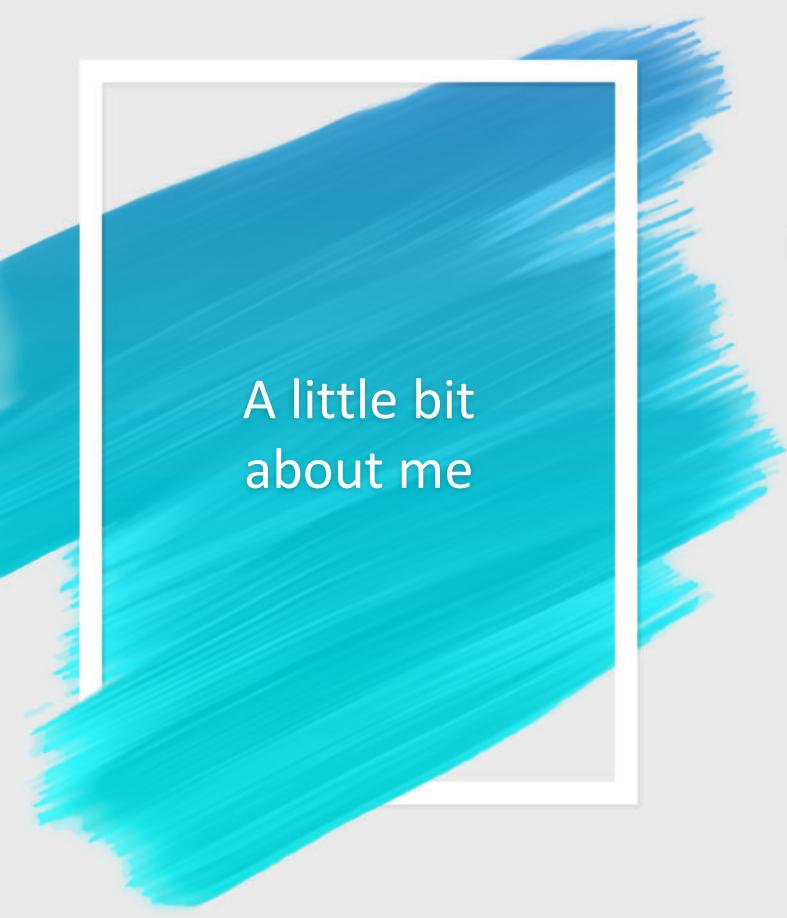




Build Anything by JavaScript

Davy Chhouk
AUG, 2019



A little bit
about me



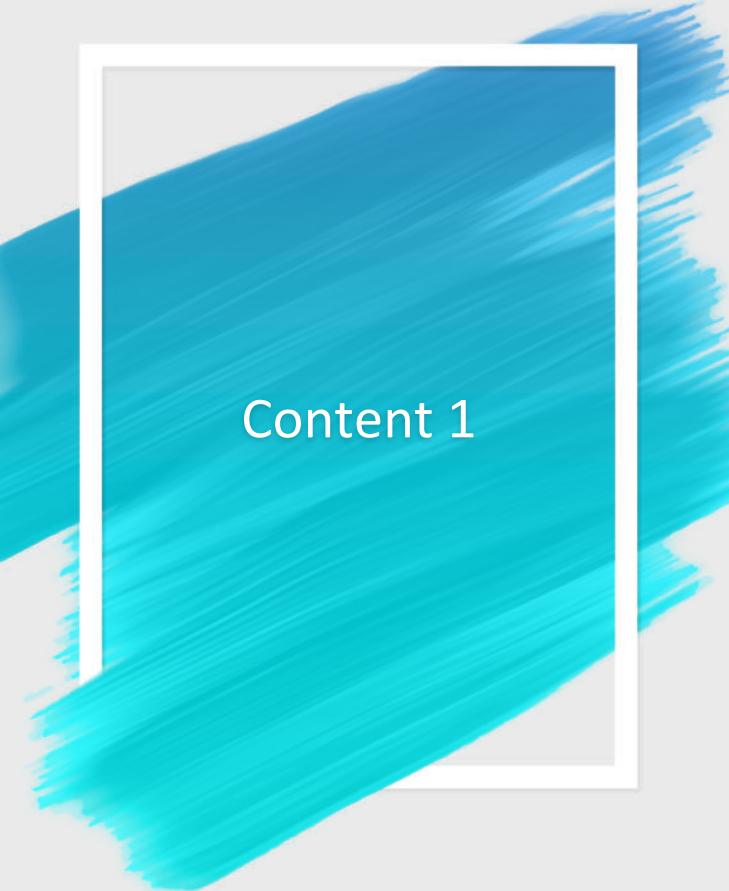
CHHOUK Davy

Email: chhouk.davy@gmail.com

Medium: <https://medium.com/@davy.chhouk>

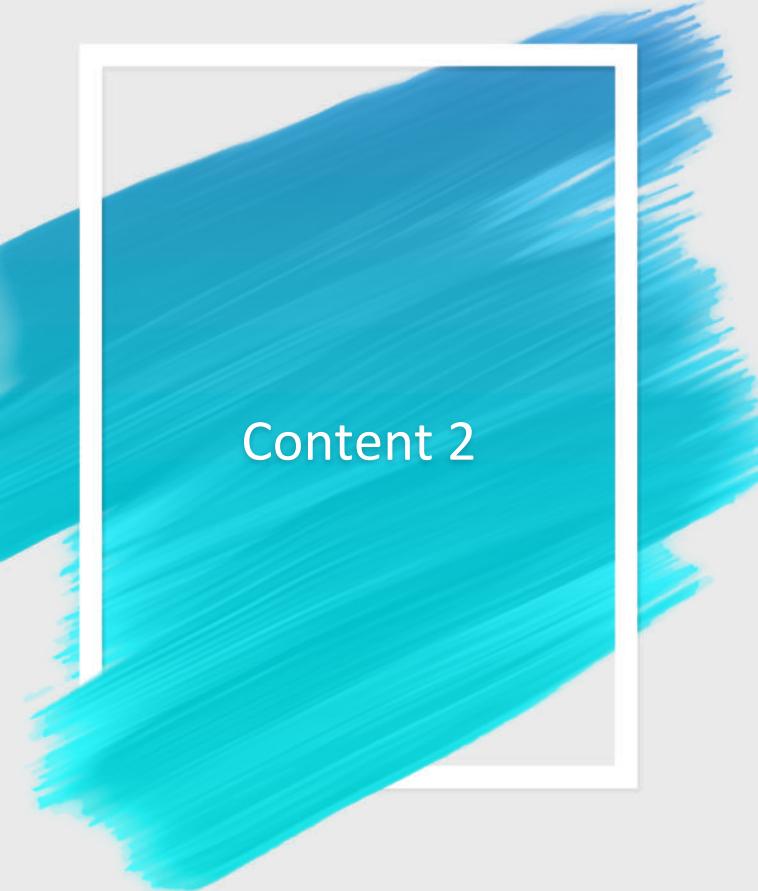
- B.S. Software Engineering**
College of Arts, Media and Technology of Chiang Mai University

- Currently Developer**
Mango Byte Technology



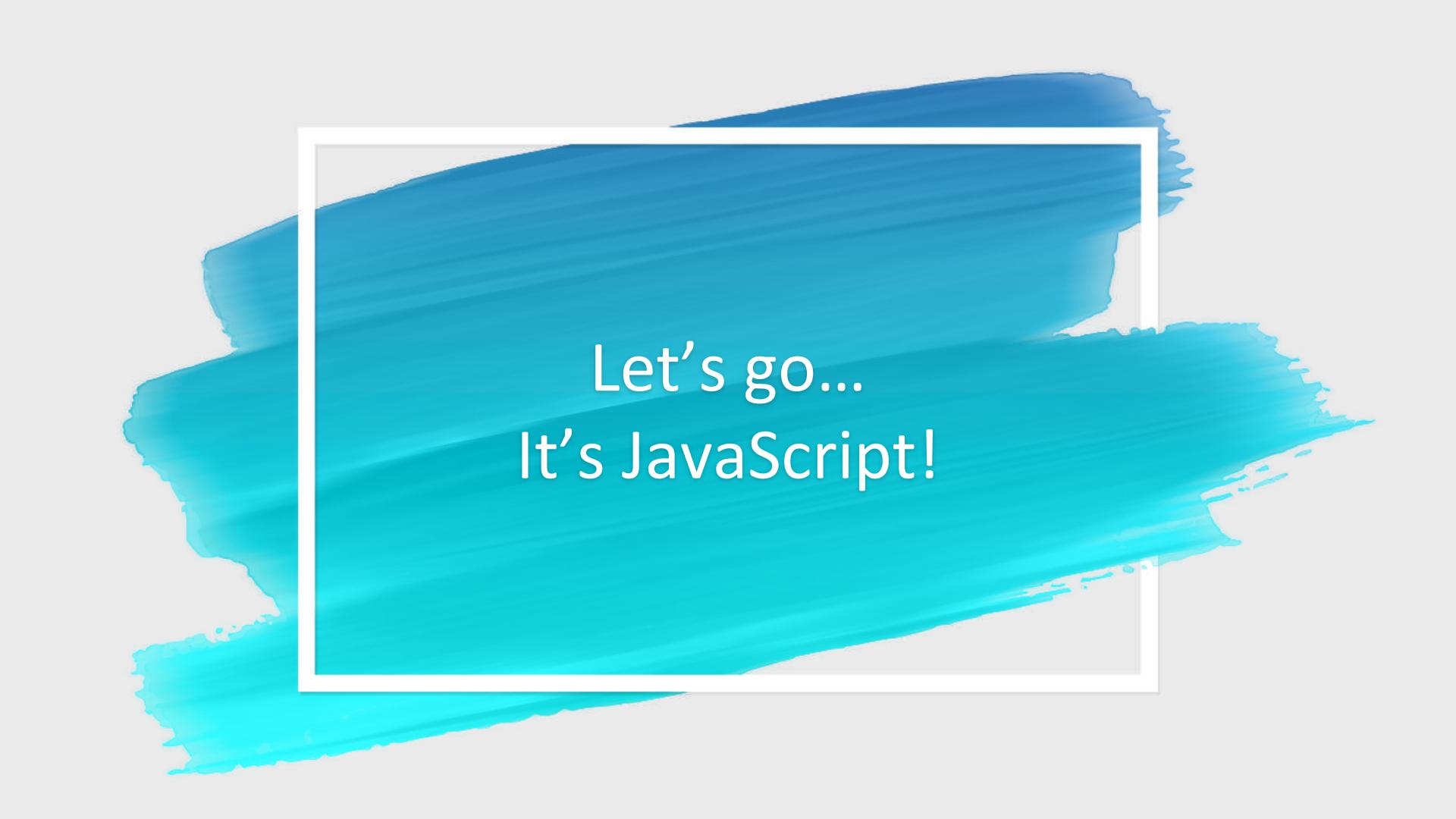
Content 1

- It's JavaScript
- A bit of History on JavaScript
- ECMAScript
- TypeScript
- Node.js and NPM
- Front-End Web Development
- Mobile Application Development
- Desktop Application Development



Content 2

- Back-End Development
- Video Games
- IoT Development
- Learning with JavaScript
- Chatbot
- Insights 2019
- Q && A



Let's go...
It's JavaScript!



It's JavaScript

JavaScript

is a scripting or programming language that allows you to implement complex things on web pages — displaying timely content updates, interactive maps, animated 2D/3D graphics, scrolling video jukeboxes, etc.

--- developer.mozilla.org



It's JavaScript

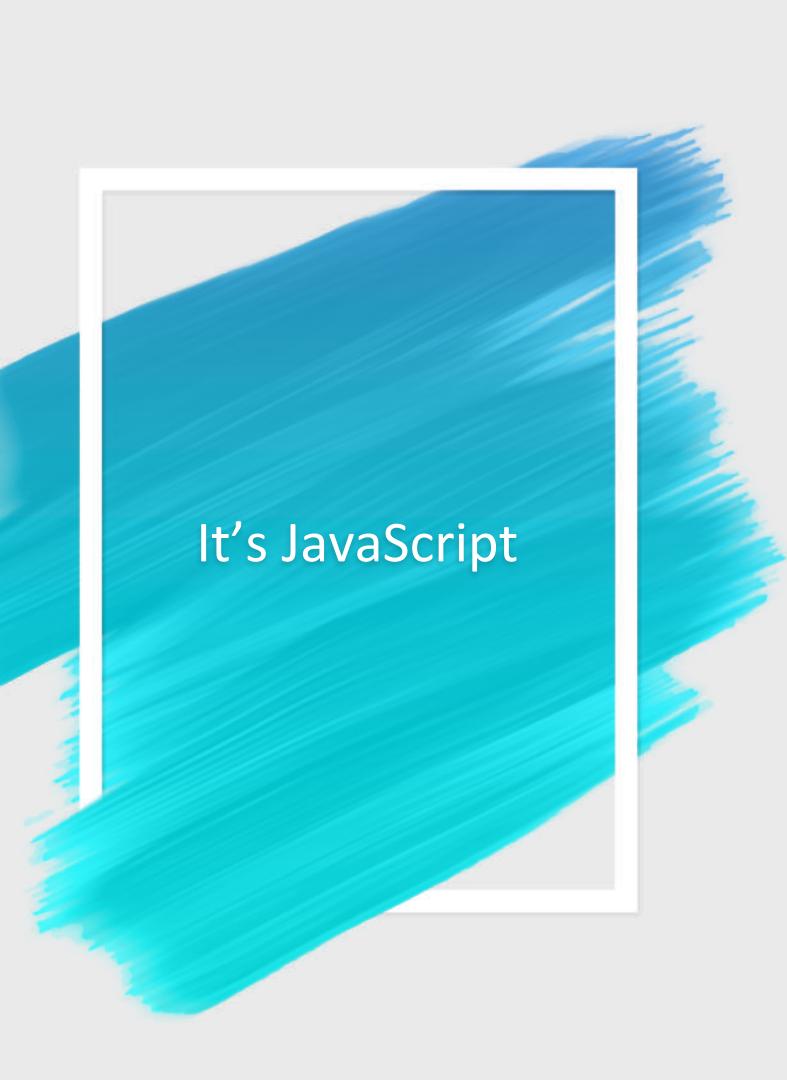
JavaScript

is a single threaded, non-blocking,
asynchronous, concurrent, dynamic
scripting programming language.

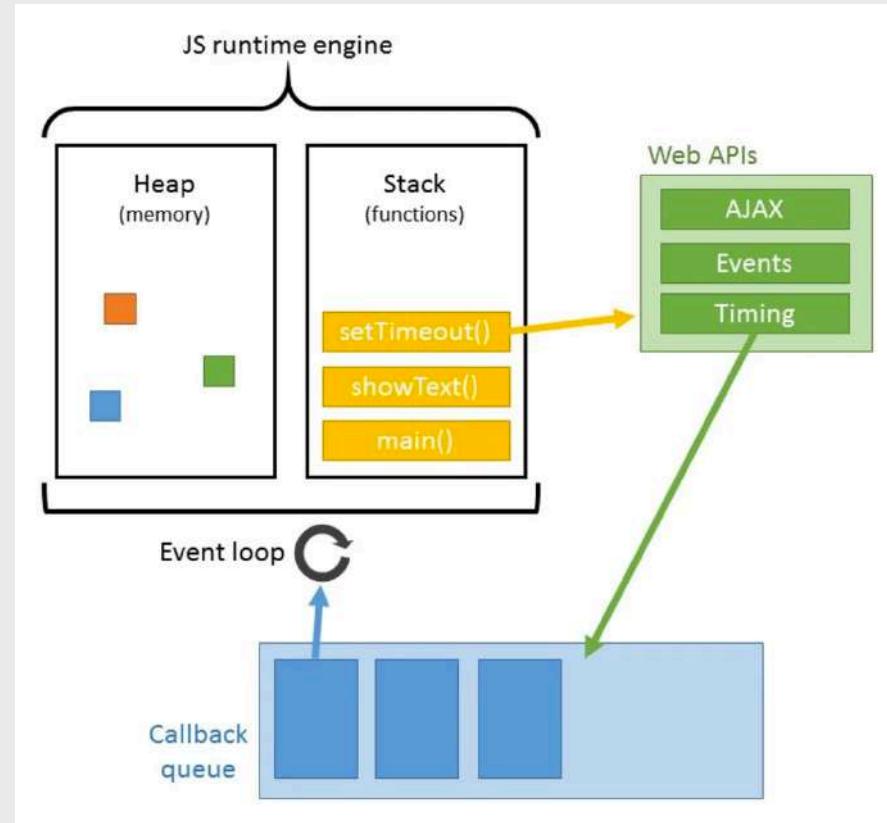
-- a more nerd-ist definition

Philip Roberts Talk on JSConf:

<https://2014.jsconf.eu/speakers/philip-roberts-what-the-heck-is-the-event-loop-anyway.html>



It's JavaScript



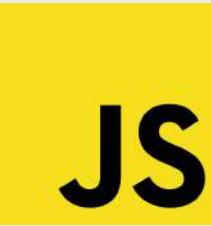
In action: <http://latentflip.com/loupe>



A bit of history on
JavaScript



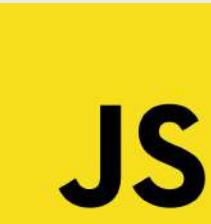
A bit of History on JavaScript



- Birth WWW (1989) by **Tim Berners-Lee**
- Creation of Browsers in the early days
 - NCSA Mosaic
 - Mosaic Netscape
 - Internet Explorer
- The Birth of Mocha in 2 weeks (10 days) by **Brendan Eich** (1995)
- Renaming of Mocha to LiveScript and again to **JavaScript**



A bit of History on JavaScript



- Creation of more browsers / JavaScript Implementations / JavaScript Engines
- Standardizing JavaScript @ Ecma International
- Post Node.js JavaScript
 - HTML + CSS + JS
 - jQuery
- Node.js
 - NPM
 - Better development tools (babel, webpack...)
- Post Node.js JavaScript: Today!



ECMAScript



ECMAScript

Problems of JavaScript

Multiple Browsers using Different JavaScript Engines.

- V8 (Chrome/New Edge)
- Spider Monkey (Firefox)
- Nitro Engine (Safari)
- Chakra Engine (Edge)



ECMAScript

What is ECMAScript?



- ECMA International** is a standards organization for information and communication systems in Europe.
- ECMA International standardized a scripting-language in **ECMA-262** and **ISO/IEC 16262** and called it **ECMAScript**.

ECMA = European Computer Manufacturers Association



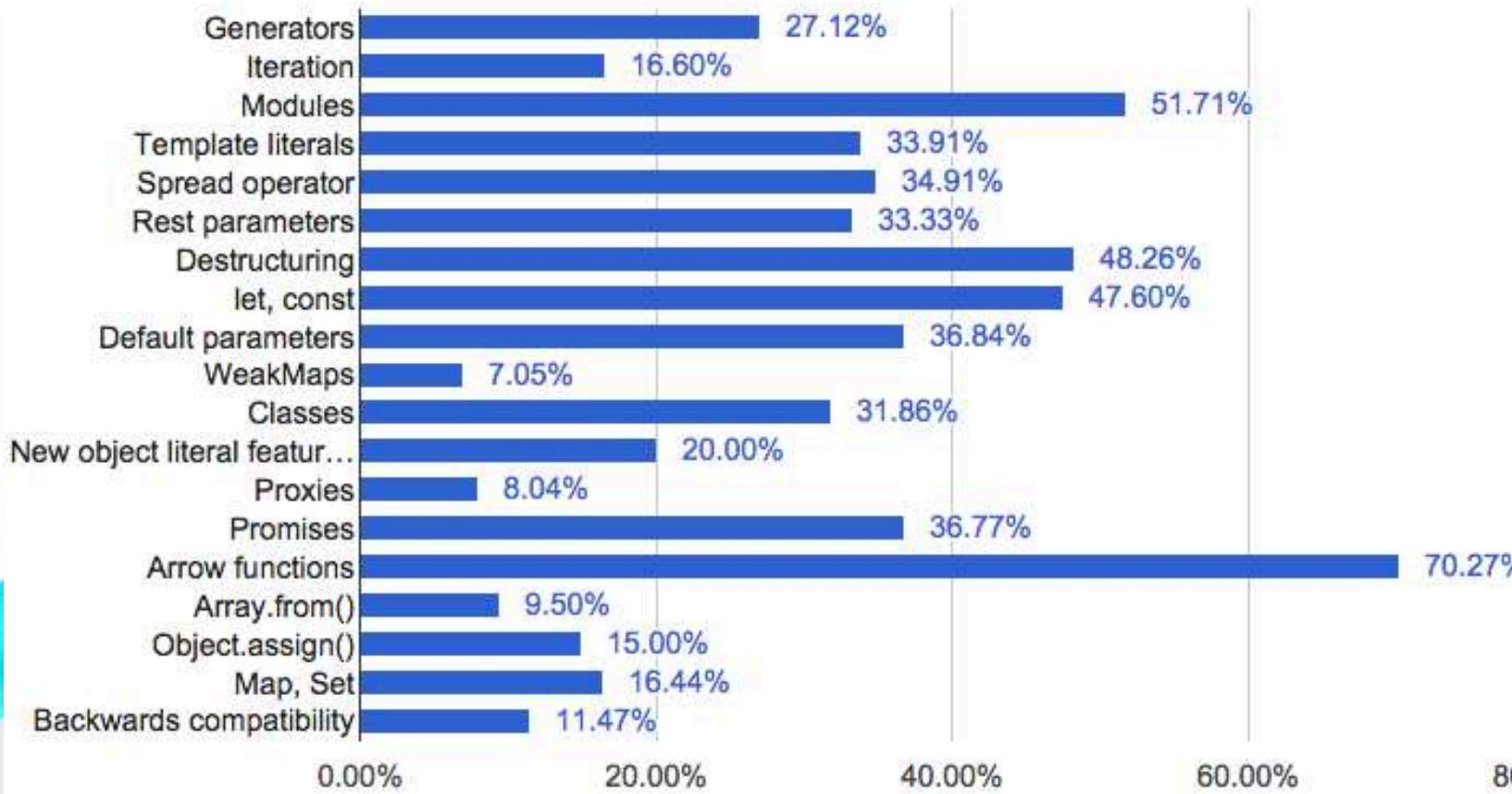
ECMAScript

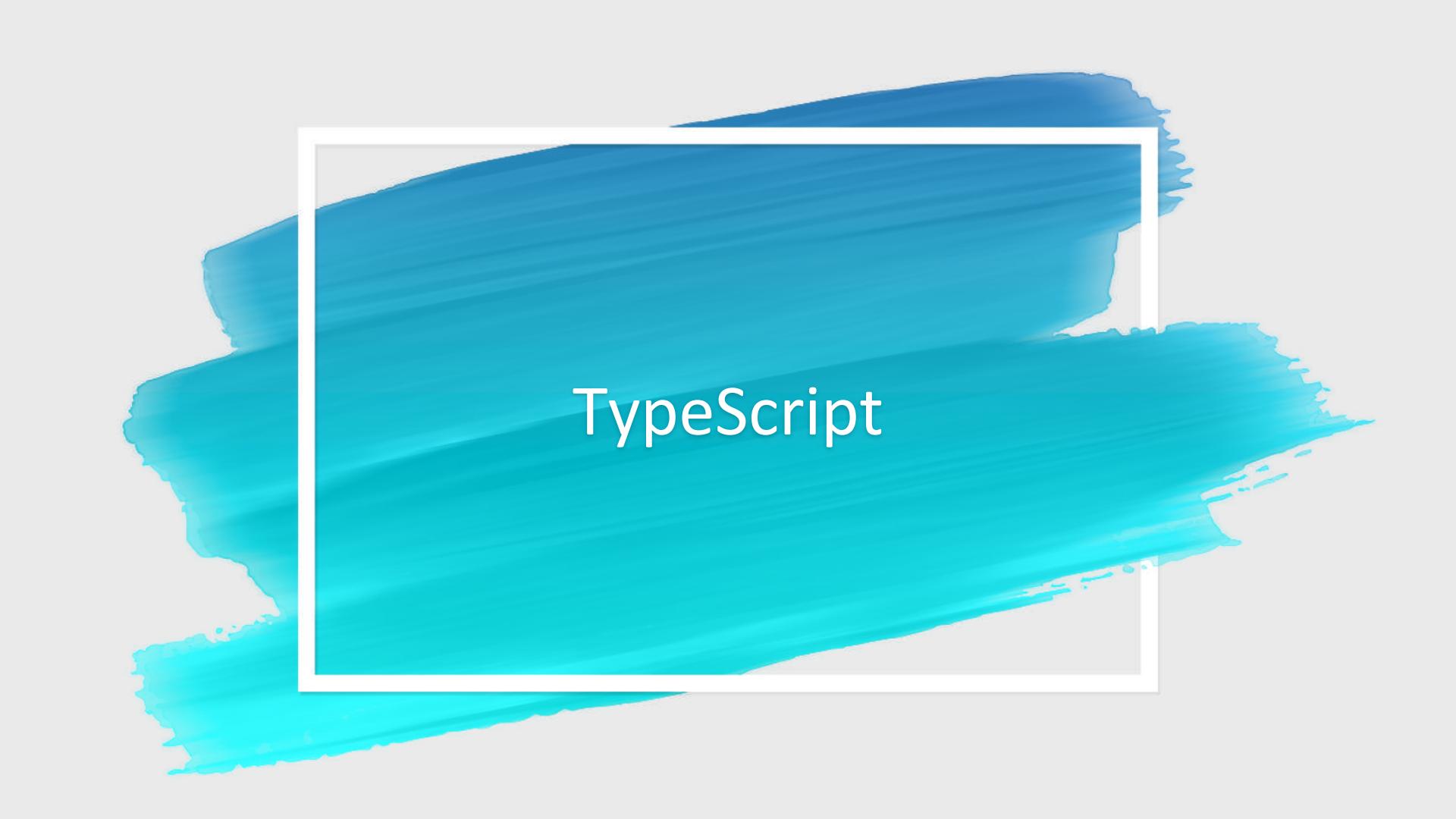
Published ECMAScript

- ES1 (1997)
- ES2 (1998)
- ES3 (1999)
- ES4 (Abandoned)
- ES5 (2009)
- ES6/ES2015 (2015)
- ES2016 (2016)
- ES2017 (2017)
- ES2018 (2018)
- ESNEXT

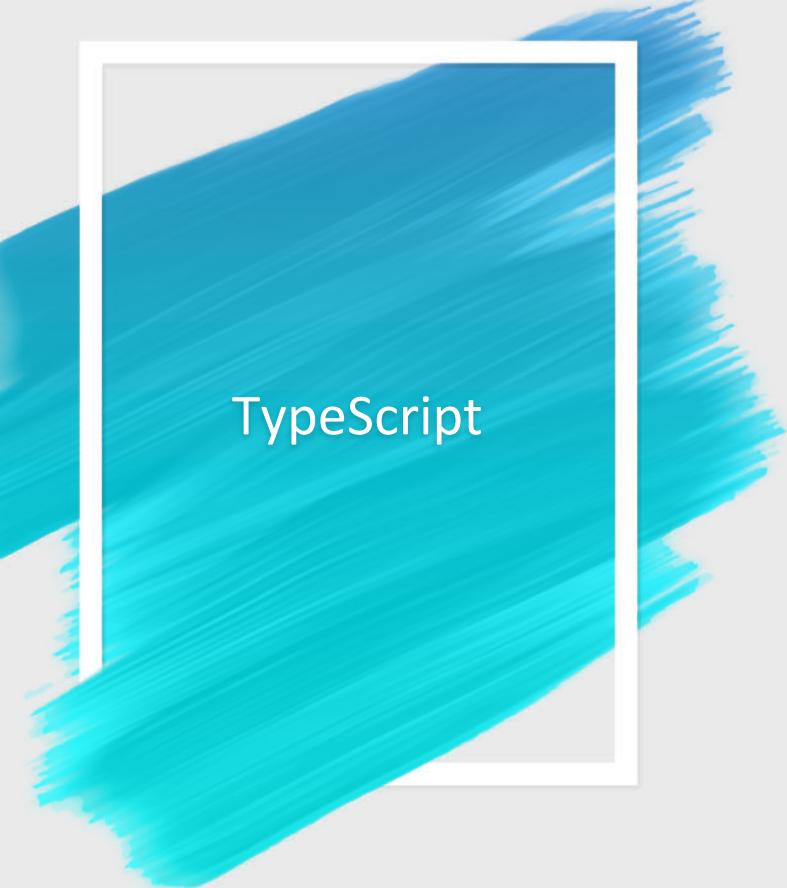
Supports: <https://kangax.github.io/compat-table>

What are your favorite ES6 features? <http://www.2ality.com/2015/07/favorite-es6-features.html>





TypeScript



TypeScript

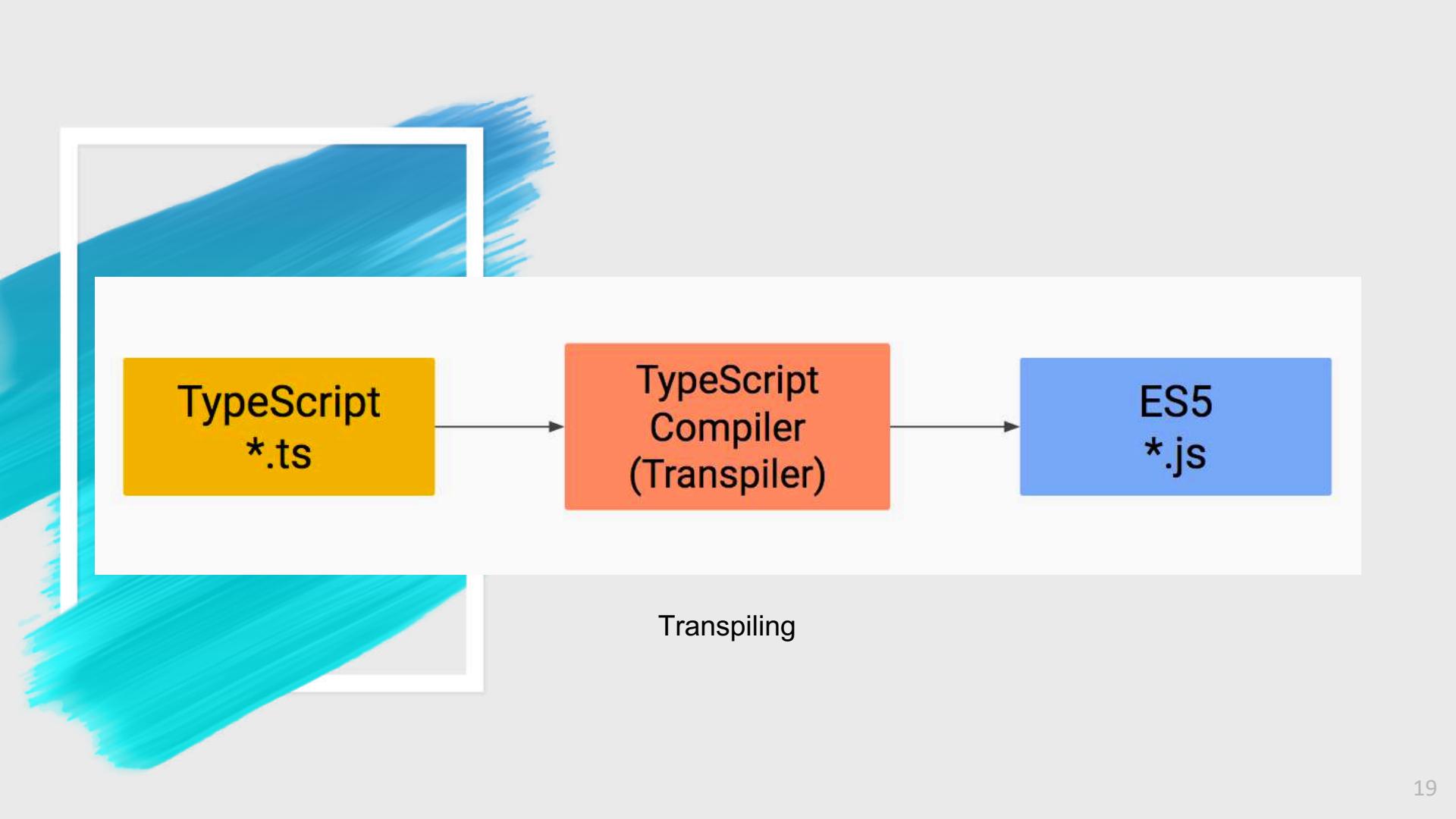
TypeScript



JavaScript that scales.

TypeScript typed superset of JavaScript that
compiles to plain JavaScript.

Any Browser. Any Host. Any OS. Open Source.



TypeScript
*.ts

TypeScript
Compiler
(Transpiler)

ES5
*.js

Transpiling

TypeScript

PREVIEW

learn

play

get it

run it

join in

Run

JavaScript

TypeScript

Walkthrough: Classes

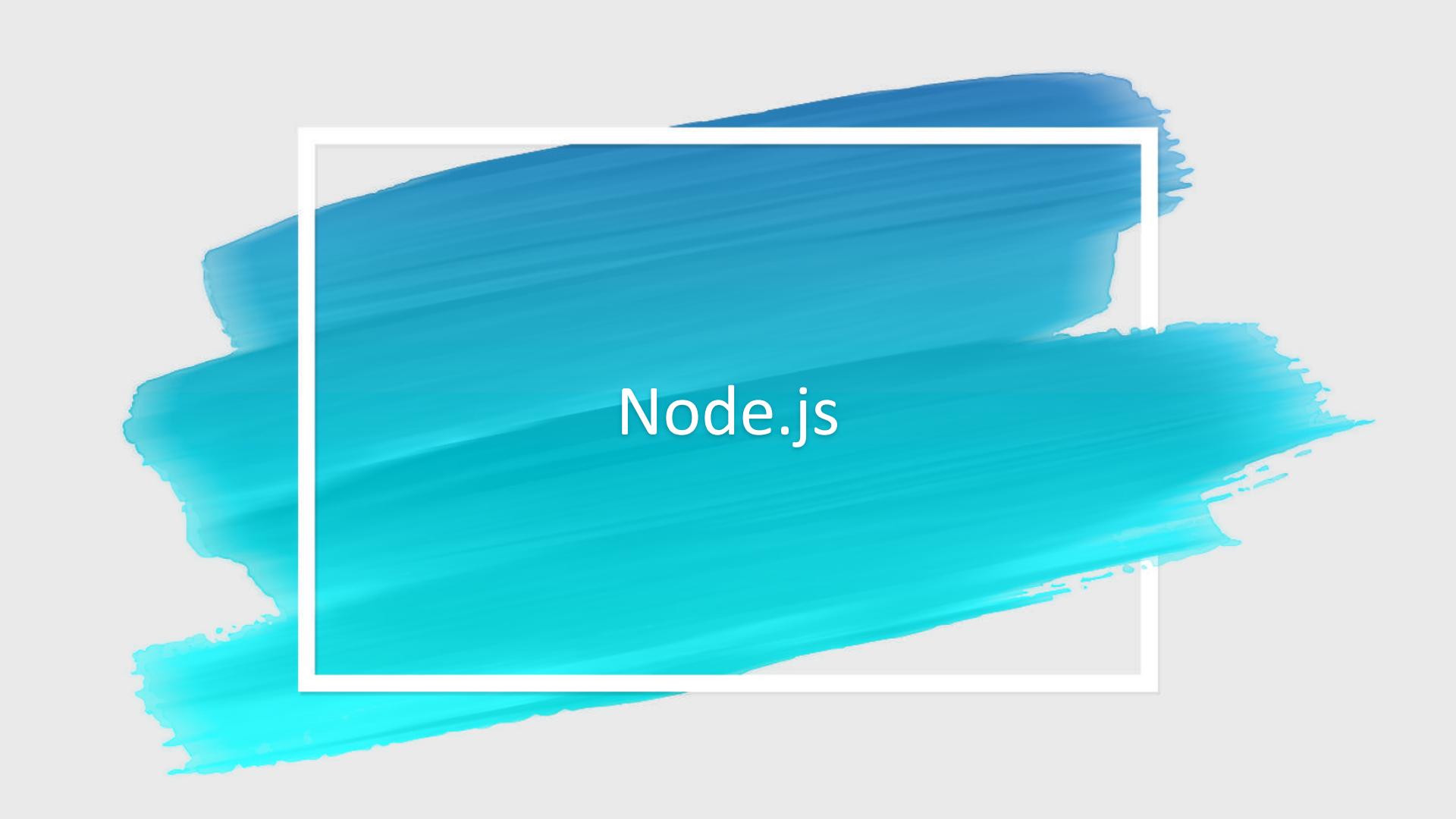
```
1 var SayHello = (function () {
2     function SayHello(pram) {
3         this.pram = pram;
4     }
5     SayHello.prototype.greet = function () {
6         return "<h1>" + this.pram + "</h1>";
7     };
8     return SayHello;
9 })();
10 ;;
11 var obj = new SayHello("Hello, world!");
12 var str = obj.greet();
13 document.body.innerHTML = str;
14 
```

To

```
1 var SayHello = (function () {
2     function SayHello(pram) {
3         this.pram = pram;
4     }
5     SayHello.prototype.greet = function () {
6         return "<h1>" + this.pram + "</h1>";
7     };
8     return SayHello;
9 })();
10 ;;
11 var obj = new SayHello("Hello, world!");
12 var str = obj.greet();
13 document.body.innerHTML = str;
14
15 
```

To

Hello, world!



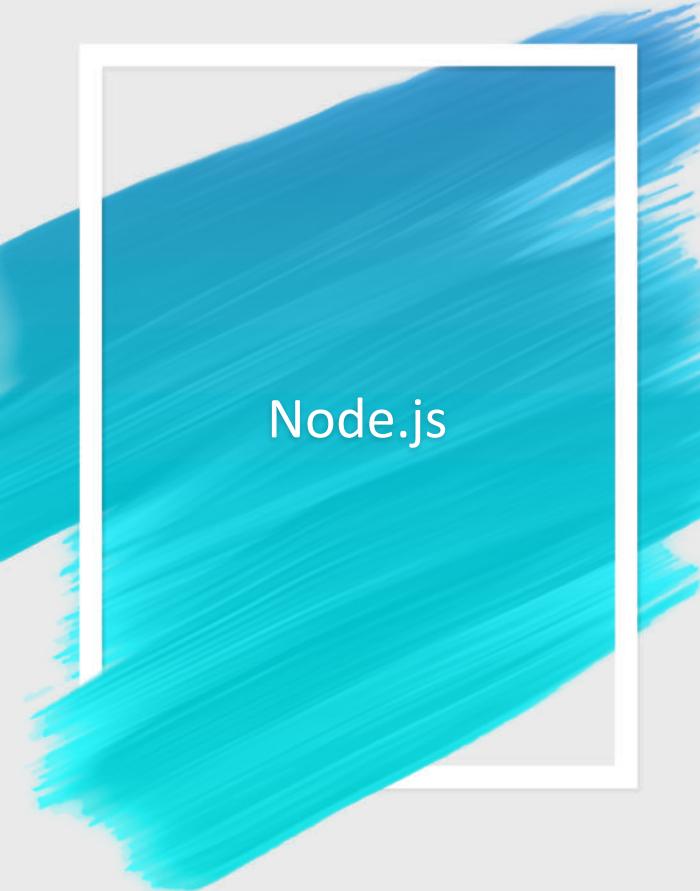
Node.js



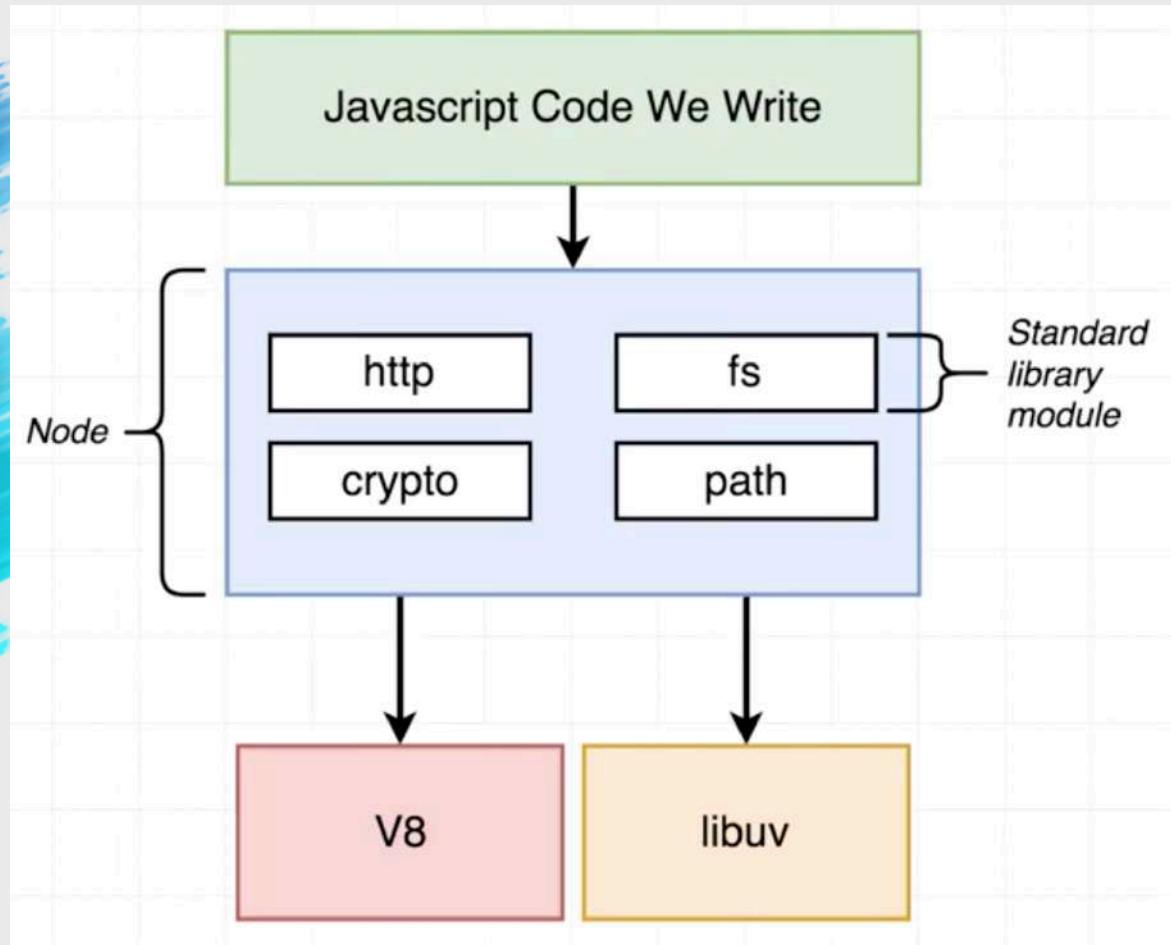
Node.js

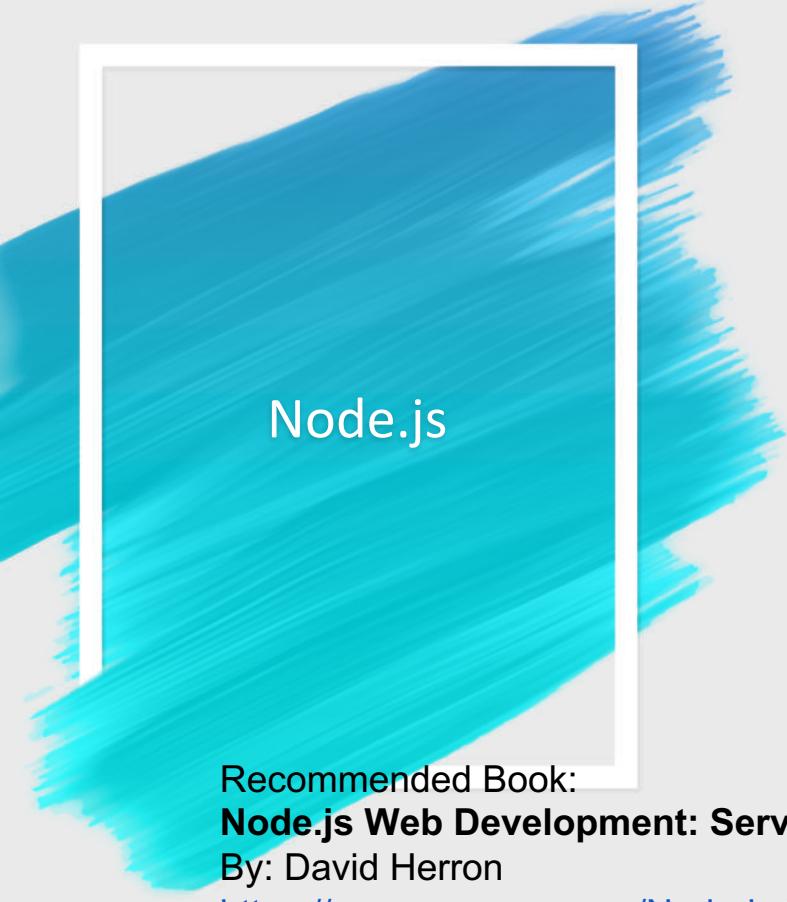
A **JavaScript** run-time built on Chrome's
V8 JavaScript Engine.

- Initial Release: May, 2009
- Author: Ryan Dahl
- Platforms: Linux, macOS, Windows, and more.



Node.js





Node.js

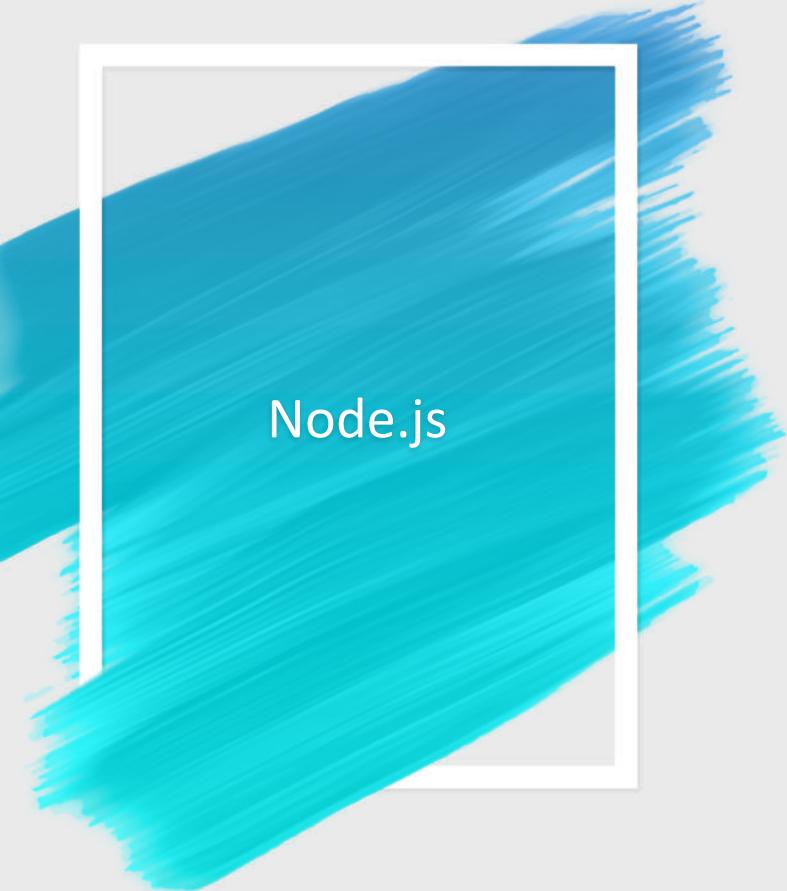
Recommended Book:

Node.js Web Development: Server-side development with Node 10 made easy, 4th Edition
By: David Herron

<https://www.amazon.com/Node-js-Web-Development-Server-side-development/dp/1788626850>

What does it mean?

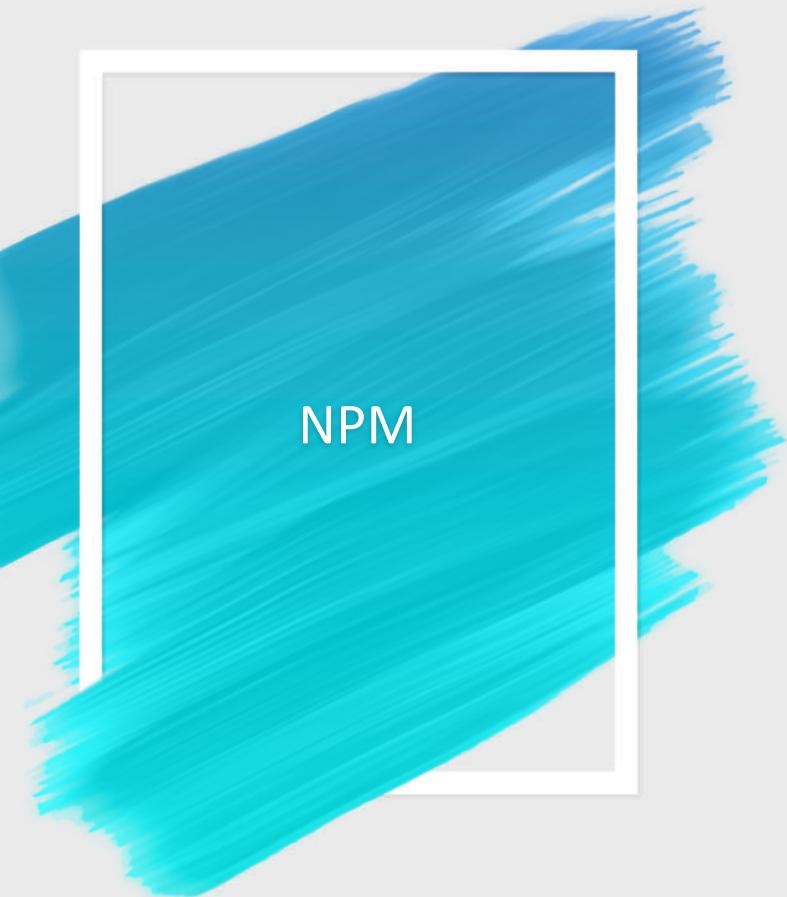
- Enabling JavaScript outside of Browser
- JavaScript for both Client and Server Side
- Development Efficiency (Fill Gap between Front-End and Back-End)
- A lot of Tools and Frameworks were possible relying on Node.js



Node.js

Best features of Node.js

- Fast
- Simple
- JavaScript
- V8 / libuv
- Asynchronous and Non-Blocking using Single Thread, Callback Function, and Event-Driven Programming
- Tons of Libraries



NPM

Node Package Manager

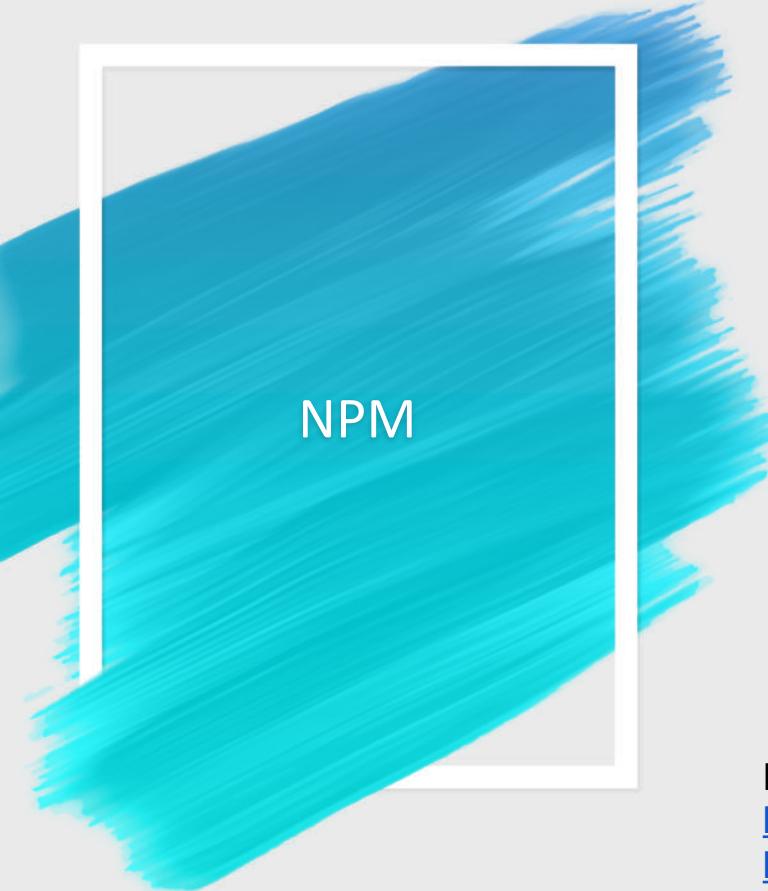


- Enabling of Code Sharing Globally
- 11 millions** Users and Growing Fast
- Package Downloads:
Around **6 Billion/Week**
- Open Source Projects Backbone

(Data on: Nov 2018)

Package.json Example

```
{  
  "name": "exampelenpm",  
  "version": "1.0.0",  
  "description": "",  
  "main": "index.js",  
  "scripts": {  
    "start": "node index.js",  
    "test": "echo \\\"Error: no test specified\\\" && exit 1"  
  },  
  "keywords": [],  
  "author": "",  
  "license": "ISC",  
  "dependencies": {  
    "lodash": "^4.17.15",  
    "react-native-floating-labels": "file:mypackage"  
  },  
  "devDependencies": {  
    "prettier": "^1.18.2"  
  }  
}
```



NPM

Tips on NPM

What to do when you use NPM package and it does not behave like you want / bug / error?

- Report issue(s) in github
- Build your own package
- Clone the package and modify / fix / adjust
- Use it as a local package / from your repository
- Pull Request / use new version

Example:

<https://www.npmjs.com/package/react-native-floating-labels>
<https://www.npmjs.com/package/react-native-voice>

The background features a large, expressive brushstroke of blue paint on a white surface. The brushstrokes are thick and layered, creating a textured and dynamic feel. They vary in shade from light blue to deep teal, with some areas appearing more saturated than others. The overall composition is organic and artistic, providing a vibrant backdrop for the central text.

Font-End Development

Front-End Web Development

- Vanilla JavaScript



- Plain JavaScript without using additional library or framework
- There are tons of libraries/frameworks out there so we tend to use those when we don't really need them. Rethink if we really need to.

Front-End Web Development

-

jQuery



- jQuery Object** and allowing own extensions and plugins without having to worry about the cross browsers supports
- Easy DOM Element access and standardized across browsers
- Standardized Even Handlers
- Made simple animation easier
- Standardized **AJAX** across browsers

Front-End Web Development

-

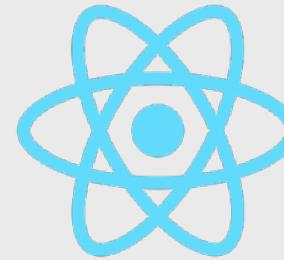
Angular



- Angular is NOT Angular.js
- Popularity: **50k+** Github Stars
- Using **TypeScript**
- Backed by **Google**
- One Whole Solution Package
- Opinionated Structured
- Separation of Concern (SoP)
- Two-Way Data Binding
- Dependency Injection
- Come with good CLI

Front-End Web Development

-
React.js



- Popularity: **135k+** Github Stars
- Backed by **Facebook**
- Lighter weight, Fast and Scalable
- Freedom
 - Only use what you need
 - Structure as you like
- Tons of Support Libraries, Tools and other resources
- JSX – JavaScript eXtension
- create-react-app CLI

Front-End Web Development

-

Vue.js



- Popularity: **146k+** Github Stars
- Vue = Good Parts of Angular + Good Parts of React
- Lightweight, Fast and Scalable
- Shallow Learning Curve
- Main support libraries like Vue Router, Vuex are built by Vue Core Team
- Freedom
 - Only use what you need
 - Structure as you like
- Come with good CLI

The background features a large, abstract brushstroke pattern in shades of blue and cyan, applied with varying thicknesses and saturation across the slide area.

Mobile Application Development



Progressive Web App (PWA)

PWA

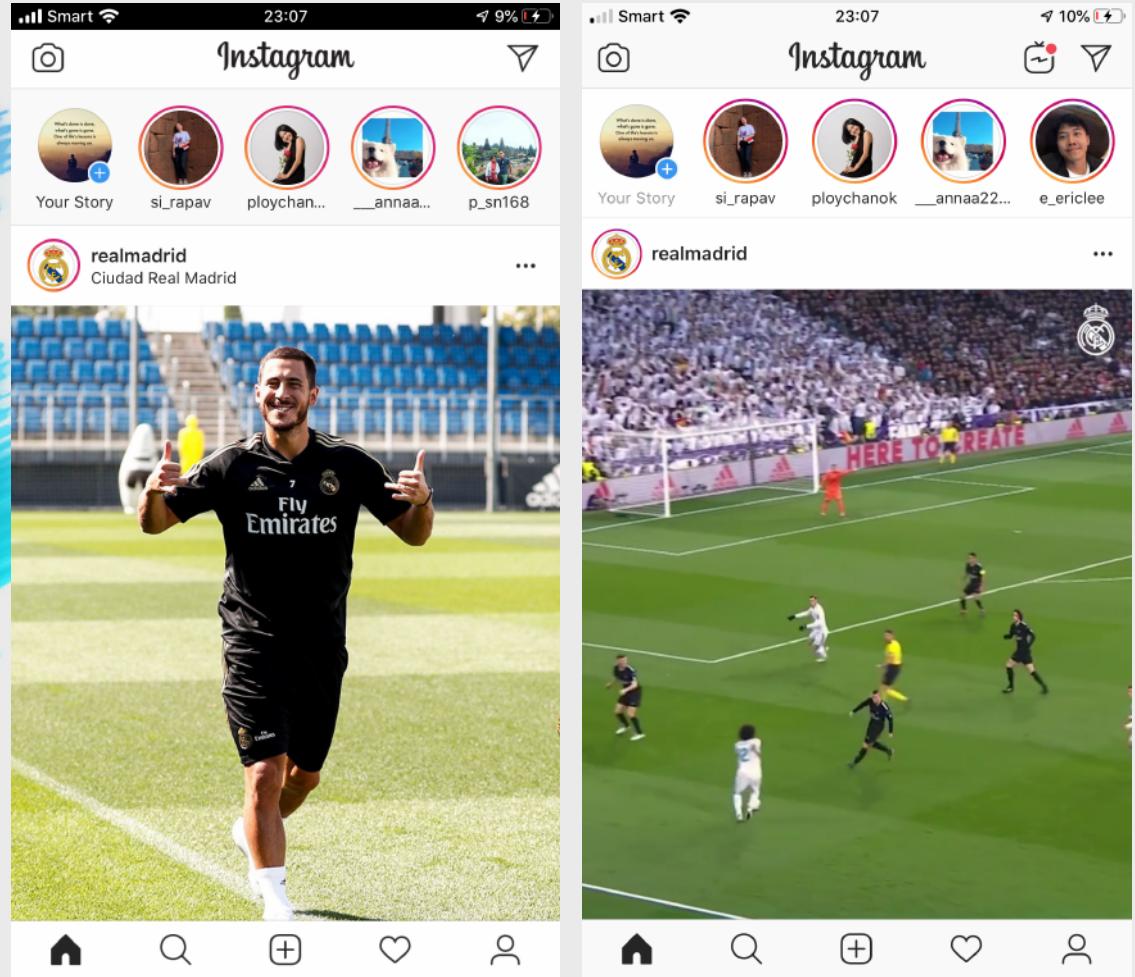
PWA are websites that offer modern web capabilities to deliver an **app-like experience** to user.

- Reliable:** Load instantly and never show the downasaur, even in uncertain network conditions.
- Fast:** Respond quickly to user interactions with silky smooth animations and no janky scrolling.
- Engaging:** Feel like a natural app on the device, with an immersive user experience.

Progressive Web App (PWA)

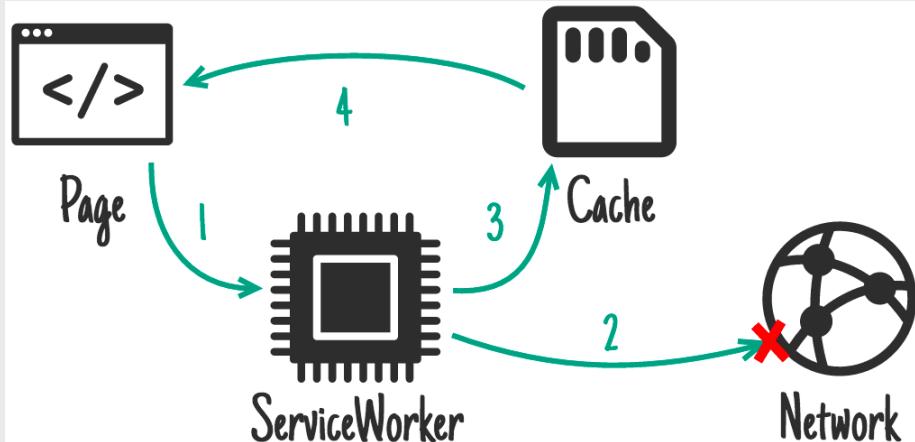


Progressive Web App (PWA)



Progressive Web App (PWA)

Service Worker



- Proxy between the Browser and Network
- Offline first using Caching API

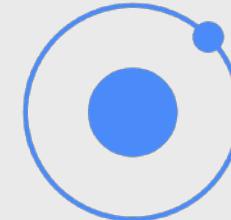
Progressive Web App (PWA)

Manifest – PWA Properties Declaration

```
{ manifest.json •  
You, a few seconds ago | 2 authors (You and others)  
1  {  
2    "name": "Test",  
3    "short_name": "Test",  
4    "theme_color": "#1976d2",  
5    "background_color": "#fafafa",  
6    "display": "standalone",  
7    "scope": "/",  
8    "start_url": "/",  
9    "icons": [  
10      {  
11        "src": "assets/icons/icon-72x72.png",  
12        "sizes": "72x72",  
13        "type": "image/png"  
14      }  
15    ]  
16  }  
17 }
```

Hybrid Mobile Application Development

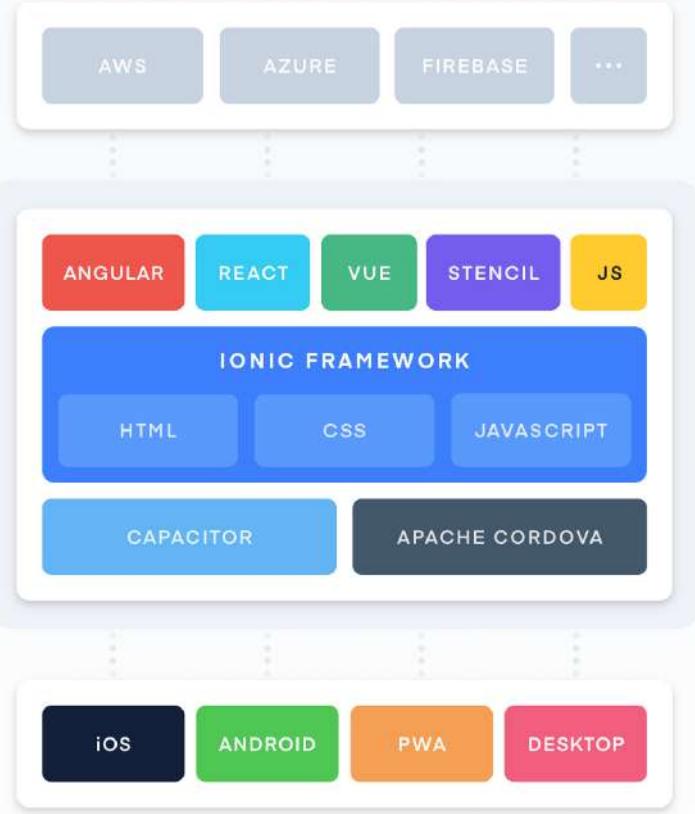
- WebView Mobile Application
- Web Components
- One Code Base for Web and App
- Easy to Convert into PWA
- Abundance of UI Components
- Faster Development Time and Less Resources
- Update Over The Air



PhoneGap

Cordova

Ionic



A complete app development kit.

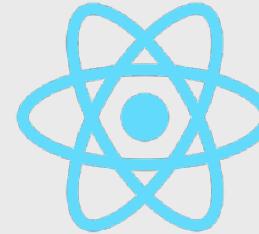
The open source [Ionic Framework](#) features a rich library of front-end building blocks and UI components that make it easy to design beautiful, high-performance mobile and Progressive Web Apps (or PWAs) using web technologies like HTML, CSS, and JavaScript.

Our universal web components pair with any JavaScript framework, including Angular, React, Vue, or no framework at all (just add a script tag!). Ionic apps are backend agnostic, with connections to AWS, Azure, and Firebase.

Mobile Application Development

-

React-Native



- Hybrid Native Application
(Native App NOT WebView App)
- Popularity: **80k+** Github Stars
- Backed by **Facebook**
- Indistinguishable Usage Experience from Native Application
- Performance is Native-Like Application
- Matured Eco System
- Abundance of Resources and Development Tools
- Update Over The Air

Mobile Application Development

-

Native Script



- Hybrid Native Application
(Native App NOT WebView App)
- Popularity: **17k+** Github Stars
- Indistinguishable Usage Experience from Native Application
- Performance is Native-Like Application
- Develop using **Angular** or **Vue**
- UI Components

The background features a large, abstract brushstroke of blue paint on a white surface. The brushstrokes are thick and layered, creating a textured look. A white rectangular frame is centered on the slide, containing the title text.

Desktop Application Development

Desktop Application Development with Electron.js



ELECTRON

Electron.js is a framework for creating native applications with web technology.

- “If you can build a website, you can build a desktop app.”
- Popularity: **76k+** Github Stars
- Built and Backed by **Github Developers**
- Based on Node.js and Chrome’s V8
- Cross-Platforms (Windows/Linux/MacOS)
- Grow a long side web technologies

Built on Electron

Initially developed for GitHub's Atom editor, Electron has since been adopted by companies all over the world.



DISCORD



openfin



slack



Microsoft



SYMPHONY



ATLASSIAN



Abstract



aircall

With Electron, creating a desktop application for your company or idea is easy. Check out some of the apps created by the community or add your own.

Desktop Application Development

-

NW.js



NW.js

Call all Node.js modules directly from DOM/WebWorker and enable a new way of writing applications with all Web technologies.

- Popularity: **35k+** Github Stars
- App run-time based on Chromium and Node.js
- Cross-Platforms (Windows/Linux/MacOS)
- Grow a long side web technologies

Desktop Application Development

-

Proton Native

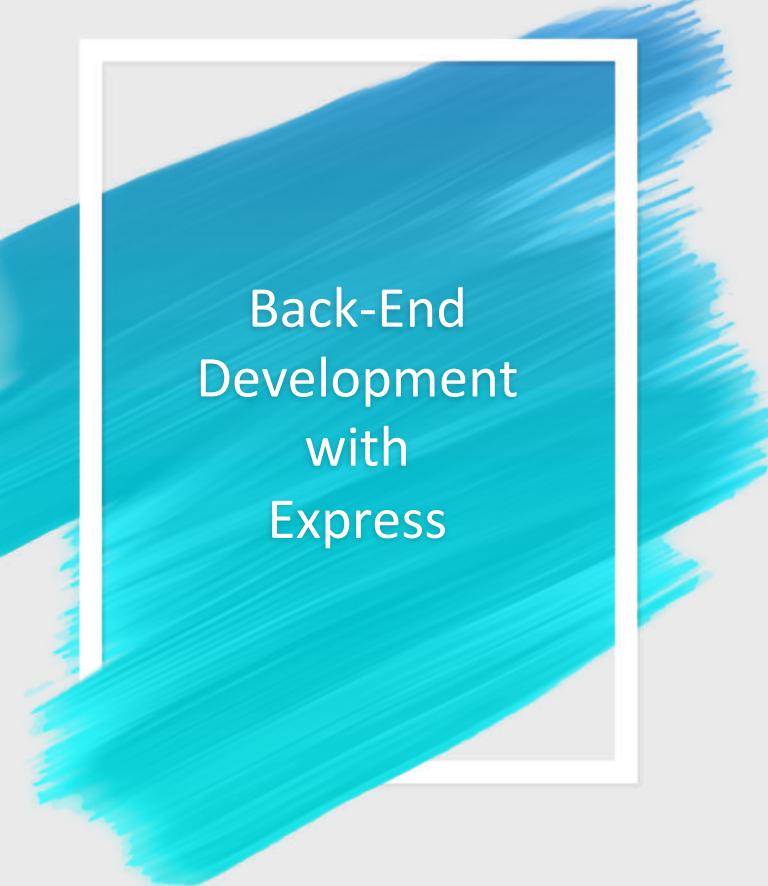


Create Native Desktop Applications through a React syntax, on all platforms.

- Popularity: **9.2k+** Github Stars
- React.js and Support existing React.js Libraries
E.g. Redux
- Native Components
- Cross-Platforms (Windows/Linux/MacOS)
- Compatible with all Node.js packages

The background features a large, expressive brushstroke of blue paint on a white surface. The brushstrokes are thick and layered, creating a textured and dynamic feel. They vary in shade from light cyan to deep teal, with some areas appearing more saturated than others. The overall composition is organic and artistic, providing a vibrant backdrop for the central text.

Back-End Development



Back-End Development with Express

Express

Fast, Unopinionated, Minimalist
Web Framework for Node.js

- Popularity: **45k+** Github Stars
- Lower Learning Curve
- Great 3rd Party Integration
- Thin Layer up on Node.js

<https://expressjs.com>

Back-End Development with Meteor.js



Full Stack JavaScript platform for developing modern
web and mobile application.

- Popularity: **41k+** Github Stars
- Full Stack Solution
- Real-time Web Application
- Custom Package Manager

<https://www.meteor.com>

Back-End Development with Sails.js



Sails makes it easy to build custom,
enterprise-grade Node.js app.

- Popularity: **20k+** Github Stars
- Full MVC
- Autogenerated REST APIs
- Any Database

<https://sailsjs.com>

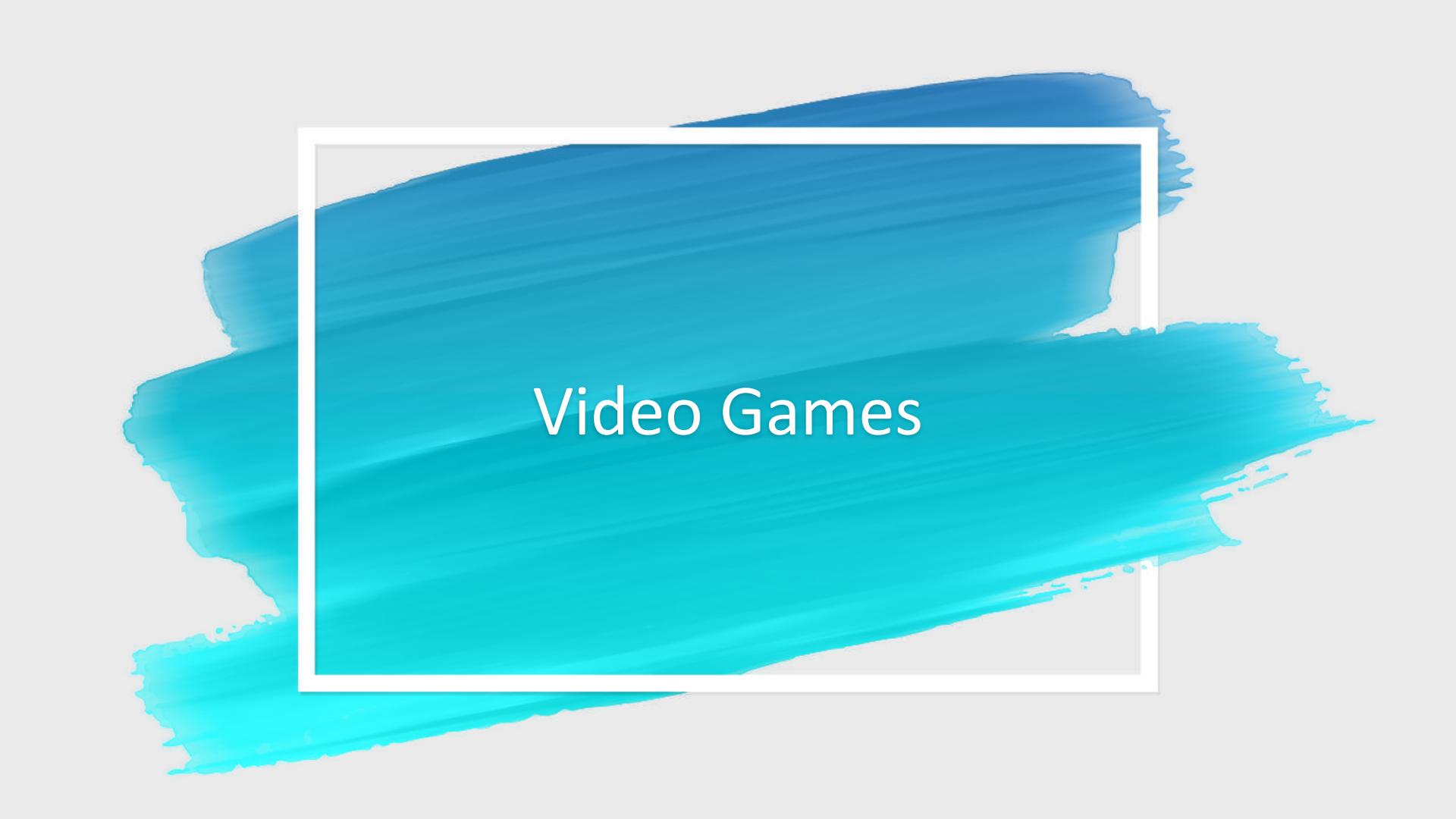
Back-End Development with Nest.js



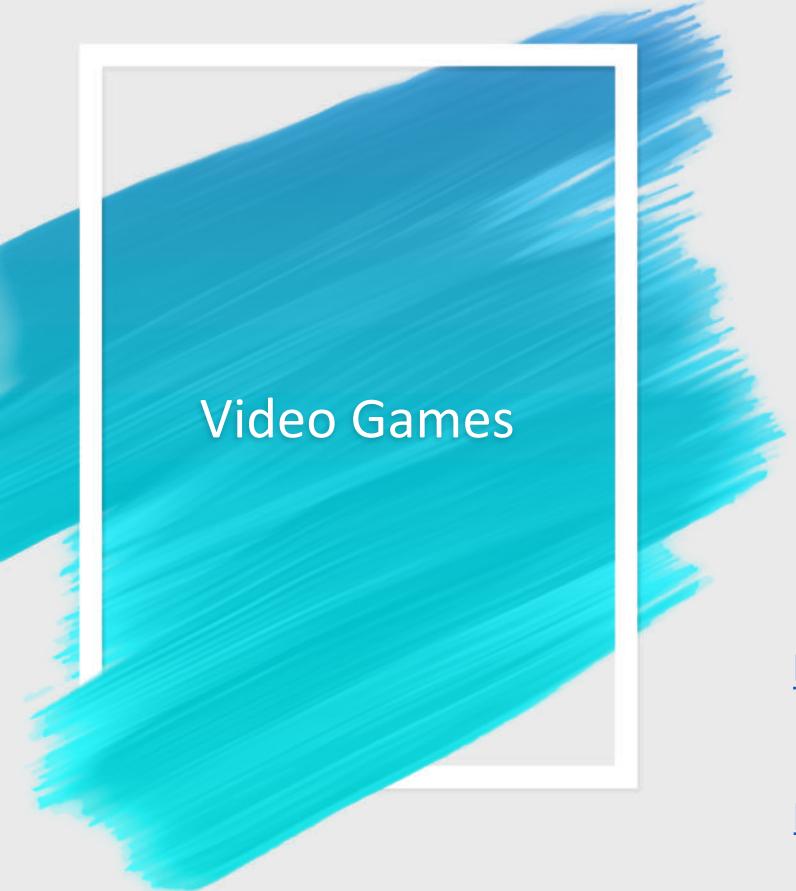
A progressive Node.js framework for building efficient, reliable and scalable server-side application.

- Popularity: **18k+** Github Stars
- Dependency Injection
- Modularization
- Inspired by Angular

<https://nestjs.com>



Video Games



Video Games



**Powerful, beautiful, simple,
open web-based 3D at its best, WebGL.**

Demo:

<https://www.babylonjs.com/demos/sponzadynamicshadows/>

Popularity: **9.9k+** Github Stars

<https://www.babylonjs.com/>



Video Games



Impact is a JavaScript Game Engine that allows you to develop stunning HTML5 Games for desktop and mobile browsers.

<https://impactjs.com/>



IoT Development

IoT Development using JavaScript



What is IoT?

- Physical objects with embedded electronics, sensors, and software connected to the **internet**.

JavaScript for these Devices?

- JavaScript only Microcontrollers
 - E.g. Tessel 1, Espriuno, ESP8266/NodeMCU
- Embedded Linux Devices
 - E.g. Tessel 2, Raspberry Pi, C.H.I.P
- Hybrid Solutions
 - E.g. Host Computer + Microcontroller + Johnny Five



Learning with JavaScript



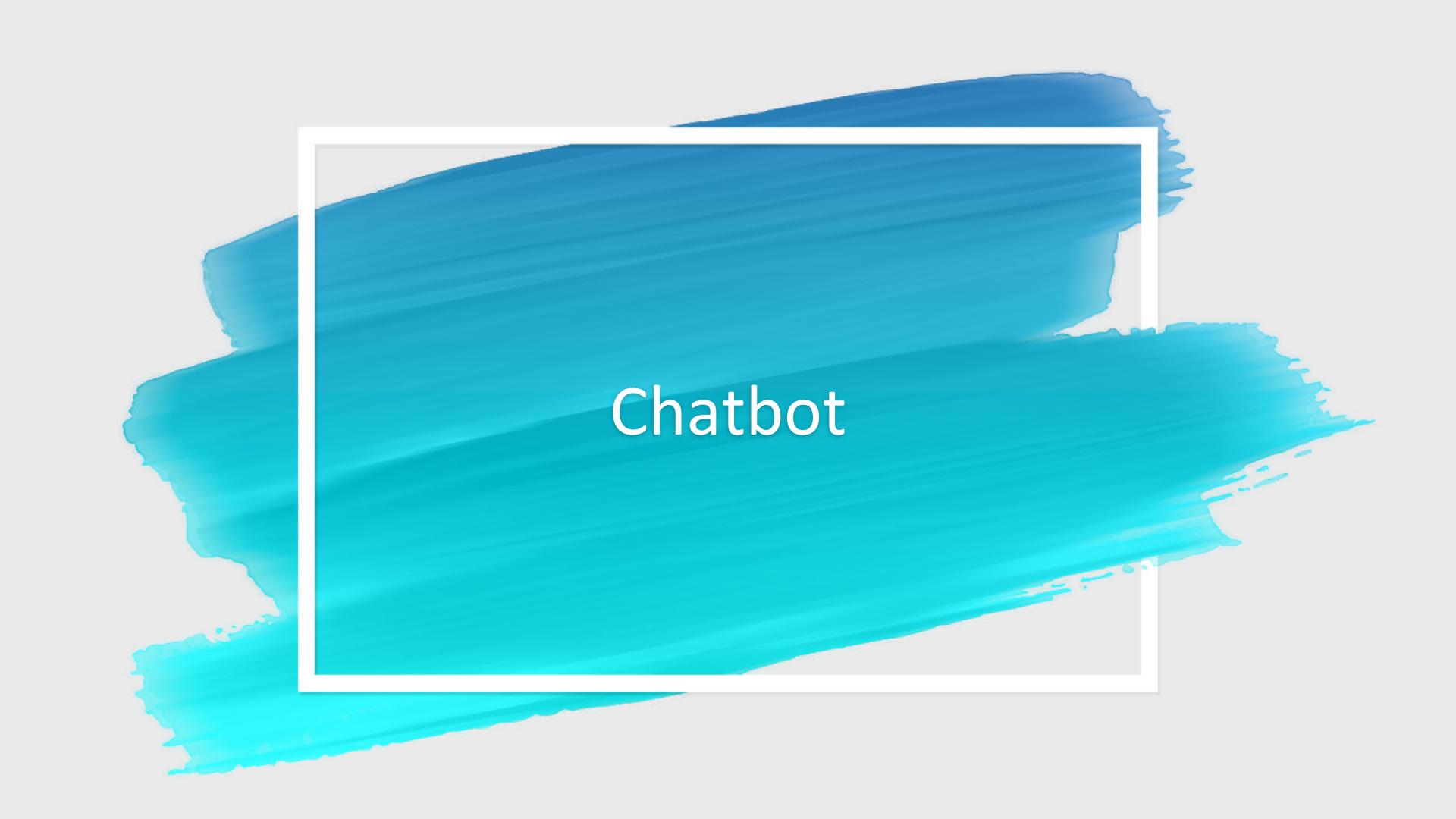
Machine Learning with JavaScript

What is Machine Learning?

- ❑ Machine learning is an application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed.

Python!!! How about JavaScript?

- ❑ TensorFlow.js
- ❑ Brain.js (For Neural Networks)
- ❑ Deeplearnjs
- ❑ mljs



Chatbot



botpress

The open-source Conversational Platform with built-in language understanding (NLU), beautiful graphical interface and dialog manager. Easily create chatbots and AI-based virtual assistants.

Popularity: **7.5k+** Github Stars

<https://botpress.io>

Chatbot

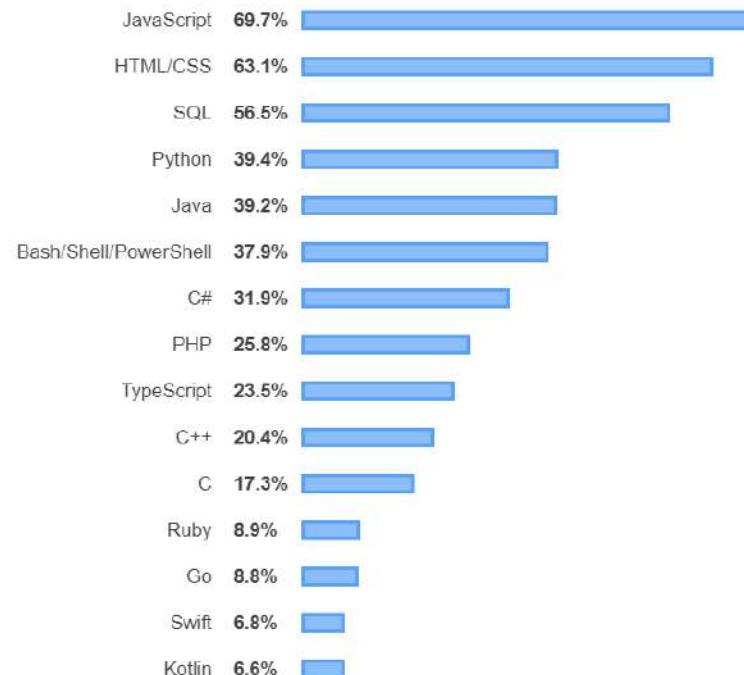


Insights

Statistic on JavaScript

Programming, Scripting, and Markup Languages

All Respondents Professional Developers



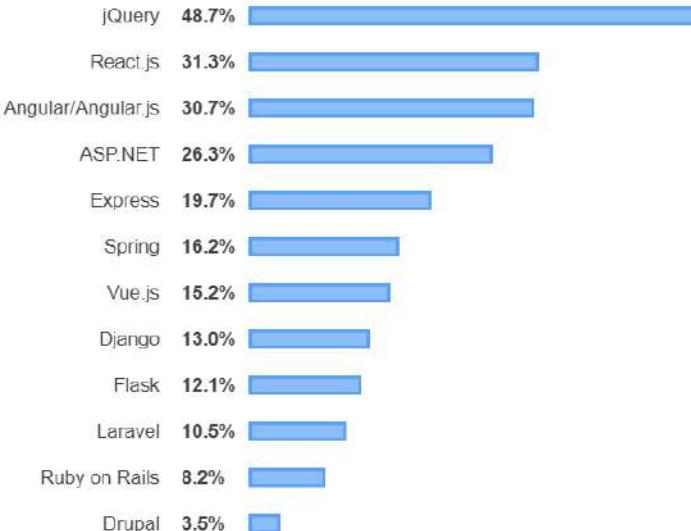
Stack Overflow Developer Survey 2019

Statistic on JavaScript

Web Frameworks

All Respondents

Professional Developers



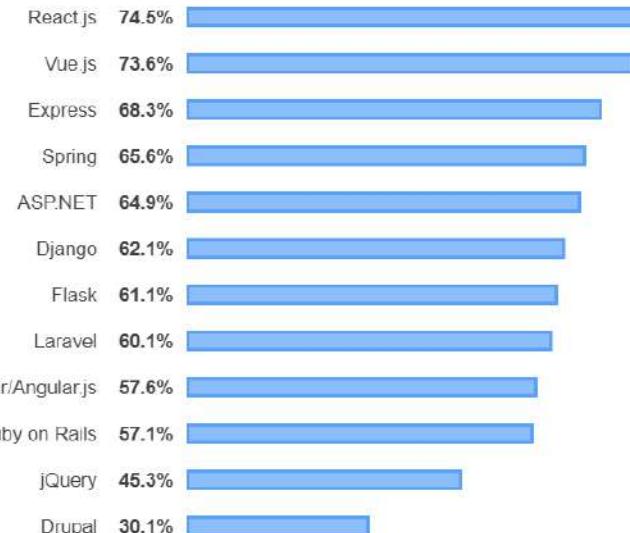
63,585 responses; select all that apply

Stack Overflow Developer Survey 2019

Statistic on JavaScript

Most Loved, Dreaded, and Wanted Web Frameworks

Loved Dreaded Wanted

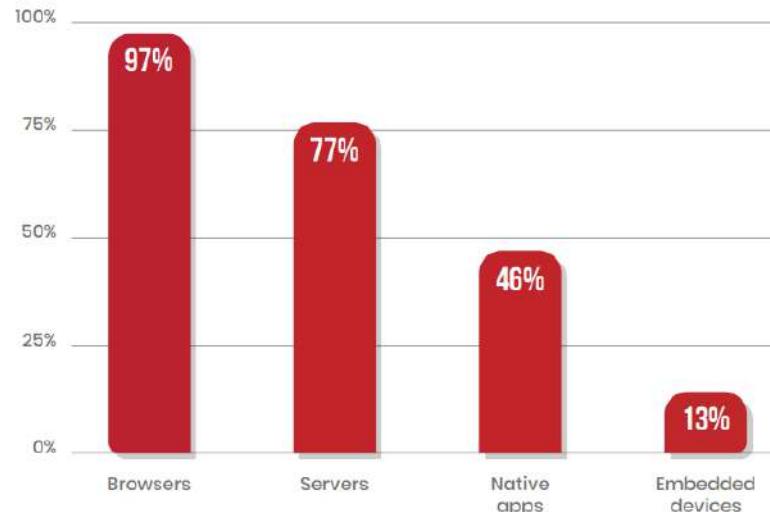


Stack Overflow Developer Survey 2019

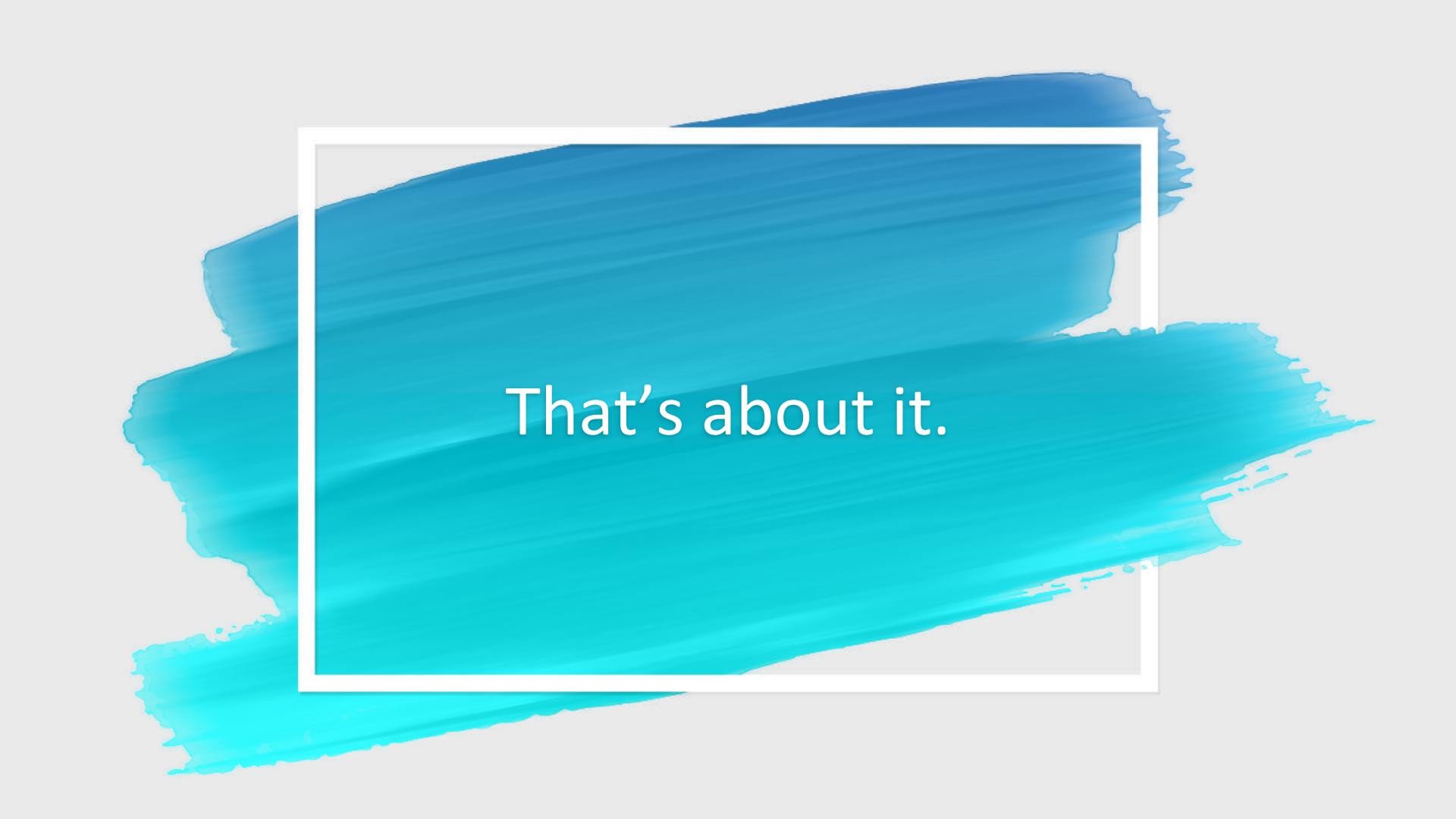
Statistic on JavaScript

Where does your JavaScript run?

percentage of npm survey respondents



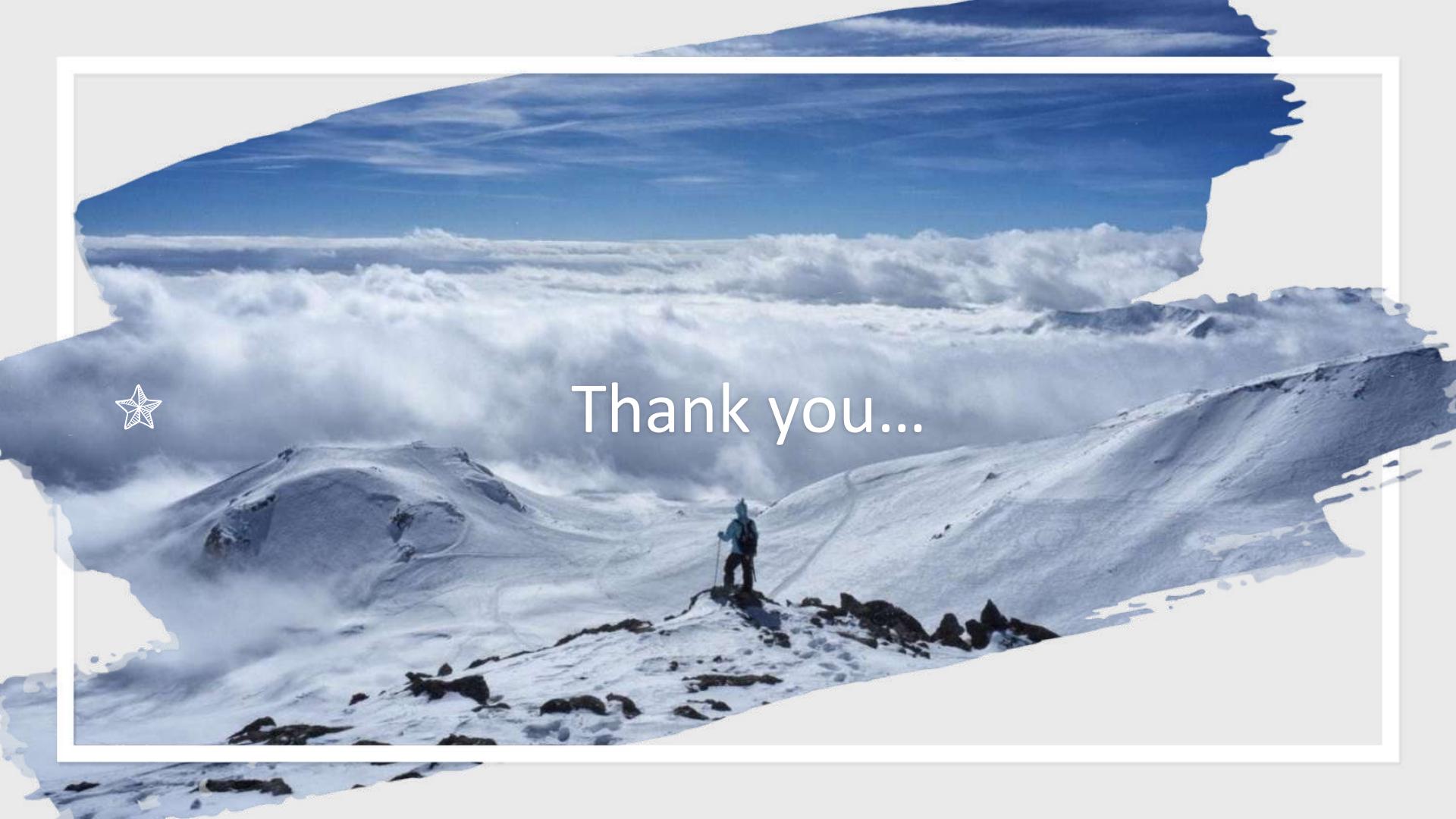
Enterprise JavaScript - NPM Survey 2019



That's about it.



Slides: <https://github.com/davychhouk/js-talk-wp-community>



A photograph of a person standing on a snowy mountain ridge, looking down at a vast sea of clouds. The sky above is a clear, bright blue. The person is wearing a blue jacket and dark pants, and is holding ski poles. The foreground shows rocky terrain with patches of snow. In the bottom left corner, there is a small white starburst icon.

Thank you...