

Publishing to TIZEN Using the Automated Conversion/Repackaging of Existing Android Apps

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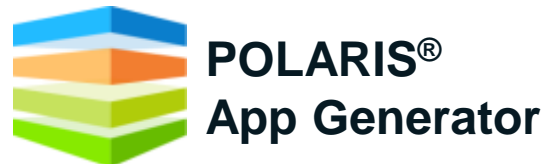


TIZENTM
DEVELOPER SUMMIT
KOREA
2013







Talking about ...

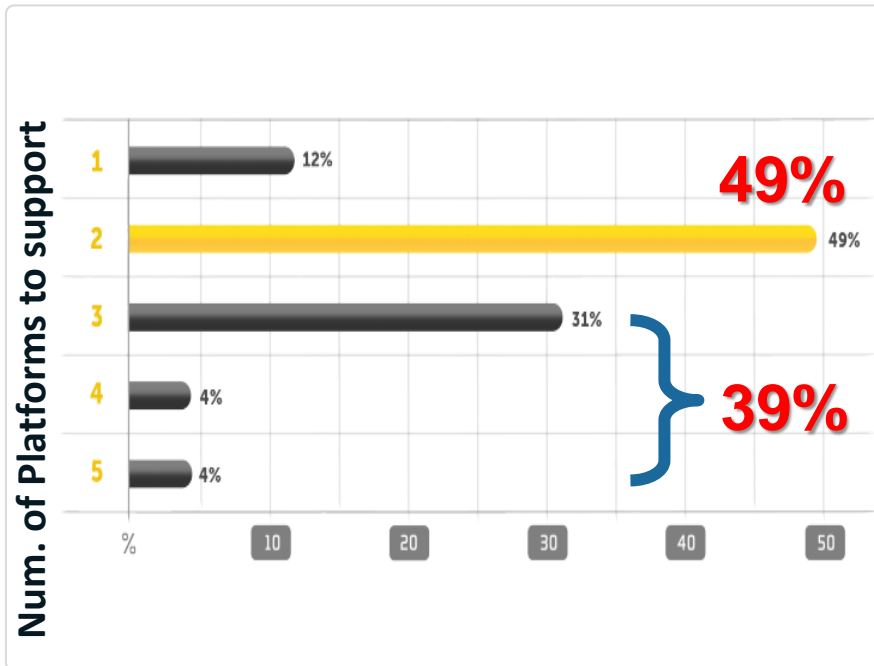
- Needs of Automated Converting from Android To Tizen
- Introduce to POLARIS® App Generator



Variety of Mobile Platform & Development Environments

						
BlackBerry Java & Native		Android Java & Native	C#	HTML 	HTML 	
				Tizen Native		
 WebWork						HTML 

But, Focused on Two Major Mobile Platforms



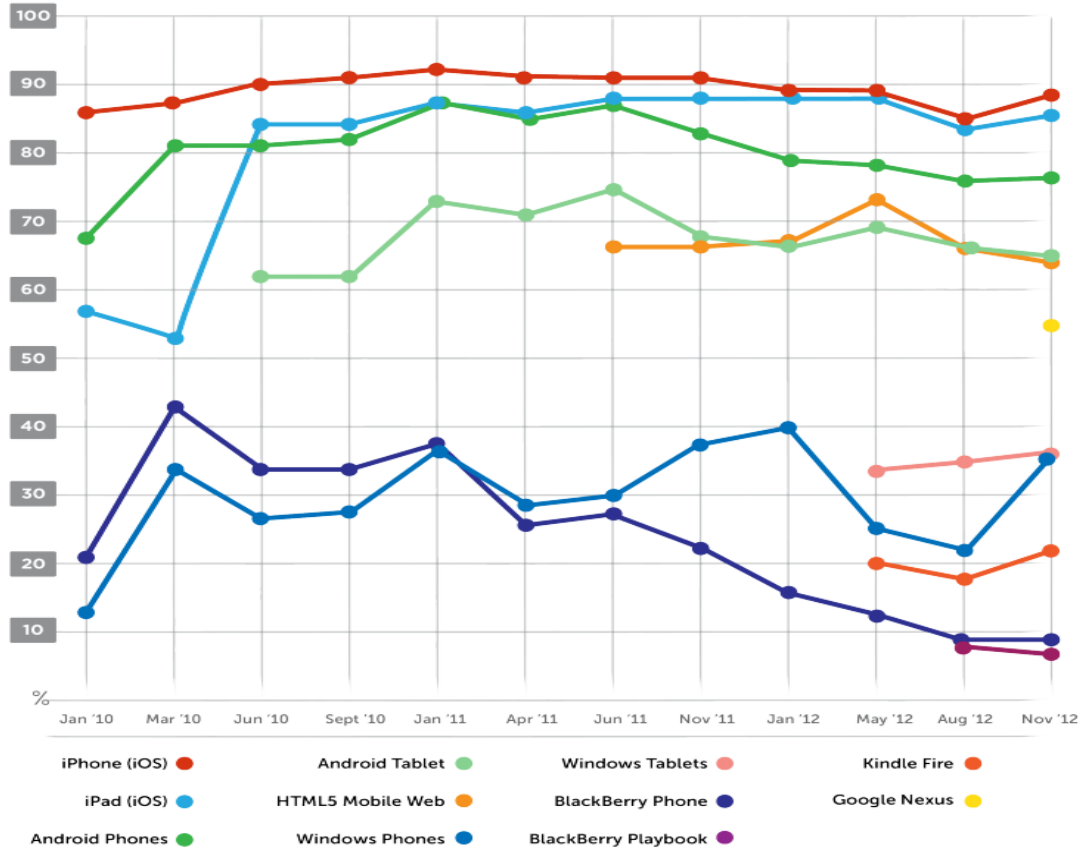
- **750 Million Android Devices sold**
- 1.4 Million Android activations per day
- More than 700,000 Applications

- 600 Million Apple Device Sold
- 55 Billion IOS App Downloads
- **\$10 Billion Developer Revenue**

*Source: Appcelerator / IDC Q4 2012 Mobile Developer Report

※ Stat. until Jul. 2013.

Interests in HTML5, as Cross platform



* Source: Appcelerator / IDC Q4 2012 Mobile Developer Report

What are the Huddles for New Platforms

- **A small number of Users & Devices**

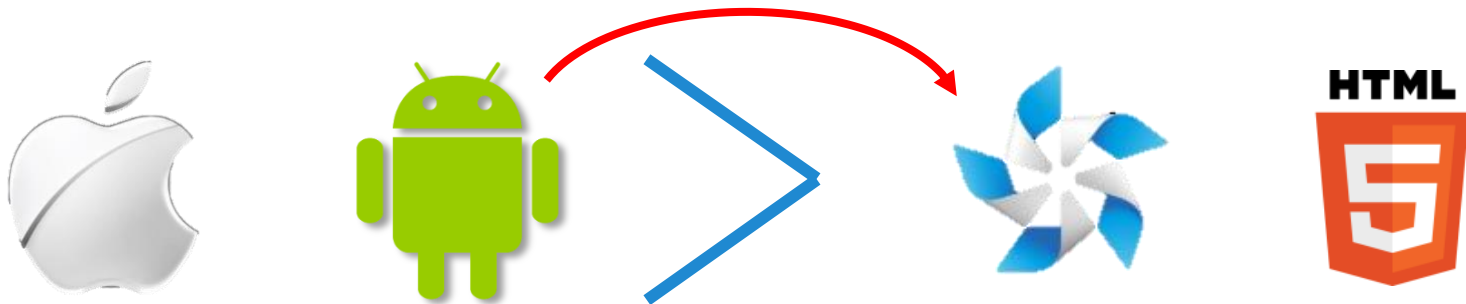
Difficulty generating revenue

- **The adoption of new application development tools & environment**

Increase development cost & period for Application

Having trouble gathering developers

- **HTML5 Standard has not yet**



Android Runtime as Cross Platform

- **Android is based on the Virtual Machine**

Freedom from Hardware & Platform Dependencies.

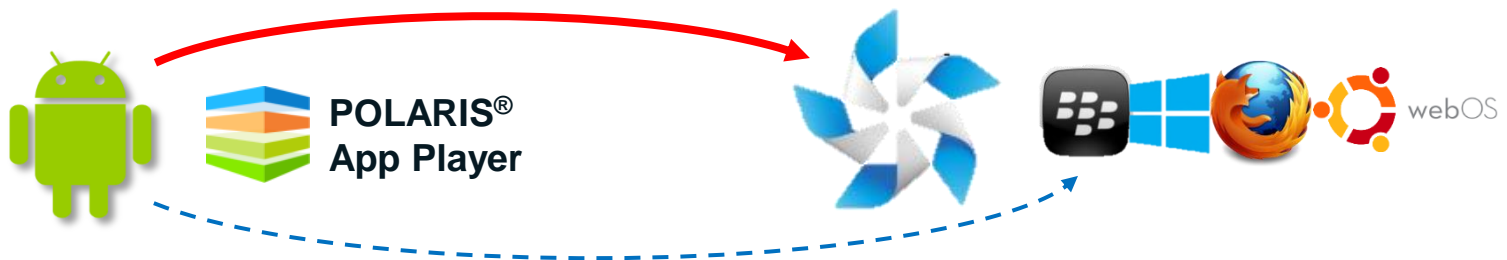
- **Android became the best selling smartphone platform & Eco-system**

Secured extremely large numbers of applications, developers, and resources.

All developers got used to simply develop Android applications on these days.

- **One Source Multi Use**

Directly run on any platforms with Android runtime called as **POLARIS® App Player**.



Easy way porting Android App to Tizen

POLARIS® App Generator

POLARIS® App Generator is the Converting Solution which allow Application Developer or Application Provider automatically convert their Android Application to Tizen Application without additional developing efforts or customizing Android Application by considering Tizen OS environment.

PAG would be the best solution to meet Tizen Apps demands & requirements just in time from the market by creating Tizen Application in a very short period & time.



**POLARIS®
App Generator**

<http://pag.polarismobile.com>



TPK



TIZEN Store



TIZEN

※ Android APK is automatically converted to TIZEN TPK, which can be uploaded to TIZEN store, downloaded into TIZEN device, and executed as same as TIZEN app

Expected effects & benefits of introducing PAG

For Developers

- Reduce extremely development cost & shorten lead-time
- Time to Market



For Platform Vendors

- A lot of Applications in the App store
- Vendors can sell more devices enough to make revenue for the developers



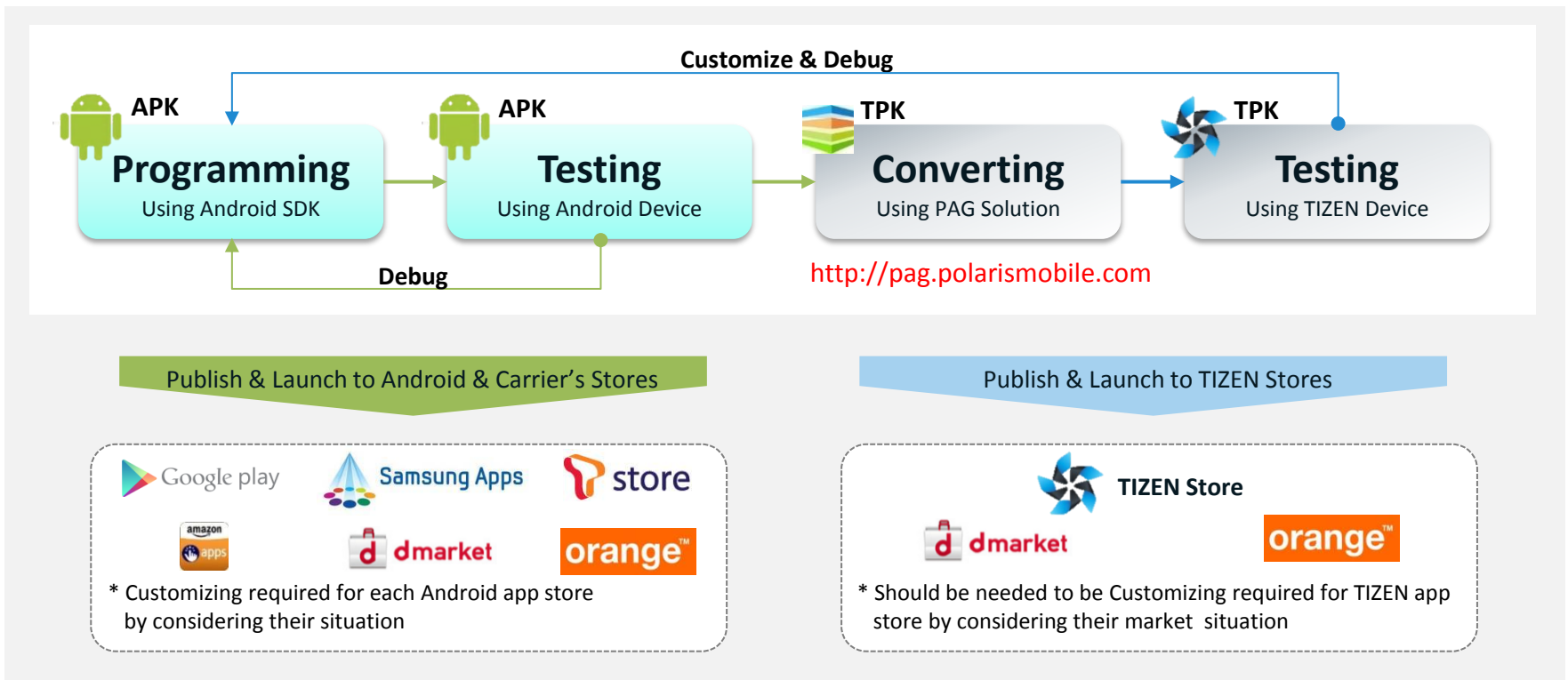
For Users

- Users could take use of high performance & quality applications regardless of Platforms



Easy of Development for TIZEN

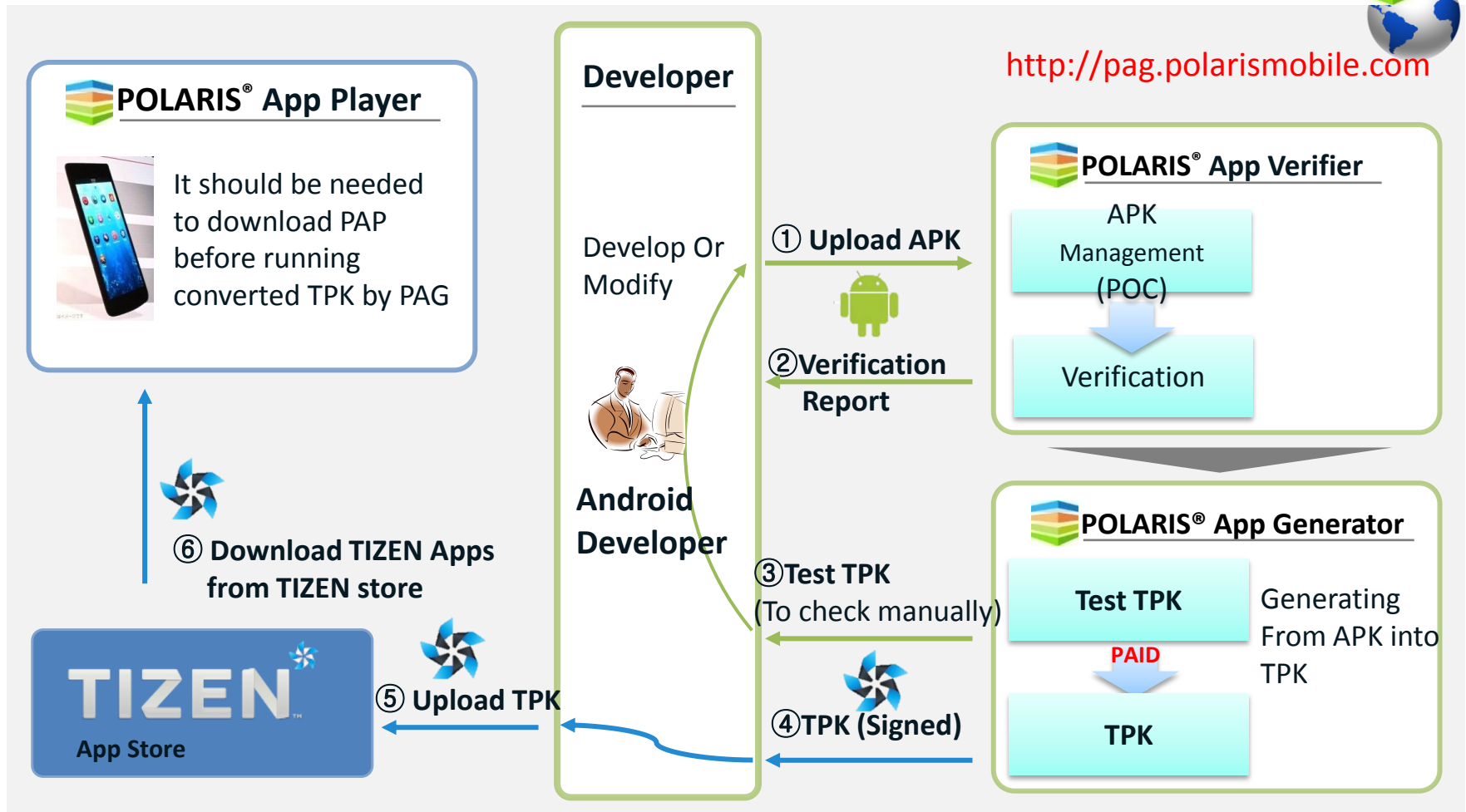
PAG would be bringing great benefits to Either create Tizen Applications by both using legacy applications based on Android in a very short period and Android Developing tools including programming, testing, and debugging for Android Or save developing time and costs in order to efficiently support & launch it on newly emerging Tizen Market from Smart Phone field.



PAG Converting Service Flow



<http://pag.polarismobile.com>



Run TPK converted by PAG on TIZEN Device



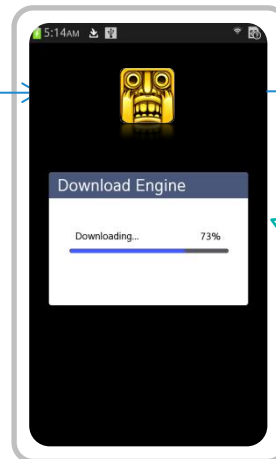
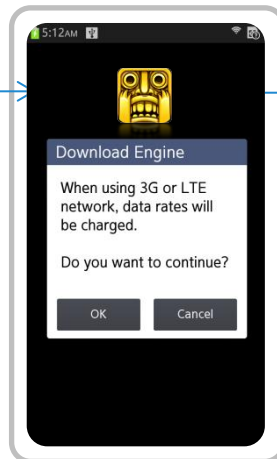
Tizen Store



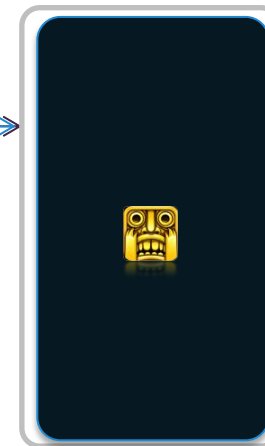
Tizen Home

- The PAP already exists.

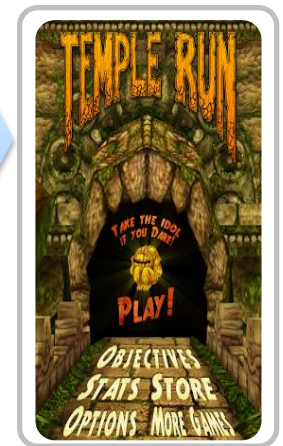
- The PAP doesn't exist in device yet.
(or PAP is upgraded)



- Download PAP module (not TPK, so we don't need to install it) and store in the given shared area.
- About 28MB will be downloaded. It may take about tens of seconds.



Loading PAP



Run Apps

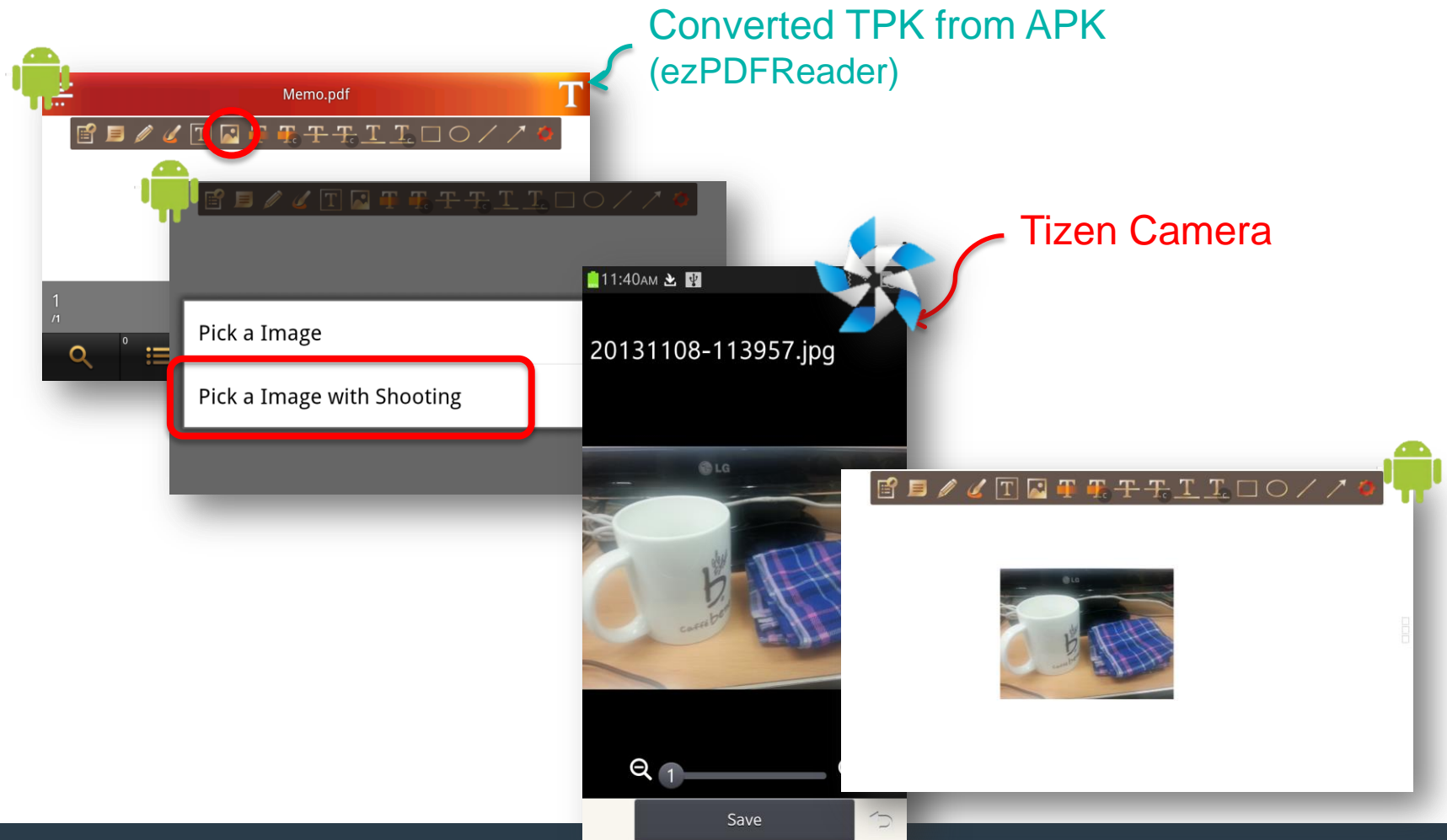


Do not Recognize the Differences owing to Fully integrated in Tizen Framework

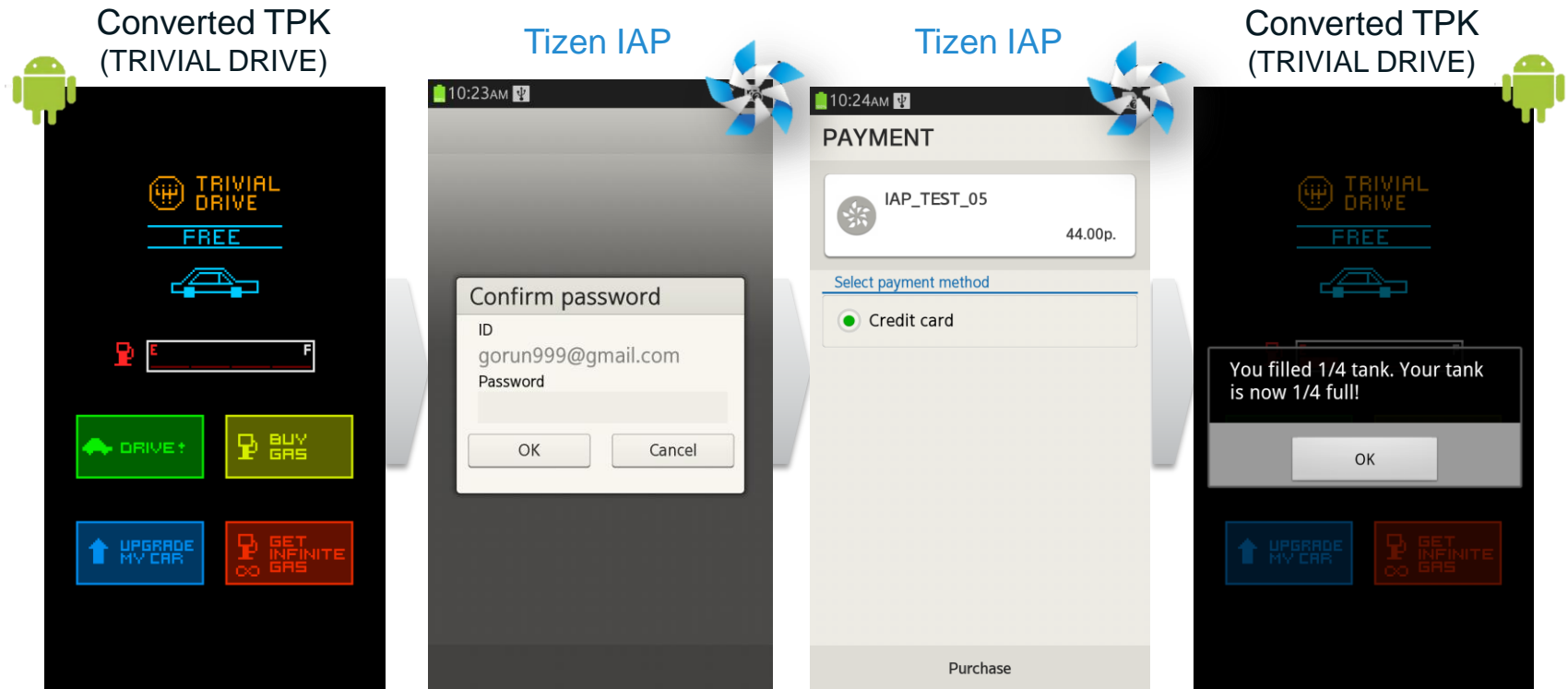


Integrated with Basic Tizen Applications

- The converted TPK using PAG can invoke default Tizen Applications, such as, gallery, browser, camera, and so on. Not invoking Android ones.



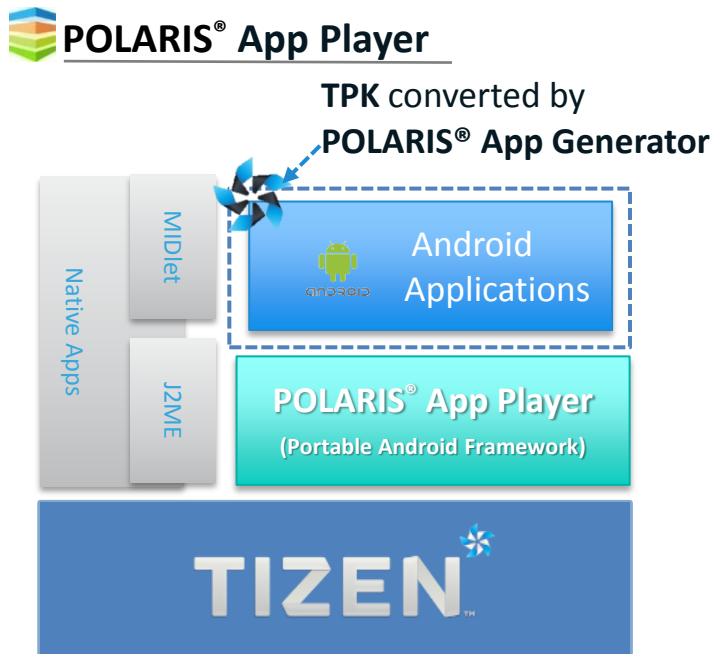
Integrated with Basic Tizen IAP (In-App Purchase)



- The developer should replace the Product ID and Public KEY with Tizen's Group ID, Item ID, and Public Key.
- The detail guides are available at pag.polarismobile.com.

What is POLARIS® App Player

POLARIS® App Player is middleware solution to play TPK converted by using POLARIS® App Generator on Tizen device. POLARIS® App Player is implemented on the POLARIS® Android Framework (PAF), which is composed of (1) **Compact Dalvik** for high performance runtime engine, (2) **Compact Kernel** for high portability, and (3) **Android Libraries** for compatibility.



- Easy to gather killer applications and developers using **Android Eco-system**
- Portable, High-performance, Well defined UI Framework based on Android
- Stable and lower cost devices, based on any OS and already-developed legacy S/W
- **POLARIS® App Player** is also downloadable application, so you can make any type of services

Technical Features of POLARIS® App Player

Features	Description
Compatible Android Version	gingerbread (2.3.7)
Startup Time	<ul style="list-style-type: none">First Time: 5~6 SecondsAfter second time: 2~3 Seconds
Performance	Similar with native app
Size of PAP	28 MB
Heap for PAP	55 MB (20MB will be shared with other instance of PAP)
TIZEN Specific Features	<ul style="list-style-type: none">Tizen IAP, Tizen Push supported.Interworking with Tizen Apps (ImageVeiwier, Camera, Gallery, Call, Phone, Message, Contacts)Multi-instance, background execution supported (controlled by Tizen Task Switcher)
Sensors	Acceleration, Magnetic, Proximity, Gyro, Light, Gravity, Orientation

What is POLARIS® App Verifier

POLARIS® App Verifier provide Customers with verification report which shows immediately the compatibility with POLARIS® App Player on the screen when uploading APK of Android Application to PAG Service. In order to make a progress efficiently to verify compatibility, POLARIS® App Verifier automatically check out uploaded apk of Android application with STATIC & DYNAMIC verifier before converting to TPK of TIZEN Application.



POLARIS® App Verifier

Static Verifier

To check out followings:

- Size of application
- Use permission
- Use device
- API (including native lib)
- Restrictions for POLARIS® App Player
- Some patterns not allowed in POLARIS® App Player

Dynamic Verifier

To check out followings: (on real device)

- Install/Uninstall
- Execution with some proper input (so, applications may be run automatically)
- Unexpected exceptions.
- Failed access to resource

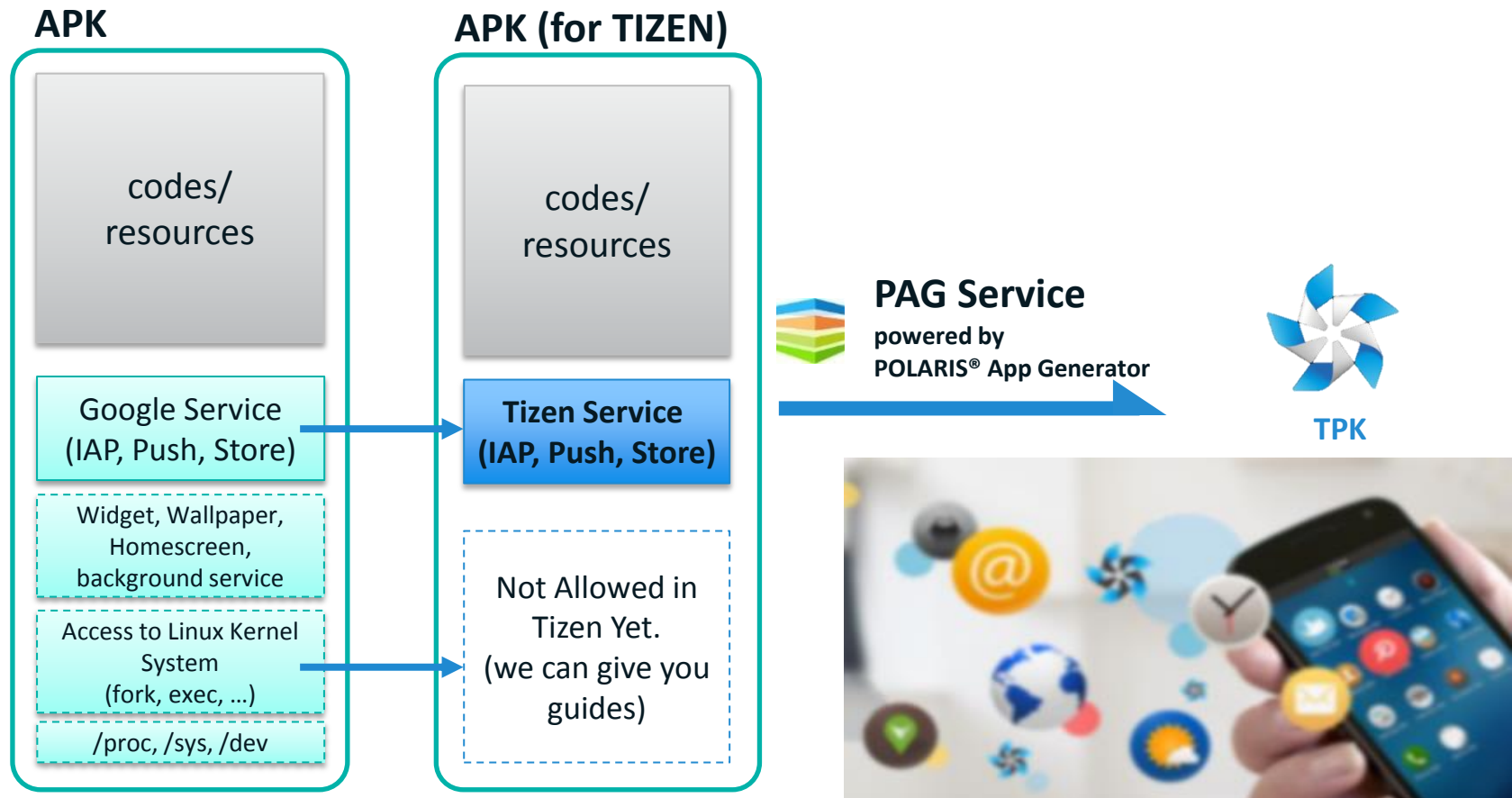
Verification Report

PASS: Executable, Compatible with POLARIS® App Player
CHECK: Need to check manually
FAIL: NOT compatible with POLARIS® App Player



Simple work publishing to Tizen

Some codes in the APK could be modified, because it could contain the codes which are not compatible with Tizen Service.



Strength of POLARIS® App Generator

- **High Performance & Less Memory Requirements**
 - Near-even performance with native apps
 - Additional 55MB for Android Runtime (20MB can be shared with others)
 - 28MB Android Runtime (PAP)
- **Seamless UX**
 - Fully Integrated in Tizen's Framework (Task Management, IAP, Push, etc)
 - No additional installation. Just download the Runtime Engine at the first time execution of any application from the market
- **Service Ownership by Developer**
 - All TIZEN Application converted by PAG would be under control by developer or Publisher. PAG only works as converting solution.

Trial service & Demonstration of POLARIS® App Generator & POLARIS® App Player

- **Trial Service of POLARIS® App Generator Service**

You can take use of trial service for POLARIS® App Generator Service when accessing following web page: <http://pag.polarismobile.com>

- **Demonstration Video Clips for POLARIS® App Player**

You can find out Demonstration for POLARIS® App Player when accessing following linkage: <http://www.youtube.com/user/infracoreinc>



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