



ANGULAR
ARCHITECTS
INSIDE KNOWLEDGE

Angular's new Standalone Components

How will They Affect My Architecture?



NgModules Provide Context

```
import { NgModule } from '@angular/core';
import { BrowserModule } from '@angular/platform-browser';

import { AppComponent } from './app.component';
[...]

@NgModule({
  imports: [BrowserModule, OtherModule],
  declarations: [AppComponent, OtherComponent, OtherDirective],
  providers: [],
  bootstrap: [AppComponent],
})
export class AppModule {}
```

Compilation Context

However ...

```
import { NgModule } from '@angular/core';
import { BrowserModule } from '@angular/platform-browser';

import { AppComponent } from './app.component';
[...]
@NgModule({
  imports: [BrowserModule, OtherModule],
  declarations: [AppComponent, OtherComponent, OtherDirective],
  providers: [],
  bootstrap: [AppComponent],
})
export class AppModule {}
```

The diagram illustrates the relationship between Angular Modules and TypeScript Modules. Two curved arrows point from the text labels to specific parts of the code. One arrow from 'Angular Modules' points to the `@NgModule({})` annotation. Another arrow from 'TypeScript Modules' points to the `import` statements at the top of the file.

Standalone Components

```
@Component({
  standalone: true,
  selector: 'app-root',
  imports: [
    HomeComponent,
    AboutComponent,
    HttpClientModule,
  ],
  templateUrl: '...'
})
export class AppComponent {
  [...]
}
```

Bootstrapping Components

```
bootstrapApplication(AppComponent);
```

What Does this Mean for

... Compatibility?

... my Architecture?



ANGULAR
ARCHITECTS
INSIDE KNOWLEDGE

Contents

#1

Mental Model

#2

Compatibility

#3

Routing

#4

Architecture



ANGULAR
ARCHITECTS
INSIDE KNOWLEDGE



SOFTWARE
ARCHITECT

#1: Mental Model



ANGULAR
ARCHITECTS
INSIDE KNOWLEDGE

Just Imagine ...

Standalone Component = Component + NgModule
(not implemented that way!)

Mental Model

```
@Component({  
  standalone: true,  
  selector: 'app-root',  
  imports: [  
    RouterModule,  
    HomeComponent,  
    AboutComponent,  
  ],  
  templateUrl: '...'  
)  
export class AppComponent {  
  [...]  
}
```



```
@NgModule({  
  imports: [  
    RouterModule,  
    HomeComponentModule,  
    AboutComponentModule,  
  ],  
  declarations: [  
    AppComponent  
  ]  
)  
export class AppModule {  
  @Component({  
    selector: 'app-root',  
    templateUrl: '...'  
  })  
  export class AppComponent {  
    [...]  
  }  
}
```

Standalone Pipes

```
@Pipe({
  standalone: true,
  name: 'city',
  pure: true
})
export class CityPipe implements PipeTransform {
  [...]
}
```

Standalone Directives

```
@Directive({
  standalone: true,
  selector: 'input[appCity]',
  providers: [ ... ]
})
export class CityValidator implements Validator {
  [...]
}
```

Importing Standalone Blocks

```
@Component({
  standalone: true,
  imports: [
    [...],
    FlightCardComponent,
    CityPipe,
    CityValidator,
  ],
  selector: 'flight-search',
  templateUrl: '...'
})
export class FlightSearchComponent {
  [...]
}
```

Wish List

Auto-Imports for Standalone Blocks



ANGULAR
ARCHITECTS
INSIDE KNOWLEDGE

Click-Dummy

```
<my-comp *ngIf="show">  
</my-comp>
```

It looks like you want to use
NgIfDirective and *MyComponent*.
Shall I import it for you?



#2: Compatibility



ANGULAR
ARCHITECTS
INSIDE KNOWLEDGE

Standalone Component → NgModules

```
@Component({
  standalone: true,
  selector: 'app-root',
  imports: [
    [...]
    HttpClientModule,
  ],
  templateUrl: '...'
})
export class AppComponent {
```

Standalone Component → NgModules

```
@Component({  
  standalone: true,  
  selector: 'app-root',  
  imports: [  
    [...]  
    HttpClientModule,  
  ],  
  templateUrl: '...'  
)  
export class AppComponent {  
}
```

NgModule → Standalone Blocks

```
@NgModule({  
  imports: [  
    FlightCardComponent,  
  ],  
  declarations: [  
    MyTicketsComponent  
  ],  
})  
export class TicketsModule { }
```

NgModule → Standalone Blocks

```
@NgModule({  
  imports: [  
    FlightCardComponent,  
  ],  
  declarations: [  
    MyTicketsComponent  
  ],  
})  
export class TicketsModule { }
```

Global Providers

```
bootstrapApplication(AppComponent, {  
  providers: [  
    MyGlobalService,  
    ...importProvidersFrom(HttpClientModule),  
    ...importProvidersFrom(RouterModule.forRoot(APP_ROUTES)),  
  ]  
});
```

Global Providers

```
bootstrapApplication(AppComponent, {  
  providers: [  
    MyGlobalService,  
    ...importProvidersFrom(HttpClientModule),  
    ...importProvidersFrom(RouterModule.forRoot(APP_ROUTES)),  
  ]  
});
```

Expect dedicated functions
in the future, e. g. configureRouter

#3: Routing



ANGULAR
ARCHITECTS
INSIDE KNOWLEDGE

Global Providers

```
bootstrapApplication(AppComponent, {  
  providers: [  
    MyGlobalService,  
    ...importProvidersFrom(HttpClientModule),  
    ...importProvidersFrom(RouterModule.forRoot(APP_ROUTES)),  
  ]  
});
```

Lazy Loading

```
export const APP_ROUTES: Routes = [
  [...],
  {
    path: 'flight-booking',
    loadChildren: () =>
      import('@nx-example/booking/feature-book')
        .then(m => m.FLIGHT_BOOKING_ROUTES)
  },
  {
    path: 'next-flight',
    loadComponent: () =>
      import('@nx-example/booking/feature-tickets')
        .then(m => m.NextFlightComponent)
  },
];

```

Lazy Loading

```
export const APP_ROUTES: Routes = [
  [...],
  {
    path: 'flight-booking',
    loadChildren: () =>
      import('@nx-example/booking/feature-book')
        .then(m => m.FLIGHT_BOOKING_ROUTES)
  },
  {
    path: 'next-flight',
    loadComponent: () =>
      import('@nx-example/booking/feature-tickets')
        .then(m => m.NextFlightComponent)
  },
];

```

Routes With Injector

```
export const FLIGHT_BOOKING_ROUTES: Routes = [{  
  path: '',  
  component: FlightBookingComponent,  
  providers: [  
    MyService  
,  
    children: [  
      [...]  
    ]  
  ]  
}];
```

Routes With Injector

```
export const FLIGHT_BOOKING_ROUTES: Routes = [{  
  path: '',  
  component: FlightBookingComponent,  
  providers: [  
    MyService  
  ],  
  children: [  
    [...]  
  ]  
}];
```

Scope: This route
+ all child routes



Routes With Injector

```
export const FLIGHT_BOOKING_ROUTES: Routes = [{  
  path: '',  
  component: FlightBookingComponent,  
  providers: [  
    ...forMyLibrary()  
  ],  
  children: [  
    [...]  
  ]  
}];
```

Routes With Injector

```
export const FLIGHT_BOOKING_ROUTES: Routes = [{  
  path: '',  
  component: FlightBookingComponent,  
  providers: [  
    ...forDomainBooking()  
  ],  
  children: [  
    [...]  
  ]  
}];
```

#4: Architecture

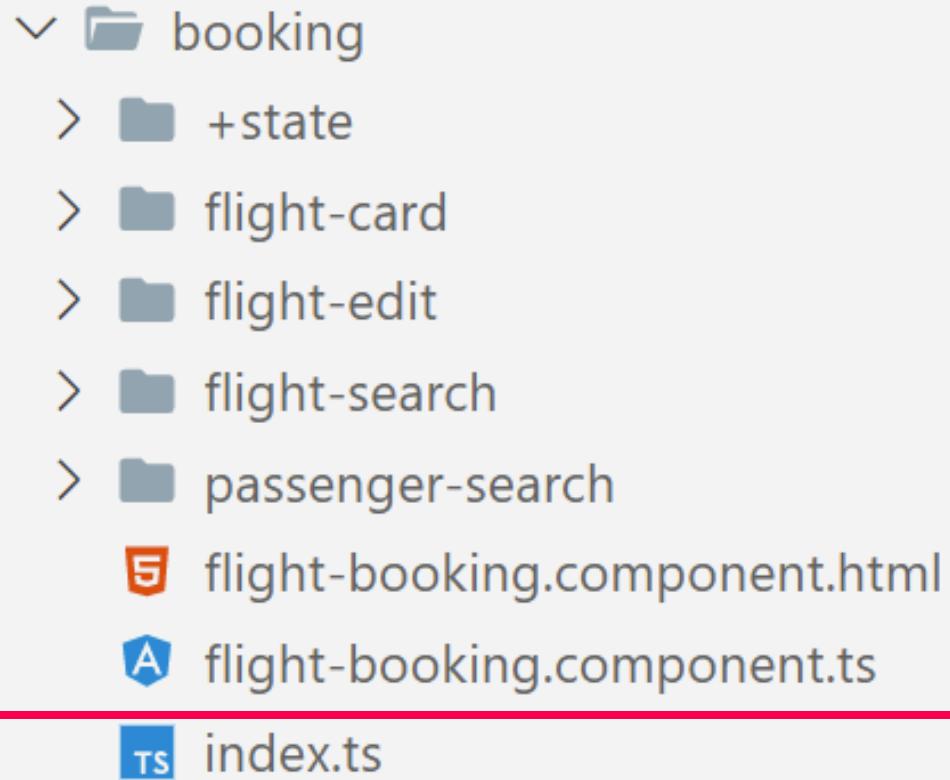


ANGULAR
ARCHITECTS
INSIDE KNOWLEDGE

Folder

```
✓  folder booking
  > folder +state
  > folder flight-card
  > folder flight-edit
  > folder flight-search
  > folder passenger-search
      5 flight-booking.component.html
      A flight-booking.component.ts
```

Barrels



```
// index.ts == Public API

export *
from './flight-booking.component';

export *
from './flight-card/flight-card.component';
```

Importing Whole Barrels

```
import * as booking from './booking';
[...]

@Component({
  standalone: true,
  imports: [
    ...Object.values(booking) as any[],
    [...]
  ],
  [...]
})
export class MyComponent {
  [...]
}
```

Importing Whole Barrels

```
import * as booking from './booking';
[...]

@Component({
  standalone: true,
  imports: [
    ...Object.values(booking) as any[],
    [...]
  ],
  [...]
})
export class MyComponent {
  [...]
}
```

Not beautiful!

Importing Whole Barrels

```
import * as booking from './booking';
[...]

@Component({
  standalone: true,
  imports: [
    ...all(booking),
    [...]
  ],
  [...]
})
export class MyComponent {
  [...]
}
```

Custom Helper Function



Wish List

Better syntax for
importing barrels



ANGULAR
ARCHITECTS
INSIDE KNOWLEDGE

Importing Whole Barrels

```
import * as booking from './booking';
[...]

@Component({
  standalone: true,
  imports: [
    booking,
    [...]
  ],
  [...]
})
export class MyComponent {
  [...]
}
```

Wish List



ANGULAR
ARCHITECTS
INSIDE KNOWLEDGE



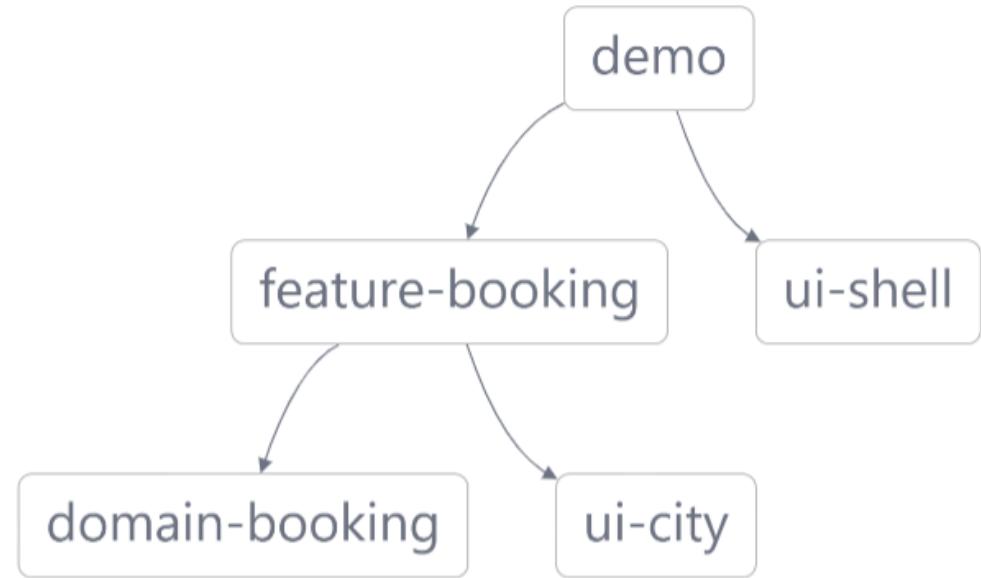
SOFTWARE
ARCHITECT

Next Logical Step: Nx Workspaces



ANGULAR
ARCHITECTS
INSIDE KNOWLEDGE

```
✓ libs
  > domain-booking
  ✓ feature-booking
    ✓ src
      ✓ lib
        > flight-card
        > flight-edit
        > flight-search
        > passenger-search
        ⚡ flight-booking.component.html
        ⚑ flight-booking.component.ts
        TS index.ts
        TS test-setup.ts
      > ui-city
      > ui-shell
```



- + Generates path mappings
- + Generates initial barrel
- + Prevents bypassing *index.ts*
- + much more

Constraints: "No Broken Windows!"

```
import { Component } from '@demo/util-shim';
import { FlightBookingComponent } from '@demo/feature-booking';
```

"FlightBookingComponent" ist deklariert, aber der zugehörige Wert wird nie gelesen. ts(6133)

A project tagged with "ui" can only depend on libs tagged with "domain", "util" [eslint\(@nrwl/nx/enforce-module-boundaries\)](#)

[Problem anzeigen](#) [Schnelle Problembehebung ... \(STRG+.\)](#)

```
export class NavbarComponent {
  sidebarVisible = false;
```

Booking

Boarding

Shared

Feature

Feature

Feature

UI

UI

UI

Domain

Domain

Domain

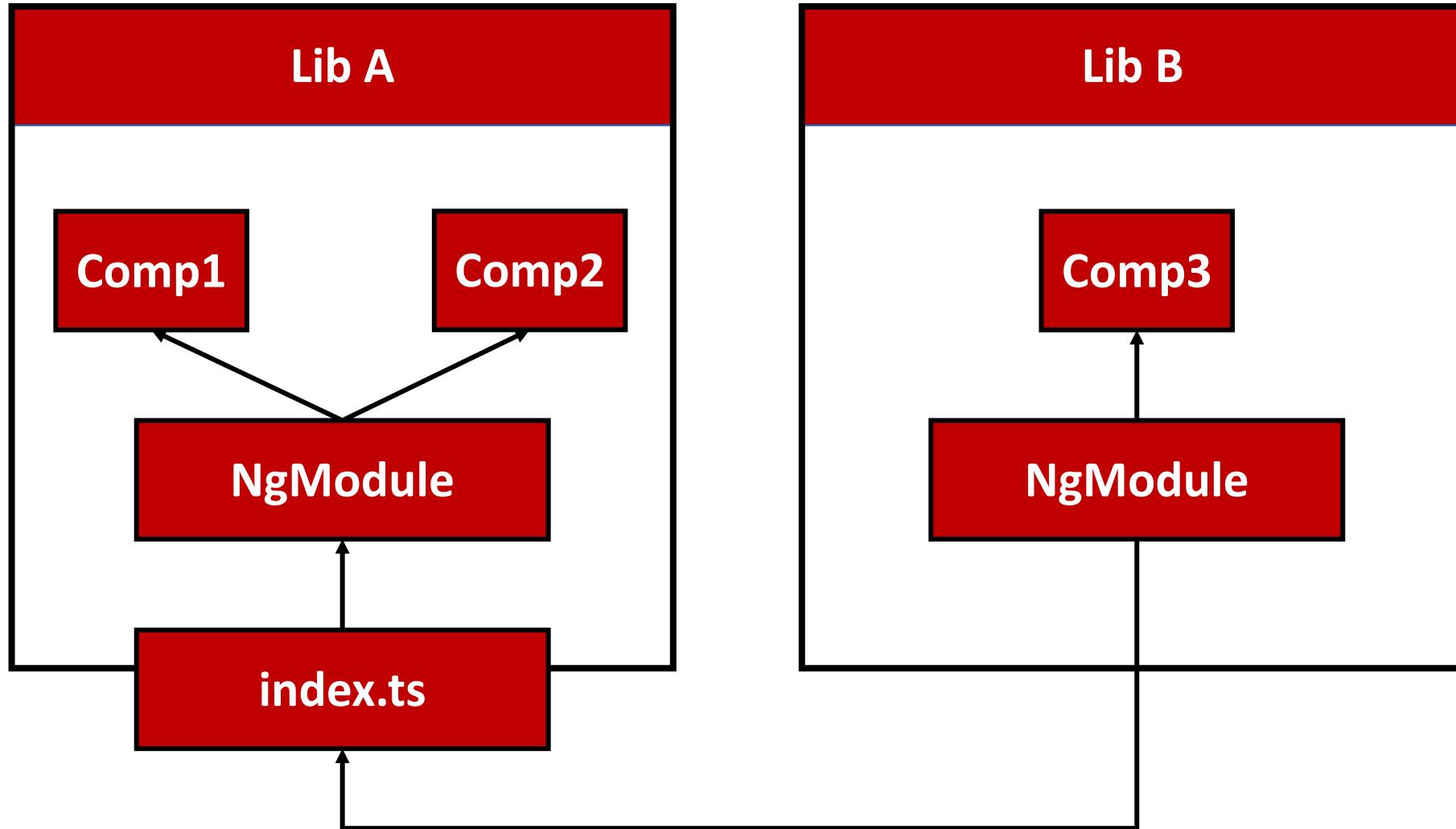
Util

Util

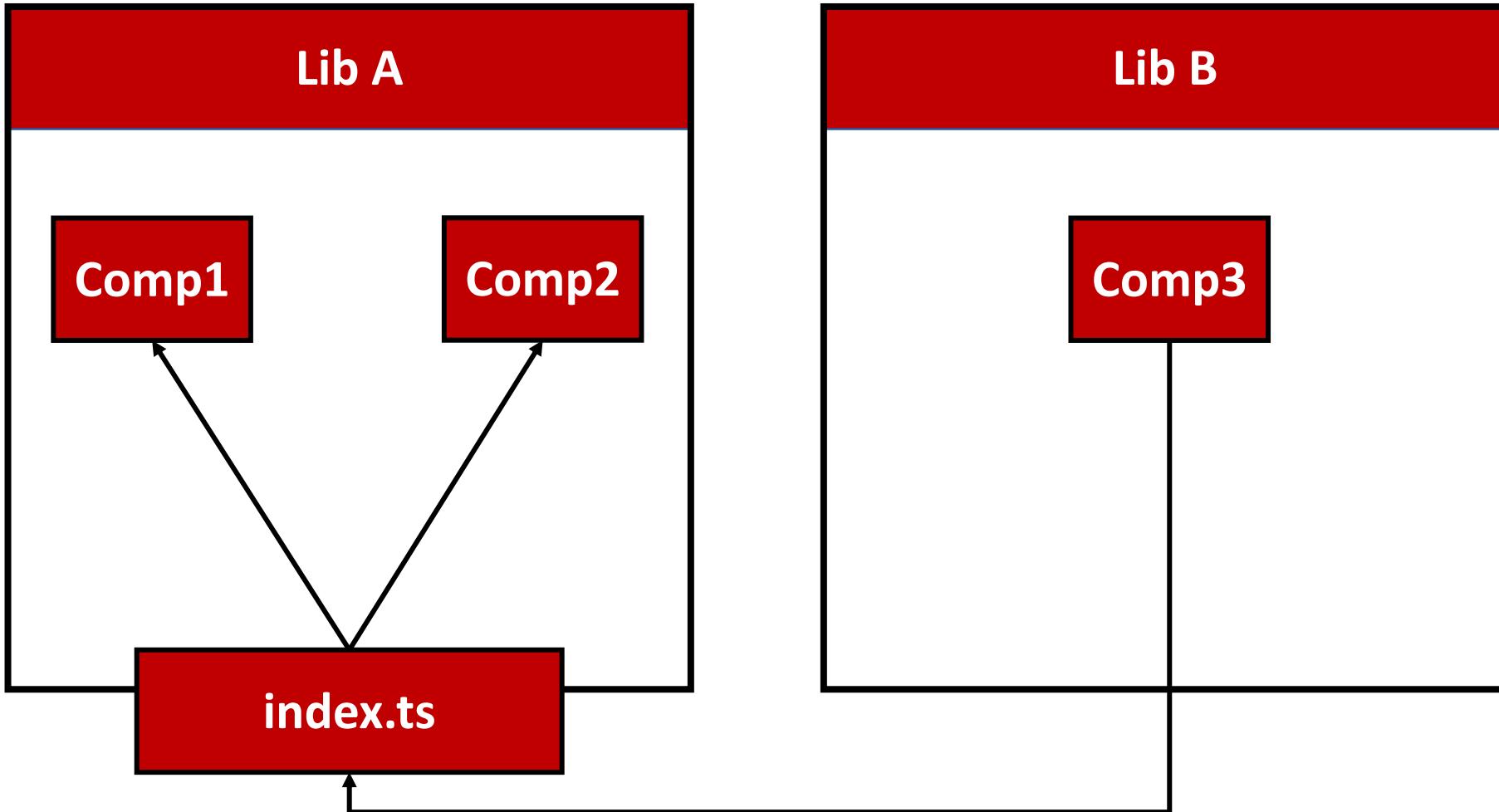
Util



Today (with NgModules)



Tomorrow (without NgModules)



Conclusion

Mental Model

Folders & Barrels

Mapped Paths

Nx, Libs, and
Constraints FTW!



ANGULAR
ARCHITECTS
INSIDE KNOWLEDGE



SOFTWARE
ARCHITECT