



IBM Software Group

IBM Deployment Planning and Automation

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March 2011*

Rational software

[Go to IBM](#)



Innovation for a smarter planet

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Agenda

- **Middleware Automation Update**
 - ▶ Latest Deployment Automation Features
 - ▶ Roadmap Ahead for Automation

- **Partnering to Expand the Scope**
 - ▶ MidVision Extensions

- **IBM Deployment Planning and Automation**
 - ▶ Plan, Automate, Govern
 - ▶ Example Scenario



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Rational Automation Framework for WebSphere (RAFW)

Customizable and extensible framework that delivers...

- ✦ Configuration management automation
- ✦ Application deployment automation
- ✦ Product installation & patching automation

Core Strengths...



Accuracy

“Data Driven” - Maintains normalized configuration data

Reliability

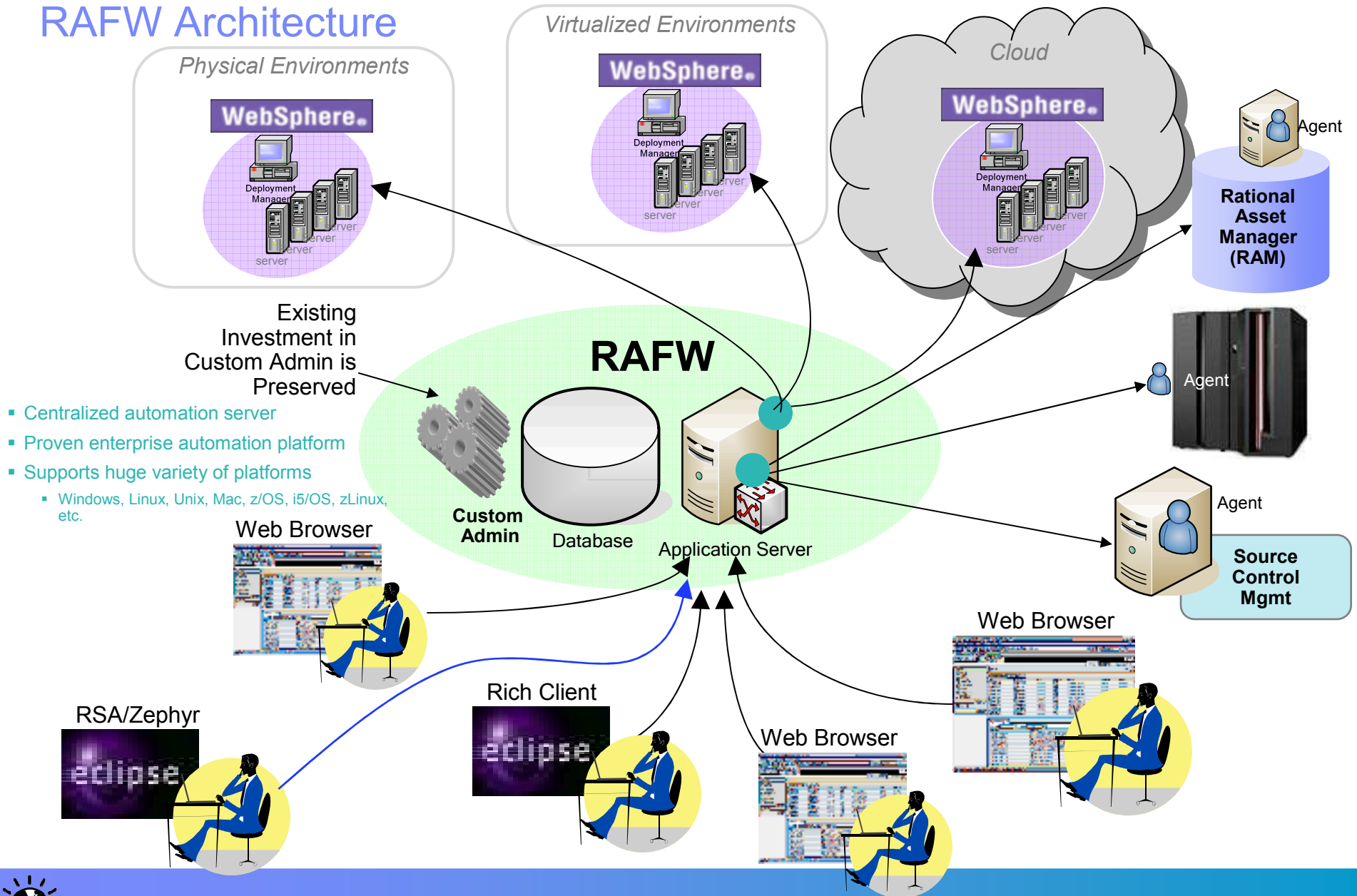
Apply right data to the right target environment

Consistency

Apply data in repeatable manner to target environments



RAFW Architecture



Existing Investment in Custom Admin is Preserved

- Centralized automation server
- Proven enterprise automation platform
- Supports huge variety of platforms
 - Windows, Linux, Unix, Mac, z/OS, i5/OS, zLinux, etc.

RAFW Automation Targets (as of 4Q 2010)

Supported Middleware Versions, Platforms, and Action Types

	AIX	HP-UX	Linux	Solaris	Windows	zLinux	z/OS
IBM HTTP Server Version 6.0, 6.1, 7.0	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Configure Deploy
WebSphere Application Server Version 6.0, 6.1, 7.0	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Configure Deploy
WebSphere Application Server ND Version 6.0, 6.1, 7.0	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Configure Deploy
WebSphere Portal Version 6.0, 6.1 6.1.5	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Configure Deploy
WebSphere Enterprise Service Bus Version 6.2	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	
WebSphere Process Server Version 6.2	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	
WebSphere Service Registry and Repository Version 6.2, 6.3	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	
WebSphere Virtual Enterprise Version 6.1	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	Install Configure Deploy	



RAFW 7.1.2 Release Highlights (October 2010)

- Expanded automation targets
 - ▶ WebSphere BPM Suite
 - WebSphere Process Server 6.2
 - WebSphere Enterprise Service Bus 6.2
 - WebSphere Service Registry and Repository 6.2
 - WebSphere Service Registry and Repository 6.3
 - ▶ WebSphere Virtual Enterprise 6.1
 - ▶ WAS Feature Packs
 - WAS 6.0: Web 2.0
 - WAS 6.1: Web 2.0, EJB3, Web Services
 - WAS 7.0: Web 2.0, CEA, XML, SCA, OSGi & JPA
 - ▶ WebSphere Portal 6.1.5
 - ▶ Fixpack updates for WAS, IHS and WebSphere Portal
- Performance/Scalability Improvements
 - ▶ Core Automation Framework (Purge, Scheduler, etc...)
 - ▶ RAFW Initial & Media Agentless Transfer



RAFW 7.1.2 Release Highlights (October 2010)

- Consumability Improvements
 - Installer GUI for RAFW (in Build Forge)
 - Reduced manual post-install activities
 - New uninstaller utility for incubator installations
 - New Logging Framework

- Extensibility Enhancements
 - Easily extend the product with custom actions that incorporate reusable Java code
 - Easily extend the product with custom actions that incorporate reusable Jython code
 - Enhanced support for Custom Environment Templates
 - RAFW Extender's Guide



Configure WCA Pattern customized by RAFW

Zodiac Application Test Pattern
 Updated on: Mar 11, 2010 11:50:37 PM

In the cloud now: (none)

Access granted to: Leigh [owner]
 Add more...

Topology for this pattern:

Virtual image: WebSphere Application Server 7.0.0.9 Deploy...

The diagram shows a 'Deployment manager' component connected to a 'Custom nodes' component. The 'RAFW Deployment Plan' is highlighted with a red circle.

- WebSphere single server
- WebSphere single server 7.0.0.
- WebSphere single server with :
- Zodiac Application Test Pattern

Patterns Catalog Cloud Appliance

Well in the required values for this part of the pattern:

- * Verify password:
- * Password (virtuser):
- * Verify password:
- * RAFW_SERVER_HOST:
- * RAFW_SERVER_USER:
- * RAFW_SERVER_PASSWORD:
- * RAFW_AUTOMATION:
- * RAFW_ENVIRONMENT:

OK Cancel

RAFW: 2011 and Beyond



- Expansion of automation portfolio
 - ▶ Exclusively driven by market needs and customer feedback
 - ▶ IBM and non-IBM targets, including MQ and WMB (*see additional slides*)

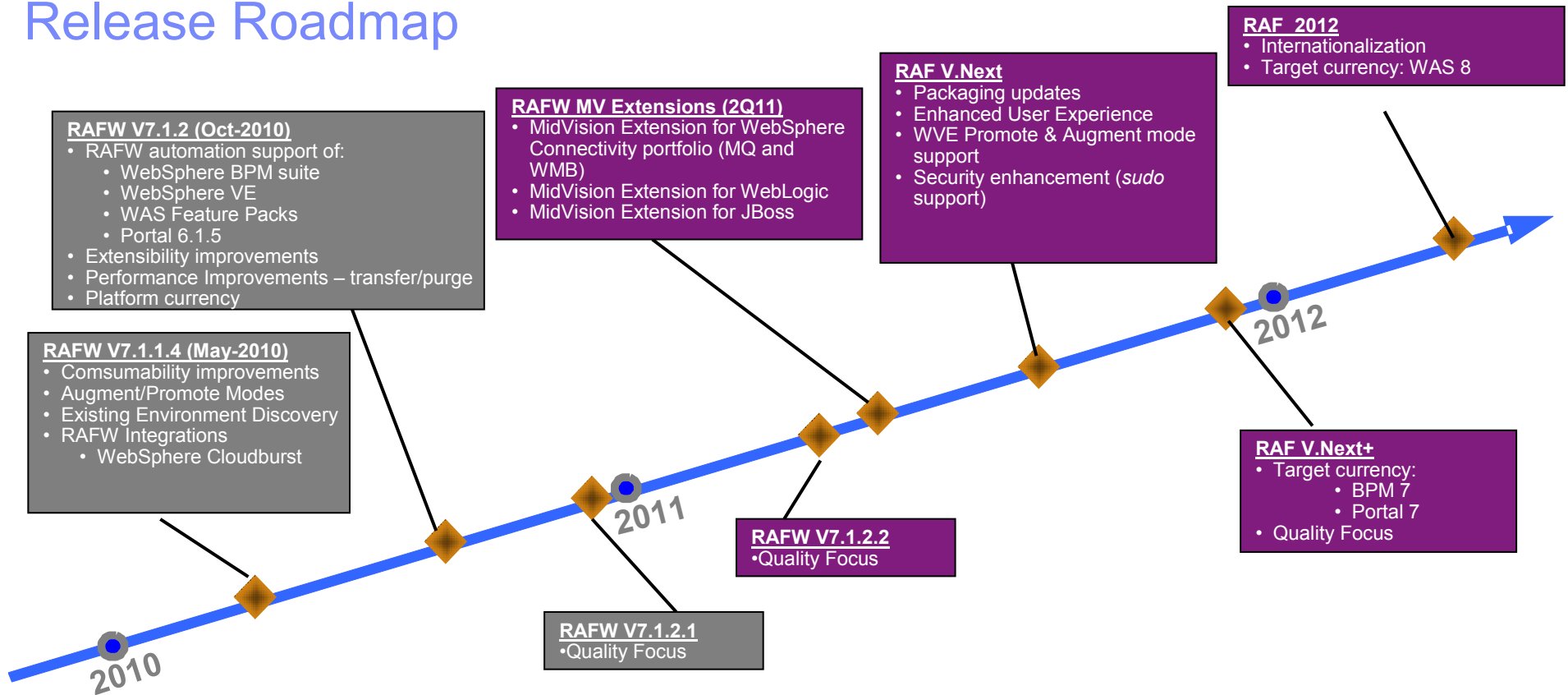
- Eclipse-based GUI for intuitive visualization of critical usage scenarios
 - ▶ Exploitation of Eclipse and VCE (*live demo*)

- Continued enhancements in scalability, performance and user experience

- End to end Lifecycle Management solutions through integration with key IBM Rational and Tivoli products
 - ▶ Tivoli Service Automation Manager/Tivoli Provisioning Manager
 - ▶ Rational Software Architect – Deployment Planning & Modeling



Release Roadmap



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What goes into RAFW?

Rational Automation Framework

- Automates Tasks
- Scheduling
- Notifications
- Auditability
- Visibility
- Consolidation & standardization
- Role-based Security

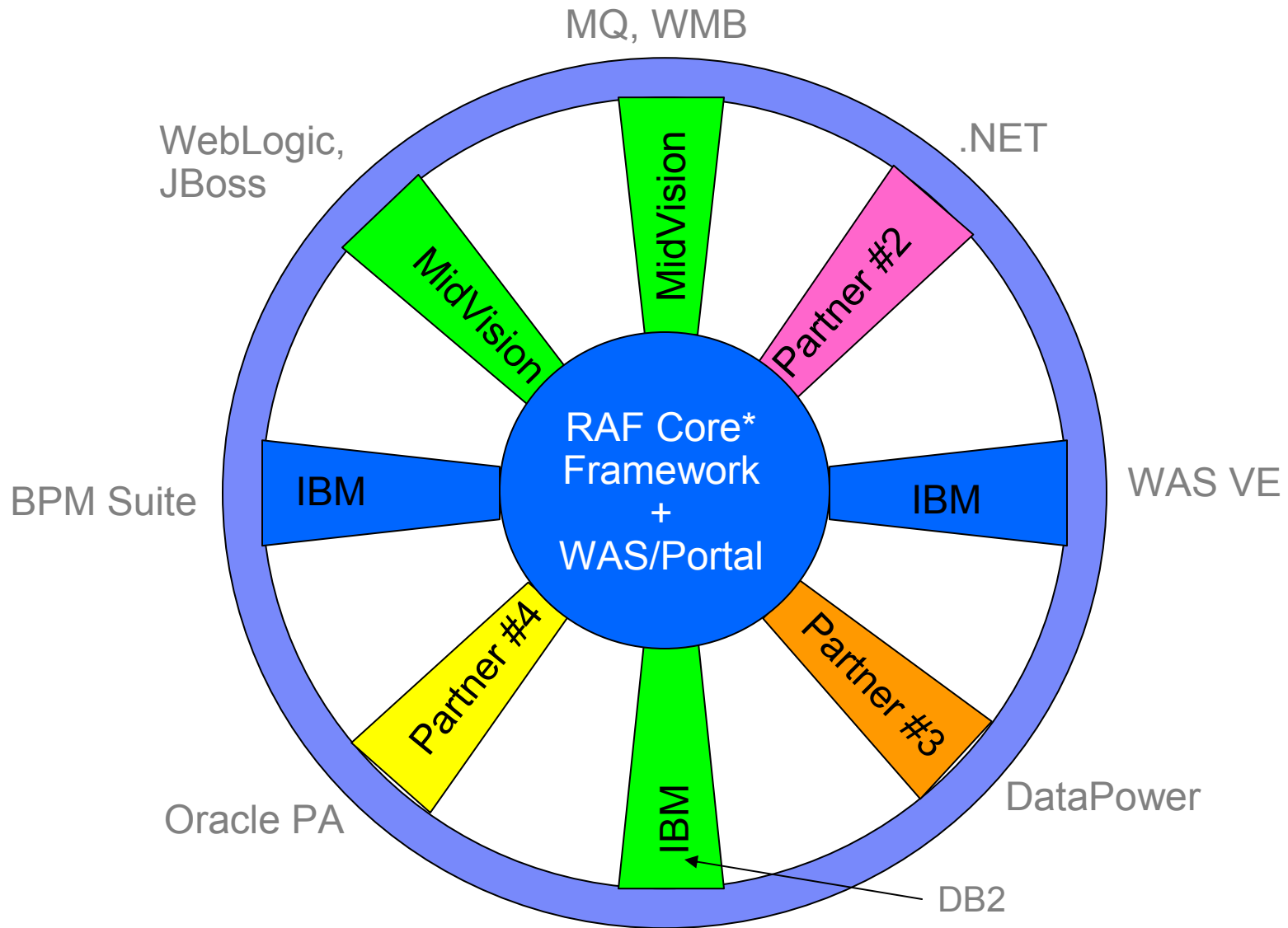
+

WebSphere Module (WAS, IHS, Portal, WPS, WSRR, WESB, WVE)

- Library of 750+ commonly used tasks to administer WebSphere family products
- Environment Generation Wizard
- Extensive help information
- Preset integration with WebSphere CloudBurst Appliance (WCA)
- Predefined automation library elements



Leveraging Partners for Full Spectrum of Middleware



Module Architecture

- RAFW provides core automation platform and services (Security, Audit, Build / SCM, Connectivity, etc.)
- Loosely coupled modules are built, packaged and distributed separately
- Uses BuildForge for version control and build processes
- Concept of a “Deployment Package” – archive containing infrastructure configuration and/or code



WMQ Support Overview

- Support for v5, v6, v7 Queue Managers
- Supports many different Operating Systems due to Client-Server model: Unix / Windows / z/OS / AS/400 / Tandem
- Queue Manager Creation (Windows / UNIX)
- Client-based deployment of WMQ artefacts to heterogeneous remote Queue Managers
- Token Scope and indexing
- Dynamic Authorisation Scripts
- Preview Mode



WMB Support Overview

- Compatible with deployments to WMB v6, v7
- Supported platforms (Unix / Windows / z/OS)
- Automated BAR File Deployments
- Ability to override BAR files
- Module either appends or re-creates Execution Groups
- Broker Creation
- Deployment of Jplugins
- XSD Schemas



WebLogic Support Overview

- Compatible with deployments to WebLogic 9, 10 and 11g
- The automated deployment and configuration is OS agnostic as it is Jython (using Weblogic's WLST) and Java based
- Automatic creation or update of WebLogic configurations below
 - ▶ Domain, Machines, Servers, Clusters
 - ▶ JDBC System Resources, JMS Servers, JMS Resources (Queues, QCFs, Foreign JMS Servers)
- Automated EAR/WAR file Deployments / Automatic restart of Administration Servers and Application Servers (using Node Managers) after a deployment



Red Hat JBoss Support

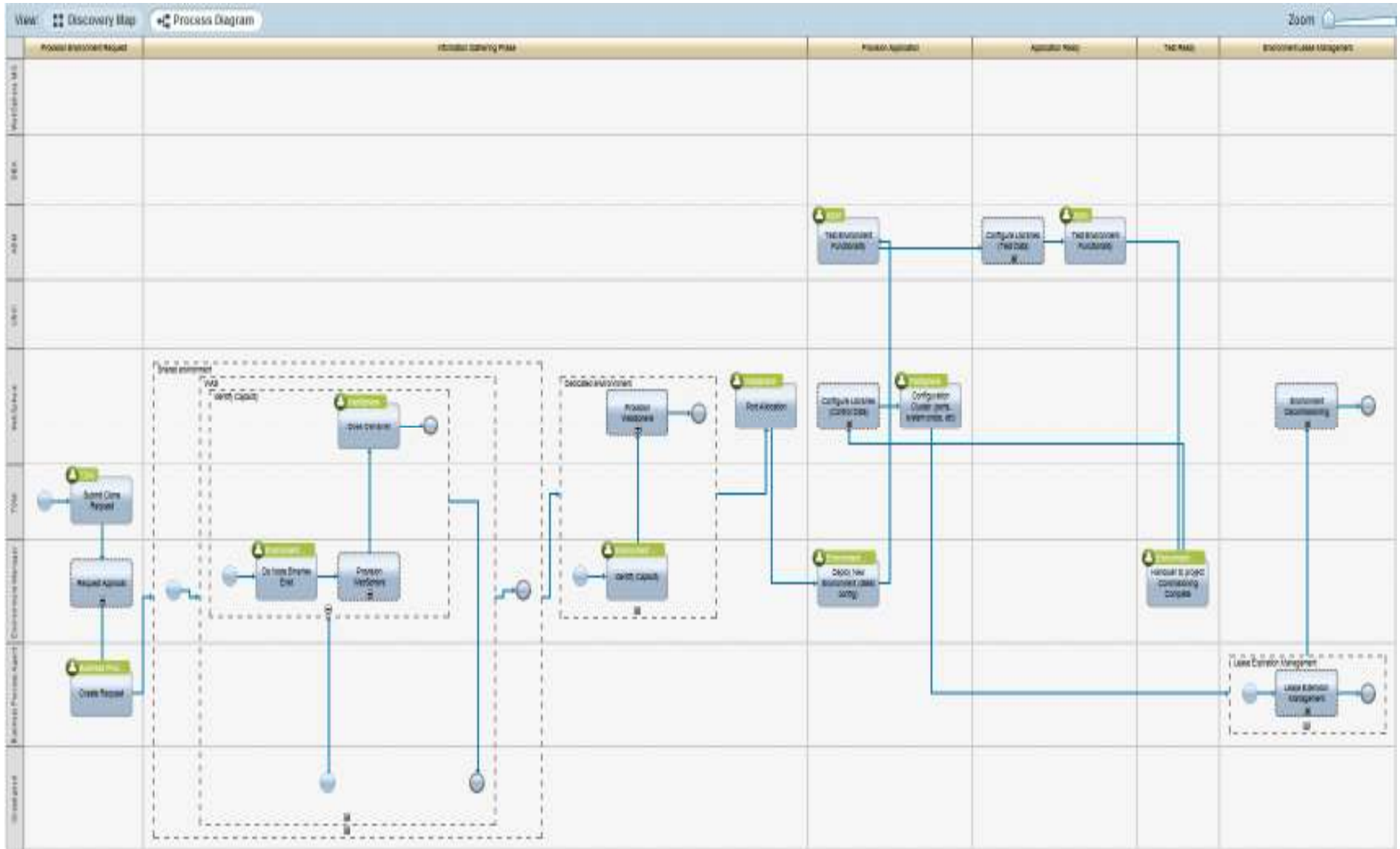
- Provision new JBoss instances
- Automatic creation or update of JBoss configurations below
 - Datasources
 - JMS Queues
 - JMS Topics
 - ConnectionPools
 - Ports, cluster ids, other administrative concerns
- Automated EAR/WAR deployments (hot and static deploy)
- A variety of operational functions to allow the deployment process to be tailored to any process requirement



Process

- Process Engineering is the foundation of effective *enterprise* middleware automation
- The main two processes we are concerned with are:
 - Workflows / Automation Scenarios
 - Deployment Automation Plan





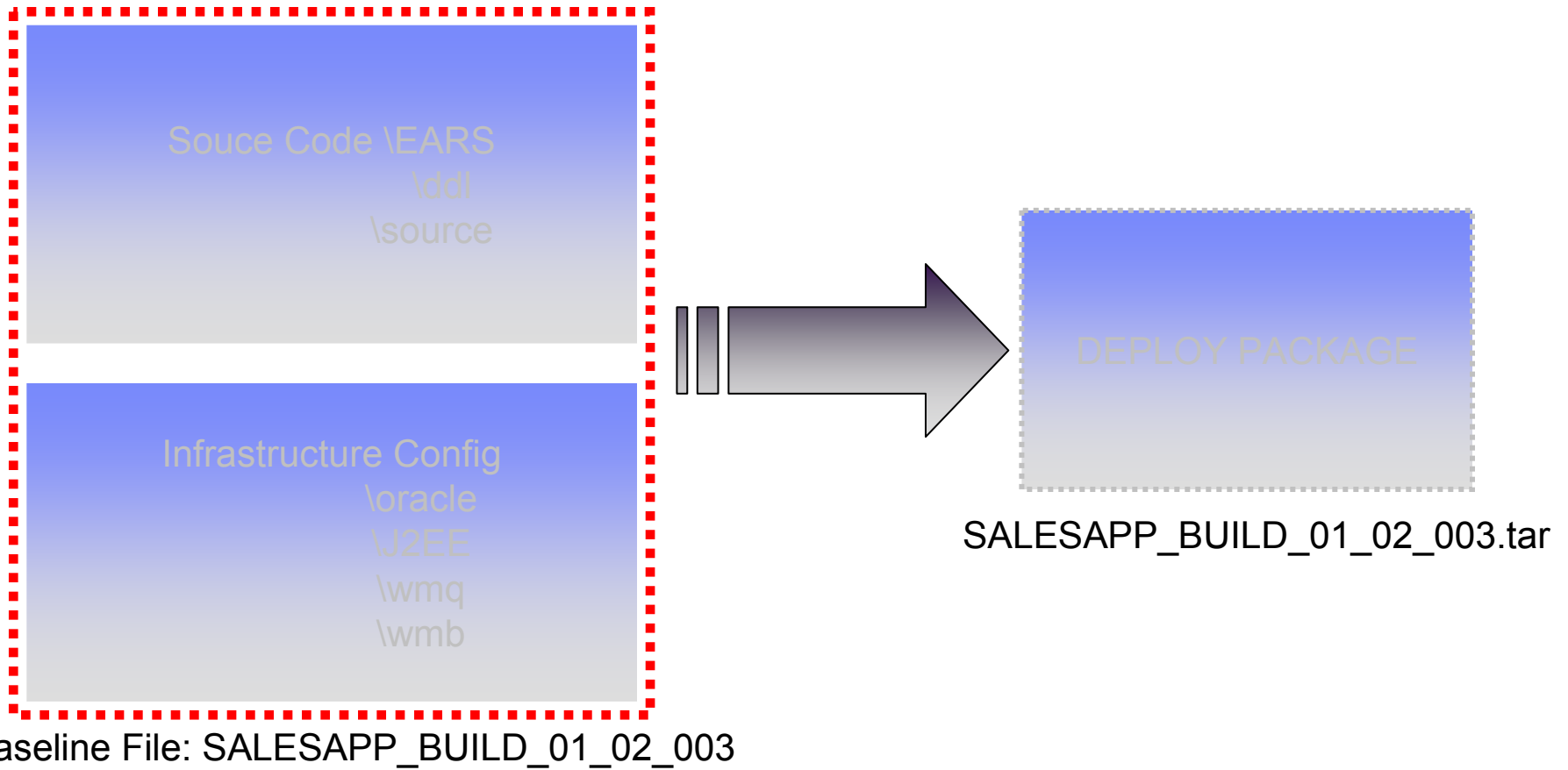
Environment Life Cycle Management Process

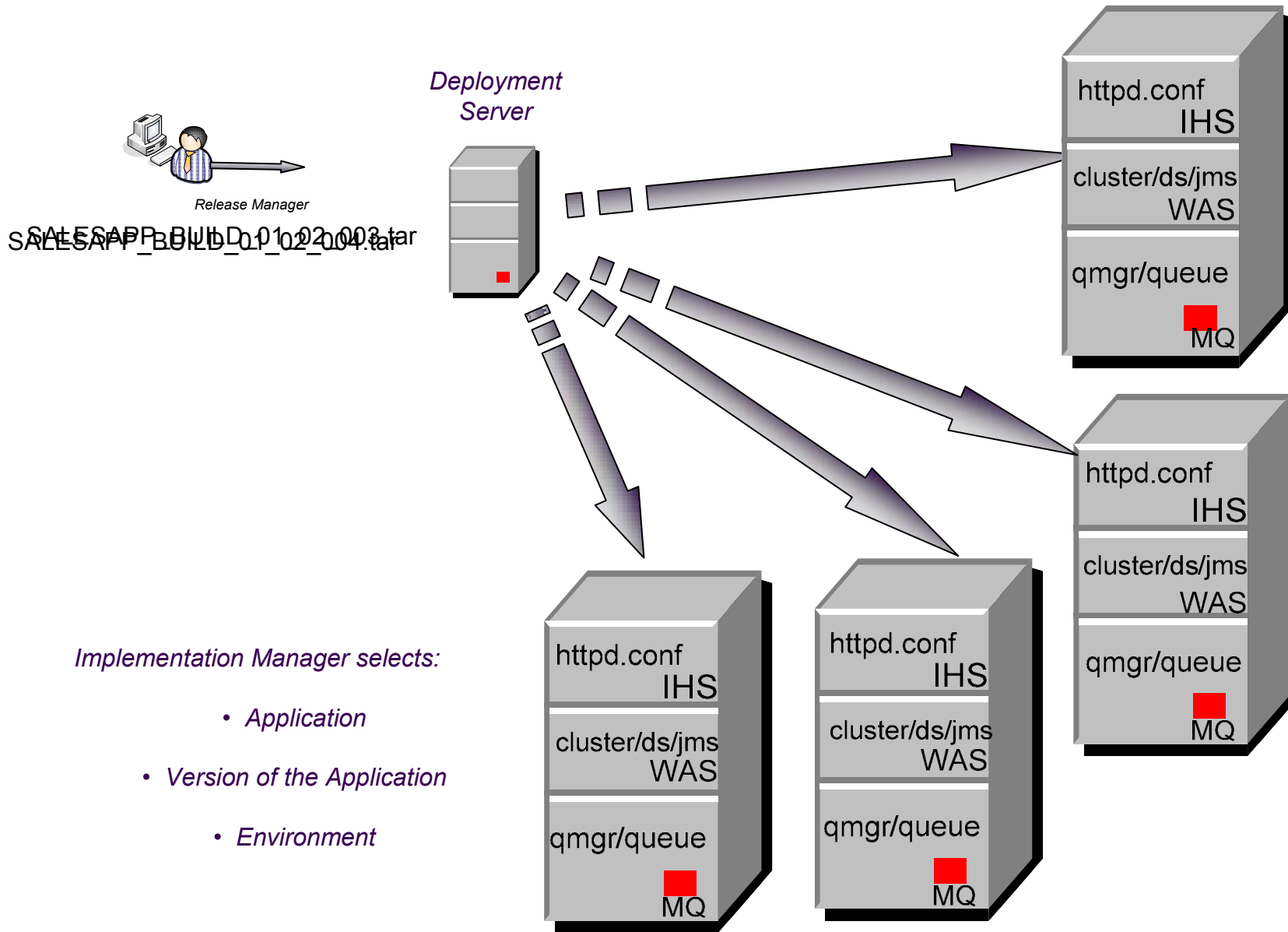
Key Principles

- Clearly defined entry and exit points for each stage
- Taxonomy: naming conventions, port allocation, file systems, etc.
- Clearly defined roles and responsibilities
- High level of configuration and deployment automation
- Encapsulation of code and / or configuration into a “deployment package”



Creating the Deploy Package





Principles

- Version control and build configuration
- Release versions of configuration change in the same way as code
 - Allows linking of configuration releases and application releases – together comprising a business application
 - “Build Once, Deploy Anywhere”
 - Bringing established best practice from application development to infrastructure management



To ensure consistency – always deploy the same thing!

- Templates created that define infrastructure or application configuration
- Templates are environment neutral and usually stored in the target platform format (i.e. ddl, mqsc, etc.)
- Contain the complete configuration for a target technology
 - Deltas become part of the template – so configuration changes are not made in isolation



Properties / Template

DevTst01

QMGR_NAME	SALESDEVQM01
QMGR_HOST	Inxdev01
QMGR_PORT	1414

MQSC Template

```
-----<QMGR_NAME>-----
-----<QMGR_HOST>-----
-----<QMGR_PORT>-----
```



Properties / Template

DevTst01	
QMGR_NAME	SALESDEVQM01
QMGR_HOST	Inxdev01
QMGR_PORT	1414
DB_USER	devtstuser

MQSC Template
-----<QMGR_NAME>-----
-----<QMGR_HOST>-----
-----<QMGR_PORT>-----
-----<DB_USER>-----



Properties / Template

DevTst01

QMGR_NAME	SALESDEVQM01
QMGR_HOST	Inxdev01
QMGR_PORT	1414
DB_USER	devtstuser

SysTst01

QMGR_NAME	SALESTSTQM02
QMGR_HOST	Inxtst01
QMGR_PORT	1415
DB_USER	syststuser

MQSC Template

```
-----<QMGR_NAME>-----
-----<QMGR_HOST>-----
-----<QMGR_PORT>-----
-----<DB_USER>-----
```



Version Control	Configuration Management Tool	Build Process	Release Mechanism	Middleware
Code Configuration	Eclipse or Web based config. UI	Generate Versioned Release Components	Ideally web based, self service	<ul style="list-style-type: none"> •WebSphere AS •Portal / WPS / ESB / WSSR •MQ / Broker / Datapower •DB2 / Oracle



Version Control	Configuration Management Tool	Build Process	Release Mechanism	Middleware
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x.mqsc	Alter channel			



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x.mqsc	Alter channel	SALES_MQ_01_02_033.zip		



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x.py	JMS Queue Dest			



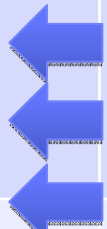
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x.mqsc	Alter channel	SALES_MQ_01_02_033.zip	SALES_MQ_01_02_033	WMQ
x.py	JMS Queue Dest	SALES_WAS_01_02_046.zip		



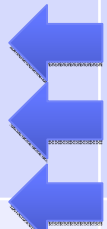
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x.mqsc	Alter channel	SALES_MQ_01_02_033.zip	SALES_MQ_01_02_033	WMQ
x.py	JMS Queue Dest	SALES_WAS_01_02_046.zip	SALES_WAS_01_02_046	WAS



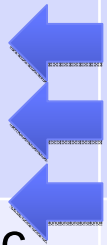
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x.mqsc	Alter channel	SALES_MQ_01_02_033.zip	SALES_MQ_01_02_033	WMQ
x.py	JMS Queue Dest	SALES_WAS_01_02_046.zip	SALES_WAS_01_02_046	WAS
x.ddl	Column, View, etc			



Version Control	Configuration Management Tool	Build Process	Release Mechanism	Middleware
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x.mqsc	Alter channel	SALES_MQ_01_02_033.zip	SALES_MQ_01_02_033	WMQ
x.py	JMS Queue Dest	SALES_WAS_01_02_046.zip	SALES_WAS_01_02_046	WAS
x.ddl	Column, View, etc	SALES_DB_01_02_012.zip		



Version Control	Configuration Management Tool	Build Process	Release Mechanism	Middleware
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x.mqsc	Alter channel	SALES_MQ_01_02_033.zip	SALES_MQ_01_02_033	WMQ
x.py	JMS Queue Dest	SALES_WAS_01_02_046.zip	SALES_WAS_01_02_046	WAS
x.ddl	Column, View, etc	SALES_DB_01_02_012.zip	SALES_DB_01_02_012	Oracle



Provisioning New Environments

Products > Configuration > Code

AppServer - products

IBM HTTP Server

WebSphere AS 6.1.0.29

WMQ6 ML72

AIX 6 TL10

Database - products

Oracle 11.1.0.7.0

AIX 6 TL10



Provisioning New Environments

Products > Configuration > Code

AppServer - products	Configuration / App
IBM HTTP Server	WEB_CONFIG_SALES_1_2_056
WebSphere AS 6.1.0.29	WAS_CONFIG_SALES_1_2_087
WMQ6 ML72	WMQ_CONFIG_SALES_1_2_032
AIX 6 TL10	STANDARD ORG IMAGE
Database - products	Configuration / App
Oracle 11.1.0.7.0	ORA_CONFIG_SALES_1_2_042
AIX 6 TL10	STANDARD ORG IMAGE



Provisioning New Environments

Products > Configuration > Code

AppServer - products	Configuration / App
	APP_CONTENT_SALES_1_2_124
IBM HTTP Server	WEB_CONFIG_SALES_1_2_056
WebSphere AS 6.1.0.29	WAS_CONFIG_SALES_1_2_087
WMQ6 ML72	WMQ_CONFIG_SALES_1_2_032
Database - products	Configuration / App
Oracle 11.1.0.7.0	ORA_CONFIG_SALES_1_2_042
AIX 6 TL10	STANDARD ORG IMAGE



Sales
Release 1.2



Introducing Deployment Planning & Automation



- Problems
 - ▶ Organizations spend too much time and too many resources on deployment
 - ▶ Manual deployment is unreliable and not repeatable
 - ▶ Inconsistent methods of hand-off between development and operations

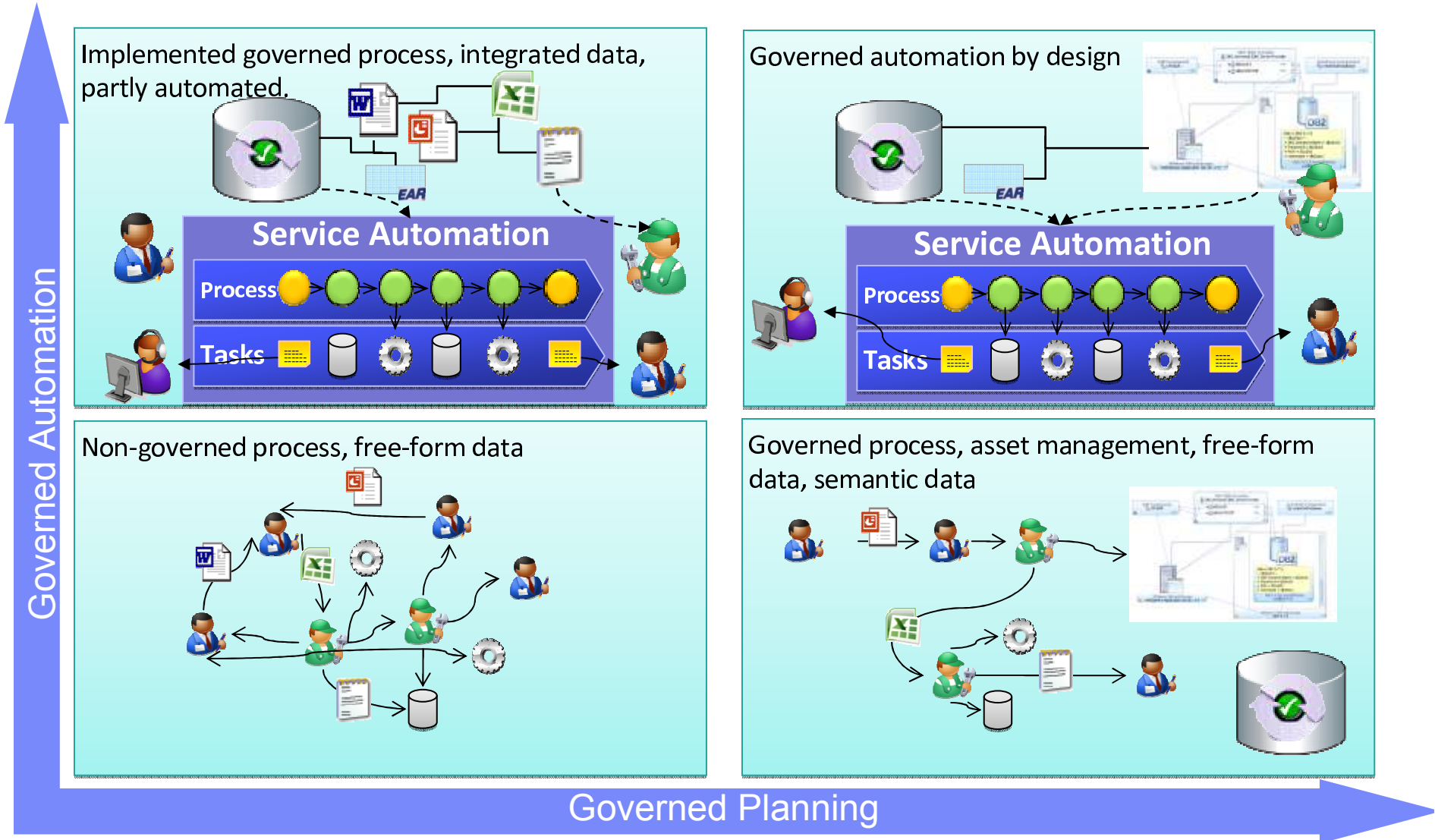
- Which Causes
 - ▶ Concerns about the risk of deploying delays customers from getting the latest software for days, weeks, months, even years

- Solution
 - ▶ IBM tools provide process, automation and collaboration to address the silos, time and resource constraints

- Benefits
 - ▶ Automation significantly reduces cost, time and human error
 - ▶ Staged and incremental adoption allows benefits to be achieved from the outset



Deployment Planning & Automation Incremental Value

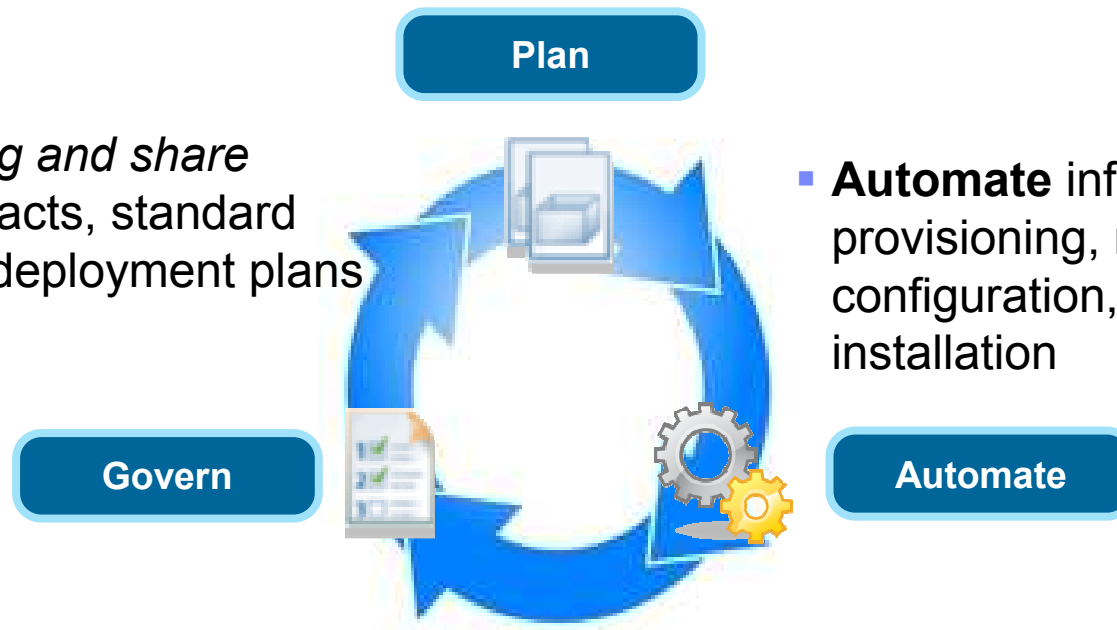


Introducing IBM Deployment Planning and Automation

- **Plan** your desired deployment using discovered resources and standard configuration templates

- **Govern, catalog and share** application artifacts, standard templates and deployment plans

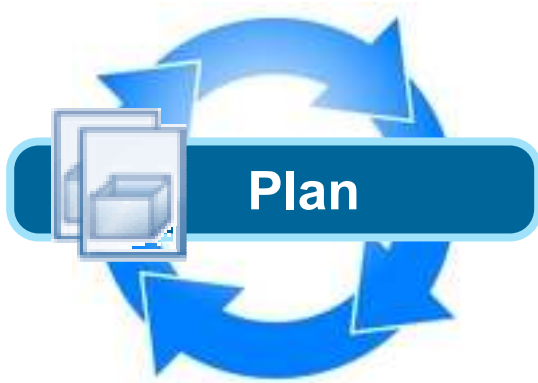
- **Automate** infrastructure provisioning, middleware configuration, and application installation



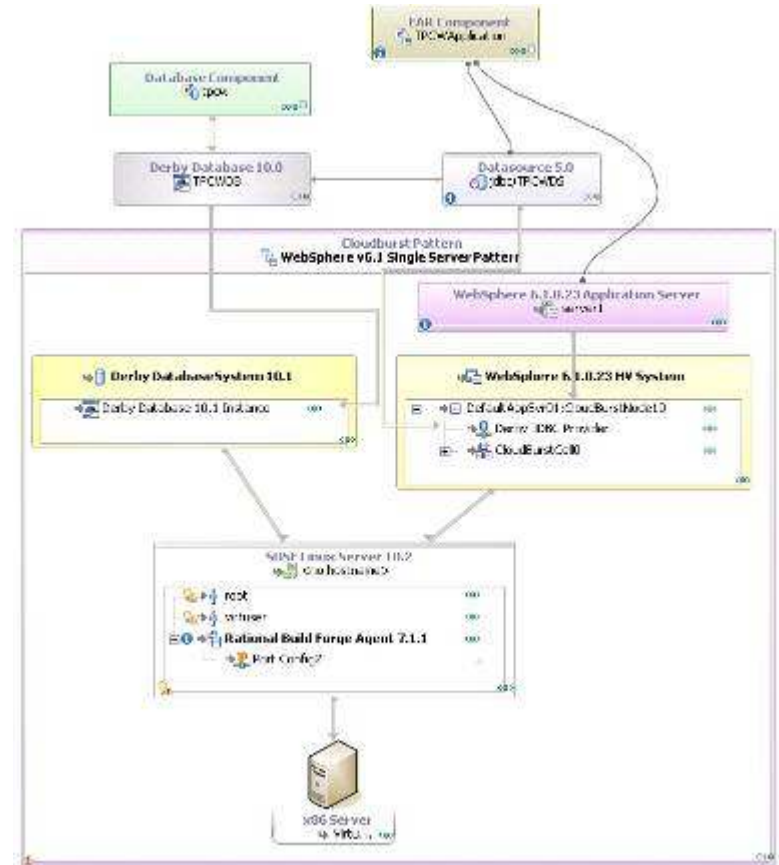
Speed the delivery of high quality applications to physical environments, virtual environments, and cloud environments



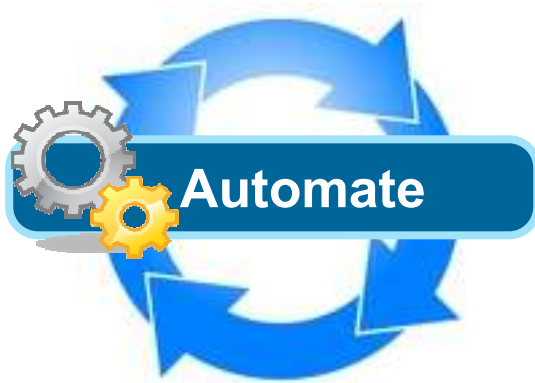
IBM Deployment Planning and Automation lifecycle



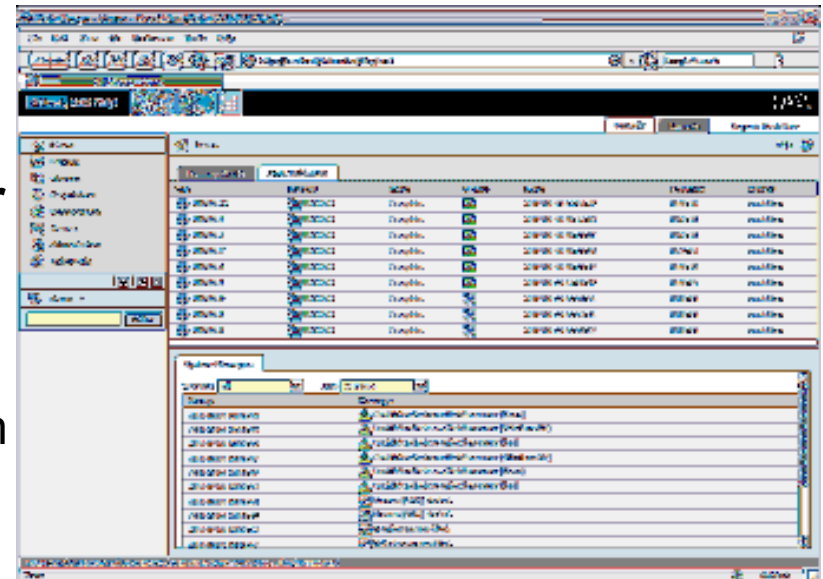
- **Rational Software Architect (RSA)** allows you to plan and validate deployment of applications and infrastructure as well as generate and publish workflows to drive automation and the creation of service templates.



IBM Deployment Planning and Automation lifecycle



- Within **Rational Automation Framework for WebSphere (RAFW)**, you can work from the published deployment workflow from RSA, refine it as required, and save it as an asset. The RAF automation engine will then perform automation activities to configure the middleware and deploy the application.

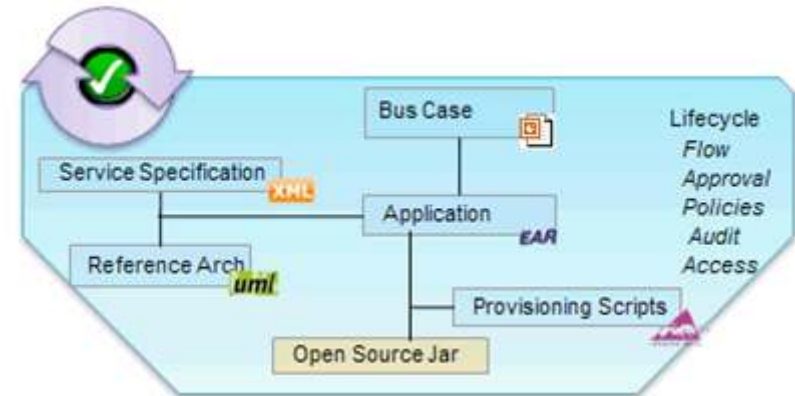


IBM Deployment Planning and Automation lifecycle



Name	Version	State	Community	Rating
WebSphere sMash	1.0	Approved	Cloud Computing Core ...	★★★★
WebSphere Portal/WCM 6.1.5-3	1.0	Approved	Cloud Computing Core ...	★★★★
WebSphere Feature Pack for OSGi Apps and JPA 2.0	1.0	Approved	Cloud Computing Core ...	★★★★
WebSphere Application Server and Rational Agent C	1.0	Approved	Cloud Computing Core ...	★★★★
suse2 10/6/09 2:13 AM	1.0	Retired	Cloud Computing Core ...	★★★★
SUSE 10 SP2				
Small System Size				

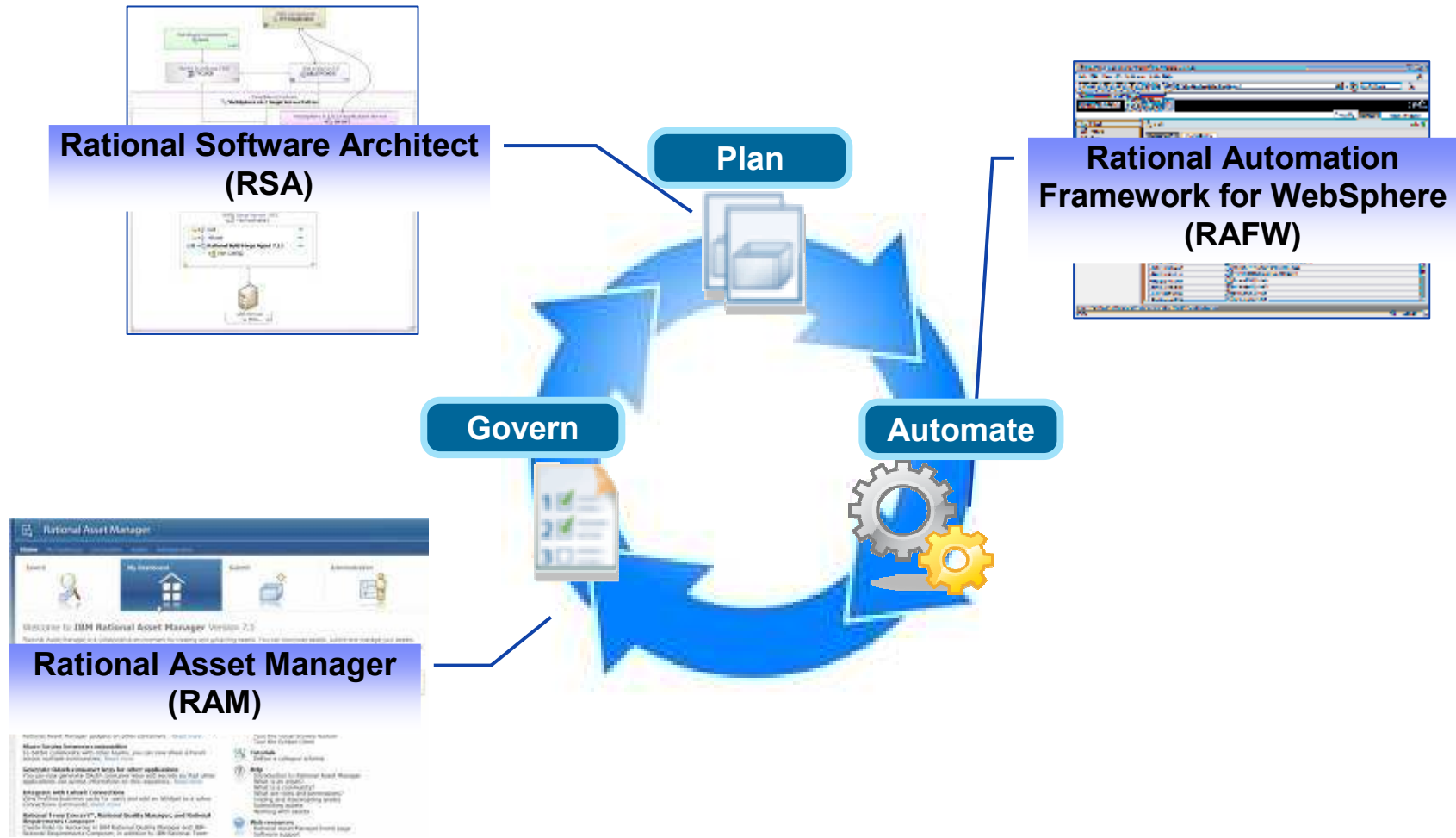
- **Rational Asset Manager (RAM)** provides a definitive library for your assets enabling strategic reuse:
 - **Catalog** enables effective search and availability of assets
 - **Govern** assets using automated reviews and policies
 - **Share** assets easily using web, rich client or integrations



Catalog, Govern and Share assets



IBM Deployment Planning and Automation Product Mapping

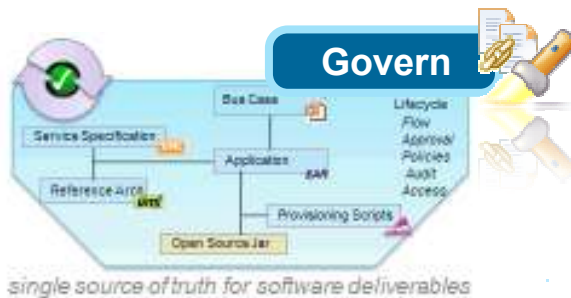


Value of the integrations

Proven templates and patterns to accelerate planning

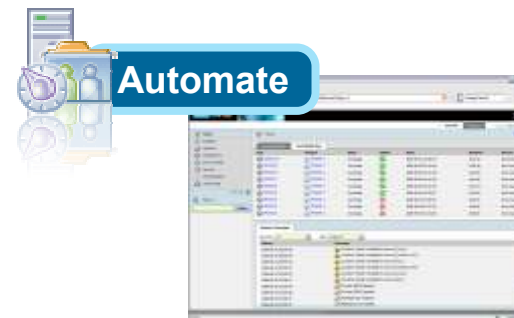


Drive automation with visual deployment plans



New technology to deploy with speed and quality

Automate deployment using approved components from the governed catalog



Deployment Planning & Automation Scenario

Solution Architect

Deployment Plan

Makes environment configurations, templates and artifacts to specify deployment plans

Governed Application Artifacts & Templates

Would love to

- Reuse known good plans and assets
- Discover existing resources vs guess

Workflow

Install & Configure Applications

Deployment Engineer

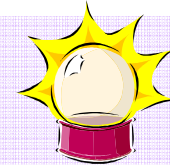
Defines environment media, creates building block workflows, creates service definition and associated management plans

Deployment Environments



Middleware

WebSphere software



Futures...



Physical Hosts

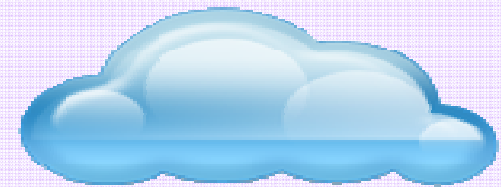
Or

Platforms



Virtual Host

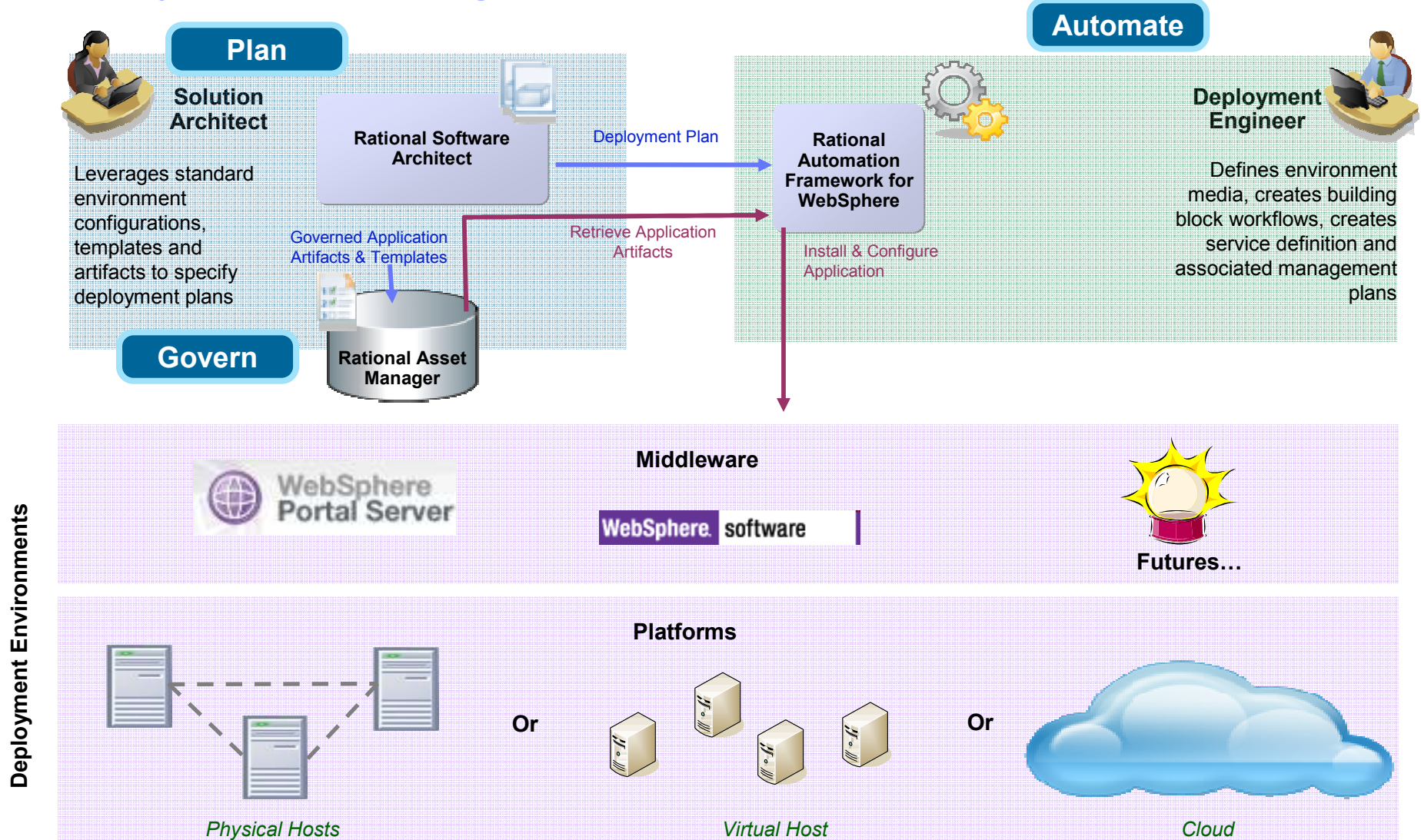
Or



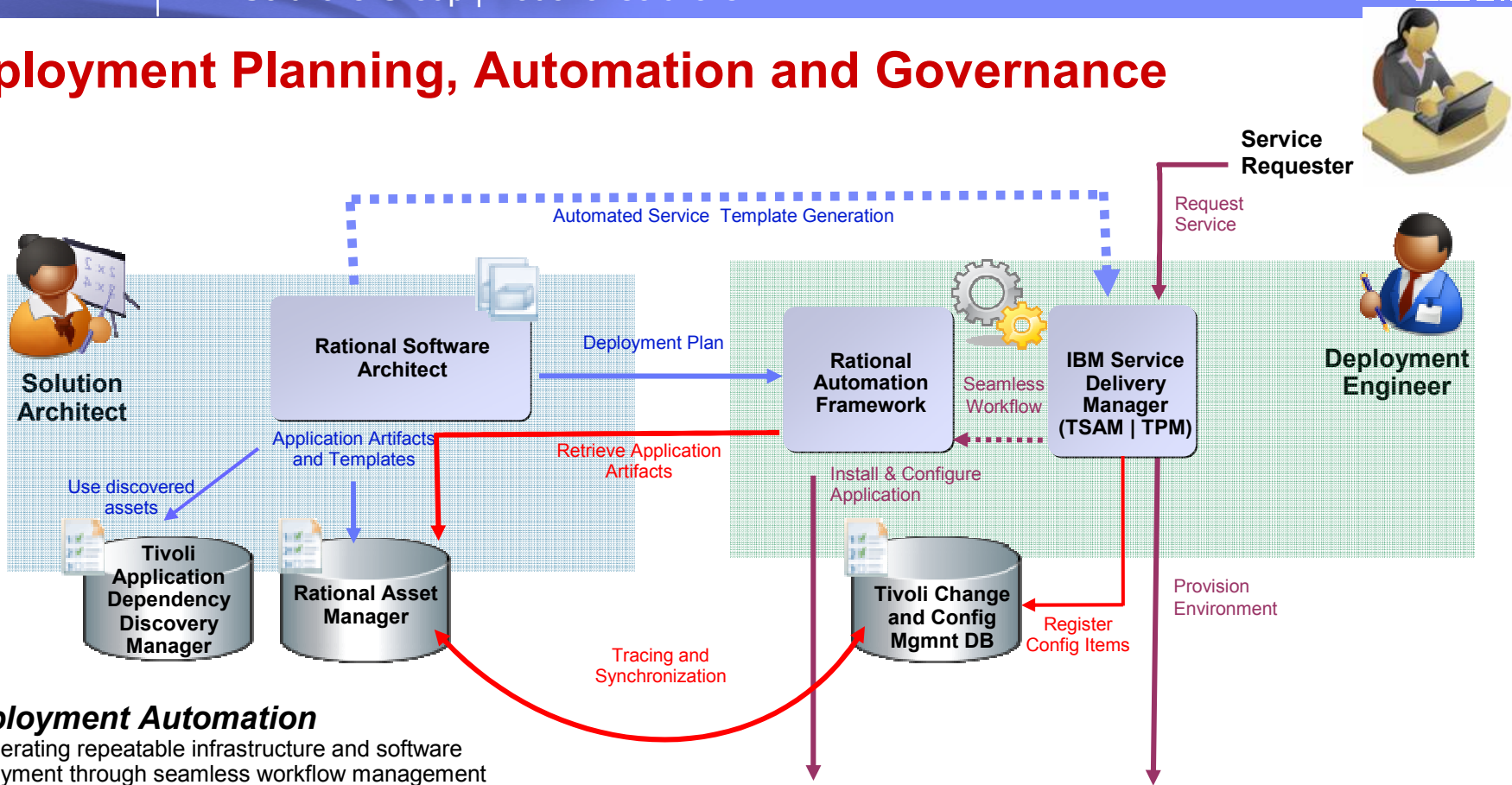
Cloud



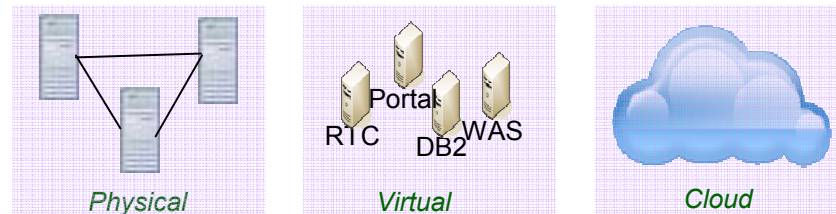
Deployment Planning & Automation Scenario Flow



Deployment Planning, Automation and Governance



- Deployment Automation**
 Accelerating repeatable infrastructure and software deployment through seamless workflow management
- Deployment Planning**
 Pre-deployment validation -improving accuracy
 Reusing standard configurations helping avoid costly mistakes
- Deployment Governance**
 Linking development and operation assets for improved traceability and change management



Summary

- Deployment challenges impact the delivery of business software with real costs of time and money
- IBM Deployment Planning and Automation *speeds the delivery of high quality applications* to the physical environments, virtual environments, and cloud environments
- IBM can provide **services offerings** to help customers leverage our cross brand solution **plan, manage and govern** the delivery of important business software





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