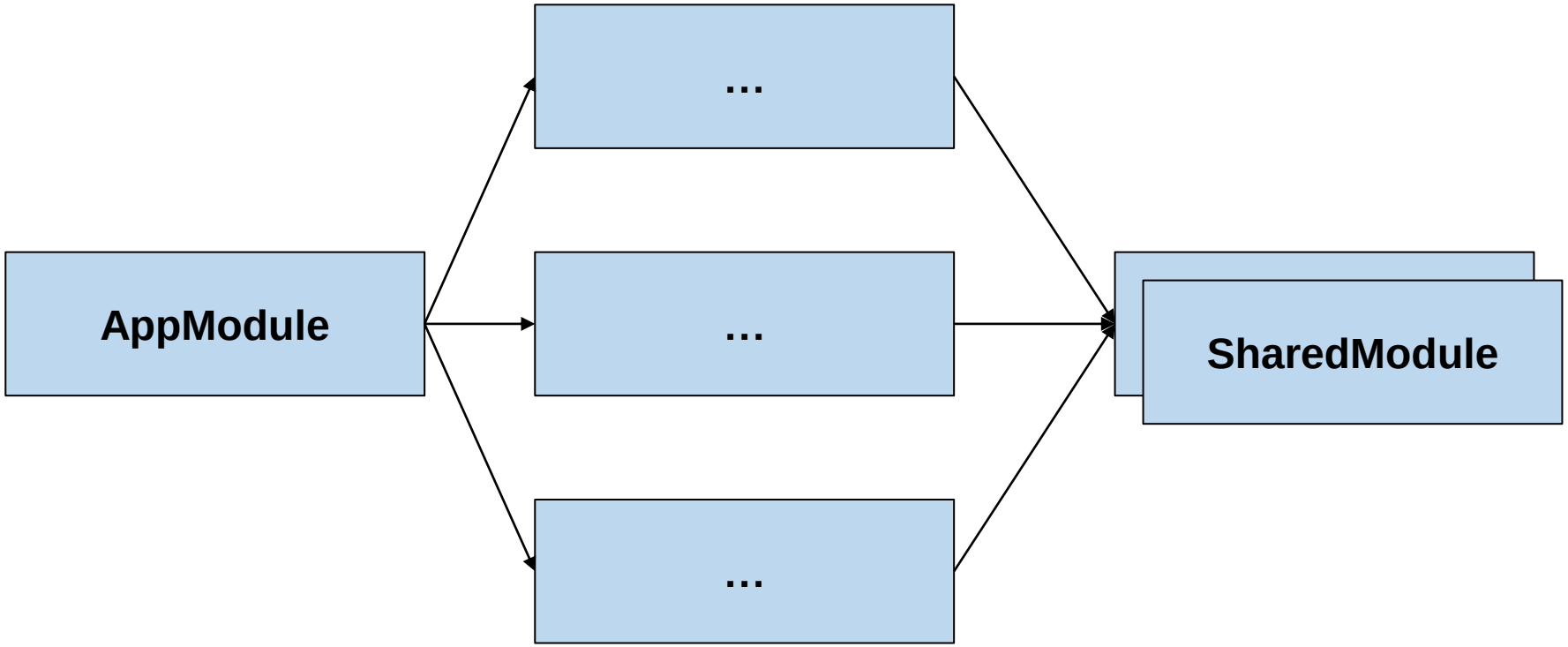
ANGULAR
ARCHITECTS
INSIDE KNOWLEDGE

Architectures for huge Enterprise Applications with Angular

angular-architects.io

Typical Module Structure



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

Contents

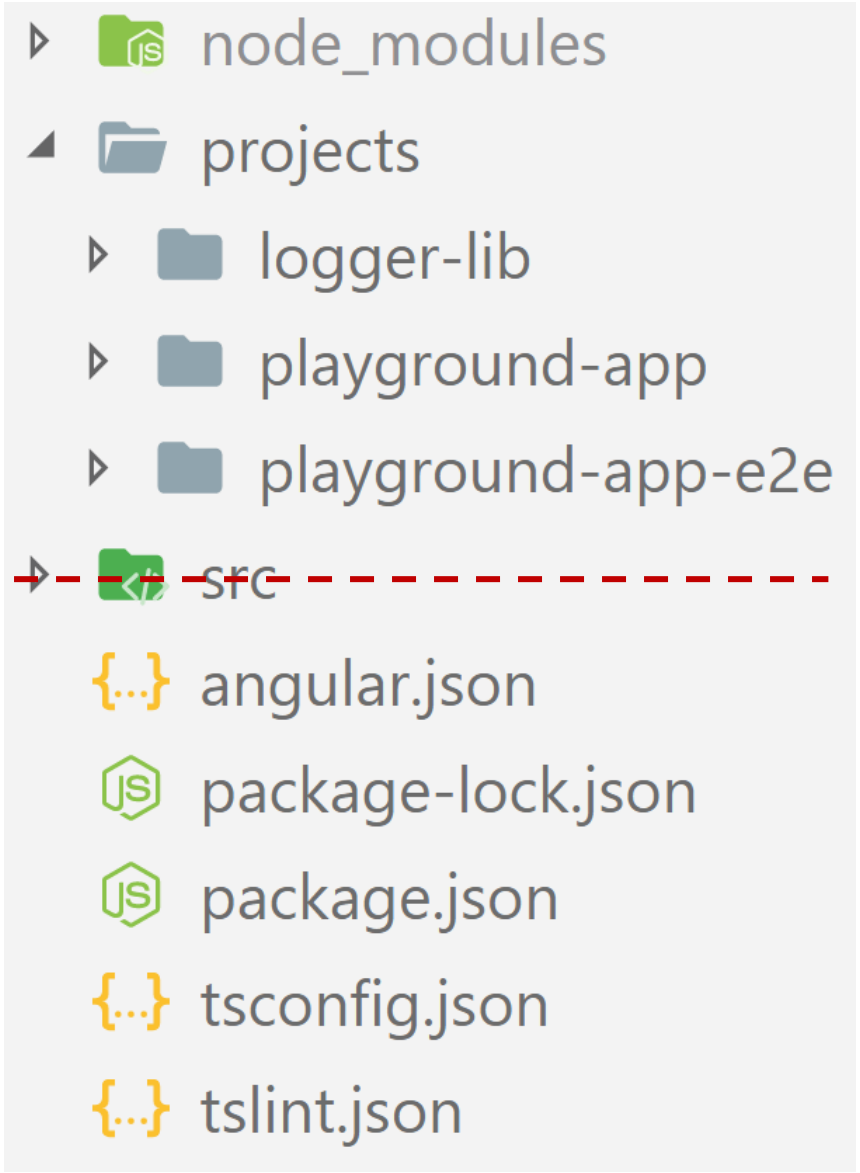
- (npm-)Packages
- Nx Monorepos
- Strategic Design and DDD

npm Packages

Create Library with CLI >= 6

```
npm install -g @angular/cli

ng new lib-project

cd lib-project

ng generate library logger-lib
ng generate application playground-app

ng serve --project playground-app
ng build --project logger-lib
```

Folder Structure



Create Library with CLI >= 6

```
npm install -g @angular/cli

ng new lib-project --create-application false

cd lib-project

ng generate library logger-lib
ng generate application playground-app

ng serve --project playground-app
ng build --project logger-lib
```


Leerungszeiten
Deutsche Post
Tagesleerungen
Spätleerung
Nachtleerung
Montag - Freitag
08:00
Samstag
08:00
Sonntag
Service-Telefon der Briefkastenleerung:
0228 4333112
Briefkästen mit späteren Leerungen:
letzte Tagesleerung
Spätleerung
Nachtleerung
Montag - Freitag
Samstag
Sonntag

Publishing

Publishing to npm Registry

- Increment version in package.json
- ng build logger-lib --prod
- npm publish *dist/logger-lib* --registry http://localhost:4873
- npm install logger-lib --registry http://localhost:4873

Alternatives for setting the Registry

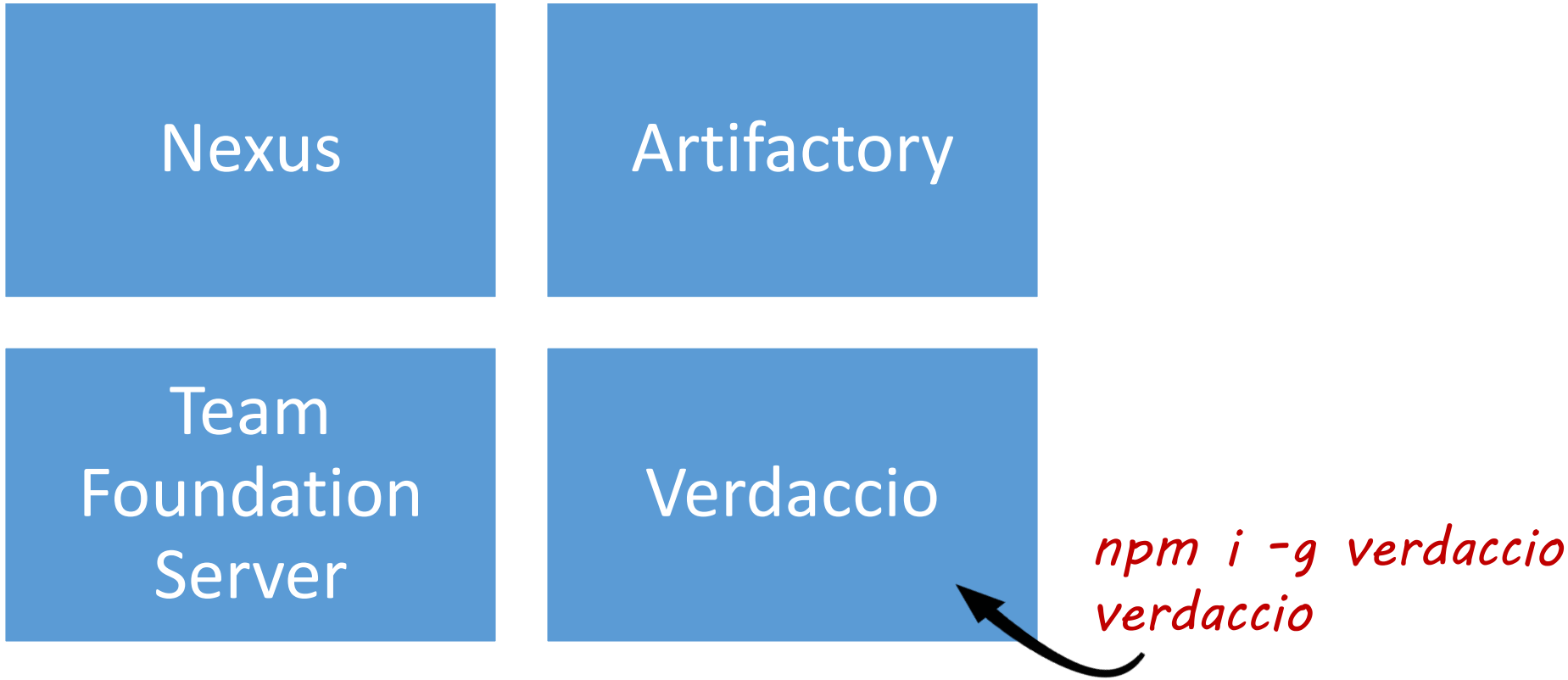
- Global: npm set registry http://localhost:4873
  - Default: registry.npmjs.org
  - npm get registry

- Project: .npmrc in project root

```
registry=http://localhost:4873/
```

```
@my-company:registry=http://my-server:4873/
```

npm Registries



DEMO

Advantages

- Distribution
- Versioning

Disadvantages

- Distribution
- Versioning

;-)

Disadvantages

Distribution

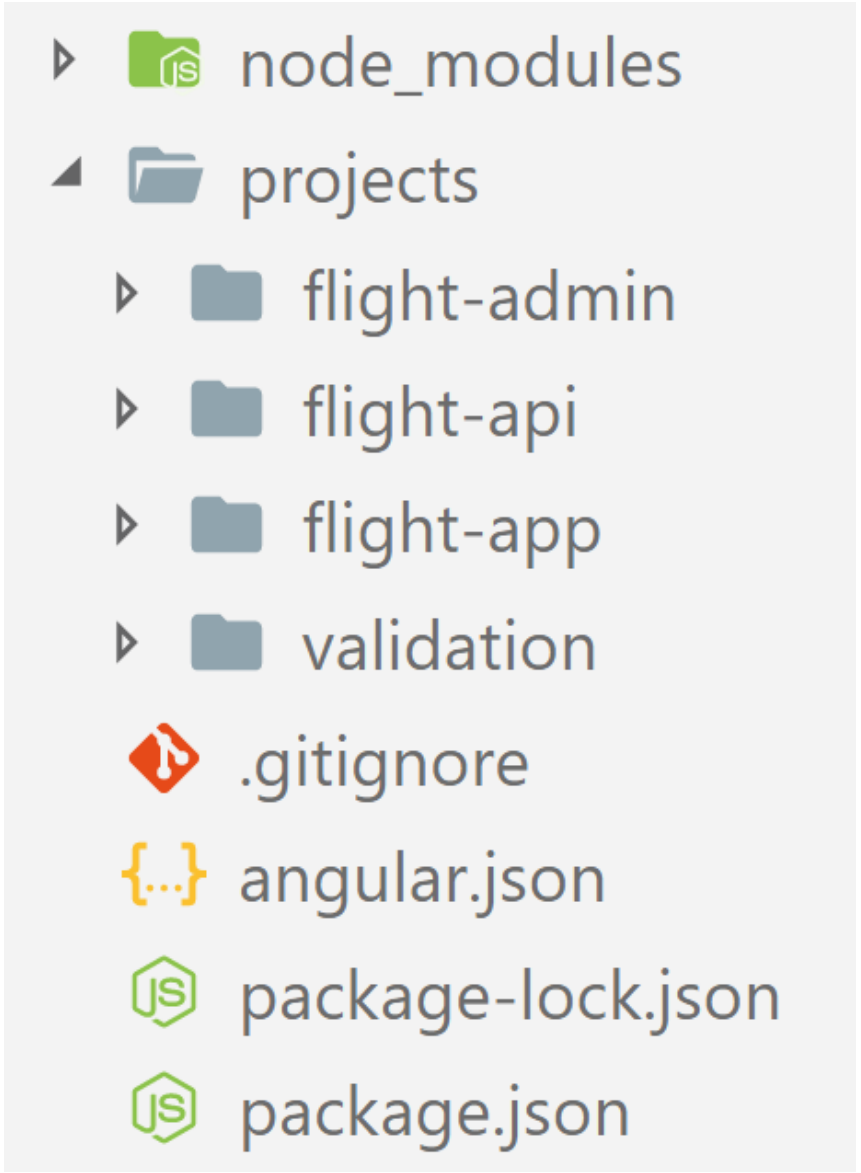
- Annoying within project
- Prevents gritting further libs

Versioning

- Old versions
- Conflicts
- How to force devs to use latest version?

Monorepos

Monorepo Structure



Advantages

- Everyone uses the latest versions
- No version conflicts
- No burden with distributing libs
- Creating new libs: Adding folder
- Experience: Successfully used at Google, Facebook, …

Two Flavors

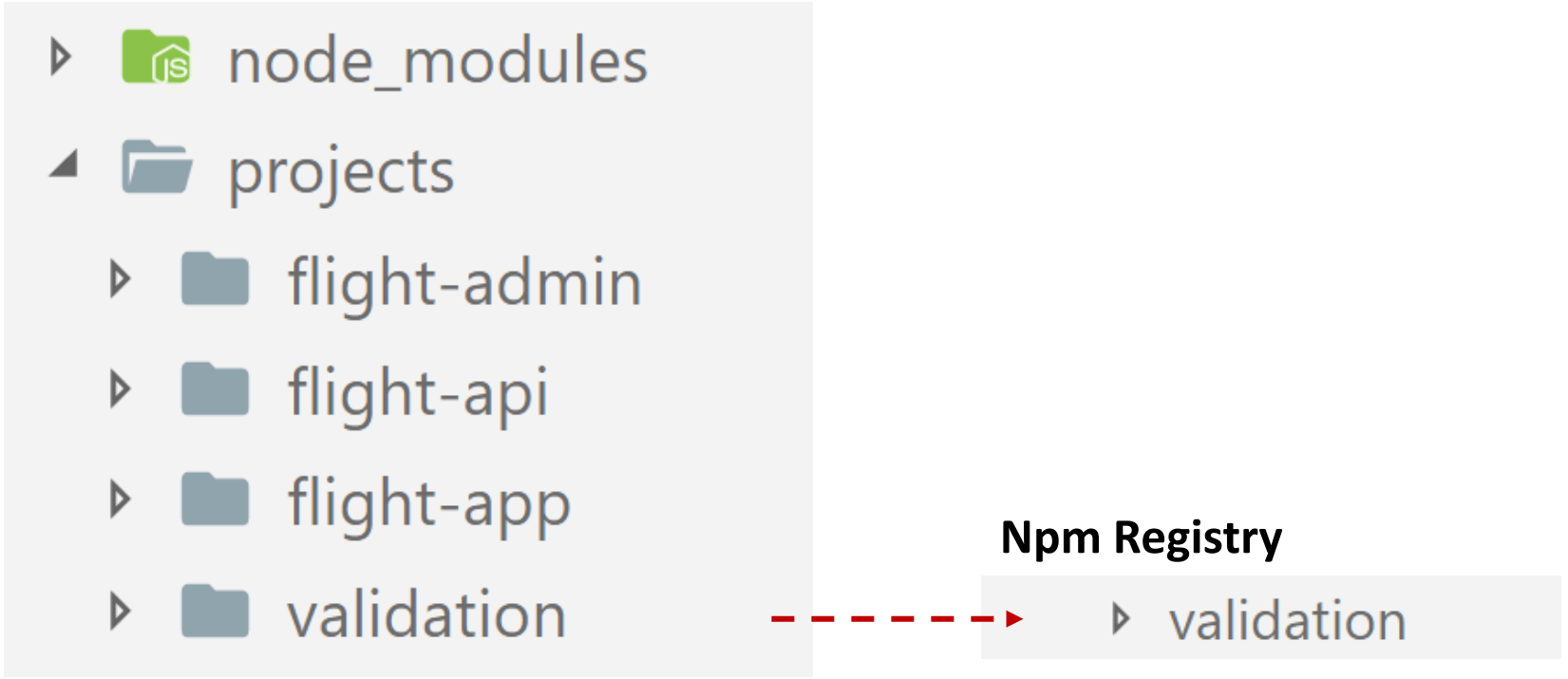
Project Monorepo

- Like Workspaces/Solutions in different IDEs

Company-wide Monorepo

- E. g. used at Google or Facebook

Moving back and forth



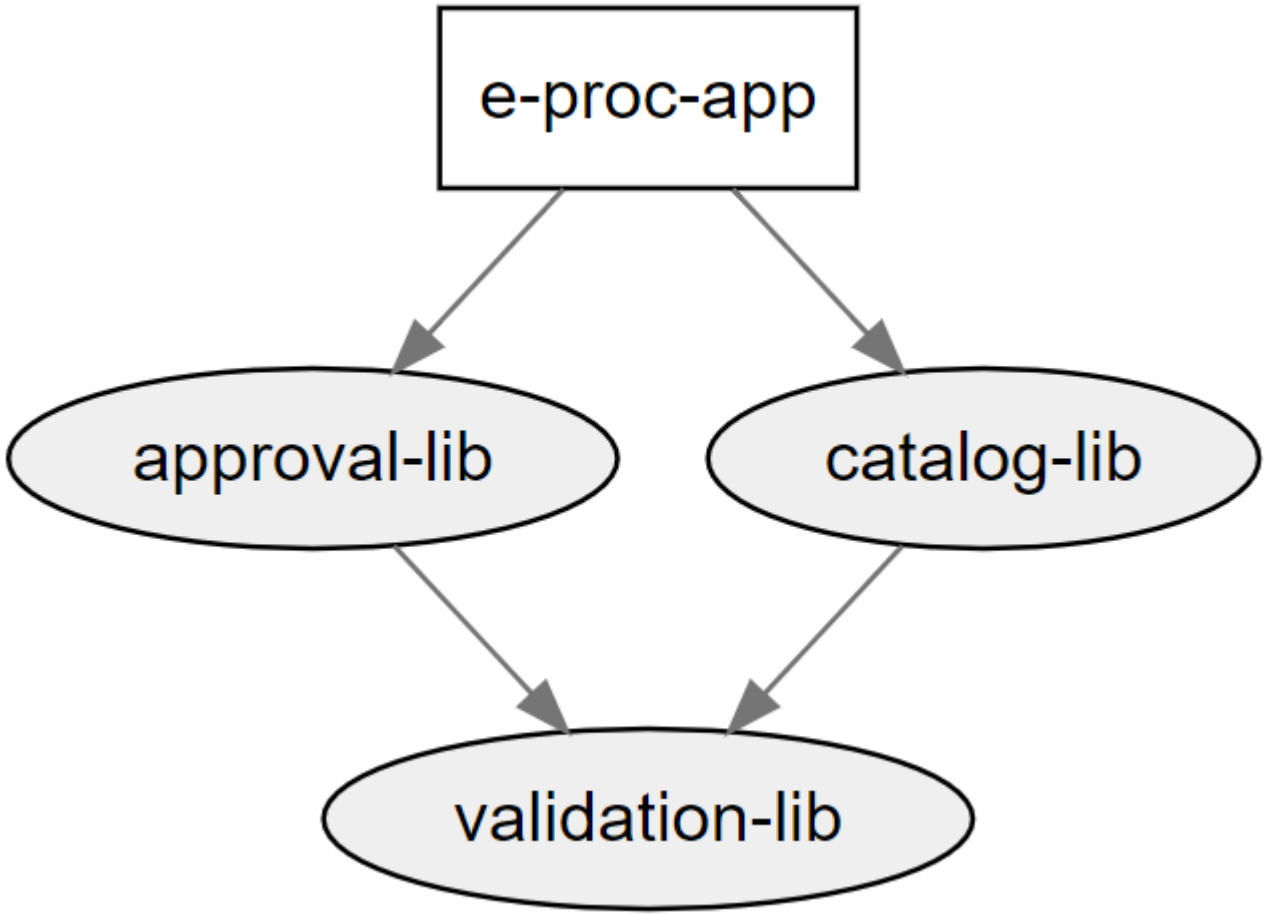
Tooling & Generator

https://nrwl.io/nx

Nrwl Extensions for Angular

An open source toolkit for enterprise Angular applications.

Visualize Module Structure



Creating a Workspace

```
npm install -g @angular/cli

ng new workspace

cd workspace

ng generate app my-app
ng generate lib my-lib

ng serve --project my-app
ng build --project my-app
```

Creating a Workspace

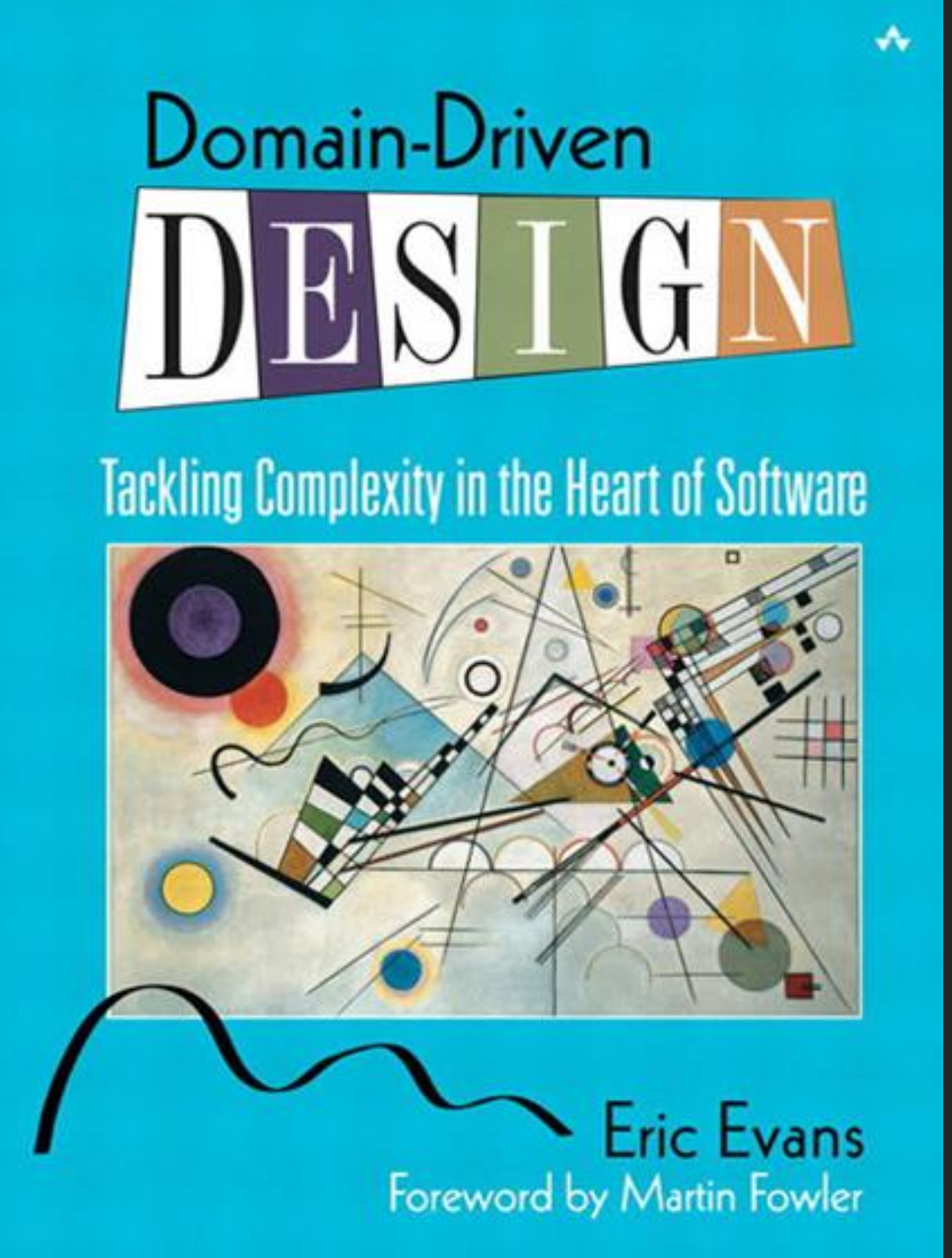
```
npm install -g @angular/cli

npm init nx-workspace workspace

cd workspace

ng generate app my-app
ng generate lib my-lib --buildable

ng serve --project my-app
ng build --project my-app
```

DEMO

LAB

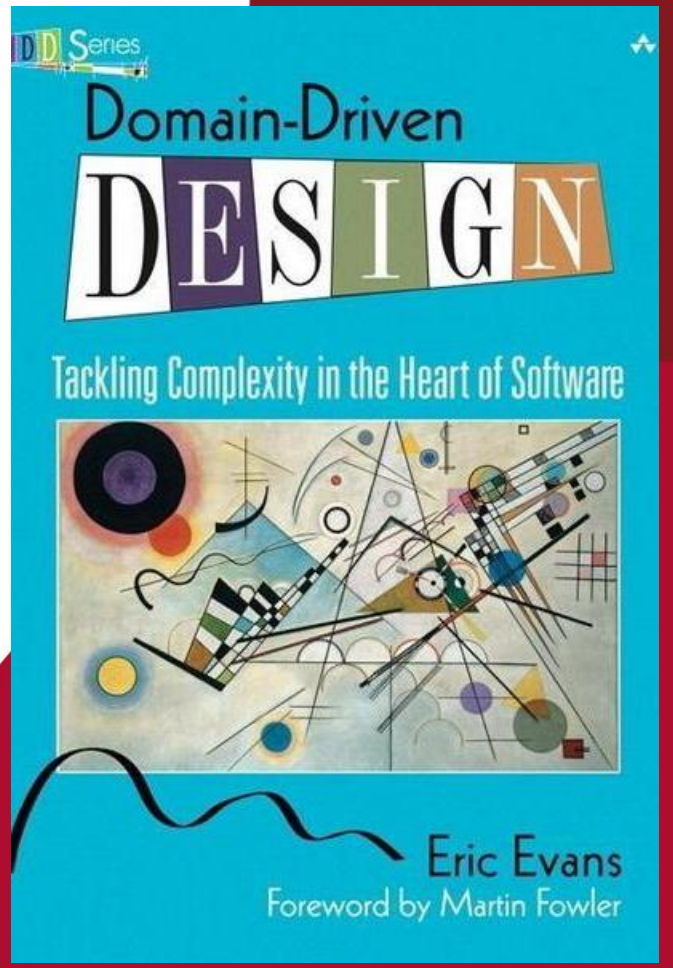
DDD

in a nutshell



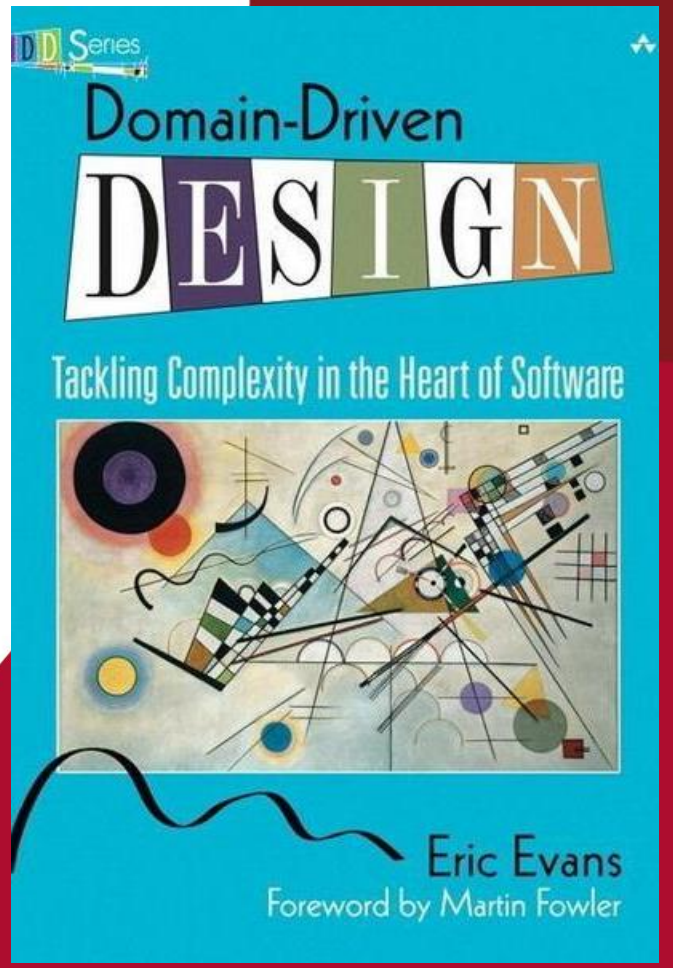
Methodology for bridging the gap b/w requirements and architecture/ design

How to create sustainable frontend architectures with ideas from DDD?



ANGULAR ARCHITECTS
INSIDE KNOWLEDGE

How to create **sustainable** frontend architectures with **ideas from DDD**?

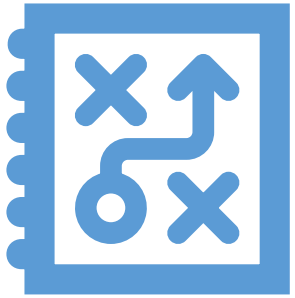


ANGULAR ARCHITECTS
INSIDE KNOWLEDGE

Domain Driven Design

Decomposing a System

Design Patterns
& Practices



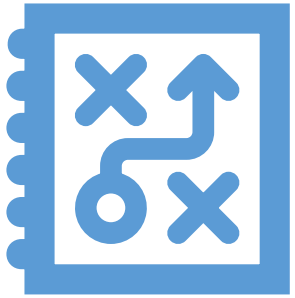
Strategic Design

Tactical Design

Domain Driven Design

Decomposing a System

Design Patterns
& Practices



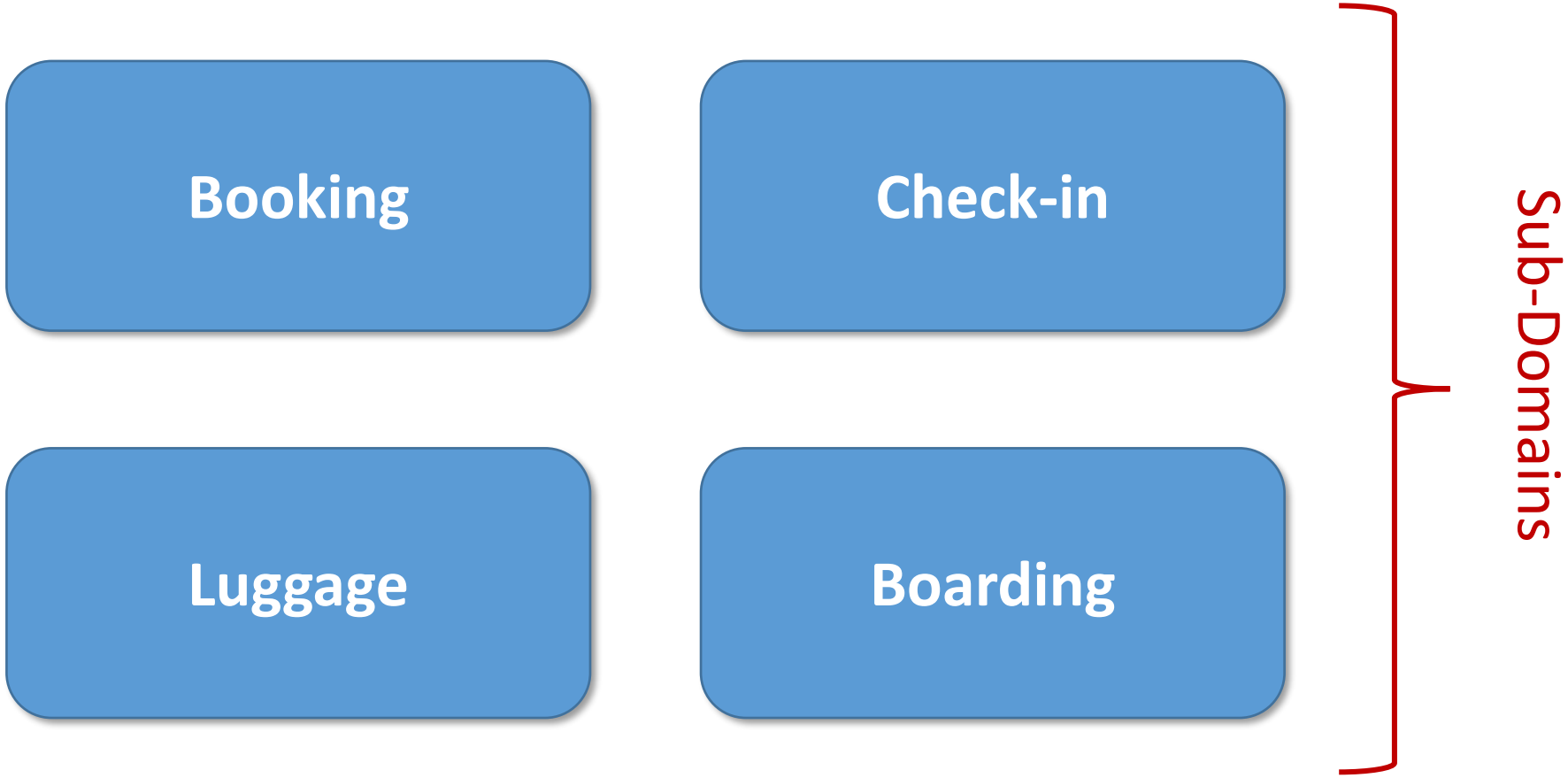
Strategic Design

Tactical Design

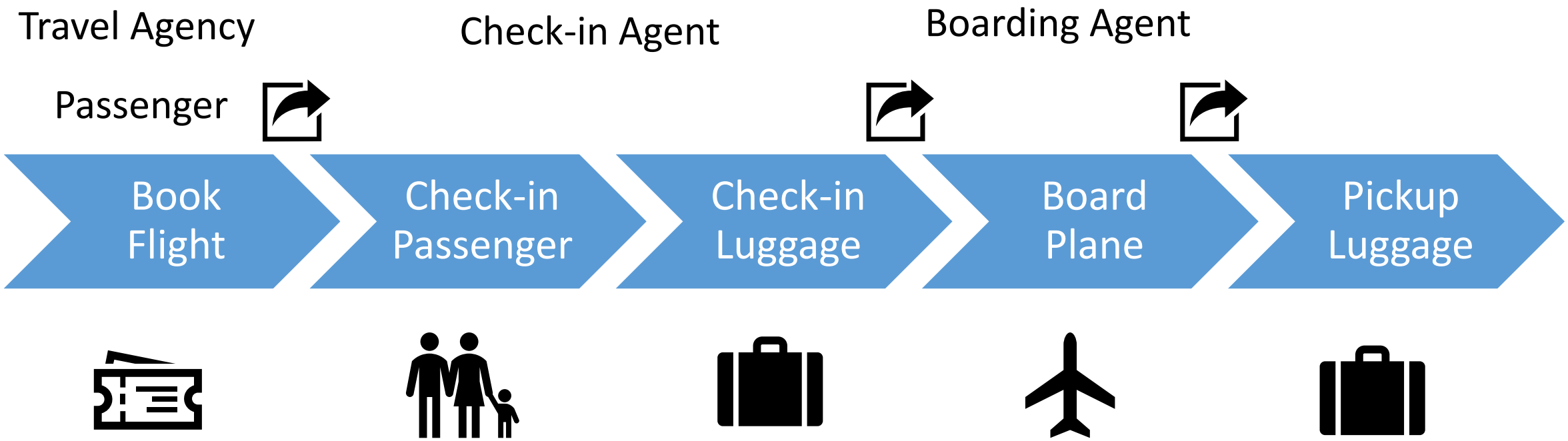
This is what Strategic DDD prevents

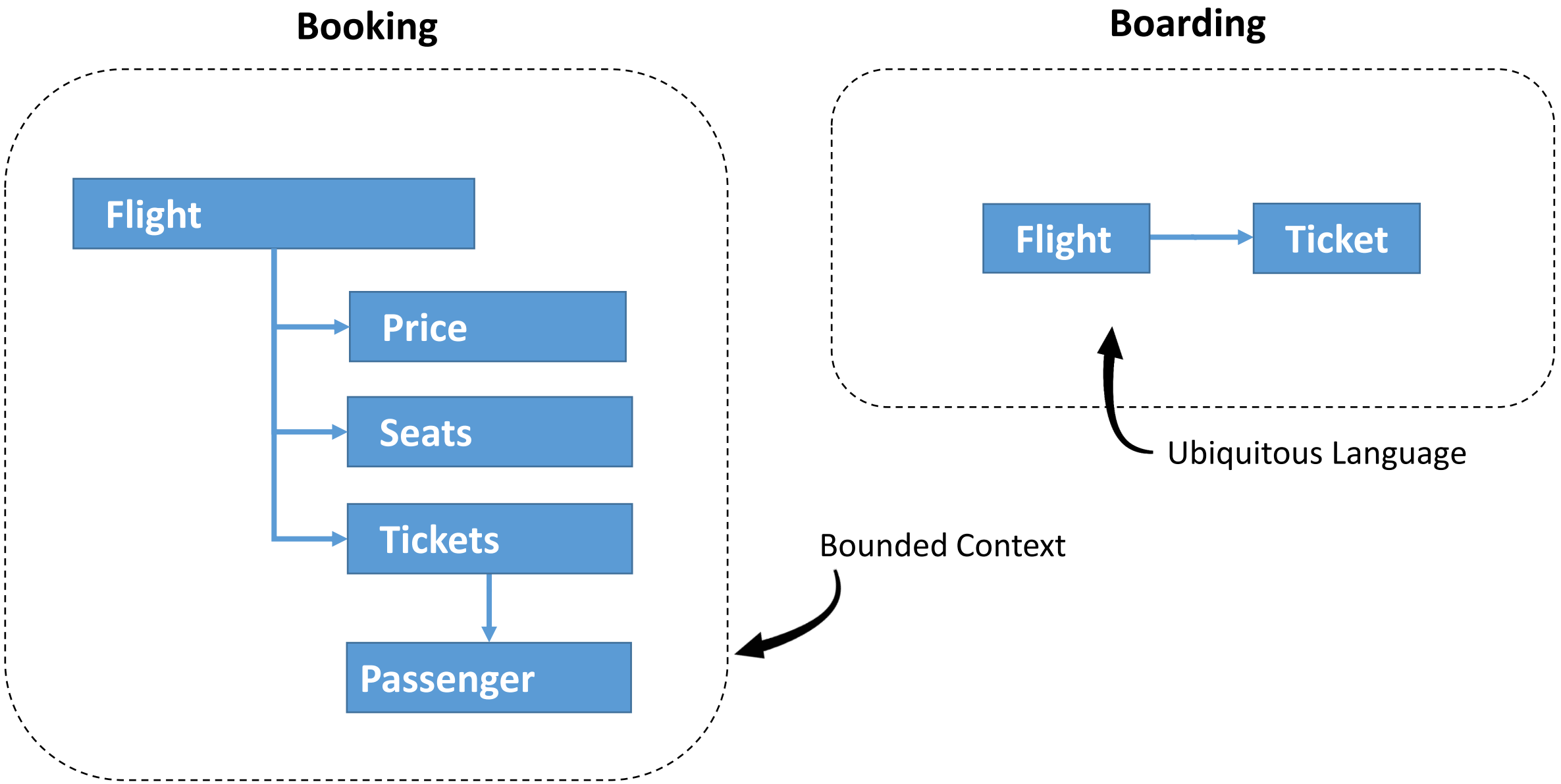
Example

Example



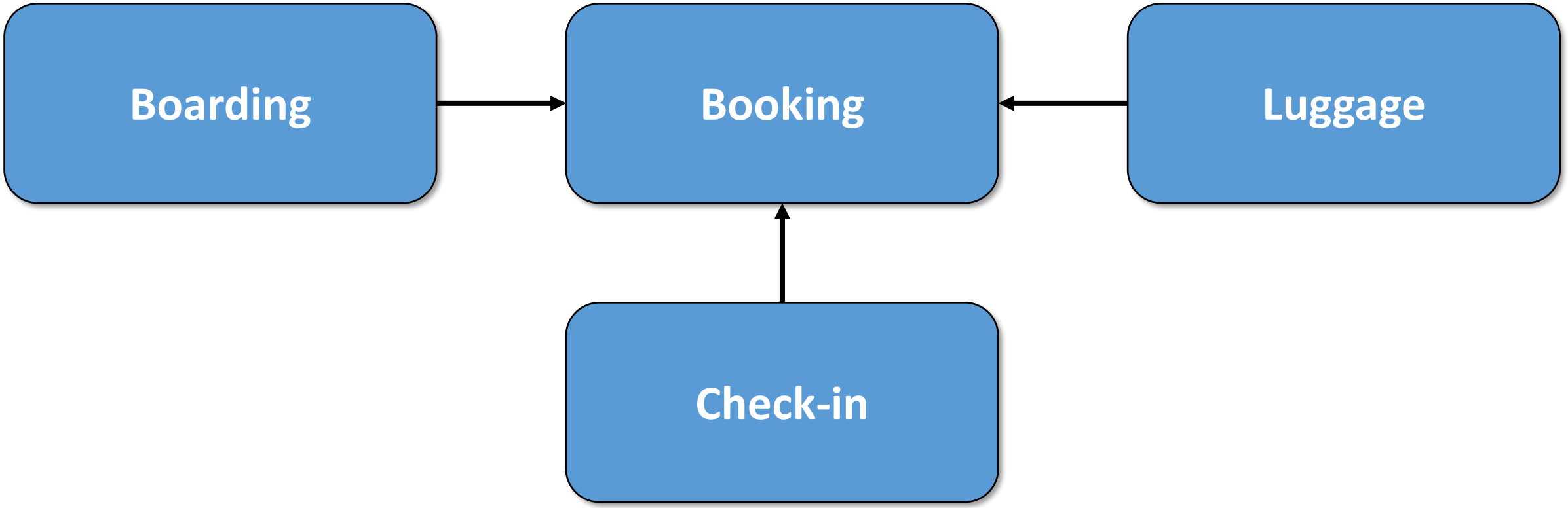
Finding Sub-Domains





@ManfredSteyer

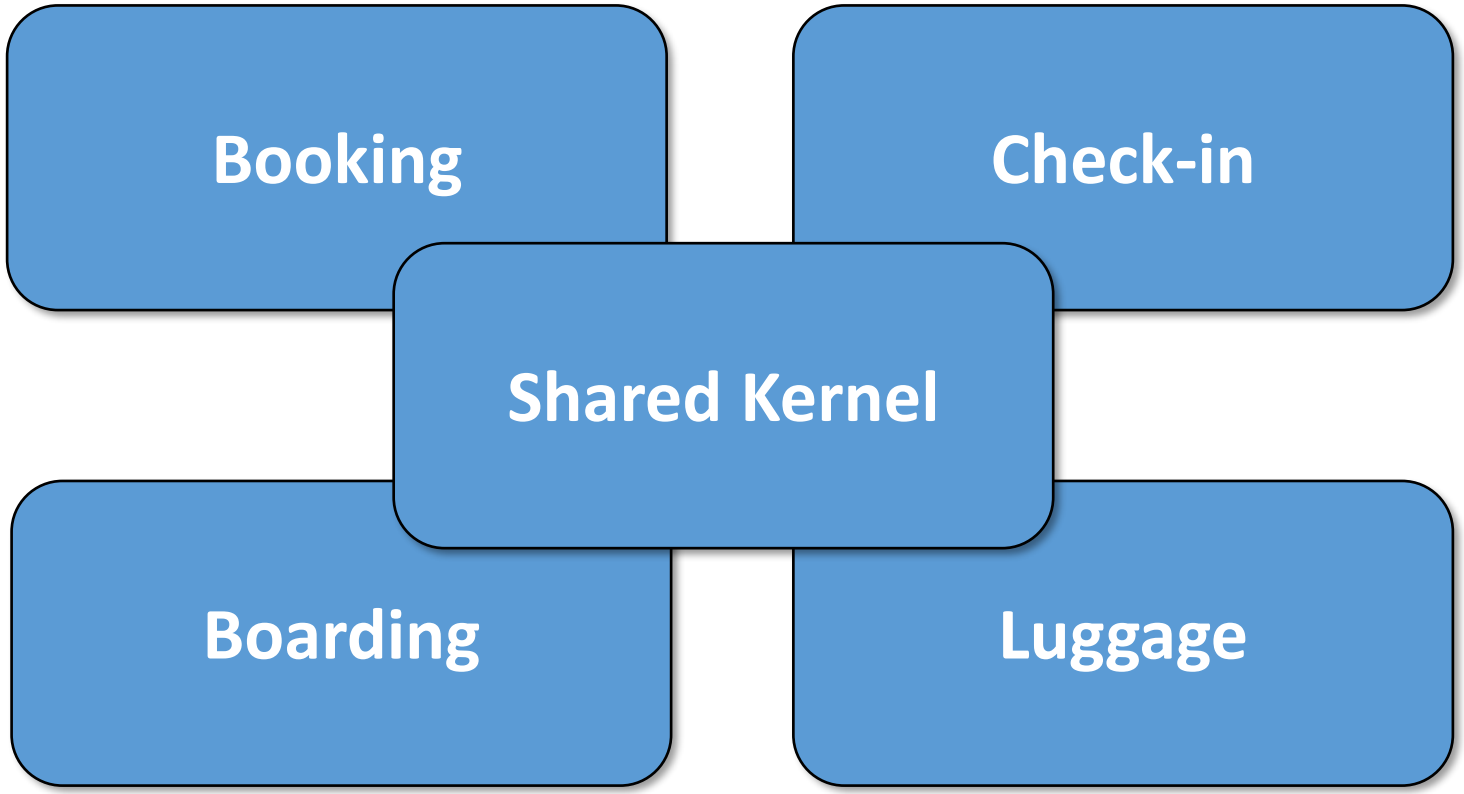
Context Map

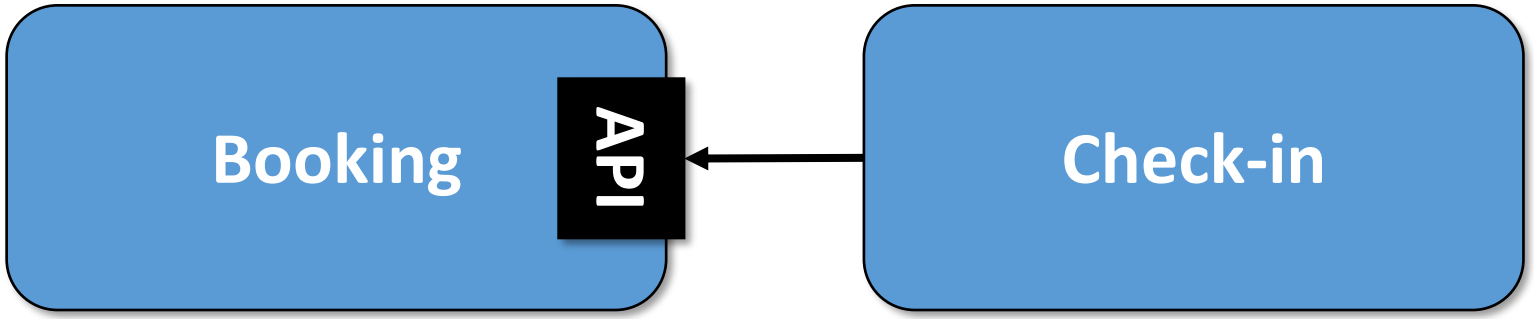


Context Map

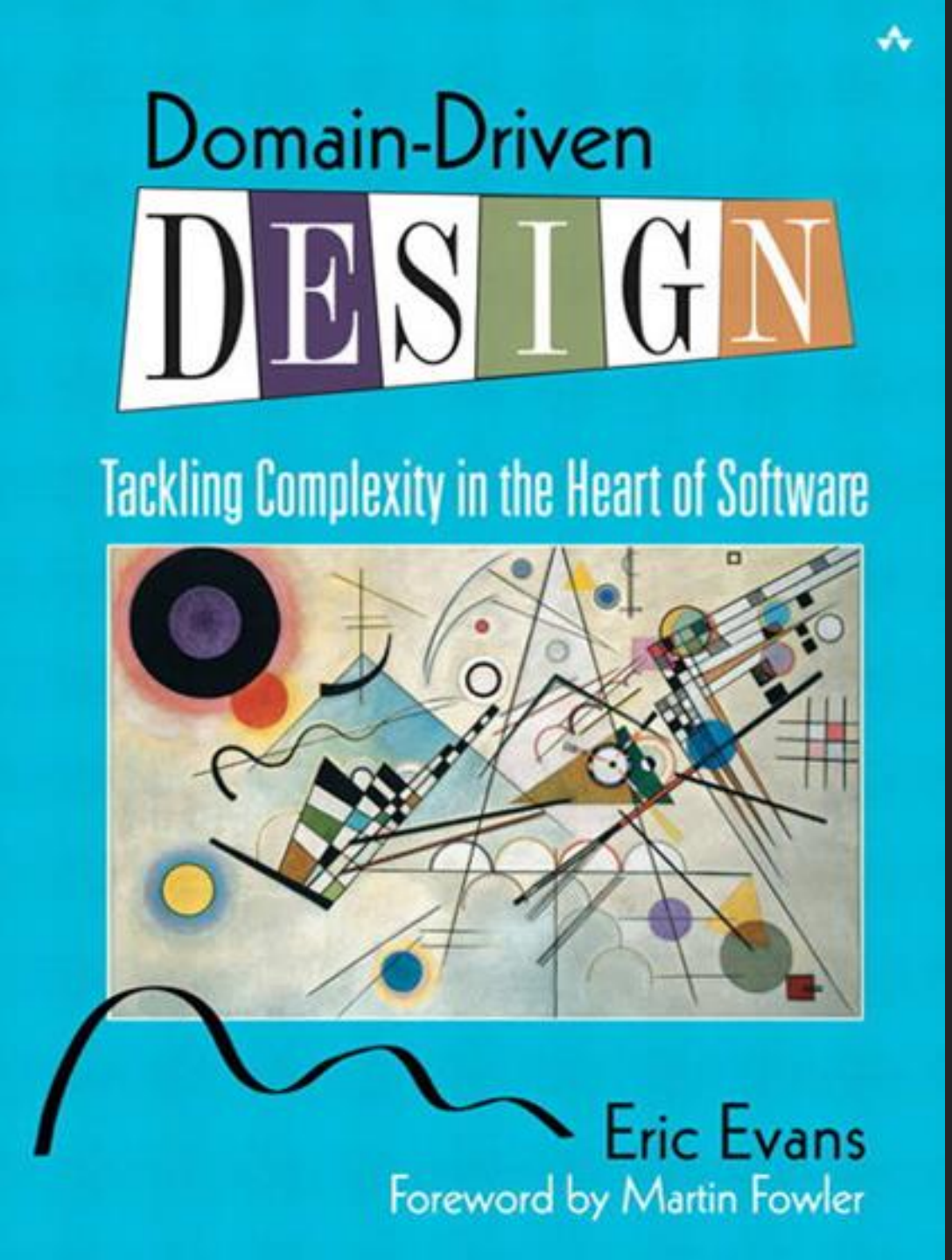
Responsibilities?

Breaking Changes?

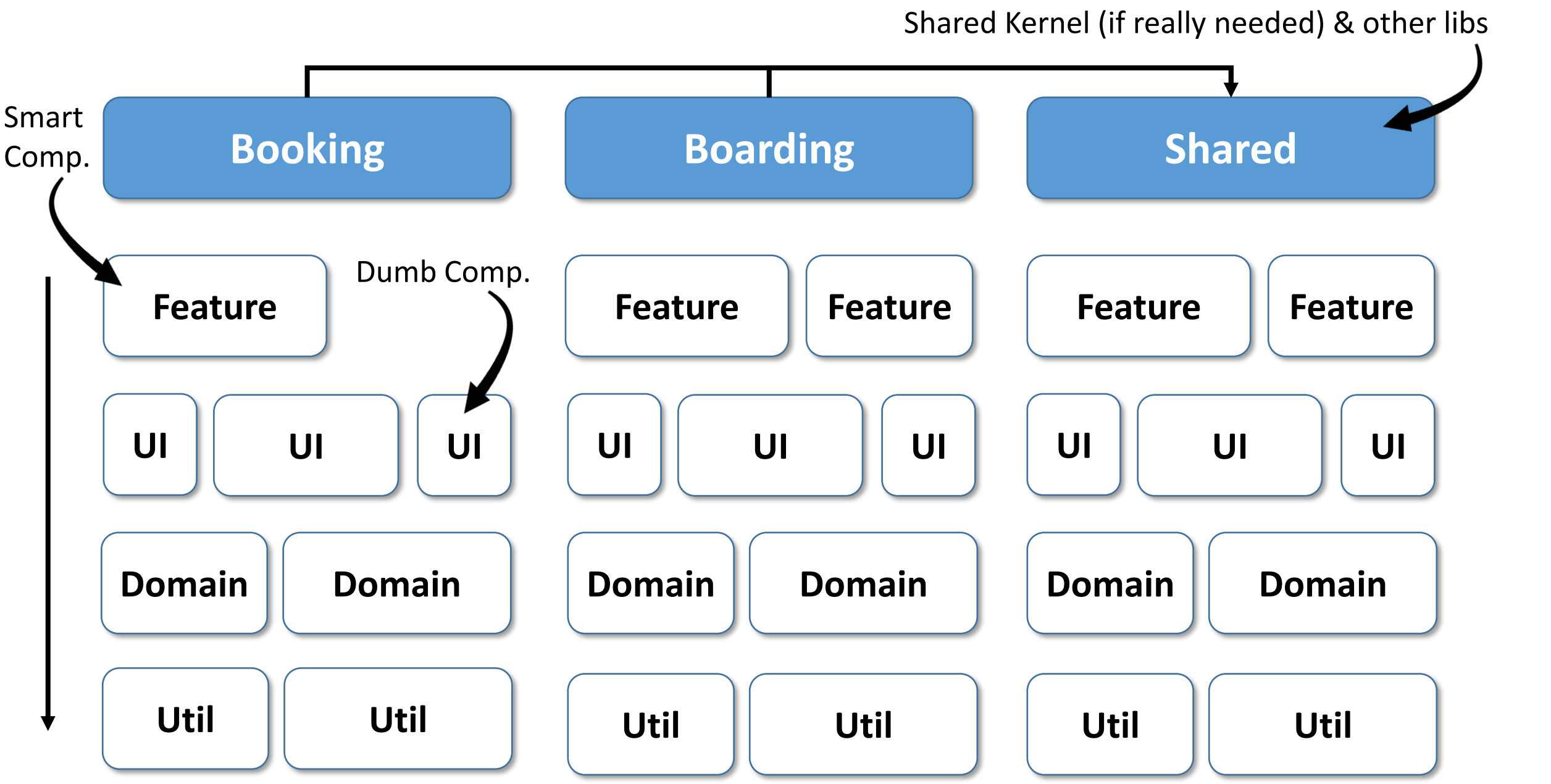




Open-/Host-Service



Lots of approaches for cross-domain communication and more …


Shared Kernel (if really needed) & other libs
Smart Comp.
Booking
Boarding
Shared
Dumb Comp.
Feature
Feature
Feature
Feature
Feature
UI
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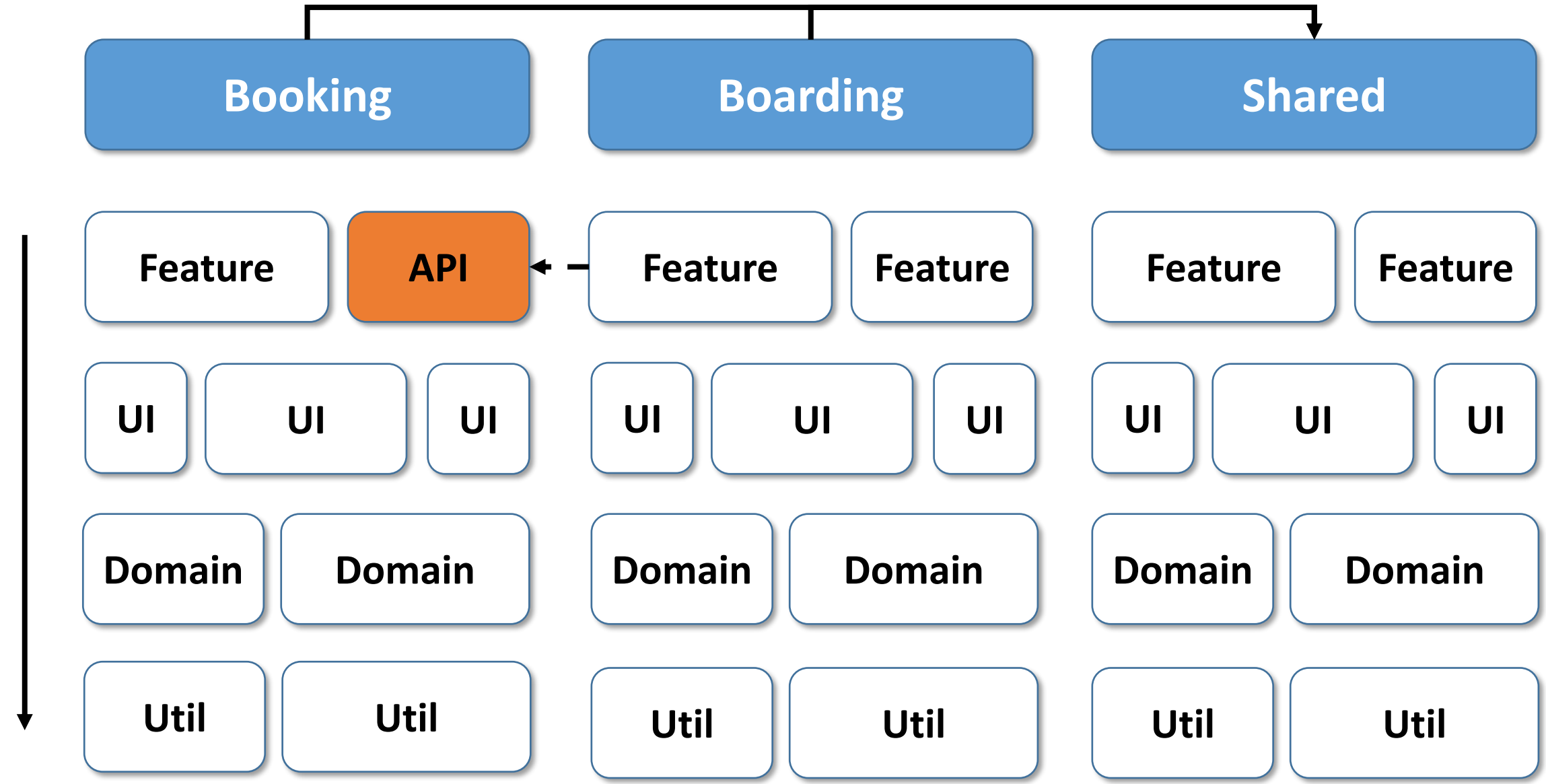
Booking
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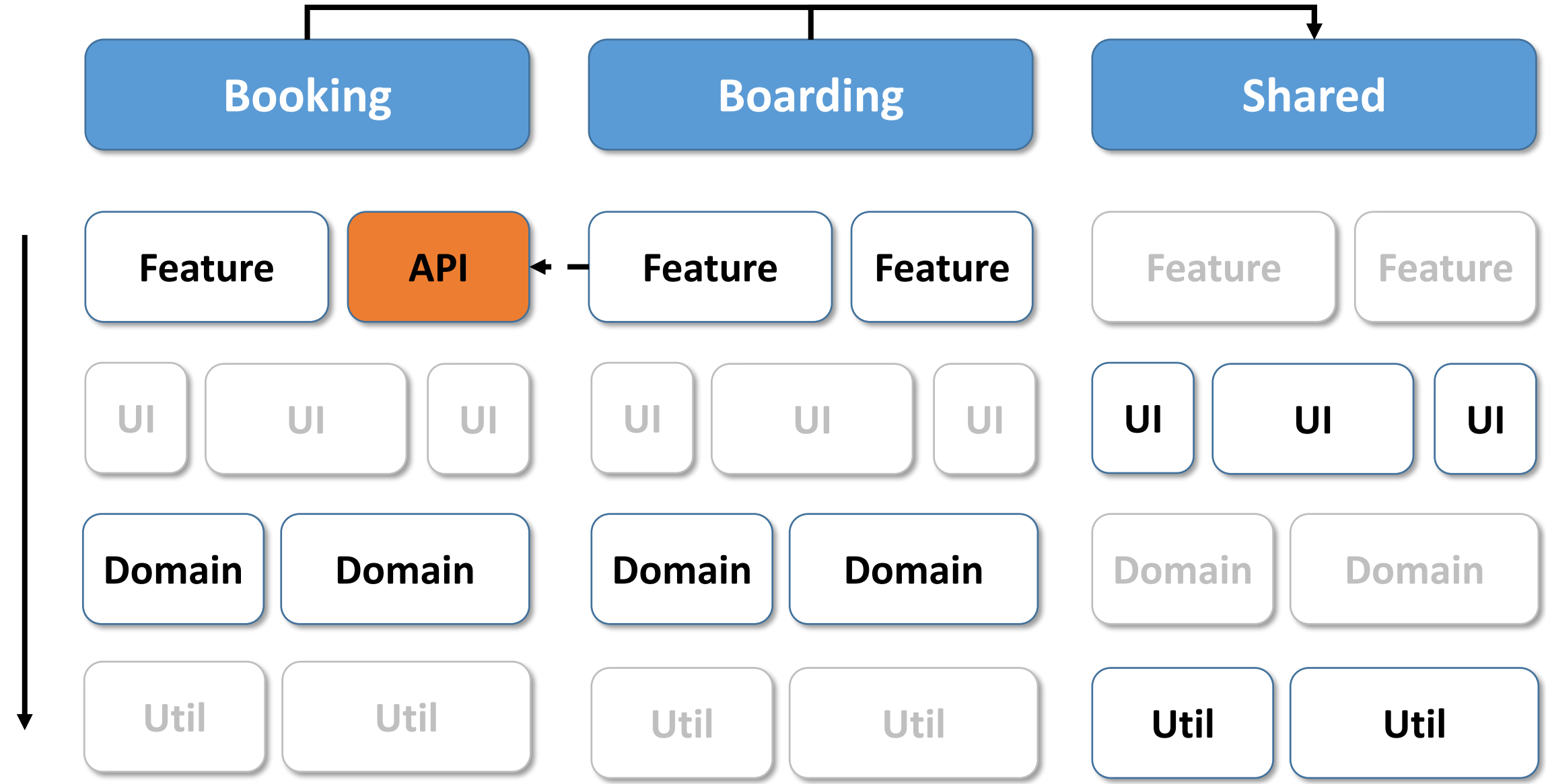
Booking
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Feature
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UI
UI
UI
UI
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Util
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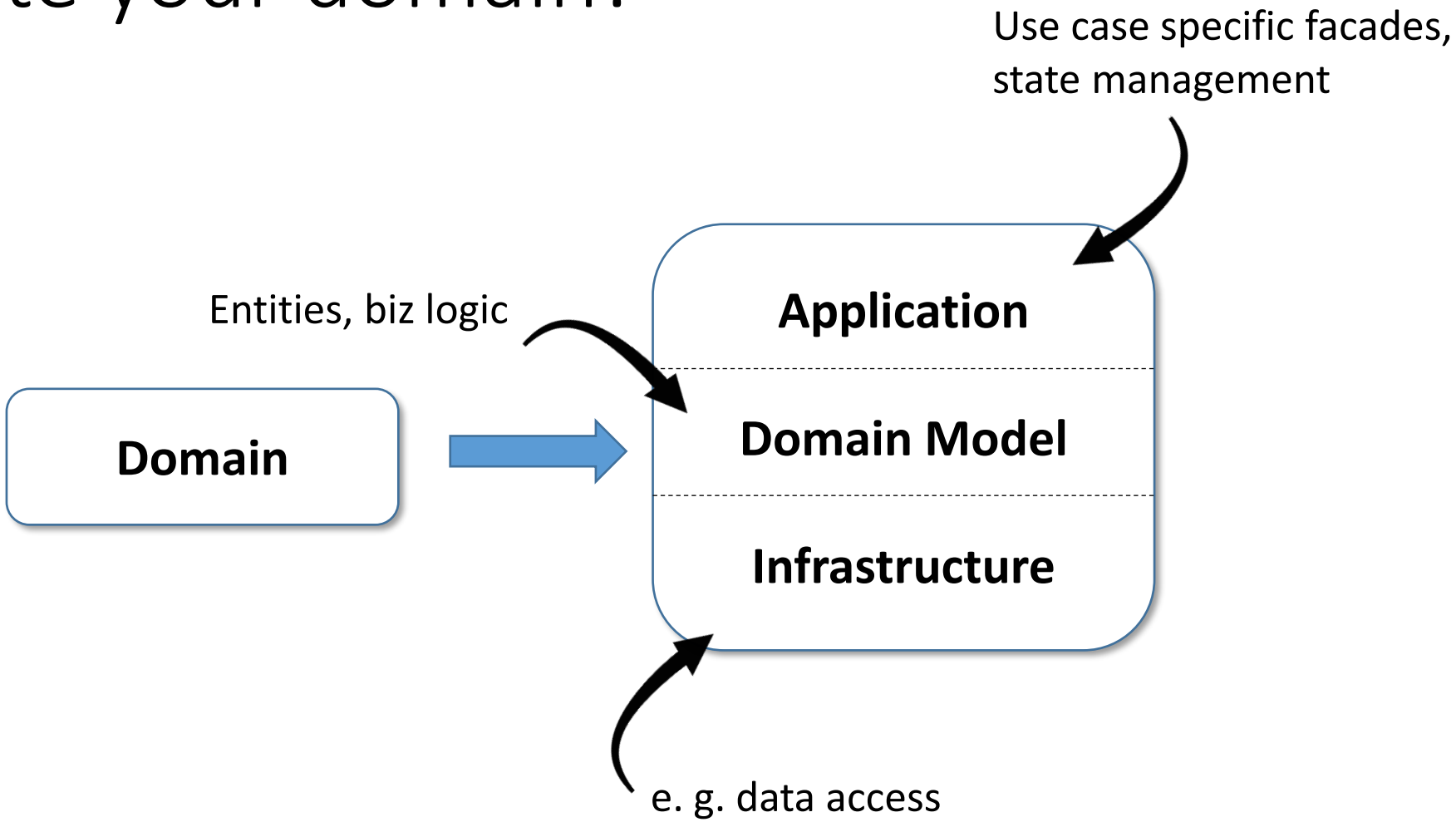
Util

Isolate your domain!



Alternatives to layering

- e. g. Hexagonal Architecture, Clean Architecture
- Anyway: We need to **restrict access** b/w libraries

DEMO

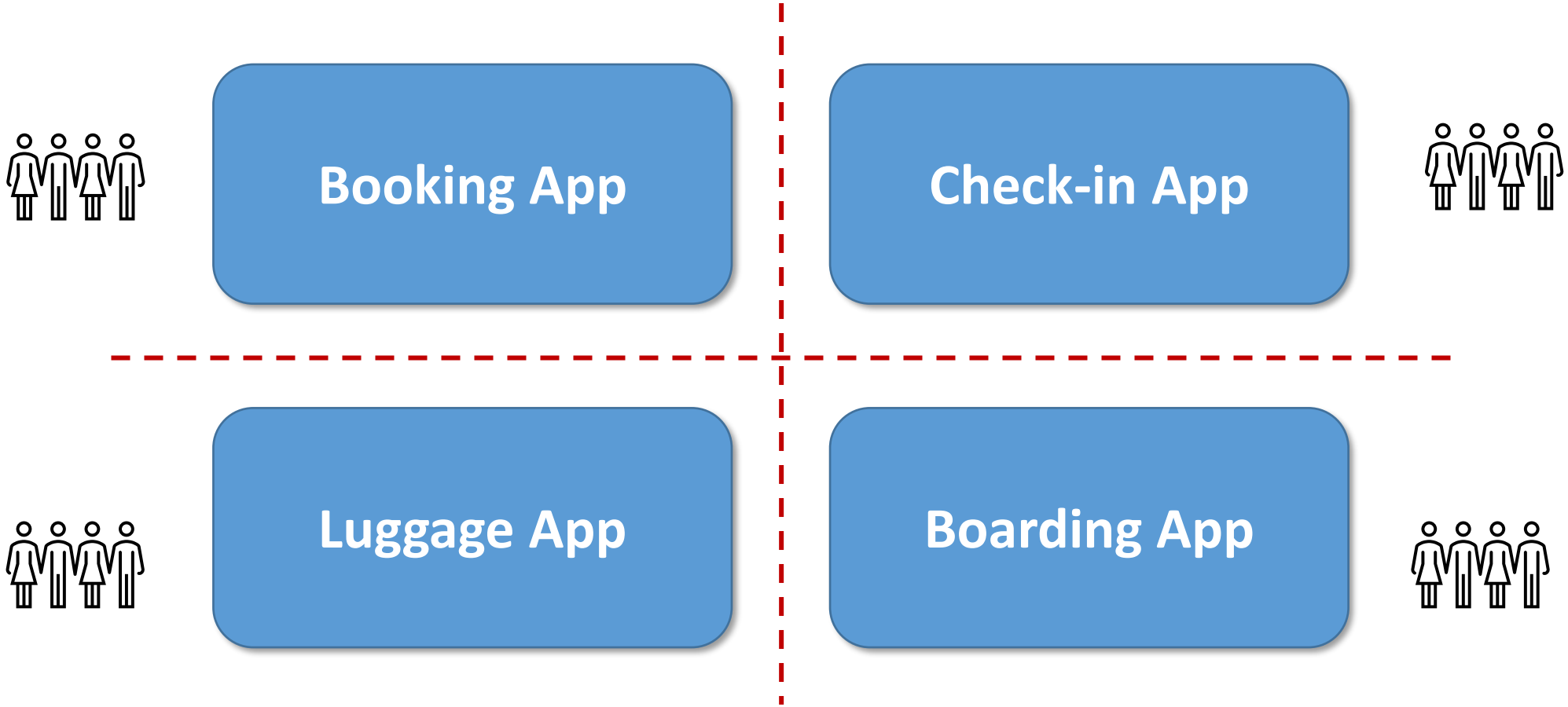
Finegrained Libraries

- Unit of recompilation
- Unit of retesting
- Access restrictions
- Information Hiding
- Easy: Just *ng g lib …*
- Future replacement for NgModules?

Micro Frontends?

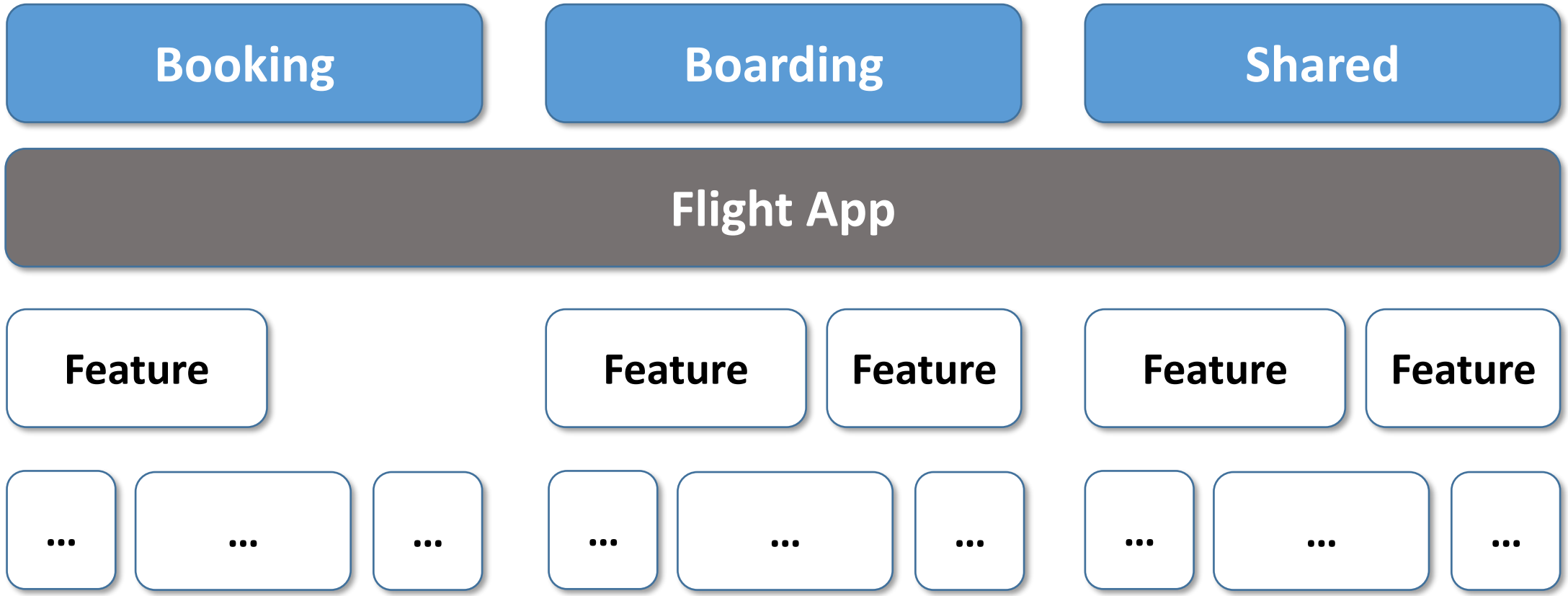
Short outlook

Microfrontends

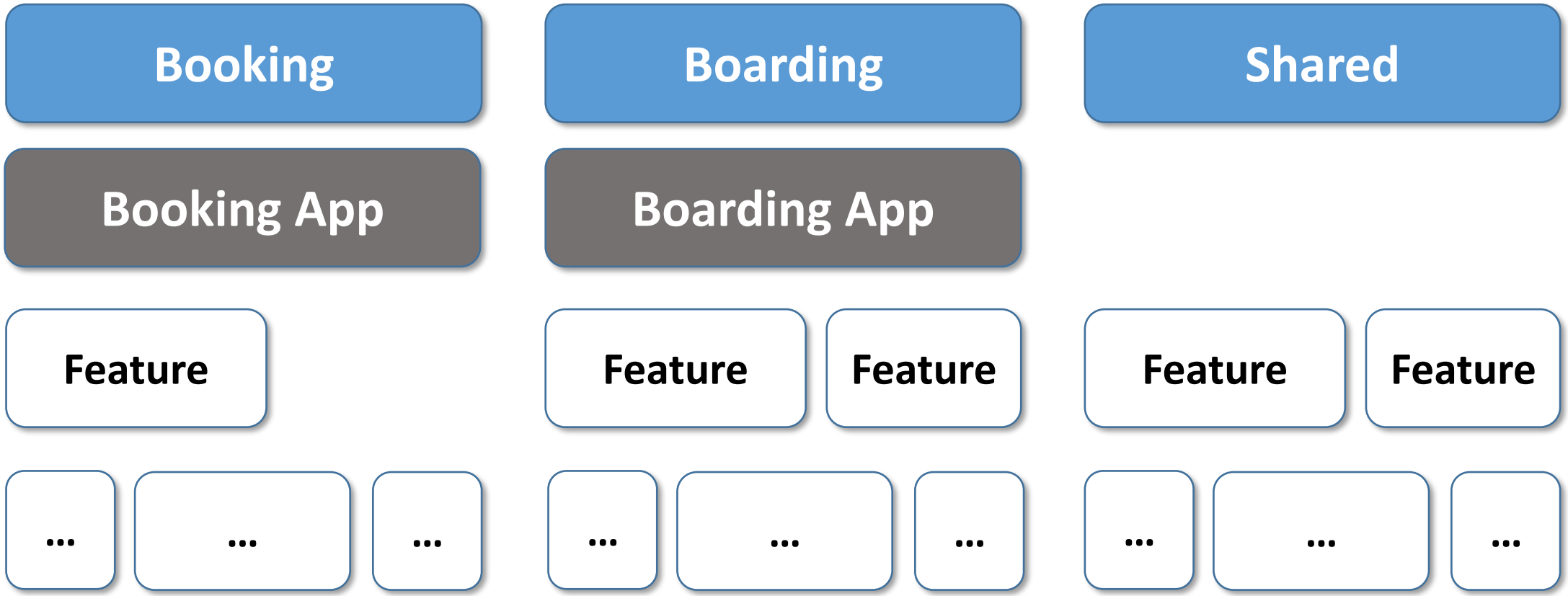


Microfrontends
are first and foremost
about **scaling teams!**

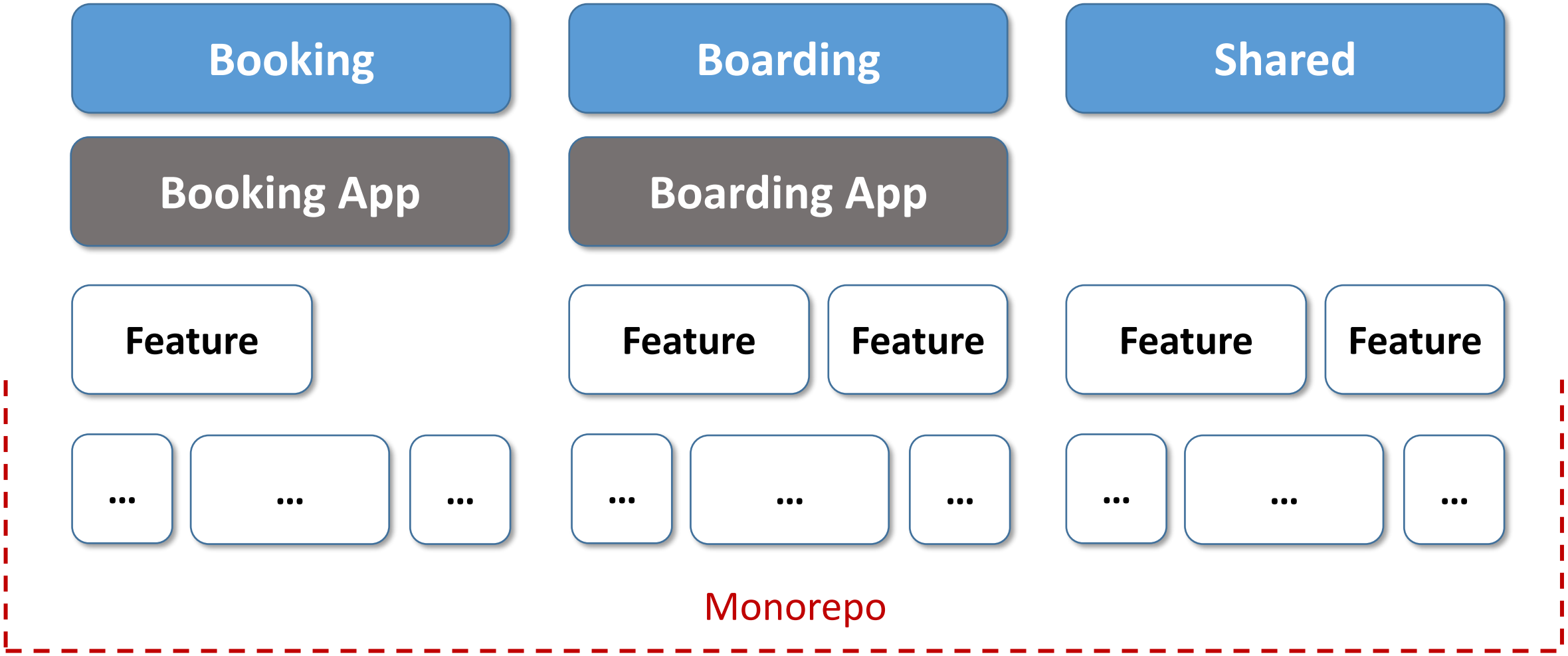
Deployment Monolith



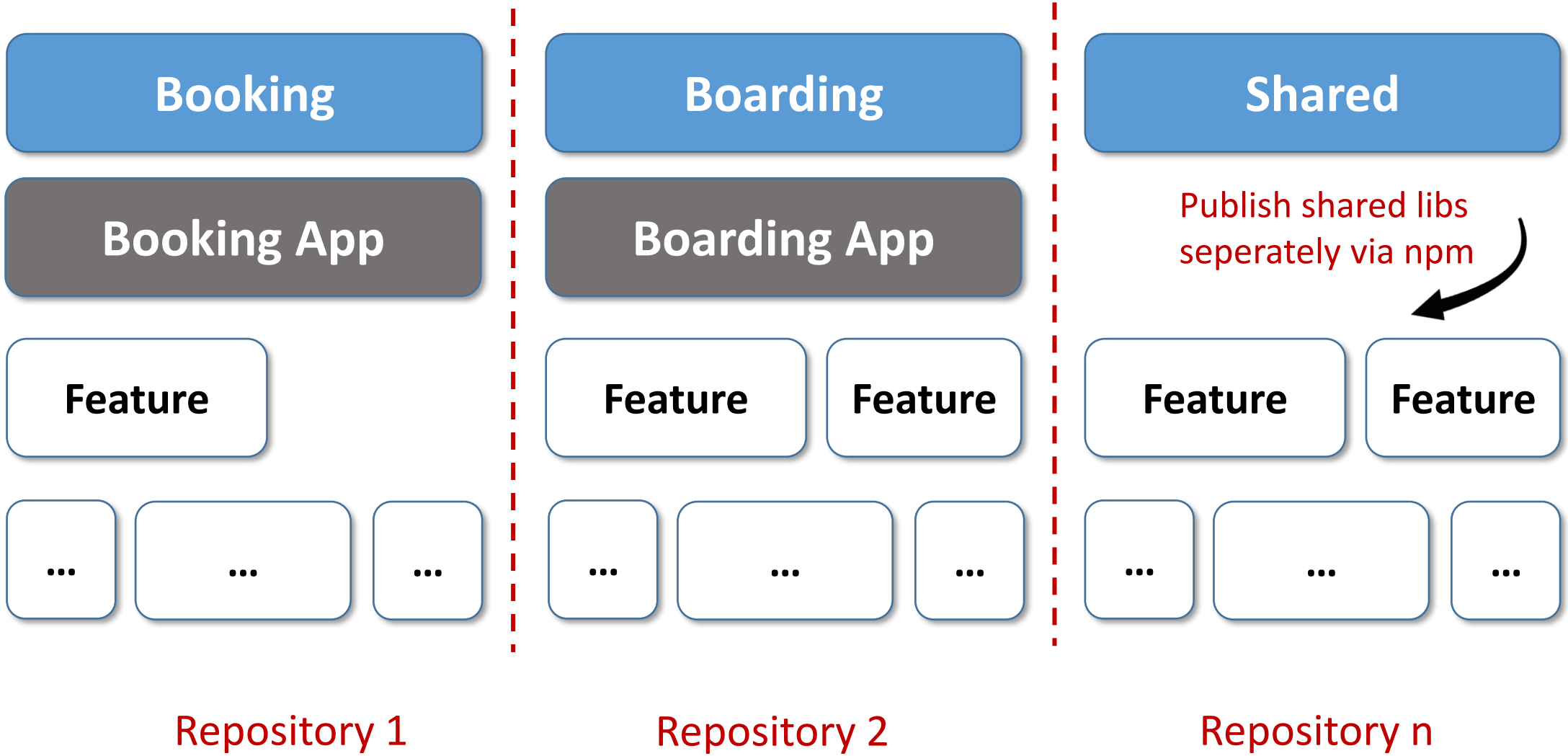
Microfrontends



Option 1: One App per Domain



Option 2: One Monorepo per Domain

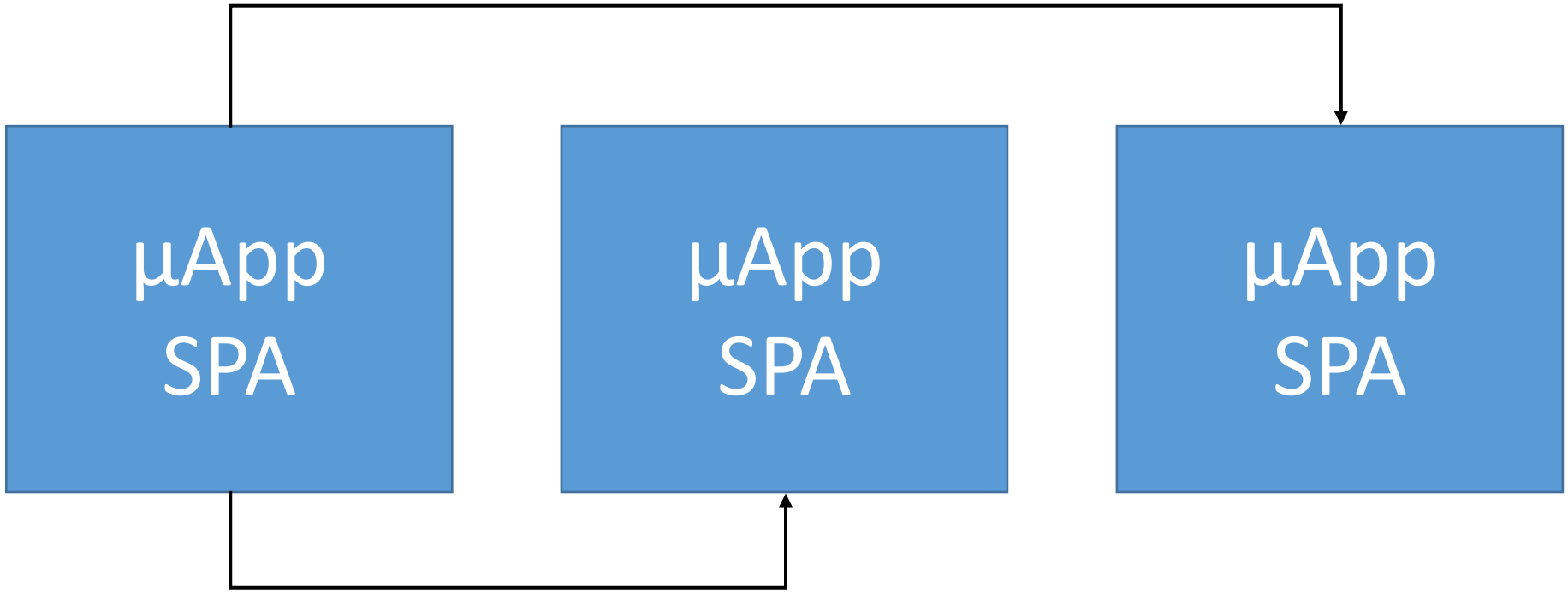


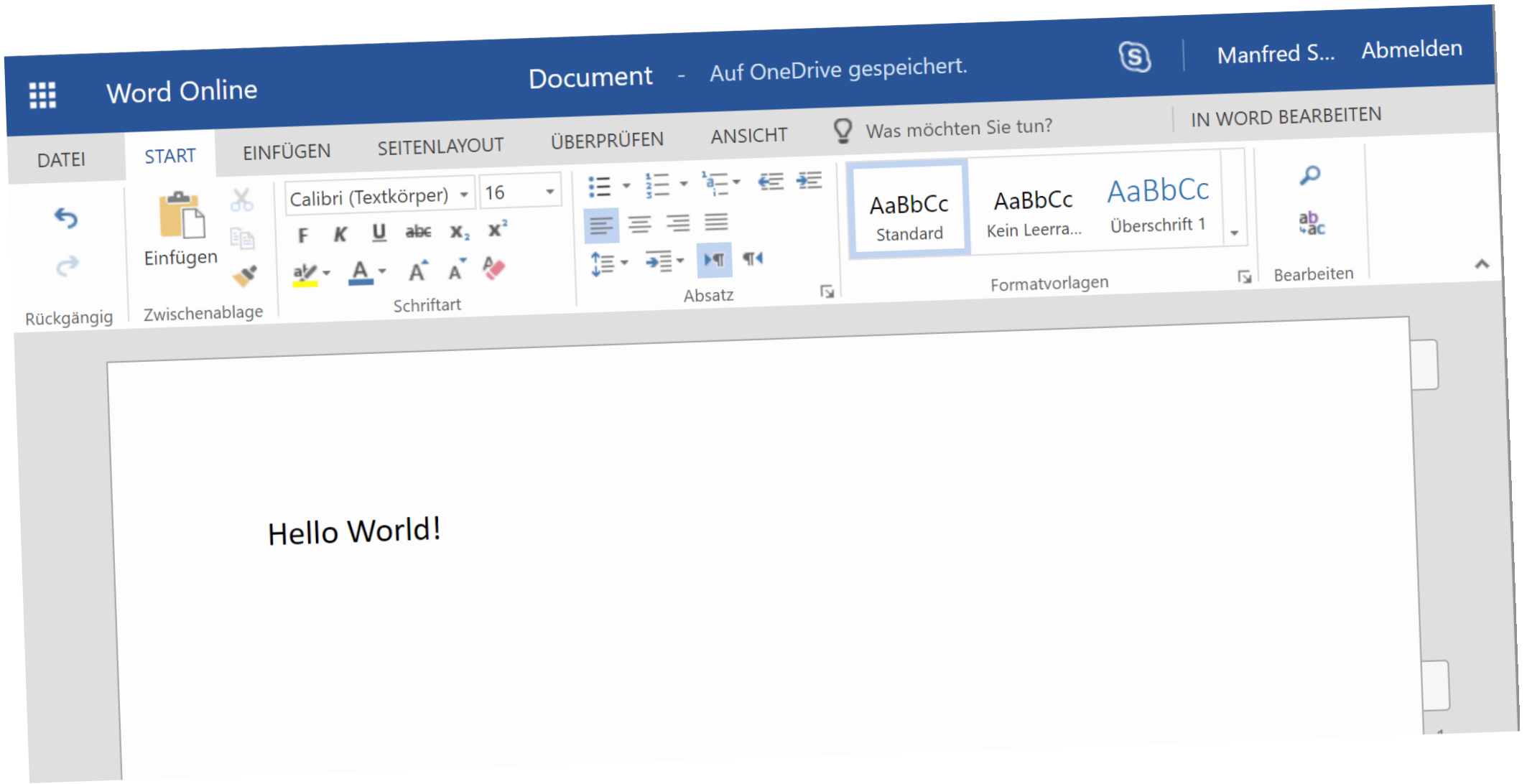
Benefits

- **Autonomous Teams**
- Separate Development
- Separate Deployment
- Own architecture decisions
- Own technology descisions

Integration via Hyperlinks

UI Composition
w/ Hyperlinks





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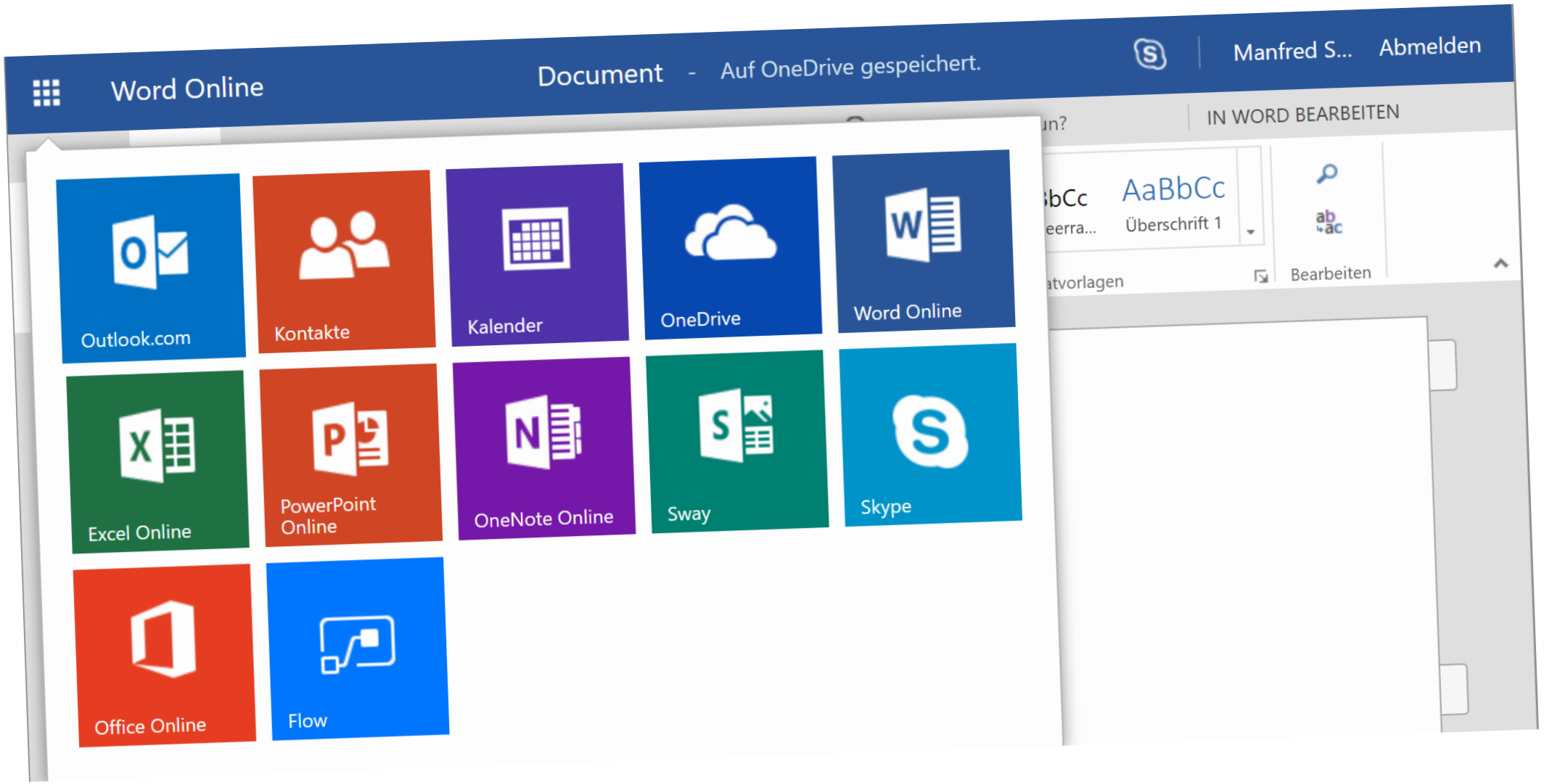
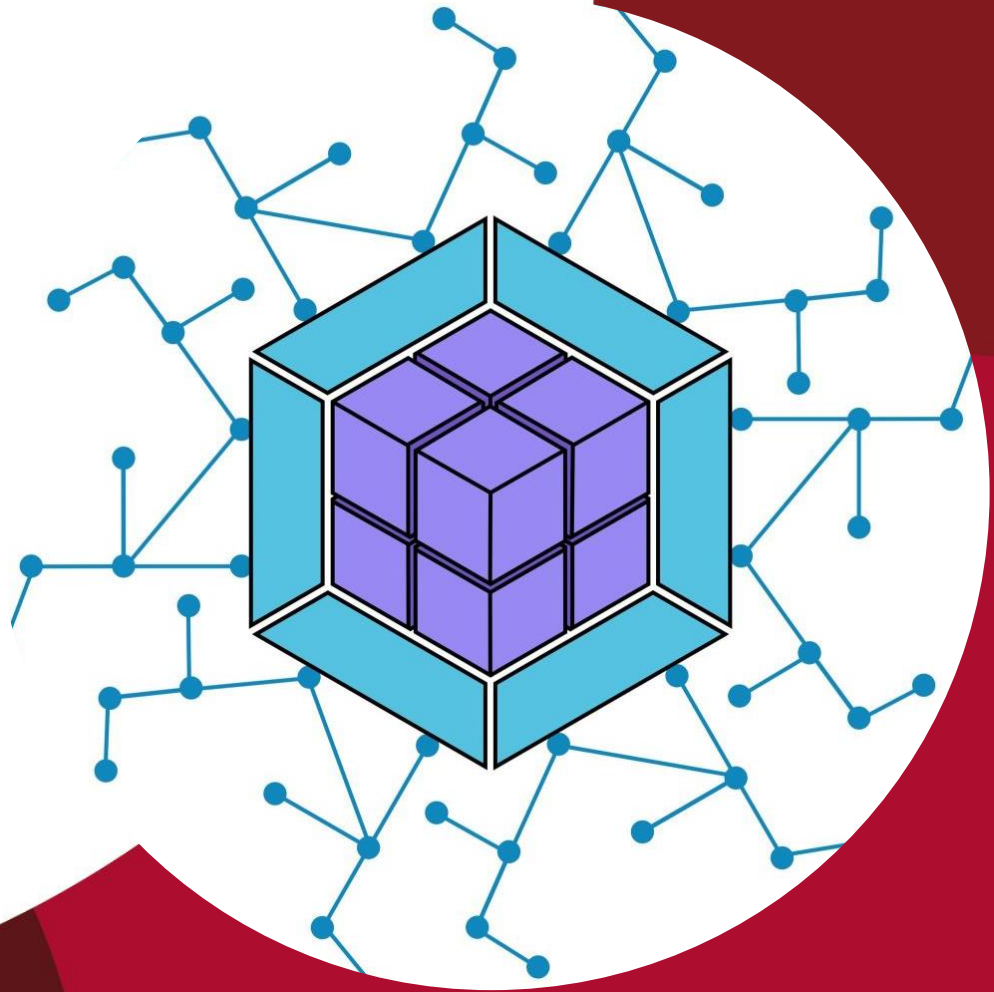


@ManfredSteyer

Integration via Shell

Providing a (SPA based) Shell

Webpack 5
Module Federation



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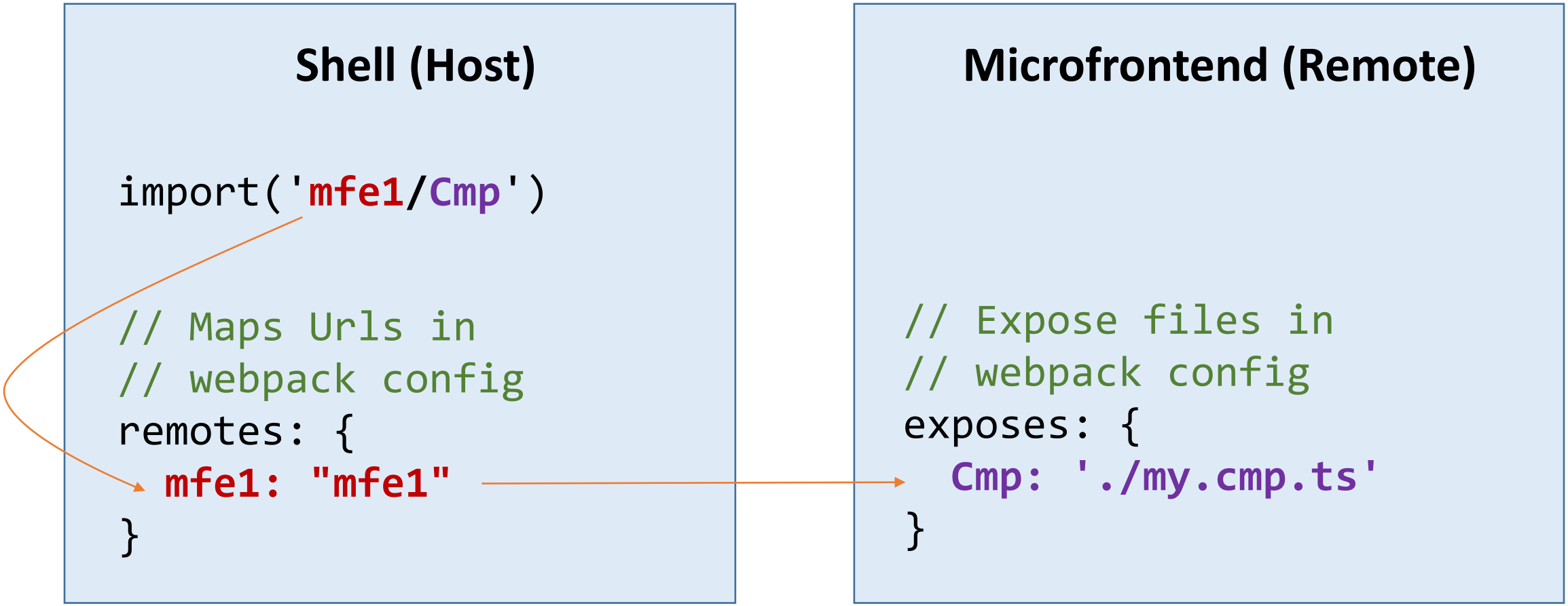
Idea

Does not work with
webpack/ Angular CLI

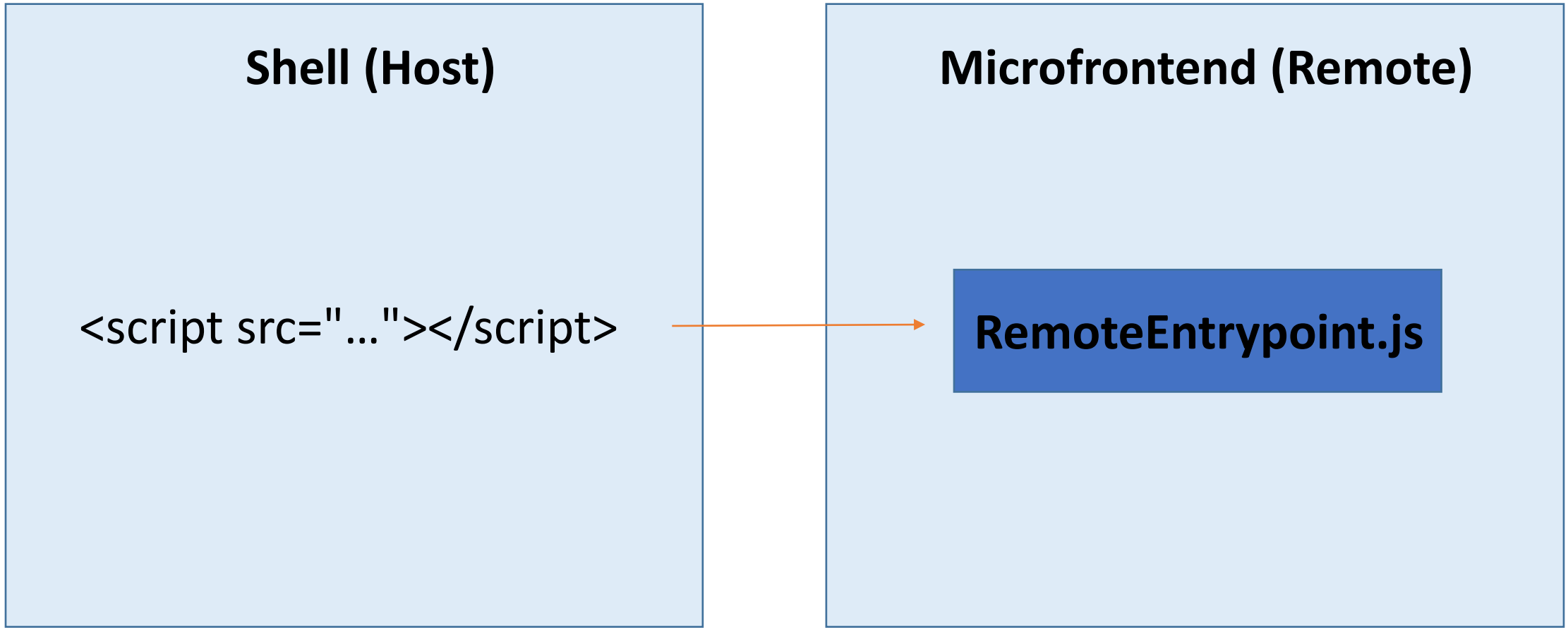
```
const Component = import('http://other-app/xyz')
```

Even lazy parts must be
known at compile time!

Webpack 5 Module Federation



How to Get the Microfrontend's URL?



How to Share Libs?

Shell (Host)

```
shared: [
  "@angular/core", "..."
]
```

Microfrontend (Remote)

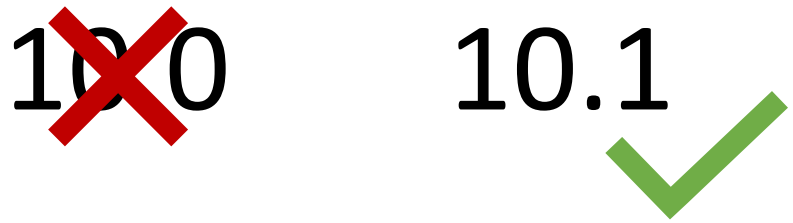
```
shared: [
  "@angular/core", "..."
]
```

Dealing with Version Mismatches

ANGULAR ARCHITECTS
INSIDE KNOWLEDGE

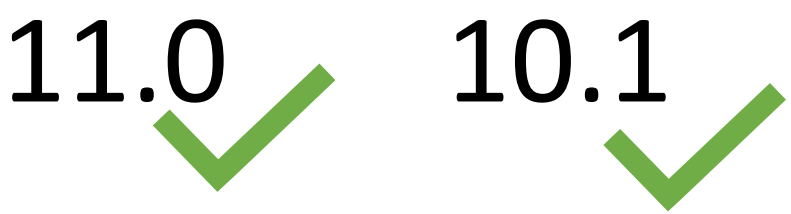
Default Behavior

Selecting the highest compatible version



Default Behavior

Conflict: No highest compatible version



Example

- Shell: my-lib: ^10.0
- MFE1: my-lib: ^10.1
- MFE2: my-lib: ^9.0
- MFE3: my-lib: ^9.1

Result:

- Shell and MFE1 share ^10.1
- MFE2 and MFE3 share ^9.1

Configuring Singletons

```
shared: {
  "my-lib": {
    singleton: true
  }
}
```

11.0 ✓ 10.1 ✗

Configuring Singletons

```
shared: {
  "my-lib": {
    singleton: true,
    strictVersion: true // Error instead of warning!
  }
}
```

11.0 ✓ 1~~0~~.1 ✗

Relaxing Version Requirements

```
shared: {
  "my-lib": {
     requiredVersion: ">=1.0.1 <11.1.1"
  }
}
```

Federated Angular:
Angular, CLI, & Module Federation

ANGULAR ARCHITECTS
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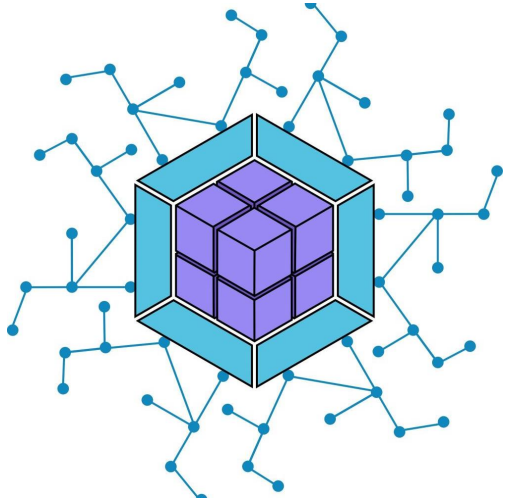
webpack

Angular CLI

?



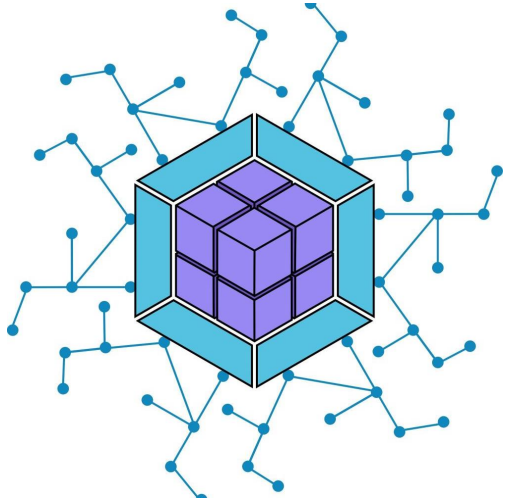
Module Federation
Configuration

@ManfredSteyer

Custom Builder

Angular CLI

webpack



Module Federation
Configuration

@angular-architects/module-federation

1.0.2 • Public • Published 18 hours ago

Readme | Explore BETA | 3 Dependencies

Features 

✅ Generates the skeleton for a Module Federation config.

✅ Installs a custom builder to enable Module Federation.

✅ Assigning a new port to serve (`ng serve`) several projects at once.

Usage

1) ng add @angular-architects/module-federation
2) Adjust generated configuration
3) ng serve

DEMO

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Possible Roadmap

Well …

- Webpack 5: final
- @angular-architects/module-federation: final
- CLI 11: Experimental webpack 5 support
- CLI 12: Official webpack 5 support (May 2021)


Choosing a Solution

Some General Advice