

# Tizen TV Architecture Overview

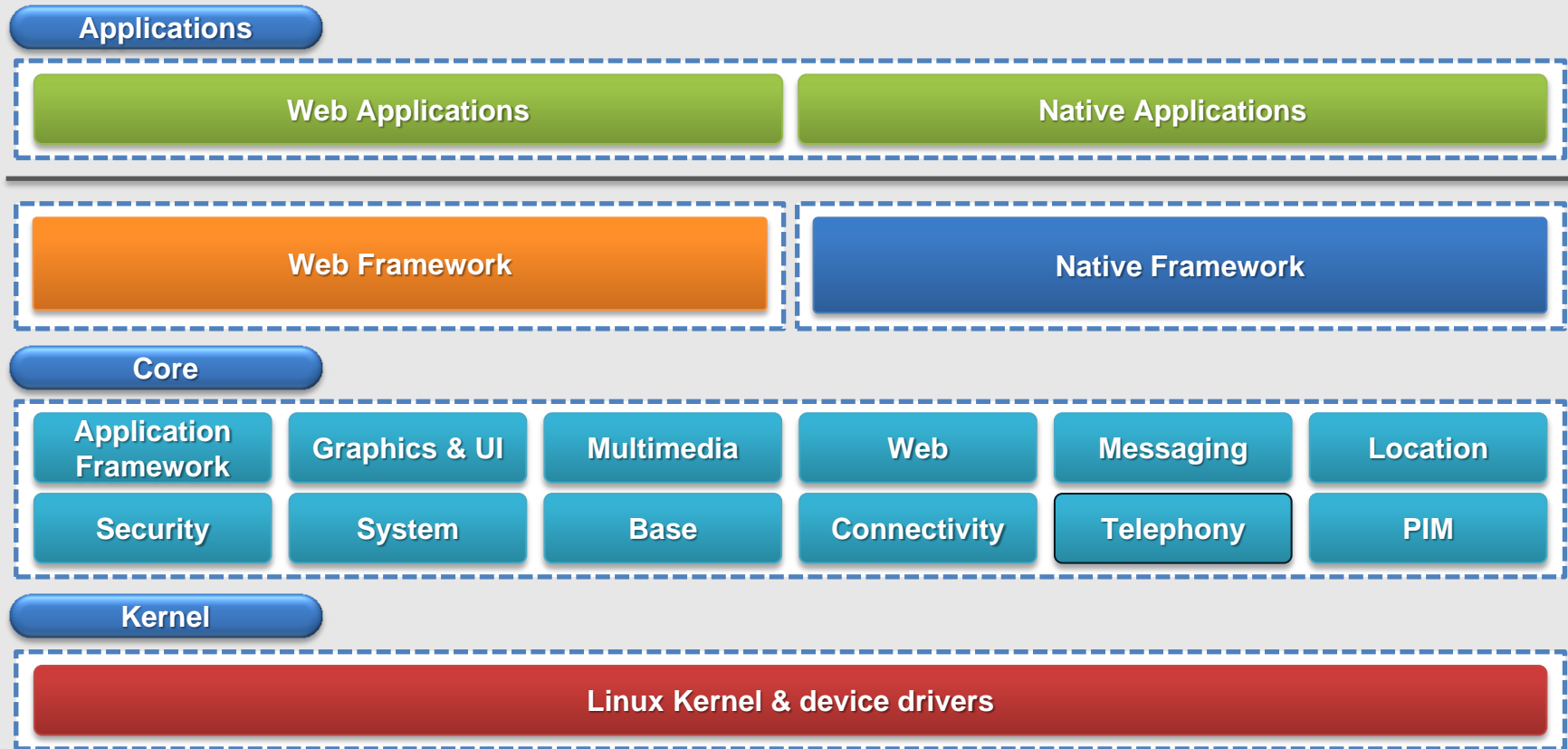
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Samsung Electronics  
20. Oct. 2014



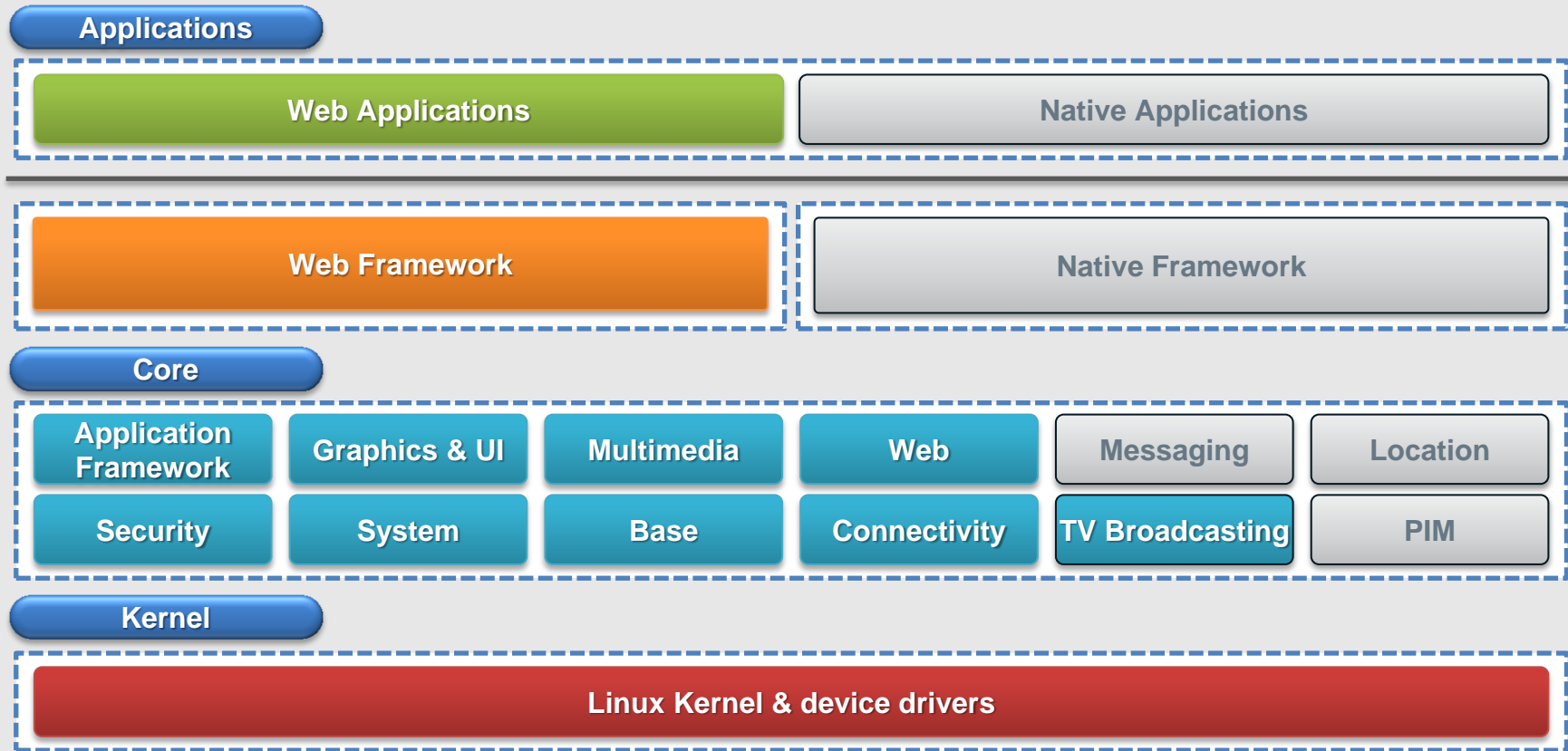
An abstract graphic design on a light gray background. It features several overlapping circles: a large white circle, a smaller white circle, and a circle with blue and white diagonal stripes. To the right, a white page is curled up, revealing a blue and white striped pattern underneath. Scattered throughout the scene are numerous small, colorful dots in shades of blue, green, and teal, resembling confetti. In the upper right corner, there is a faint, stylized illustration of a city skyline with a prominent tower.

Architecture

# Tizen Architecture for Mobile



# Tizen Architecture for TV (ongoing)



# Tizen Architecture for TV (ongoing)

## Applications

Web Applications

## Web Framework

W3C/HTML5

Device APIs

Web UI FW

Caph

Web Runtime

Core Applications (in-house)

## Core

Application Framework

Graphics & UI

Multimedia

Web

TV Broadcasting

Security

System

Base

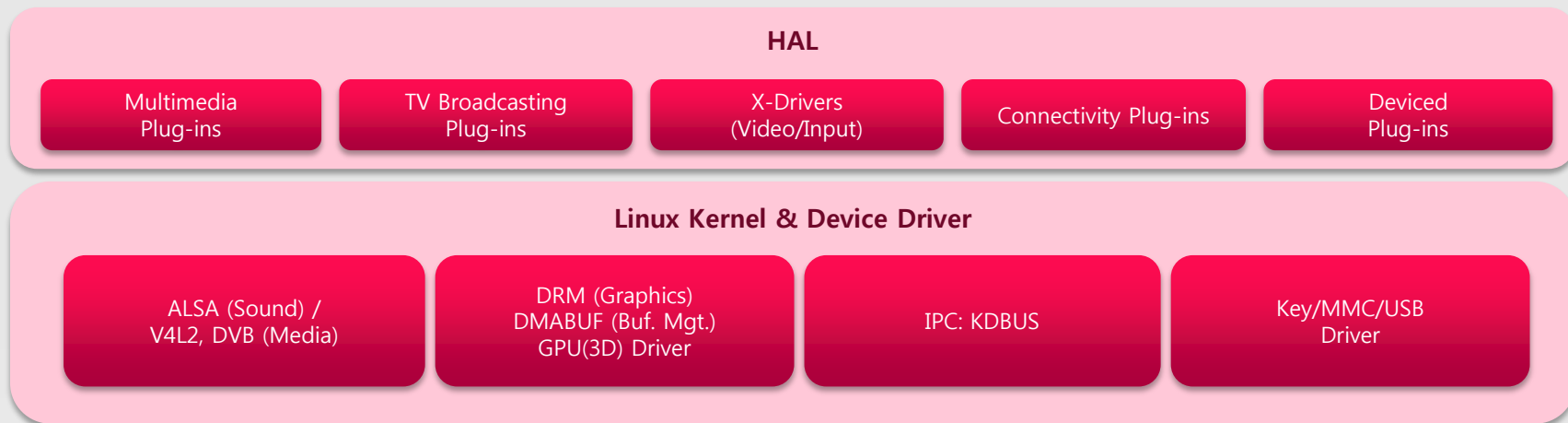
Connectivity

## Kernel

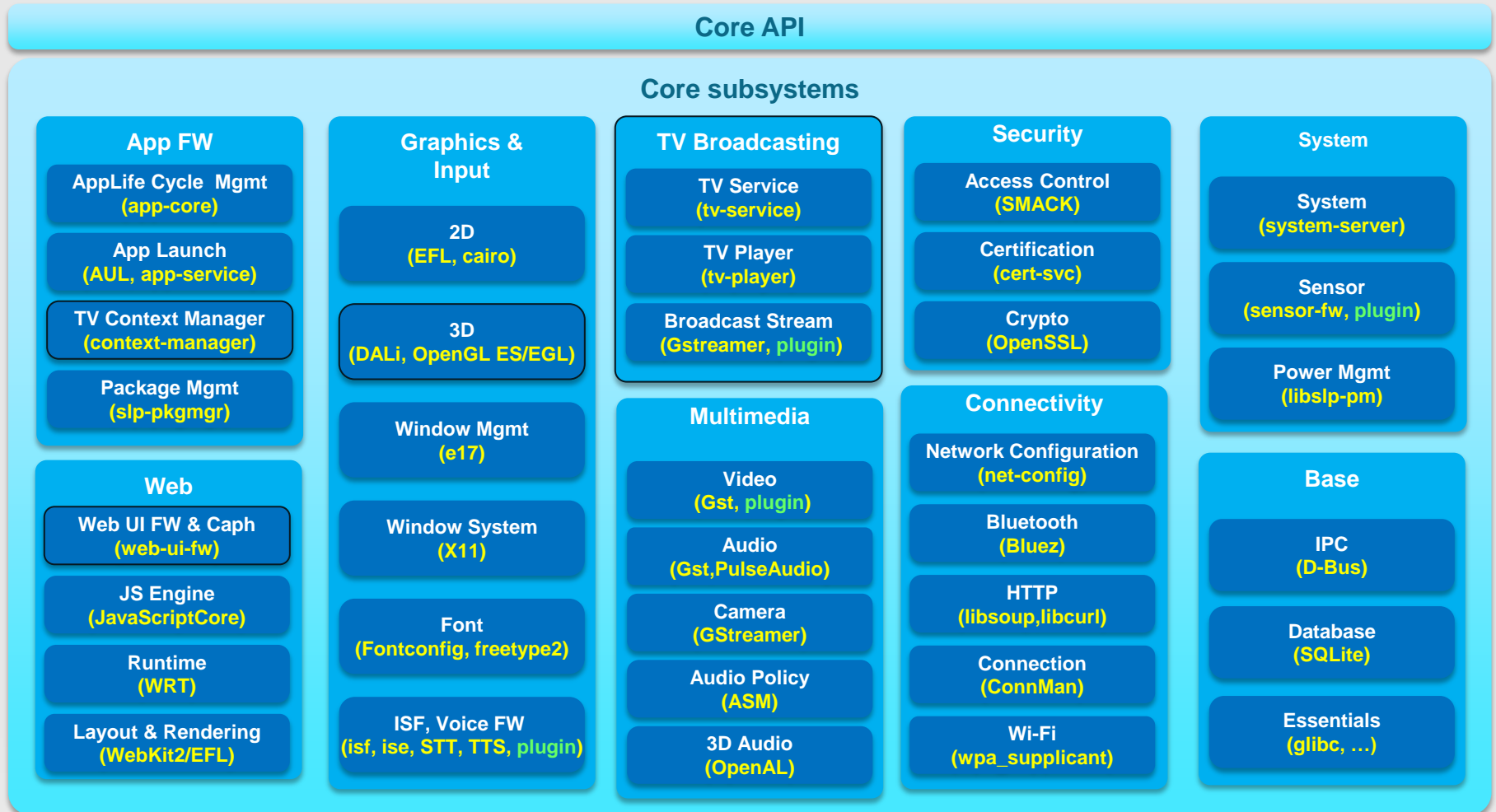
Linux Kernel & device drivers

# Hardware Adaption and Kernel

- **Features:**
  - Linux Kernel & Device Drivers
  - Hardware Adaptation Layer
    - Plug-ins
  - OpenGL ES/EGL Graphics Driver
    - DRM-based graphics stack
  - DVB subsystem for TV Broadcasting



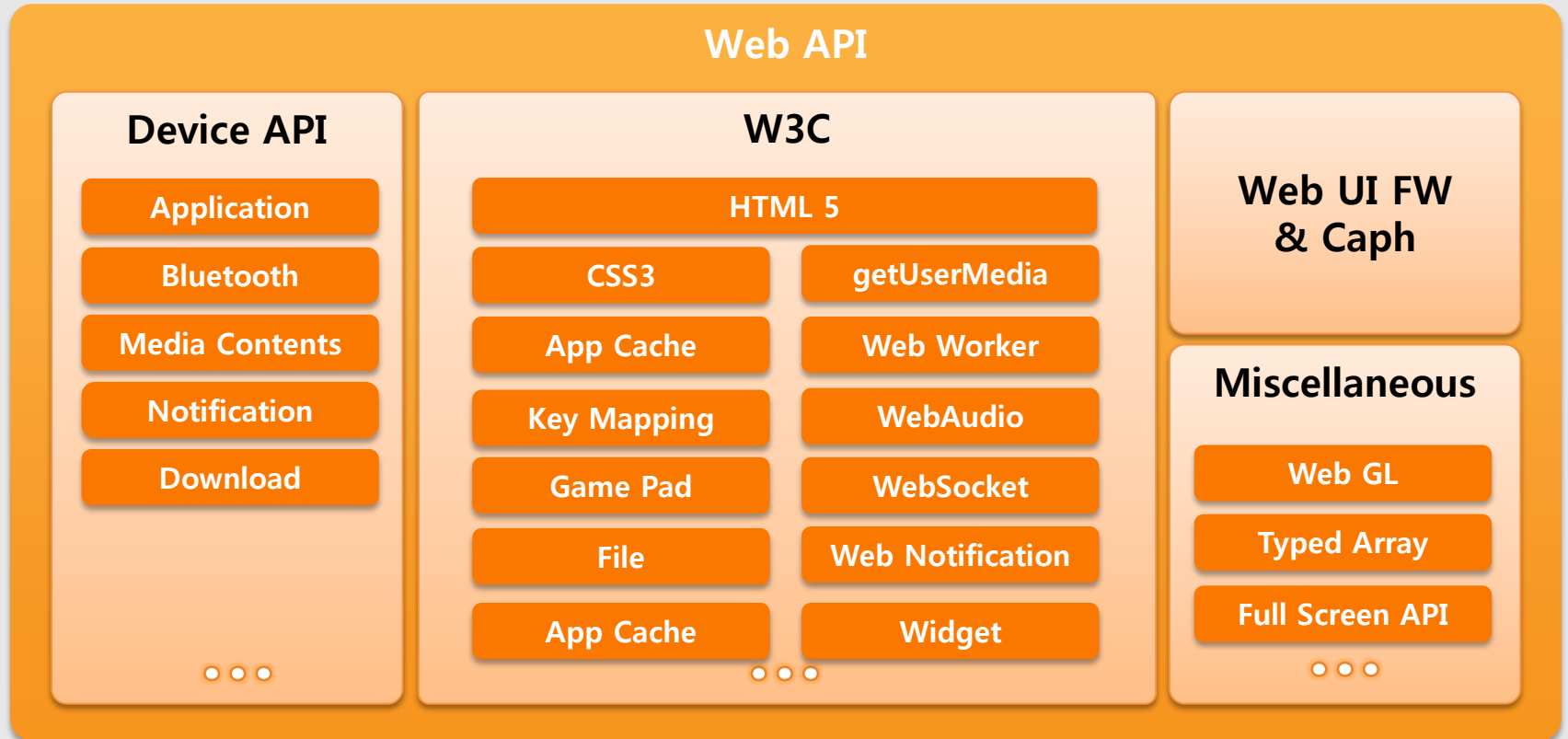
# Core subsystems



New for TV

# Web API

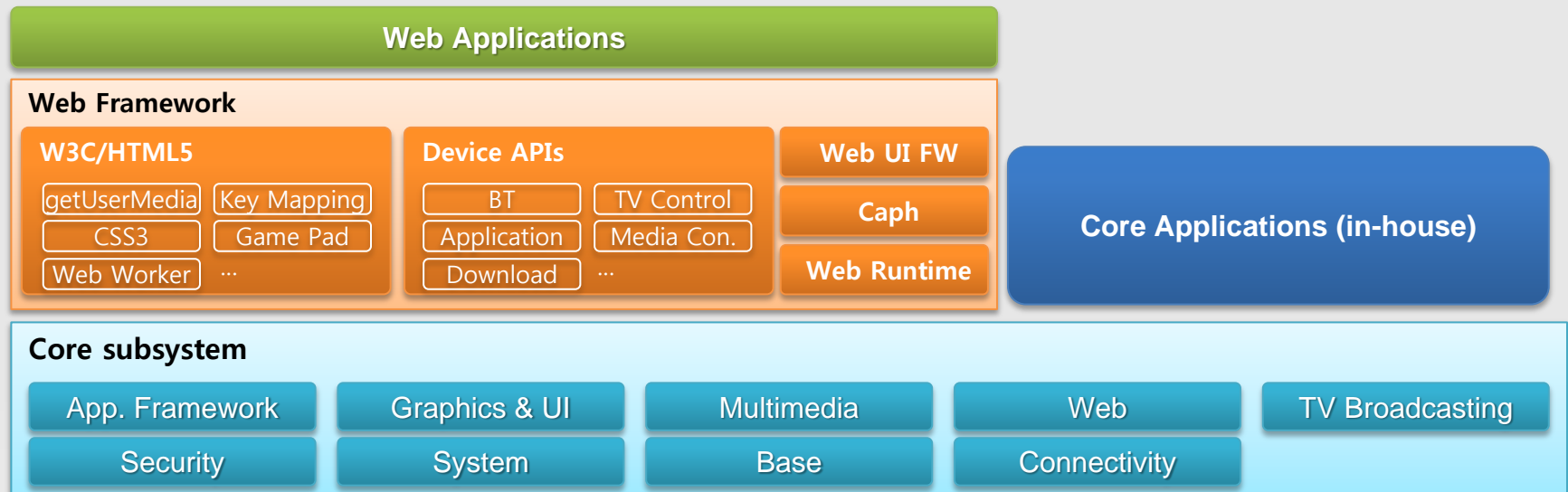
- Standard HTML5 + Tizen Device API






# Applications

- **Web Applications for all profiles**
  - Web has been the primary app. development env. from Tizen 1.0
  - SDK is available for Web App development
  - Many sample apps included in the SDK
- **Core Applications**
  - Available for device implementers through components in Core subsystem



The background is a light gray with a subtle texture. It features several decorative elements: a large white circle with a drop shadow, a smaller white circle above it, and a blue and white striped circle to the right. In the top right corner, there is a stylized city skyline with a prominent tower. Scattered throughout the background are numerous small, colorful dots in shades of blue, green, and dark blue, resembling confetti. A white, curved shape on the right side suggests a page being turned.

# Core subsystems

: Major changes from Tizen Mobile

# TV Broadcasting

- **Provides**
  - Capability to scan and store TV broadcasting programs.
  - Data of the electronic program guide (EPG).
  - Play a live broadcasting stream (DTV/ATV).
  - Various formats and standards of captions.



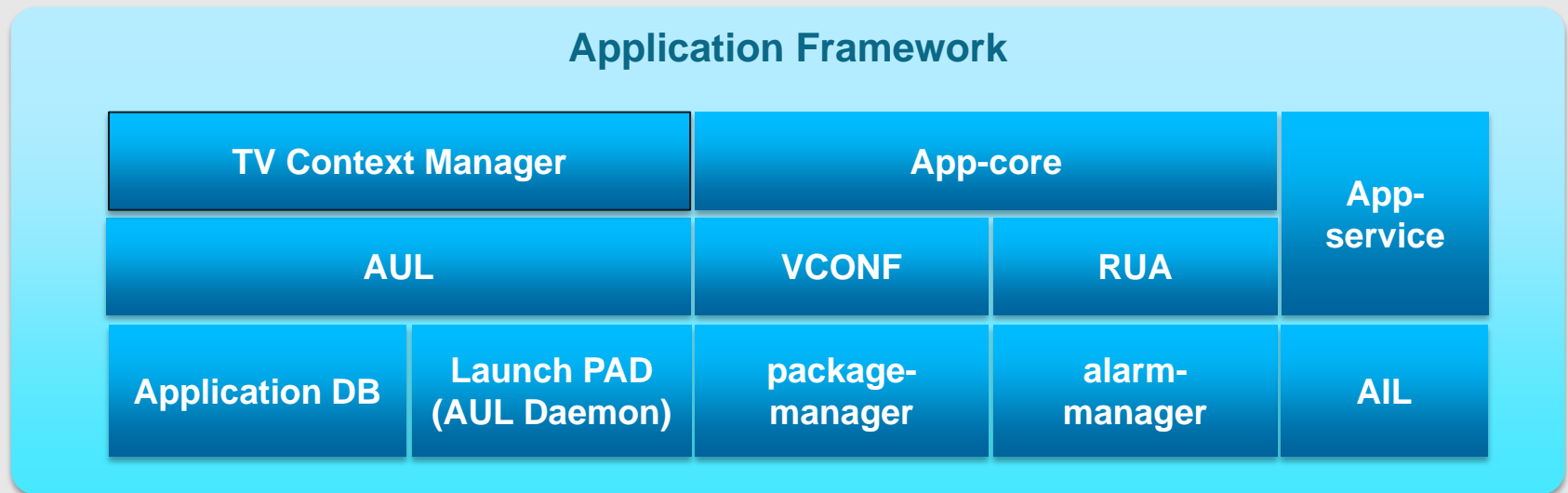
# Application Framework (1/3)

- **Provides**

- **Launching Application (AUL, App-Service)**
  - Explicit or implicit information (Combination of Action, URI, and MIME) can be used to determine an app to launch
  - Allow to launch different type of app (i.e. Web to Core and Core to Web)
- **Application life cycle management and handling system events (App-core)**
  - Getting app state change notification or system events through main loop
  - Then, calling registered callbacks for the events
- **Installing/Uninstalling application (package-manager)**
- **Managing application launched history (RUA)**
- **Setting an alarm to launch at specific time (alarm-manager)**

# Application Framework (2/3)

- **Provides**
  - Handling global key events with the remote controller to launch application based on TV UX scenario (TV Context Manager)

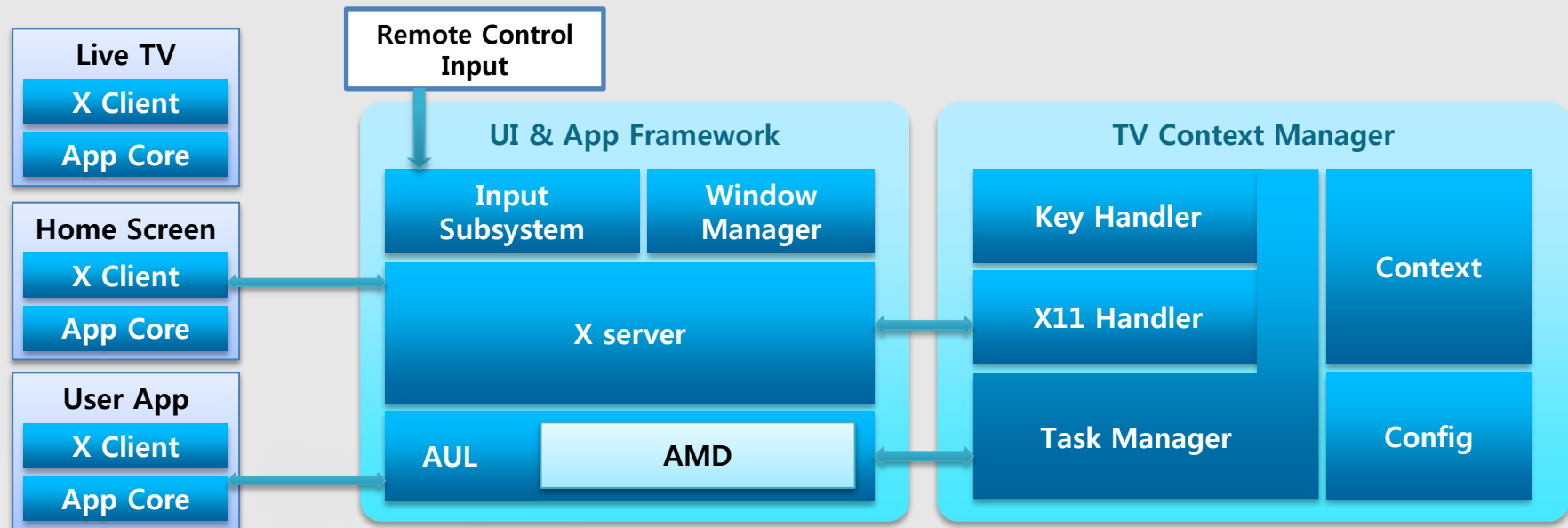


New for TV

# Application Framework (3/3)

- **TV Context Manager**

- Launching an application with AUL by key input on a TV remote control
- Running rule-based actions based on TV UX scenario
  - ex) Running an OSD app exclusively; when launching an OSD app, then other apps exit
  - ex) Pushing “Exit” key terminates the running application and activate Live TV application on top-level

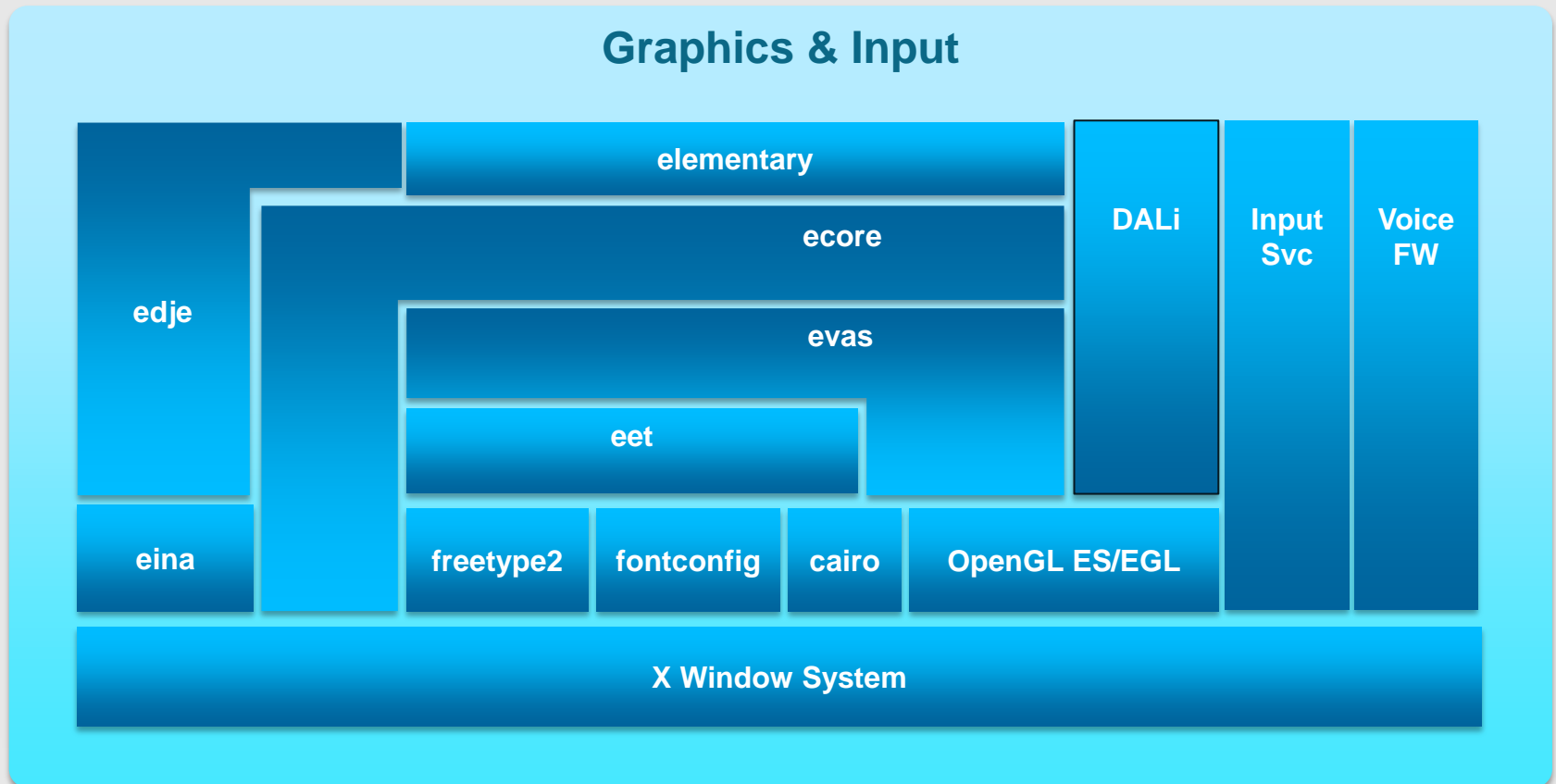


# Graphics & Input (1/2)

- **Consists of:**

- Window System based on X11
- EFL(Enlightenment Foundation Libraries)
  - Rich Widgets multiple theme supports by Elementary
  - Retained mode canvas by Evas (Scene-graph, OpenGL ES back-end)
  - Composite Window Manager
- TV ref. theme for TV UX (elementary)
- 3D UI Toolkit - DALi
- 3D (OpenGL ES)
- Input Service (SCIM), Voice FW (STT, TTS)
- Font (freetype2, fontconfig)

# Graphics & Input (2/2)



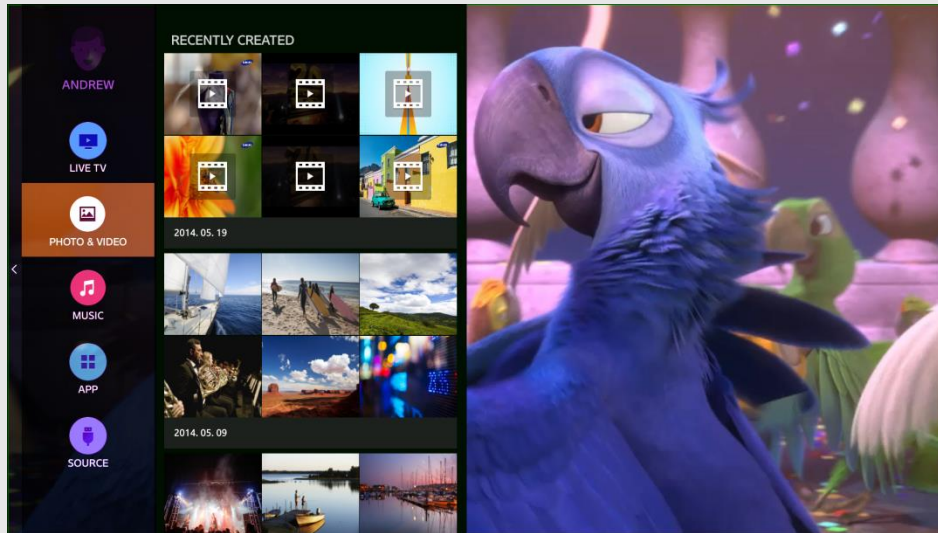
New for TV



# Tizen TV Reference UX

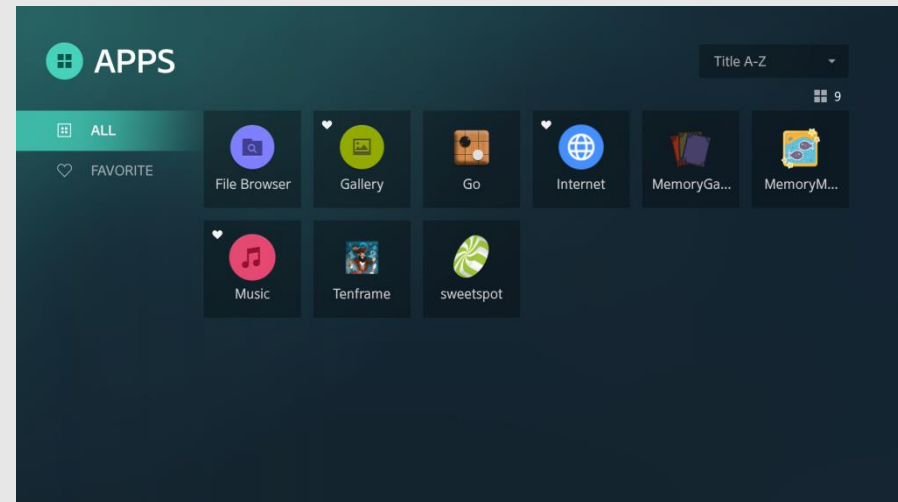


# Tizen TV Reference UX (1/2)

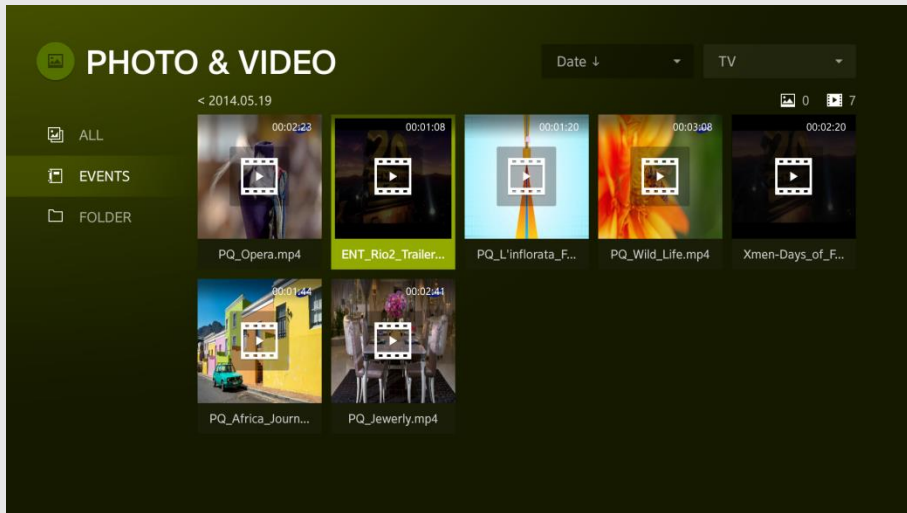


home screen – live tv

Apps panel

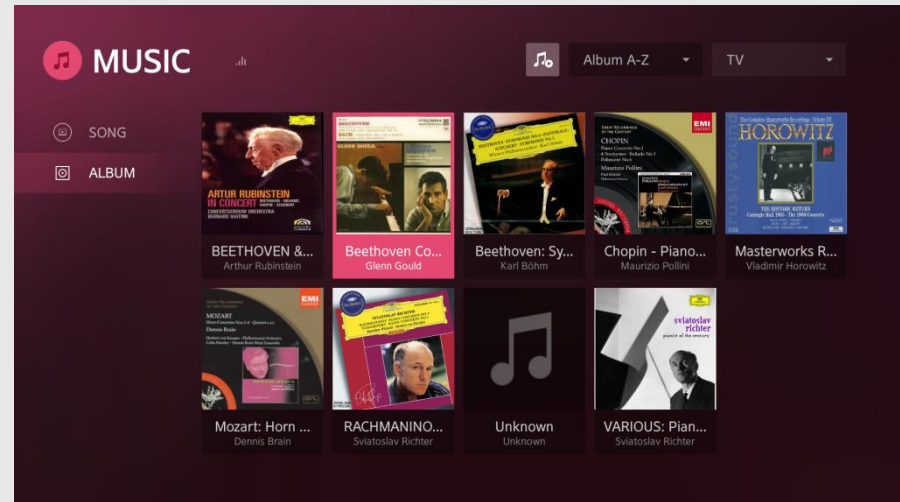


# Tizen TV Reference UX (2/2)



Media Browser

Music Player



# Conclusion



# Conclusion (1/2)

- **Building Tizen TV Platform Architecture is ongoing**
- **Web APIs**
  - TV control API added
  - Mobile specific APIs removed
- **New core applications with TV ref. UX**
  - Home screen, Live TV, Web browser, App. launcher, Multimedia Apps, etc.



# Conclusion (2/2)

- **Major new/ revised core subsystems**
  - TV Broadcasting
  - TV Specific Input & Application Scenario
    - TV Context Manager
  - Web UI Framework, Caph
  - Graphics & UI
    - TV theme for UI: GUI theme for TV widgets (EFL)
    - DALi, 3D UI Toolkit.
  - Kernel & Device Driver
    - Linux DVB subsystem for DTV broadcasting





# TIZEN<sup>TM</sup>

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