



Hiroyuki Kobota  
Director – Principal Engineer

Alex Adjadj  
Director – Global Strategic Development &  
Mobile Sales

**TIZEN**<sup>™</sup>  
**DEVELOPER  
CONFERENCE**  
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Part 1 – Technical Presentation

Part 2 – TIZEN & NAMCO BANDAI Games



# Part 1 – Technical Presentation

# Overview

- **Introduction**
- **Encounter**
- **Approach**
- **Challenges**
- **Recap**

# Hiroyuki Kobota – Developer Profile

- **Started as a console engineer for 10+ years...**
    - Platforms: Dreamcast, Arcade, PS2, GameCube, Xbox, Xbox360, PS3, PC...
    - Specialty: Systems/Graphics
    - Languages Expertise: C/C++/Assembly/HLSL/DirectX/OpenGL
  - **Experience on Mobile Development with Game Engines: Unity**
- ⇒ **Hadn't dealt with a mobile platform SDK directly before..**

# Discovery of Tizen Development

## Main Questions

- **May require special set-ups for development?**
  - License? Account? Packages to install?
- **What HTML5 is for Tizen?**
  - Unknown area for me
- **May have important restrictions?**
  - Differences with console hardware?
  - Fragmentation?

# Easy Set-Up

- Windows PC
- SDK downloaded from Samsung Developer Site
- Comes with IDE, Compiler, Debugger, Tools as well as **Documentation**

# First Steps into Native SDK

- **Access to vast list of functionalities through C++!**
  - No need for Javascript or HTML5
- **Standards:**
  - GCC
  - OpenGL / OpenAL
- **Other components**
  - Network access
  - Media loader/decoders
  - Etc..



# Cross-Platform Comparative Chart

	Tizen (RD PQ)	Consoles	PC (WinXP 32bit)
<b>Compiler</b>	GCC/LLVM	MSVC/GCC	MSVC/GCC
<b>Endian</b>	Big	Little	Big
<b>Pointer size</b>	32bit	32bit	32bit
<b>Graphics/Shader</b>	OpenGL ES2.0 (Shader Model 3)	Shader Model 3+	Shader Model 3
<b>Audio interface</b>	OpenAL	Original	Can be anything..
<b>Avail Memory</b>	???	400M+	1G+
<b>Screen Sizes</b>	480x800/720x1280	480p, 720p, 1080ip	1920x1200

**Findings: specs close to best gaming platforms**

# Challenges

- **Debugging experience**
  - Slow, unreliable
  - No edit & continue
- **SDK still under development**
  - Regular changes on APIs
  - Lots of errors/warnings from OS even with a sample app
- **Eclipse not straightforward**
  - Lots of settings/options
  - Differences of shortcuts

# Approach – Stage 1

=> Developed on PC first

- **Usually more than 90% of code base is platform independent**
  - Same endian = data can be same
  - Emulation of platform specific features was easy in my case:  
\$ Touch => mouse, system events => hot keys, etc..
- **Visual Studio**
  - Easier/Familiar
  - Good debugger, Edit & Continue
  - Memory leak detection
- **OpenGL ES emulator, OpenAL SDK**
  - OpenGL analyzer can be utilized as well

# Approach – Stage 2

Porting code base to Tizen

- **MSVC => GCC differences**
  - Some macro issues
- **Platform specific features**
  - Window => Frame
  - Main loop => timer
  - Touch, suspend, acceralometers, onLowMemory, etc..
  - UI (text box, pop-up, 'loading' overlay)
- **Other modules**
  - Image decoder, Media decoder, Http access, font render
  - Printf's => AppLog (macro)
- **As a result, only 1.5 weeks to port ('alpha' stage)**

# Tips & Tricks

- **'data' folder have to be under the project folder**
  - Not easy to switch between test data ↔ game data
  - Junction!
- **Frame rate issues**
  - Initially < 15fps, even with only 1 polygon on the screen
  - Switched to **'Frame base'** dramatically improves the rendering performance (15fps => 30 - 45fps)
  - Updating to 2.1.0b: now = 60fps!

# Recap

- **Native SDK is great for my profile**
  - Good set of libraries needed for game development (media decoder, font rendering, math library etc..)
  - C++ to do everything = no other language necessary
- **The hardware supports decent standards well**
  - This let me implement/debug platform independent codes rapidly on my familiar environment
  - minimum amount of effort to port to Tizen (1.5 weeks to 'alpha' in my case)
- **Still some platform specific tricks necessary**
  - Package build restrictions
  - Form base => Frame base

# Questions?



## Part 2 – TIZEN & NAMCO BANDAI Games



# Main Messages

- Deploy with all OEMs & Telcos to access new territories and new users of all budgets and tastes
- Grow verticals (development of new OS) to expand horizontal growth (new revenue streams/ App Stores) across a wide range of consumer electronics
- Support the creation of a healthy ecosystem in partnership with main market participants

# Questions?

Thank You