ANGULAR
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INSIDE KNOWLEDGE

Performance Tuning

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Turbo Button
Colani
HIGHSCREEN
386 SX-33
POWER
HDD
TURBO
RESET

Contents

- Lazy Loading and Preloading
- Performance for Data Binding with OnPush change detection
- Angular & Tree Shaking

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Lazy Loading

Why Lazy Loading?

- Load modules when they are needed

- Improve initial load (performance → very important!)

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Root module with Lazy Loading

```
const APP_ROUTE_CONFIG: Routes = [
    {
        path: '',
        redirectTo: 'home',
        pathMatch: 'full'
    },
    {
        path: 'home',
        component: HomeComponent
    },
    {
        path: 'flights',
        loadChildren: () =>
              import('[…]flight-booking.module')
                .then(m => m.FlightBookingModule)

    }
];
```

Routes for feature module

```
const FLIGHT_ROUTES =    [
    {
        path: 'subroute',
        component: FlightBookingComponent,
        […]
    },
    […]
}
```

```
export const FlightRouterModule =
                    RouterModule.forChild(FLIGHT_ROUTES);
```


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Preloading

Idea

- Once the initial load (the important one) is complete load the lazy loaded modules (before they are even used)

- Once the module will come into use it's immediately accessable

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Use preloading (very easy!)

```
export const AppRoutesModule =
                  RouterModule.forRoot(
                    ROUTE_CONFIG,
                    { preloadingStrategy: PreloadAllModules });
```


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Performance-Tuning with OnPush

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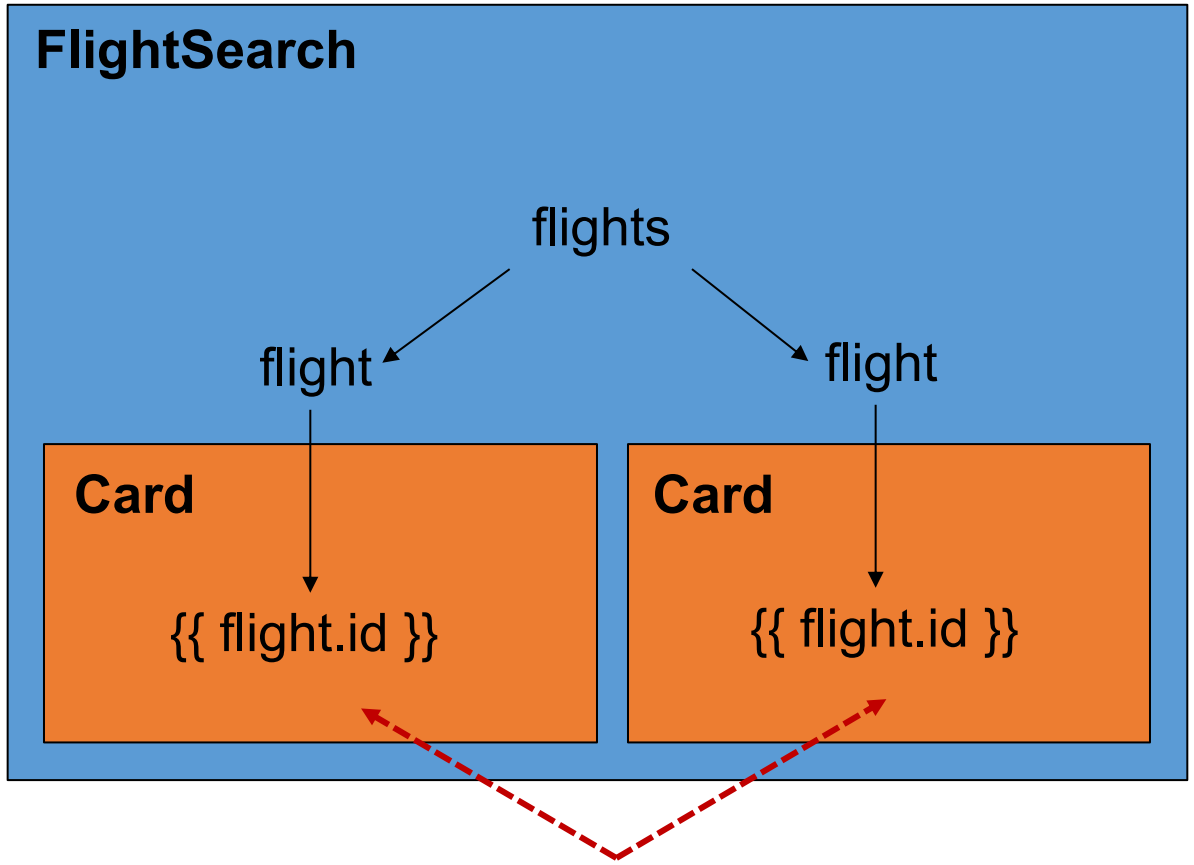
OnPush



Angular just checks when “notified”

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"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

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Activate OnPush

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


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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

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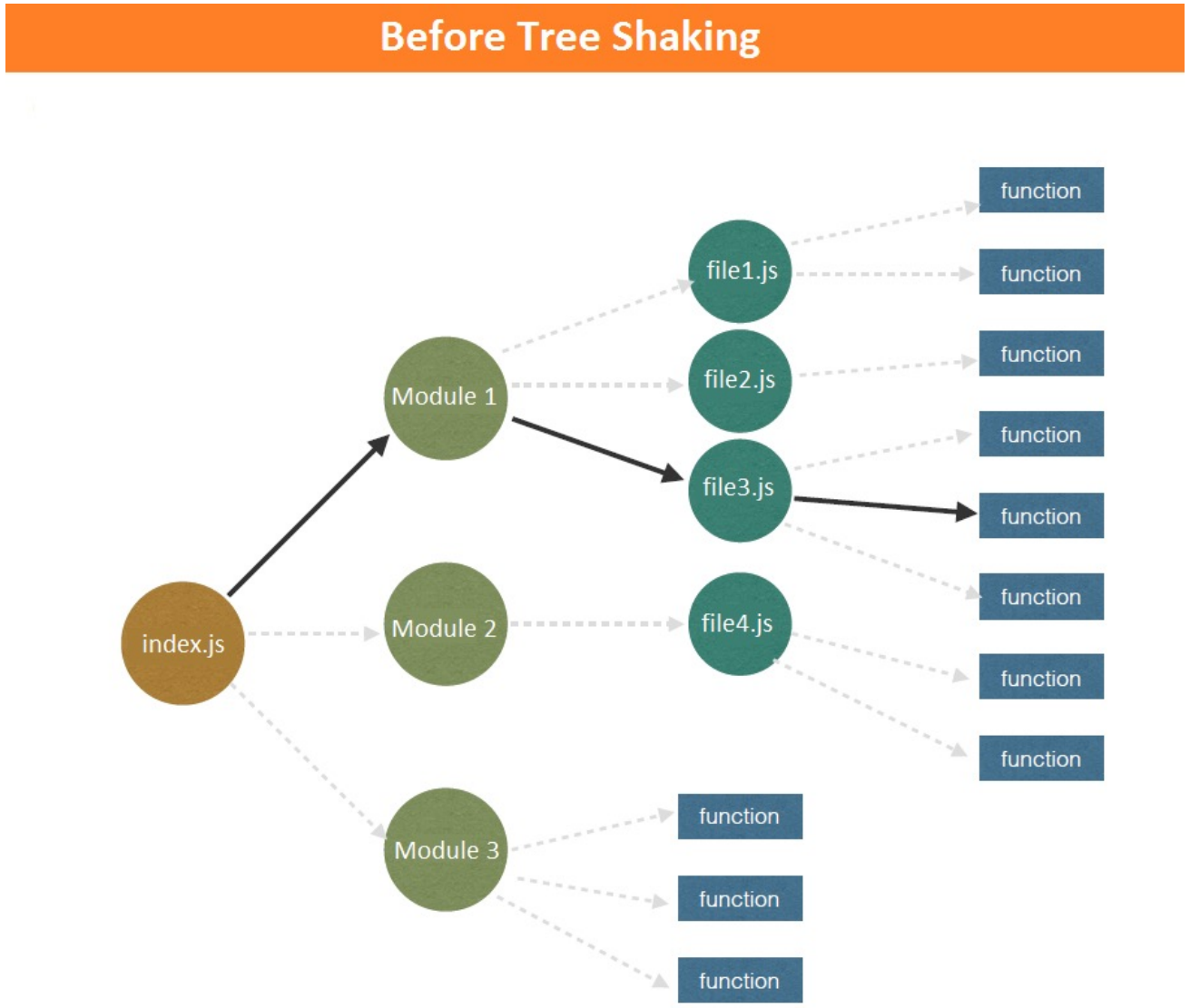
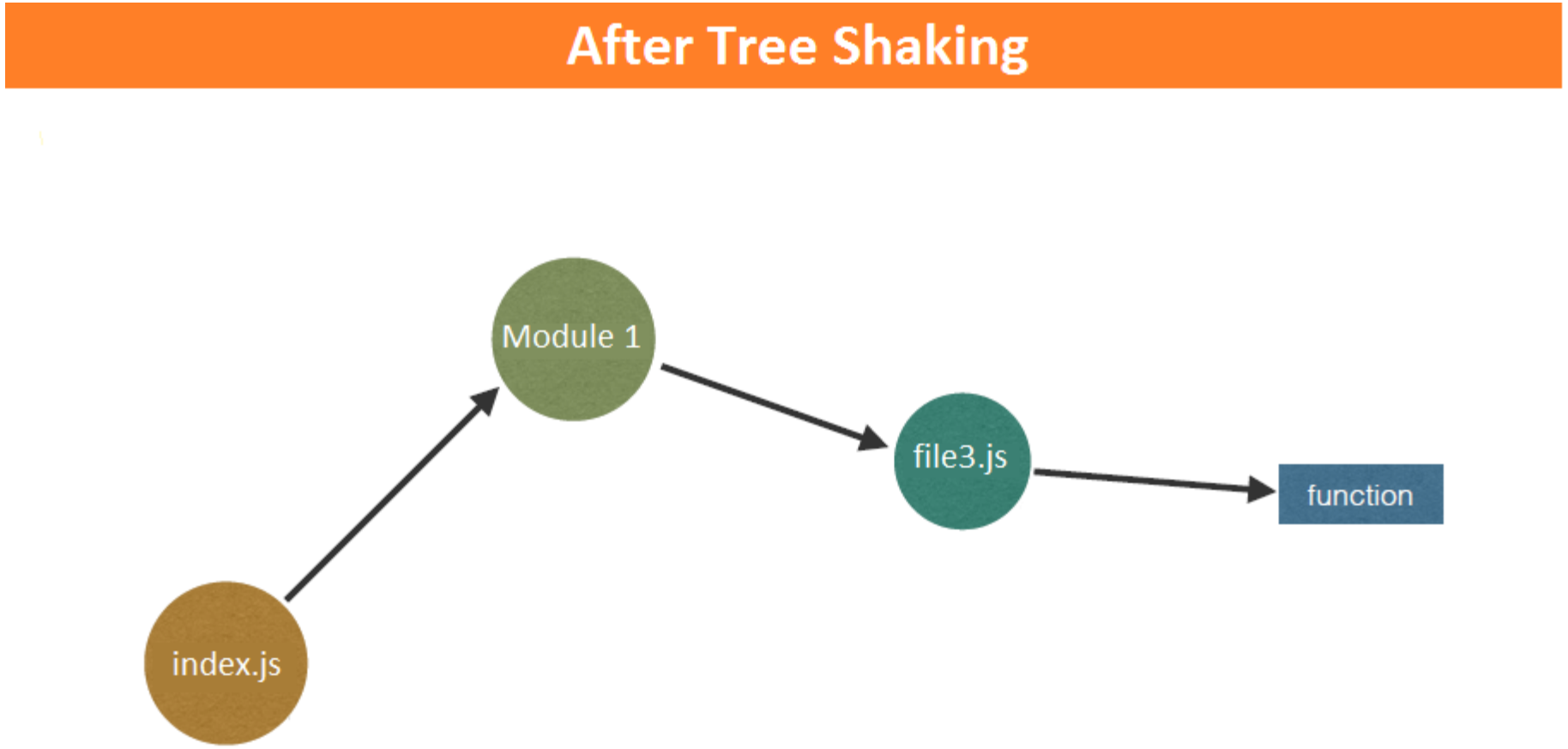
Tree Shaking



Tree Shaking



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Webpack Bundle Analyzer

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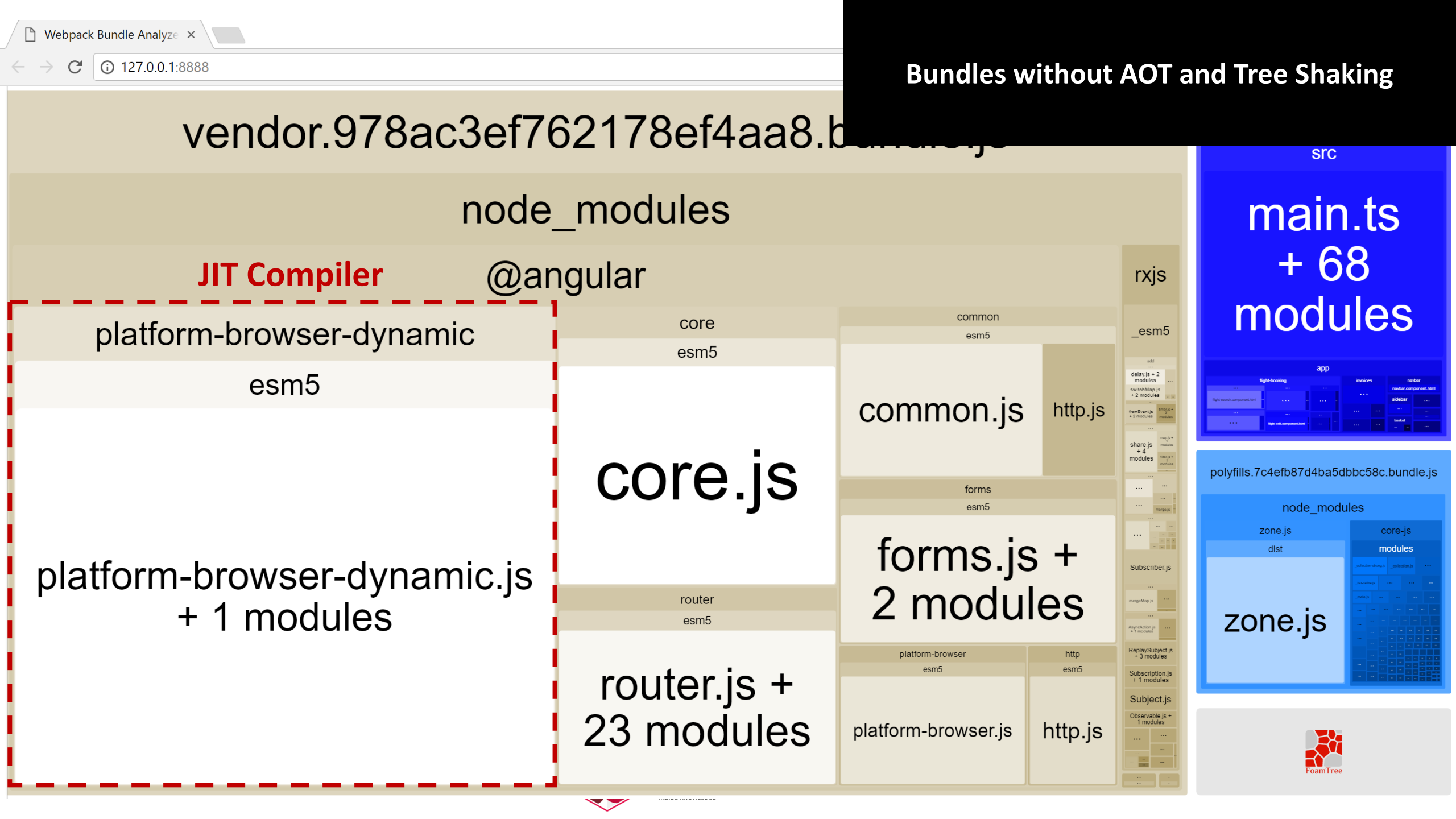
Webpack Bundle Analyze
127.0.0.1:8888
Bundles without AOT and Tree Shaking
vendor.978ac3ef762178ef4aa8.b
node_modules
JIT Compiler
@angular
platform-browser-dynamic
esm5
platform-browser-dynamic.js
+ 1 modules
core
esm5
core.js
router
esm5
router.js +
23 modules
common
esm5
common.js
http.js
forms
esm5
forms.js +
2 modules
platform-browser
esm5
platform-browser.js
http
esm5
http.js
rxjs
_esm5
Subscriber.js
Subject.js
src
main.ts
+ 68
modules
app
polyfills.7c4efb87d4ba5dbbc58c.bundle.js
node_modules
zone.js
dist
zone.js
core-js
modules
FoamTree

DEMO

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Conclusion

Lazy Loading

Preloading

OnPush with Immutables or Observables

Tree Shaking

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For a performance deep dive

Check out my special workshop

https://www.angulararchitects.io/schulungen/angular-performance-workshop/

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