



IBM Software Group

Equipping Yourself for the Agile Wave

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Rational. software



Discussion Topics

- **Agile has gone Mainstream**
- The Road to Agility
- Best Practices for Agile Testing
- Latest and Upcoming Rational Technologies
- Summary



What is Agile?

- An iterative and incremental (evolutionary) approach performed in a highly collaborative manner with **just the right amount of ceremony** to produce high quality software in a cost effective and timely manner which meets the changing needs of its stakeholders.

- Core principles
 - ▶ Frequent delivery of working software
 - ▶ Continuous testing and validation
 - ▶ Consistent team collaboration
 - ▶ Rapid response to change
 - ▶ Ongoing customer involvement
 - ▶ “Fits just right” process



Agile has gone Mainstream

From the analyst community

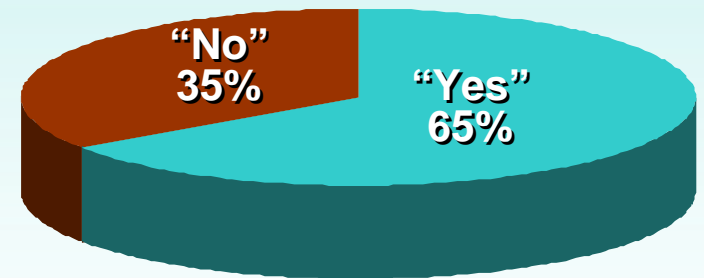
"Thirty-five percent ofrespondents have projects or pilots underway, and *only 12 percent do not see a fit* for Agile processes in their organizations.

The fact that 88 percent of these organizations (one-third of which have over 10,000 employees) are using or evaluating Agile processes proves that Agile processes have truly hit the mainstream."

- Excerpt from "And the Agile Survey Says..."
Agile Journal, March 6, 2006

Third-party research suggests even wider adoption

Have you adopted any Agile techniques?



Source: Ambler 'Agile Adoption Rate Survey' of over 4200 Dr. Dobb's subscribers, March 2006



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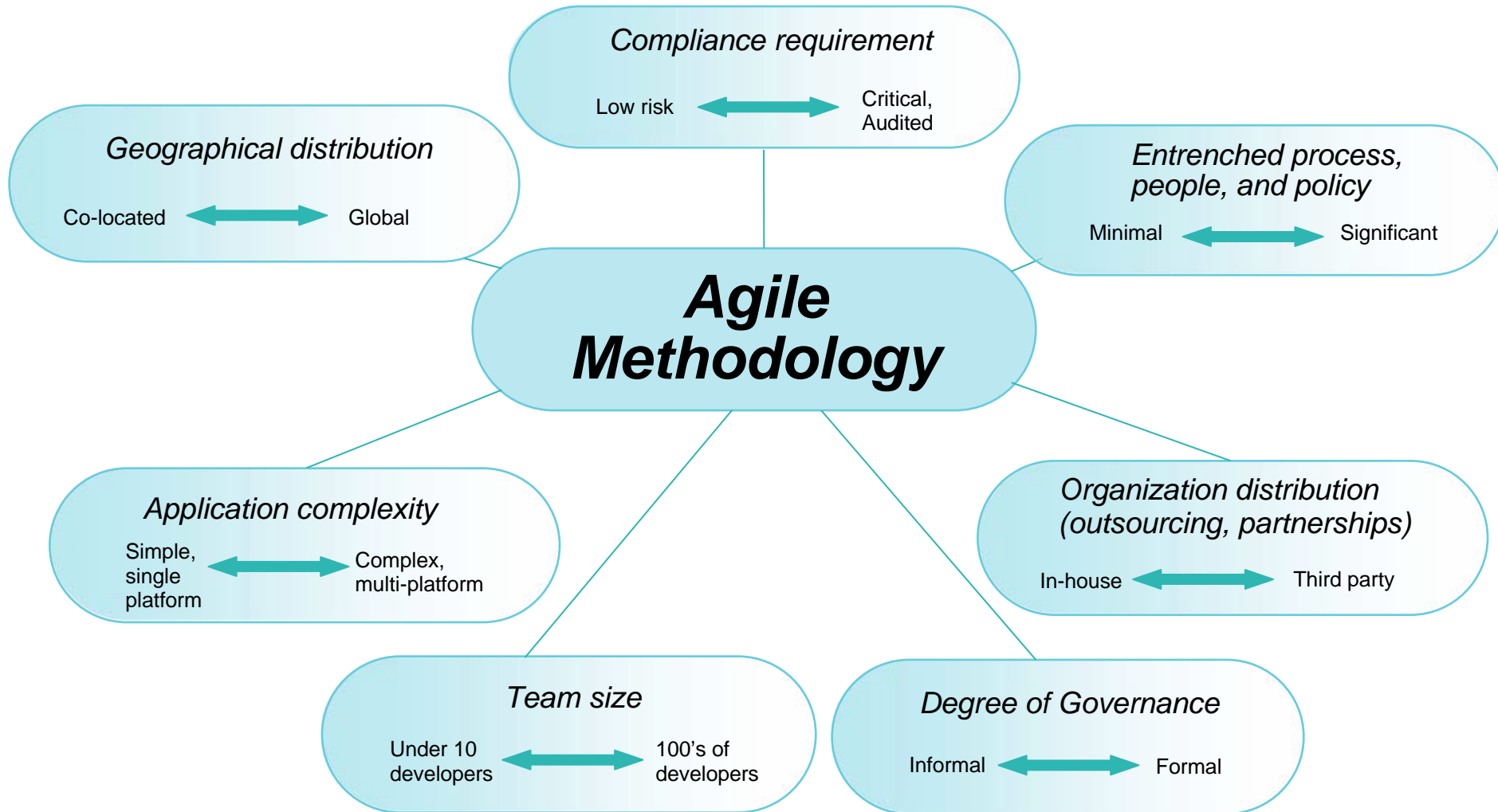


Challenges in Achieving Agility

- Following the process
- Change management
- Collecting team status
- The larger role of a tester
- Heavier testing workload
- Traditional tools do not fit well with Agile testing
- Cost of face-to-face meetings
- Why is this change in the build?



Challenges with Agile in Larger Organisations



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Testing Best Practices in Agile

- User Acceptance Testing
- Manual Exploratory Testing
- Security Testing
- Unit Testing
- Test Management and Team Collaboration



Best Practices – User Acceptance Testing

- Get educated on requirements definition/gathering
- Automate UAT
- Centralise generic test assets for reuse
- Use mainstream scripting languages
- Automate Policy Testing



Best Practices - Manual Exploratory Testing

- Used to uncover hidden requirements
- Pair up with a domain expert or a business analyst to do exploratory testing
- Keep a catalog of reusable test assets
- Automate part of your exploratory tests



Best Practice - Security Testing

- We are not security experts – get help
- Automate security tests
- Security information updates are important
- Recommendations to developers would be ideal



Best Practices – Unit Testing

- Pick your favourite tools
- IDE
- xUnit family
- Reuse



Best Practices – Test Management and Team Collaboration

- Clearly define and publish the process and keep it up-to-date
- Everyone keeps a task list
- Test planning for one iteration
- Generate documentation instead of writing them
- Use team collaboration technologies to replace some face-to-face meetings
- End-to-end automation of regression testing



Complexity Changes the Approach for Tools & Process

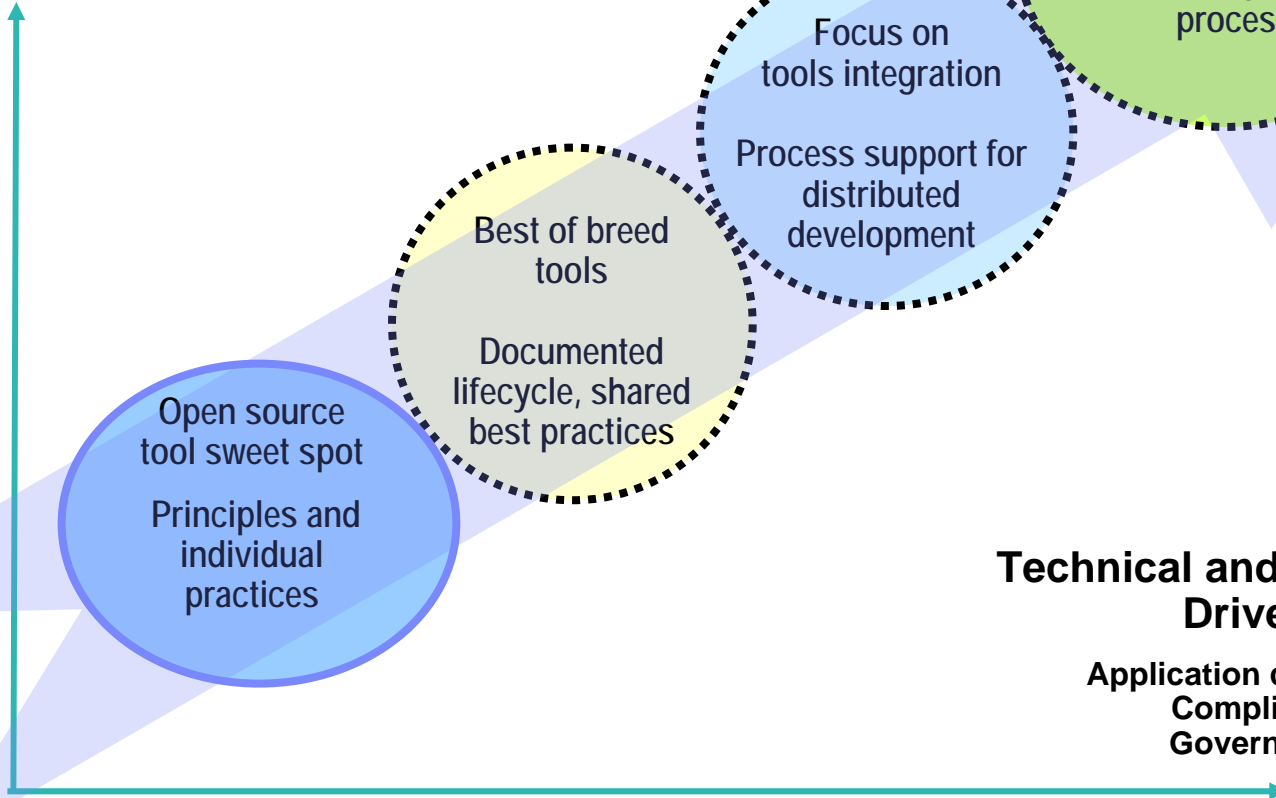
Organizational Drivers

Team Size

Geographical Distribution

Organization Distribution

Entrenched process, people, policy



Technical and Regulatory Drivers

Application complexity

Compliance

Governance



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Rational Performance Tester Extension *for SAP Solutions*



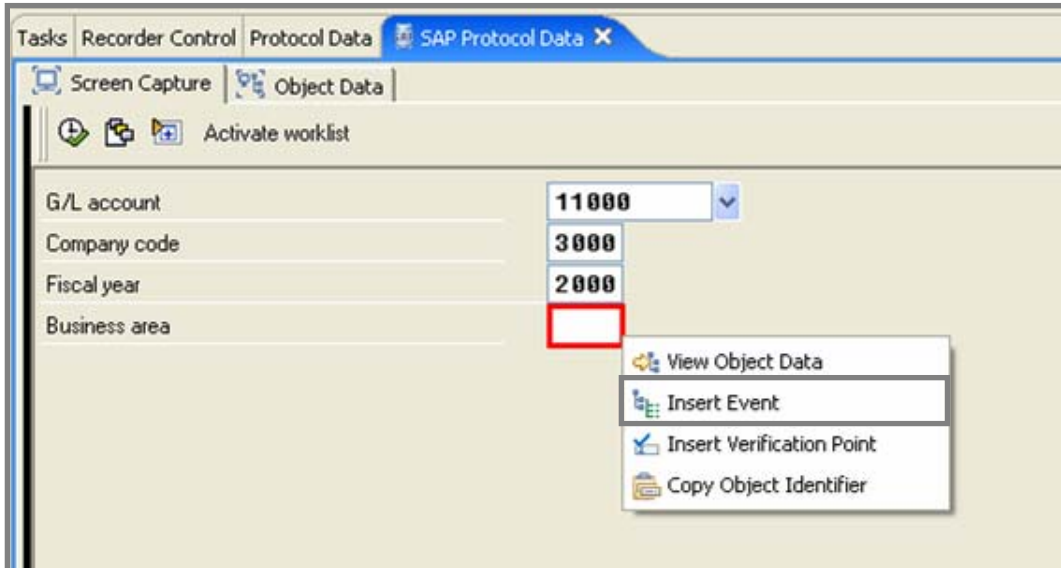
Powered by
Rational
Performance
Tester
Extensibility
SDK

Rational. software

- The process of testing SAP applications
 - ▶ Follows the same steps as testing web based applications
 - Record
 - Edit
 - Execute & measure response times
 - ▶ Requires new technology to enable the process
 - SAP Recorder
 - SAP Protocol Browser for test editing
 - SAP Performance Reports



Rational Performance Tester Extension *for SAP Solutions* *SAP Protocol Browser*

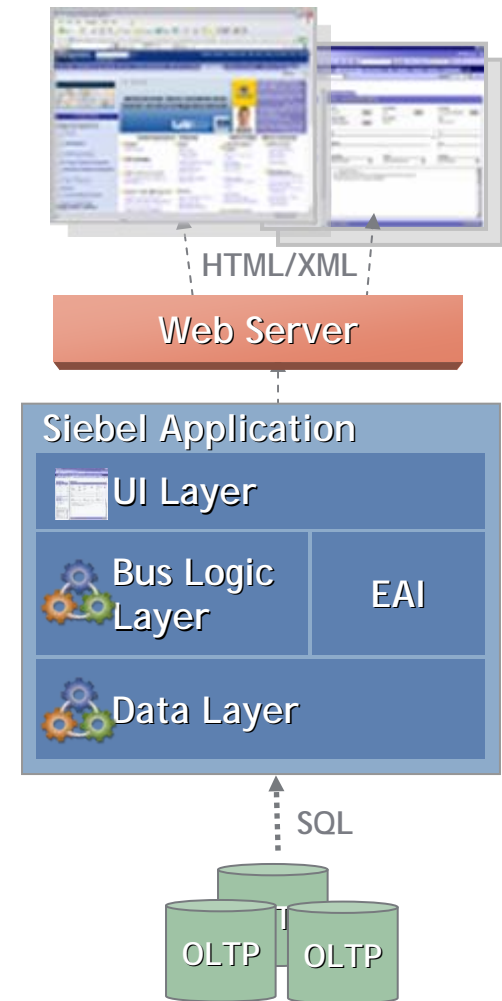


- Protocol Browser allows users to insert actions into the script by acting upon captured screenshots
 - ▶ No re-recording or complex test editing required
- Verification points can be inserted to validate SAP data

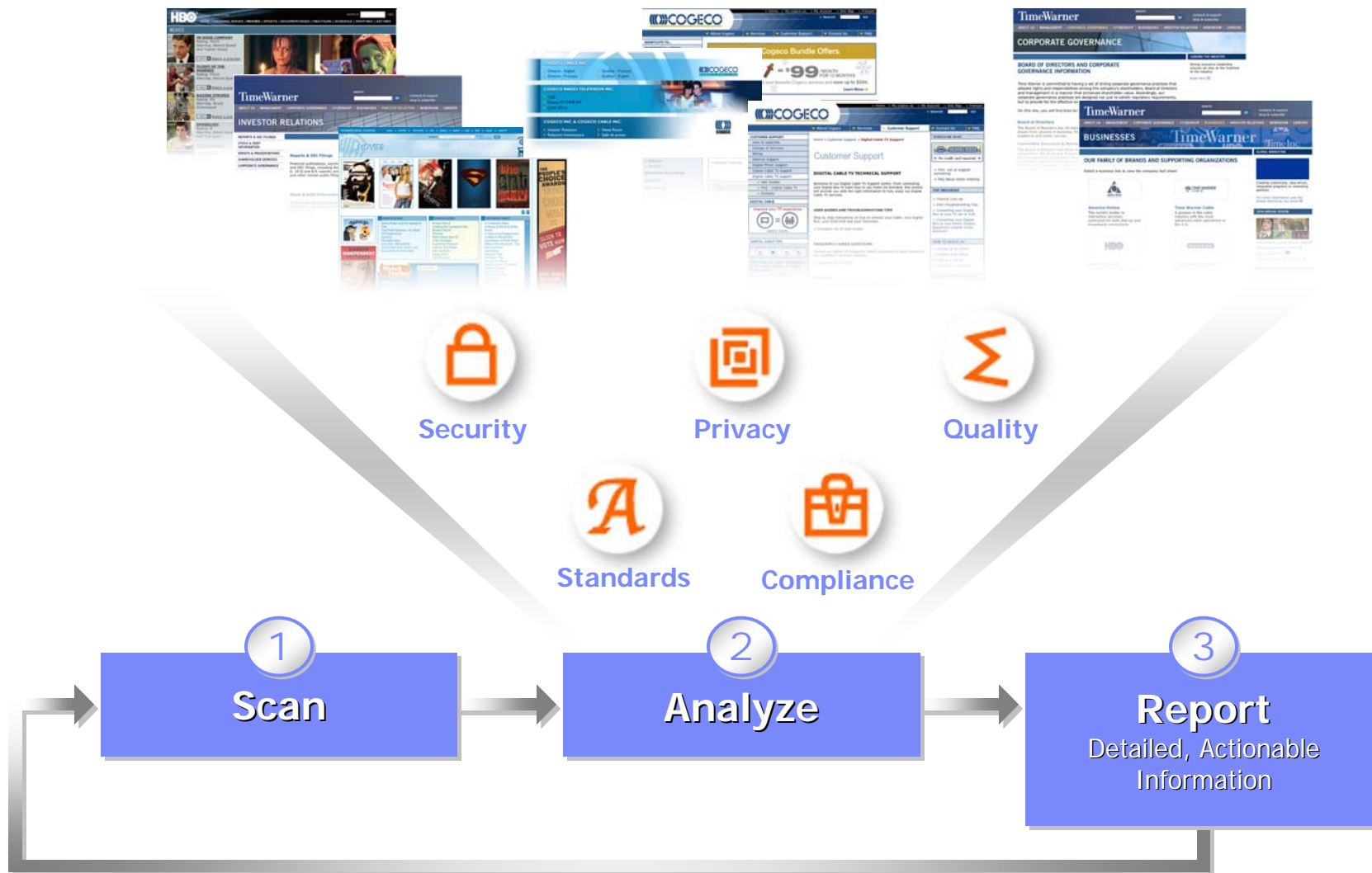
Rational *Functional* Tester Extension for Siebel Test Automation

Unique Features

- Lowers the cost of functional testing
 - ▶ Recognition of Siebel custom High Interactivity (HI) and Standard Interactivity (SI) Objects
- Offers extensive customization options
 - ▶ Exposing of Siebel Script-Only methods
 - ▶ Siebel Automation Framework



How Rational AppScan works



Rational AppScan Screenshots

The screenshot displays the Watchfire AppScan interface for a scan of 'My Application' (http://www.althoromutual.com/). The interface is divided into several sections:

- Left Panel:** Contains navigation options for 'Security Issues', 'Remediation Tasks', and 'Application Data'.
- Tree View:** Shows the scanned application structure, including folders like 'admin', 'althor', 'bank', 'images', 'pr', and 'static', and files like 'default.aspx', 'disclaimer.htm', 'feedback.aspx', 'high_yield_investments.htm', 'search.aspx', 'servererror.aspx', 'subscribe.swf', and 'survey_questions.aspx'.
- Main Panel:** Lists 63 security issues. The top issues include:
 - Blind SQL Injection (6)
 - Cross-Site Scripting (5)
 - HTTP Response Splitting (1)
 - Login Page SQL Injection (2)
 - Microsoft ASP.NET Cross-Site Scripting (4)
 - Poison Null Byte Files Retrieval (1)
 - Predictable Login Credentials (1)
 - SQL Injection (5)
 - XPath Injection (1)
 - Cookie Poisoning SQL Injection (1)
 - Directory Listing (1)
 - Link Injection (facilitates Cross-Site Request Forgery) (4)
 - Sensitive Files Found (1)
 - Unencrypted Login Request (1)
 - Application Error (8)
 - Inadequate Account Lockout (1)
 - Microsoft ASP.NET Debugging Enabled (2)
 - Possible Server Path Disclosure Pattern Found (2)
 - Session Identifier Not Updated (1)
 - Unencrypted Password Parameter (2)
 - Unsigned __VIEWSTATE Parameter (3)
 - Application Test Script Detected (1)
 - Hidden Directory Detected (3)
 - HTML Comments Sensitive Information Disclosure (3)
 - Unencrypted __VIEWSTATE Parameter (3)
- Issue Detail View (circled in red):** Provides a detailed view of a 'Blind SQL Injection' issue:
 - Severity:** High
 - Type:** Application-level test
 - WASC Threat Classification:** Command Execution, SQL Injection
 - CVE Reference(s):** N/A
 - Security Risk:** It is possible to view, modify or delete database entries and tables
 - Possible Causes:** Sanitation of hazardous characters was not performed correctly on user input
 - Technical Description:** Web applications often use databases at the backend to interact with the enterprise data warehouse. The de-facto standard language for querying databases is SQL (each major database vendor has its own dialect). Web applications often take user input (taken out of the HTTP request) and incorporate it in an SQL query, which is then sent to the backend database. The query results are then processed by the application and sometimes displayed to the user. This mode of operation can be exploited by an attacker if the application is not careful enough with its treatment of user (attacker) input. If this is the case, an attacker can inject malicious data which when incorporated into an SQL query, changes the original syntax of the query into something completely different. For example, if an application uses user's input (such as username and password) to query a database table of users' accounts in order to authenticate the user, and the attacker has the ability to inject malicious data into the username part of the query, the password part, or both, the query can be changed into a different data yanking query, a query that modifies the database, or a query that runs shell commands on the database server. Typically, the attacker achieves this goal in steps. He/she will first learn the structure of the SQL query, and then use this knowledge to thwart the query (by injecting data that changes the query syntax) into performing a different query than intended. Suppose the query in question is:

AppScan Screenshots



The screenshot shows a software advisory window for a security issue. At the top, there are three tabs: 'Advisory' (selected), 'Fix Recommendation', and 'Request/Response'. The main content area has a dark header with a shield icon and the title 'Blind SQL Injection'. Below the title, there are several key-value pairs: Severity (High), Type (Application-level test), WASC Threat Classification (Command Execution: SQL Injection), CVE Reference(s) (N/A), and Security Risk (It is possible to view, modify or delete database entries and tables). The advisory is divided into sections: 'Possible Causes' (Sanitation of hazardous characters was not performed correctly on user input) and 'Technical Description' (Web applications often use databases at the backend to interact with the enterprise data warehouse. The de-facto standard language for querying databases is SQL (each major database vendor has its own dialect). Web applications often take user input (taken out of the HTTP request) and incorporate it in an SQL query, which is then sent to the backend database. The query results are then processed by the application and sometimes displayed to the user. This mode of operation can be exploited by an attacker if the application is not careful enough with its treatment of user (attacker) input. If this is the case, an attacker can inject malicious data, which when incorporated into an SQL query, changes the original syntax of the query into something completely different. For example, if an application uses user's input (such as username and password) to query a database table of users' accounts in order to authenticate the user, and the attacker has the ability to inject malicious data into the username part of the query (or the password part, or both), the query can be changed into a different data yanking query, a query that modifies the database, or a query that runs shell commands on the database server. Typically, the attacker achieves this goal in steps. He/she will first learn the structure of the SQL query, and then use this knowledge to thwart the query (by injecting data that changes the query syntax) into performing differently than intended. Suppose the query in question is:



AppScan Screenshots

Advisory Fix Recommendation Request/Response

Blind SQL Injection

Fix Recommendation

- General
- Asp.Net
- J2EE
- PHP

© 2007 Watchfire Corporation, www.watchfire.com

Advisory Fix Recommendation Request/Response

Fix Recommendation

- General
- Asp.Net
- J2EE
 - ** Prepared Statements:

There are 3 possible ways to protect your application against SQL injection, i.e. malicious tampering of SQL parameters. Instead of dy

[1] PreparedStatement, which is precompiled and stored in a pool of PreparedStatement objects. PreparedStatement defines setters supported JDBC SQL data types. For example, setString should be used for input parameters of type VARCHAR or LONGVARCHAR (r input parameters prevents an attacker from manipulating the SQL statement through injection of bad characters, such as apostrophe.

Example of how to use a PreparedStatement in J2EE:

```
// J2EE PreparedStatement Example
// Get a connection to the database
Connection myConnection;
if (isDataSourceEnabled()) {
    // using the DataSource to get a managed connection
    Context ctx = new InitialContext();
    myConnection = ((DataSource)ctx.lookup(datasourceName)).getConnection(dbUserName, dbPassword);
} else {
    try {
        // using the DriverManager to get a JDBC connection
        Class.forName(jdbcDriverClassPath);
        myConnection = DriverManager.getConnection(jdbcURL, dbUserName, dbPassword);
    } catch (Exception e) {
        // Handle exception
    }
}
```



What is Jazz?

Jazz is IBM's **next-generation technology platform** for collaborative software delivery. Uniquely attuned to global and distributed teams, the Jazz platform is designed to **transform how people work together to build software**—making software delivery more **collaborative, productive and transparent**.

Innovation

A major investment by IBM to create a scalable, extensible team collaboration platform

Evolution

Many Rational products will evolve to support the Jazz technology platform over time, bringing a host of next-generation capabilities to the Rational Software Delivery Platform.

Community

Jazz.net – an online venue for open commercial development of the Jazz platform and Jazz-based products.

Vision

Our vision for the future of software delivery -- supporting diverse types of teams and a workforce that is increasingly organizationally and globally distributed, fluid and dynamic.



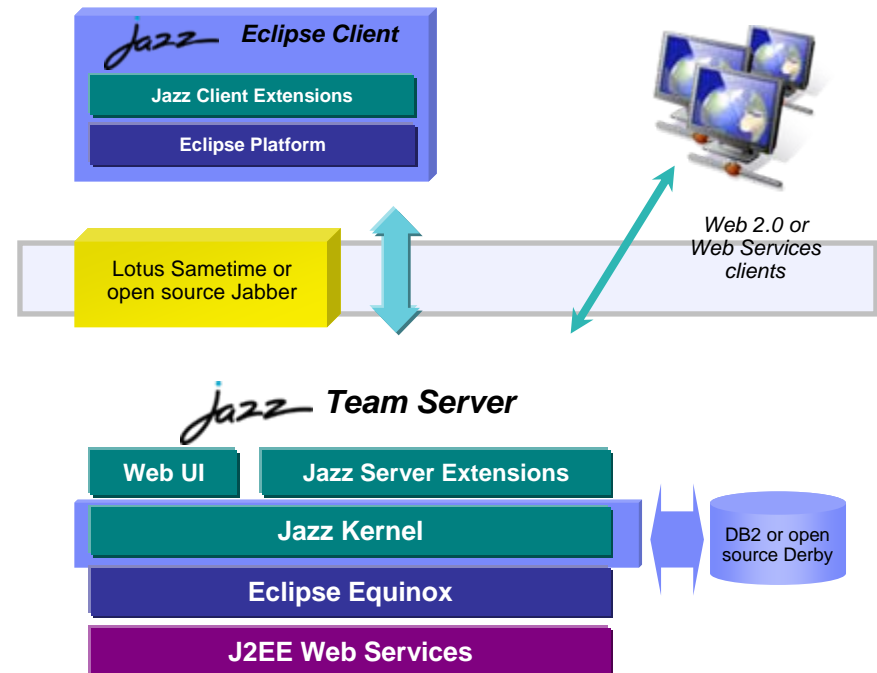
jazz



The value of the *jazz* technology?

- The Jazz platform enables teams to:
- **Collaborate in context** of the work they are doing. Jazz maintains the relationships between artifacts so you don't have to.
- **Right-size governance** by capturing, sharing and automating best practices at varying degrees of rigor. Fine-tune your governance process over time—avoiding the need to define everything up front.
- **Choose your own path.** An open and extensible architecture is designed to give you the flexibility to assemble your own software delivery platform, relying on your pref

The *jazz* Platform An Open, Services Oriented Architecture



What is IBM Rational Team Concert?

A New Family of Products based on Jazz Technology

- ▶ Optimized for agile development teams in mid-sized & large businesses
- ▶ Integrates the entire team around an integration server
- ▶ Includes Enhanced Eclipse Development environment

Primary Features

- ▶ In-place **collaboration** among team members
- ▶ Support and enforcement for development **processes**
- ▶ **Transparency** of status and trends through automated data-gathering & reporting

Motivation

- ▶ Enable flexible, agile application lifecycle management
- ▶ Low administrative footprint optimized for agile teams in SMB & large businesses
- ▶ Adds value for existing **ClearCase** and **ClearQuest** customers
- ▶ Step one in the rollout of “lifecycle service integration” middleware in the Rational Software Delivery Platform



Evolving the Rational Software Delivery Platform

An open ecosystem based on IBM middleware

Third-party Clients

New Rational Client
for Enterprise Program
Mgmt. (Polaris)

Other IBM Clients
(WBM, RDA)

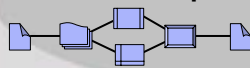
Agile team
collaboration
Client

RAD / RSA
integrated with TCS

LIFECYCLE SERVICE INTEGRATION MIDDLEWARE

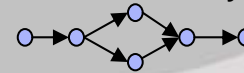
Team Collaboration
Services

Artifact
relationships



Powered by *Jazz*

Adaptive
Process Enactment
& Continuous Analysis



- Integrated Events / Status Function

- Integrated Work Item Function
- Integrated SCM Function

Point Product Integrated Platform

Rational
Portfolio
Manager

Portfolio
Management
Events
(optional)

Rational
RequisitePro

Rational
ClearCase/
ClearQuest

ClearCase
SCM
(optional)

ClearQuest
Work Items
(optional)

Rational
Build Forge

Rational
Functional Tester/
Performance
Tester

Third-party
products

Built for development efficiency: Allows developers to innovate rather than duplicating efforts, figuring out who to hand off to, or tracking and reporting status

Work items at jazz.net

Jazz - Mozilla Firefox

File Edit View History Bookmarks Tools Help

https://jazz.net/jazz/web/projects/Jazz%20Project#perspective=Work%20Items

IBM Intranet Google Eclipse.org Main Page Jazz

You are logged in as John Kellerman

The Jazz Project

Home | **Work Items** | Iteration Plans | Reports | Admin

New Work Item

New Query

Search

Recently Viewed

Recently created Run

My Queries

None

Shared Queries

Closed created by me

Closed subscribed by me

New unassigned

Open assigned to me

Open assigned to me (current milestone)

Open created by me

Open subscribed by me

Pending approvals for me

Plan Items

RFS

Recently closed

Recently created

Recently modified

Resolved by me

Current Query: Recently created

Previous | 1.43 of 43 | Next

Edit Current Query

Type Filter Text

Type	ID	Summary	Owner	Status	Priority	Severity	Modified
	27567	Please do not name a ClearQuest record type "Project"	Unassigned	New			3 hours ago
	27566	Fulltext test failures in build I20070717-1701	Benjamin Pasero	New			4 hours ago
	27565	Rename DynamicElement.INTERNAL_ID to DynamicElement.KEY	Christof Marti	New			3 hours ago
	27563	Adapt to Process API change: Renaming in preparation for modeled iterations	Christof Marti	New			4 hours ago
	27562	Adapt to Process API change: Renaming in preparation for modeled iterations	Unassigned	New			46 minutes ago
	27561	Adapt to Process API change: Renaming in preparation for modeled iterations	Unassigned	New			5 hours ago
	27558	annotation synch does not remove queryAnnotation when querable is set to false	Rafik Jaouani	Resolved			5 hours ago
	27557	Enforce shared stream permissions	Jean-Michel Lemieux	New			51 minutes ago
	27560	Adapt to Process API change: Renaming in preparation for modeled iterations	Unassigned	New			5 hours ago
	27556	Support Shared Queries in the web ui	James Moody	New			6 hours ago
	27554	Exceptions running jazz on Websphere Application Server 6.1	Richard Backhouse	New			5 hours ago
	27553	Clean-up and move jazz performance meter into repository.client.tests	James Branigan	New			6 hours ago
	27552	parentid should not be queryable	John Camelon	Resolved			6 hours ago
	27551	getController() still required for default page views	Bill Higgins	New			6 hours ago
	27550	ItemRestService needs to check statelids on PUT	Todd Lainhart	New			6 hours ago
	27549	Failed auto-resolve leaves empty change-set	Unassigned	New			7 hours ago
	27548	Changes not refreshed for component-specific flow targets	Christophe Cornu	New			6 hours ago
	27547	Add support for BigDecimal extension types	Ritchie Schacher	New			7 hours ago
	27546	Auto-resolve gives error, but checks in anyway	Unassigned	New			7 hours ago
	27545	Change-set left completed after failed Discard	Unassigned	New			7 hours ago
	27544	Conflict between completed change-sets not detected	Unassigned	New			5 hours ago
	27542	CLOB's can't be compared	Unassigned	New			6 hours ago

Iteration plan at jazz.net

The screenshot displays the Jazz web application interface in a Mozilla Firefox browser window. The page title is "Iteration Plan: Web UI 0.6 M2". The user is logged in as John Kellerman. The page shows the following details:

- Iteration Plan: Web UI 0.6 M2**
- Jun 04, 2007 to Aug 12, 2007 | Interval: 0.6 M2 | 36 Open Items | 37 Closed Items | -11 / 73
- Overview | Planned Items | Charts
- Core Web UI (Bill, Richard)**
- Services**
 - Boolean and Numeric values are not being marshalled correctly to JSON (12506)
- Layout and Styles**
 - set font-size to 1em for button, input, select, and textarea in styles.css (44483)
 - left-nav border does not extend all the way down when navigation content is very long (13740)
 - disable default browser styles for margin and padding (15613)
 - Web UI footer should be "attached" to the bottom of the browser window (20852)
 - LeftNavigation is broken on IE6 when Text Size is "Larger" (23710)
- Work Item Web UI (Larry, Patrick)**
- Themes:**
 - Improve Consumability and user experience
 - Improve consistency with Eclipse UI
- Work item summary:**
 - Ability to step through query results in the context of a work item editor (43697)
 - Rework tabs to UX spec (24061)
 - Links summary progressive disclosure (22892)
 - Make Links and Attachment pages match format of the Overview page (25067)
 - Ability to edit web query results in place (25377) (25377)
 - Surface "Delete query" in the Web UI (22945) (22945)
 - Edit unsaved queries once they are run (25047)
 - Plus several UX improvements

The interface includes a search bar, navigation tabs (Home, Work Items, Iteration Plans, Reports, Admin), and a sidebar with filters for Team Areas and Interval.



Dashboards at jazz.net

You are logged in as Derek Holt | [Logout](#)

The Jazz Project

Home | **Dashboards** | Work Items | Iteration Plans | Reports

New Private Dashboard

▼ My Dashboards

My Profile

▼ Project and Team Areas

Jazz Project

Jazz

Agile Planning

Build

ClearCase Connector

ClearQuest Connector

Community Site

Dashboard

Improv

Incubator

Code Coverage

Component

Development

JRS

Mylyn Integration

Provisioning

Static Analysis

Tuner

Visual Studio Client

Install

Jumpstart

Process

Release Engineering

Reports

Rennetron

Web UI Team Dashboard

Team and Work | Docs | Old Stuff

Team Description

Web UI Foundation

Provides frameworks and APIs for web browser-based user interfaces. Also develops the Admin Web UI.

Team Members (6)

- Bill Higgins - componentlead, contributor
- Richard Backhouse - contributor
- Kristen Balhoff - contributor
- Rob Retchless - parttime, contributor
- Matthew Jarvis - contributor
- Matt Lavin - parttime, contributor

Planning

- PMC M5 Iteration Plan
- Releng Rotation
- Team Concert 1.0 Release Plan
- Web UI M5 Iteration Plan
- Web UI Wiki Page

Recent Team Events (52)

- 'Improve Web UI handling of situation when a user does not belong to the groups required to acces...' (40667)
- *'Improve Web UI handling of situation when a user does not belong to the groups required to acces...' (40667)
- 'Improve user experience when there are problems with login' (38433)
- 'Improve Web UI handling of situation where a user exists in the repository, but not in the user ...' (40662)

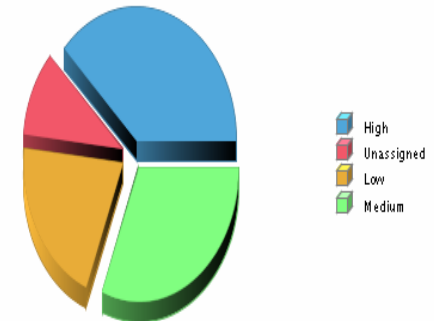
In Progress Work Items (5)

- 36128 Adopt Dojo 1.0.2
- 39996 Display error icon on the project application page for Admins
- 38972 Adopt Dojo 1.0 (Repository)
- 33697 Need a way to dynamically show/hide 'show partial/maximize' controls
- 38416 Set 'Cache-Control: public' header for web UI resources

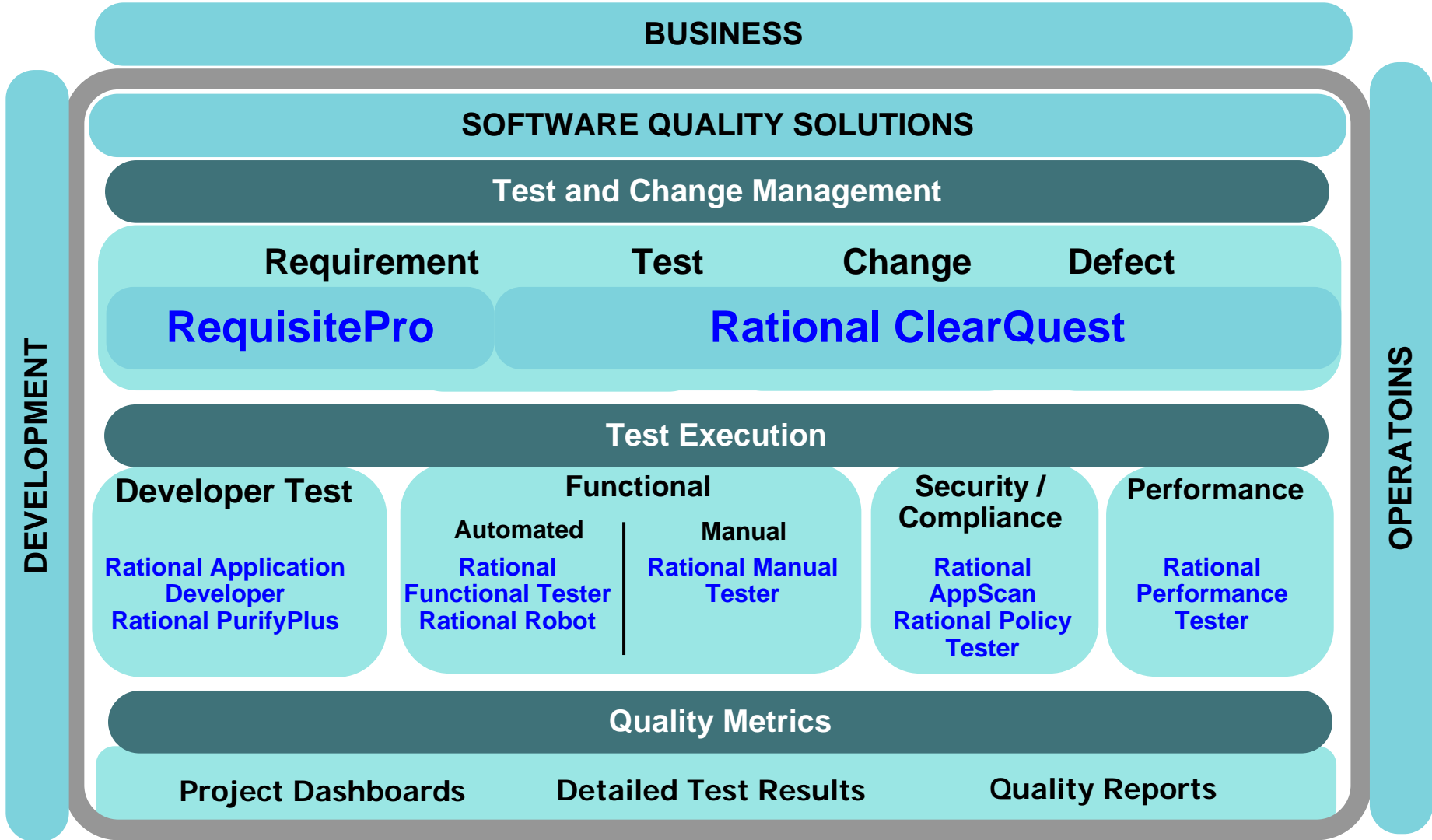
Team Work Item Queries

- Open (Current Milestone) (29)
- Recently Resolved (1)
- Untriaged (40)
- Backlog (67)

Open (Current Milestone) (29) Priority



Software Quality Solutions



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Summary: Succeeding with Agile

- **Agile Development is transforming how development is done**
 - ▶ Placing greater demand on people, processes and tools
- **Following best practices, Agile can scale to accommodate technical and organizational complexity**
 - ▶ Automation is a must
 - ▶ Equip your testers
- **There are a lot of cool Rational technologies**
 - ▶ Rational AppScan
 - ▶ Rational testing tools for SAP, Siebel
 - ▶ Jazz.net
 - ▶ Rational Team Concert – read Agile!



Resources

- Agile Community <http://www.agilealliance.org/>
- Manifesto for Agile Development <http://www.agilemanifesto.org/>
- Scott Ambler <http://www.ambysoft.com/>
- Crispin, L. & Hourse, T. (2002) Testing Extreme Programming. Addison-Wesley.
- developerWorks <http://www.ibm.com/dw/>
- Jazz or Rational Team Concert <http://www.jazz.net>
- Alan Kan, alankan@nz.ibm.com





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