



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

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2015 BENGALURU 
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



Various giveaways ready for you! Register NOW!

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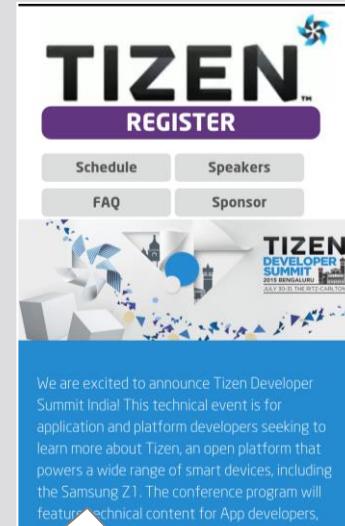
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<http://tizendevsummit.com/index.html>



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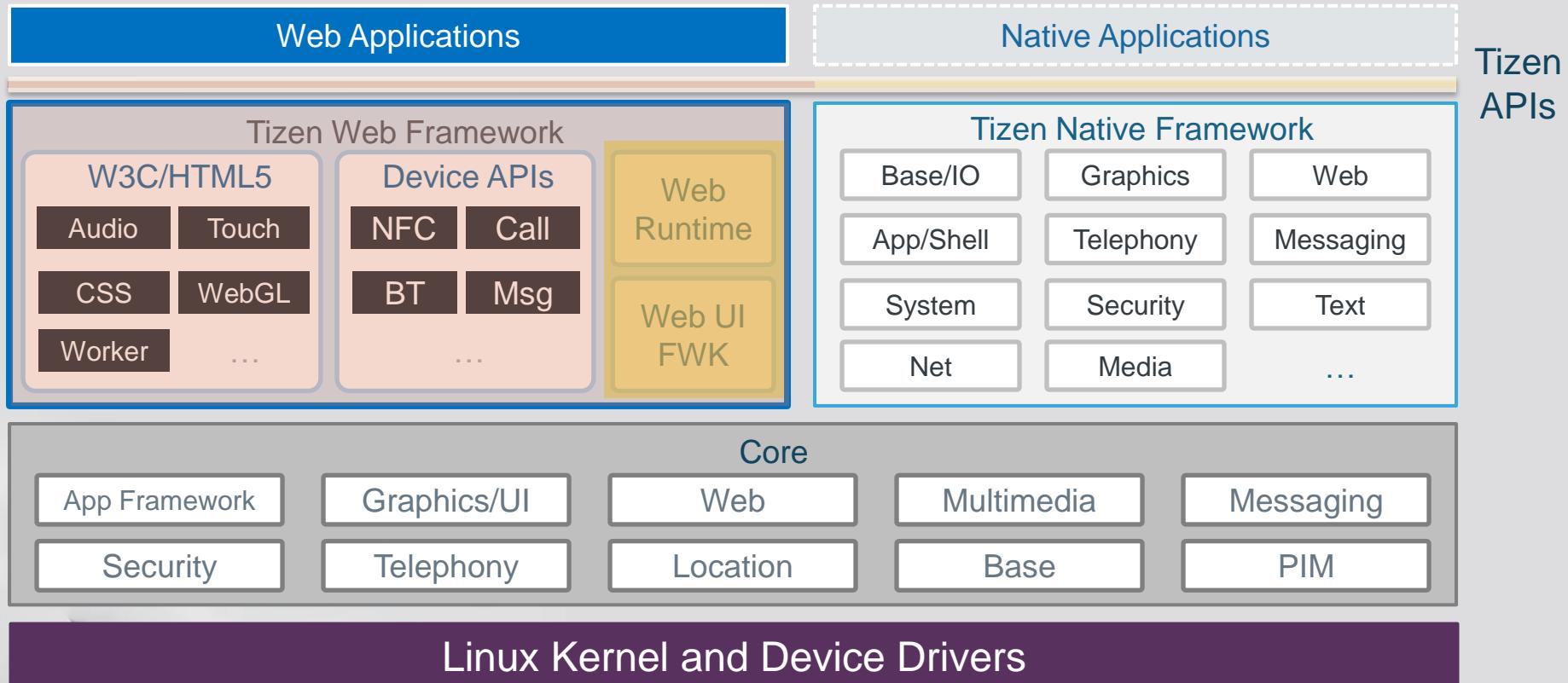
RWD



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Sites Packaged Web Apps on Tizen

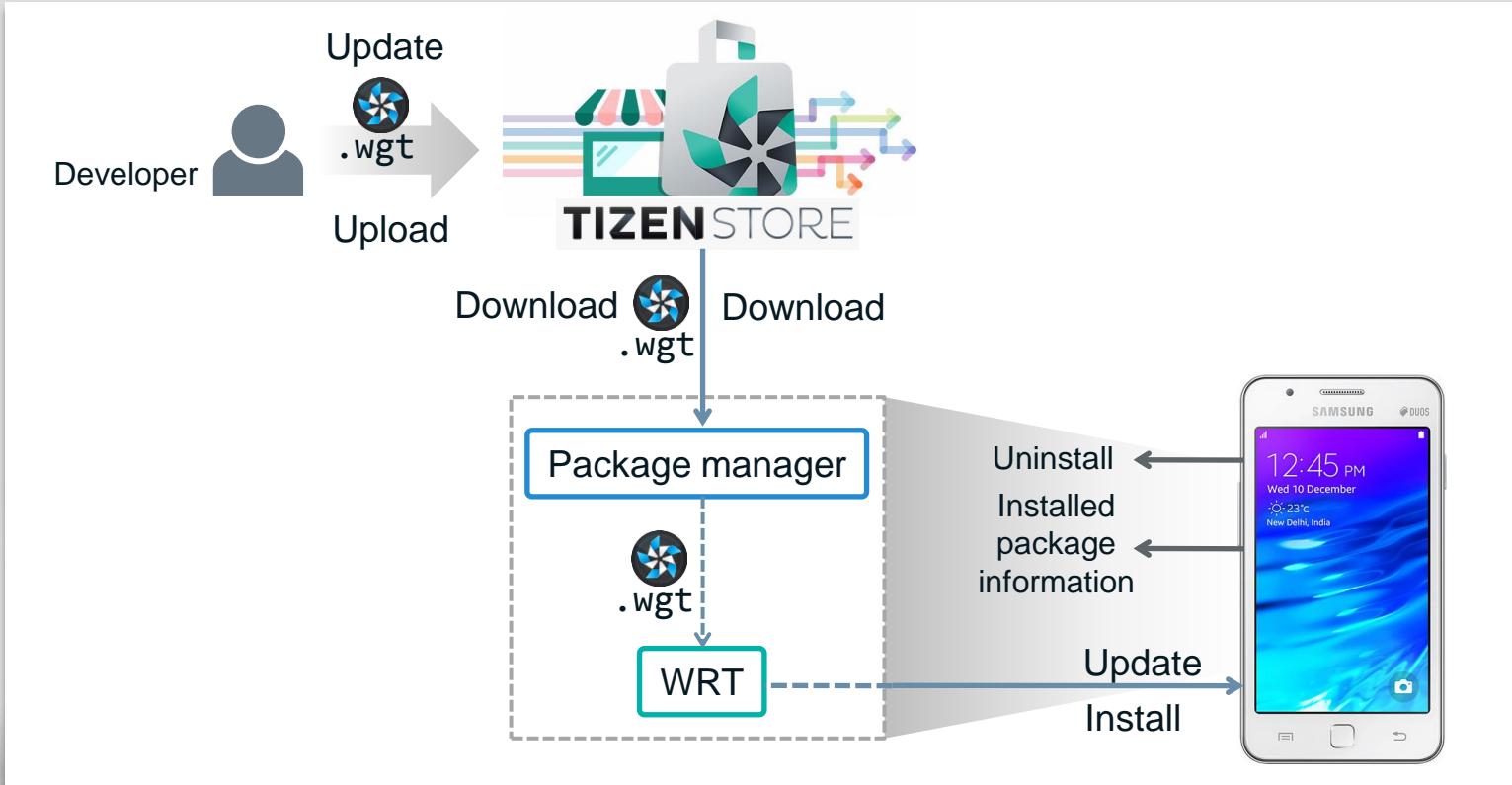
Architecture



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

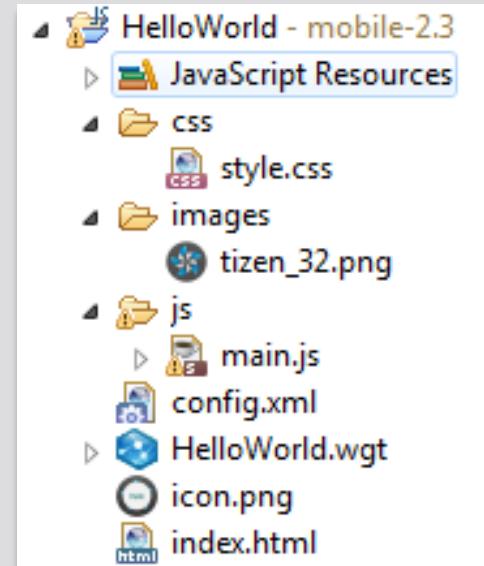
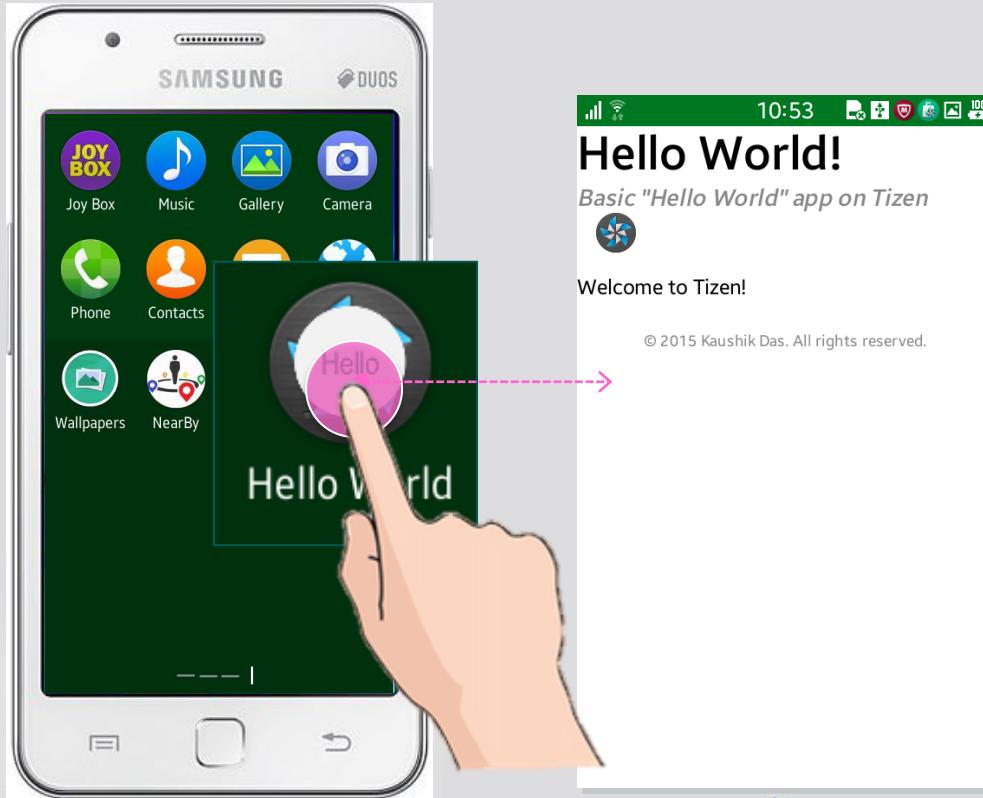
Web Application Installation



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="Kgob6oXpyYe.Basic" package="Kgob6oXpyYe"
    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

The screenshot shows the 'Localization' section of a configuration tool. At the top, there's a file icon and the file name 'config.xml'. Below that, the title 'Localization' is displayed. A sub-section titled 'Managing the Localization' contains the message 'Localization for selected node elements of config.xml.' A table labeled 'Name' lists language codes ('language') and their corresponding names ('name'). The first entry is 'hi-in' with the name 'हेलो वर्ल्ड'. There are 'Add' and 'Remove' buttons next to the table. The bottom navigation bar includes tabs for 'Overview', 'Widget', 'Features', 'Privileges', 'Policy', 'Localization' (which is highlighted with a red dashed box), and a notification badge showing '13'.

Name/Description/License

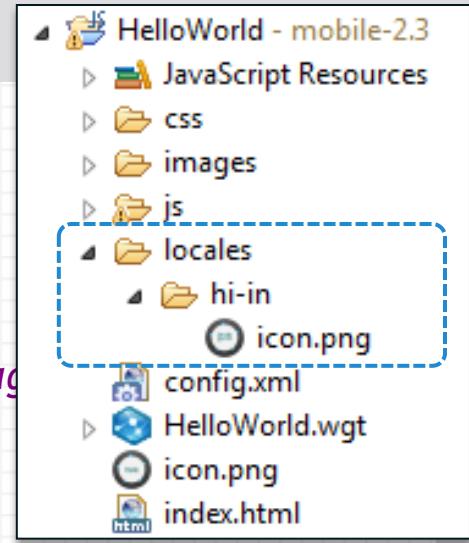
The screenshot shows the 'Localization Wizard' dialog box. The title bar says 'Localization Wizard'. The main area is titled 'Select files for localization' with the sub-instruction 'Select the files below, that you want to localize.' It contains a section titled 'Info' with the note 'Already localized files are displayed as grayed.' A list of files is shown, with most being grayed out: 'css/style.css', 'icon.png', 'images/tizen_32.png', 'index.html', and 'js/main.js'. There are 'Select All' and 'Deselect All' buttons on the right. At the bottom, it says 'Click Next > to continue.' The bottom of the dialog has buttons for '< Back', 'Next >', 'Finish', and 'Cancel'.

icon and other stuffs



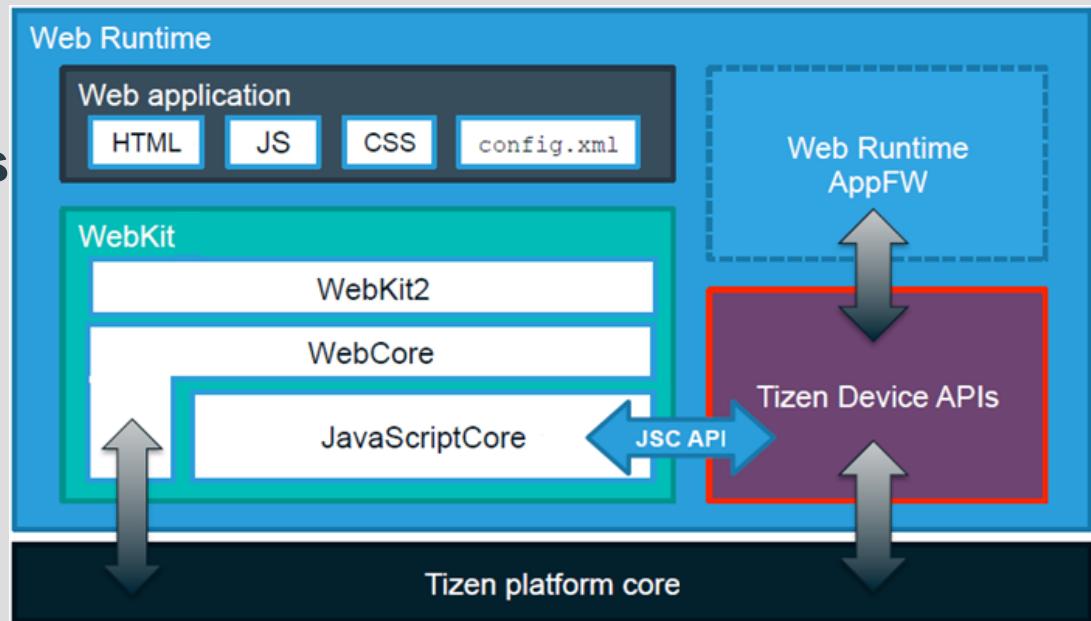
Localization – changed structure

```
<?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="Kg06oXpyYe.Basic" package="com.tizen.helloworld"
        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

Web Applications

Native Applications

Tizen
Native
APIs

Tizen Web Framework

W3C/HTML5

Audio Touch
CSS WebGL
Worker ...

Device APIs

NFC Call
BT Msg
... ...

Web Runtime

Web UI FWK

Tizen Native Framework

Base/IO Graphics Web
App/Shell Telephony Messaging
System Security Text
Net Media ...

Core

App Framework

Graphics/UI

Web

Multimedia

Messaging

Security

Telephony

Location

Base

PIM

Linux Kernel and Device Drivers

Why Native App ?

Native

Device Access



Web



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

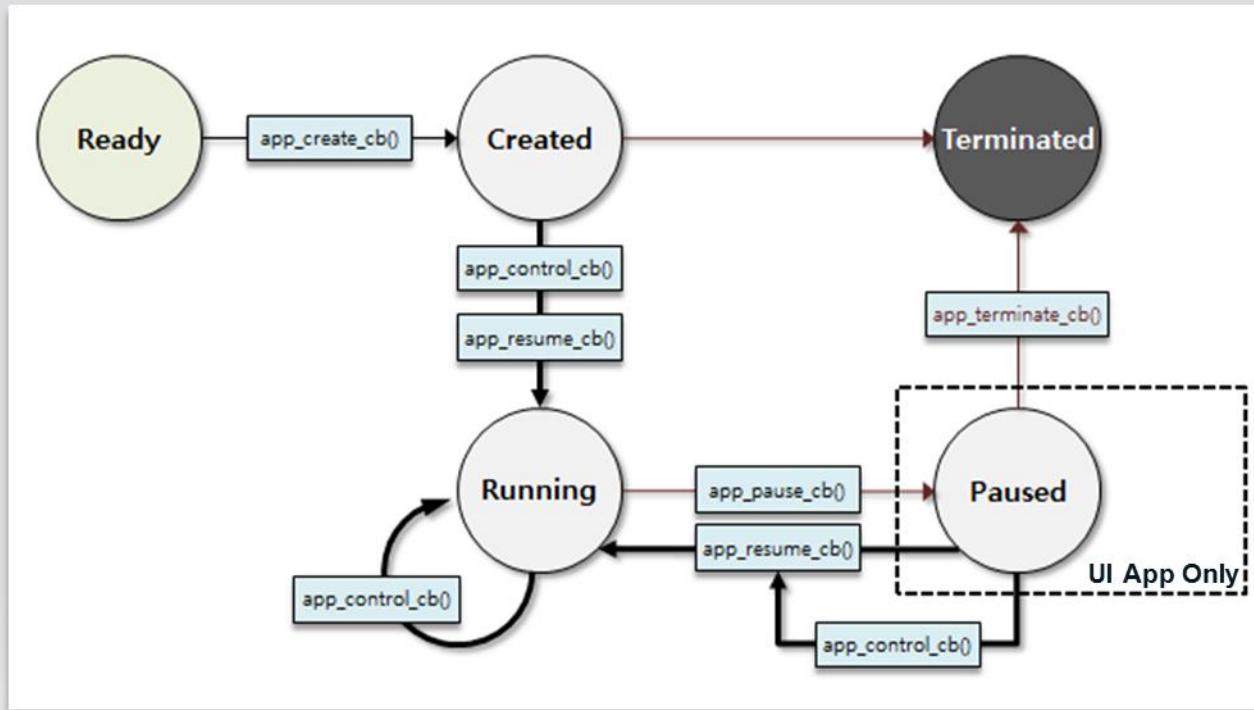
Debug

- 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;
    /* application event callback */
    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;
    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/nc/packaging"
    api-version="2.3" package="org.tizen.sample" version="1.0.0"
    appid="org.tizen.sample" tizen. exec="sample"
        nodisplay="false" taskmanagement="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>
    <feature name="http://tizen.org/feature/camera">true</feature>
</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="en-gb" -->  
  <!-- description xml:lang="hi-in" -->  
  <!-- 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" -->  
  <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>
    <mime name="image/png" />
    <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()`

Tizen App-1

Send Message

Tizen App-2

Message Port - Bi-directional

Check remote port –

`message_port_check_remote_port()`

Send message & local port id –

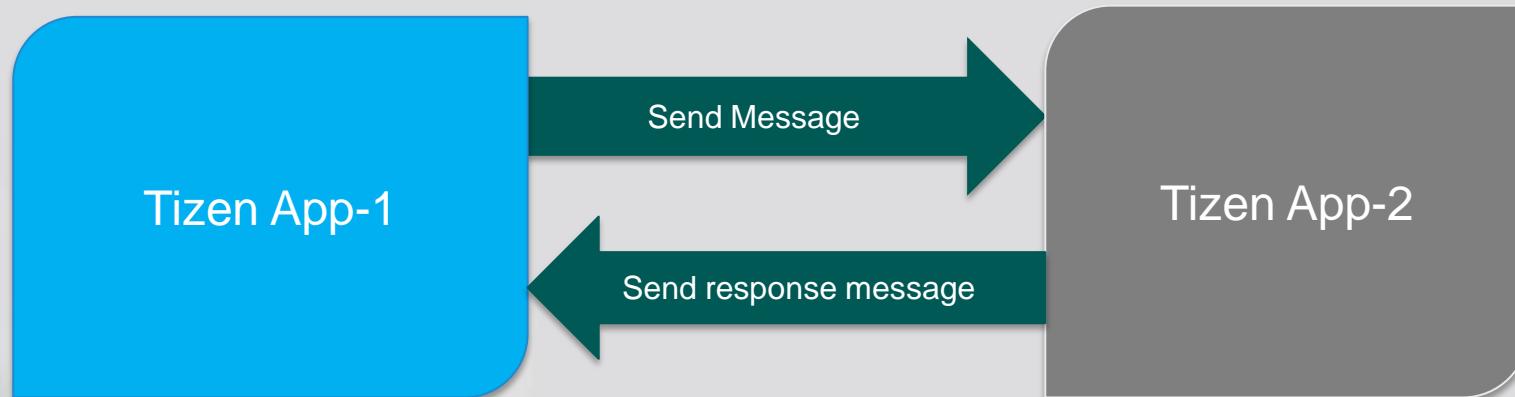
`message_port_send_message()`

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()`

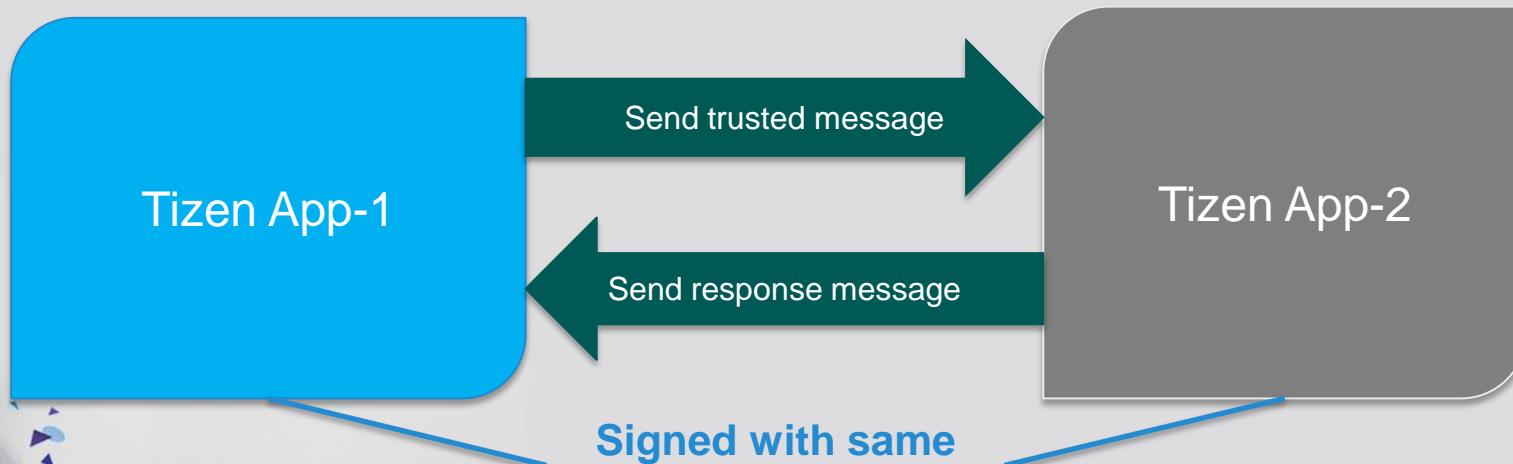
Send trusted message & trusted local port id –

`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

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Thank you

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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;
```