Intro to Web Application Architecture

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Architecture

Architecture is an abstract plan that can include design patterns, modules, and their interactions.

In this course we will focus on

Architecture **Implementation or Realization**

which incorporates

Frameworks - *architected* "physical" structures on which you build your application.

specifically we will use

The **Spring Framework** and **React Framework, Enterprise Application** Development environment for building large scale enterprise applications.

Enterprise Application

Large

- Large-scale, multi-tiered, scalable, reliable, and secure network applications. Designed to solve the problems encountered by large enterprises.

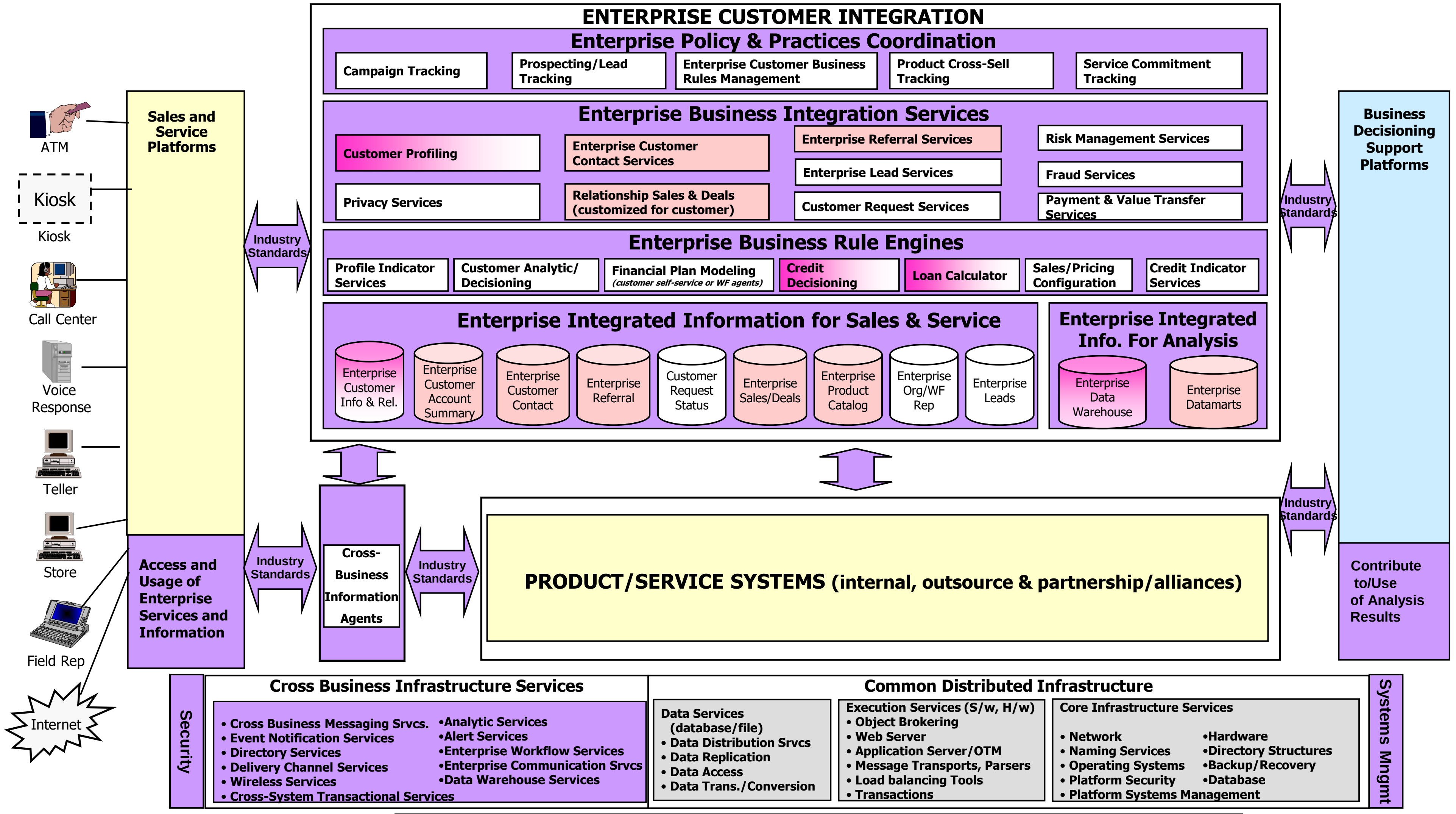
Business Oriented

- Meets specific business requirements; business policies, processes, rules, and entities.

Mission Critical

- Sustain continuous operation, scalable and deployment, provide for maintenance, monitoring, and administration.

Enterprise Architecture


ENTERPRISE CUSTOMER INTEGRATION
Enterprise Policy & Practices Coordination
Campaign Tracking
Prospecting/Lead Tracking
Enterprise Customer Business Rules Management
Product Cross-Sell Tracking
Service Commitment Tracking
Enterprise Business Integration Services
Customer Profiling
Enterprise Customer Contact Services
Enterprise Referral Services
Risk Management Services
Enterprise Lead Services
Fraud Services
Privacy Services
Relationship Sales & Deals (customized for customer)
Customer Request Services
Payment & Value Transfer Services
Enterprise Business Rule Engines
Profile Indicator Services
Customer Analytic/ Decisioning
Financial Plan Modeling (customer self-service or WF agents)
Credit Decisioning
Loan Calculator
Sales/Pricing Configuration
Credit Indicator Services
Enterprise Integrated Information for Sales & Service
Enterprise Customer Info & Rel.
Enterprise Customer Account Summary
Enterprise Customer Contact
Enterprise Referral
Customer Request Status
Enterprise Sales/Deals
Enterprise Product Catalog
Enterprise Org/WF Rep
Enterprise Leads
Enterprise Integrated Info. For Analysis
Enterprise Data Warehouse
Enterprise Datamarts
ATM
Kiosk
Kiosk
Call Center
Voice Response
Teller
Store
Field Rep
Internet
Sales and Service Platforms
Access and Usage of Enterprise Services and Information
Industry Standards
Industry Standards
Cross-Business Information Agents
Industry Standards
PRODUCT/SERVICE SYSTEMS (internal, outsource & partnership/alliances)
Industry Standards
Industry Standards
Business Decisioning Support Platforms
Contribute to/Use of Analysis Results
Security
Cross Business Infrastructure Services
• Cross Business Messaging Srvcs.
• Event Notification Services
• Directory Services
• Delivery Channel Services
• Wireless Services
• Cross-System Transactional Services
•Analytic Services
•Alert Services
•Enterprise Workflow Services
•Enterprise Communication Srvcs
•Data Warehouse Services
Common Distributed Infrastructure
Data Services (database/file)
• Data Distribution Srvcs
• Data Replication
• Data Access
• Data Trans./Conversion
Execution Services (S/w, H/w)
• Object Brokering
• Web Server
• Application Server/OTM
• Message Transports, Parsers
• Load balancing Tools
• Transactions
Core Infrastructure Services
• Network
• Naming Services
• Operating Systems
• Platform Security
• Platform Systems Management
•Hardware
•Directory Structures
•Backup/Recovery
•Database
Systems Mngmt

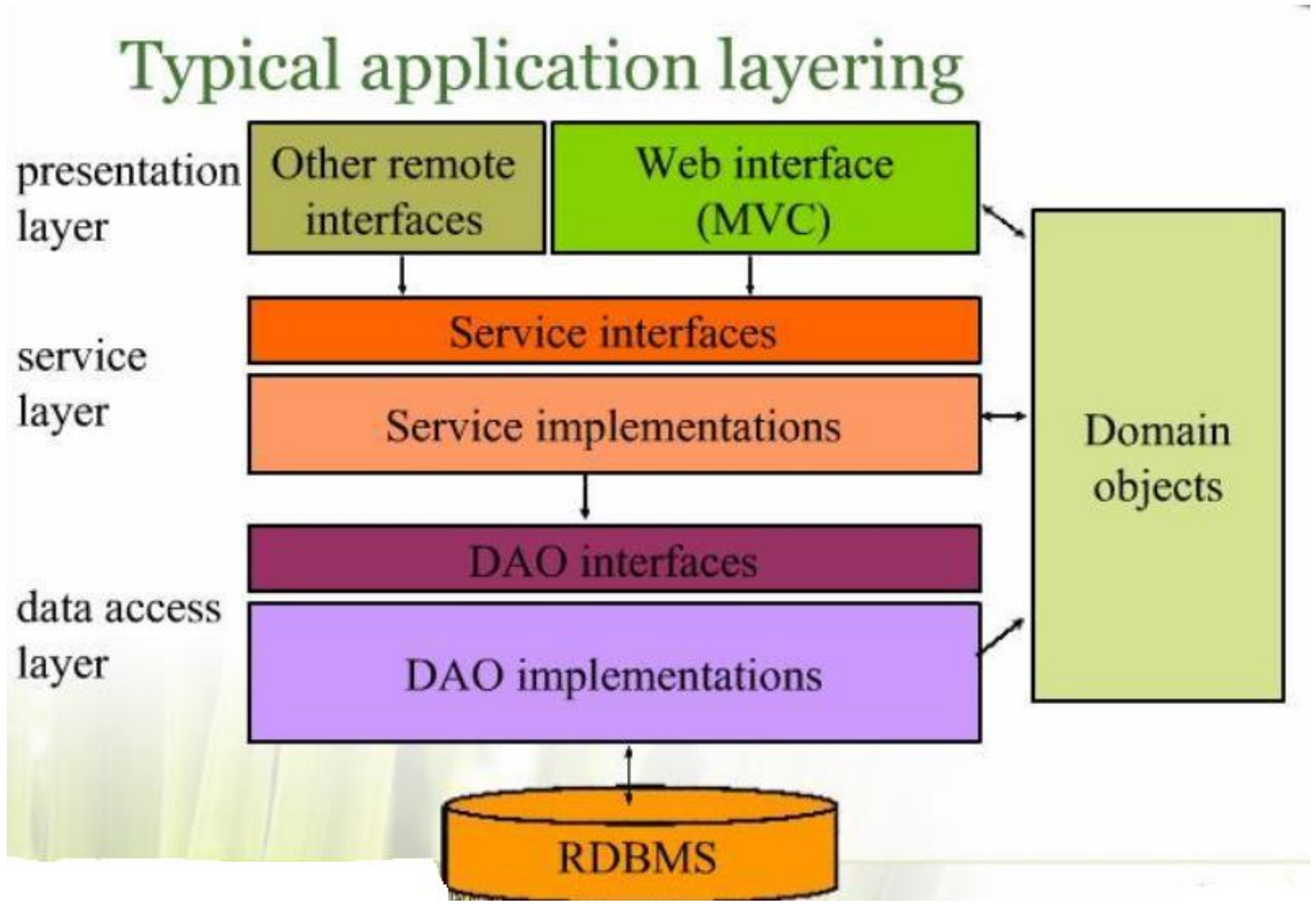
Capability Stage:

⬜	**Direction – No Progress**
🟧	**Initial:** limited strategic functionality; production pilots or single LOB/channel use
🟪	**Expanded:** increased strategic functionality; limited Enterprise Information populated and used by a few LOBs/channels
🟪	**Advanced:** full strategic functionality; Enterprise Information populated by many LOBs; wide production use

Key: 🟪 **Enterprise Shared, must contribute & use** 🟨 **Business Line options with integration requirements** ⬜ **Enterprise Standard - could be more than one product**

N-Tier Software Architecture

- Separation of Concerns
- Domain Model
  - Central, organizing component
- Design to Interfaces



MVC & the N-tier architecture

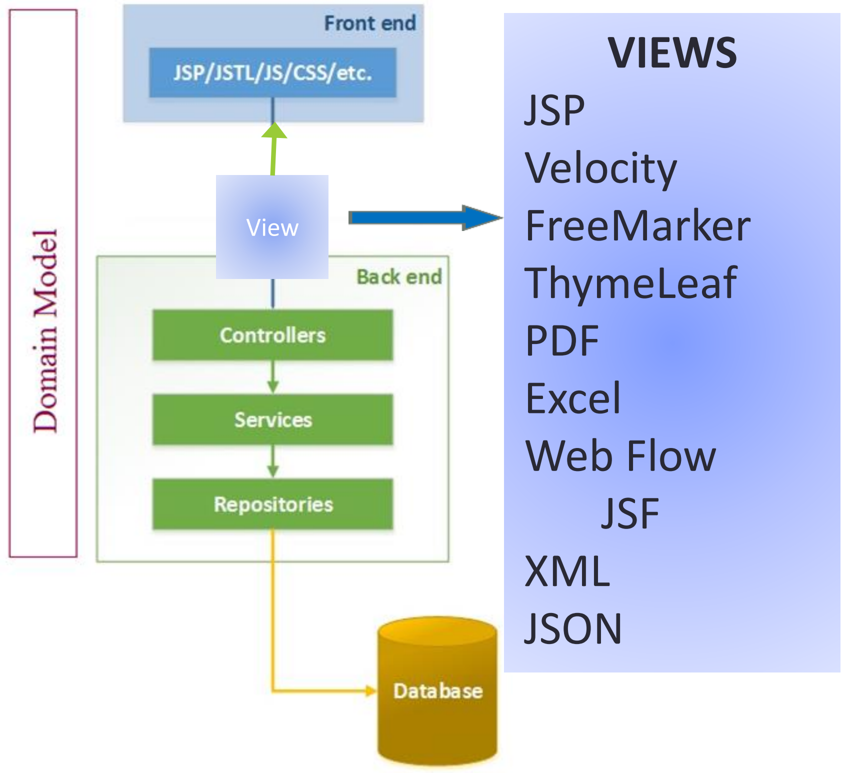
MVC is the primary “pattern” associated with the presentation tier

It is commonly identified as page rendering on the server

The growth of the **Consumer Web[2.0]** has emphasized alternative solutions, specifically:

- SPA & **microservices**

“Classic” Spring MVC



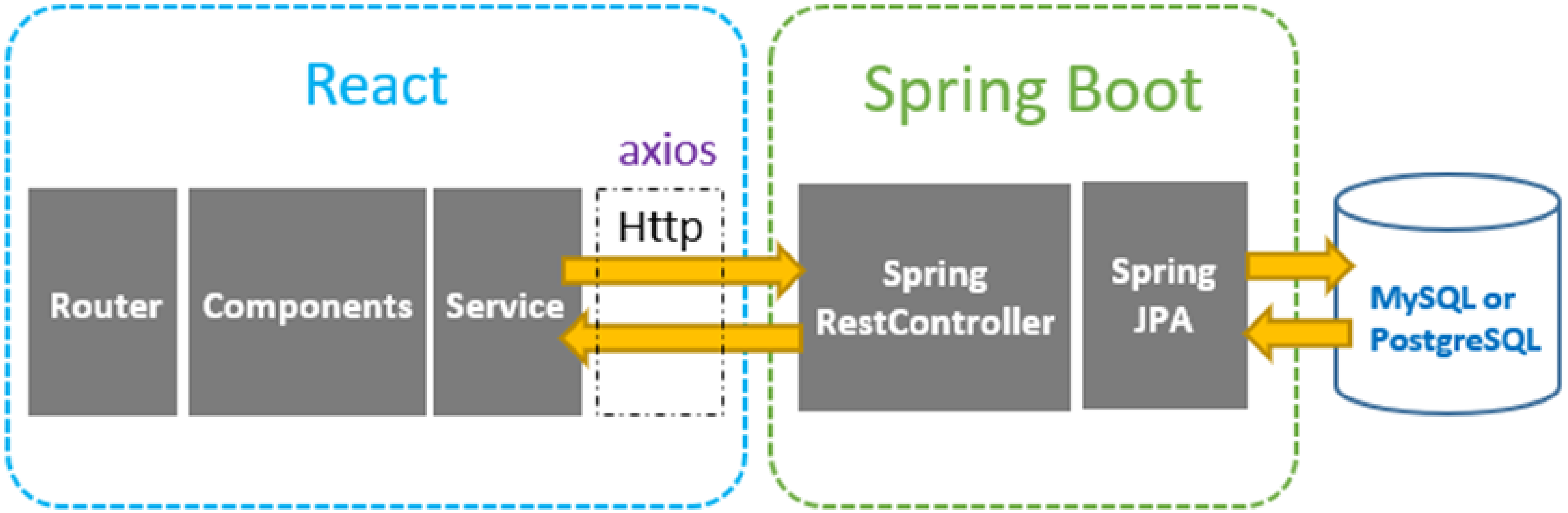
SPA & Microservices Definitions

A SPA is a web application or web site that interacts with the user by dynamically rewriting the current page rather than loading entire new pages from a server. This approach avoids interruption of the user experience between successive pages, making the application behave more like a desktop application.

Microservices is a variant of the service-oriented architecture (SOA) architectural style that structures an application as a collection of loosely coupled services. In a microservices architecture, services should be fine-grained and the protocols should be lightweight.

- single business goal
- simple, well-defined communication interface
- runs a unique process
- manages[usually] its **own database.**

What are we going to learn in this course?


React
axios
Router
Components
Service
Http
Spring Boot
Spring RestController
Spring JPA
MySQL or PostgreSQL