Deployment Planning and Automation Solution from Rational and Tivoli

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PCTY2011

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Optimising the World's Infrastructure

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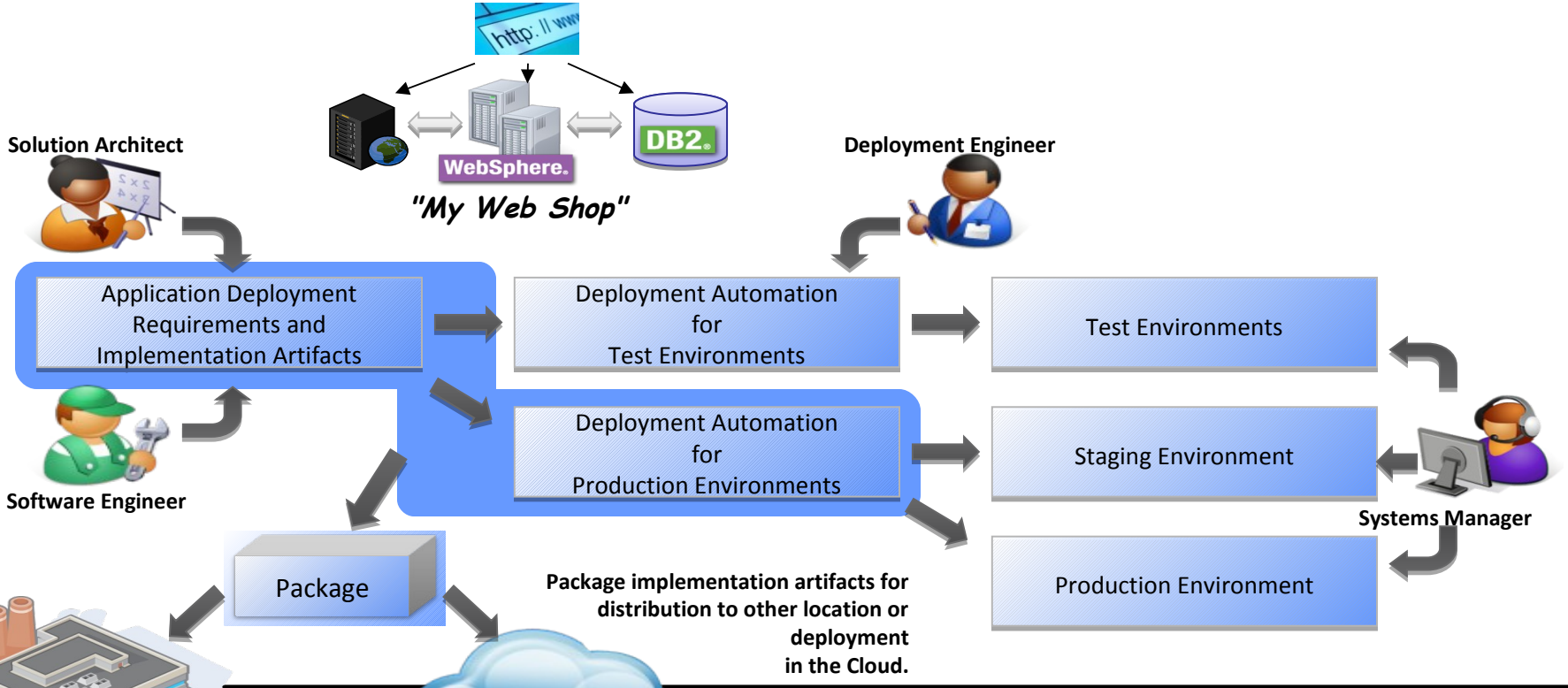
Agenda

- The Problem
- The IBM Solution
- Demo
- Summary

Example Scenario

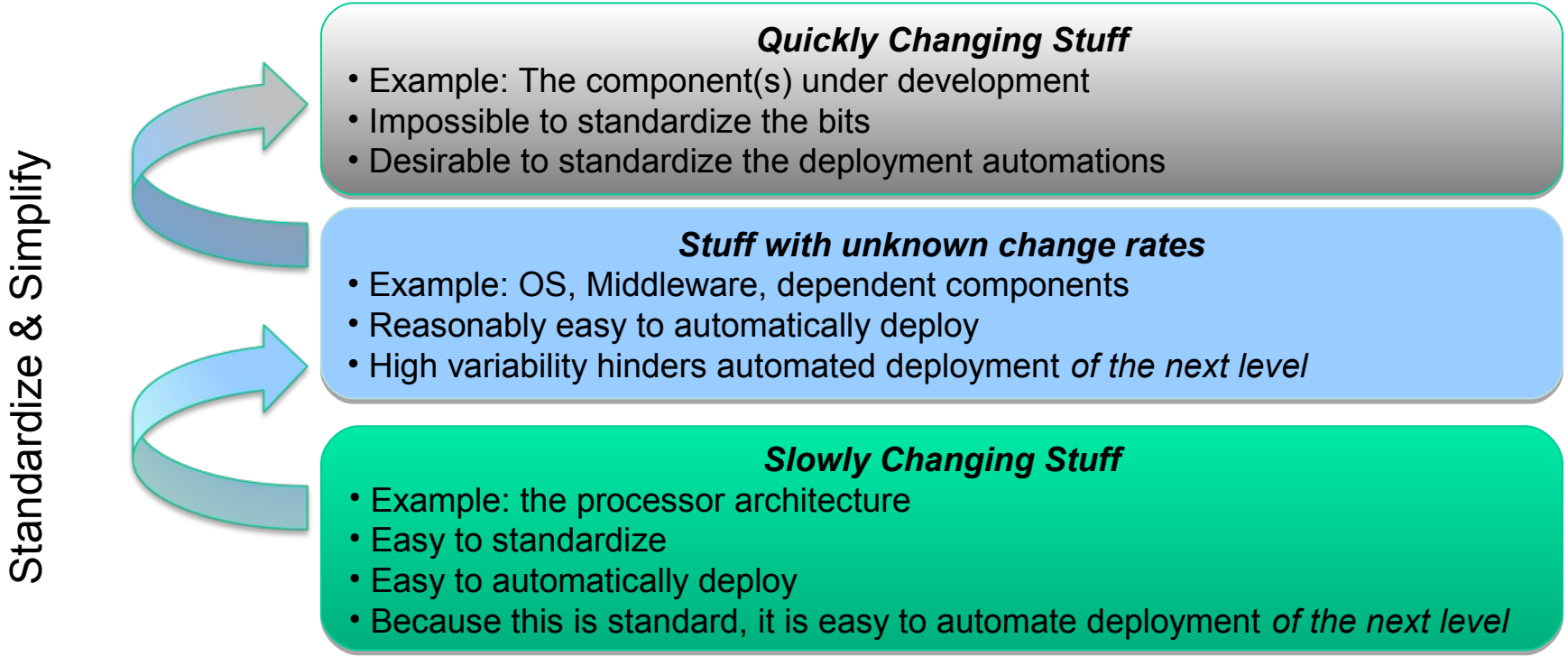


Deployment is a Complex Problem

- **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)*

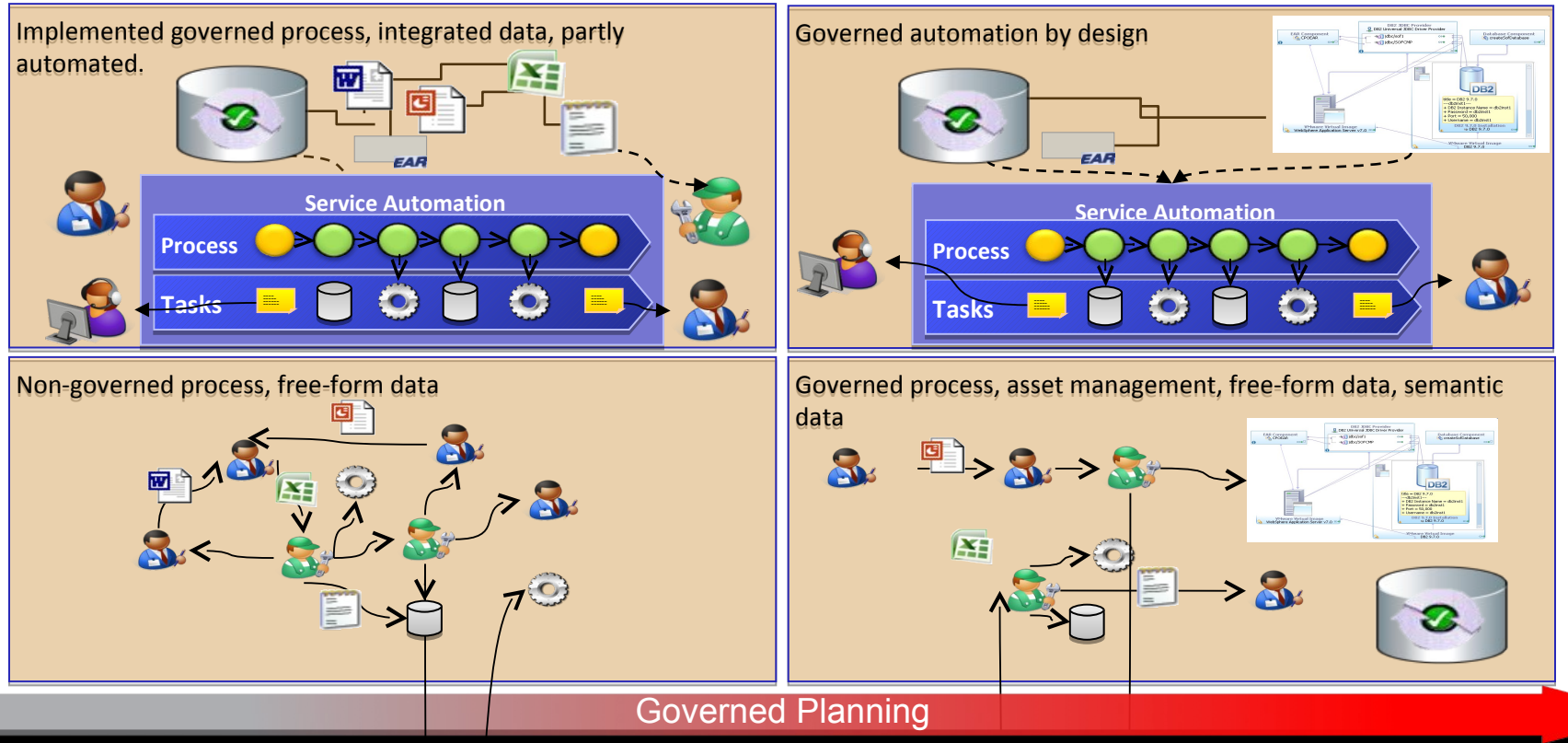
Variability During Development Lifecycle



The IBM Solution

Integrated Rational and Tivoli tools

Introduction of Service Automation is an Evolutionary Process



IBM Deployment Planning and Automation
An Integrated Solution

- **Plan** composite application deployments using organizational standards
  - Reduce time and errors
  - Improve communication
- **Automate** infrastructure provisioning, middleware configuration, and application installation
  - Repeatedly setup standardized environments
  - Remove costly manual errors
  - Reduce provisioning times
- **Govern** and application artifacts, standards, and deployed resources
  - Adhere to organizational standards

Scenario

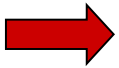
Application Architect

Describe the topology that captures the deployment requirements for a composite application.

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

Deployment Plan

Application Artifacts and Templates



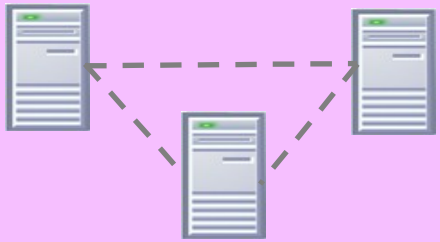
Plan and create workflows

Provision platform and install/configure application

Deployment Engineer

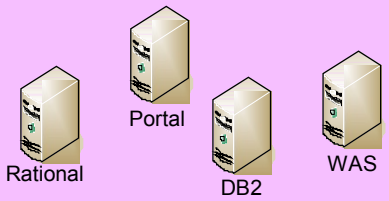
Defines environment media, creates building block workflows, creates service definition and associated management plans

Deployment Environments



Physical Hosts

Or

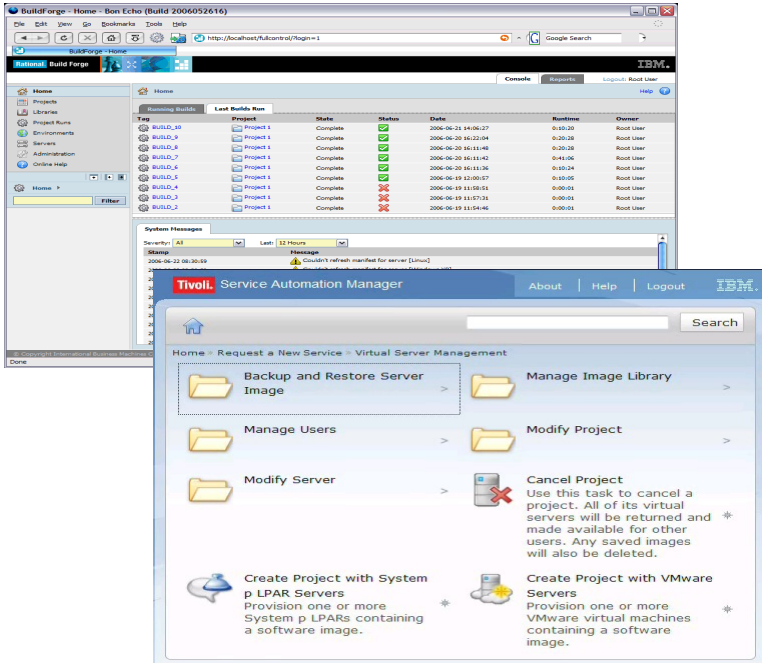


Virtual Host

Or

Cloud


Automate

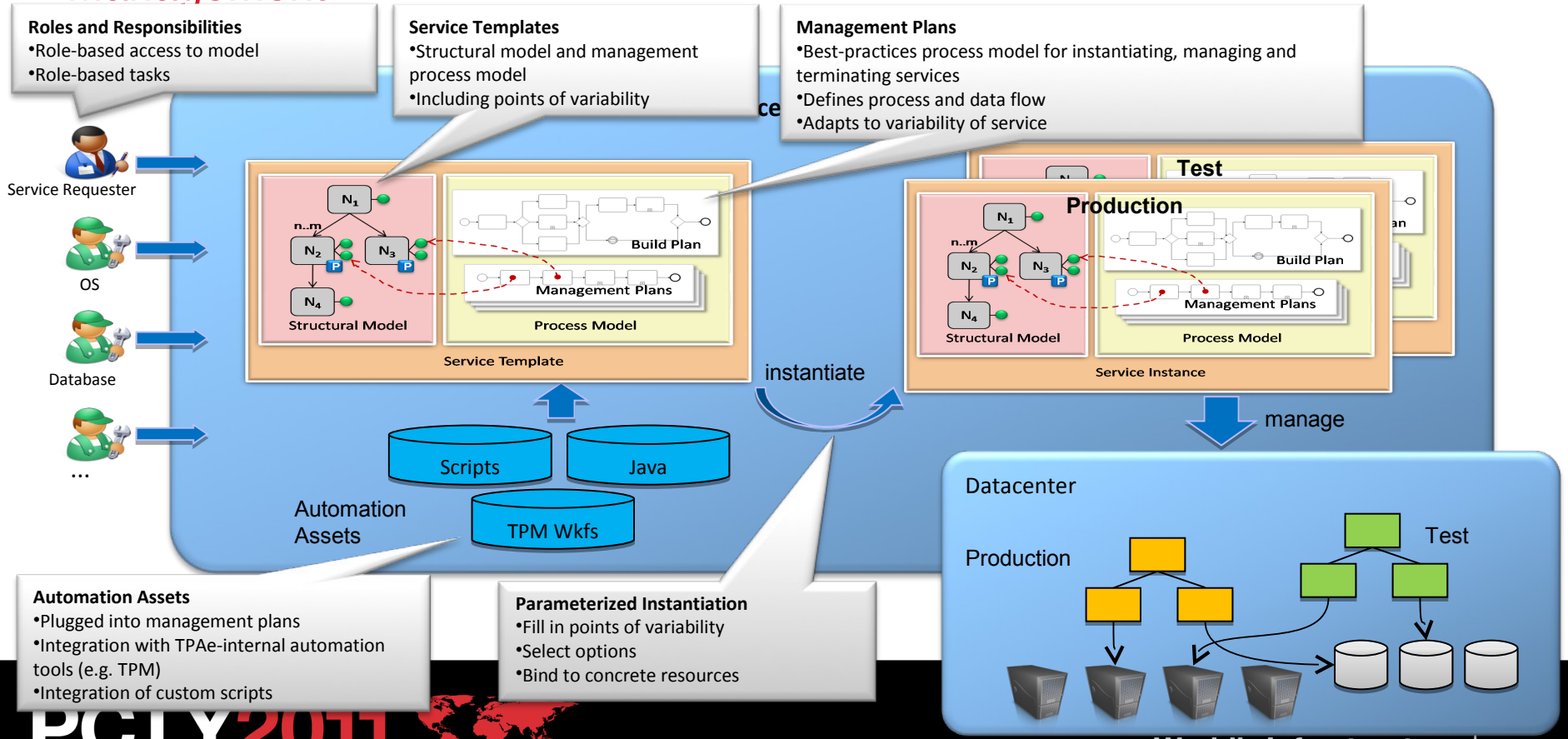

BuildForge - Home - Bon Echo (Build 200605261616)
Tivoli. Service Automation Manager
About
Help
Logout
IBM.
Search
Home » Request a New Service » Virtual Server Management
Backup and Restore Server Image
Manage Image Library
Manage Users
Modify Project
Modify Server
Cancel Project
Use this task to cancel a project. All of its virtual servers will be returned and made available for other users. Any saved images will also be deleted.
Create Project with System p LPAR Servers
Provision one or more System p LPARs containing a software image.
Create Project with VMware Servers
Provision one or more VMware virtual machines containing a software image.

Tivoli Service Automation Manager's Approach for IT- and Cloud Service Management

Roles and Responsibilities
- Role-based access to model
- Role-based tasks

Service Templates
- Structural model and management process model
- Including points of variability

Management Plans
- Best-practices process model for instantiating, managing and terminating services
- Defines process and data flow
- Adapts to variability of service



Automation Assets
- Plugged into management plans
- Integration with TPAe-internal automation tools (e.g. TPM)
- Integration of custom scripts

Parameterized Instantiation
- Fill in points of variability
- Select options
- Bind to concrete resources

Tivoli Service Automation Manager implements a holistic Model for Service Lifecycle Management

(1) Service topology templates capture IT- and Cloud Service reference architectures

- Service as a composition of its components, and their relationships and dependencies
- Configuration templates and allowed variations
- Including non-functional aspects and policies

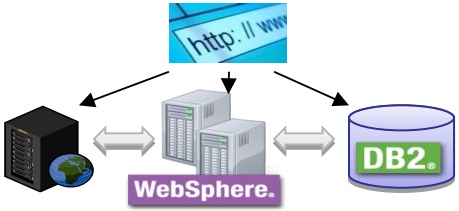
(2) Integrate structural and management process models enable architecture-compliant automation

- Management processes as an orchestration over service components, invoking operations on service components
- Including integration into surrounding enterprise processes

(3) Service lifecycle management

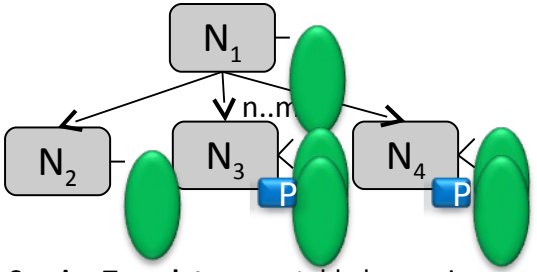
- Initial deployment of services
- Operational management of services

The IT Service Lifecycle Supported by Our Concepts

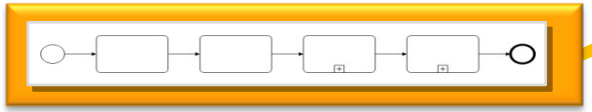


IT service to be managed with specific solution- and deployment architecture

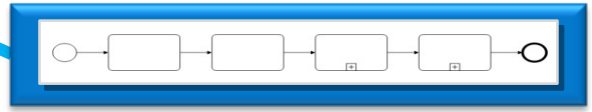
Design guidelines and programming models, integrated platform tooling



Service Template executable by service management runtime, capturing solution- and deployment archicture including variation options



Management process model for the operational management of deployed service instances

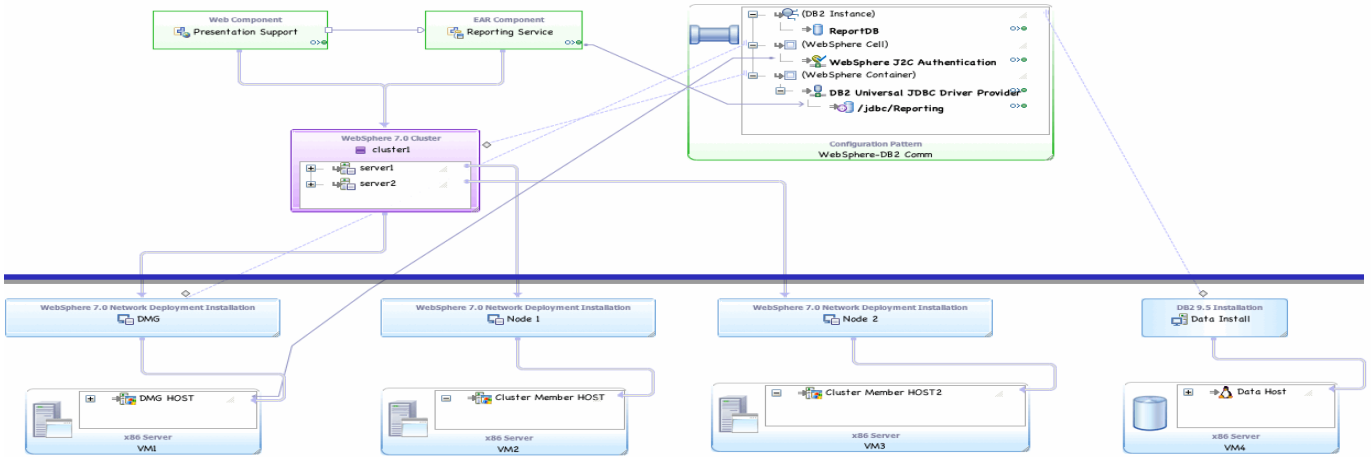


Management process model for the template-based instantiation of service deployments

Tivoli Provisioning Manager and Rational Automation Framework Positioning

Rational Automation Framework

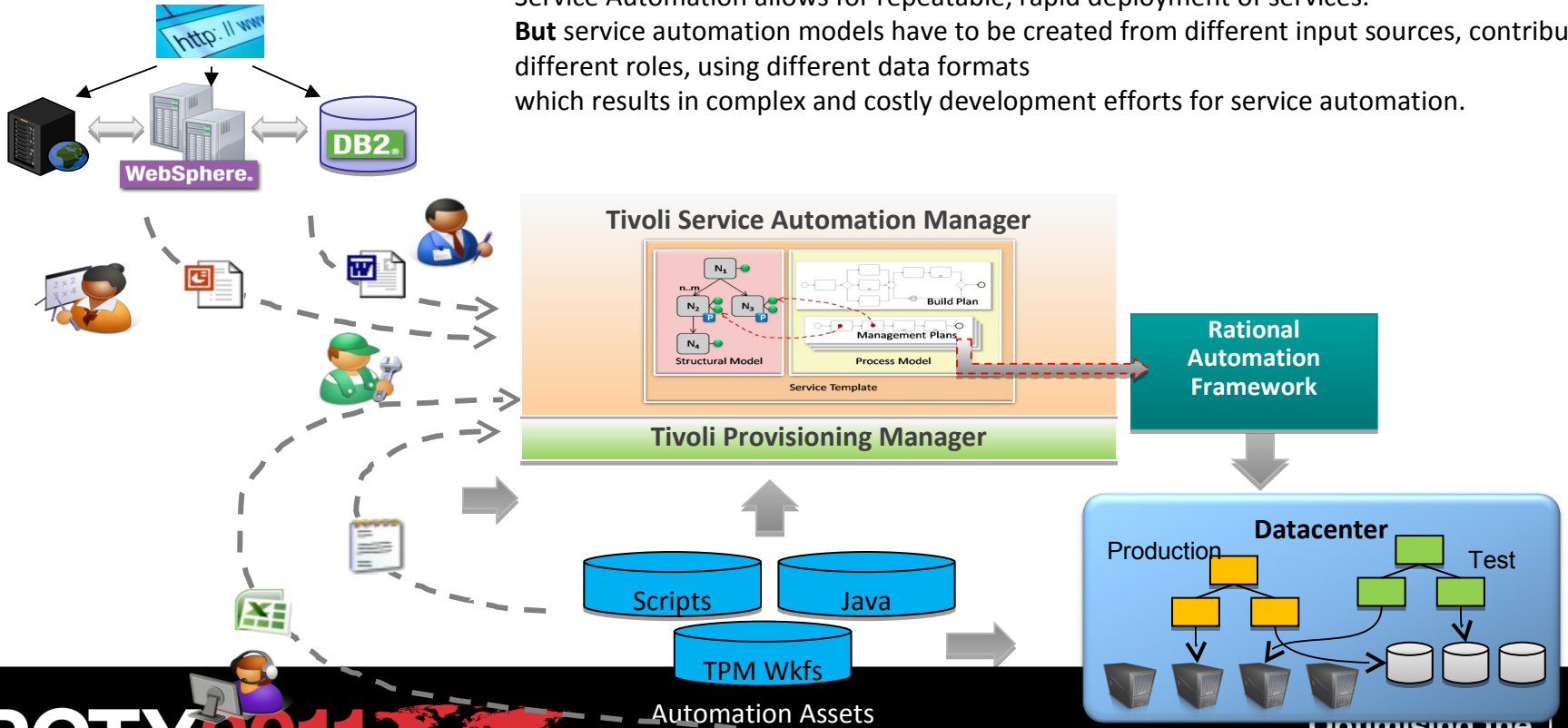
Tivoli Provisioning Manager



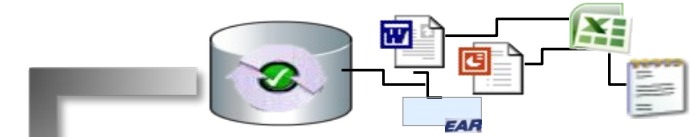
Rational Automaton Framework package available on Integrated Service Management Library to integrate TPM workflows with RAF workflows

The Remaining Challenge…

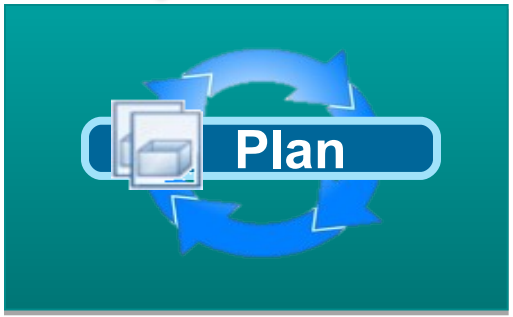
Service Automation allows for repeatable, rapid deployment of services.
But service automation models have to be created from different input sources, contributed by different roles, using different data formats
which results in complex and costly development efforts for service automation.

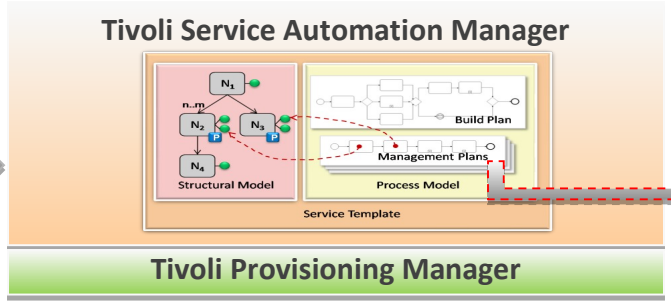


Automation by Design as the Next Step

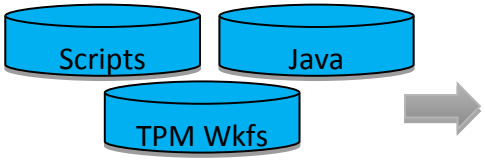


Integrated architecture and design tooling supporting different roles, and generation of automation models and flows out of design models leads to and end-to-end integrated flow of design → deployment → management of IT- and Cloud Services.

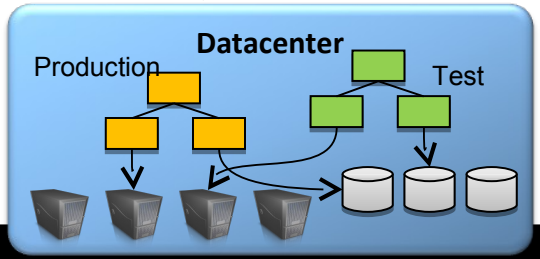




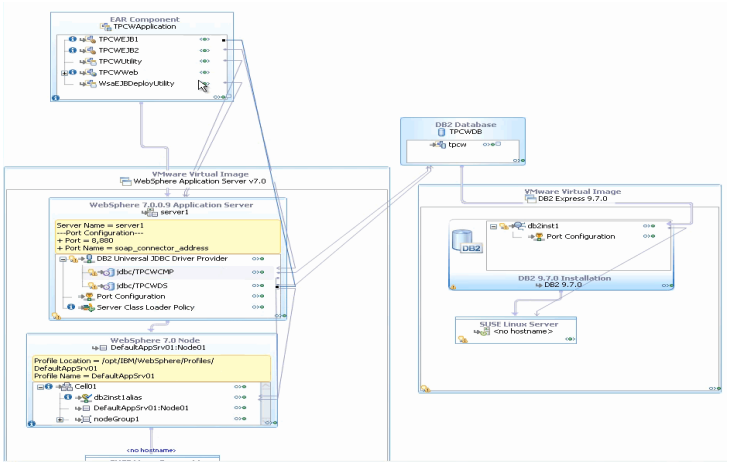
Rational Automation Framework



Automation Assets

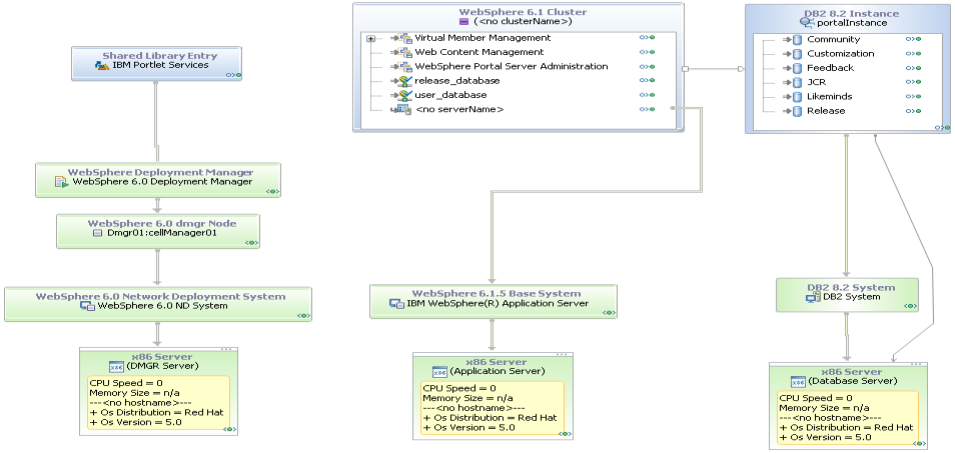



Plan


EAR Component
TPCWApplication
TPCWEJB1
TPCWEJB2
TPCWUtility
TPCWWeb
WsaEJBDeployUtility
DB2 Database
TPCWDB
tpcw
VMware Virtual Image
WebSphere Application Server v7.0
WebSphere 7.0.0.9 Application Server
server1
Server Name = server1
Port Configuration---
+ Port = 8,880
+ Port Name = soap_connector_address
DB2 Universal JDBC Driver Provider
jdbc/TPCWCMP
jdbc/TPCWDS
Port Configuration
Server Class Loader Policy
WebSphere 7.0 Node
DefaultAppSrv01:Node01
Profile Location = /opt/IBM/WebSphere/Profiles/DefaultAppSrv01
Profile Name = DefaultAppSrv01
Cell01
db2inst1alias
DefaultAppSrv01:Node01
nodeGroup1
<no hostname>
VMware Virtual Image
DB2 Express 9.7.0
db2inst1
Port Configuration
DB2 9.7.0 Installation
DB2 9.7.0
SUSE Linux Server
<no hostname>

Rational Software Architect

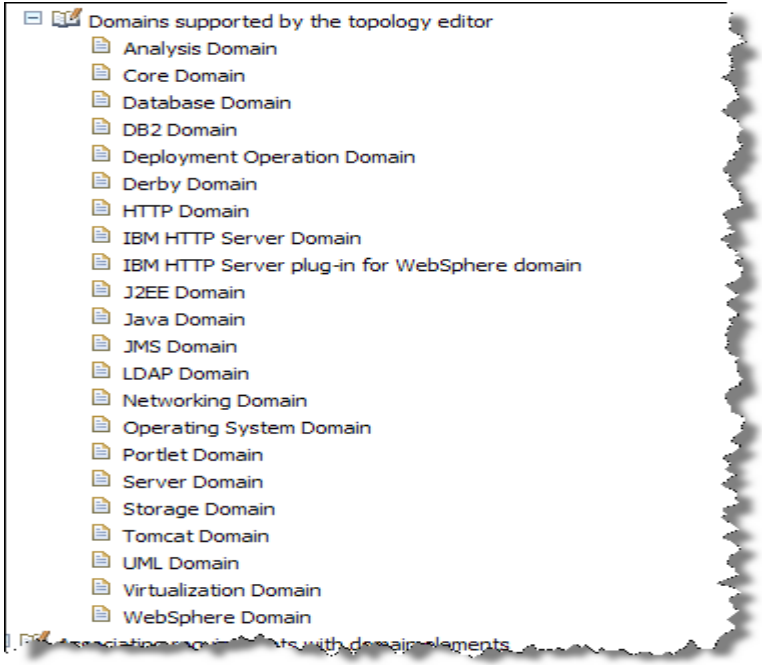
- **Smarter IT Deployment Planning**
  - Communicate and validate IT deployments to avoid costly problems late in the application lifecycle
- **Deployment Template Design and Reuse**
  - Capture and reuse organizational standards to quickly and easily plan deployments
- **Datacenter Discovery**
  - Quickly construct a topology describing what you have in your infrastructure



RSA Extension for Deployment Planning

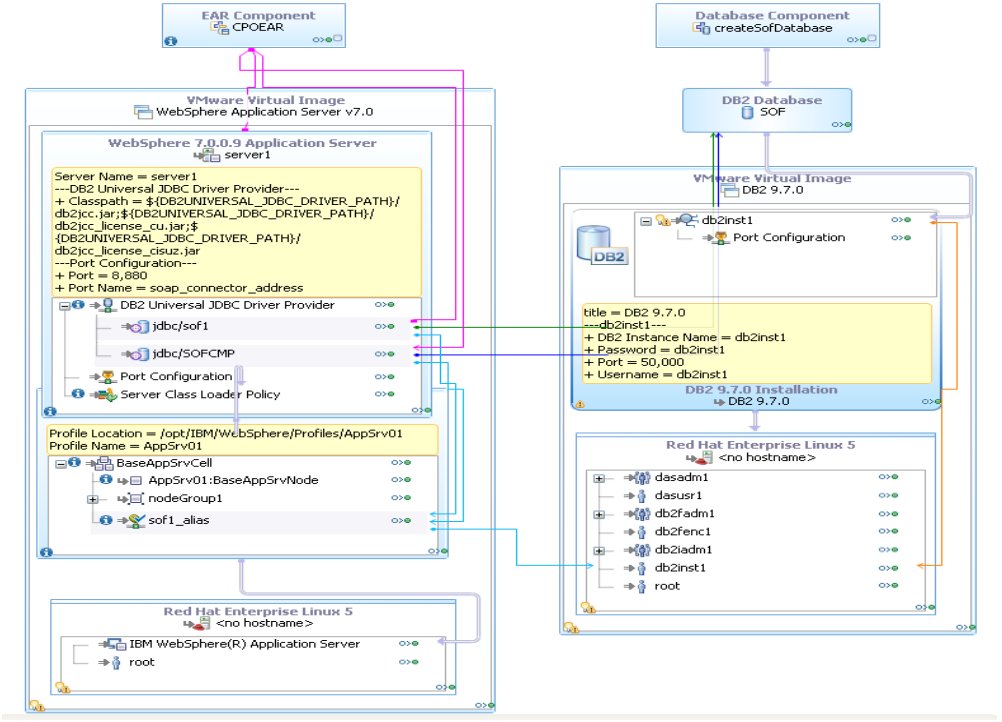
Deployment Planning Capabilities

- **Rich UI Diagraming**
  - Multiple views over the same data
  - Layers and re-usable appearances
  - Validation feedback in diagrams
  - Flexible representations
- **Backed by a rich semantic model**
  - Simple Extensible XML format
    - Dynamic extensions as well as static supported by a simple to use SDK
  - Technology domains (over 25 domains and growing)
  - Model changes reflected automatically in all diagrams
  - Constraints and validation with Quick Fix resolutions
- **Which can be reported upon**
  - BIRT report templates



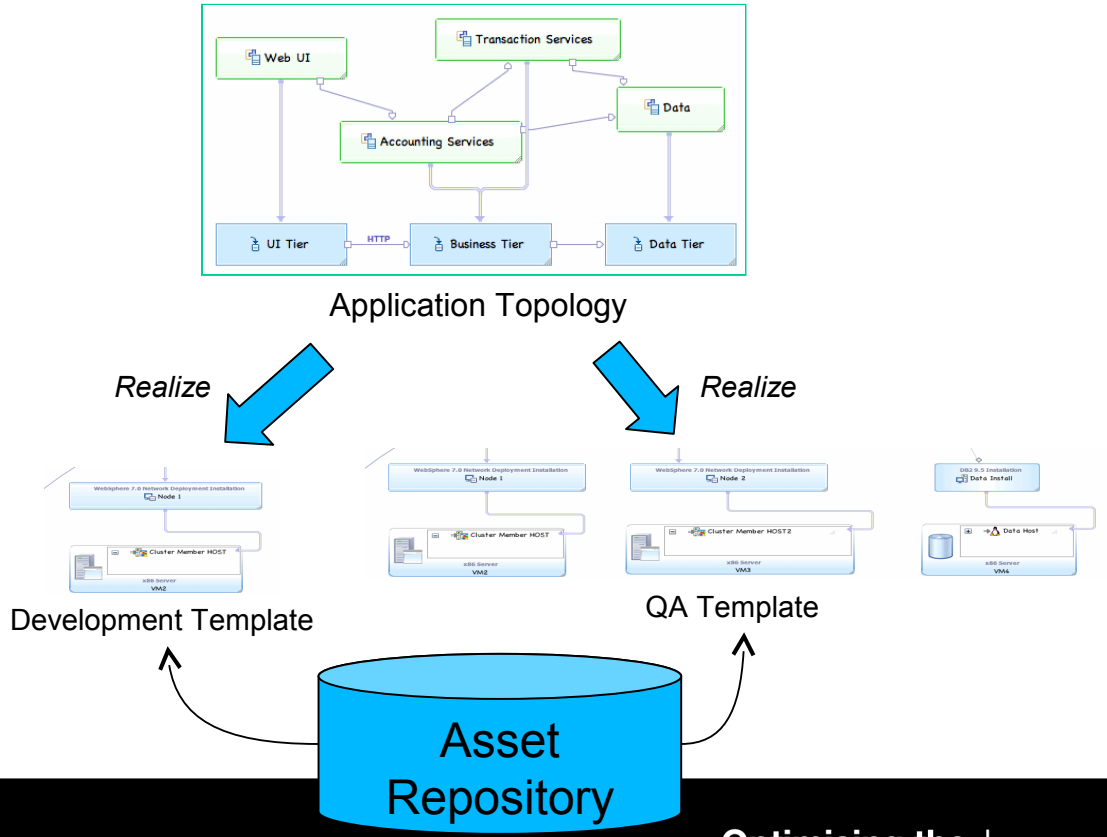
Automation By Design Focuses on Topology

- Specify resources to satisfy application needs such as datasources and authentication
- Incorporate assumptions about middleware such as version
- Describe dependencies between separate nodes in the Topology



Standardize with Deployment Templates

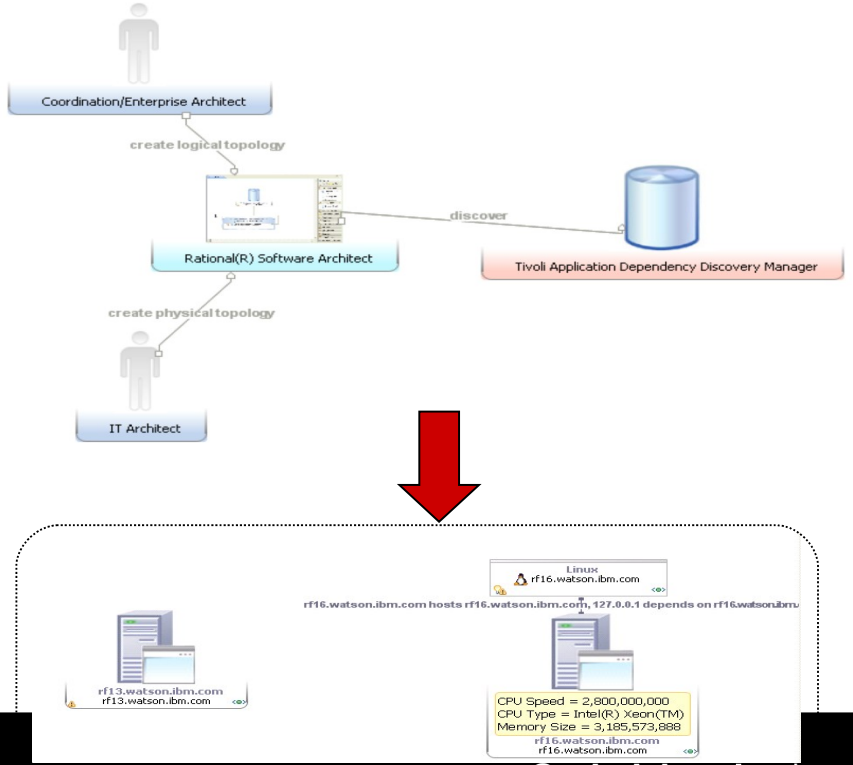
- Define and capture organizational standards with deployment templates
- Govern using an asset repository
- Reuse to guide deployment placement and implementation choices
- Ideal for capturing standard environment patterns and configurations



Datacenter Discovery

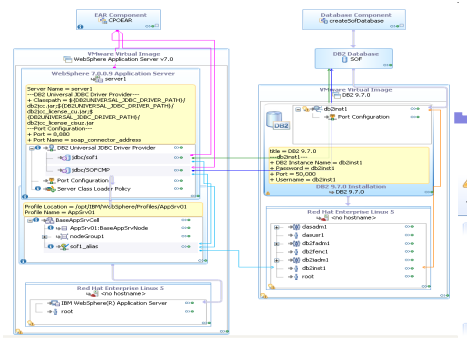
Leverage discovered operational data to expedite new designs & updates

- Reduce manual creation of topologies representing the current state of the datacenter
- Quickly understand structure of an existing datacenter
- Starting point for defining datacenter changes
- Import data from manually defined spreadsheets.



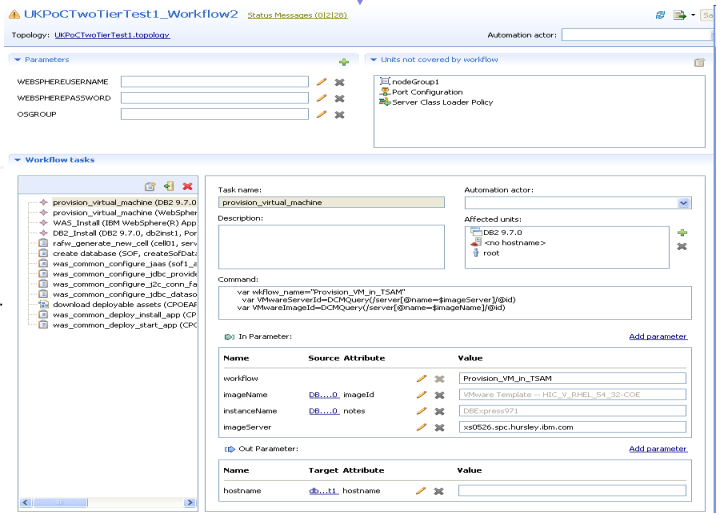
Plan Automation from Deployment Topology

- Parameters and configuration files derive their values from the model
- Single source of truth provides pre-deployment validation and problem identification
- Allows post-generation adjustments as needed



Deployment Topology

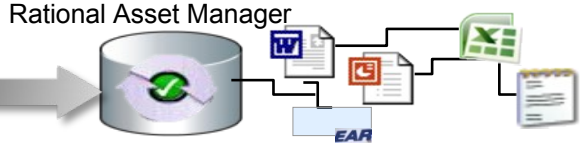
Analyze & Generate



Automation Plan

Reference

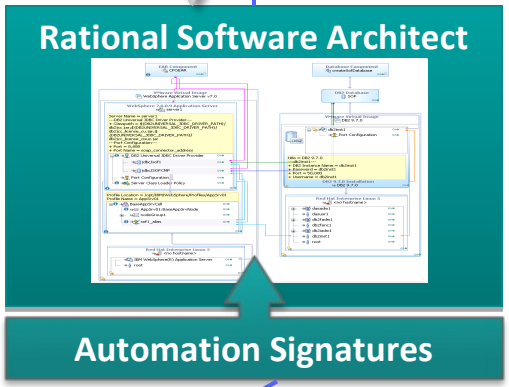
IBM Deployment Planning and Automation Architecture



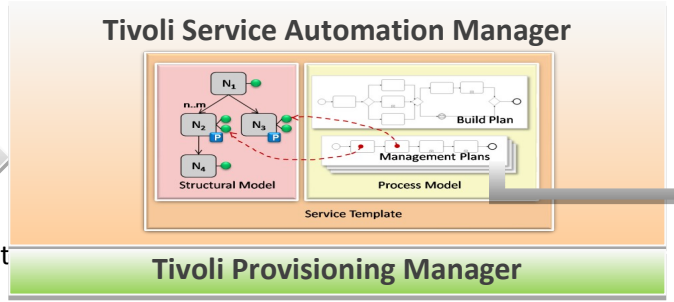
IBM Deployment Planning and Automation for Cloud package available on Integrated Service Management Library to integrate TPM workflows with RAF workflows

Application Artifacts, Templates

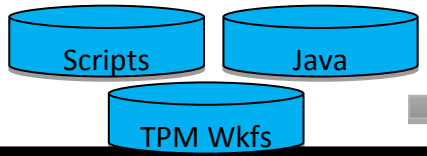
Publish automation project and configuration files



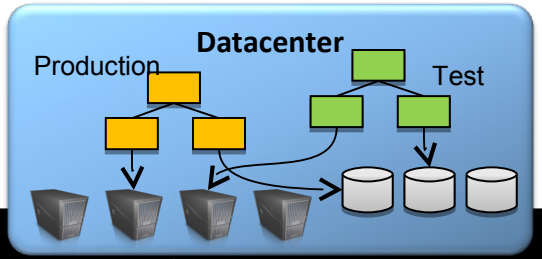
Publish Topology Template and Mgmt Plans in common format



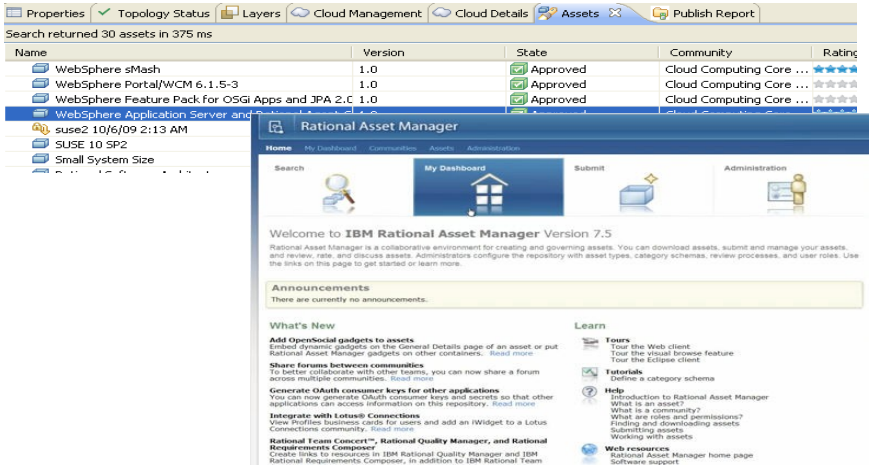
Rational Automation Framework



Automation tasks made available as




Govern

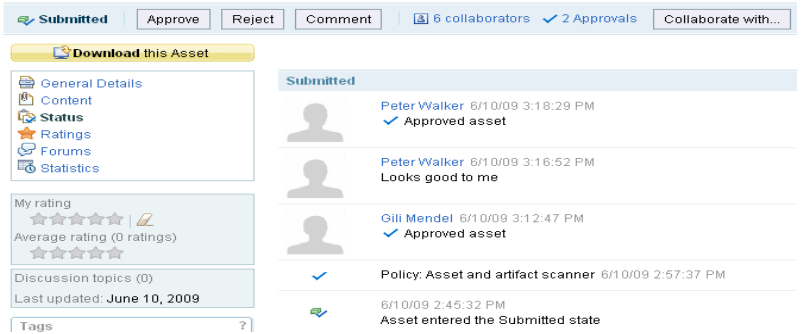

Properties
Topology Status
Layers
Cloud Management
Cloud Details
Assets
Publish Report
Search returned 30 assets in 375 ms
Name
Version
State
Community
WebSphere sMash
1.0
Approved
Cloud Computing Core ...
WebSphere Portal/WCM 6.1.5-3
1.0
Approved
Cloud Computing Core ...
WebSphere Feature Pack for OSGi Apps and JPA 2.0
1.0
Approved
Cloud Computing Core ...
WebSphere Application Server and
suse2 10/6/09 2:13 AM
SUSE 10 SP2
Small System Size
Rational Asset Manager
Home
My Dashboard
Communities
Assets
Administration
Search
My Dashboard
Submit
Administration
Welcome to IBM Rational Asset Manager Version 7.5
Announcements
There are currently no announcements.
What's New
Learn
Tours
Tutorials
Help
Web resources

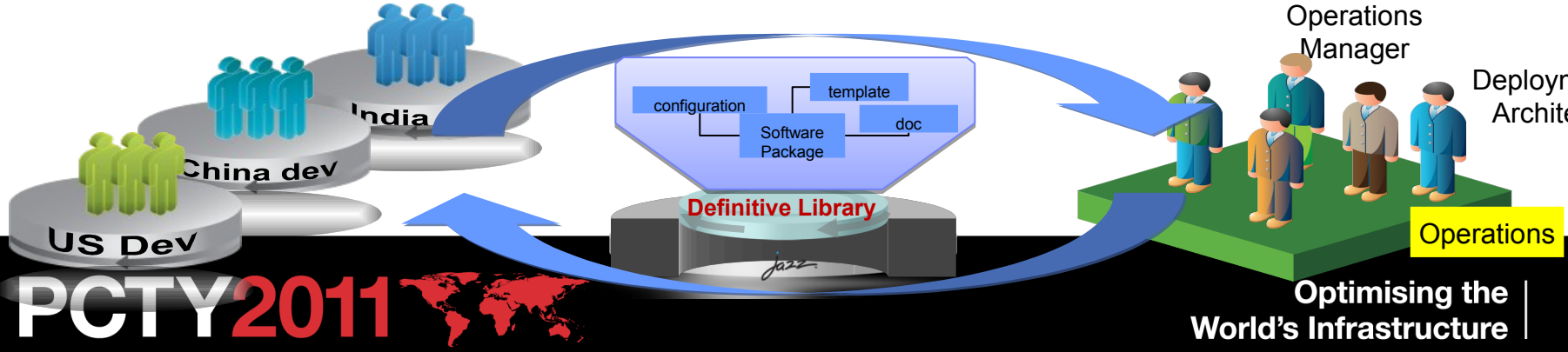
Govern your deployments using a definitive library

Deploy the right deliverables, with the right plan, using the right automation

Gain control over the:

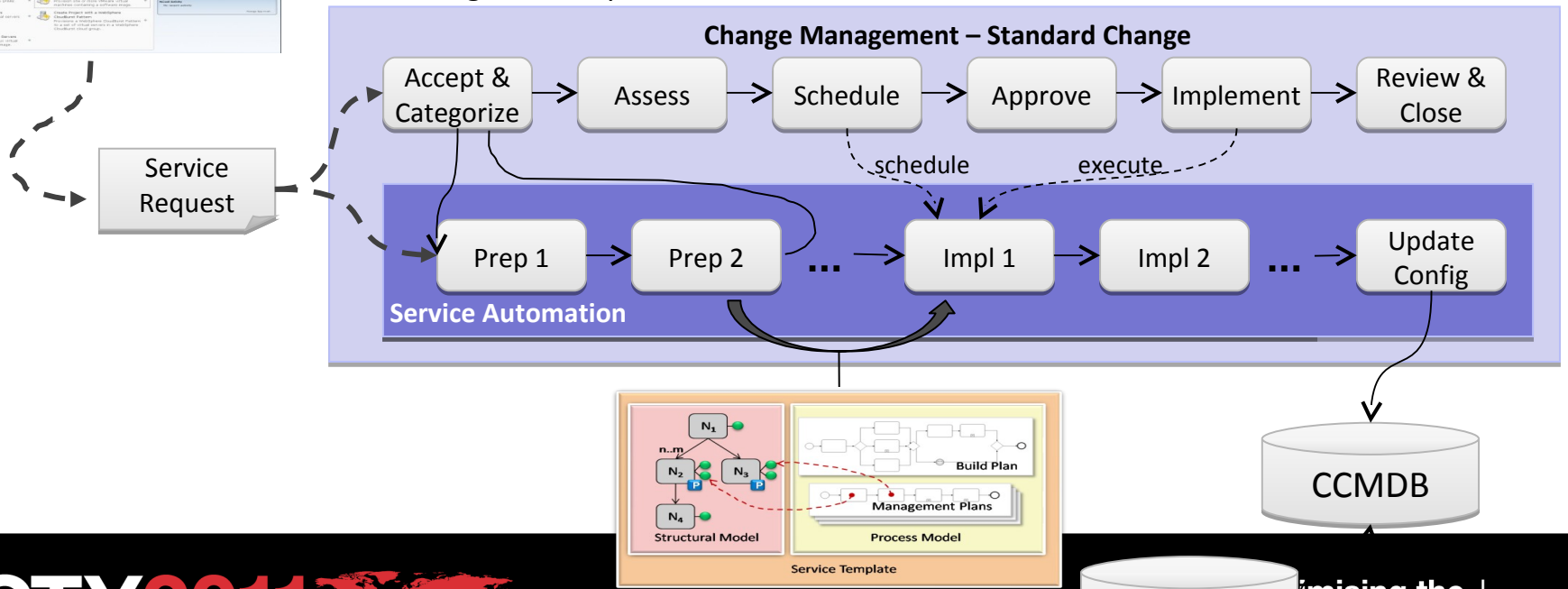
- **People** who are stakeholders in the decision making
- **Workflow** to manage sharing
- **Policies** to enforce rules
- **Access permissions** to control access
- **Traceability and auditing** for plans and automations



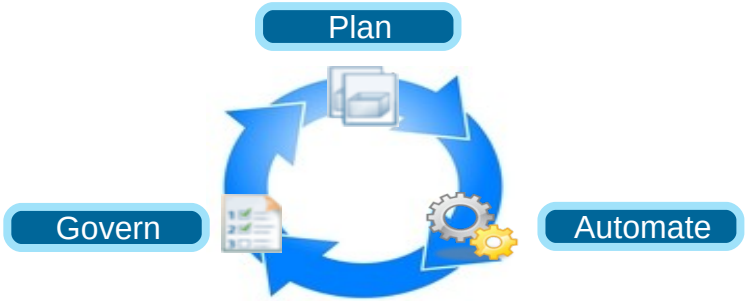


Integrated Service Automation, Change and Configuration Management

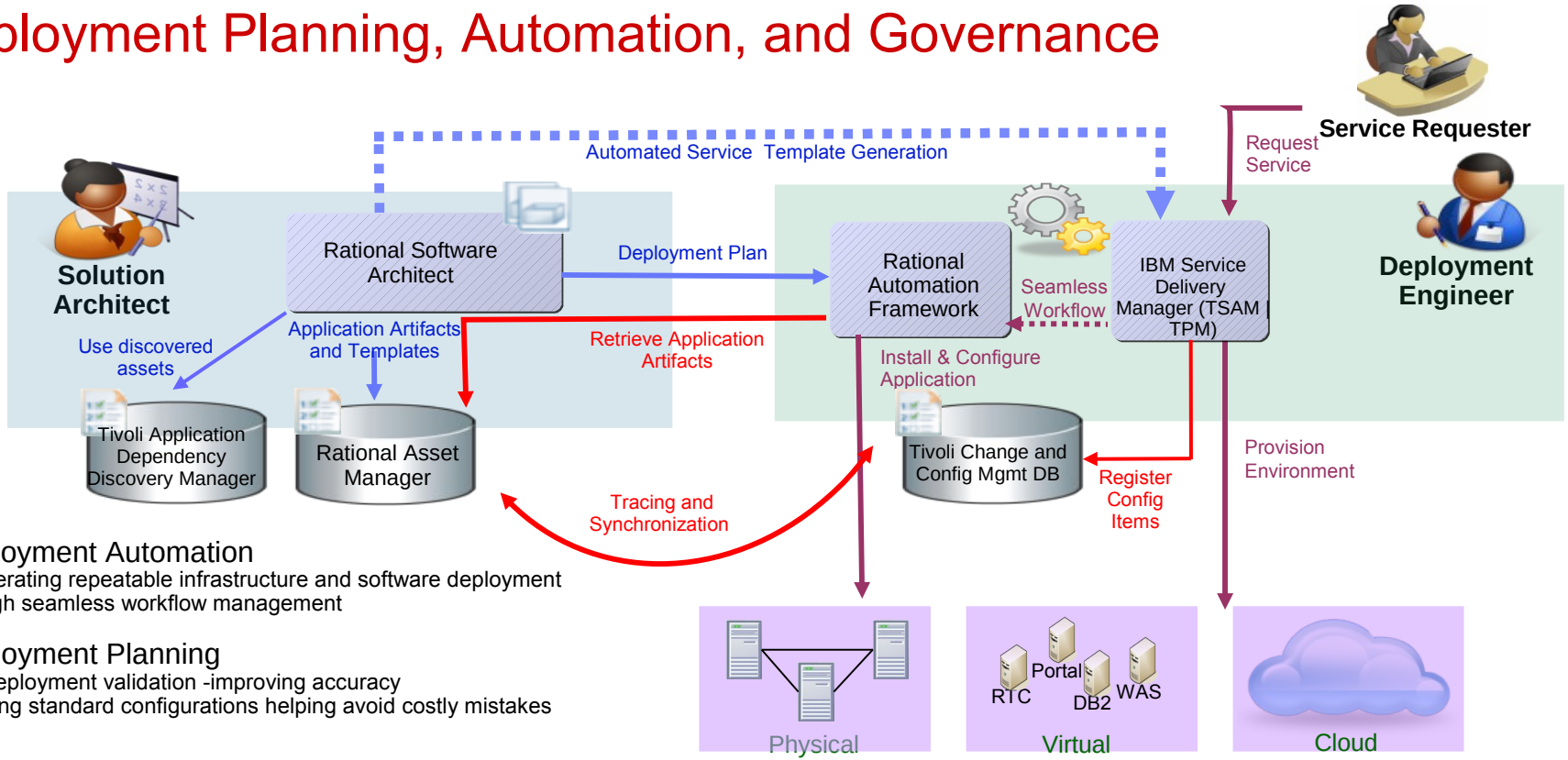
Service automation can be used stand-alone for lean and rapid service management **or** it can be configured to integrate with change management to have ITIL-aligned governance over the IT environment, including automated configuration updates



Understanding the Flow - Demo



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

Summary

- Cloud Computing provides **virtualization, standardization and automation** to **increase flexibility and reduce costs** for software delivery
- IBM Deployment Planning and Automation **speeds the delivery of high quality applications** to the cloud
- We have **services offerings** to help you **plan, manage and secure** your IT transformation onto cloud

For more information:
http://www.ibm.com/rational/cloud

QUESTIONS?