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!

@misprintedtype
We grew up.
Internet usage - Mobiles VS. Ordinateurs

The projection of global internet users conducted by Morgan Stanley Research: Mobiles VS. Computers from 2007 to 2015.
Mobile web traffic stands at 7.96% in the USA, that number is much larger in places like Africa and Asia.

- USA: 7.96%
- Africa: 14.85%
- Asia: 17.84%

These numbers are up 192.5% since 2010.

Mobile-only web users:
- Egypt: 70%
- India: 59%
- S. Africa: 57%
- USA: 25%

Amount of mobile-only web users is out of reach.
Tell me...
WHY YOU NO ONLINE
Cannot Connect to Server

Ugh! Not this screen again.
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

minutes.io
Problems
offline > error handling
inform user
Keine Internetverbindung
build trust
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
Your settings could not be saved: Invalid request, authentication expired.
decide
OH GLOB.
How satisfied were you with your ability to schedule an appointment in a timely manner?

Still there?

No

Please start a new survey.

Yes

Let’s keep going.
mispredtype @mispredtype · 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

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
New Approaches
Rethink!
(but how?)
http://hood.ie
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
3. App Cache is an additional cache
4. Non-cached resources will not load
App Cache nanny

https://www.npmjs.org/package/appcache-nanny
Work it!
Web what?!
web worker

- HTML5 feature
- runs JS in browser
Web Workers

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

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Global: 87.56%
Germany: 93.57%
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 little helpers
2 types of workers

- dedicated workers
- shared workers
dedicated worker
shared worker
// available?

function areWorkersAvailable() {
    return !!window.Worker;
}
var worker = new Worker('task.js');
// map.js
http://slides.html5rocks.com/#web-workers
more demos

// examples.js
http://greenido.github.io/Web-Workers-Examples-/

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

Why?
WELCOME BACK!
Service Worker

shut down at end of events
Service Worker
scriptable caches
Service Worker

promises
SW lifecycle
No Service Worker

Installing

Activated

Error

Idle

Terminated

Fetch / Message

Service Worker

https://github.com/slightlyoff/ServiceWorker
https://jakearchibald.github.io/isserviceworkerready/

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

@misprintedtype
offline cookbook

http://jakearchibald.com/2014/offline-cookbook/
Do not harm humans!

(first law of robotics)
Do not lose data!

(first law of offline first)
PouchDB + CouchDB = <3
Apache CouchDB™ is a database that uses JSON for documents, JavaScript for MapReduce indexes, and regular HTTP for its API.

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
CouchDB
Stephans data
(share with Hannes)

Stephans partial data
(replicated)

Hannes data
PouchDB
<table>
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<tr>
<th>browser</th>
<th>storage</th>
<th>limitation</th>
<th>confirm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firefox</td>
<td>IndexedDB</td>
<td>unlimited</td>
<td>y</td>
</tr>
<tr>
<td>Chrome / Opera /</td>
<td>IndexedDB</td>
<td>% of storage</td>
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<td>SQLite</td>
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<td>WebSQL</td>
<td>50MB</td>
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<td>Safari</td>
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<td>Android 4.3 and lower</td>
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<td>200MB</td>
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Trust pound!
hoodie <3 you

@misprintedtype / @hoodiehq