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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 integration of 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.

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?



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Architecture



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#1: Mental Model



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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



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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



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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



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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

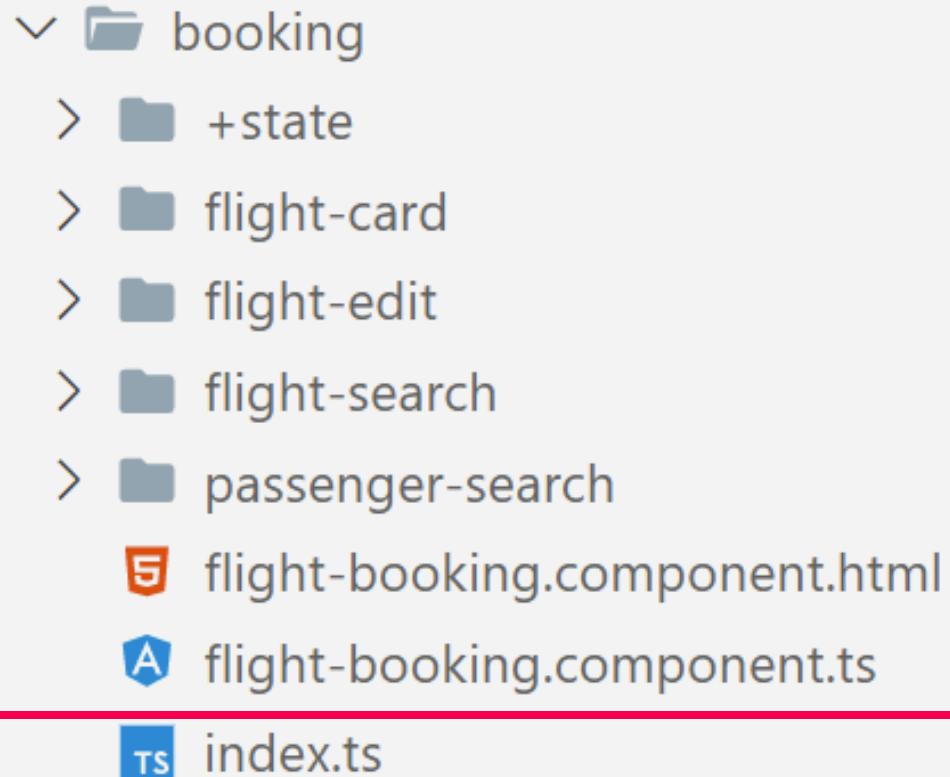


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Folder

```
✓  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



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Importing Whole Barrels

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

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

Wish List



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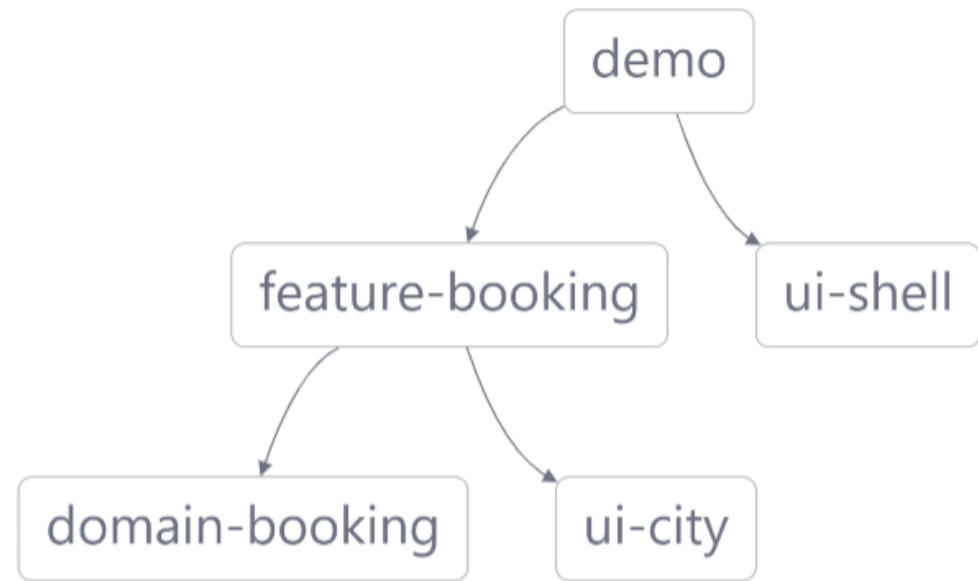
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Next Logical Step: Nx Workspaces



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```
✓ 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

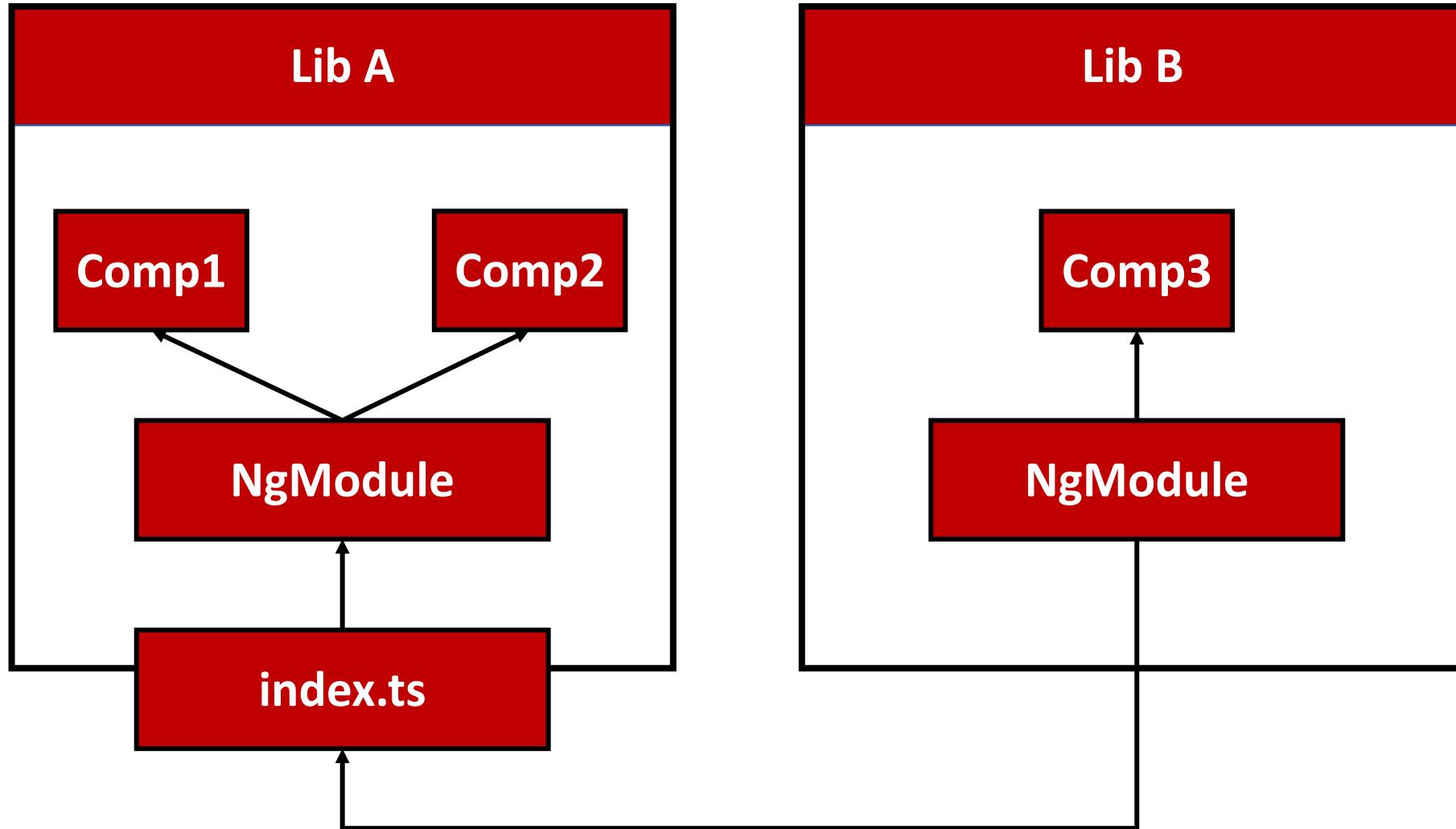
Util

Util

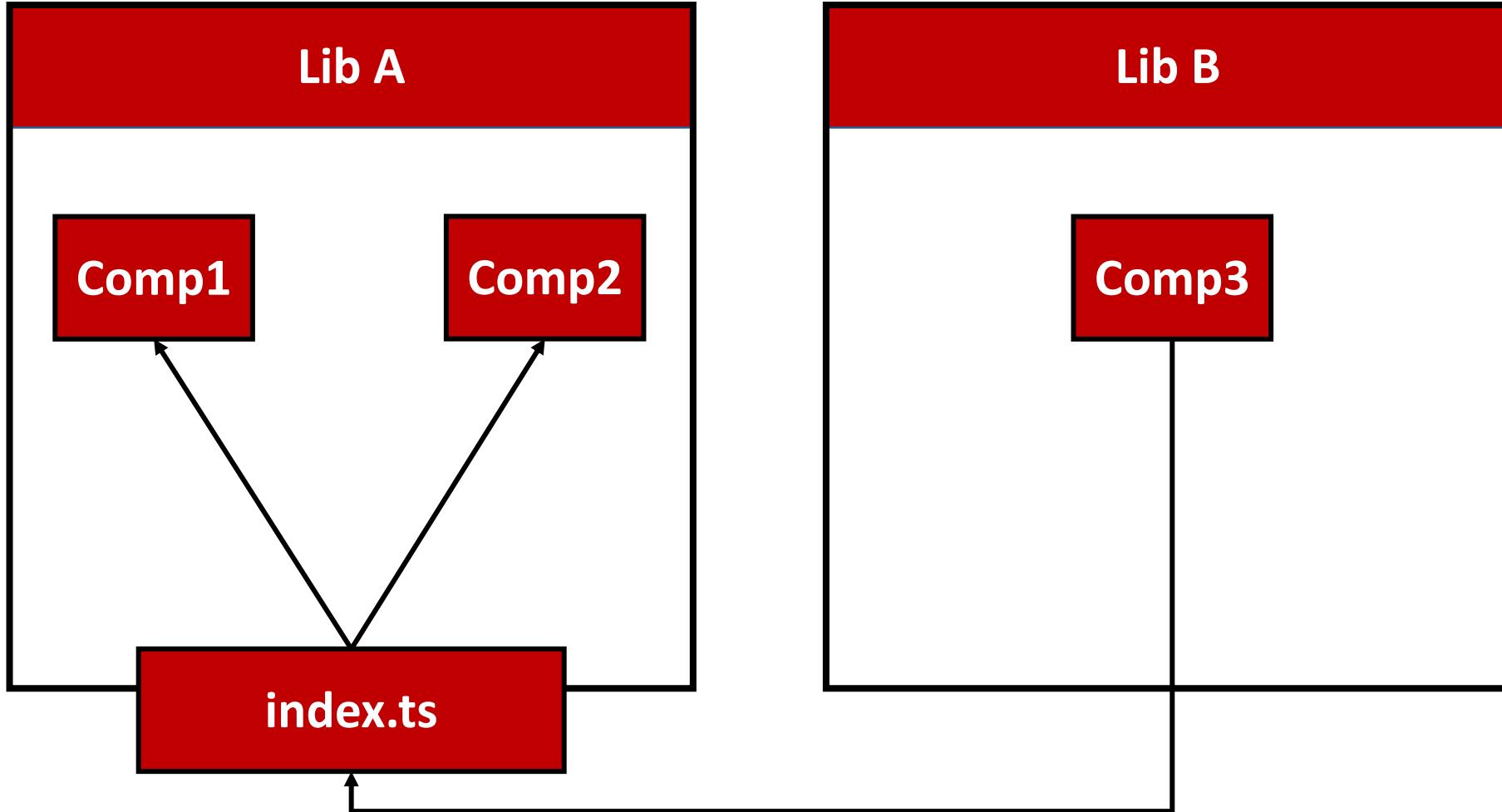
Util



Today (with NgModules)



Tomorrow (without NgModules)



Conclusion

Mental Model

Folders & Barrels

Mapped Paths

Nx, Libs, and
Constraints FTW!



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