



Empower mobile web developers with JavaScript & WebAPI

Frédéric Harper

Sr. Technical Evangelist @ Mozilla

@fharper | outofcomfortzone.net

Prague JS

Prague, Czech Republic

2014-03-27

Omlouváme se,
nemluvím česky

Thanks Google translate...



38 billion devices
connected in 2020

ABI Research - 2013-05-09 - <http://j.mp/38billion>

You should start with the web...





HTML



What you deserve

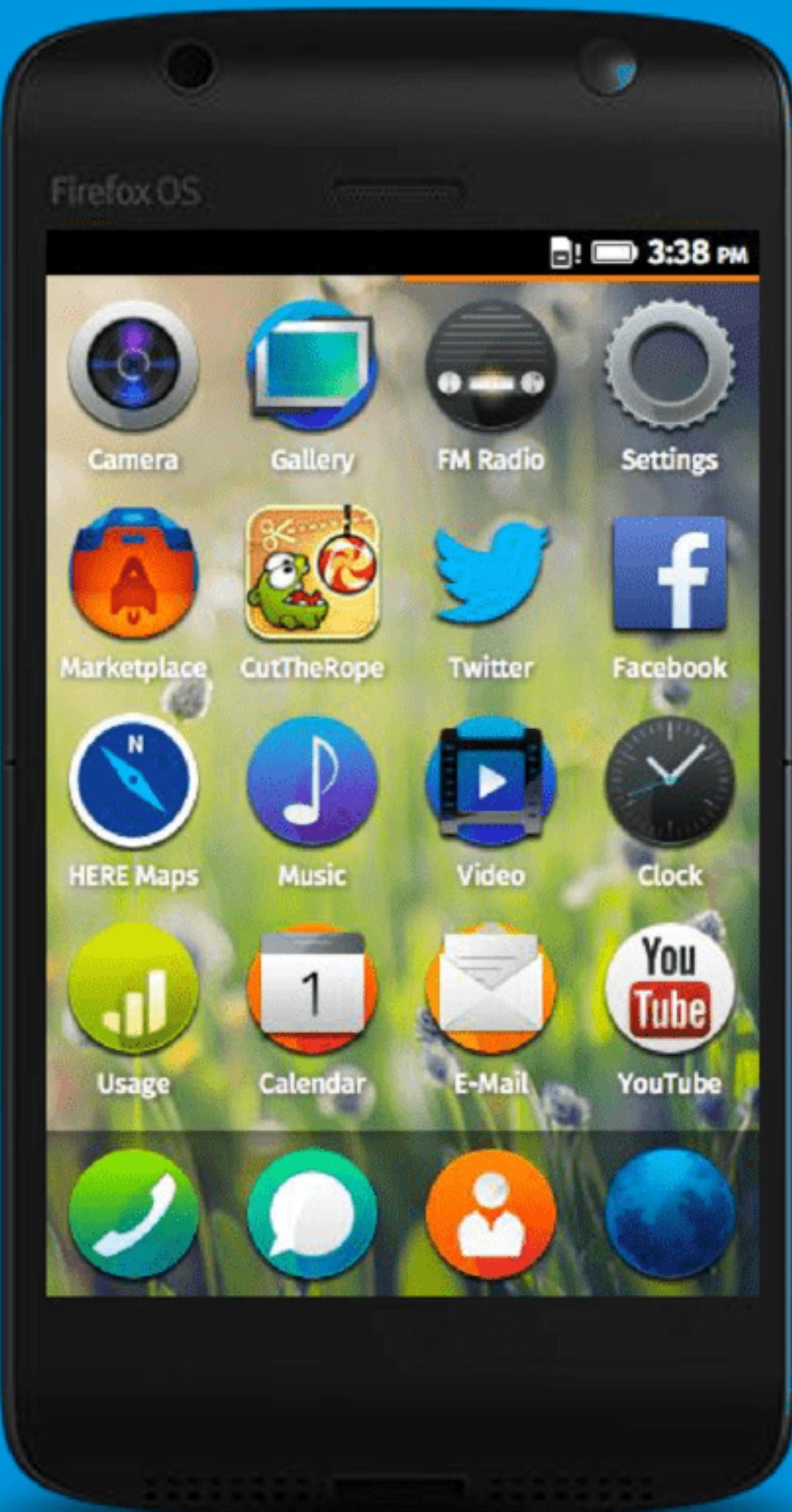


Built with the Web

Using HTML5, CSS3 and JavaScript

with a number of APIs

to build apps.



Adaptive App Search



-  Type a word or subject you're interested in
-  Find exactly what you want — and more
-  Get instant access or save apps to your phone
-  Discover more apps on the Firefox Marketplace

It's open source



Architecture

Gecko:
Web runtime with
open Web APIs

Gonk:
Open Linux kernel
and drivers



Benefits of HTML5

- ✓ In-built distribution – the Web
- ✓ Simple technologies used by a lot of developers
- ✓ Evolution of existing practices
- ✓ Open, independent, and standardized

Some facts

- 7 mobile operator & 4 hardware partners
- ZTE Open, Alcatel One Touch Fire, Geeksphone Keon, Geeksphone Peak, LG FireWeb...
- More to come: Huawei Y300, ZTE Open C, Alcatel One Touche Fire C & E & S...
- Aimed at emerging markets/low end market



[Back to Store](#) | Listed as ZTE Open - Orange (Unlocked) Smartphone in category: Cell Phones & Accessories > Cell Phones & Smartphones**\$ EXTRA 5% OFF WHEN YOU BUY 2 OR MORE** [See all eligible items ▾](#)

25% OFF



Mouse over image to zoom

ZTE Open powered by Firefox OS - 3G unlocked smartphone orange - eBay exclusive!

Get 5% off when you buy 2 or more!

Item condition: **New**Quantity: Limited quantity available / **1,724 sold**List price: **US \$99.99** ?You save: **\$25.00 (25%)**Price: **US \$74.99****Buy It Now****Add to cart** SquareTrade 2 yr warranty **\$15.99**

1312 watchers

 Add to watch list Add to collection**Limited quantity remaining****Over 50% Sold****104 Inquiries**Shipping: **\$15.00 Standard Int'l Shipping** | [See details](#)International items may be subject to customs processing and additional charges. ?

Item location: United States

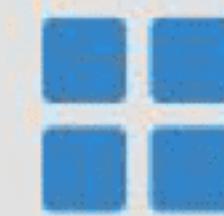
Ships to: Worldwide [See exclusions](#)Delivery: Estimated between **Fri. Jan. 17 and Thu. Jan. 23**Seller ships within 1 day after receiving cleared payment. ?

Please allow additional time if international delivery is subject to customs processing.

Payments: **PayPal** | [See details](#)Returns: 14 days money back, buyer pays return shipping | [Read details](#)**Seller information**[zte_us \(4046\)](#)

99.5% Positive feedback

[See other items](#)Visit store: [ZTE Mobile US](#)

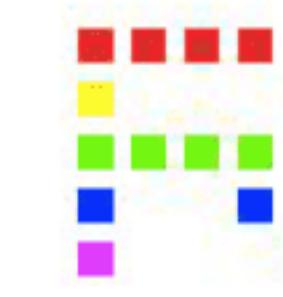


All Categories ▾

Featured Apps

[View All »](#)

Surfline Mo...
Free
★★★★★



ROTOGAMEsq
Free
★★★★★



Fix-It Felix
Free
★★★★★



Contactzilla
Free
★★★★★



Firetext
Free
★★★★★



VTCS 13
Free
★★★★★



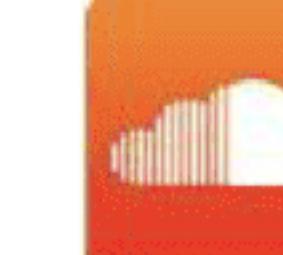
Evernav
Free
★★★★★

[Popular](#)[New](#)[View All »](#)

Twitter
Free
★★★★★



Pasjans/Sol...
Free
★★★★★



SoundCloud
Free
★★★★★



Loqui IM
Free
★★★★★



Wikipedia
Free
★★★★★



ConnectA2
Free
★★★★★



Wassap
Free
★★★★★

A Firefox OS app?

- Creating a hosted or packaged app
- Using
 - Vanilla HTML5
 - Libraries...
 - Regular API
 - Privileged API
 - *Certified API*

HTML5 + manifest (JSON) = Firefox OS app

```
{  
  "version": "42",  
  "name": "My amazing app",  
  "launch_path": "/index.html",  
  "description": "My super amazing app do super amazing things",  
  "icons": {  
    "16": "/images/logo16.png"},  
  "developer": {  
    "name": "Frédéric Harper",  
    "url": "http://outofcomfortzone.net",  
  },  
  "default_locale": "en",  
  "permissions": {  
    "geolocation": {  
      "description": "Get the long/lat of the user"  
    }  
  }  
}
```



Emberjs todomvc

Web APIs

Web APIs – Regular

- Alarm API
- Ambient light sensor
- Archive API
- Battery Status API
- Geolocation API
- IndexedDB
- Network Information API
- Notifications API
- Open WebApps
- Proximity sensor
- Push API
- Screen Orientation
- Vibration API
- Web Activities
- WebFM API
- WebPayment



Ambient Light Sensor

Ambient Light Sensor

```
window.addEventListener("devicelight", function (event) {  
  
    // The level of the ambient light in lux  
    // The lux values for "dim" typically begin below 50,  
    // and the values for "bright" begin above 10000  
    console.log(event.value);  
});
```



Boilerplate – Ambient Light Sensor

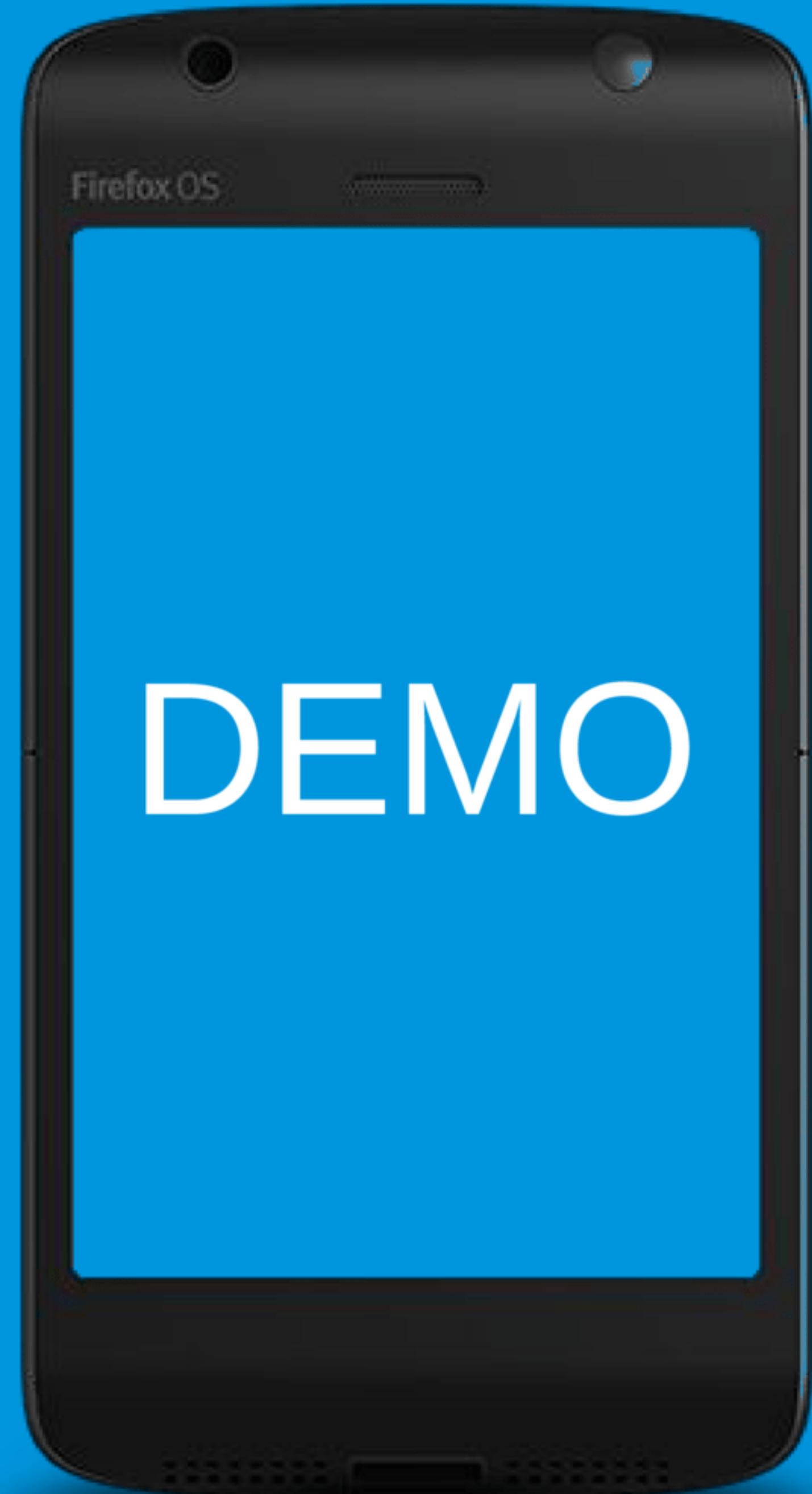
Battery Status

Battery Status

```
var battery = navigator.battery;

if (battery) {
    var batteryLevel = Math.round(battery.level * 100) + "%",
        charging = (battery.charging)? "yes" : "no",
        chargingTime = parseInt(battery.chargingTime / 60, 10,
        dischargingTime = parseInt(battery.dischargingTime / 60, 10);

    battery.addEventListener("levelchange", setStatus, false);
    battery.addEventListener("chargingchange", setStatus, false);
    battery.addEventListener("chargingtimechange", setStatus, false);
}
```



Boilerplate – Battery status

Web APIs – Privileged

- Browser API
- Contacts API
- Device Storage API
- systemXHR
- TCP Socket API



Browser

Browser

```
<div>
    <span id='location-bar'></span>
    <button onclick='go_button_clicked()'>Go</button>
</div>
<div id='load-status'></div>
<div id='security-status'></div>
<img id='favicon'>
<div id='title'></div>
<iframe mozbrowser src='yoursite.com' id='browser'></iframe>
```

Browser

```
addEventListener('mozbrowserloadstart', function(e) {  
    //Do stuff  
});  
  
/*  
Possible values:  
  "mozbrowserloadstart"          "mozbrowserloadend"  
  "mozbrowserlocationchange"     "mozbrowsertitlechange"  
  "mozbrowsericonchange"         "mozbrowsersecuritychange"  
  "mozbrowsercontextmenu"        "mozbrowsererror"  
  "mozbrowserkeyevent"           "mozbrowsershowmodalprompt"  
  "mozbrowseropenwindow"          "mozbrowserclose"  
*/
```

Contacts

Contacts

```
var contact = new mozContact();
contact.init({name: "Tom"});

var request = navigator.mozContacts.save(contact);
request.onsuccess = function() {
    console.log("Success");
};

request.onerror = function() {
    console.log("Error")
};
```

Web APIs – Certified

- Camera API
- Idle API
- Mobile Connection API
- Network Stats API
- Permissions API
- Power Management API
- Settings API
- Time/Clock API
- Voicemail
- WebBluetooth
- WebSMS
- WebTelephony
- WiFi Information API



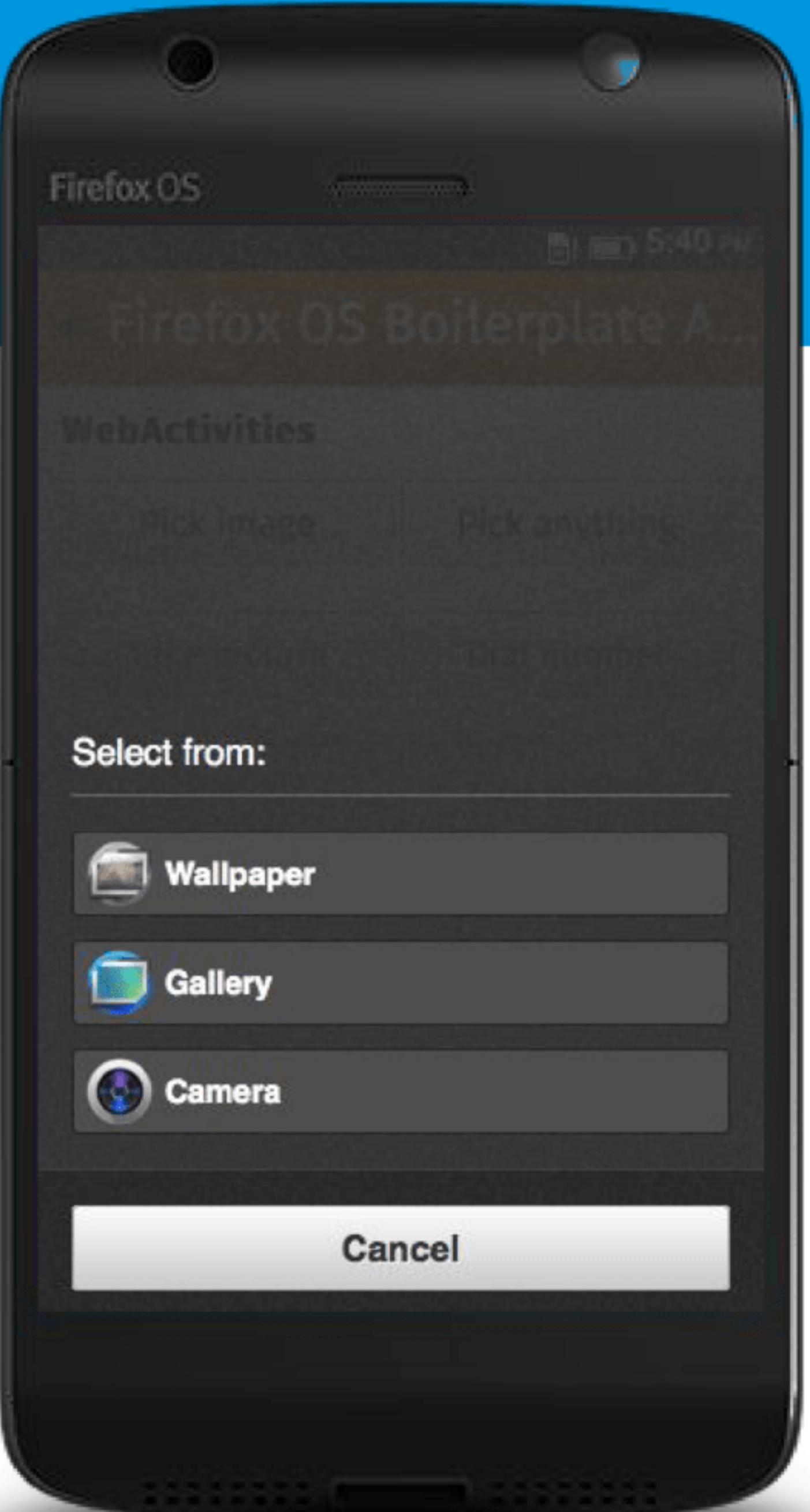
Web Activities

Web Activities

- browse
- configure
- costcontrol
- dial
- open
- pick
- record
- save-bookmark
- share
- view
- update
- new
 - mail
 - websms/sms
 - webcontacts/contact

Pick

```
var activity = new MozActivity({  
    name: "pick",  
    //Provide the data required  
    //by the filter of the activity  
    data: {  
        type: "image/jpeg"  
    }  
});
```



Pick

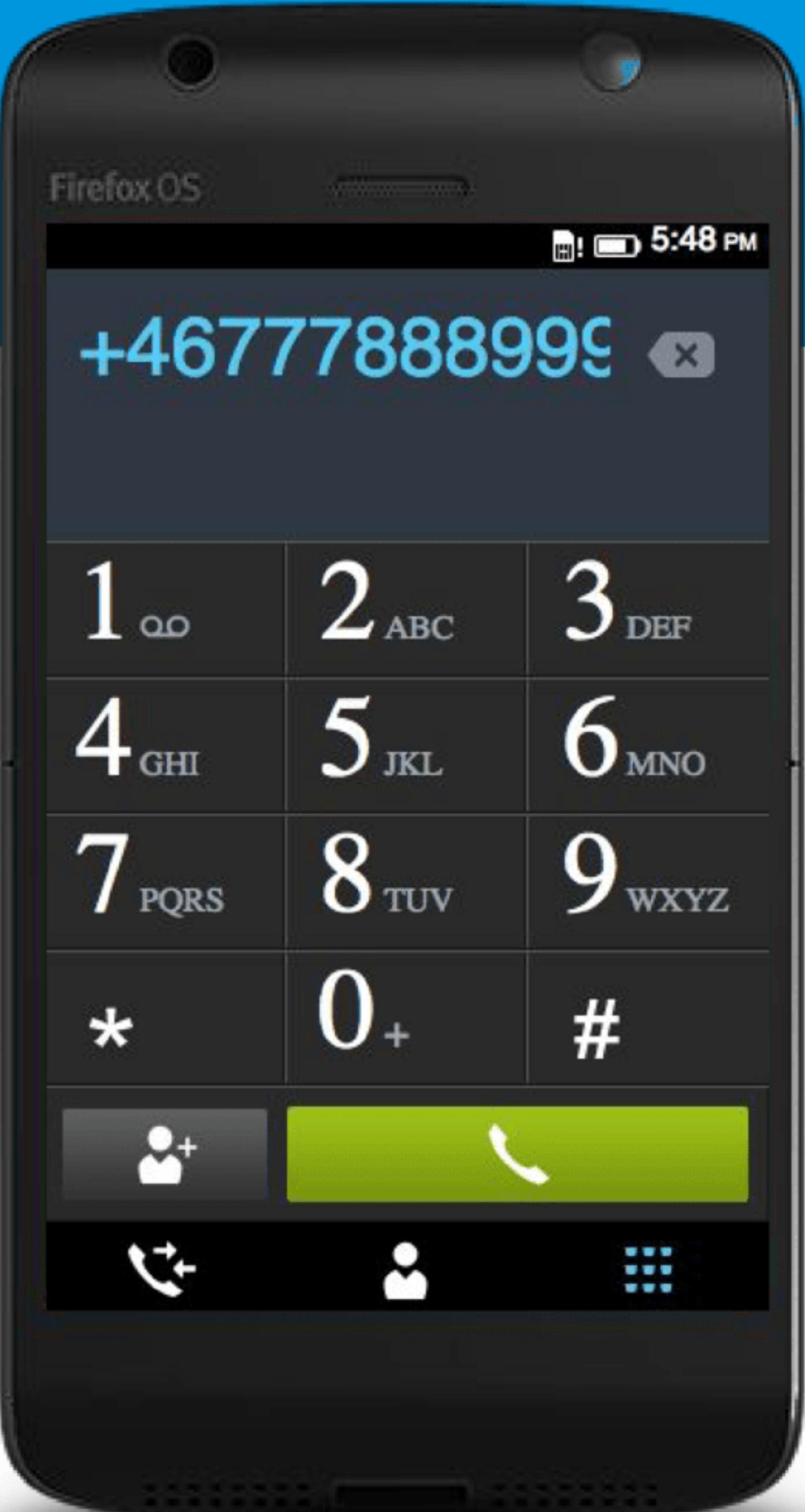
```
activity.onsuccess = function () {
    var img = document.createElement("img");

    if (this.result.blob.type.indexOf("image") != -1) {
        img.src = window.URL.createObjectURL(this.result.blob);
    }
};

activity.onerror = function () {
    //error
};
```

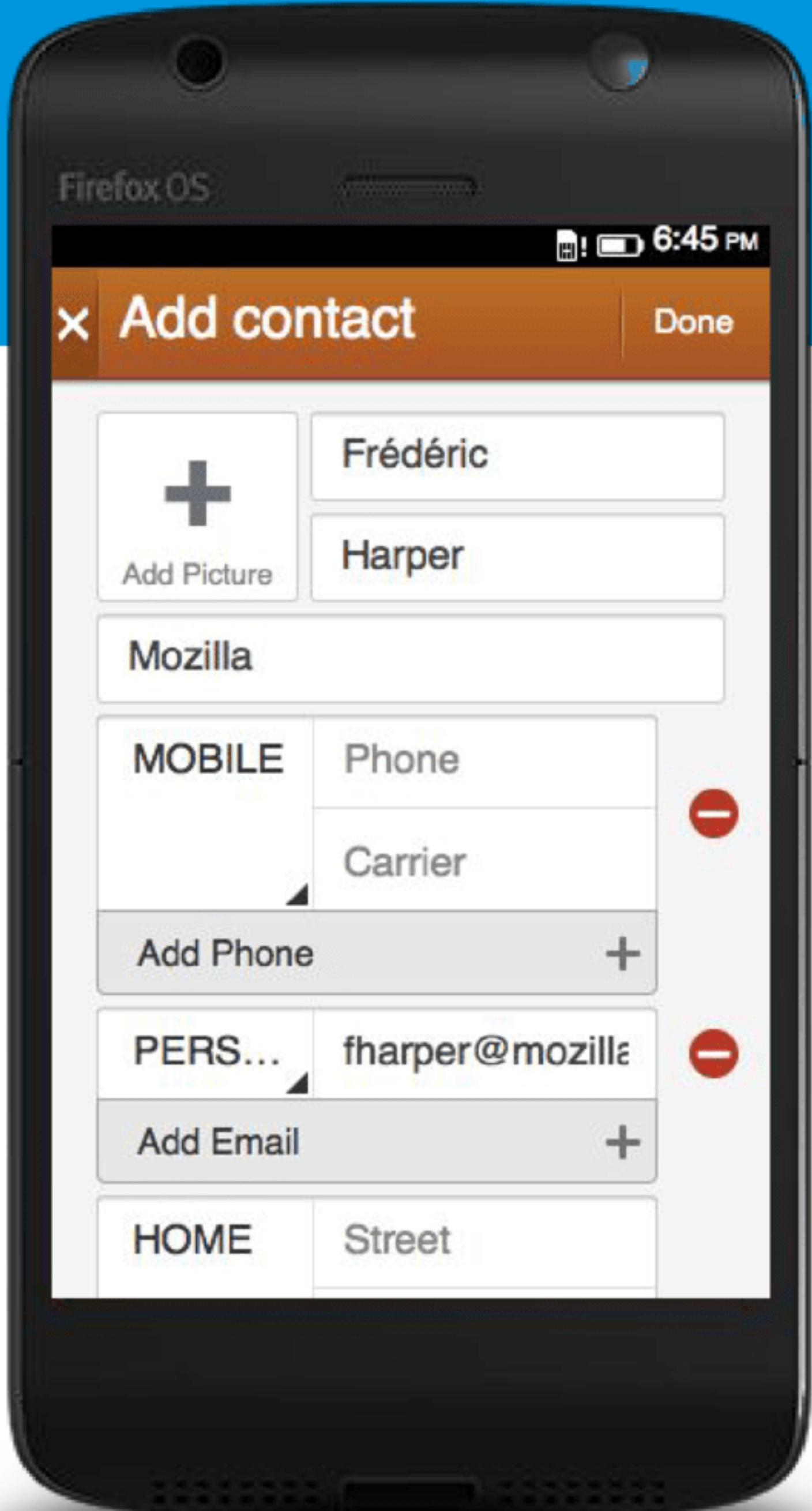
Dial

```
var call = new MozActivity({  
    name: "dial",  
    data: {  
        number: "+46777888999"  
    }  
});
```



new webcontacts/contact

```
var newContact = new MozActivity({  
    name: "new",  
    data: {  
        type: "webcontacts/contact",  
        params: {  
            givenName: "Frédéric",  
            lastName: "Harper",  
            email: "fharper@mozilla.com",  
            company: "Mozilla"  
        }  
    }  
});
```



Web Activity Received Handler

```
"activities": {  
    "pick": {  
        "filters": {  
            "type": ["image/jpeg", "image/png"]  
        },  
        "disposition": "inline",  
        "returnValue": true,  
        "href": "/index.html#pick"  
    }  
}
```

Don't forget to handle it!

```
navigator.mozSetMessageHandler('activity', function(activityRequest) {  
    var option = activityRequest.source;  
  
    if (activityRequest.source.name === "pick") {  
  
        // Do something to handle the activity  
        if (picture) {  
            activityRequest.postResult(picture);  
        }  
        else {  
            activityRequest.postError("Unable to provide a picture");  
        }  
    }  
});
```

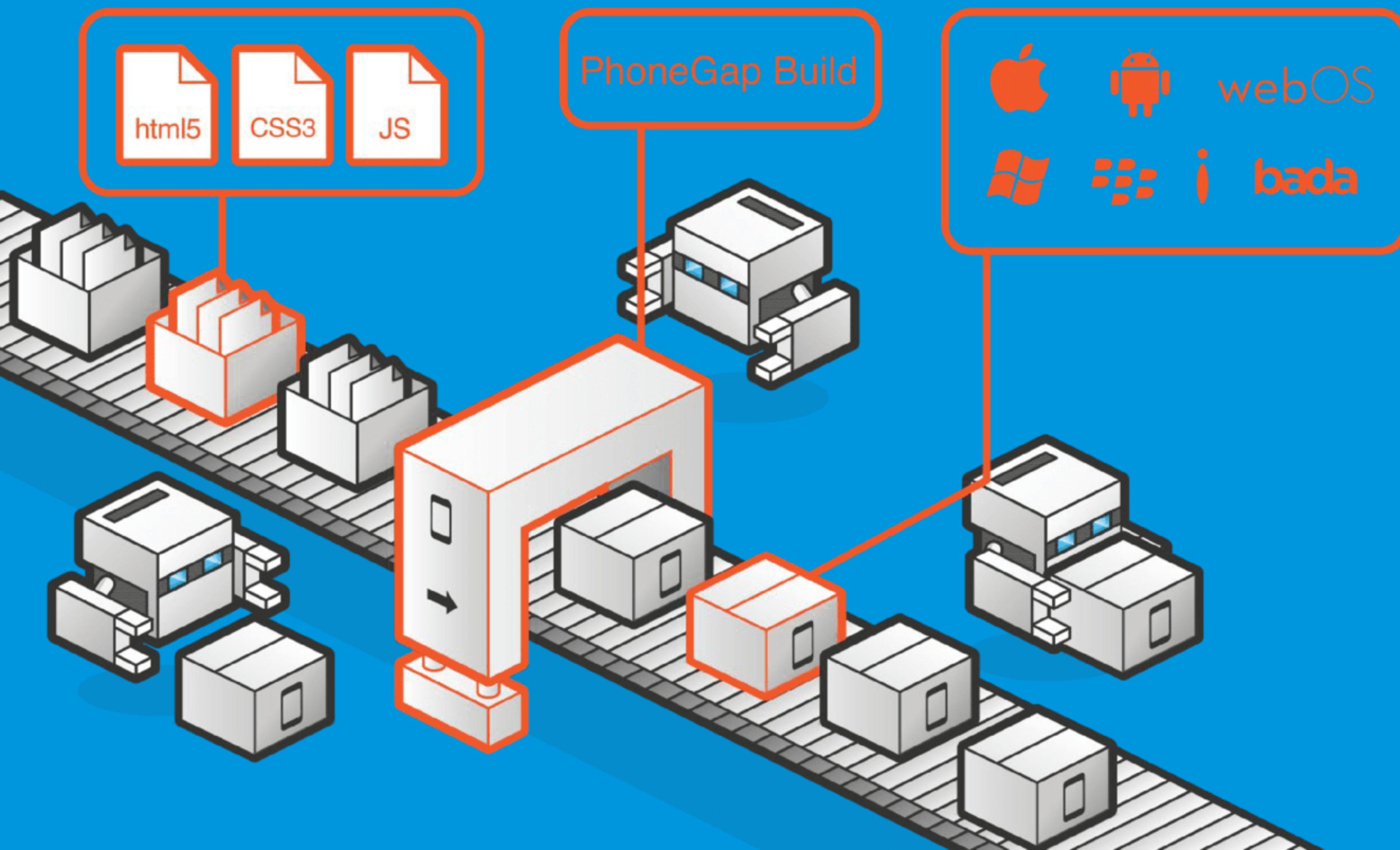


Creative Commons: <http://j.mp/1iZHGAw>

How to start



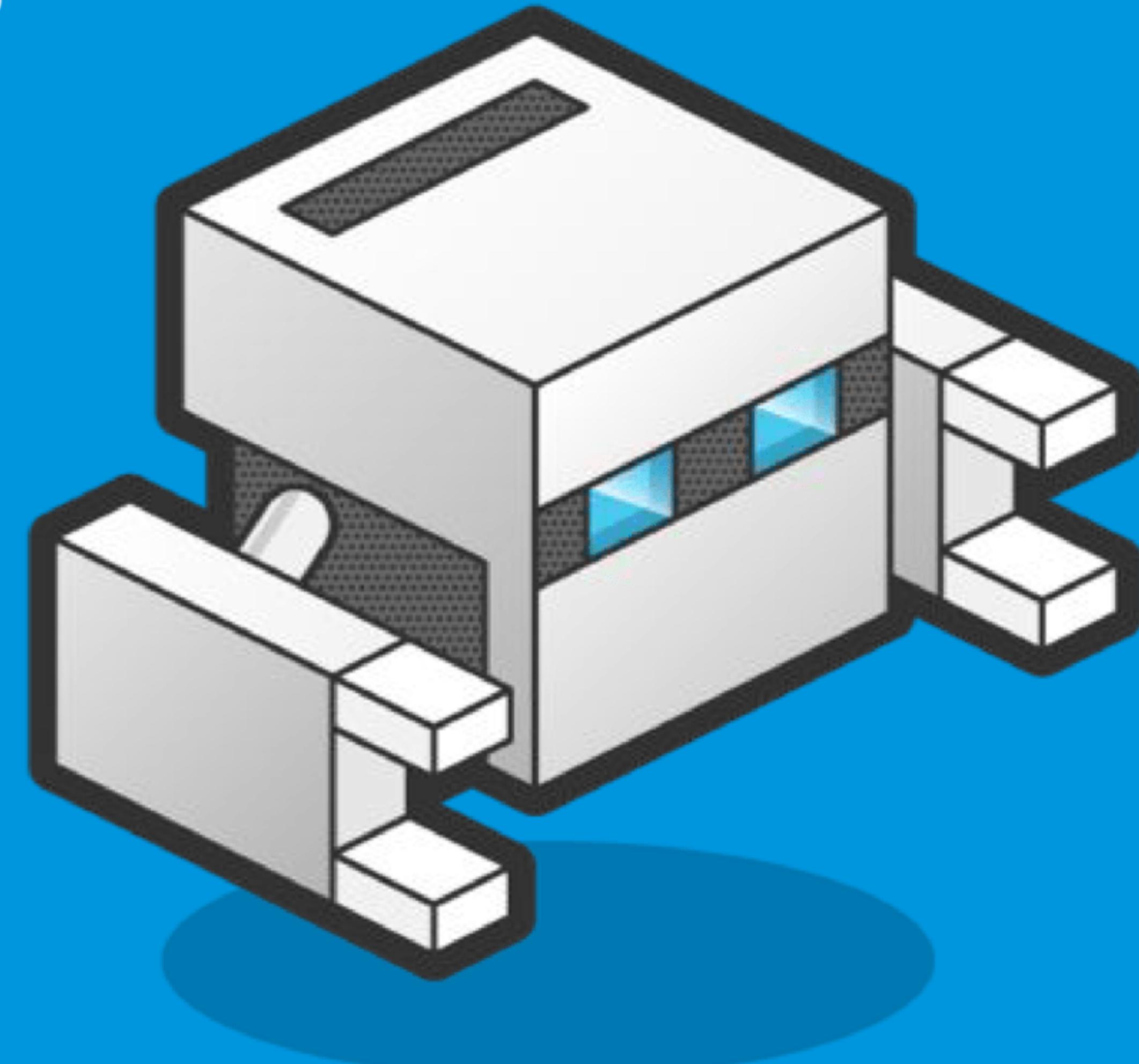
Cordova & Phonegap



Firefox OS

API implementations

- Camera
- Contacts
- Device
- Device-motion
- Geolocation
- Orientation
- Vibration



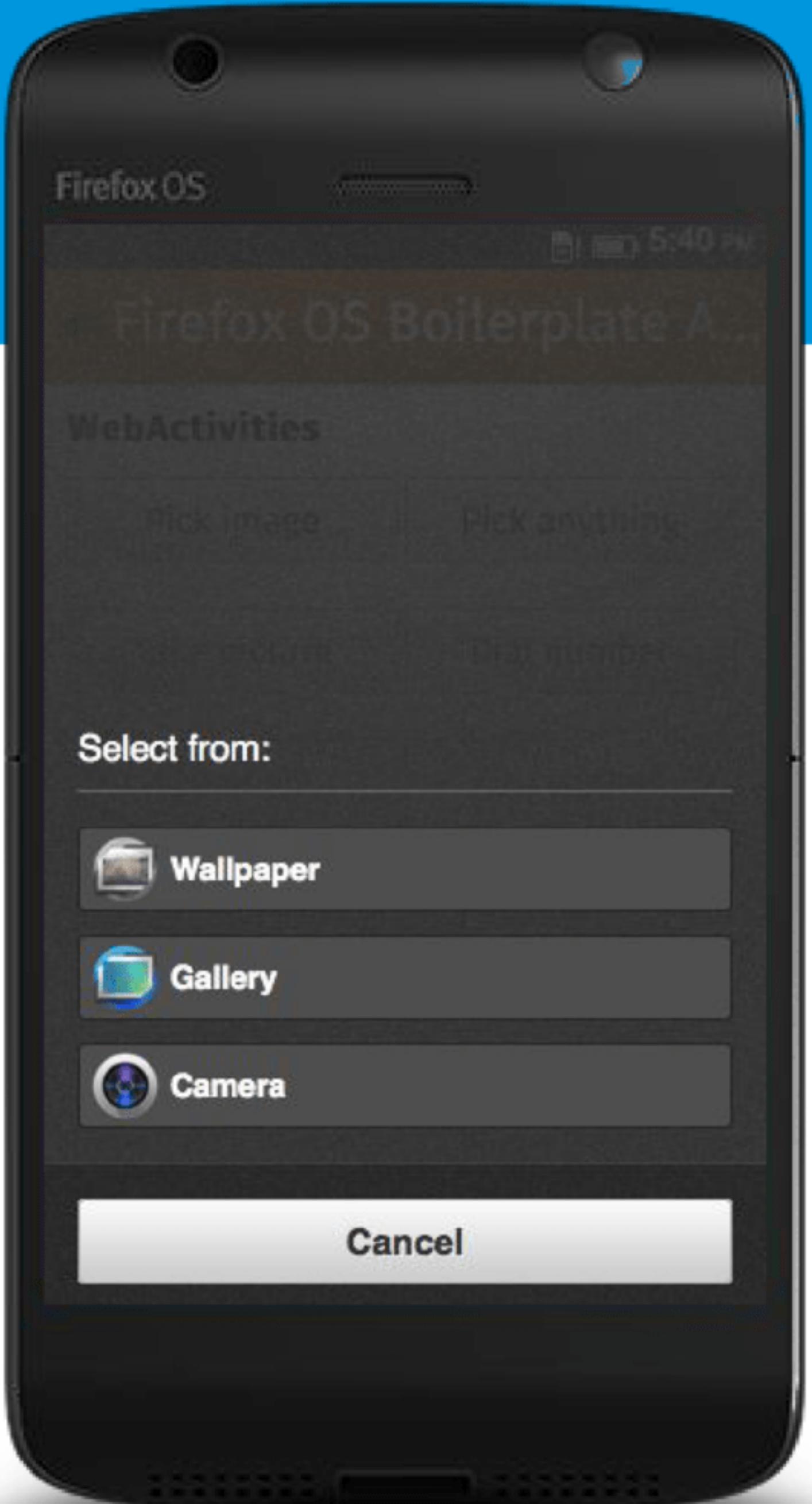
Get ready!

```
$ sudo npm install -g cordova  
$ cordova create hello com.example.hello HelloWorld  
$ cd hello  
$ cordova platform add firefoxos  
$ cordova prepare firefoxos
```

Camera API

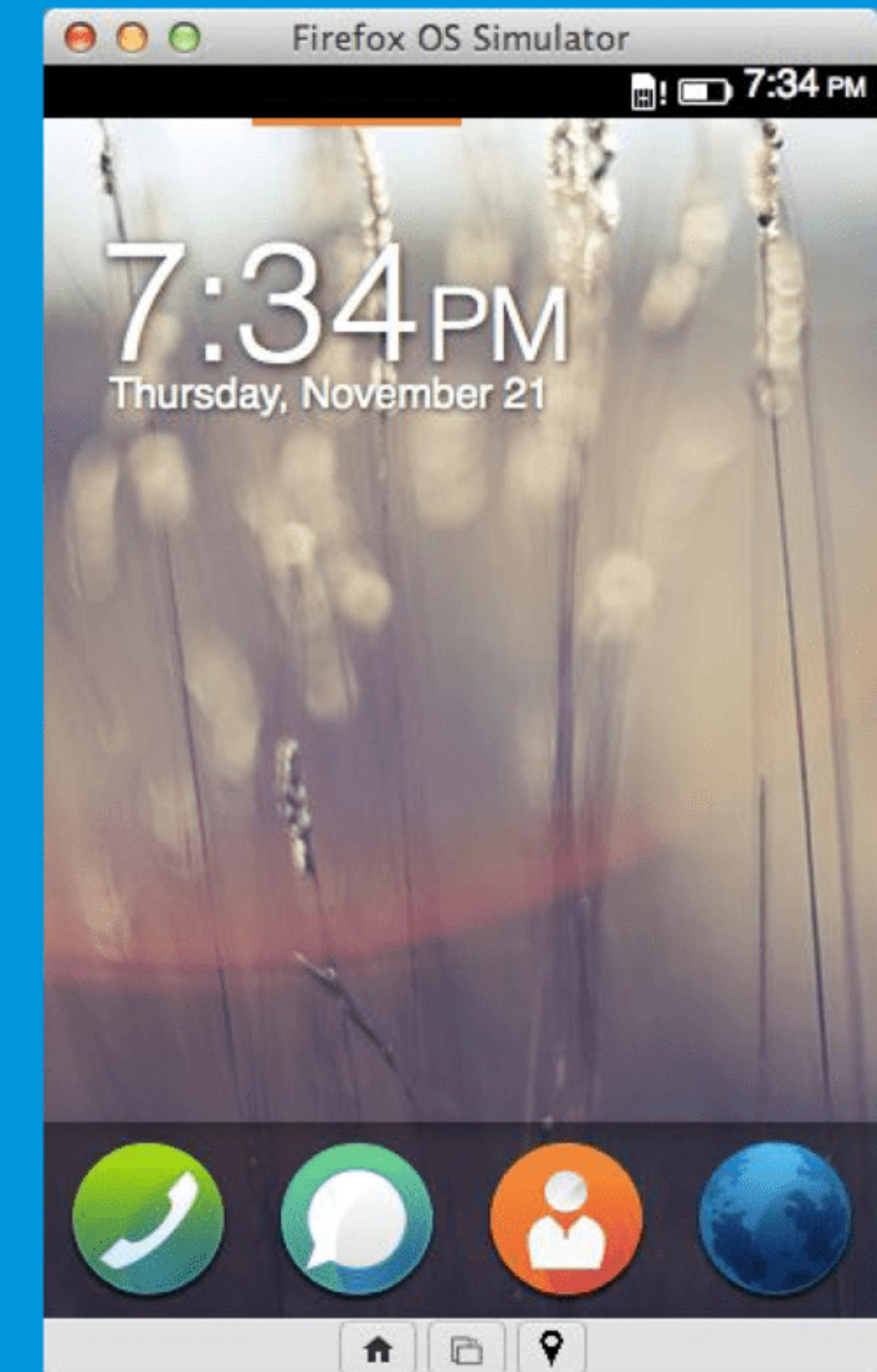
```
$ cordova plugin add org.apache.cordova.camera
```

```
//Cordova code
navigator.camera.getPicture(function (src) {
    var img = document.createElement('img');
    img.id = 'slide';
    img.src = src;
}, function () {}, {
    destinationType: 1
});
```



Firefox OS App Manager + Simulator (1.2+)

The screenshot shows the Firefox OS App Manager interface. On the left, there's a sidebar with icons for Apps (selected), Device, and Help. The main area displays the details for the "Firefox OS Boilerplate App". The app icon is orange with the word "Boilerplate" in white. The title is "Firefox OS Boilerplate App" with status "PACKAGED". The developer is listed as "Robert Nyman" with the URL "/Users/fharper/Documents/GitHub/Firefox-OS-Boilerplate-App". A description below states "Boilerplate Firefox OS app with example use cases to get started". There's a "UPDATE" button at the bottom. At the bottom of the main panel, there are buttons for "Add Packaged App" and "Add Hosted App" with a URL input field containing "http://example.com/app/manifest.webapp". The footer message says "Not Connected. No device found. Plug a device or Start Simulator".



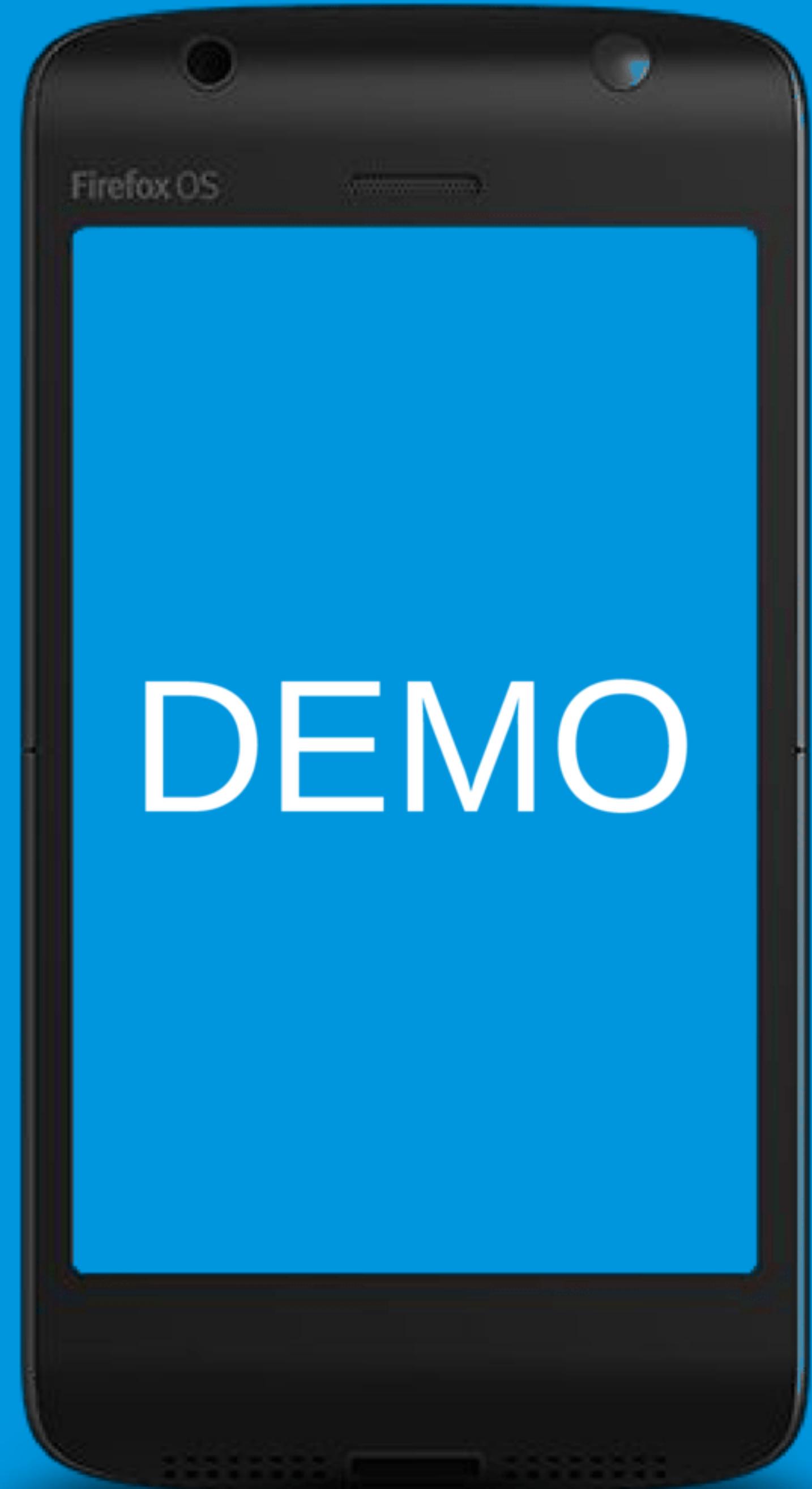
Firefox Web Developer Tools

The screenshot shows the Firefox Web Developer Tools Inspector panel. The top navigation bar includes tabs for Console, Inspector, Debugger, Style Editor, Profiler, and Network, along with various icons. Below the tabs, a breadcrumb navigation bar shows the current node path: html > body > article. The main content area has two panes. The left pane displays the DOM tree:

```
<!DOCTYPE html>
<html>
  <head></head>
  <body>
    <article></article>
    <script id="app-template" type="text/template"></script>
    <script src="js/vendor/jquery-1.9.1.js"></script>
    <script src="js/vendor/nunjucks-dev.js"></script>
    <script src="js/plugins.js"></script>
    <script src="js/applist.js"></script>
    <script src="js/main.js"></script>
  </body>
</html>
```

The right pane shows the CSS rules for the selected element (body). It includes tabs for Rules, Computed, Fonts, and Box Model. The Rules tab displays the following CSS code:

```
element { inline
}
body {
  background-color: white; main.css:16
  color: black;
  background-image:
  url("watermark.png");
  background-repeat: no-repeat;
  background-attachment: fixed;
  background-position: center center;
  display: -moz-box;
  -moz-box-orient: horizontal;
}
html, body {
  width: 100%; main.css:10
  height: 100%;
  margin: 0px;
  padding: 0px;
}
body {
  margin: 0px; normalize.css:91
}
```



How to debug a Firefox OS app

Shared knowledge for the Open Web

Search the docs

WEB PLATFORM

[Web APIs & DOM](#)

[HTML](#)

[CSS](#)

[JavaScript](#)

[more...](#)

ZONES

[App Center](#)

[Firefox](#)

[Firefox OS](#)

[Persona](#)

DEVELOPER TOOLS

[Firefox OS Simulator](#)

[Page Inspector](#)

[JavaScript Debugger](#)

[Web Console](#)

[more...](#)

MDN BETA

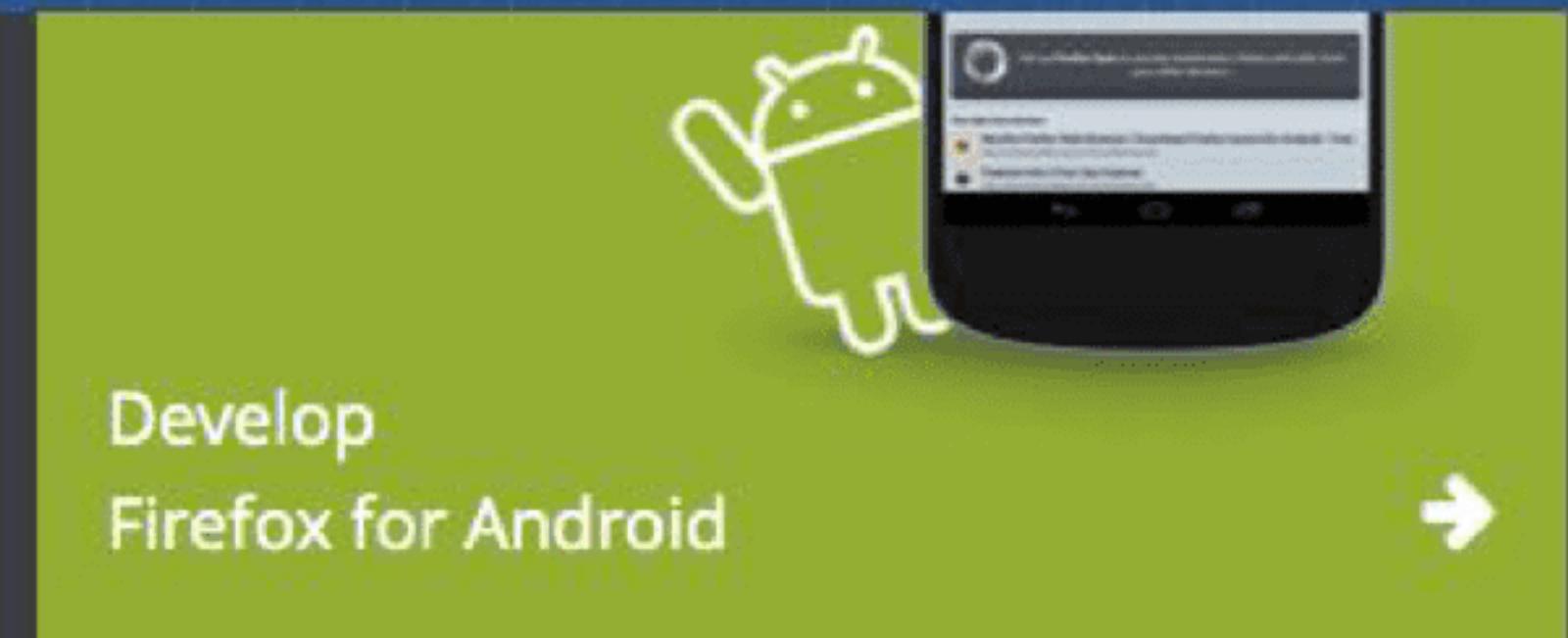
Welcome to the MDN Beta.

[Learn how you can help!](#)



Create Web Apps →

The section features a large orange background with a white stylized fox logo. A large red hexagon contains a white number '5'.



Develop Firefox for Android →

The section features a green background with a white stylized fox logo. It shows a smartphone displaying a mobile version of a web page.



Build Firefox OS →

The section features a blue background with a white stylized fox logo.

 Search hacks.mozilla.org[Home](#) [Articles](#) [Demos](#) [About](#)

Mozilla Hacks is one of the key resources for people developing for the Open Web, talking about news and in-depth descriptions of technologies and features. [Learn more...](#)

 Follow @mozhacks on Twitter

 Visit MozHacks on YouTube

 Subscribe to our news feed

FEATURED ARTICLES [More »](#)

[Launching developer Q&A on Stack Overflow](#)

November 19, 2013 • by Robert Nyman [Editor] • Apps, Firefox OS, HTML5 • 18 comments

[Introducing the Whiteboard Drum – WebRTC and Web Audio API magic](#)

November 14, 2013 • by Tatsuya Shinyagaito and Robert Nyman [Editor] • Audio, WebRTC • 2 comments

[Firefox Developer Tools: Episode 27 – Edit as HTML, Codemirror & more](#)

November 6, 2013 • by Paul Rouget and Robert Nyman [Editor] • Developer Tools, Firefox Aurora • 50 comments

FEATURED DEMOS [More »](#)



The making of a hack – Media Query Mario



BrowserQuest – a massively multiplayer HTML5 (WebSocket + Canvas) game experiment



Creating thumbnails with drag and drop and HTML5 canvas

[Questions](#)[Tags](#)[Users](#)[Badges](#)[Unanswered](#)[Ask Question](#)

Tagged Questions

[info](#)[newest](#)[frequent](#)[votes](#)[active](#)[unanswered](#)

Sponsored links for this tag

- [Mozilla Hacks](#)
- [HTML5 on the Mozilla Developer Network \(MDN\)](#)
- [App Center](#)
- [Firefox OS on the Mozilla Developer Network \(MDN\)](#)
- [Dev Tools on the Mozilla Developer Network \(MDN\)](#)



Firefox OS is an open source HTML5 based operating system developed for mobile devices by the Mozilla Corporation. Firefox OS is designed to run apps that are implemented in HTML, JavaScript, and CSS

[learn more...](#) | [improve tag wiki](#) | [top users](#) | [synonyms](#)

0

votes

0

answers

6 views

[Rendering issue while scrolling in a Firefox OS app](#)

I have a Firefox OS app that displays images and text of different sizes (Titles and content). The app used to work fine in both simulator and device, but today it started to render oddly every time I ...

[javascript](#) [jquery](#) [scrolling](#) [rendering](#) [firefox-os](#)

asked 1 hour ago

**Mavi**

5 • 2

0

votes

1

answer

21 views

[What are the system fonts of Firefox OS?](#)

Fira Sans seems to be the default font, but I'm wondering what other fonts are on the device that can be used by apps via CSS.

[firefox-os](#)

asked 15 hours ago

**Christoph Ono**

56 • 2

150

questions tagged

[firefox-os](#) [about »](#)



CAREERS 2.0

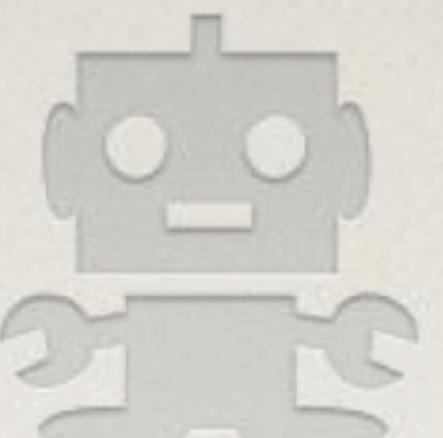
[Senior Software Architect](#)
[Discovery Communications](#)
New York, NY

[Softwareentwickler/-in in Rastatt](#)
(bei Karlsruhe)
[LAWO Informationssysteme](#)

[Home](#)[New](#)[Browse](#)[Search](#)[Search](#)[\[help\]](#)[Reports](#)[My Dashboard](#)[Product Dashboard](#)

version 4.2.7+

Welcome to Bugzilla

[Get Help](#)[File a Bug](#)[Search](#)[User Preferences](#)

Enter a bug number or some search terms

[Quick Search](#)[Quick Search help](#)[Bugzilla User's Guide](#) | [Release Notes](#) | [Bugzilla Etiquette](#) | [Bug Writing Guidelines](#) | [Data for Researchers](#)[Home](#) [New](#) [Browse](#) [Search](#) [Reports](#) [My Dashboard](#) [Product Dashboard](#)[My Bugs](#) [Events requests with my name](#)[Bugs Filed Today](#)[Privacy Policy](#)

Some candies



This repository

Search or type a command

Explore Gist Blog Help



fharper



PUBLIC



robnyman / Firefox-OS-Boilerplate-App

[Unwatch](#)

71

[Unstar](#)

507

[Fork](#)

180

Creating Firefox OS apps

163 commits

5 branches

0 releases

12 contributors



branch: gh-pages ▾

Firefox-OS-Boilerplate-App / [+](#)

Removed button for the Alarm API (more intended for scheduling app ta... ⋮



robnyman authored 8 days ago

latest commit 27d7e6be3b [🔗](#)

.tx	re-configure transifex integration	2 months ago
css	Adding example of getting contacts	a month ago
fonts	Adding/changing font looks	10 months ago
images	Adding 120*120 logo	a month ago
js	Updated Notification code, via Mte90 on GitHub	20 days ago
locales	Update locales.ini with new locales ar, fr, el, id, ja and nl.	14 days ago
.htaccess	Added .htaccess for GitHub pages test	10 months ago
README.md	Changing heading levels	21 days ago
fallback.html	Remove trailing spaces	3 months ago
index.html	Removed button for the Alarm API (more intended for scheduling app ta...	8 days ago

Code

Issues 1

Pull Requests 0

Wiki

Pulse

Graphs

Network

HTTPS clone URL

<https://github.com/>

You can clone with HTTPS, SSH, or Subversion. ⓘ

[Clone in Desktop](#)[Download ZIP](#)

Prototyping with JSFiddle



- Append /webapp.manifest to install the app in the Firefox OS simulator
- Append /fxos.html to get an install page like a Firefox OS hosted app.

Building Firefox OS

Start creating your own apps

[Follow @openwebdevice](#)

4,396 followers

[Tweet](#)

959



Building Blocks

Reusable component set with markup and usage examples.



CSS Transitions

Ready to use animations and transitions for your apps.



Downloads

Get all Firefox OS goodies!
Design stencils, icons, fonts...



What is Brick?

Brick is a bundle of reusable UI components created to enable **rapid development** of cross-browser and mobile-friendly HTML5 web applications.

I'm the front face.

Neat. How?

Brick components are **custom HTML tags** created using [X-Tag](#) — a library that makes developing Web Components easier.

Um, Web Components?

Web Components is a series of emerging [W3C standards](#) that allow developers to define custom HTML elements, and interact with them using the native DOM.

Brick in Action

[Toggle flip](#)

Markup

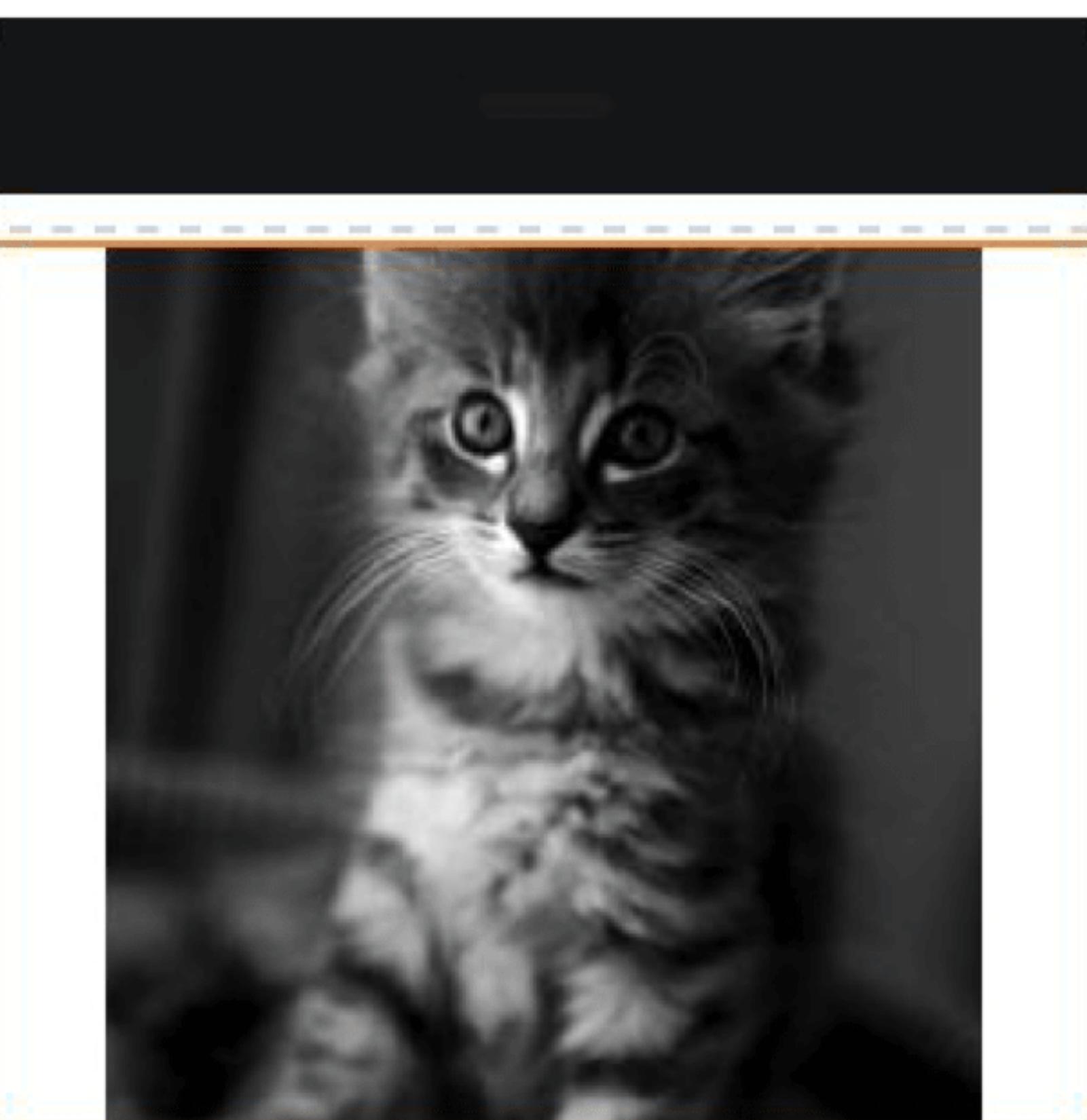
```
<x-flipbox>
  <div>I'm the front face.</div>
  <div>And I'm the back face.</div>
</x-flipbox>
```

JavaScript

```
// assume that toggleButton and flipBox are already
// defined as their respective DOM elements
toggleButton.addEventListener("click", function(){
  flipBox.toggle();
});
```

What's next

form starter data math
numbers input fun photo

[Show all tags](#)[Alternating Gate](#)[Audio Player](#)[Average Number](#)[Button](#)[Chat Window](#)[Component Template](#)[Counter](#)[Fireworks](#)[Flickr](#)

Randomcat

[Customize](#) [View Source](#)[Photo Style](#)

Cat Width

80

More Web APIs & features

- Calendar API
- FileHandle API Sync API
- Keyboard/IME API WebRTC
- HTTP-cache API
- Peer to Peer API
- Spellcheck API LogAPI
- Resource lock API
- UDP Datagram Socket API
- WebNFC
- WebUSB



To infinity, and
beyond...

When you'll build your next app

Why not think about the web first...

Resources

Firefox OS Simulator

<http://j.mp/fxosSimulator>

Firefox OS App Manager

<http://j.mp/fxosAppManager>

Mozilla Developer Network

<https://developer.mozilla.org>

StackOverflow forum

<http://j.mp/fxosStackOverflow>

Firefox OS Boilerplate

<http://j.mp/fxosBoilerplate>

Firefox OS UI Component

<http://buildingfirefoxos.com/>

Mozilla Brick

<http://j.mp/mozBrick>

Mozilla Appmaker

<https://appmaker.mozillalabs.com/>

Join us for an epic workshop

<http://mozhacks.wufoo.com/forms/firefox-os-app-workshop-prague>



Planning to port
or build a
Firefox OS app?

Please let me know!



Frédéric
Harper

fharper@mozilla.com

@fharper

<http://hacks.mozilla.com>

<http://outofcomfortzone.net>