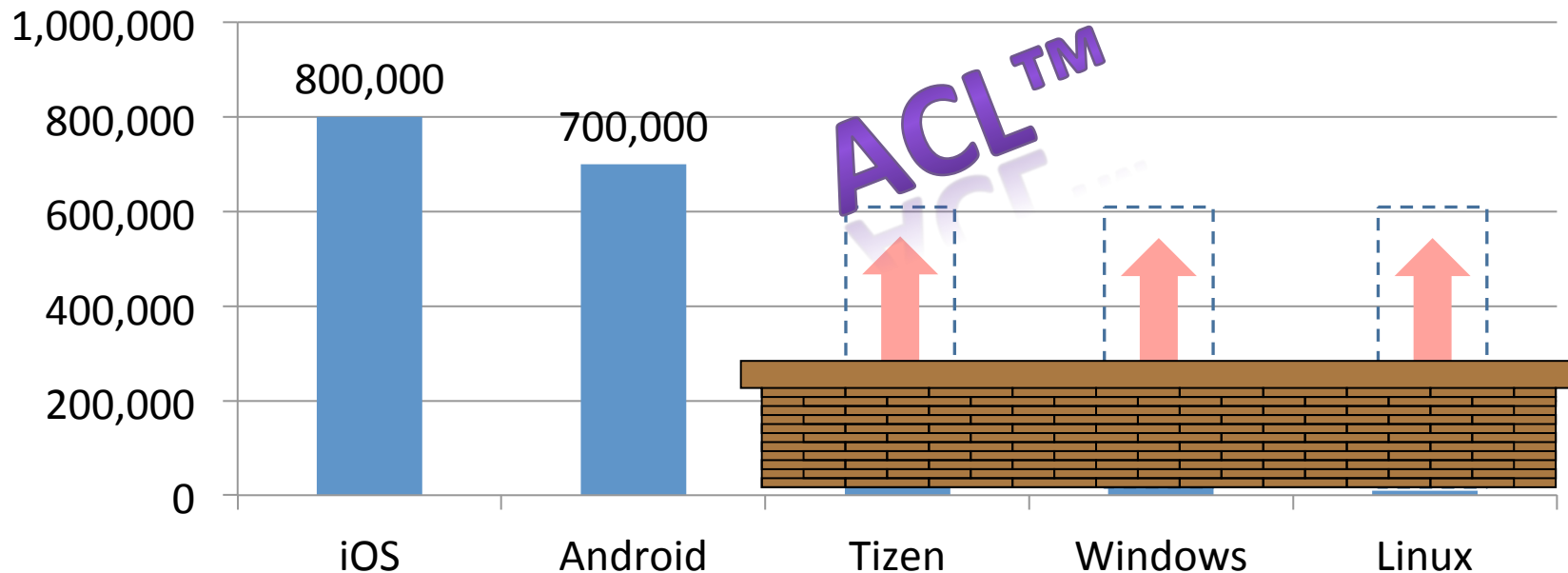
Application Compatibility Layer (ACL) ™

- **Software Technology from OpenMobile**
  - Enables Android Apps to run on non-Android platforms
- **Enables OEM's and Device Manufacturers to Break the App Barrier Immediately**
  - Provides access to over 700,000 Android Apps
  - Runs on multiple O/S and device platforms
- **Enables App Developers to Leverage their Android App Investment**
  - Gain a foothold in new App ecosystems while they develop native apps

Application Compatibility Layer
How it Works

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 automatically 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 !

ACL™ *for Tizen* Basic Operation - App Execution

- **Android runtime (Core libraries, Dalvik Virtual Machine), Android Application frameworks, and Android libraries are linked to the native Tizen Framework**
- **OpenMobile-Enabled Android App executes within the Dalvik virtual machine just as if it were running on an Android platform**
- **The Android App is linked directly to its required Android libraries and required Tizen native libraries**
- **App execution occurs properly and transparently**

ACL™ for Tizen Technical Details

Characteristic	ACL™ for Tizen
Installation Source	Downloaded from Tizen Store as TPK
Upgrade Type/ Source	Tizen App Upgrade / Tizen Store
ACL™ TPK Package Size	Approximately 45 MB
Installation Time after Download	~10 sec
ACL Launched at	Device Startup and/or launch of ACL-Enabled App
Device Memory (RAM) Footprint	Approximately <64MB (cache dumped)
Device Storage Footprint (Zero Apps Loaded)	<100MB
Process Types on Device	Tizen Native App Services, Automatic and daemon
Supported Devices	Samsung RD-210, RD-PQ, various IVI , tablet platforms
Tizen Revision Supported	Tizen v2.0 (V2.1 in progress)
Android Version	Gingerbread (Jelly Bean 4.X planned)
Tizen Privileges Required	Varies based on Android App Permissions/Features
Licensing and user Acceptance	*ACL™ for Tizen* custom EULA

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ACL™ for Tizen Technical Details, Continued

Hardware & Software Features	Supported By ACL™ for Tizen
Sensors (Accel, Tilt, Gyro, Ambient Light, Proximity)	Yes
Sensors (NFC, Barometer)	No
Power Management	Yes
Internal & External SD Card Sharing	Yes
Gstreamer/Multimedia (Samsung–provided Codecs)	Yes
OpenGL/OpenGL ES Accelerated 3D Graphics	Yes
Light (Visible Indicator), Vibrator	TBD, Yes
ARM and X86 Architectures	Yes
Bluetooth	No
Camera, Wi-Fi	Yes
Telephony/SMS	Pending hardware verification
Device Settings	Yes
Background Services	Yes
Access/Integration with Tizen email, contacts, widgets, wallpaper, etc.	No

APK to TPK Manifest Mapping Example:
Android Permission-> Tizen Privilege*

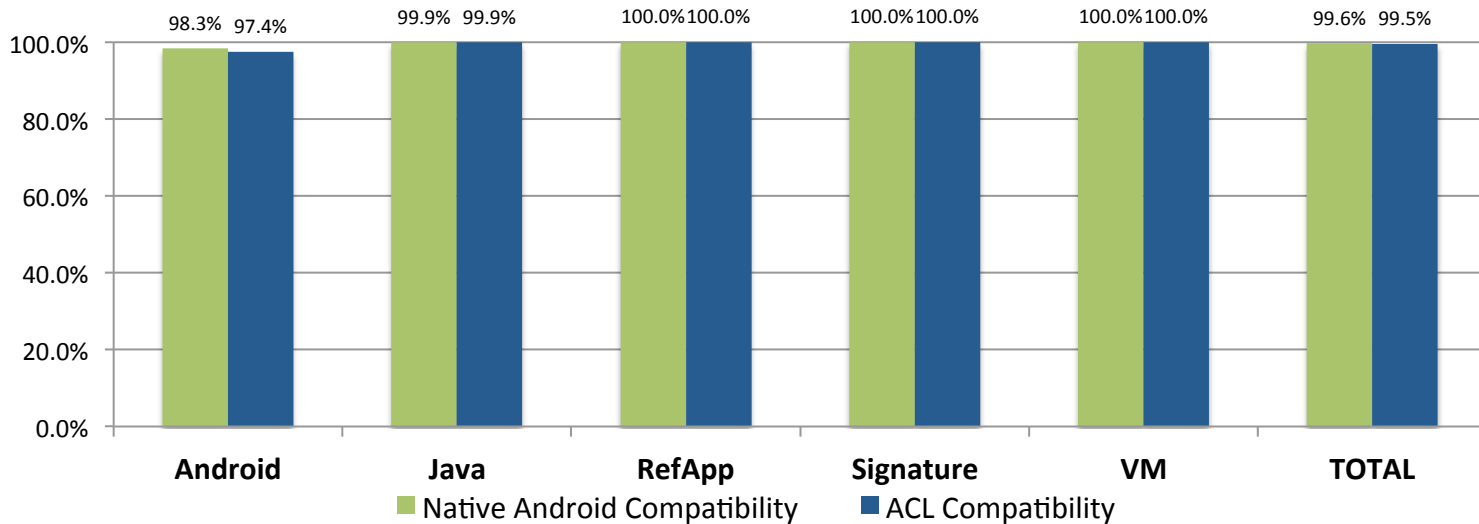| ANDROID	TIZEN
AndroidManifest.xml	**Manifest.xml**
android.permission	**http://tizen.org/privilege/**
LAUNCHER	application.launch
RECORD_AUDIO	audiorecorder
CAMERA	camera
READ_CONTACTS	contact.read
WRITE_CONTACTS	contact.write
WRITE_EXTERNAL_STORAGE	content.write
INTERNET	dns
	http
DOWNLOAD_WITHOUT_NOTIFICATION	download
ACCESS_FINE_LOCATION	location
ACCESS_COARSE_LOCATION	
ACCESS_NETWORK_STATE	network.statistics.read
SYSTEM_ALERT_WINDOW	notification
BATTERY_STATS	power
READ_SYNC_SETTINGS	setting
WRITE_SYNC_SETTINGS	
INTERNET	socket
READ_PHONE_STATE	systeminfo
VIBRATE	vibrator
INTERNET	web.service
ACCESS_WIFI_STATE	wifi.read

* Note: Tizen V2.0 example shown – updates in progress for V2.1

ACL vs. Android CTS Tests

◎ Android CTS tests run to analyze ACL's performance on a non-Android device

◎ 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

CTS Compatibility Results

	Android	Java	RefApp	Signature	VM	TOTAL
Native Android Compatibility	98.3%	99.9%	100.0%	100.0%	100.0%	99.6%
ACL Compatibility	97.4%	99.9%	100.0%	100.0%	100.0%	99.5%

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OpenMobile-Enabled App Ecosystem

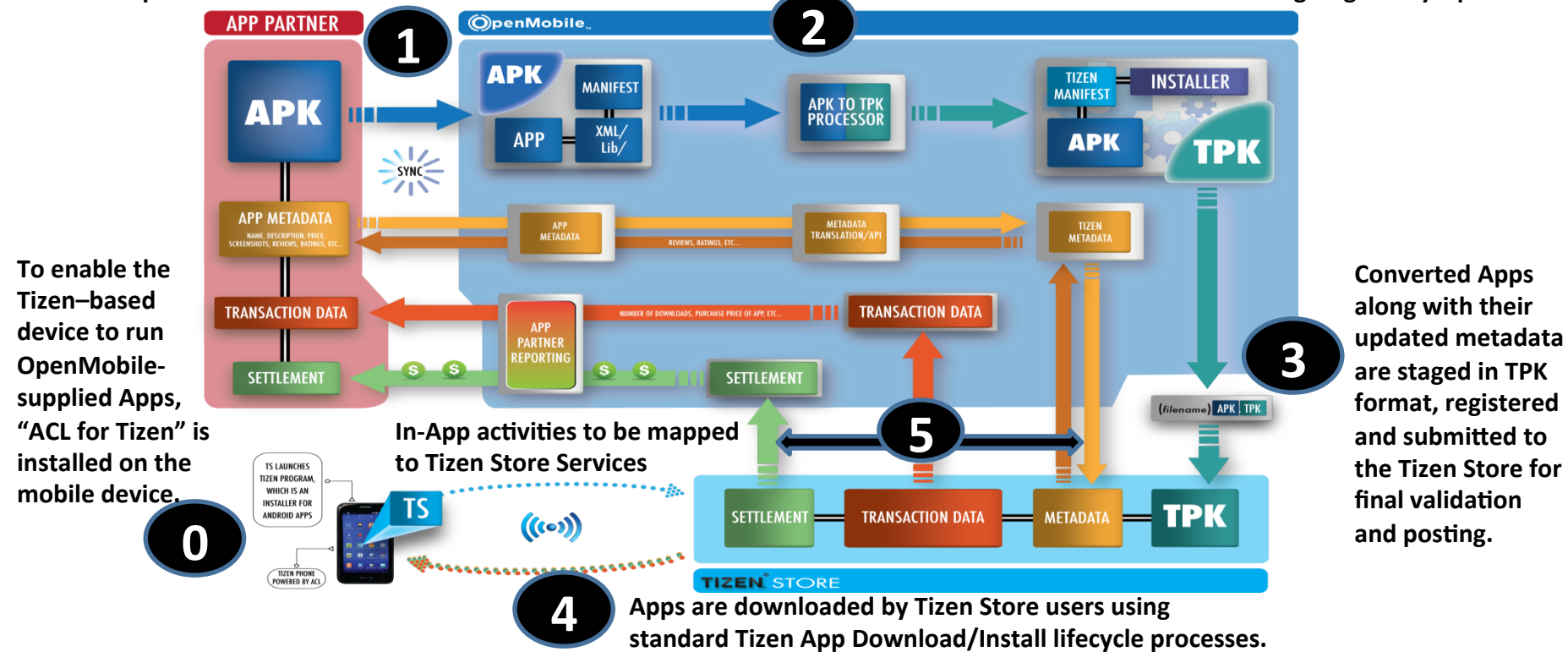# OpenMobile-Enabled App Ecosystem Architecture Overview
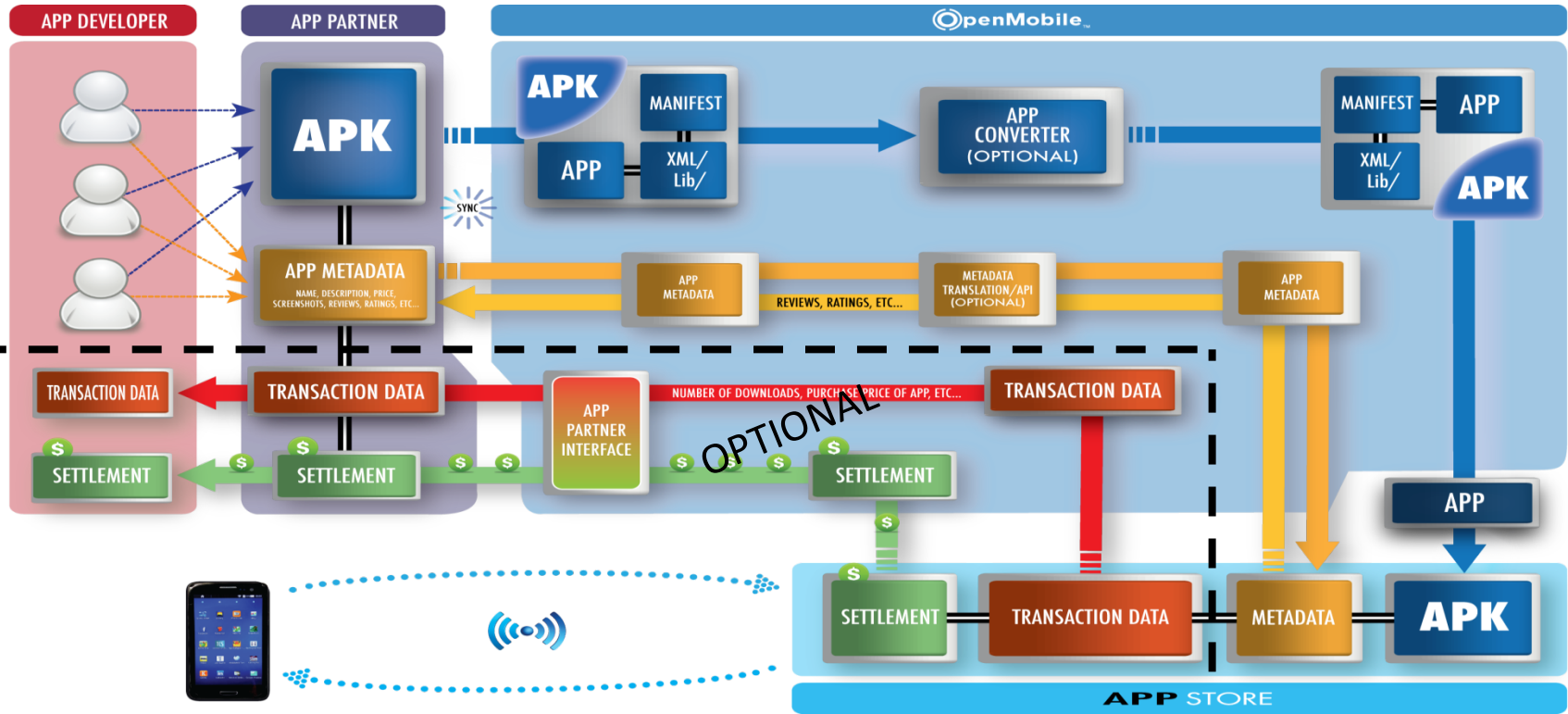
OpenMobile-Enabled App Ecosystem for Tizen Details

- **OpenMobile-Enabled Apps are acquired from App Partners**
  - Sourced under contract with App Developers
- **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

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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.

In-App activities to be mapped to Tizen Store Services

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.**
  - Installs & Launches properly
  - Display and resolution are correct
  - Major functionality operates properly
  - Terminates correctly
  - Uninstalls properly
  - Etc.

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OpenMobile App Validation Process

A — App Testing Secure Storage Server

B — APP ANALYSIS SYSTEM

C — App Test Loading Server

D — APP TESTING SYSTEM

E — APP TESTING RESOURCES

F — APP TEST REPORTER

G — App Test Results Server

H — AppMall Back-EndServer

APP TEST RESULTS FEEDBACK

Automated Process
Semi-Automated Process

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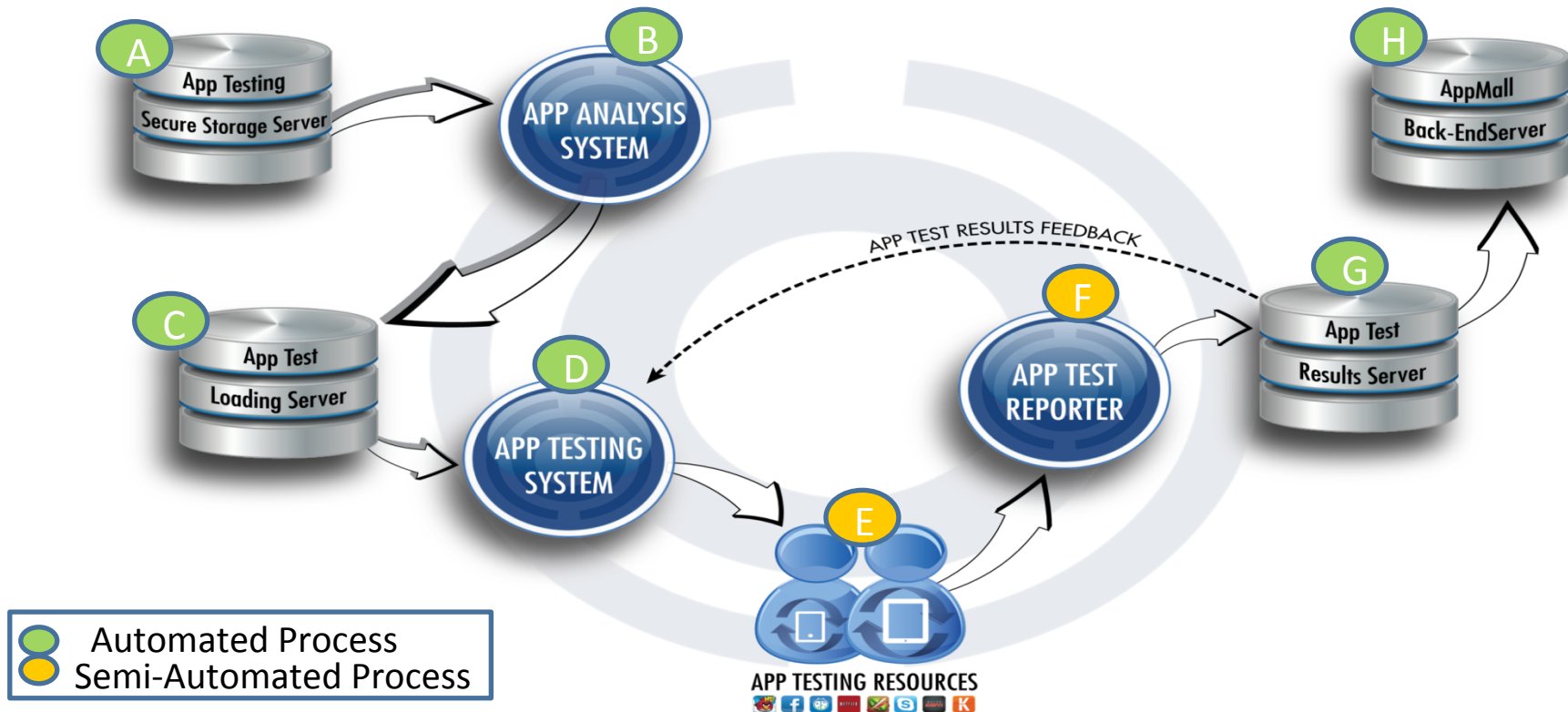
Summary and Next Steps

OpenMobile Summary

- **Strategic Partner of the Tizen Community**
  - Solves the chicken or egg conundrum
  - Breaks the App Barrier
- **Enabling Technology for Tizen Device Manufacturers**
  - ACL™ for Tizen Provides Immediate App Availability
- **Great Path for App Developers into Tizen**
  - Leverage Android App Investment
  - Gain Foothold in the Tizen Ecosystem
  - No Up-front charges for the APK to TPK conversion
  - No costs to the App Developer

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Open Mobile Differentiation

- **ACL™ Technical Advantages**
  - Expanded sensor support
  - Tizen theming
  - Seamless install/invoke process with/from the Tizen Store
- **App Validation process**
  - Includes real humans running your app on Tizen platforms
  - Ensures that user experience is recreated
- **Developer-Friendly Business Model**
  - Lets you get started with no up-front costs

Next Steps for App Developers

- **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
- **Contact us ASAP so we can connect you with one of our App Partners!**

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Questions?

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