Wearables DevCon

INTRODUCTION TO WEARABLE DEVELOPMENT WITH PEBBLE

THOMAS SARLANDIE

MARCH 5, 2014 - WEARABLES DEV CON


two
forty
five


ZULU 24
00:02:55
01:02:42
CR AL:15
pebble

ABOUT ME

@sarfata

French, Mobile developer (in a past life) and now Pebble developer evangelist

LOGISTICS

10:45 11:30 12:00 12:45

Discover Pebble | **SimplyJS** | **H** | **Pebble C SDK**

iOS

Download the official Pebble app on the AppStore

Download the latest Beta app
http://pbl.io/android

My goal today: **Turn all of you into wearable developers!**

PLEASE DO STOP ME FOR QUESTIONS!

A BRIEF HISTORY OF PEBBLE - A WEARABLE PROJECT

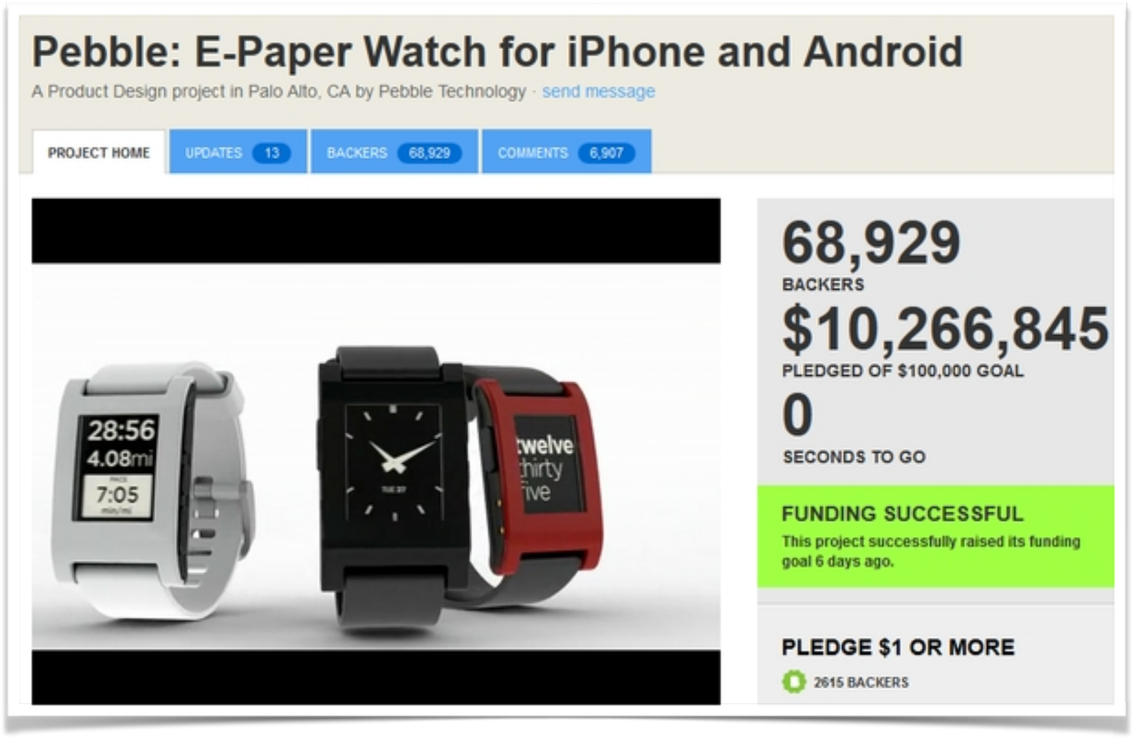
THE EARLY DAYS

IN-PULSE

Notifications
Battery life
Apps
Blackberry only

http://vimeo.com/40128933

KICKSTARTER



Four hardware buttons

Screen 144x168 B&W pixels

3 axis accelerometer

Vibration

Backlight

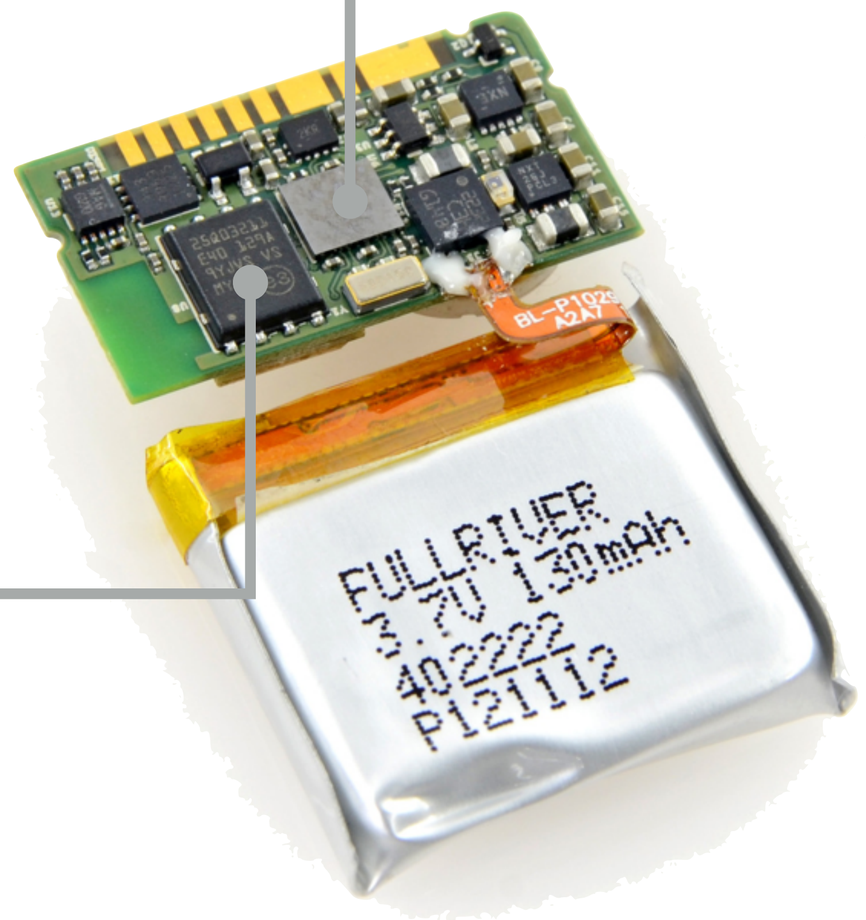
Back

Up

Select

Down

processor
80MHz
ARM Cortex-M3 core
512 kilobytes flash
128 kilobytes RAM



serial flash
4 megabytes

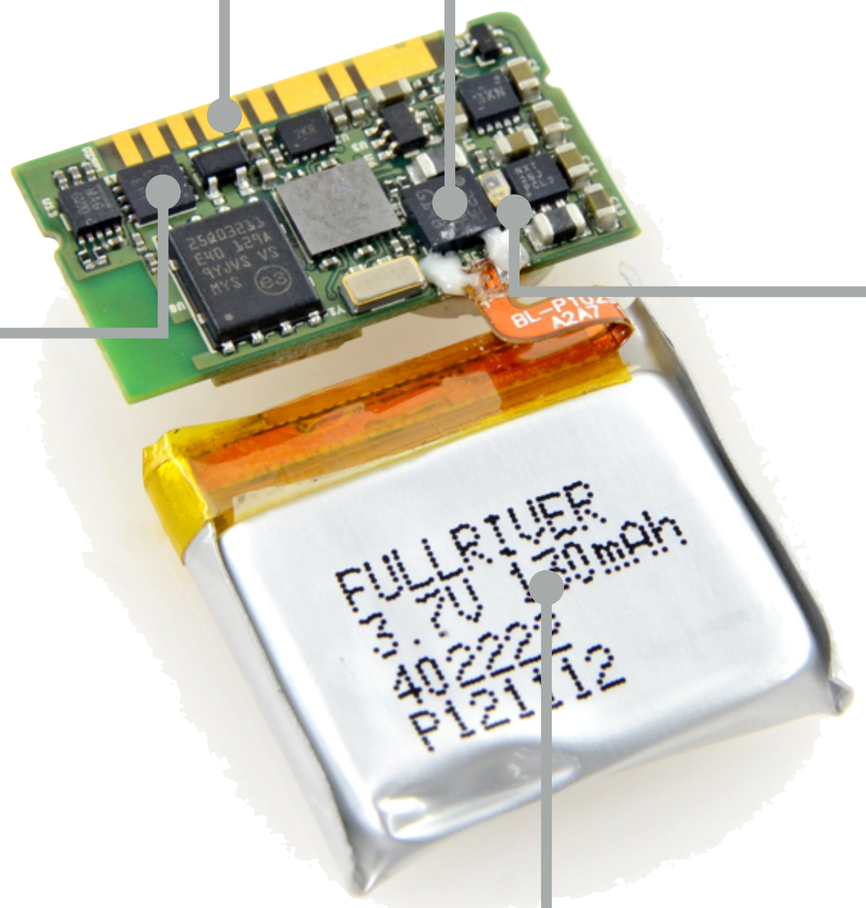
bluetooth radio
(hidden on back)
Bluetooth 2 + BLE

display connector

accelerometer

magnetometer

ambient light sensor



battery

Pebble Steel

DISCOVER PEBBLE

Music Alarm Phone Messages Email

PEBBLE COMES WITH SEVERAL BUILT-IN APPS

PEBBLE IS CUSTOMIZABLE - WITH WATCH FACES

DAILY

Apps in daily provide quick access to stocks, weather, news, and other timely data Pebblers check everyday.

Check Traffic, Headlines, Financial info, Weather...

TOOLS & UTILITIES

Need an app to count, measure or calculate something? Or quickly find your parked car or your ride home? It's a tool.

Convert currency, Calculate, Learn, Find local services...

REMOTES

Does your app control other products like a camera, thermostat, or automobile right from Pebble? It's a remote app.

Control music, Home appliances, Car door locks, Cameras...

NOTIFICATIONS

A Pebble notifications app helps users get customized notifications from their favorite apps & web services right to Pebble.

Social media, Travel, Auctions, Events, Calendars...

FITNESS

Cyclists, swimmers, and athletes of all types use these apps to support their active lifestyles & fitness goals.

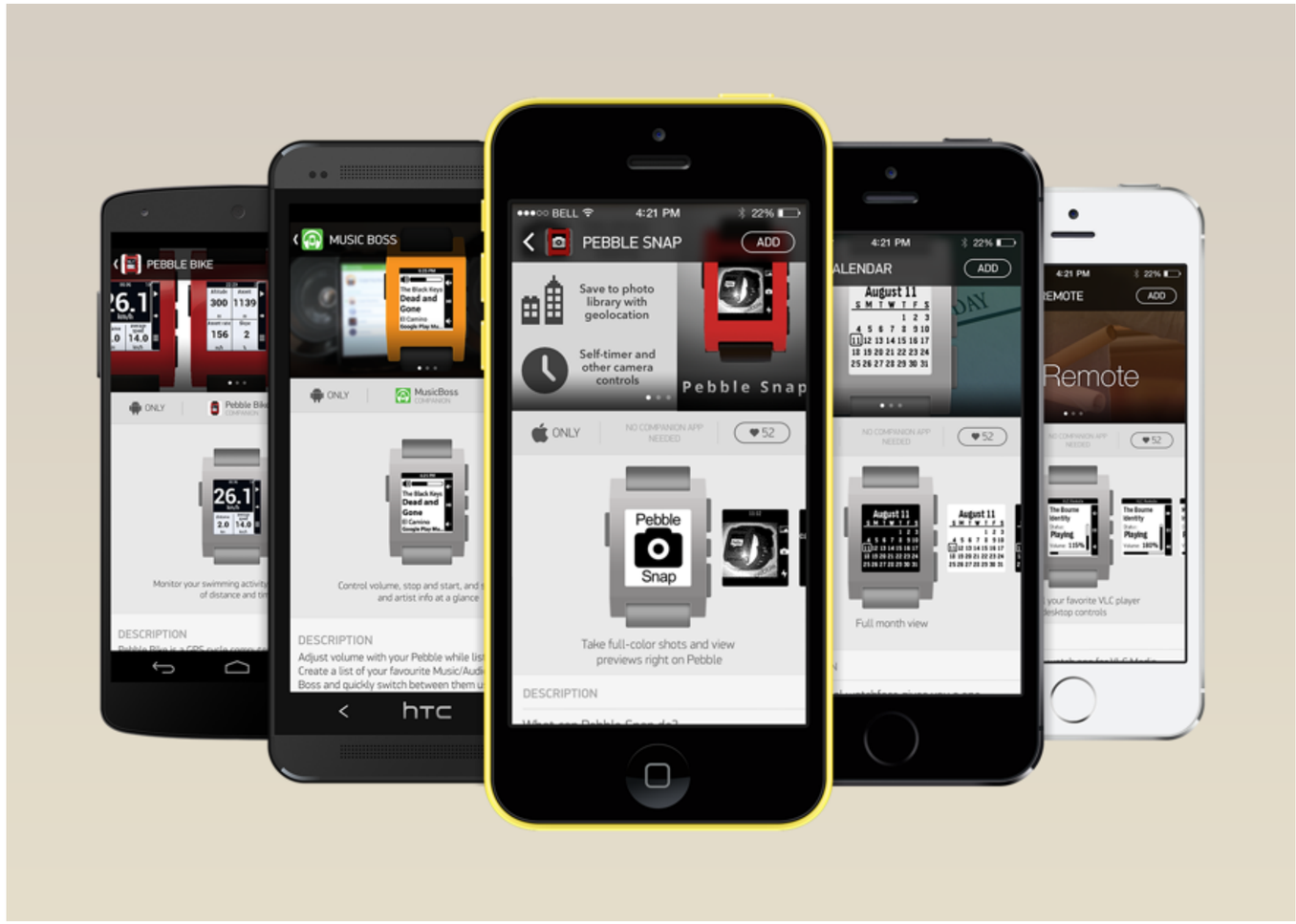
Count swim laps, Monitor calories, Guided workouts...

GAMES

Play On

Classic games, Puzzles, Turn-based, Action...

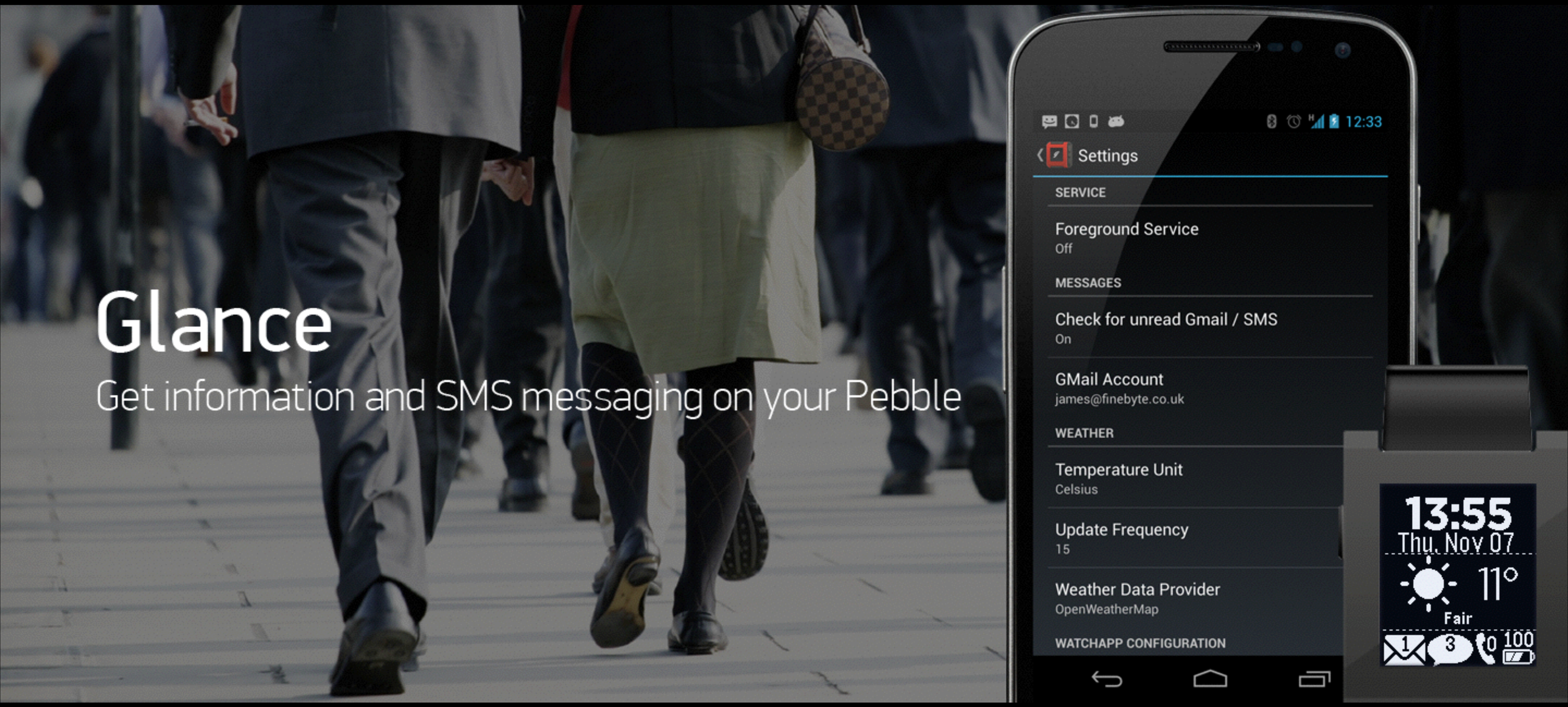
AND APPS



AVAILABLE ON THE PEBBLE APP STORE

SOME POPULAR APPS ON PEBBLE TODAY

Notifications

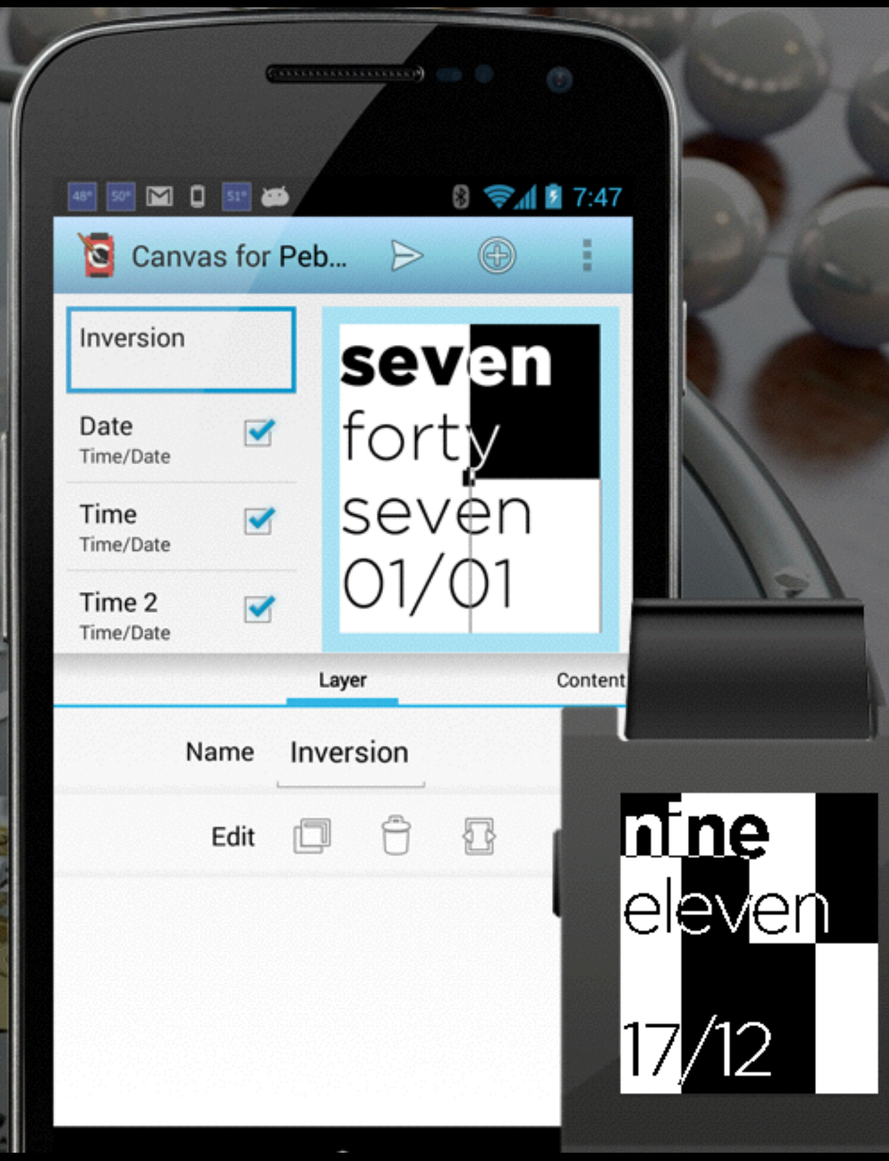


Contextual Information

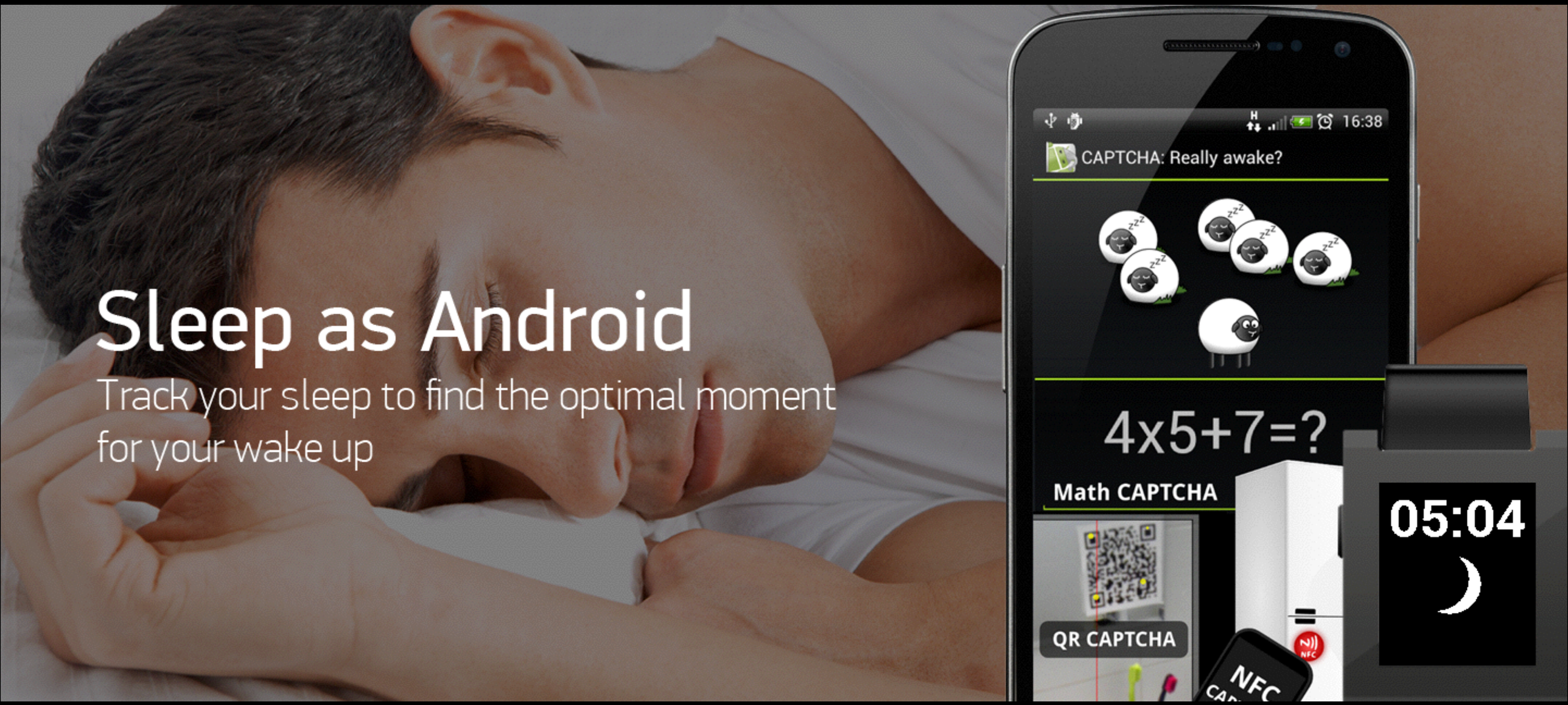
Contextual Information

Pebble Canvas

Design a watchface on your phone



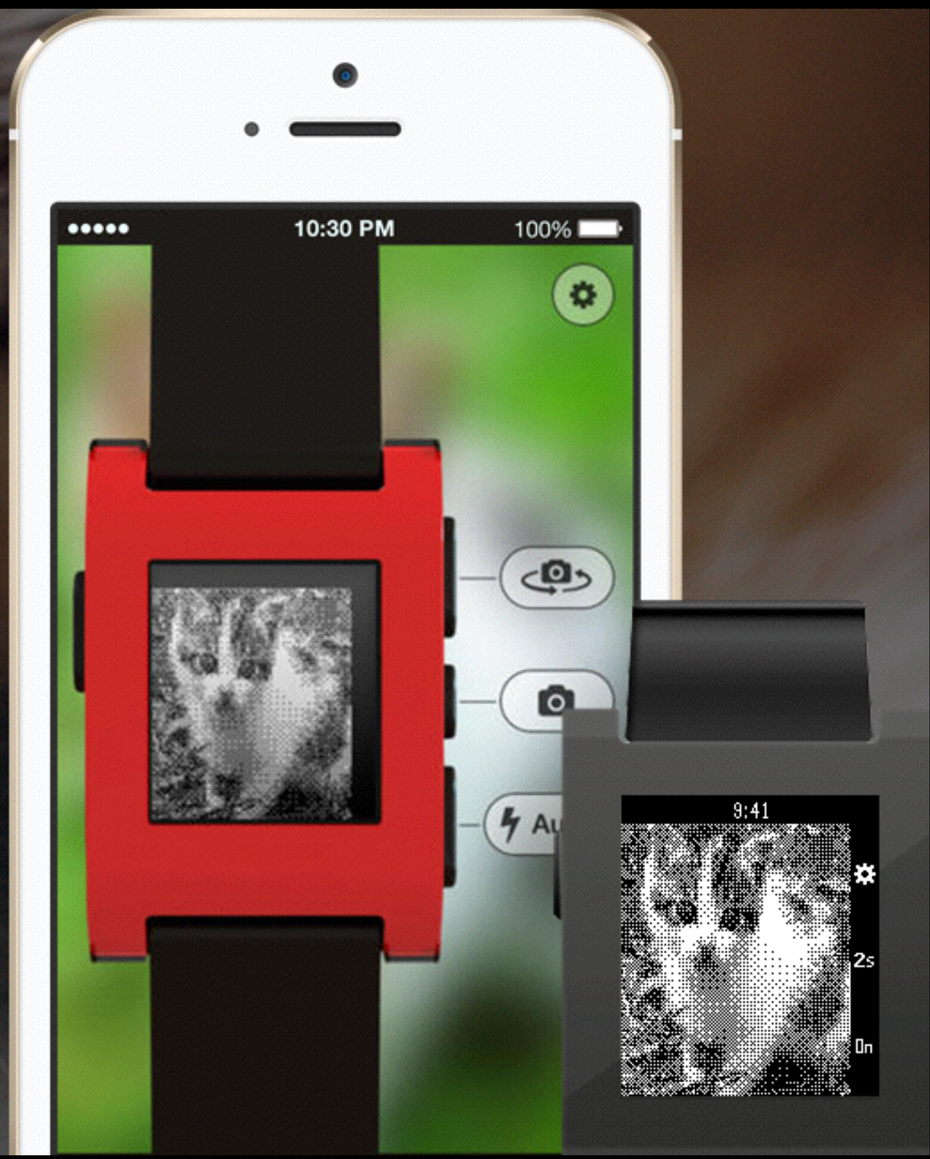
Customize Pebble



Fitness and Activity Monitoring

PebbleCam

Preview and remote control your iPhone's Camera



Remote Control

Remote Control

DREAM TEAM

Remote Control

DEMO: INSTALLING AN APPLICATION FROM THE PEBBLE APPSTORE

PEBBLE AS A PLATFORM

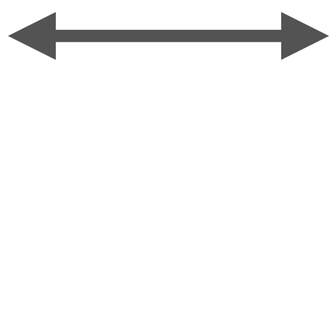
C SDK

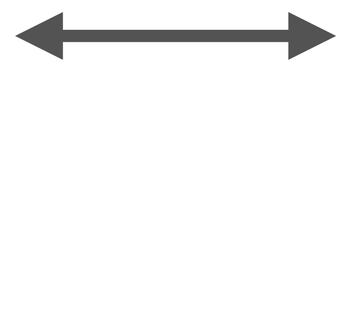
Developers can write applications that run on Pebble with the native C SDK

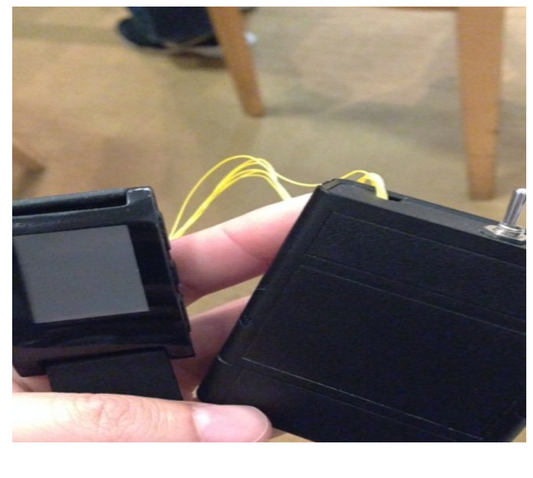
C SDK

JavaScript

Pebble applications can embed JavaScript that is executed on the phone.
Apps can show a configuration window on the phone, store settings, use the GPS, …







C SDK

JavaScript

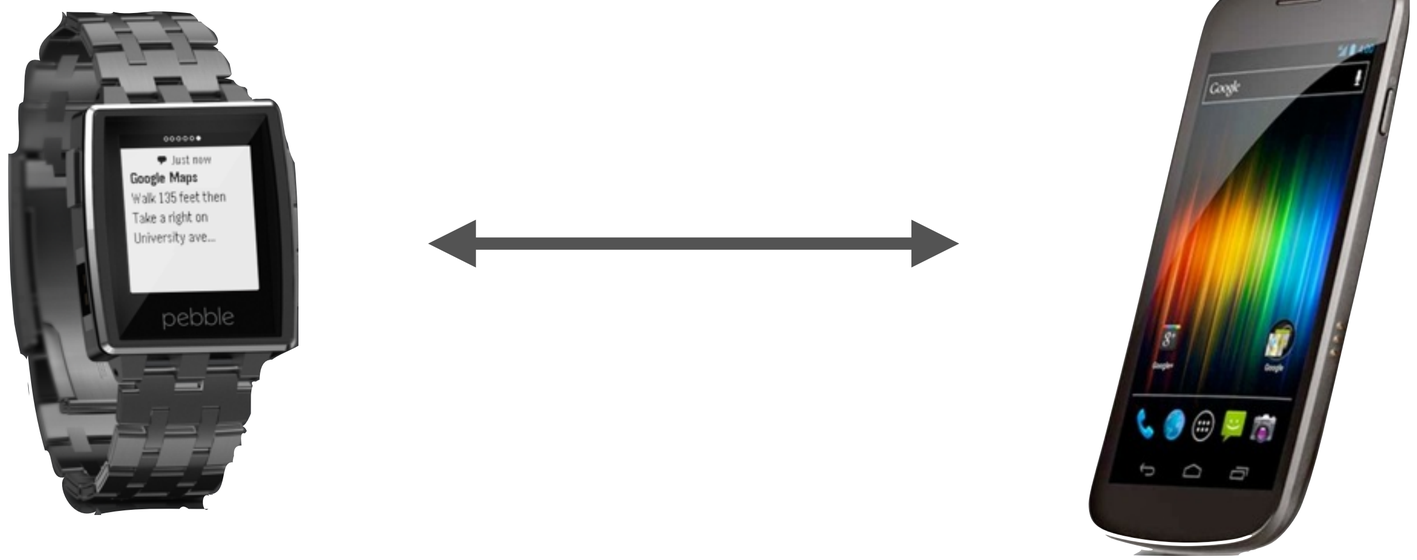
Internet

Through the phone, Pebble app have access to the Internet.

pebble

+ RunKeeper

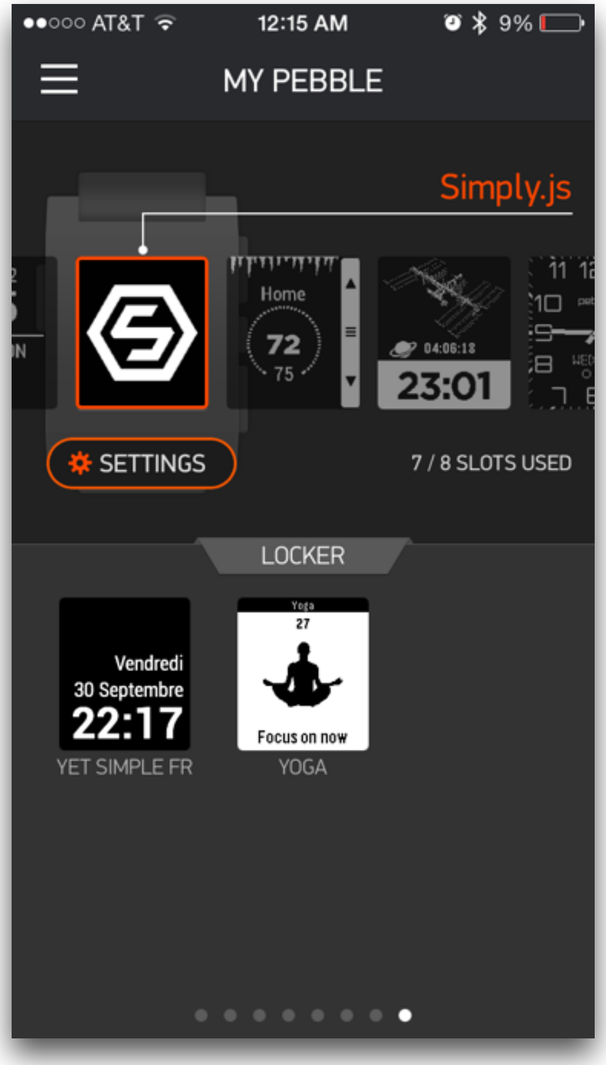
Extend existing app with PebbleKit iOS and PebbleKit Android

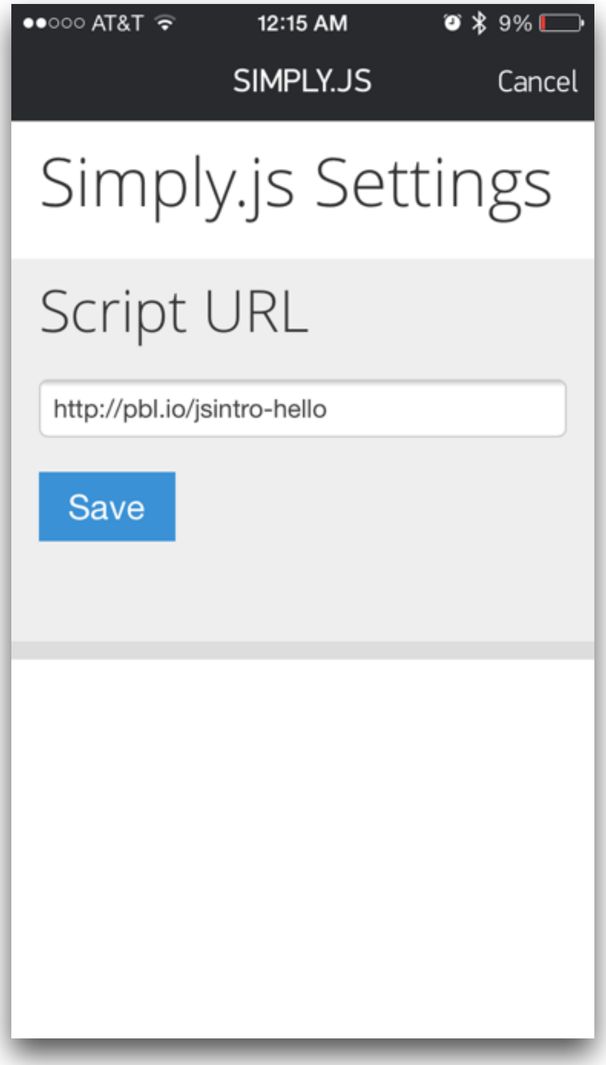


SimplyJS is a JavaScript framework to write Pebble applications. The JavaScript is running on the phone and remote-controls the Pebble.

http://simplyjs.io

GETTING STARTED WITH SIMPLY JS





1. **Download Simply JS** from the Pebble appstore
2. Configure Simply JS to load **pbl.io/jsintro-hello**
3. **Run** your first SimplyJS app!

SIMPLY.JS: HELLO WORLD

pbl.io/jsintro-hello

SIMPLY.JS: BUILDING A CLOCK

pbl.io/jsintro-clock

```
function displayTime() {
  var now = new Date();
  simply.text({
    title: "          "
         + now.getHours() + ":"
         + now.getMinutes()
         + ":" + now.getSeconds()
  }, true);
}

simply.fullscreen(true);
displayTime();
setInterval(displayTime, 1000);
```

SIMPLY.JS: ADDING SOME CONTENT

pbl.io/jsintro-quote

```
// Fetch a quote
ajax({
    url: 'http://api.theysaidso.com/qod.json',
    type: 'json'
  },
  function(quote) {
    simply.text( {
    subtitle: quote.contents.author,
    body: quote.contents.quote });
  }
);
simply.scrollable(true);
```

SIMPLY.JS - APIS OVERVIEW

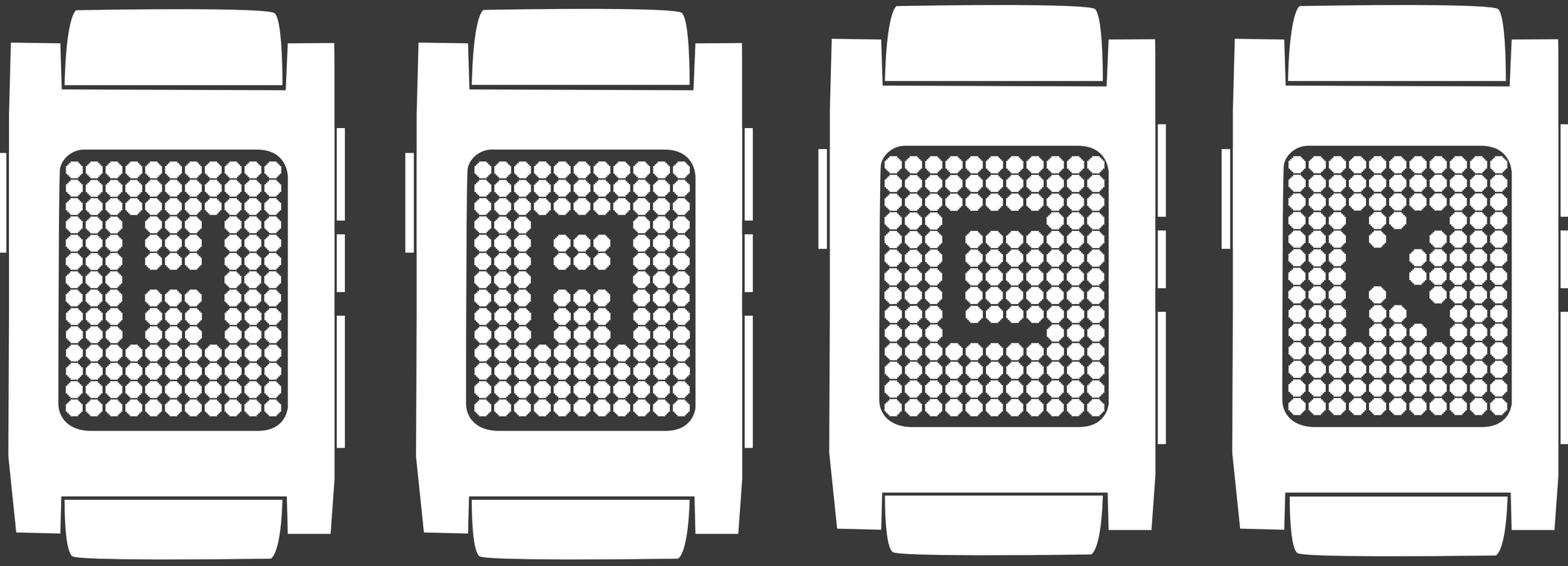
Display text on screen. Support three different styles and you can make the text scrollable.

Button input: Send an http request every time a button is pressed.

GPS and Accelerometer are supported too.

SimplyJS is great to quickly connect Pebble to the Internet!

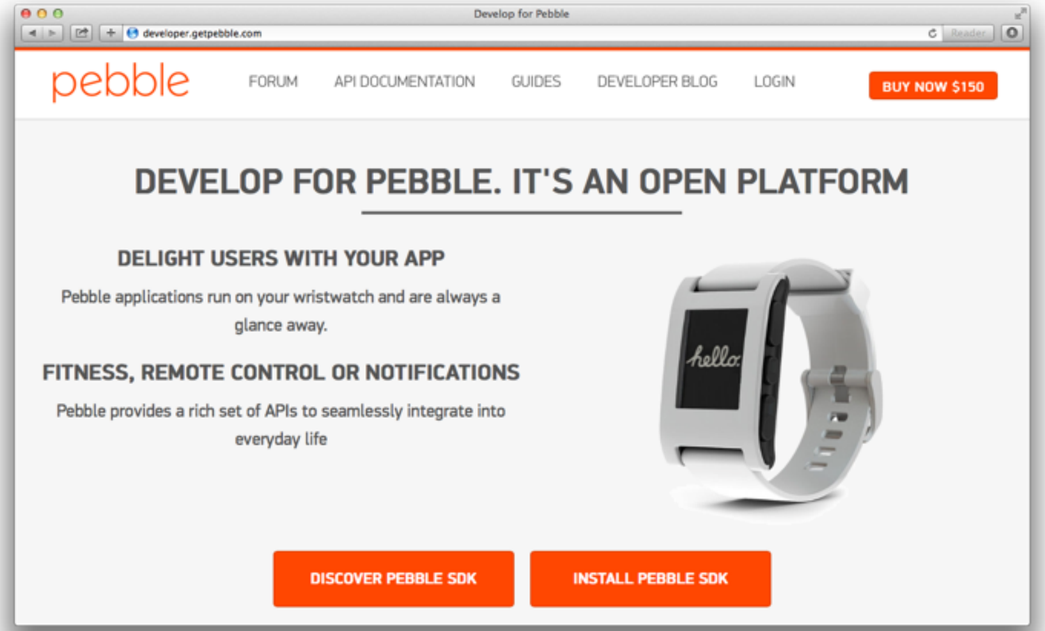
http://simplyjs.io

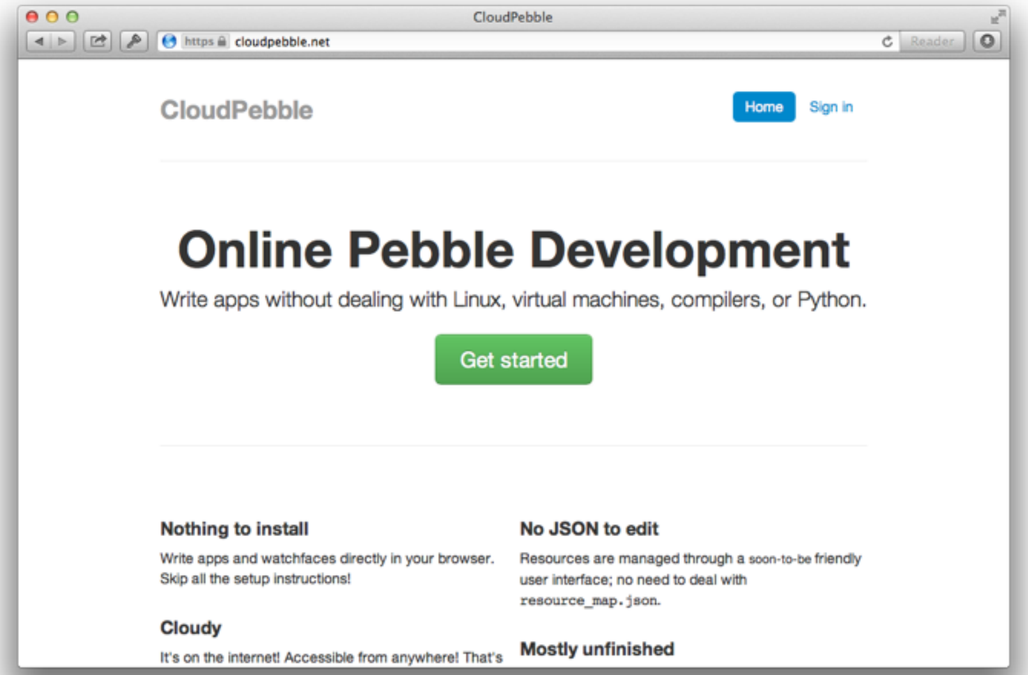


Tip: Use dropbox to save a JS file and quickly share it.
rawgithub.com is another great option.

GETTING STARTED WITH PEBBLE NATIVE SDK

USING PEBBLE NATIVE SDK





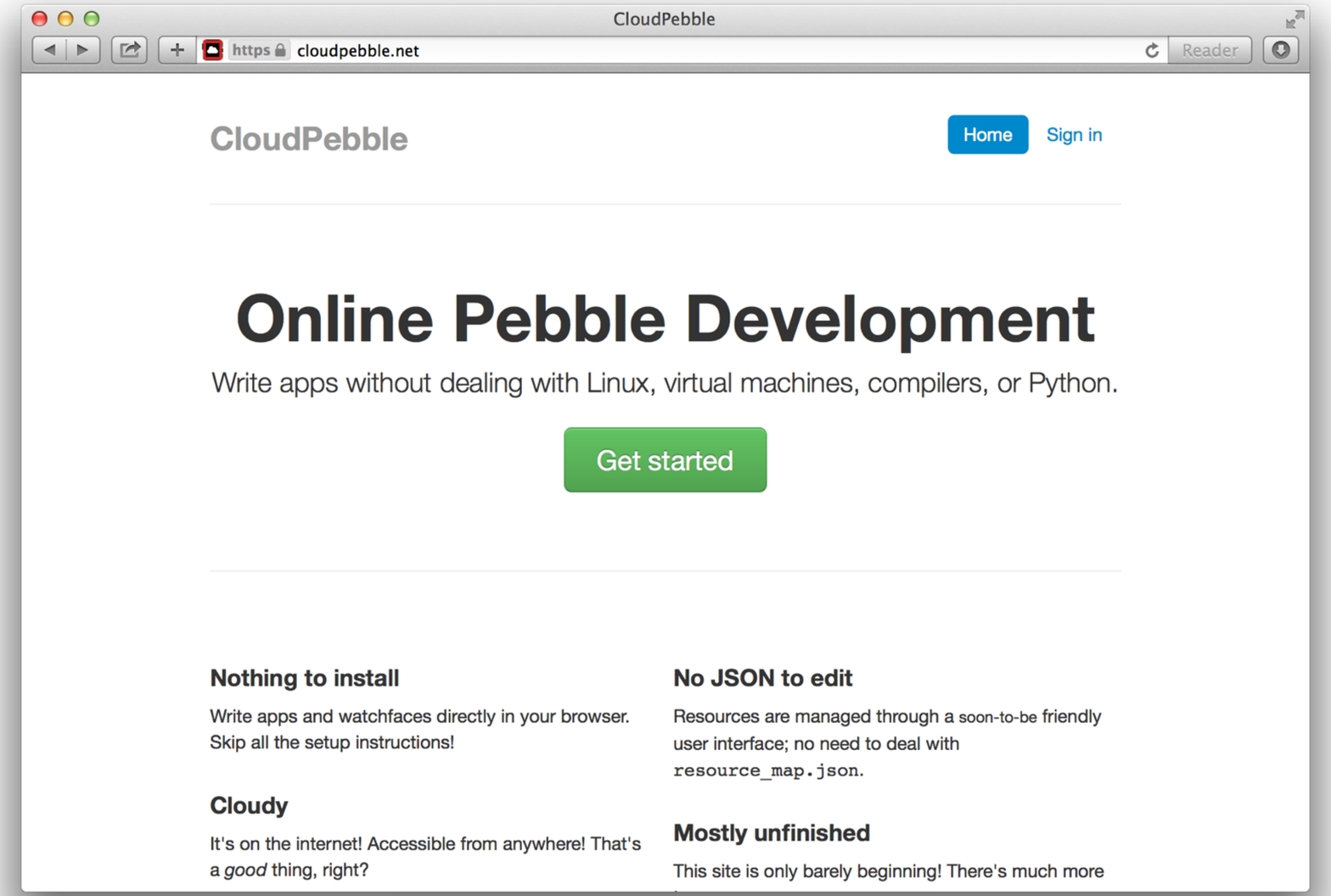
Download and install the SDK

Use CloudPebble

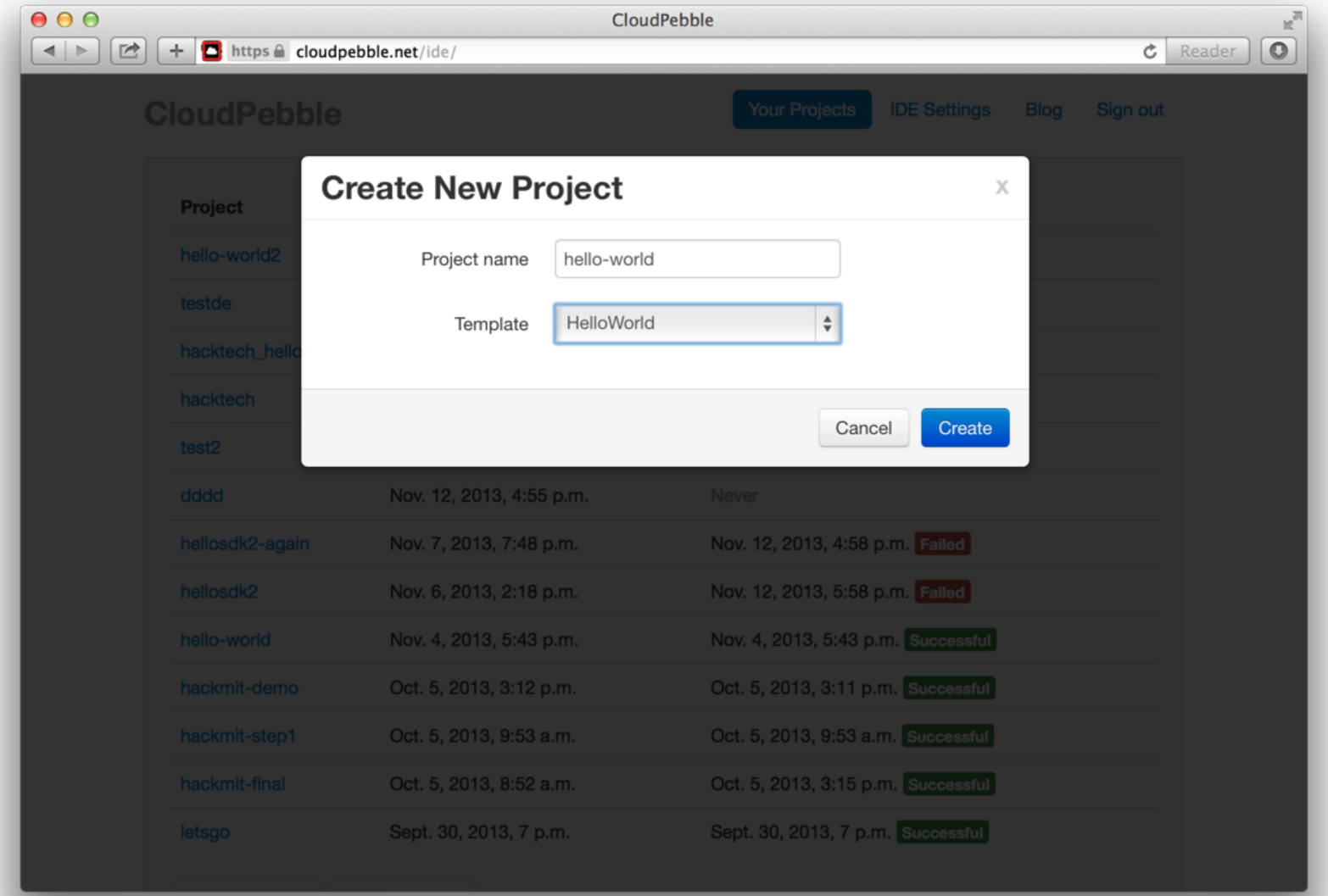
WALKTHROUGH - BUILD AND INSTALL YOUR FIRST NATIVE APP

1. Log into **Cloud Pebble**
2. **Create** a new project with the ‘helloworld’ template
3. **Build** the project in the “Build tab”
4. Enable the **developer connection** on your phone
5. **Install and run** your first application

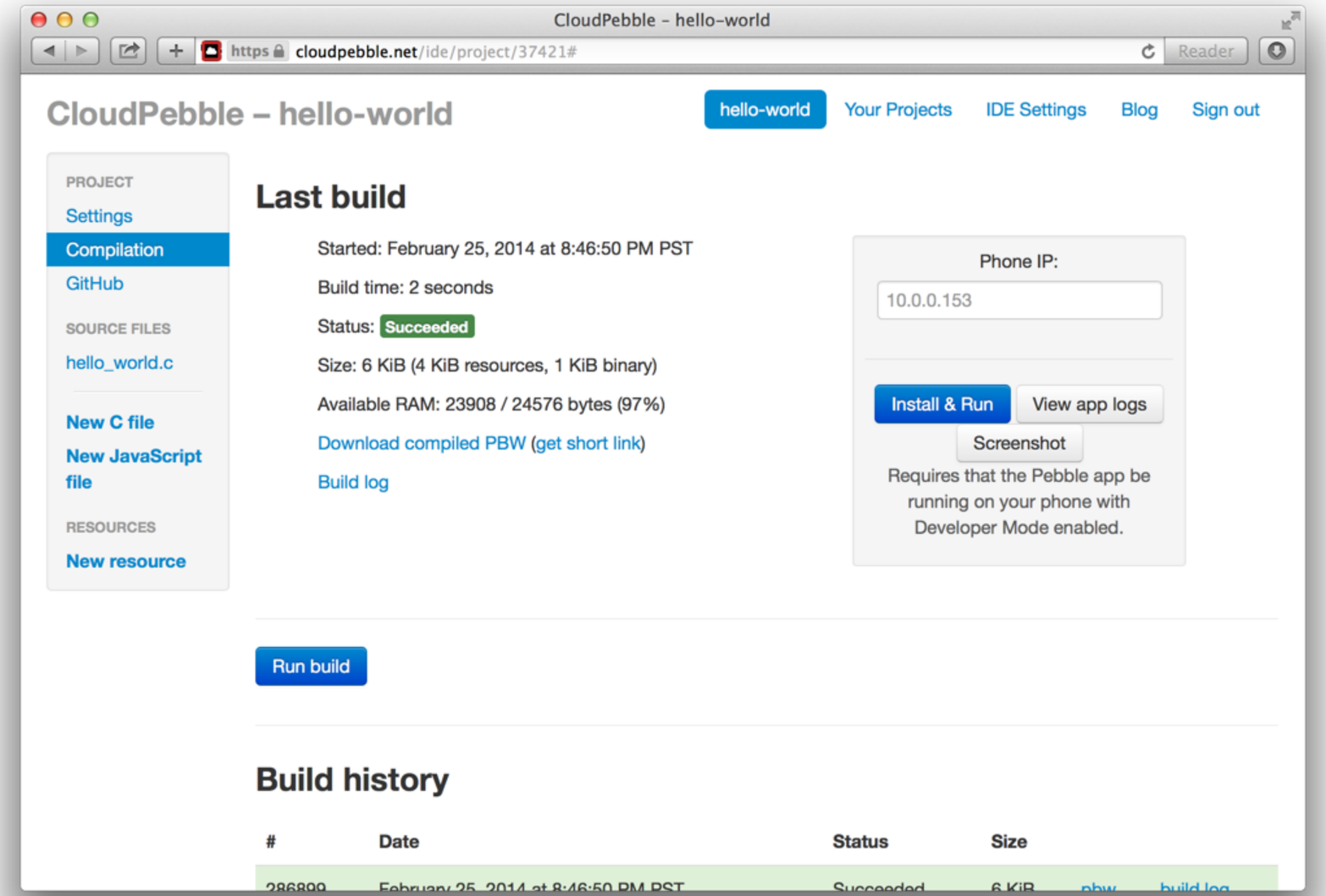
LOG INTO CLOUDPEBBLE.NET



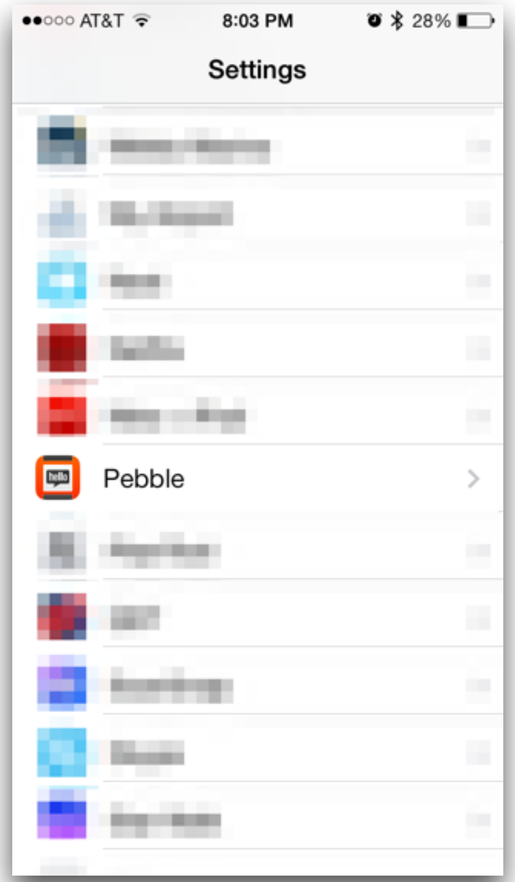
CREATE A NEW PEBBLE PROJECT

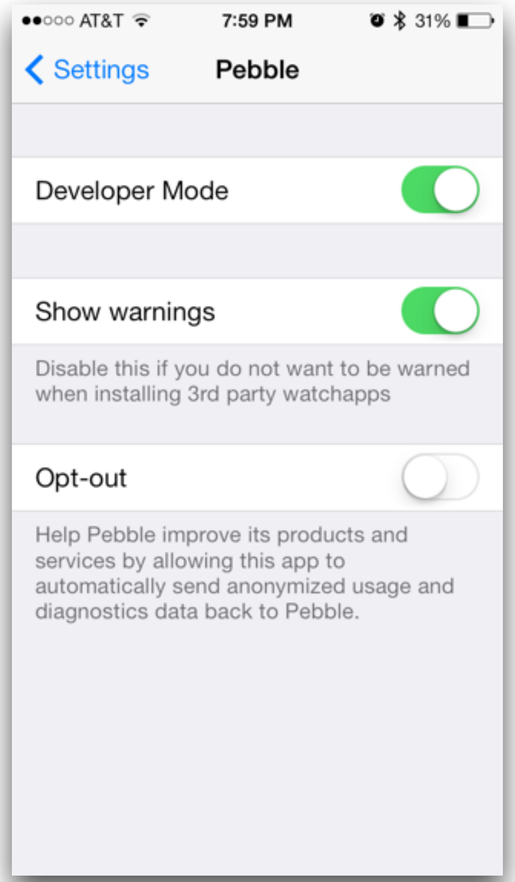


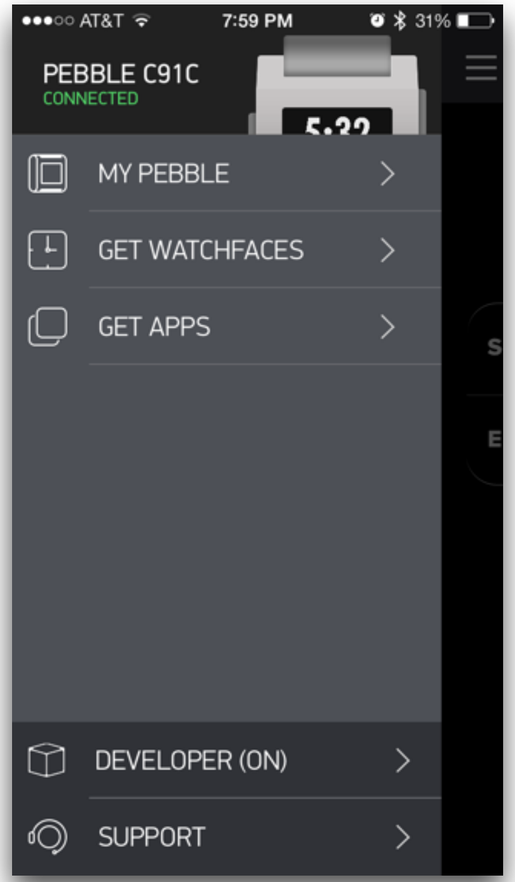
BUILD YOUR FIRST PROJECT

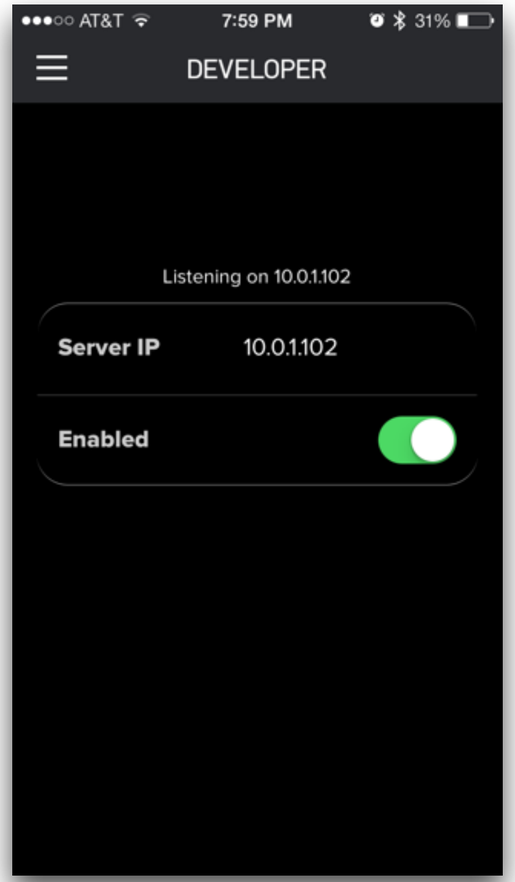


ENABLE THE DEVELOPER CONNECTION ON IOS

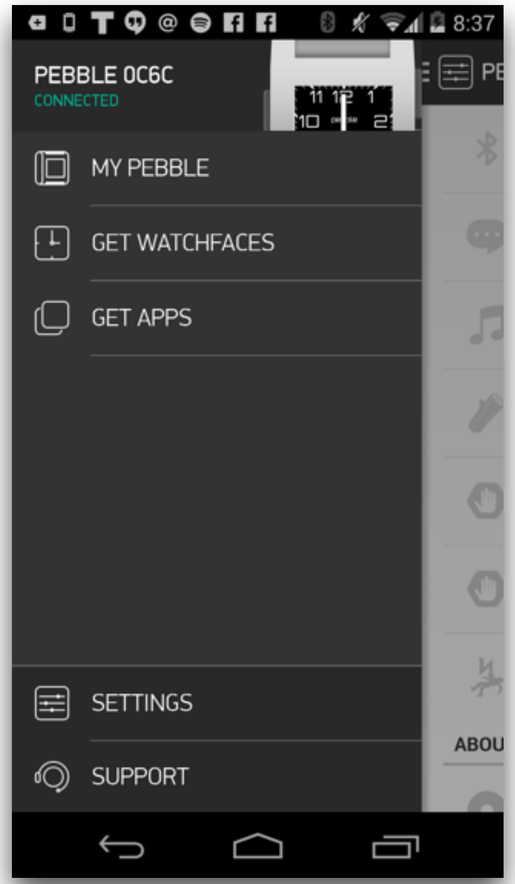


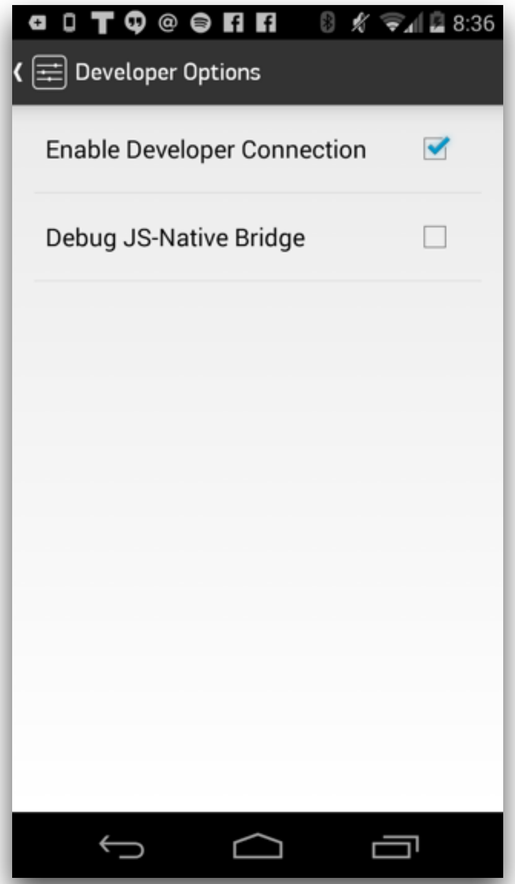


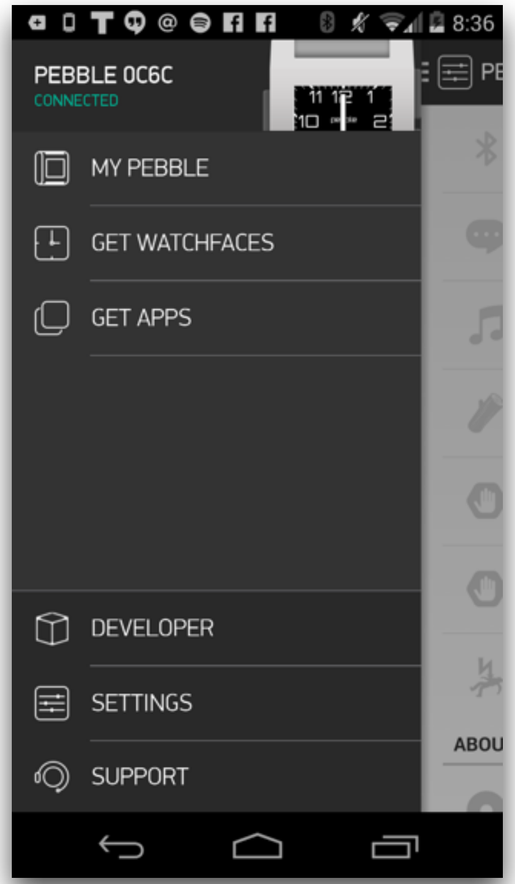


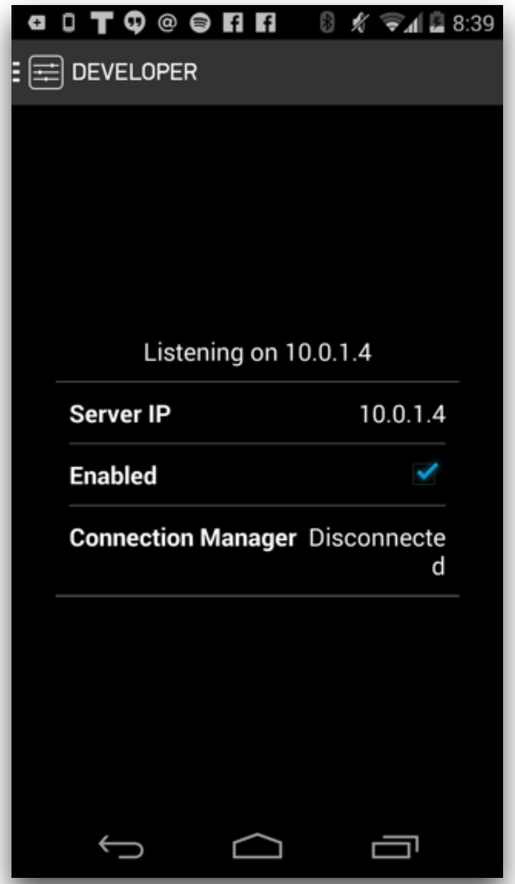


ENABLE THE DEVELOPER CONNECTION ON ANDROID









INSTALL AND RUN YOUR APPLICATION

INSIDE YOUR FIRST PEBBLE APP

UNDERSTAND YOUR FIRST PEBBLE C APP

```
int main(void) {
  handle_init();
  app_event_loop();
  handle_deinit();
}
```

You provide a function to initialize your app

The system will run an event loop and send events to your app

The event loop returns when the app is ready to exit. Clean up!

CloudPebble - hello-world

https cloudpebble.net/ide/project/37421# Reader

CloudPebble – hello-world

hello-world | Your Projects | IDE Settings | Blog | Sign out

PROJECT

Settings

Compilation

GitHub

SOURCE FILES

hello_world.c

New C file

New JavaScript file

RESOURCES

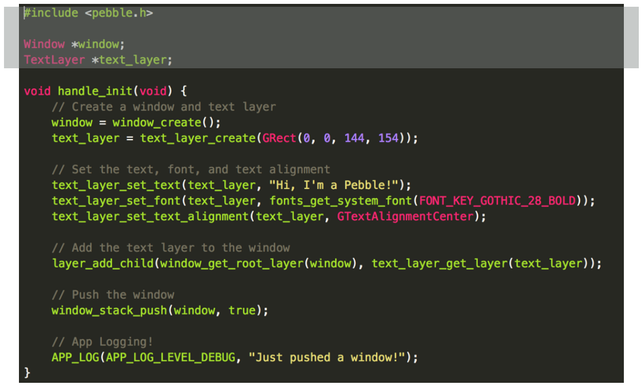
New resource

```c
#include <pebble.h>

Window *window;
TextLayer *text_layer;

void handle_init(void) {
    // Create a window and text layer
    window = window_create();
    text_layer = text_layer_create(GRect(0, 0, 144, 154));

    // Set the text, font, and text alignment
    text_layer_set_text(text_layer, "Hi, I'm a Pebble!");
    text_layer_set_font(text_layer, fonts_get_system_font(FONT_KEY_GOTHIC_28_BOLD));
    text_layer_set_text_alignment(text_layer, GTextAlignmentCenter);

    // Add the text layer to the window
    layer_add_child(window_get_root_layer(window), text_layer_get_layer(text_layer));

    // Push the window
    window_stack_push(window, true);

    // App Logging!
    APP_LOG(APP_LOG_LEVEL_DEBUG, "Just pushed a window!");
}
```

Delete | Reload file | Save

```
#include <pebble.h>

Window *window;
TextLayer *text_layer;
```

Declare our two UI elements



```
void handle_init(void) {
  window = window_create();
  text_layer = text_layer_create(
                    GRect(0, 0, 144, 154)
  );
```

```c
#include <pebble.h>

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    // Push the window
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    // App Logging!
    APP_LOG(APP_LOG_LEVEL_DEBUG, "Just pushed a window!");
}
```

Initialize both UI elements

```
text_layer_set_text(text_layer,
    "Hi, I'm a Pebble!");
text_layer_set_font(text_layer,
  fonts_get_system_font(
    FONT_KEY_GOTHIC_28_BOLD));
text_layer_set_text_alignment(text_layer,
  GTextAlignmentCenter);
```

Define properties of our text layer

```c
#include <pebble.h>

Window *window;
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    // Add the text layer to the window
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    // Push the window
    window_stack_push(window, true);

    // App Logging!
    APP_LOG(APP_LOG_LEVEL_DEBUG, "Just pushed a window!");
}
```

```
layer_add_child(window_get_root_layer(window),
    text_layer_get_layer(text_layer));
```

```
window_stack_push(window, true);
```

Add the text layer to the window and push your window

Pebble WindowStack provide a uniformed way to organize navigation inside apps

You can add different type of Layers to a Window.
Pebble SDK provides ready-to-use Layers to build beautiful apps.

Scroll Layer

`feature_scroll_layer`

Menu Layer

`feature_menu_layer`

Action Bar

`feature_persist_counter`

Animation

`drop_zone`

```c
#include <pebble.h>

Window *window;
TextLayer *text_layer;

void handle_init(void) {
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    text_layer = text_layer_create(GRect(0, 0, 144, 154));

    // Set the text, font, and text alignment
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    // Add the text layer to the window
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    // Push the window
    window_stack_push(window, true);

    // App Logging!
    APP_LOG(APP_LOG_LEVEL_DEBUG, "Just pushed a window!");
}
```
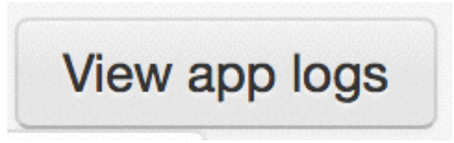

```c
APP_LOG(APP_LOG_LEVEL_DEBUG,
                        "Just pushed a window!");
```

You can send logs message from your Pebble app.



CloudPebble - hello-world

cloudpebble.net/ide/project/37421#

Reader

CloudPebble – hello-world

hello-world | Your Projects | IDE Settings | Blog | Sign out

PROJECT

Settings

Compilation

GitHub

SOURCE FILES

hello_world.c

New C file

New JavaScript file

RESOURCES

New resource

```
[INFO] app_manager.c:143: Heap Usage for <Simply.js>: Available <19412B> Used <5016B> Still allocated <32B>
[DEBUG] hello_world.c:23: Just pushed a window!
[PHONE] pebble-app.js:?: {'runhost client uuid' = e5cd9f3a-2123-4bd8-bc88-6490731bf6c9}:{'webapp uuid' = 133215f0-cf20-4c05-997b-3c9be5a64e5b}: ++_JS_LIFECYCLE_++:KILLED
```

DEMO - ADD ANOTHER TEXT LAYER IN OUR APPLICATION

ADD SUPPORT FOR EVENTS

Pebble provides a uniformed way to deal with events based on a subscribe mechanism. You can use it for time changes, timers, app-messages, bluetooth connection changes and accelerometer detection.

```
char message[40];

void accel_handler(AccelData *data, uint32_t num_samples) {
  /* ... */
}

void handle_init() {
  /* ... */
  accel_data_service_subscribe(1, accel_handler);
}
```

DEMO - ADD LIVE ACCELEROMETER DATA

APP MESSAGE

Pebble apps can receive and send messages to a JavaScript program running in the Pebble mobile app, to an iOS app or to an Android app.

The protocol used is called App Message and is based on very simple Dictionaries.

DEMO - RECEIVING MESSAGES WITH APP MESSAGE

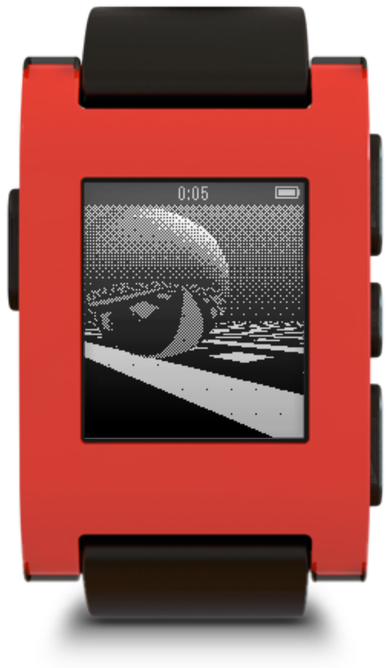
DEMO - USING PEBBLEKIT JS TO GET CURRENT GPS COORDINATES

OTHER APIS

There are more Pebble APIs for specific applications:

Data Logging - To collect and transfer large amount of data.
Graphics API - To draw directly on screen
App Sync - A simplified framework on top of App Message
Persistent Storage - Save data on Pebble flash storage
Vibration - User interaction

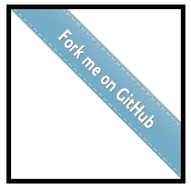
TinyBird



RayTracer

PebbGPS

RESOURCES



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http://developer.getpebble.com

The developer web site is the main hub for Pebble development:

- Design Guide
- Developer Guides
- API Reference
- Examples

PEBBLE FORUMS

GitHub

pebble
pebble-hacks
Search for window stack push

stackoverflow

#MAKEAWESOMEHAPPEN

APPENDIX: INSTALLING PEBBLE SDK ON YOUR COMPUTER

INSTALLING THE PEBBLE SDK ON YOUR COMPUTER

OS X

```
curl -sSL http://developer.getpebble.com/install.sh | sh
```

Linux — Follow instructions on developer.getpebble.com

Windows — We recommend CloudPebble.net or Linux in VirtualBox

USING PEBBLE SDK ON YOUR COMPUTER