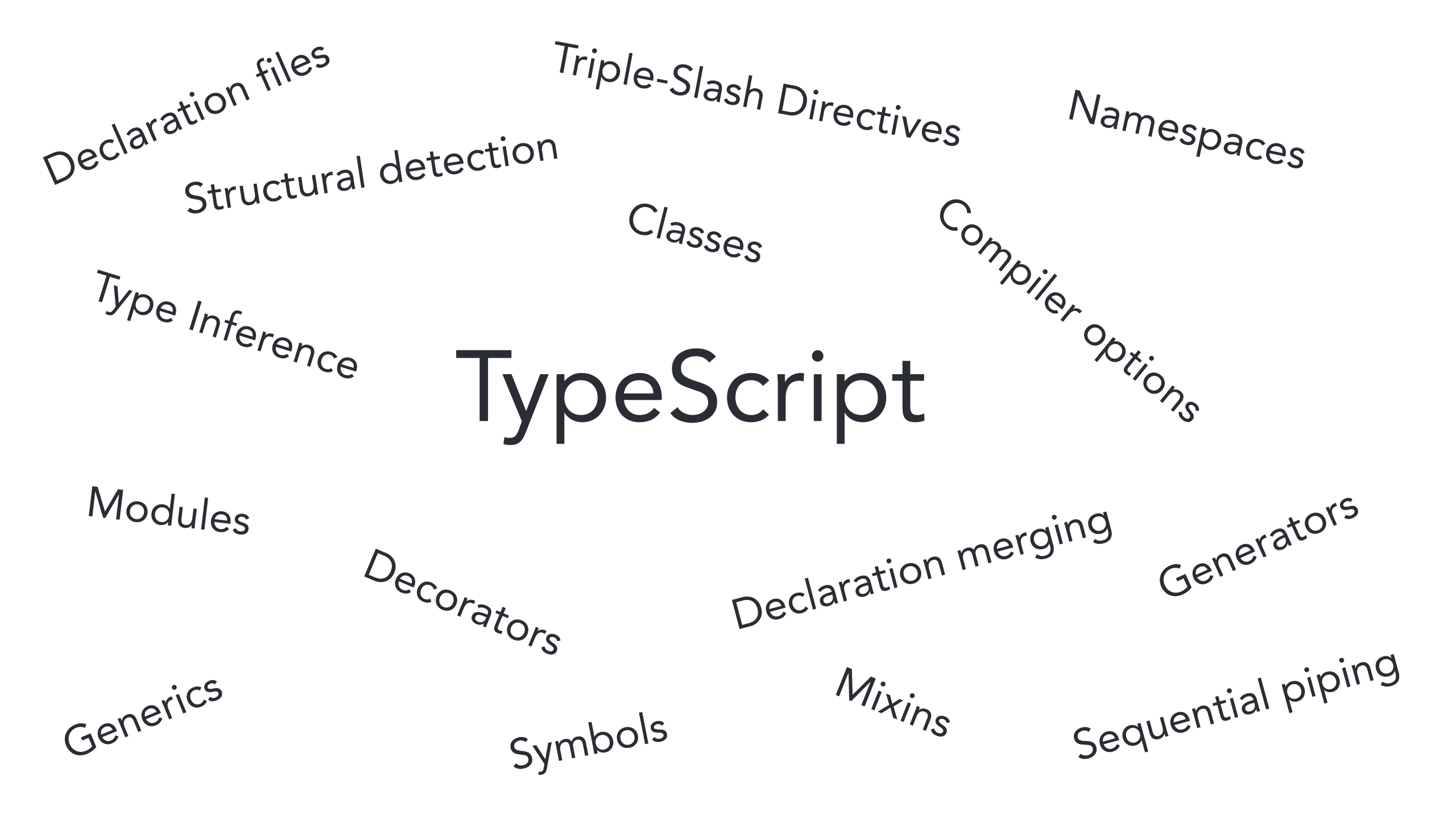


What is TypeScript, and Should You Care?

TJ VanToll

How big was MSU's first
graduating class (1861)?

7



TypeScript

Oh, is tonight interactive? Like should people code along?

Nope no interaction. I speak the truth and you listen.

Delivered

Declaration files

Structural detection

Triple-Slash Directives

Namespaces

Classes

Compiler options

Type Inference

TypeScript

Modules

Decorators

Declaration merging

Generators

Generics

Symbols

Mixins

Sequential piping

"A typed superset of
JavaScript that
compiles to plain
JavaScript"

"A typed superset of
JavaScript that
compiles to plain
JavaScript"



wiseGEEK

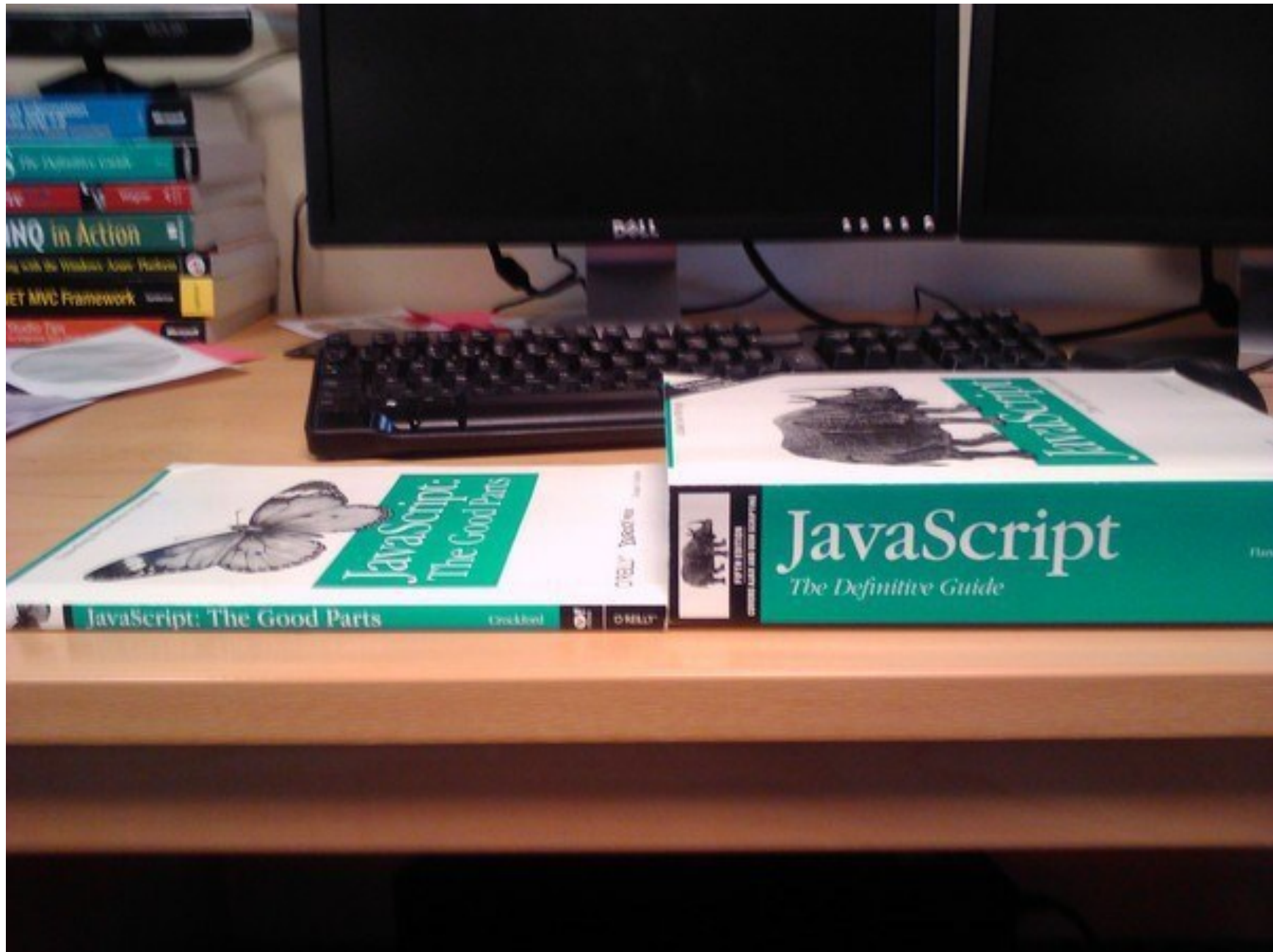
**"A typed superset of
JavaScript that
compiles to ~~plain~~
JavaScript"**







1	<code>true == 1</code>	<code>→ true</code>
2	<code>true == "1"</code>	<code>→ true</code>
3	<code>false == 0</code>	<code>→ true</code>
4	<code>false == "0"</code>	<code>→ true</code>
5		
6	<code>false == undefined</code>	<code>→ false</code>
7	<code>false == null</code>	<code>→ false</code>
8		
9	<code>null == undefined</code>	<code>→ true</code>



Compile to JavaScript tools

- There are a lot.
 - 345
 - Source: <https://github.com/jashkenas/coffeescript/wiki/List-of-languages-that-compile-to-JS>
- Ruby, Python, Erlang, Java, Scala, C#, F#, Lisp, Scheme, Haskell, Smalltalk, C, C++, Basic, Go, PHP, and way more.

Fun names of compile-to-JS tools

- treehugger
- jangaroo
- Waterbear



The
WATERBEAR
welcomes you!

Waterbear is a toolkit for making programming more accessible and fun. Having a visual language means you don't have to focus on learning a syntax to start programming.

Try it out

<http://waterbearlang.com/>



CoffeeScript is a little language that compiles into JavaScript. Underneath that awkward Java-esque patina, JavaScript has always had a gorgeous heart. CoffeeScript is an attempt to expose the good parts of JavaScript in a simple way.

The golden rule of CoffeeScript is: *"It's just JavaScript"*. The code compiles one-to-one into the equivalent JS, and there is no interpretation at runtime. You can use any existing JavaScript library seamlessly from CoffeeScript (and vice-versa). The compiled output is readable, pretty-printed, and tends to run as fast or faster than the equivalent handwritten JavaScript.

The CoffeeScript compiler goes to great lengths to generate output JavaScript that runs in every JavaScript runtime, but there are exceptions. Use [generator functions](#), [for...from](#), or [tagged template literals](#) only if you know that your [target runtimes can support them](#). If you use [modules](#), you will need to [use an additional tool to resolve them](#).

Latest Version: [1.12.5](#)

```
npm install -g coffee-script
```

CoffeeScript 2 is coming! It adds support for [ES2015 classes](#), [async/await](#), and generates JavaScript using ES2015+ syntax. [Learn more](#).

Objects:

math =

 root: Math.sqrt

 square: square

 cube: (x) -> x * square x

Splats:

race = (winner, runners...) ->

 print winner, runners

Existence:

alert "I knew it!" if elvis?

Array comprehensions:

cubes = (math.cube num for num in list)



CoffeeScript

Programming Language



Compare

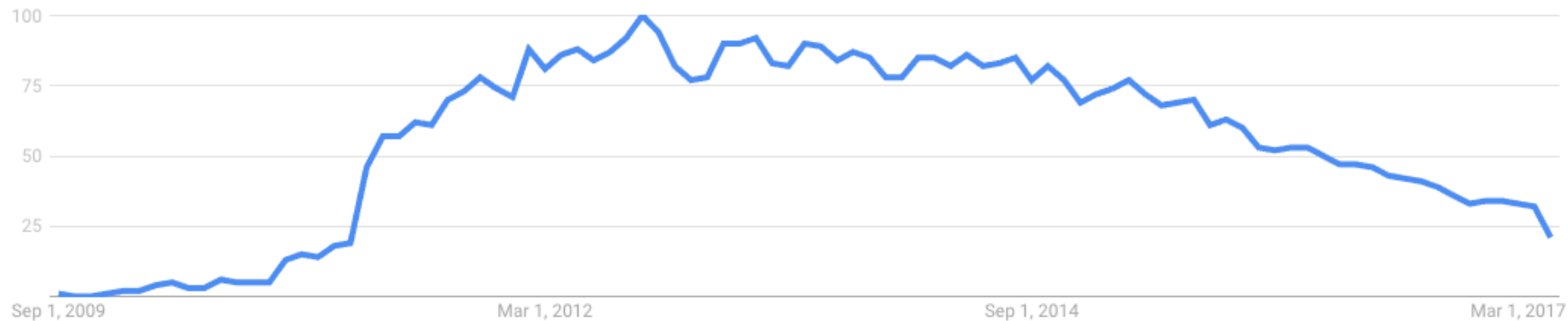
Worldwide ▼

9/1/09 - 5/3/17 ▼

All categories ▼

Web Search ▼

Interest over time ?





[Watch the videos for Dart Developer Summit 2016.](#)

```
import 'dart:async';
import 'dart:math' show Random;

main() async {
  print('Compute  $\pi$  using the Monte Carlo method.');
```

[Open in DartPad](#)

```
  await for (var estimate in computePi()) {
    print('n = $estimate');
  }
}

/// Generates a stream of increasingly accurate estimates of  $\pi$ .
Stream<double> computePi({int batch: 1000000}) async* {
  var total = 0;
  var count = 0;
  while (true) {
    var points = generateRandom().take(batch);
    var inside = points.where((p) => p.isInsideUnitCircle);
    total += batch;
    count += inside.length;
    var ratio = count / total;
    // Area of a circle is  $A = \pi \cdot r^2$ , therefore  $\pi = A/r^2$ .
    // So, when given random points with  $x \in <0,1>$ ,
```

Dart is an application programming language that's easy to learn, easy to scale, and deployable everywhere.

Google depends on Dart to make very large apps.

[Get Started](#)[Install Dart](#)

[**Click underlined text or code to learn more.**]

[News](#)

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Find packages.

[Dart webdev](#)

Build browser apps.

[Flutter](#)

Build mobile apps.

```
// Copyright (c) 2011, the Dart project authors. Please see the AUT
// for details. All rights reserved. Use of this source code is gove
// BSD-style license that can be found in the LICENSE file.
// Simple test program invoked with an option to eagerly
// compile all code that is loaded in the isolate.
// VMOptions=--compile_all

class HelloDartTest {
  static testMain() {
    print("Hello, Darter!");
  }
}

main() {
  HelloDartTest.testMain();
}
```

Compiles to 17259 lines of JavaScript code. Now, most of it is just the library core, but it shows what you have to do to bolt static typing on top of a prototype-based, dynamic, truly object-oriented language.



Dart

Programming language

+ Compare

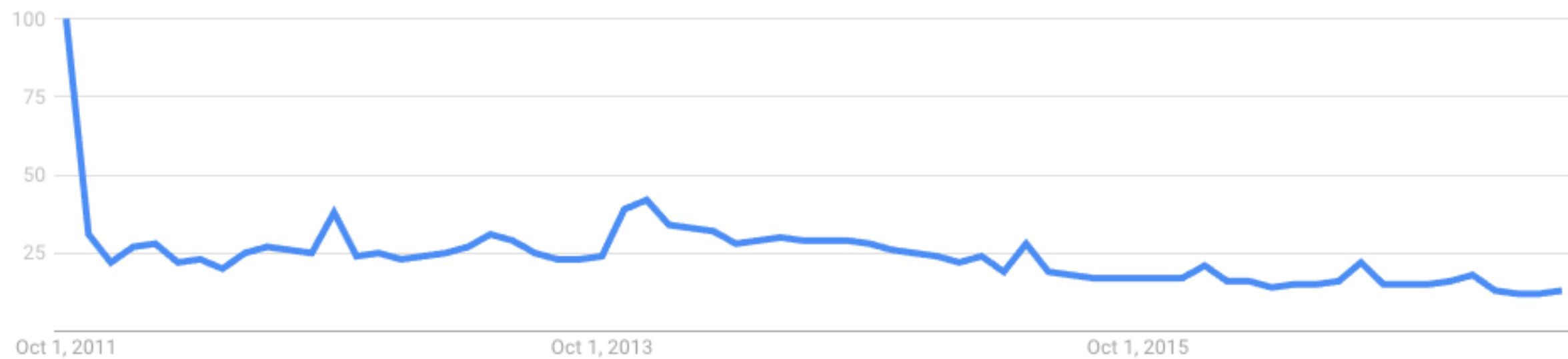
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Interest over time ?





Dart

Developer Summit

2016

[Watch](#)

[Program](#)

[Speakers](#)

[Location](#)

[Info](#)

Dart Dev Summit

2 days. 17+ talks.

October 26–27
Munich, Germany



WATCH

Microsoft augments JavaScript for large-scale development

In an extension to JavaScript, Microsoft provides static typing, classes and modularization



By **IDG News Service staff**

IDG News Service | OCT 1, 2012

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Interest over time ?







Worldwide ▼

10/1/12 - 12/31/14 ▼

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Interest over time









“We risk a lot by
building our core on
top of TypeScript.”

“I don’t hear anyone
talking about
TypeScript.”

"I like to keep my
JavaScript pure, as
God intended."

Build better NativeScript apps with TypeScript

TypeScript is a first-class citizen in NativeScript.

TypeScript is a typed superset of JavaScript that compiles to plain JavaScript. In addition to the great features you like about JavaScript, TypeScript offers benefits of special interest to developers coming from Strongly Typed, or Object Oriented backgrounds.

● TypeScript
Programming Lan...

● Dart
Programming lang...

● CoffeeScript
Programming Lan...



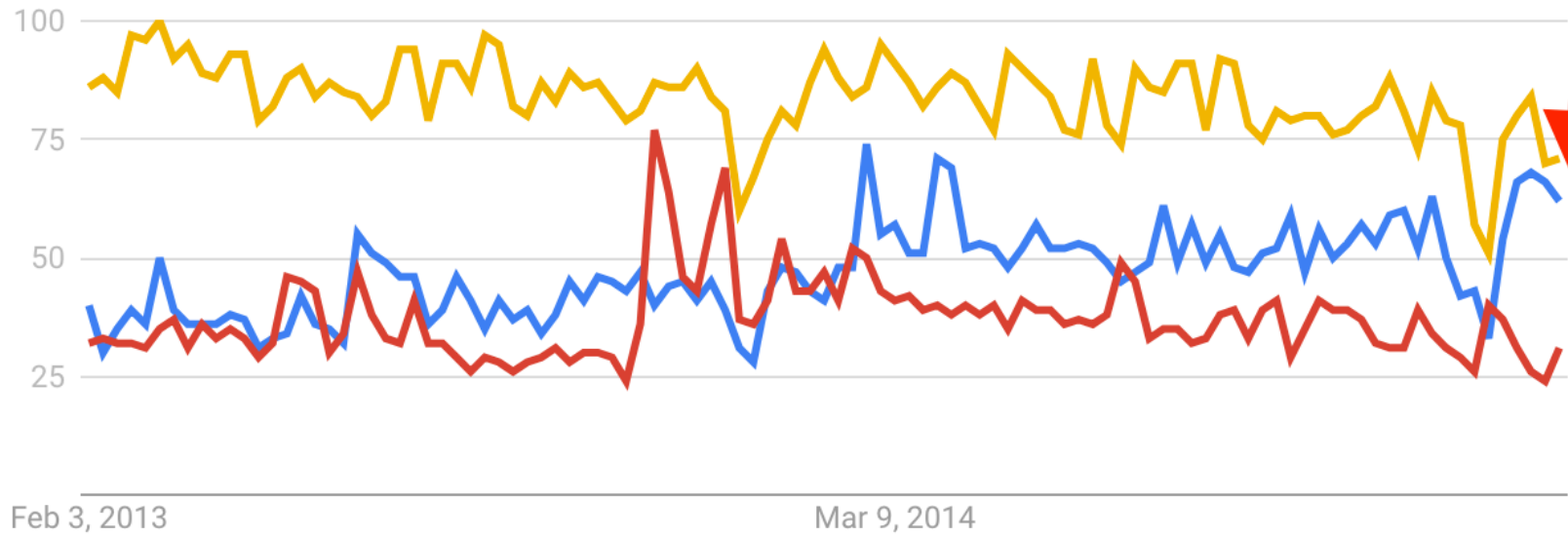
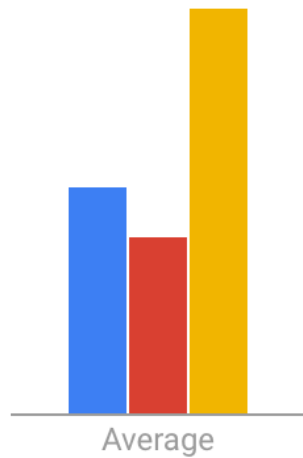
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Interest over time ?



● TypeScript
Programming Lan...

● Dart
Programming lang...

● CoffeeScript
Programming Lan...



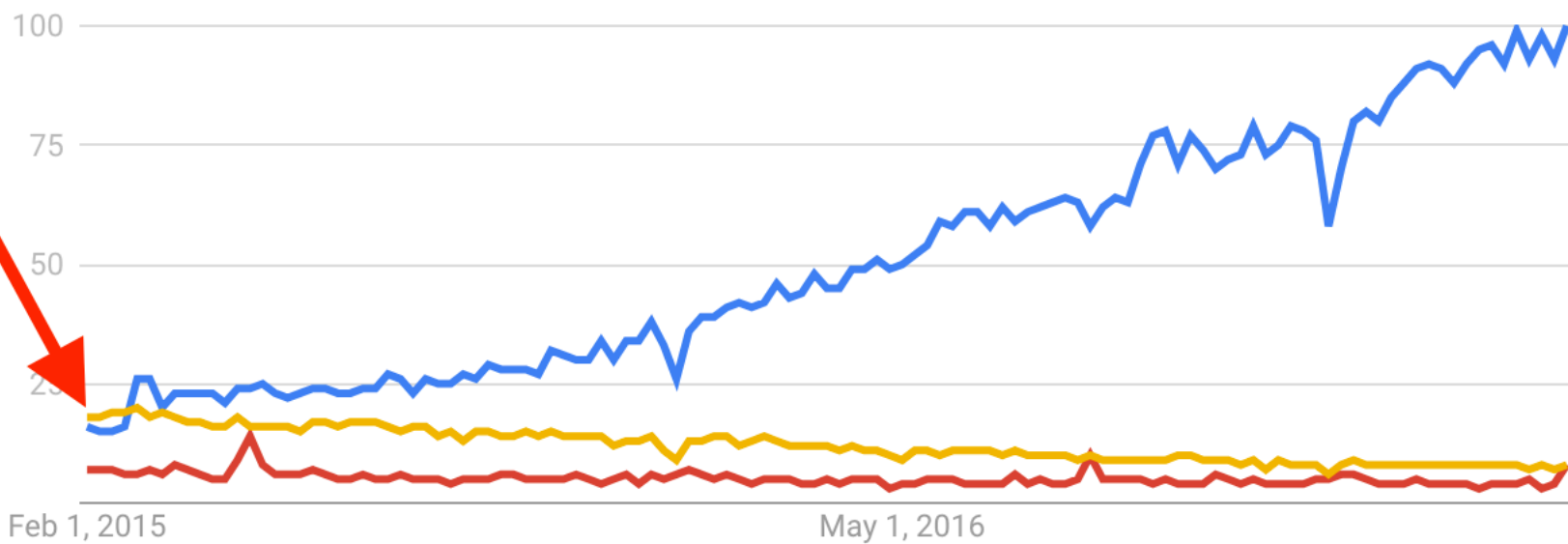
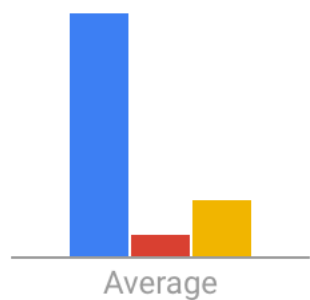
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Interest over time ?



Microsoft And Google Collaborate On Angular 2 Framework, TypeScript Language

Posted Mar 5, 2015 by [Frederic Lardinois \(@fredericl\)](#)



Next S

ADVERTISEMENT

```
todo.ts

import {Component, Template} from 'annotations';
import {bootstrap, Foreach} from 'angular2/angular2';
import {bind} from 'angular2/di';
import {AngularFire, FirebaseArray} from 'firebase/AngularFire';

@Component({
  selector: 'todo-app',
  componentServices: [
    AngularFire,
    bind(Firebase).toValue(new Firebase('https://webapi.firebaseio-demo.com/test'))
  ]
})
@Template({
  url: '/todo.html',
  directives: [Foreach]
})
class TodoApp {
  todoService: FirebaseArray;
```

Foreach	alias
FormData	interface

Crunchbase

Microsoft Launches Visual Studio Code, A Free Cross-Platform Code Editor For OS X, Linux And Windows

Posted Apr 29, 2015 by [Frederic Lardinois \(@fredericl\)](#)



Next Story



At its [Build developer conference](#), Microsoft today announced the launch of [Visual Studio Code](#), a lightweight cross-platform code editor for writing modern web and cloud applications that will run on OS X, Linux and Windows. The application is still officially in preview, but you can now download it [here](#).

Crunchbase

Microsoft

FOUNDED

1974

OVERVIEW

Microsoft is an American multinational corporation that develops, manufactures, licenses, supports, and sells a range of software products and services. Microsoft's devices and consumer (D&C) licensing segment licenses Windows operating system and related software; Microsoft Office for consumers; and Windows Phone operating system. The company's computing and gaming hardware segment provides ...

LOCATION

Redmond, WA

CATEGORIES

Collaboration, Developer Tools, Cloud Computing,

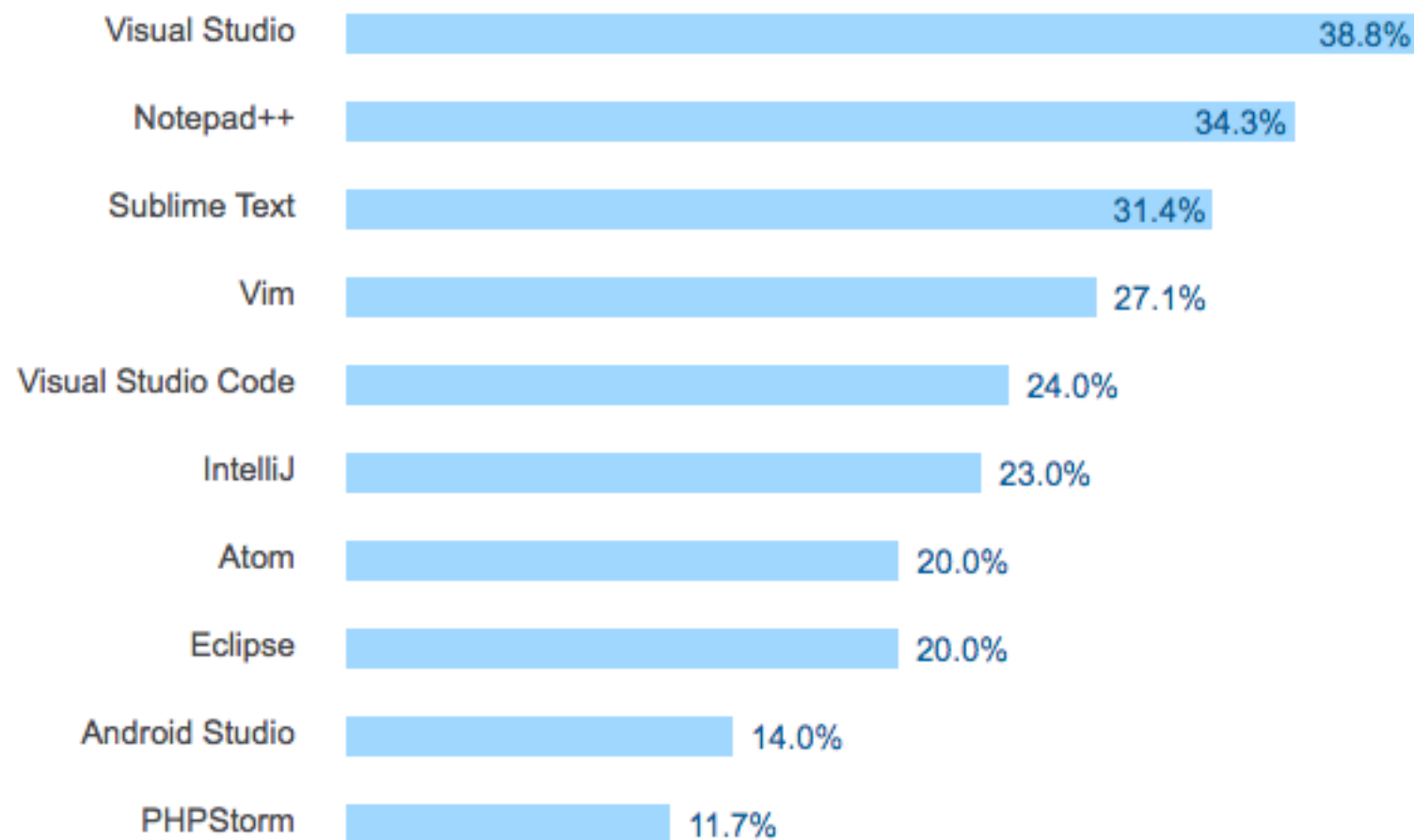
Most Popular Developer Environments by Occupation

Web Developer

Desktop Developer

Sysadmin / DevOps

Data Scientist/Engineer





Tom Dale

@tomdale

 Follow



I'm sold on TypeScript. Would like to move as many of my projects to it as I can, not sure about the Node workflow though.

RETWEETS

27

LIKES

44



3:43 PM - 20 Jan 2016

 21

 27

 44



Dave Herman @littlecalculist

I ported my first nontrivial JS lib to [@typescriptlang](#) and it was a pure joy.
What a lovely piece of technology.



Felix Rieseberg

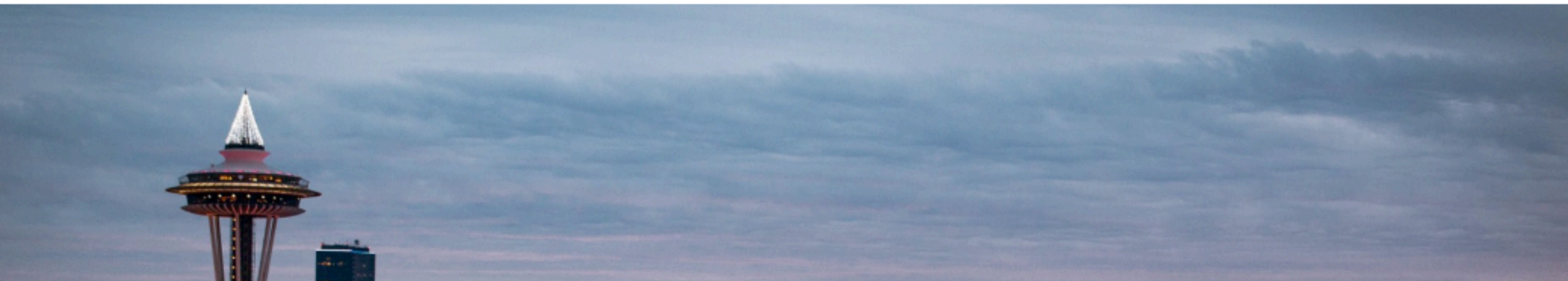
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Desktop Engineer @Slack. @TryGhost Core Team. || Previously open source @Microsoft, exec edito...

Apr 11 · 7 min read

TypeScript at Slack

Or, How I Learned to Stop Worrying & Trust the Compiler













Why?

3 reasons

1) Commitment to the
ECMAScript standard

“Some examples [of compile-to-JavaScript frameworks], like Dart, portend that JavaScript has fundamental flaws and to support these scenarios requires a “clean break” from JavaScript in both syntax and runtime. We disagree with this point of view. We believe that with committee participant focus, the standards runtime can be expanded and the syntactic features necessary to support **JavaScript at scale can be built upon the existing JavaScript standard.**”

		Compilers/polyfills					
		97%	56%	71%	48%	59%	18%
Feature name	►	Current browser	Traceur	Babel + core-js ^[2]	Closure	Type-Script + core-js	es6-shim
Optimisation							
● proper tail calls (tail call optimisation)	►	0/2	0/2	0/2	0/2	0/2	0/2
Syntax							
● default function parameters 	►	7/7	4/7	4/7	4/7	5/7	0/7
● rest parameters 	►	5/5	4/5	3/5	2/5	4/5	0/5
● spread (...) operator 	►	15/15	15/15	13/15	12/15	4/15	0/15
● object literal extensions 	►	6/6	6/6	6/6	4/6	6/6	0/6
● for..of loops 	►	9/9	9/9	9/9	6/9	3/9	0/9
● octal and binary literals	►	4/4	2/4	4/4	4/4	4/4	2/4
● template literals 	►	5/5	4/5	4/5	3/5	3/5	0/5
● RegExp "y" and "u" flags 	►	5/5	3/5	3/5	0/5	0/5	0/5
● destructuring, declarations 	►	22/22	20/22	21/22	19/22	15/22	0/22
● destructuring, assignment 	►	24/24	23/24	24/24	17/24	19/24	0/24
● destructuring, parameters 	►	23/23	19/23	20/23	18/23	15/23	0/23
● Unicode code point escapes	►	2/2	1/2	1/2	1/2	1/2	0/2

2) Types are opt-in

3) Tooling

So should you use TypeScript?

- Are your apps big?
- Do you work on a team?
- Unfamiliar codebases?
- Non JS developers that need to write JS code?

Thanks!
[@tjvantoll](#)

