

# One Size Fits All : Building Apps for any platform with Tizen

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**TIZEN™**  
**DEVELOPER  
SUMMIT**  
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JULY 30-31, THE RITZ-CARLTON

# Contents

- **Web Application Introduction**
- **Native Application Introduction**
- **Hybrid Application Introduction**

# Web Application Introduction

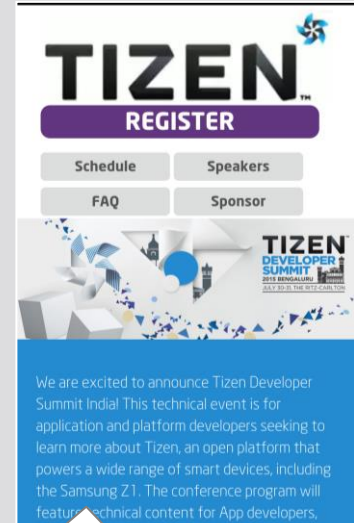
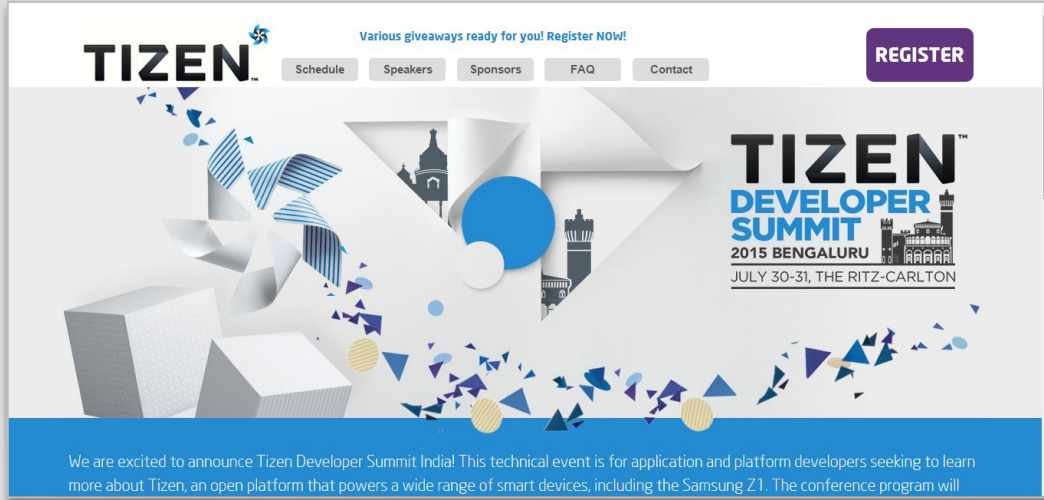


# Web application

- What is web application?



# Mobile Web Pages



<http://tizendevsummit.com/index.html>

*True cross-platform  
technology → web*



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# Sites

## Packaged Web Apps on Tizen

# Architecture

## Web Applications

### Tizen Web Framework

#### W3C/HTML5

Audio Touch

CSS WebGL

Worker ...

#### Device APIs

NFC Call

BT Msg

...

Web  
Runtime

Web UI  
FWK

## Native Applications

### Tizen Native Framework

Base/IO

Graphics

Web

App/Shell

Telephony

Messaging

System

Security

Text

Net

Media

...

Tizen  
APIs

### Core

App Framework

Graphics/UI

Web

Multimedia

Messaging

Security

Telephony

Location

Base

PIM

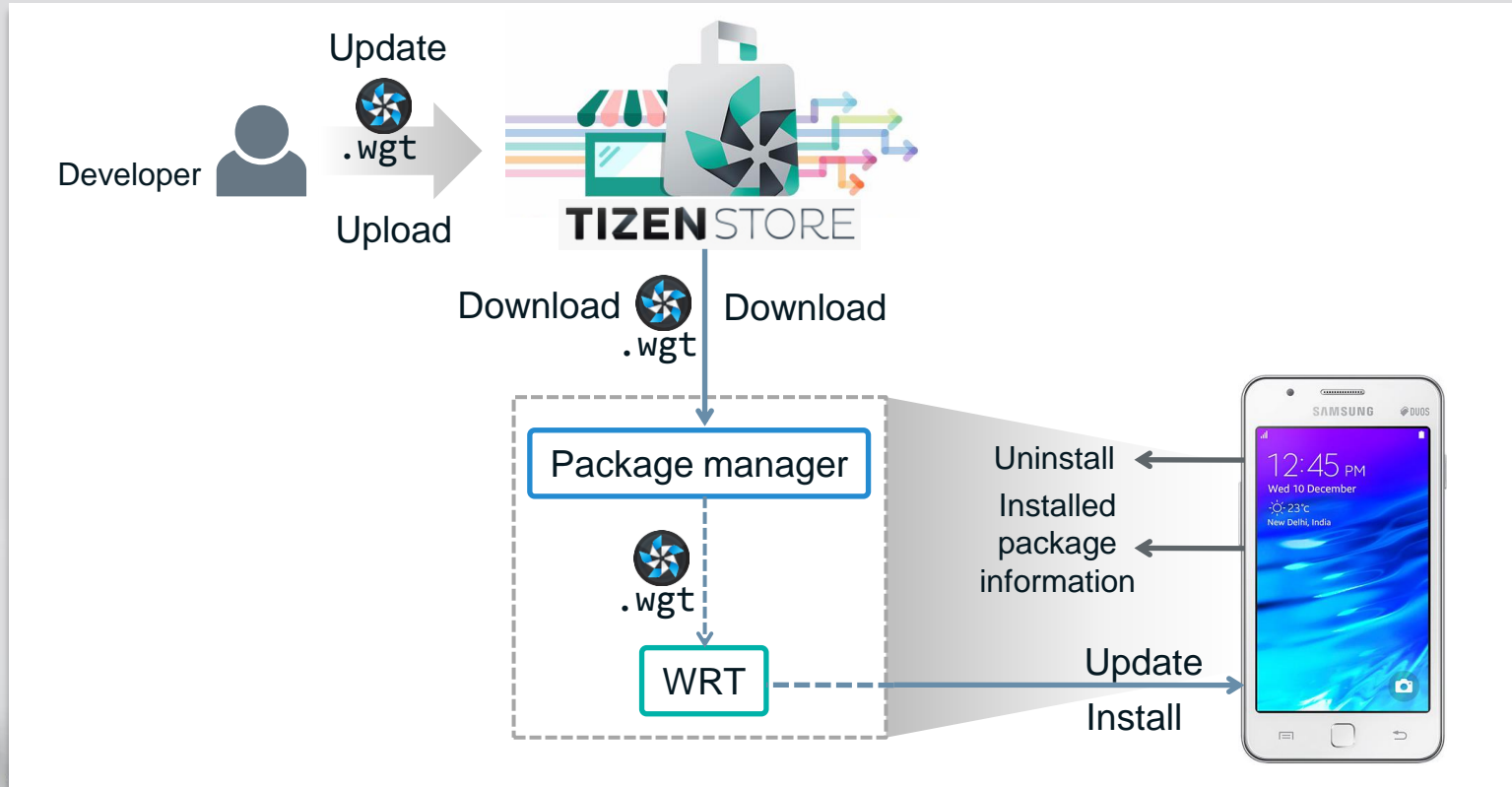
Linux Kernel and Device Drivers

# Tizen Web APIs

- **A Tizen web application supports various**
  - W3C, HTML5 and supplementary APIs  
Location, Media, Storage, Communication, Graphics, ...
  - Tizen specific APIs  
BT, NFC, Call, Msg, FM, IME, ...
- **Some supports are profile specific. Please refer to online Tizen documentation for details**



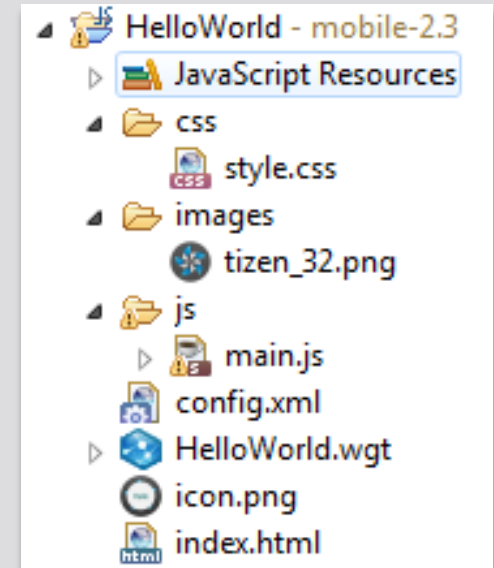
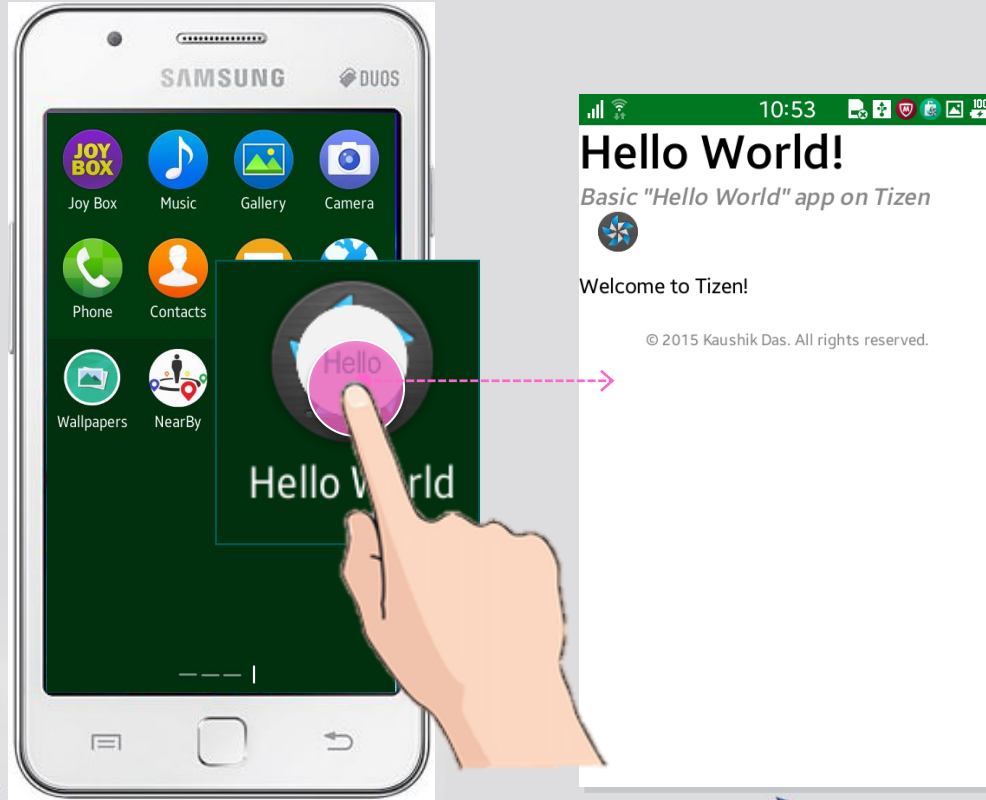
# Web Application Installation



# Tizen Web Application Package

- File format: ZIP archive file format
- File extension: `.wgt` (for example, `sample.wgt`)
- MIME type: `application/widget`
- Content
  - Application configuration document
  - Application default icon
  - Application default start file
  - Folders for CSS files, JS files and localized resources

# Hello World Web App



# Application Configuration Document

```
<?xml version="1.0" encoding="UTF-8"?>
<widget xmlns:tizen="http://tizen.org/ns/widgets"
  xmlns="http://www.w3.org/ns/widgets"
  id="http://yourdomain/Basic" version="1.0.0"
  viewmodes="maximized">
  <tizen:application id="Kgo6oXpyYe.Basic" package="Kgo6oXpyYe"
    required_version="2.3"/>
  <content src="index.html"/>
  <icon src="icon.png"/>
  <name>Hello World</name>
  <feature name="http://tizen.org/feature/screen.size.all"/>
  <tizen:profile name="mobile"/>
</widget>
```

# Localization

Name	Description
language	name
hi-in	हेलो वर्ल्ड

Name/Description/License

css/style.css

icon.png

images/tizen\_32.png

index.html

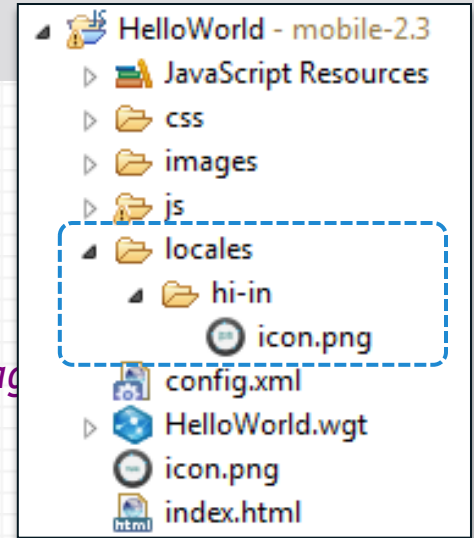
js/main.js

icon and other stuffs



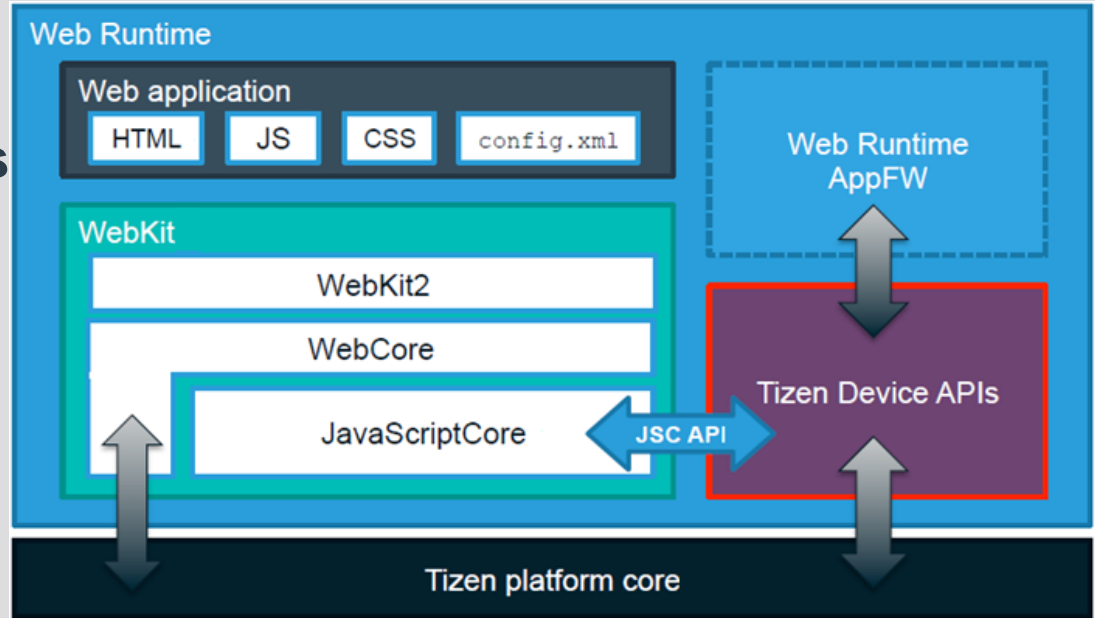
# Localization – changed structure

```
<?xml version="1.0" encoding="UTF-8"?>
<widget xmlns:tizen="http://tizen.org/ns/widgets"
  xmlns="http://www.w3.org/ns/widgets"
  id="http://yourdomain/Basic" version="1.0.0"
  viewmodes="maximized">
  <tizen:application id="Kgo6oXpyYe.Basic" package="org.tizen.helloworld.basic"
    required_version="2.3"/>
  <content src="index.html"/>
  <icon src="icon.png"/>
  <name>Hello World</name>
  <name xml:lang="hi-en">हेलो वर्ल्ड</name>
  <feature name="http://tizen.org/feature/screen.size.all"/>
  <tizen:profile name="mobile"/>
</widget>
```



# Web Application Security

- **Package security**
  - Signing and encryption
- **Controlled N/W access**
  - WARP
  - CSP
  - Internet privilege
- **API security**
  - Privilege control



# Native Application Introduction





# Native Vs Web

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### Tizen Native Framework

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App Framework

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Web

Multimedia

Messaging

Security

Telephony

Location

Base

PIM

Linux Kernel and Device Drivers



Tizen  
Native  
APIs

# Why Native App ?



Native

Web


Device Access



Speed & Size



C/C+ interface



# Agenda

- **Application Development Process**
- **State Model & Life Cycle**
- **Packaging of Native applications**
- **Hybrid Apps overview**
- **Which one to choose?**

# Application Development Process

Develop

- WYSIWYG editor
- Enventor edc editor

Build &  
Run

- Debug mode
- Release mode
- Run on emulator / target

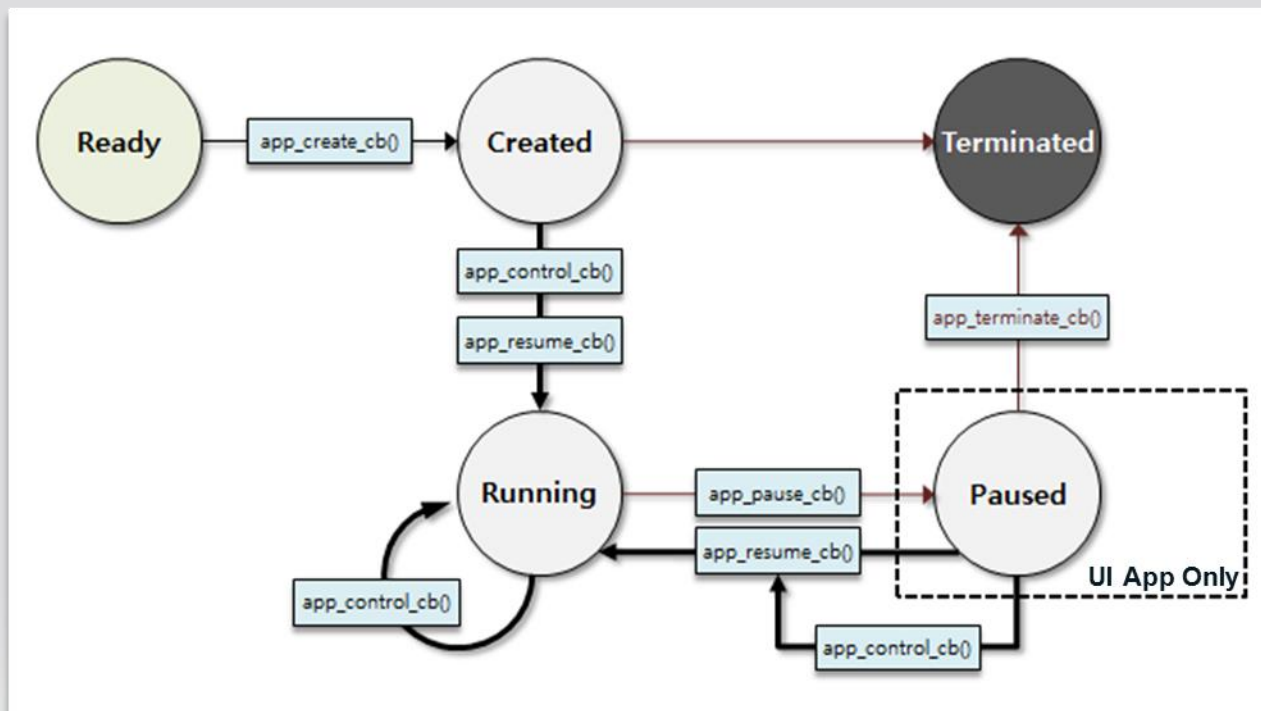
Debug

- Logs, Breakpoints, watchpoints
- GDB

Optimize

- Dynamic analyser
- Valgrind

# State model



# Native app main function

```
int main(int argc, char *argv[]) {
    appdata_s *ad = {0,};
    int ret = 0;
    /* app life cycle event cb init */
    ui_app_lifecycle_callback_s event_callback = {0,};
    app_event_handler_h handlers[5] = {NULL,};
    event_callback.create = app_create;
    event_callback.terminate = app_terminate;
    event_callback.pause = app_pause;
    event_callback.resume = app_resume;
    event_callback.app_control = app_control;
    /* optional : app event cb init Ex: low battery etc. */
    /* start the event loop */
    ret = ui_app_main(argc, argv, &event_callback, &ad);
    /* application exits */
    return ret;
}
```

# Native app main function

```
int main(int argc, char *argv[]) {
    appdata_s *ad = {0,};
    int ret = 0;
    /* event_callback.create = app_create;
    ui_app_main(event_callback, ad);
    event_callback.terminate = app_terminate;
    event_callback.pause = app_pause;
    event_callback.resume = app_resume;
    event_callback.app_control = app_control;
    event_callback.app_control = app_control;
    /* optional : app event cb init Ex: low battery etc. */
    /* start the event loop */
    ret = ui_app_main(argc, argv, &event_callback, &ad);
    /* application exits */
    return ret;
}
```

# Packaging (Overview)

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<manifest xmlns="http://tizen.org/ns/packages"
  api-version="2.3" package="org.tizen.sample" version="1.0.0">
  <profile name="mobile"/>
  <ui-application appid="org.tizen.sample" exec="sample" multiple="false"
    nodisplay="false" taskmanage="true" type="capp">
    <label>sample</label>
    <icon>sample.png</icon>
  </ui-application>
  <privileges>
    <privilege>http://tizen.org/privilege/systemsettings</privilege>
  </privileges>
  <feature name="http://tizen.org/feature/screen.size.all">true</feature>
</manifest>
```



# Packaging (Overview)

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
```

```
<manifest xmlns="http://tizen.org/ns/packages"
```

api-version="2.3"

package="org.tizen.sample"

version="1.0.0"

appid="org.tizen.sample"

exec="sample"

multiple="false"

```
nodisplay="false" taskmanage="true" type="capp">
```

```
  <label>sample</label>
```

```
  <icon>sample.png</icon>
```

```
</ui-application>
```

```
<privileges>
```

```
  <privilege>http://tizen.org/privilege/systemsettings</privilege>
```

```
</privileges>
```

```
  <feature name="http://tizen.org/feature/screen.size.all">true</feature>
```

```
</manifest>
```

# Packaging (Features)

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<manifest xmlns="http://tizen.org/ns/packages" api-version="2.3"
package="org.tizen.sample" version="1.0.0">
  <profile name="mobile"/>
  <ui-application appid="org.tizen.sample" exec="sample" multiple="false"
    nodisplay="false" taskmanage="true" type="capp">
    <label>sample</label>
    <icon>sample.png</icon>
  </ui-application>
  <privileges>
    <privilege>http://tizen.org/privilege/systemsettings</privilege>
  </privileges>
  <feature name="http://tizen.org/feature/camera">true</feature>
</manifest>
```

# Packaging (Features)

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<manifest xmlns="http://tizen.org/ns/packages" api-version="2.3"
package="org.tizen.sample" version="1.0.0">
  <profile name="mobile"/>
  <ui-application appid="org.tizen.sample" exec="sample" multiple="false"
    nodisplay="false" taskmanage="true" type="capp">
    <label>sample</label>
    <icon>sample.png</icon>
  </ui-application>
  <privileges>
    <privilege>http://tizen.org/privilege/systemsettings</privilege>
    <feature name="http://tizen.org/feature/camera">true</feature>
  </privileges>
</manifest>
```



<http://tizen.org/feature/>

# Packaging (Privileges)

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<manifest xmlns="http://tizen.org/ns/packages" api-version="2.3"
package="org.tizen.sample" version="1.0.0">
  <profile name="mobile"/>
  <ui-application appid="org.tizen.sample" exec="sample" multiple="false"
    nodisplay="false" taskmanage="true" type="capp">
    <label>sample</label>
    <icon>sample.png</icon>
  </ui-application>
  <privileges>
    <privilege>http://tizen.org/privilege/systemsettings</privilege>
  </privileges>
  <feature name="http://tizen.org/feature/camera">true</feature>
</manifest>
```

# Packaging (Privileges)

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<manifest xmlns="http://tizen.org/ns/packages" api-version="2.3"
package="org.tizen.sample" version="1.0.0">
  <profile name="mobile"/>
  <ui-application appid="org.tizen.sample" exec="sample" multiple="false"
    nodisplay="false" taskmanage="true" type="capp">
    <label>sample</label>
```

```
<privileges>
  <privilege>http://tizen.org/privilege/systemsettings</privilege>
</privileges>
```

```
  <privilege>http://tizen.org/privilege/systemsettings</privilege>
</privileges>
  <feature name="http://tizen.org/feature/camera">true</feature>
</manifest>
```



<http://tizen.org/privilege/>

# Packaging (Localization)

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<manifest xmlns="http://tizen.org/ns/packages" api-version="2.3"
  package="org.tizen.sample" version="1.0.0">
  <description xml:lang="en-gb">this is a sample application.</description>
  <description xml:lang="hi-in">यह एक नमूना अनुप्रयोग है।</description>
  <profile name="mobile"/>
  <ui-application appid="org.tizen.sample" exec="app1" multiple="false"
    nodisplay="false" taskmanage="true" type="capp">
    <label>sample</label>
    <label xml:lang="en-gb">sample</label>
    <label xml:lang="hi-in">नमूना</label>
    <icon>app1.png</icon>
    <icon xml:lang="en-gb">sample_icon_gb</icon>
    <icon xml:lang="hi-in">sample_icon_hi</icon>
  </ui-application>
  <privileges>
    <privilege>http://tizen.org/privilege/systemsettings</privilege>
  </privileges>
  <feature name="http://tizen.org/feature/screen.size.all">true</feature>
</manifest>
```

# Packaging (Localization)

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
```

```
<description xml:lang="en-gb">this is a sample application.</description>
```

```
<description xml:lang="hi-in">यह एक नमूना अनुप्रयोग है।</description>
```

```
<description xml:lang="hi-in">यह एक नमूना अनुप्रयोग है।</description>  
<profile name="mobile"/>
```

```
<label>sample</label>
```

```
<label xml:lang="en-gb">sample</label>
```

```
<label xml:lang="hi-in">नमूना</label>
```

```
<label xml:lang="hi-in">नमूना</label>
```

```
<icon>app1.png</icon>
```

```
<icon xml:lang="en-gb">sample_icon_gb</icon>
```

```
<icon>app1.png</icon>
```

```
<icon xml:lang="en-gb">sample_icon_gb</icon>
```

```
<icon xml:lang="hi-in">sample_icon_hi</icon>
```

```
</privileges>
```

```
<feature name="http://tizen.org/feature/screen.size.all">true</feature>
```

```
</manifest>
```

# Packaging (Advanced)

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<manifest xmlns="http://tizen.org/ns/packages" api-version="2.3"
  package="org.tizen.sample" version="1.0.0">
  <profile name="mobile"/>
  <ui-application appid="org.tizen.sample" auto-restart="false" exec="sample"
    multiple="false" nodisplay="false"
    on-boot="false" taskmanage="true" type="capp">
    <label>sample</label>
    <icon>sample.png</icon>
    <app-control>
      <operation name="http://tizen.org/appcontrol/operation/view"/>
      <mime name="image/png"/>
    </app-control>
    <metadata key="sample_key" value="123"/>
    <datacontrol access="ReadOnly"
      providerid="http://app1.com/datacontrol/provider/app1" type="Sql"/>
  </ui-application>
  <privileges>
    <privilege>http://tizen.org/privilege/systemsettings</privilege>
  </privileges>
  <feature name="http://tizen.org/feature/screen.size.all">true</feature>
</manifest>
```



# Packaging (Advanced)

```
<ui-application appid="org.tizen.sample" auto-restart="false" exec="sample"  
    multiple="false" nodisplay="false"  
    on-boot="false" taskmanage="true" type="capp">
```

```
<app-control>  
    <operation name="http://tizen.org/appcontrol/operation/view"/>  
    <mime name="image/png"/>  
</app-control>
```

```
<metadata key="sample_key" value="123"/>
```

```
<datacontrol access="ReadOnly"  
    providerid="http://app1.com/datacontrol/provider/app1" type="Sql"/>
```

```
<privilege>http://tizen.org/privilege/systemsettings</privilege>  
</privileges>  
<feature name="http://tizen.org/feature/screen.size.all">true</feature>  
</manifest>
```

# Hybrid Application Introduction



# Introduction

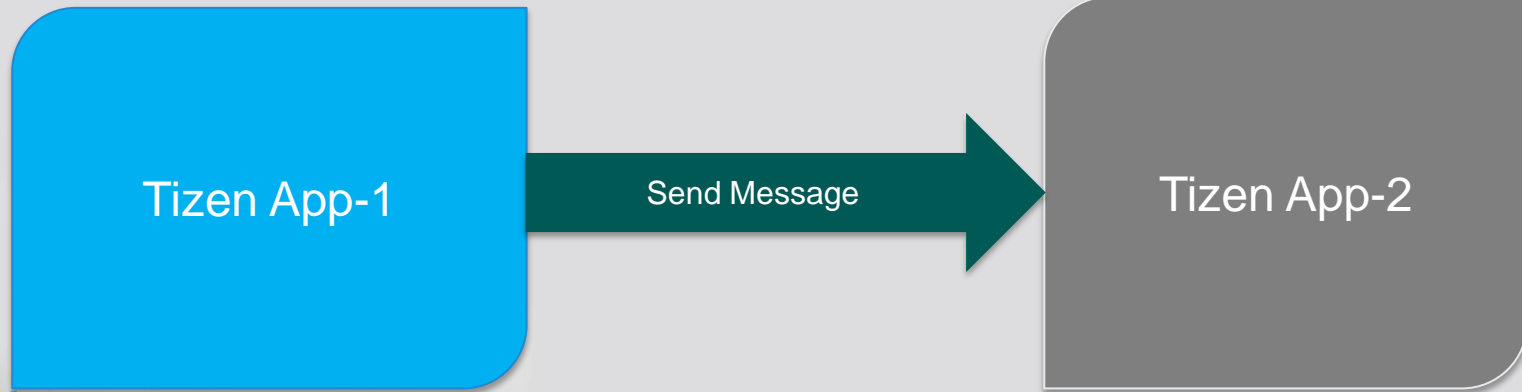
- **Web UI and Native Services**
- **Faster UI development**
- **Background data processing**
- **Native Services can be shared across multiple applications**
- **Access to Native open-source libraries**

# Message Port - Uni-directional

Check remote port –  
`message_port_check_remote_port()`

Send message –  
`message_port_send_message()`

Register to a local port –  
`message_port_register_local_port()`,  
`message_port_message_cb()`



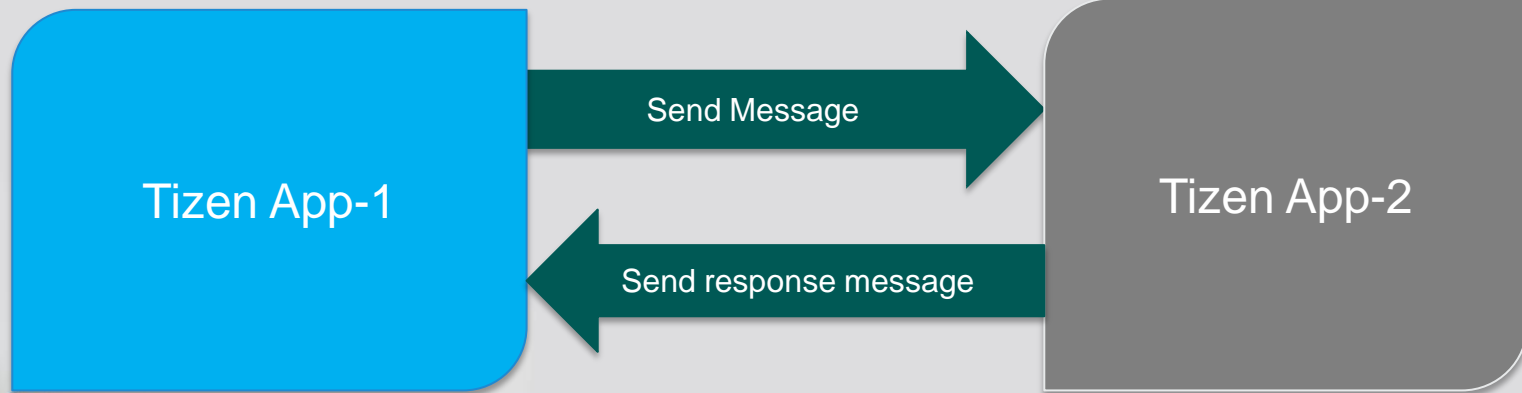
# Message Port - Bi-directional

Check remote port –  
`message_port_check_remote_port()`

Send message & local port id –  
`message_port_send_message()`

Register to a local port –  
`message_port_register_local_port()`,  
`message_port_message_cb()`

Send response message using the received  
remote port id –  
`message_port_send_message()`



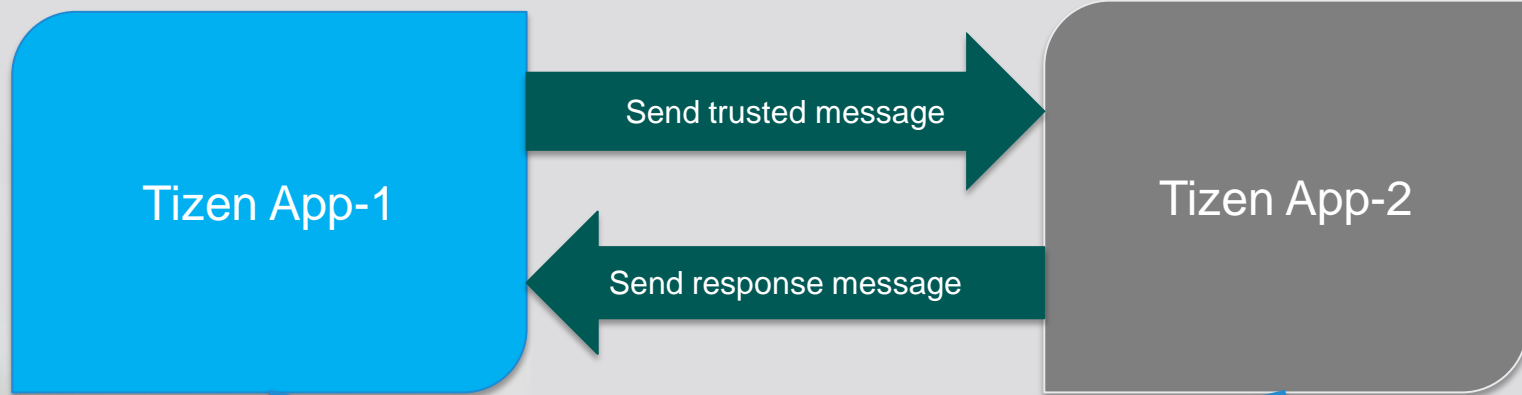
# Message Port – Trusted communication

Check trusted remote port –  
`message_port_check_trusted_remote_port()`

Send trusted message & trusted local port id –  
`message_port_send_trusted_message()`

Register to a trusted local port –  
`message_port_register_trusted_local_port()`,  
`message_port_trusted_message_cb()`

Send response message using the received remote port id –  
`message_port_send_trusted_message()`



# Which app to choose ?

	Web	Native	Hybrid
Rapid UI development	Fast	Moderate	Fast
Open standards based (Portability)	Good	Poor	Good
Performance in heavy calculation	Poor	Good	Good
Offline mode	Supported	Supported	Supported
Background support (Service)	Not Supported	Supported	Supported
Core Services Access	Partial	Full	Full
Complexity	Less	Moderate	Moderate

# Demo

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# QnA

**TIZEN™**  
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2015 BENGALURU   
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# Thank you

**TIZEN™**  
**DEVELOPER**  
**SUMMIT**  
2015 BENGALURU   
JULY 30-31, THE RITZ-CARLTON

# Appendix – Back Key Handling

```
//Initialize function
var init = function () {
  // add eventListener for tizenhwkey
  document.addEventListener('tizenhwkey', function(e) {
    if(e.keyName == "back") {
      try {
        tizen.application.getCurrentApplication().exit();
      } catch (error) {
        console.error("getCurrentApplication(): " + error.message);
      }
    }
  });
};

window.onload = init;
```