

Say Hello To Offline First

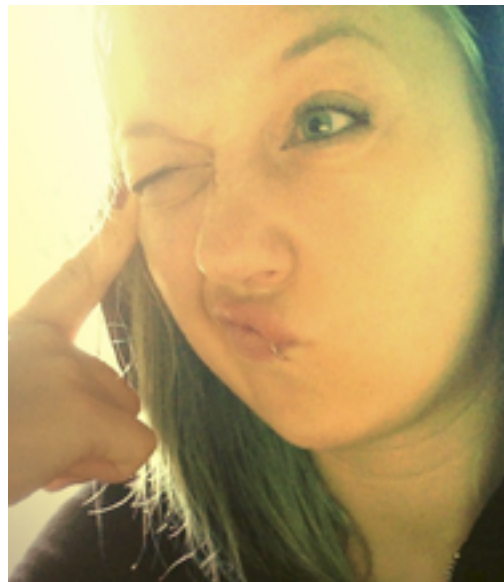
How to build applications for
the real world

we <3 GOTOBerlin

Ola Gasidlo

- Developer for +10 years
- Core Member of Hoodie
- Co-Organizer of OTSConf && RejectJS

twitter: @misprintedtype



Agenda

1. What & why?
2. Problems
3. New approach
4. Implementation

What & why?





The internet turned **25** last year!

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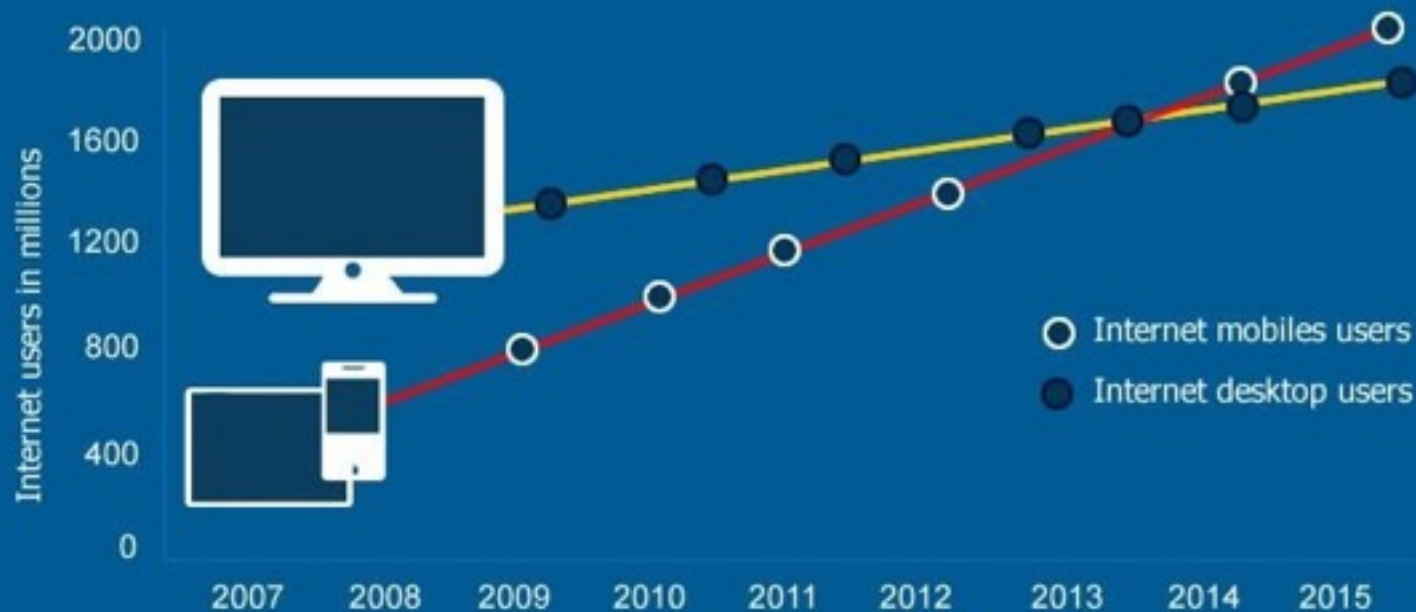


We grew up.

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Internet usage - Mobiles VS. Ordinateurs

The projection of global internet users conducted by Morgan Stanley Research: Mobiles VS. Computers from 2007 to 2015.



HOW HAS MOBILE INTERNET GONE GLOBAL?

Mobile web traffic stands at 7.96% in the USA, that number is much larger in places like Africa and Asia.



these numbers are up **192.5%** since 2010

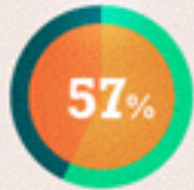
MOBILE-ONLY WEB USERS



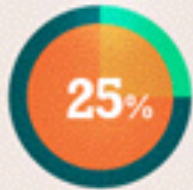
EGYPT



INDIA



S. AFRICA



USA

MOBILE-ONLY WEB USERS

amount of mobile-only web users is out of reach

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Tell me...



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**Cannot Connect to
Server**

Ugh! Not this screen again.

Retry



Get Inspired, Create Lists.

Pages for your projects, and lists for your todos.

**Take notes & share
them right away**

No sign up. Just essence.

Start using [minutes.io](#)

or [Sign In](#)

the best meeting tool since pen & paper

Project
Meeting Title
Thursday, 8.5.2014 14:00

I Where

minutes.io

Minute taker

your name and

Linz, Österreich

Linz
Österreich

[Routenplaner](#) [Speichern](#)



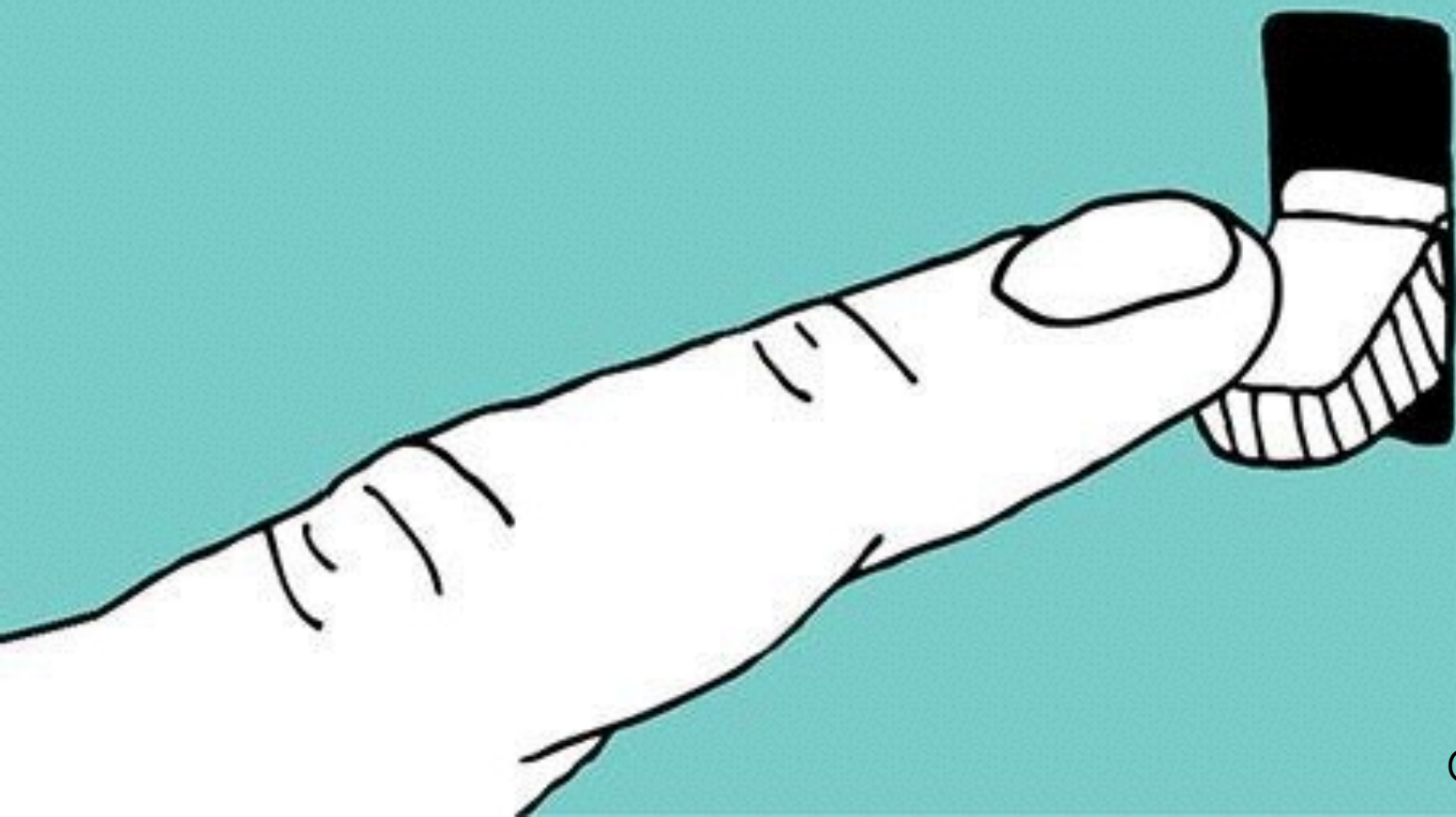
Die Umgebung erkunden
in der Nähe von



Problems



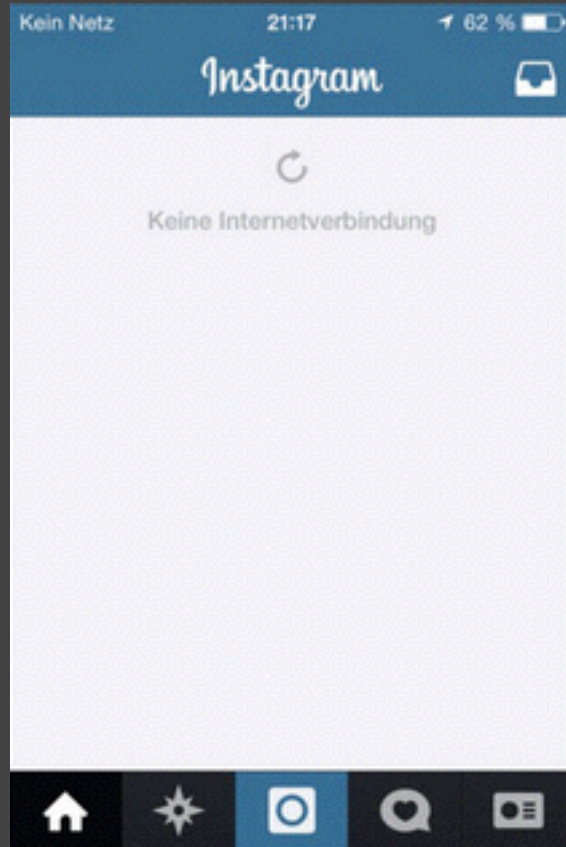




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offline > error handling

inform user



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build trust

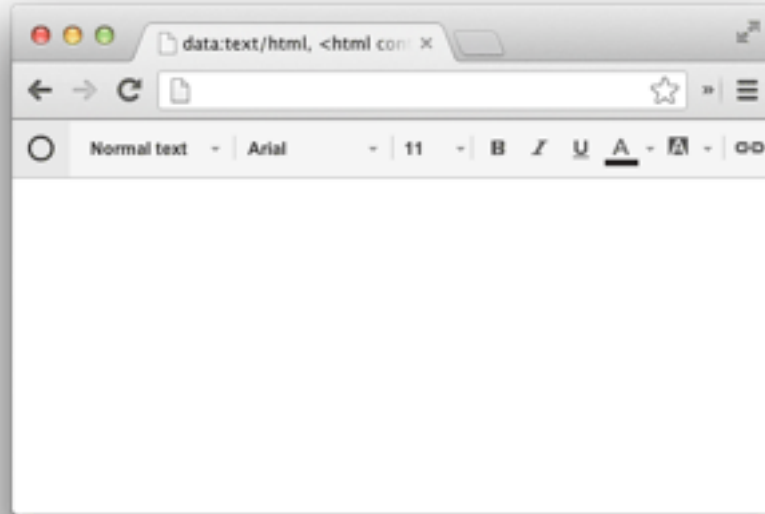
Unsaved

Save Cycle

Saved



<http://branch.com/b/redesigning-the-save-symbol-let-s-do-this>



<http://branch.com/b/redesigning-the-save-symbol-let-s-do-this>

organise data



Info and Settings



Enhancements



Audio



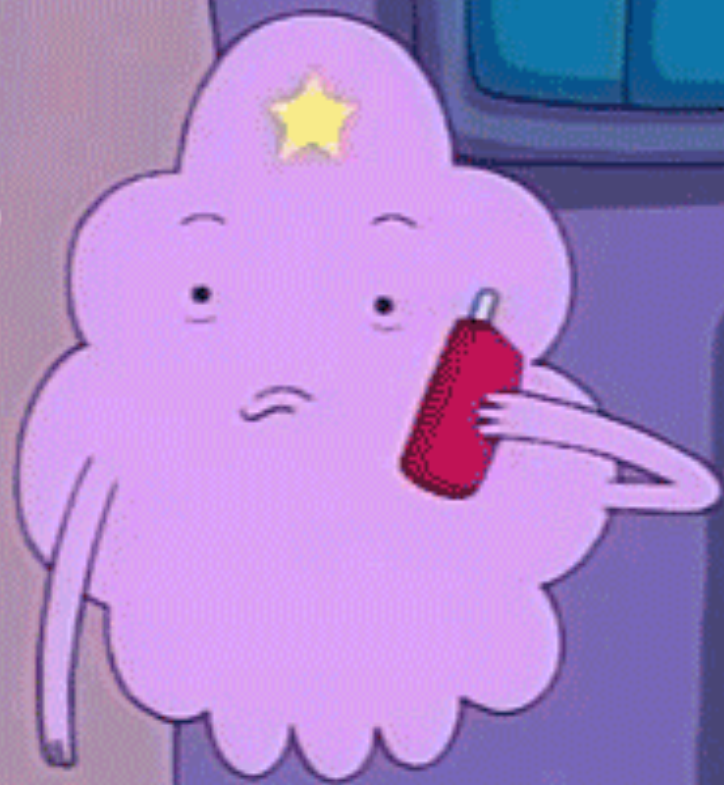
Annotations

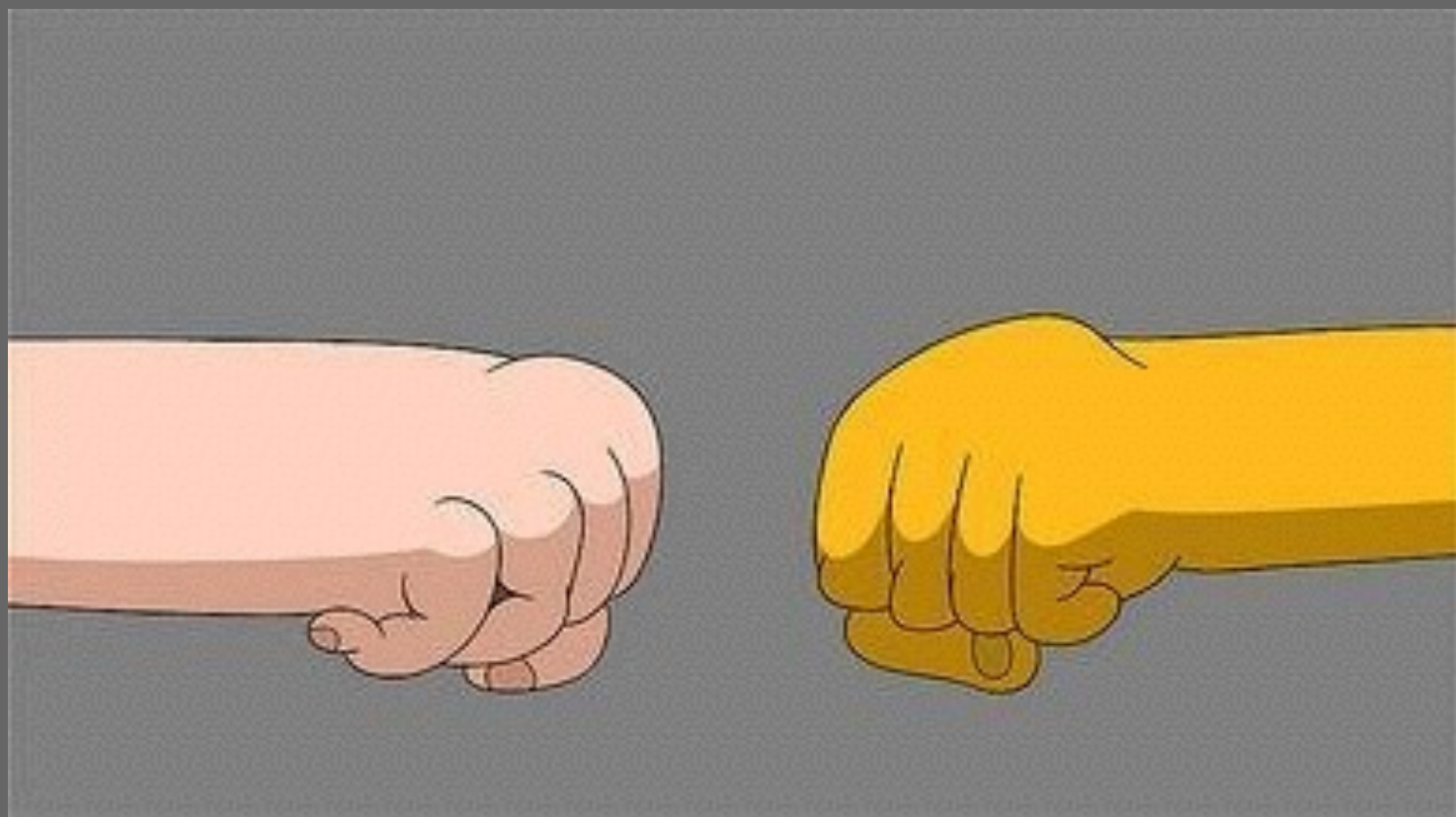
 Your settings could not be saved: Invalid request, authentication expired.

decide



OH GLOB.





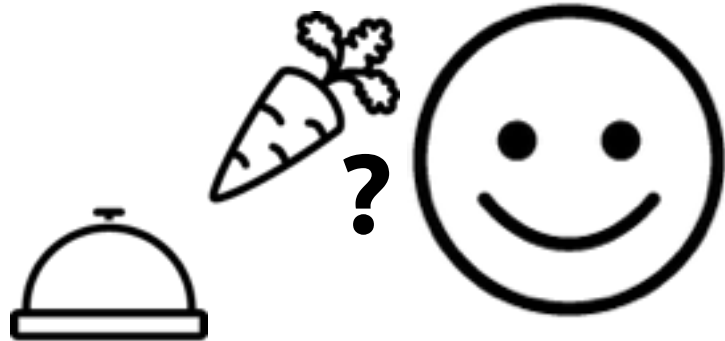
@misprintedtype

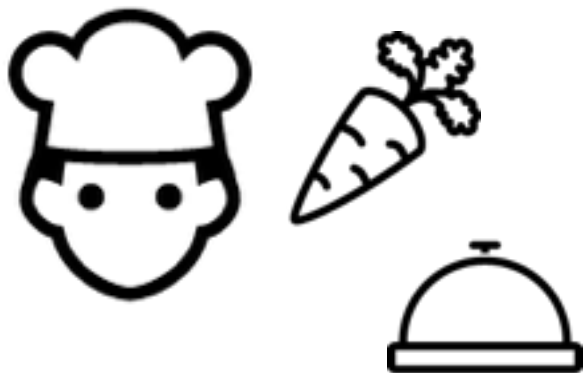


@misprintedtype





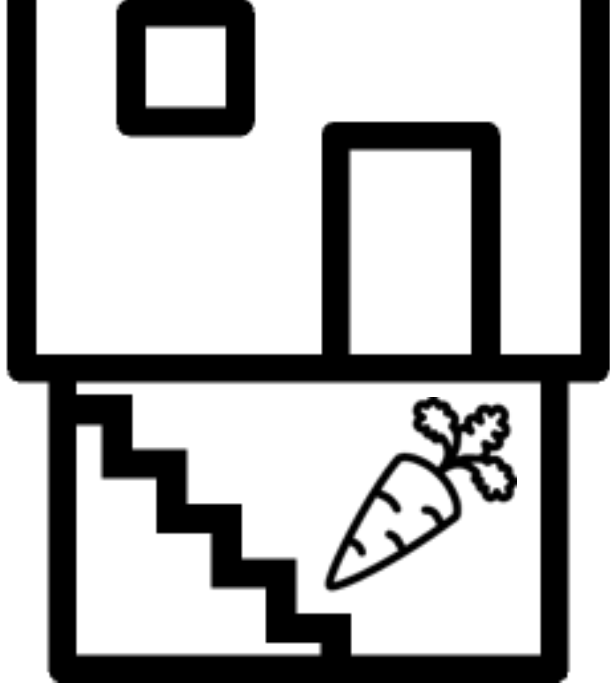


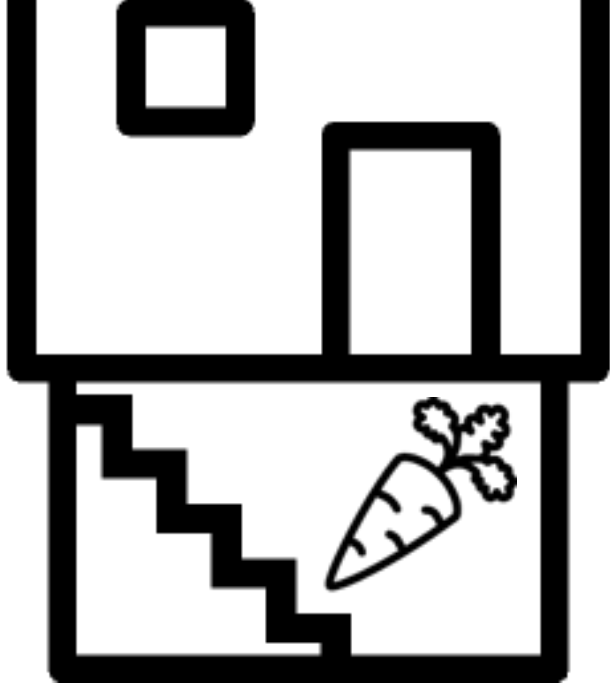






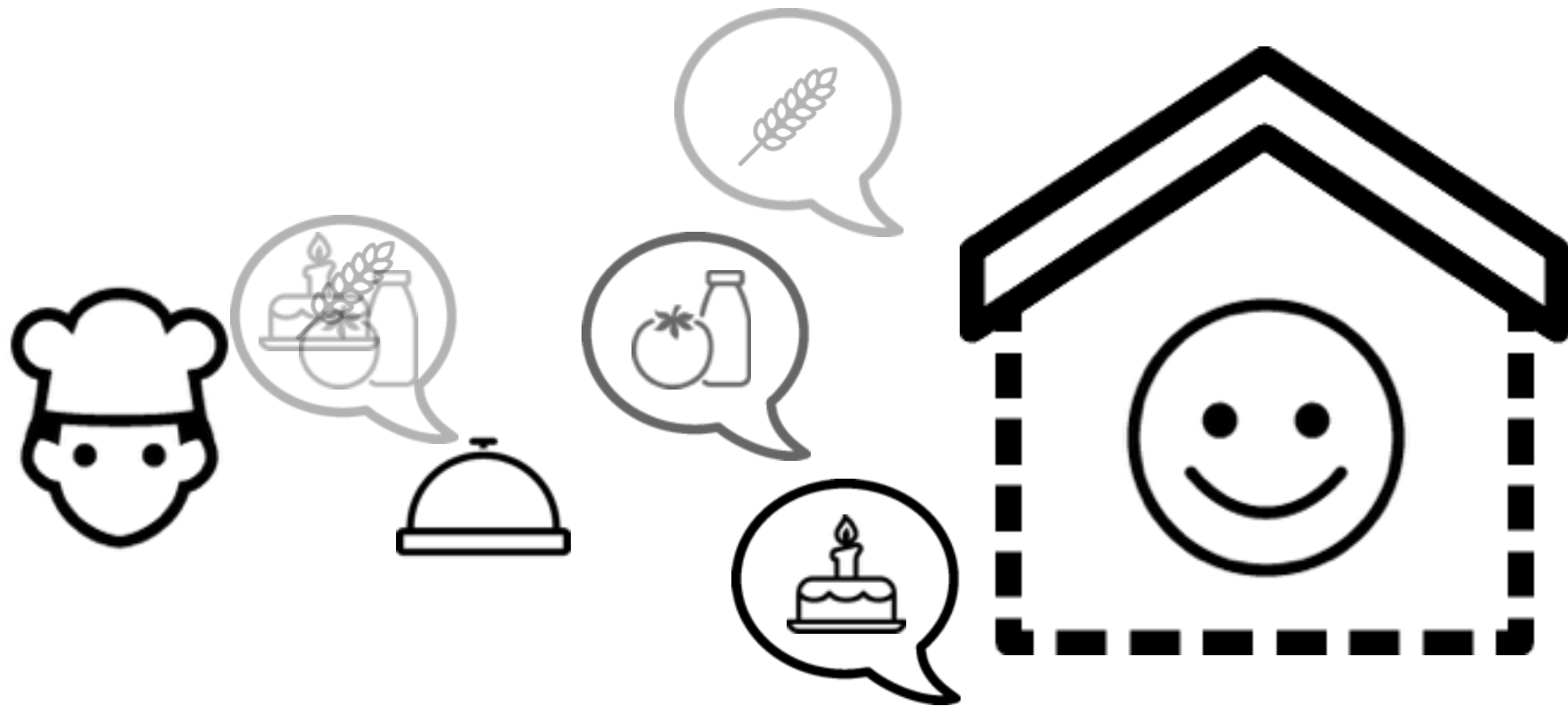




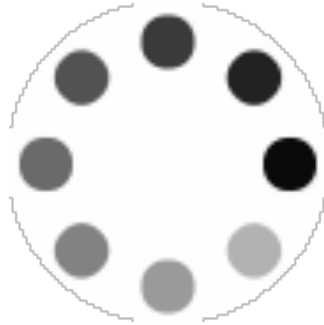














2

3

4

5

6

7

8

9

10

QUESTION 2

How satisfied were you with your ability to schedule an appointment in a timely manner?

Still there?

No

Please start a new survey.

Let's keep going.

Yes



Results for #hoodiehq

Save

Top / All



misprintedtype @misprintedtype · May 2

"Being a committer does not mean you commit code, it means you are committed to the project." blog.hood.ie/2014/05/every-... #TGIF #hoodiehq

Expand

↩ Reply ★ Favorite ... More



Krasimir Tsonev and 9 others follow



admc @admc · 1 May 2013

I wish I had known about hood.ie about a month ago. Looks really awesome, been doing a lot of that myself. #hoodiehq

Expand

↩ Reply ↻ Retweet ★ Favorite ... More

New Approaches



Rethink!

(but how?)



http://hood.ie

INSTALLATION

Can be found [here](#).

TUTORIALS

Learn in [these tutorials](#) how to install Hoodie and get started.



Hoodie [enables you to express yourself through technology](#) by making web app development very fast, easy and accessible.

It's a complete backend for your apps: develop your frontend code, plug it into our API and your app is ready.

DOCUMENTATION

[Hoodie's Documentation](#)

FAQ

For any questions you may have, check out [our FAQ](#).

A HOODIE FOR YOU

Currently, Hoodie is mainly for frontend developers who want to [build](#)



FRONTEND

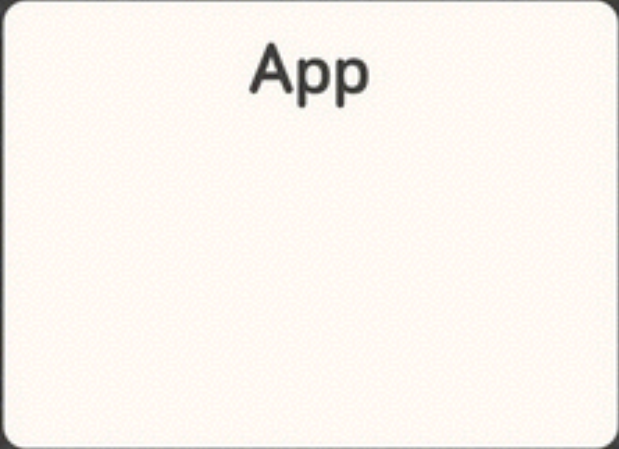
Hoodie Sync

BACKEND

FRONTEND

Hoodie Sync

BACKEND



App

FRONTEND

Hoodie Sync

BACKEND

App



hoodie.store

FRONTEND

Hoodie Sync

BACKEND

App

hoodie.store

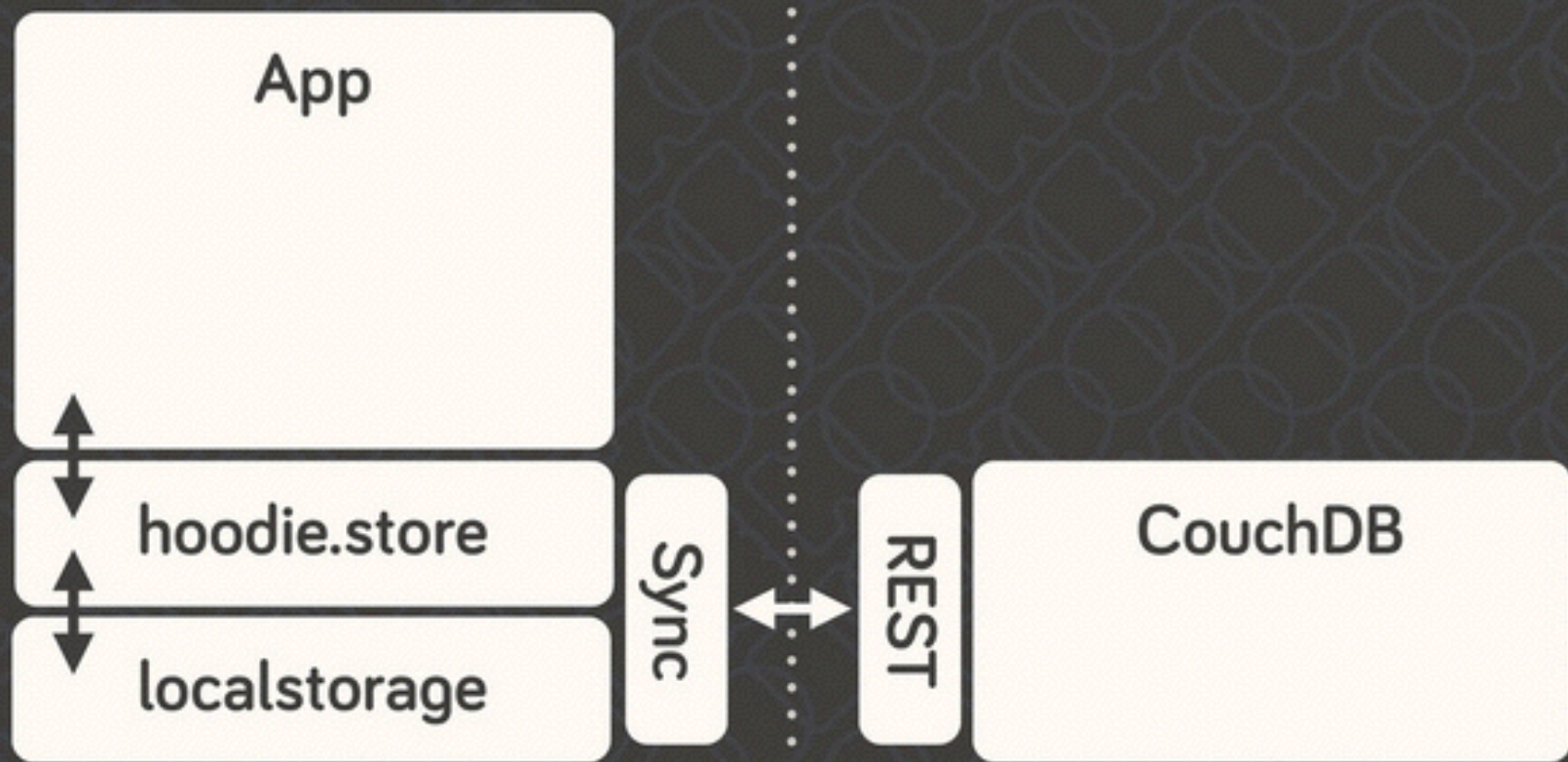
localStorage



FRONTEND

Hoodie Sync

BACKEND



FRONTEND

Hoodie Sync

BACKEND

App

Plugins
(node.js)

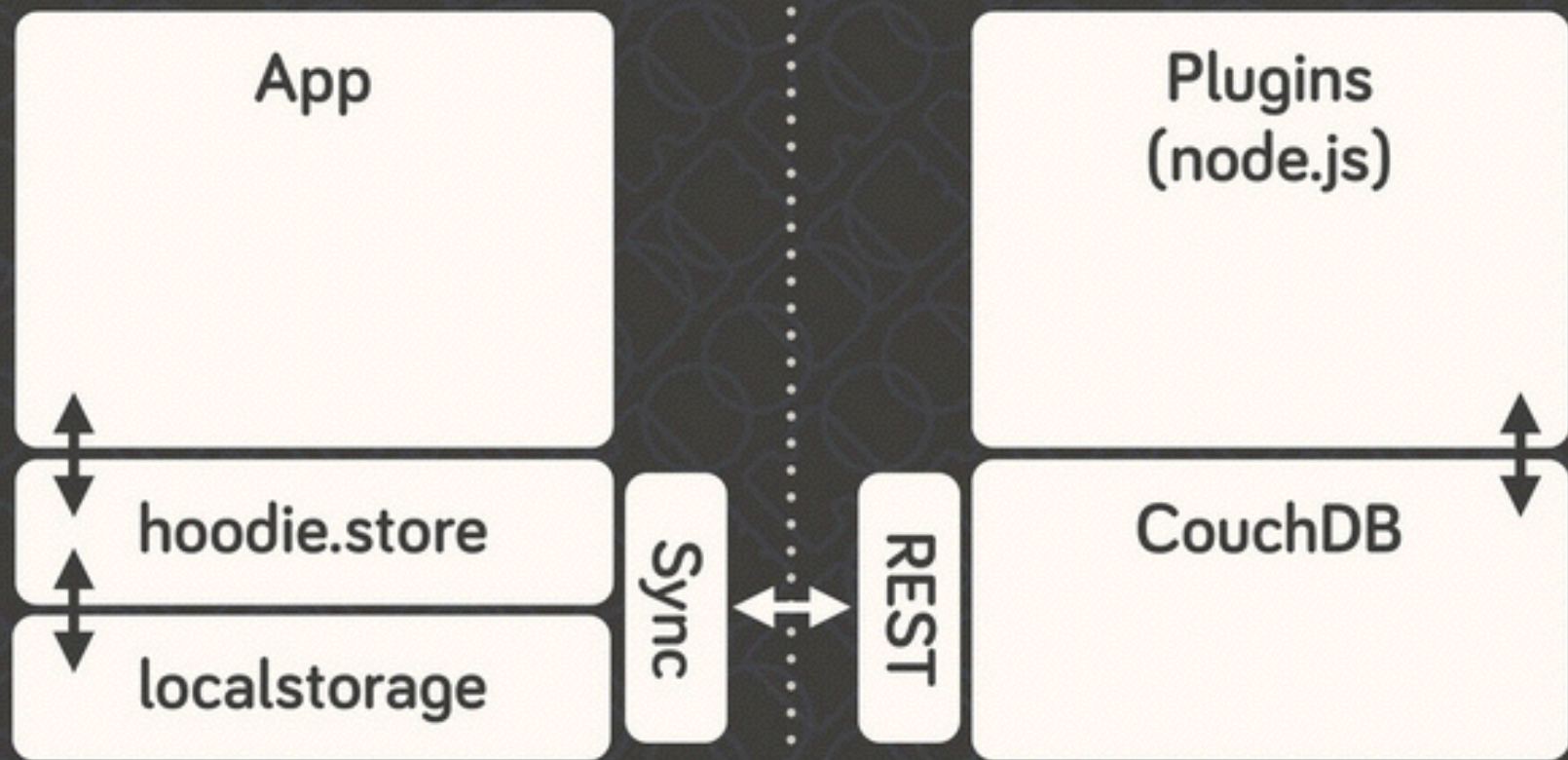
hoodie.store

localStorage

Sync

REST

CouchDB



Implementation





files



data





files



data



Manifest

App Cache is a douchebag!

<http://alistapart.com/article/application-cache-is-a-douchebag>

App Manifest

1. Files always come from the cache
(also if you are online!)

App Manifest

2. App Cache only updates if manifest changed

App Manifest

3. App Cache is an additional cache

App Manifest

4. Non-cached resources will not load

App Cache nanny

<https://www.npmjs.org/package/appcache-nanny>

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Work it!

Web what?!

web worker

- HTML5 feature
- runs JS in browser

Web Workers - LS

Global 87.56%

Germany 93.57%

Method of running scripts in the background, isolated from the web page

Current aligned

Usage relative

Show all

IE	Firefox	Chrome	Safari	Opera	iOS Safari *	Opera Mini *	Android Browser *	Chrome for Android
		31						
		36						
		37						
8	31	38					4.1	
9	35	39	7				4.3	
10	36	40	7.1		7.1		4.4	
11	37	41	8	27	8.1	8	40	41
TP	38	42		28				
	39	43		29				
	40	44						

UI Events



large API data



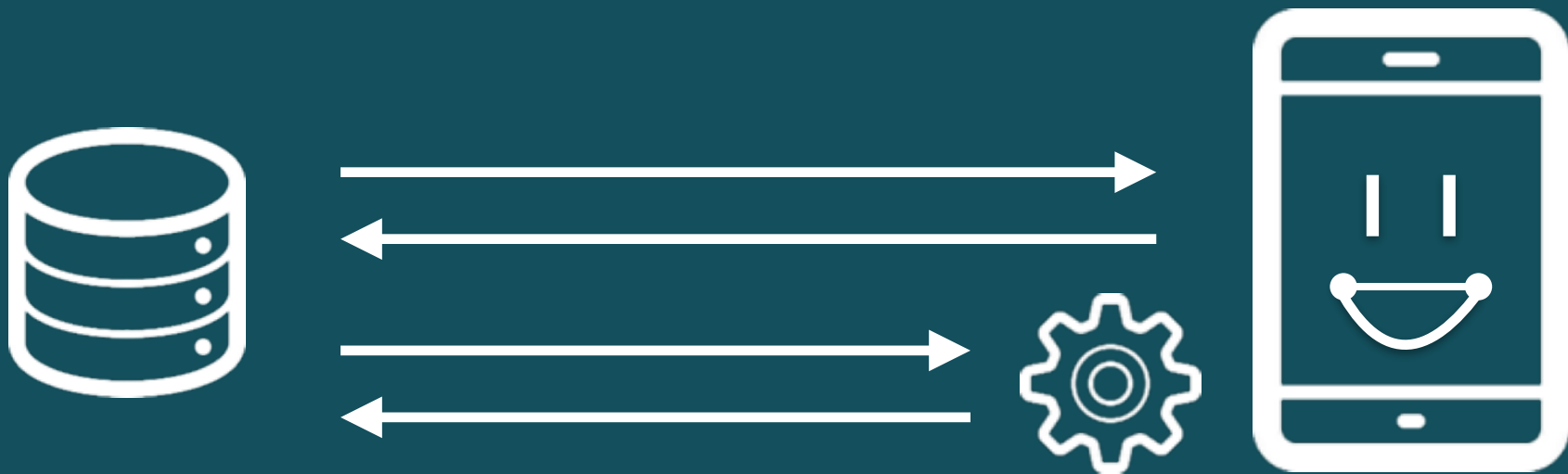
DOM



async !== concurrency











Encoding & decoding large strings



Complex mathematical **calculations**



Prefetching & caching data





Network requests



Manipulation on **localStorage**



Image manipulation





real-time text analysis



processing **video** or **audio** data



Polling web services

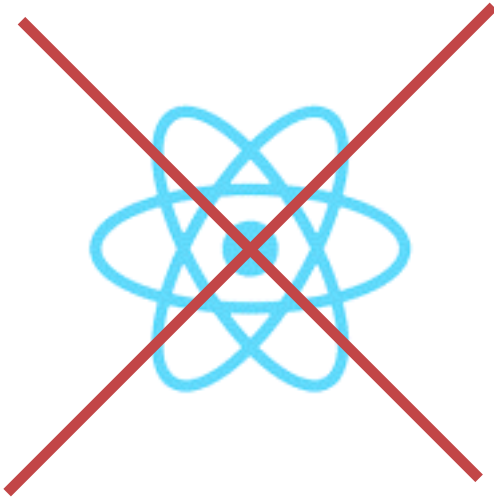
```
// worker.js - no access

// window
window.alert(`Work it!`);

// document
document.getElementById(`danceParty`);

// parent
window.globalFunction();
```

no libs depending on these objects,
for example





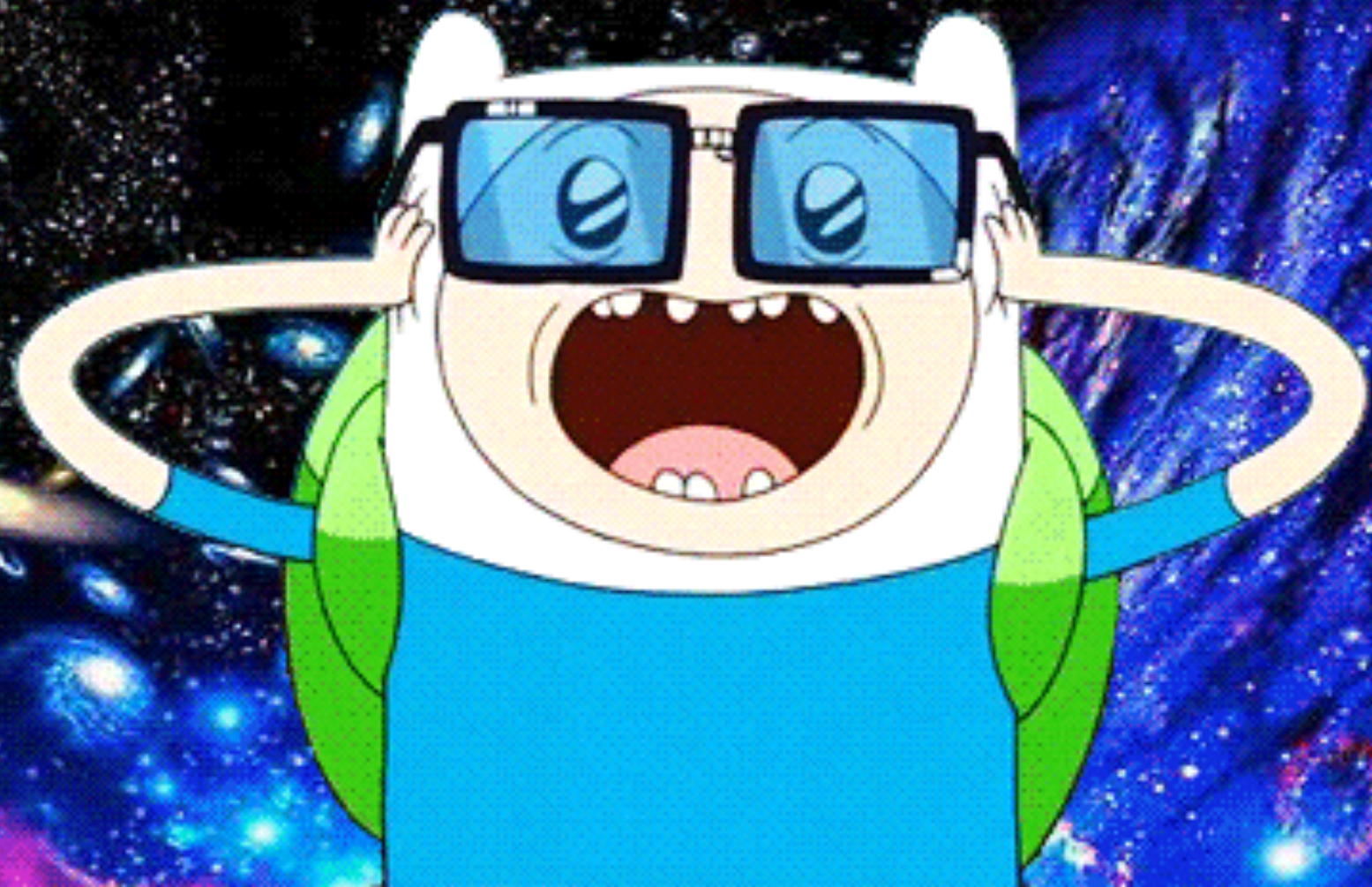
```
// worker.js
```

```
// navigator  
navigator.onLine;
```

```
// location  
location.href;
```

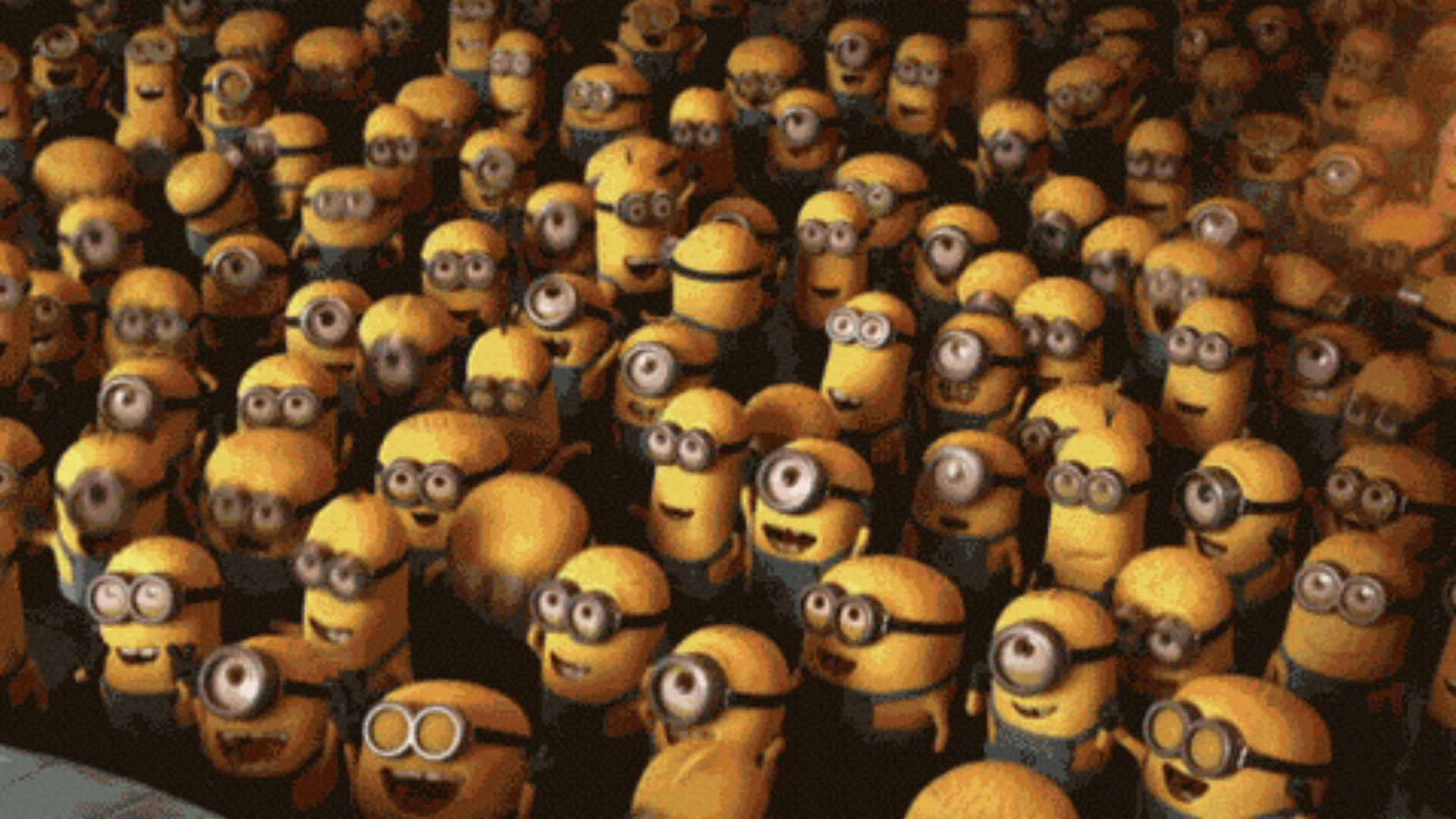
```
// xhr  
xmlhttp.send();
```

```
// worker.js  
  
// appCache  
applicationCache.status;  
  
// import  
import `worker-script`;
```



Web workers

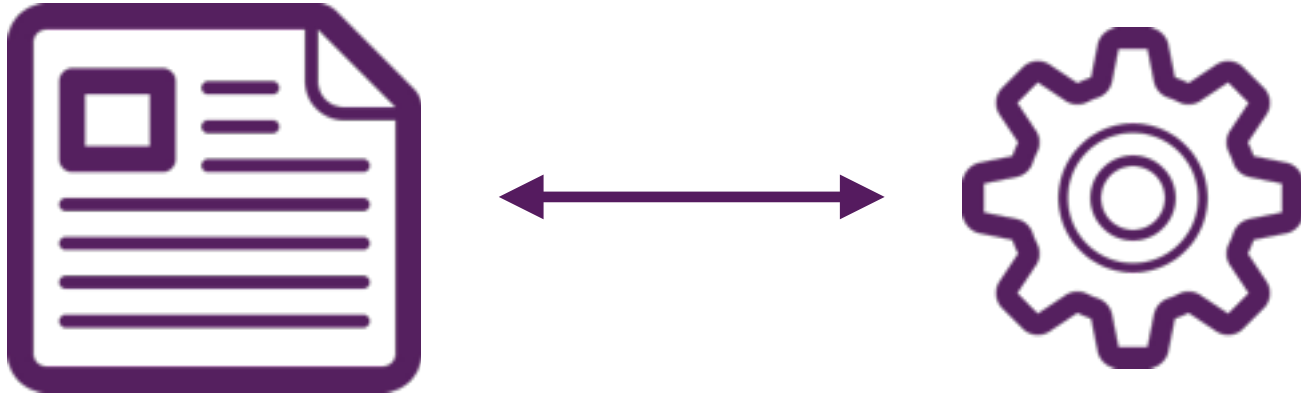
- amazing litte helpers



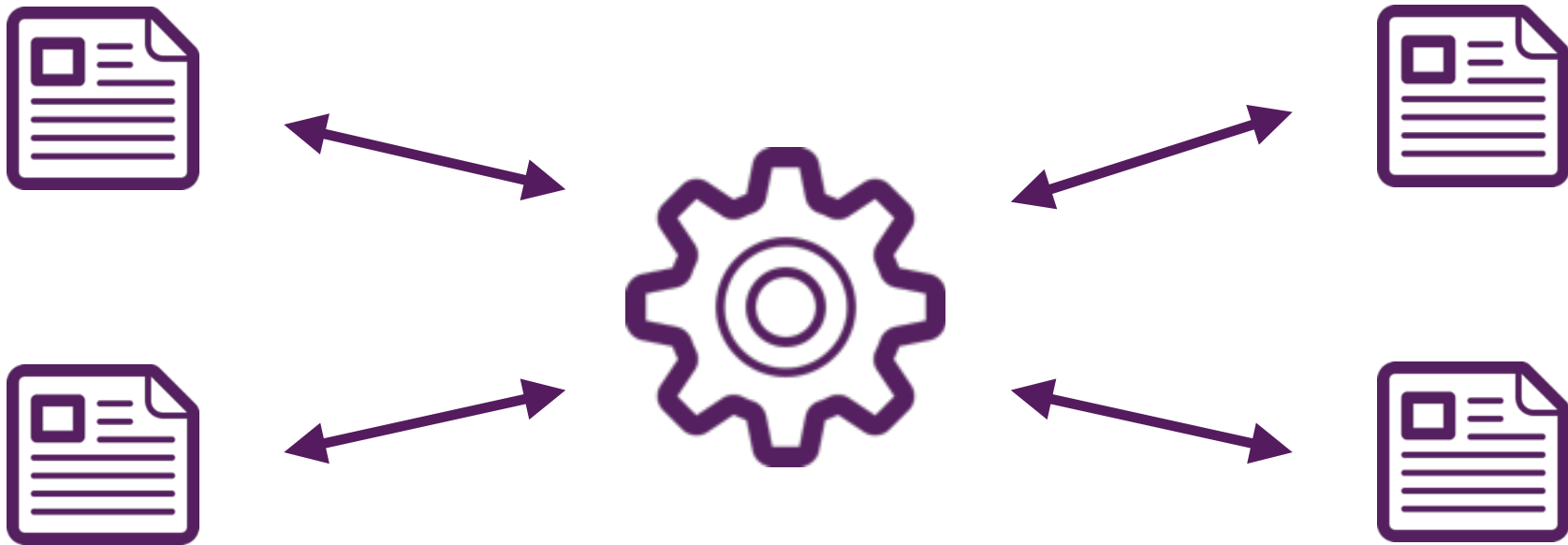
2 types of workers

- dedicated workers
- shared workers

dedicated worker



shared worker



```
// available?
```

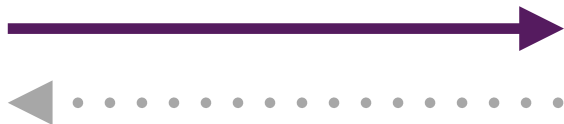
```
function areWorkersAvailable() {  
    return !!window.Worker;  
}
```

```
// run worker run!
```

```
// app.js
```

```
var worker = new Worker(`task.js`);
```





?



demo

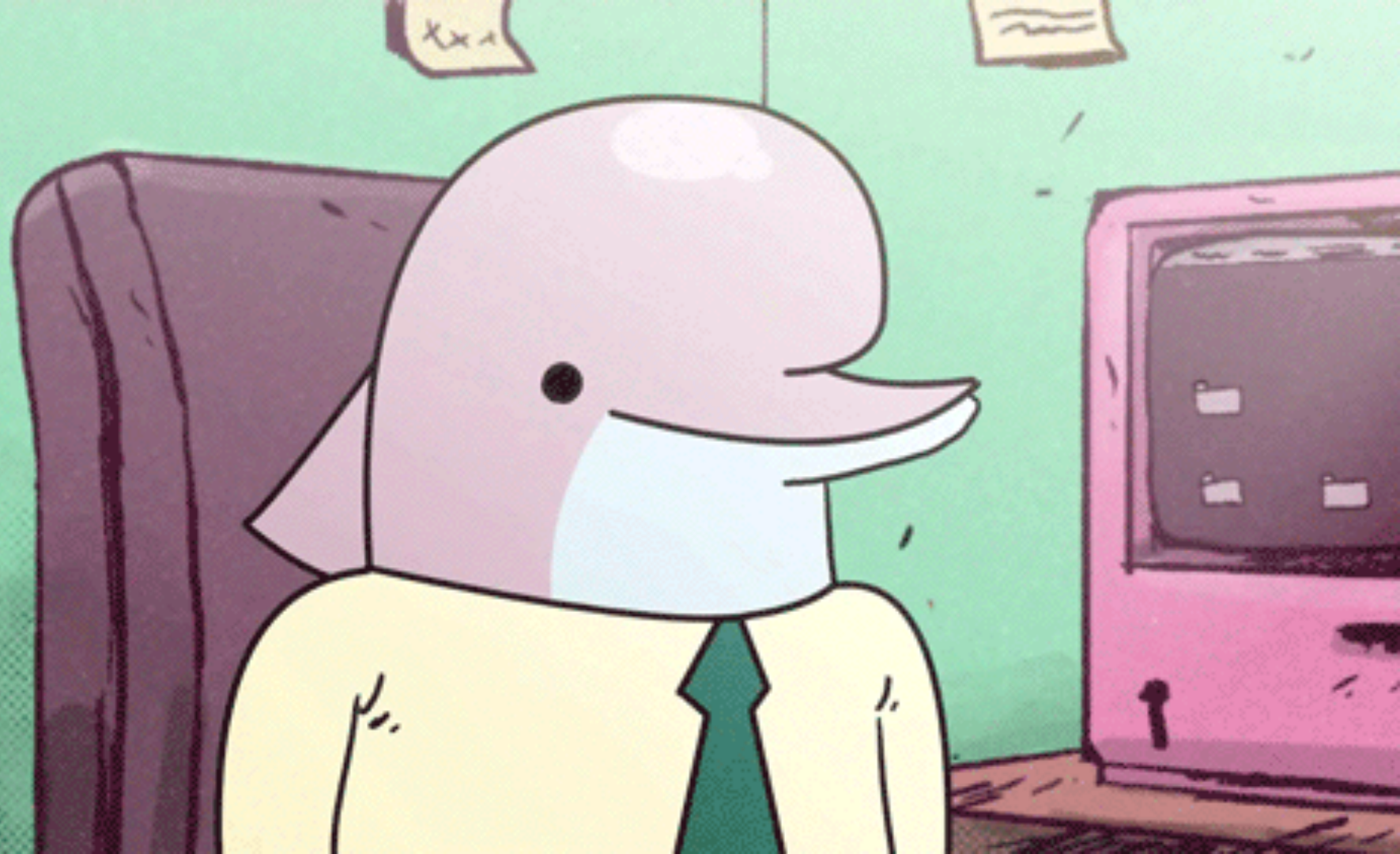
// map.js

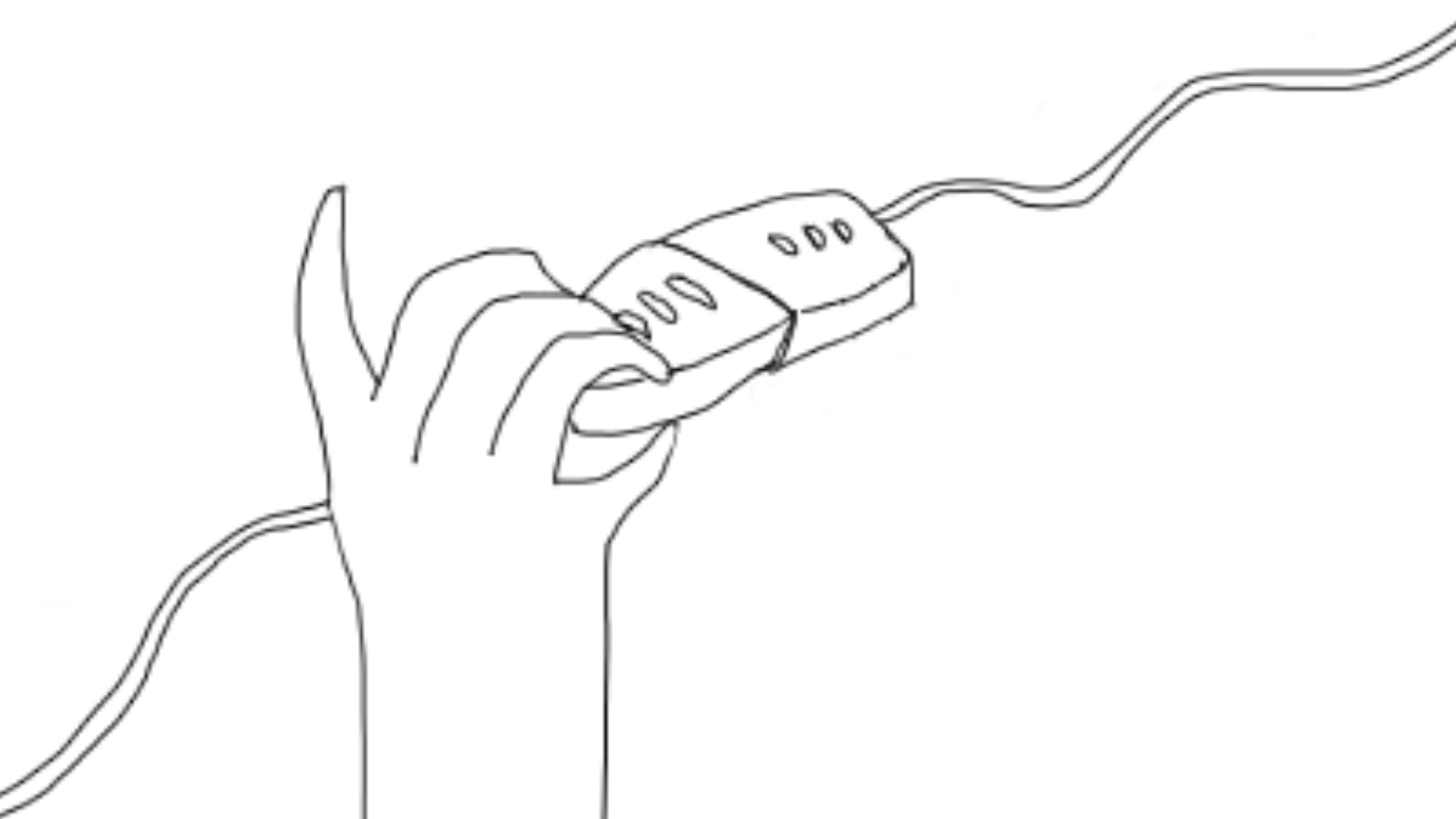
<http://slides.html5rocks.com/#web-workers>

more demos

// examples.js

<http://greenido.github.io/Web-Workers-Examples/>







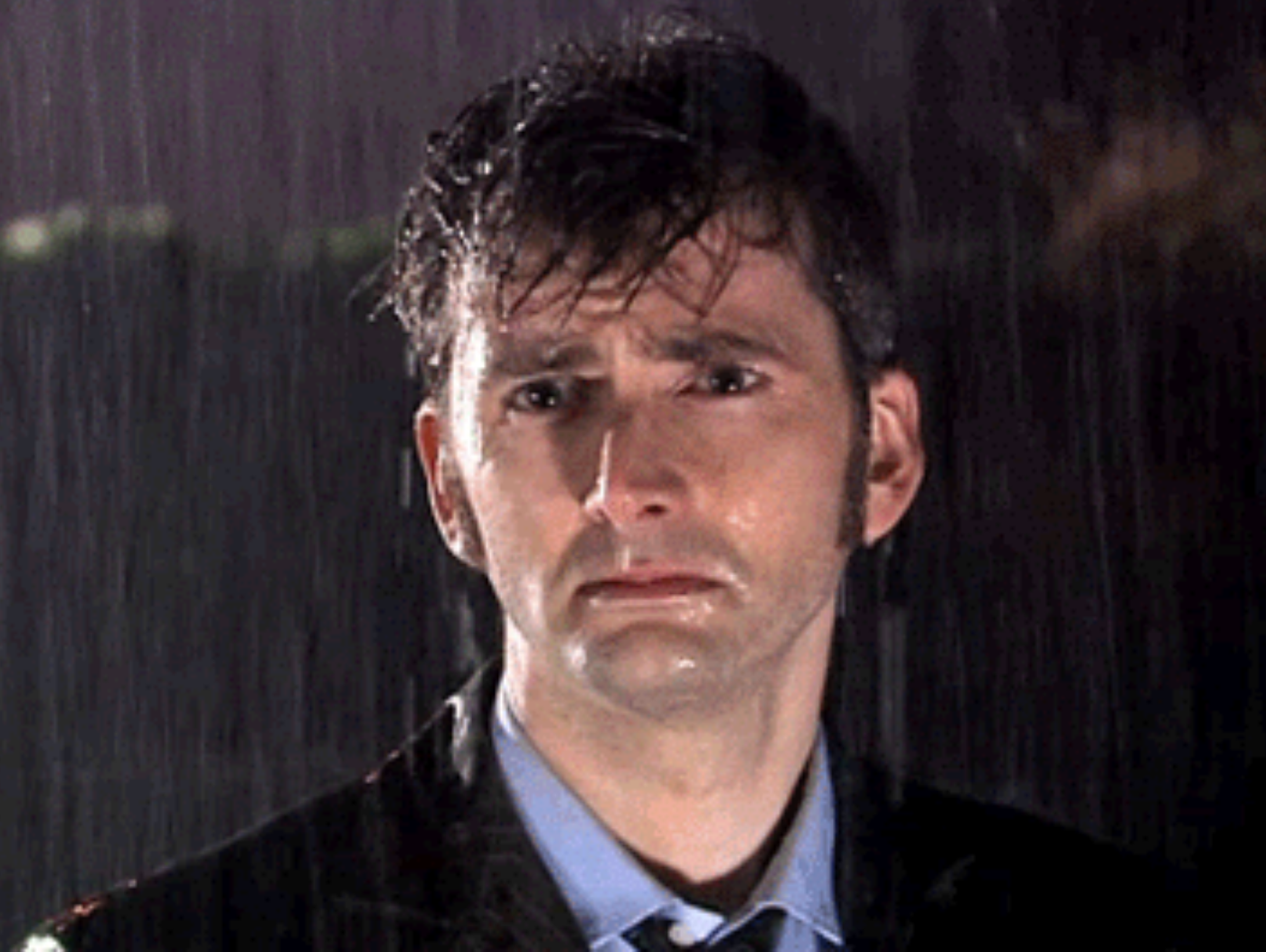
Jake Archibald

@jaffathecake



Following

"Offline-first" means getting on-screen without a network request. The more that's there before the network, the more offline-first it is.





SPWA

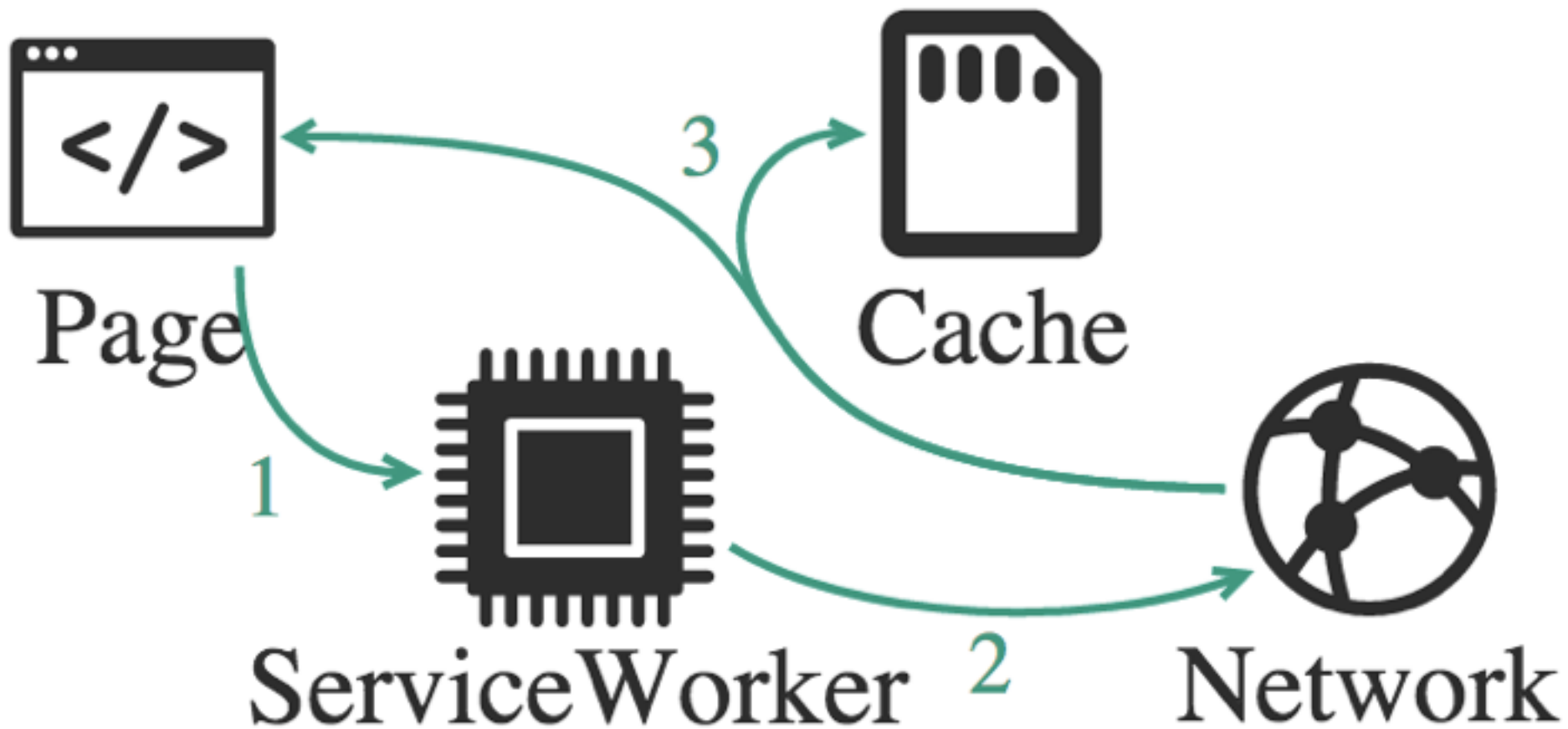


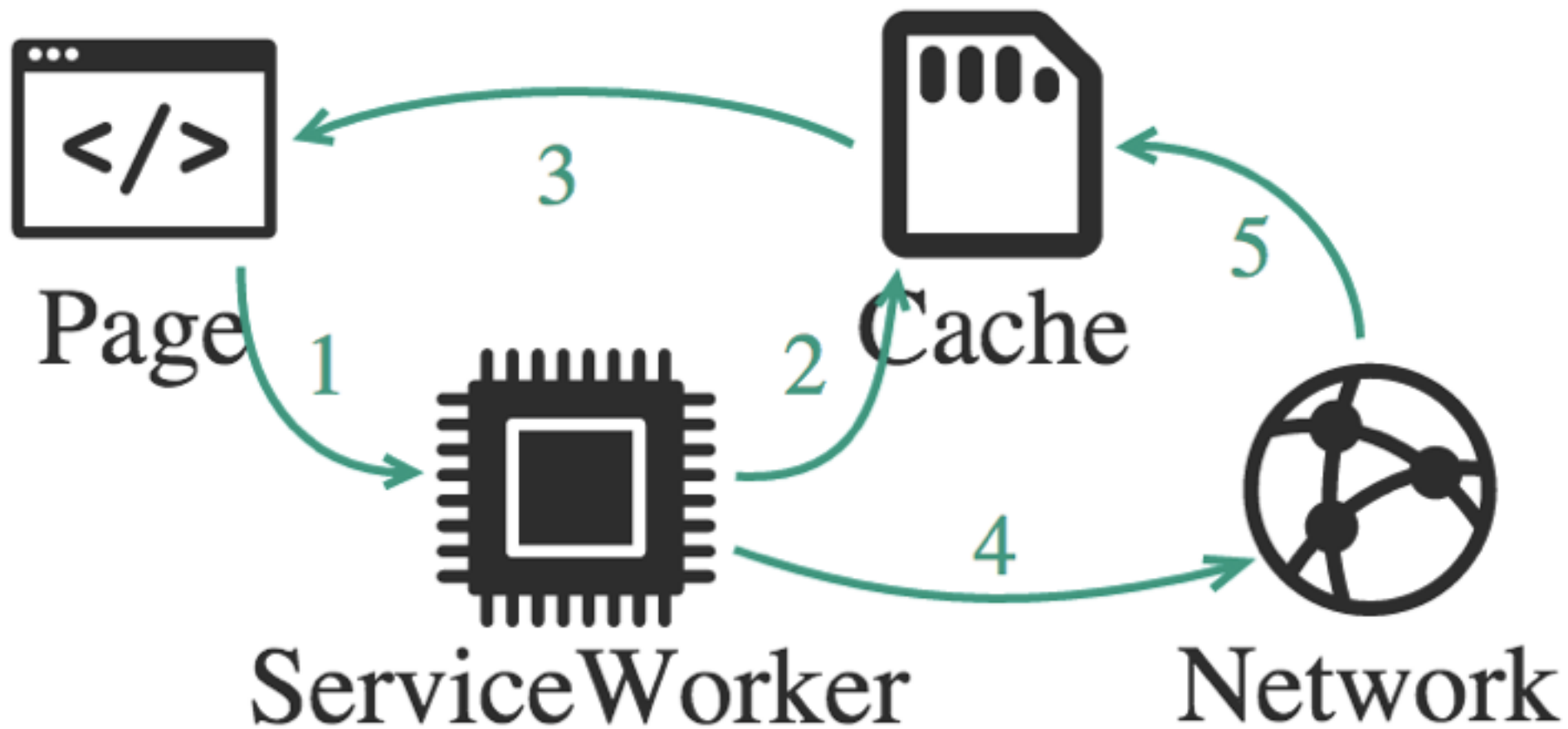
MPS

Service Worker

Service Worker

Why?







Service Worker

shut down at end of events

Service Worker



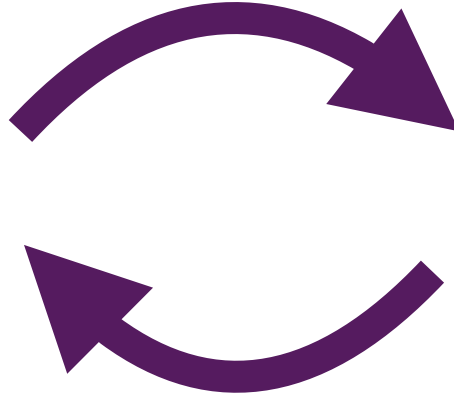
scriptable caches

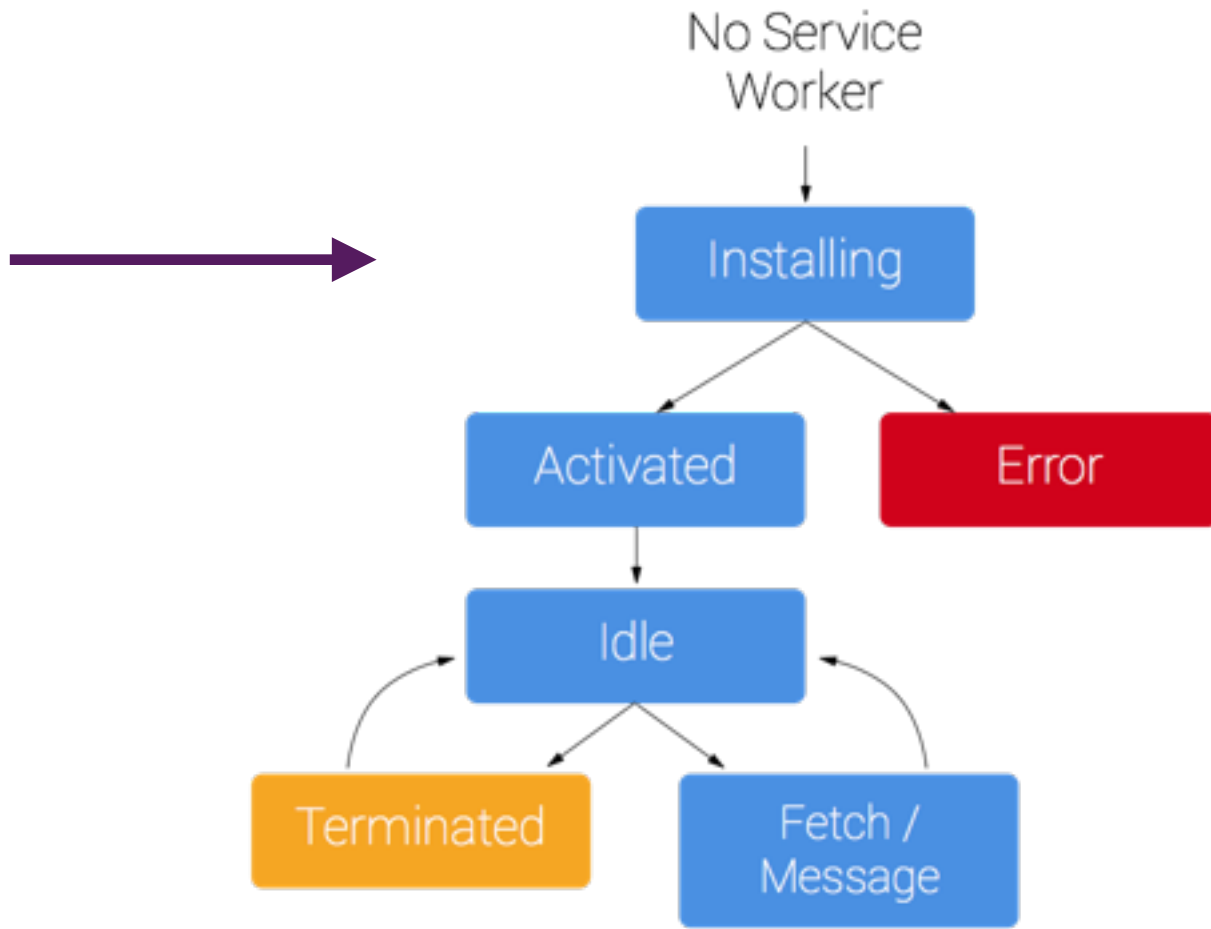
Service Worker

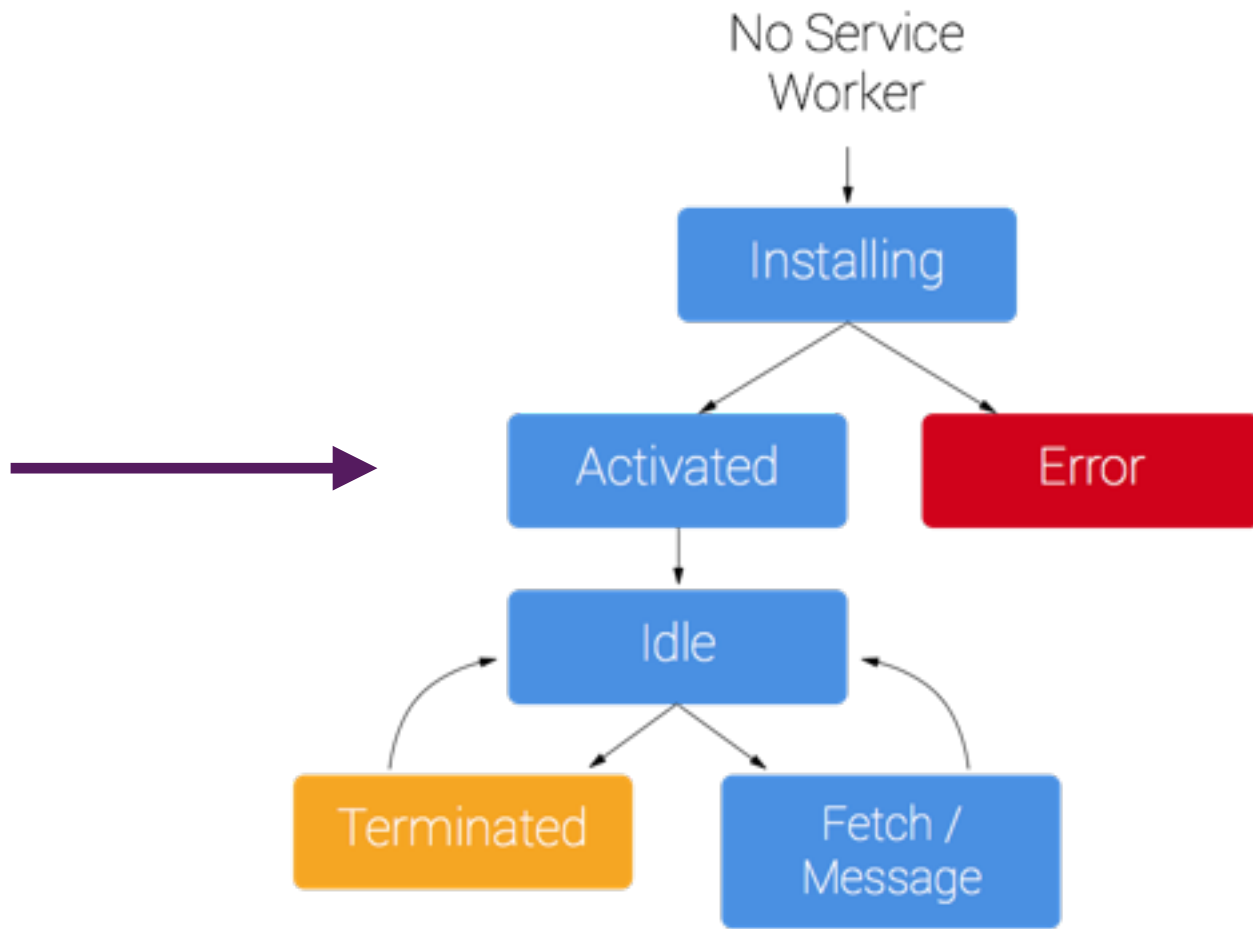


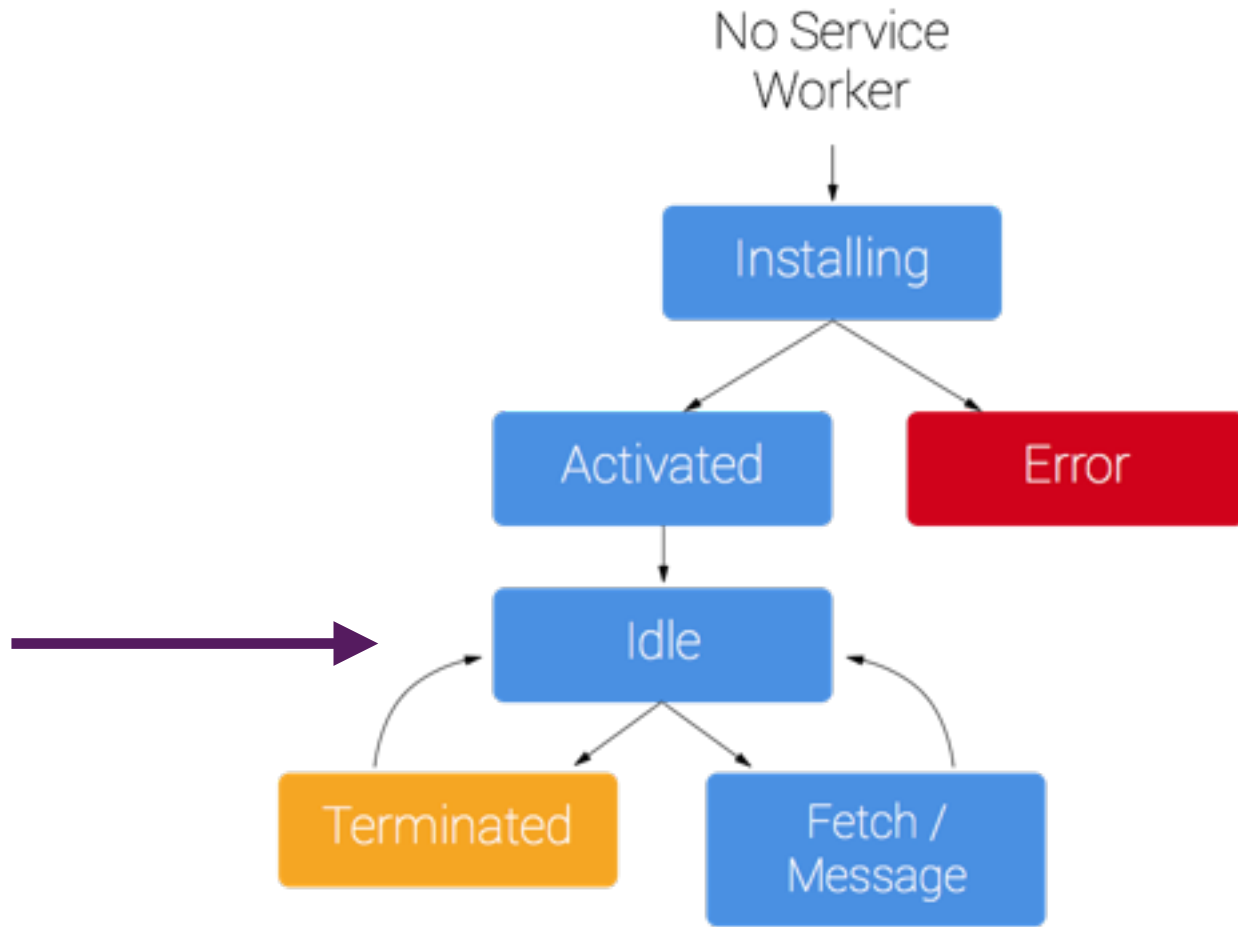
promises

SW lifecycle









is SERVICEWORKER ready?

Status * Spec * Intro * Resources * GitHub

ServiceWorker enthusiasm

The first thing any implementation needs.



Safari: Brief positive signals in five year plan.

Edge: Under consideration, but positive signals.

<https://jakearchibald.github.io/isserviceworkerready/>

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Service Worker

<https://github.com/slightlyoff/ServiceWorker>

<https://jakearchibald.github.io/isserviceworkerready/>

https://www.youtube.com/watch?v=SmZ9XcTpMS4&list=PL37ZVnwpeshGPw2RfUGNQbPsU_WGpi05J

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offline cookbook

<http://jakearchibald.com/2014/offline-cookbook/>



files



data





files



data

Do not harm humans!

(first law of robotics)

Do not lose data!

(first law of offline first)



PouchDB + CouchDB = <3

Apache CouchDB

couchdb.apache.org

About



Apache
CouchDB
relax



Apache CouchDB™ is a database
that uses **JSON** for documents,
JavaScript for **MapReduce** indexes,
and regular **HTTP** for its **API**

DOWNLOAD
Version 1.5.1





A Database for the Web



The Database that Syncs!

PouchDB is an open-source JavaScript database inspired by **Apache CouchDB** that is designed to run well within the browser.

PouchDB was created to help web developers build applications that work as well offline as they do online.

It enables applications to store data locally while offline, then synchronize it with CouchDB and compatible servers when the application is back online, keeping the user's data in sync no matter where they next login.

[Learn more](#)

```
var db = new PouchDB('dbname');

db.put({
  _id: 'dave@gmail.com',
  name: 'David',
  age: 67
});

db.changes({
  onChange: function() {
    console.log('Ch-Ch-Changes');
  }
});

db.replicate.to('http://example.com/mydb');
```

CouchDB



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Stephans data
(share with Hannes)

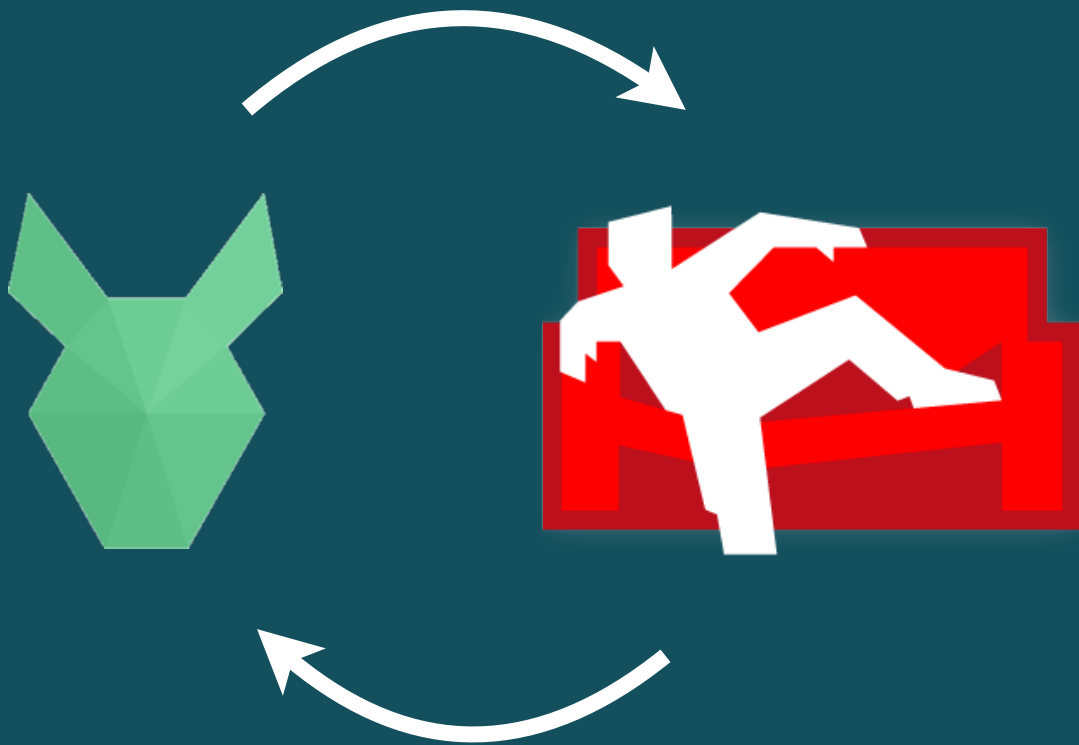


Stephans partial data
(replicated)



Hannes data





PouchDB



browser	storage	limitation	confirm
Firefox	IndexedDB	unlimited	y
Chrome / Opera / Android 4.4+	IndexedDB	% of storage	y
IE 10+	SQLite	250MB	n
Mobile Safari	WebSQL	50MB	n
Safari	WebSQL	5MB -> 500MB	y
Android 4.3 and lower	IndexedDB	200MB	n



Trust pound!

hoodie <3 *you*

@misprintedtype / @hoodiehq