

Title: Mobile DevOps – Challenges & Best Practices
Name: Mehul Mehta, Sr. Engineering Manager,
Rational Labs



The Industry's Most Comprehensive Mobile Portfolio

IBM **MobileFirst**



1

The Broadest
Portfolio of
Mobile
Solutions

2

The Deepest
Set of Services
Expertise

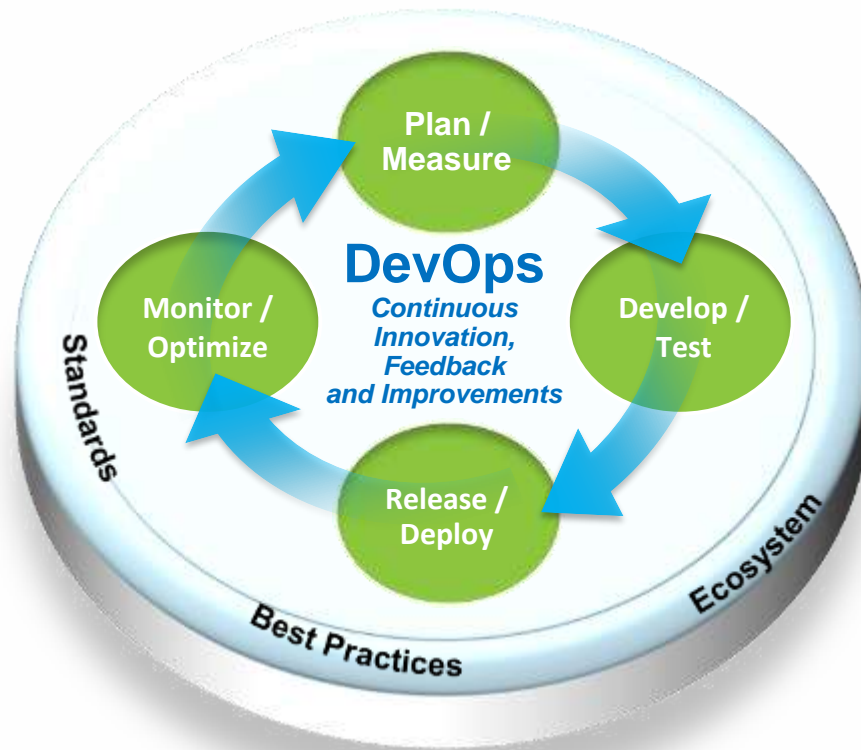
3

New Industry
Partnerships
and Resources
for Developers

Agenda

- **What is DevOps?**
- DevOps for Mobile – Challenges
- DevOps for Mobile – Best Practices
- Implementing DevOps for Mobile

DevOps: Continuous delivery of software driven innovation



Enterprise capability for continuous software delivery that enables clients to seize market opportunities and reduce time to customer feedback

Accelerate software delivery - By enabling collaboration across software supply chain
Balance speed, cost, quality & risk- By eliminating waste & automating manual processes
Improve client experience - By speeding the customer feedback loop

DevOps Principles and Values



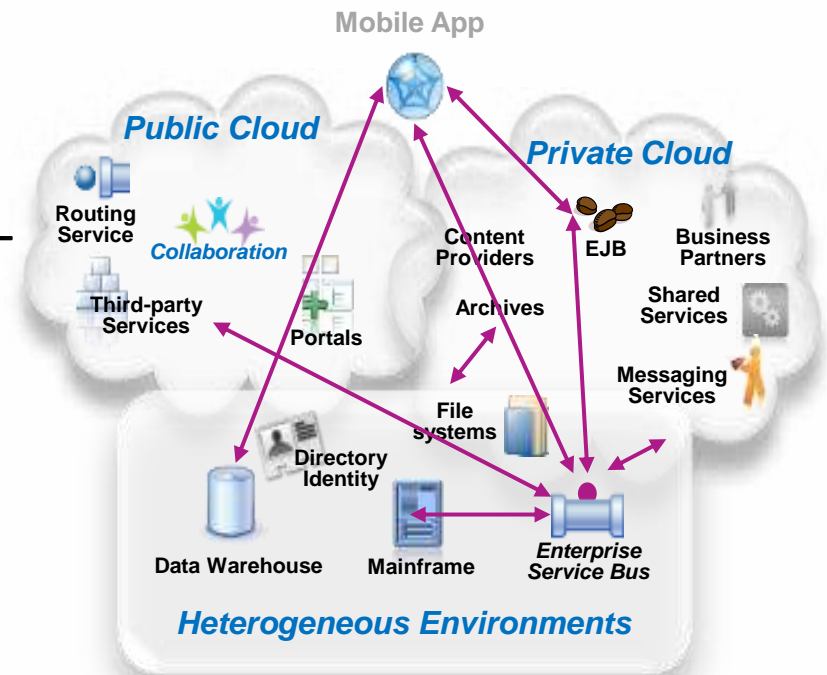
- Develop and test against a production-like system
- Iterative and frequent deployments using repeatable and reliable processes
- Continuously monitor and validate operational quality characteristics
- Amplify feedback loops

Agenda

- What is DevOps?
- **DevOps for Mobile – Challenges**
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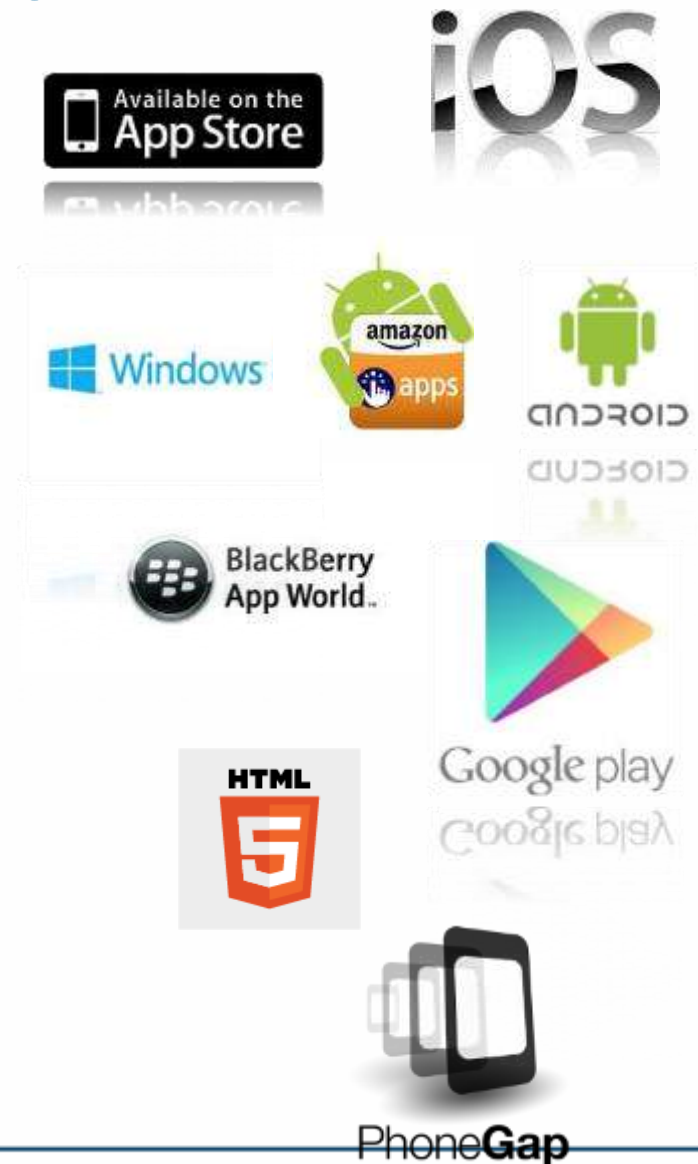
DevOps for Mobile - Challenges

- Mobile Apps are the front-end to a complex (enterprise) back-end system
- Mobile Apps are rapidly becoming a critical user interface to enterprise systems
- But they are just one part of a multi-tier, multi-component application “eco-system”
- Developing and delivering mobile apps requires coordination across that whole eco-system



DevOps for Mobile - Challenges

- Fragmented Platforms
 - Multiple mobile operating systems
 - Multiple devices & form factors
 - Multiple implementation technology choices
- Frequently a mix of technology is involved for mobile app implementation
- App stores add additional asynchronous deployment step



The IBM Mobile Enterprise Development Lifecycle

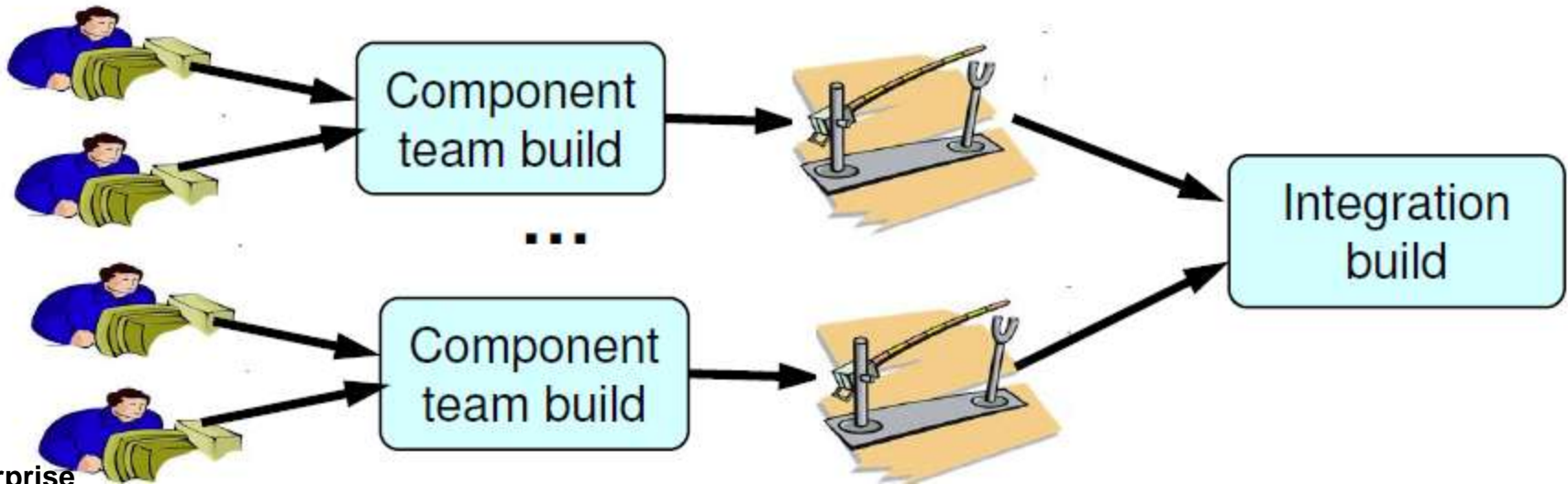


Agenda

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Practice Continuous Integration

Mobile App
Development
Teams



Enterprise
Services
Development
Teams

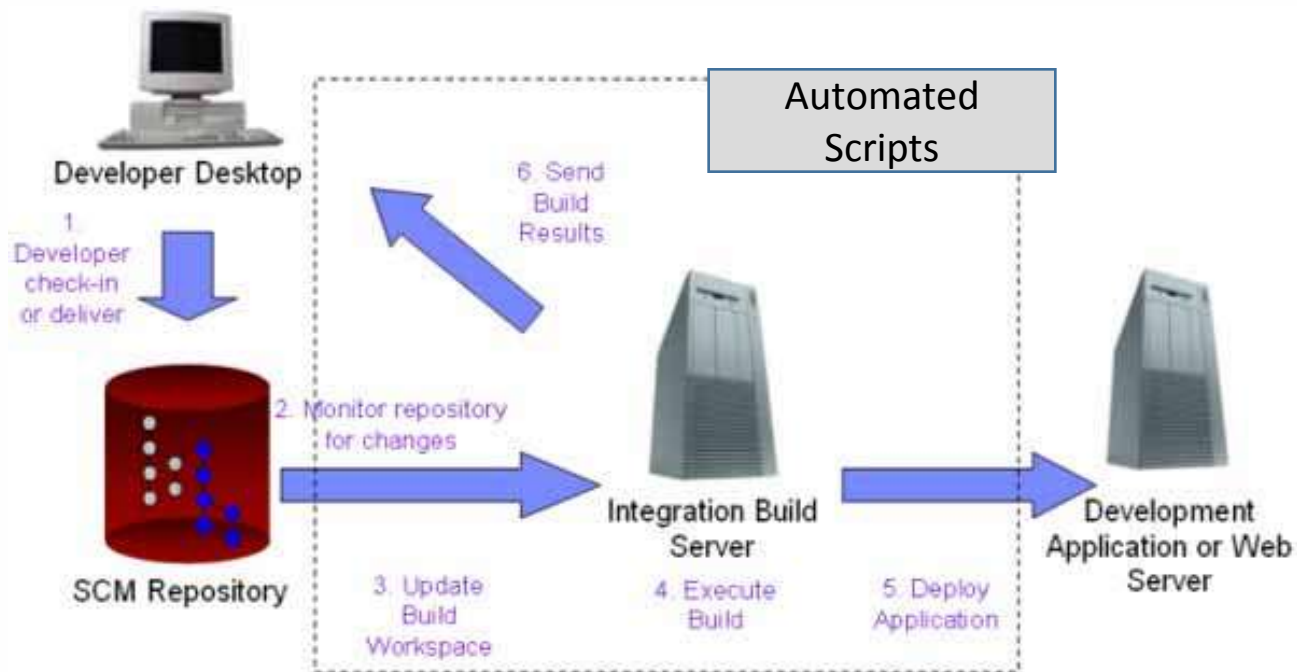
DevOps for Mobile – Best Practices

Maintain separate build areas for each
SDK version

```
<manifest xmlns:android="http://schemas.android.com/apk/res/android" ... >  
  <uses-sdk android:minSdkVersion="4" android:targetSdkVersion="15" />  
  ...  
</manifest>
```

DevOps for Mobile – Best Practices

Automated Build and Deploy scripts



DevOps for Mobile – Best Practices

Test each build on real supported devices



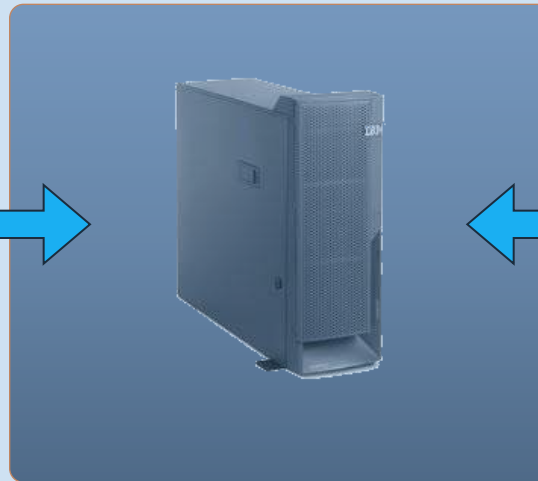
DevOps for Mobile – Best Practices

Simulate Back-end Services

Client Tier Devices UI Testing

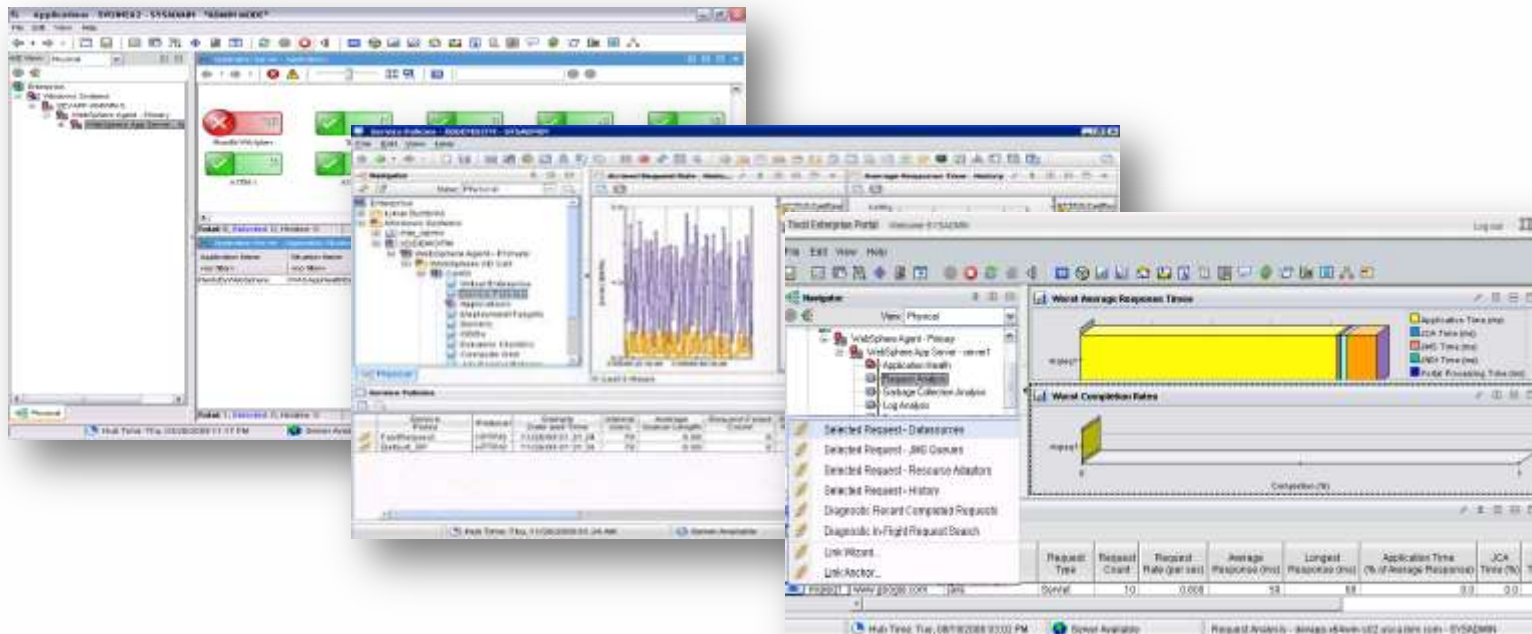


For focused automated mobile client tier functional testing, use Service Virtualization to simulate the mobile middle tier and back office systems.



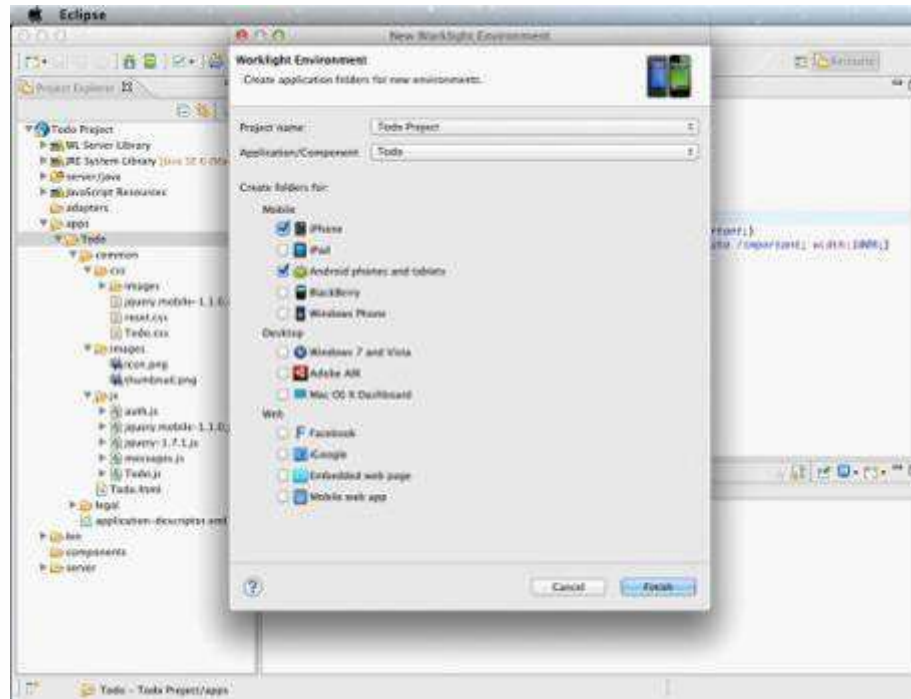
DevOps for Mobile – Best Practices

Monitor deployed apps and back end services performance




DevOps for Mobile – Best Practices

Governance of provisioning profiles, certificates and API keys



DevOps for Mobile – Best Practices

Use a ‘Private’ App store to test device deployment



The screenshot displays the IBM Developer Application Store interface. At the top, there is a navigation bar with 'Applications' selected. Below the navigation bar, the page title is 'Application Management'. A search bar is visible on the right. The main content area is titled 'Available Applications' and includes an 'Add Application' button and a 'Display' dropdown menu. A list of applications is shown, each with an icon, title, platform, installation status, and version information. The applications listed are:

- Dojo Showcase**: Android (com.ibm.mobile.dojoshowcase), Installation unrestricted, Administration restricted, version 20120109-000412.
- Managed Myurance**: Android (com.ibm.mobile.sample_managedmyurance_android), Installation unrestricted, Administration restricted, version 20120108-000412.
- Notifications Sample**: Android (com.ibm.mobile.notifications.service.sample), Installation unrestricted, Administration restricted, version 20120108-000412.
- TabletApp**: iOS (com.TabletApp), Installation unrestricted, Administration restricted, version 1.0-000412.

At the bottom of the list, there are pagination controls showing 'Show: 0 | 10 | 20 | 50 | All items' and 'Jump to page: 1 of 1'.

DevOps for Mobile – Best Practices

Convert App Store feedback into user stories



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- **Implementing DevOps for Mobile**

IBM Worklight: An Overview



Studio

Leading tools for cross platform hybrid development that maximize code reuse and enable per-device optimization



Operational console

Operational management for deployments, concurrent versions, and infrastructure access. Operational analytics provide real-time insight into application usage



Application center

A cross-platform private mobile application store focused on the needs of a development organization or a team

Application runtime

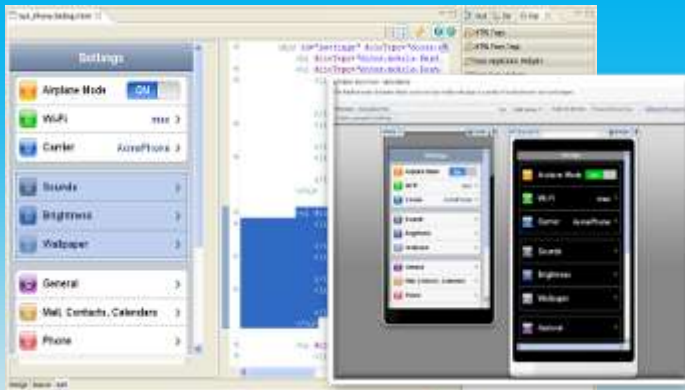


Cross platform services for the mobile channel (client & server componentry). Client APIs are introduced for both pure **native** as well as **hybrid** development

Integrated Mobile Collaborative Development

Enabling collaborative team development on mobile app projects

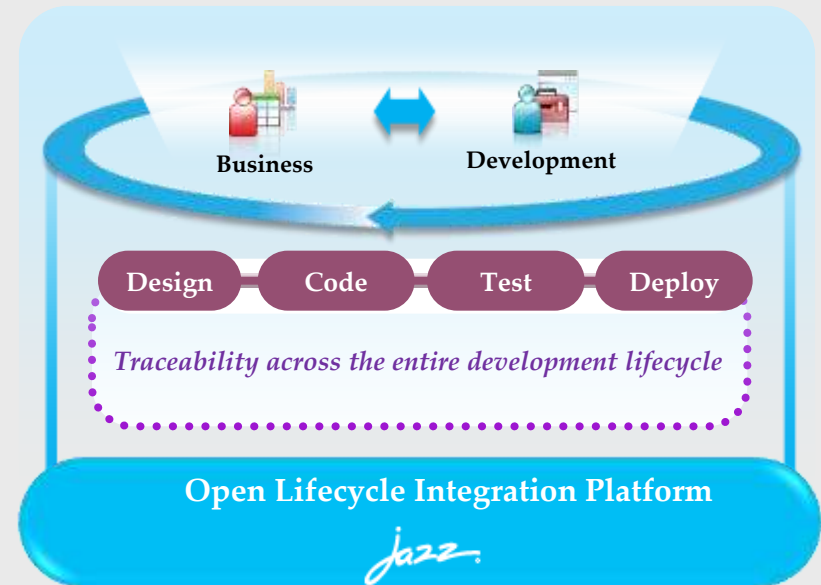
IBM Worklight



Construct, debug, and test mobile UIs

Mobile Application Platform

Collaborative Lifecycle Management



Application Lifecycle Management

IBM provides the only comprehensive mobile development solution currently in the market combining a mobile application platform, construction tools, and lifecycle management all integrated together

IBM Rational Test Workbench v8.5

High quality mobile apps built and tested for a rapidly evolving mobile infrastructure

New!

- **Mobile Test Automation**
 - Support Worklight and native iOS or Android mobile apps
- **Eclipse Client integration**
 - Integration with Rational Quality Manager and IBM Worklight Studio
- **End-to-end mobile testing**
 - Capture and replay of multi-touch events with virtualization of multi-tier systems



“Being agile, we are developing tests as we write our code, so automating the functional tests of our mobile apps and using them for regression on multiple platforms makes our team much more productive!” - Mobile developer

Virtualize back-end services to maintain agility

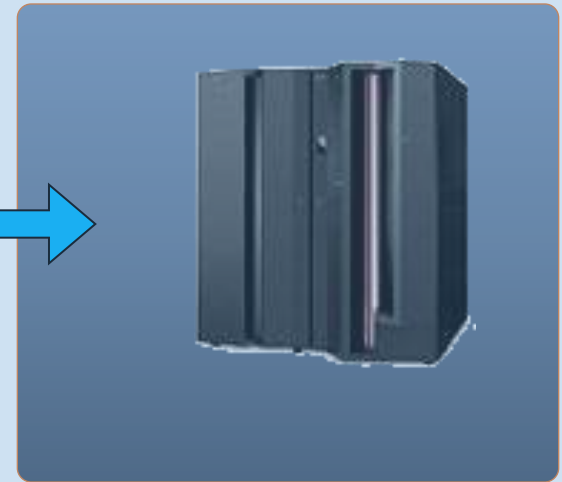
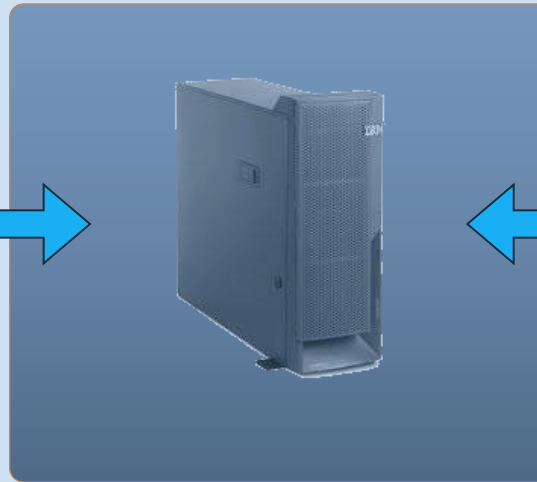
Client Value: Mobile development team can meet aggressive schedules and reduce MIPS usage on enterprise systems

Rational Test Workbench

Service Virtualization support for
isolating mobile client tier

**Client Tier Devices
UI Testing**

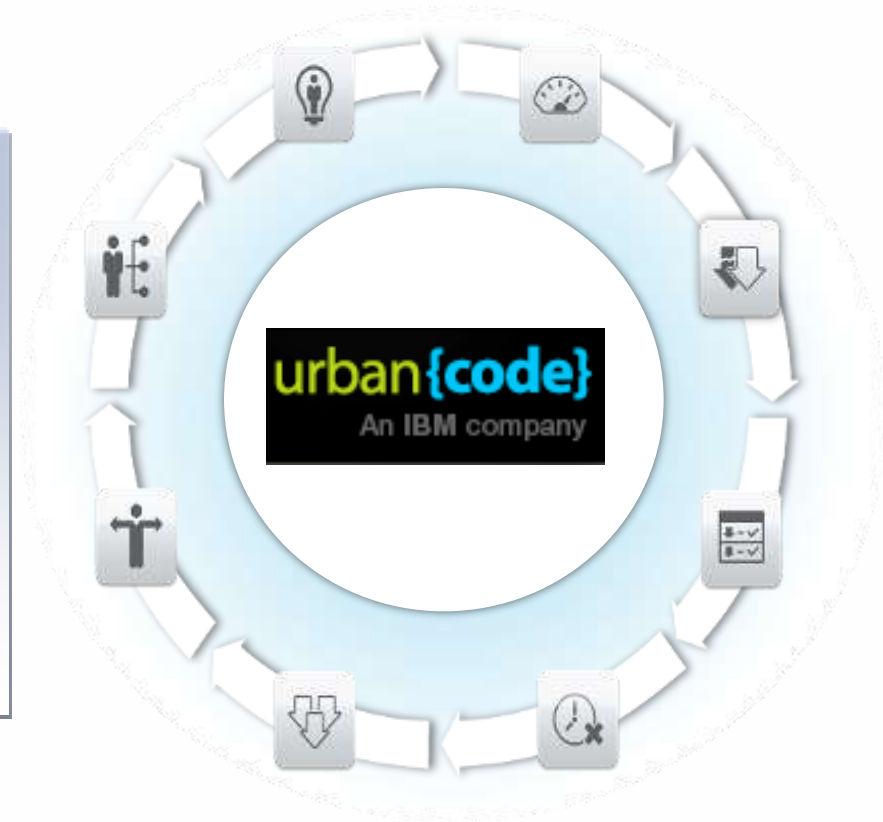
For focused automated mobile client tier functional testing, use Service Virtualization to simulate the mobile middle tier and back office systems.



IBM UrbanCode delivers DevOps

Enabling clients to more rapidly deliver mobile, cloud, big data analytics and traditional applications with complementary DevOps capabilities

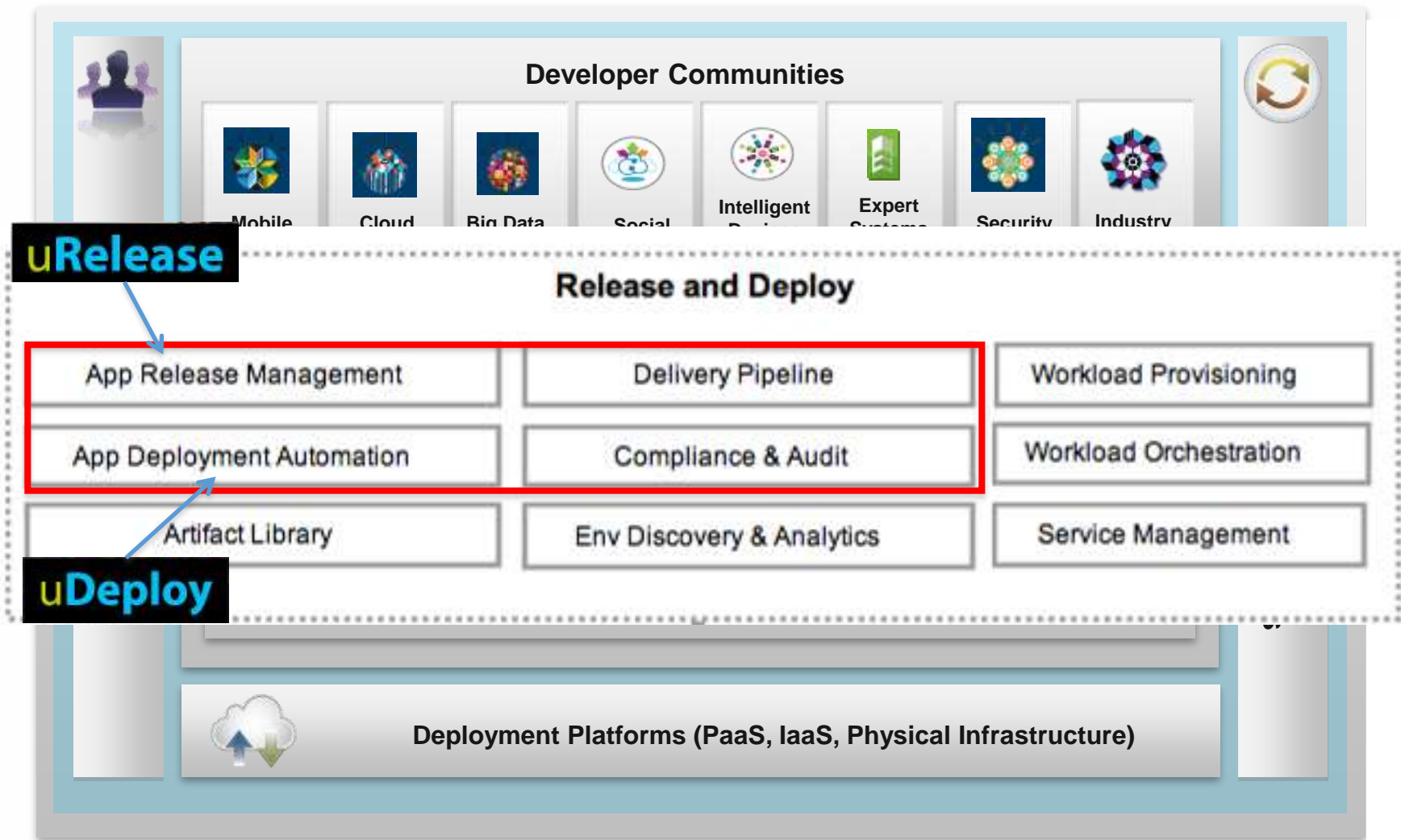
- **Drive down costs**
 - Reduce the amount of manual labor, resource wait-time, and rework
- **Speed time to market**
 - Increase frequency of software delivery
- **Reduce risk**
 - Deliver higher quality application releases with increased compliance



“Mobile development moves more quickly than most enterprises are accustomed to. The coordination required, and the pace being driven by mobile, is a big factor driving DevOps in the enterprise.”

- Eric Minick, **UrbanCode**.

UrbanCode capabilities

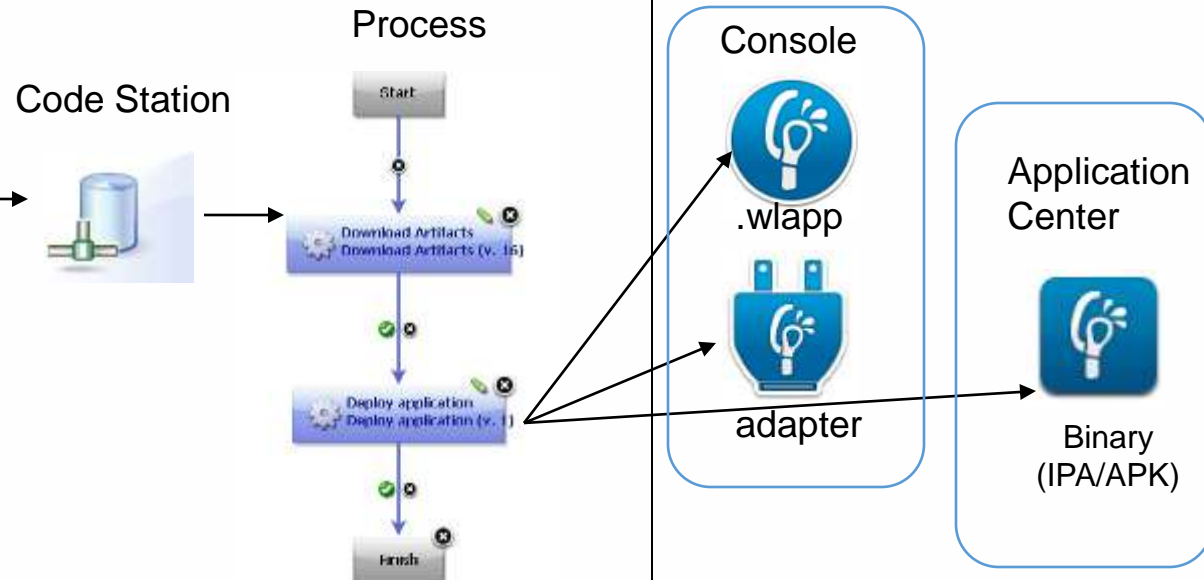


Automate deployment to IBM MobileFirst Platform (Worklight)

IBM UrbanCode Deploy

- Download build output from codestation
- Deploy to Worklight Platform

Worklight



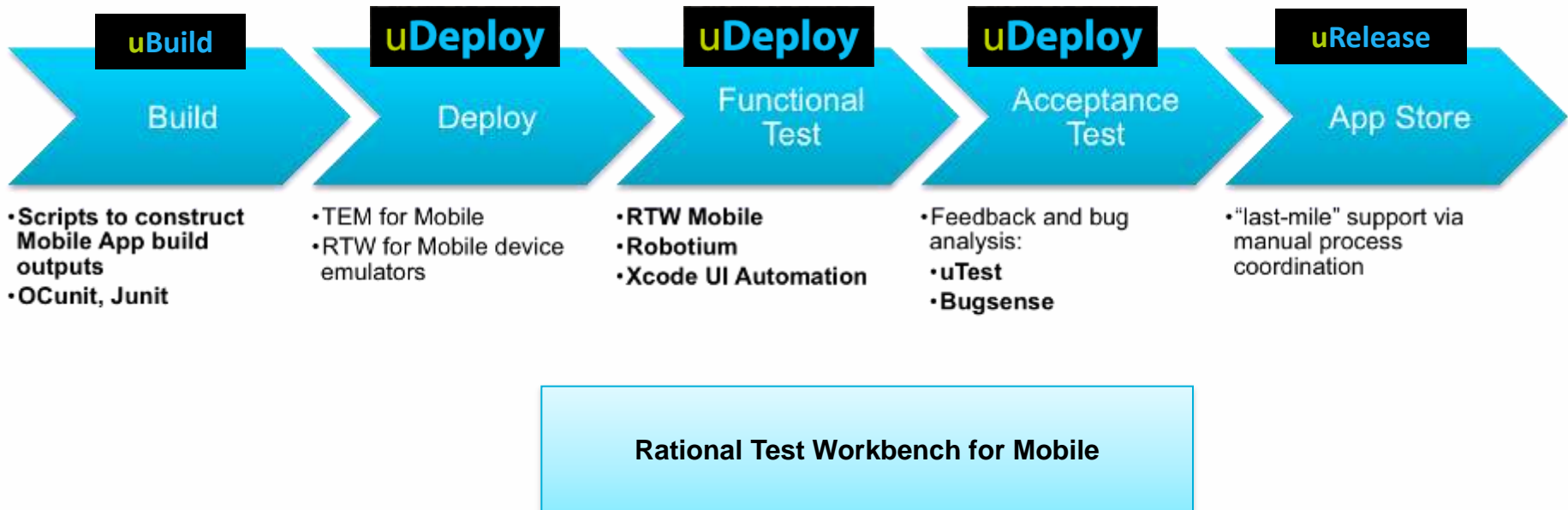
Automatically deploy Worklight applications as part of your deployment process

The plugin supports:

- ✓ deploying Worklight **adapter and application components** to the Worklight Server
- ✓ deploying Worklight **mobile application binaries** to the Worklight Application Center for distribution and management

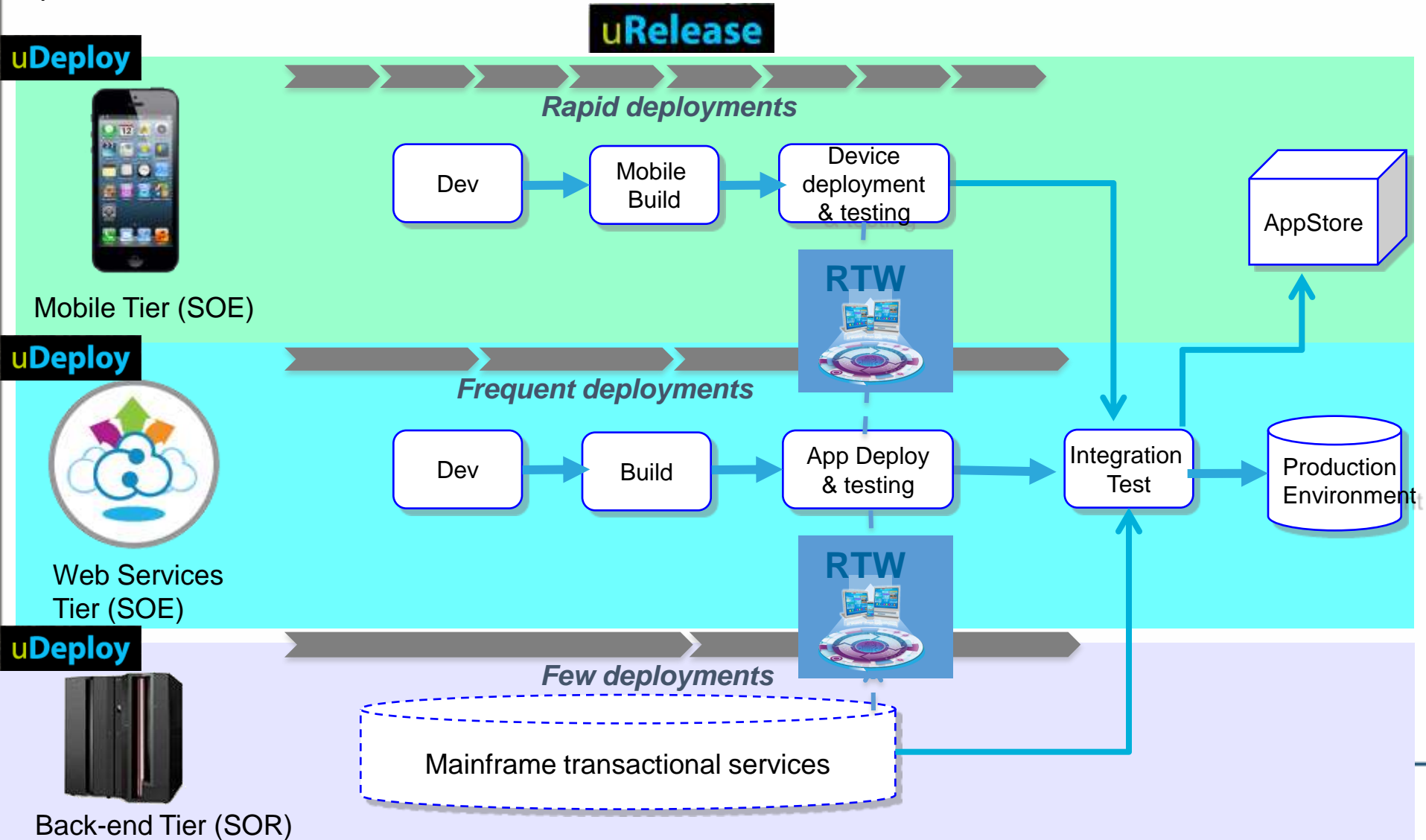
DevOps for Mobile Examples

- Enabling continuous delivery for rapid updates of Mobile Applications



Distributed DevOps Pattern

Mobile apps need to be updated and released rapidly, delays due to wait for operations teams to setup test labs, longer cycles required to integrate with existing apps/services, processes



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New Industry
Partnerships
and Resources
for Developers

Thank you!

IBM®

... the plugin must be loaded into the uDeploy server



The screenshot shows the uDeploy web interface. At the top, the uDeploy logo is on the left, and 'Dashboard' and 'Compor' are on the right. Below the logo, there is a breadcrumb trail: 'Home > Settings > Plugins'. The main content area has several tabs: 'Automation Plugins', 'Post Processing Scripts', 'Locks', and 'Statuses'. The 'Automation Plugins' tab is active. Below the tabs, there is a 'Load Plugin' button. A table lists the following plugins:

Plugin	Description
File Utils	The FileUtils plugin allows users to perform folder and file level tasks as part of their deployment process. A in a file
IBM Worklight	Provides support for deploying mobile application artifacts to an IBM Worklight server.
Resource Properties Collector	Tools used for retrieving env and resource properties from the resource.
Shell	The Shell plugin allows users to run custom shell scripts during the deployment process.
System Information	The System Information plugin includes a variety of checks to perform against the operating system. These
UrbanCode Versioned File Storage	A plugin to allow uDeploy to upload artifacts to a uDeploy (VFS) artifact repository.
uDeploy Application	Plugin for creating and managing uDeploy applications.
uDeploy Component	Component for creating and managing uDeploy components.

The plugin supports basic commands to automate deployment to Worklight Console and Worklight Application Center

Automation Plugin: IBM Worklight

Description

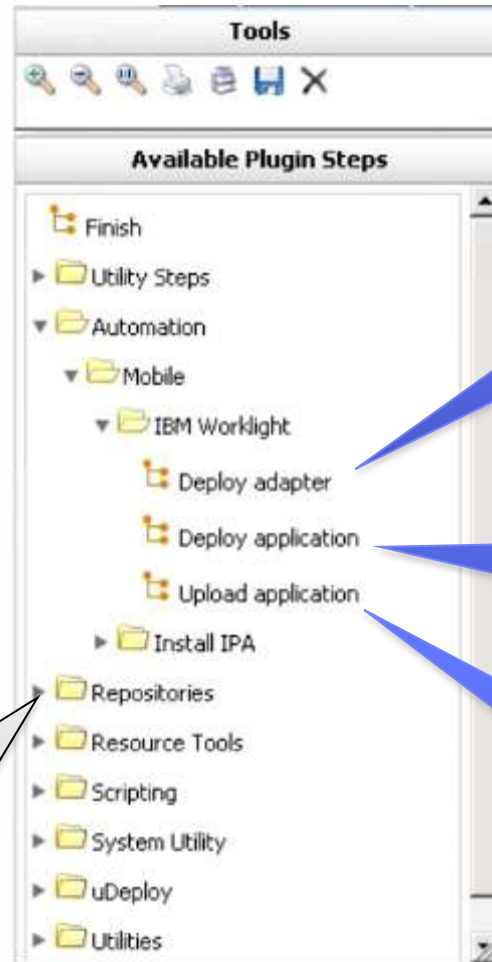
Provides support for deploying mobile application artifacts to an IBM Worklight server.

Commands

Command	
Upload Application	Uploads the application to the IBM Worklight Application Center.
Deploy Application	Deploys the application to the IBM Worklight Console.
Deploy Adapter	Deploys the adapter to the IBM Worklight Console.

10 per page 3 records -

... When modeling a deployment process, the plugin provides steps to operate against Worklight Console and Application Center:



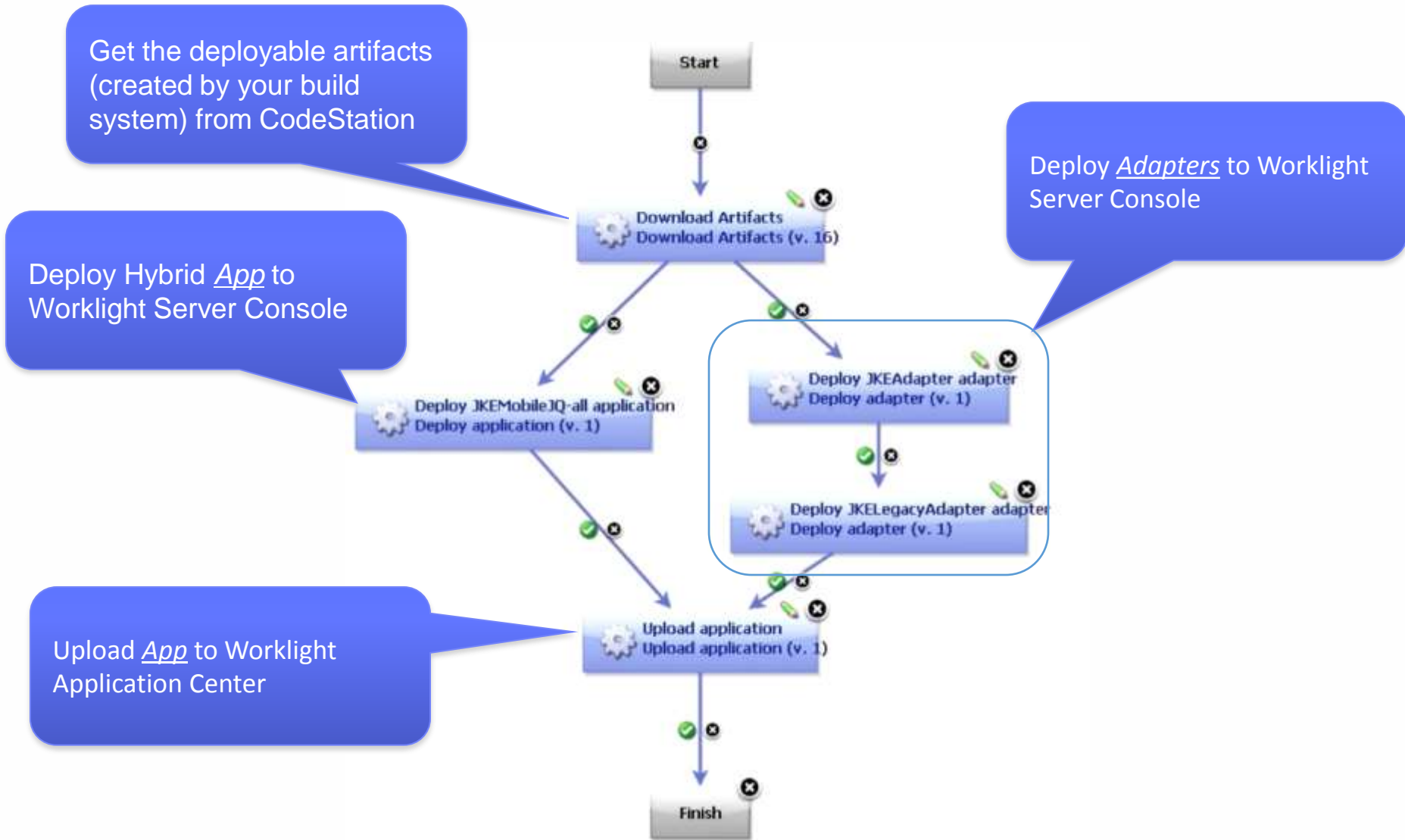
Deploy Adapter to Worklight Server Console

Deploy Hybrid App to Worklight Server Console

Upload App to Worklight Application Center

Other plugins provide these steps, which are also usable in the same process model

Here's a simple process example for our JKE sample app:



During process modeling, you configure the plugin properties

Edit Properties

Name * Deploy JKEMobileJQ-all Application

Server Path * http://localhost:9080/worklight [?](#)
[Prompt for a value on use](#)

Application File * JKEMobileJQ-all.wlapp [?](#)
[Prompt for a value on use](#)

Allow Failure [?](#)

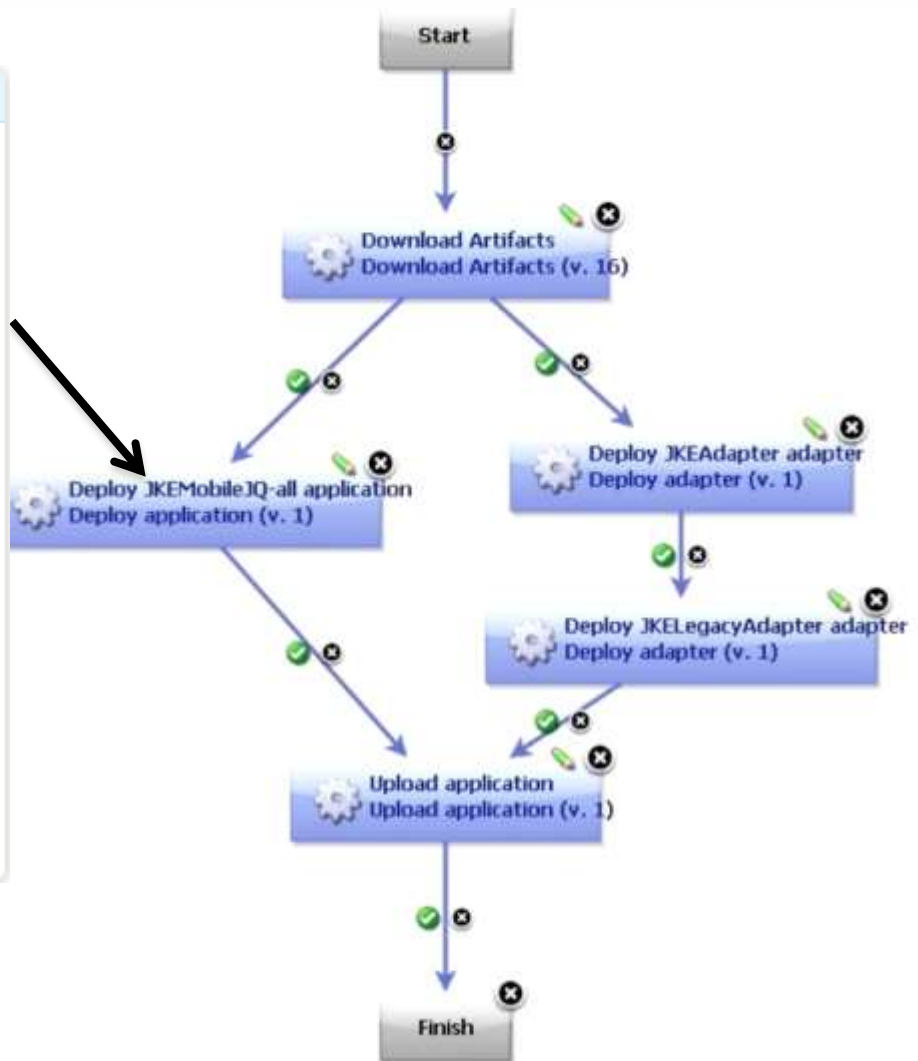
Working Directory [?](#)

Post Processing Script Step Default [?](#)

Precondition [?](#)

Use Impersonation [?](#)

Show Hidden Properties [?](#)



During process modeling, you configure the plugin properties

Edit Properties x

Name *

Server Path * ?
[Prompt for a value on use](#)

Context
[Prompt for a value on use](#)

User ?
[Prompt for a value on use](#)

Password ?
[Prompt for a value on use](#)

Force upload ?
[Prompt for a value on use](#)

File * ?
[Prompt for a value on use](#)

Allow Failure ?

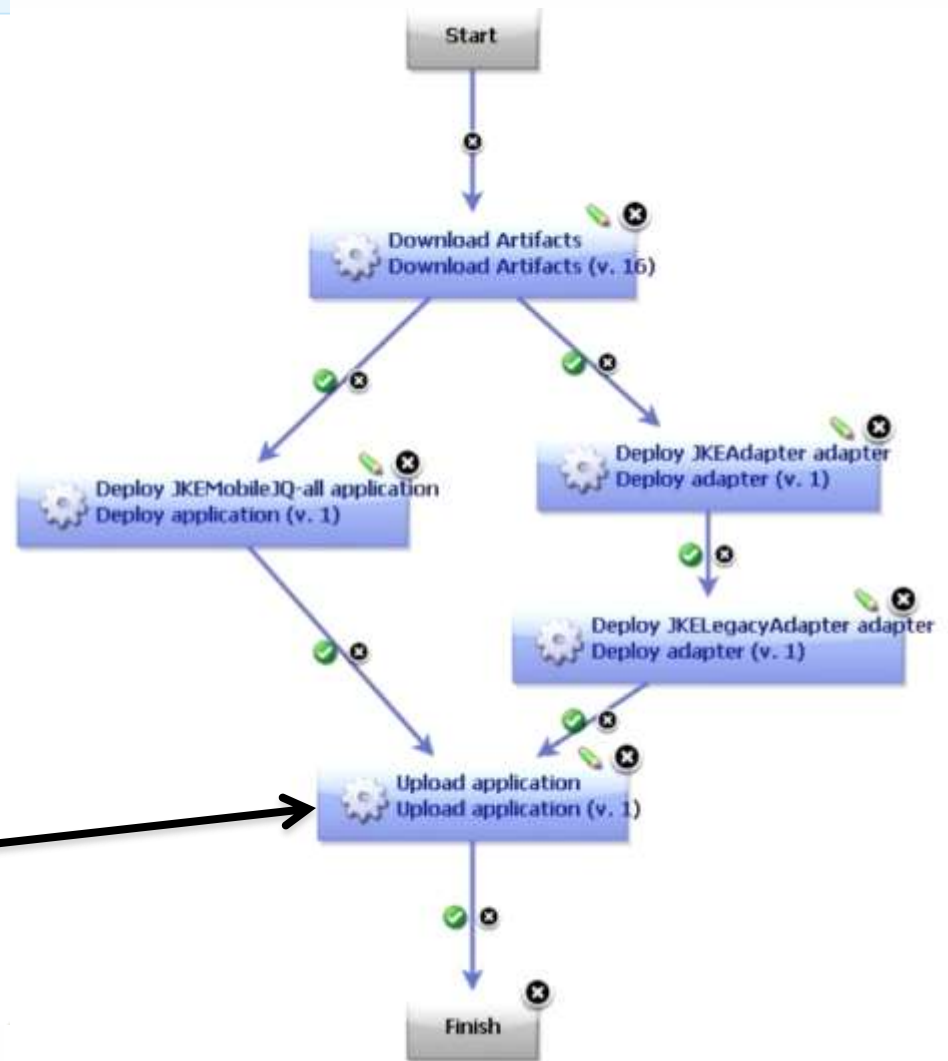
Working Directory ?

Post Processing Script ?

Precondition?

Use Impersonation ?

Show Hidden Properties ?



You run (automatically) the process within an Environment definition

Application: JKEMobile

Description

Environments **Gates** **History** **Edit** **Properties** **Components** **Snapshots** **Processes** **Calendar** **Tasks** **Changes** **Security**

Environments

Drag environments by their label boxes to order them.



Component	Version	Snapsh
JKEMobile	1.0.0522130413	

10 per page

- Show Inactive Environments
- Automatically Expand Environment Inventory

Create New Environment

Kick off the process, for the DEV environment

Environments

Drag environments by their label boxes to order them.

Dev

Test

Request Process, Compare, Copy, Inactivate, Delete

Component	Version	Snapsh
JKEMobile	1.0.0522130413	

10 per page

- Show Inactive Environments
- Automatically Expand Environment Inventory

Create New Environment

... There will be many environments with different processes for each

.... You can see the details of the deployment, and













Deployment of Component: JKEMobile

Process [Upload and Deploy App \(Version 6\)](#)
Version [1.0.0522130413](#)
Resource [jc-localhost-agent](#)
Agent [jc-localhost-agent](#)
Date 05/23/2013, 10:54 AM
Requested By admin
[View Application Process Execution](#)

Log **Properties**

Sort By: [Graph Order](#) [Start Time](#)

Step	Type
Download Artifacts	UrbanCode Versioned File Storage v. 16.369060
Deploy JKEAdapter adapter	IBM Worklight v. 1.05230946
Deploy JKEMobileJQ-all application	IBM Worklight v. 1.05230946
Deploy JKELegacyAdapter adapter	IBM Worklight v. 1.05230946
Upload application	IBM Worklight v. 1.05230946

Total Execution	Start	Duration	Status	Actions
	10:54:11 AM	0:00:08	Success	  
	10:54:20 AM	0:00:14	Success	  
	10:54:20 AM	0:00:14	Success	  
	10:54:35 AM	0:00:05	Running	  
			Not Started	
10:54:11 AM	0:00:28		Running	

The Mobile App (updated) has been deployed to the Worklight Server Console and Application Center

Adapters and Middleware

The screenshot displays the IBM Worklight Server Console interface. At the top, there are tabs for 'Catalog' and 'Push Notifications'. Below the tabs is a search bar with the text 'Deploy application or adapter' and buttons for 'Browse...' and 'Submit'. The main content area is divided into three sections, each representing a different adapter or middleware component:

- JKEMobileJQ**: Last updated at: 2013-05-23 10:54. It includes a 'Lock this version' checkbox and a 'Preview as Common Resources' link.
- JKEAdapter**: Last updated at: 2013-05-23 10:54. It includes a 'Show details' dropdown menu.
- JKELegacyAdapter**: Last updated at: 2013-05-23 10:54. It includes a 'Show details' dropdown menu.

Application Center (App Store)

The screenshot displays the IBM Worklight Application Center interface. At the top, there are tabs for 'IBM Worklight Application Center' and 'Applications'. Below the tabs is a navigation bar that says 'You are in: Applications'. The main content area is titled 'Application Management' and 'Available Applications'. There is an 'Add Application' button and a pagination indicator '1 - 2 of 2'. The search results are sorted by 'Label', 'OS', and 'Update Date'. The first result is 'JKEMobileJQ', which is an Android application with 'unrestricted' access control and version 1, updated on 5/23/13. It has a rating of 0 stars. There is also a 'Show: 10 | 20 | 50 | All items' dropdown menu at the bottom.