ANGULAR
ARCHITECTS
INSIDE KNOWLEDGE

Router Deep Dive

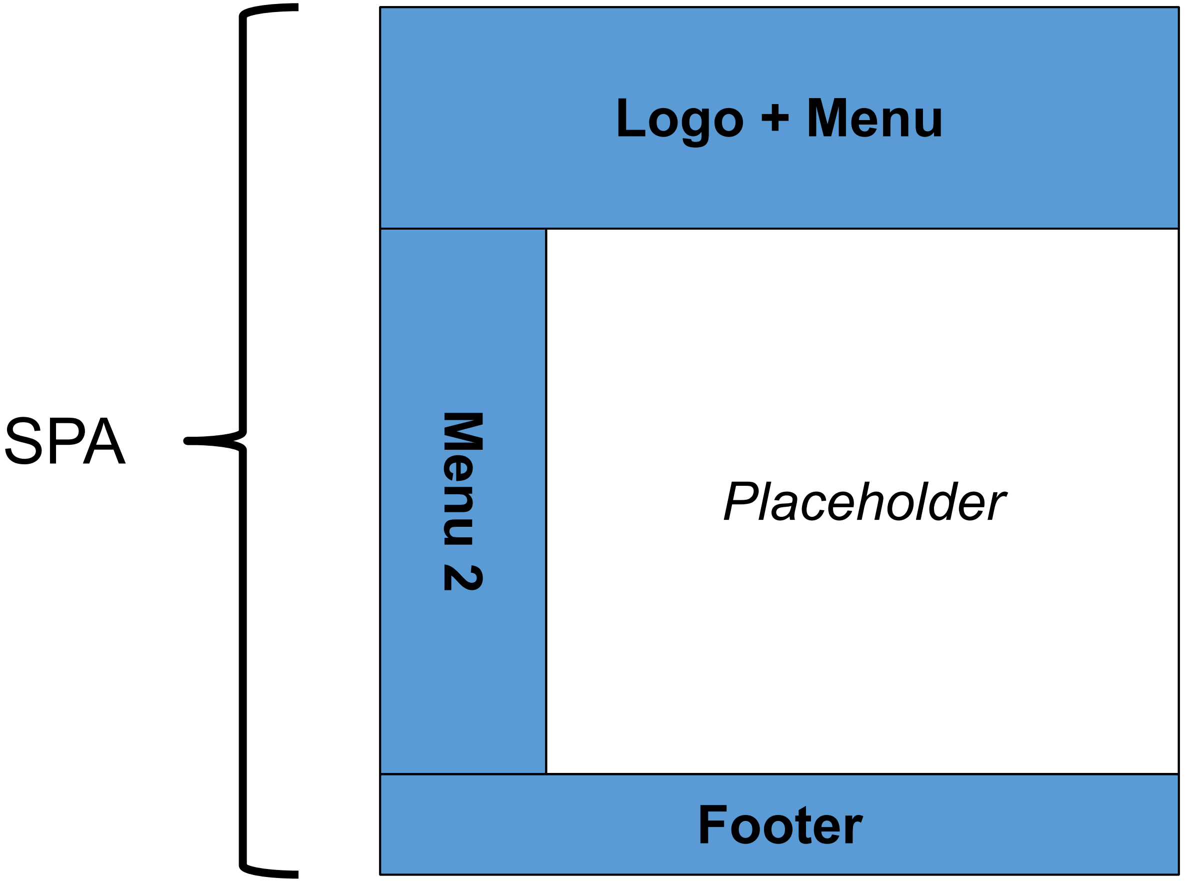
ANGULARarchitects.io

Contents

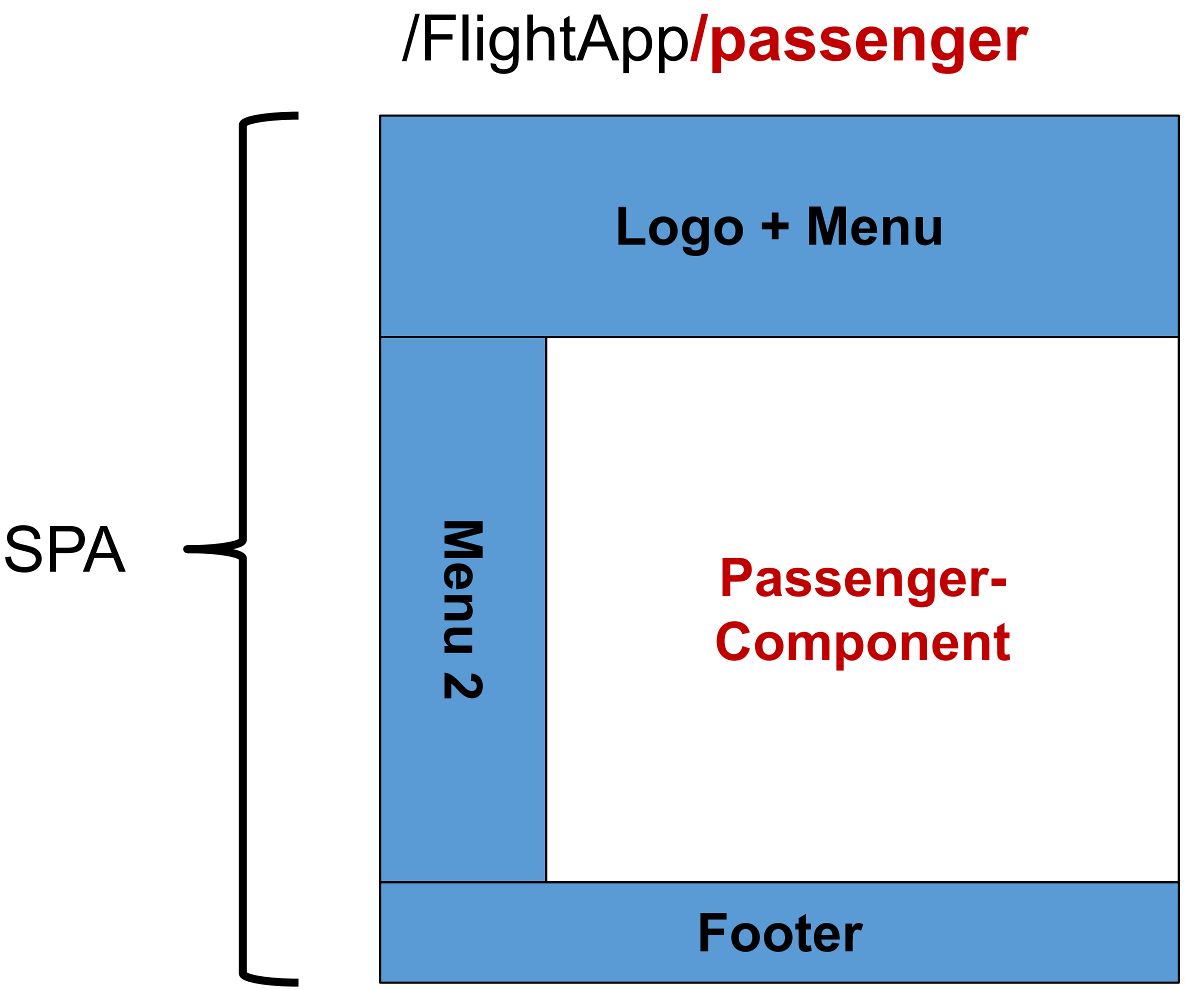
- Basics
- Child Routes
- Aux Routes
- Guards
- Resolver
- Lazy Loading

Angular Router

Routing in Angular



Routing in Angular



Configuration

```
const APP_ROUTES: Routes = [
    {
        path: 'home',
        component: HomeComponent
    },
    {
        path: 'flight-search',
        component: FlightSearchComponent
    },
    {
        path: '**',
        redirectTo: 'home'
    }
]
```

Configuration

```
// app.module.ts
@NgModule({
    imports: [
        BrowserModule,
        HttpModule,
        FormsModule,
        RouterModule.forRoot(ROUTE_CONFIG)
    ],
    […]
})
export class AppModule {
}
```

For Root-Module

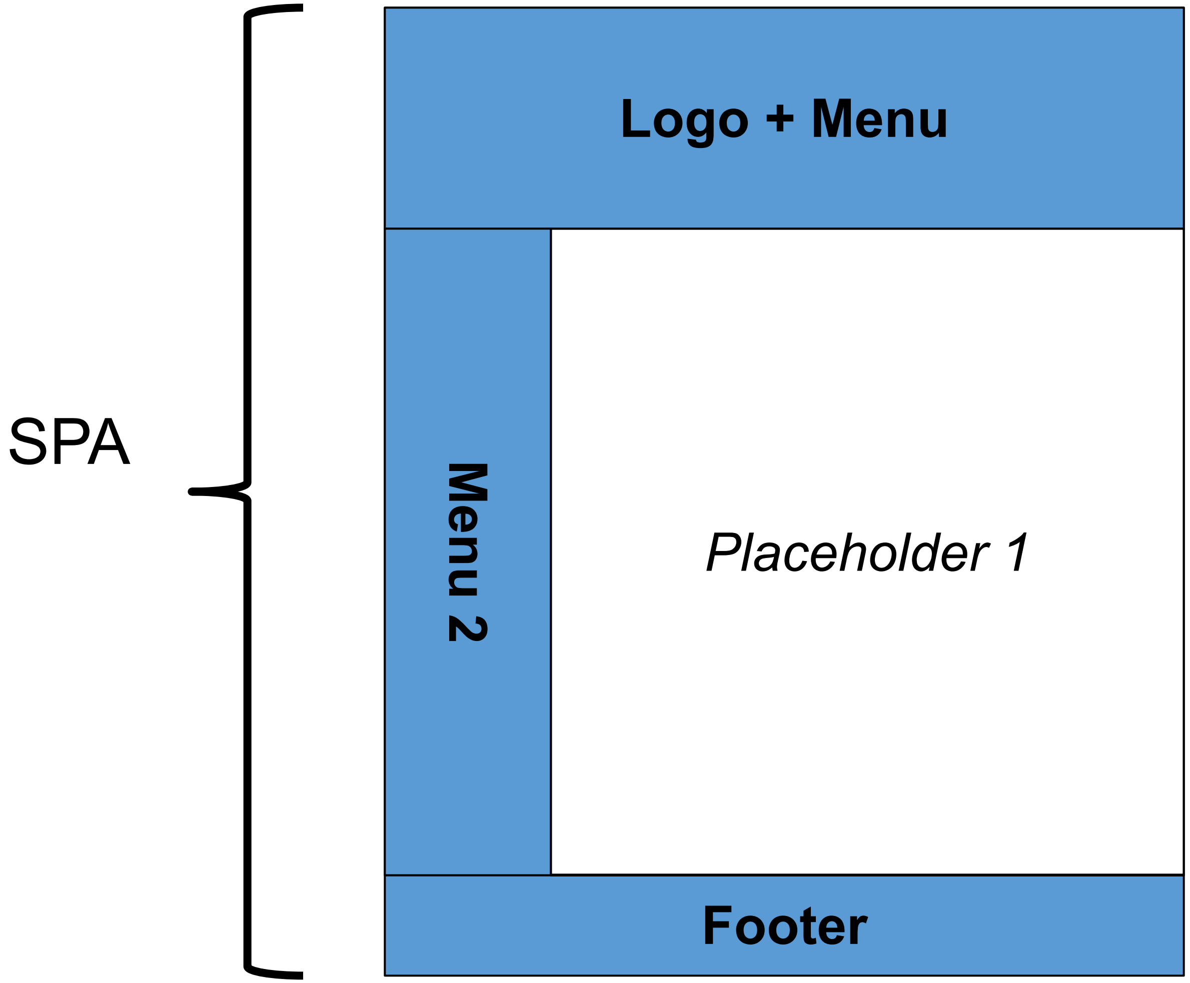
For Feature-Module: forChild

AppComponent

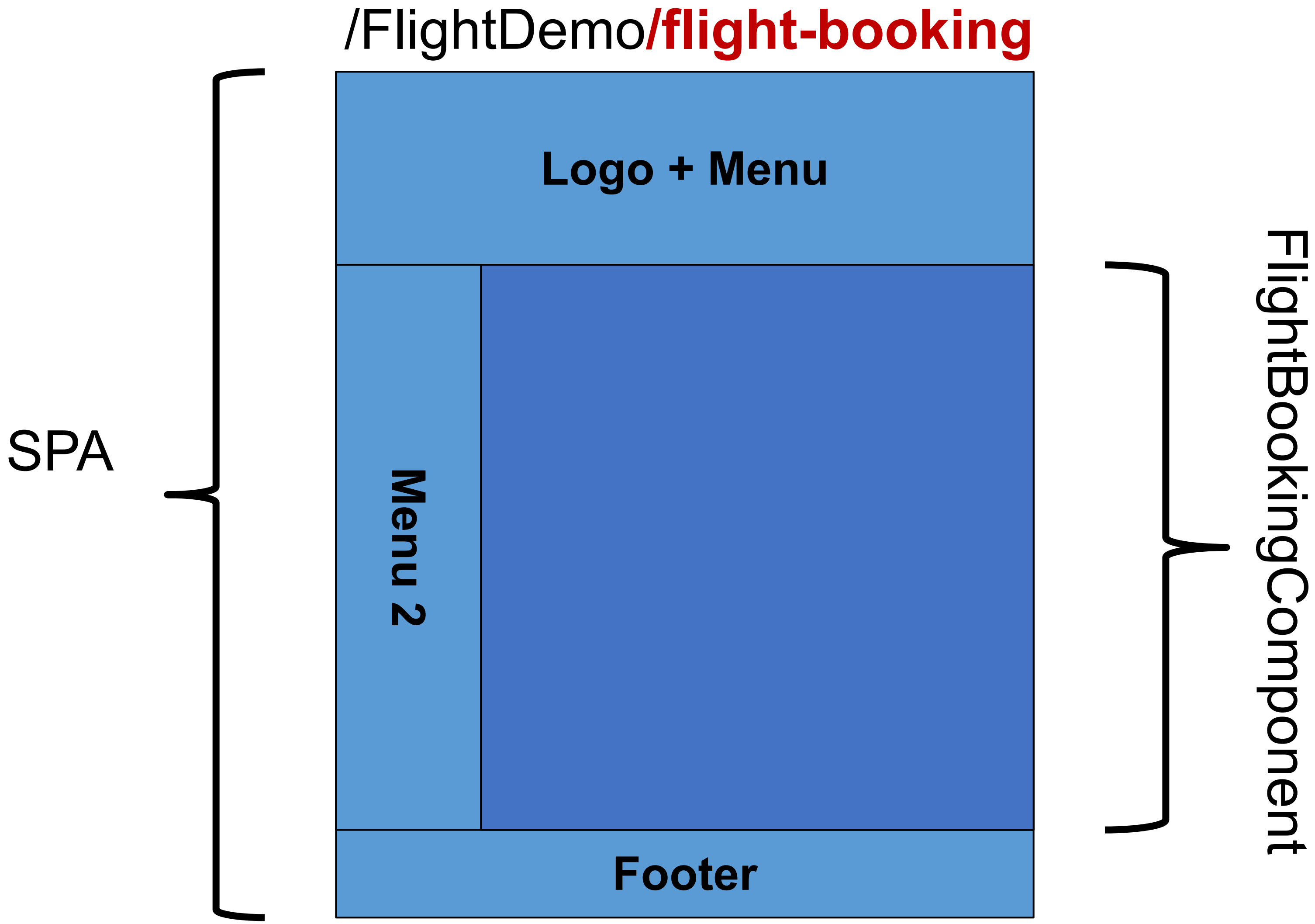
```
<a routerLink="/home">Home</a>
<a routerLink="/flight-search">Flight Search</a>

<div>
    <router-outlet></router-outlet>
</div>
```

Hierarchical Routing

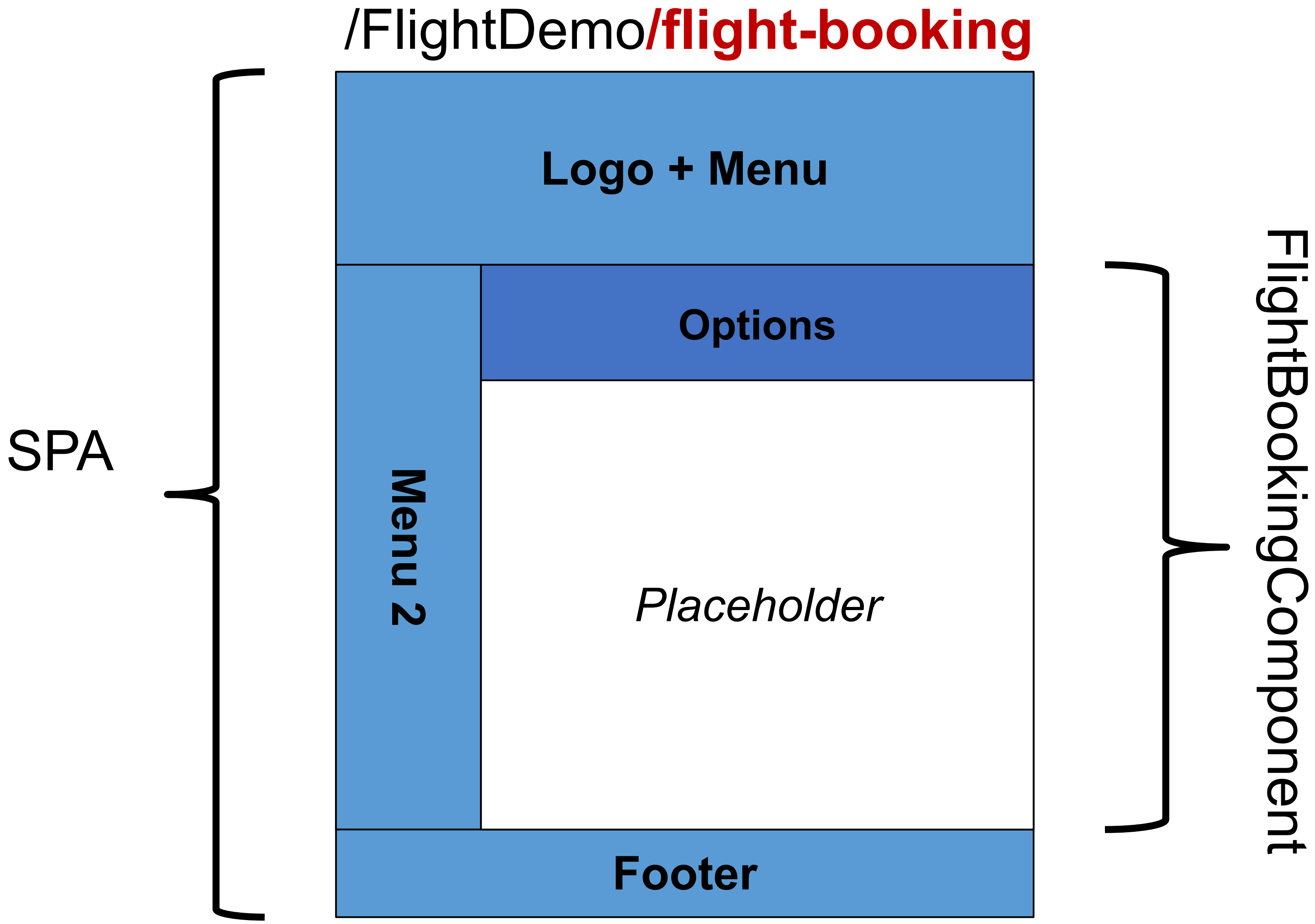
Hierarchical Routing



Hierarchical Routing

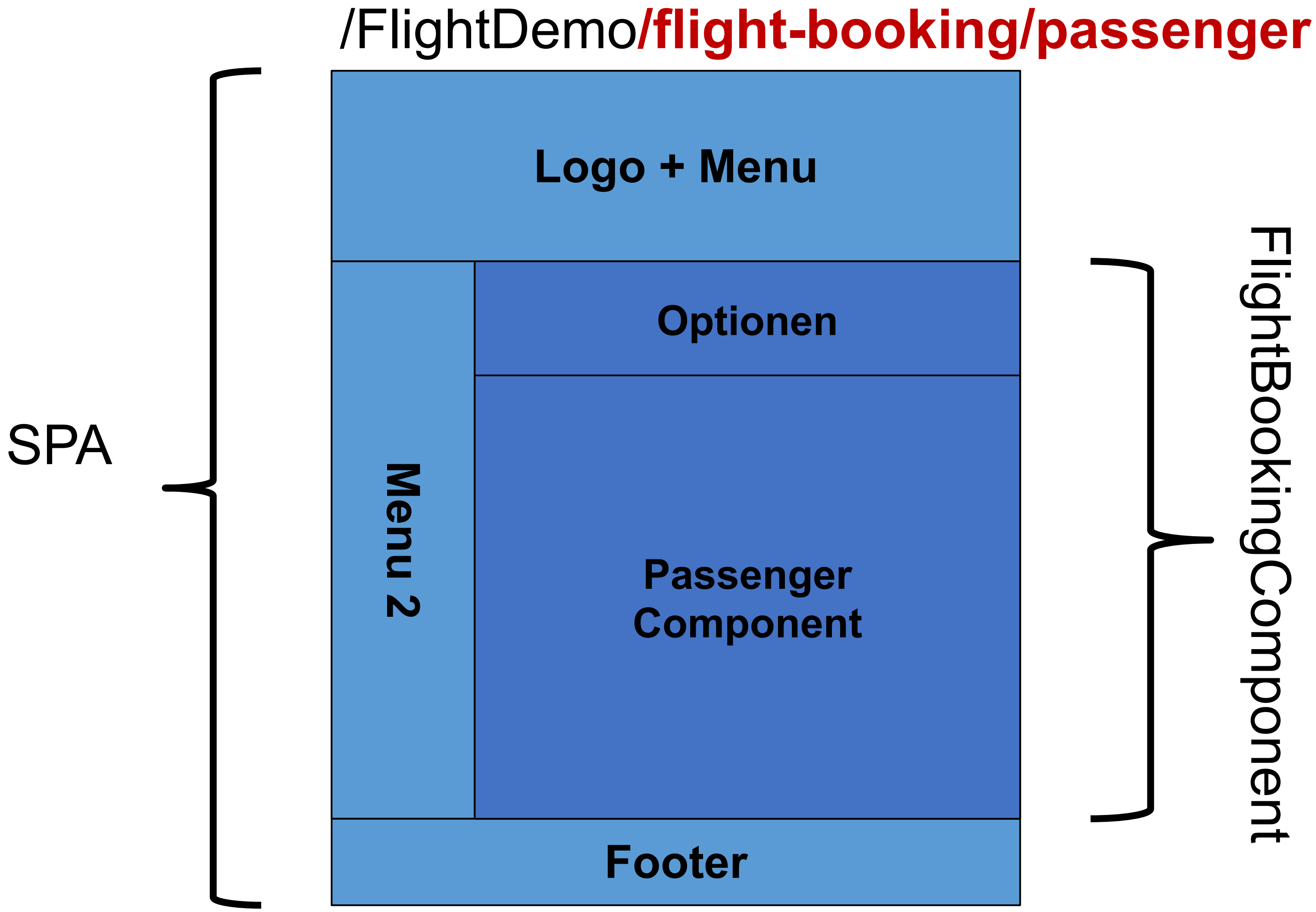


Hierarchical Routing



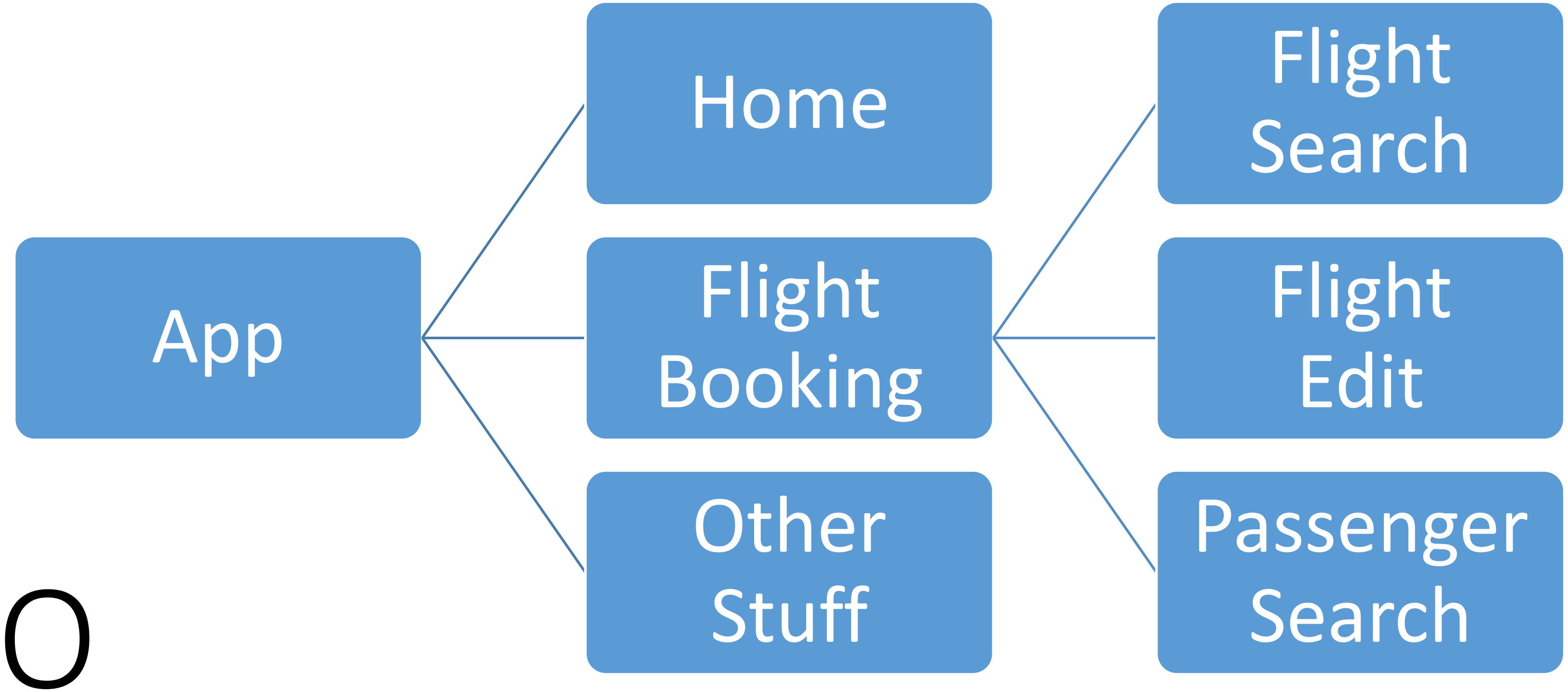
ManfredSteyer

Hierarchical Routing



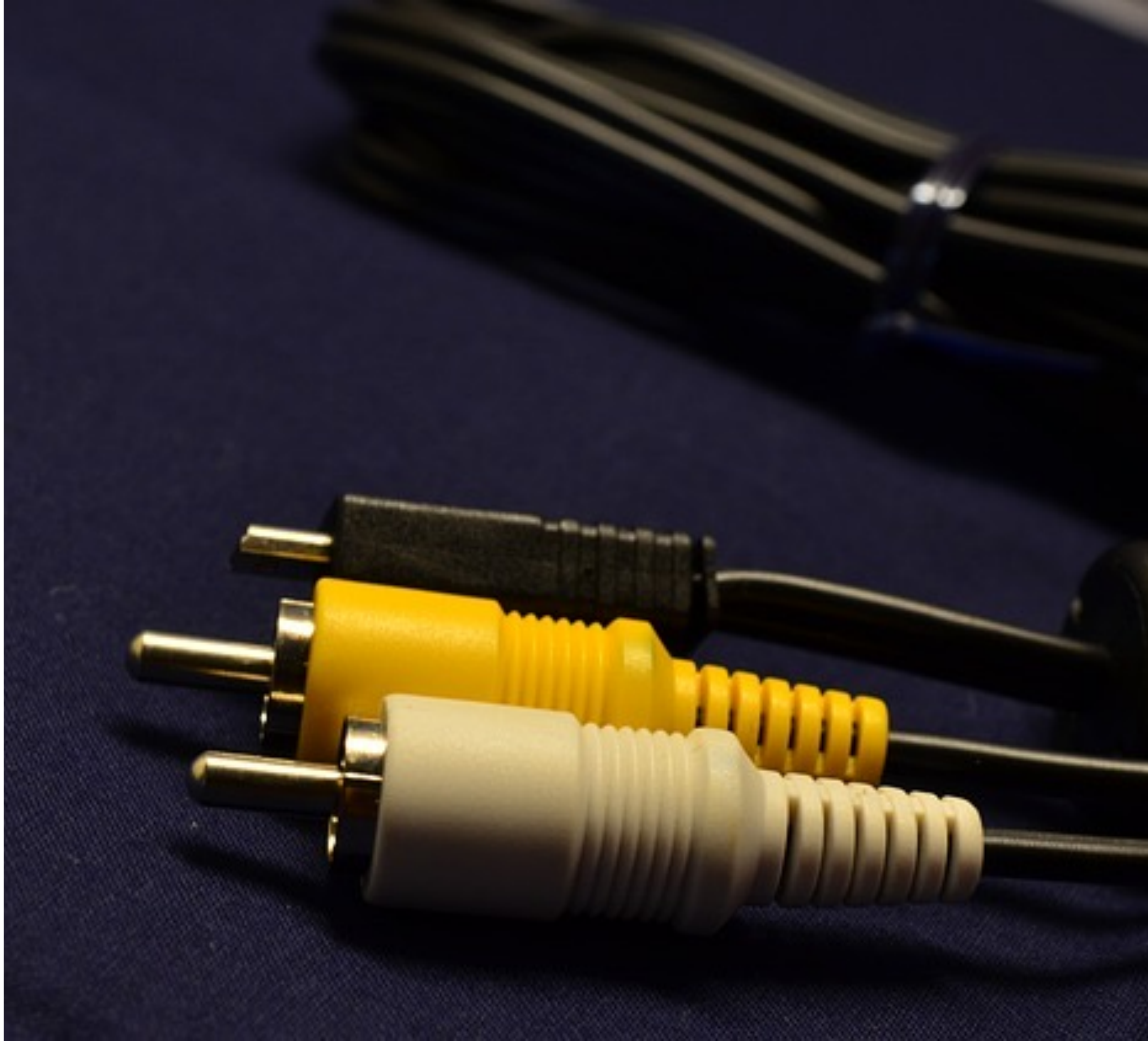
Configuration

```
const APP_ROUTES: Routes = [
    {
        path: '',
        component: HomeComponent
    },
    {
        path: 'flight-booking',
        component: FlightBookingComponent,
        children: [
            {
                path: 'flight-search',
                component: FlightSearchComponent
            },
            […]
        ]
    }
];
```

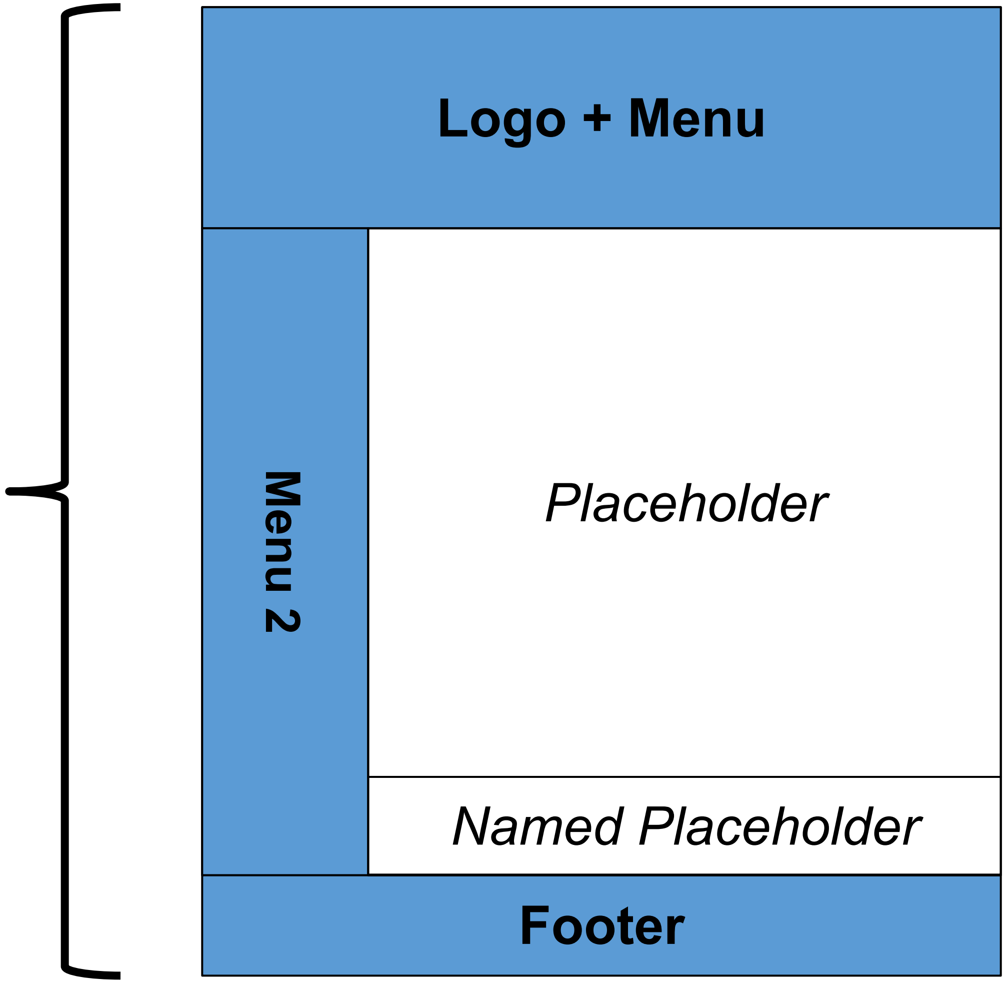

App
Home
Flight Booking
Other Stuff
Flight Search
Flight Edit
Passenger Search

DEMO

Aux Routes

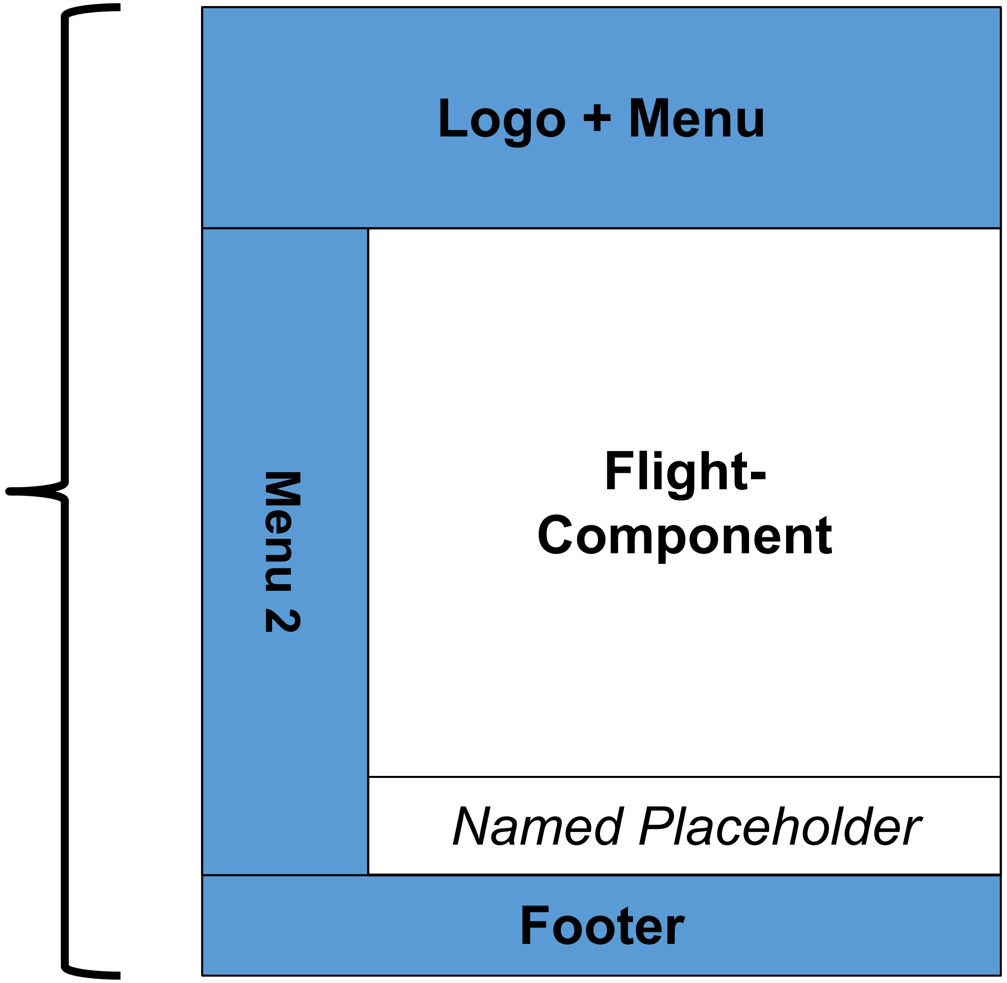


Aux-Routes



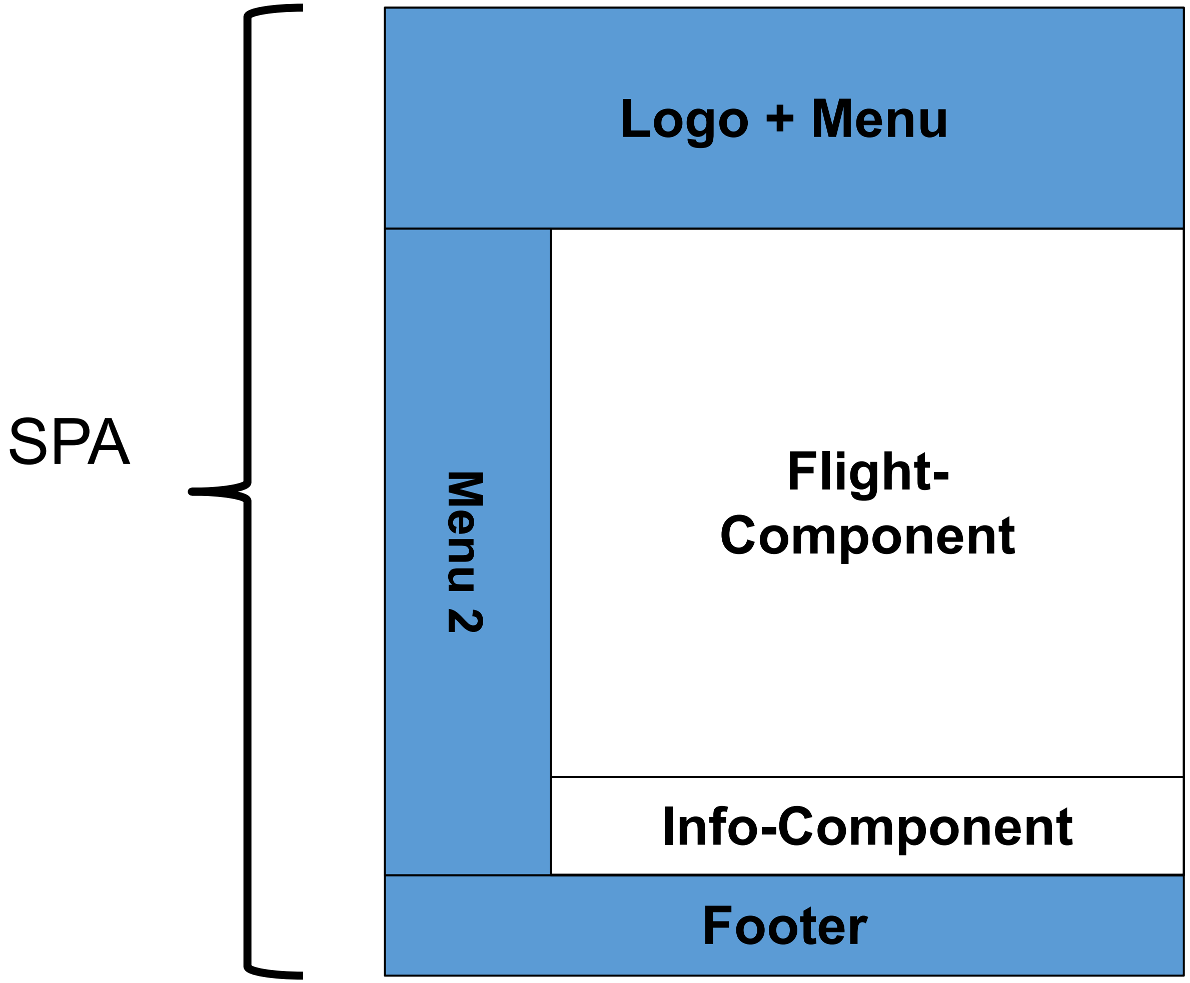
Aux-Routes

/FlightApp/**flights**



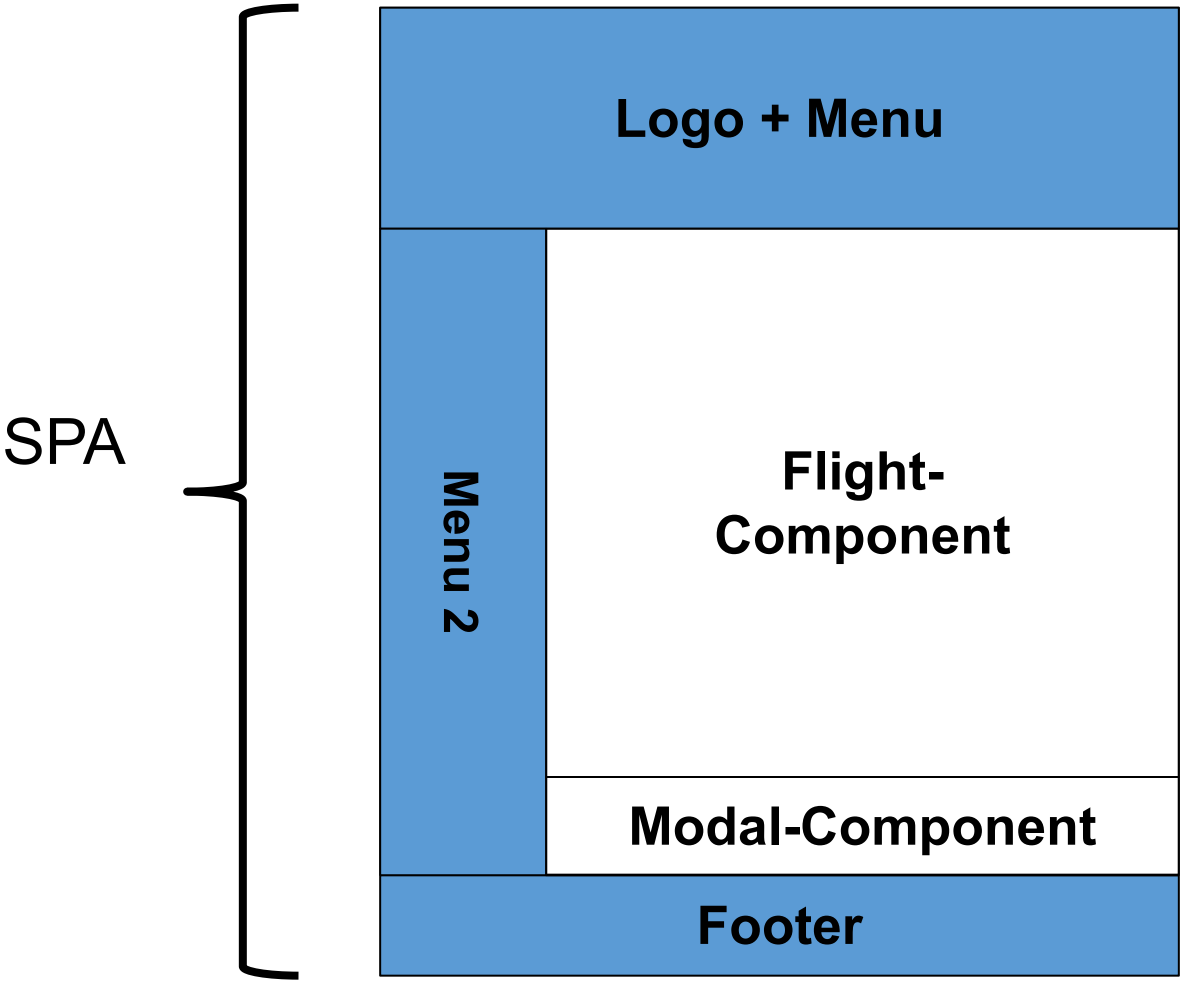
Aux-Routes

/FlightApp/**flights(aux:info)**



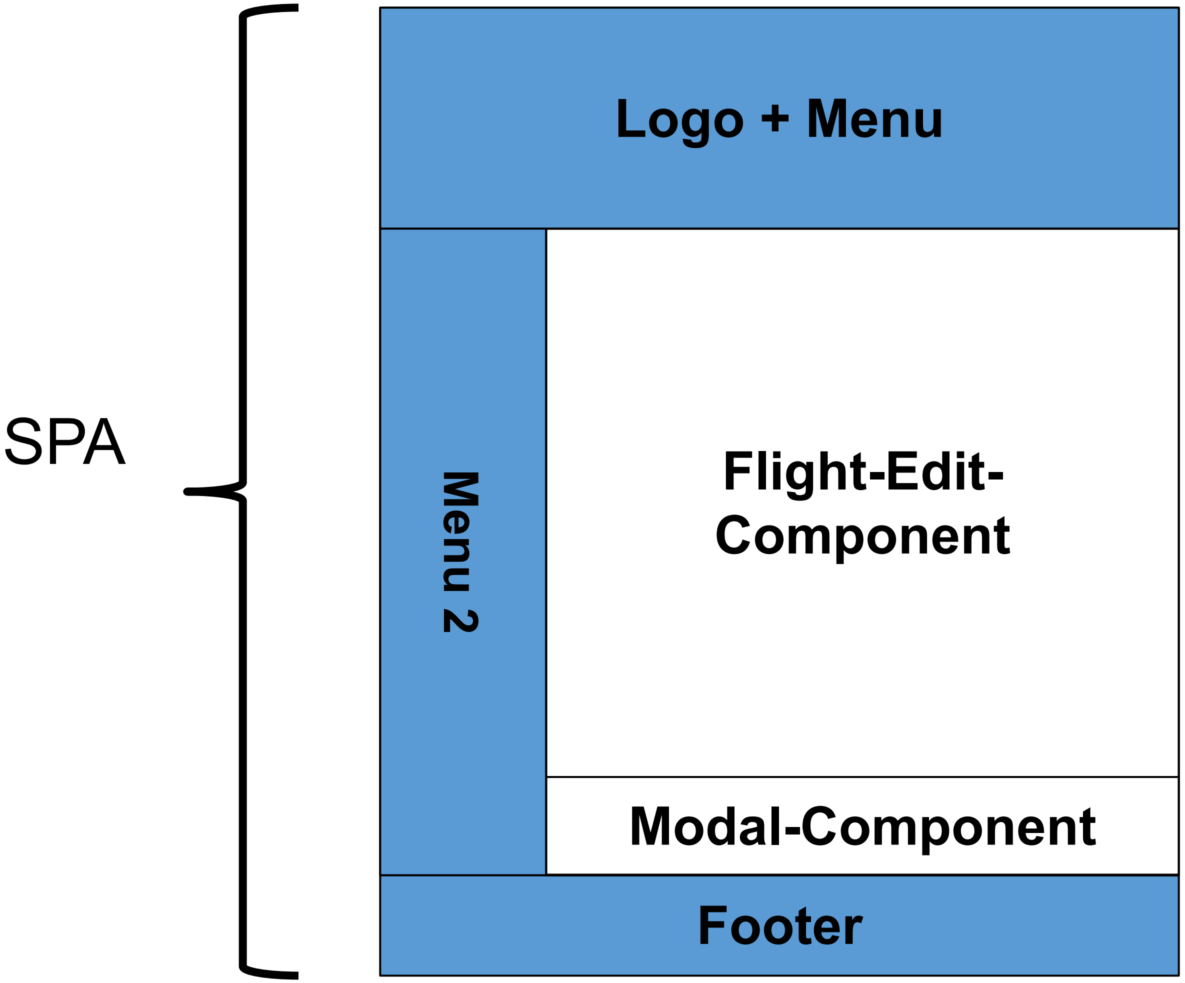
Aux-Routes

/FlightApp**/flights(aux:info/modal)**



Aux-Routes

/FlightApp**/flights(aux:info/modal)/edit/17**



Use Cases

- Partly autonomous parts of an application
- „Norton Commander Style“
- (CSS-based) Popups and Modals

Define Outlets

Default Name: primary

```
<router-outlet></router-outlet>

<hr>

<router-outlet name="aux"></router-outlet>
```

Configuration

```
export const ROUTE_CONFIG: Routes = [
    {
        path: 'home',
        component: HomeComponent
    },
    {
        path: 'info',
        component: InfoComponent,
        outlet: 'aux'
    },
    {
        path: 'dashboard',
        component: DashboardComponent,
        outlet: 'aux'
    }
]
```

Activating Aux-Routes

```
<a [routerLink]="[{outlets: { aux: 'info' }}]">
    Activate Info
</a>

<a [routerLink]="[{outlets: { aux: null }}]">
    Deactivate Info
</a>
```

Activating Several Aux Routes at Once

```
<a [routerLink]="[{outlets: {
                     aux: 'basket',
                     primary: 'flight-booking/flight-search' }}]"> … </a>


<a [routerLink]="[{outlets: { aux: 'basket',
                     primary: ['flight-booking', 'flight-search'] }}]"> … </a>


<a [routerLink]="[{outlets: { aux: 'basket',
                     primary: ['flight-booking', 'flight-edit', 17] }}]"> … </a>
```

Code-based Routing

```
export class AppComponent {

    constructor(private router: Router) {
    }

    activateInfo() {
        this.router.navigate([{outlets: { aux: 'info' }}]);
    }

    deactivateInfo() {
        this.router.navigate([{outlets: { aux: null }}]);
    }
}
```

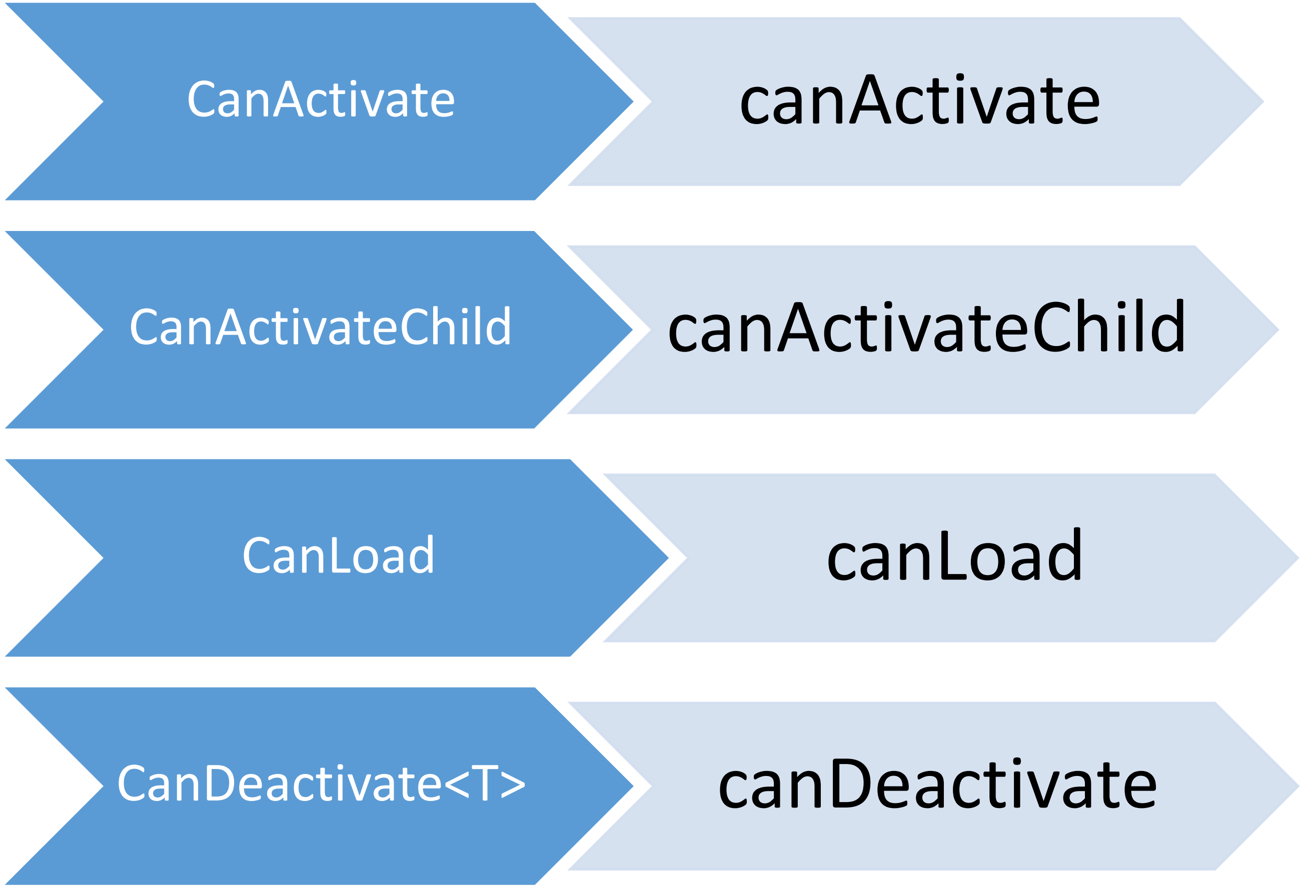
DEMO

Guards

What are Guard?

- Services
- Can prevent the Activation or Deactivation of a Route

Guards



CanActivate	canActivate
CanActivateChild	canActivateChild
CanLoad	canLoad
CanDeactivate<T>	canDeactivate

Result: boolean | Observable<boolean> | Promise<boolean>

ManfredSteyer

Guards and the Router Configuration

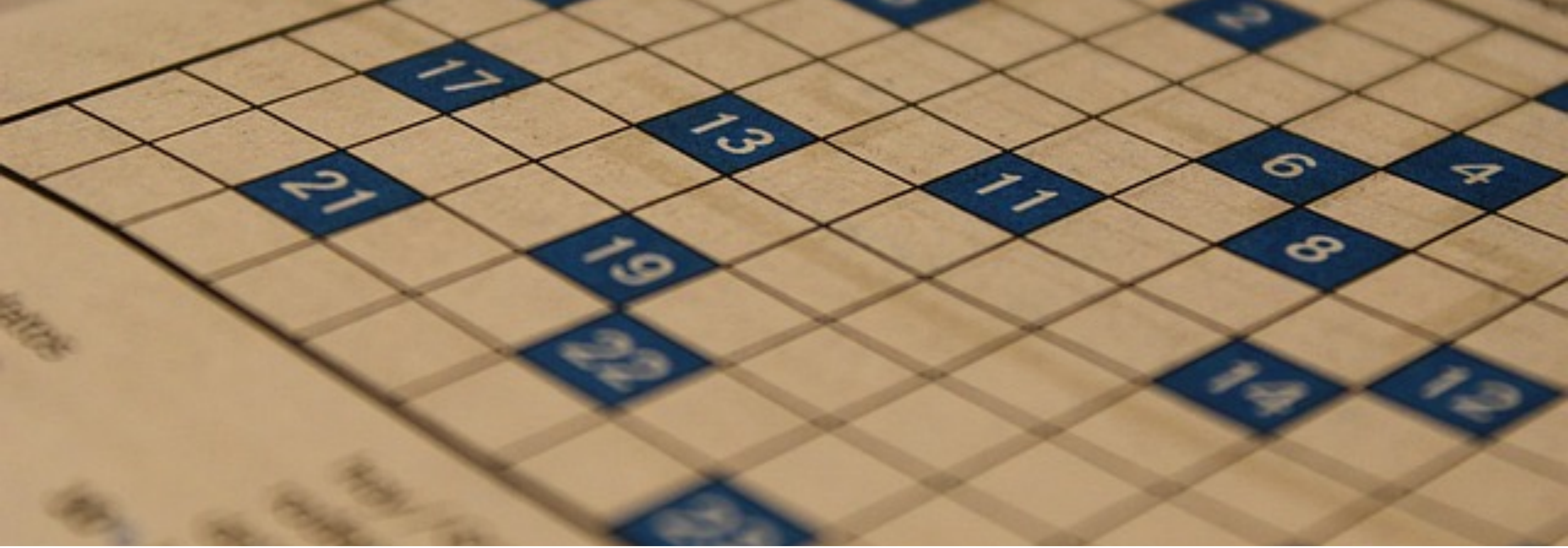
```
const APP_ROUTES: Routes = [
    {
        path: '/flight-booking',
        component: FlightBookingComponent,
        canActivate: [AuthGuard],
        children: [
            {
                path: 'flight-edit/:id',
                component: FlightEditComponent,
                canDeactivate: [FlightEditGuard]
            },
            […]
        ]
]
```

Provider for Guards

```
// app.module.ts
@NgModule({
    providers: [
        FlightEditGuard,
        AuthGuard
    ],
    […]
})
export class AppModule {
}
```

DEMO

Lab



Resolver

ManfredSteyer

What are Resolver?

- Services
- Are activated when the Router switches over to another route
- Can load needed data
- Postpone activation of target route until data is loaded
- Meanwhile, a loading indicator can be shown

Resolver

```
@Injectable()
export class FlightResolver implements Resolve<Flight>
{
    constructor(private flightService: FlightService) {
    }

    resolve(route, state):
           Observable<Flight> | Promise<Flight> | any {

        return […]
    }
}
```

Register Resolver

```
const FLIGHT_BOOKING_ROUTES: Routes = [
    […]

    {
        path: 'flight-edit/:id',
        component: FlightEditComponent,
        resolve: {
            flight: FlightResolver
        }
    }

];
```

Token

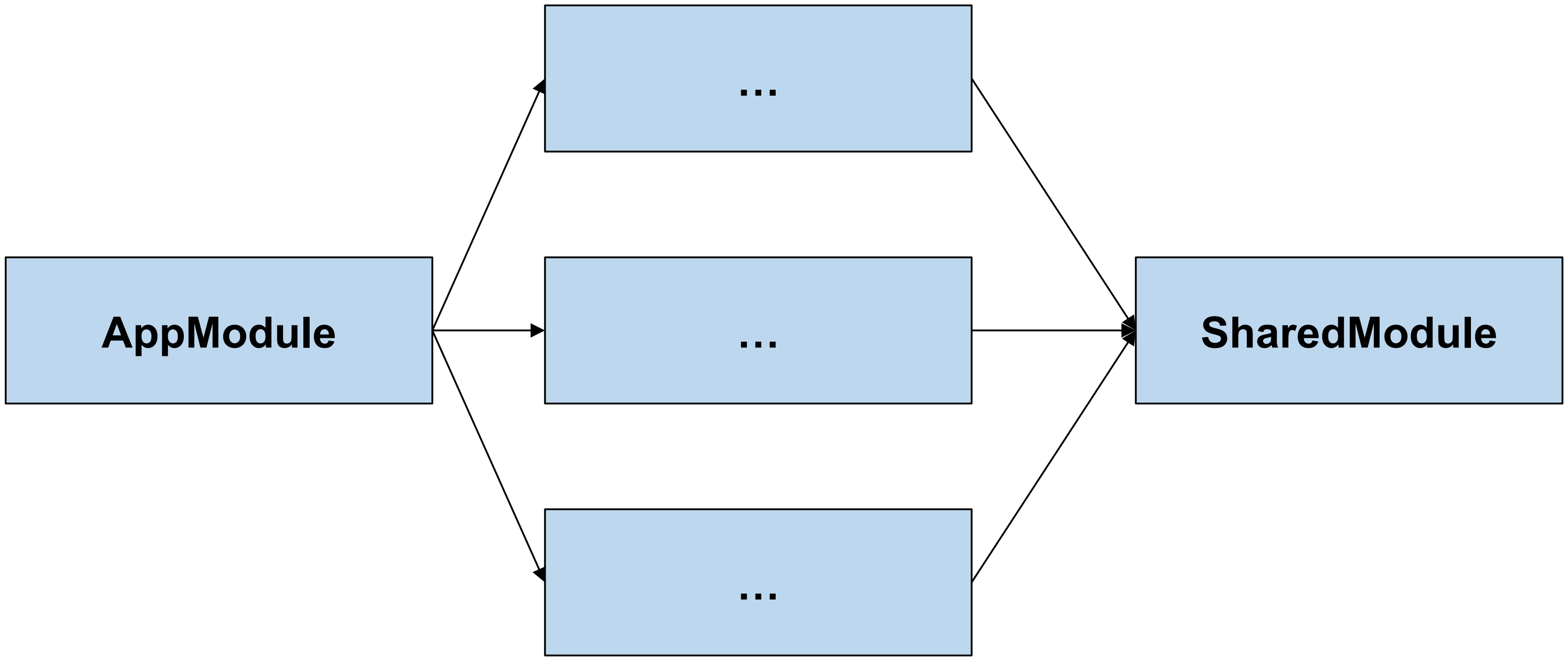
Receive Data in Component

```
@Component({ … })
export class FlightEditComponent {

    flight: Flight;

    constructor(private route: ActivatedRoute) { }

    ngOnInit() {
        this.route.data.subscribe(
            data => {
                this.flight = data['flight'];
            }
        );
    }
}
```

DEMO

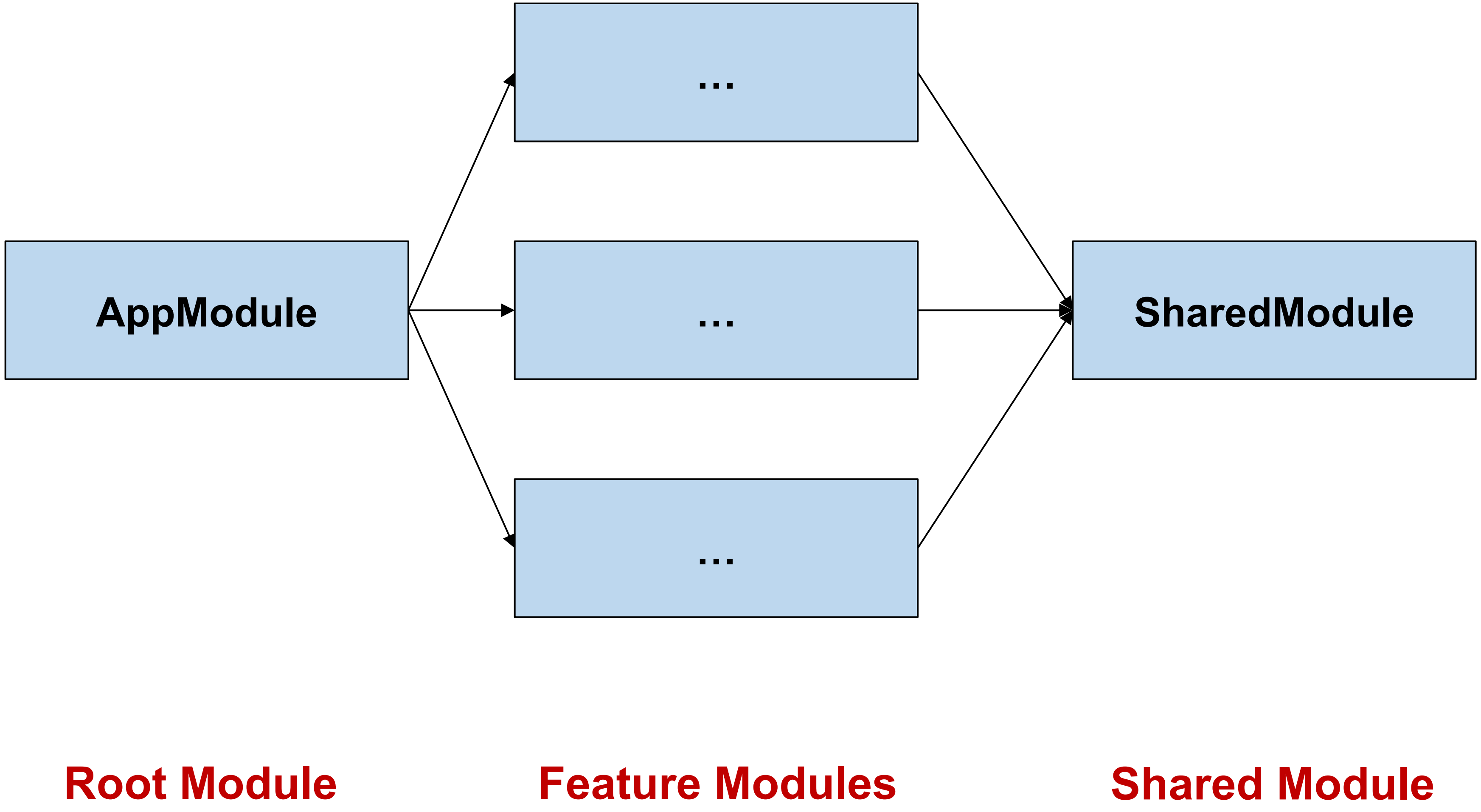
Lazy Loading

Module Structure



Root Module **Feature Modules** **Shared Module**

Lazy Loading



AppModule

…

…

…

SharedModule

Root Module

Feature Modules

Shared Module

Root Module with Lazy Loading

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

Routes for Feature Module

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

Routes for Feature Module

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

Url: /flights/bookings

Triggers Lazy Loading

DEMO

Tree-Shakable Provider for Lazy Modules

Lazy Modules

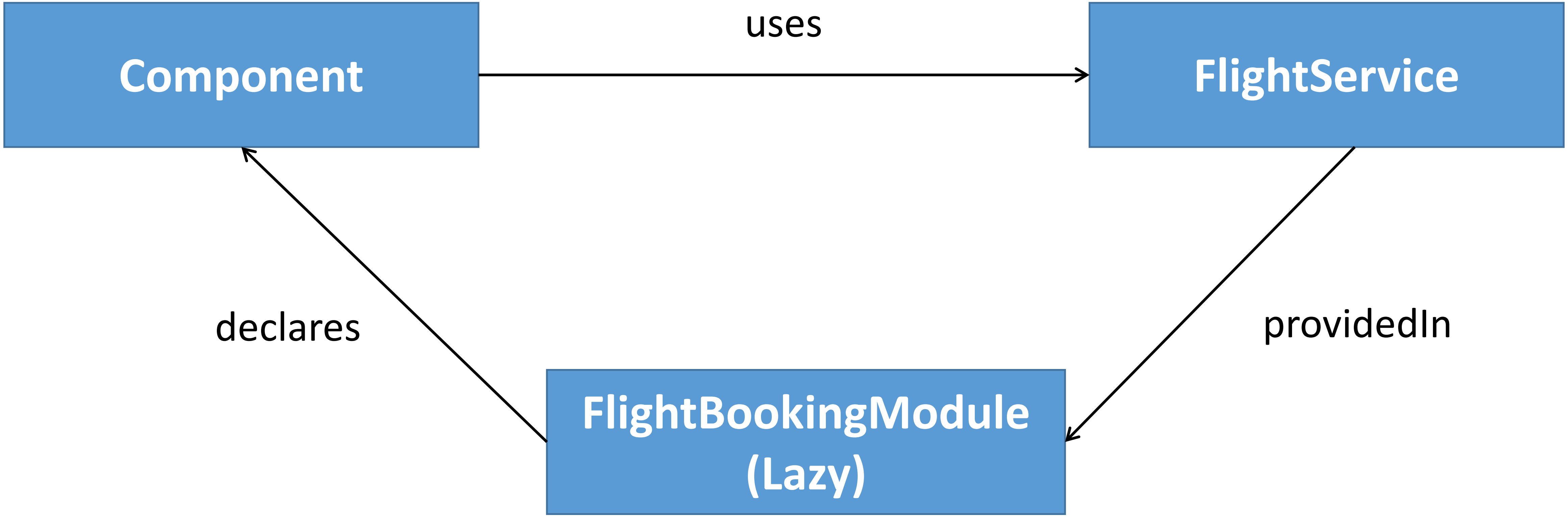
Service is loaded alongside lazy module!

```
@Injectable({ providedIn: LazyApiModule })
export class FlightService {

    […]

}
```

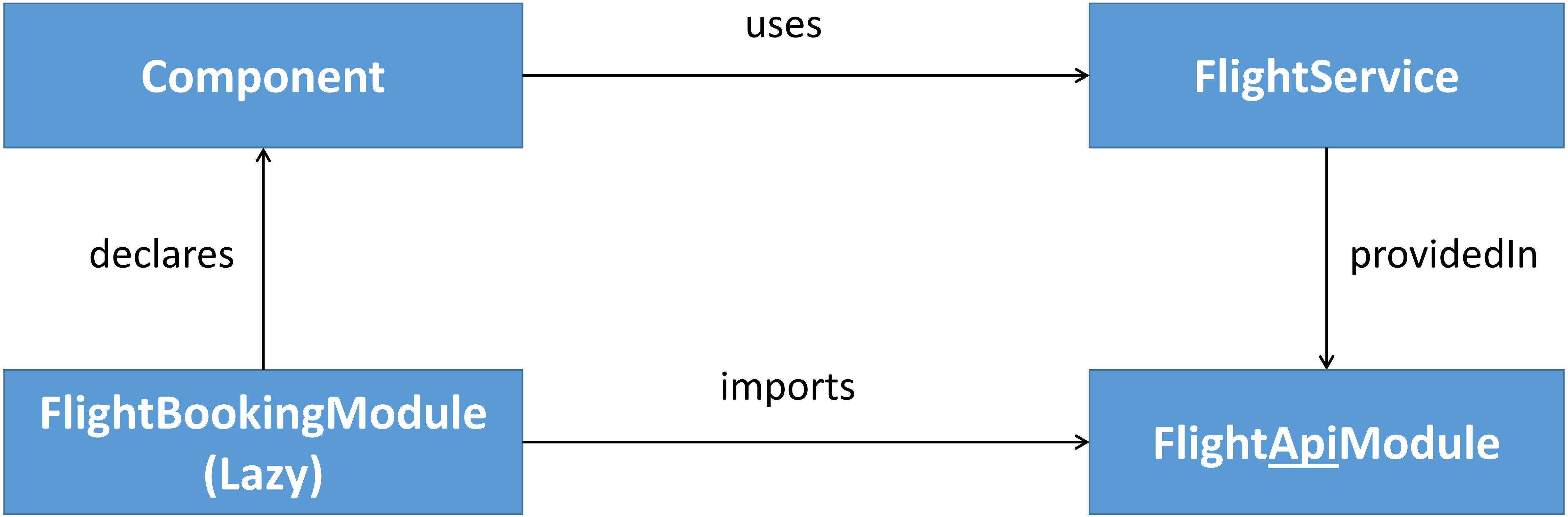
Only makes sense with lazy loading !!

All "classic" modules: root scope

Preventing Cycles



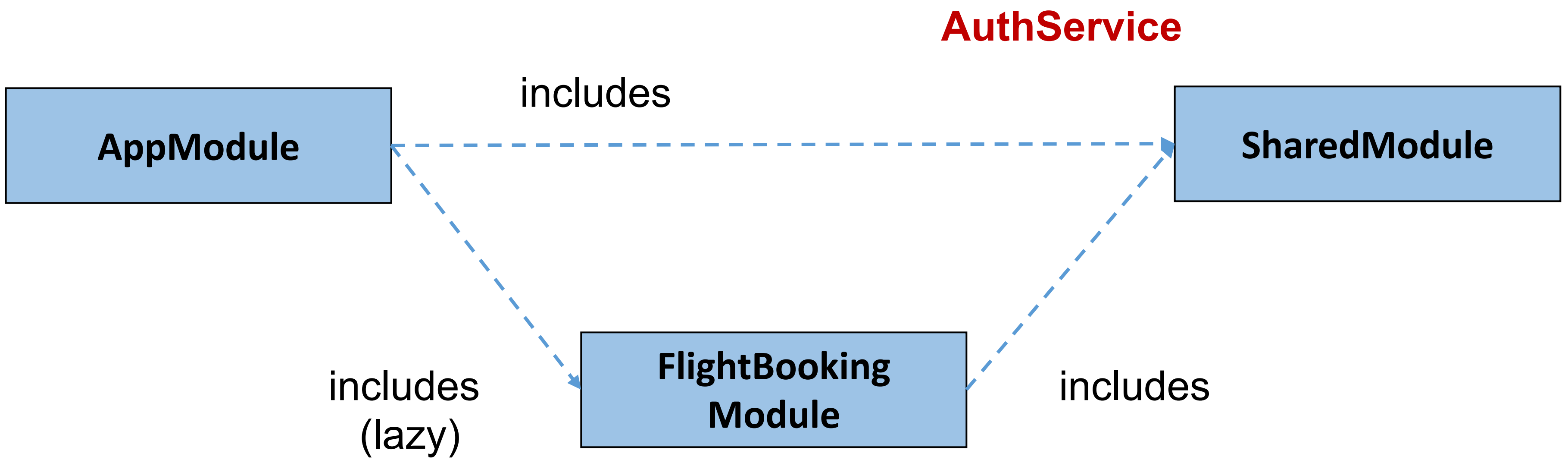
Preventing Cycles



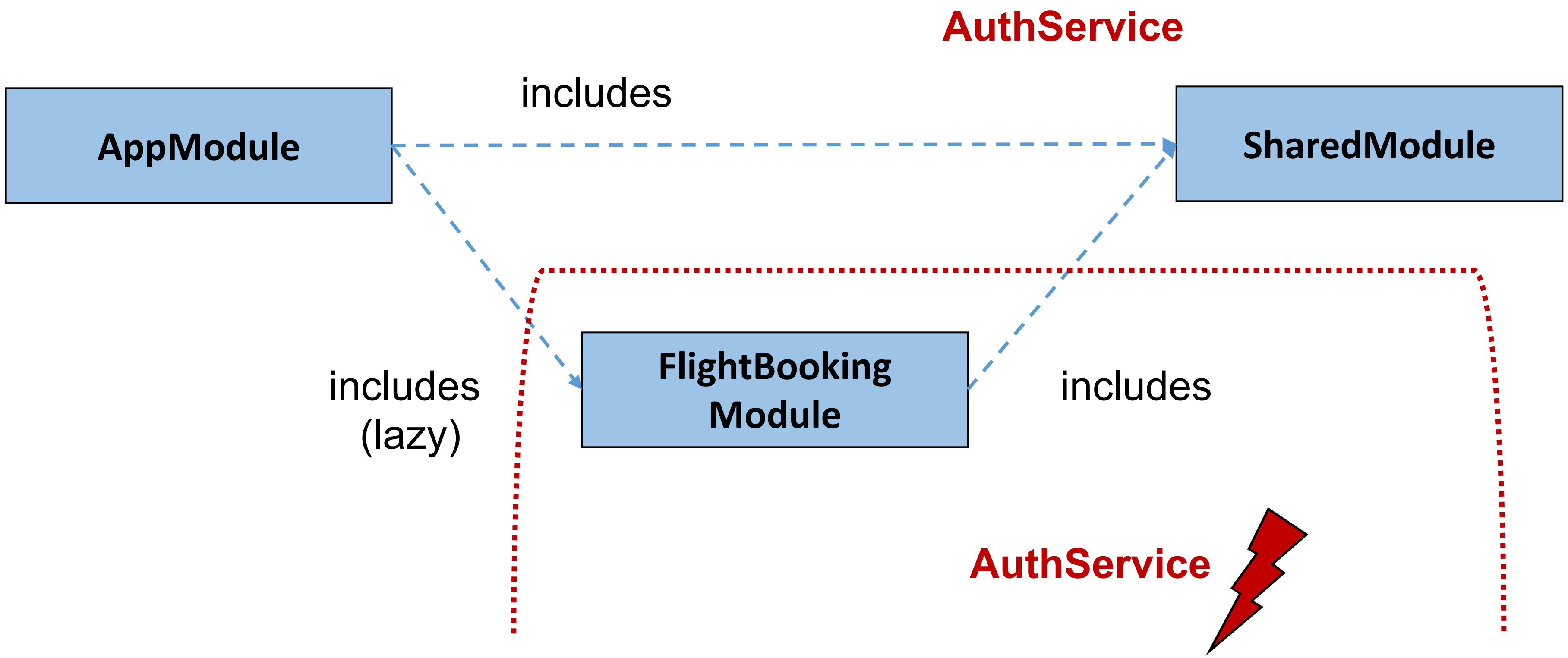
DEMO

Problem with Lazy Loading and Classic Providers

Lazy Loading and Shared Modules



Lazy Loading and Shared Modules



AuthService

AppModule

includes

SharedModule

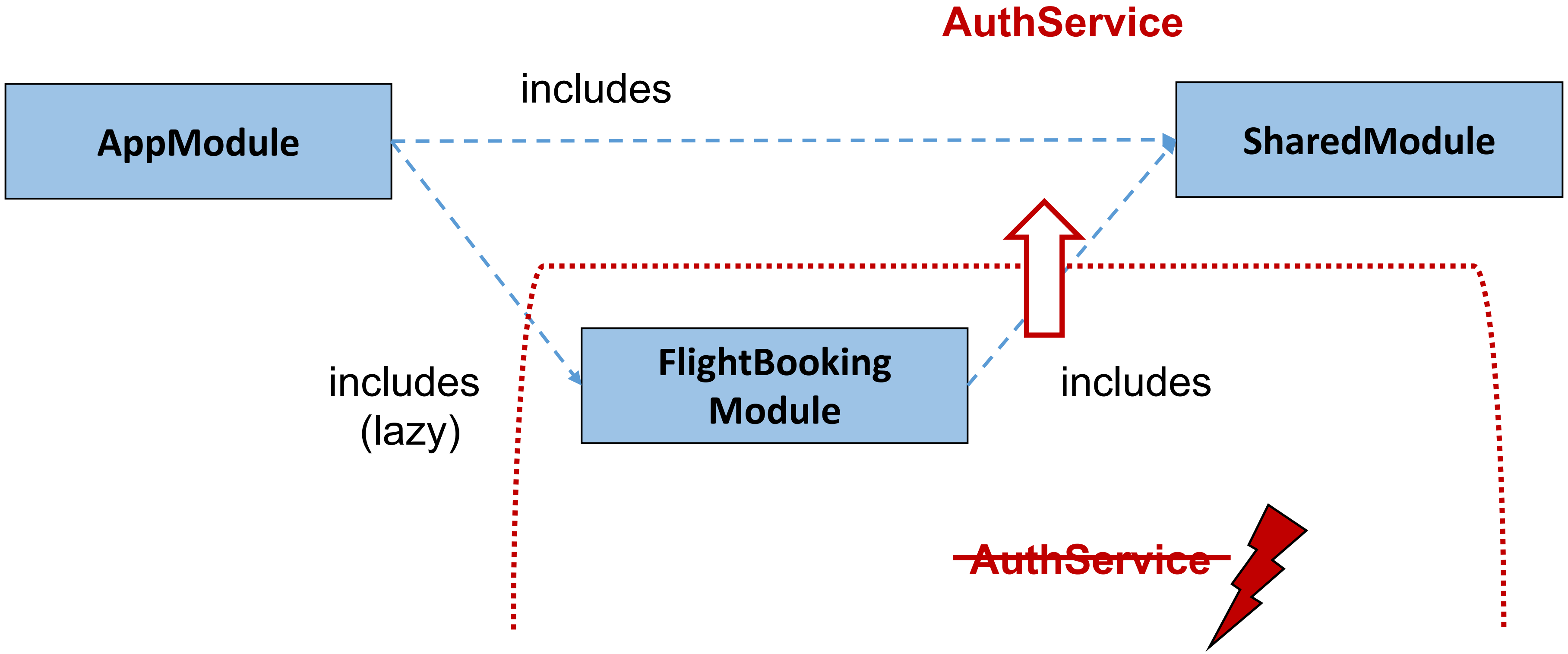
includes (lazy)

FlightBooking Module

includes

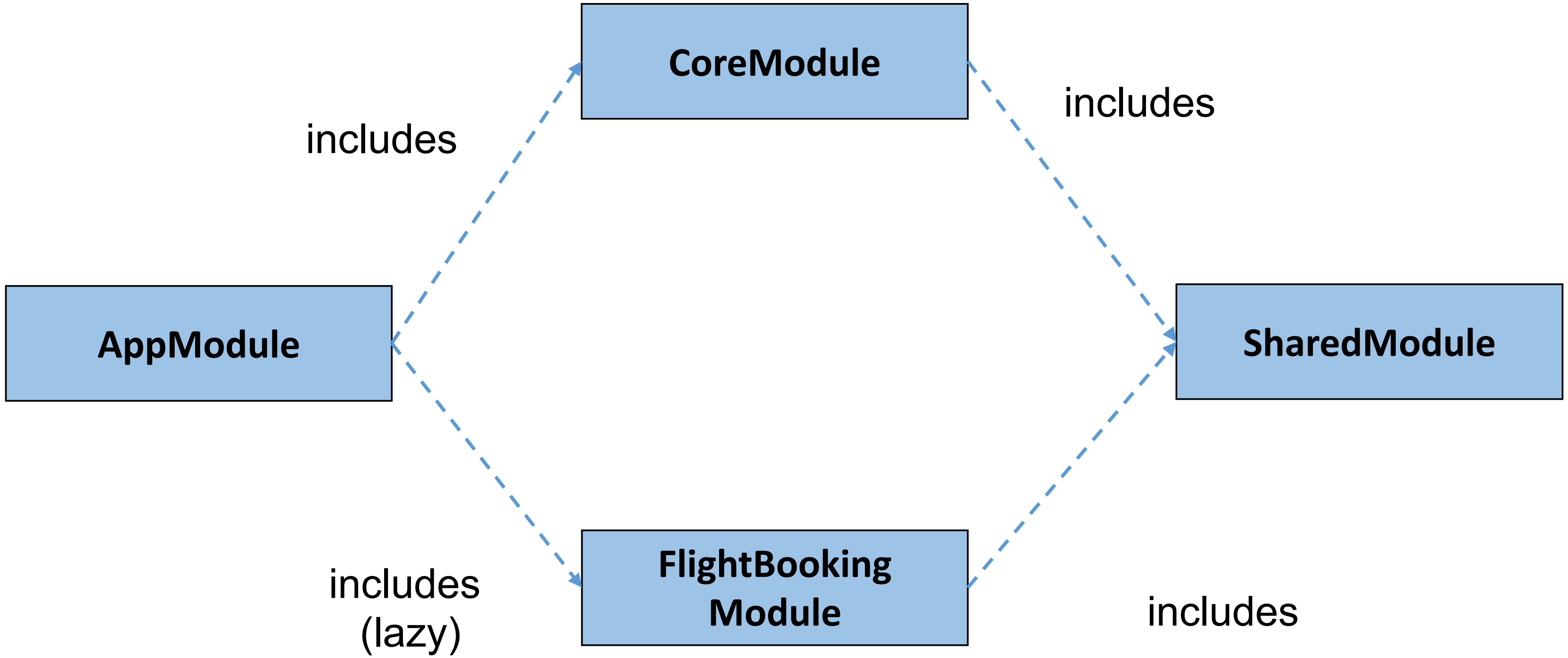
AuthService

Lazy Loading and Shared Modules



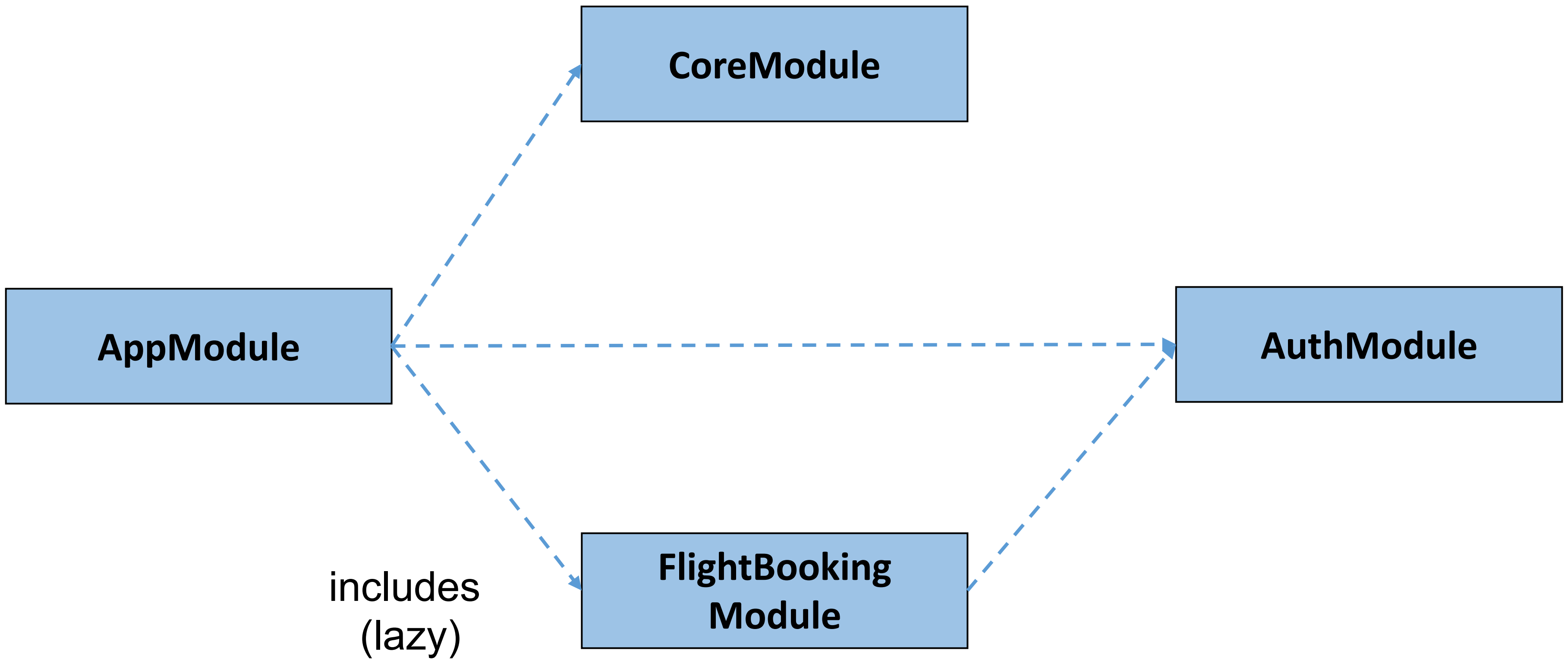
Solution 1: CoreModule

Global Providers + Shell

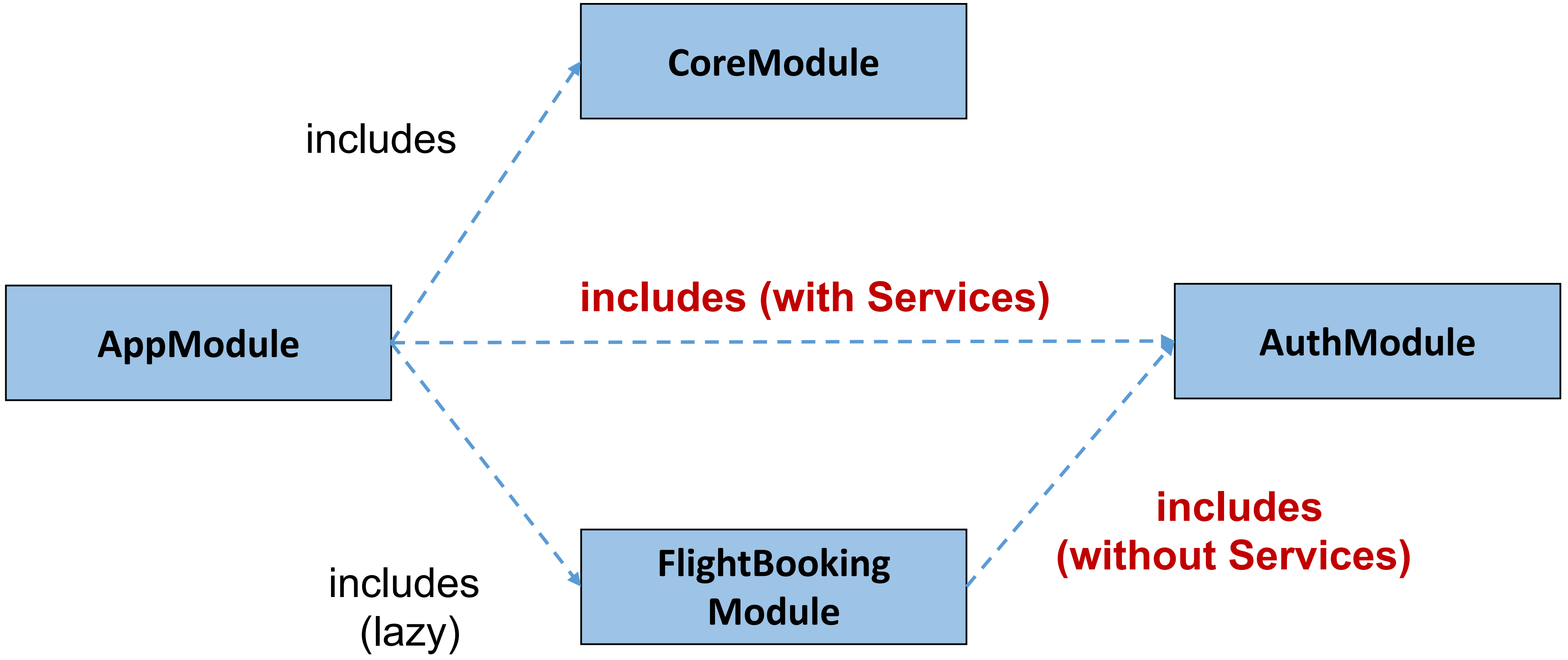


Core-Module is only imported into the AppModule

Solution 2: forRoot



Solution 2: forRoot



AuthModule

```
@NgModule({
    […],
    providers: []
})
export class AuthModule {
}
```

AuthModule

```
@NgModule({
    […],
    providers: []
})
export class AuthModule {

    static forRoot(): ModuleWithProviders<AuthModule> {
        return {
            ngModule: AuthModule,
            providers: [AuthService, […]]
        }
    }

}
```

DEMO

Solution 3: Tree-shakable Provider

```
@Injectable({ providedIn: 'root' })
export class AuthService {

    […]

}
```

Preloading

Idea

- Modules that **might be needed** later are loaded after (!) the start of the application
- When the module is actually needed, it is available **immediately**

Activating Preloading

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

DEMO

Summary

- Child Routes
- Aux Routes
- Guards and Resolvers
- Lazy Loading and Preloading
- Lazy Loading and Providers