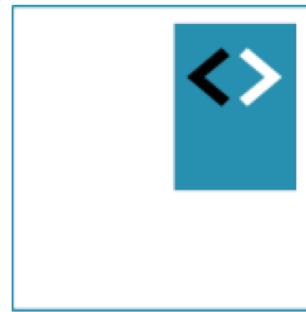




Ministerie van Defensie

# *Crossplatform Mobile Apps*

## Module 9 – PhoneGap API's



Peter Kassenaar – [info@kassenaar.com](mailto:info@kassenaar.com)

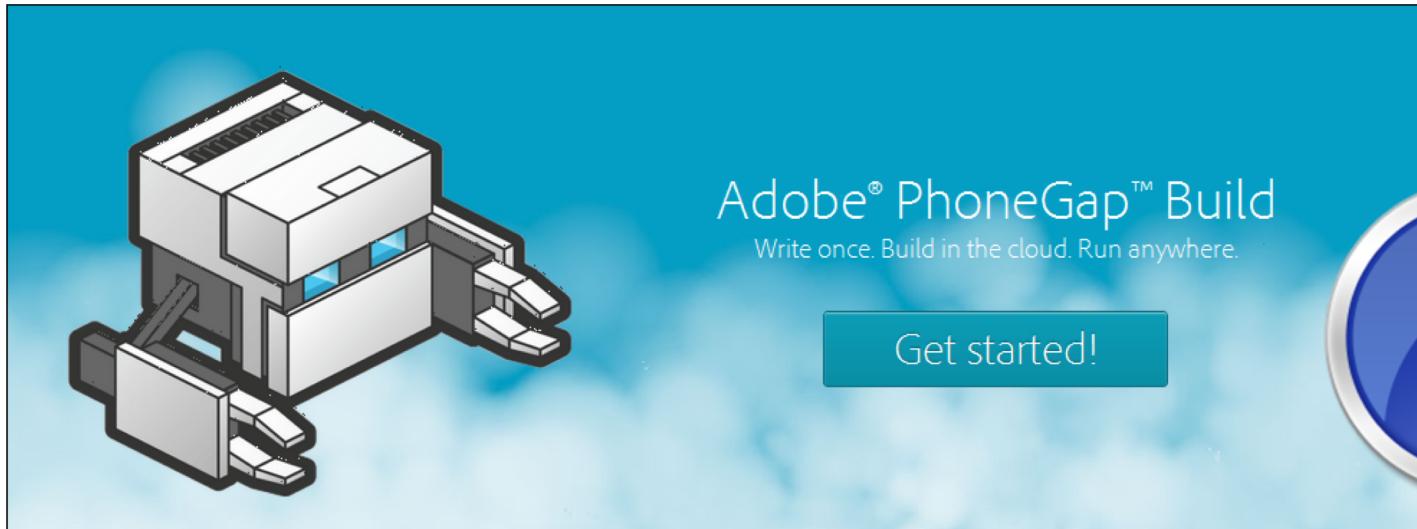
# Korte Herhaling

- Geschiedenis – app stores sinds ca. 2008
- Drie platformen:
  - Android (~ 80%)
  - iOS (~20%)
  - Window Phone, blackberry, de rest
- Tools – Editors, libraries, PhoneGap

# Korte Herhaling

- Twee doelen
  - *Wrapper* (HTML, CSS, JS verpakken als app)
  - *Bridge* (native device sensors aanspreken)

# PhoneGap- twee manieren



## Getting Started Guides

---

- Getting Started with Android
- Getting Started with Blackberry
- Getting Started with iOS
- Getting Started with Symbian
- Getting Started with WebOS
- Getting Started with Windows Phone
- Getting Started with Bada
- Getting Started with Tizen

A large blue circular icon with a silver metallic border. Inside the circle is a white number "2". This icon is located on the right side of the "Getting Started Guides" section.

## **1. PhoneGap Build**

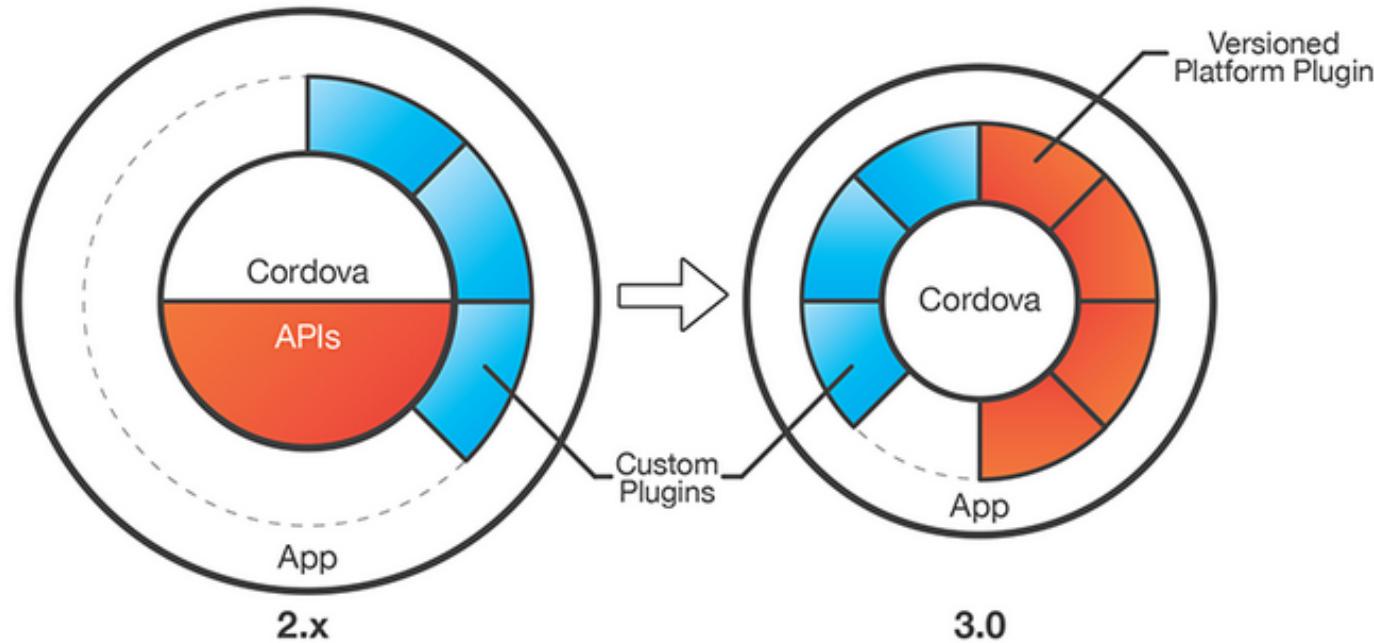
- Snel resultaat
- Weinig inspanning, geen aanvullende installaties nodig
- Configuratiemogelijkheden met config.xml
- Automatische updates via Hydration

## **2. PhoneGap lokale installatie**

- Lastig installeren en configureren (Windows & Mac)
  - Maar: eenmalig. Daarna telkens van profiteren
- Veel schnellere build- & testcycle

# PhoneGap 3.x

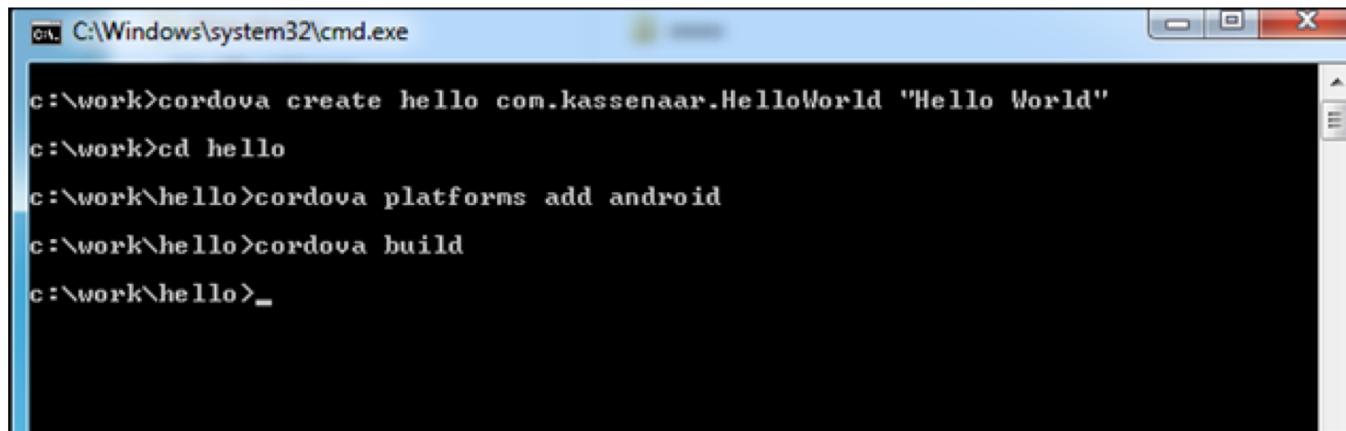
<http://phonegap.com/blog/2013/07/19/adobe-phonegap-3.0-released/>



[http://www.raymondcamden.com/index.cfm/2013/7/19/PhoneGap-30-Released--  
Things-You-Should-Know](http://www.raymondcamden.com/index.cfm/2013/7/19/PhoneGap-30-Released--Things-You-Should-Know)

## Voorbeeld: 3.x/4.x installatie Android

- Maak project via command line
- Build
- Open in Editor+ Run in AVD of op device



```
C:\Windows\system32\cmd.exe
c:\work>cordova create hello com.kassenaar.HelloWorld "Hello World"
c:\work>cd hello
c:\work\hello>cordova platforms add android
c:\work\hello>cordova build
c:\work\hello>
```

## **Eigen app**

*Vervang de inhoud van de  
standaard map \www door je  
eigen app!*

# Ervaringen

- Er kan *ontzettend veel* mis gaan
  - Java
  - Versies van SDK
  - Android Studio, emulator?
  - Gradle
- Je bent vaak *uren* aan het downloaden
- Als je er een maand niet naar hebt gekeken, zijn er al weer tal van updates verschenen. Dit moet je weer downloaden...
- Er zijn veel onderlinge afhankelijkheden. Als je één onderdeel bijwerkt, kan het zijn dat een ander niet meer werkt.
  - Moet je die ook weer eerst updaten...

# Gisteren

- Ochtend
  - PhoneGap achtergronden
  - PhoneGap Build
  - Zip, upload & install
- Middag
  - Handmatige Installatie
  - NPM, Git, Cordova,
  - Java JDK 1.8 (*niet* 11.x)
  - Android Studio – SDK tools
  - Pad aanpassen

## **Issues - gisteren**

- Accept licenses – Android SDK
- Add JAVA to path - Mac OS
- ...

# Meer documentatie -

The screenshot shows the Apache Cordova documentation website. The top navigation bar includes links for Documentation, Plugins, Blog, Contribute, Get Started, and a search bar. On the left, a sidebar titled 'CREATE APPS' contains a list of steps: Overview, Create your first app (which is selected), and sub-steps like 'Installing the Cordova CLI', 'Create the App', etc. Below this, there are sections for 'Add Platforms', 'Install pre-requisites for building', 'Build the App', 'Test the App', 'Add Plugins', 'Using merges to Customize Each Platform', 'Updating Cordova and Your Project', 'Templates for apps', and 'Platform support'. Further down, there's a 'Develop for platforms' section with links for Android, iOS, Windows, and OS X, and a link to 'Manage versions and platforms'. The main content area features a large heading 'Create your first Cordova app'. Below it, a text block explains the guide's purpose: 'This guide shows you how to create a JS/HTML Cordova application and deploy them to various native mobile platforms using the `cordova` command-line interface (CLI). For detailed reference on Cordova command-line, review the [CLI reference](#)'. A sub-section titled 'Installing the Cordova CLI' follows, with instructions on how to install Node.js and the npm package, and details about the git client and the cordova module.

Apache CORDOVA™

Documentation Plugins Blog Contribute Get Started Search '8.x' docs...

Overview

**CREATE APPS**

**Create your first app**

- Installing the Cordova CLI
- Create the App
- Add Platforms
- Install pre-requisites for building
- Build the App
- Test the App
- Add Plugins**
- Using merges to Customize Each Platform
- Updating Cordova and Your Project
- Templates for apps
- Platform support

**Develop for platforms**

- Android
- iOS
- Windows
- OS X

Manage versions and platforms

[Edit Source on GitHub](#) English ▾ 8.x (Latest) ▾

## Create your first Cordova app

This guide shows you how to create a JS/HTML Cordova application and deploy them to various native mobile platforms using the `cordova` command-line interface (CLI). For detailed reference on Cordova command-line, review the [CLI reference](#)

### Installing the Cordova CLI

The Cordova command-line tool is distributed as an npm package.

To install the `cordova` command-line tool, follow these steps:

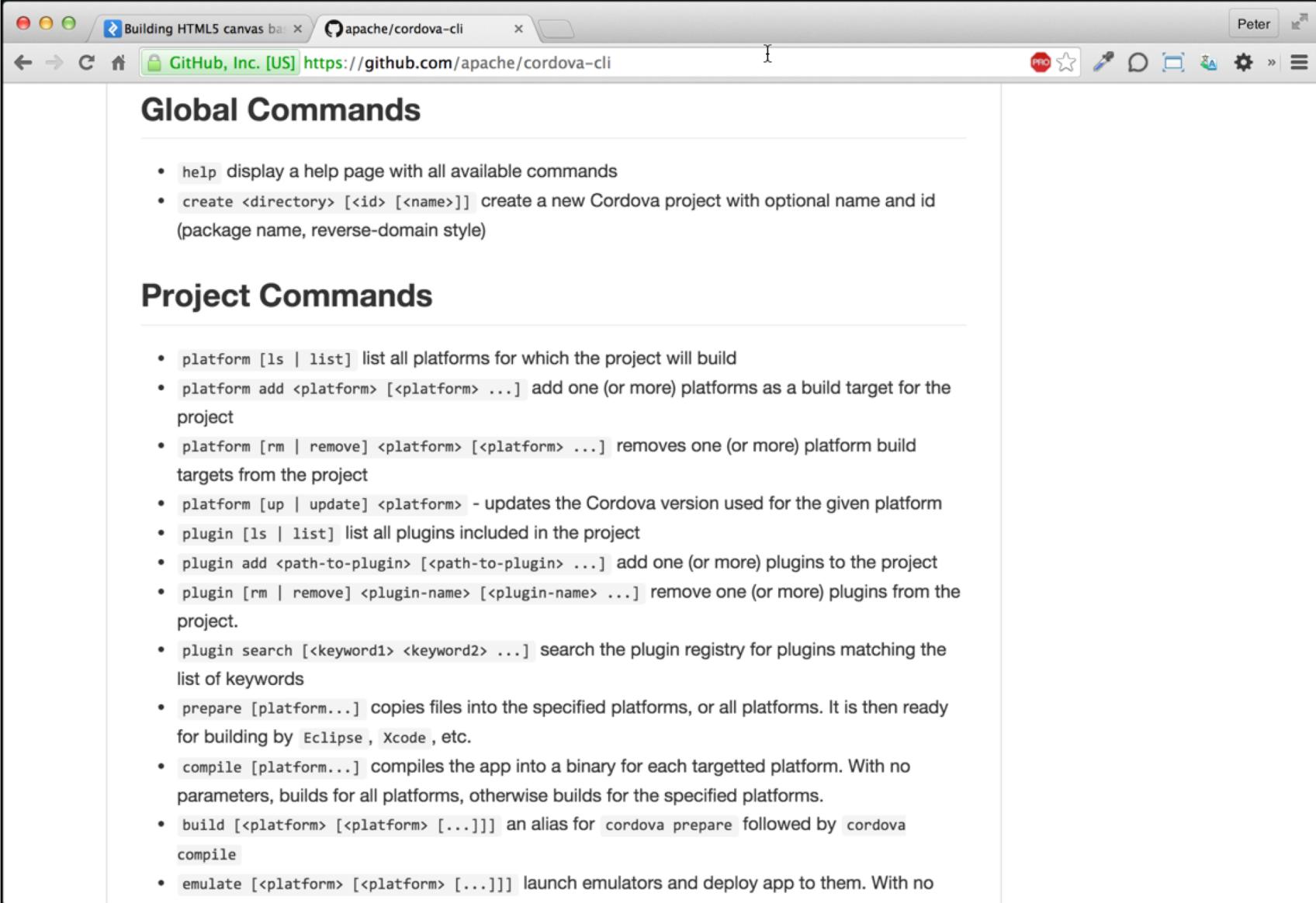
1. Download and install [Node.js](#). On installation you should be able to invoke `node` and `npm` on your command line.
2. (Optional) Download and install a [git client](#), if you don't already have one. Following installation, you should be able to invoke `git` on your command line. The CLI uses it to download assets when they are referenced using a url to a git repo.
3. Install the `cordova` module using `npm` utility of Node.js. The `cordova` module will automatically be downloaded by the `npm` utility.
  - on OS X and Linux:

<https://cordova.apache.org/docs/en/latest/guide/cli/index.html>

# Vandaag:

- Ochtend: Plug-ins
  - Installatie via CLI
  - Relatief Eenvoudige plugins
  - Device
  - Network information
- Middag: meer complexe plug-ins, met callbacks
  - JavaScript !
  - Camera
  - Barcode scanner
  - Default plug-ins & third party plugins.

# CLI - overview



The screenshot shows a web browser window with the URL <https://github.com/apache/cordova-cli>. The page displays the command-line interface documentation for Apache Cordova. It includes sections for Global Commands and Project Commands, each listing various CLI commands with their descriptions.

**Global Commands**

- `help` display a help page with all available commands
- `create <directory> [<id> [<name>]]` create a new Cordova project with optional name and id (package name, reverse-domain style)

**Project Commands**

- `platform [ls | list]` list all platforms for which the project will build
- `platform add <platform> [<platform> ...]` add one (or more) platforms as a build target for the project
- `platform [rm | remove] <platform> [<platform> ...]` removes one (or more) platform build targets from the project
- `platform [up | update] <platform>` - updates the Cordova version used for the given platform
- `plugin [ls | list]` list all plugins included in the project
- `plugin add <path-to-plugin> [<path-to-plugin> ...]` add one (or more) plugins to the project
- `plugin [rm | remove] <plugin-name> [<plugin-name> ...]` remove one (or more) plugins from the project.
- `plugin search [<keyword1> <keyword2> ...]` search the plugin registry for plugins matching the list of keywords
- `prepare [platform...]` copies files into the specified platforms, or all platforms. It is then ready for building by `Eclipse`, `Xcode`, etc.
- `compile [platform...]` compiles the app into a binary for each targeted platform. With no parameters, builds for all platforms, otherwise builds for the specified platforms.
- `build [<platform> [<platform> [...]]]` an alias for `cordova prepare` followed by `cordova compile`
- `emulate [<platform> [<platform> [...]]]` launch emulators and deploy app to them. With no

<https://github.com/apache/cordova-cli>

# **API's == 'plug-ins'**

1. Native / Standaard plug-ins
2. Third Party plug-ins
3. Onderscheid is (zo goed als) verdwenen
4. Werking: zowel via PhoneGap Build als via PhoneGap Local

# PhoneGap API's

Vroeger

PhoneGap Documentation

Plugin APIs

Guides

- Overview
- Platform Support
- The Command-Line Interface
- Platform Guides
- Using Plugin to Manage Plugins
- The config.xml File
- Icons and Splash Screens
- Embedding WebViews
- Plugin Development Guide
  - Privacy Guide
  - Whitelist Guide
  - Storage
  - Keyword Index

API Reference

- Events
- Plugin APIs

Nu

CORDOVA™ Documentation Plugins Blog Contribute Get Started Search '8.x' docs...

## Cordova Plugins

Search 4127 plugins...

What is a Cordova plugin?

A plugin is a bit of add-on code that provides JavaScript interface to native components. They allow your app to use native device capabilities beyond what is available to pure web apps.

+ Contribute Plugins ⓘ Plugin Help

Must Support Platform(s):

Android iOS Windows macOS Browser

Sort: Quality▼

4127 result(s) found

**cordova-plugin-camera-roll-location** v0.3.3 by mixersoft Last updated 694 days ago

get location metadata with photos from CameraRoll

**cordova-blinkup-plugin** v1.1.5 by m21lab

# “Standaard” plug-ins

This documentation describes this plugin at version master. Other versions are on GitHub.

AppVeyor	Travis CI

## cordova-plugin-battery-status

This plugin provides an implementation of an old version of the [Battery Status Events API](#). It adds the following three events to the `window` object:

- `batterystatus`
- `batterycritical`
- `batterylow`

Applications may use `window.addEventListener` to attach an event listener for any of the above events after the `deviceready` event fires.

### Installation

<https://cordova.apache.org/docs/en/latest/>

## Plugin APIs

### Battery Status

Get events for device battery level.

### Camera

Take pictures with the device camera.

### Device

Get device information.

### Dialogs

Use native dialog UI elements

### File

Read/write files on the device.

### Geolocation

Access GPS data.

### Inappbrowser

Open an in-app browser window.

### Media

Record and play audio on the device.

### Media Capture

Capture audio, video, and images.

### Network Information

Get information about wireless connectivity.

### Screen Orientation

Set the screen orientation

### Splashscreen

Control the splash screen for your app.

### Statusbar

Control the device status bar

### Vibration

Vibrate the device

### Whitelist

Whitelist external content accessible

# **Beginnen met API's**

- Eenvoudig → meer complex
  - Device information
  - Connection information
  - Contacts
  - Accelerometer, camera, compass, geolocation
  - enzovoort

# Standaard PhoneGap Plug-ins

- Apparaatinformatie
- Netwerkstatus
- Events  
(background/foreground)
- GPS
- Compass
- Accelerometer
- Table View data
- Contacts
  - Viewing/adding
- Camera en Photo album
- FileTransfer
- Audio/Video
- Storage
- Tal van andere plug-ins...

# Plug-ins toevoegen

## 1. Bij lokale installatie

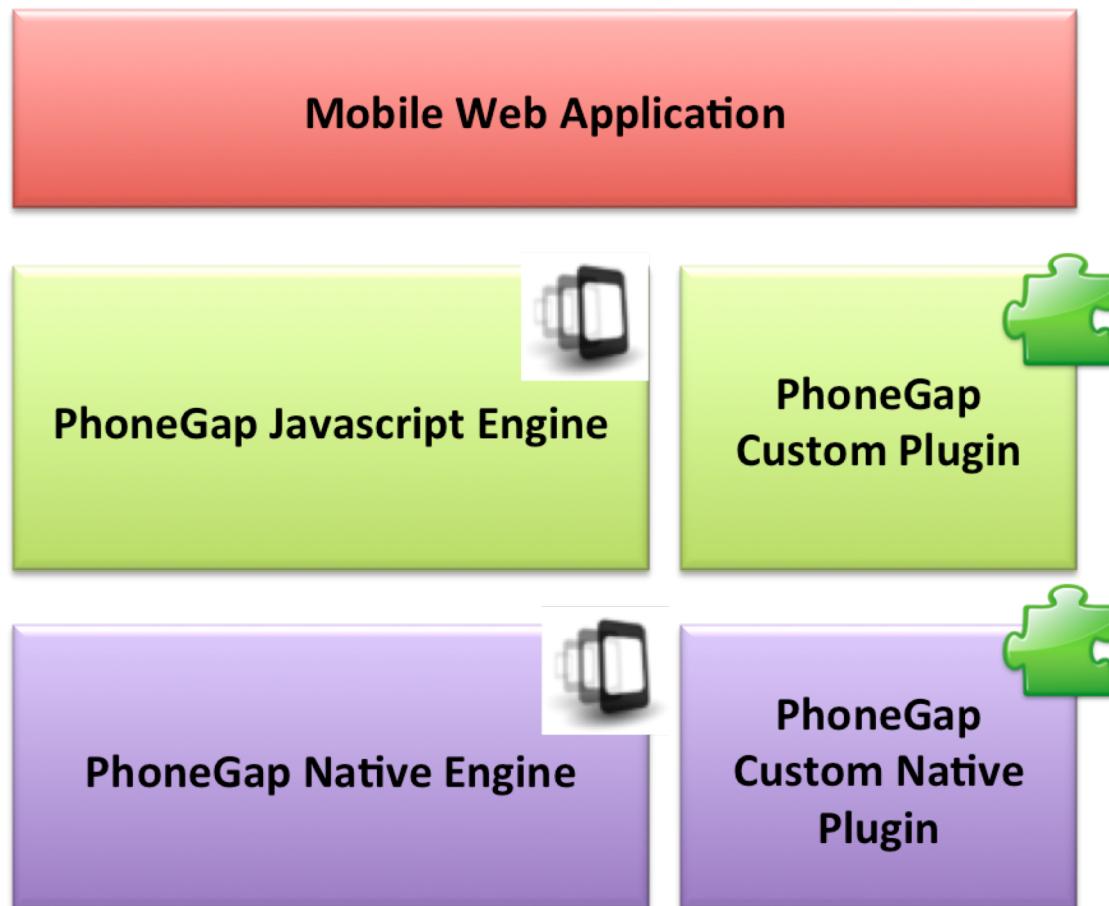
- Nieuwe plug-ins installeren via CLI
- cordova plugin add ...
- Online documentatie is leidend [docs.phonegap.com](https://docs.phonegap.com)

## 2. PhoneGap Build: <gap:...>-tag

- <https://build.phonegap.com/plugins>

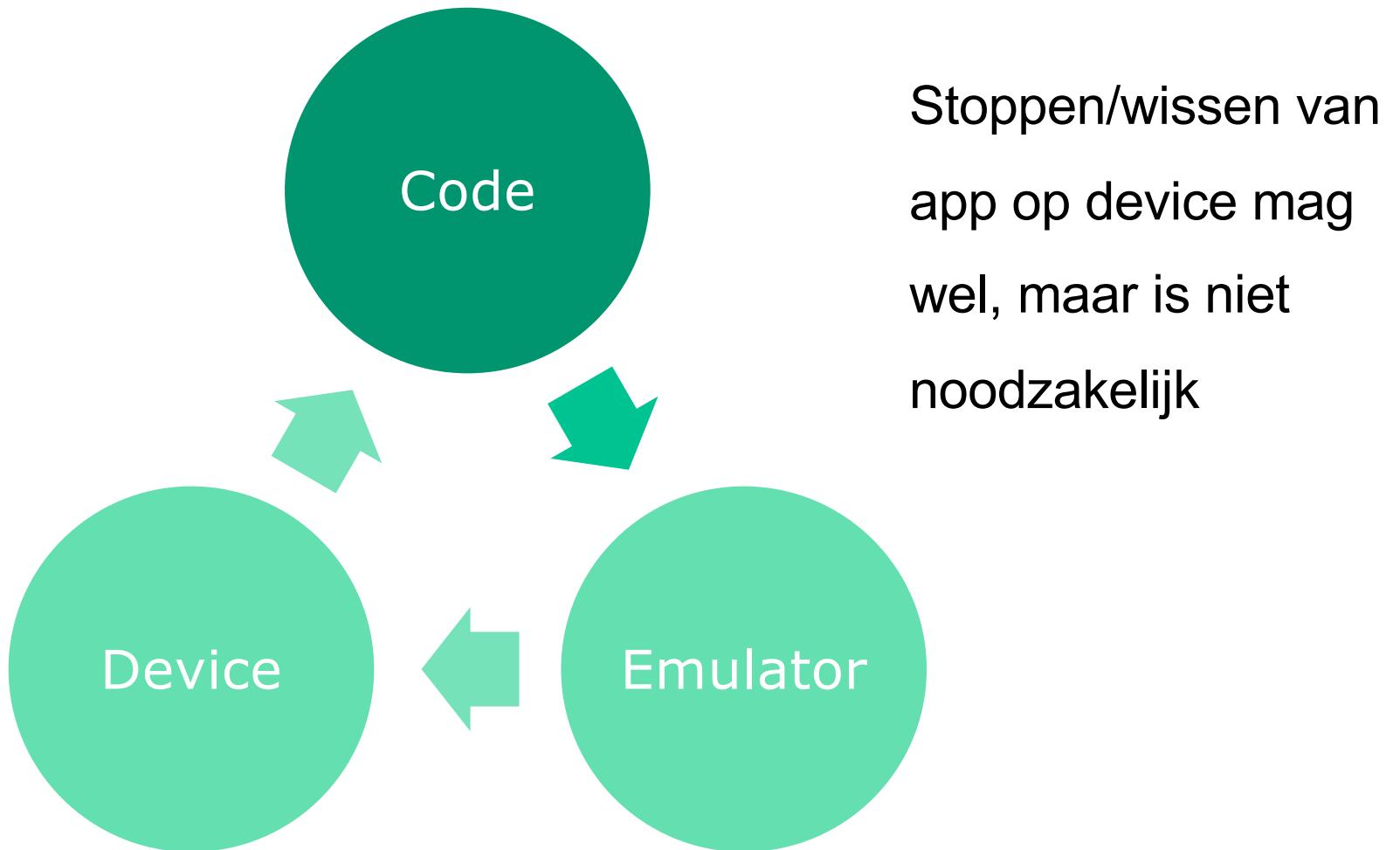
```
<gap:plugin name="org.apache.cordova.camera" version="0.3.2" />
```

# Architectuur



<http://phonegap.pbworks.com/w/page/36752779/PhoneGap%20Plugins>

# Build cycle



# Apparaatinformatie

The screenshot shows a GitHub repository page for the Apache / cordova-plugin-device project. The page includes the repository name, a summary of 219 lines (161 sloc) and 6.389 kb, and a code editor displaying the contents of index.md. The code editor highlights the org.apache.cordova.device plugin definition and its usage.

**apache / cordova-plugin-device**  
mirrored from <git://git.apache.org/cordova-plugin-device.git>

branch: master | [cordova-plugin-device / doc / index.md](#)

**shazron** on 15 Sep CB-7552 - device.name docs have not been removed

4 contributors

219 lines (161 sloc) | 6.389 kb

Raw Blame History

## org.apache.cordova.device

This plugin defines a global `device` object, which describes the device's hardware and software. Although the object is in the global scope, it is not available until after the `deviceready` event.

```
document.addEventListener("deviceready", onDeviceReady, false);
function onDeviceReady() {
    console.log(device.cordova);
}
```

## Installation

```
cordova plugin add org.apache.cordova.device
```

# Netwerkverbinding

## Properties

- connection.type

## Constants

- Connection.UNKNOWN
- Connection.ETHERNET
- Connection.WIFI
- Connection.CELL\_2G
- Connection.CELL\_3G
- Connection.CELL\_4G
- Connection.CELL
- Connection.NONE

## connection.type

This property offers a fast way to determine the device's network connection state, and type of connection.

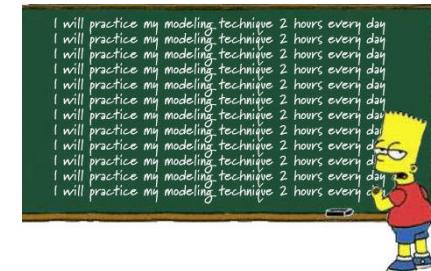
## Quick Example

```
function checkConnection() {
    var networkState = navigator.connection.type;

    var states = {};
    states[Connection.UNKNOWN] = 'Unknown connection';
    states[Connection.ETHERNET] = 'Ethernet connection';
    states[Connection.WIFI] = 'WiFi connection';
    states[Connection.CELL_2G] = 'Cell 2G connection';
    states[Connection.CELL_3G] = 'Cell 3G connection';
    states[Connection.CELL_4G] = 'Cell 4G connection';
    states[Connection.CELL] = 'Cell generic connection';
    states[Connection.NONE] = 'No network connection';
```

# Oefening

- Breid de app uit met opties over device en connection
- Gebruik de documentatie online,
  - <https://cordova.apache.org/docs/en/latest/reference/cordova-plugin-device/index.html>
  - <https://cordova.apache.org/docs/en/latest/reference/cordova-plugin-network-information/index.html>
- Denk aan toevoegen van  
`<script type="text/javascript" src="cordova.js"></script>`
- Test verschillen in Emulator en op apparaat



# Meer complexe API's

- Werken volgens het `async/callback`-principe
  - Methode aanroepen
  - functies definieren als callback-parameters
- vaak:
  - `success` callback
  - `error` callback
  - `options` object, json-formatted

## Voorbeeld - Camera

- navigator.camera.getPicture(  
cameraSuccess,  
cameraError,  
[ cameraOptions ] );
- Definieer de success- en -error functies en het options-object
- Gebruik deze met camera.getPicture()

# Camera - options

- Opties:

- Camera.PictureSourceType (CAMERA | PHOTOLIBRARY | ...)
- Camera.DestinationType (DATA\_URL, ...)
- Camera.EncodingType (JPG, ...)
- Camera.quality (20...100)
- ...

## org.apache.cordova.camera

This plugin provides an API for taking pictures and for choosing images from the system's image library.

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

### navigator.camera.getPicture

Takes a photo using the camera, or retrieves a photo from the device's image gallery. The image is passed to the success callback as a base64-encoded String , or as the URI for the image file. The method itself returns a CameraPopoverHandle object that can be used to reposition the file selection popover.

```
navigator.camera.getPicture( cameraSuccess, cameraError, cameraOptions );
```

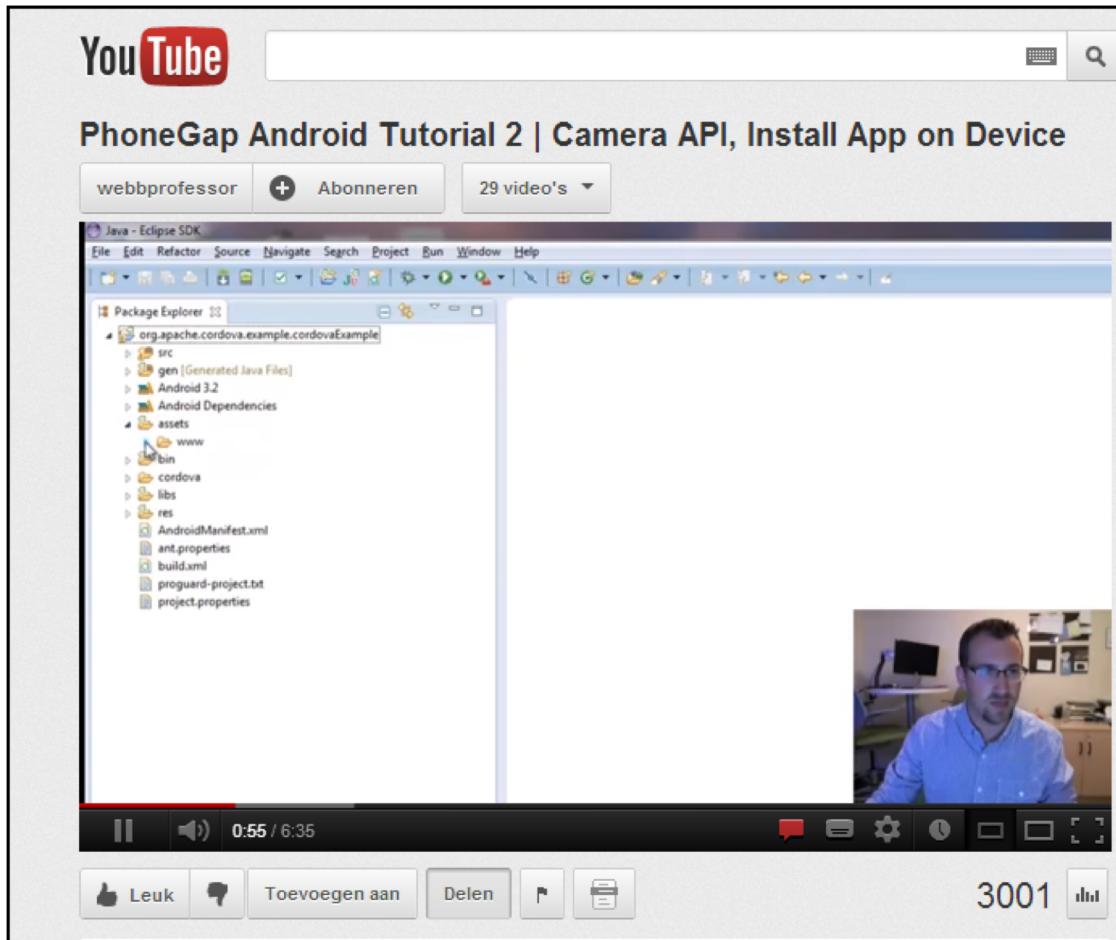
### Description

The `camera.getPicture` function opens the device's default camera application that allows users to snap pictures. This behavior occurs by default, when `Camera.sourceType` equals `Camera.PictureSourceType.CAMERA` . Once the user snaps the

## **Camera – tips**

- Gebruik een quality van max. 50-70.
  - Anders: memory-issues
- Werkt niet altijd goed op iPhone 3GS en ouder
- Gebruik control flow in je app om dit te checken (if (), switch())
- Lees de quirks en platform-issues in de docs!

# Altijd handig - YouTube



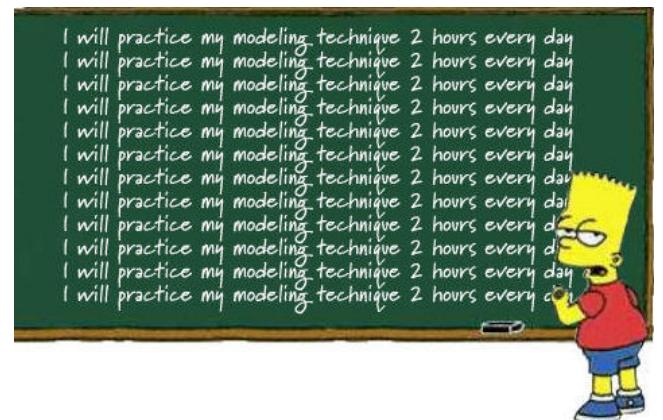
Zoek op juiste trefwoorden

- phonegap
- camera
- contacts
- plug-ins
- enzovoort

[http://youtu.be/HO\\_59WXg33g](http://youtu.be/HO_59WXg33g)

# Oefening

- Breid de app uit met een camera-optie
- Gebruik de documentatie online
  - Gebruik Camera en PhotoLibrary
- Niet te testen in Emulator!
  - (uiteraard) wel op device



# Contacten

*"The contacts object provides access to the device contacts database."*

- Meerdere methods, parameters en objects
  - contacts.create()
  - contacts.find(), ...
- met weer:
  - contactSuccess, contactError,  
contactFindOptions en meer
- Let op synchroon vs. asynchroon

# Enkele voorbeelden

## contacts.create

Returns a new [Contact](#) object.

```
var contact = navigator.contacts.create(properties);
```

## contacts.find

Queries the device contacts database and returns one or more [Contact](#) objects, each

```
navigator.contacts.find(contactFields, contactSuccess, contactError,
```

## Contact

Contains properties that describe a contact, such as a user's personal or business contact.

### Properties :

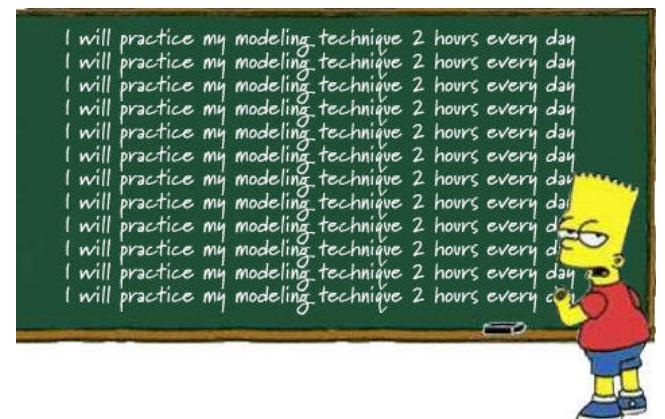
- **id**: A globally unique identifier. ([DOMString](#))
- **displayName**: The name of this [Contact](#), suitable for display to end-users. ([DOMString](#))
- **name**: An object containing all components of a persons name. ([ContactName](#))
- **nickname**: A casual name to address the contact by. ([DOMString](#))
- **phoneNumbers**: An array of all the contact's phone numbers. ([ContactField\[\]](#))
- **emails**: An array of all the contact's email addresses. ([ContactField\[\]](#))
- **addresses**: An array of all the contact's addresses. ([ContactAddress\[\]](#))
- **ims**: An array of all the contact's IM addresses. ([ContactField\[\]](#))
- **organizations**: An array of all the contact's organizations. ([ContactOrganization\[\]](#))
- **birthday**: The birthday of the contact. ([Date](#))
- **note**: A note about the contact. ([DOMString](#))
- **photos**: An array of the contact's photos. ([ContactField\[\]](#))
- **categories**: An array of all the contacts user defined categories. ([ContactField\[\]](#))
- **urls**: An array of web pages associated to the contact. ([ContactField\[\]](#))

### Methods :

- **clone**: Returns a new [Contact](#) object that is a deep copy of the calling object, with the id property set to `null`.
- **remove**: Removes the contact from the device contacts database. An error callback is called with a [ContactError](#)

# Oefening

- Maak een pagina met contacts-opties
- Contacten tonen, een zoekveld maken,
  - maak bijvoorbeeld telefoonnummers klikbaar
- Contact maken en opslaan



# PhoneGap-apps sturen met Events

- Belangrijkste: deviceready
- Ook :
  - pause
  - resume
  - online
  - offline
  - backbutton
  - battterylow

## Events

---

“ Cordova lifecycle events.

### Event Types :

- deviceready
- pause
- resume
- online
- offline
- backbutton
- batterycritical
- battterylow
- batterystatus
- menubutton
- searchbutton
- startcallbutton
- endcallbutton
- volumedownbutton
- volumeupbutton

# Events afvangen

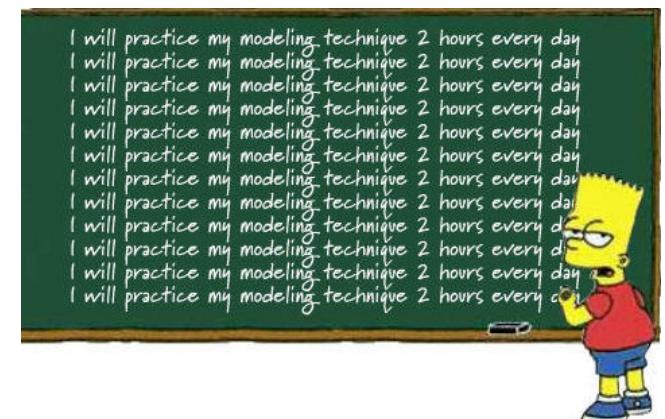
- In alle gevallen:
  - window.addEventListener(...)
  - event handler function schrijven
  - Tip: eventListeners binnen deviceready() !
- Bijvoorbeeld

```
document.addEventListener("pause", onPause, false);

function onPause() {
    // Handle the pause event
}
```

# Oefening

- Breid app uit met events-opties
- Voorbeelden:
  - Switch tussen online/offline
  - batterijstatus weergeven
  - gegevens opslaan bij pause
  - ...



API's naar keuze...