What's new in Tizen .NET?

New Update for Galaxy Watch and Samsung TV

Hobum (Vincent) Kwon

Principal Engineer, Samsung Electronics

Brandon Minnick

Developer Advocate, Microsoft

From the title, you may ask …

- What is Tizen?
- What is Tizen .NET?

Including answers for the questions, let's set the agenda first.

Agenda for this session:

- Introduction to Tizen Platform and Tizen .NET
- Overview of Xamarin
- 10 new updates in Tizen .NET with demo

Questions:

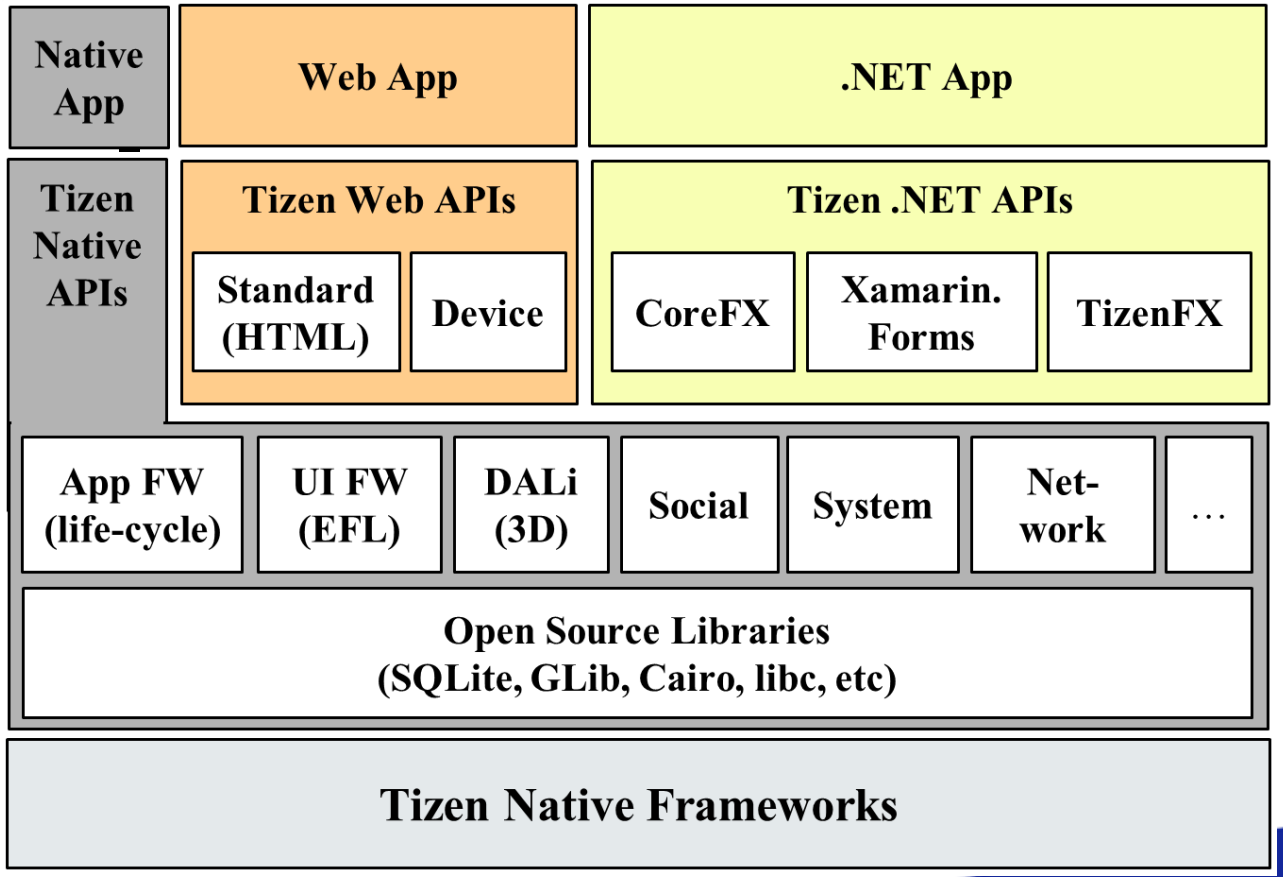
- How many of you use Tizen SDK for making applications?
- How many of you use Xamarin & .NET for making applications?

Tizen

- Linux-based open source platform since 2012
- Designed & optimized for CE devices
- **100 million** Tizen-based devices already
- Adopted to
  - Samsung TVs (since 2015)
  - Galaxy Watches (since 2014)
  - Family-Hub (since 2016)
  - Phones (Z1, Z3, Z4)
  - …
- Current: Tizen 5.0 M2 (Nov 2018)

3 Tizen Application Models

- Web app model
  HTML5, CSS, JavaScript
- Native app model
  - C/C++, open source libs
- Tizen .NET app model
  - C#, .NET, Xamarin



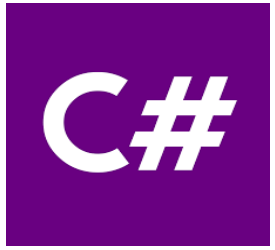
SAMSUNG Developer Conference

Tizen .NET

- Introduced to improve application development experience
- Included all Tizen 4.0 devices
- 2018 Samsung Smart TVs and 2018 Galaxy Watch Products

+

Reasons of high productivity in Tizen .NET



Powerful as Java

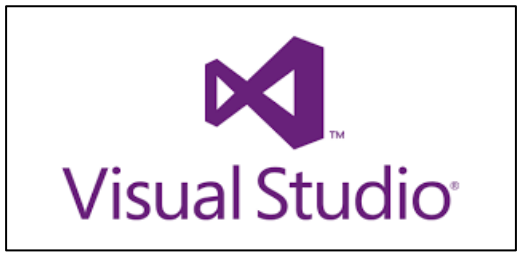
Object-oriented, strong typed

New advanced features added

Open source on Linux, Mac, Windows

+32,000 APIs (.NET standard 2.0)

Strong community (estimated 8 million)



High productivity (Intellisense)

Tons of extensions & tools

NuGet package managers

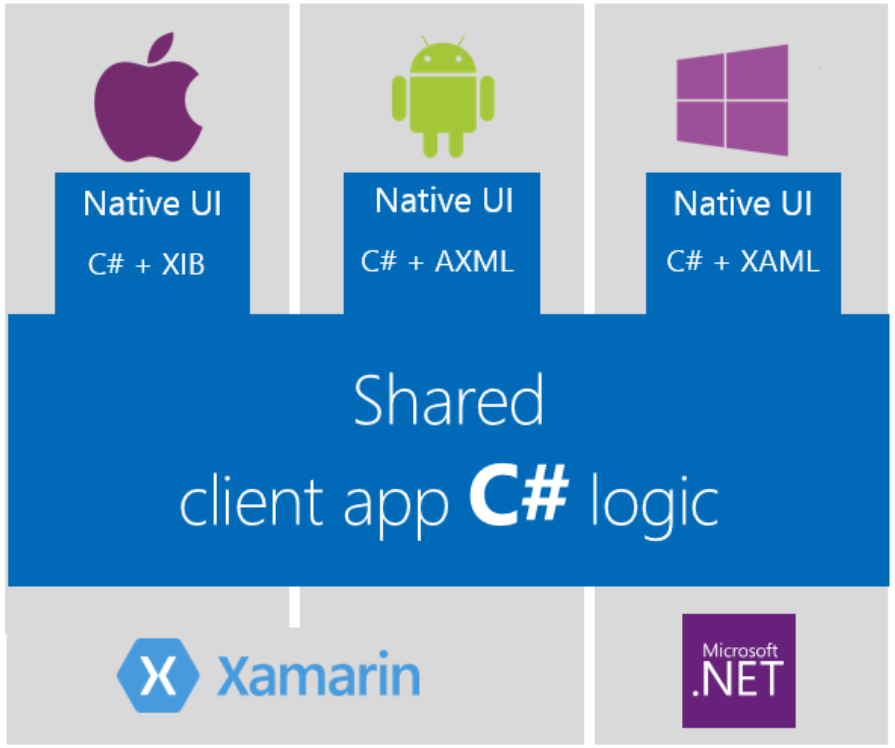
TizenFX

(Tizen-specific features)

Samsung-specific UI Controls

Tizen .NET + Xamarin

- Make native UI development much easier than Tizen Native
- Provides cross-platform APIs with tons of developer references



Tizen .NET

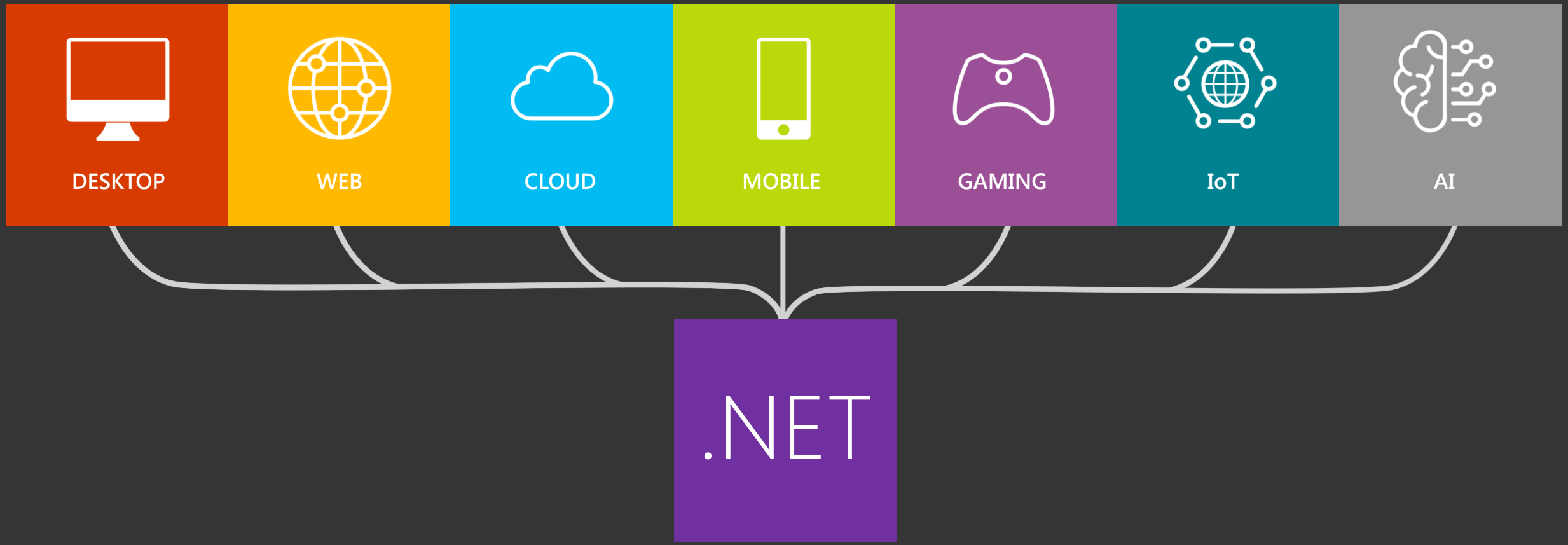
Microsoft

Xamarin.Forms

Brandon Minnick
Developer Advocate

What is .NET?

Your platform for building anything



C# Runs on .NET

Along with F# and Visual Basic

What is Xamarin?

Original Approach

No shared code • Many languages and development environments • Multiple teams

Xamarin's Approach

Shared C# codebase • 100% native API access • High performance

Xamarin + Xamarin.Forms

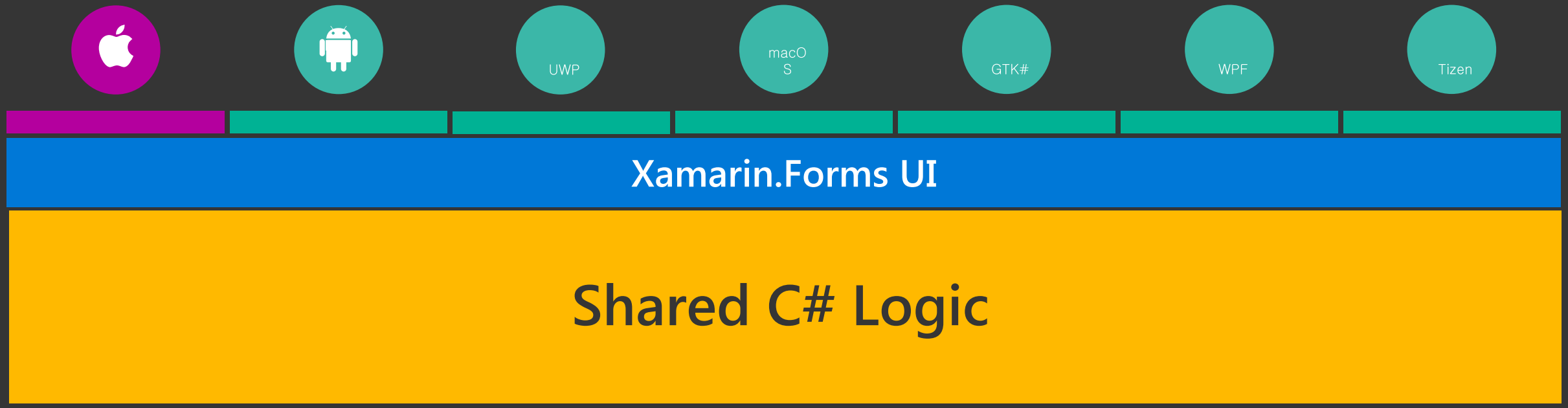
More code-sharing, all native

Traditional Xamarin Approach

Xamarin.Forms Approach

Xamarin + Xamarin.Forms

More code-sharing, all native



Xamarin.Forms Approach

Demo

Xamarin.Forms

10 New Updates in Tizen .NET

Hobum (Vincent) Kwon

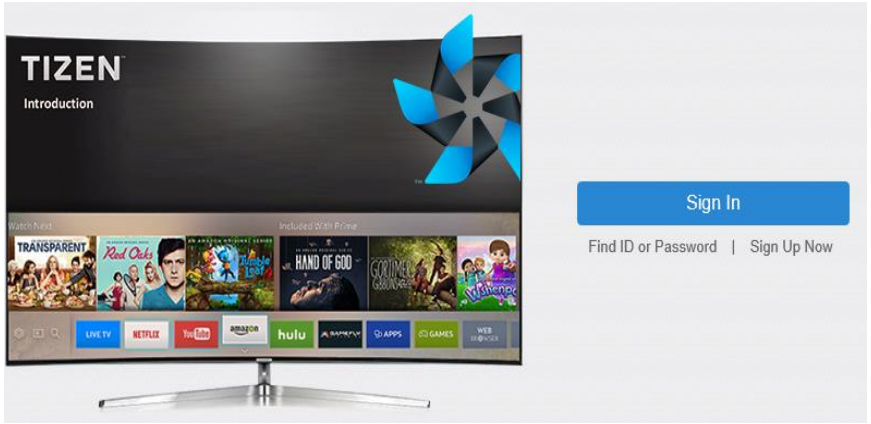
SAMSUNG Developer Conference

1. Stores are ready for Tizen .NET apps

- Register your apps to Galaxy Apps (for watch) and Samsung Apps (for TV)
- Devices which can run Tizen .NET apps are
  - 2018 Samsung Smart TVs
  - Galaxy Watch

SAMSUNG Galaxy Apps

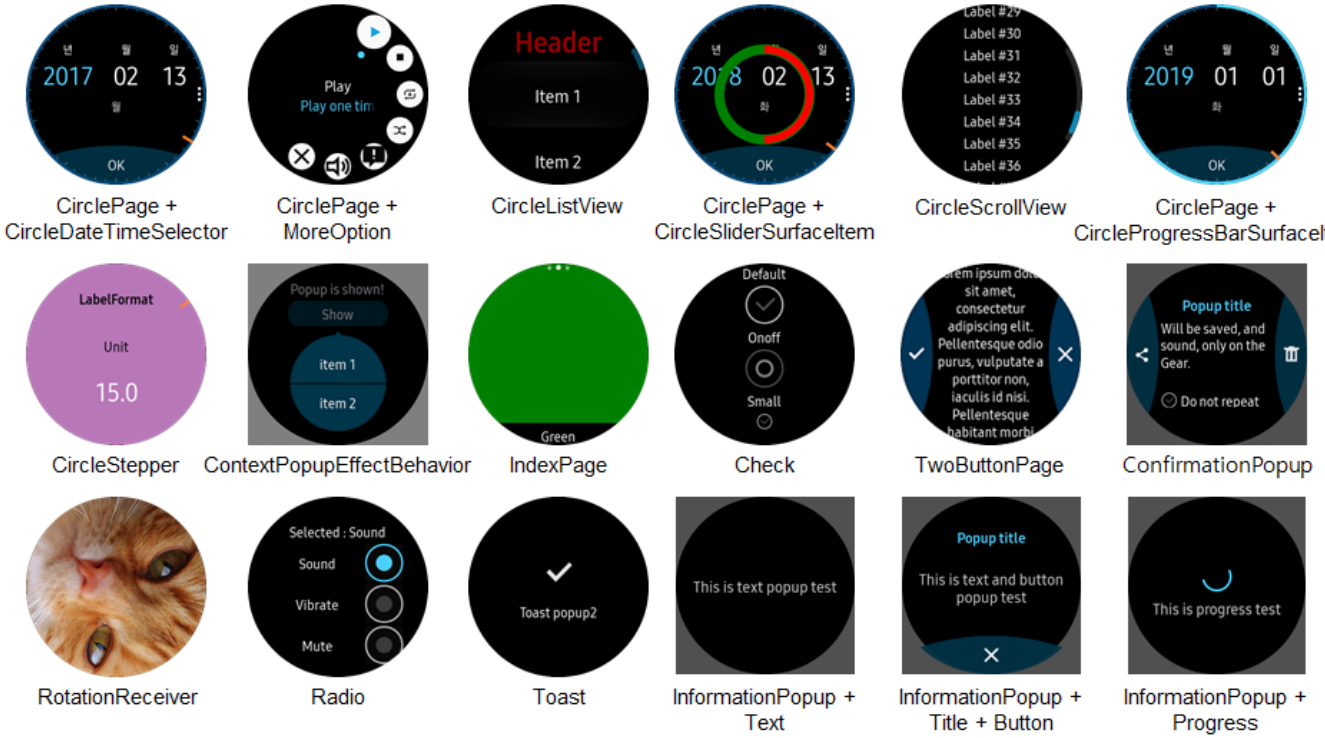
https://www.samsung.com/global/galaxy/apps/galaxy-apps/



https://seller.samsungapps.com/tv/portal/main#

2. Tizen Circular UI for Galaxy Watch

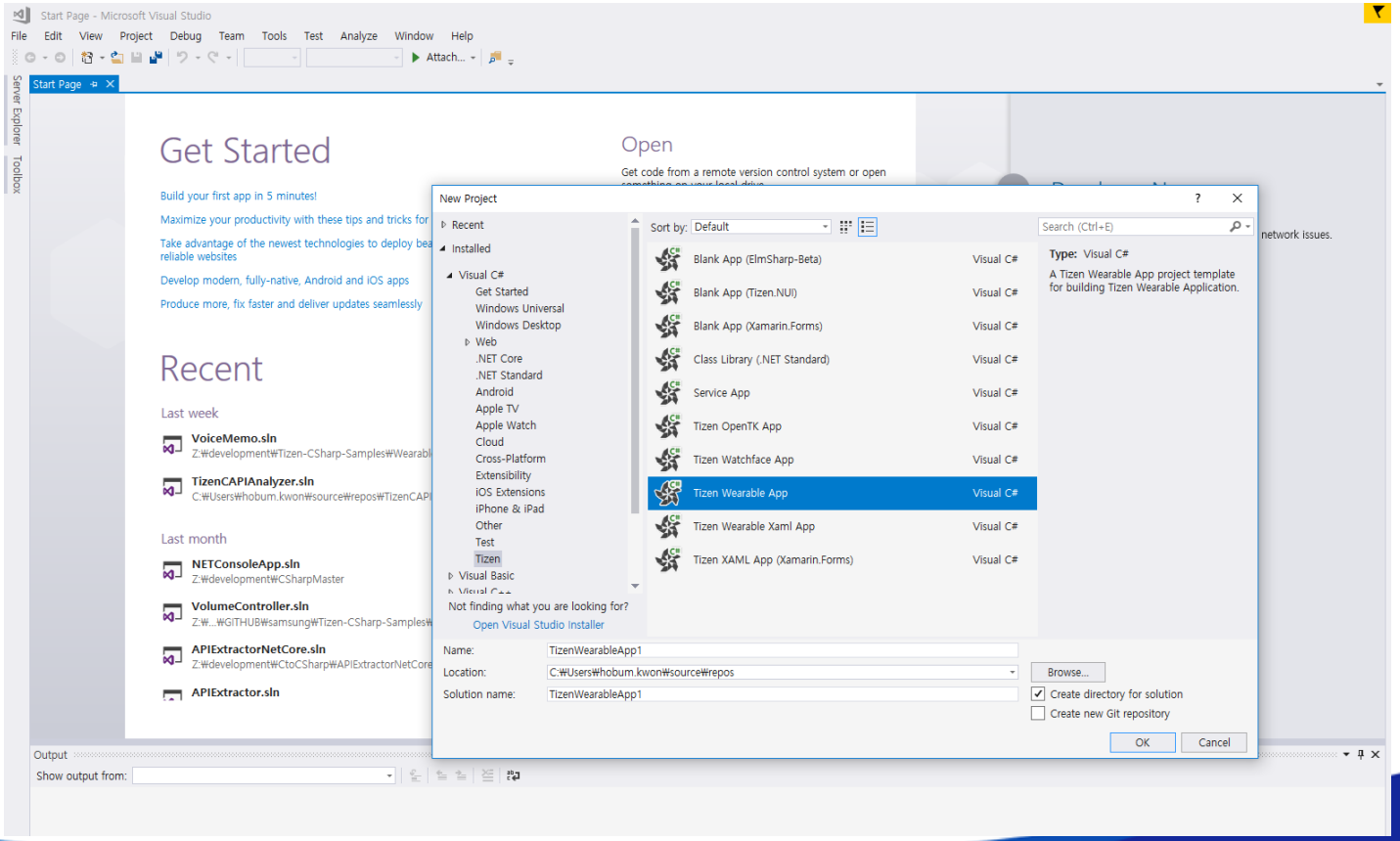
- Enable easy watch app development with Tizen Circular UI APIs



Source code: https://github.com/Samsung/Tizen.CircularUI
Nuget: https://www.nuget.org/packages/Tizen.Wearable.CircularUI/

2. Tizen Circular UI for Galaxy Watch

- Just create a “Tizen Wearable App” from a project template



SAMSUNG Developer Conference

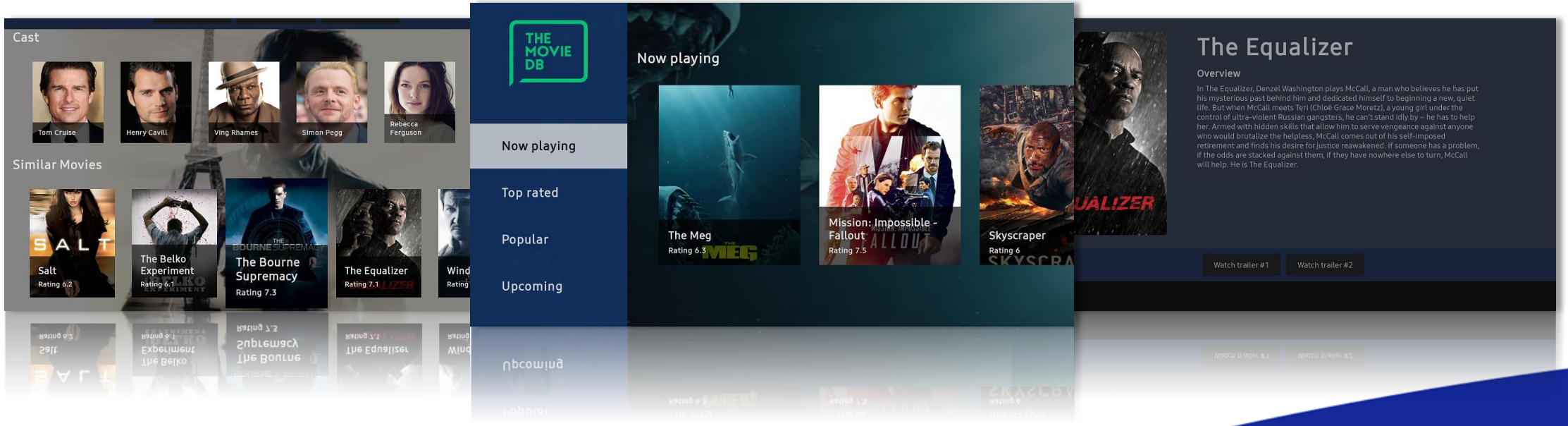
3. Tizen TV UI for Samsung Smart TV

- Enable easy smart tv app development with Tizen TV UI APIs.

  Source code: https://github.com/Samsung/Tizen.TV.UIControls

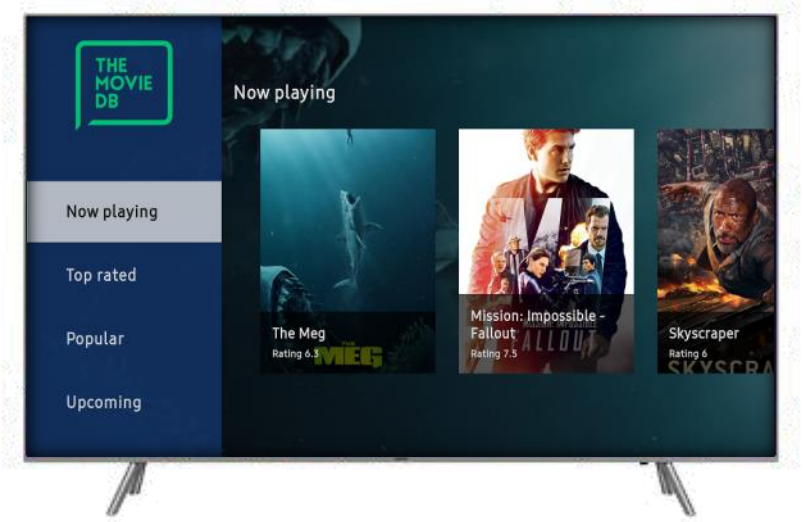
  Nuget : https://www.nuget.org/packages/Tizen.TV.UIControls/1.0.0-beta-00003

  Browse **Tizen.TV.UIControls** from Nuget Package Manger in Visual Studio

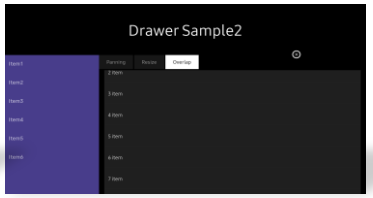


3. Tizen TV UI for Samsung Smart TV

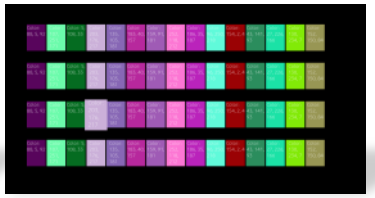
- Newly released Tizen TV UI APIs (UI Controls) as below:

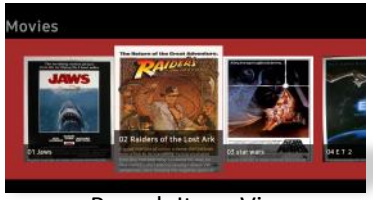


Media Player



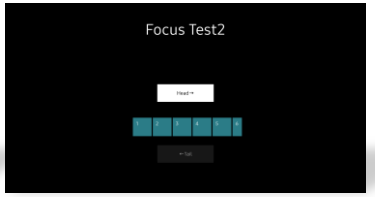
Drawer + ListView


Focus Chain

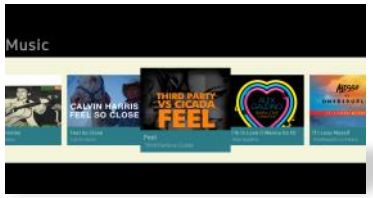


RecycleItemsView

Media Player + Embedding Controls



Focus Management



ImageCell with Text

Entry and Editor

Popup

4. .NET Core Runtime for Tizen

INTRO & ROADMAP

- Microsoft Maintained Open-source CLR & .NET Class Libraries
- High Performance & Modular Design
- Supporting Linux, Mac, & Windows
- Compatible w/ .NET FW, Xamarin and Mono via .NET Standard
- Now .NET Core 2.1.5 & Upcoming Ship Dates Are:

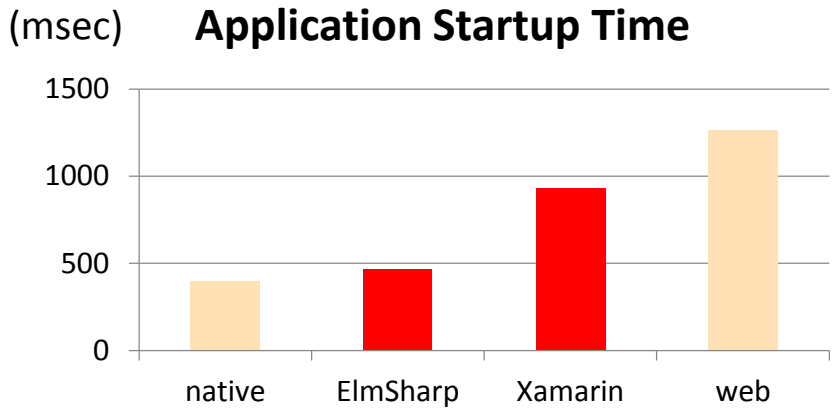
*Common Language Runtime

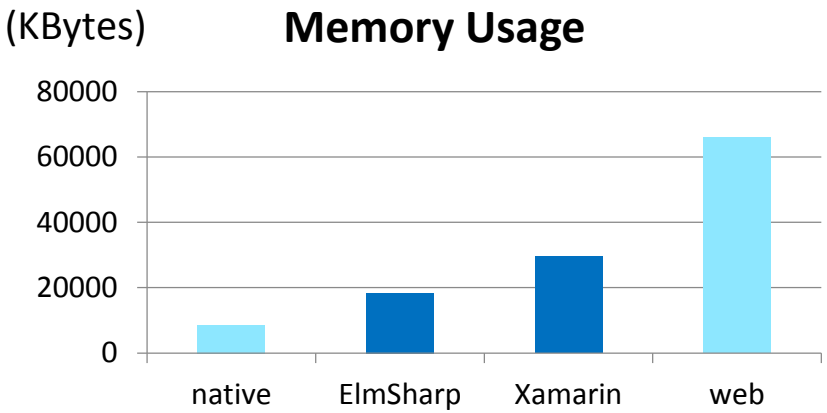
Milestone	Release Date
.NET Core 2.2	Q4 2018
.NET Core 3.0	Q1 2019

4. .NET Core Runtime for Tizen

PERFORMANCE& VERSION MAPPING

- Performance (Galaxy Gear – Tizen 5.0)





Tested with
Simple Stopwatch App

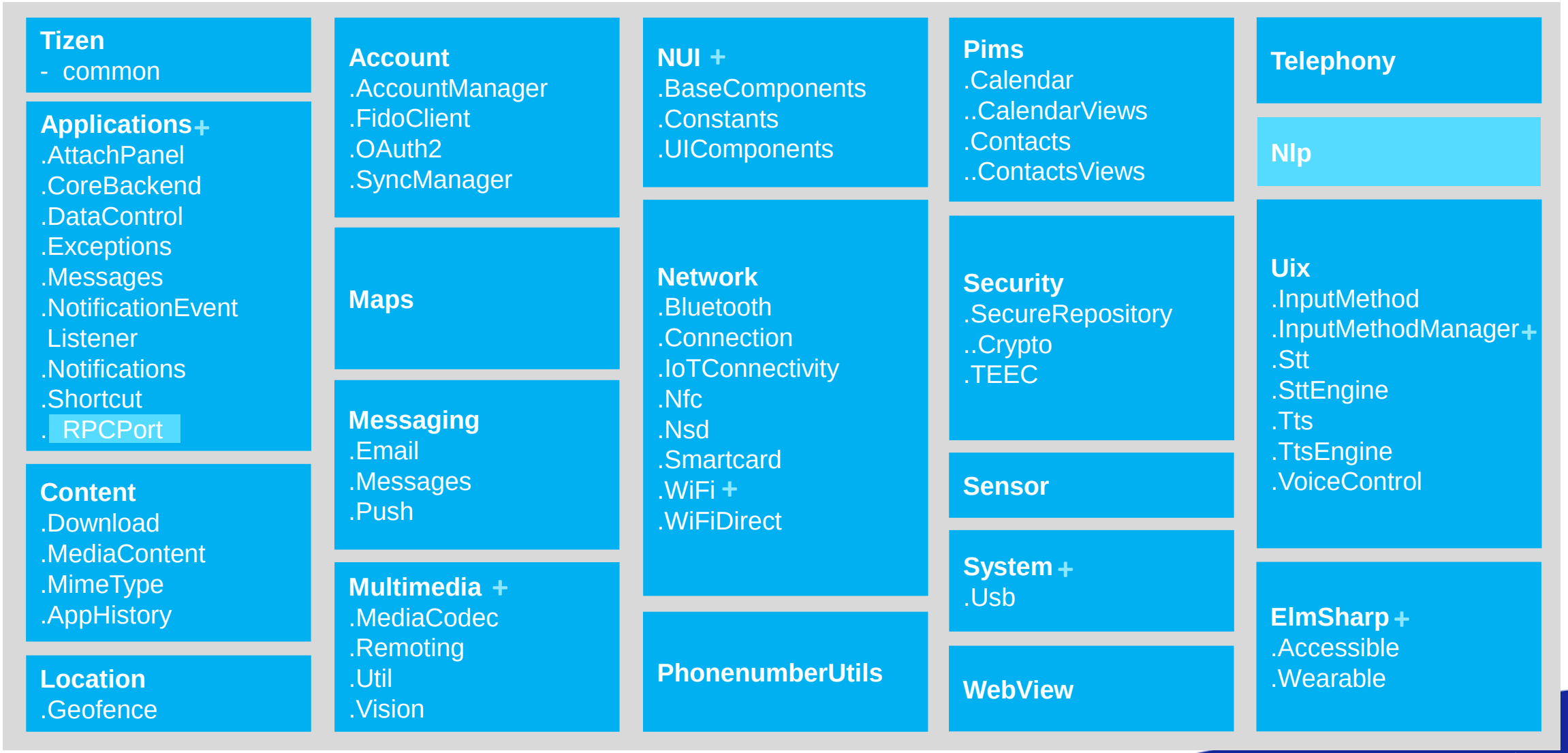
- Version Mapping
  - Tizen 4.0 : .NET Core 2.0.0
  - Tizen 5.0 : .NET Core 2.1.4

4. .NET Core Runtime for Tizen

- .NET Standard 2.0 has the set of 32,000 APIs
- CI for Functional Regression & Performance Statistics
- Test All APIs under Secure Application Environment

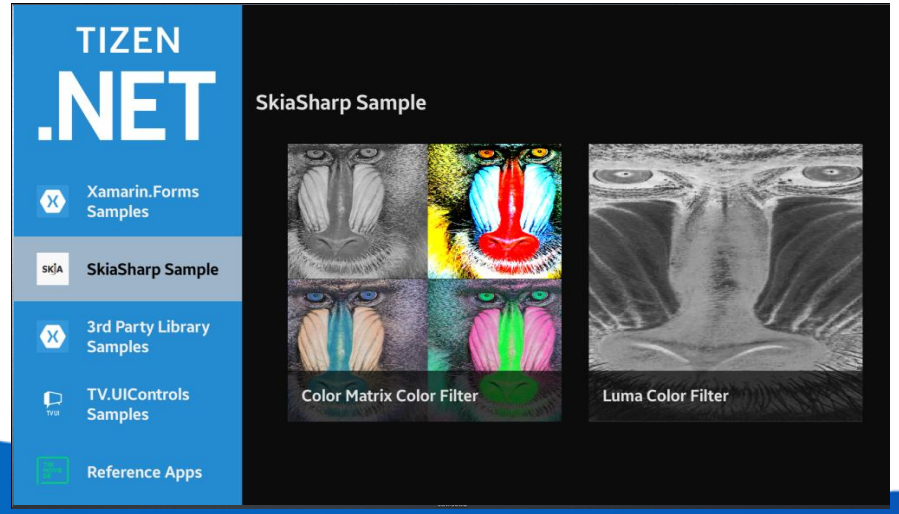
	Total	Pass	Pass Ratio
CoreCLR Tests Core managed library, Loader, GC, JIT, Hosting, ReadyToRun, Base services, Exceptions	10,998	10,998	100 %
CoreFX Tests System.IO, System.Collections, System.Xml, System.Globalization, System.Net, System.Linq, System.Text, System.Threading, and more …	492,943	492,943	100 %

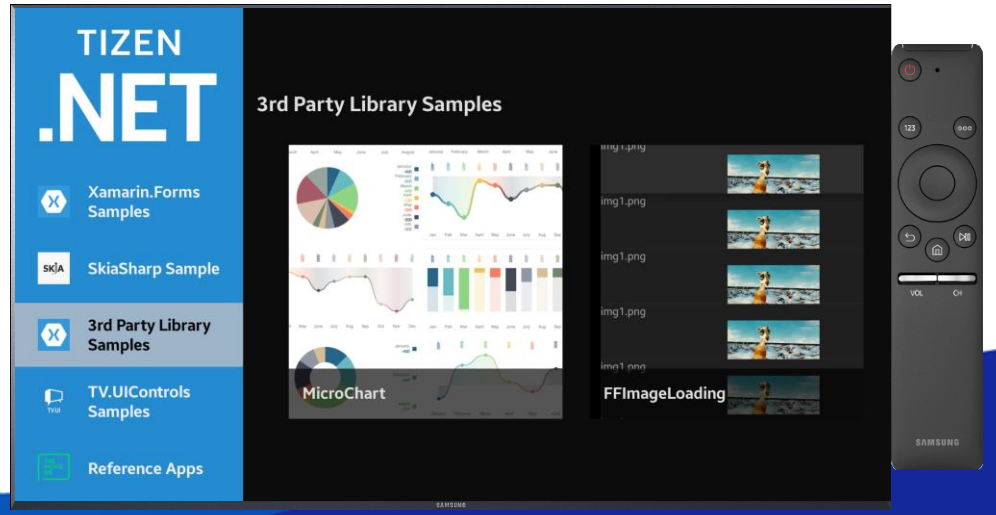
5. Tizen specific TizenFX API (version 5)



6. Tizen Support for .NET & Xamarin 3rd APIs

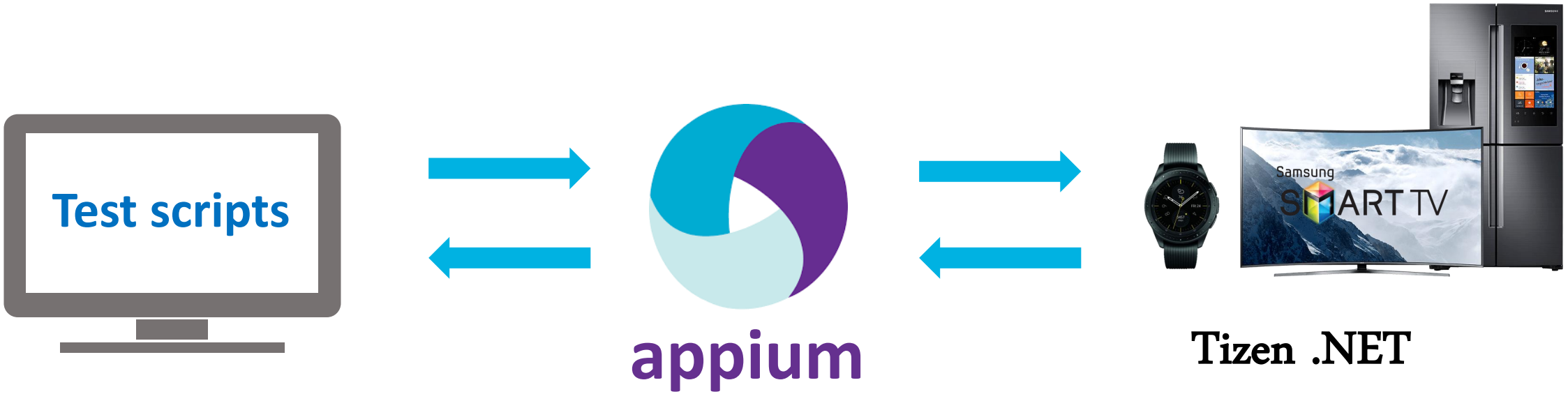
- Skiasharp
- FFImageLoading
- MicroChart
- Xamanimation
- CarouselView
- XamarinMediaMenager
- XamarinMediaMenager
- Xam.Plugins.Messaging
- SimpleAudioPlayer
- UserDialogs
- SharePlugin
- SettingPlugin
- SecureStorage
- Permissions
- Media Plugin
- DeviceInfoPlugin
- ConnectivityPlugin
- And so on





7. UI Test Automation using appium

- Write tests against multiple platform
- Run tests on multiple Tizen devices



7. UI Test Automation using appium

- We are contributing to appium for supporting Tizen
  - Appium tizen drivers
    https://github.com/Samsung/appium-tizen-driver
  - Appium client library (for C#)
    https://github.com/appium/appium-dotnet-driver
  - Tizen.Appium (for Tizen .NET apps using Xamarn.Forms)
    https://github.com/Samsung/Tizen.Appium

7. UI Test Automation using appium

- Preparing your Tizen .NET app for test

```
TizenAppium.StartService(app);
```

- Running your test app with appium

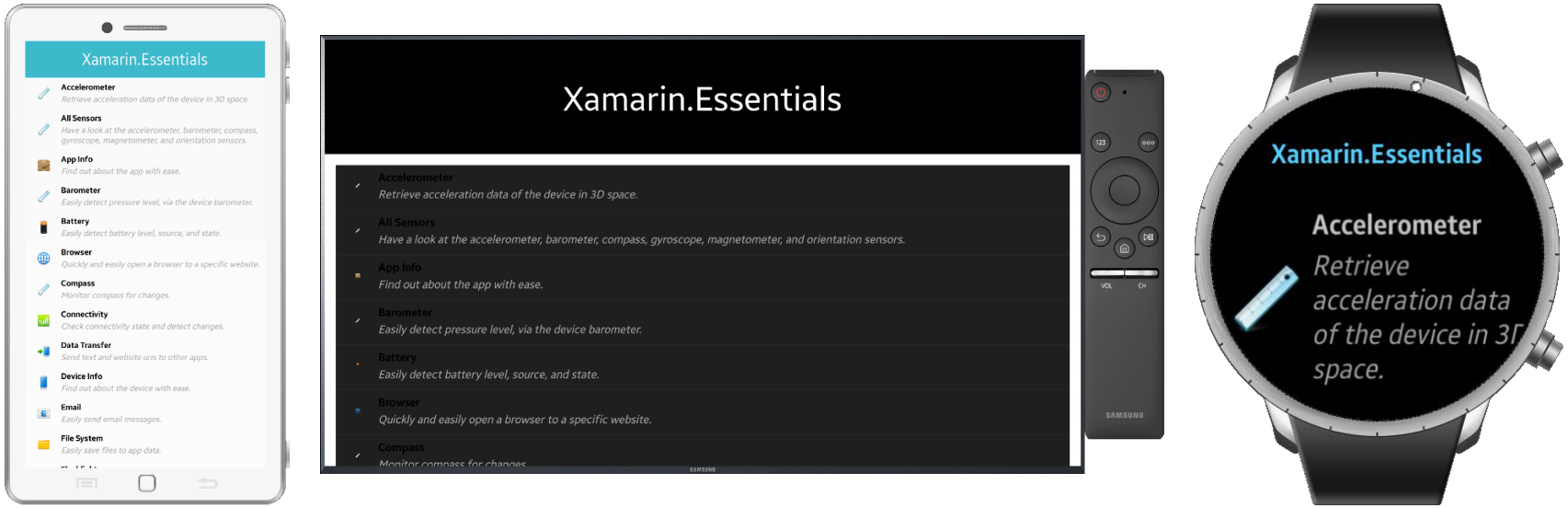
```
DesiredCapabilities appCapabilities = new DesiredCapabilities();
appCapabilities.SetCapability("platformName", "Tizen");
appCapabilities.SetCapability("deviceName", "emulator-26101");
appCapabilities.SetCapability("appPackage", "ControlGallery.Tizen");

URL url = new URL("http://127.0.0.1:4723/wd/hub");
TizenDriver<TizenElement> driver = new TizenDriver<TizenElement>(url, desiredCapabilities);
```

8. Xamarin Essentials for Tizen

- A single cross-platform device API
  - works with any Android, iOS, and UWP application.
  - can be accessed from shared code no matter how the user interface is created.
- Developing 30+ modules
  - accelerometer, battery, compass, …
  - https://github.com/xamarin/Essentials

8. Xamarin Essentials for Tizen

- Tizen backend added !
  - Support multi-profiles (Mobile, TV, Watch)
  - Currently support 26 of 30 modules.



SAMSUNG Developer Conference

9. Tools update

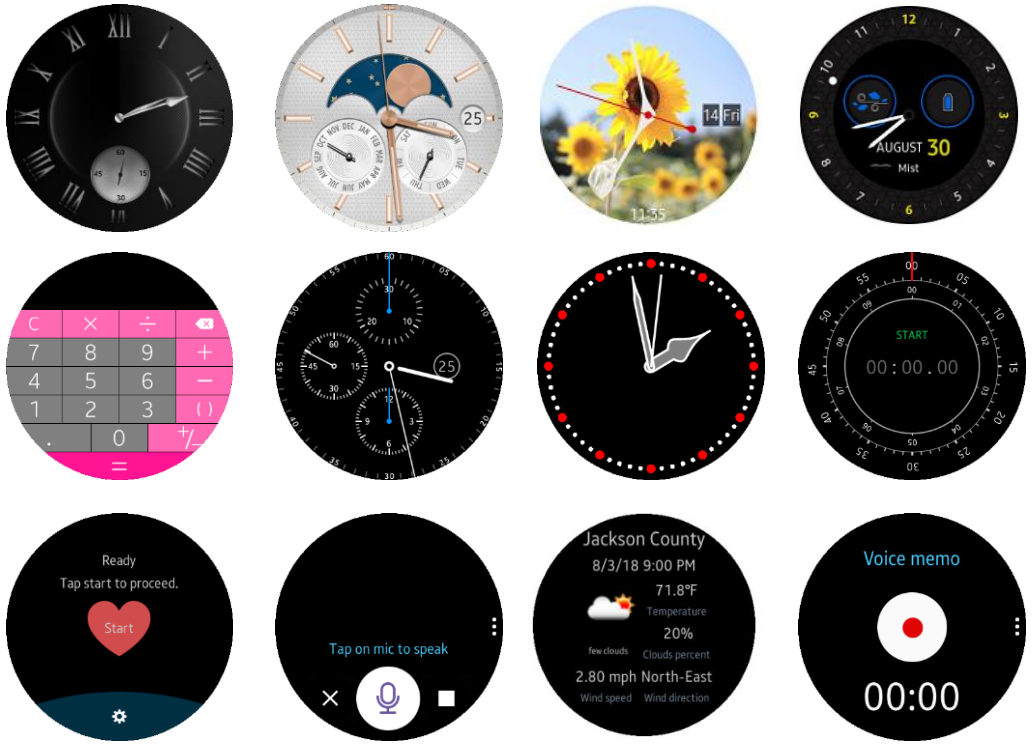
- Visual Studio Tools for Tizen
  - Project Templates
  - Manifest Editor
  - Emulators and Emulator Manager
  - Tizen Log Viewer
  - Tizen API and Privilege Checker

Development Environment (Visual Studio 2017)	Emulator
Performance Profiler	Debugger & Utilities

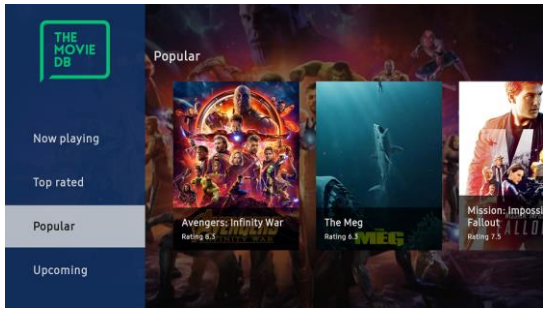
Visual Studio Tools for Tizen

10. More Samples and More Documents

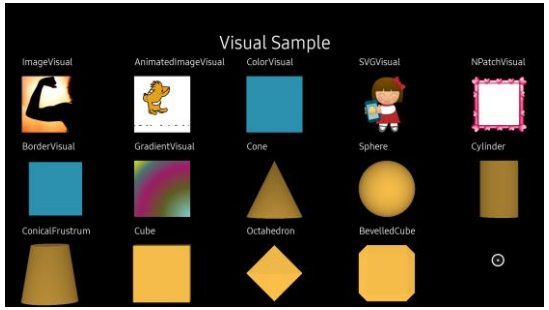
- For Wearable

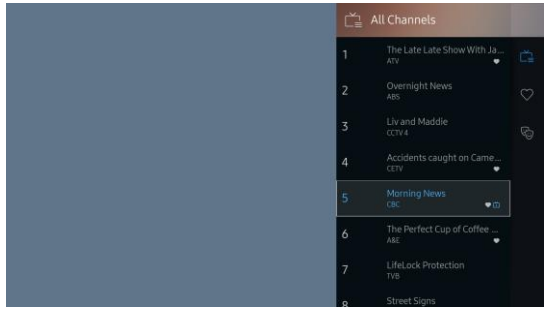


- For TV



*https://github.com/Samsung/Tizen.TV.UIControls/tree/master/sample/TMDb





https://developer.tizen.org/development/sample/.net-application

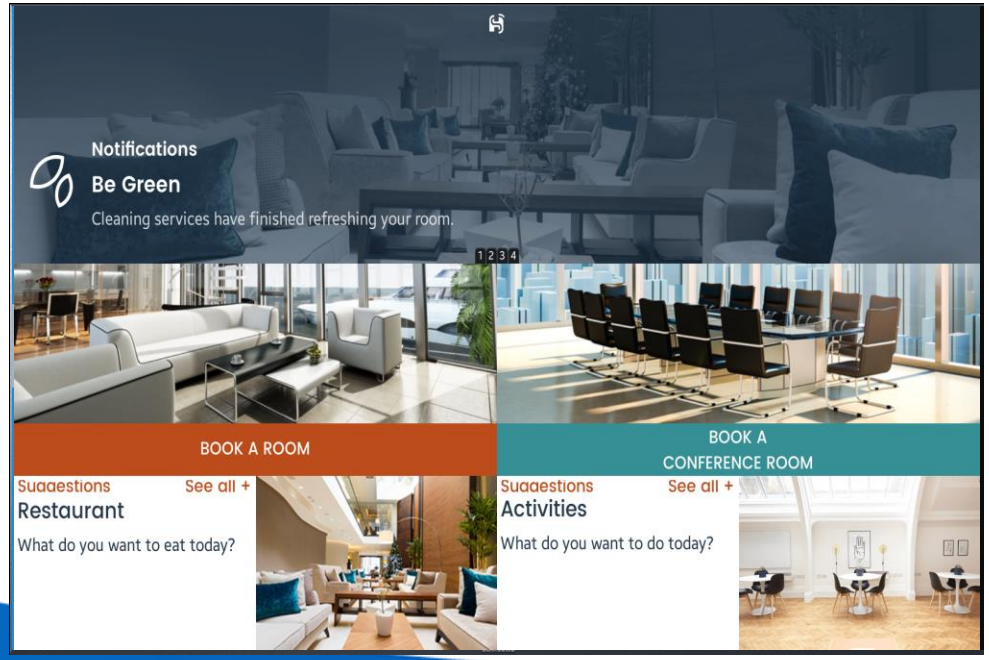
Demo 1

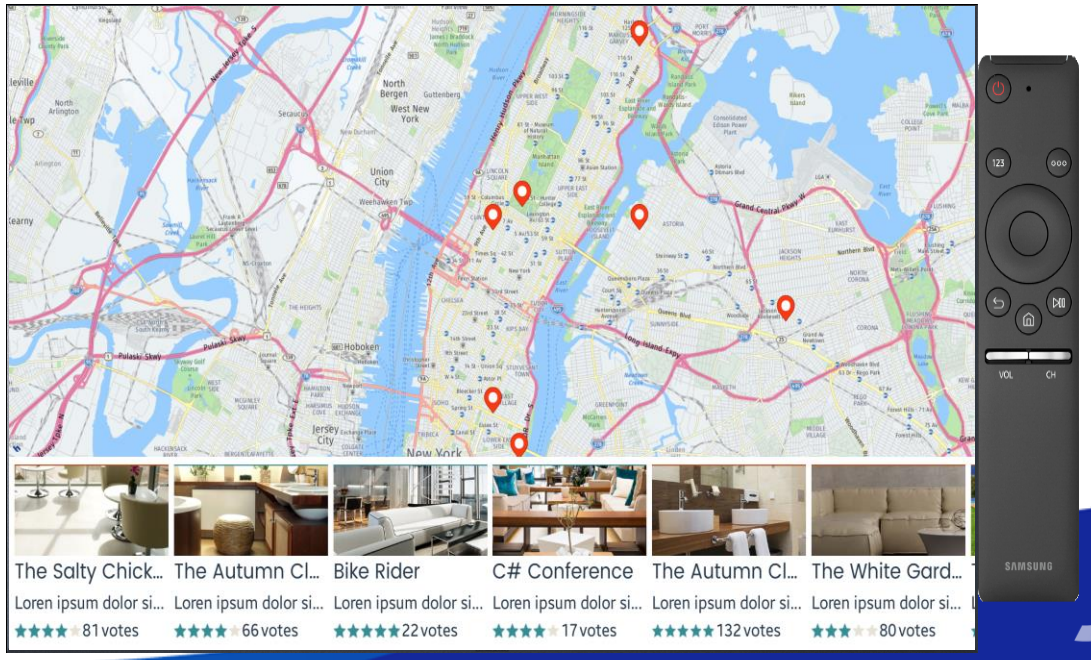
A Tizen .NET TV app

SAMSUNG Developer Conference

SmartHotel 360 - E2E reference sample and Azure backend

- SmartHotel360 is a fictional smart hospitality company showcasing the future of connected travel
- SmartHotel360 was shared as reference samples at Connect(); 2017 Scott Guthrie's keynote





Demo 2

Tizen .NET Wearable Apps

SAMSUNG Developer Conference

Conclusion

SAMSUNG Developer Conference

Summary

- Tizen platform is being used on more than 100 million devices
- Tizen .NET brings you
  - High productivity (.NET Core, CoreFX, Visual Studio, …)
  - Consistent development environment for all Tizen devices
  - Cross-platform capability (Xamarin Forms)
- You can register Tizen .NET apps to Watch and TV stores
  - Watch apps for Galaxy Apps
  - TV apps for Samsung Apps
- More APIs & doc & samples for app developers
  - TizenFX, Tizen Circular API, Tizen TV UI for Samsung Smart TV, Xamarin 3rd party APIs, Xamarin Essentials, and more samples

Questions?

To: hobum.kwon@samsung.com

SAMSUNG Developer Conference