Web Application Concepts

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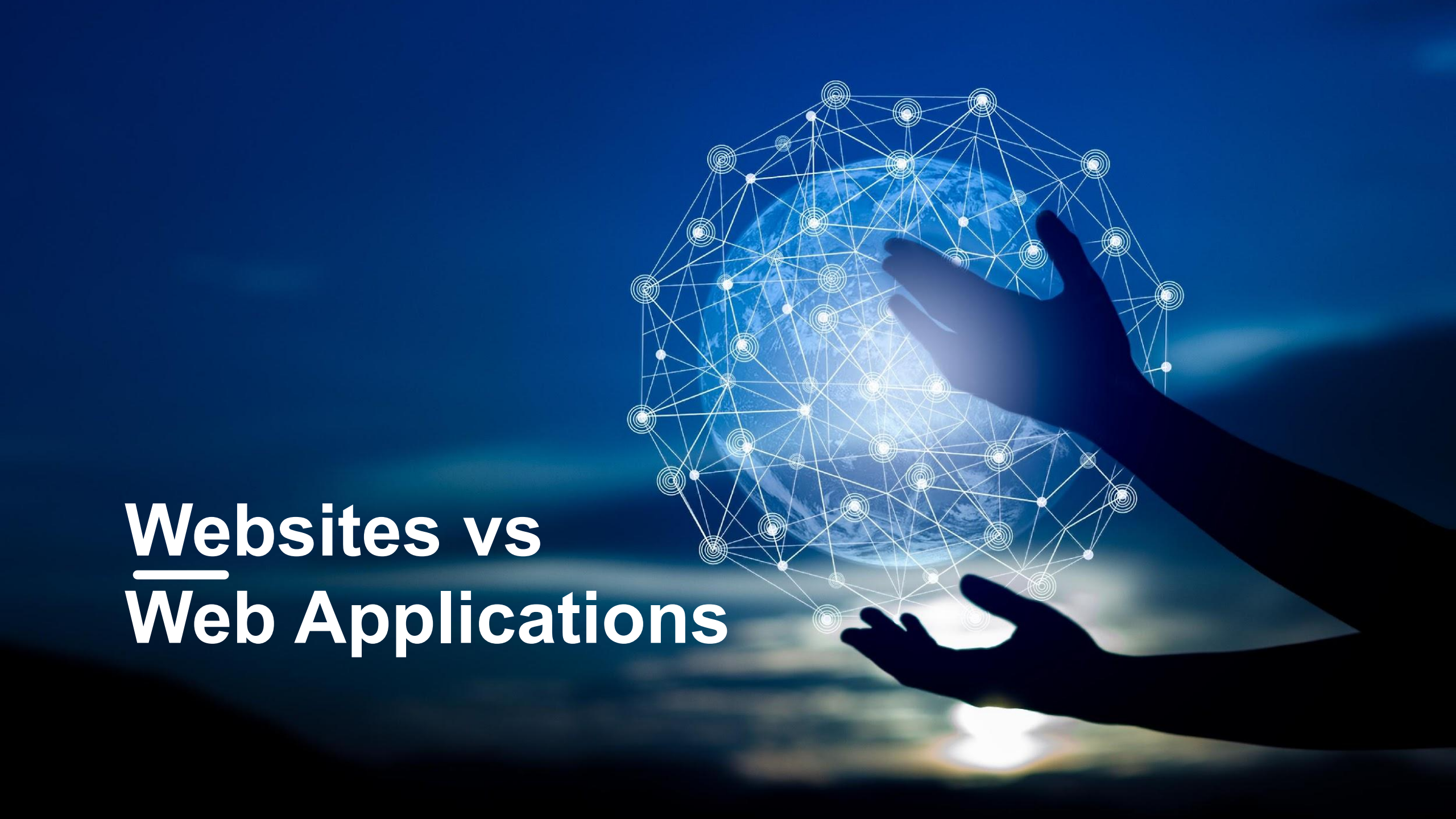
Overview

- Websites vs Web Applications.
- HTTP Protocol.
- Web Application Layers.
- Web Application Components.
- Web Application Architecture.

Websites vs Web Applications



Websites

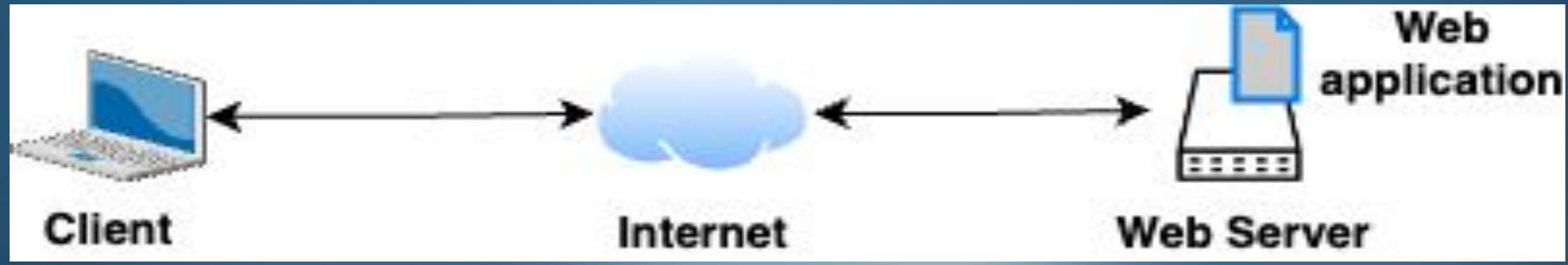
- Set of interconnected documents.
- Developed using HTML, CSS, Javscript.
- Limited User Interaction.
- Stateless.
- Blogs, News Sites, etc.

Web Applications

- Provide complex functionalities.
- Allows for User Interaction.
- More complex to architect.
- Online Games, e-commerce, Online Learning, etc.

Client – Server Architecture

- A computing model to serve and consume resources.
- Clients: Mobiles, Browsers, IOT Devices, etc.
- Servers: Mail servers, File servers, etc.
- Servers are reached by IPs, and serve applications using ports.



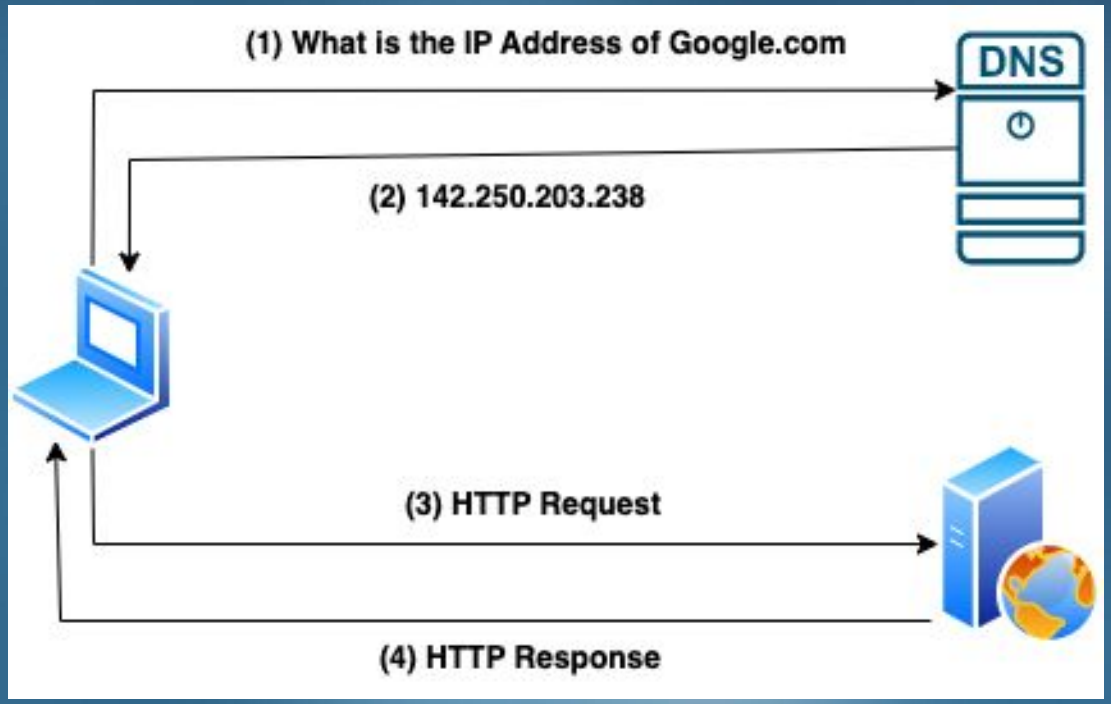
HTTP Protocol

Definition

—

Designed to fetch web pages deployed on the internet.

Communication is done using HTTP Messages.



HTTP Protocol Components

HTTP Methods

—

↳ Indicates the desired actions.

↳ **GET**: Fetch data from the server.

↳ **POST**: Create data on the server.

↳ **PUT**: Modify data on the server.

↳ **DELETE**: Delete data from the server.

HTTP Version

The version of the HTTP version used.

HTTP Uniform Resource Locator (URL)

The complete and unique address of a resource on the web.

```
http://mywebapp.com:80/some/api?key1=val1,key2=val2
```

- **Protocol**: http
- **Domain Name**: mywebapp.com
- **Application port**: 80
- **Path**: /some/api
- **Query String Paramters**: key1=val1,key2=val2

HTTP Headers

- Contain information about the request/response.
- Stored as key-value pairs.

HTTP Body

Contains information sent by the client to the server.

HTTP Status Code

- Code dictating the status of the request.

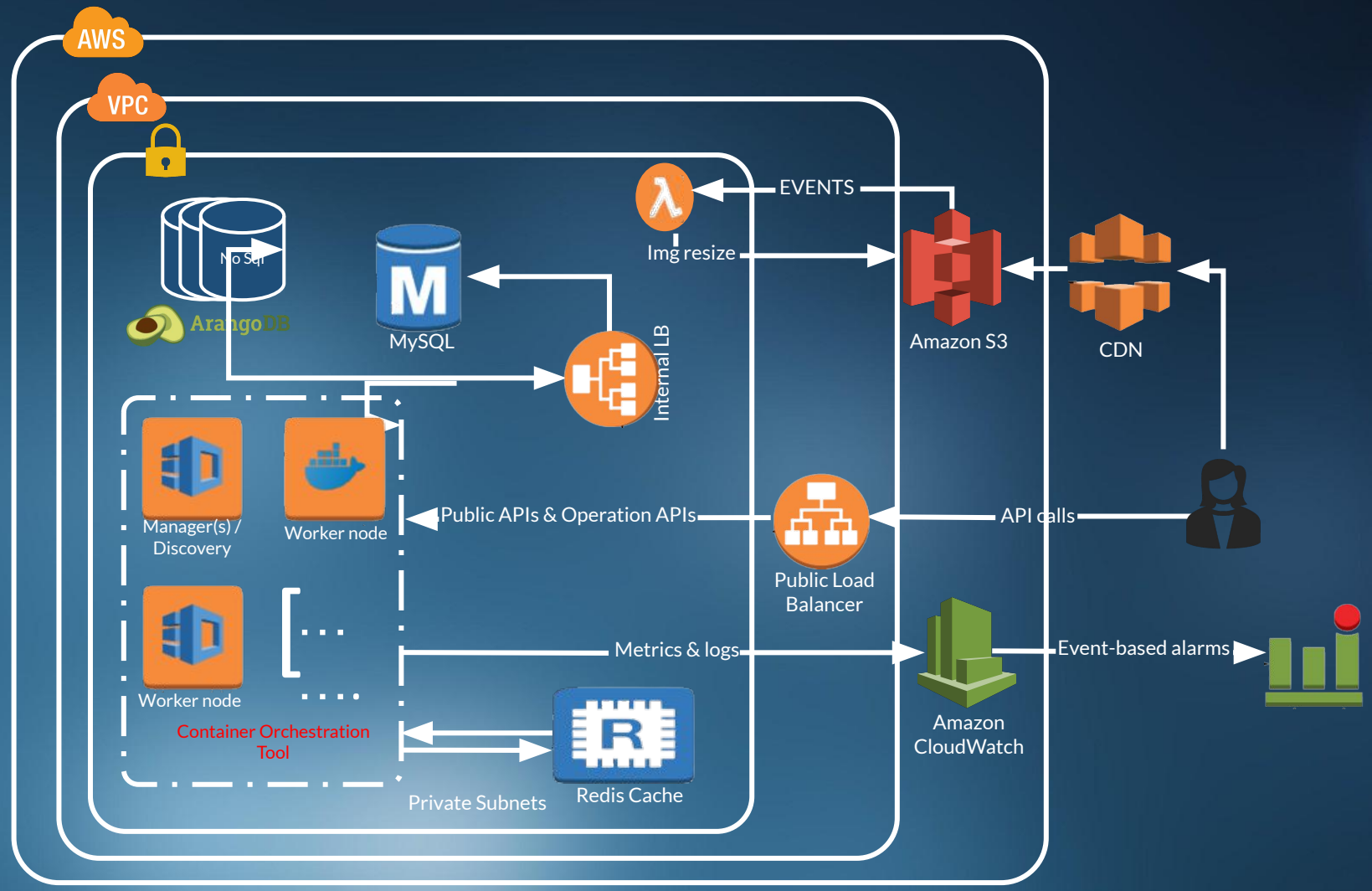
- Status Codes:
  - 2XX: Success
  - 4XX: Logical error
  - 5XX: Server Error

Web Application Layers

- Presentation Layer: Client side application.
- Application (Business Logic) Layer: Server side application.
- Database Layer: Data storage and persistence.

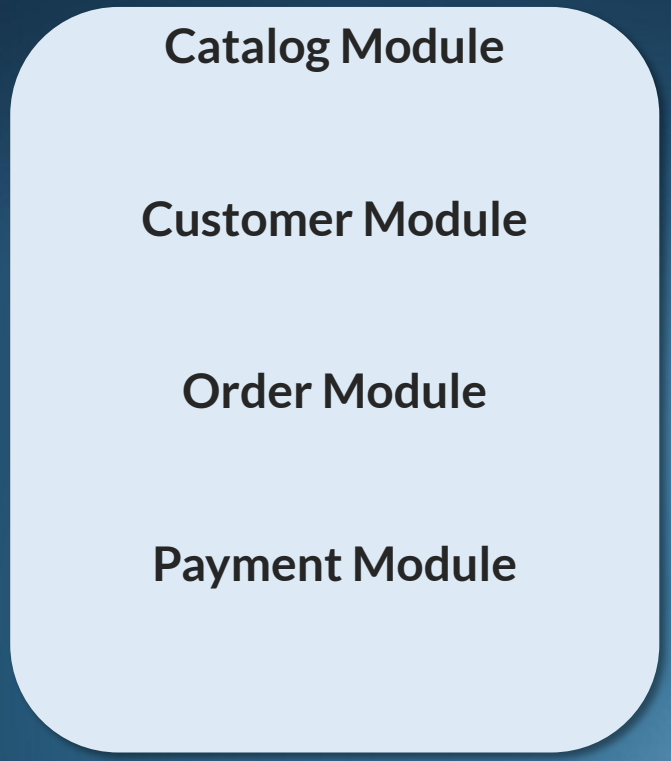
Web Application Components

- Frontend Application.
- Backend Application.
- Database.
- Message Bus.
- Content Delivery Network.
- Workflow Management Platform.

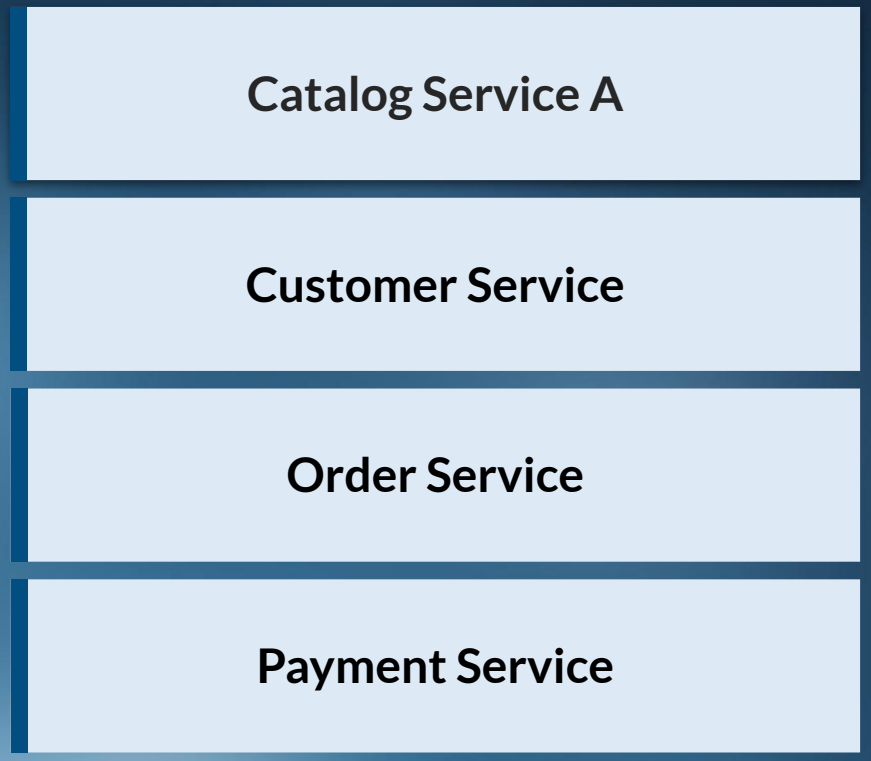


Web Application Architecture

Definition



Monolithic Architecture



Microservices Architecture

Monolithic Applications - Advantages

- Ease of Development.
- Ease of Deployment.
- Ease of testing.

Monolithic Applications - Disadvantages

- Slower Development Lifecycles.
- Code Dependency.
- Performance issues.
- Scalability issues.
- Code Ownership and Team Division Problems.
- Technology Lock-in.
- Technical Debt.
- Infrastructure Costs.

Microservices Applications - Advantages

- Fault Tolerance.
- High Scalability.
- Ease of maintenance.
- Ease of Deployment.
- Technological Freedom.
- Fast Development Lifecycles.

Microservices Applications - Disadvantages

- Complex Infrastructure.
- Need for DevOps.
- Increased Network Calls.
- Complex End to End Testing.

Thank You