Micro Frontends - foundations

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Agenda

01 Software Architecture

The software architecture in short terms is about the whole system organization which includes: **components, relations between them, infrastructure and environment and set of rules and design patterns used to manage the system.**

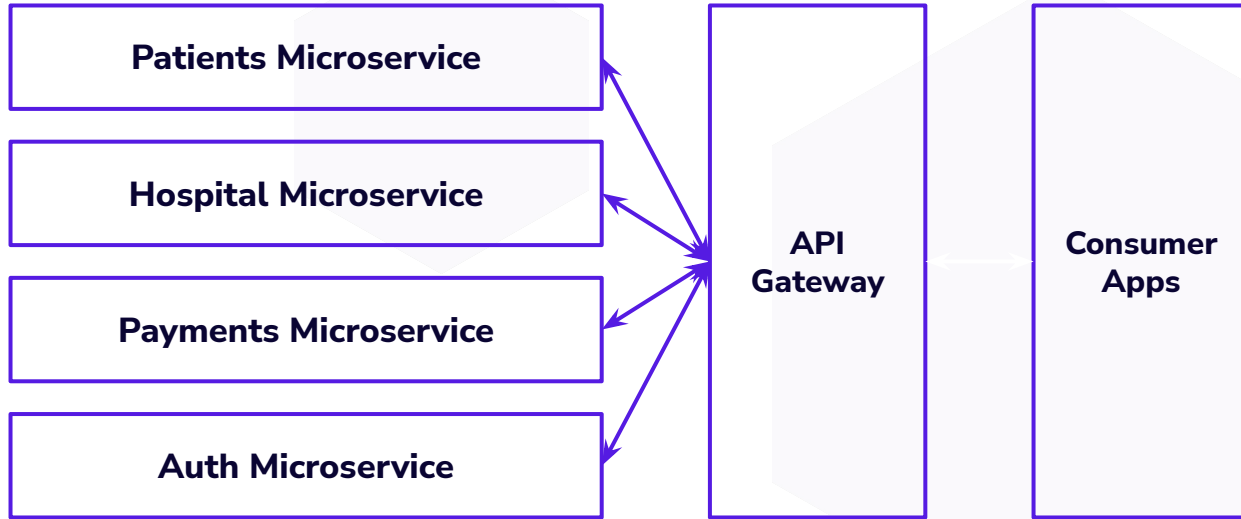| Components	Relations	Environment	Rules and design patterns

02 Monolith approach

backend

frontend

APP

database
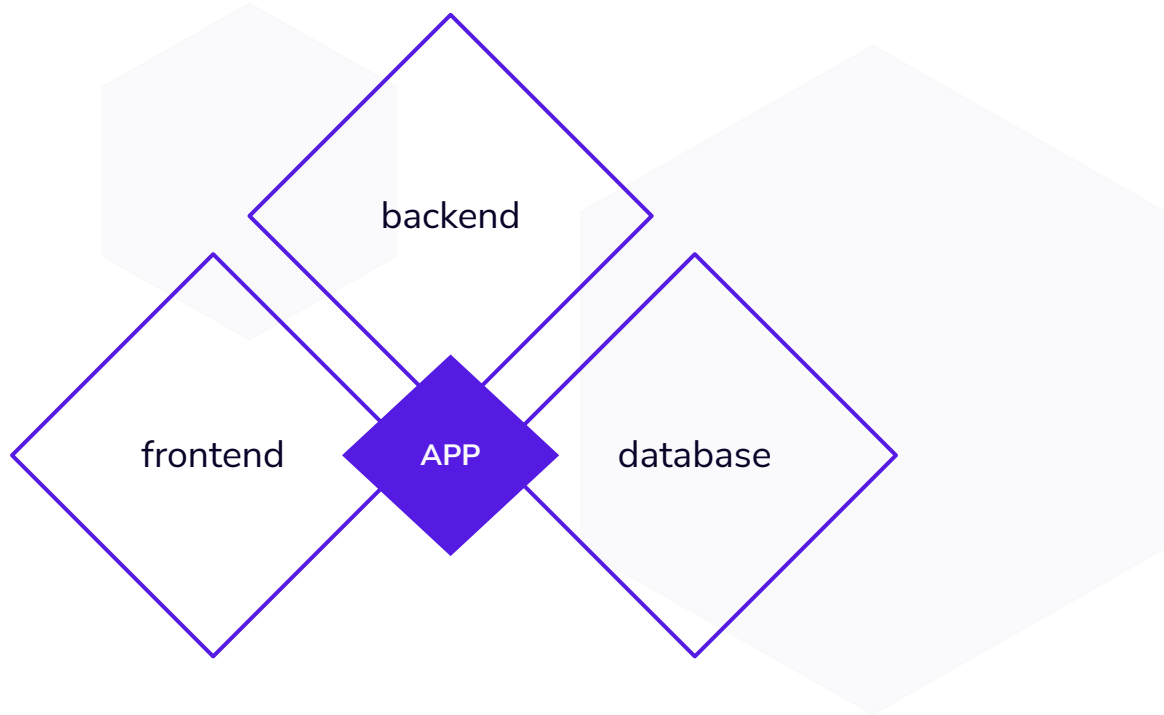
02 Monolith approach

Pros and cons

◆ Encapsulate all problems and solution under single application

◆ On complexity growth it's hard to scale

◆ Security of data storing and communication

◆ Reduced palette of used technologies

◆ Lack of modularity

◆ Easy to start development

03 Distributed approach

Patients Microservice

Hospital Microservice

Payments Microservice

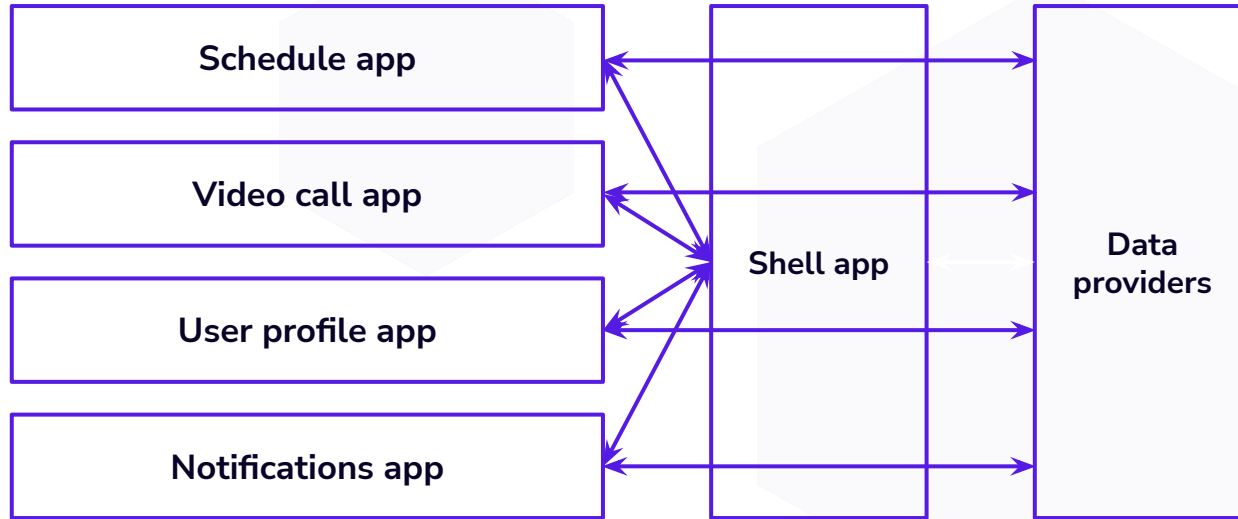| Auth Microservice |
| :---: |

API Gateway
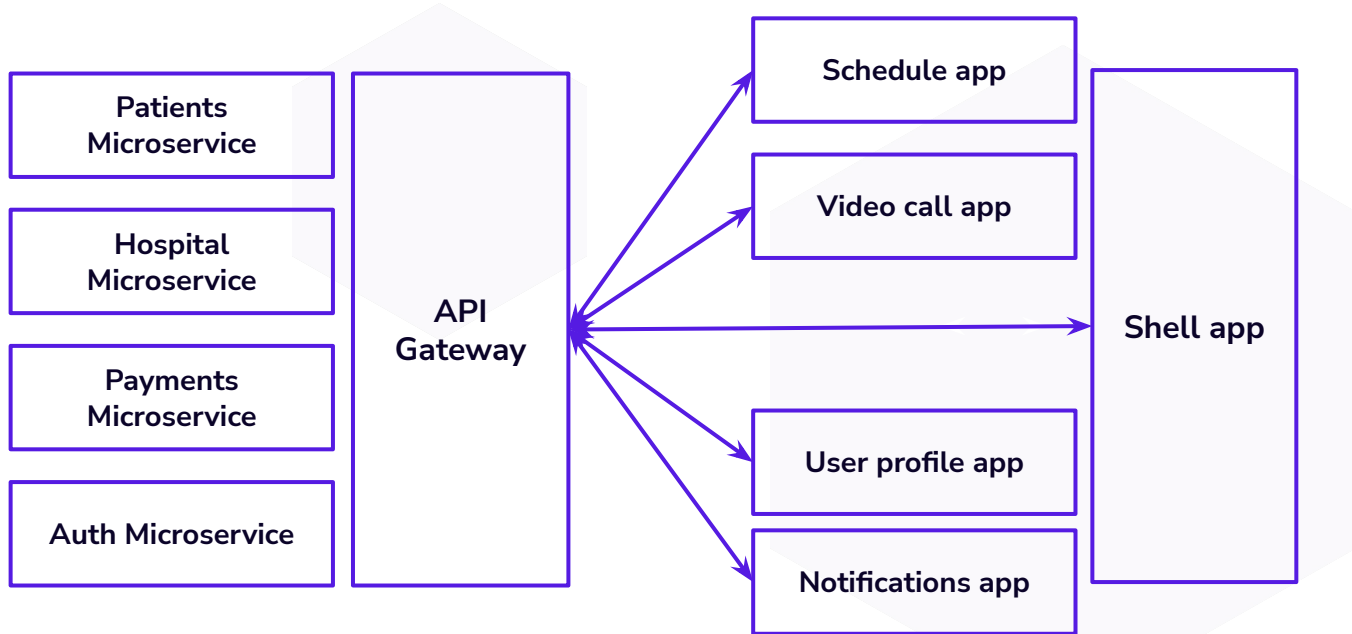
Consumer Apps

03 Distributed approach

Pros and cons

◆ High performance under big traffic and easy to scale.

◆ Increased response time depends on the number of the nodes to process the request.

◆ High complexity at the beginning of implementation.

◆ Wide palette of available technologies.

◆ Hard to debug and analyze.

◆ Hard to proof security for the whole system.

04 Micro Frontends

04 Micro Frontends

Patients Microservice

Hospital Microservice

Payments Microservice

Auth Microservice

API Gateway

Schedule app

Video call app

Shell app

User profile app

Notifications app

04 Micro Frontends

Pros and cons

◆ Each module is a separate self contained app with own ecosystem.

The key is to provide the good communication between apps.

◆ Modularization makes it easy to scale.

◆ Shell app is responsible for integrating all the apps.

◆ Each micro-frontend has own API integration.

◆ Independent development teams can collaborate on a frontend app easily.
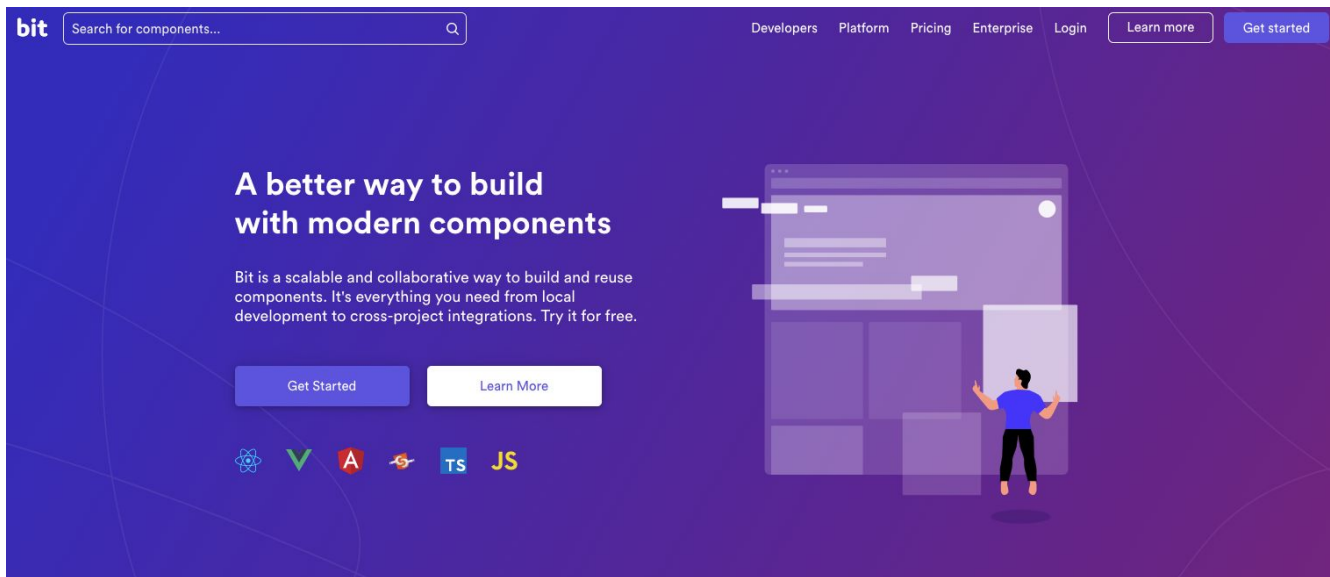
◆ Performance optimization opportunities.

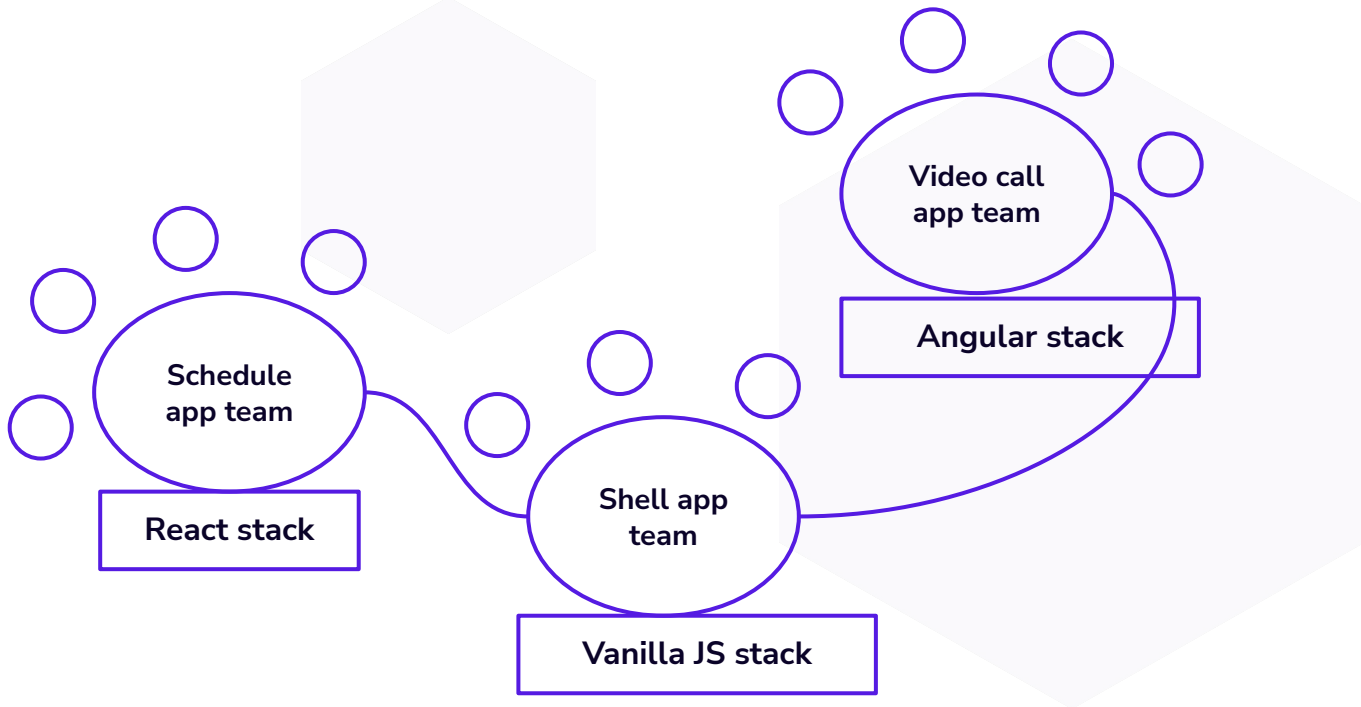# 04 Micro Frontends

Popular micro frontends framework

Bit	Single SPA
Webpack 5 & Module Federation	Open Components
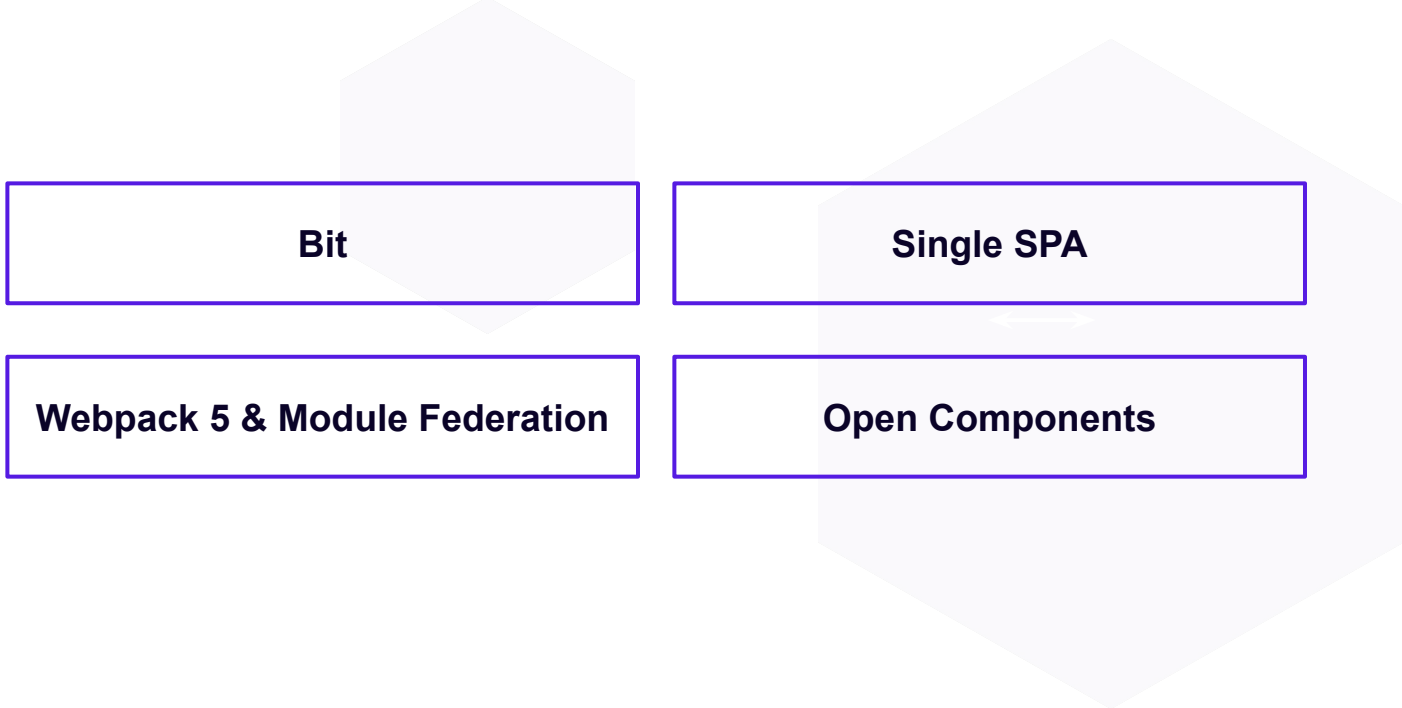
04 Micro Frontends

BIT

React tutorial: https://docs.bit.dev/docs/tutorials/bit-react-tutorial

05 **Why we might need that?**

Independent development teams

Video call
app team

Angular stack

Schedule
app team

React stack

Shell app
team

Vanilla JS stack

05 Why we might need that?

Technology migration

Healthcare monolith

app

- Schedule module
- Video call module
- User profile module
- Notifications module

Angular stack

Schedule app

React stack

Healthcare app

- Schedule app adapter
- Video call module
- User profile module
- Notifications module

Angular stack
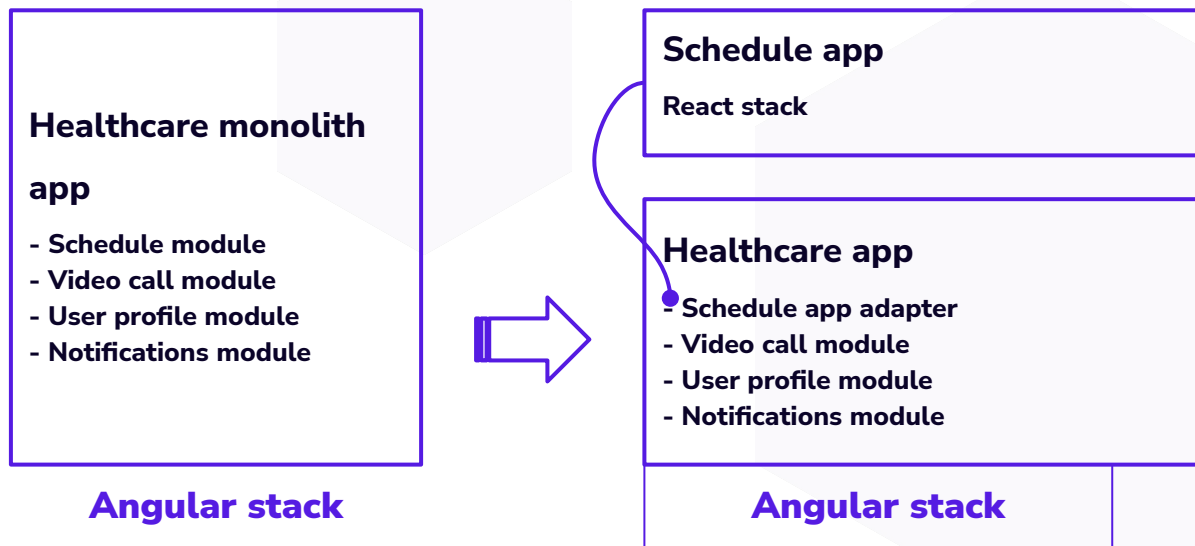
05 Why we might need that?

Reusable micro apps

Ambulance driver app
React

Video call micro app
Angular

Patient app
React

Doctor app
Angular
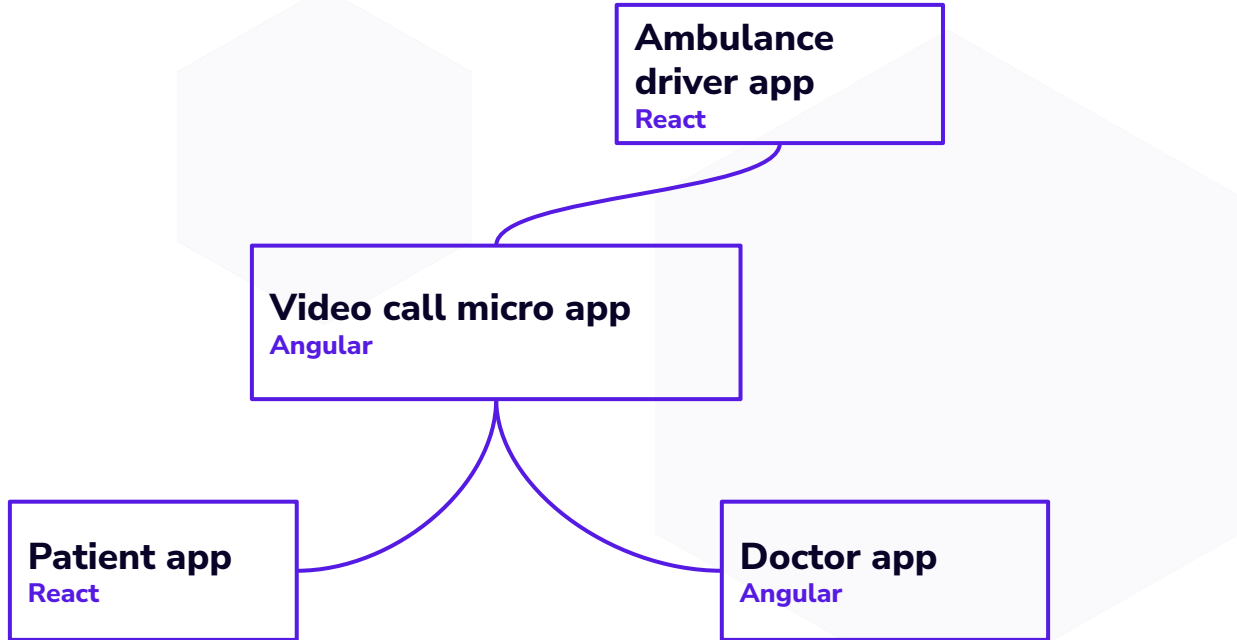
05 Why we might need that?

Unified design system across platform

Design system
React with storybook

Schedule micro app
React

Payment micro app
React

Patient app
React

Coordinator app
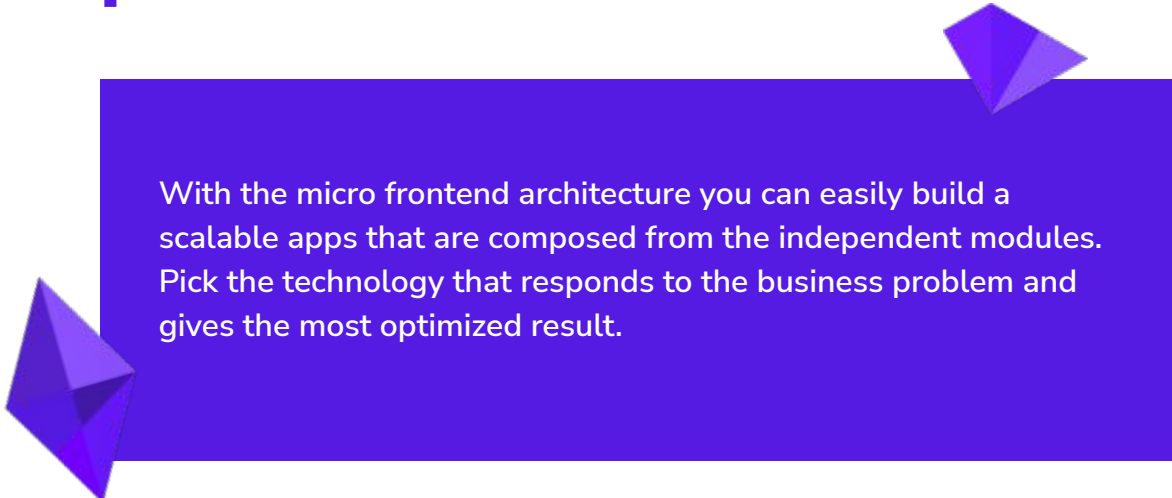**React**

Doctor app
React
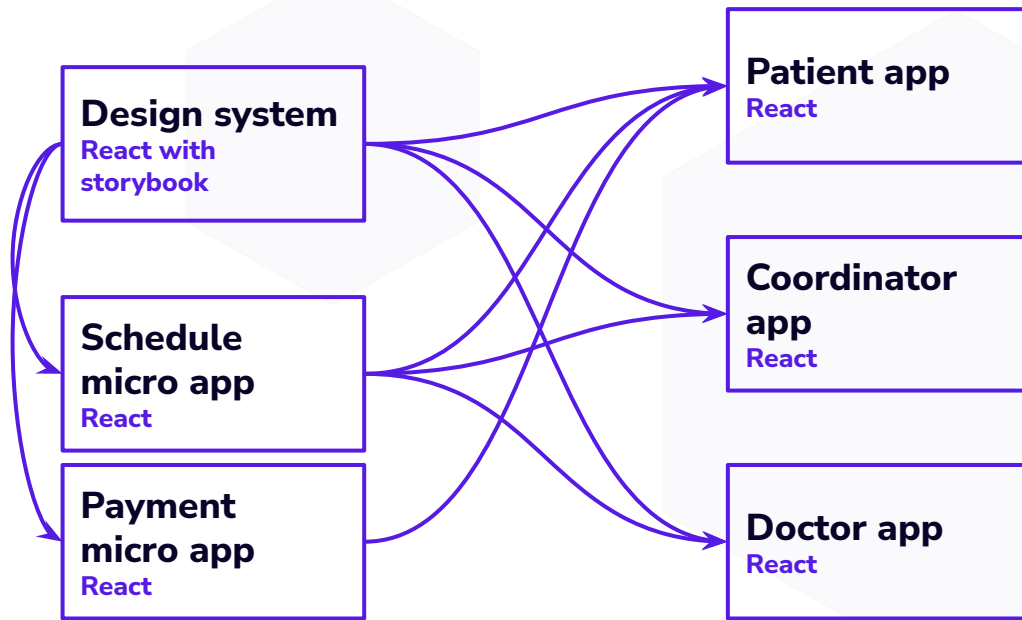
05 Why we might need that?

Why did They needed?

Choose technology with
surgical precision

With the micro frontend architecture you can easily build a scalable apps that are composed from the independent modules. Pick the technology that responds to the business problem and gives the most optimized result.

Thank you!

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