

CS3004D Software Engineering

Service Oriented Architecture
Web Services

Part of Online Learning

Service Oriented Architecture (SOA)

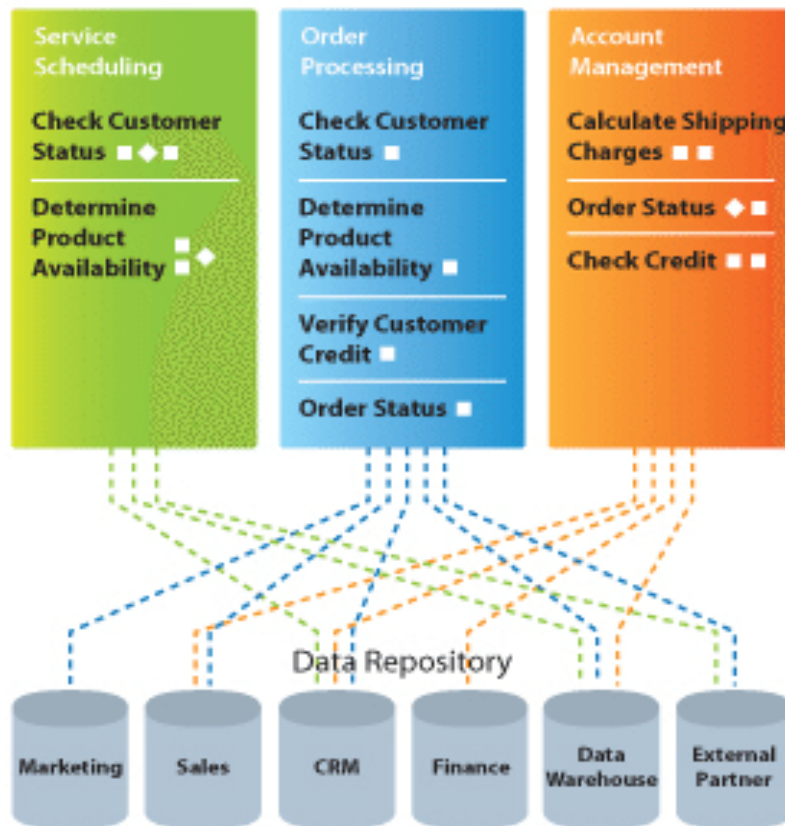
- Support service orientation
- Services are provided to the other components by application components, through a communication protocol over a network.
- A service is
 - a repeatable business activity with a specified outcome
 - self-contained
 - a black box for its consumers
 - may be composed of other services

Why Service-Oriented Architecture Is Important

Before SOA

Closed - Monolithic - Brittle

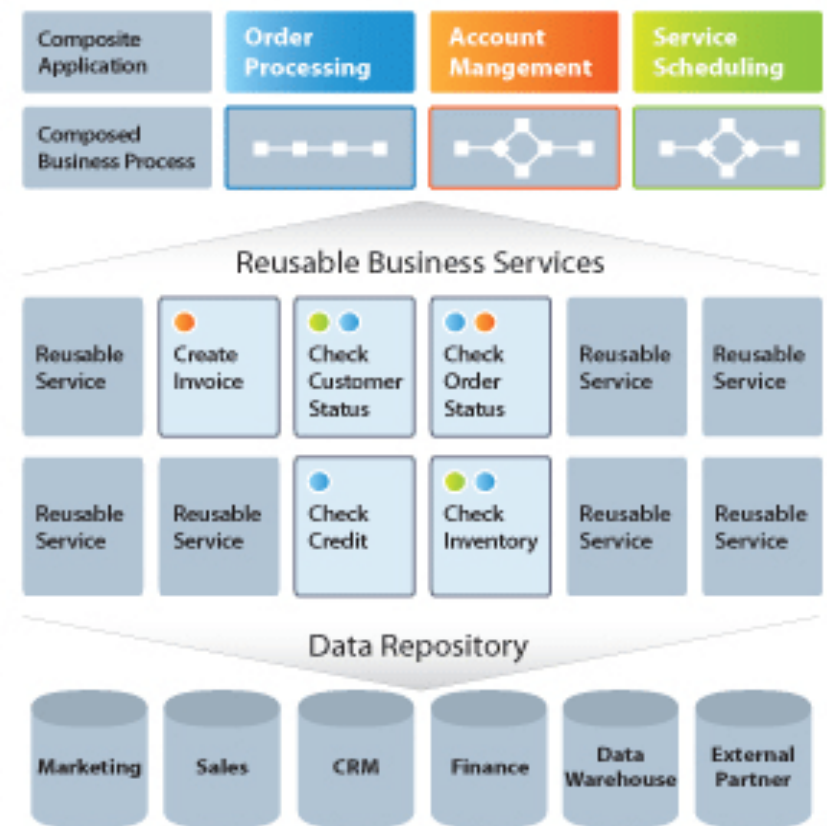
Application Dependent Business Functions



After SOA

Shared services - Collaborative - Interoperable - Integrated

Composite Applications



SOA

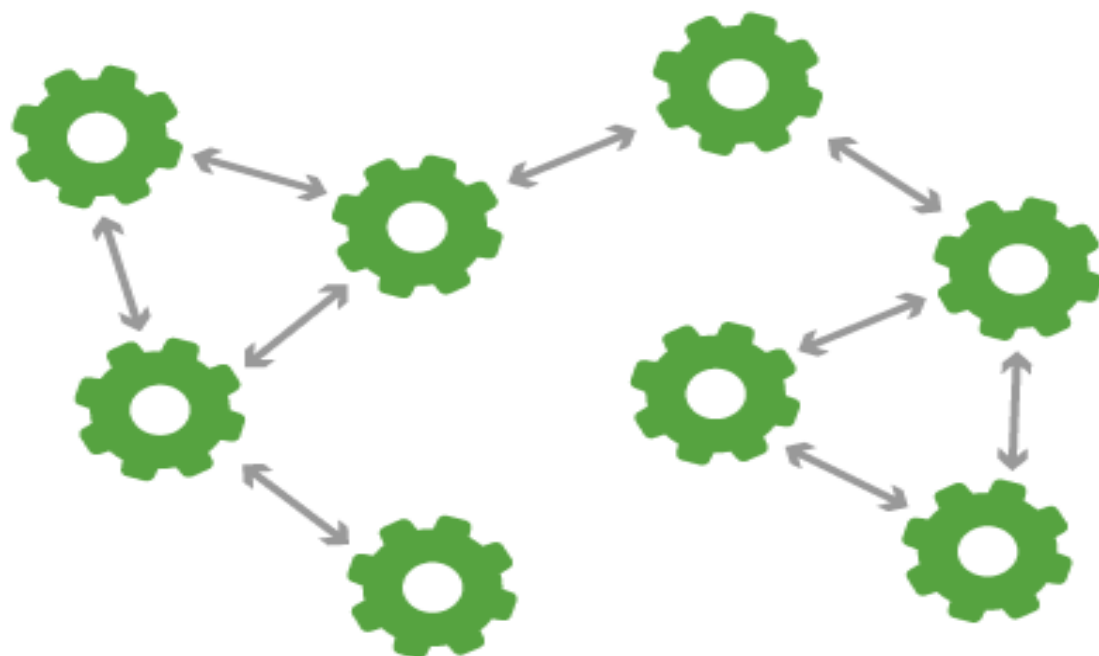
- There is loose coupling between services.
- It separates functions into distinct services, which developers make accessible over a network in order to allow users to combine and reuse them in the production of applications.
- Entities
 - Service provider
 - Service broker, service registry or service repository
 - Service requester/consumer

Benefits

- Creates reusable code
- Promotes interaction
- Allows for scalability
- Language or platform independence

Micro Services

- Microservice architecture – a variant of the service-oriented architecture (SOA) structural style
- In a microservices architecture, services are fine-grained and the protocols are lightweight.
- A change to a small part of the application only requires rebuilding and redeploying only one or a small number of services



Microservices are a number of independent application services delivering one single functionality in a loosely connected and self-contained fashion, communicating through light-weight messaging protocols such as HTTP, REST or Thrift API.

Differences



With monolithic, tightly coupled applications, all changes must be pushed at once, making continuous deployment impossible.



Traditional SOA allows you to make changes to individual pieces. But each piece must be carefully altered to fit into the overall design.



With a microservices architecture, developers create, maintain and improve new services independently, linking info through a shared data API.

- [Microservices \(martinfowler.com\)](http://martinfowler.com)

Next...

- Web services