

# Android Development

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FRI ŽU  
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24.2. 2011



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# Obsah

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Platforma Android

Vývoj na platforme AIR

Vývoj Java

Testovanie

Výkon a použiteľnosť

Predaj aplikácií

# Android

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Open source platforma  
pre mobilné zariadenia.



# História

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30.4. 2009

Android 1.5 – Cupcake

Linux kernel 2.6.27



# Ďalšie verzie

1.6. Donut – gestá

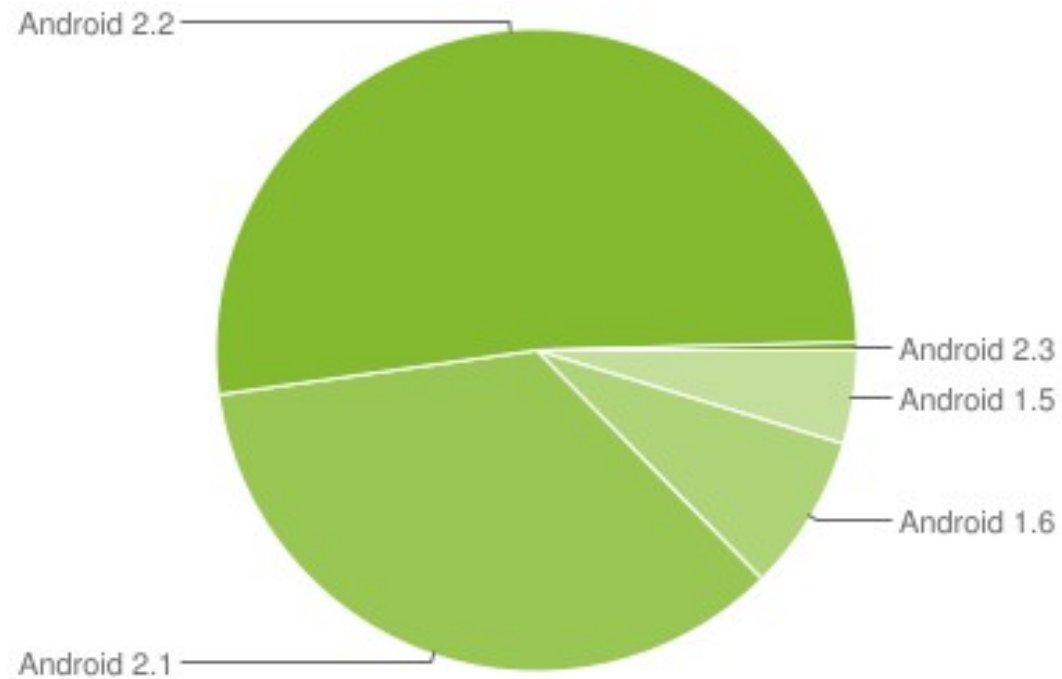
2.0/2.1 Eclair – HTML5, Exchange Sync

2.2 Froyo – lepší JIT, Adobe Flash Player a AIR

2.3 Gingerbread – úpravy UI a použiteľnosti

3.0 Honeycomb – multicore, hw akcelerácia

# Aktuálne verzie



Zdroj: wikipedia.org

# Android a Linux

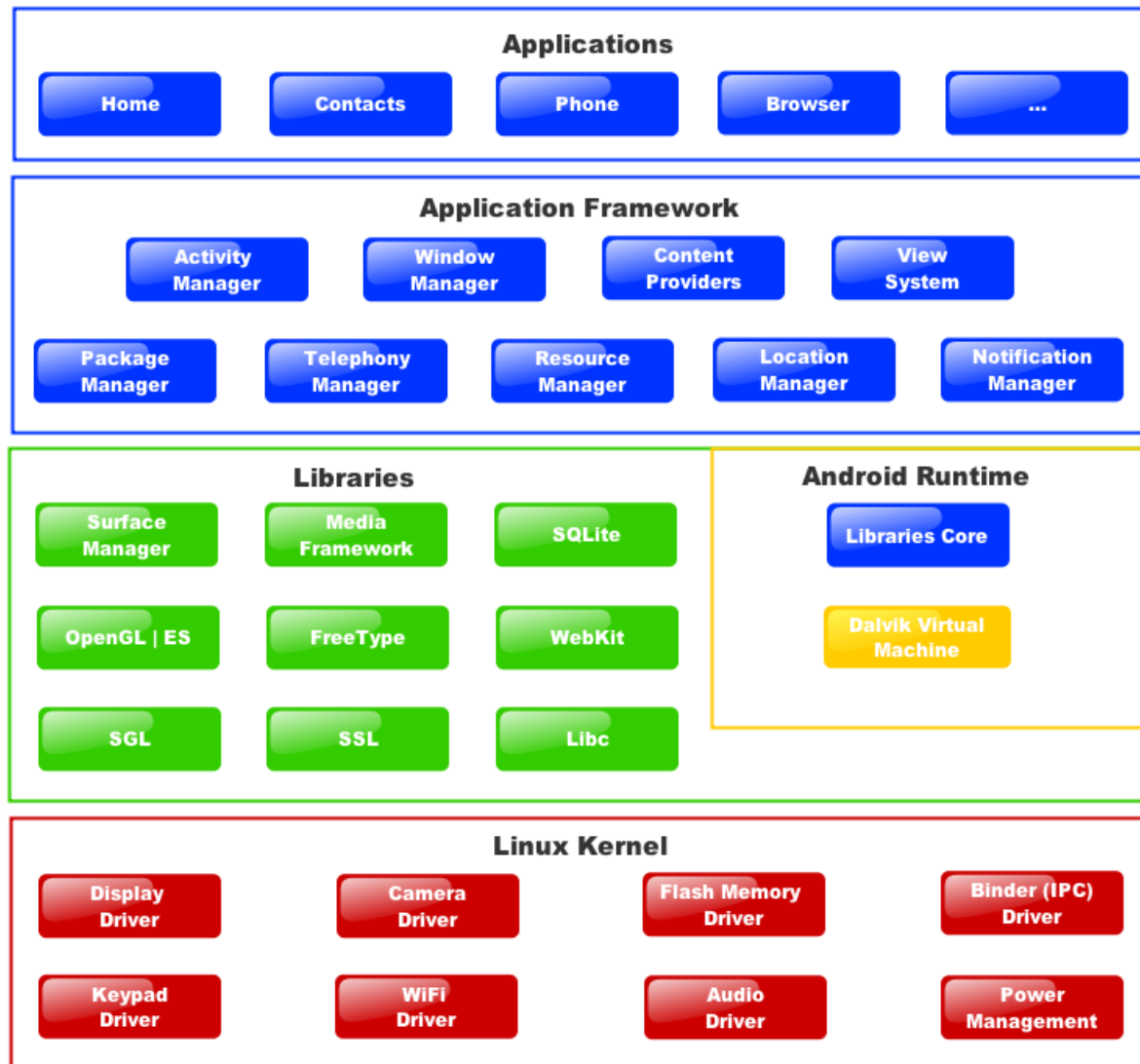
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Kernel pochádza z Linuxového jadra.

Google má vlastný fork.

Časť úprav jadra od Google je opakovane zamietaná už od roku 2009.

# Architektúra





# Android open source



<http://source.android.com>

`git clone git://android.git.kernel.org/ + project path.`

Apache Software License 2.0

# Možnosti vývoje

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Java

C/C++

AIR

HTML/JavaScript

# Java

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Dalvik VM

register based architecture

Dalvik Executable (.dex)

mobily, tablety, netbooky

# C/C++

---

hm

Skutočne to chcete?

# C/C++ NDK

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Using native code does not result in an automatic performance increase, but always increases application complexity.

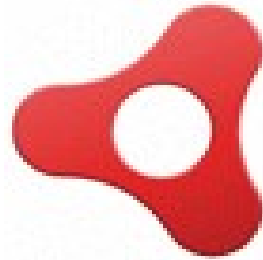
# Android SDK



<http://developer.android.com>

SDK + emulátor (qemu)

# Adobe AIR



**ADOBE AIR™**

Multiplatform runtime  
Linux, Mac, Windows, Mobile

RIA

Flash Builder Burrito



# Flash Builder Burrito

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Vývojové prostredie na Eclipse

Mac, Windows

<http://labs.adobe.com>

Študenti a akademický pracovníci  
- licenciacia zdarma



# Flex SDK Hero

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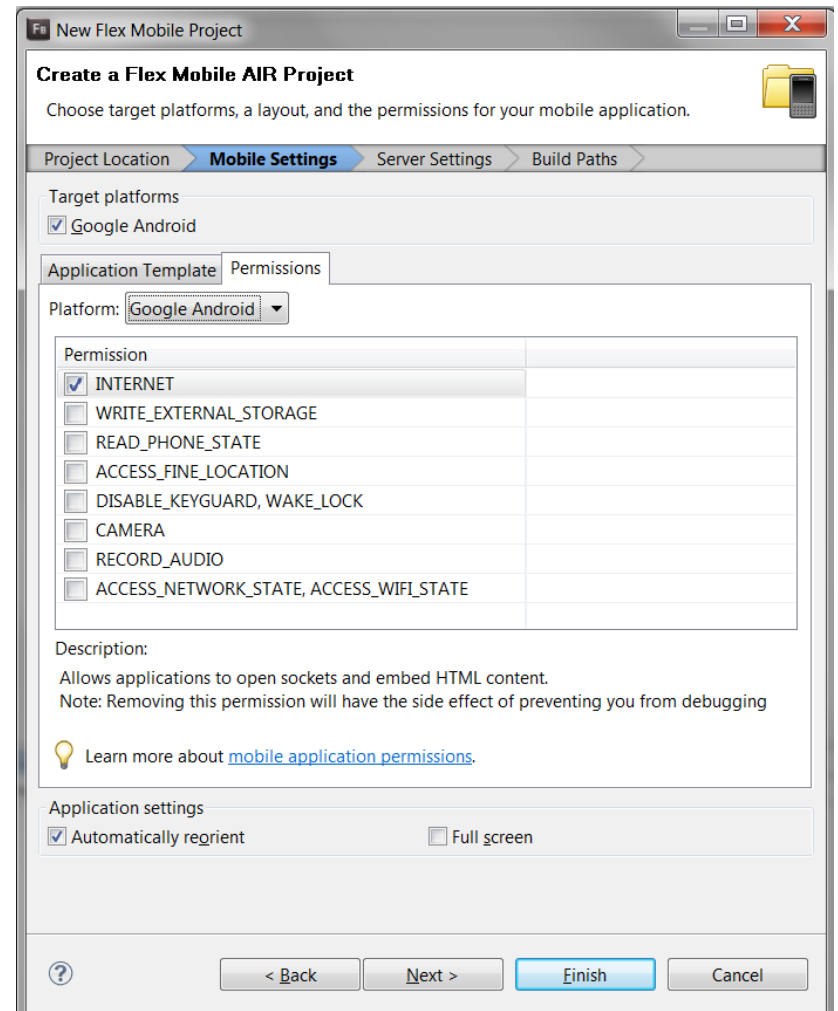
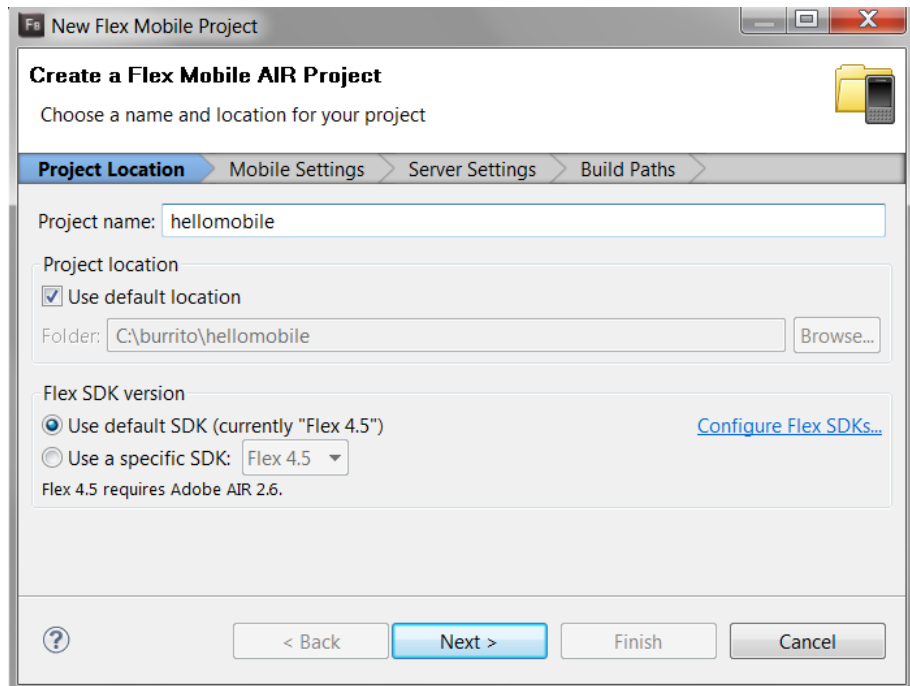
Mozilla Public licence

Linux, Mac, Windows, BSD

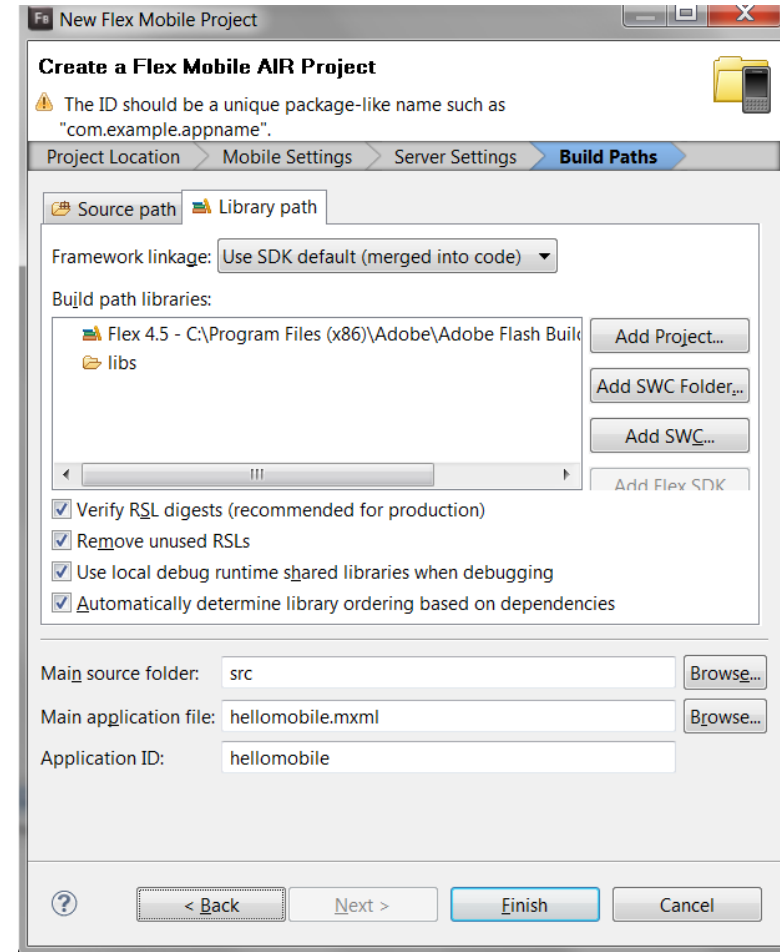
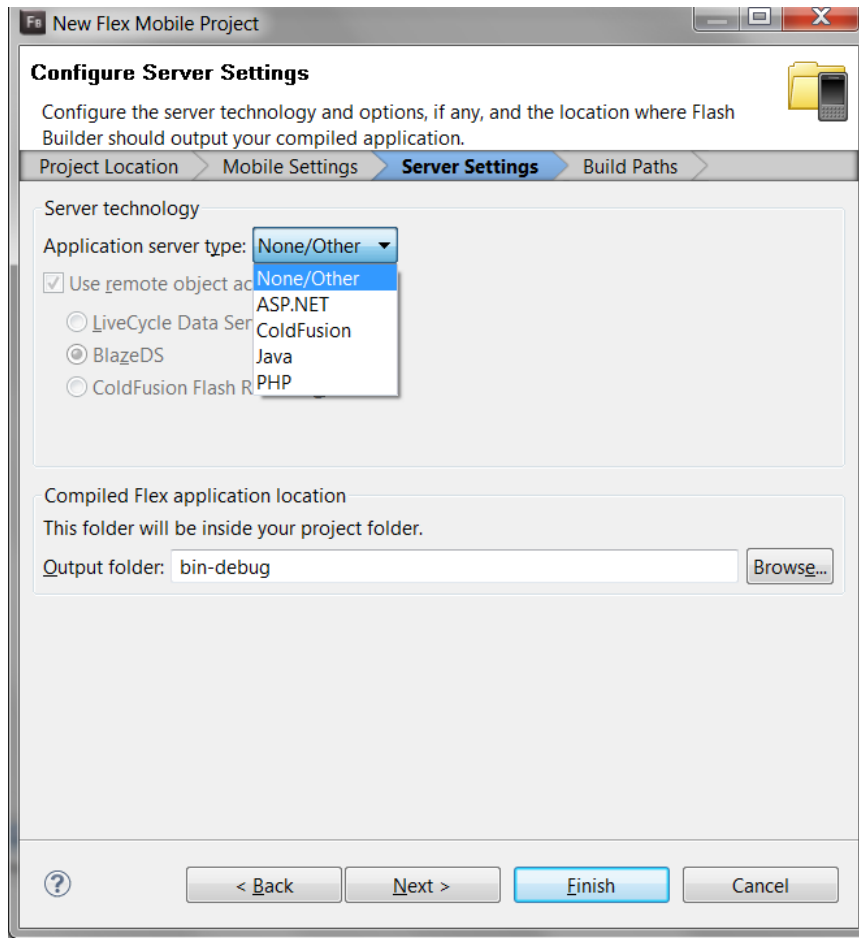
Flex SDK 4.5 – podpora mobilných zariadení



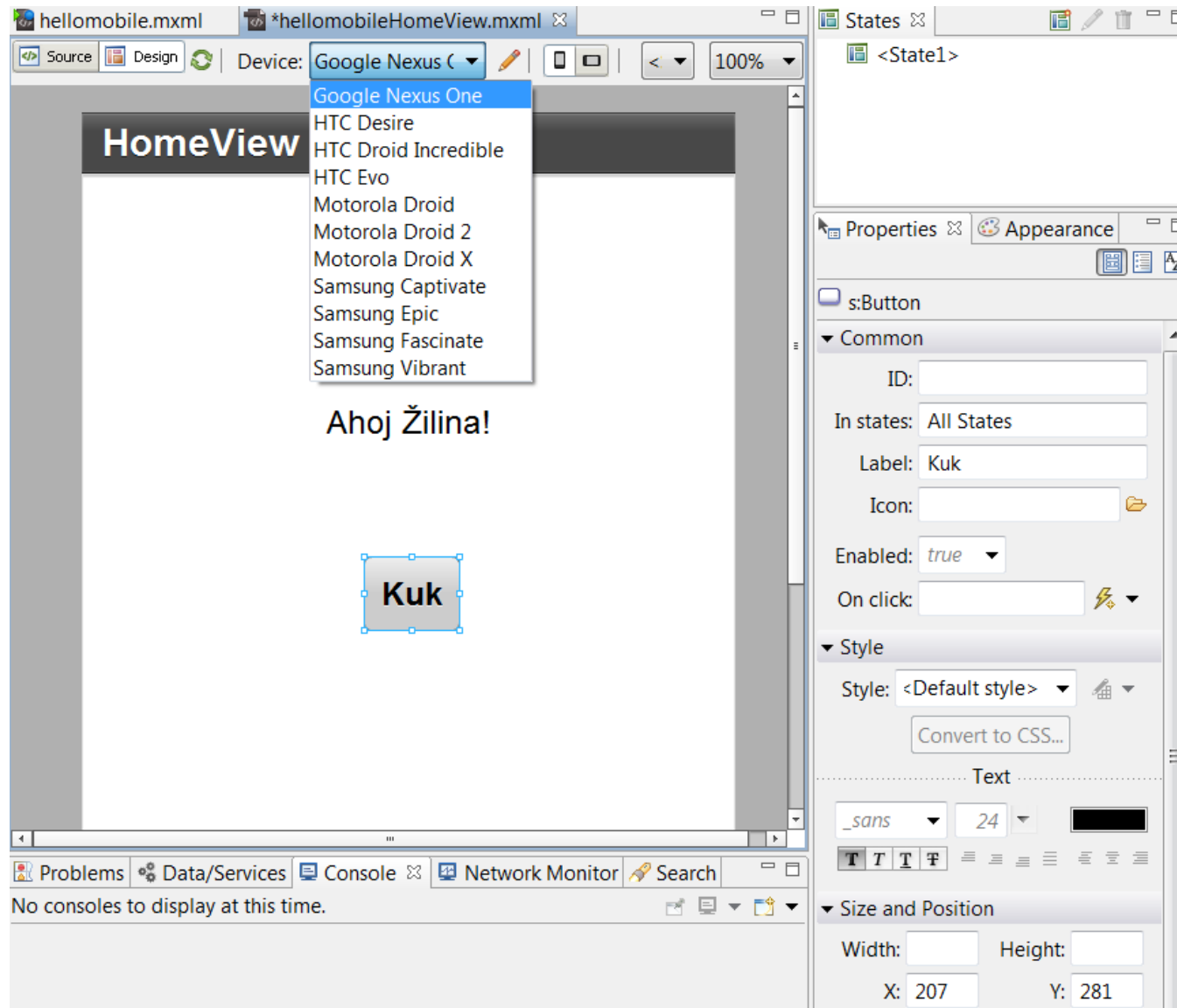
# Mobile Wizard



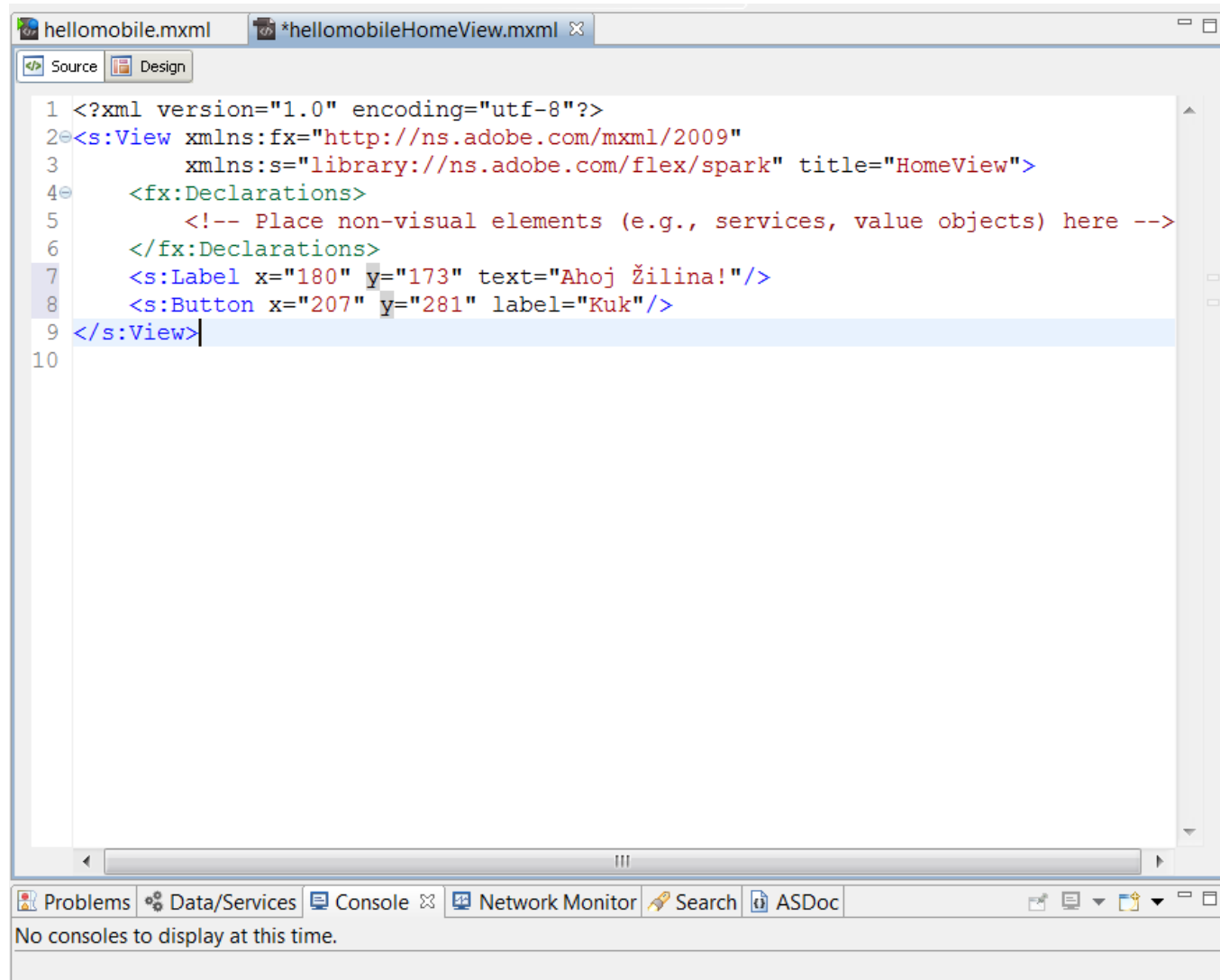
# Backend, Config



# Design View



# Source View

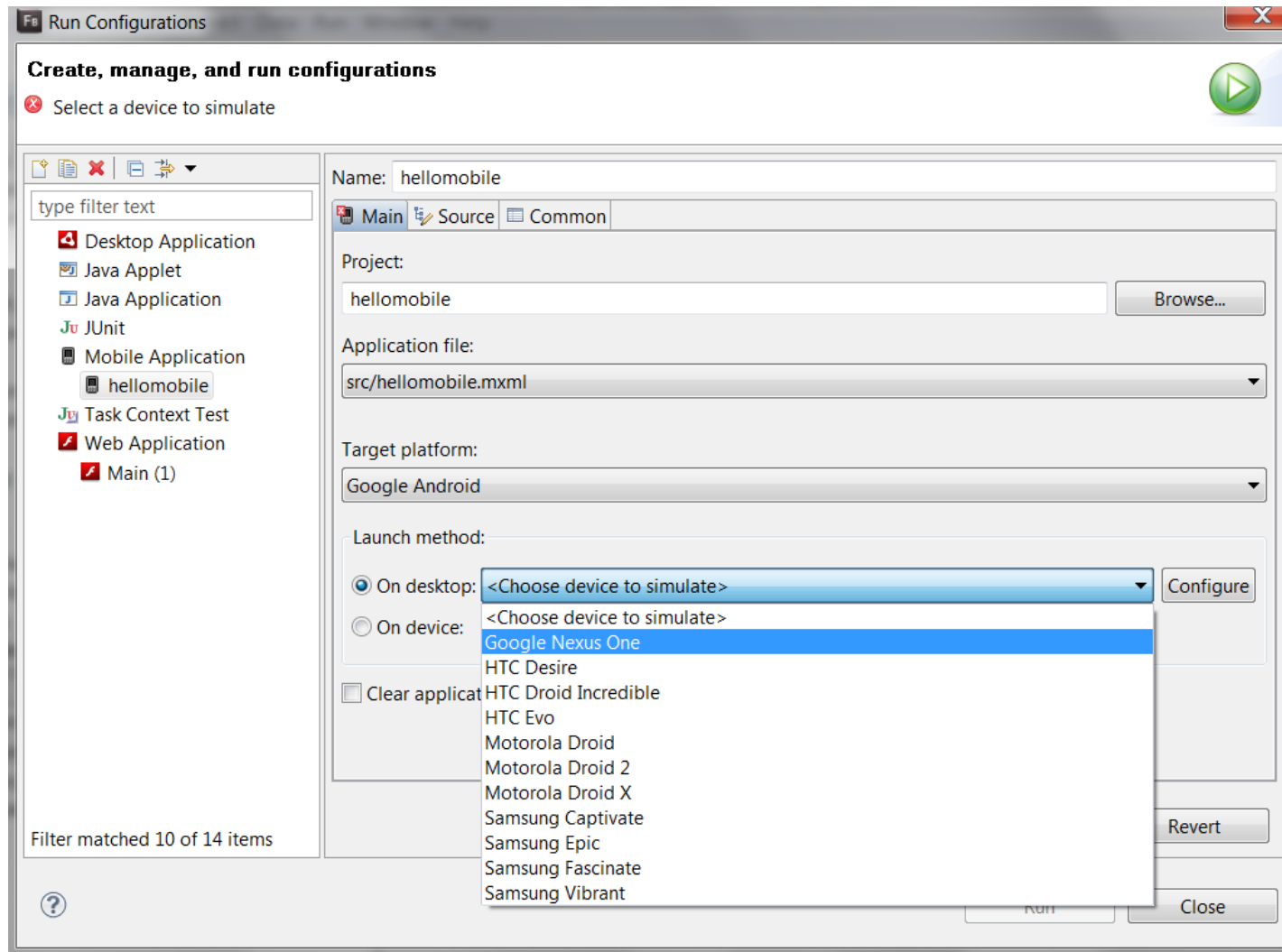


The screenshot shows an IDE window with two tabs: 'hellomobile.mxml' and '\*hellomobileHomeView.mxml'. The 'Source' view is active, displaying the following MXML code:

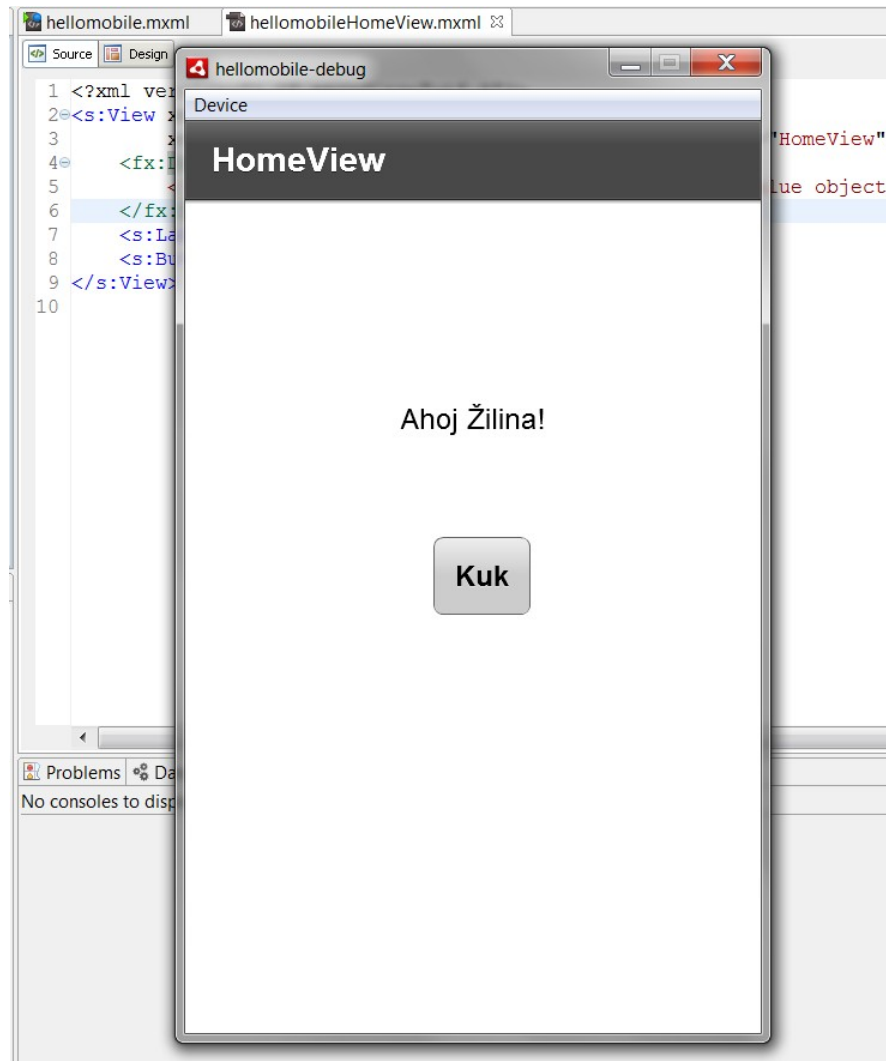
```
1 <?xml version="1.0" encoding="utf-8"?>
2 <s:View xmlns:fx="http://ns.adobe.com/mxml/2009"
3     xmlns:s="library://ns.adobe.com/flex/spark" title="HomeView">
4   <fx:Declarations>
5     <!-- Place non-visual elements (e.g., services, value objects) here -->
6   </fx:Declarations>
7   <s:Label x="180" y="173" text="Ahoj Žilina!"/>
8   <s:Button x="207" y="281" label="Kuk"/>
9 </s:View>
10
```

The IDE interface includes a 'Design' view button, a scroll bar on the right, and a bottom toolbar with icons for Problems, Data/Services, Console, Network Monitor, Search, and ASDoc. A status bar at the bottom indicates 'No consoles to display at this time.'

# Run configuration



# Run - Desktop





# Debug

The screenshot shows the Flash Builder IDE in debug mode. The main window displays the source code for `hellomobileHomeView.mxml`. A breakpoint is set at line 9, which is highlighted in green. The code in this line is `this.messageLabel.text = "Kuk";`. The IDE also shows a "Device" window titled "hellomobile-debug (Not Responding)" which displays the application's UI. The UI has a title bar "Device", a header "HomeView", and the text "Ahoj Žilina!". Below the text is a button labeled "Kuk". The IDE's status bar at the bottom right shows "117M of 254M".

Flash Debug - hellomobile/src/views/hellomobileHomeView.mxml - Flash Builder

File Edit Source Navigate Search Project Data Run Window Help

Debug

- hellomobile [Mobile Application]
- file:/C:/burrito/hellomobile/bin-debug/
- Main Thread (Suspended)
- views:hellomobileHomeView/butt
- views:hellomobileHomeView/

Breakpoints

- UploaderFile.as [line: 419]
- hellomobileHomeView.mxml [line: 9]

Expressions

Variables

Name	Value
hellomobile-debug (Not Responding)	

hellomobile.mxml hellomobileHomeView.mxml

Source Design

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <s:View xmlns:fx="http://ns.adobe.com/mxml/2009"
3   xmlns:s="library://ns.adobe.com/flex/spark" title="Home
4
5   <fx:Script>
6     <![CDATA[
7       protected function button1_clickHandler(event:Mouse
8         {
9           this.messageLabel.text = "Kuk";
10        }
11      ]]>
12   </fx:Script>
13
14   <fx:Declarations>
```

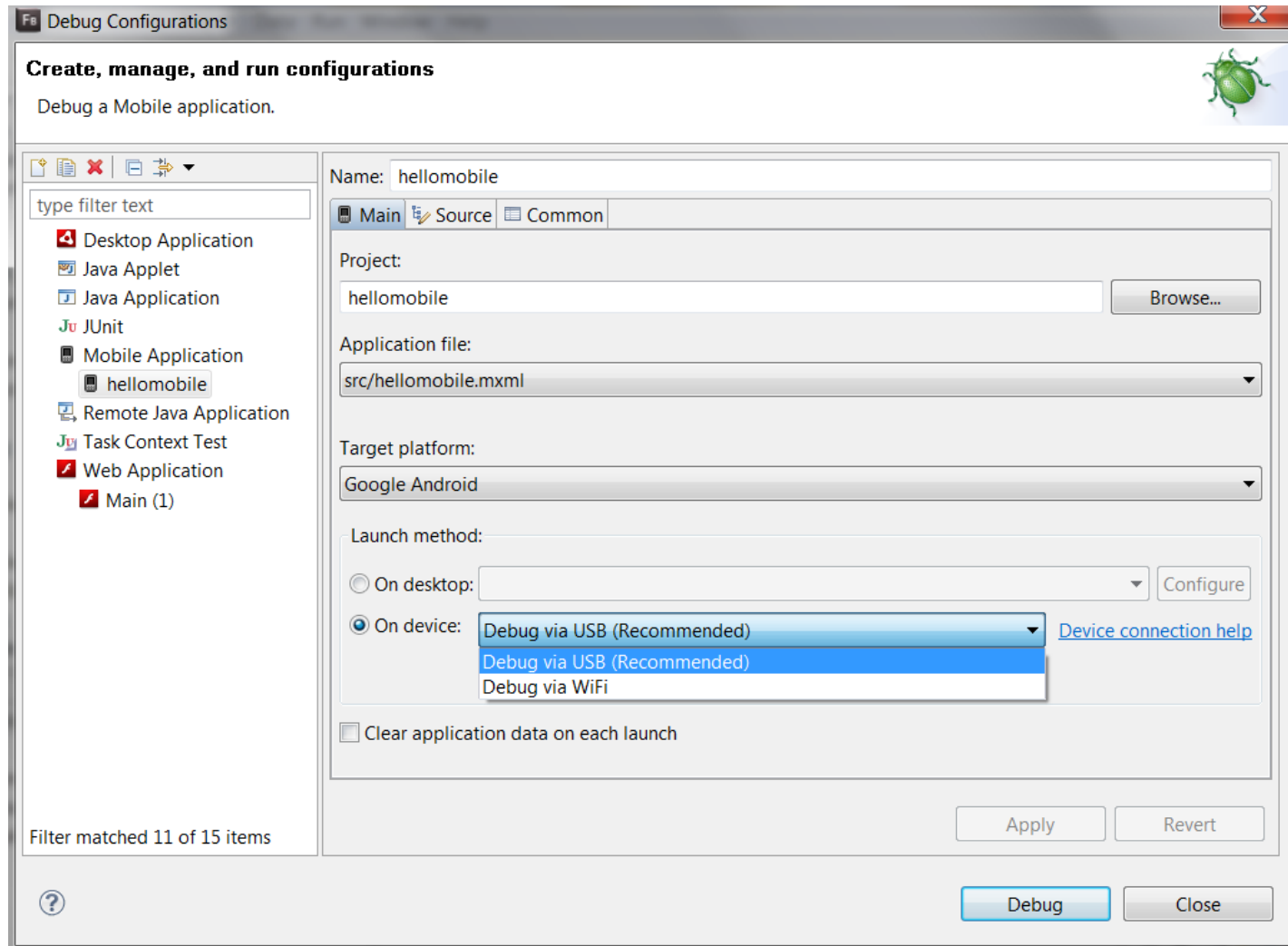
Console

Data/Services Network Monitor

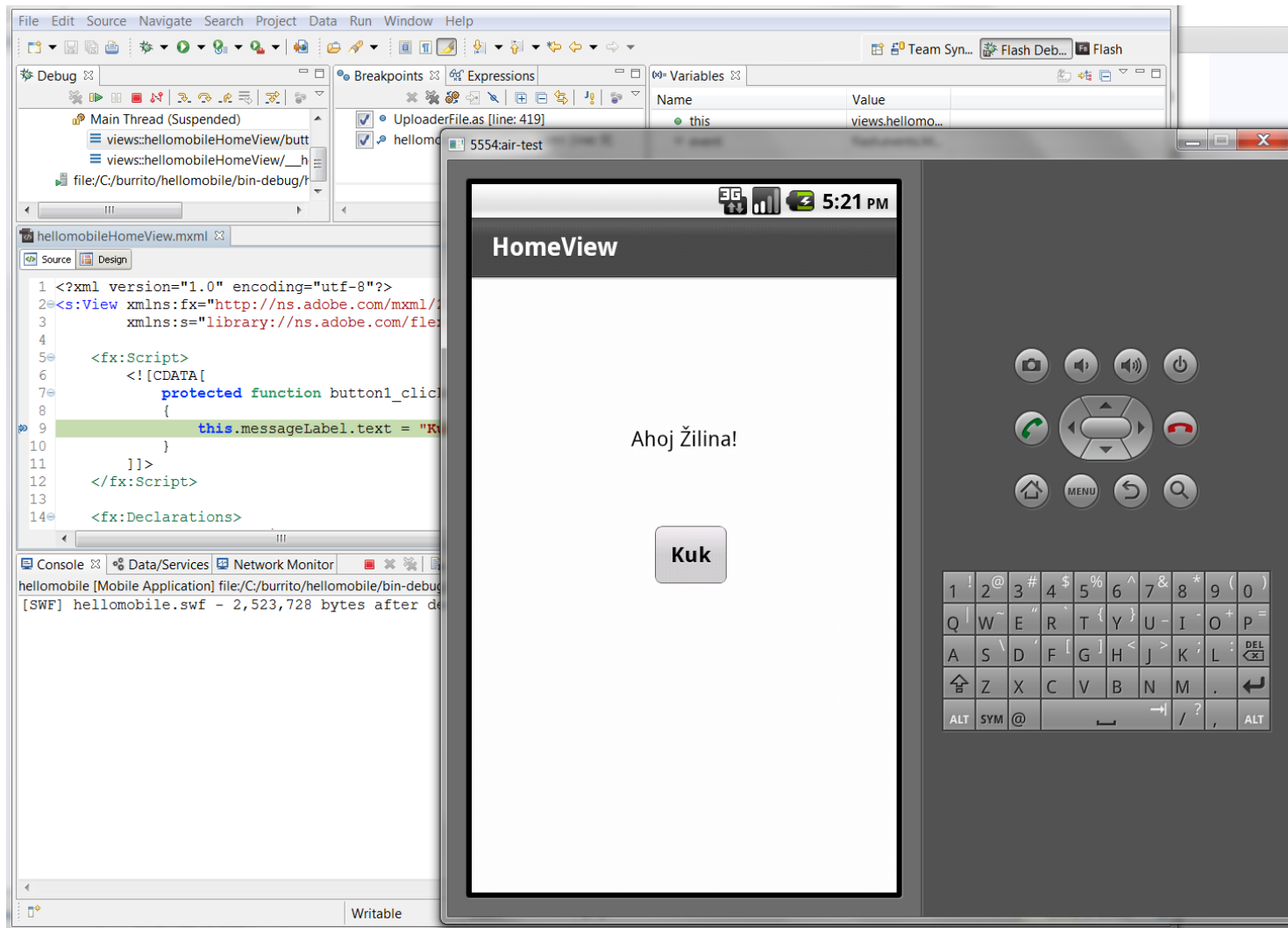
hellomobile [Mobile Application] file:/C:/burrito/hellomobile/bin-debug/hellomobile-app.xml  
[SWF] hellomobile.swf - 2,523,728 bytes after decompression

117M of 254M

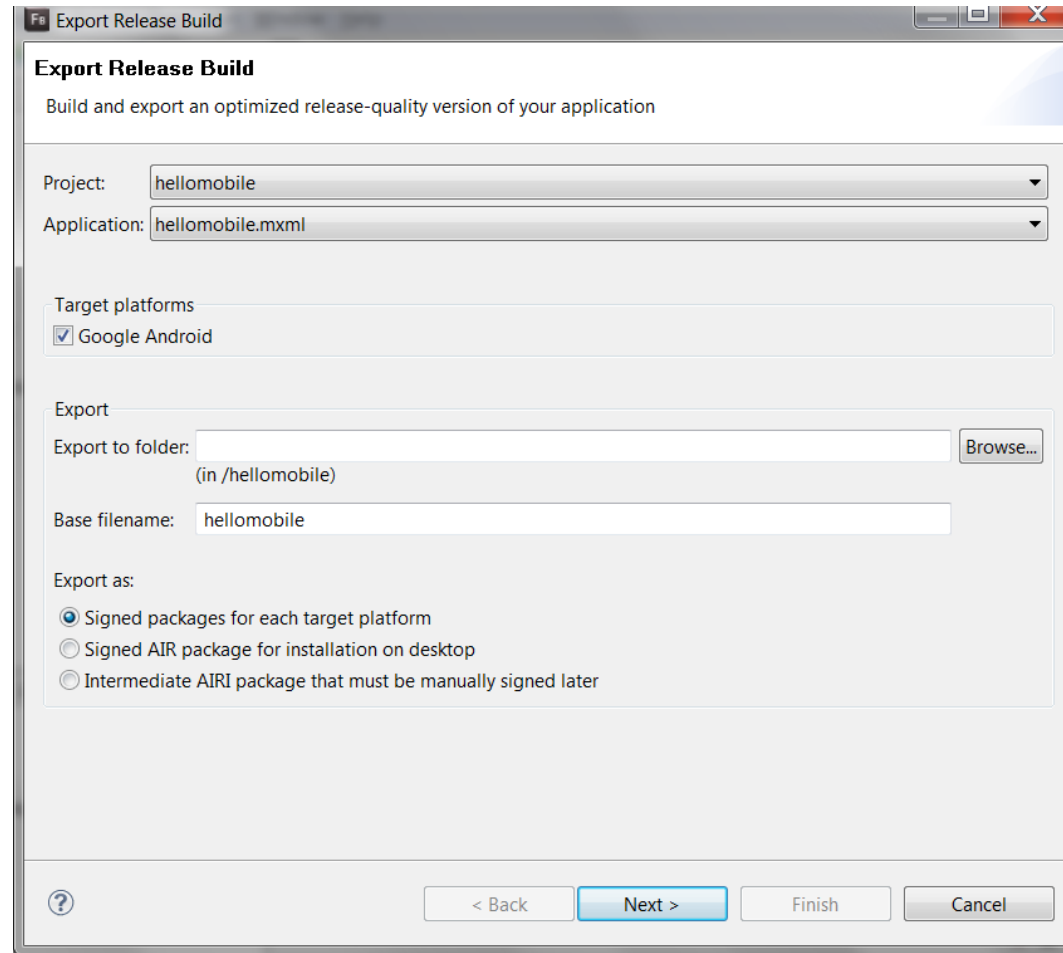
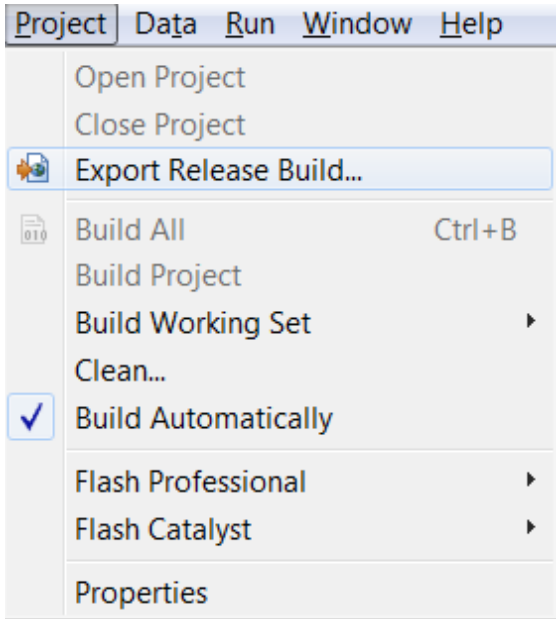
# Debug v emulátore



# Break point v emulátore



# Export Release Build



# AIR Runtime pre Android

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Adobe Flash Builder

Burrito/sdks/4.5.0/runtimes/air/android/emulator

Runtime.apk

```
adb install Runtime.apk
```

# Release pre emulátor

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## Air packager:

```
adt -package -target apk-emulator -storetype pkcs12  
-keystore cert.p12 Main.apk Main-app.xml Main.swf
```

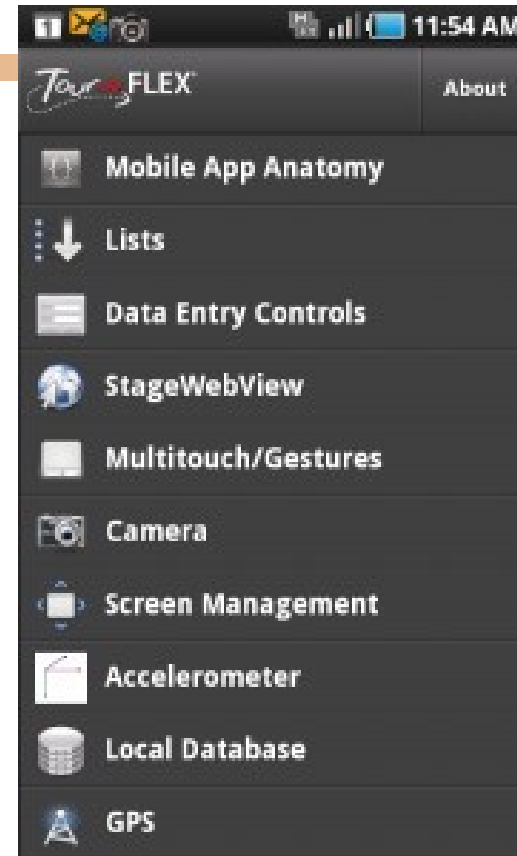
## Install:

```
adb install Main.apk
```

## Podrobný popis

<http://georgik.sinusgear.com/2011/01/02/how-to-package-air-app-for-google-android-emulator/>

# Tour de Mobile



<http://flex.org/tourmobile>

# Air aplikácie pre Android

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<http://www.appbrain.com/apps/adobe-air/>

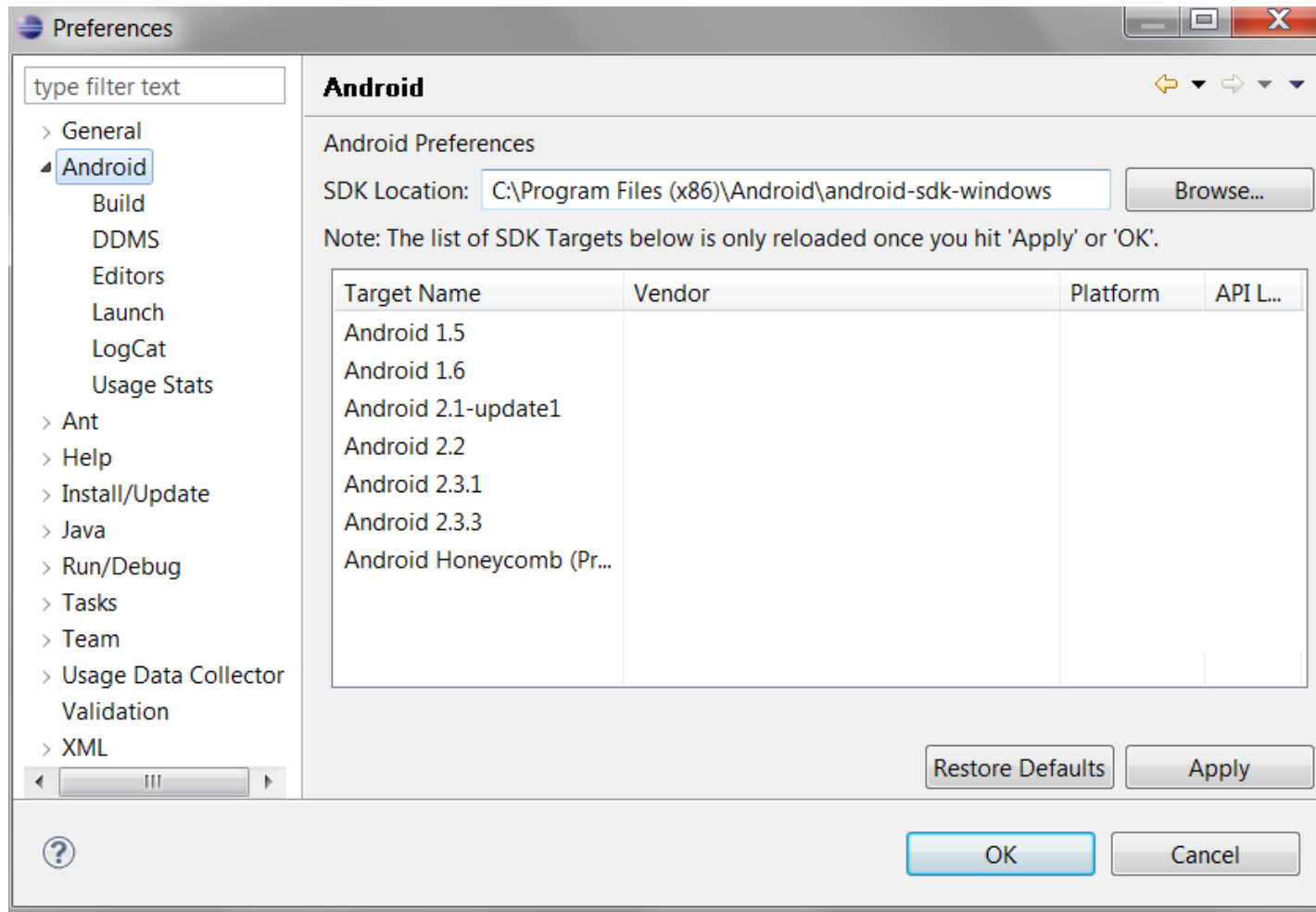


# Eclipse

---

Plugin ADT

# Nastavenie cesty k SDK



# Nový/Import projektu

**New Android Project**

⚠ A project with that name already exists in the workspace

Project name:

Contents

Create new project in workspace

Create project from existing source

Use default location

Location:

Create project from existing sample

Samples:

Build Target

Target Name	Vendor	Platform	API Level
<input checked="" type="checkbox"/> Android 1.5	Android Open Source Project	1.5	3
<input type="checkbox"/> Android 1.6	Android Open Source Project	1.6	4
<input type="checkbox"/> Android 2.1-update1	Android Open Source Project	2.1-update1	7
<input type="checkbox"/> Android 2.2	Android Open Source Project	2.2	8
<input type="checkbox"/> Android 2.3.1	Android Open Source Project	2.3.1	9
<input type="checkbox"/> Android 2.3.3	Android Open Source Project	2.3.3	10
<input type="checkbox"/> Android Honeycomb (Previe...	Android Open Source Project	Honeycomb	Honeyc...

Properties

Application name:

Package name:

Create Activity:



# IntelliJ IDEA



Podpora pre Android  
<http://www.jetbrains.com/idea>

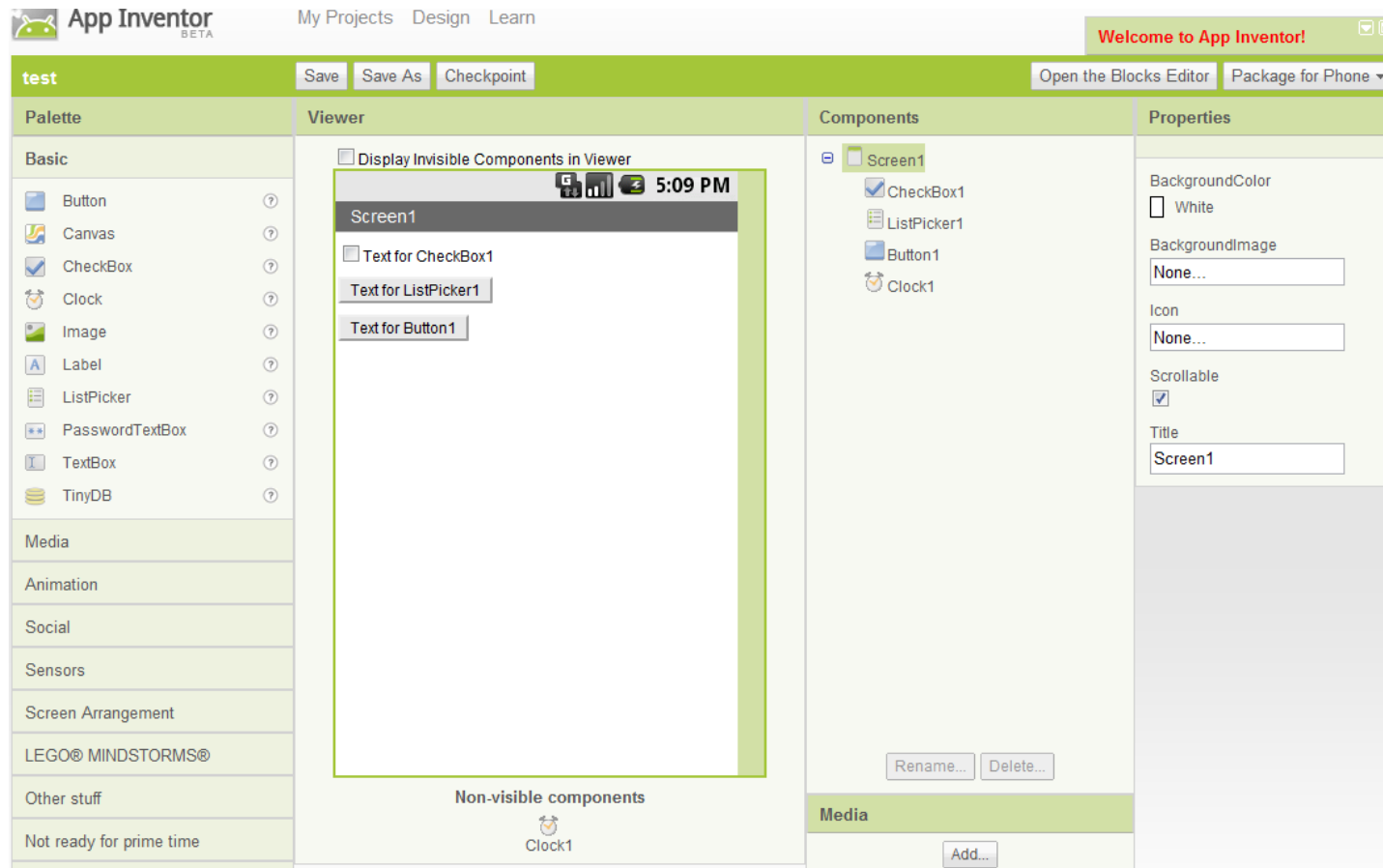
# jQuery mobile

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<http://jquerymobile.com/>



# App Inventor



<http://appinventor.googlelabs.com>

# Android Debug Bridge

---

adb <param>

devices

shell

push/pull <src> <dst>

install/uninstall

forward <local> <remote>

logcat

bugreport



# ADB Scripting

---

shell <command>

wait-for-device

start-server

kill-server

get-state

reboot [bootloader|recovery]

# System properties

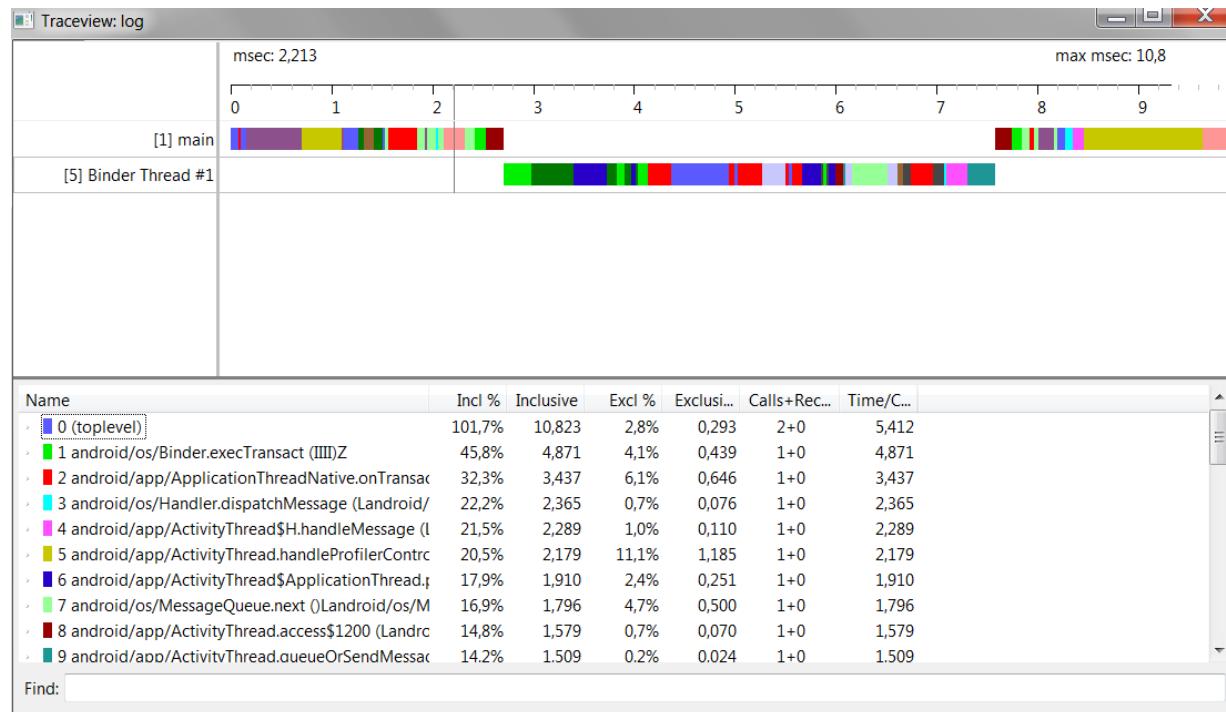
---

adb shell getprop

Nastavenia od výrobcu.

Root môže meniť.

# Activity Manager



am profile PID start LOGFILE

am profile PID stop

traceview LOGFILE

# Rýchlosť a reakcie

---

Vytvárať len úlohy, ktoré majú význam.

Alokovať len nutné množstvo zdrojov.

Performance pointers.

# Progress

---

Prefetch

Problém s modálními okny

5 sekund na reakci

Background thread – Async Task

# Spotreba energie

---

Systemové zdroje je nutné používať zodpovedne.

Kontrola senzorov.

Prenos údajov – zdieľať údaje.

Framework je optimalizovaný.

Wake lock

# Použitelnosť

---

Využiť navigáciu,  
ktorú používateľ očakáva.

Skrývanie status baru?  
Používateľ stratí prehľad o zariadení.

Získavanie dát na pozadí.  
Súhlasil s tým používateľ?

# Široké spektrum zariadení

---

Rozdielne rozlíšenie, hardvér,  
konfigurácia.

Dizajn aplikácie, tak aby podporovala  
všetky zariadenia.

I18N už na začiatku vývoja.

Resource framework.



# Dizajn

---

UI dizajnér

Škálovateľná vektorová grafika.

Nezávislosť na rozlíšení.

Device Independent Pixels

# Zdieľanie údajov

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Viac aplikácii má prístup  
k rovnakým dátam.

intent filter: city://zilina/

# Services

---

Reštart na pozadí.

Background service

Foreground service

`stopSelf()`

# Alarm

---

Event driven app

Intent receiver

Alarm beží aj keď aplikácia nebeží.

Inexact alarm

posun alarmov – vykonanie naraz

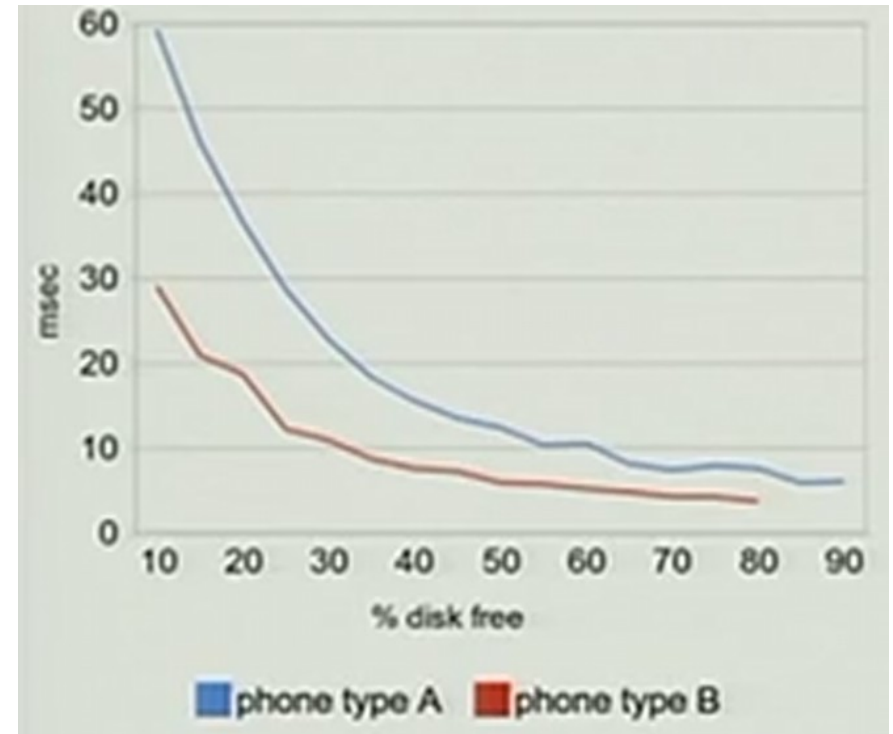
# Zápis a čítanie

FS: yaffs2

Zápis je drahý.

Rýchlosť práce s diskom klesá s jeho obsadením.

Emulátor má omnoho rýchlejšie IO!



Graf z Google IO

# Mobilné testovanie

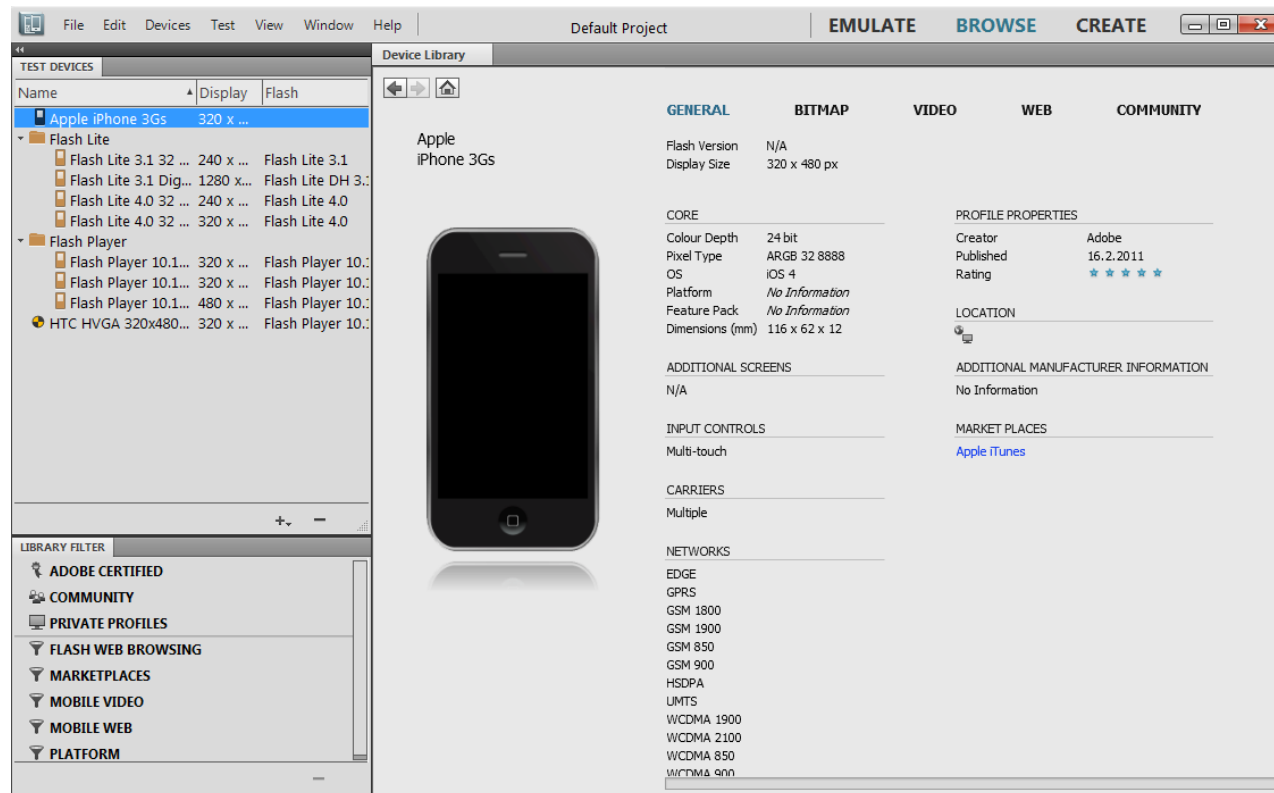
---

Citát klasika:

„Bez peněz do hospody nelez.“

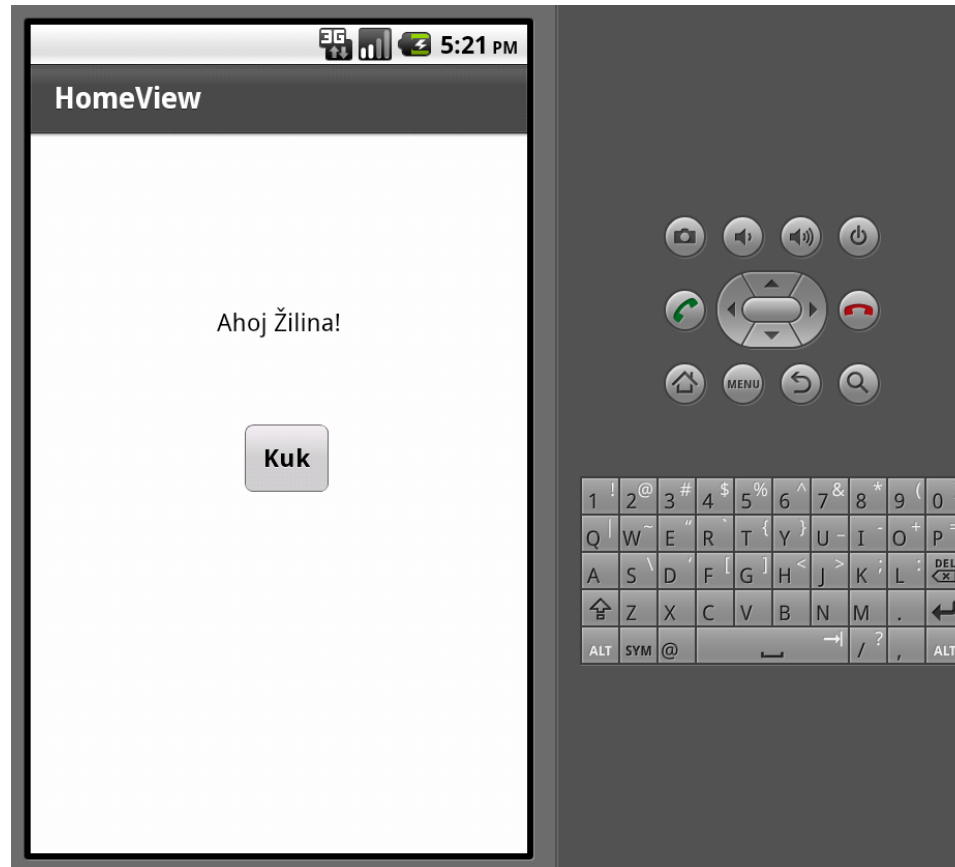
„Bez testů do vývoje nelez.“

# Adobe Device Central



Flash aplikácie  
väčšina mobilných platforiem

# Android Emulátor



Iba Android platforma



# Perfecto Mobile

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Test na reálnych zariadeniach.

VNC-like pripojenie

<http://perfectomobile.com/>

# Device Anywhere



<http://www.deviceanywhere.com/>

# Marketplace

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Percento z predaja

Android Market

<https://market.android.com/>

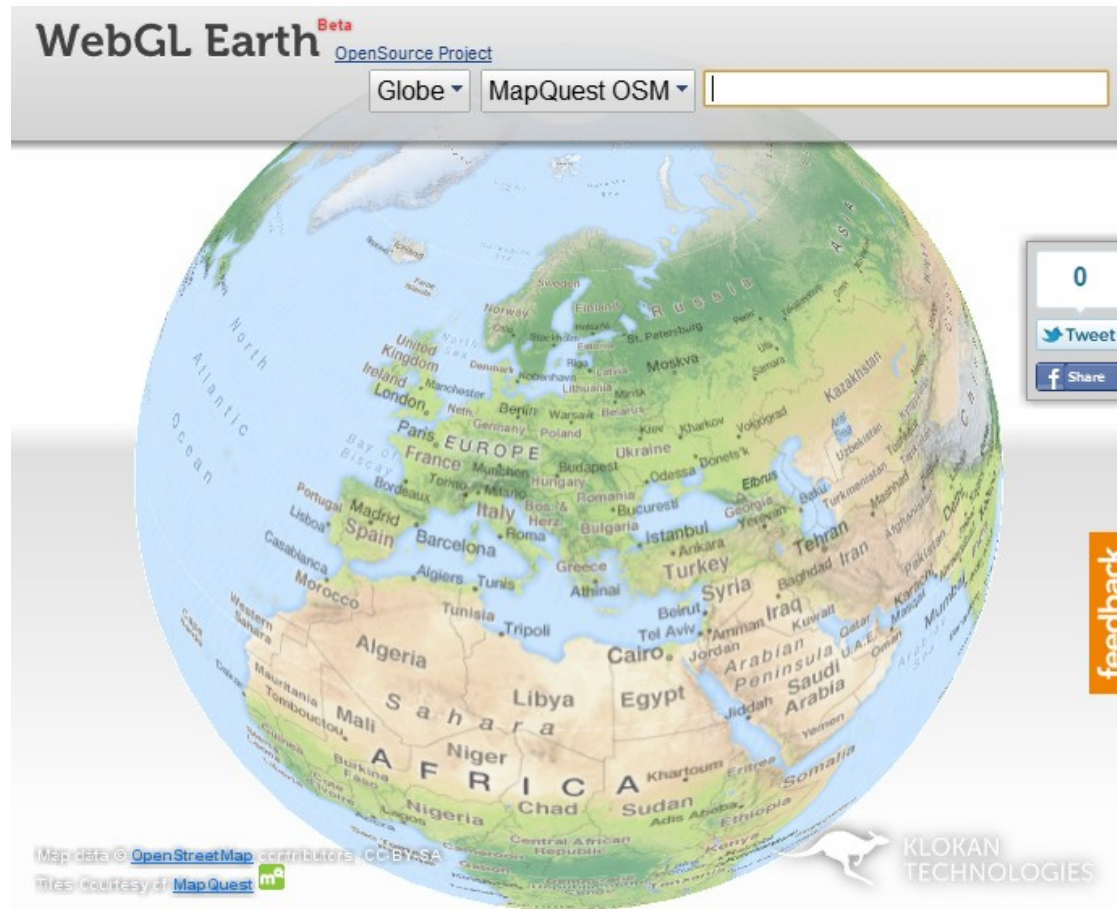
Adobe Marketplace

<http://www.adobe.com/cfusion/marketplace/>

Intel Marketplace

<http://www.appup.com/applications/index>

# WebGL Earth



<http://www.webglearth.com>

# Jenkins

The screenshot displays the Jenkins Dashboard interface. On the left, there is a navigation menu with links for People, Build History, Project Relationship, and Check File Fingerprint. Below this menu are two sections: 'Build Queue' which shows 'No builds in the queue.', and 'Build Executor Status' which shows two executors in an 'Idle' state. The main area of the dashboard is a table with columns for job status (S for Success, W for Warning), job names, and last success times. The jobs listed include as3-signals, as3corelib, fixel, mate-framework, parsley-core, picasaflashapi, pushbuttonengine, robotlegs-framework, and swiz-framework. At the bottom of the table, there is a link for 'Icon: S M L'.

Jenkins » Dashboard

- People
- Build History
- Project Relationship
- Check File Fingerprint

**Build Queue**  
No builds in the queue.

**Build Executor Status**

#	Status
1	Idle
2	Idle

S	W	Job ↓	Last Success
		<a href="#">as3-signals</a>	14 days (#36)
		<a href="#">as3corelib</a>	14 days (#12)
		<a href="#">fixel</a>	14 days (#11)
		<a href="#">mate-framework</a>	14 days (#15)
		<a href="#">parsley-core</a>	1 day 15 hr (#430)
		<a href="#">picasaflashapi</a>	14 days (#54)
		<a href="#">pushbuttonengine</a>	14 days (#12)
		<a href="#">robotlegs-framework</a>	14 days (#13)
		<a href="#">swiz-framework</a>	14 days (#16)

Icon: [S](#) [M](#) [L](#)

Continuous Integration – <http://ci.sinusgear.com>

# Otázky?

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# Ďakujem za pozornosť

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