Tizen SDK Annual Report – Key Improvements

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Introduction
Tizen SDK Release History

**Tizen 2.3 SDK**
- Mobile Native(C/C++)
- Native UI Builder
- Enventor
- Mobile/Wearable

**Tizen 2.3.1 SDK**
- Circle UI
- Rotary Device Support
- Wearable Native(C/C++)
- Mobile/Wearable

**Tizen 2.4 SDK**
- HD Resolution
- Storyboard
- Wearable Native UI Builder
- Resource Manager
- Stale Object Checker / T-trace
- New Installer / Update Manager
- Online Sample / Document
- Mobile

**Next Tizen Mobile**
- One SDK Supporting Multi-version
- UI Hierarchy Viewer
- Enhanced Developer Certification
- Mobile/Wearable/TV/Micro(IoT)

**Next Tizen SDK**
- Planned

**February 2015**
- Samsung Z130H
- Mobile Native(C/C++)
- Native UI Builder
- Enventor
- Mobile/Wearable

**September 2015**
- Samsung Gear-S2
- Circle UI
- Rotary Device Support
- Wearable Native(C/C++)
- Mobile/Wearable

**October 2015**
Tizen SDK Architectural Overview

- Tools of Tizen SDK have updated and extended to increase developer’s efficiency and usability.
Updated Features

• **Common Features**
  • Multiple Platform Version Support
  • SDK Install / Update
  • Install add-on SDK
  • Setup Developer Certificate (Only Samsung Devices for Security Purpose)
  • Online Documents

• **Application Development Features**
  • Application Model & Programming
  • Run, Debug and Profile
Updated Features – Common
One SDK supporting Multiple Platform Version

- SDK tools and Platforms were tightly coupled
  - App Developers should use the proper SDK supporting required platform version

AS-IS
<Tizen 2.4>

An Integrated SDK will support multiple platform version (Planned within 2015).
  - App Developers can select the platform version by their attention.

TO-BE
<Next SDK>
### Install Manager of Tizen 2.3

- Heavy SDK Image Size (∆ 2.5 GB)
  - Tools and Platforms are in one image
- Uninstall all of packages only
- Not easy to check packages to be updated

### Installer & Update Manager of Tizen 2.4

- Reduces Initial Install Size (≤ 400MB)
  - Tools and Platform are separated.
- Can uninstall selected packages
- Easy to check packages to be updated from download server

<table>
<thead>
<tr>
<th>AS-IS</th>
<th>TO-BE</th>
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<tbody>
<tr>
<td>Tizen 2.3</td>
<td>Tizen 2.4</td>
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• **Separate The Installation Step into 2 parts**
  - Initial Installation – Common IDE, CLI and Can develop web application
  - Update Manager After Installation
    - Can install Platform Binaries, Emulator and Simulator by selecting versions and profiles
    - Can develop Native Application

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**AS-IS**  
<Tizen 2.3>

- Install Manager
- Download SDK Image (Over 2.5Gb)
- Install SDK
- Application development

**TO-BE**  
<Tizen 2.4>

- Installer  
  - Under 400Mb
- Install  
  - Web app development
- Update Manager (On-demand Package Installation)
  - Native Tools, Emulator, Add-ons....
- Application development
**Improved Developer’s Certification**

- **Certification Process for Samsung Devices**
  - Request in Web site & Receive by e-mail
  - Register process is *NOT* simple
  - Make developer’s VOC on registering in SDK

- **Improvement on Issuing process**
  - Register immediately with add-on SDK
  - Opening service at the end of 2015
Documentation – Dev Guides

- Restructured & Go to online
  - Dev Guides are restructured for reducing duplication and maintenance
  - Developers can navigate Dev guides easily through developer.tizen.org

**AS-IS**
<Tizen 2.3>

**TO-BE**
<Tizen 2.4>
Updated Features
– Application Model & Programming
**Enhanced Programming Model for Native Application (1/3)**

- **New application models for more real world**
  - Watch (for wearable only)
  - IME
  - Widget (on home screen)

- **TEP for rapid test and update**
  - A new separate package to contain large files
  - No repeated installation of unchanged files
  - TEP: Tizen Expansion Package
  - TPK: Tizen Package

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**App Project**
- `tizen-manifest.xml`
- `/bin/`
- `/lib/`
- `/res/`
- `/shared/res/`
- `/tep/a.mp4`
How to support multi-devices?

- **PO File Editor to write multilingual programs**
  - Easily edits multilingual messages applied to .po files for GNU gettext
Enhanced Programming Model for Native Application (3/3)

- **Efficient Resource Management**
  - Supports multiple devices without re-packaging
    - Resources under res/contents according to locale and screen density
    - All-in-one packaging with res.xml
  - Resource Manager (planned in 2.4)
    - Shows all resource configurations
    - Easily edits the resources in drag/drop way

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**App Resources (flag.png)**

<table>
<thead>
<tr>
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<th>Small</th>
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<tbody>
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<tr>
<td>Korea</td>
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</tbody>
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**res.xml**

```xml
<group-flag folder="image">
  <node folder="image/small_ko"/>
  <node folder="image/large_ko"/>
  <node folder="image/small_cn"/>
  <node folder="image/large_cn"/>
</group-flag>
```

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**Resource Management Model**

- **Resource Explorer**
- **Resource Manager**

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**Project Explorer**
Online Sample

✔ Problems in offline sample
  - Lazy update depending on SDK release
  - Unclear classification of sample types
  - No search or filter

• Online sample
  - Up-to-date samples available without SDK update
  - Useful search and profile filter
  - Plenty of well-categorized samples
    - Web: Application, Communication, Contents, General, Graphics, Hybrid, Multimedia, Sensor, Social, Storage, System, UI
UI authoring tool vs. text editor?

- **UI Builder**: Easy and fast way to develop UI application
  - Designs views by drag and dropping in WYSIWYG editor
  - Easily binds logic programming by code generation of event handler stubs
  - Storyboard to design view and event flows in visual way

- **Enventor** to design UI widget
Easy UI Programming for Native Application (2/2)

• A short clip of UI Builder (application making in 2m30s)

Create project
JavaScript Analyzer (JSA) for Web Application

✓ How to write more stable web application?

• Rule Checker of static analysis
  – Detects potential errors
    • Web API misuse
    • API version compatibility & missing API privilege
  – Checks compliance to coding guides

• Stale Object Checker of dynamic analysis
  – Dynamically detects possible memory leaks
  – Finds the problematic JavaScript objects
  – Locates the site creating problematic objects
Updated Features
– Run, Debug and Profile
T-trace: New Profiling Tool for Platform and Native Application

- A profiling tool for Tizen platform and native application

- Provides various data from
  - Tizen Platform (pre-defined)
    - Graphics, Input, Multimedia,
    - Application/Windows manager, ...
  - Kernel (pre-defined)
    - Scheduling,
    - CPU Load/Frequency ...
  - Application (user-defined)
Don’t you have Tizen devices?

- **Circular wearable emulator**
  - Shows circular display
  - Supports rotary input using mouse

- **TV emulator (planned)**
  - Enables TV application development without heavy TV devices
  - Provides full-featured remote controller
Still hungry for emulator performance?

• SMP acceleration
  – Fully utilizes host PC’s multi-cores by the aid of KVM and HAXM
  – Dramatically improves performance up to 3 times when running on quad cores

• Direct rendering to relax host CPU
  – Only uses GPU to remove CPU-GPU transition overhead
  – Allows to use more host CPU resources for other programs, such as, IDE
Wrap-up
New Benefits from the Latest Tizen SDK

- **Common**
  - Multi-platform support
  - Easy but powerful installation
  - Up-to-date online documentation and samples
  - Simplified developer’s certification

- **Tools**
  - Enhanced native programming model and tools
  - Powerful analysis tools
  - State-of-the-art Emulator of high performance
Thank you