

Spring and Tomcat The Perfect Match

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SpringSource Inc.

Who we are



- Ramnivas Laddad
 - Spring framework committer
 - Author of AspectJ in Action
 - Speaker at many professional conferences
 - JavaOne, JavaPolis, No Fluff Just Stuff, Spring Experience, SpringOne, Software Development, EclipseCon, O'Reilly etc.
- Filip Hanik
 - SpringSource Technical Team Member
 - ASF Member
 - Apache Tomcat committer

- Corporate Overview
- Why Spring?
 - Overview
 - The Spring Portfolio
- Why Tomcat?
 - Overview
 - Adoption in the market
- The Spring/Tomcat Combination
 - The viable JEE alternative

SpringSource Company Overview



- Rod Johnson CEO, Founder of Spring
- Spring: The leading Enterprise Java Application Platform
- Lead and sustain the Spring Portfolio
 - Manage Spring roadmap & release schedules
 - Manage Commit-rights
- Silicon Valley-based
- Venture backed: Benchmark Capital
- Operations in UK, Australia, Germany and Netherlands

SPRINGSOURCE ACQUIRES COVALENT TECHNOLOGIES

***Acquisition Brings Together Two Open
Source Market Leaders to
Enable a Simpler and More Powerful
Enterprise Application
Infrastructure***

Who's using Spring?



- Has become ubiquitous in the world of Java
 - It's known & trusted. It's used It adds value
 - Well established in the enterprise space:
 - Banking / Financials, Telecom, Insurance, Government, Airline industry, Defence
 - The middle tier companies
 - ...all the way down to mom & pop development shops
 - Over 4 million downloads
- Analyst conclusion (Forrester – *Health of Open Source*)
 - *A majority of [enterprise Java] users interviewed by Forrester use Spring*

The Ubiquity of Spring in Banking



- 9 out of 10 of the world's most profitable banks are SpringSource customers.



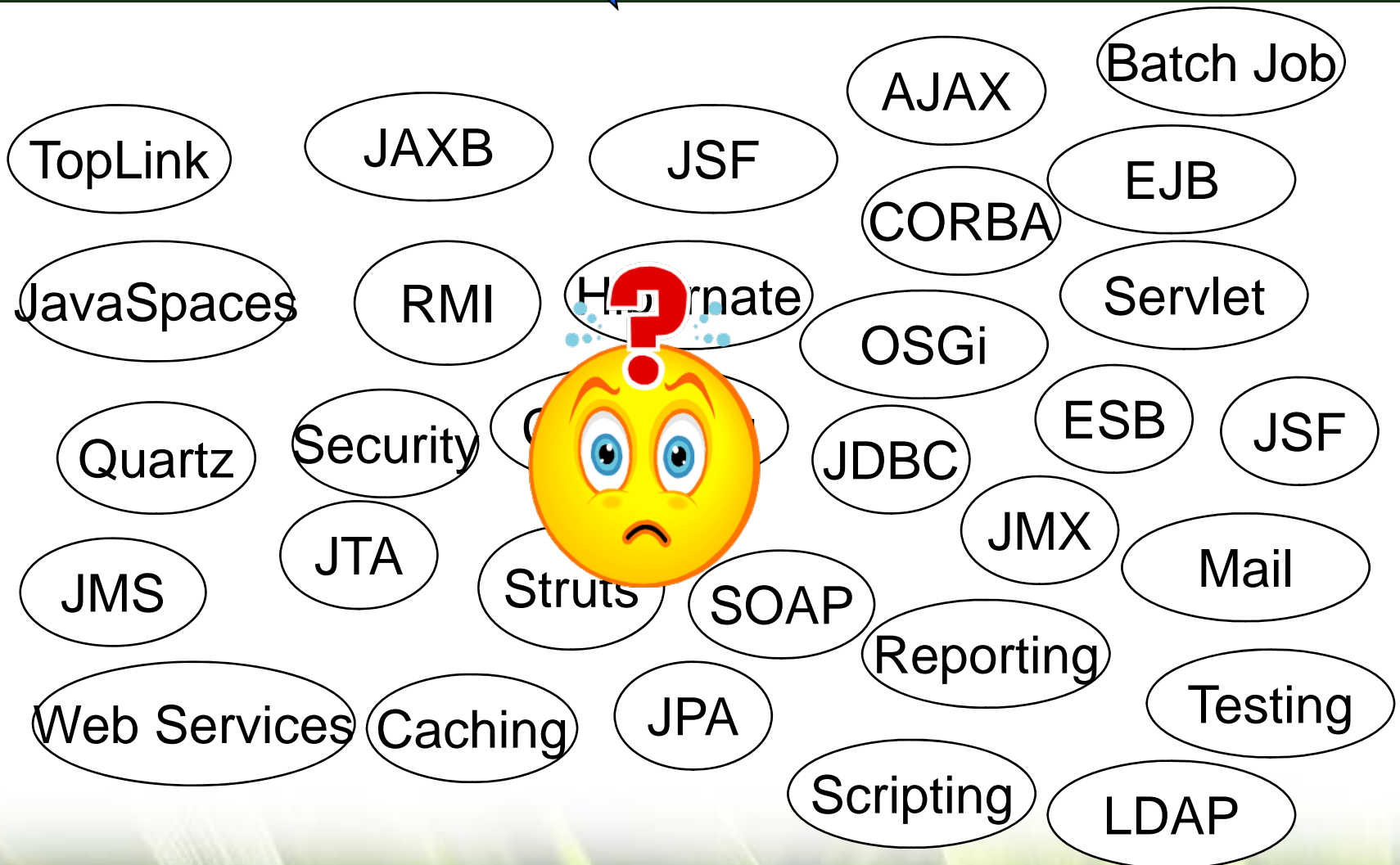
Spring Overview

Why Spring?

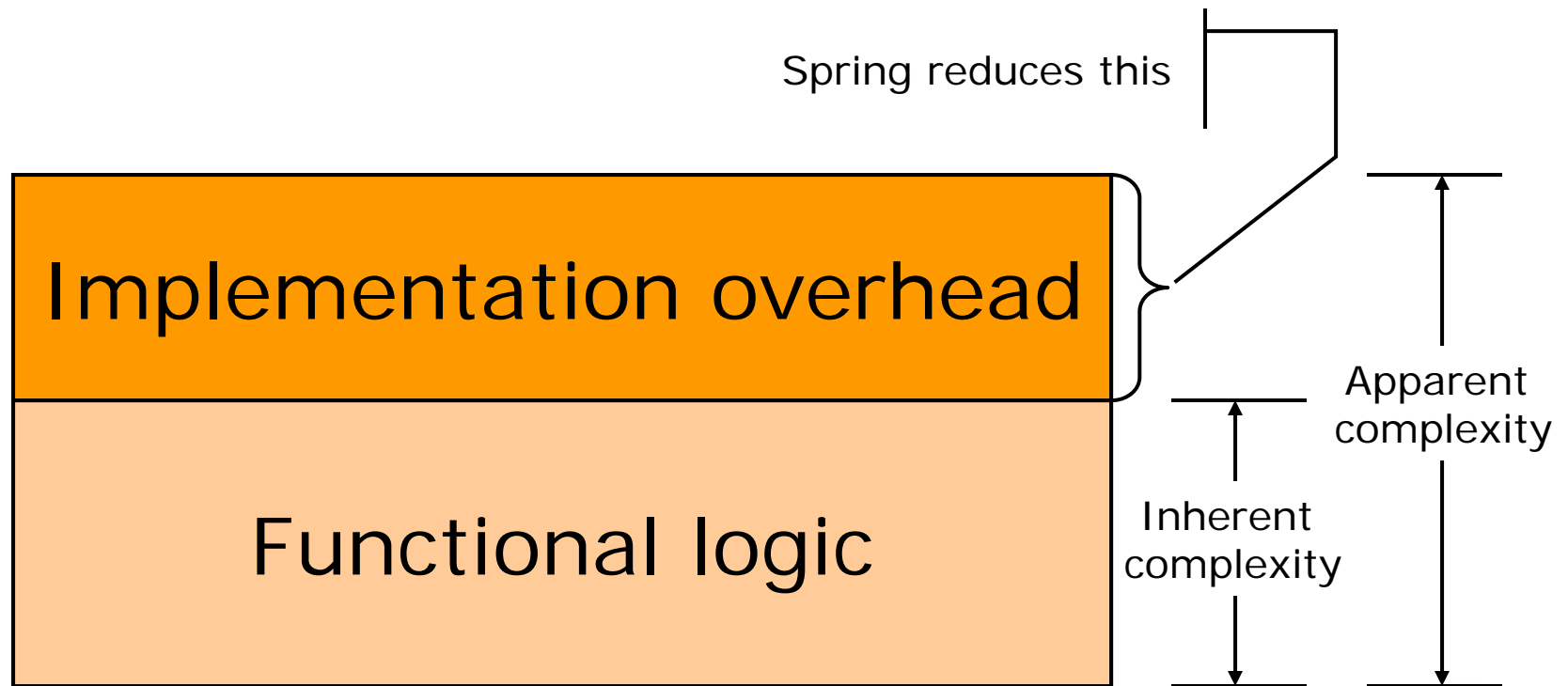
State of Software Development

- Complexity is increasing at rapid pace
 - More functionality
 - Complex integration
 - Higher stake in quality
 - Confusing technology landscape
- Coping with complexity a challenge
 - Increasing development costs
 - Time to market at risk



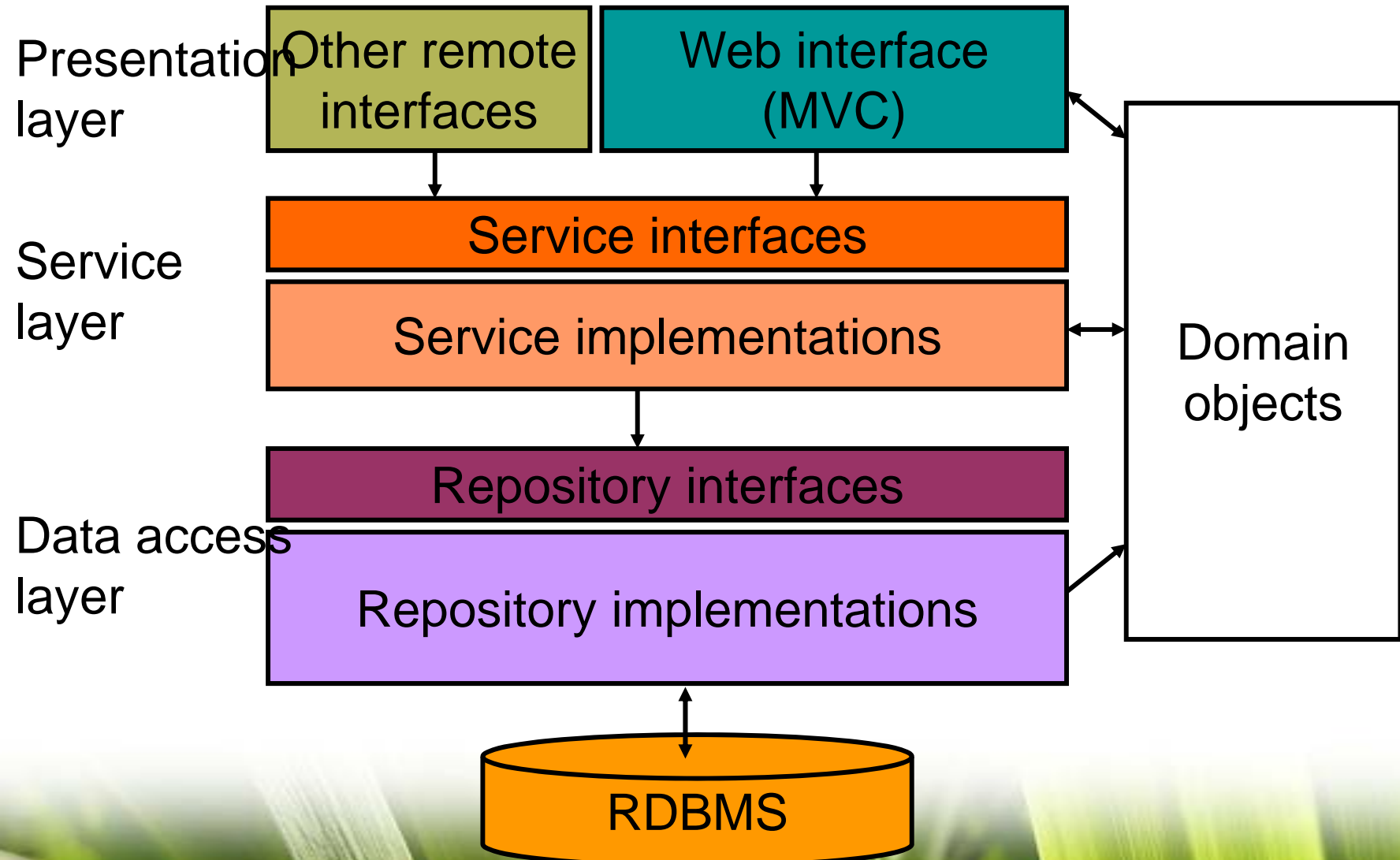


Inherent vs. Apparent Complexity

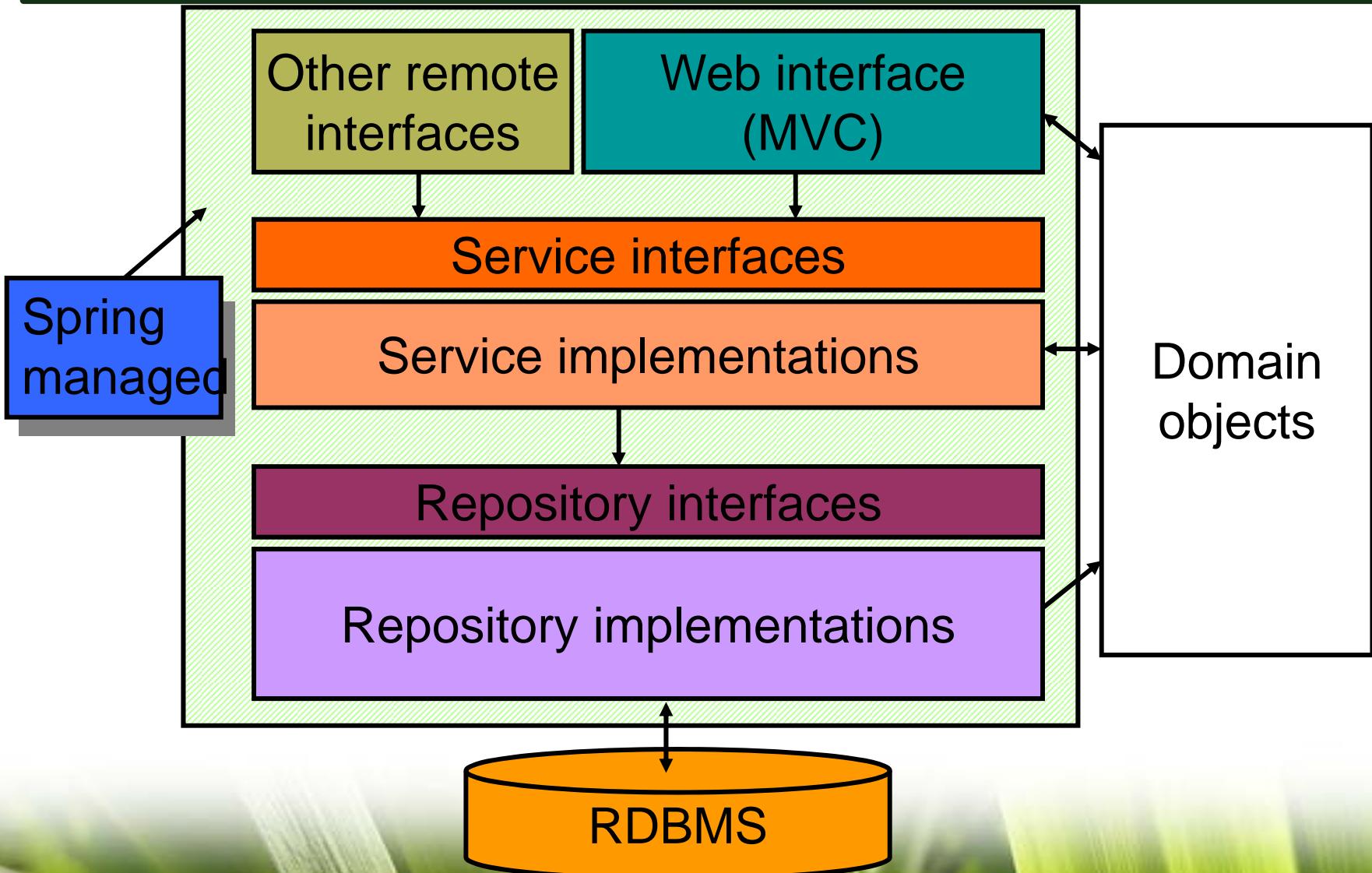


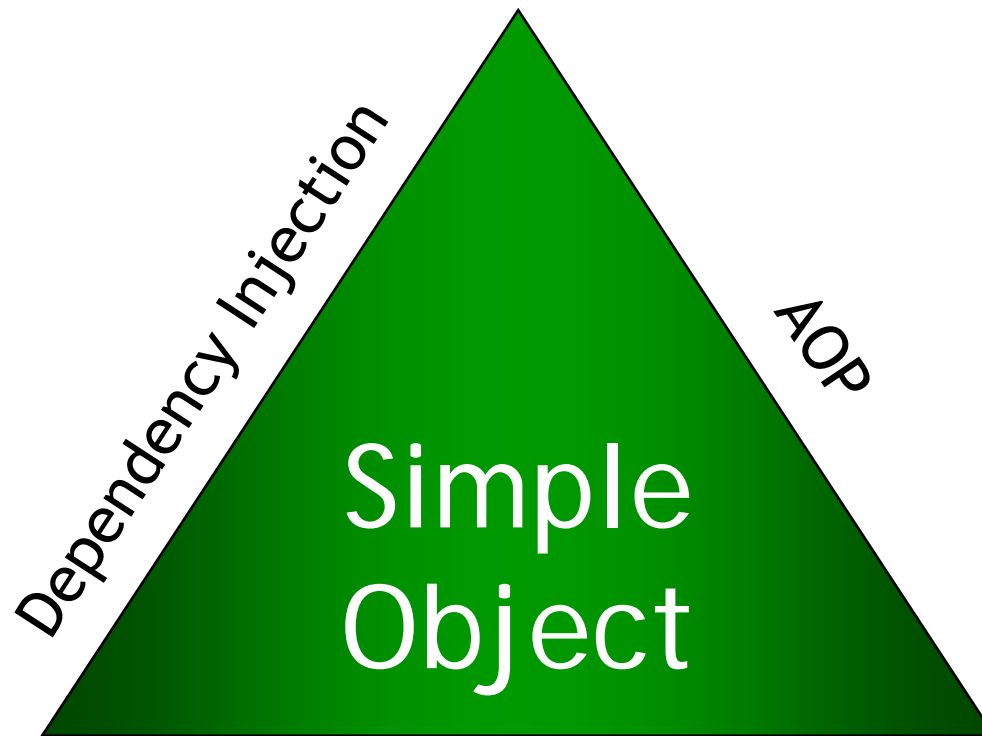
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- Decoupling of volatile infrastructure from stable business logic
 - All based on Plain Old Java Object
 - Separation of concerns

Typical application layering



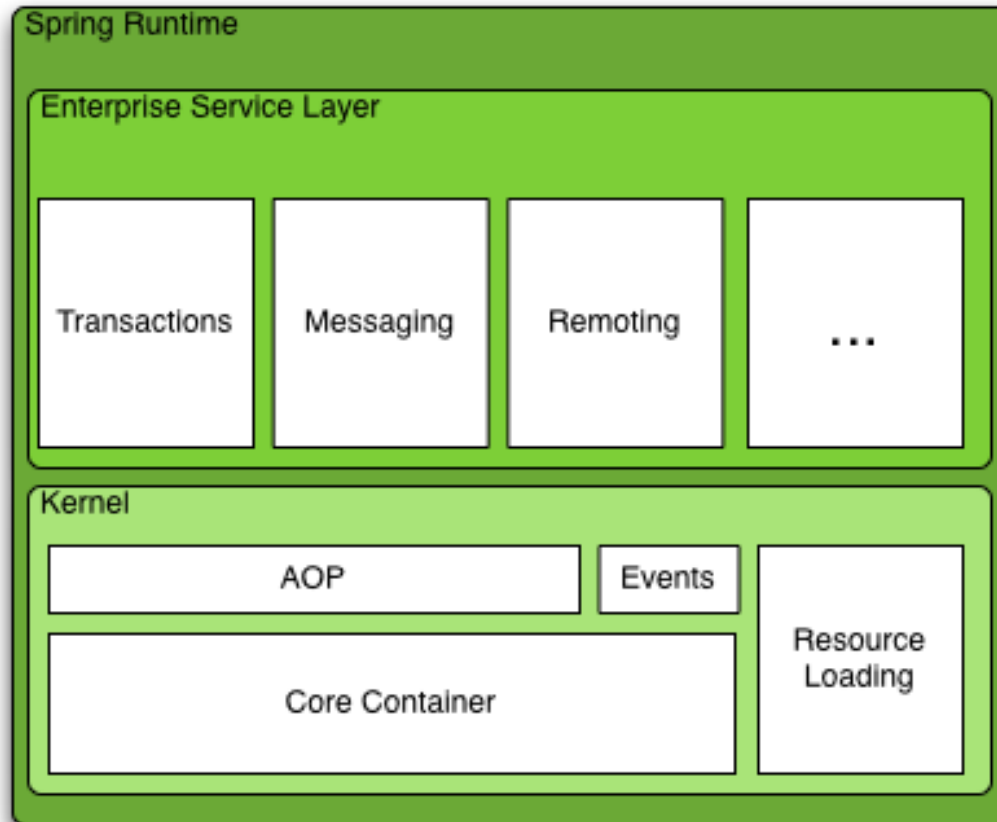
Typical application layering



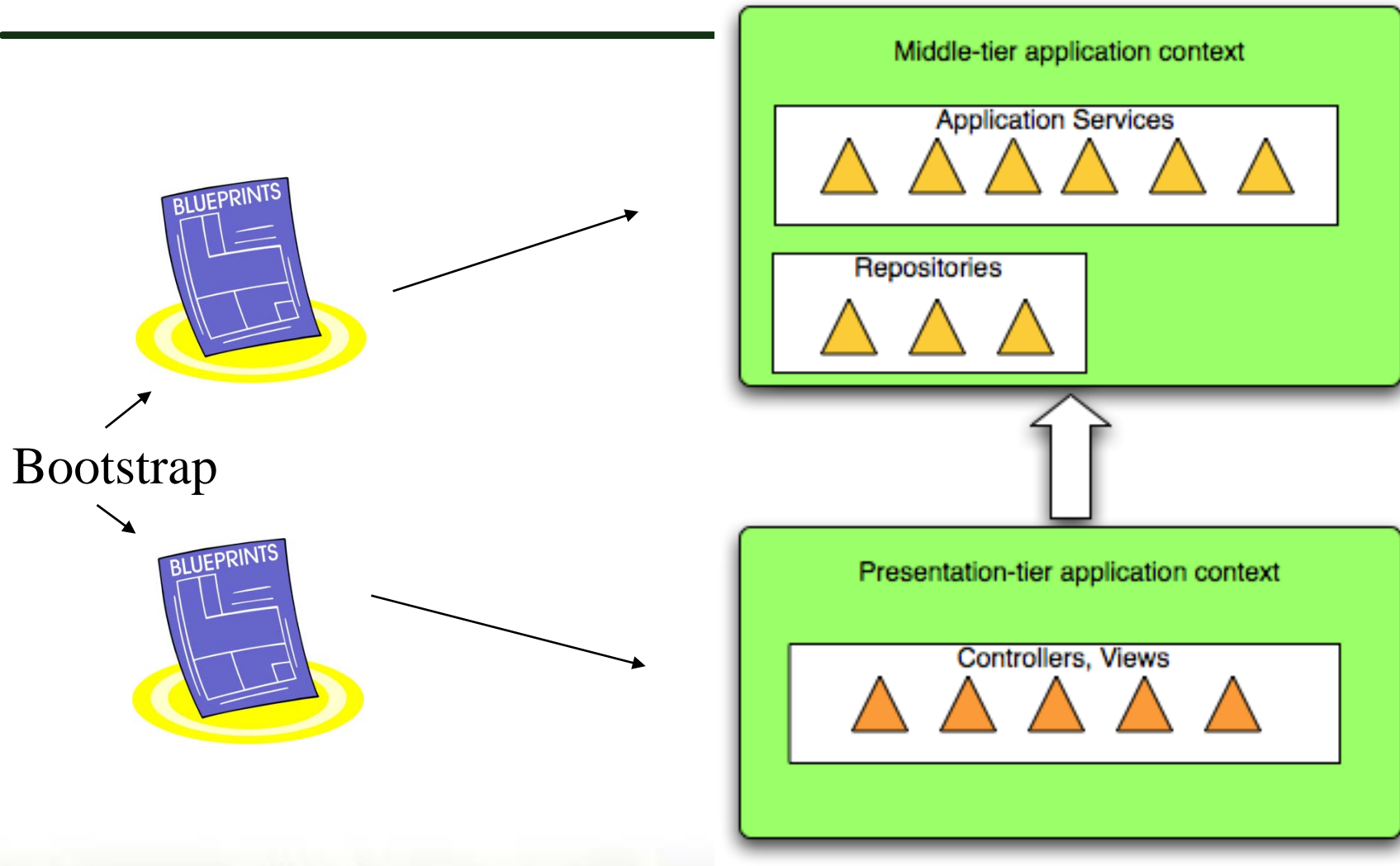


Enterprise Service Abstractions

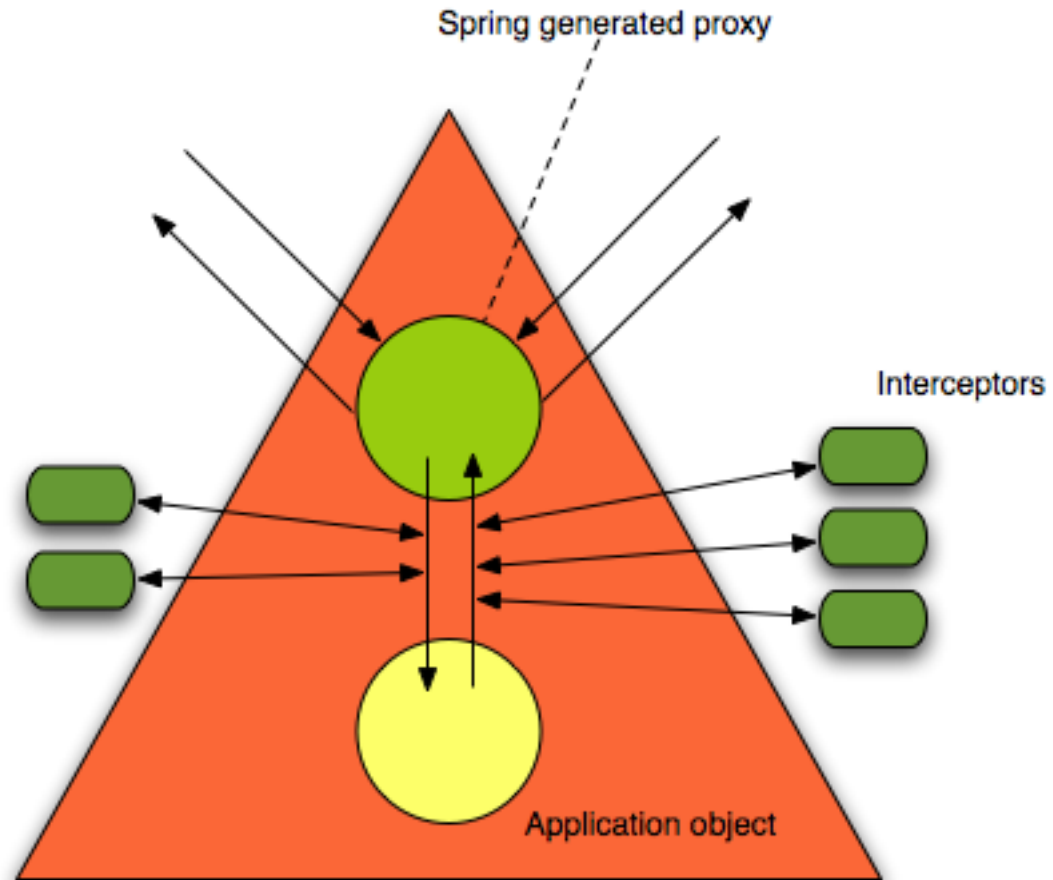
Spring Overview



Dependency Injection

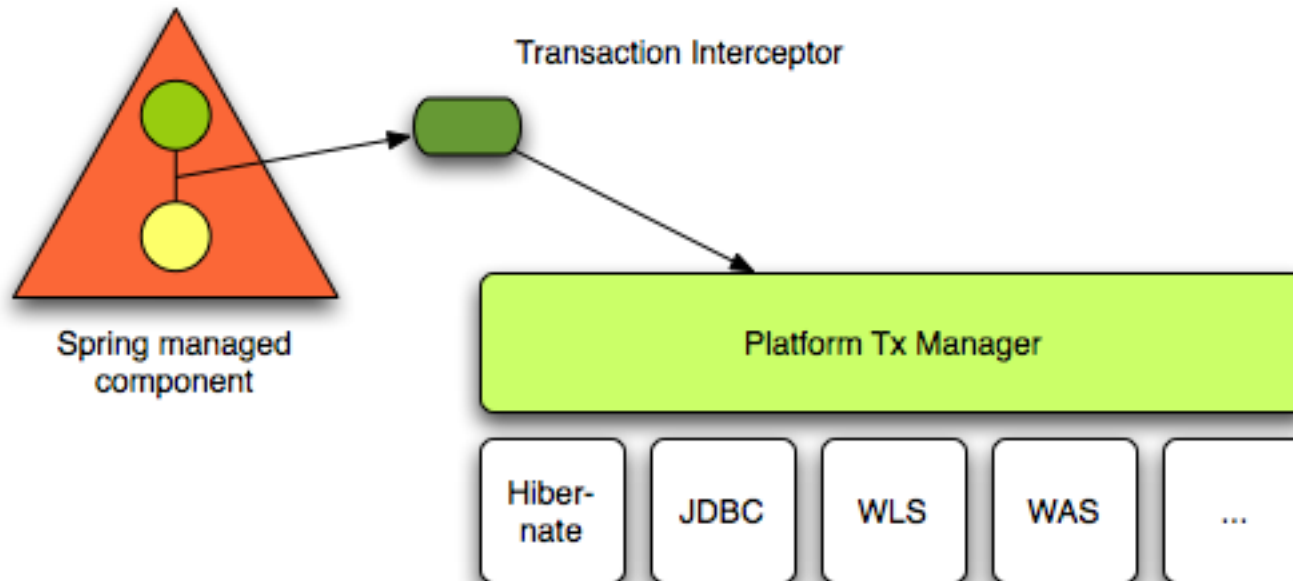


Aspect-Oriented Programming



Spring managed component

Enterprise Service Abstraction



- [Spring Framework](#)
 - [AspectJ](#)
 - [Spring Security \(formerly Acegi\)](#)
 - [Spring Web Flow](#)
 - [Spring Web Services](#)
 - [Spring Dynamic Modules for the OSGi Service Platform](#)
 - [Spring Modules](#)
 - [Spring IDE](#)
 - [Spring .NET](#)
 - [Spring LDAP](#)
 - [Spring Rich Client](#)
 - [Spring Batch](#)
- and growing...

Tomcat Overview

Why Tomcat?

Tomcat – The introduction

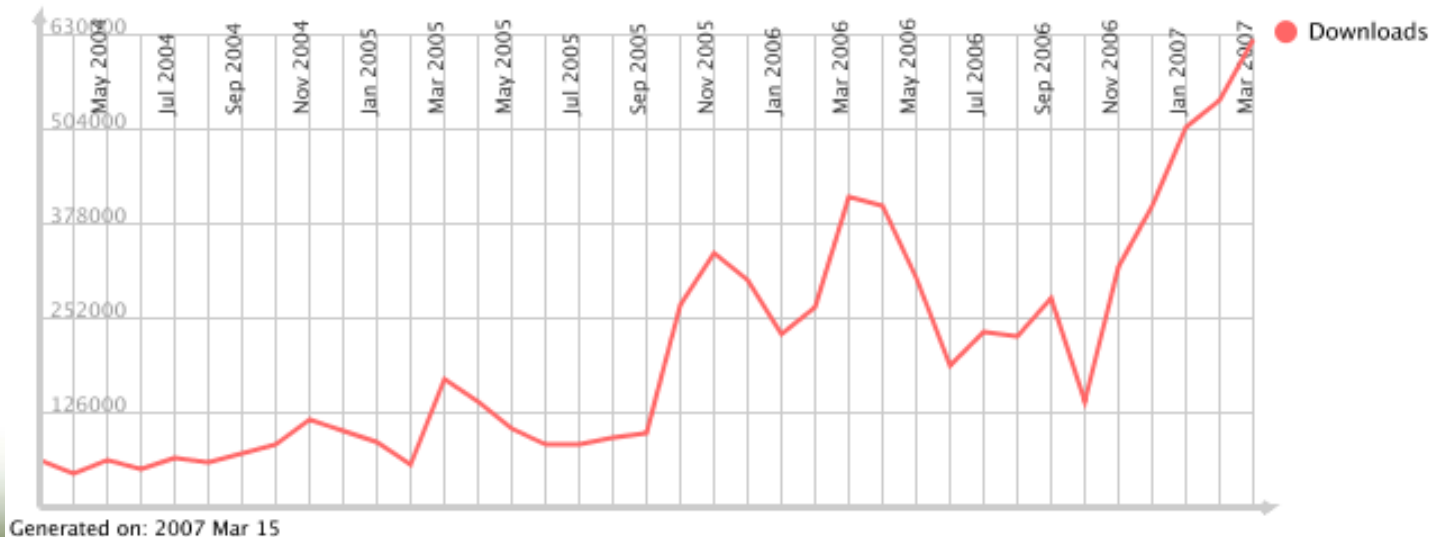


- tomcat.apache.org
 - Top level ASF project
 - Small core developer group
 - Managed by the Tomcat PMC
- Started in 1999
 - RI implementation to the Servlet/JSP spec
- Current
 - 6.0.16 Latest stable version

Tomcat – The introduction



- Actively developed
 - In average 1 release/month
 - 10+ active committers
 - 600k downloads/month (not counting mirrors)



Tomcat – Where are we at?

Servlet/ JSP Spec		Tomcat version	JDK Version
2.5	2.1	6.0.x	JDK 1.5+
2.4	2.0	5.0.x, 5.5.x	JDK 1.4+
2.3	1.2	4.1.x	JDK 1.3+
2.2	1.1	3.3.x	JDK 1.2+

Why Tomcat?



- Lightweight
- Flexible and configurable
- Robust and scalable
- Adopted in the enterprise
- Integrates easily with Spring

- Core download – 6MB!
- Installs on any platform without installer
- You don't need 3 CD's to distribute your environment
- Setup an environment, rsync it to a cluster
- All you need is a JVM

- Supports many configuration options
 - Full HTTP(S) server
 - Virtual Host functionality
 - Access logging
 - Multiple deployment methods
 - Any part of Tomcat can be swapped out with a proprietary implementation

-
- Code base is mature and well tested
 - Enhancements are carefully considered
 - Maintain production level quality
 - Scalable connectors
 - 3 diff implementations, BIO,NIO,APR
 - C10k achieved and surpassed

- Research show that 64% of enterprises use Tomcat in some capacity
 - Market leader in application server market
- Wide adoption
 - Fortune 1000
 - Developers preference
- Current market trend
 - JEE containers being replaced by lightweight containers

- Runs on any platform that has a JVM
- Integration happens at
 - Container Level
 - Application Level
 - Module level
- 93% of Spring users running on Tomcat
 - The Spring Experience survey

Spring and Tomcat together

The Perfect Match

The Spring/Tomcat match



- Alternative to JEE
 - Reduce complexity
 - Speed up development
 - Increase Quality
- Doesn't replace JEE
 - Plug in JEE modules on as needed basis
 - Don't use JEE where not needed
- Keep it simple, Keep it Working!

The Spring/Tomcat match



- Spring on Tomcat – meet your needs!
 - Spring Framework
 - Spring Web Flow
 - Spring Web Services
 - Spring Security
 - Spring AOP
 - Spring Management Suite
- Use what you need

- A comprehensive framework for modeling, designing, and implementing flow-oriented web interactions
- UI support in Spring IDE
- Manages flow state using HTTP session
 - Can leverage Tomcat's clustering

- A special classloader provided to perform instrumentation:
TomcatInstrumentableClassLoader
- JPA support may be enabled per application
 - No need to affect the entire container

- Spring AOP
 - Simple and sufficiently powerful for most enterprise needs
 - Nothing more than Java needed
- AspectJ AOP
 - Powerful AOP for all needs
 - A weaver is needed
 - Special support for Tomcat in Spring

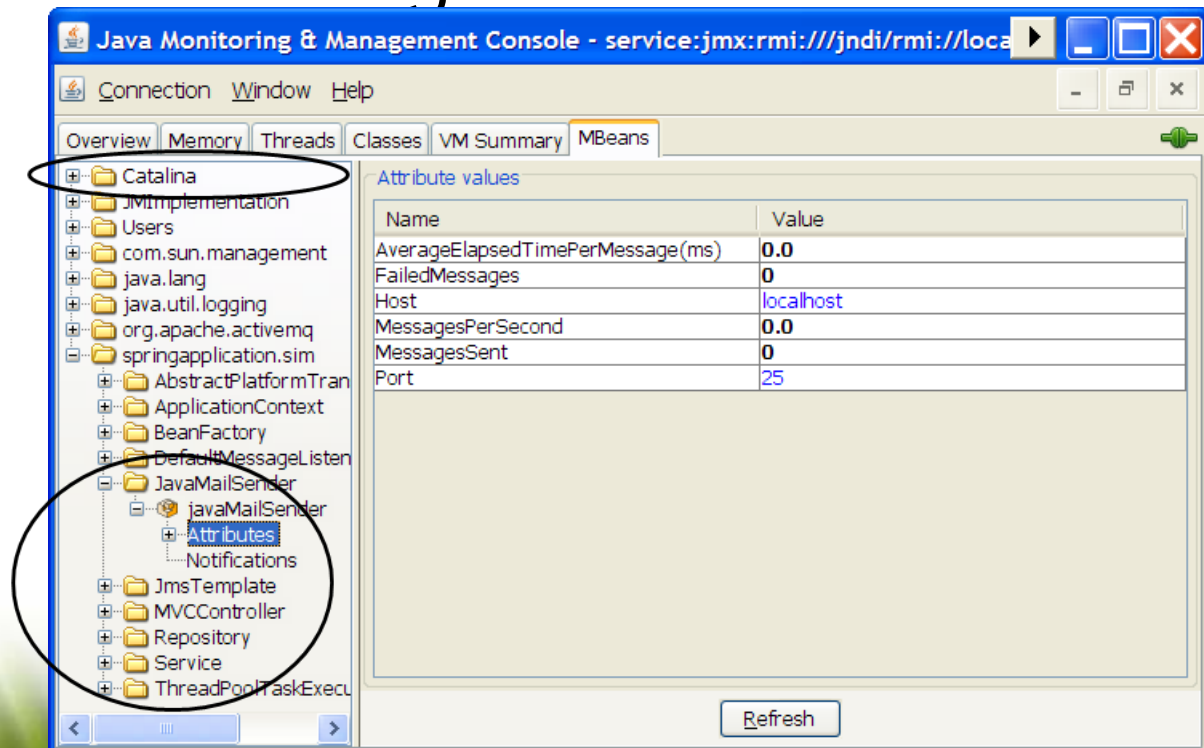
SpringSource Application Management Suite (AMS)



- Auto-discovery of Spring-managed applications and components, and the platforms and application servers that they run on
- Monitoring of Spring applications, components, and runtime
- Custom alert configuration and corrective actions
- Performance and service-level report generation
- Partnership with Hyperic to provide high quality management console
- Builds on SpringSource's deep expertise in AspectJ as well as Spring Portfolio

JMX integration

- Trivial to export Spring beans through JMX
- Side-by-side monitoring with Tomcat MBeans



Java Monitoring & Management Console - service:jmx:rmi:///jndi/rmi://localhost:8080/jmxrmi

Connection Window Help

Overview Memory Threads Classes VM Summary MBeans

Attribute values

Name	Value
AverageElapsedTimePerMessage(ms)	0.0
FailedMessages	0
Host	localhost
MessagesPerSecond	0.0
MessagesSent	0
Port	25

Refresh

- Two options: container or application-level
- Container-level data source
 - Shared by all applications
 - Exposed and obtained through JNDI
- Application-level data source
 - Configured for each application
 - Defined as Spring beans

Spring is about...



- Spring is about POJOs
- Spring is about reuse
- Spring is about choice
 - Spring enables you to make choices
- Spring is about consistency
- **Spring enables you to focus on your business domain**
 - Question code that does not relate to your domain

SpringSource is about...



- Build and offer the best software for enterprise Java development
- Provide the best enterprise level open source support
- Give back and contribute to open source organizations, communities and projects
- Share technical knowledge, experience and best practices
- Technical evangelism – to boldly go where we all should have gone

Spring Stakeholders: The Active Community



- Unique strength of open source
 - Community is very large because there is no cost barrier to entry
 - Community is active
- Openness means that *thousands* of people have strong knowledge of open source software
 - Can contribute suggestions and patches from a basis of strong understanding
 - Feel a sense of loyalty and ownership
 - Ongoing supply of outstanding developer talent

- Apache 2.0 License
 - Liberal, non-viral, commercially friendly license
- Over 50 developers
- Over 10,000 users registered on Spring mailing lists and forums, and growing rapidly
 - Many more regularly use forums as guests
 - Helpful, courteous community

Community Relations

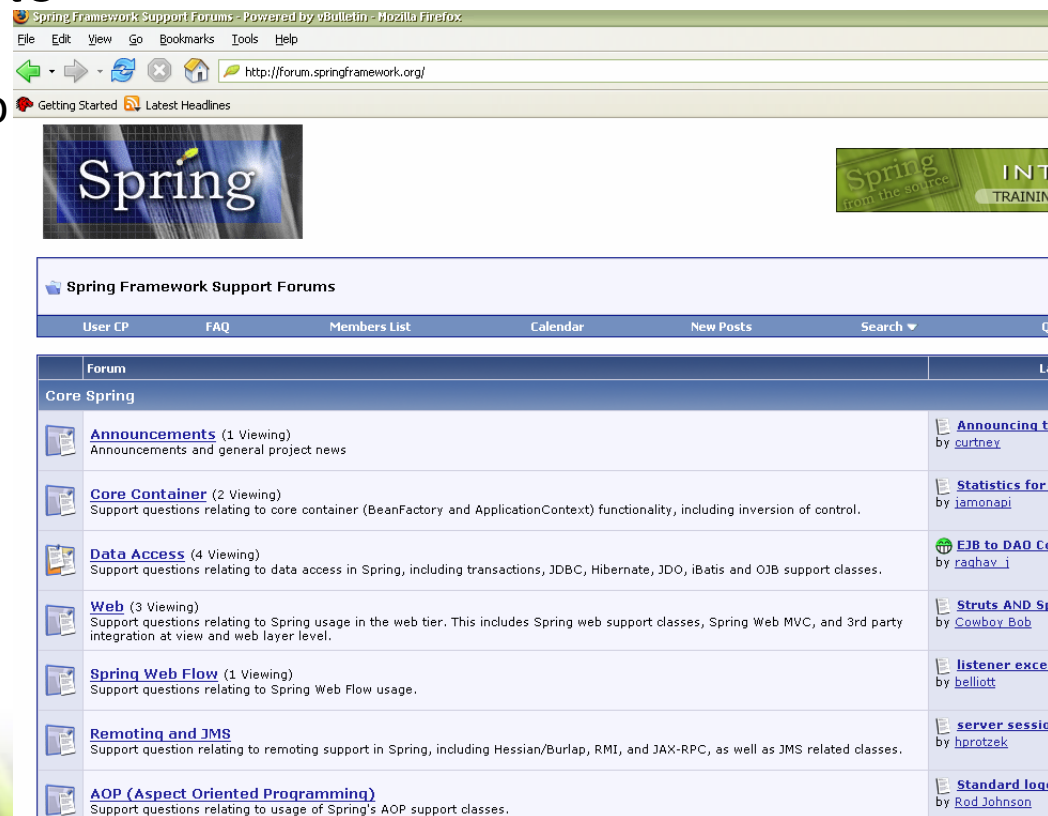


- At SpringSource we believe a strong community is essential to a sustainable business

- We owe our success to our users
- We owe them respect

- Essential to:

- Remain open to community
- Continue to earn the respect and trust of community
- Invest in helping the community, as well as paying customers



- Enterprise level 24x7 support
 - Aggressive SLA
 - Support from the core engineers
 - Guaranteed bug and security fixes
- Bundle with developer support
 - Have support throughout the development life cycle

- Spring and Tomcat provide a complete solution for enterprise applications
- Doesn't replace JEE, instead aims to provide a simplified alternative
- Best practices - don't use what you don't need
- Lesser is better

Questions?



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