



# GlassFish – An Open Application Server

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Sun Microsystems, Inc.

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# Who am I ?

- Member of Project GlassFish team
- Technology Evangelist for Web services and “Web 2.0” Applications @ Sun
- With Sun for over 8 years
- Specifications, Engineering, Standards, Interoperability, ...
- 1996 Alumni
- <http://blogs.sun.com/arungupta>



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# Agenda

- What is GlassFish ?
- Metro – Web services stack
- JRuby and GlassFish
- jMaki – Ajax framework
- The Power of Sun
- Call to Action

# Agenda

- **What is GlassFish ?**
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# GlassFish Is a ...

- Community
  - > Deliverables: Application Server and Top Link Essentials
  - > Source, Bug Database, Technical discussions, Roadmaps, Architecture Documents, ...
- Java EE 5 compliant Application Server
  - > GlassFish v1 is Sun AS 9.0
  - > GlassFish v2 is Sun AS 9.1
  - > GlassFish v3 is Cooking!
- FOSS Application Server
  - > Dual-licensed: CDDL and GPLv2
  - > Use it in production!

# What is Java EE 5 ?

- Industry-standard for building portable, robust, scalable, secure and server-side Java applications
- Provides Web services, Component Model, Management and Communications API
- Defined as JSR 224 in the Java Community Process
  - > Multiple JSRs for each technology
- GlassFish is Java EE 5 “Reference Implementation”
- Technology Compatibility Kit to ensure compatibility for other vendors

# Java EE 5.0 = (J2EE 1.4).next

- Java EE 5 Theme: Ease of Development
- POJO-based programming
  - > More freedom, fewer requirements
- Extensive use of annotations
  - > Reduced need for deployment descriptors
- Configure by exception
  - > Reasonable defaults wherever possible
- Resource Injection
- New APIs and frameworks
  - > EJB3, JAXB 2, JAX-WS, JSF, ...

# What is FOSS ?

- Free and Open Source Software
- Three basic criteria
  - > Access to the source code
  - > Freedom to modify the code
  - > Freedom to redistributed the code
- Three basic characteristics
  - > It's about Freedom
  - > It's about Sharing Transparency
  - > It's about Communities/Connectivity

# Our Core Value: Share

NFS



TCP/IP



PROJECT  
LOOKING GLASS



GNOME



Project  
JXTA

Java.net



# A request from the top

“Every software asset we produce is open source. If it isn't today, it will be pretty damn quickly.”

**Jonathan Schwartz**  
CEO, Sun Microsystems  
January 2007

# GlassFish - Timeline

- GlassFish v1 (Jun 2006)
  - > Java EE 5 compliance!
- GlassFish v2 (Sep 2007)
  - > New Web services stack – Metro
  - > High-performance, Production-quality
  - > Load-balancing, Clustering, High-Availability
  - > Some scripting support
- GlassFish v3 (~2009)
  - > Small (<100 KB), Fast (<1s startup), Modular
  - > Ideal container for Web 2.0
  - > Can run in phone, desktop or in-process

# Demo

## GlassFish Download & Install

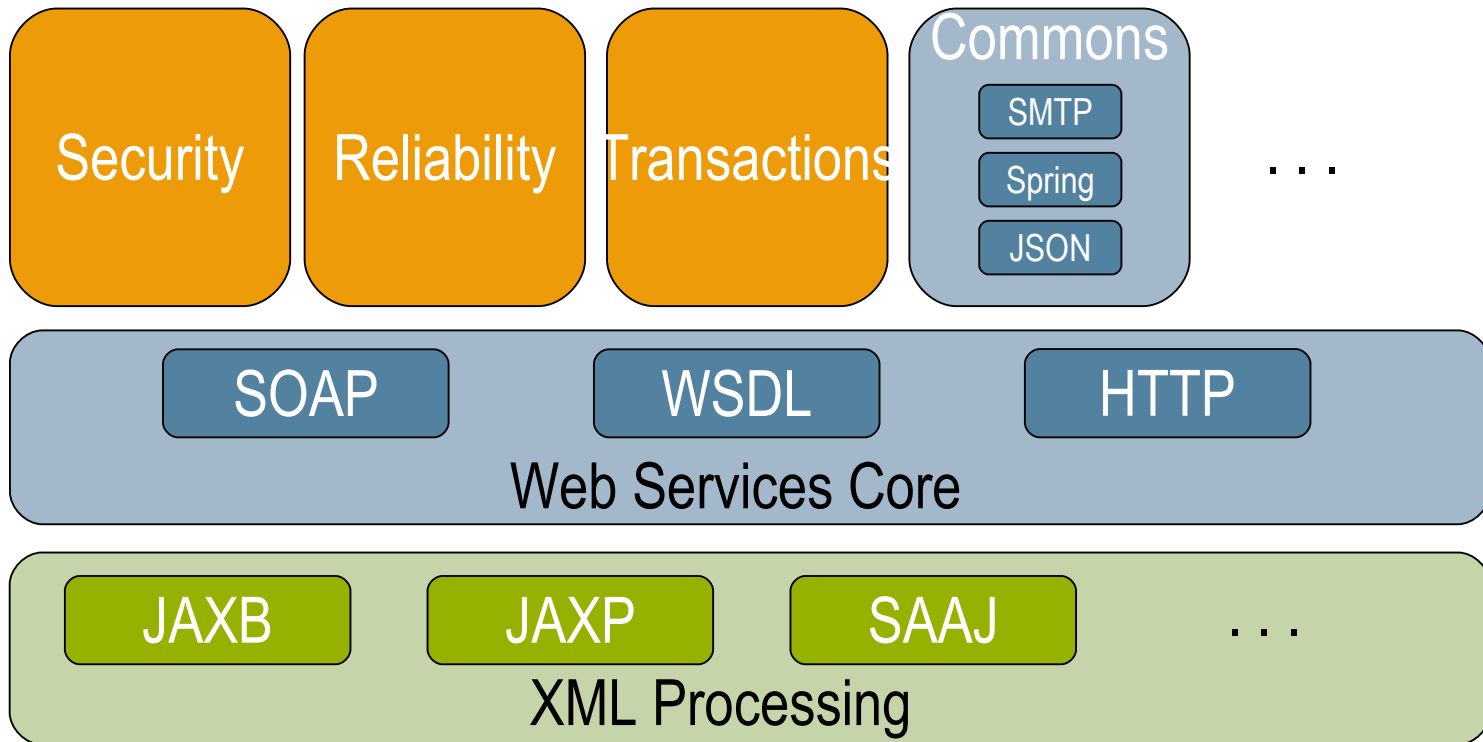
# Agenda

- What is GlassFish ?
- **Metro – Web services stack**
- JRuby and GlassFish
- jMaki – Ajax framework
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- Call to Action

# What is Metro ?

- Web Services stack from GlassFish community
- High-performance and production-quality one stop shop for all Web service needs
- Metro = JAX-WS “RI” + WSIT/Tango
- JAX-WS RI provides Core Web services support
  - > Extensible and pluggable architecture
- WSIT/Tango provides support for Security, Reliability, Transactions and Interoperability with .NET 3.0

# Metro Overview



**Metro – GlassFish Web Services Stack**  
[metro.dev.java.net](http://metro.dev.java.net)

# Metro Features

- JAX-WS 2.1: Easy to use Web services API
  - > Replaces JAX-RPC
- Embrace POJO concepts via annotations
  - > Descriptor-free programming
- Protocol and Transport Independence
- Integrated data binding via Java API for XML Binding (JAXB)
  - > 100% XML Schema Support

# Metro Features

## Protocol-based Reliability

- Before RM
  - > Reliable protocols based on TCP/IP
  - > Point-to-point
- Recovery from lost or mis-ordered messages
- Transparent to application
- Enable use of multiple transports
  - > Works on non TCP/IP transports

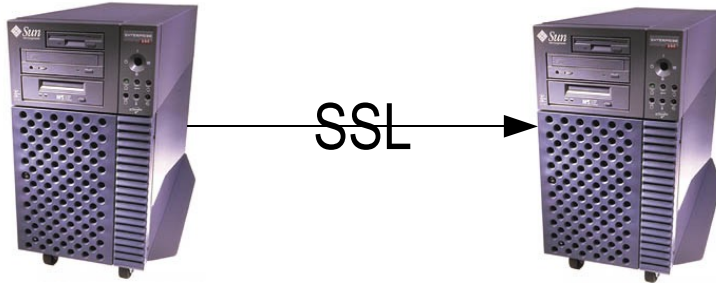
# Metro Features

## Transactional Web services

- Same as EJB/RMI-IIOP Transactions
- All operations in TX boundary succeed or rollback

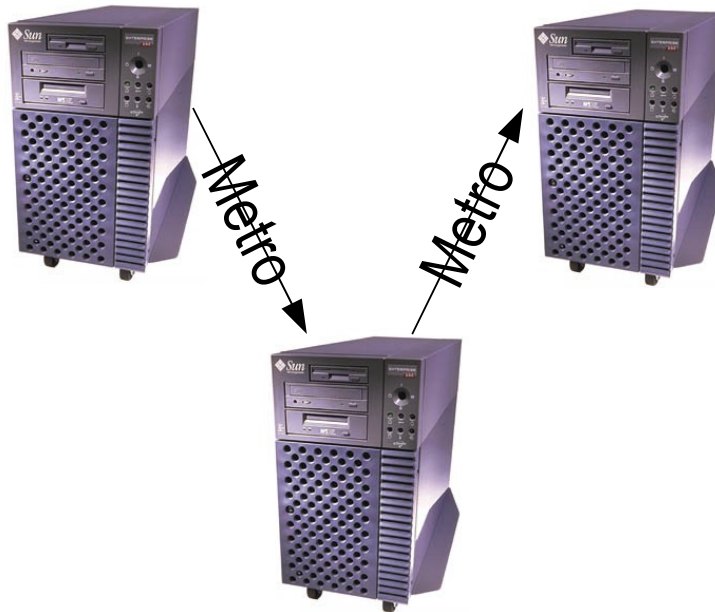
# Metro Features

## End-to-End Security



### Before WS-Security

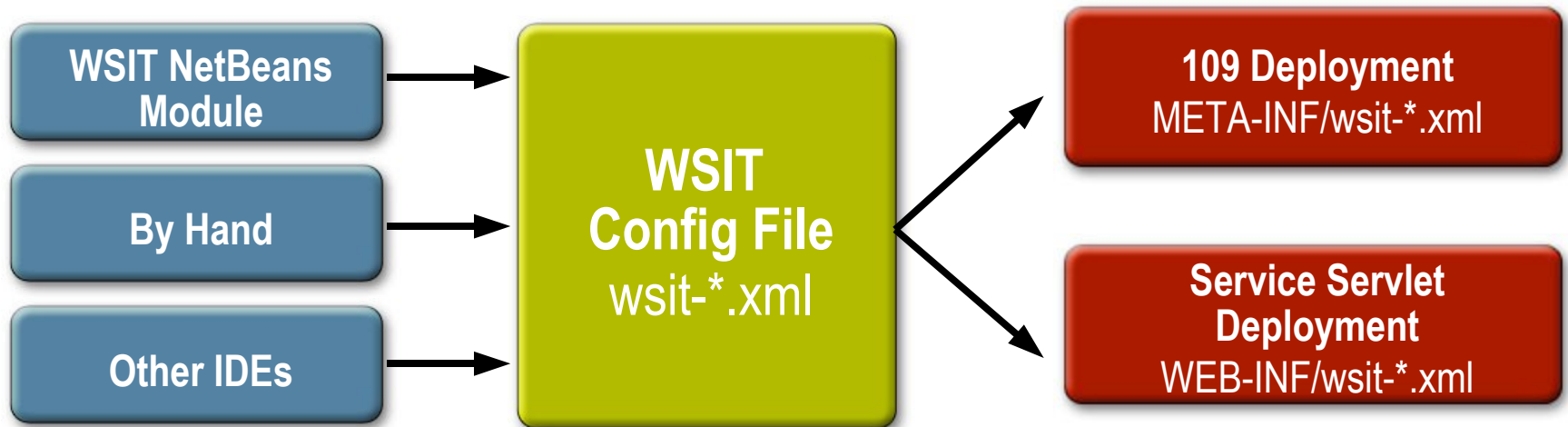
- SSL/HTTPS
- Point-to-point
- All or nothing granularity



### WS-Security

- SOAP-based security
- Works on Non-TCP/IP transports
- Fine granularity possible
- Leverage existing specifications
  - > W3C XML Signature/Encryption

# Server-side Programming Model

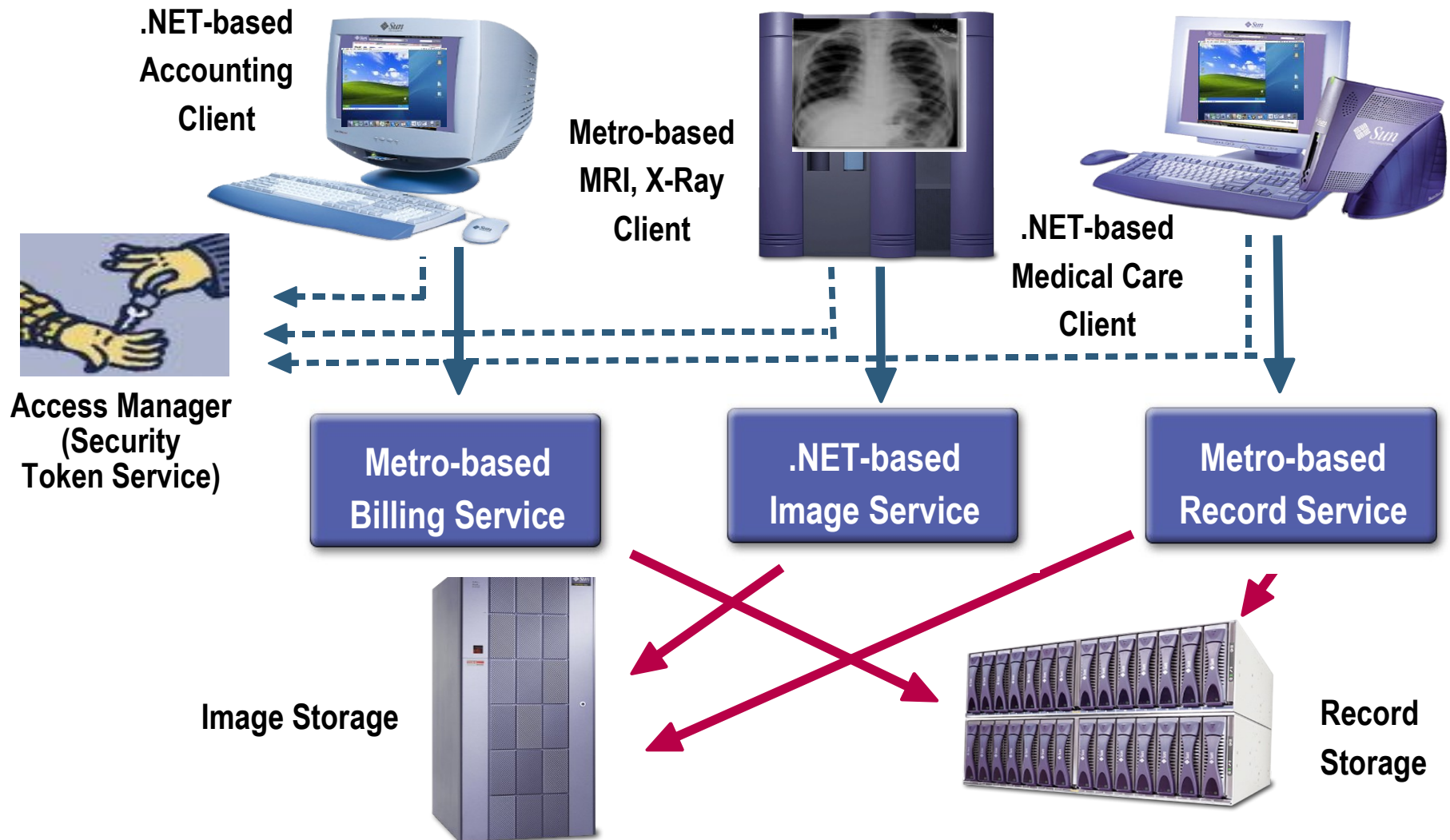


# Demo

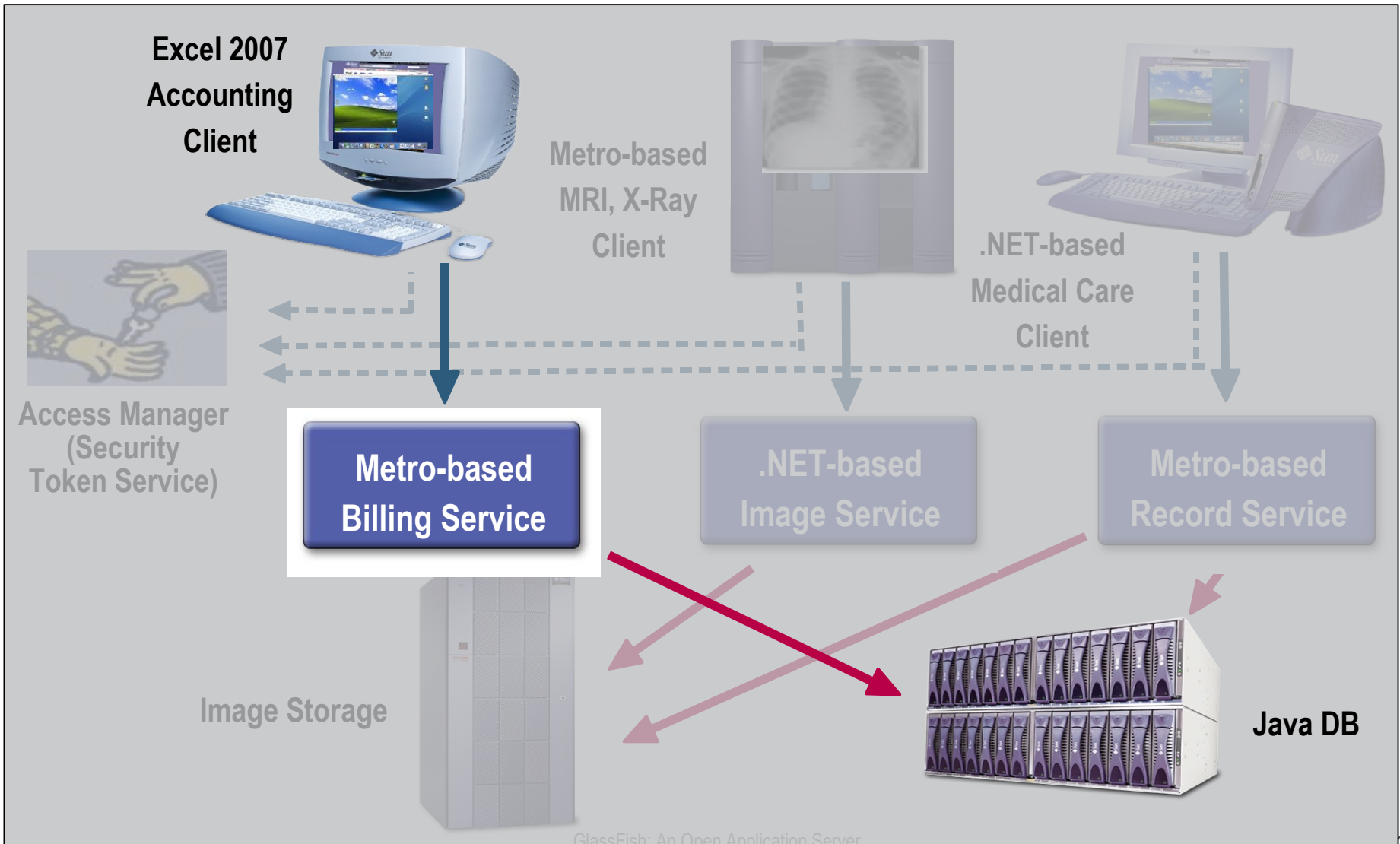
## Ease-of-use with NetBeans 6 IDE

[http://blogs.sun.com/arungupta/entry/screncast\\_ws7\\_secure\\_and\\_reliable](http://blogs.sun.com/arungupta/entry/screncast_ws7_secure_and_reliable)

# Demo Scenario: Health Care System



# Demo Scenario: Health Care System



# Demo

## Excel to Sun Storage using Metro

[http://blogs.sun.com/arungupta/entry/excel\\_using\\_wsit\\_javaone\\_2007](http://blogs.sun.com/arungupta/entry/excel_using_wsit_javaone_2007)

[http://blogs.sun.com/arungupta/entry/excel\\_using\\_wsit\\_metro\\_and](http://blogs.sun.com/arungupta/entry/excel_using_wsit_metro_and)

# REST Tenets

- What is REST ?
  - > Architecture style
  - > Distributed hypermedia systems
- **RE**presentational **S**tate **T**ransfer
  - > Resources
  - > Uniform Interface
  - > Representations

# REST vs RPC

- RPC
  - > Few endpoints, many custom methods
  - > Few nouns, many verbs
  - > `musicdb.getRecordings("magnum")`
- REST
  - > Many resources, few fixed methods
  - > Many nouns, few verbs
  - > `GET /music/artists/magnum/recordings`

# Jersey

- Open-source implementation for RESTful Web services
  - > API + SPIs to extend the needs
- Reference Implementation of JSR 311 (JAX-RS)
- Early Access at [jersey.dev.java.net](http://jersey.dev.java.net)
  - > Source code
  - > User lists
  - > Samples, ...

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- **JRuby and GlassFish**
- jMaki – Ajax framework
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# What is JRuby ?

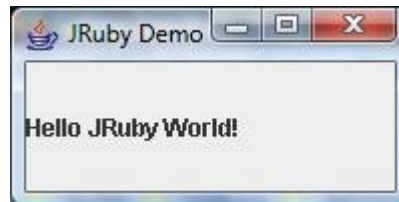
- 100% pure-Java implementation of Ruby language
  - > Ruby 1.8-ish
  - > Libraries of Java + Simplicity of Ruby
- Two-way Interaction
  - > Invoke Java from Ruby
  - > Invoke Ruby from Java (JSR 223)
- Embed Ruby interpreter in any Java application
- Open-source
  - > Core team – 4 developers (3 from Sun)
- Current release - JRuby 1.0.2, Planned - 1.1

# JRuby Sample

```
include Java # Give access to bundled Java libraries

frame = javax.swing.JFrame.new("JRuby Demo") # Create a Java Frame
label = javax.swing.JLabel.new("Hello JRuby World!") # Add a label to Frame

# Call Java methods as if they were defined in Ruby
frame.getContentPane.add(label)
frame.setDefaultCloseOperation(javax.swing.JFrame::EXIT_ON_CLOSE)
frame.setSize 200, 100
frame.setVisible(true)
```



# Demo

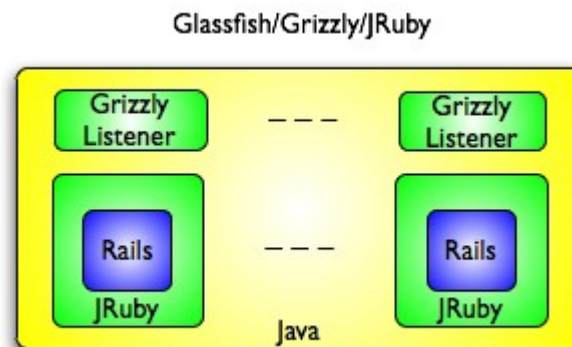
## IRB for JRuby (jirb)

# What is Rails ?

- FOSS Web Application Framework
- Based on Model-View-Controller pattern
- Two principles
  - > Convention over Configuration (CoC)
  - > Don't Repeat Yourself (DRY)
- Tools: Scaffolding, WEBrick, Rake, ...
- Gems: Extend the core Rails functionality

# GlassFish v3 Gem

- Ruby Gem (6.8 MB)
  - > GlassFish server + Grizzly connector for JRuby-on-Rails
- “Green” alternative to WEBrick and Mongrel
- Adds glassfish\_rails in bin directory
- One command, one process



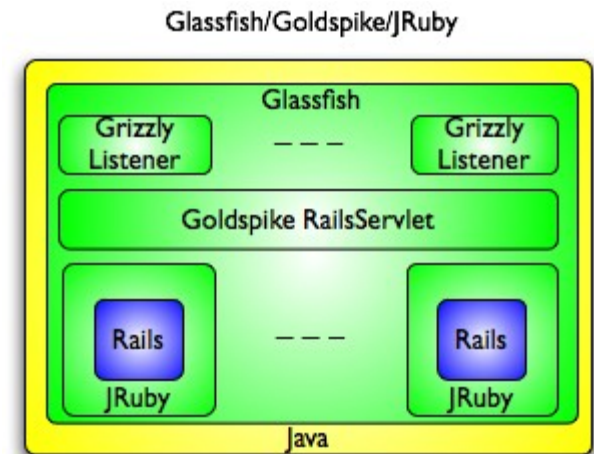
# Demo

## GlassFish v3 Gem

[http://blogs.sun.com/arungupta/entry/announcing\\_glassfish\\_gem\\_for\\_rails](http://blogs.sun.com/arungupta/entry/announcing_glassfish_gem_for_rails)


# GlassFish v2 Update Center Module



- GlassFish Update Center
  - > Add new components
  - > Update existing components
- “JRuby on GlassFish” module
  - > JRuby 1.0.1
  - > Goldspike
  - > Rails 1.2.3, ...
- Standalone and Shared WAR



GlassFish Update Center


Select the software component desired to update the installation.

!	*		Name	Date Published	Version	Size
		<input type="checkbox"/>	JRuby on GlassFish	Sep 17, 2007	1.0	13 MB
		<input type="checkbox"/>	Web Technologies			
		<input type="checkbox"/>	Phobos	Sep 17, 2007	0.5.11	3 MB
		<input type="checkbox"/>	jMaki	Sep 13, 2007	0.9.8.1	3 MB
		<input type="checkbox"/>	Jersey (RESTful Web Services)	Sep 11, 2007	0.2.1	4 MB
		<input type="checkbox"/>	Social Software			
		<input type="checkbox"/>	Weblog Server for GlassFish	Aug 13, 2007	1.0	11 MB
		<input type="checkbox"/>	Composite Applications			
		<input type="checkbox"/>	Open ESB	Apr 23, 2007	2.0	18 MB

 Restart will be required.
  New

Details

## JRuby on GlassFish



**Version:** 1.0

**Source:** Sun Microsystems Inc.

**Homepage:** <http://glassfish.dev.java.net>

### Overview

The goal is to have to a Ruby on Rails application deployed on GlassFish Application Server. The user need not have to deal with checking out and building the jruby code. You just create a Ruby on Rails application and then run an ant command to be able to deploy the application to

# Demo

## JRuby Update Center Module

[http://blogs.sun.com/arungupta/entry/screencast\\_web\\_9\\_jruby\\_on](http://blogs.sun.com/arungupta/entry/screencast_web_9_jruby_on)

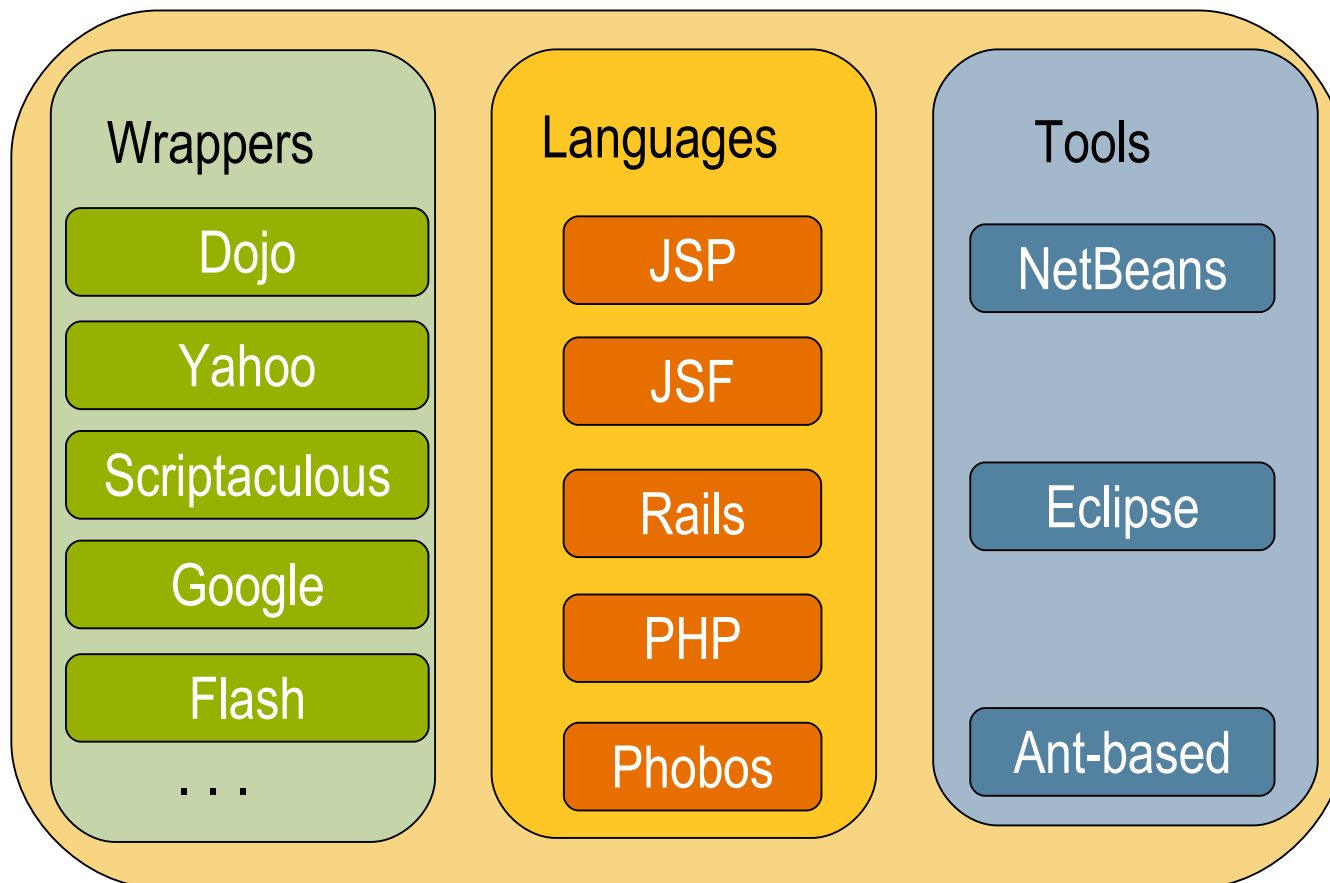
# Why JRuby on GlassFish ?

- Java EE is tested deployment platform
- Integrate existing Java EE & RoR apps in one container
- Hot Deployment
  - > No need to restart container
- Database Connection Pooling
- One instance, one process
- OOTB Clustering and High Availability

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# What Is Project jMaki?

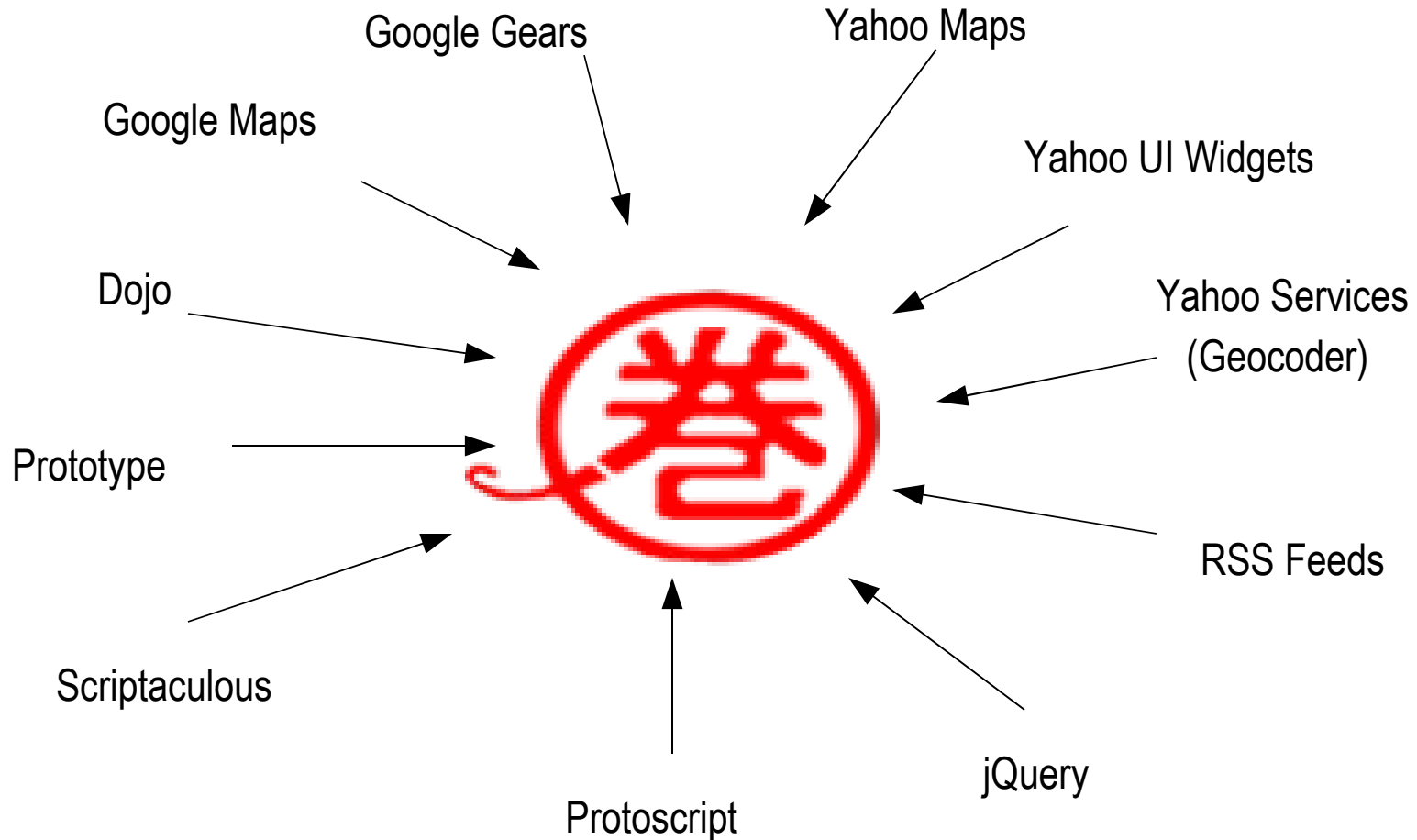


**jMaki – Web 2.0 Apps Your Way**  
**([jmaki.com](http://jmaki.com))**

# Why use jMaki ?

- Standardizes Event / Data Models
  - > Consistent programming model
- Defaults set out of the box
  - > Convention over configuration
- Portable Widget libraries
  - > Share your extensions / widgets libraries
- Use the tool of your choice
- Theming Support

# jMaki Ecosystem



# Multi-Server Support

## JSP technology: index.jsp

```
<%@ taglib prefix="a" uri="http://jmaki/v1.0/jsp" %>  
<a:widget name="yahoo.button" />
```

## Ruby: index.rhtml

```
<%= javascript_include_tag "jmaki" -%> <%= jmaki_setup -%>  
<%= jmaki_widget 'yahoo_button' %>
```

## PHP: index.php

```
<?php require_once 'Jmaki.php'; ?>  
<?php addWidget( name=>"yahoo_button"); ?>
```

## Phobos index.ejs

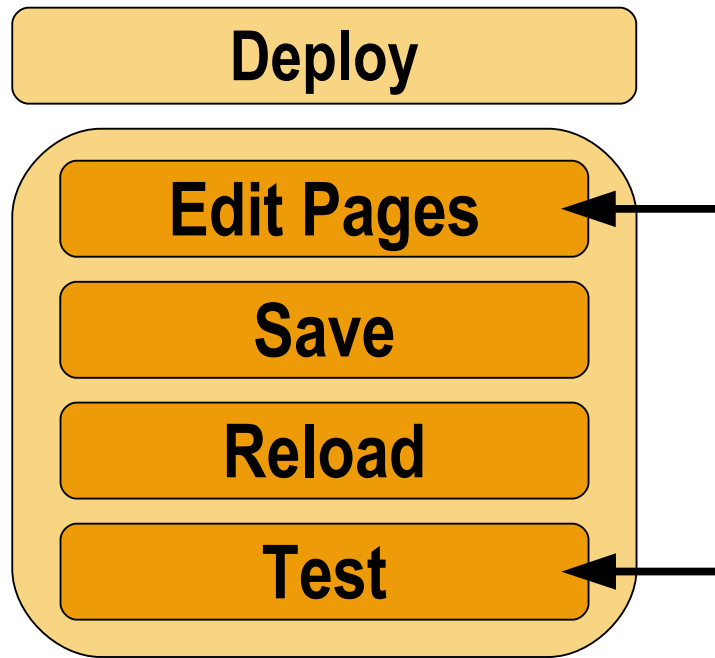
```
<% library.jmaki.insert(component: "yahoo_button"); %>
```

# jMaki Framework

- Create and Wrap widgets, libraries, ...
- Data Models
- Widget component model
- Events = Actions / Glue
- Layouts / Theming model
- XmlHttpRequest
- Extensions

# Development Cycle

## Immediate Feedback



iMaki Logger



```

[00:00] Topic: jsaki:runtime:analyzed message {}
[00:00] Topic: jsaki:runtime:widget:loaded message {}
[00:00] Topic: jsaki:runtime:widget:loaded message {id: 'yahooui_map1'}
[00:00] Topic: jsaki:runtime:widget:loaded message {id: 'yahooui_map2'}
[00:00] Topic: jsaki:runtime:widget:loaded message {id: 'yahooui_recorder3'}
[00:00] Topic: jsaki:runtime:widget:loaded message {}
[00:00] Topic: jsaki:runtime:load:complete message {}
[00:00] Topic: Yahoo!recorder:onGcode message {id: 'yahooui_recorder?', value: ... [X]}
[00:00] Topic: Yahoo!recorder:onGcode message {id: 'yahooui_recorder?', value: [runtime:
[00:00] Topic: Yahoo!recorder:onGcode message {id: 'yahooui_recorder?', value: ... [ace]}
  
```

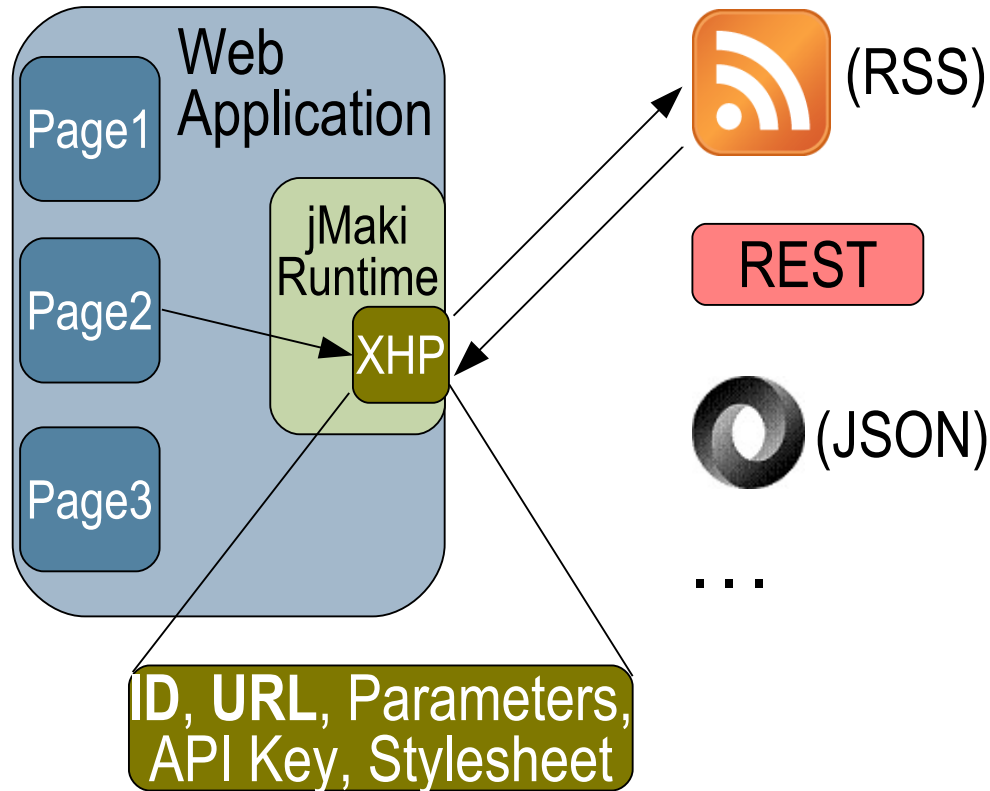


Firebug

# Demo

## jMaki Ease-of-use with NetBeans

# Accessing External Services



# Demo

## Accessing External Services

[http://blogs.sun.com/arungupta/entry/screencast\\_web5\\_creating\\_mashups\\_with](http://blogs.sun.com/arungupta/entry/screencast_web5_creating_mashups_with)

[http://blogs.sun.com/arungupta/entry/screencast\\_web4\\_creating\\_mashups\\_with](http://blogs.sun.com/arungupta/entry/screencast_web4_creating_mashups_with)

# Reference

- [jMaki.com](http://jMaki.com)
- [ajax.dev.java.net](http://ajax.dev.java.net)
- Available from
  - > [GlassFish Update Center](#)
  - > [NetBeans Update Center](#)

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[www.sun.com/studentzone](http://www.sun.com/studentzone)

- Internship Program
- Full-time Entry Level Positions
- Academic Developer Initiative
- Campus Activities/Events
- Training Programs
- Collaborative Research

# Free Training for Every Student

- Sun Academic Initiative - FREE Sun Training for students and professors/teachers
  - > 100+ classes include Web scripting, Open Source, Mobile Java, Development, Beginner Java Training, Operating Systems, And much more...
  - > <http://www.sun.com/products-n-solutions/edu/programs/sai/>
- General Sun Training Link
  - > <http://www.sun.com/training/index.xml>

# Discounted Certification for Every Student

- SAI Tool offers upto 60% discount for students
  - > Pick the certification and learning path that is right for you at:
    - <http://www.sun.com/training/certification/index.xml>
- Why get certified?
  - > Developers: Earn on average 14.3% more
  - > System Administrators: Earn on average 31% more
  - > Build a more credible resume and build career skills
- How to get Sun certification vouchers & Free Tests
  - > <https://learningconnection.sun.com/>

# Student Ambassador Program

- Recruit Student Ambassador
- The ambassador will be trained
- Commit to 6 demos/talks on campus every semester
- Will be mentored by IEC on need basis
- Activities will be tracked and reported

# Sun India University Program

One stop shop for collaborating with Sun

<http://in.sun.com/univ>

# Call to Action

- Download GlassFish ([glassfish.java.net](http://glassfish.java.net))
- Download NetBeans 6 ([netbeans.org](http://netbeans.org))
- Try Screencasts
  - > <http://wiki.glassfish.java.net/Wiki.jsp?page=Screencasts>
- Subscribe to Blogs
  - > <http://blogs.sun.com/theaquarium/>
  - > <http://blogs.sun.com/arungupta/>
- Tell your friends about it!