



# Deployment Planning and Automation

*Achieving Operational Efficiencies: The Devil is in the Deployment Details*

Sachin Raj

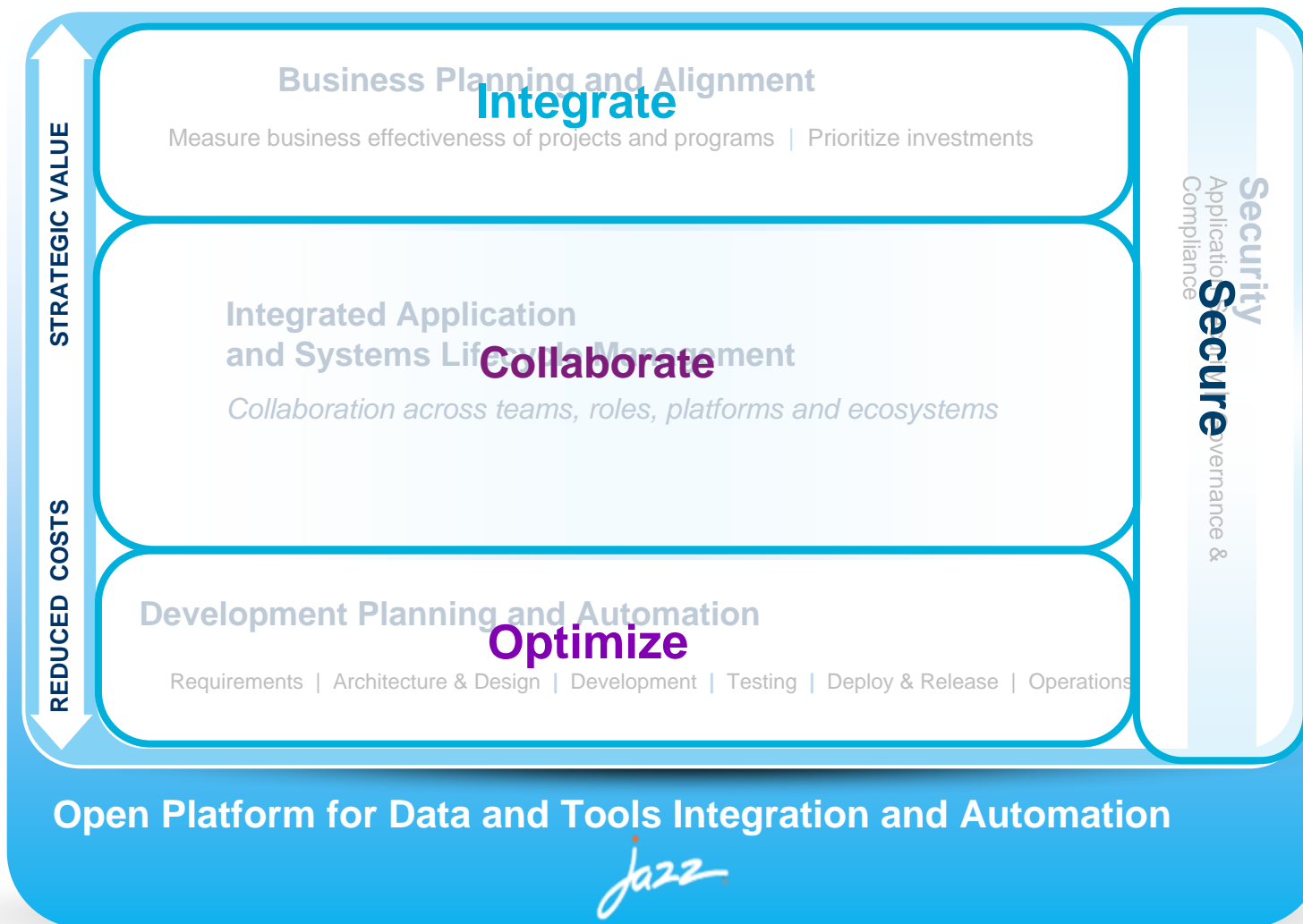
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# Agenda

- Introduction
  - Software delivery challenges
  - Deployment Challenges
- IBM Deployment, Planning and Automation
  - Plan, automate, govern
  - Scenario
- Summary
- Q & A

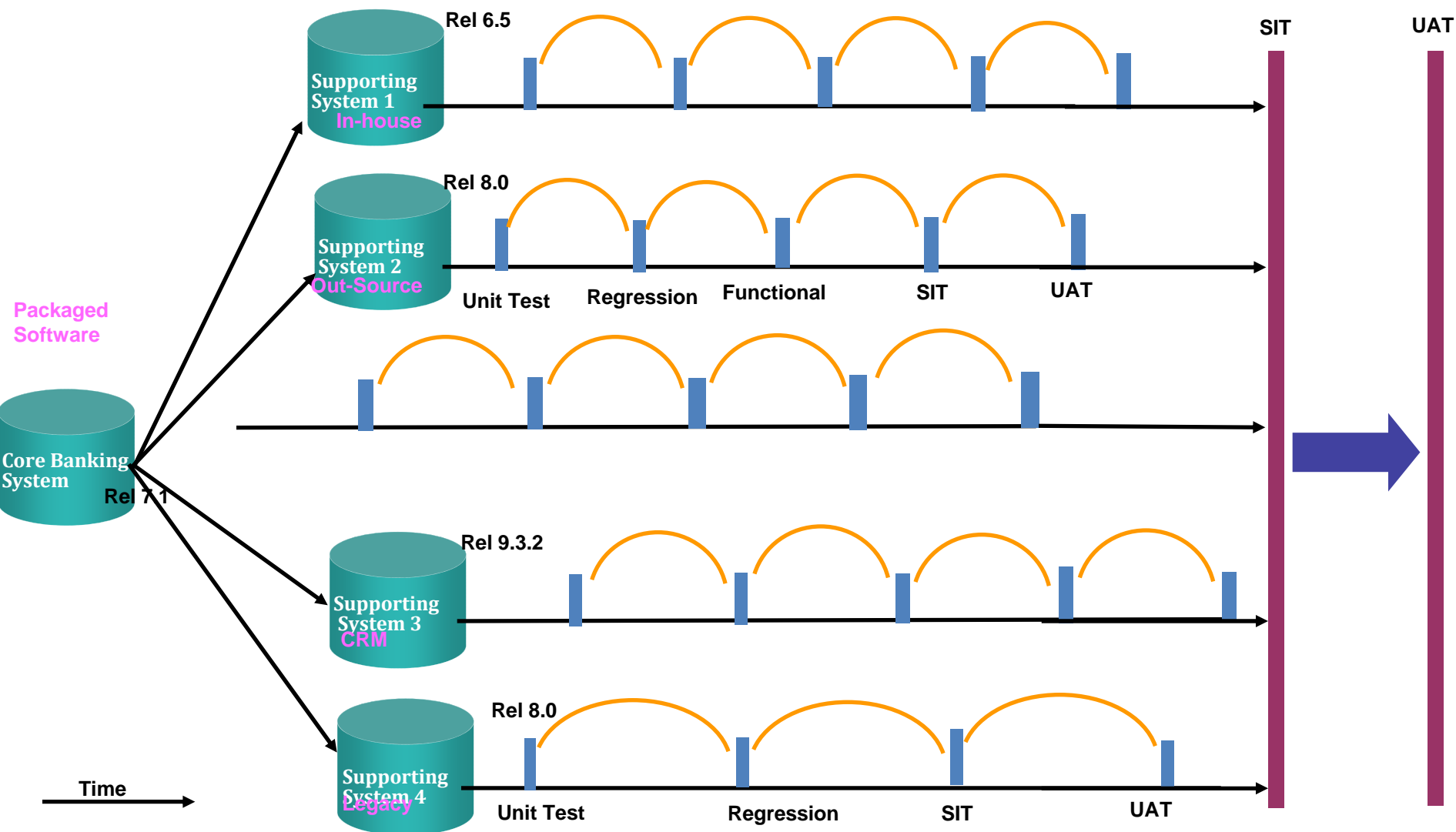


## Business Impact of Challenges

- **Delays and missed deadlines** for application releases/updates
- **Costly systems to support, troubleshoot and maintain;** High Risk with assembly and build knowledge held by few
- **Unpredictable product release cycles,** limited repeatability and portability
- **Bottlenecks** occur without increased headcount to handle additional volume
- **Unauthorized changes** to build and test systems lead to unpredictable results
- **Delayed releases** can lead to customer satisfaction issues
- **Requires more costly tracking** and auditing throughout the application lifecycle



# Staged Application Releases makes complex



# Deployment is a complex problem

- **Development and Operations teams collaboration challenges**

- Hand-off from development teams is inconsistent and manual
- Application component requirements do not match IT infrastructure

- **Deployment requirements are difficult to validate**

- Enterprise, Software & IT architects all use different formats
- No standardization or templates for reuse

- **Complex series of steps**

- Deployment engineers often execute manual steps
- Not repeatable, prone to error
- Automations are hard to build, maintain and reuse
- Hard to tell what if the right things were installed



- ✓ 50% of applications put into production are later rolled back (*Gartner*)
- ✓ 60% - 80% of an average company's IT budget is spent on maintaining existing applications (*Intelligent Enterprise.com*)
- ✓ Software related downtime cost industries almost \$300 billion annually (*CENTS - Comparative Economic Normalization Technology Study*)

# Deployment Planning & Automation

Speed delivery of high quality applications

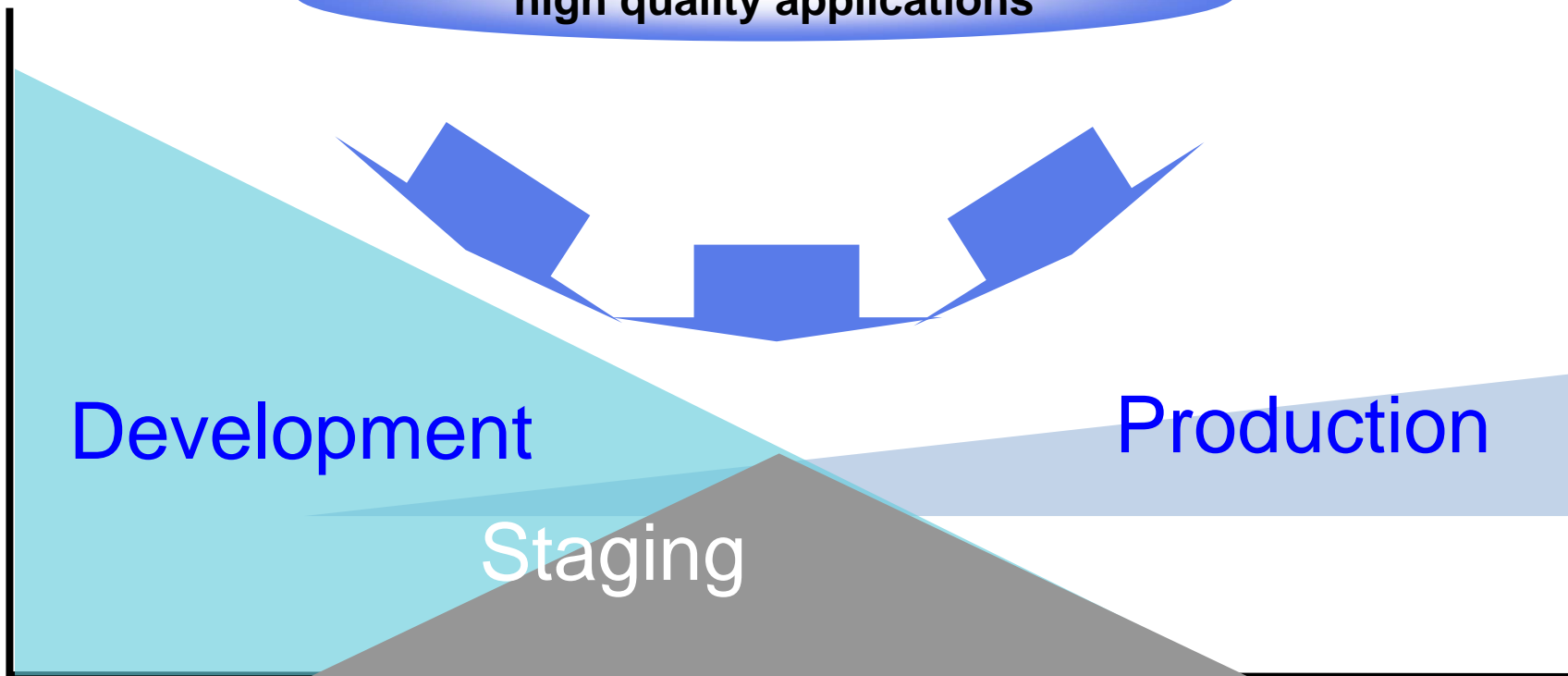
Continuous test deployment

Development

Staging

Production

Governed, repeatable and reliable deployment



# 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



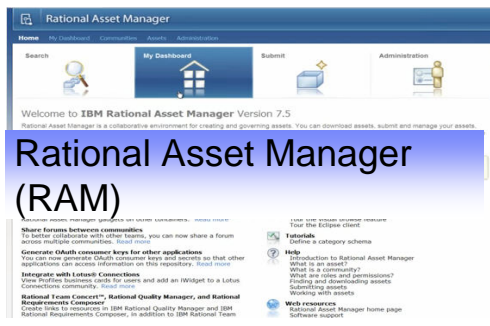
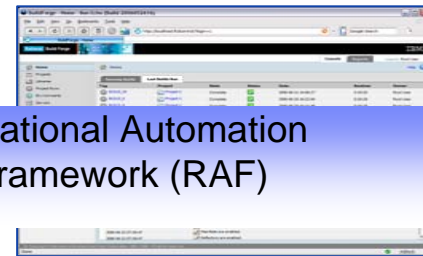
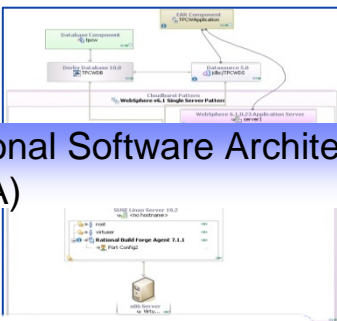
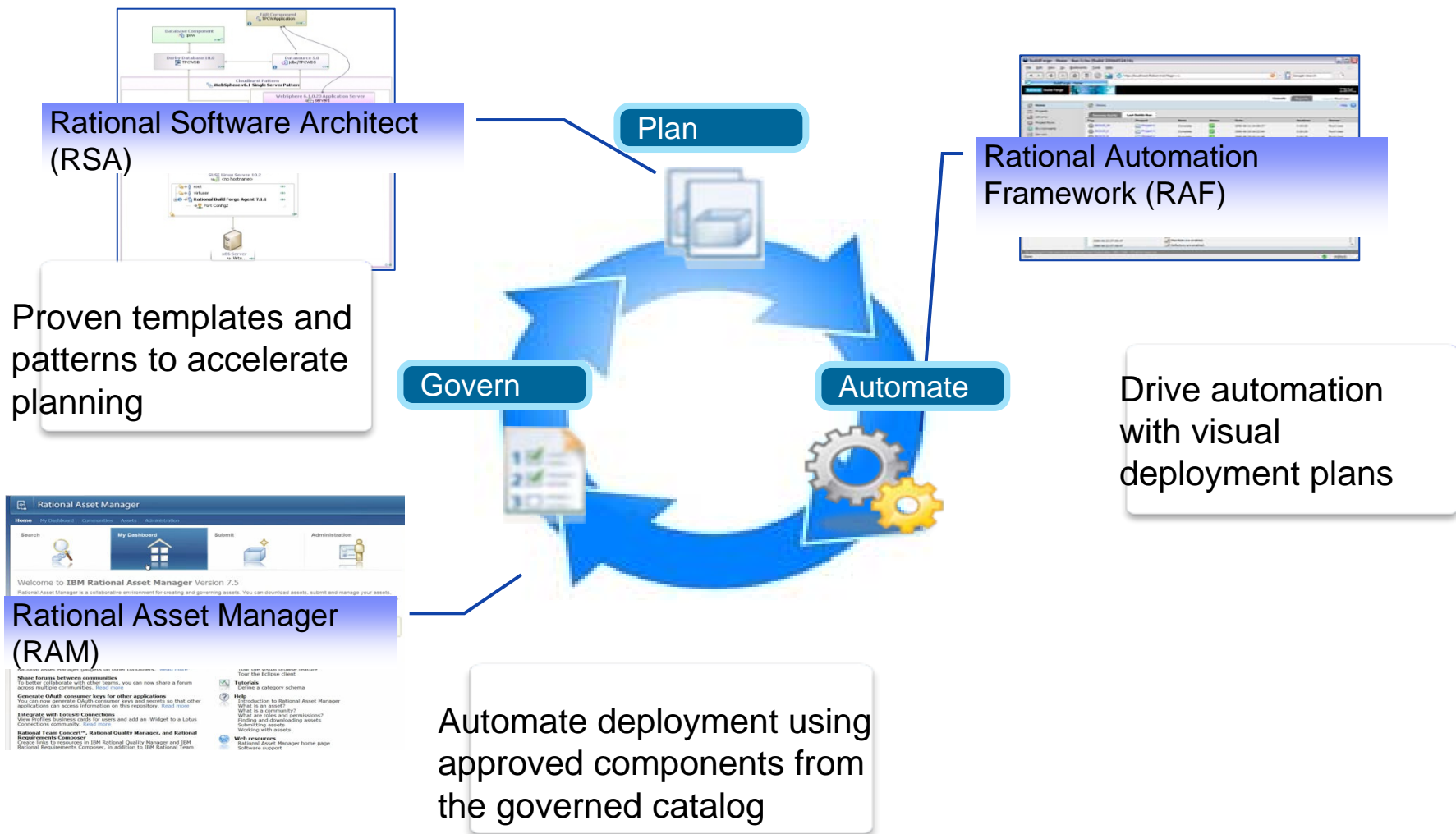
- **Automate** infrastructure provisioning, middleware configuration, and application installation

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





# IBM Deployment Planning & Automation Product Mapping

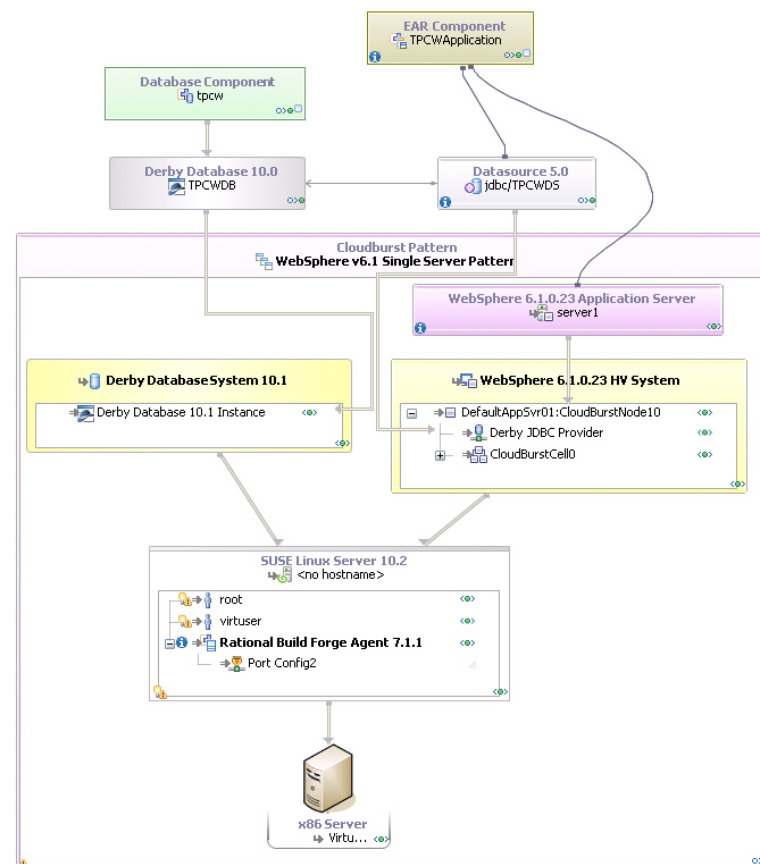


Automate deployment using approved components from the governed catalog

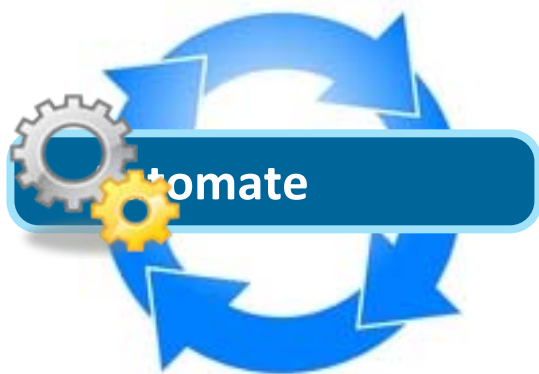
# IBM Deployment Planning and Automation lifecycle



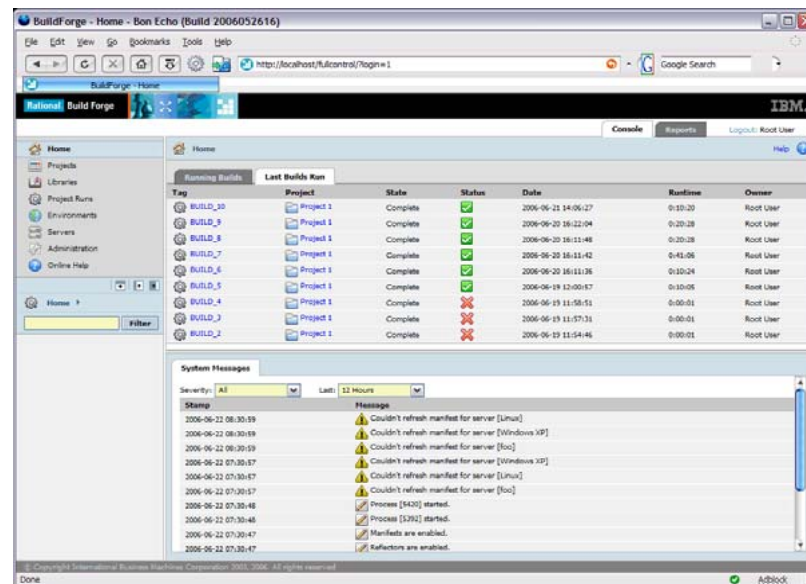
- **Rational Software Architect (RSA)** allows you to plan and validate deployment of applications and infrastructure as well as generate and publish workflows to drive automation and the creation of service templates.



# IBM Deployment Planning and Automation lifecycle



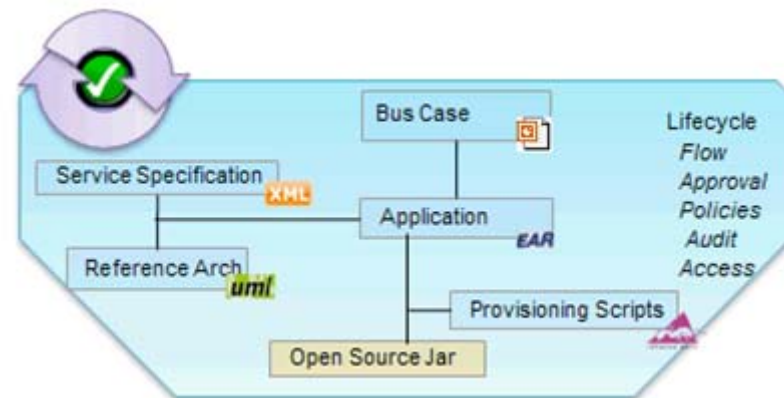
- Within **Rational Automation Framework (RAF)**, you can work from the published deployment workflow from RSA, refine it as required, and save it as an asset. The RAF automation engine will then perform automation activities to configure the middleware and deploy the application.



# IBM Deployment Planning and Automation lifecycle



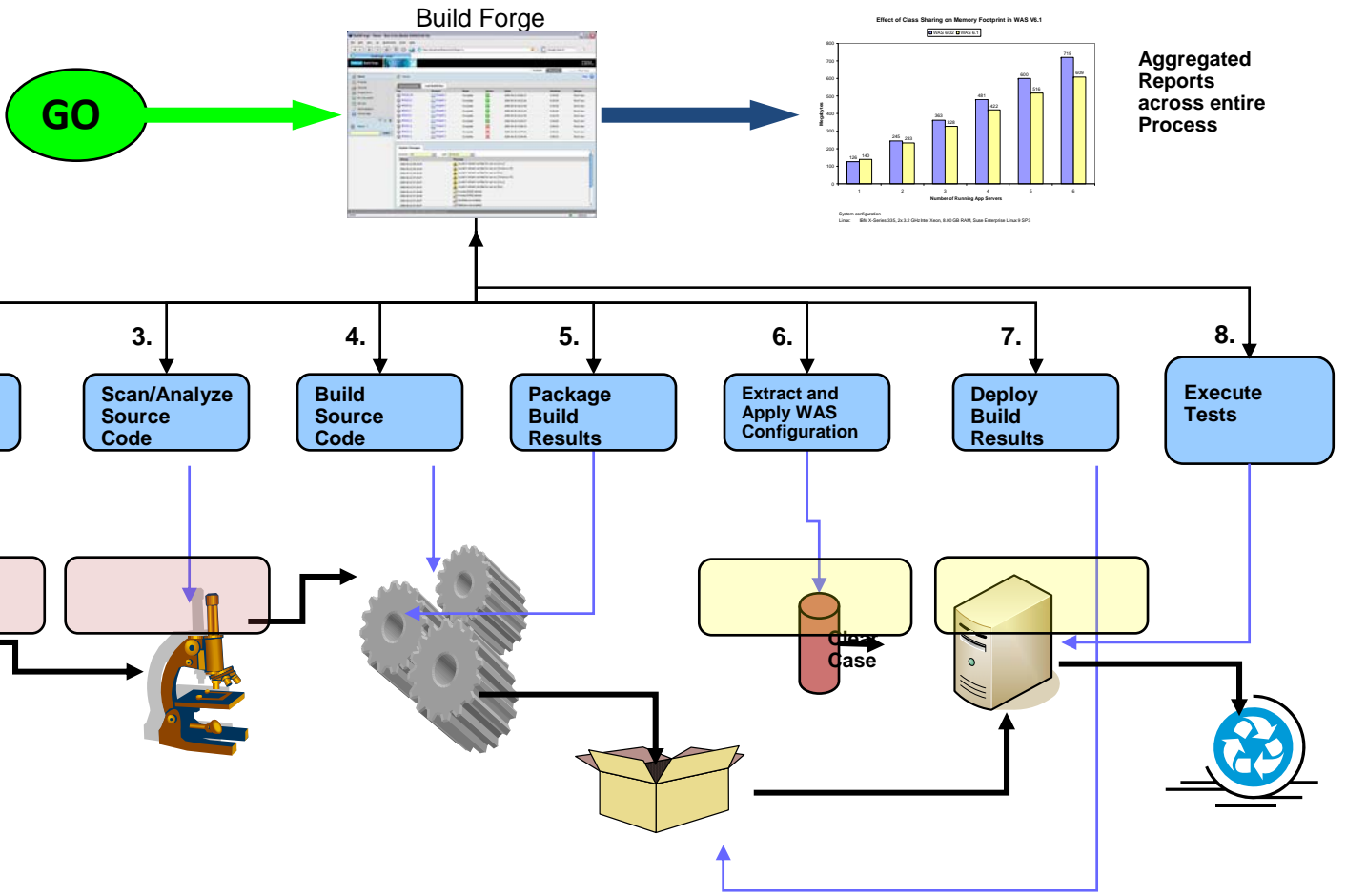
Name	Version	State	Community	Rating
WebSphere sMash	1.0	Approved	Cloud Computing Core ...	★★★★
WebSphere Portal/WCM 6.1.5-3	1.0	Approved	Cloud Computing Core ...	★★★★
WebSphere Feature Pack for OSGi Apps and JPA 2.0	1.0	Approved	Cloud Computing Core ...	★★★★
WebSphere Application Server and Rational 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				



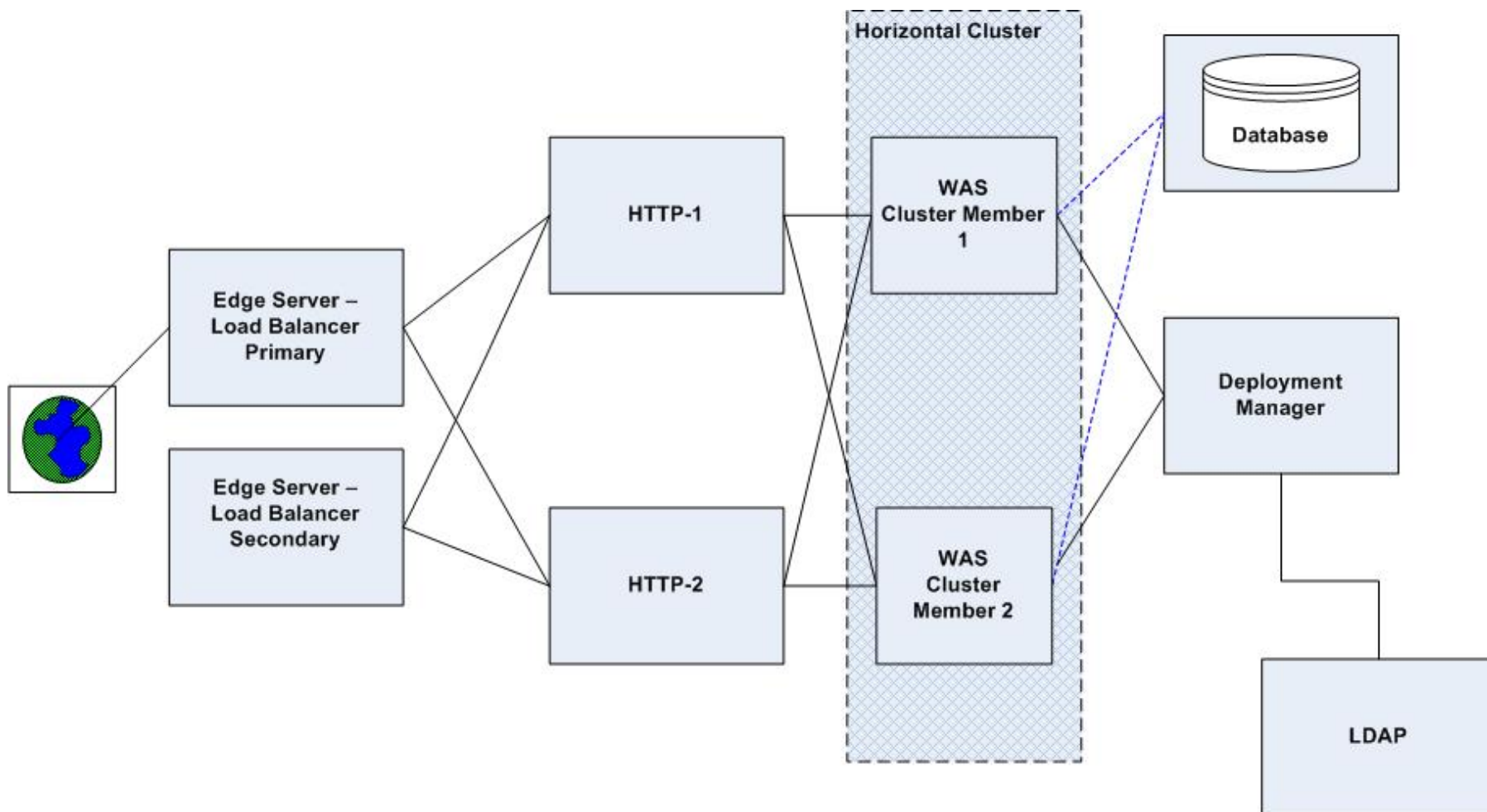
Catalog, Govern and Share assets

- **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

# Example: Automation with RAF



# Why RAF Matters? Set up a simple WAS cluster



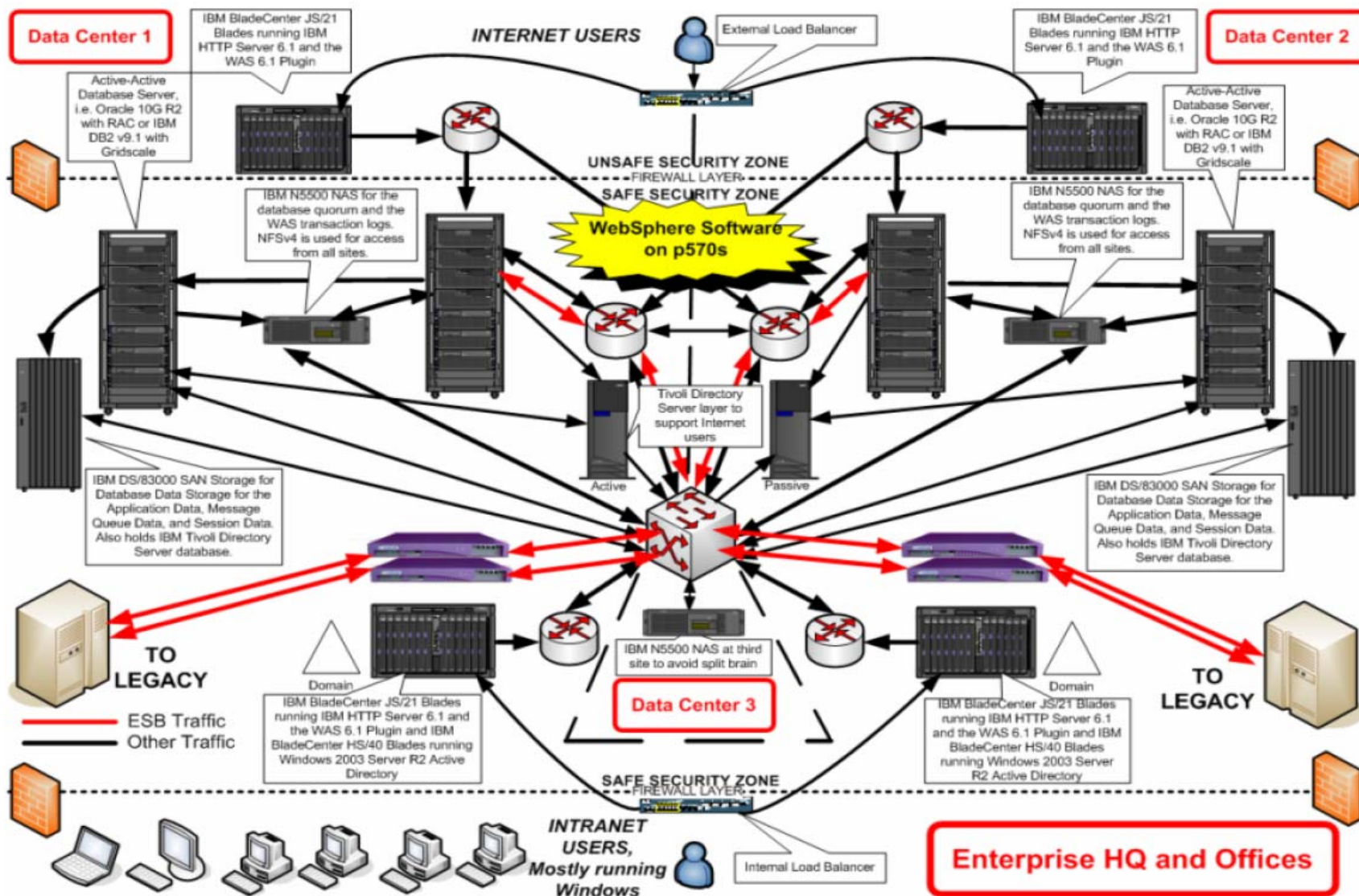
## Why RAF Matters? Behind the scenes

Total Steps = 150+

- Perform pre-installation tasks (05 steps)
- Create, configure, and verify deployment manager profile (20 steps)
- Create, configure, and verify application server profile (12 steps)
- Create, configure, and verify custom profile (10 steps)
- Federate nodes (both app server and custom profiles) (14 steps)
- Install, configure, and verify IBM HTTP server (14 steps)
- Install the distributed remote plug-in (20 steps)
- Create and configure the horizontal cluster (High Availability) (17 steps)
- Enable and configure HA persistent service (09 steps)
- Configure HTTP session persistence (41 steps)
  - Memory-to-memory (20 steps)
  - Database (21 steps)
- Create and configure SIBus and messaging engine (5 steps)



# Why RAF Matter? consider something more complex, but typical....!

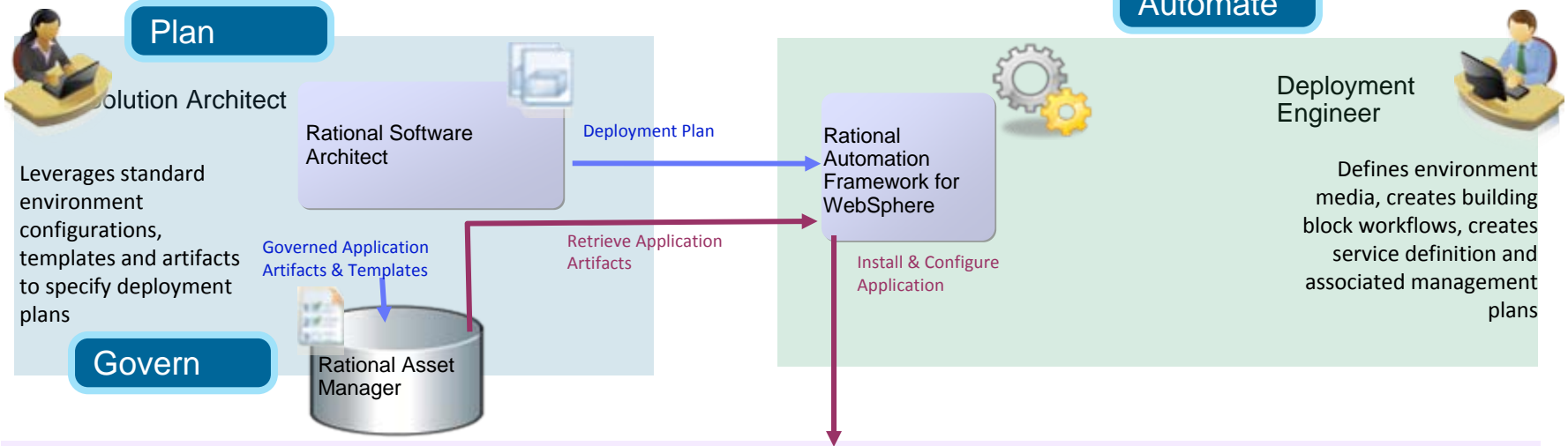




# Deployment Planning & Automation Scenario Flow

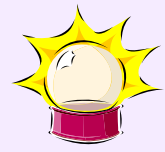
**Plan**

**Automate**



Middleware

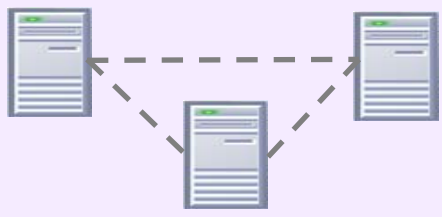
WebSphere software



Futures...

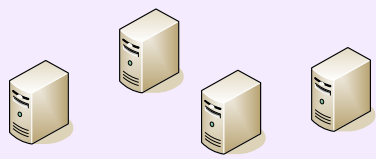
Deployment Environments

Platforms



Physical Hosts

Or



Virtual Host

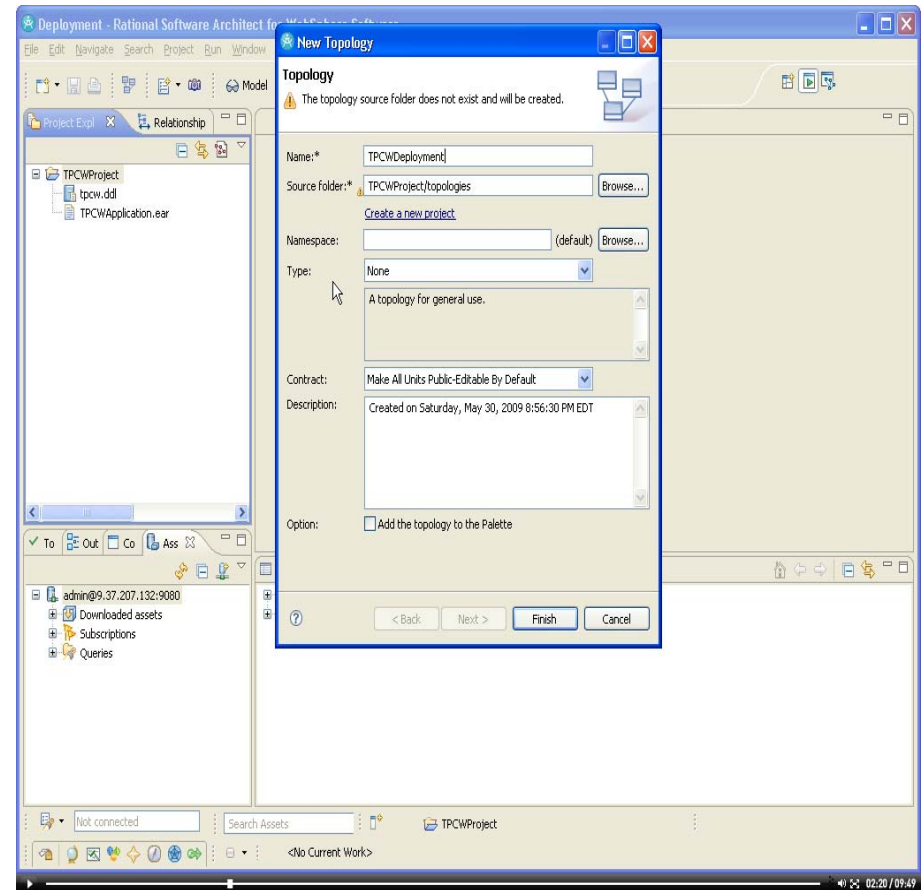
Or



Your Cloud

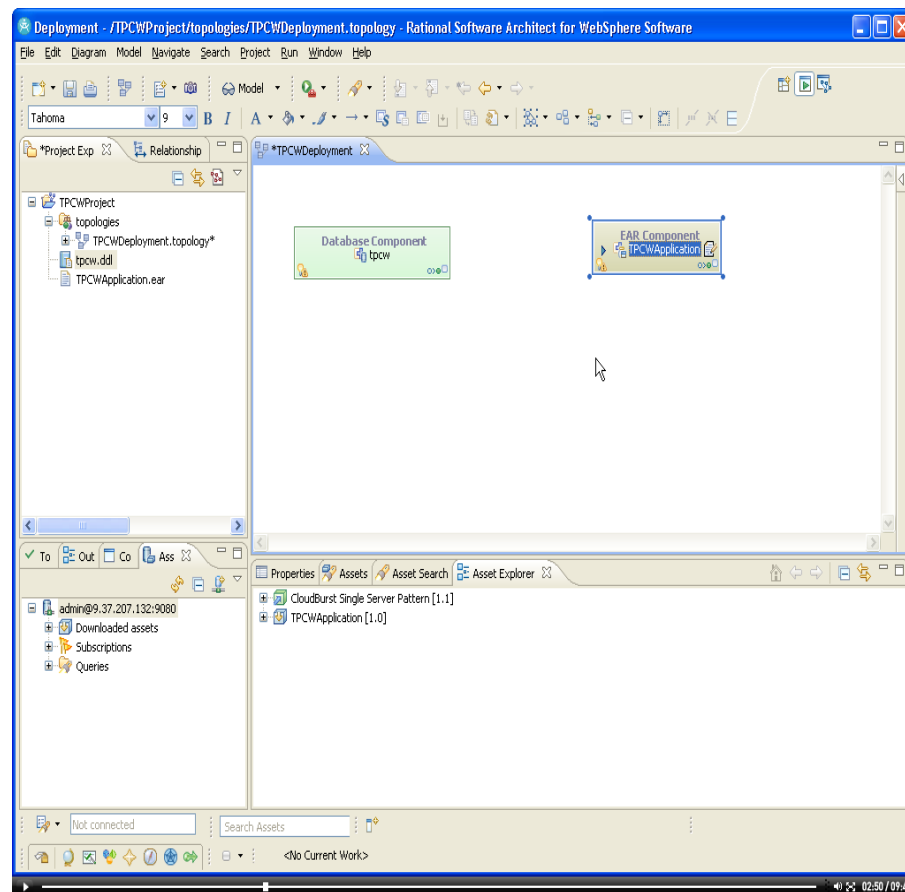
# Demo - Deployment Planning & Automation

- User creates a new deployment topology in Rational Software Architect
- The topology will be used to capture
  - Software to be installed
  - Target virtual environment
  - Configurations necessary for the software



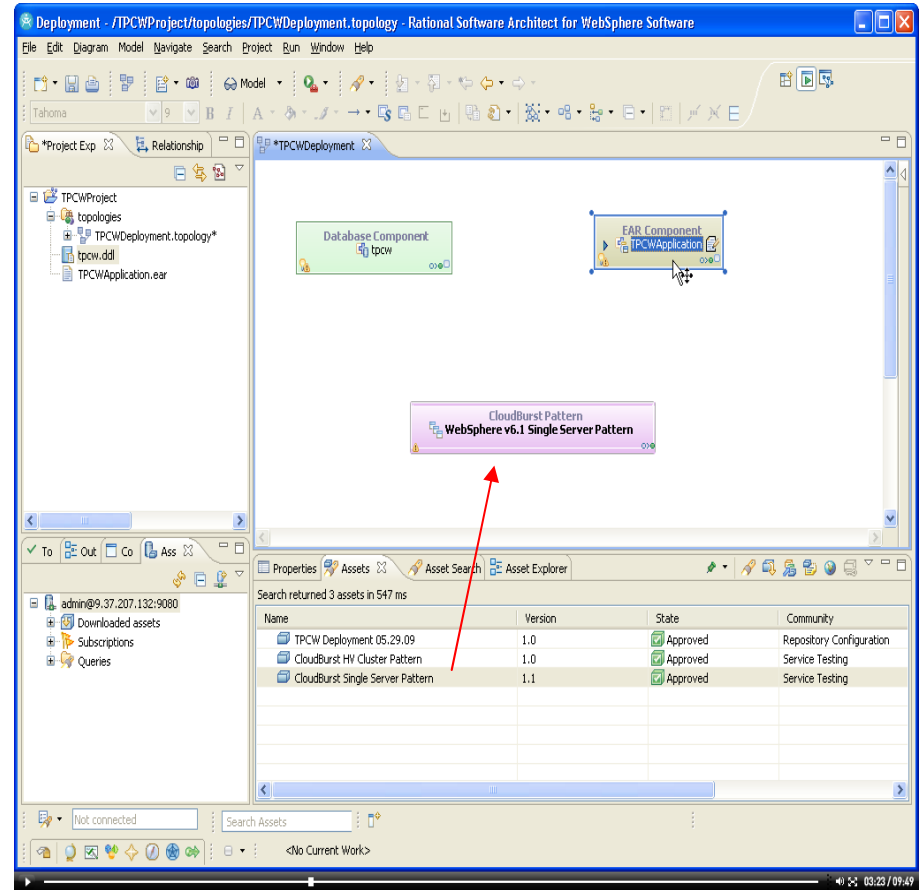
# Demo - Deployment Planning & Automation

- User drags application components from the Project Explorer onto the topology
  - Applications may be retrieved from a Rational Asset Management repository
  - Structure and deployment requirements are discovered for JEE applications and database files



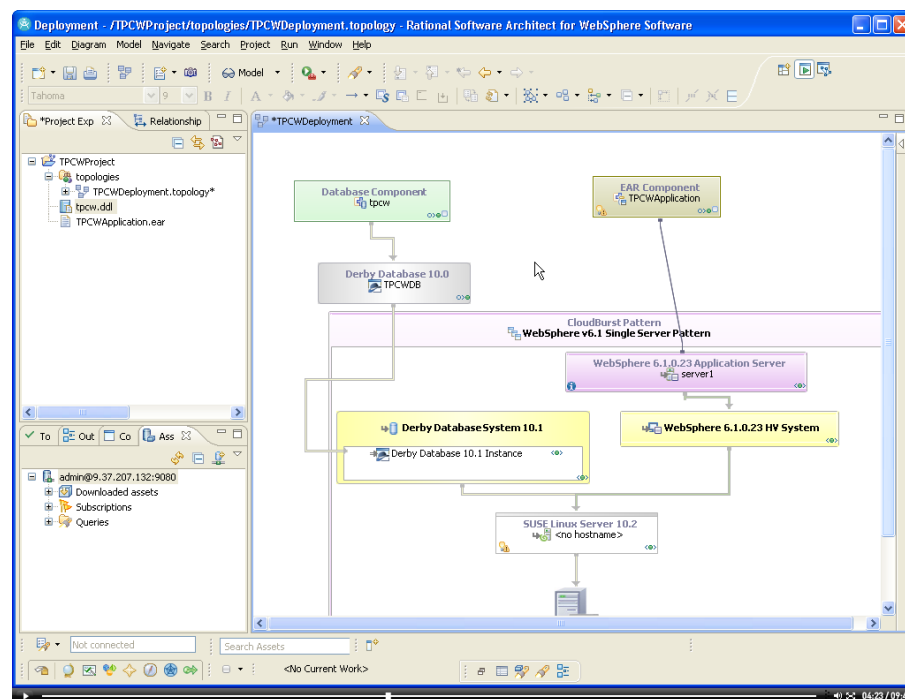
# Demo - Deployment Planning & Automation

- Target virtual images can be defined as templates in the RAM repository
- Users can search for available image templates and drag them onto the topology
  - Image structure is rendered on the topology
  - All formatting is preserved from the template asset



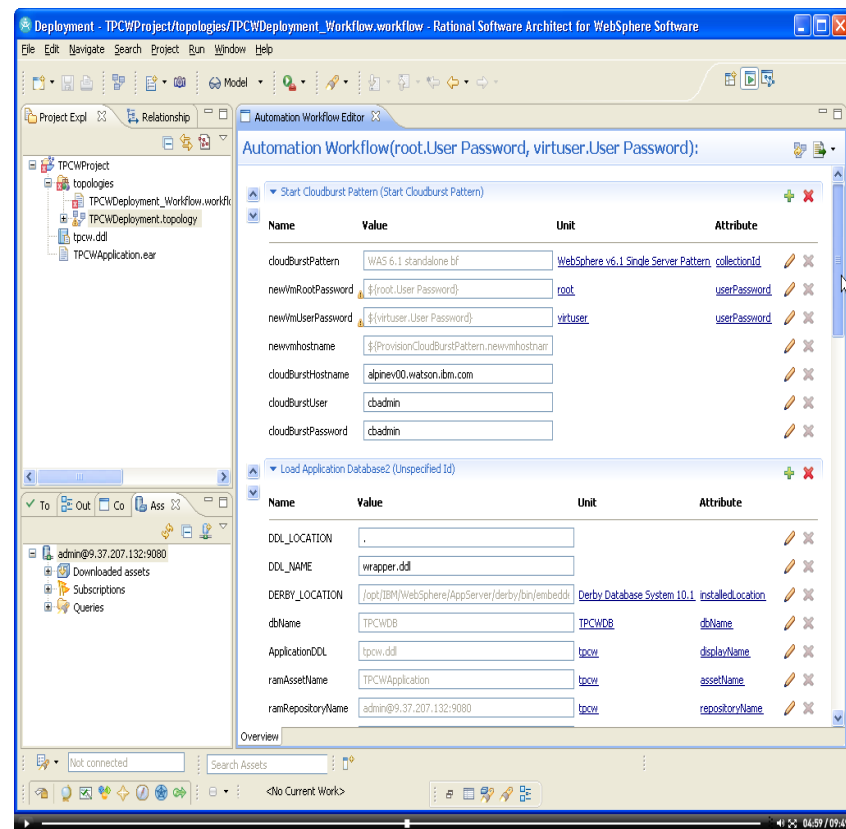
# Demo - Deployment Planning & Automation

- Using constraints, resolutions, and/or link creation tools the user is able to define where the software components will be installed in the image
  - Note, the image has semantic data defining its contents
- Additional configuration information is defined
  - User is guided by validation messages within the topology



# Demo - Deployment Planning & Automation

- Leveraging pre-defined automation signatures, the user can generate an Automation Workflow
  - The workflow analysis uses pattern matching to select automation workflows from the pool of available automation signatures
- The Automation Workflow does
  - Select automation signatures for units having a state change
  - Order automation signatures based on semantics in the topology
  - Automatically maps automation signature parameter values to properties defined in the topology
- Users can manually add more signatures, reorder signatures, change values, add parameters, and switch actors
  - Actors define which server and user will be used to run the automation step
- The workflow can be refreshed as property values change in the topology



# Demo - Deployment Planning & Automation

- The project may now be executed which starts the provisioning process
  - Integration with RQM will allow this project to be invoked by a tester from within the test management solution
- Any workflow parameters are now shown as parameters that can be supplied when

Start >> Start Project >> TPCWDeploymentToCB

TPCWDeploymentToCB [Execute] [Cancel]

Job Details Job Steps

Project Parameters		Project Environment	
Snapshot:	Base Snapshot	root_userPassword	impactpa
Selector:	localhost	virtuser_userPassword	
Class:	Production		
Tag Format:	TPCWDeploymentToCB_BUILD_\$\$		
Tag Example:	TPCWDeploymentToCB_BUILD_1		

BuildForge - Jobs - Mozilla Firefox

Build >> TPCWDeploymentToCB\_BUILD\_1

Status: Running --- Executing Launch CloudBurst Commands Date: 05/30/09 09:02PM Project: TPCWDeploymentToCB (Base Snapshot)

Selector: localhost (Base Snapshot) Class: Production

Step	Step Name	Result	Server (Selector)	Runtime	Chains
1	Step ProvisionCloudBurstPatternUnit	Running	localhost (localhost)	0:00:04	
2	Launch CloudBurst	Running	localhost (localhost)	0:00:01	
3	parse results	----	Default (Default)	0:00:00	
4	Step Load Application Database2	----	Default (Default)	0:00:00	
5	redirect	----	Default (localhost)	0:00:00	
6	Fetch DDL	----	Default (Default)	0:00:00	
7	get asset from RAM	----	Default (localhost)	0:00:00	
8	Transfer DDL	----	Default (Default)	0:00:00	
9	Load DDL	----	Default (Default)	0:00:00	
10	Step Create JDBC Datasource2	----	Default (Default)	0:00:00	
11	redirect	----	Default (Default)	0:00:00	
12	Create Datasource	----	Default (Default)	0:00:00	
13	Step Install Application2	----	Default (Default)	0:00:00	
14	redirect	----	Default (Default)	0:00:00	
15	Fetch Application from RAM	----	Default (Default)	0:00:00	
16	get asset from RAM	----	Default (localhost)	0:00:00	
17	Download script	----	Default (Default)	0:00:00	
18	Download EAR File	----	Default (Default)	0:00:00	
19	Install Application	----	Default (Default)	0:00:00	

# Demo - Deployment Planning & Automation

- The remaining steps execute and now the environment with the software is running and ready to use

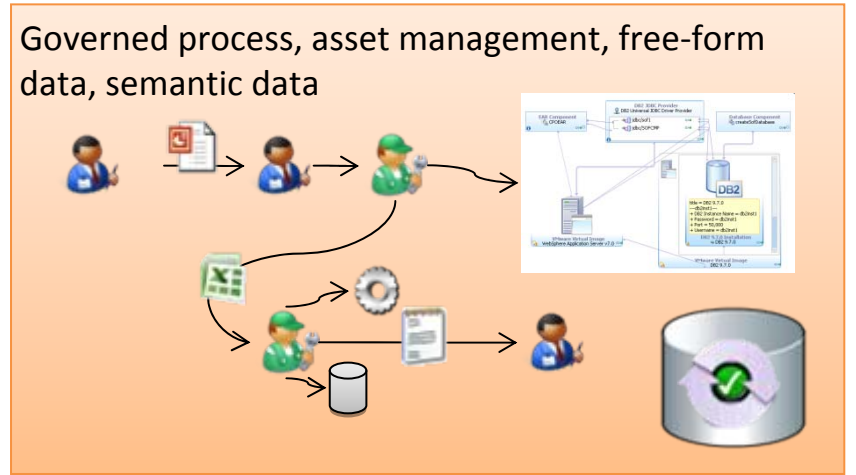
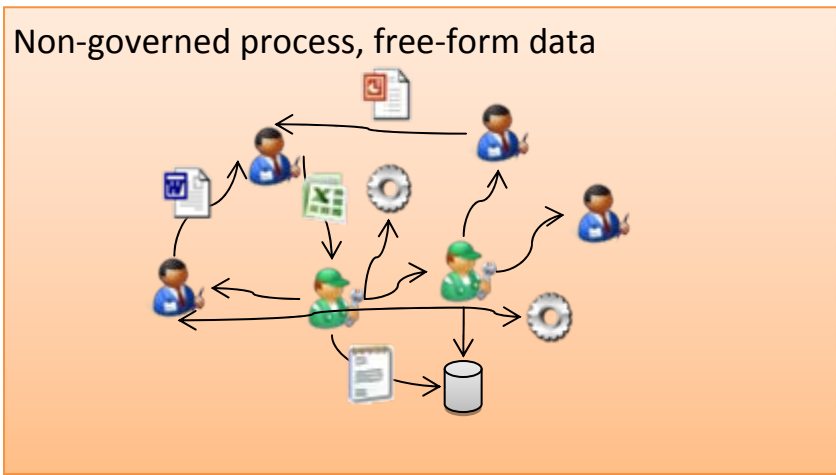
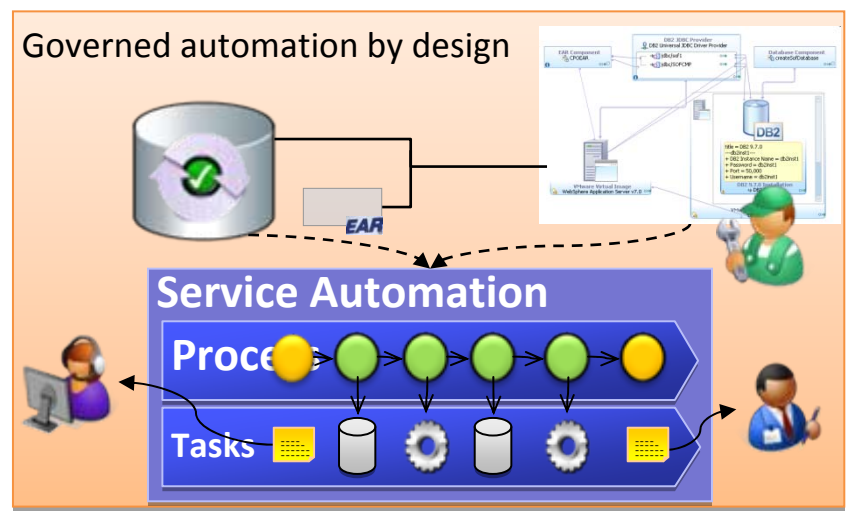
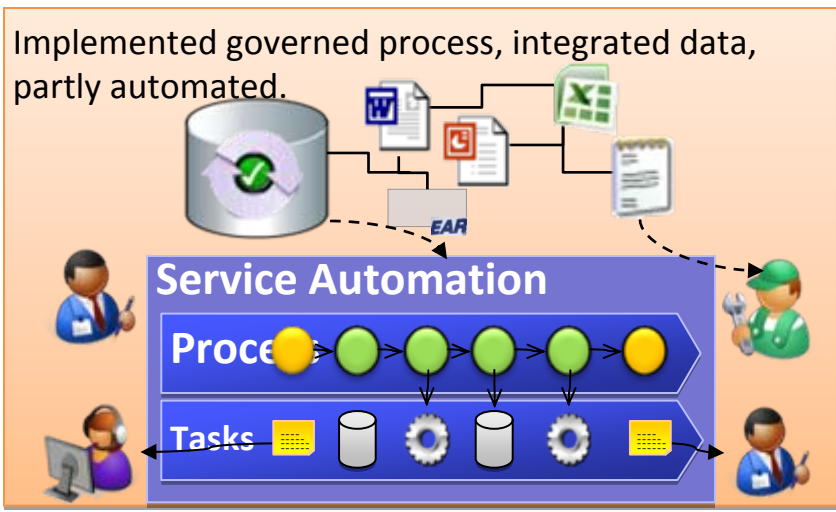
The screenshot shows the BuildForge Jobs console in a Mozilla Firefox browser. The main area displays the details for a build job named 'TPCWDeploymentToCB\_BUILD\_1'. The status is 'Completed -- Passed -- Built' and the date is '05/30/09 09:02PM'. The selector is 'localhost (Base Snapshot)' and the class is 'Production'. Below this, there is a table listing 19 steps, all of which have passed successfully. The table columns are Step, Step Name, Result, Server (Selector), Runtime, and Chains.

Step	Step Name	Result	Server (Selector)	Runtime	Chains
1	Step ProvisionCloudBurstPatternUnit	Passed	localhost (Default)	0:09:02	
2	Launch CloudBurst	Passed	localhost (localhost)	0:08:11	
3	parse results	Passed	localhost (Default)	0:00:43	
4	Step Load Application Database?	Passed	localhost (Default)	0:02:46	
5	redirect	Passed	localhost (localhost)	0:00:04	
6	Fetch DDL	Passed	9.59.227.28 (Default)	0:01:05	
7	get asset from RAM	Passed	localhost (localhost)	0:00:34	
8	Transfer DDL	Passed	9.59.227.28 (Default)	0:00:40	
9	Load DDL	Passed	9.59.227.28 (Default)	0:00:48	
10	Step Create JDBC DataSource?	Passed	localhost (Default)	0:01:16	
11	redirect	Passed	localhost (Default)	0:00:05	
12	Create DataSource	Passed	9.59.227.28 (Default)	0:01:07	
13	Step Install Application?	Passed	localhost (Default)	0:03:27	
14	redirect	Passed	localhost (Default)	0:00:05	
15	Fetch Application from RAM	Passed	9.59.227.28 (Default)	0:00:46	
16	get asset from RAM	Passed	localhost (localhost)	0:00:27	
17	Download script	Passed	9.59.227.28 (Default)	0:00:33	
18	Download EAR File	Passed	9.59.227.28 (Default)	0:01:01	
19	Install Application	Passed	9.59.227.28 (Default)	0:00:50	



# Deployment Planning & Automation Incremental Value

Governed Automation



Governed Planning

**IBM.**

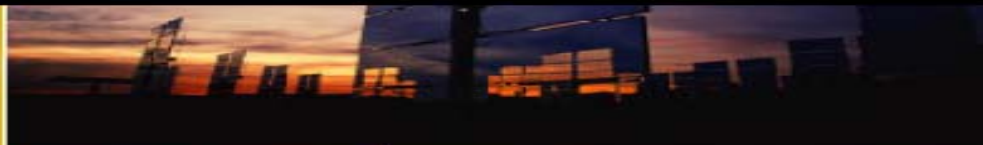
See,  
Touch  
& Feel

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## Mobile App Question

- Which are the **three** areas of deployment does the IBM Rational Deployment Planning and Automation Solution address?
  - A) Design, Develop and Deploy
  - B) Plan, Automate and Governance
  - C) Collaborate, Develop and Automate

## Mobile App Question

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# QUESTIONS

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