

# Apps ontwerpen met App Inventor



# Kennismaking

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- Kris Werbrouck
- Leerkracht Elektronica-ICT en Toegepaste Wetenschappen-Engineering in VTI-Torhout Scholengroep Sint-Rembert (2<sup>de</sup> + 3<sup>de</sup> graad)
- STEM coördinator VTI-Torhout
- GEEN professionele maker van apps
- Nascholing app inventor op 22 maart 2017 in Torhout via Eeckhout Academy <https://www.eekhoutacademy.be/nascholingen/detail/117-200>

# Kennismaking

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- ASO – TSO
- 1<sup>ste</sup> graad
- 2<sup>de</sup> graad
- 3<sup>de</sup> graad

# STEM in VTI Torhout

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- Waarom? Realisatie leerplannen.
  
- Opdeling?
  - Afzonderlijke vakken.
    - Fysica, Chemie
    - Toegepaste wetenschappen en Engineering
    - Wiskunde
  - Sterke samenwerking tussen de leerkrachten.
  
- Doel?
  - Realisatie van leerwinst.
  - Toename transfer tussen verschillende vakken.

# 3<sup>de</sup> jaar vs 6<sup>de</sup> jaar

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## 3<sup>de</sup> jaar

Aanleren basis

Duidelijke structuur

Voornamelijk S, T en M

## 6<sup>de</sup> jaar

Interactie tussen alle STEM componenten met behoud van eigenheid

Probleemoplossend leren via toepassingen

Vaardig en creatief

Denken en redeneren

Samenwerken

Innovatief

# Gerealiseerde GIP's met App inventor

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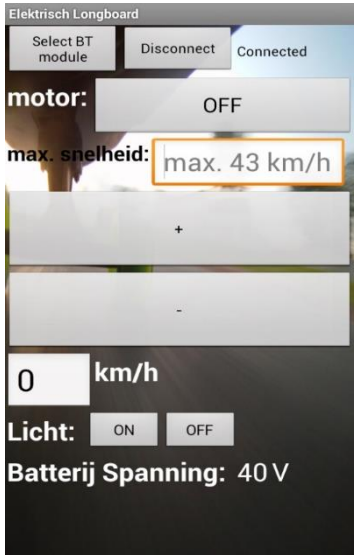
# Gerealiseerde GIP's met App inventor

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- Treinnetwerk met smartphone bediening en automatisch remsysteem



# Gerealiseerde GIP's met App inventor



# Hoe ontwikkeling van apps aanleren?

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- Realisatie in groep van zeer eenvoudige apps.
- Leerlingen maken individueel op eigen tempo complexere apps.
- Leerlingen maken gebruik van Tutorials, videolessen, ...

# Bronnen om app inventor aan te leren

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- Videolessen van Bart Huyskens via RTC-Antwerpen
- Voorbeelden website <http://e2cre8.be/>
- Online tutorial <http://appinventor.mit.edu/explore/ai2/tutorials>
- Website <http://www.appinventor.org/>
- MOOC (Massive Open Online Course)  
<https://www.edx.org/course/mobile-computing-app-inventor-cs-trinityx-t007x>

# Smartdevice

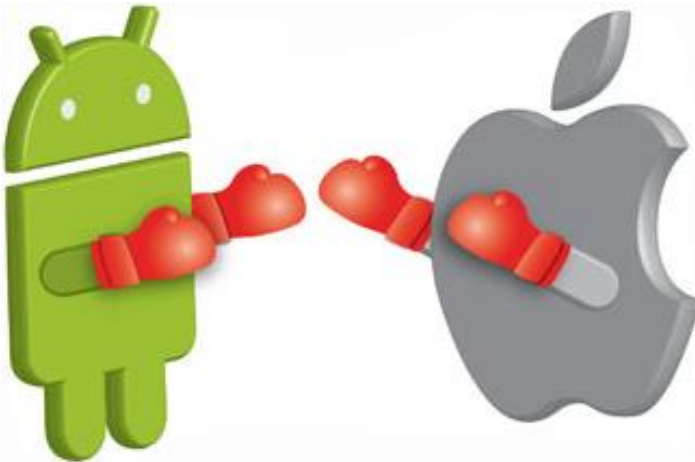
11

- Draagbaarheid
- Relatief lang gebruik op batterij
  
- Extra sensoren Smartdevice:
  - Touchscreen
  - Camera
  - Bluetooth communicatie
  - WIFI communicatie
  - GPS
  - Pan en Tilt Sensor / Kompas
  - ...



# Besturingssysteem

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## Besturingssysteem:

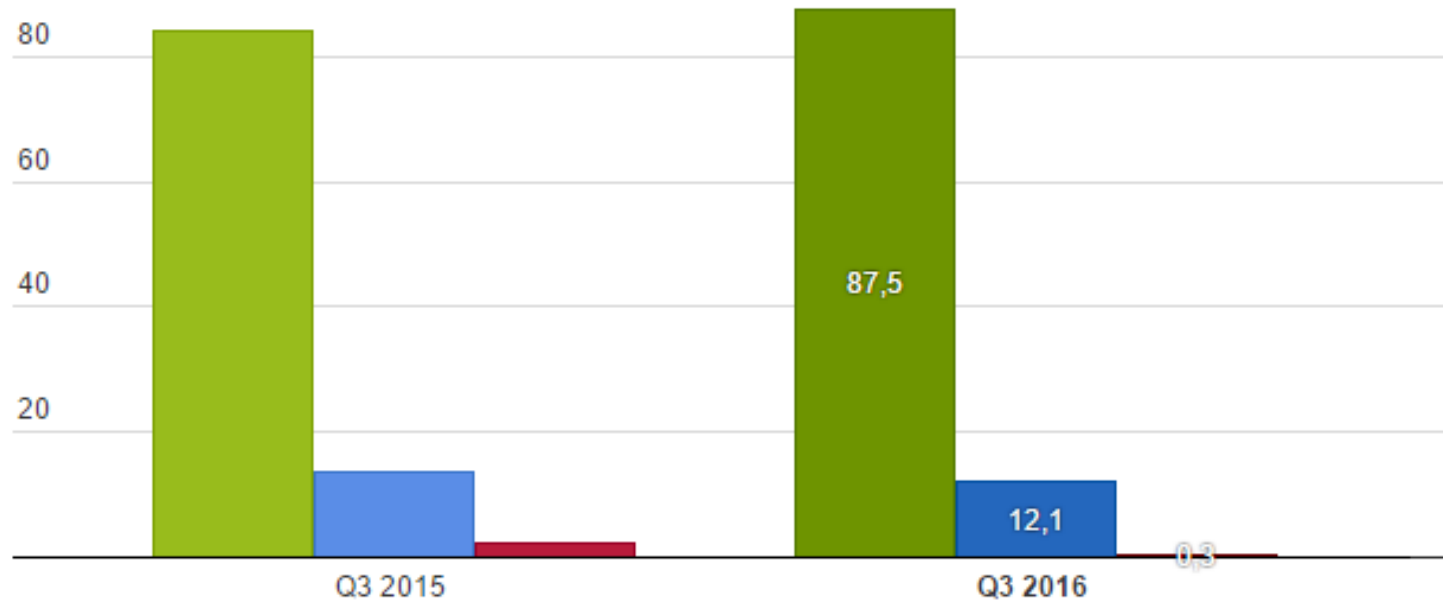
- Windows mobile van Microsoft
- IOS van Apple
- Android van Google

# Marktaandeel

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Cijfers volgens analistenbureau Strategy Analytics.

■ Android ■ Apple iOS ■ Overig



Bron: Strategy Analytics

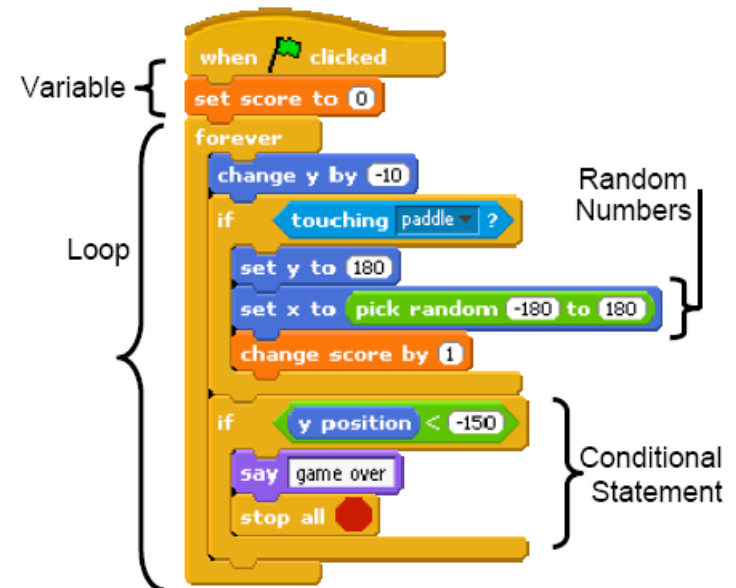
# Ontwikkel software

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- App inventor:
  - Gratis
  - Cloud gebaseerd
  - Gebaseerd op scratch
  - Gebruik browser (Chrome, Firefox, Safari, Edge) - geen Internet Explorer



- Nodig:
  - Windows, Mac, chromebook of linux computer
  - Google account
  - Android toestel
  - Internetverbinding



# App inventor

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**1 De gebruiker klikt op een knop. Dit is een 'Event'.**

Hello World

Tekst

**2 Het 'Event' wordt uitgevoerd.**

```
when BtnHelloWorld .Click
do
  call TextToSpeech1 .Speak
  message " Hello World "
  set LblTekst . Text to " Hello World "
```

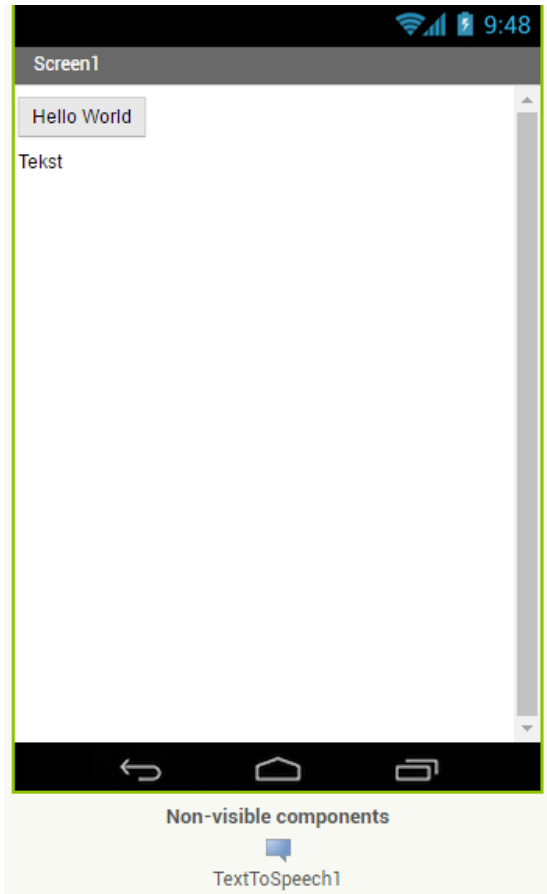


**DESIGNER SCREEN**

**BLOCKS SCREEN**

# App inventor

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**DESIGNER SCREEN**

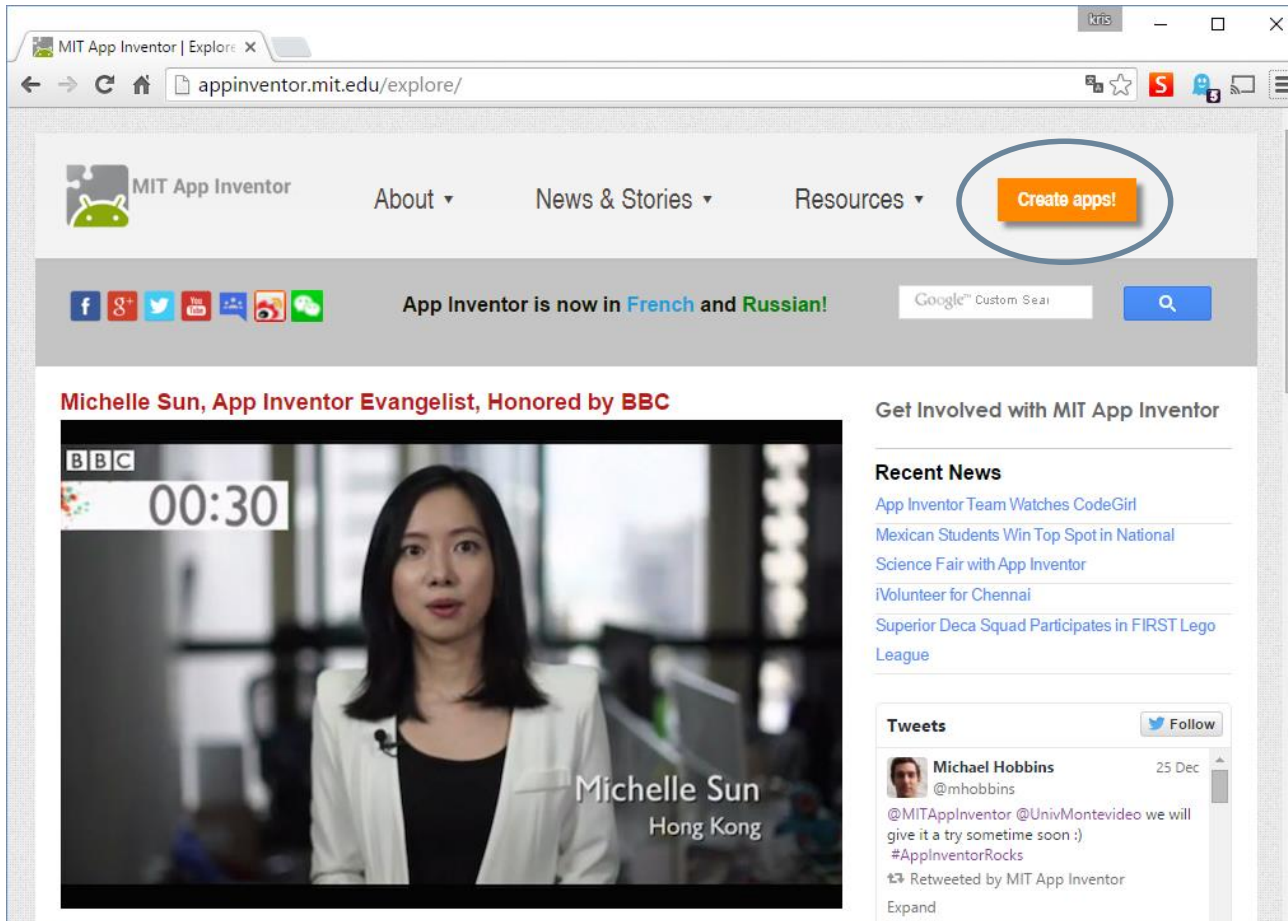


**BLOCKS SCREEN**

# App inventor opstarten

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<http://appinventor.mit.edu/explore/>

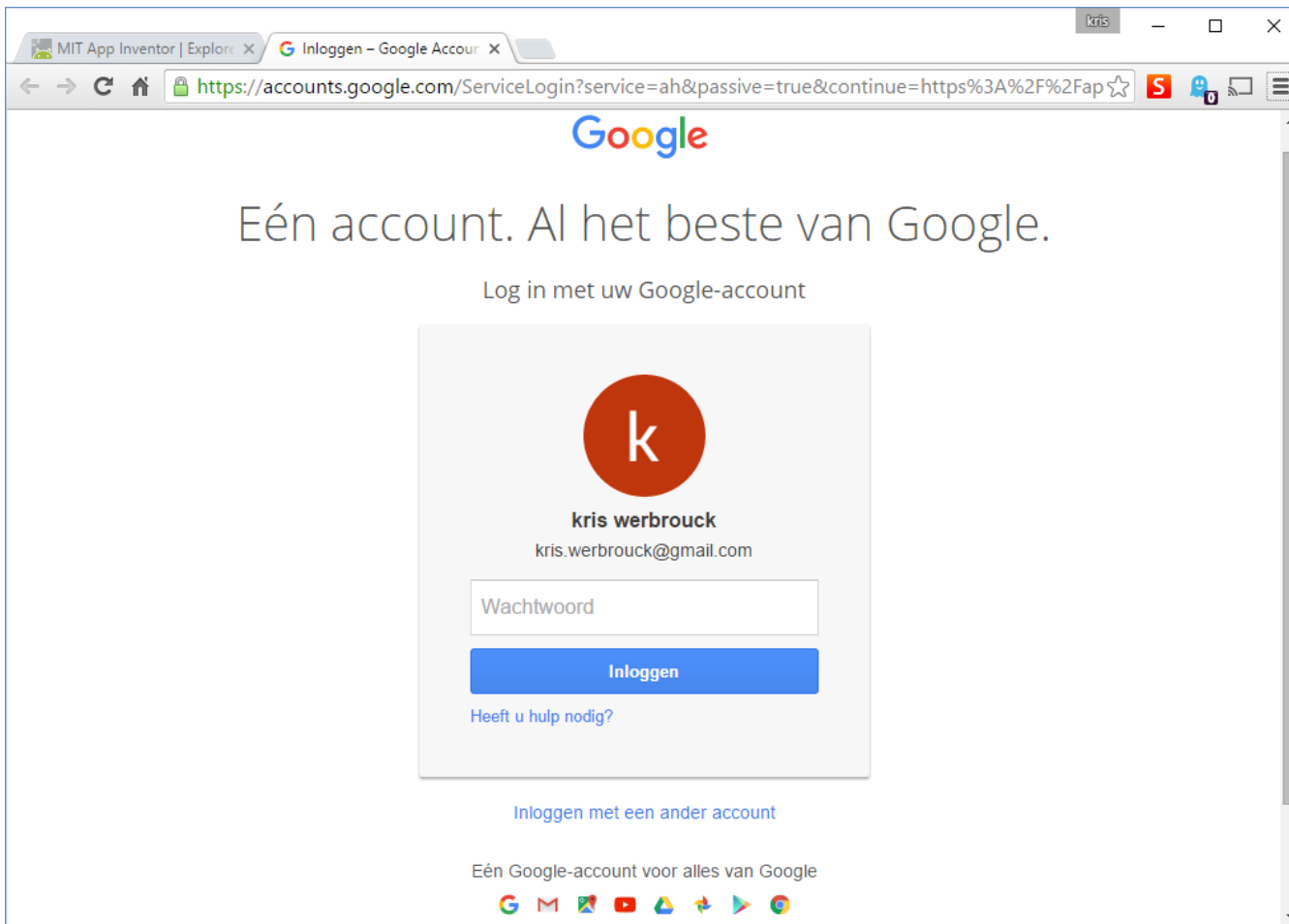


The screenshot shows the MIT App Inventor website homepage in a browser window. The browser's address bar displays "appinventor.mit.edu/explore/". The website header includes the MIT App Inventor logo, navigation links for "About", "News & Stories", and "Resources", and a prominent orange "Create apps!" button circled in blue. Below the header, there are social media icons, a search bar, and a notification that "App Inventor is now in French and Russian!". The main content area features a video player with a BBC logo and a 00:30 duration, showing Michelle Sun, an App Inventor Evangelist, with her name and location "Hong Kong" displayed. To the right of the video, there is a "Get Involved with MIT App Inventor" section with a "Recent News" list containing links to articles about CodeGirl, a national science fair, and a volunteer opportunity in Chennai. Below the news section is a "Tweets" section showing a tweet from Michael Hobbins (@mhobbins) dated 25 Dec, mentioning @MITAppInventor and @UnivMontevideo, with a "Follow" button and an "Expand" link.

# App inventor opstarten

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## Inloggen met Google-account



The screenshot shows a web browser window with the Google login page. The browser's address bar displays the URL: <https://accounts.google.com/ServiceLogin?service=ah&passive=true&continue=https%3A%2F%2Fap>. The page features the Google logo at the top, followed by the text "Eén account. Al het beste van Google." and "Log in met uw Google-account". A central card displays a profile picture of a red circle with a white 'k', the name "kris werbrouck", and the email address "kris.werbrouck@gmail.com". Below this is a password input field labeled "Wachtwoord" and a blue "Inloggen" button. A link "Heeft u hulp nodig?" is positioned below the button. At the bottom of the card, there is a link "Inloggen met een ander account". The footer of the page includes the text "Eén Google-account voor alles van Google" and a row of icons for various Google services.

# Project aanmaken

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The screenshot shows the MIT App Inventor 2 web interface. The browser address bar displays `ai2.appinventor.mit.edu/#4743651994894336`. The page title is "MIT App Inventor 2 Beta". The navigation bar includes "Projects", "Connect", "Build", and "Help". The "My Projects" section is active, showing a list of projects with columns for "Name", "Date Modified", and "Published". A dropdown menu is open over the "My projects" header, listing options such as "Start new project", "Import project (.aia) from my computer...", "Save project", "Export selected project (.aia) to my computer", and "Delete keystore". A blue arrow points from the "Start new project" option in the menu to a "Create new App inventor project" dialog box. The dialog box has a "Project name:" label and a text input field containing "Demo1". It also features "Cancel" and "OK" buttons.

Name	Date Modified	Published
DrawingApp	Dec 26, 2015, 7:24:29 PM	No
Magic8Ball	Dec 26, 2015, 6:54:14 PM	No
Schudden	Dec 25, 2015, 10:20:56 PM	No
test4	Dec 25, 2015, 10:07:38 PM	No
test3	Oct 29, 2015, 12:00:00 PM	No
EV3_Button_CAVEDU	Oct 29, 2015, 12:00:00 PM	No
Sturen_1_LED	Oct 28, 2015, 12:00:00 PM	No
HelloWorld	Sep 23, 2015, 12:00:00 PM	No
Analoog1	Sep 15, 2015, 12:00:00 PM	No
TalkToMe	Aug 12, 2015, 12:00:00 PM	No
TestAugustus1	Aug 8, 2015, 12:00:00 PM	No
Meten_met_AI2	Aug 8, 2015, 2:00:00 PM	No
test2	May 18, 2015, 12:38:50 PM	No
test1	May 12, 2015, 12:34:05 PM	No

Privacy Policy and Terms of Use

# Plaatsen button op Viewer screen

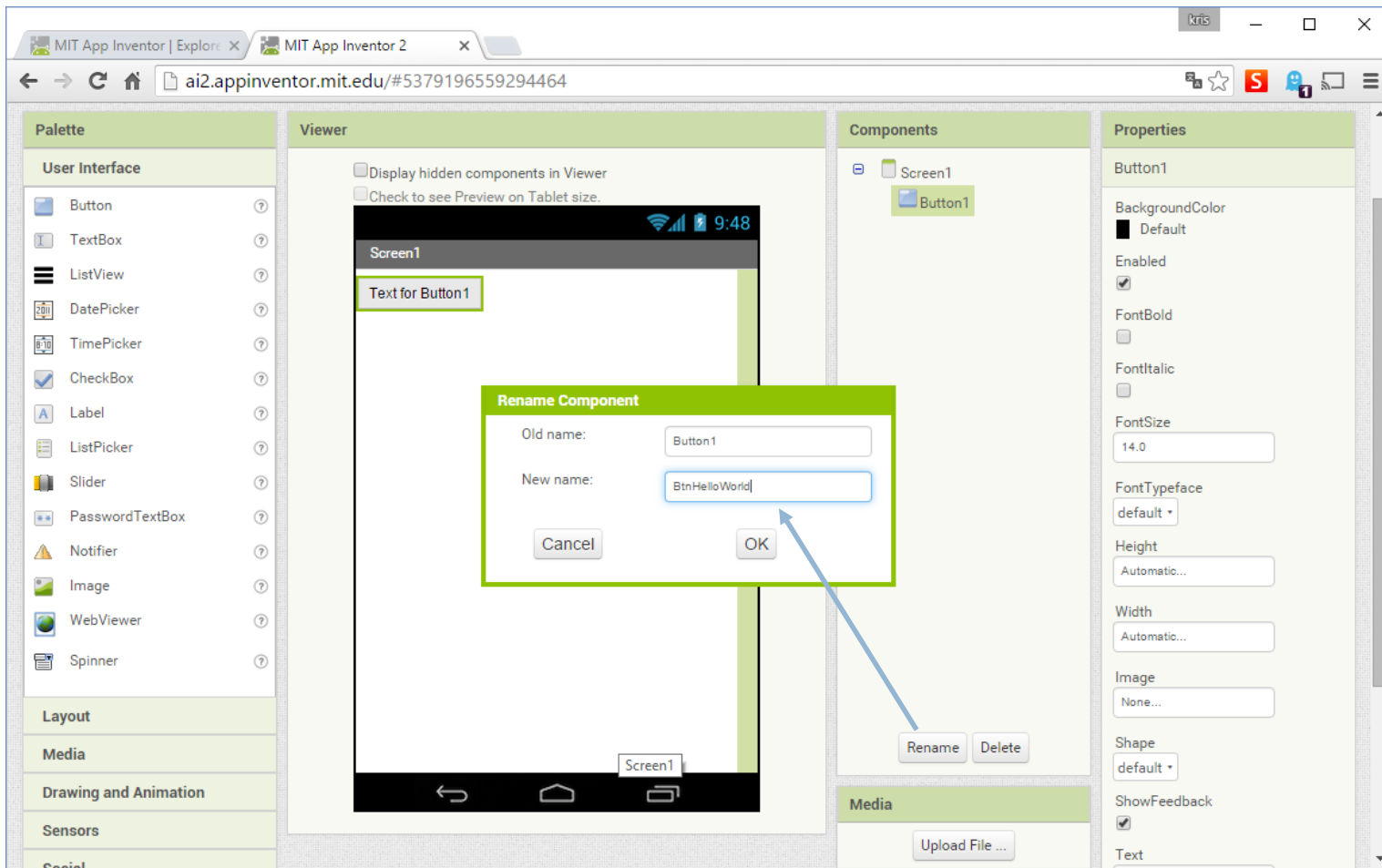
20

The screenshot displays the MIT App Inventor 2 Beta web interface. At the top, the browser address bar shows the URL `ai2.appinventor.mit.edu/#5379196559294464`. The main interface is divided into several panels:

- Palette:** A list of user interface components. The **Button** component is highlighted with a blue arrow pointing towards the viewer.
- Viewer:** A central area showing a mobile device preview. A button labeled **Text for Button 1** is placed on the screen. Above the button, there are checkboxes for  `Display hidden components in Viewer` and  `Check to see Preview on Tablet size.`
- Components:** A panel on the right showing a tree view of the app's components, including `Screen1` and `Button1`.
- Properties:** A panel on the far right showing the configuration options for the selected `Button1` component, such as `BackgroundColor`, `Enabled`, `FontSize` (set to 14.0), and `FontTypeface`.

# Naam button component aanpassen

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# Text button component aanpassen

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The screenshot displays the MIT App Inventor 2 web interface. The browser address bar shows the URL `ai2.appinventor.mit.edu/#6374505911418880`. The interface is divided into several panels:

- Palette:** A sidebar on the left containing various component categories such as User Interface, Layout, Media, Drawing and Animation, Sensors, Social, Storage, Connectivity, and Experimental. The 'Text' component is highlighted in the 'User Interface' section.
- Viewer:** A central area showing a mobile device preview. A text button labeled 'Hello World' is visible on the screen. Above the preview are checkboxes for 'Display hidden components in Viewer' and 'Check to see Preview on Tablet size'.
- Components:** A panel on the right showing the hierarchy of components on the screen, including 'Screen1' and 'BtnHelloWorld'.
- Properties:** A panel on the far right showing the configuration options for the selected 'BtnHelloWorld' component. Properties include BackgroundColor, Enabled, FontBold, FontItalic, FontSize (set to 14.0), FontTypeface (set to default), Height, Width, Image, Shape, and ShowFeedback. A 'Text' field at the bottom of this panel contains the text 'Hello World' and is circled in blue.

# TextToSpeech component plaatsen

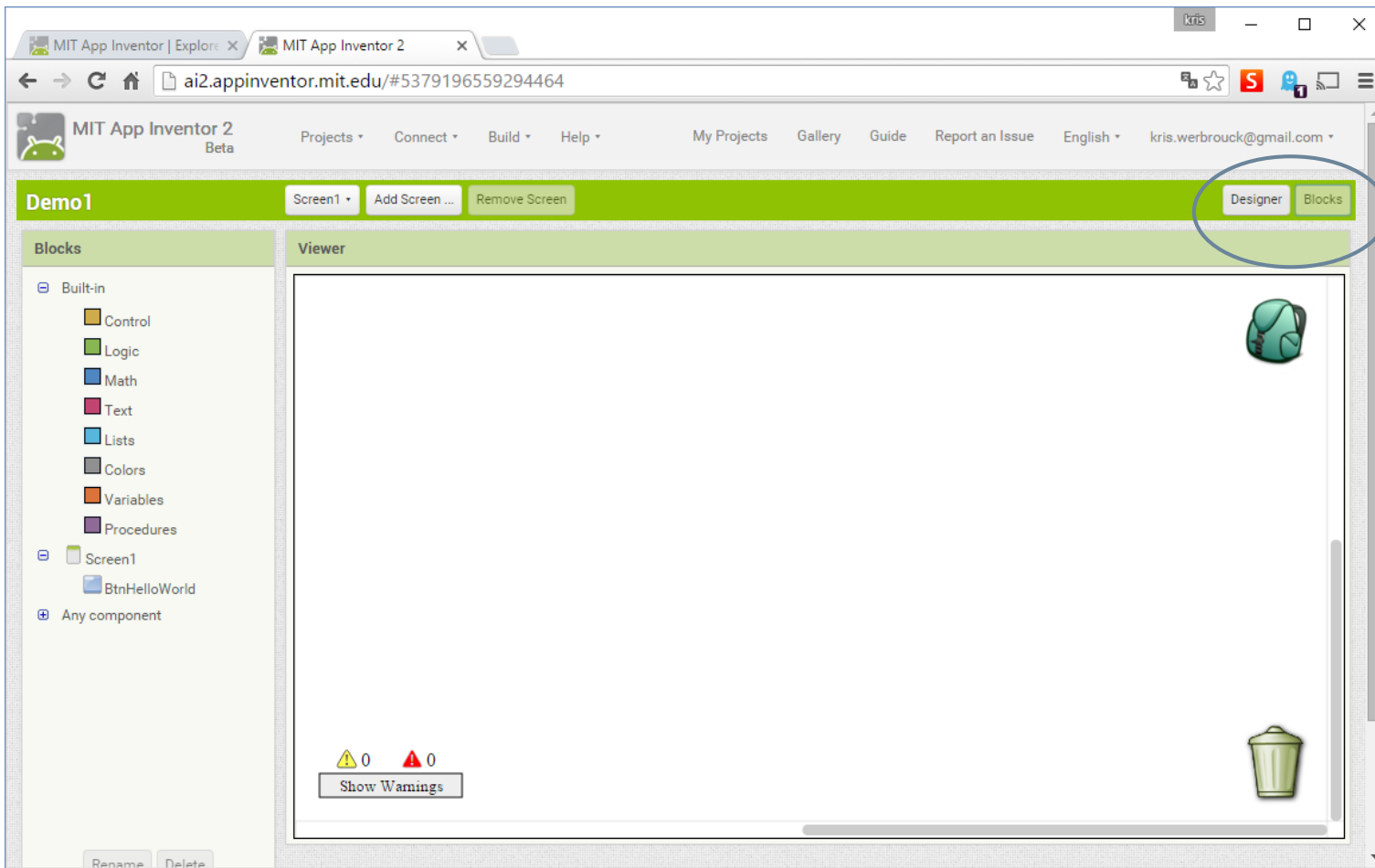
23

The screenshot displays the MIT App Inventor 2 web interface. The browser address bar shows the URL `ai2.appinventor.mit.edu/#5379196559294464`. The interface is divided into four main panels:

- Palette:** Lists various components under categories like User Interface, Media, Drawing and Animation, Sensors, Social, Storage, and Connectivity. The **TextToSpeech** component is highlighted in the Media section.
- Viewer:** Shows a mobile app preview for 'Screen1' with a 'Hello World' button. A blue arrow points from the TextToSpeech component in the Palette to the app screen. Below the viewer, a 'Non-visible components' section contains a 'TextToSpeech1' component highlighted with a green box.
- Components:** Shows the hierarchy of components on the screen: 'Screen1' containing 'BtnHelloWorld' and 'TextToSpeech1'.
- Properties:** Shows the configuration for the selected 'TextToSpeech1' component, including 'Country' (Default), 'Language' (Default), 'Pitch' (1.0), and 'SpeechRate' (1.0).

# Overschakelen naar Blocks

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# Control toevoegen

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The screenshot displays the MIT App Inventor 2 web interface. The browser address bar shows the URL `ai2.appinventor.mit.edu/#5379196559294464`. The page title is "MIT App Inventor 2 Beta". The main interface is divided into several sections:

- Header:** Includes "Projects", "Connect", "Build", and "Help" menus, along with "My Projects", "Gallery", "Guide", "Report an Issue", "English", and a user profile "kris.werbrouck@gmail.com".
- Project Name:** "Demo1" is displayed in a green bar, with "Screen1" selected and "Add Screen ..." and "Remove Screen" buttons.
- Designer/Blocks:** A toggle switch is set to "Designer".
- Blocks Panel:** A sidebar on the left lists categories: "Built-in" (Control, Logic, Math, Text, Lists, Colors, Variables, Procedures), "Screen1", "BtnHelloWorld", and "Any component".
- Viewer:** The main workspace shows a list of event blocks for "BtnHelloWorld":
  - when BtnHelloWorld .Click
  - when BtnHelloWorld .GotFocus
  - when BtnHelloWorld .LongClick
  - when BtnHelloWorld .LostFocus
  - when BtnHelloWorld .TouchDown
  - when BtnHelloWorld .TouchUpEach block has a "do" field for adding actions. A blue arrow points from the ".Click" block to the right. A trash can icon is visible in the bottom right corner of the viewer.

# Procedures aanvullen

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The screenshot displays the MIT App Inventor 2 web interface. The browser address bar shows `ai2.appinventor.mit.edu/#5379196559294464`. The application title is "MIT App Inventor 2 Beta". The main workspace is titled "Demo1" and contains a single screen, "Screen1".

In the "Blocks" panel on the left, the "Procedures" category is expanded, showing a procedure named "TextToSpeech1" attached to a "TextToSpeech1" component. The "Viewer" panel on the right shows a visual representation of the procedure: a yellow "when BtnHelloWorld .Click" block followed by a purple "do call TextToSpeech1 .Speak" block with a message parameter set to "Hello World".

At the bottom of the viewer, there are two warning icons (yellow and red) with a count of 0, and a "Show Warnings" button. A trash can icon is also visible in the bottom right corner of the viewer area.

# Onbekende bronnen op smartdevice toestaan

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Selecteer op smartdevice:

- Instellingen
- Beveiliging
- Onbekende bronnen → inschakelen



# QR reader



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## Via Google Playstore QR reader installeren

A screenshot of the Google Play Store page for the 'QR Droid Code Scanner' app. The page shows the app's icon, which is a green Android robot with a QR code on its back. The app is by 'DroidLa' and is categorized as 'Productiviteit'. It has a rating of 4.5 stars and 345,683 reviews. The PEGI rating is 3. A green button indicates the app is 'Geïnstalleerd'. Below the app information are three preview images: 'Scan' showing a QR code being scanned, 'Options' showing a menu with icons for Scan, My Profile, History, and Inbox, and 'Business Cards' showing a list of scanned business cards. The left sidebar shows navigation options like 'Mijn apps', 'Winkelen', 'Games', 'Familie', and 'Keuze van de redactie'. The top navigation bar includes 'Categorieën', 'Startpagina', 'Populairste items', and 'Nieuwe releases'. The URL in the browser is 'https://play.google.com/store/apps/details?id=la.droid.qr&amp;hl=nl'.

# QR-code genereren en inscannen

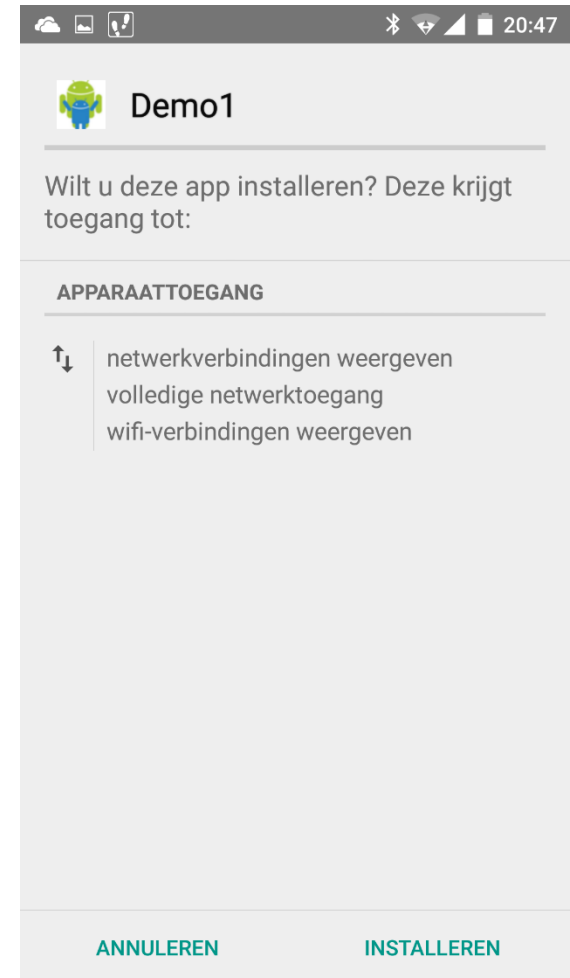
29

The screenshot displays the MIT App Inventor 2 web interface. The browser address bar shows the URL `ai2.appinventor.mit.edu/#5379196559294464`. The interface includes a top navigation bar with options like 'Projects', 'Connect', 'Build', and 'Help'. Below this, a green header bar for 'Demo1' contains buttons for 'Screen1', 'Add Screen...', and 'App (provide QR code for .apk)'. A tooltip for the 'App' button shows two options: 'App (provide QR code for .apk)' and 'App (save .apk to my computer)'. The main workspace is divided into 'Blocks' and 'Viewer' sections. The 'Blocks' section on the left lists various components, including 'TextToSpeech1'. The 'Viewer' section shows a code block: 'when BtnHelloWorld .Click do call TextToSpeech1 .Speak message "Hello"'. A blue arrow points from the 'App (provide QR code for .apk)' button to a 'Barcode link for Demo1' dialog box. This dialog box features a QR code, an 'OK' button, and a note: 'Note: this barcode is only valid for 2 hours. See [the FAQ](#) for info on how to share your app with others.' At the bottom of the viewer, there are warning icons (0 yellow and 0 red) and a 'Show Warnings' button.

# App installeren en uitvoeren

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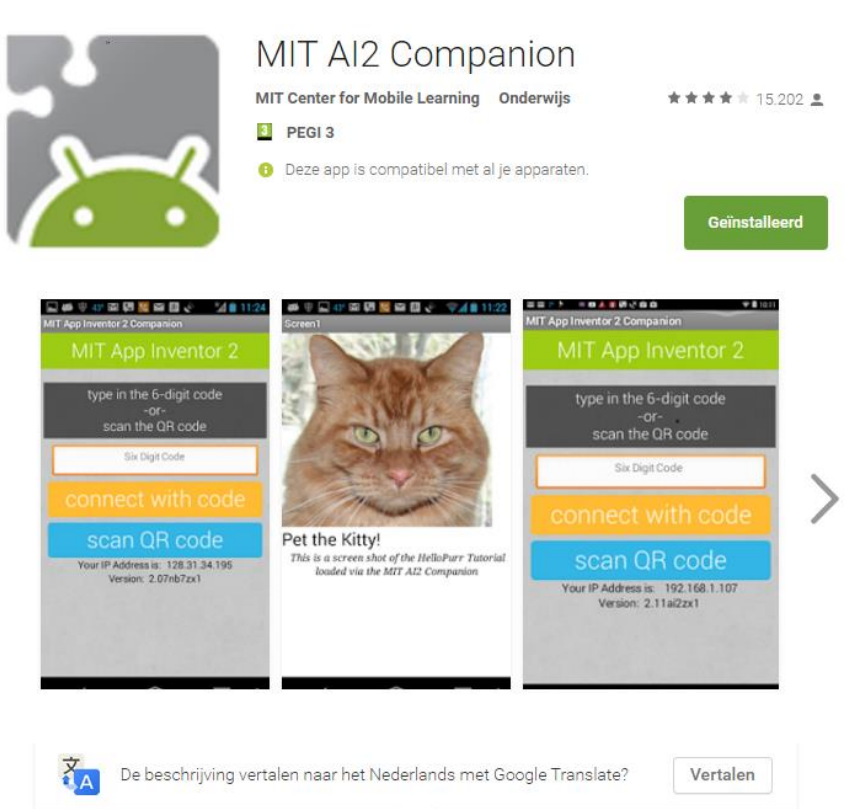
## App installeren en uitvoeren



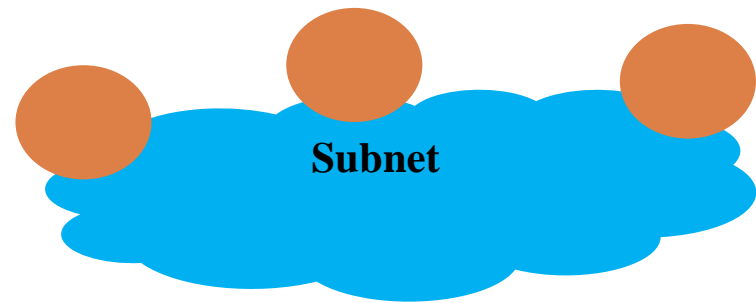
# App inventor app

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Via app MIT AI2 Companion is het mogelijk aanpassingen te doen aan de app zonder opnieuw de app te downloaden en installeren.



Computer en smartdevice moeten in zelfde subnet zitten.

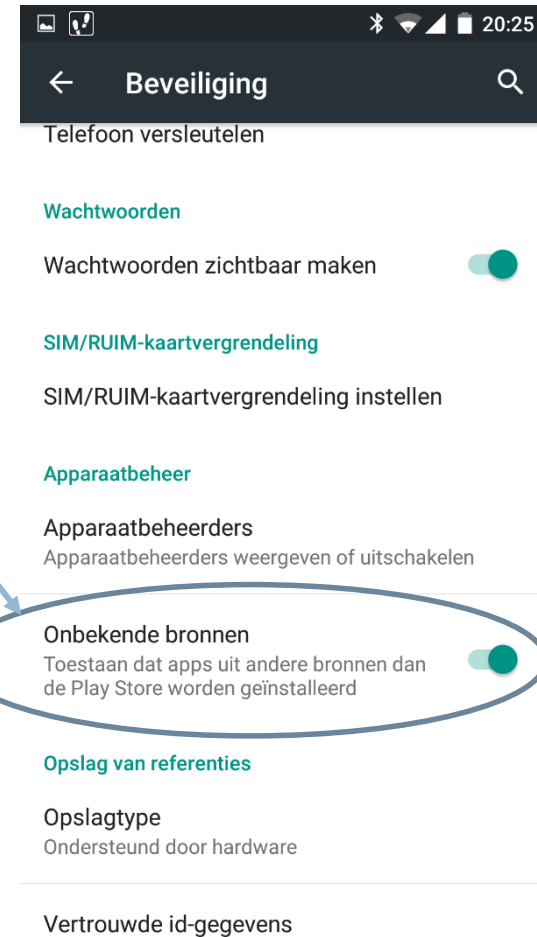


Use the MIT AI2 Companion to help Develop your very own Android Applications using MIT App Inventor. You can learn more at <http://ai2.appinventor.mit.edu>.

# App publiceren

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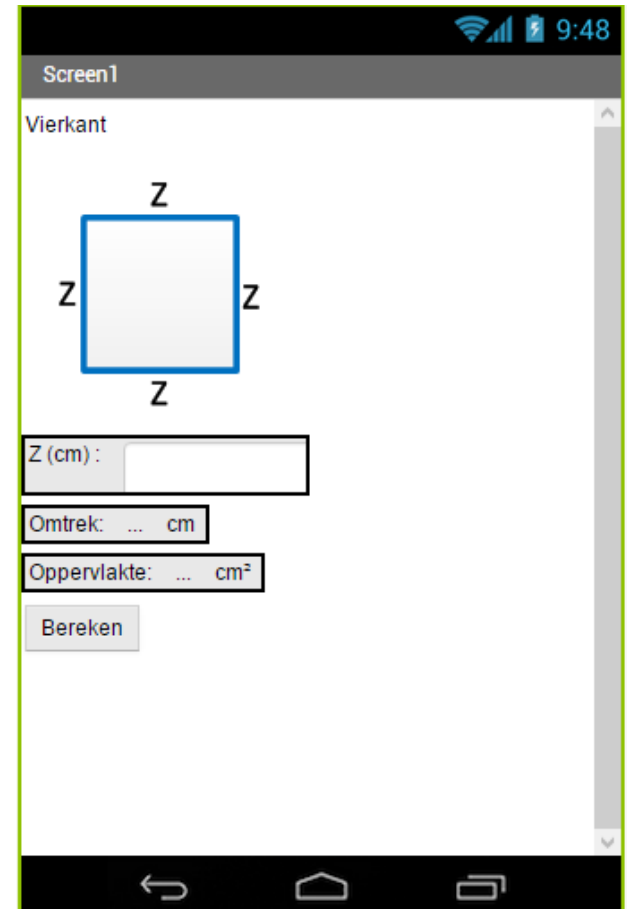
- IOS enkel via Appstore → ontwikkelaar moet betalen.
- Android via Playstore → ontwikkelaar moet betalen.
- Alternatief voor Android:
  - Apps doorsturen via mail of downloaden
  - Kies bij 'Onbekende bronnen' voor 'Aan'
  - Daarna app installeren



# Toepassing oppervlakte en omtrek vierkant

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- Via <https://youtu.be/14YmKUITK8M>
- Leerlingen maken app voor rechthoek,  
...



# Toepassing

## Martin Luther King en Malcolm X app

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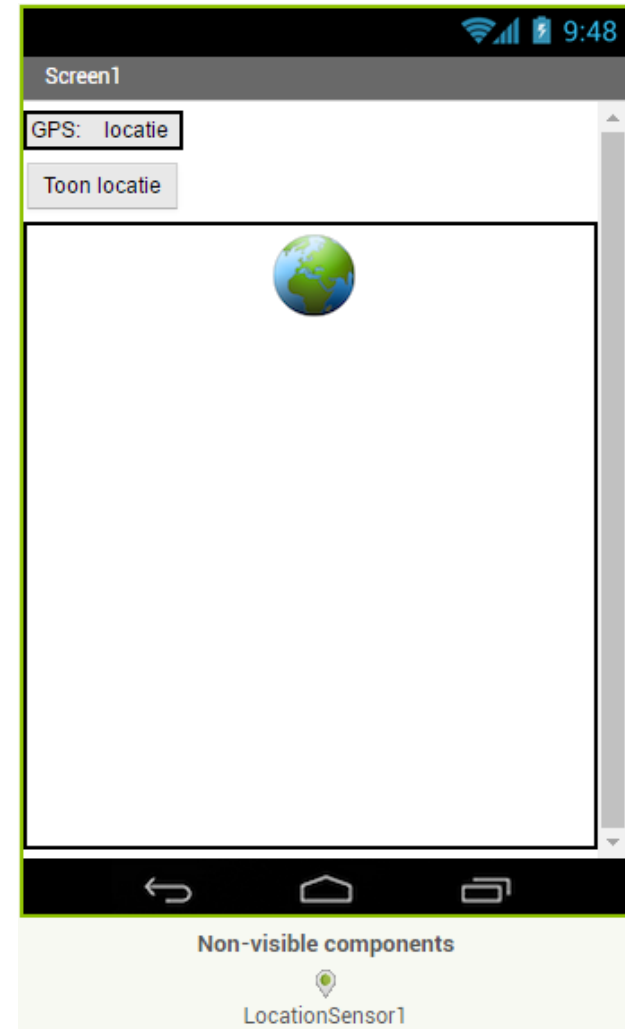
- Via youtube filmpjes. Zie <http://www.appinventor.org/content/ai2apps/simpleApps/dream>



# Toepassing GPS-locatie weergeven

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- Doel: locatie weergeven in Google Maps
- Hoe: Leerlingen krijgen verschillende stappen en realiseren vervolgens een geheel.



# Toepassing SMS sturen met locatie

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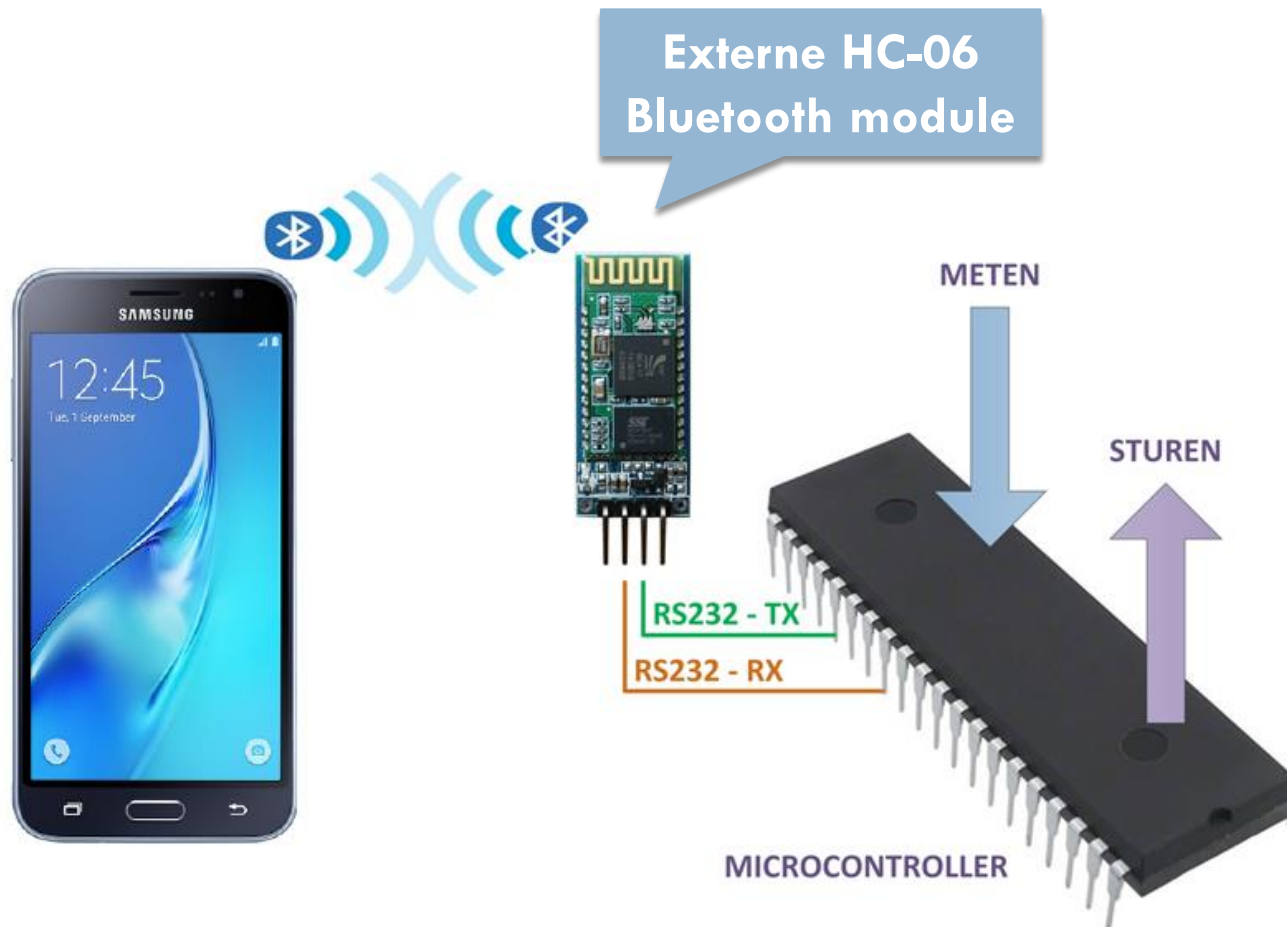
- Doel:
  - locatie bepalen
  - SMS versturen met locatie naar ingesteld nummer



# App inventor in combinatie met elektronica

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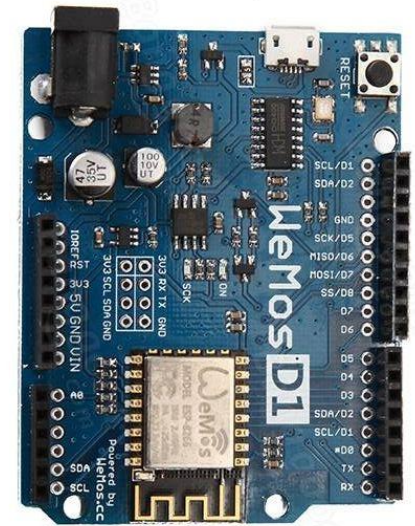
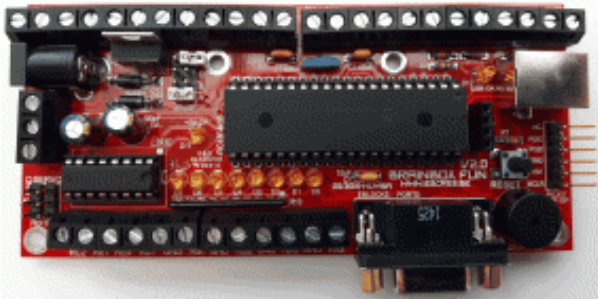
- Gebruik bluetooth



# Elektronika (hardware)

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**BRAINBOX**  
**FUN**



# App Inventor LED aansturen

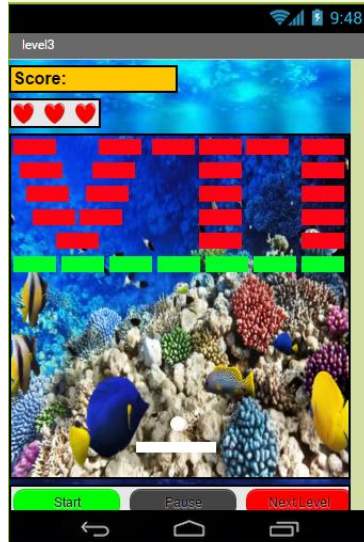
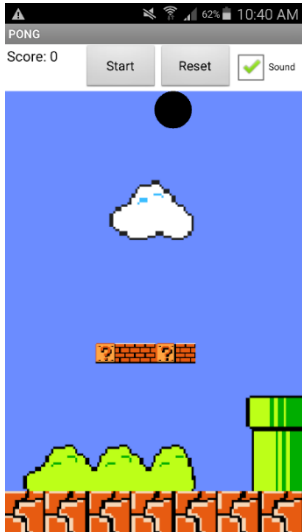
39

- Basis app aansturen led.
- Leerlingen werken vervolgens projecten uit.



# Realisaties

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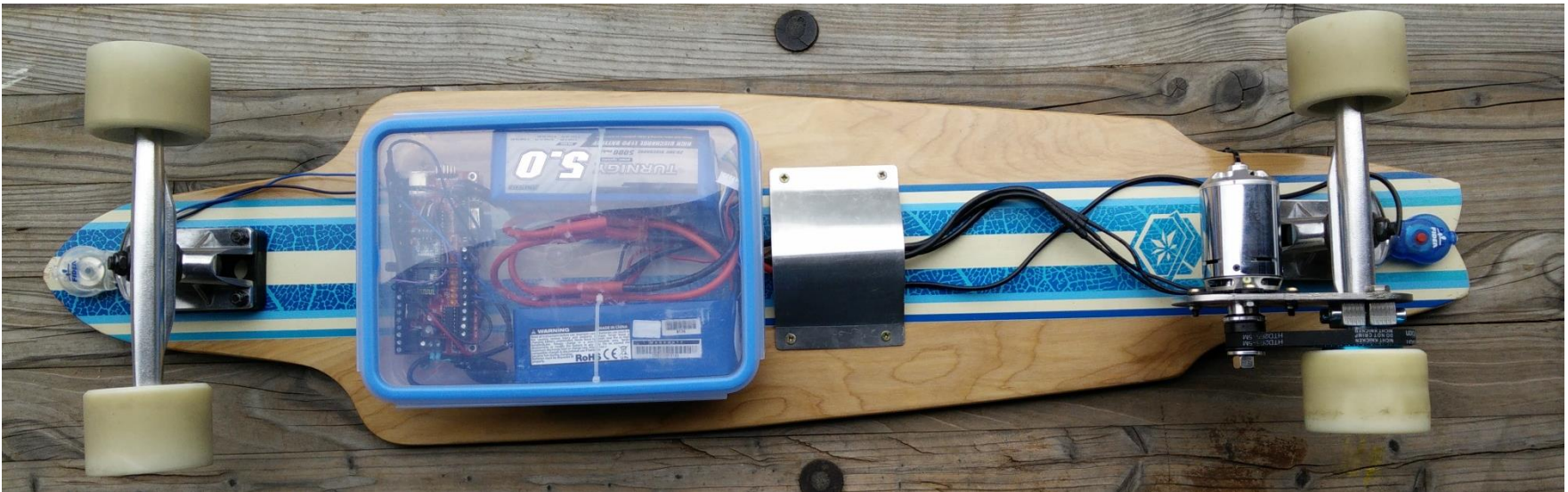
# Realisaties

41



# Realisaties

42



- Elektrisch longboard:

[https://www.youtube.com/watch?v=6Lud\\_pLkel0&feature=youtu.be](https://www.youtube.com/watch?v=6Lud_pLkel0&feature=youtu.be)

# Vragen?

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- Vragen?