



HTML
WORLD STANDARD

Loveliness!

- More performant
- More accessible
- More robust
- Less code to write
- Less code to test
- **More time in the pub**

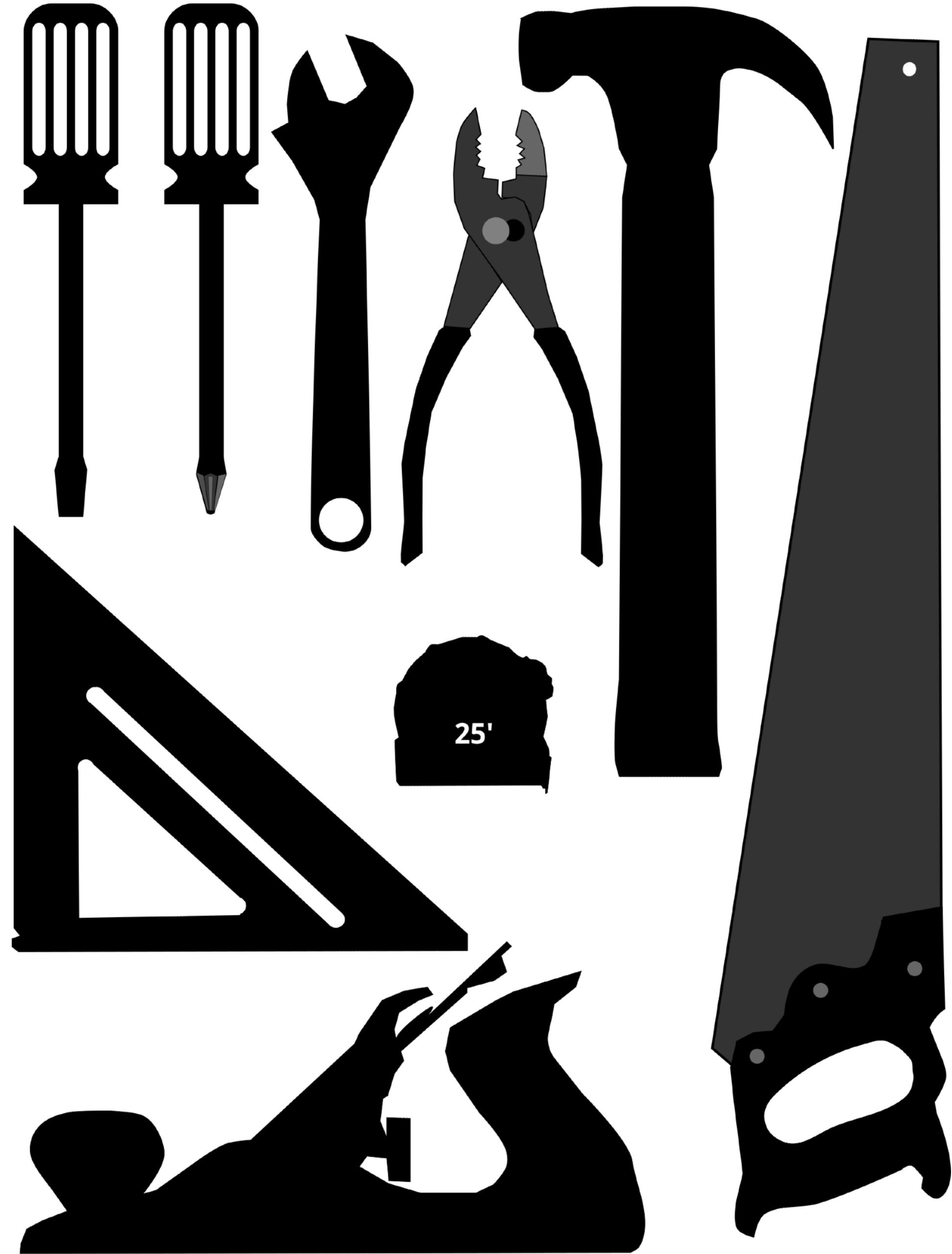
TL; DR

- Use HTML properly
- Write more HTML
- Write less JavaScript
- **Built-in beats Bolt-on. Bigly.**

REACT.

RYN

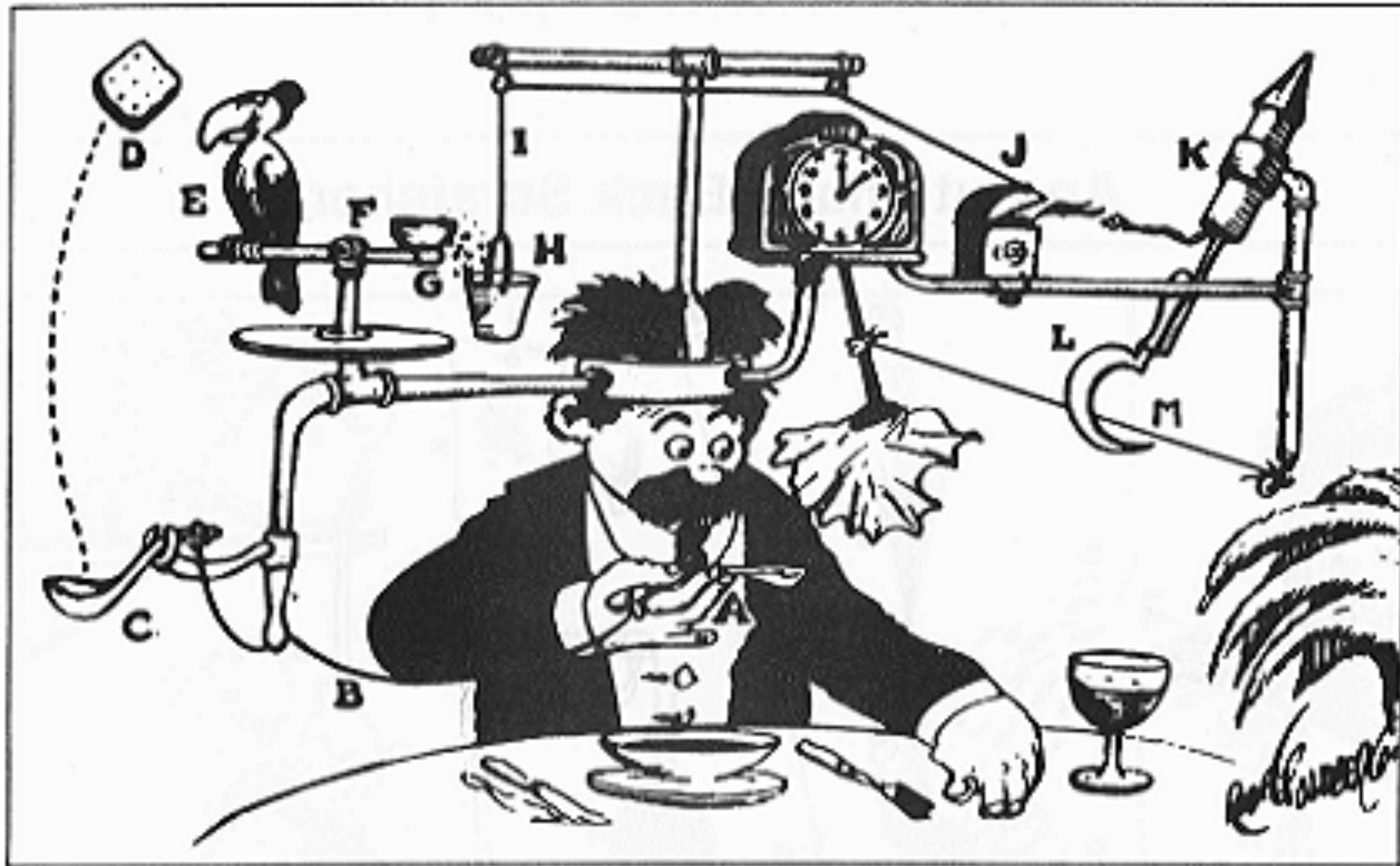




Reactangularbonestraphubpack.js



Self-Operating Napkin



A close-up portrait of Tim Berners-Lee, a middle-aged man with light brown hair, looking directly at the camera with a neutral expression. He is wearing a dark blue or black collared shirt. The background is a plain, light-colored wall.

Tim Berners-Lee
Web Developer



Tim Berners-Lee ✓

@timberners_lee

Following



This is for everyone #london2012 #oneweb
#openingceremony @webfoundation @w3c

10:08 PM - 27 Jul 2012

World Wide Web

The WorldWideWeb (W3) is a wide-area [hypermedia](#) information retrieval initiative aiming to give universal access to a large universe of documents.

Everything there is online about W3 is linked directly or indirectly to this document, including an [executive summary](#) of the project, [Mailing lists](#) , [Policy](#) , November's [W3 news](#) , [Frequently Asked Questions](#) .

[What's out there?](#)

Pointers to the world's online information, [subjects](#) , [W3 servers](#), etc.

[Help](#)

on the browser you are using

[Software Products](#)

A list of W3 project components and their current state. (e.g. [Line Mode](#) ,X11 [Viola](#) , [NeXTStep](#) , [Servers](#) , [Tools](#) , [Mail robot](#) , [Library](#))

[Technical](#)

Details of protocols, formats, program internals etc

[Bibliography](#)

Paper documentation on W3 and references.

[People](#)

A list of some people involved in the project.

[History](#)

A summary of the history of the project.

[How can I help ?](#)

If you would like to support the web..

[Getting code](#)

Getting the code by [anonymous FTP](#) , etc.

<http://info.cern.ch/hypertext/WWW/TheProject.html>



We broke it

- fixed width
- bad contrast, fonts, colours
- pixel-perfect layout
- lack of captions for videos
- lack of keyboard accessibility
- removing focus indicator

The Raw Materials





HTML is declarative

```
<button type="button">Click Me!</button>
```


HTML is fault-tolerant

`<blink>OMG you're having a seizure</blink>`

so is backwards compatible

```
<video src="video.mp4">
```

```
<p>Can't play it.
```

```
<a href="video.mp4">Download it</a>.</p>
```

```
</video>
```


Paving a cowpath

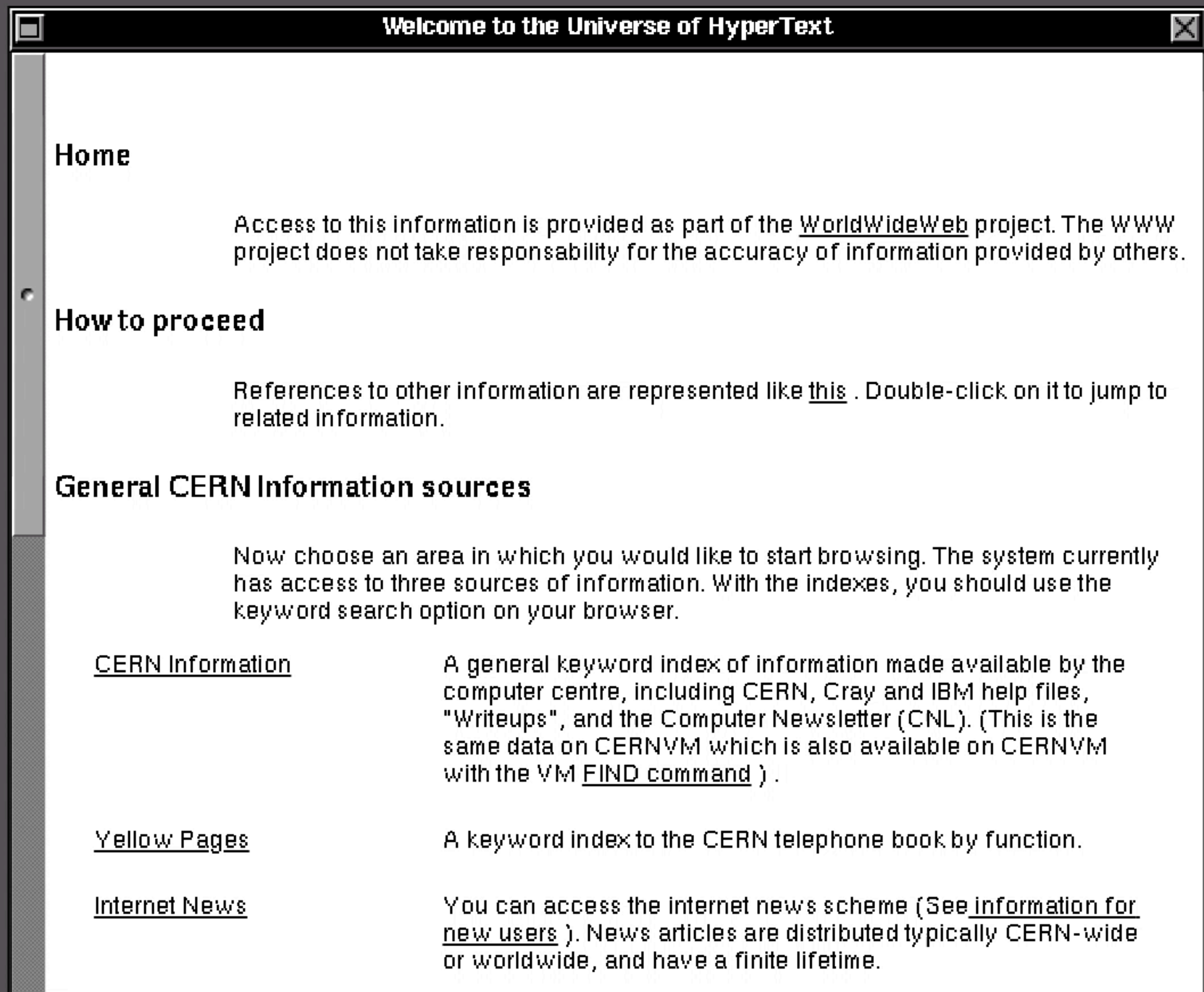
```
<picture>
```

```
<source srcset="tiny.webp"  
type="image/webp">
```

```

```

```
</picture>
```

JavaScript is NOT declarative

Imperative programming focuses on describing how a program operates.

The term is often used in contrast to declarative programming, which focuses on what the program should accomplish without specifying how the program should achieve the result.

Principle of Least Power

“ The choice of language is a common design choice. The **low power end of the scale is typically simpler to design, implement and use**, but the high power end of the scale has all the attraction of being **an open-ended hook into which anything can be placed**: a door to uses bounded only by the imagination of the programmer.

Sir Uncle Timbo <https://www.w3.org/DesignIssues/Principles.html#PLP>



13 MILLION
REQUESTS FOR JAVASCRIPT
WILL TIMEOUT





Phil Hawksworth

@philhawksworth

Follow



Says @ianfeather at #AllDayHey — "our monitoring tells us that around 1% of requests for JavaScript on BuzzFeed timeout. That's around 13 million requests per month."

A reminder if one were needed that we should design for resilience

Everyone has JavaScript, right?

YOUR USER REQUESTS YOUR WEB APP

HAS THE PAGE LOADED YET?

“All your users are non-JS while they're downloading your JS” — Jake Archibald



Matthew Somerville @dracos · Apr 19



coronavirus.data.gov.uk is a static site, fetching and displaying remote data. It is also a 100% client-side JavaScript React site.

dracos.co.uk/made/coronavir... is 238K vs 770K (basics) on load. I've removed about 550K of JavaScript. It seems to work the same.

<https://twitter.com/dracos/status/1251836594509791232>

Original

Mine

0.0

0.0



Matthew Somerville @dracos · Apr 19



Replying to @dracos

What about the About page? That is just static text, surely that's quicker? No, it is worse. (Of course, all the JS/CSS would be cached, but so to on mine, and you still don't have to wait for JS to construct your HTML if you just give it HTML.)

Original

Mine

0.0

0.0

LIVE

breakyourownnews.com

BREAKING NEWS

**HTML IS MORE THAN <DIV>, **

11:51

MYSTERIOUS PHENOMENON CALLED "SEMANTICS" HIDING IN PLAIN SIGHT

Oooh demo

☐ Check if you don't want not to opt out of cancelling us stopping sending you spam forever

☐ Check if you don't want not to opt out of cancelling us stopping sending you spam forever

Wooooh code

```
<input type="checkbox"><span>blah blah blah</span>
```

```
<label><input type="checkbox"> blah blah blah</label>
```


<button>

```
<div class="Btn">Click me (if you can!)</div>
```

- Remember to set ARIA role (in HTML or JS)
- Remember to manage focusability
- Remember to listen for the correct keypresses

div id=header

div
id=nav

div id=main

div class=article

div class=article

div class=article

div id=footer

div

“The `div` element has no special meaning at all.

Authors are strongly encouraged to view the `div` element as an element of last resort, for when no other element is suitable. Use of more appropriate elements instead of the `div` element leads to better accessibility for readers and easier maintainability for authors.”

<header>

<nav>

<main>

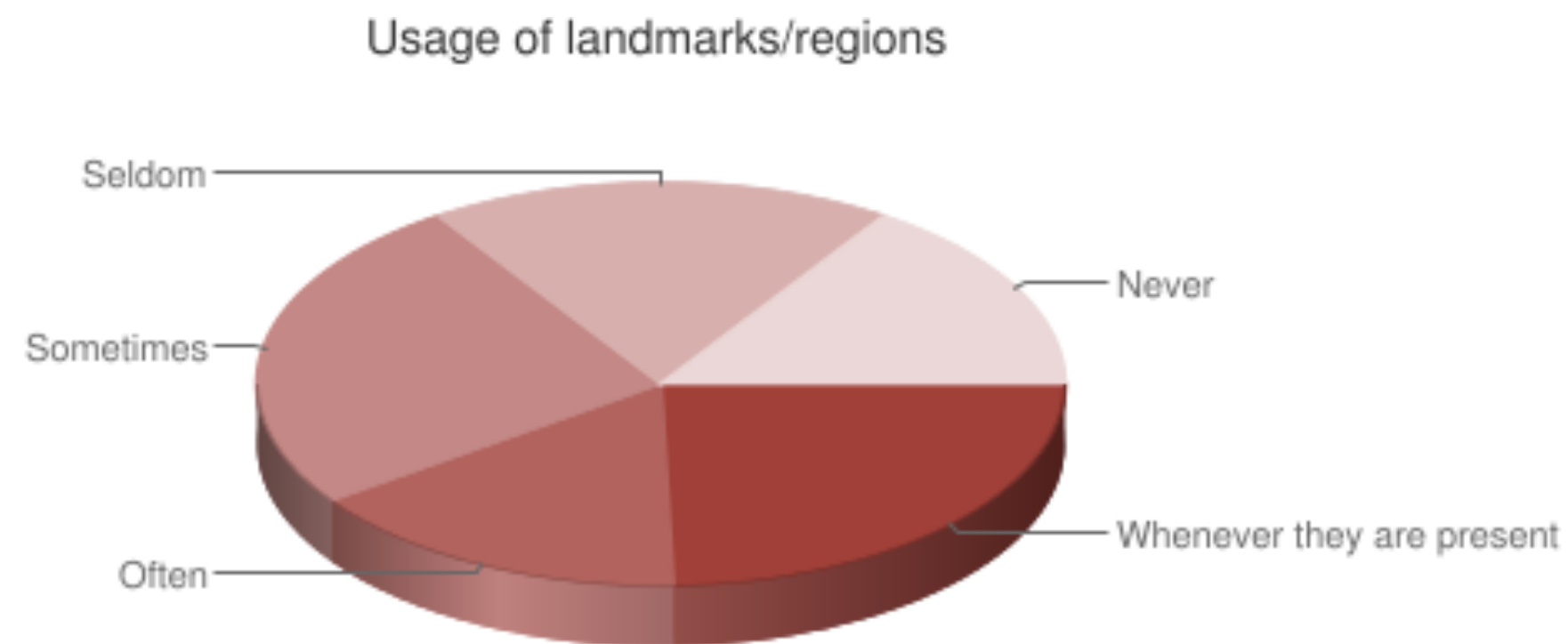
<article>

<article>

<article>

<footer>

Screen reader users



How often do you navigate by landmarks/regions in your screen reader?

Response	# of Respondents	% of Respondents
Whenever they are present	354	25.5%
Often	254	18.3%
Sometimes	388	28.0%
Seldom	209	15.1%
Never	182	13.1%

webaim.org/projects/screenreadersurvey5/ - used by kind permission

“Structured data”

When you add markup to your content, you help search engines understand the different components of a page.

When Google's systems understand your page more clearly, Google Search can surface content through the cool features discussed in this post, **which can enhance the user experience and get you more traffic.**

<https://webmasters.googleblog.com/2019/04/enriching-search-results-structured-data.html>

ooooh \$\$\$\$

- Eventbrite leveraged event structured data and saw **100% increase in the typical YOY growth of traffic from search.**
- Jobrapido integrated with the job experience on Google Search and saw **115% increase in organic traffic, 270% increase of new user registrations from organic traffic,** and 15% lower bounce rate for Google visitors to job pages.
- Rakuten used the recipe search experience and saw a **2.7X increase in traffic from search engines and a 1.5X increase in session duration.**


```
<article itemscope itemtype="http://schema.org/BlogPosting">
```

```
<header>
```

```
<h2 itemprop="headline" id="post-11">The HTML Treasure Hunt</h2>
```

```
<time itemprop="dateCreated pubdate datePublished"
```

```
datetime="2019-05-20">Monday 20 May 2019</time>
```

```
</header>
```

```
...
```

```
</article>
```


Safari Reader



Enclose main content in an `article` element

Safari Reader



Use `itemprop` to apply semantic attributes

Safari Reader



Enclose images and captions in `figure` elements

Form Controls



```
<input type="tel">
```



```
<input type="date">
```



```
<select>
```


Accessibility is part of Usability

“high conformance with web accessibility guidelines may provide benefits to users **without disabilities.**”

Schmutz, Sonderegger and Sauer

- Sixty-one participants without disabilities used one of three websites differing in levels of accessibility
- A high level of web accessibility led to better performance (i.e., task completion time and task completion rate) than low or very low accessibility.
- Likewise, high web accessibility improved user ratings (i.e., perceived usability, aesthetics, workload and trustworthiness) compared to low or very low web accessibility.

Department of Psychology, University of Fribourg, Fribourg, Switzerland

www.unifr.ch/psycho/assets/files/KogErg/SchmutzSondereggerSauer2016.pdf



Jamie Knight

@JamieKnight Follows you

Autistic developer, speaker & kit car
builder. Never far from my plush sidekick
Lion ([@lickr](#)) Senior research engineer
[@BBC](#) (partial speech)



Glenda Sims

@goodwitch

Following



“No one comes to our sites disabled. They come with impairments. We disable them.”
@JamieKnight #a11y #coga #csunact19

4:30 PM - 14 Mar 2019

<https://twitter.com/goodwitch/status/1106231135443410944>



A close-up portrait of Tim Berners-Lee, a middle-aged man with light brown hair, looking directly at the camera with a neutral expression. He is wearing a dark blue or black collared shirt. The background is a plain, light-colored wall.

Tim Berners-Lee
Web Developer

Sir Uncle Timbo:

The web is for everyone and collectively we hold the power to change it. It won't be easy. But if we dream a little and work a lot, we can get the web we want.

<https://webfoundation.org/2019/03/web-birthday-30/>

What can you do?

Learn the semantics of HTML. There are 120(ish) elements, that's all!



Most 2-year-olds can say about 100 words.



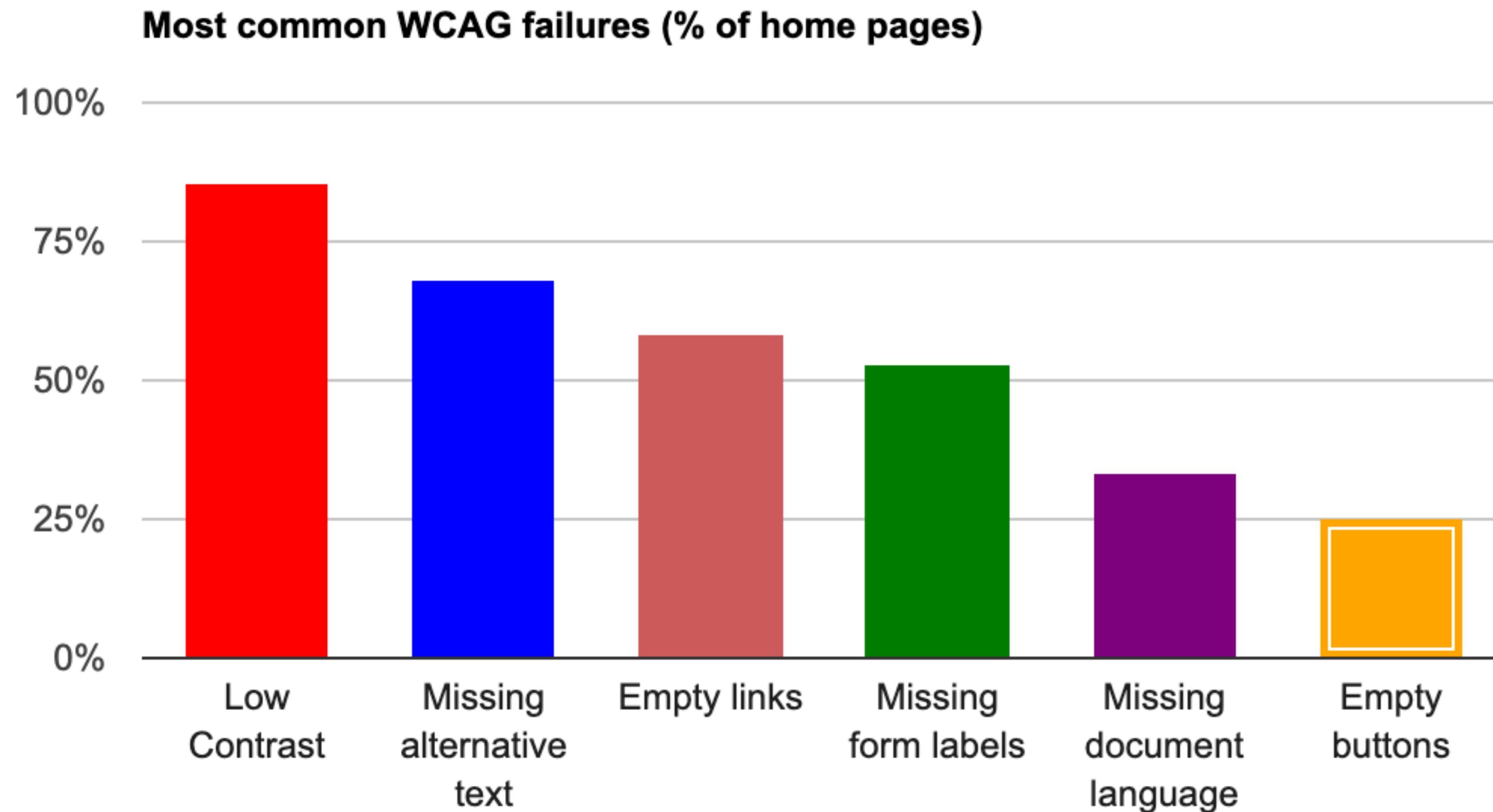
By the time your toddler is 2 1/2, she'll probably know close to 300



What can you do?

- Learn the semantics of HTML. There are 120(ish) elements, that's all!
- Run automated tests and go for low-hanging fruit, e.g. colour contrast

98% of top million pages have errors



<https://webaim.org/projects/million/>

This tool was inspired by Lea verou's work on site contrast and uses some code from her [Contrast Ratio](#) utility.

Drag the Bookmarklet to your bookmark bar: Analyse Contrast

Firefox: Fallback bookmarklet, works in firefox, doesn't work offline: Analyse Contrast

Examples of bad contrast

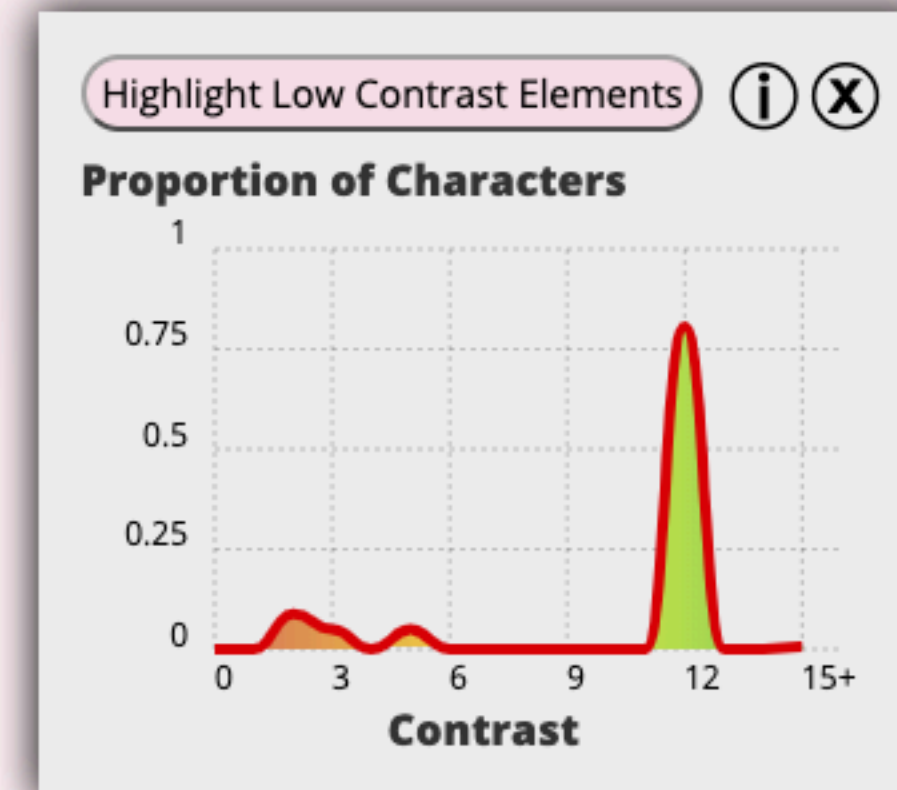
Push the "Highlight Low Contrast Elements" button to see these highlighted.

2.6
Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book.

1.7
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

Scripts for automated testing

As well as a bookmarklet to enable it's use with automated tests I also compiled it as a script you can inject into the page once it has loaded. They can be configured to just show the graph or highlight the problem areas. The results are attached to the window so you can easily retrieve the results



<https://ada.is/contrast-widget/>

What can you do?

- Learn the semantics of HTML. There are 120(ish) elements, that's all!
- Run automated tests and go for low-hanging fruit, e.g. colour contrast
- Use HTML (and CSS) wherever possible.
- Make sites that work without JavaScript, then enhance with JS.
- Choose your libraries carefully.

tenon-ui.info



Tenon-UI Documentation

[Code on GitHub](#)

Information

[Home page](#)

[Getting Started](#)

[Styling](#)

Components

[Smart form components](#)

Welcome to Tenon-UI

These are the documentation pages of **Tenon-UI**: Tenon's accessible React components library.

Why another component library?

Tenon-UI strives to become a go-to library for React developers who want to build inclusive and accessible sites that can be used by as many people as possible.

If you do not yet know why this is a very good idea or how this relates to React in general, please visit the [React Accessibility Docs](#).

Use our views or bring your own.

Bruce Approved!

react-bootstrap

Base Nav

Navigation bits in Bootstrap all share a general `Nav` component and styles. Swap `variants` to switch between each style. The base `Nav` component is built with flexbox and provide a strong foundation for building all types of navigation components.

The basic, variant-less, `Nav` component does not include any `active` prop styling!

Active Link Link Disabled

<https://react-bootstrap.github.io/components/navs/>

```
▼<div class="nav"> == $0
```

```
▼<div class="nav-item">
```

```
  <a href="/home" data-rb-event-key="/home" class="nav-link active">Active</a>
```

```
</div>
```

```
▶<div class="nav-item">...</div>
```

```
▶<div class="nav-item">...</div>
```

```
▶<div class="nav-item">...</div>
```

```
</div>
```

What no <nav>?
Bruce rejected.

React

- Design System of Australian Government
<https://designsystem.gov.au/components/>
- Reakit “strictly follows WAI-ARIA 1.1 standards. All components come with proper attributes and keyboard interactions out of the box”
- Reach UI “is tested with Safari + VoiceOver, Firefox + NVDA, and Edge + JAWS. As the project matures we’ll get it audited by WebAIM to ensure that if you pick Reach UI, your app has a solid, accessible foundation.”

Others

- Vuetensils “Follows WAI-ARIA authoring practices for accessibility baked in; semantics, ARIA attributes, roles, etc.”
- Tournant UI and Vue a11y are small but growing.
- Lion is a white-label, open-source, framework-agnostic component library from ING Bank:
<https://github.com/ing-bank/lion/>



Timeseries of JavaScript Bytes

Source: httparchive.org



Zoom

1m

3m

6m

YTD

1y

3y

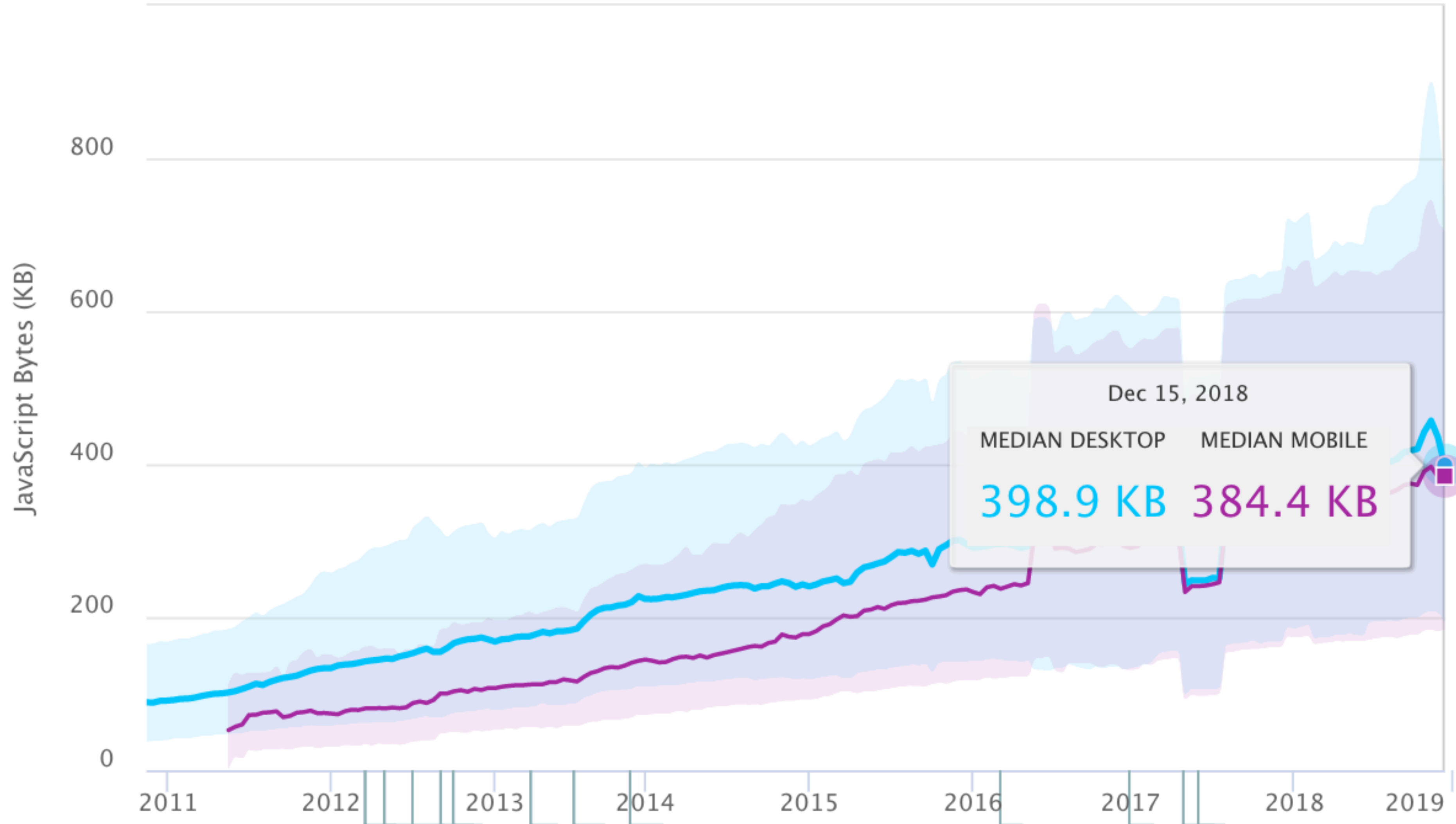
All

From

Nov 15, 2010

To

Jan 1, 2019



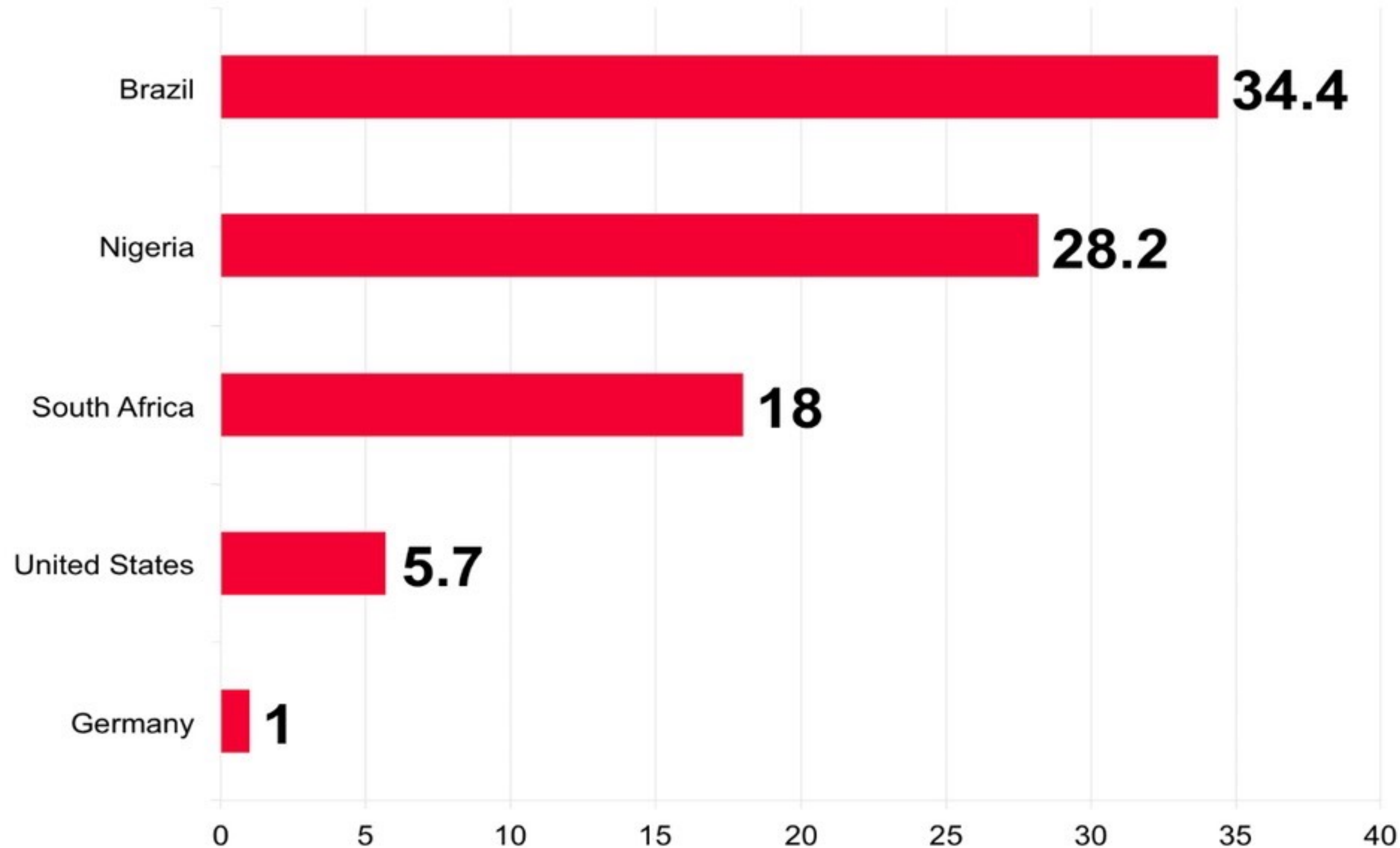
“Developer Experience” Bait-and-Switch

“ We cannot continue to use as much JavaScript as is now “normal” and expect the web to flourish.

To get this fixed, we need to confront the “developer experience” bait-and-switch. Tools that cost the poorest users to pay wealthy developers are bunk.

Alex Russell <https://infrequently.org/2018/09/the-developer-experience-bait-and-switch/>

500MB data: hours worked



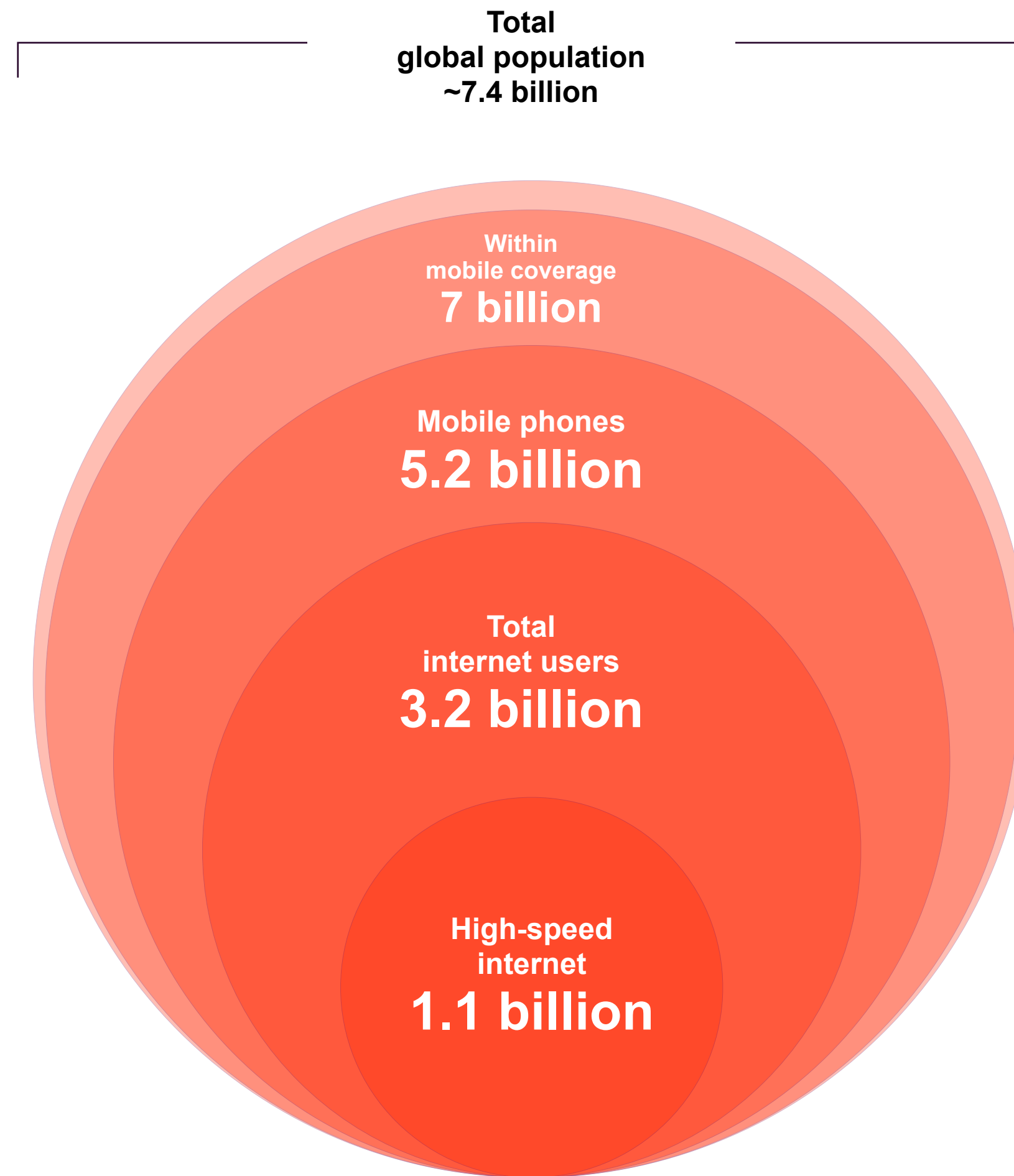
<https://360.here.com/2015/06/03/offline-navigation-really-matters-500mb-data-costs-week-wages/>

How To Make Internet Affordable

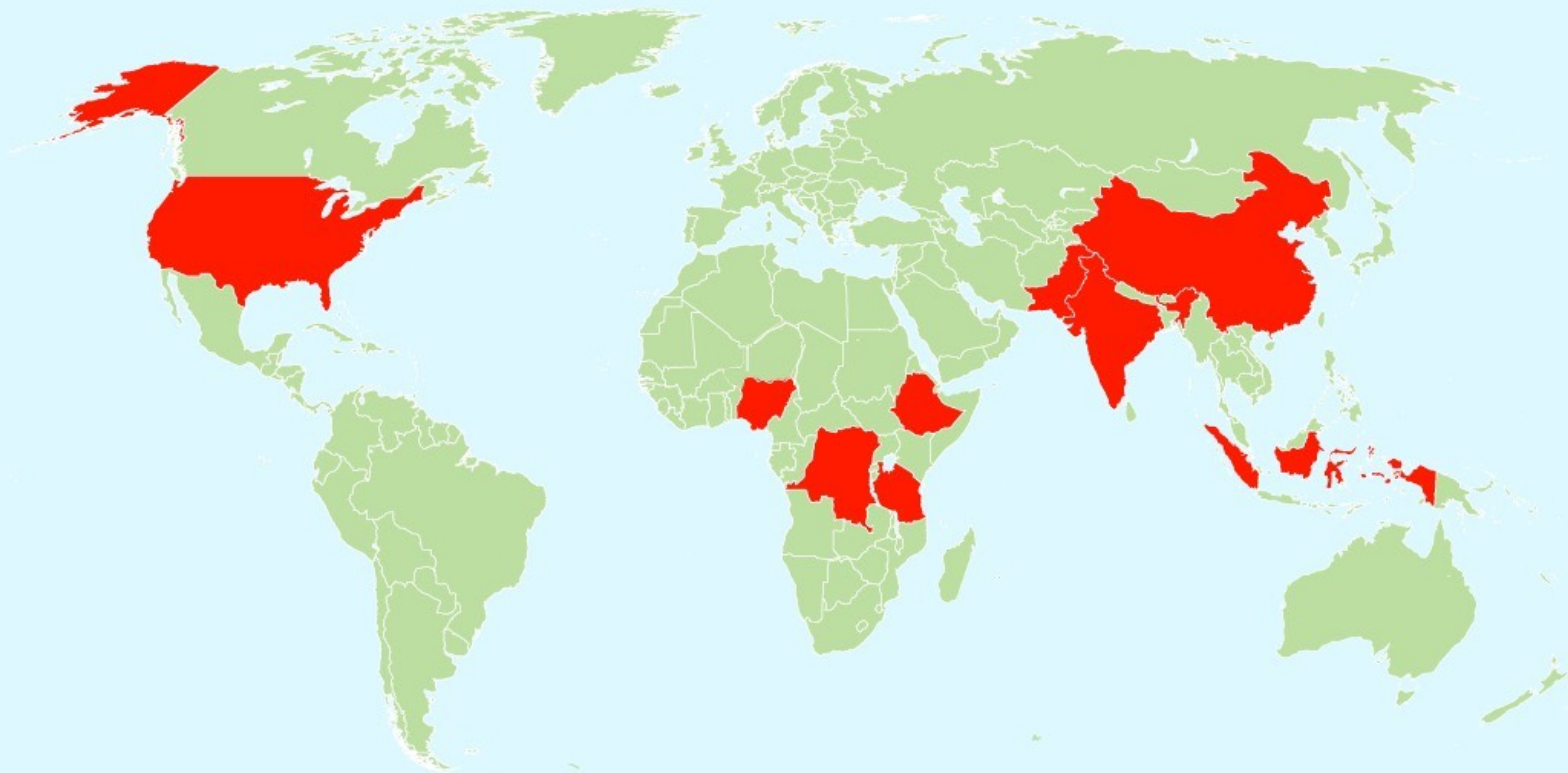
“ Even with more phones than ever before, the cost of Internet is a major obstacle. **In Nigeria, the data needed to watch just 2 minutes of online video a day can cost more than sending a child to school for a month.**

<https://webwewant.org/news/how-to-make-internet-affordable/>

ICT access by population



World Bank: Digital Dividends 2016



“ Developing countries are home to 94% of the global offline population.

- *State of Connectivity 2014, internet.org*

World Bank

“

Making the internet universally accessible and affordable should be a global priority.

Where There Is No Doctor a village health care handbook

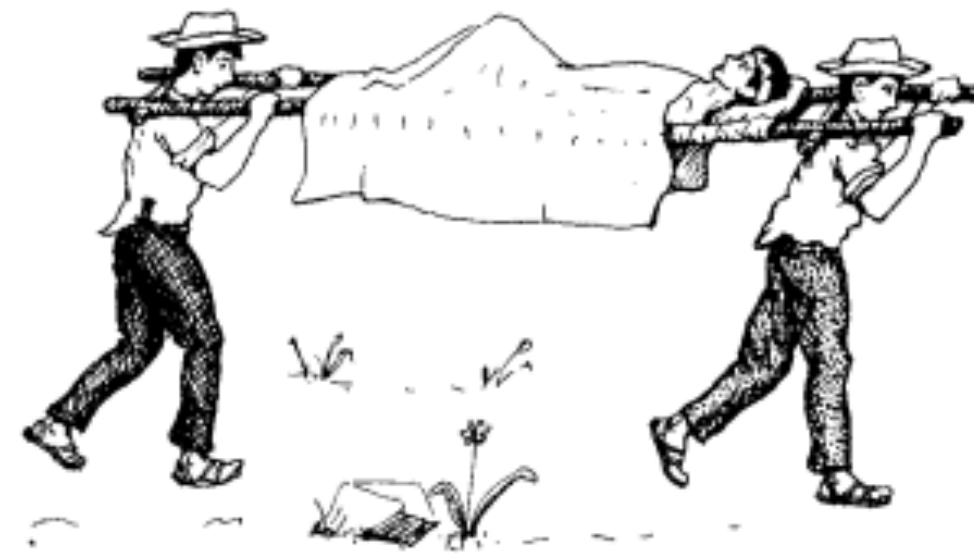
~ revised edition ~

by

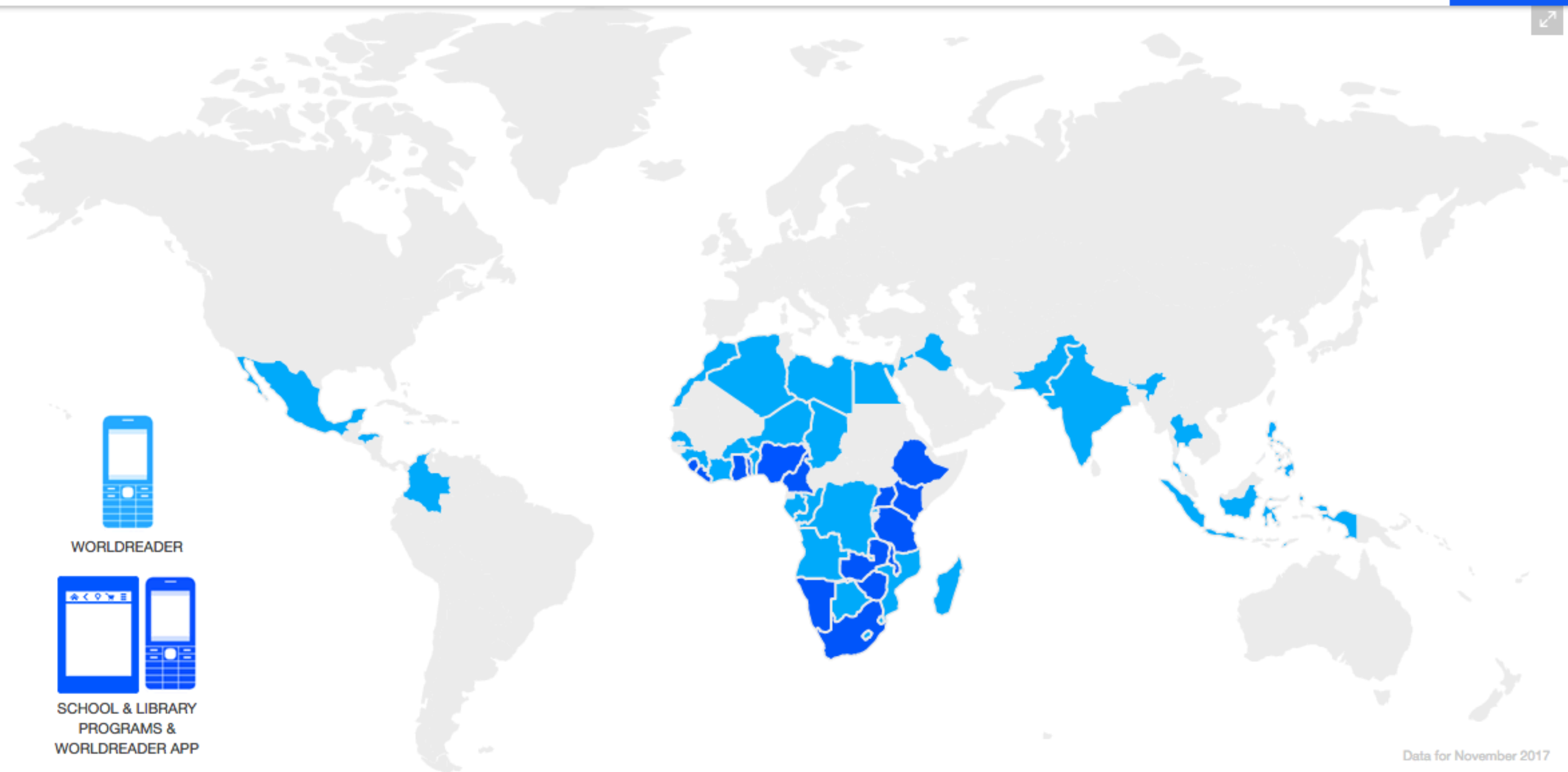
David Werner

with

Carol Thuman and Jane Maxwell



with drawings by David Werner



47

COUNTRIES

551

SCHOOLS & LIBRARIES

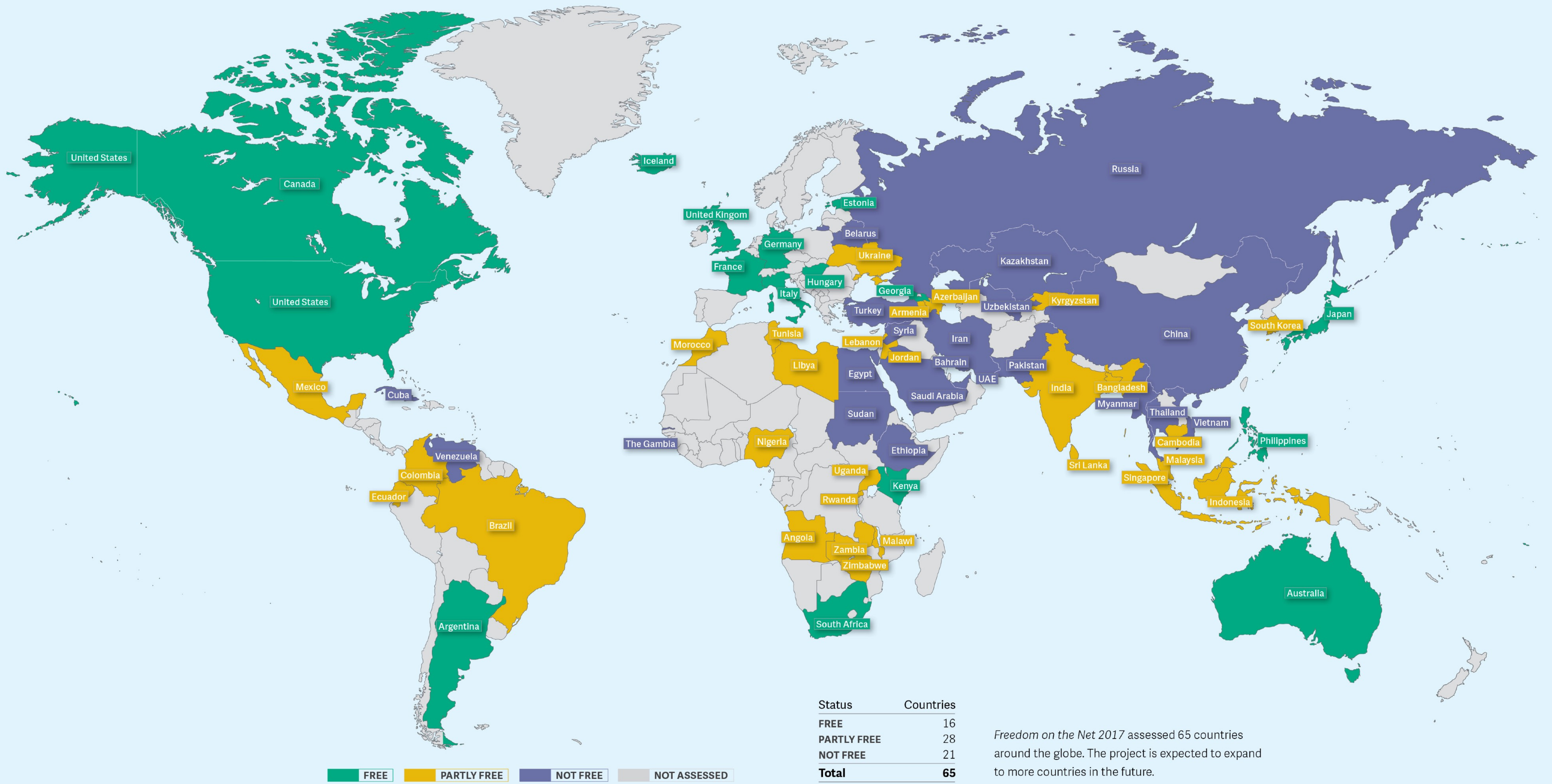
606,356

MONTHLY READERS

7,628,939

READERS SINCE 2010

FREEDOM ON THE NET 2017



“ “ If you want to liberate a country, give them the internet.

- *Wael Ghonim, Egyptian internet activist*



Internet matters

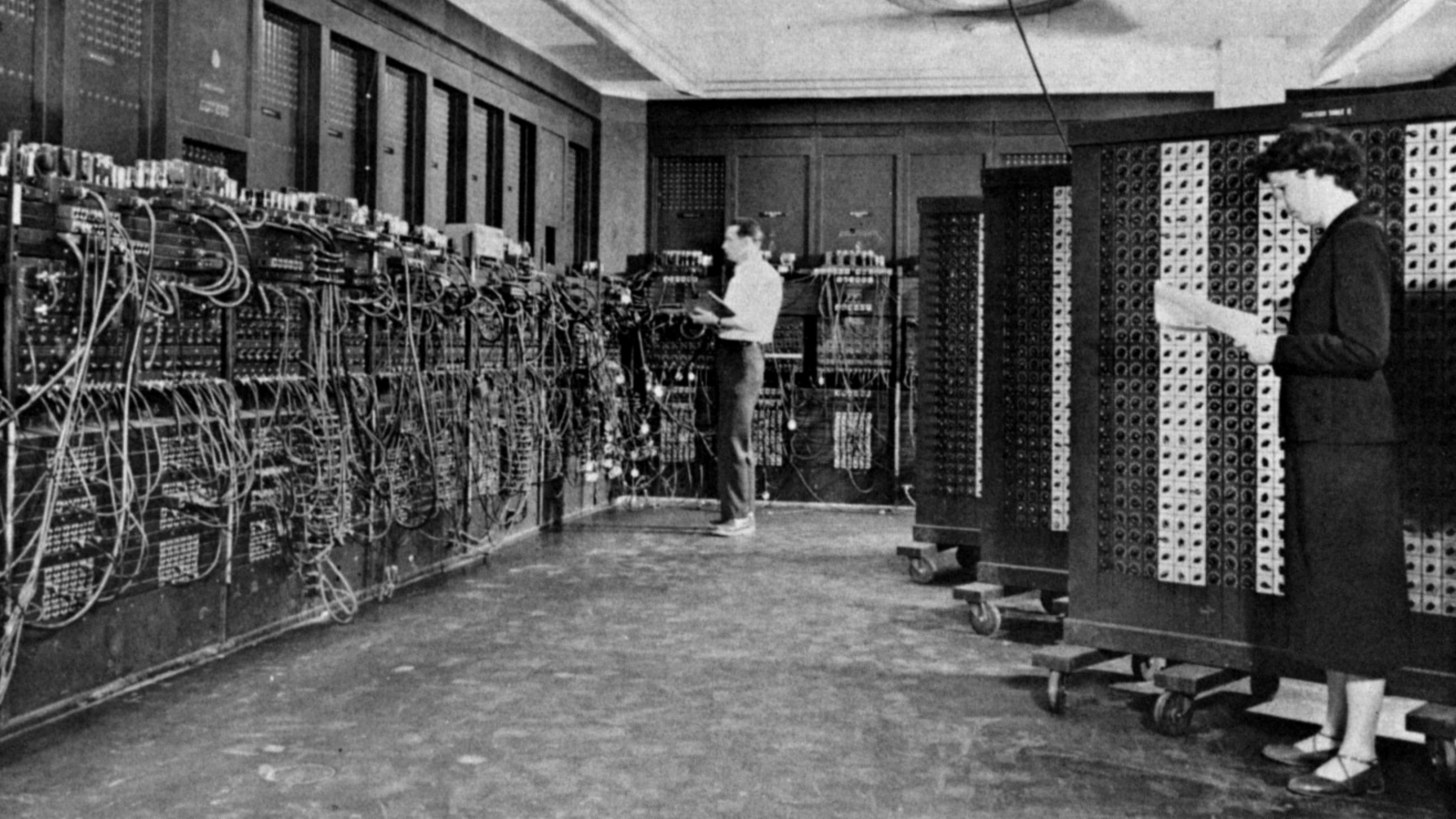
“ an increase in Internet maturity similar to the one experienced in mature countries over the past 5 years creates an increase in real GDP per capita of \$500 on average during this period.

- The Net's sweeping impact on growth, jobs, and prosperity (McKinsey Global Institute)

Internet matters

“ “ It took the Industrial Revolution of the 19th century 50 years to produce the same result.

- The Net's sweeping impact on growth, jobs, and prosperity (McKinsey Global Institute)



High

Cirrostratus

Cirrus

Cirrocumulus

Middle

Altostratus

Nimbostratus

Alto cumulus

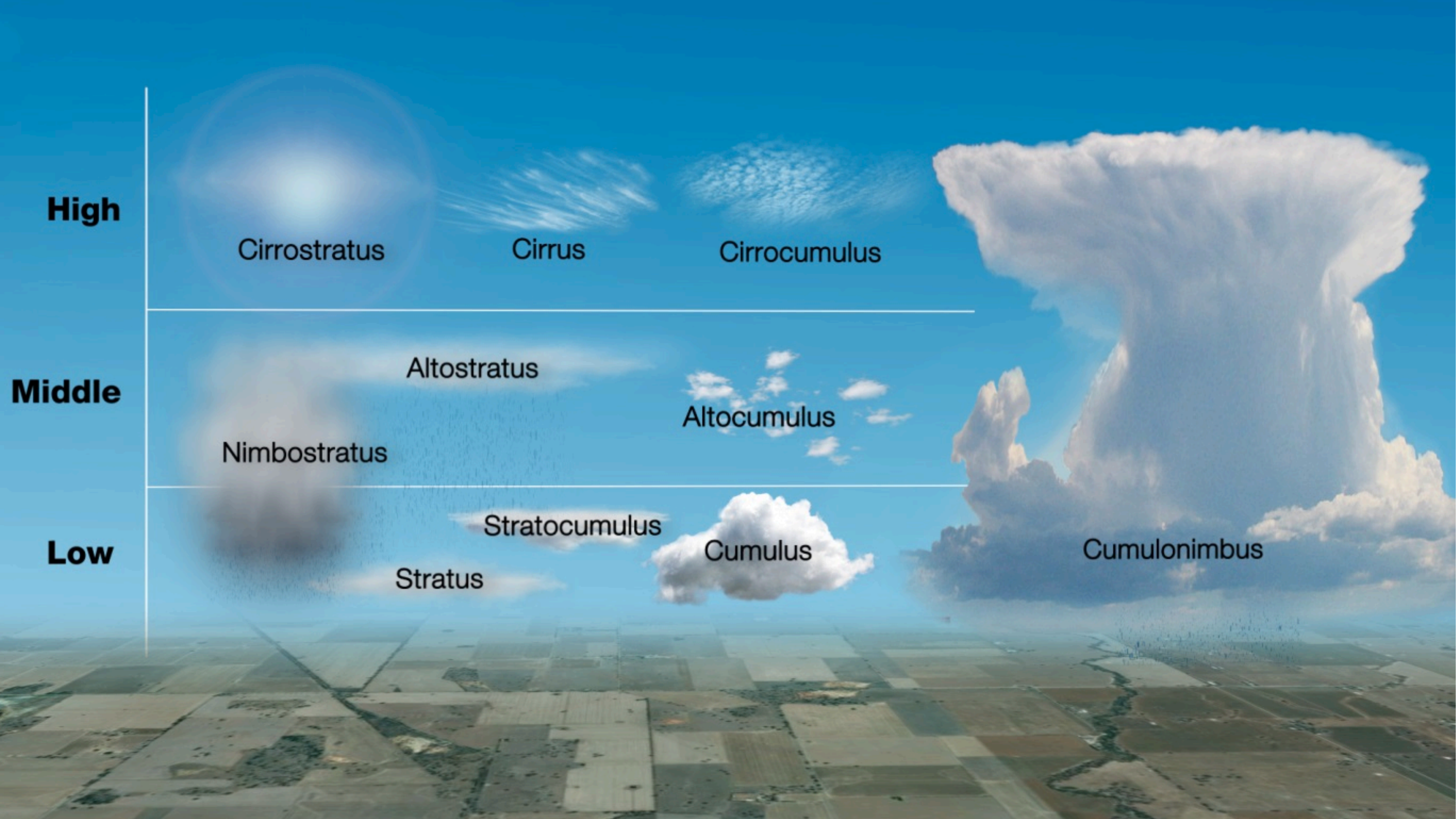
Low

Stratocumulus

Stratus

Cumulus

Cumulonimbus













Matthew, by Rebecca Wilson

<https://www.flickr.com/photos/saucysalad/3295390579/>





THANKS 'N' SNOGS!

brucelawson.co.uk
@brucel

* Other Bruce Lawsons are available.

** known to cause nausea in some jurisdictions.

THANKS 'N' ELBOW BUMPS!

brucelawson.co.uk
@brucel

* Other Bruce Lawsons are available.

** known to cause nausea in some jurisdictions.