# Lightweight JavaEE development with Spring

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# Synyx

- Synyx GmbH & Co. KG
  - Client / Server systems
  - Rich / Fat clients
  - Java based CM (OpenCms)
  - Minos business platform
  - JavaME
- Customers
  - Public administrations
  - Automotive
  - Financial industry

- Oliver Gierke
  - Java (EE) developer
  - Client / Server
  - Architecture
  - Agile methods
  - Spring, AOP


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# Overview

- Motivation / background
- Enabling technologies
- Modules
- News in 2.0 / 2.1
- Spring ecosystem
- Spring and EJB? Spring VS. EJB
- Mythbuster
- Summary


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# Motivation / Background

- Starting position
  - Experiences with EJB2 Specification
    - JavaEE component model
    - Focus on distributing objects
      - „The first rule of distributing objects is don‘t distribute objects“ [1]
    - Complicated programming model
      - 2 Interfaces per component + implementation
    - A lot of technical code -> technology dependency
    - No (unit)testability
    - Depending on the deployment environment (Java EE)


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# What do we want?

- Component model (lifecycle)
- Declarative infrastructure services
  - Security
  - Transactions
  - Integration
- Simple
- Powerful
- Technology- and platform independent (POJOs)


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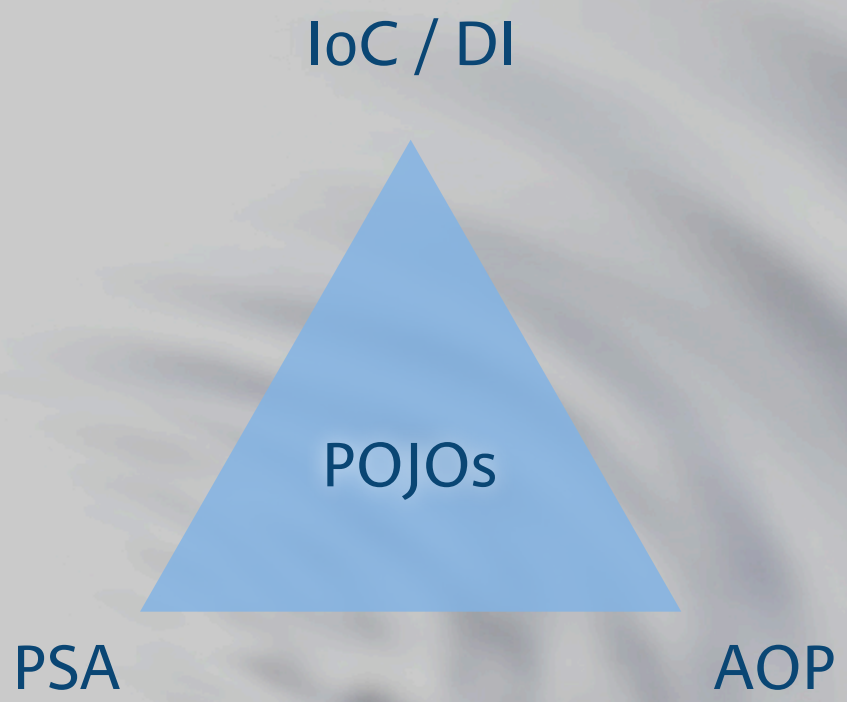
# What makes a Spring app?




- POJO based programming model
- Dependency Injection
  - Inversion of Control
- Aspect Orientation
- Portable Service Abstraction



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# Spring modules / parts

- Container
- Data Access
- ORM
- Integration
- Web
- Testing


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# Container

- Dependency Injection
- Wiring objects
- Component lifecycle
- Configuration (XML, Annotations, JavaConfig)
- Extension points
- Resource abstraction
- Data binding, PropertyEditor


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# Data access

- JDBC Abstraction
- Template pattern
- Exception transformation
  - Checked -> unchecked
  - Implementation independent exception hierarchy


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# ORM / Transactions

- Object Relational Mapping
  - Integration of Hibernate, TopLink, JPA
  - Template pattern
- Transaction handling
  - PlatformTransactionManager
  - Strategy pattern
  - JDBC, JPA, Hibernate, JTA, JDO
  - Programmatic and declarative configuration
    - Benefits of DI / Strategy pattern driven design


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# Integration

- Remoting
  - WebServices
  - RMI, Hessian, Burlap, RPC
- EJB
  - 2.X / 3 consuming and providing
- JMS
- JMX
- JCA CCI


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# Web

- Spring MVC
  - Web framework – heavily DI driven (strategy pattern)
- Spring WebFlow
  - Let‘s you describe flows in XML (e.g. checkout flow)

- Integration of 3rd party frameworks (Struts, JSF)
- Portlet (JSR-168)


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# Testing

- No support for unit tests required as you can easily inject mocks (EasyMock e.g.)
- Abstract classes to support integration tests
  - e.g. `AbstractTransactionalSpringContextTest`
    - Opens a transaction for every test method and rolls it back afterwards


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# 2.0 News

- XML Namespaces -> easier configuration
- JPA
- Asynchronous JMS
- Dynamic language support
- Support for @Aspect AspectJ annotations
- Java 5 support


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# 2.5 News

- Java 6 & JavaEE 5 (EJB 3, JTA 1.1, Java Mail 1.4)
- No JDK 1.3 support anymore
- Annotation driven DI
- Classpath scanner
- JCA 1.5
- Enhanced JPA support
- Namespaces for JPA and web (maybe in 2.2)


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# Spring eco system

- Spring Security (Acegi)
- Spring WebServices
- Spring WebFlow
- Pitchfork Project (not Project Pitchfork ;)
- Spring IDE
- Spring OSGi
- Spring Extensions (Modules)


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# Spring and EJB / Spring VS EJB?

- Where is EJB now?
  - Released in summer 2006
  - Annotation driven DI (simple, powerful but invasive)
  - „AOP“ through interceptors
  - True inheritance in entity beans (JPA)
  - Flaws in EntityManager API


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# Spring and EJB / Spring VS EJB?

- EJB3 is actually a subset of Spring
  - No real AOP means (Interceptors)
  - Still binds implementation to technology (Annotations)

- Spring allows EJB integration (FactoryBean) and export of beans as EJB (Exporter)
- Spring is integrative platform rather than a plain component model


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# Mythbuster

- AOP is a tiny magic toy
  - Spring reference projects
    - French online tax system
    - Voca (Largest European system for financial transactions) -> 5 Bio. transactions per year
- XML configuration hell
  - Modularizable, different ways of configuration

- http://www.oreillynet.com/onjava/blog/2006/08/ten_common_misconceptions_abou.html


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# Spring affects programming

- Loose coupling between components
- Cleaner architecture
- Let‘s you think about dependencies
- Separation of concerns


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# Summary

- Spring allows real „Separation of concerns“
- More modularized system (AOP)
- Less technical code
  - at least separated from business code
- Technology and (as far as possible) Spring independent
- Step by step integration possible (legacy systems)
- Scales up AND down


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# What is Spring?

- Programming model
- Integrative platform
- Framework


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# Demo Application

- OrderService (place and list orders)
- 3 different clients (web, swing and bot)
- Test driven / contract
- Distributed development


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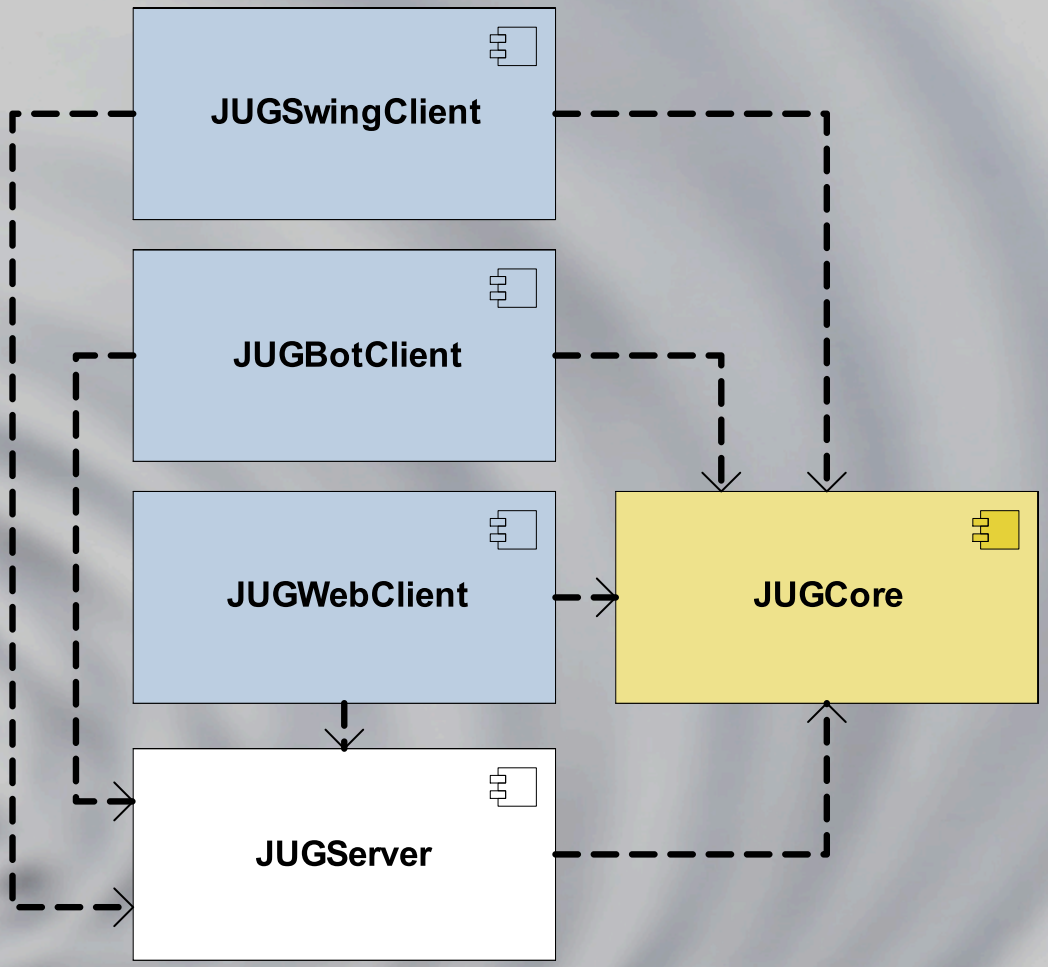
# Architecture



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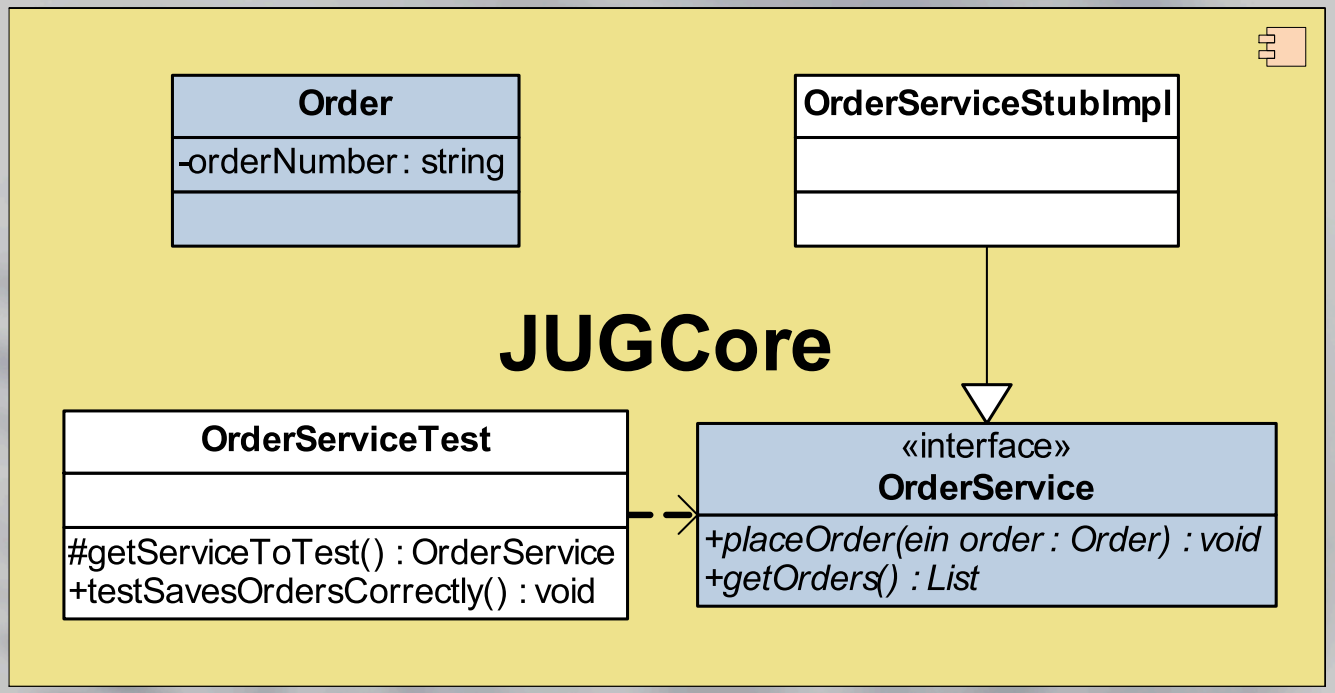
# Core Detail



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# Where do we go from here?

- Upcoming presentations
  - Container
  - Data Access, Transactions, ORM
  - Web
  - Integration (Remoting, WebServices, JMS, JMX)

- www.springframework.org
- www.springhub.com
- groups.google.com/group/sugg


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# Feel free to ask!

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# Sources

- Martin Fowler – Dependency Injection
  - http://www.martinfowler.com/articles/injection.html
- Eberhard Wolff – Spring 2 – Framework für die Java Entwicklung
  - Book @ Amazon
  - http://www.spring-buch.de/
- Rod Johnson - Expert One-on-one J2EE Design and Development
  - Book @ Amazon
- Rod Johnson, Jürgen Höller - J2EE Development without EJB
  - Book @ Amazon
- Robert C. Martin – Agile Software Development
  - Book @ Amazon


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# Development Environment

- Eclipse 3.3 (Europa) – www.eclipse.org
- SpringIDE 2.0.1 (Dev) – www.springide.org
- M2Eclipse – m2eclipse.codehaus.org
- AspectJ Development Tools – 1.5.0


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