ANGULAR
ARCHITECTS
INSIDE KNOWLEDGE

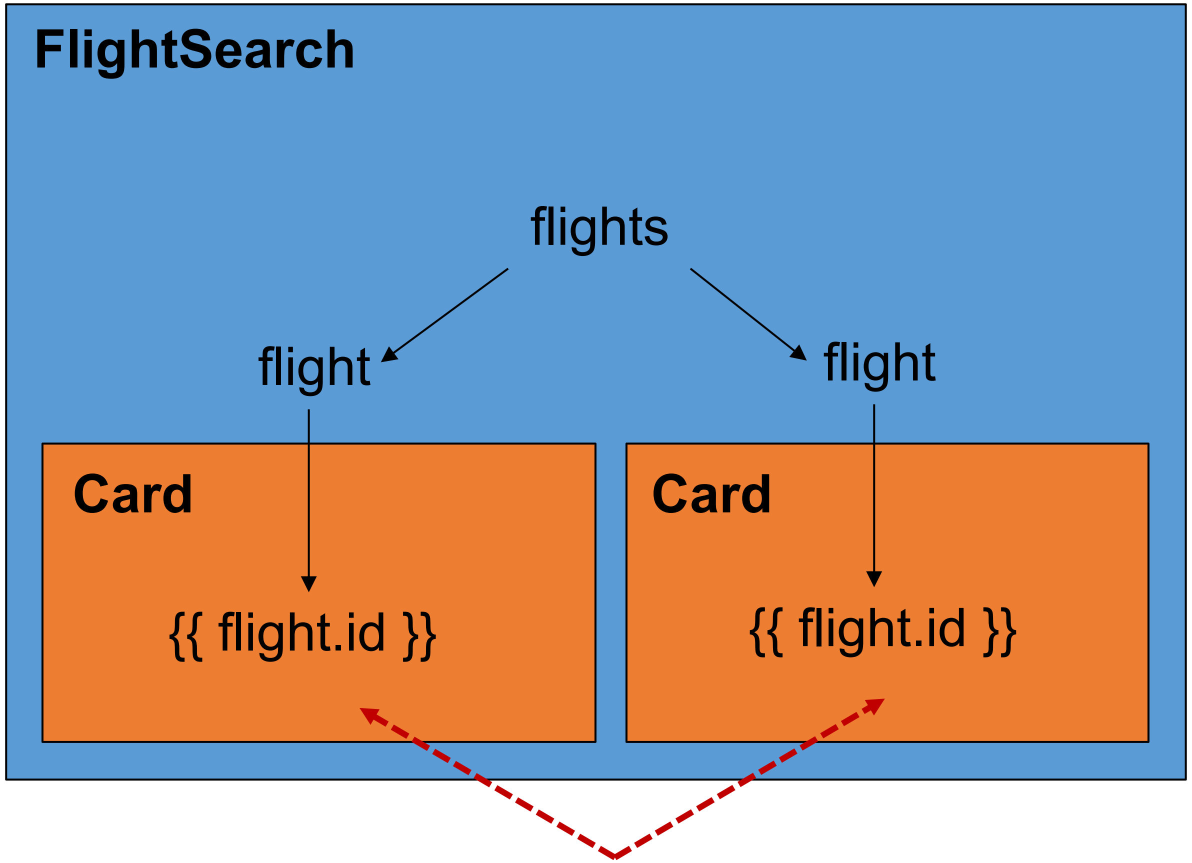
Performance Tuning

angular-architects.io

Performance-Tuning with OnPush

DEMO

OnPush



Angular just checks when “notified”

"Notify" about change?

- Change bound data (@Input)
    - OnPush: Angular just compares the object reference!
    - e. g. oldFlight === newFlight
- Raise event within the component
- Notify a bound observable
    - {{ flights$ | async }}
- Trigger it manually
    - Don't do this at home ;-)
    - At least: Try to avoid this

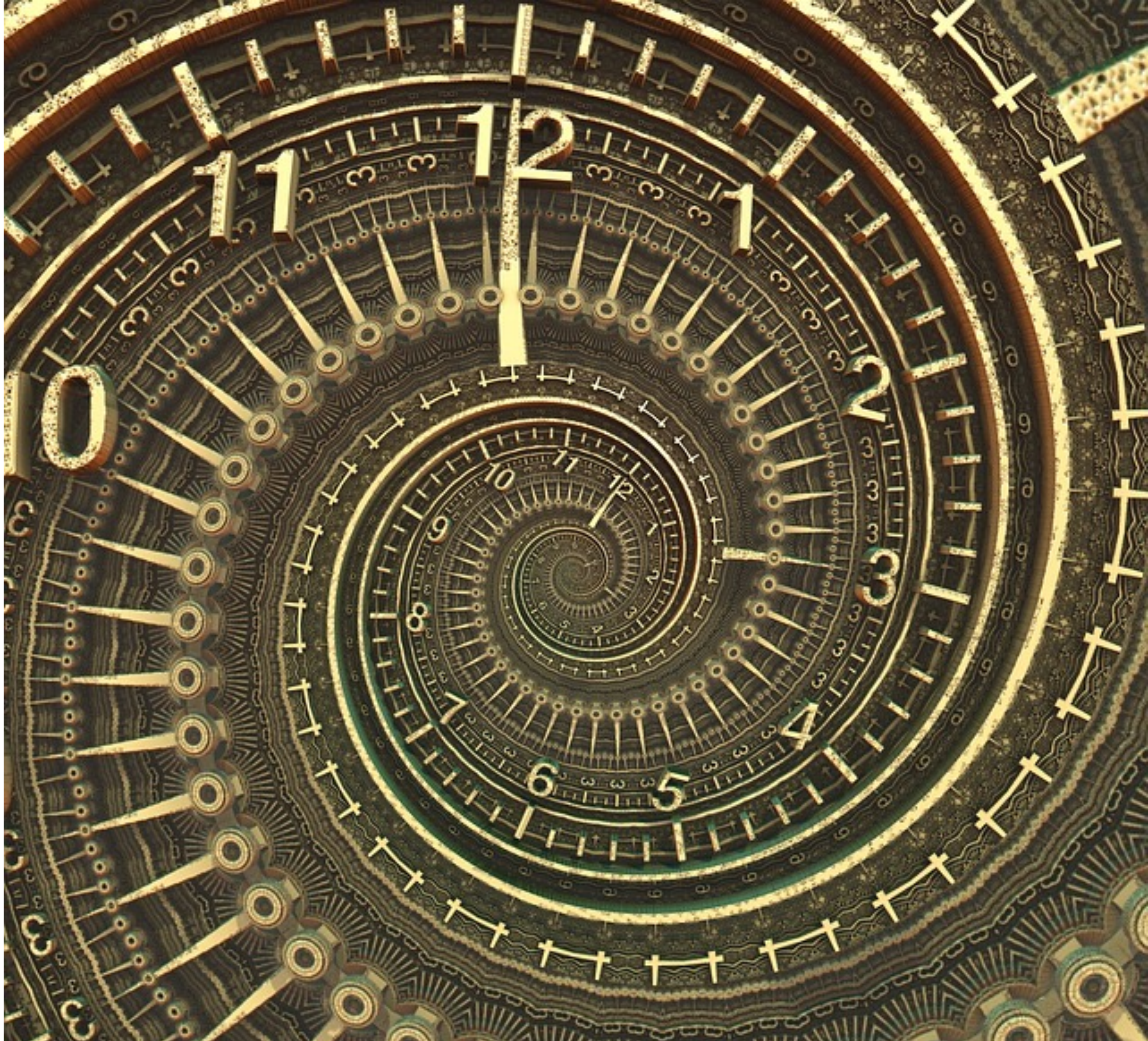
Activate OnPush

```
@Component({
       […]
       changeDetection: ChangeDetectionStrategy.OnPush
})
export class FlightCard {
   […]
   @Input() flight;
}
```

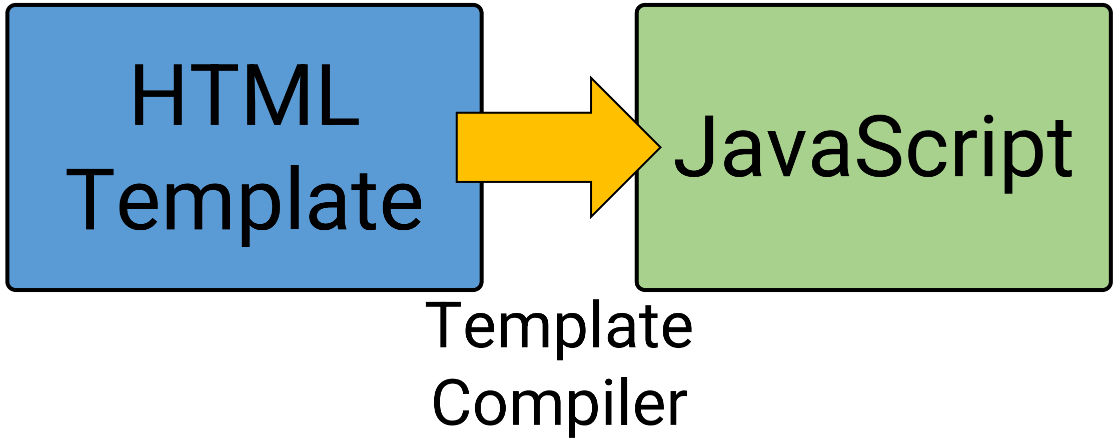
DEMO

LAB

Ahead of Time (AOT) Compilation



Angular Compiler



Approaches

- JIT: Just in Time, at runtime
- AOT: Ahead of Time, during build

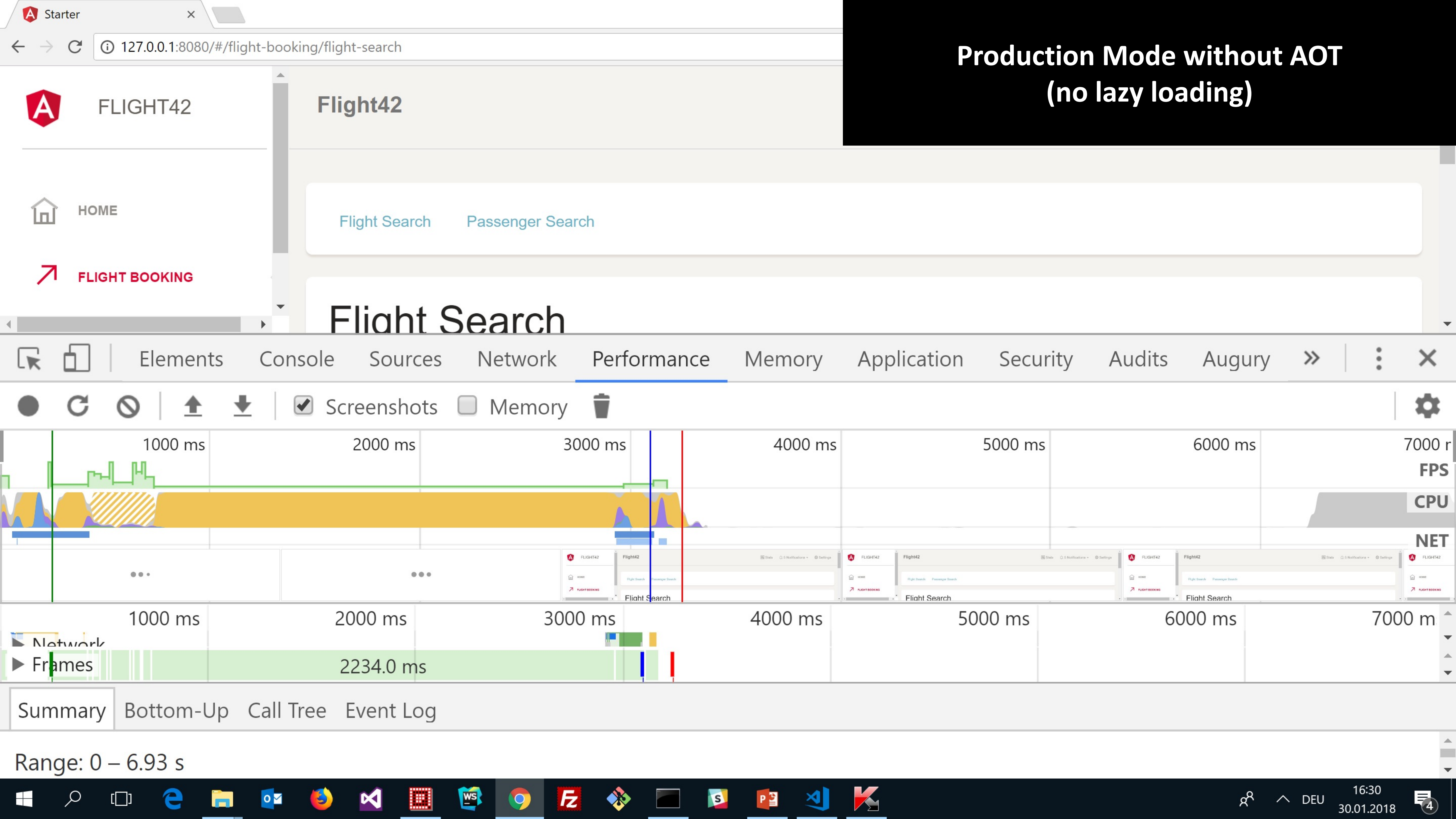
Advantages of AOT

- Better Startup-Performance
- Smaller Bundles: You don't need to include the compiler!
- Tools can easier analyse the code
  - Remove unneeded parts of frameworks
  - Tree Shaking

Angular CLI

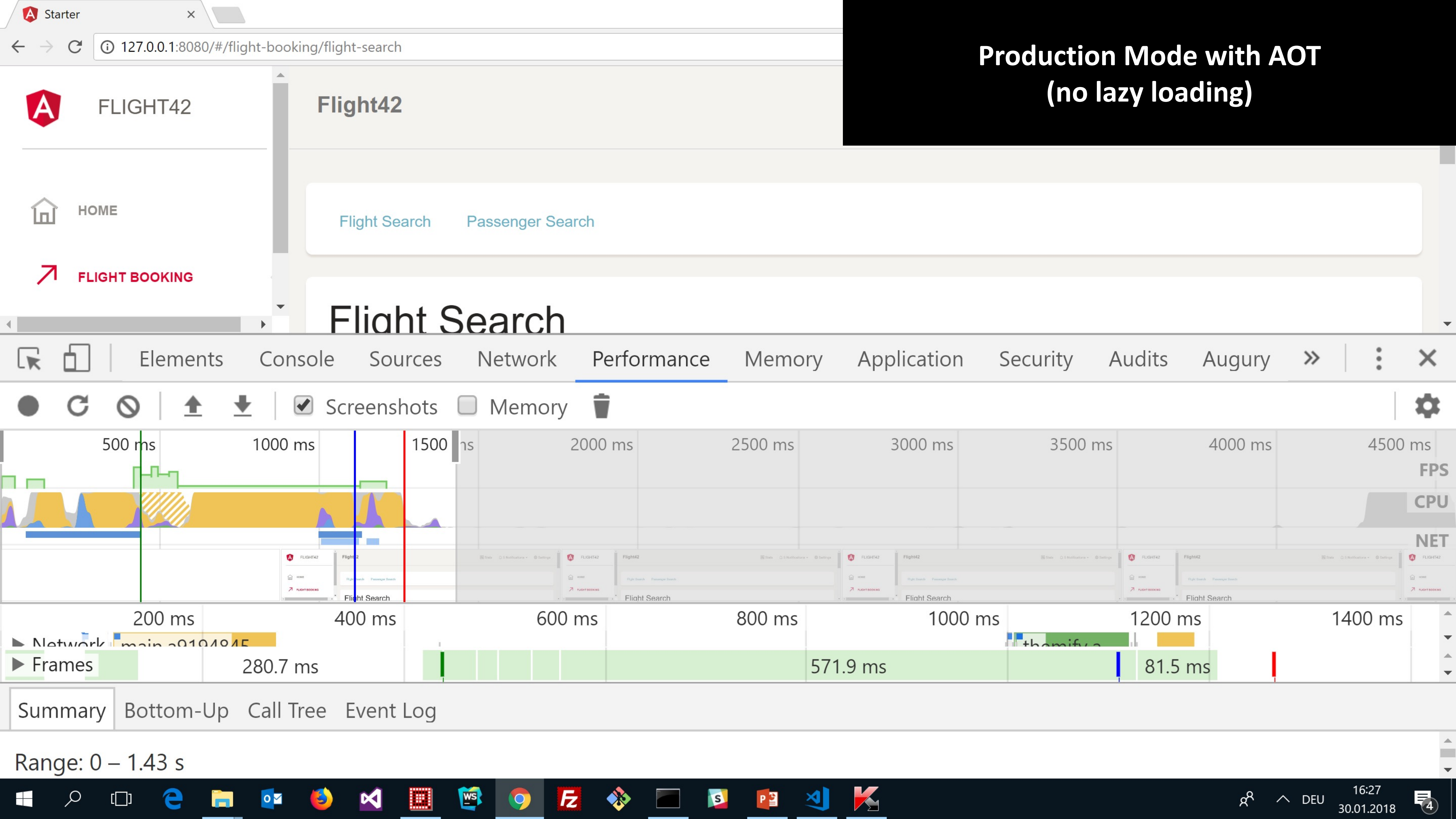
- ng build --prod
- @ngtools/webpack with AngularCompilerPlugin
- Can be used without CLI too

Production Mode without AOT
(no lazy loading)



Range: 0 – 6.93 s

Production Mode with AOT
(no lazy loading)



☑ Screenshots □ Memory

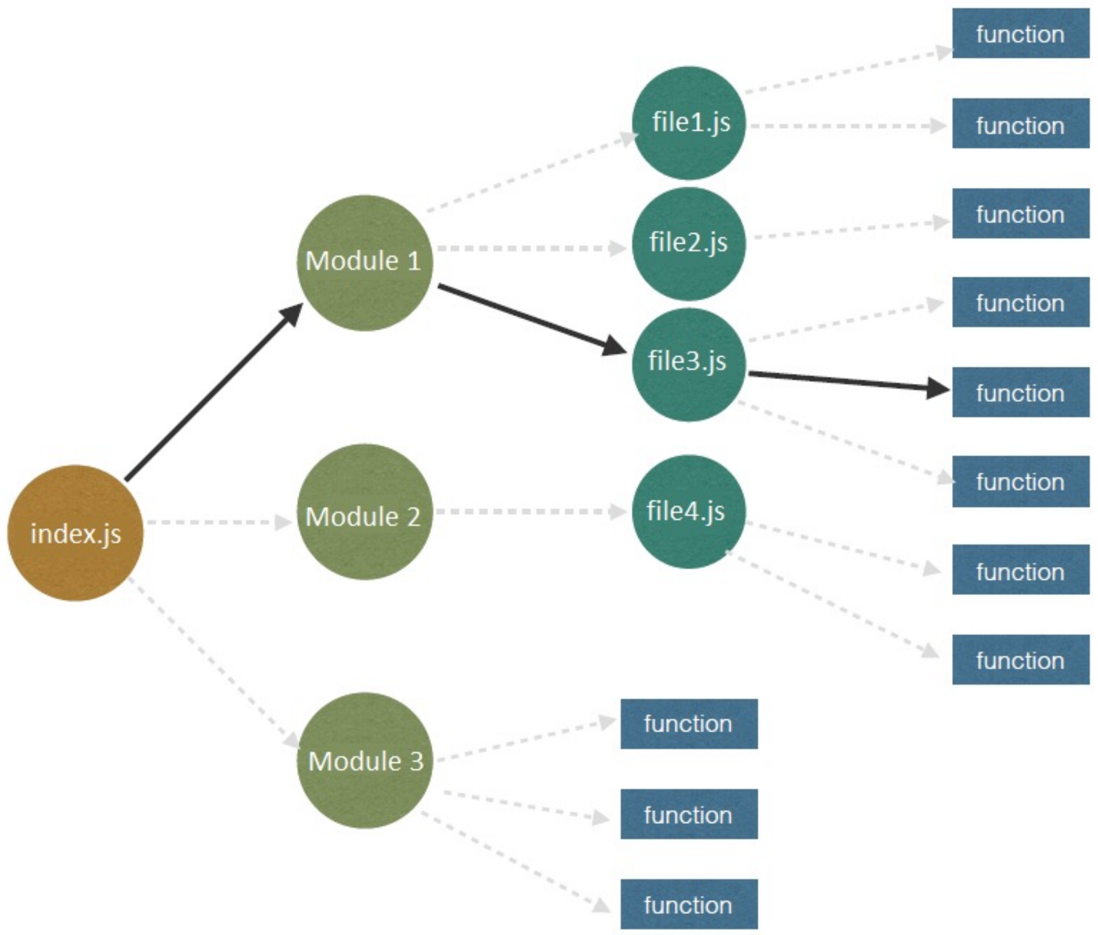
Range: 0 – 1.43 s

Ivy makes AOT the default ☺

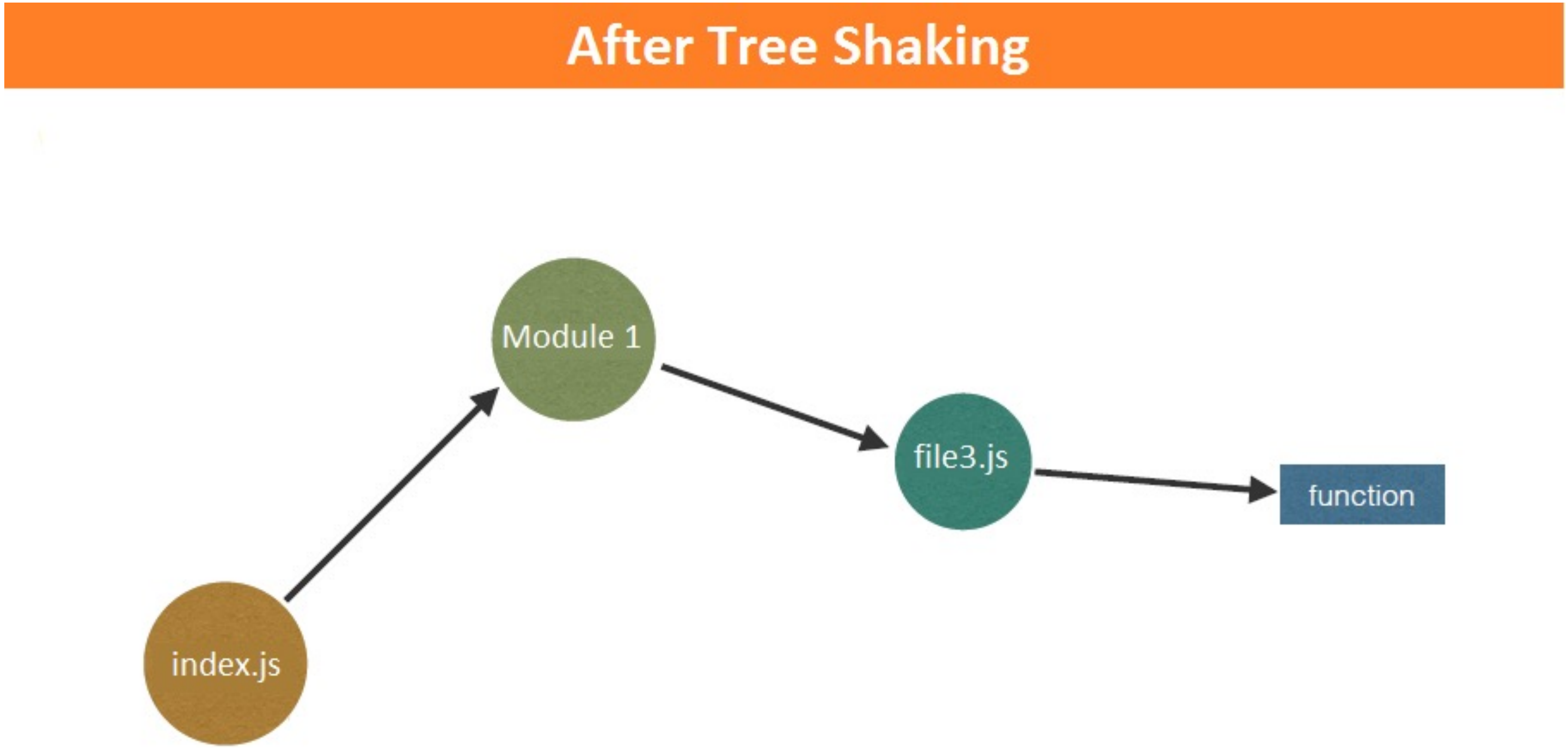
- Ivy also does a lot of under the hood optimization
- No breaking changes, nothing to do from our side ☺
- Angular ViewEngine itself was not tree-shakable
- Angular Ivy is tree-shakable ☺
- Default since NG 10, for libs default since NG 12

Tree Shaking

Before Tree Shaking

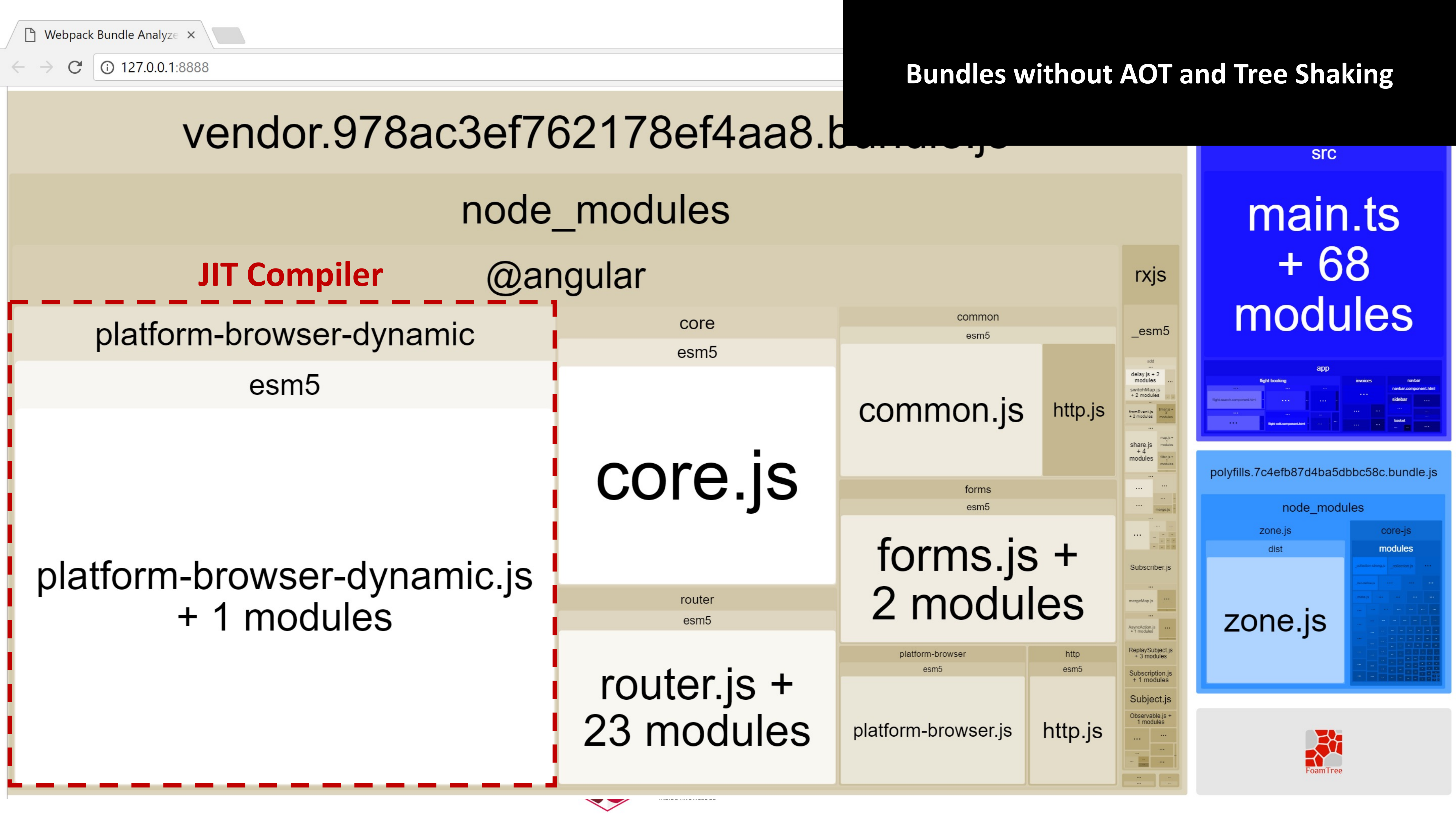


Tree Shaking



Webpack Bundle Analyzer

Bundles without AOT and Tree Shaking



JIT Compiler

Demo

Conclusion

Lazy Loading

Preloading

OnPush w/ Immutables and Observables

AOT and Tree Shaking

For performance deep dive

Watch this (starting at 8:30):

https://drive.google.com/file/d/15fmyedJPYSOIv_0YvFtg26XGS8tZpZ03/view

Repo: https://github.com/jeffbcross/victor-videos/