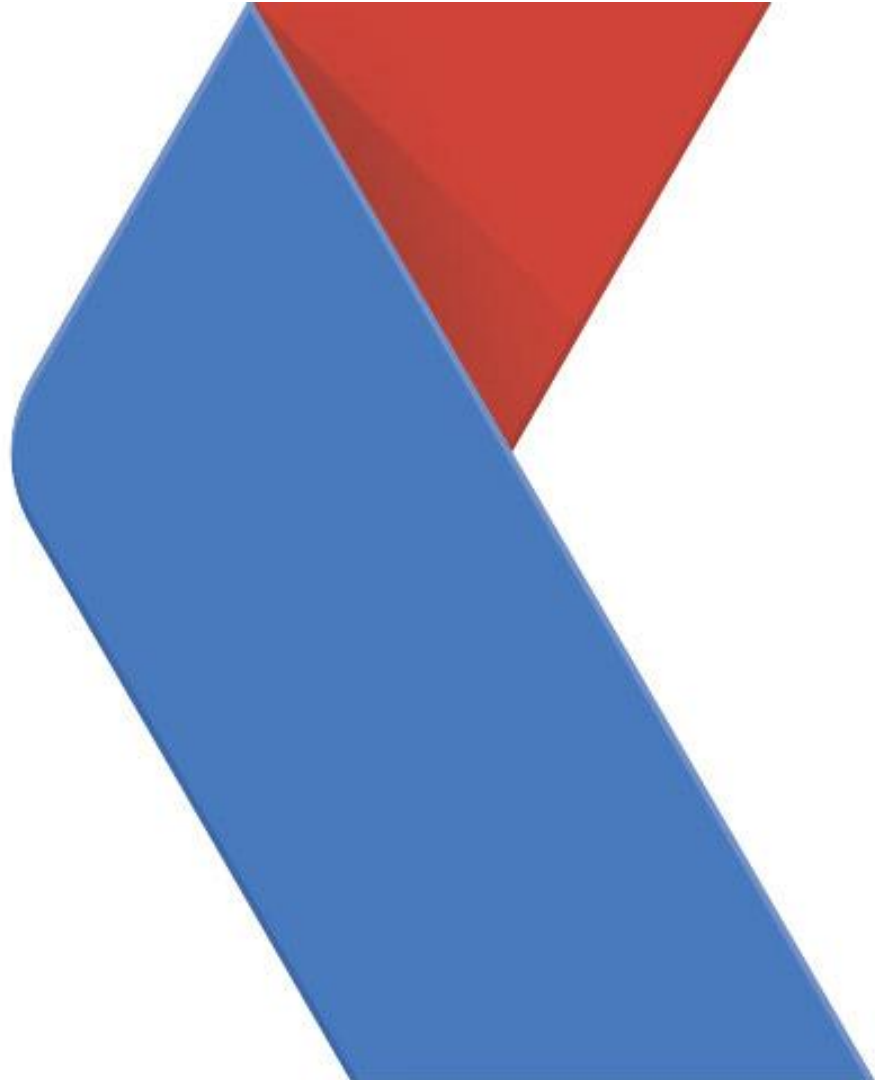


TypeScript:

Superheroic Power In Angular

2016.12



Outline

Why TypeScript?

Getting Started with TypeScript + Angular

Why TypeScript?

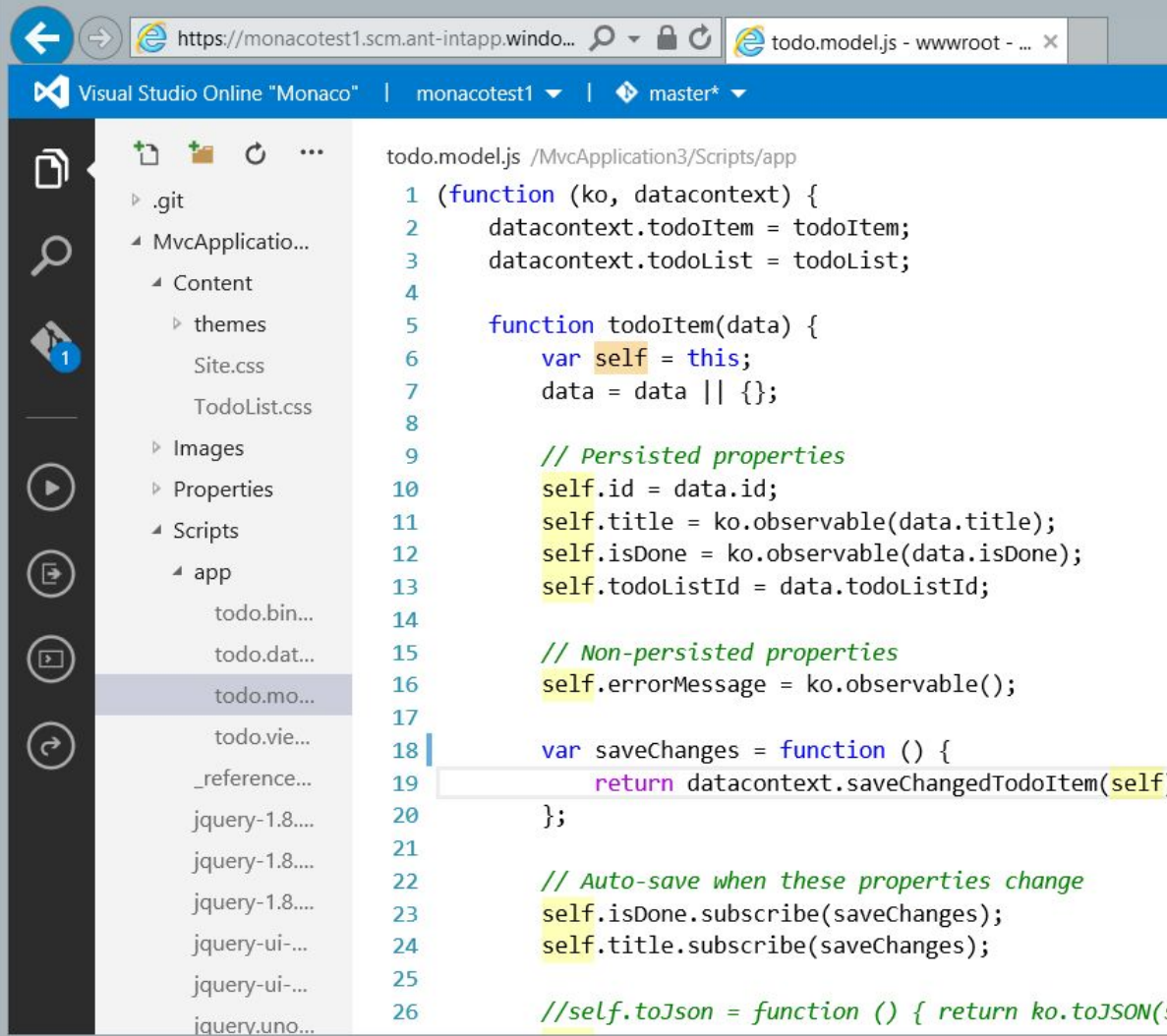


Big JavaScript apps are **hard**.

Monaco

(Visual Studio Code)

Million lines of JavaScript code

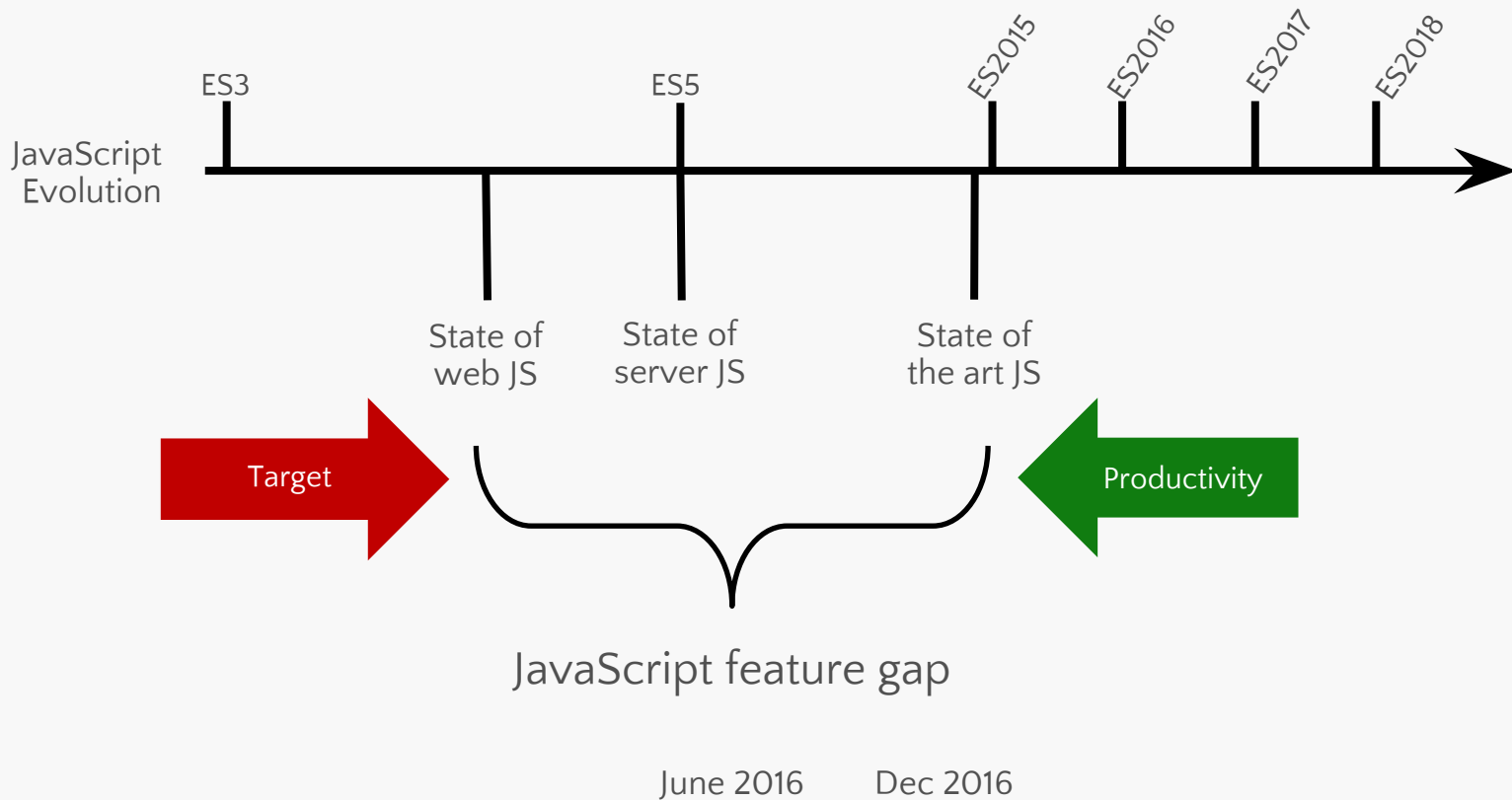


The screenshot displays the Monaco editor interface. The top bar shows the browser address bar with the URL `https://monacotest1.scm.ant-intapp.windo...` and the Monaco logo. Below the top bar, the breadcrumb trail indicates the current file path: `monacotest1 > master* > todo.model.js`. The left sidebar contains a file explorer showing the project structure. The file `todo.model.js` is selected. The main editor area displays the content of `todo.model.js`, which is a JavaScript file defining a `function` `ko` and a `function` `todoItem`. The code is as follows:

```
1 (function (ko, datacontext) {
2     datacontext.todoItem = todoItem;
3     datacontext.todoList = todoList;
4
5     function todoItem(data) {
6         var self = this;
7         data = data || {};
8
9         // Persisted properties
10        self.id = data.id;
11        self.title = ko.observable(data.title);
12        self.isDone = ko.observable(data.isDone);
13        self.todoListId = data.todoListId;
14
15        // Non-persisted properties
16        self.errorMessage = ko.observable();
17
18        var saveChanges = function () {
19            return datacontext.saveChangedTodoItem(self);
20        };
21
22        // Auto-save when these properties change
23        self.isDone.subscribe(saveChanges);
24        self.title.subscribe(saveChanges);
25
26        //self.toJson = function () { return ko.toJSON(
```

JavaScript alone is **not enough**.

The Feature Gap



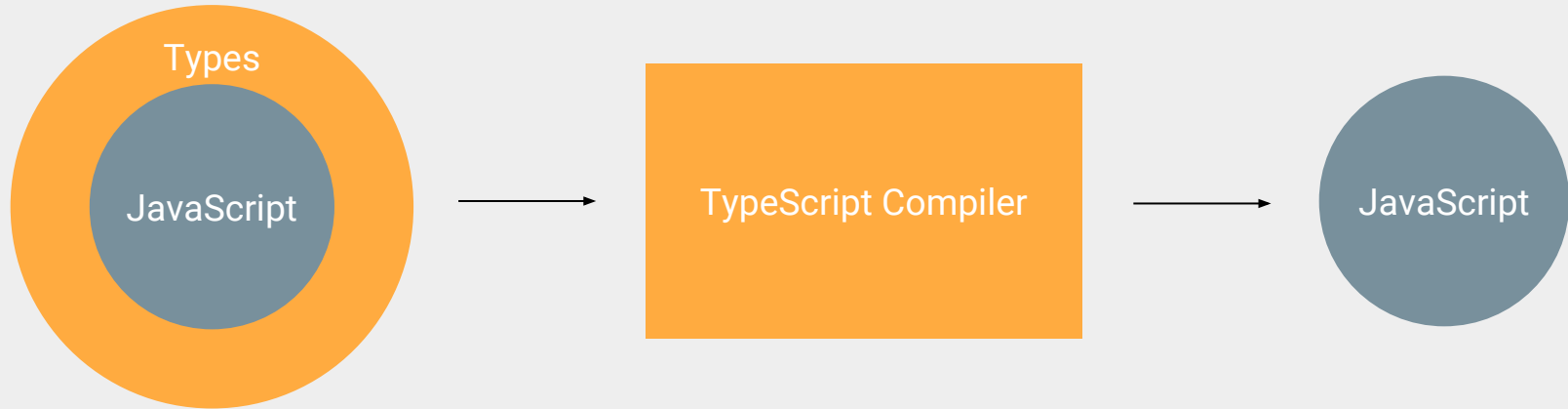
TypeScript:

A typed superset of JavaScript that
compiles to plain JavaScript

Any browser. Any host. Any OS.

Open Source.

The TypeScript Language





Demo: JavaScript to TypeScript

Demo Recap

Benefits from TypeScript today

Compile time type checking

Consume JavaScript file with `--allowJs`

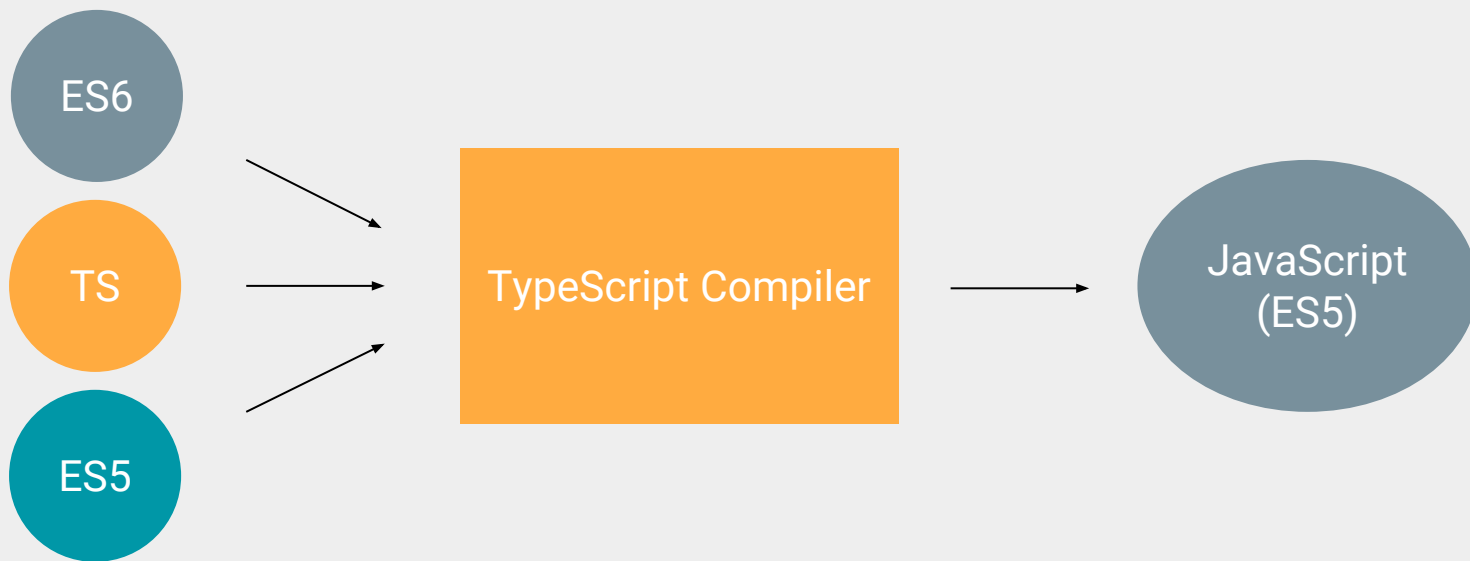
Opt-in gradual type system

Use future JavaScript feature now

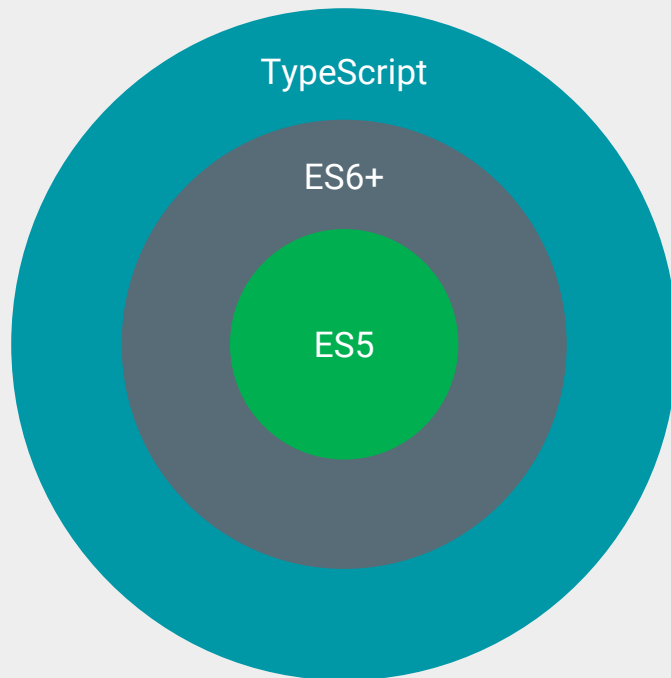


JavaScript **IS** TypeScript

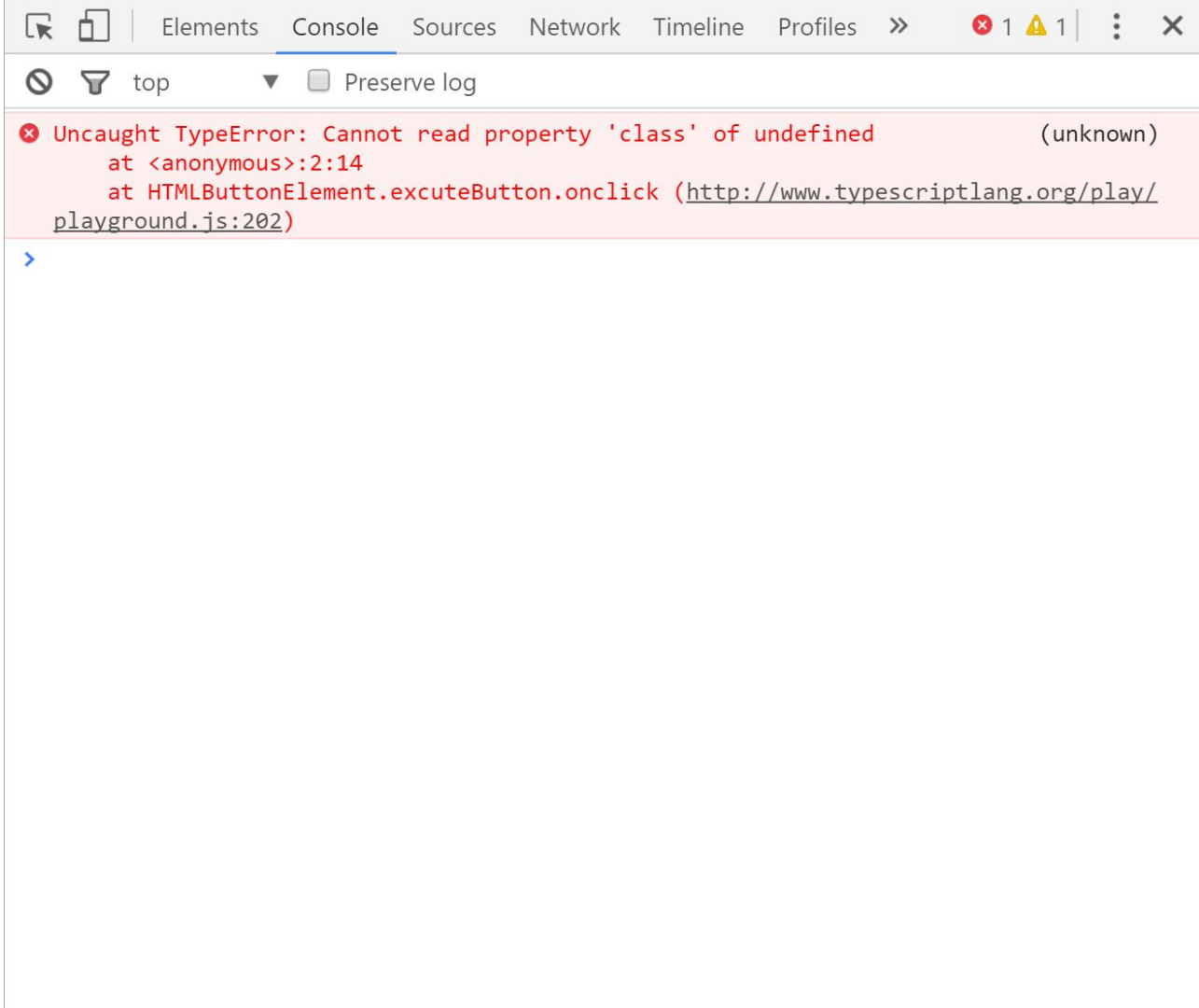
Downlevel Compilation



JavaScript **IS** TypeScript



JavaScript's Billion Dollar Mistake





Demo:

Type checking in action

Demo Recap

Type Checking in Action

Managing nullability in JS is error-prone
Non-nullable types provide `null/undefined` coverage
Control flow analysis traces flow for you



Getting Started with TypeScript + Angular



Google Developer Day







Demo: Migration from Angular 1

Angular 2 and TypeScript



Angular 2 ergonomics are
great with TypeScript



Demo: Angular 2 and TypeScript

Demo Recap

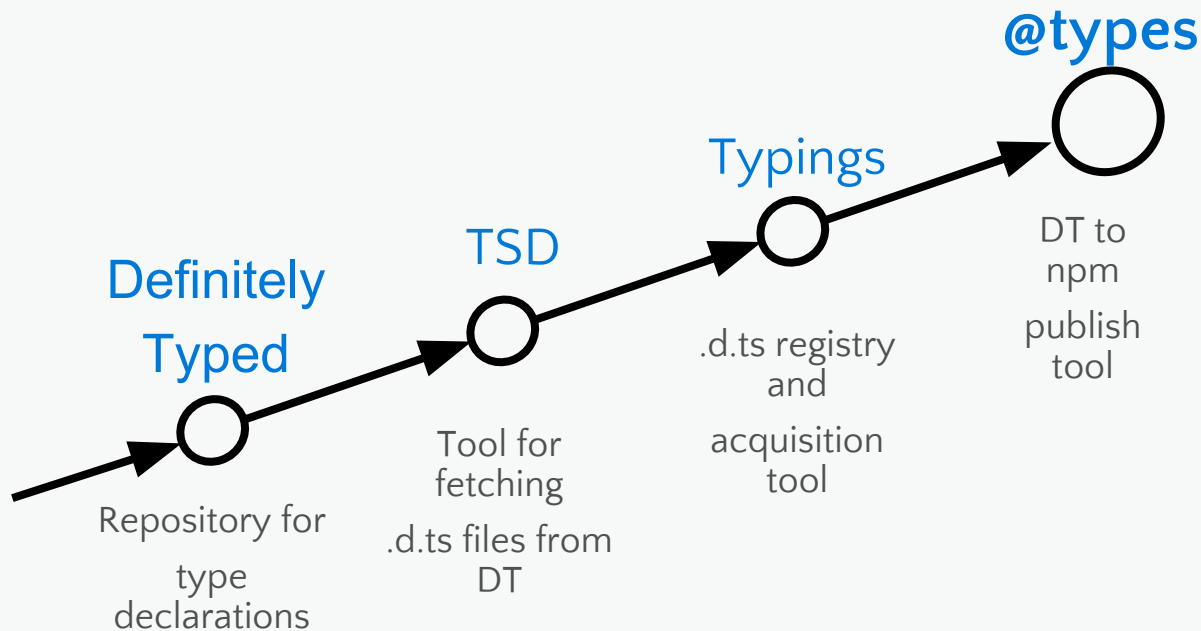
Angular 2 + TypeScript

ES6 features make code more readable
Decorators separate framework from user code
Dependency injection makes use of types



Using 3rd Party Libraries?

Evolution of Type Acquisition



```
npm install -S @types/lodash
```





Demo: Type acquisition

Demo Recap

Type Acquisition

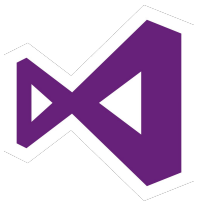
npm is all you need

Contribute to [DefinitelyTyped](#)!



Google Developer Day

TypeScript Editors



Visual Studio



Sublime Text



Atom



WebStorm



Visual Studio Code



Eclipse



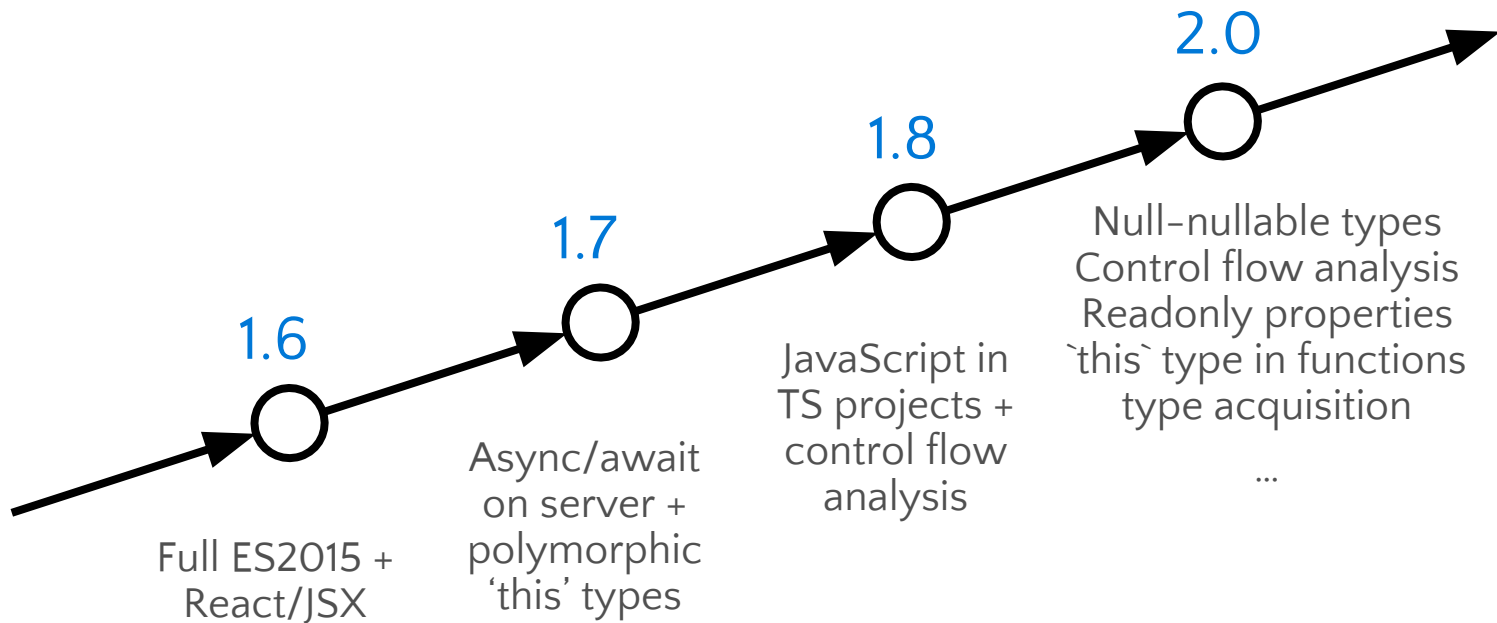
Emacs



Vim



Four Releases in One Year



Advanced TypeScript



TypeScript has powerful
type features



Demo: Advanced TypeScript

Demo Recap

Advanced TypeScript

async / await for handling promises

Mapped types for all your dynamic JS patterns



In Review: Session Takeaways

Why TypeScript?

Getting started with TypeScript is easier than ever

TypeScript and Angular together is awesome

The Future

Get in touch!

- We're on GitHub! (<https://github.com/Microsoft/TypeScript>)
- And Twitter! (@typescriptlang)
- And Gitter! (<https://gitter.im/Microsoft/TypeScript>)
- Demo code will be posted at <https://github.com/zhengbli/ng-china-2016>





Google Developer Day