Angular in Practice: Zoneless Change Detection

What Angular Does by Default

Brian Treese
Chief of User Experience

www.youtube.com/@briantreese | www.socreate.it

Course Introduction

Modern apps are interactive

Data is always changing

Users expect instant feedback


4
Update

Enter Change Detection

Detects changes in data

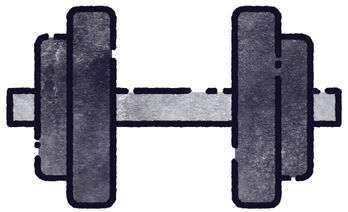
Updates the UI to match

Automatic, behind the scenes

But how does it work?

What Is Zone.js and How Does It Work?

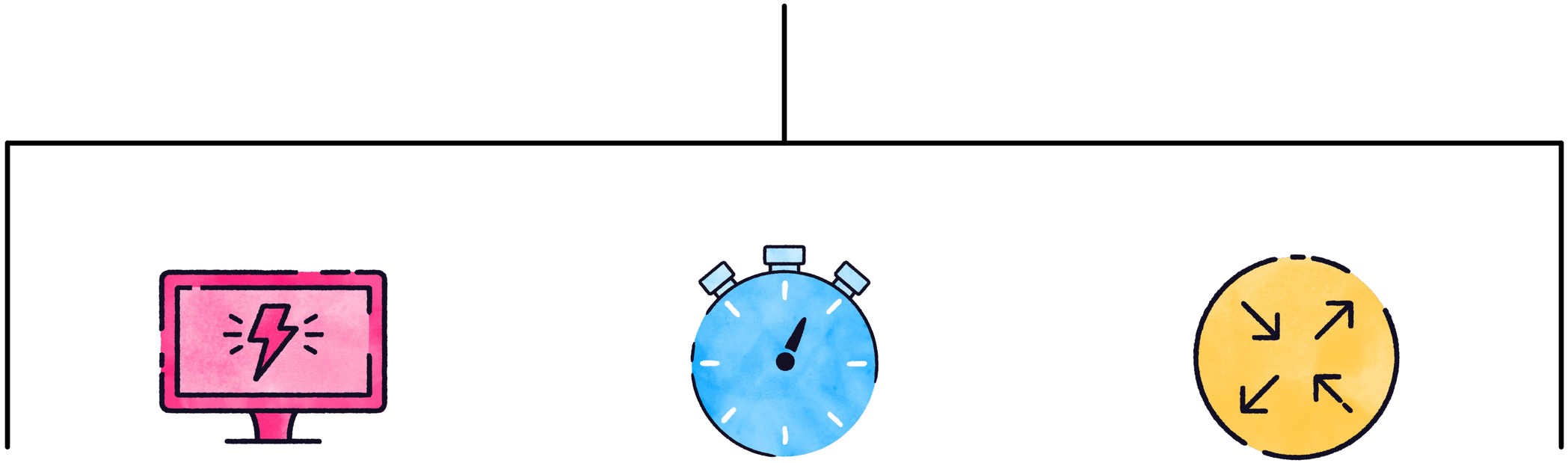
What Is Zone.js?



Tiny but powerful

The old magic trick

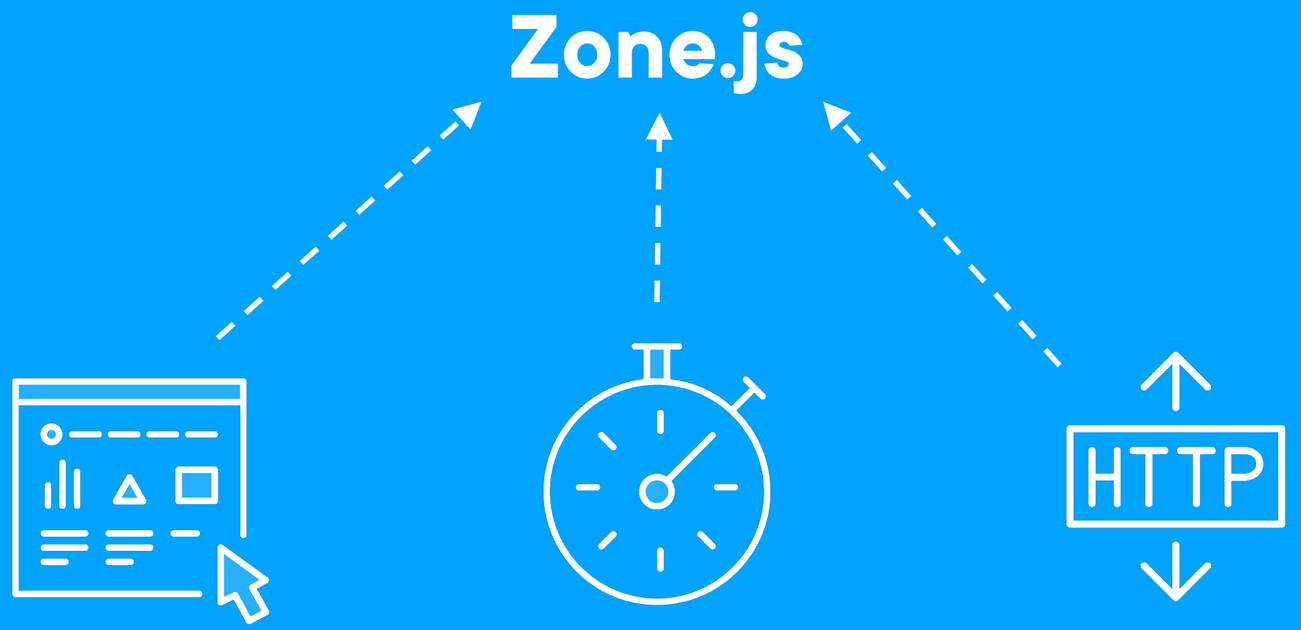
Monkey-patching the Browser

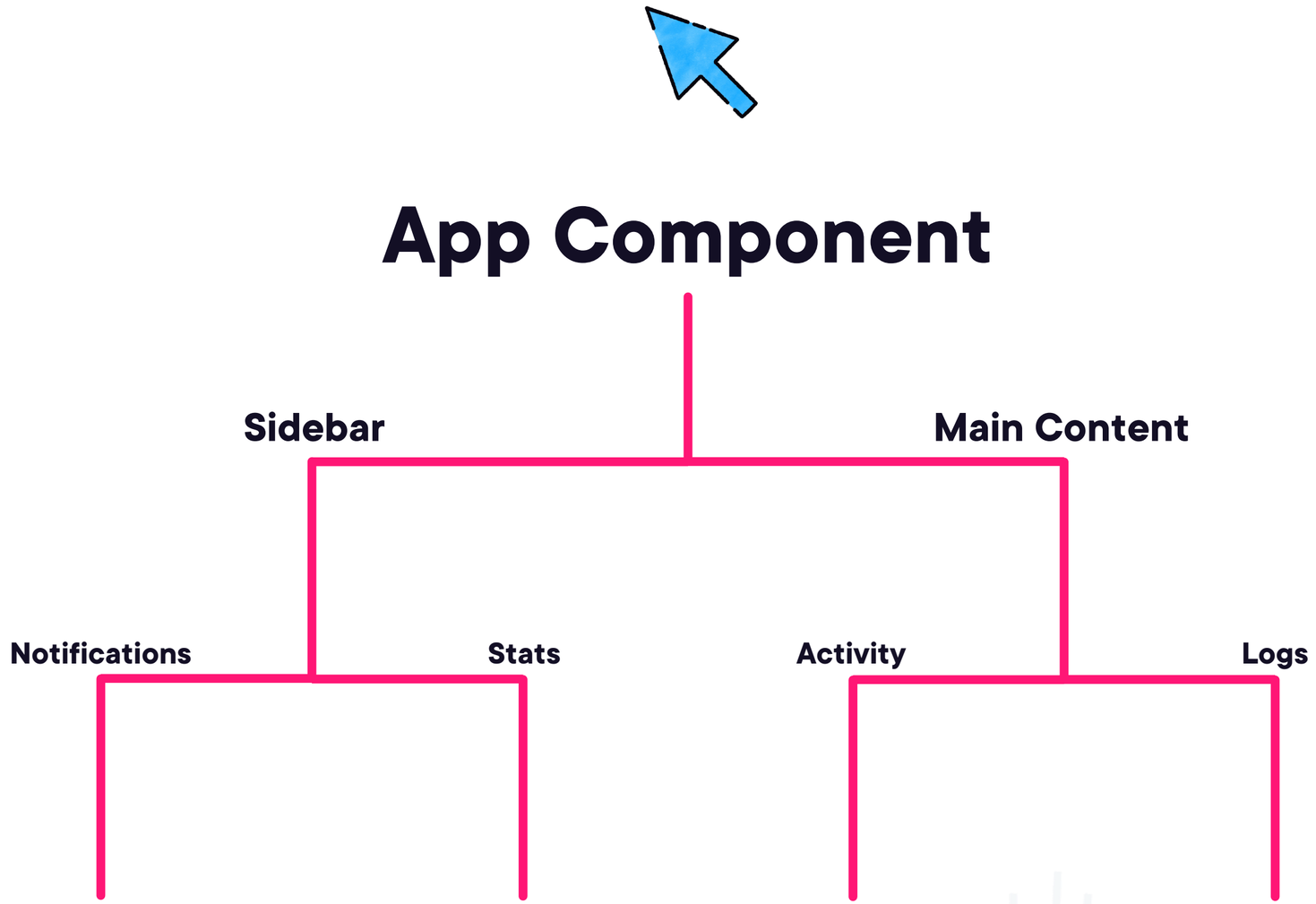


Browser events

Timers

Async actions


Zone.js
HTTP


App Component
Sidebar
Main Content
Notifications
Stats
Activity
Logs

But Is That Efficient?

Why It Matters

Small projects... small problems

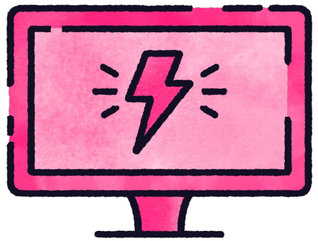
Big projects... big problems

What Types of Events Trigger Change Detection?

https://github.com/pluralsight-zonless-change-detection/demos

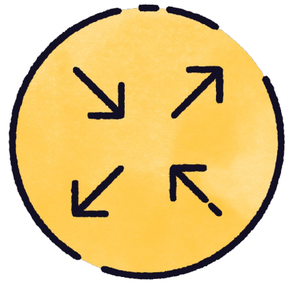
```
npm install
npm start
```

To Recap...



Browser events

Timers



Async actions

As Your App Grows

Wasted CPU

Slow performance

OnPush Change Detection (With Zones)

The Angular Default

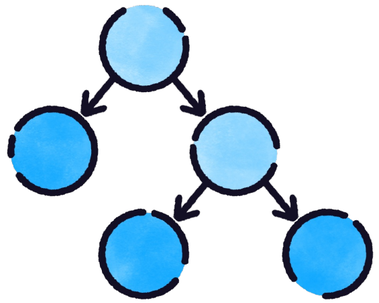
Zone.js patches browser events

Change detection runs everywhere

Easy, but can be inefficient

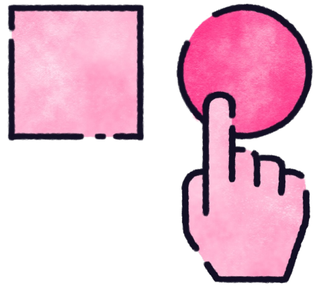
What Is OnPush?

Smarter change detection



Input changes

Manual triggers



Certain events

OnPush

Smarter change detection

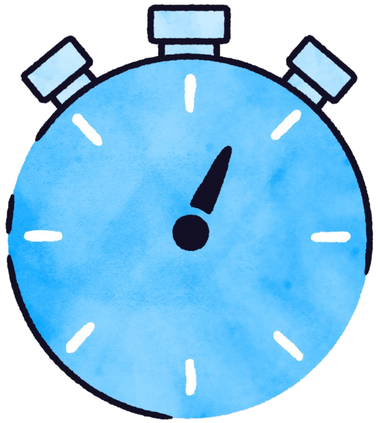
Skips work unless needed

Avoids unnecessary calculations

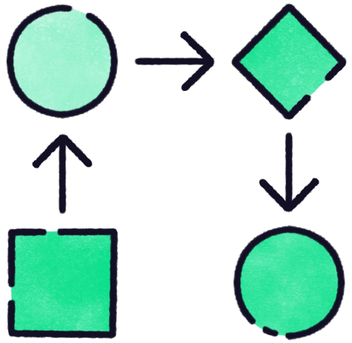
Good for performance!

The Case for More Control

Where It Hurts: Real Apps, Real Work



Change fires

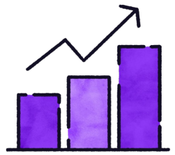


Many checks!

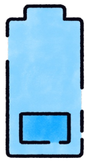
Slow!

Performance Symptoms

Feels sluggish as the app grows



CPU usage spikes



Battery drains faster

Why is this component running so often?

What We Want

Wouldn’t it be better if:

Only checked when changed?

Prevent expensive updates?

Had more precise control?

The Solution: Smarter Change Detection

With these tools, we can:

No wasted work!

Speed!

Predictability!