



Tizen Web Runtime. Device API



Что нового в html5

- Элементы разметки:
 - article, nav, header, footer...
- Поддержка API
 - 2D drawing
 - video, audio
 - Offline web
 - Drag and Drop
 - File API
 - Геолокация
 - Базы данных (key-value)



Html + javascript

hello.html

```
<!DOCTYPE html>
<html>
  <head>
    <script
type="test.js"></script>
  </head>
<body>
Html+js helloworld
</body>
</html>
```

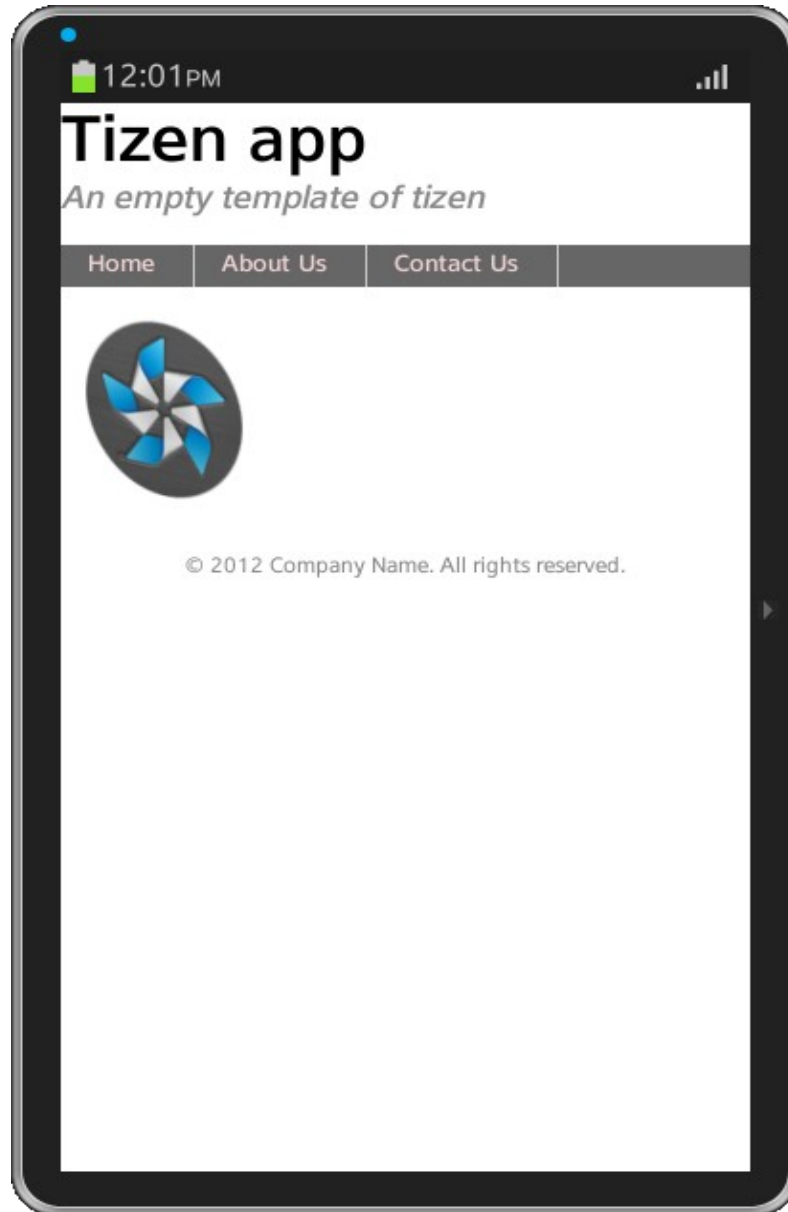
test.js

```
var init = function(){
  alert("HelloWorld");
}

window.onload = init;
```



Timer logo





Timer logo details

- in HTML

```

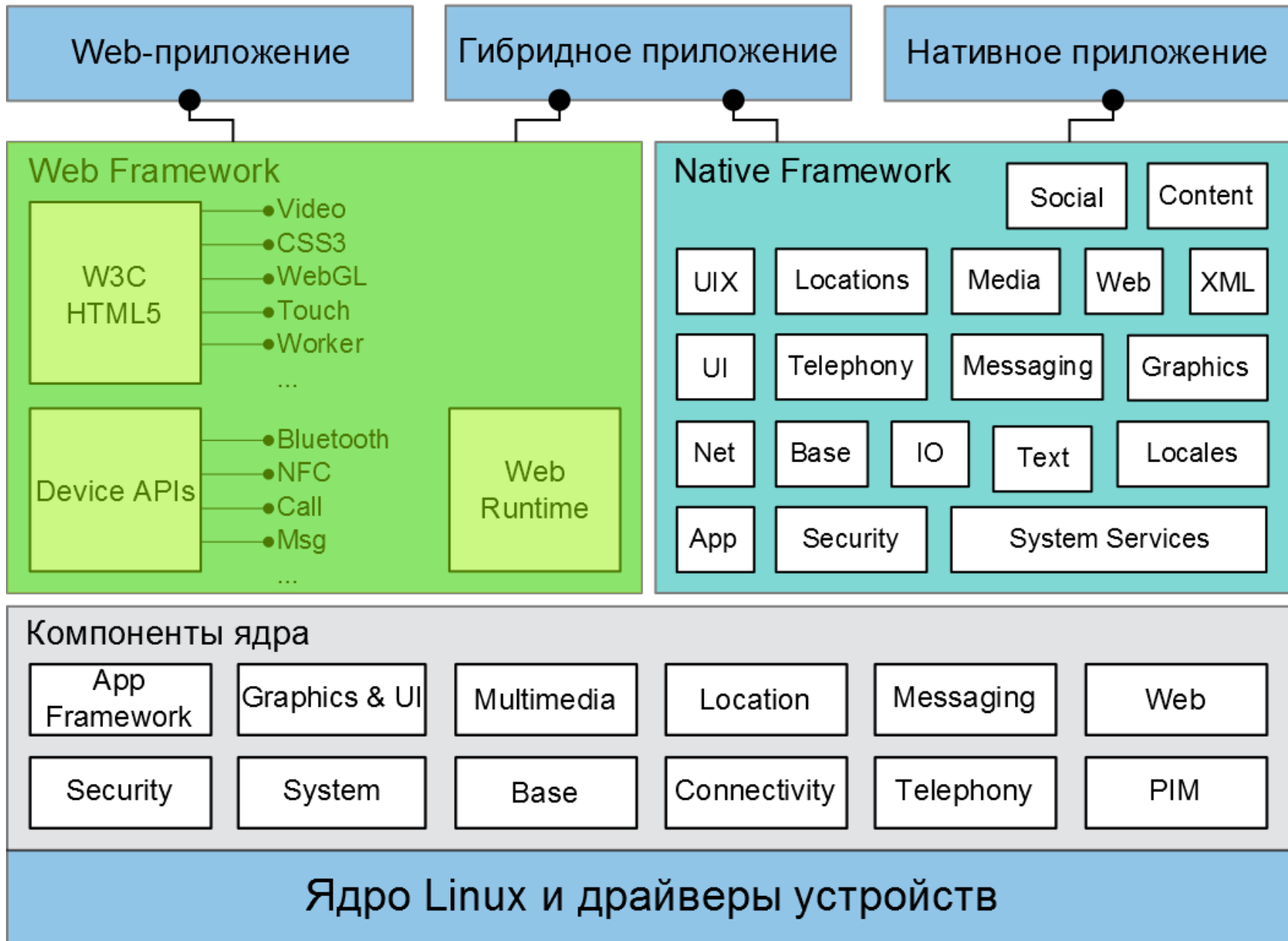
```

- in main.js

```
var image = document.getElementById("logo");  
image.style.webkitTransform =  
    ('rotateX(' + anglex + 'deg)') +  
    ('rotateY(' + angley + 'deg)');
```



Web API place in platform





Device API overview

- Tizen (Common)
- Communication
- Social
- Content
- Input/Output
- System
- Application
- User interface (notifications)



Privileges

Privileges

Managing the Privileges

'tizen:privilege' element indicates what sensitive API

Name
http://tizen.org/privilege/application.launch
http://tizen.org/privilege/content.read
http://tizen.org/privilege/kill
http://tizen.org/privilege/...
http://tizen.org/privilege/...
http://tizen.org/privilege/...

kill

Kills an application with the specified application context ID.

```
void kill(ApplicationContextId contextId, optional ErrorCallback errorCallback)
```

Since: 2.0

The `ErrorCallback()` is launched with these error types:

- `NotFoundError` - If the context is not found with the specified context ID.
- `InvalidValuesError` - If any of the input parameters is invalid.
- `UnknownError` - If any other error occurs.

Privilege level: partner

Privilege: http://tizen.org/privilege/appmanager.kill

Parameters:

Add privilege to 'filemanager'

Add privilege to the widget project

Internal

http://tizen.org/privilege/alarm

http://tizen.org/privilege/application.info

http://tizen.org/privilege/appmanager.certificate

http://tizen.org/privilege/appmanager.kill

http://tizen.org/privilege/bluetooth.admin

http://tizen.org/privilege/bluetooth.gap

http://tizen.org/privilege/bluetooth.health

Browse...

Cancel Finish

Overview Widget Features Privileges Policy Location

Problems Console Pages Declaration



Privilege levels

<https://www.tizen.org/ru/privilege>

- **Public** – open to all Tizen application developers
- **Partner** – can only be used by developers registered as partners on the Tizen store
- **Platform** – can be used by system APIs for managing the Tizen platform



Tizen API

- Basic definitions and interfaces
- Contains:
 - filters
 - attribute
 - attribute range
 - composite
 - sorting modes
 - Web API
 - errors/exception handlers
 - callbacks



Filter example

```
// Define success callback
function successCallback(events) {
    console.log(events.length + " events today.");
}

// Define error callback
function errorCallback(error) {
    console.log("An error occurred: " + error.message);
}

// Create an attribute range filter based on event start date: "All
events occurring today".
var now_dt = tizen.time.getCurrentDateTime();
var today_begin = new tizen.TZDate(now_dt.getFullYear(),
now_dt.getMonth(), now_dt.getDate());
var today_end = today_begin.addDuration(new tizen.TimeDuration(1,
"DAYS"));
var filter = new tizen.AttributeRangeFilter("startDate", today_begin,
today_end);

// Send a search request to default event calendar.
tizen.calendar.getDefaultCalendar("EVENT").find(successCallback,
errorCallback, filter);
```



Application API

- Implements Application and Application context management:
 - get information about application/context
 - launch/kill
 - list of installed apps
 - application events callback
 - oninstalled
 - onuninstalled
 - onupdated



Application example

```
// Get application name
var appInfo = tizen.application.getAppInfo(null);
console.log("Current application name : " +
appInfo.name);

// Hide current application
var app = tizen.application.getCurrentApplication();
app.hide();
```



Example: Application API

```
<form id="application">  
  <label for="app name">Name of application</label>  
  <input id="appname">  
  <button onclick="runApplication()">Run</button>  
</form>
```

```
document.getElementById("appname").value  
    ="9BwRJcbDae.helloworld"  
tizen.application.launch(appname, success, failure);
```



Communication API

- Bluetooth
- Messaging: SMS, MMS, E-mails
- NFC
- Push notifications
- Secure elements access



Push notification

- Push notification is a Tizen Association Service
- Interface for the proactive interaction (server initiates connection)
- App registration as a Push Service (**might take long time**) is required (but can be emulated in WebSimulator)
- Push notification sending is available using RESTful API



Communication example

```
// Define the callbacks
function messageSent(recipients) {
    console.log("The SMS has been sent");
}

function messageFailed(error) {
    console.log("The SMS could not be sent " + error.message);
}

function serviceErrorCB(error) {
    console.log("Cannot get messaging service " + error.message);
}

function serviceListCB(services) {
    if (services.length > 0) {
        // SMS sending example
        var msg = new tizen.Message("messaging.sms",
            {
                plainBody:"I will arrive in 10 minutes.",
                To:["+479218777222"]
            });
        // Send request
        services[0].sendMessage(msg, messageSent, messageFailed);
    }
}

// Get access to sms messaging service
tizen.messaging.getMessageServices("messaging.sms", serviceListCB, serviceErrorCB);
```



Content API

- Access to media files (audio, video, image,...)
- ContentManager – global tizen object
 - browsing content
 - view and update
 - update notifications
- DownloadRequest – interface for downloading content from the web.



Download example

```
var listener = {
  onprogress: function(id, receivedSize, totalSize) {
    console.log('Received with id: ' + id + ', ' + receivedSize + '/' +
      totalSize);
  },
  onpaused: function(id) {
    console.log('Paused with id: ' + id);
  },
  oncanceled: function(id) {
    console.log('Canceled with id: ' + id);
  },
  oncompleted: function(id, fileName) {
    console.log('Completed with id: ' + id + ', file name: ' + fileName);
  },
  onfailed: function(id, error) {
    console.log('Failed with id: ' + id + ', error name: ' + error.name);
  }
};

// Start downloading the html file on the web with the corresponding callbacks.
var downloadRequest = new tizen.DownloadRequest(
  "http://download.tizen.org/tools/README.txt", "documents");
downloadId = tizen.download.start(downloadRequest);

// Add the listener.
tizen.download.setListener(downloadId, listener);
```



Input/Output API

- Filesystem:
 - collection of disjointed filesystem virtual root locations, each corresponding to a specific location in the device filesystem
- MessagePort
 - interacts as local IPC(Inter-Process-Communication) mechanism.



Filesystem example

```
function onsuccess(files) {  
    for(var i = 0; i < files.length; i++) {  
        // alerts each name of dir's contents  
        console.log(files[i].name);  
    }  
}  
  
function onerror(error) {  
    console.log("The error " + error.message +  
        " occurred when listing the files in the selected  
        folder");  
}  
  
//list directory contents  
dir.listFiles(onsuccess, onerror);
```



MessagePort

- Data is wrapped into JSON array of key/value pairs
- Connection control using app ID, message port name
- Trusted MessagePort:
 - Two interacting applications must be signed with the same certificate
- Only **onMessageReceived** event can be controlled



MessagePort example

```
//Sends message
var localMsgPort =
  tizen.messageport.requestLocalMessagePort('MessagePortA');

var remoteMsgPort =
  tizen.messageport.requestRemoteMessagePort(
    '6xaeuflskd.App1', 'MessagePortB');

localMsgPort.addMessagePortListener(function(items,
remoteport) {
  // ...
  if(remoteport !== null) {
    remoteport.sendMessage([{key:'RESULT', value:'OK'}]);
  }
});

remoteMsgPort.sendMessage([{ key:'CMD', value:'openWindow' },
  { key:'OPTION', value:'bx' }], localMsgPort);
```



System API

- General system information (network/hardware)
- Power:
 - status for CPU/Screen
 - control for the screen state (on/off/brightness)
- System settings (wallpapers and ringtones)
- Time - information regarding date / time and time zones
- Web settings (cookies, ...)



System API example

```
function onSuccessCallback(battery) {  
    console.log("Low battery: " + battery.level);  
}
```

```
tizen.systeminfo.addPropertyChangeListener(  
    "BATTERY", onSuccessCallback,  
    {  
        LowThreshold : 0.2  
    }));
```



Social API

- Management for
 - web bookmarks
 - calendars, events, tasks
 - call history
 - contacts
 - supports Open Mobile Alliance data synchronization protocol.



Calendar example

```
// Defines the error callback.
function errorCallback(response) {
    console.log( 'The following error occurred: ' + response.name);
}

function addEventsSuccess(events) {
    console.log("Successfully added " + events.length + " events!");
}

// Gets the default calendar
var calendar = tizen.calendar.getDefaultCalendar("EVENT");

var ev = new tizen.CalendarEvent({description:'Tizen Introduction',
    summary:'Tizen devlab',
    startDate: new tizen.TZDate(2011, 3, 30, 10, 0),
    duration: new tizen.TimeDuration(1, "HOURS"),
    location:'Saint-Petersburg'});

calendar.addBatch([ev], addEventsSuccess, errorCallback);
```



Example: deviceOrientation

```
interface DeviceOrientationEvent : Event {
    readonly attribute double? alpha;
    readonly attribute double? beta;
    readonly attribute double? gamma;
    readonly attribute boolean absolute;
    void initDeviceOrientationEvent(in DOMString type,
                                    in boolean bubbles,
                                    in boolean cancelable,
                                    in double? alpha,
                                    in double? beta,
                                    in double? gamma,
                                    in boolean absolute);
}
```

```
window.addEventListener("deviceorientation", handleDeviceOrientation, false);
```



Example: canvas

```
<canvas id="canvas" width="300" height="300"></canvas>
```

```
canvas = document.querySelector("canvas");  
context = canvas.getContext("2d");
```

```
// HACK for canvas clear  
canvas.width = canvas.width;
```

```
context.clearRect(0, 0, context.canvas.width,  
context.canvas.height);  
context.lineWidth = 4;
```

```
//context.moveTo(...)  
//context.lineTo(points[i].x, points[i].y);
```

```
context.stroke();
```



Questions

mark.zaslavskiy@gmail.com