



# Introduction to Tizen TV SDK

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Samsung Electronics

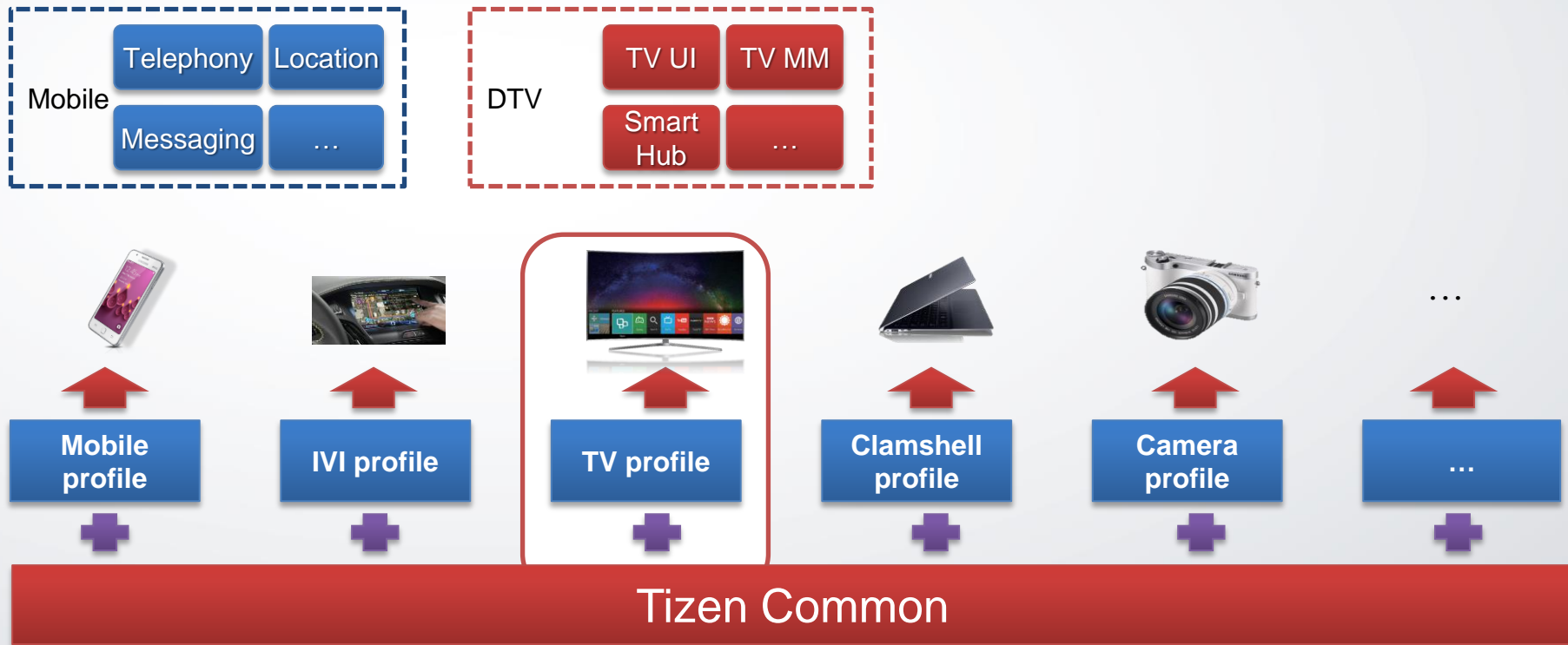
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## Tizen TV Profile SDK

API of Tizen TV SDK

Tizen TV Tools Suite

# Tizen TV Profile



# Tizen App Category

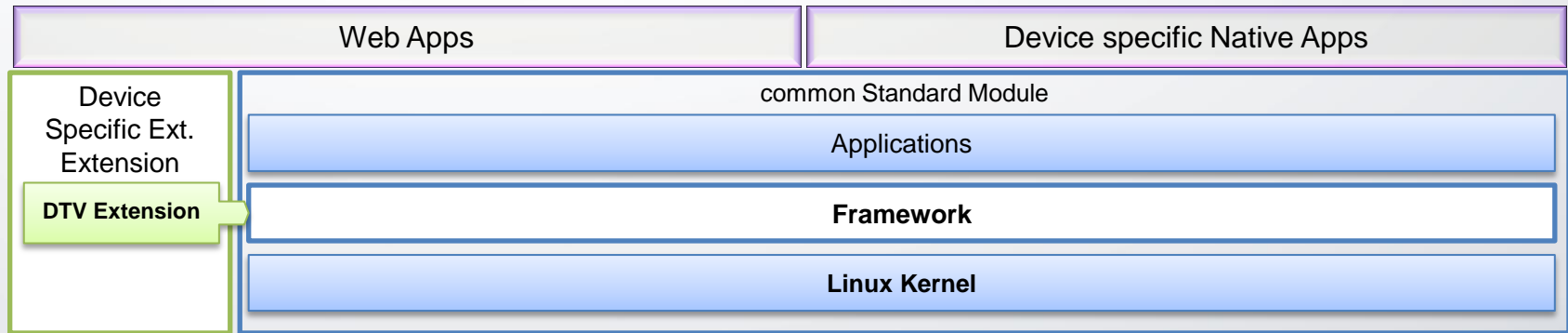
## Web Framework based Application

- Information
- VoD
- Games
- Lifestyle
- Sports
- Educational
- Many More...



## EFL Framework based Application

- TV Subsystem
- Multimedia
- Network
- Security
- MultiScreen
- Many More...



# Tizen TV SDK Evolution



SDK is very important for  
Open P/F / Ecosystem  
Success



SDK 2.X

TV SDK  
1.5

Integrated with Tizen  
SDK soon  
- Single SDK installation

Multi Screen 2.0  
'15 Smart Controller  
Mac OS TV Emulator

TV SDK  
1.4

Multi  
Resolution  
TV Emulator  
Caph 2.2.1

TV SDK  
1.2

1st Emulator  
Tizen Product APIs

TV SDK  
1.0

Tizen Web Device API  
Web Standard API  
Caph 2.0

TV SDK  
1.0b

1st IDE  
Web Simulator.  
Web Inspector

July Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun July Aug Sep

2014

2015

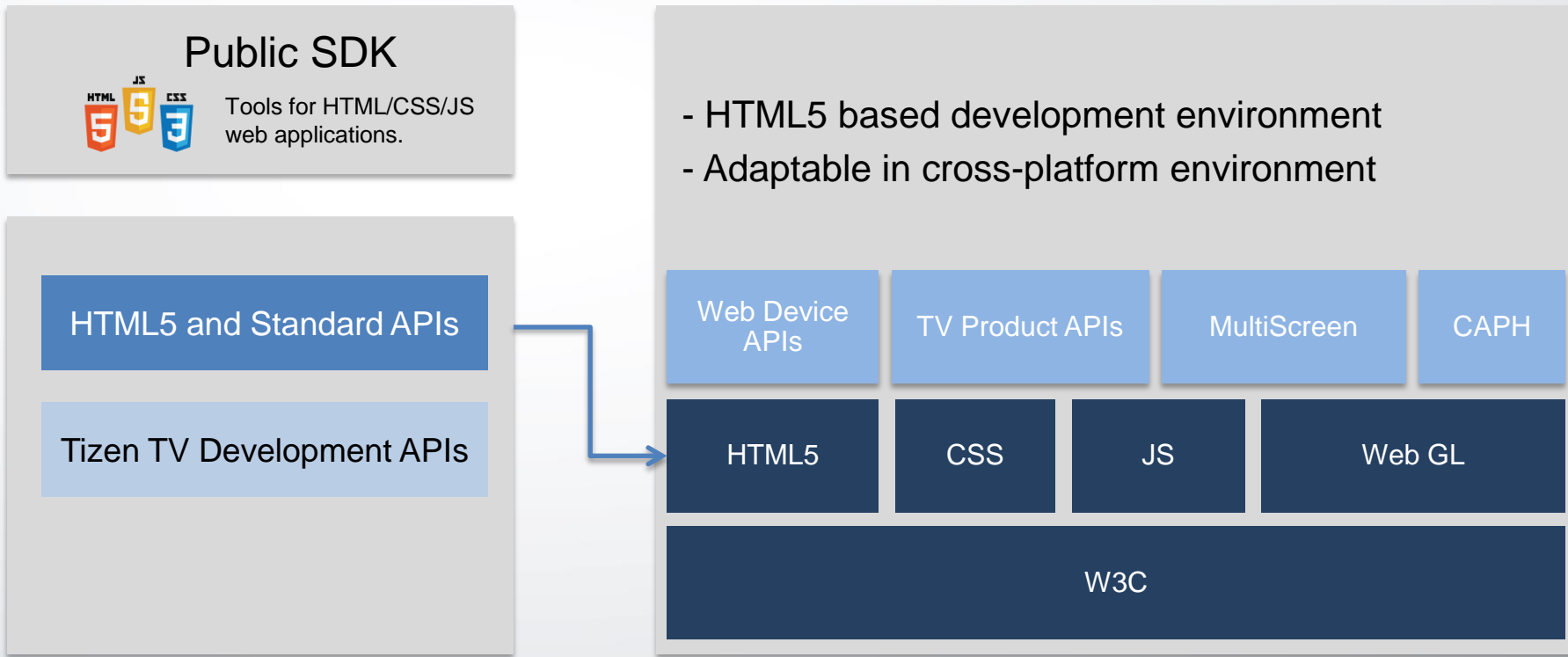
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Tizen TV Profile SDK

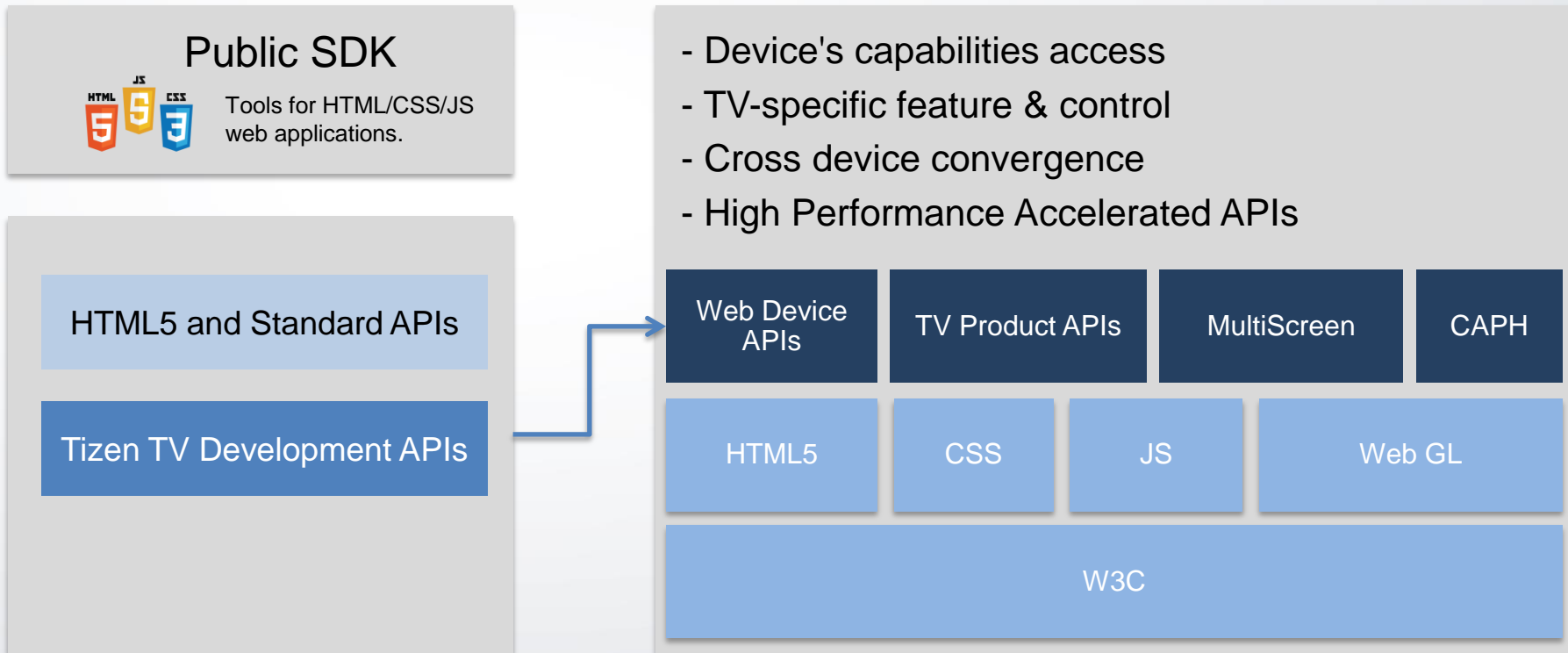
**API of Tizen TV SDK**

Tizen TV Tools Suite

# Web Functions Supporting



# TV Functions Supporting





# Web Device API

Web Device API

TV Product API

MultiScreen

Caph

Application

Controls

System

Input/Output



Alarms



Audio Control



Settings



Archives



Packaging



Input Device



Time



File System



Application



Channel



Web Settings



Message Port

# TV Product API

Web Device API

TV Product API

MultiScreen

Caph

App Common



DrmlInfo



TvInfo



Widget Data



Network



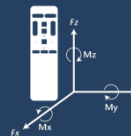
AVPlay



Provider



Smart Controller



Ad Framework



Device Discovery



Microphone



ASF Service

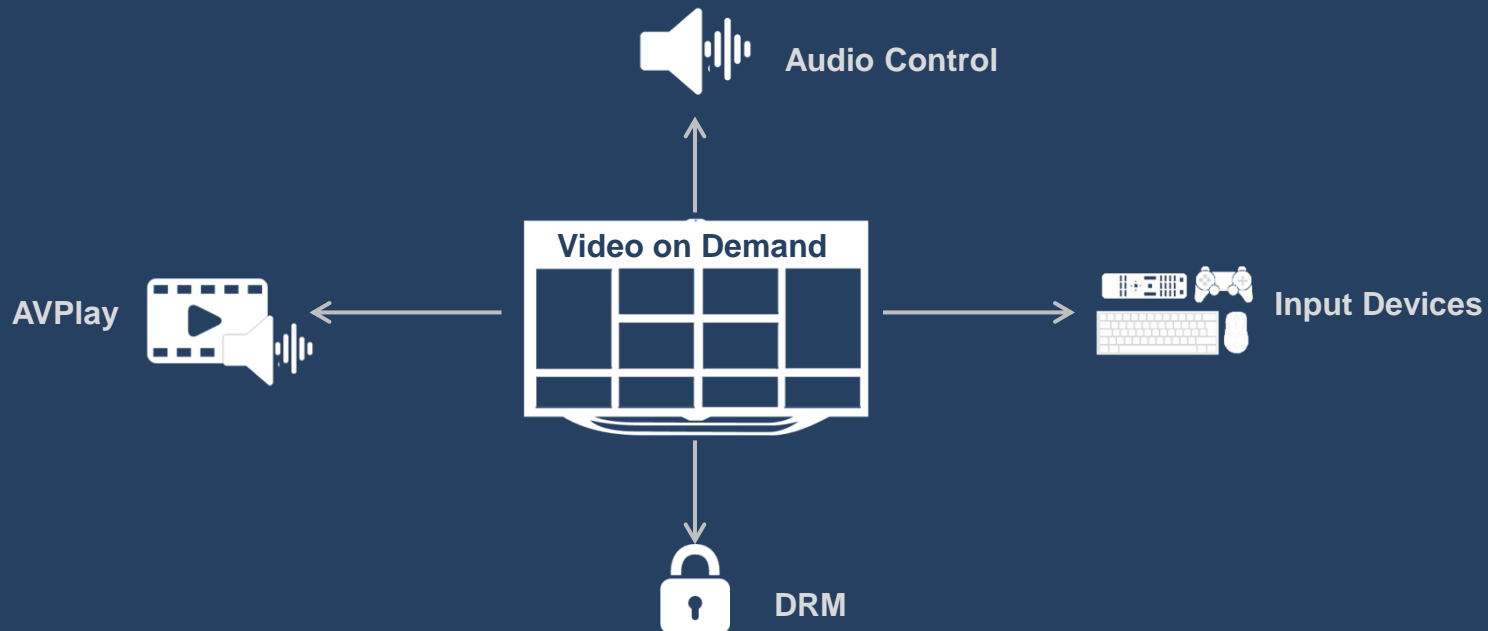


# App Scenarios

Web Device API + TV Product API

MultiScreen

Caph

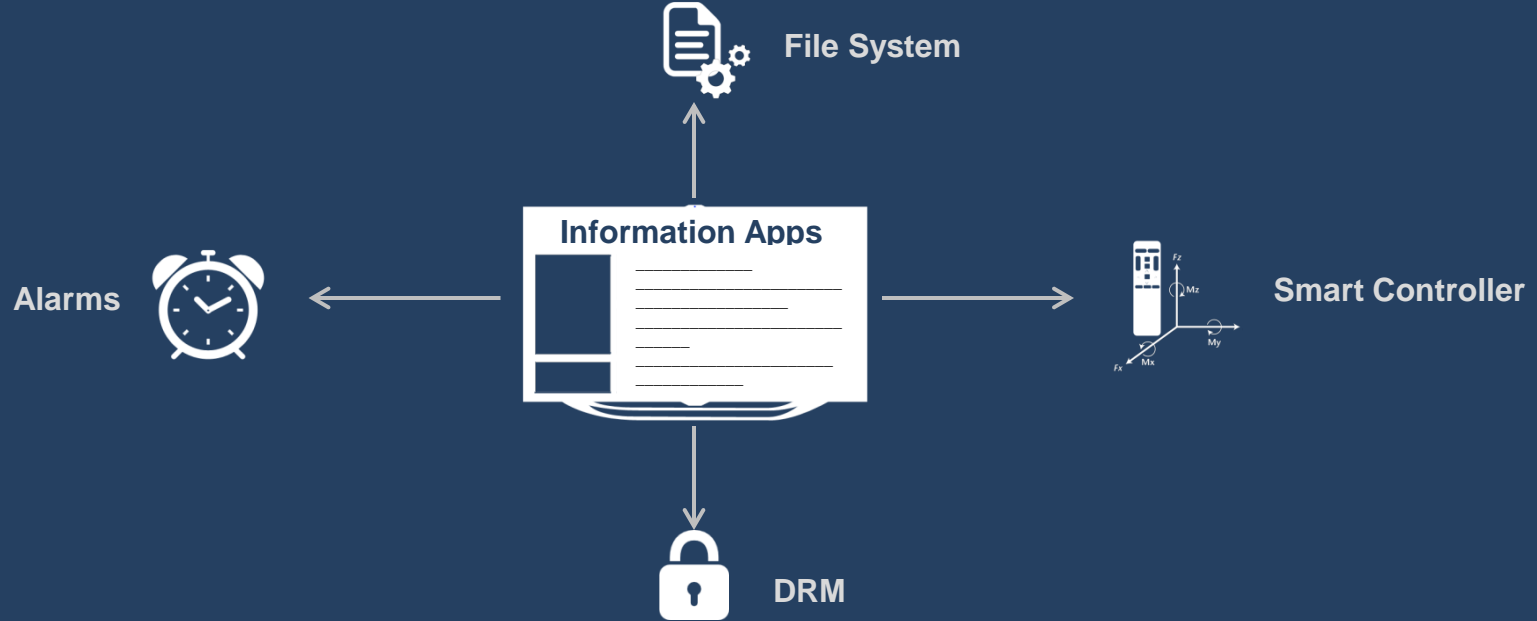


# App Scenarios

Web Device API + TV Product API

MultiScreen

Caph

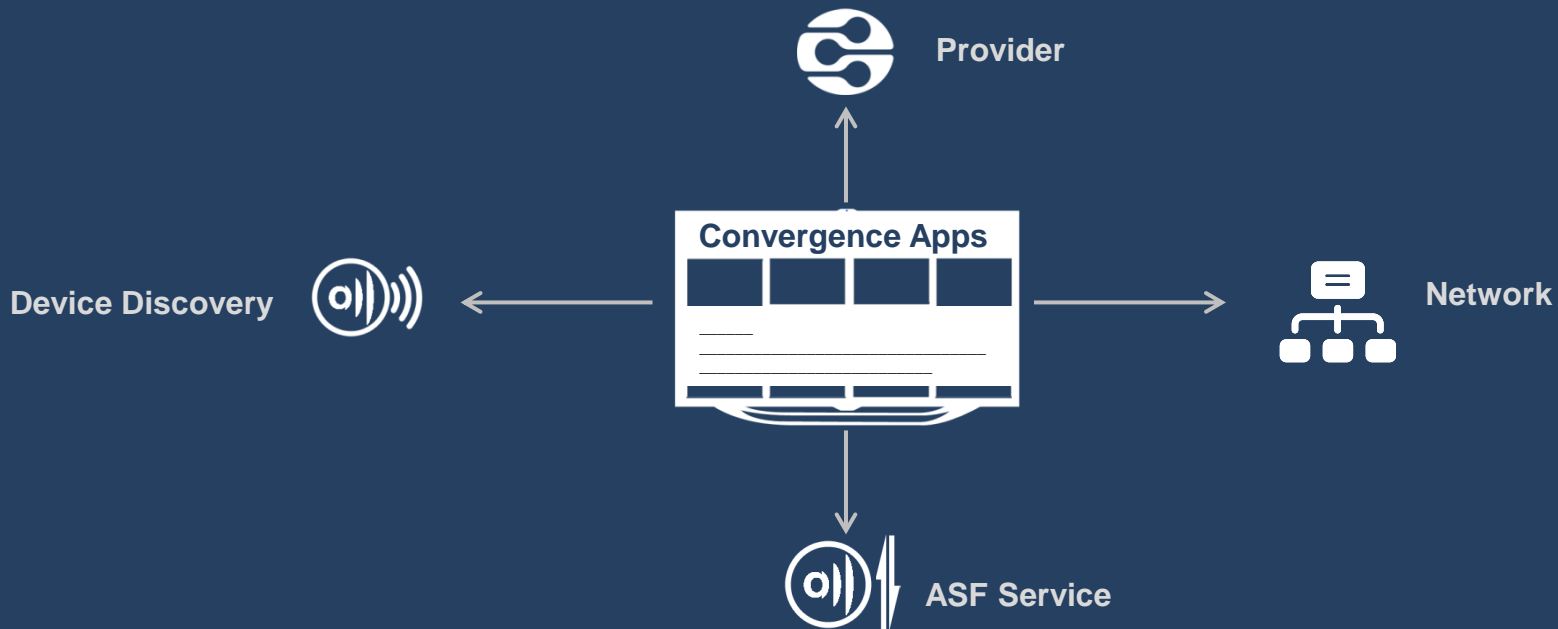


# App Scenarios

Web Device API + TV Product API

MultiScreen

Caph



# MultiScreen - Over View

Web Device API

TV Product API

MultiScreen

Caph

- Extend mobile apps to the Big Screen
- Separate views connected and running on different devices (Two Apps)
  - TV view enjoyed by an audience
  - Mobile view for privacy & SmartTV control.
- Devices (and the TV) are connected and can communicate.



# MultiScreen - Work Flow

Web Device API

TV Product API

MultiScreen

Caph

**Discover**



Discover Smart TVs on your network  
from mobile app

**Launch**



Launch TV apps from your mobile app

**Communicate**



Send/Receive messages to/from any  
number of mobile devices

# MultiScreen - App Scenarios

Web Device API

TV Product API

MultiScreen

Caph

## App Casting



Installed TV apps & Cloud TV apps

## Media Casting



Photos, Videos & Music

## Shared Experience



Multi Device, Multi User



# Caph – Over View

Web Device API

TV Product API

Multi Screen

Caph

- Web Application framework
- Higher performance
- Easily Extendable & Customizable
- Fast & Easy prototyping



# Caph – Framework

Web Device API

TV Product API

Multi Screen

Caph

## caph.base



- Access and animate DOM
- Define your class to support OOP
- Performance oriented jquery-style API
- Transform and timeline animations

## caph.ui



- Accelerated UI component
- Customizable APIs
- Supports various types of layouts
- Accessible Rich Internet Applications

## caph.theme



- Pre-defined UI components
- Define your own theme

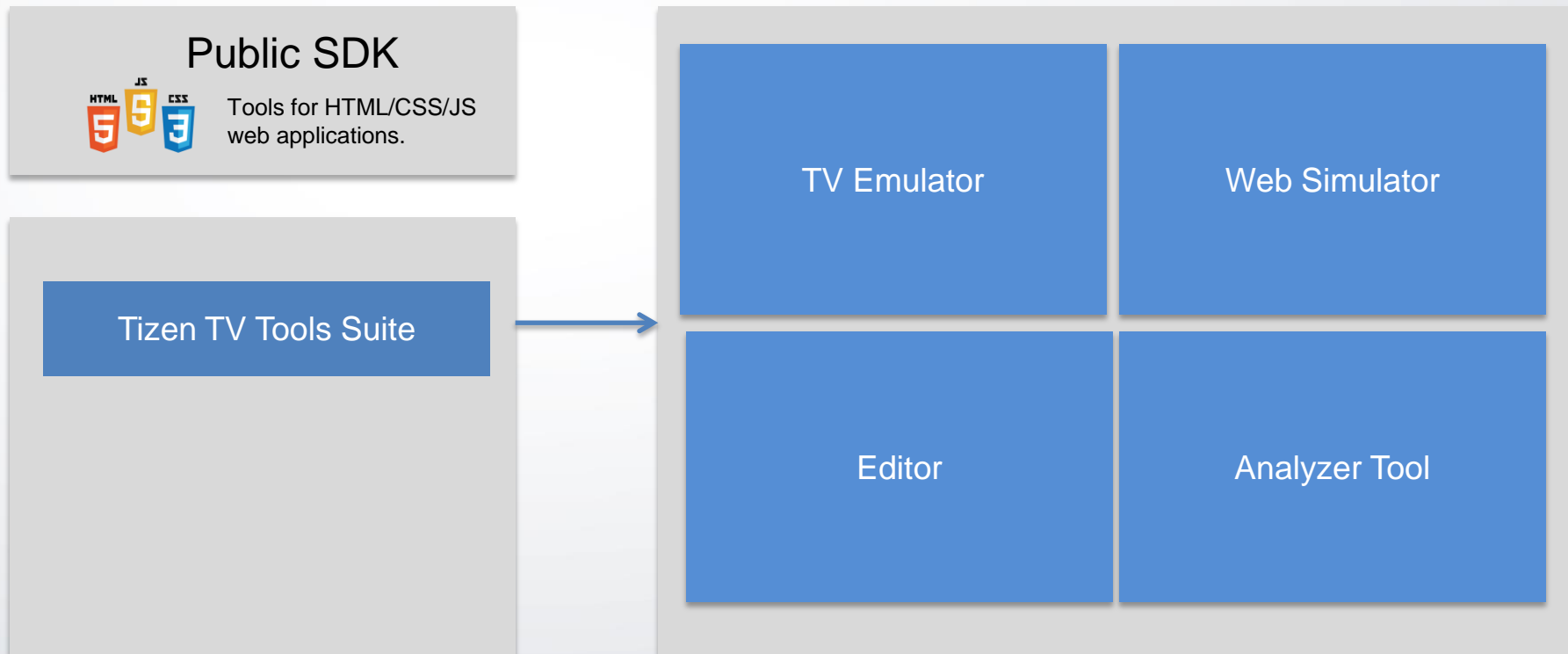
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Tizen TV Profile SDK

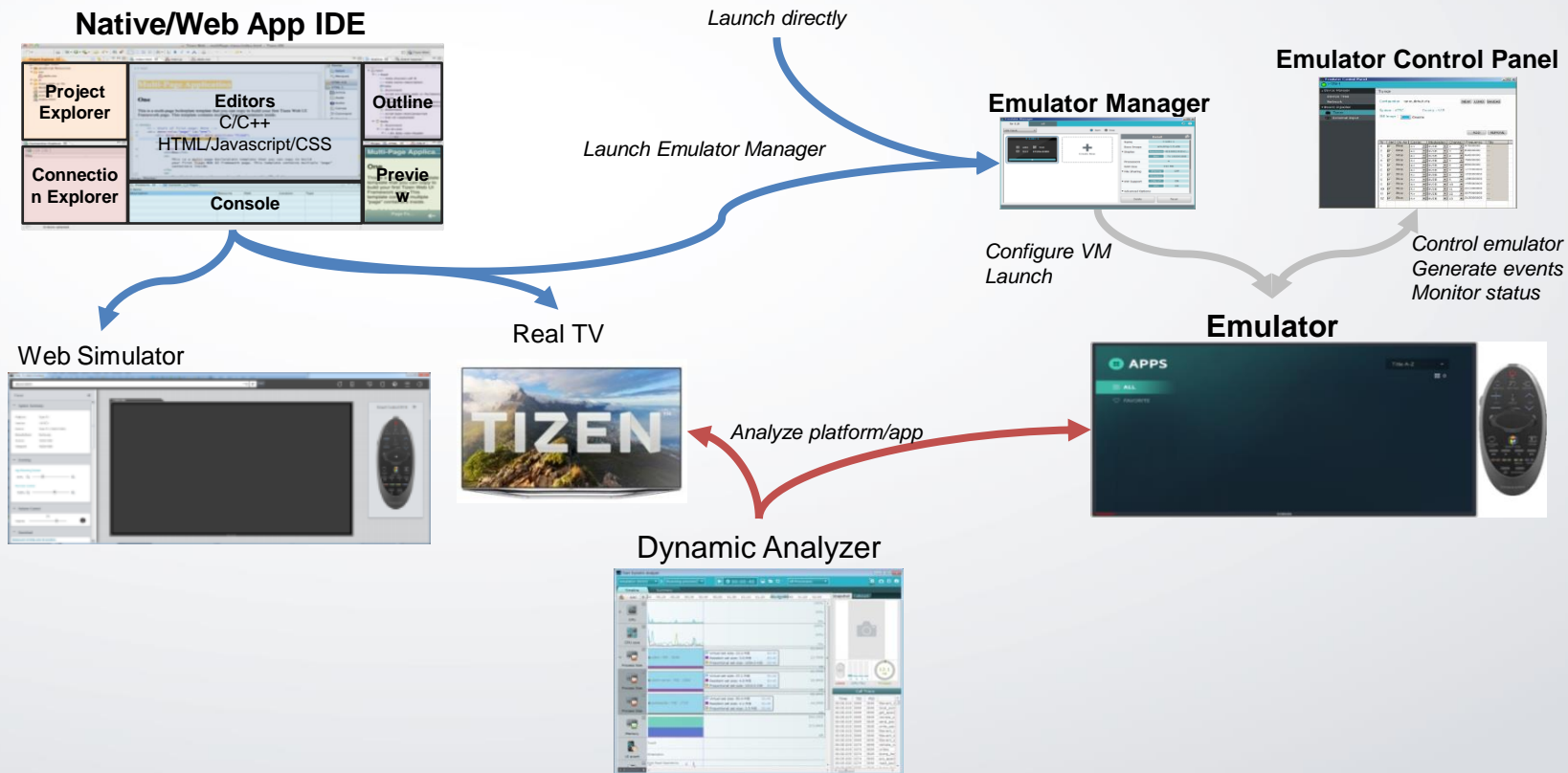
Tizen TV Development API

**Tizen TV Tools Suite**

# Tools Suit



# Tools Convergence



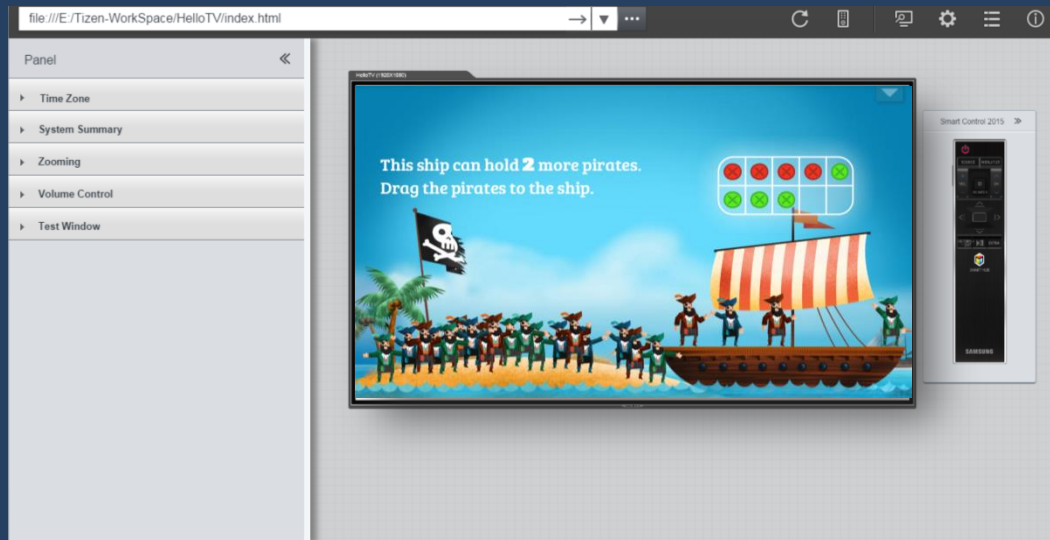
# Web Simulator

Light weight debug environment

Useful in quick Development of UI based Apps

Supports Debugger (Web Inspector)

Supports Mouse, keyboard and Remote Control



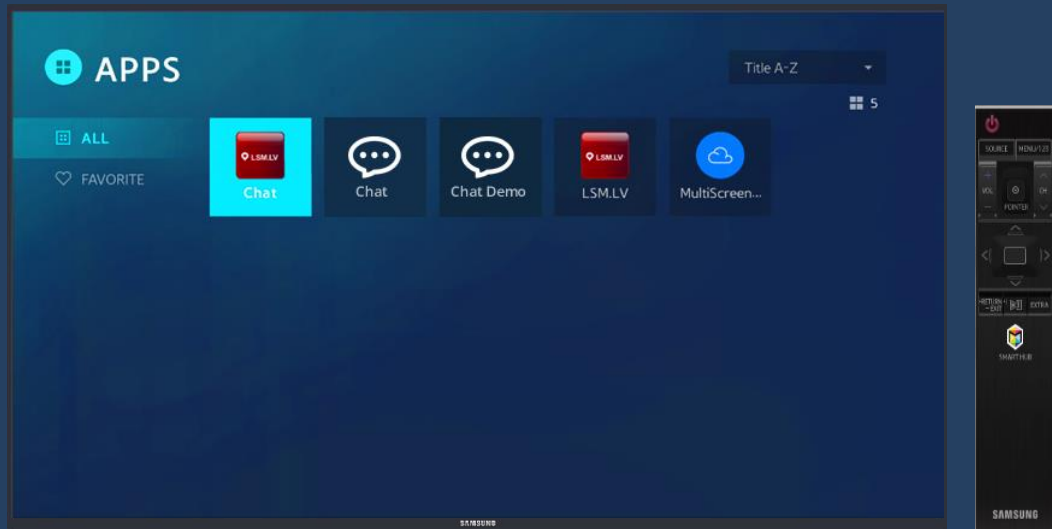
# TV Emulator

Provides Tizen TV emulation

Debug Apps with TV Product & Device APIs

Supports Debugger (Web Inspector)

Emulate HW by setting HW / SW specs



# Editor Video Slide

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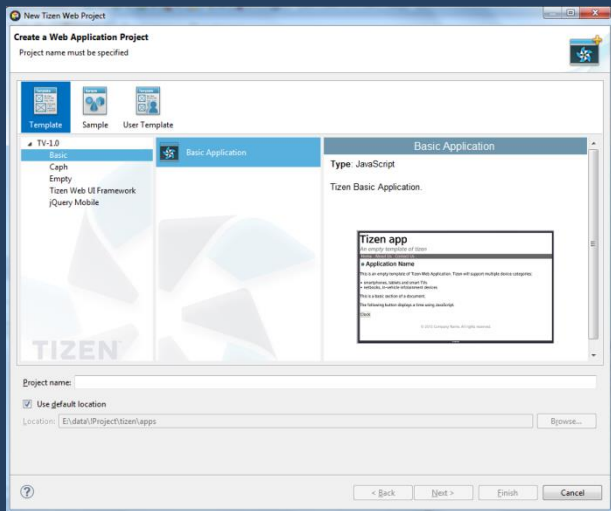


IDE Debug.avi

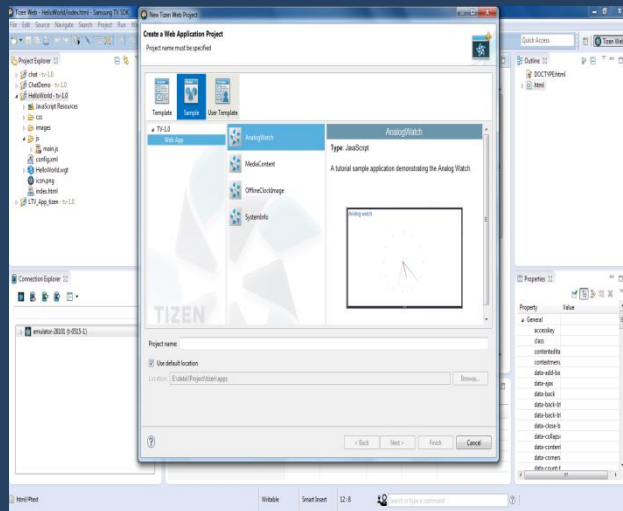


# Code Editor: Project Creation

## Project Selection



## Template Interface

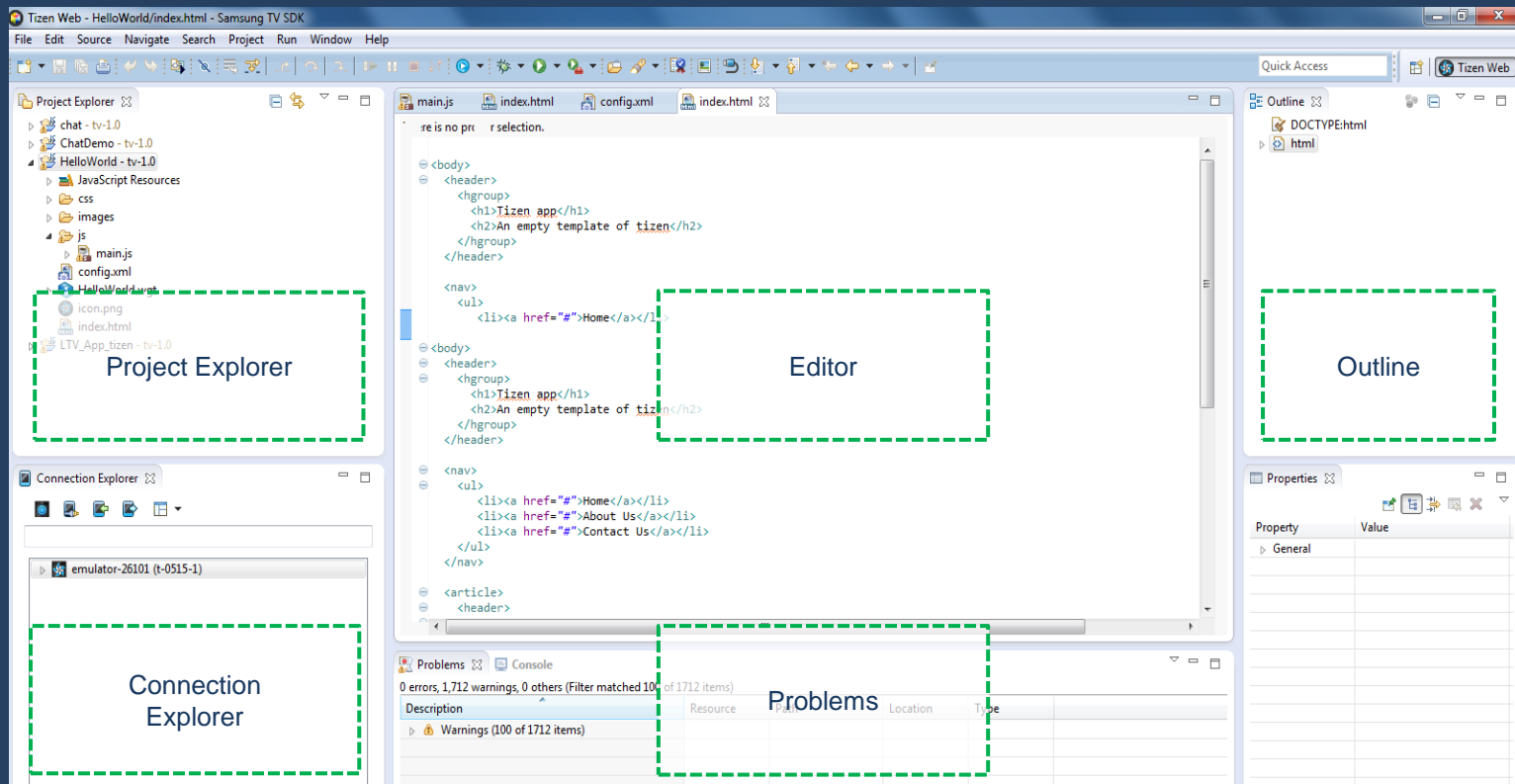


Project Selection  
Variety of templates

Samples  
Sample Applications

Caph Samples  
Templates and Sample for  
Caph Apps

# Editor: Project Creation



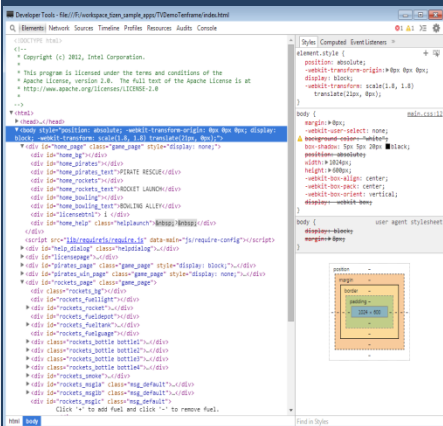
## Analyze Tool - Web Inspector

# Elements

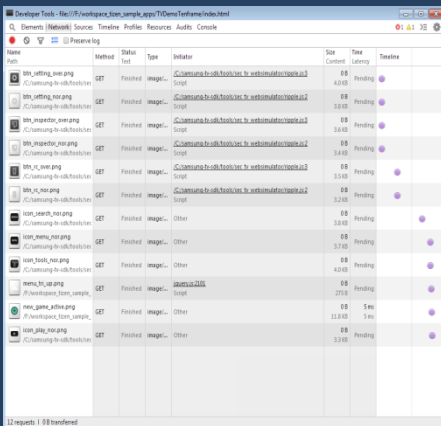
# Network

## Source

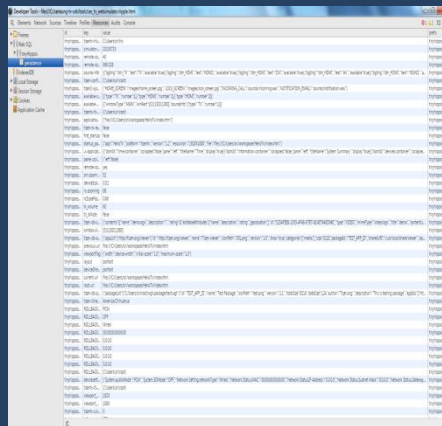
## Console



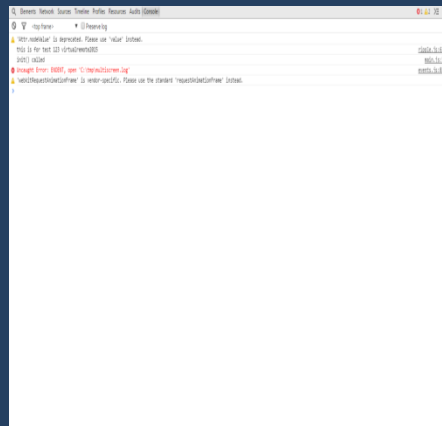
## Inspect DOM Elements



## Network profiling



## Java Script Debugger



## Diagnostic Logs

# Analyze Tool - Web Inspector Elements

The screenshot displays the Tizen Web Inspector's 'Elements' panel. The DOM Tree View on the left shows a hierarchical structure of HTML elements, with the 'body' element selected. The Event Listener pane on the right shows a list of events, with 'click' selected. The Style Pane on the right shows the computed styles for the selected element, including 'position: absolute', 'display: block', and 'width: 1024px'. The Metrics pane on the right shows a diagram of the element's layout, with dimensions of 1024 x 600.

**DOM Tree View**

```
<!DOCTYPE html>
<!--
 * Copyright (c) 2012, Intel Corporation.
 *
 * This program is licensed under the terms and conditions of the
 * Apache License, version 2.0. The full text of the Apache License is at
 * http://www.apache.org/licenses/LICENSE-2.0
 *
-->
<html>
  <head>...</head>
  <body style="position: absolute; -webkit-transform-origin: 0px 0px 0px; display:
  block; -webkit-transform: scale(1.8, 1.8) translate(21px, 0px);">
    <div id="home_page" class="game_page" style="display: none;">
      <div id="home_bg"></div>
      <div id="home_pirates"></div>
    </div>
    <div id="pirates_win_page" class="game_page" style="display: none;"></div>
    <div id="rockets_page" class="game_page">
      <div class="rockets_bg"></div>
      <div id="rockets_fuellight"></div>
      <div id="rockets_rocket"></div>
      <div id="rockets_fueldepot"></div>
      <div id="rockets_fueltank"></div>
      <div id="rockets_fuelguage"></div>
      <div class="rockets_bottle bottle1"></div>
      <div class="rockets_bottle bottle2"></div>
      <div class="rockets_bottle bottle3"></div>
      <div class="rockets_bottle bottle4"></div>
      <div id="rockets_smoke"></div>
      <div id="rockets_msg1a" class="msg_default"></div>
      <div id="rockets_msg1b" class="msg_default"></div>
      <div id="rockets_msg1c" class="msg_default"></div>
    </div>
  </body>
</html>
```

**Event Listener**

**Style Pane**

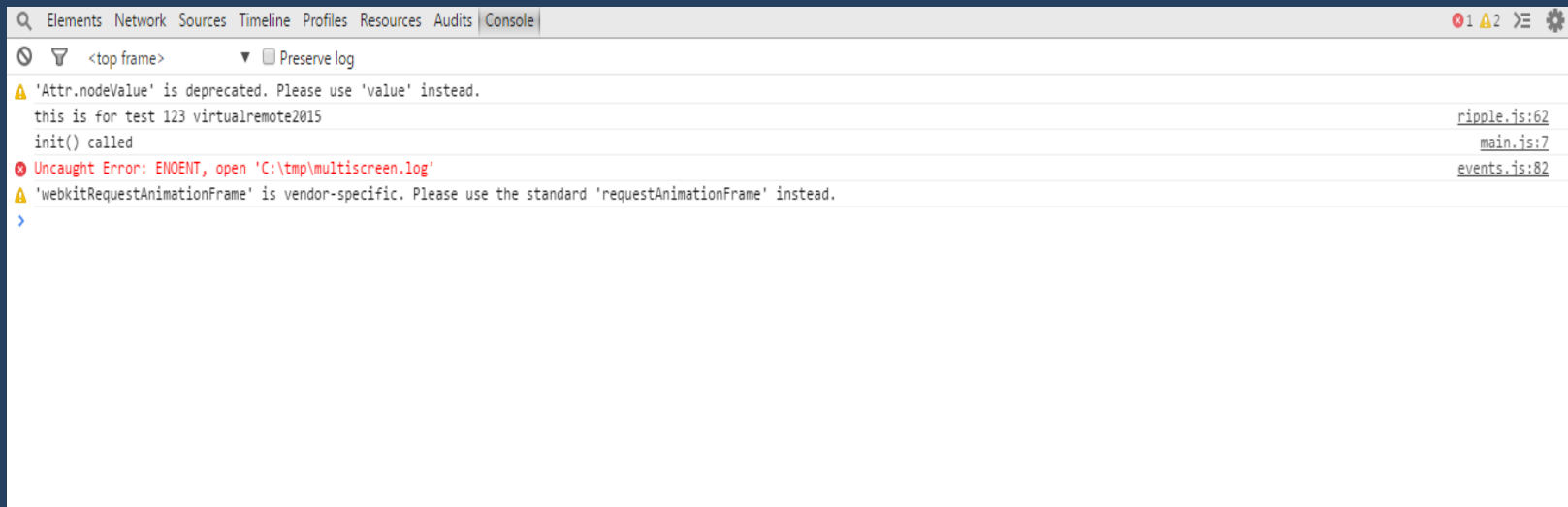
```
body {
  display: block;
  margin: 8px;
}
```

**Metrics**

Editing DOM nodes as HTML

Editing CSS & Listener attributes

# Analyze Tool - Web Inspector Console



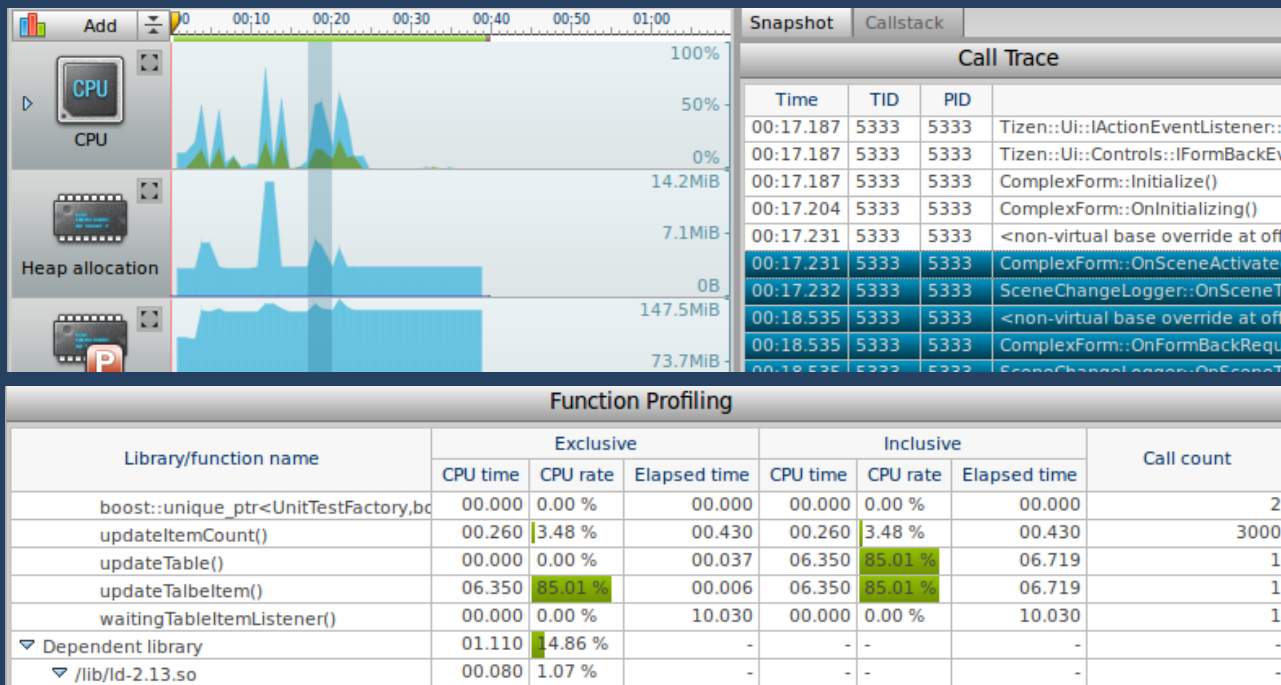
Message Stacking

Console API for Errors, Warnings and Logs

Frame Selection to operate within different frames

Command Line interaction with DOM

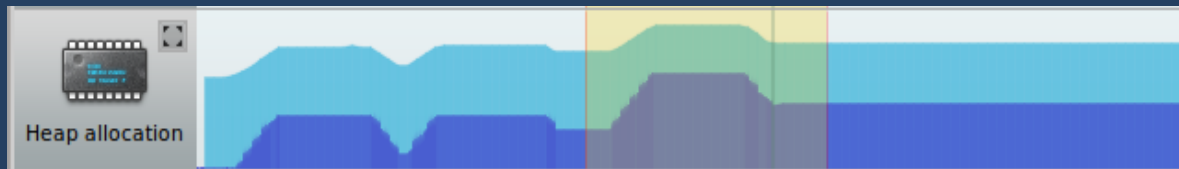
# Analyze Tool – Dynamic Analyze CPU



1. CPU charge graph
  - \* blue : whole CPU
  - \* green : selected process
  - \* shade : selected duration (time based)
2. Call Trace
3. Function Profiling
  - \* find function to use CPU much
  - \* find function to spend much time

\* Platform SDK only

# Analyze Tool – Dynamic Analyze Memory



Leak candidates						
API	PID	Cat...ry	Time	File/p...meter	Return	
malloc	4093	Memory	01:25.781	131072, 0x0	0xB94F63D0	/o
malloc	4093	Memory	01:23.075	131072, 0x0	0xB91962F8	/o
malloc	4093	Memory	01:26.082	131072, 0x0	0xB95563E8	/o
malloc	4093	Memory	01:24.879	131072, 0x0	0xB93D6380	/o
malloc	4093	Memory	01:25.480	131072, 0x0	0xB94963B8	/o
malloc	4093	Memory	01:22.073	131072, 0x0	0xB90562A8	/o
malloc	4093	Memory	01:22.373	131072, 0x0	0xB90B62C0	/o
malloc	4093	Memory	01:23.776	131072, 0x0	0xB9276330	/o
malloc	4093	Memory	01:19.366	131072, 0x0	0xB8CF61D0	/o
malloc	4093	Memory	01:24.377	131072, 0x0	0xB9336360	/o
malloc	4093	Memory	01:19.666	131072, 0x0	0xB8D561E0	/o
malloc	4093	Memory	01:23.375	131072, 0x0	0xB91F6310	/o

1. CPU graph
  - \* light blue : total heap used
  - \* deep blue : used heap for selected process
2. Candidates function
  - \* function not to call free yet

\* Platform SDK only

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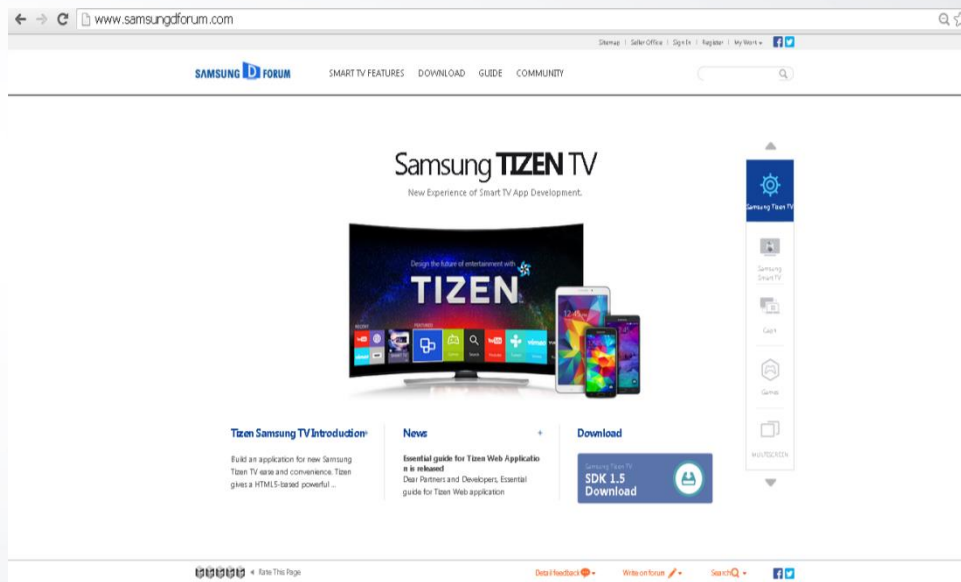
Thank You!



# Appendix - Developer Resources

## Information

- TV SDK Detailed Information
- SDK Download
- Documentation
- API Reference
- Samples
- Distribution Guide
- UX Guidelines



[www.samsungdforum.com](http://www.samsungdforum.com)