



# DevOps for YOU!

Database, APEX, JET, EBS, Middleware, BI, Cloud, and More

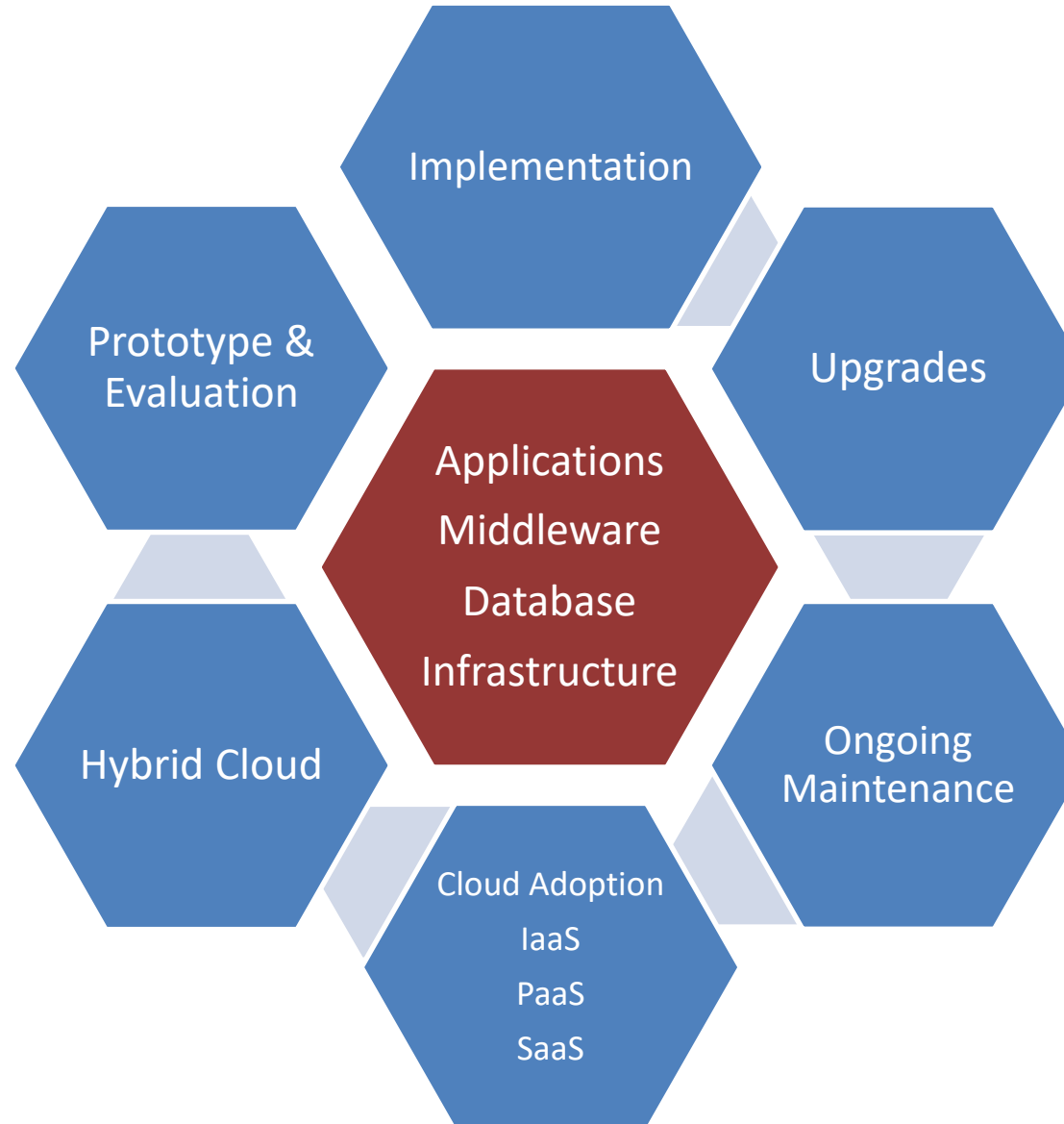
Dan Goerdts

Flexagon

+1 920.819.6788

[dan.goerdts@flexagon.com](mailto:dan.goerdts@flexagon.com)

# The Challenges Never End!



# Challenges with Software Delivery

## Cost

- Manual activities are very costly
- Creating & maintaining environment and scripts
- Outages in test and production environments

## Speed

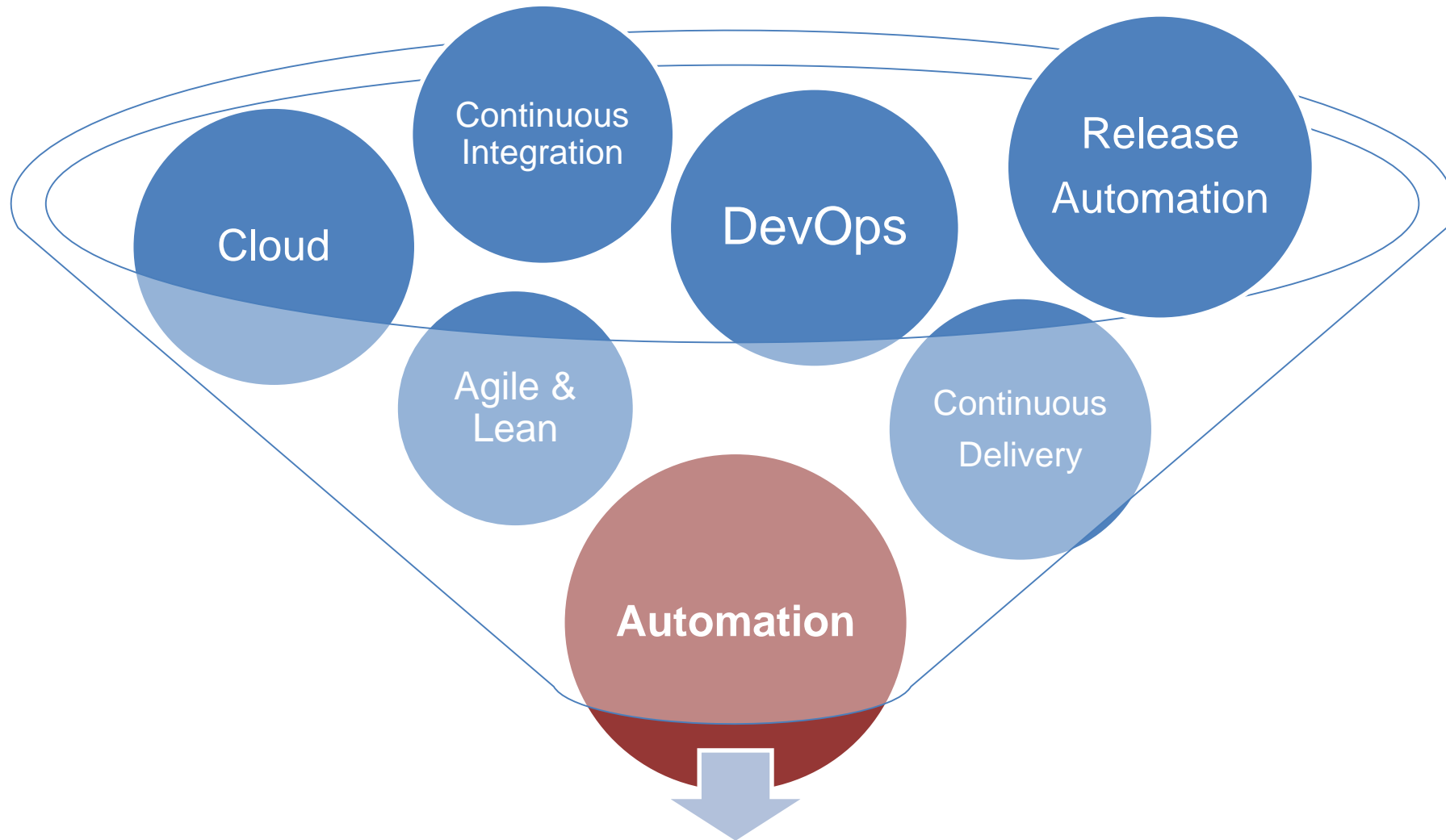
- Delays for environment provisioning/setup
- Slow deployment and release, impacting test cycle times
- Time spent troubleshooting issues vs. 'productive work'

## Quality

- Poor Visibility to what, when, who, how
- Lack of Controls lead to compliance issues & failed audits
- Increased Risk for quality delivery

**Too costly, slow, error prone, and high risk**

# Drivers for Change



Accelerate Delivery, Improve Quality, Reduce Cost

---- **Business Value** ----

# DevOps Core Capabilities

Continuous  
Integration

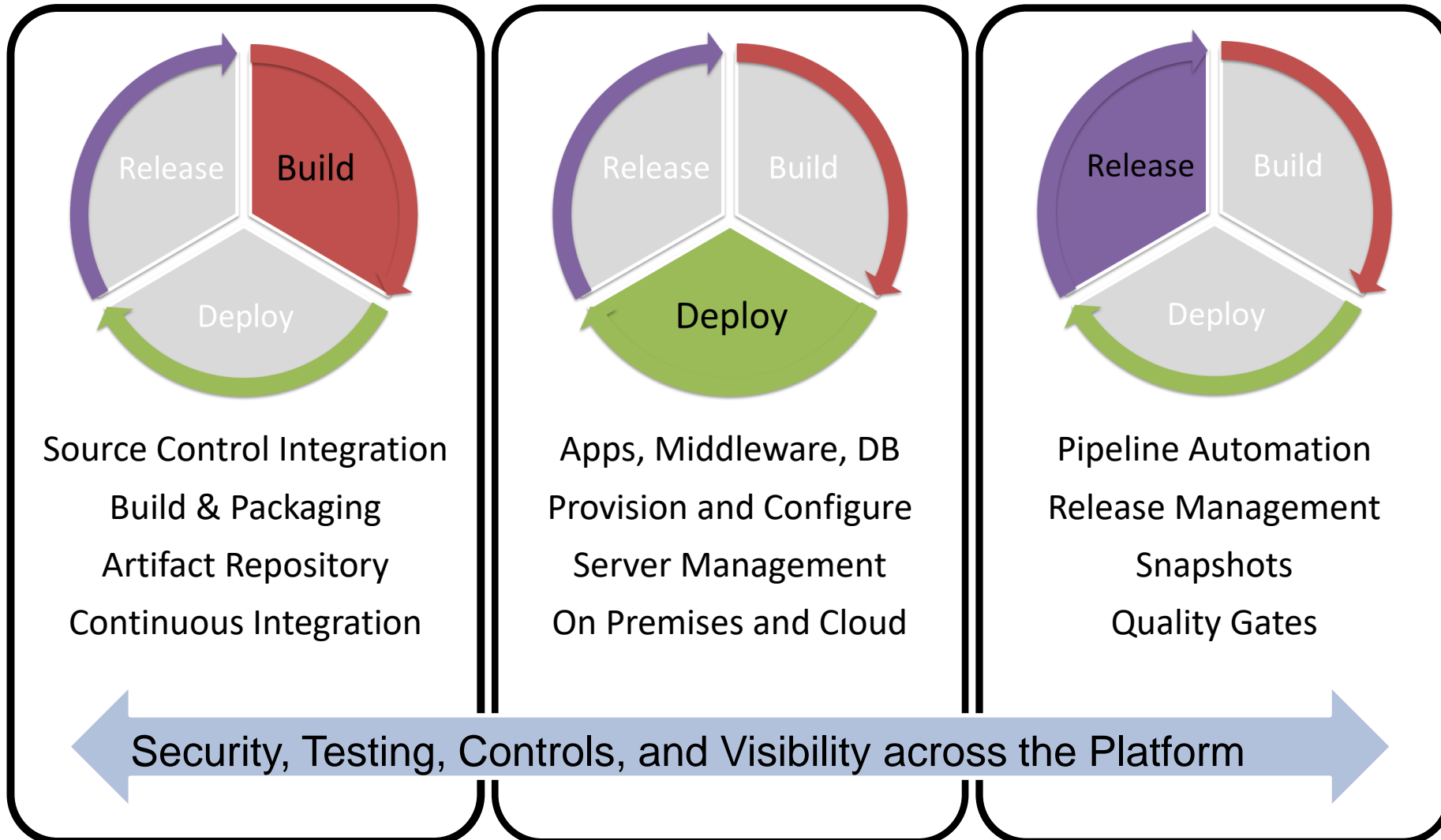
+

Continuous  
Delivery

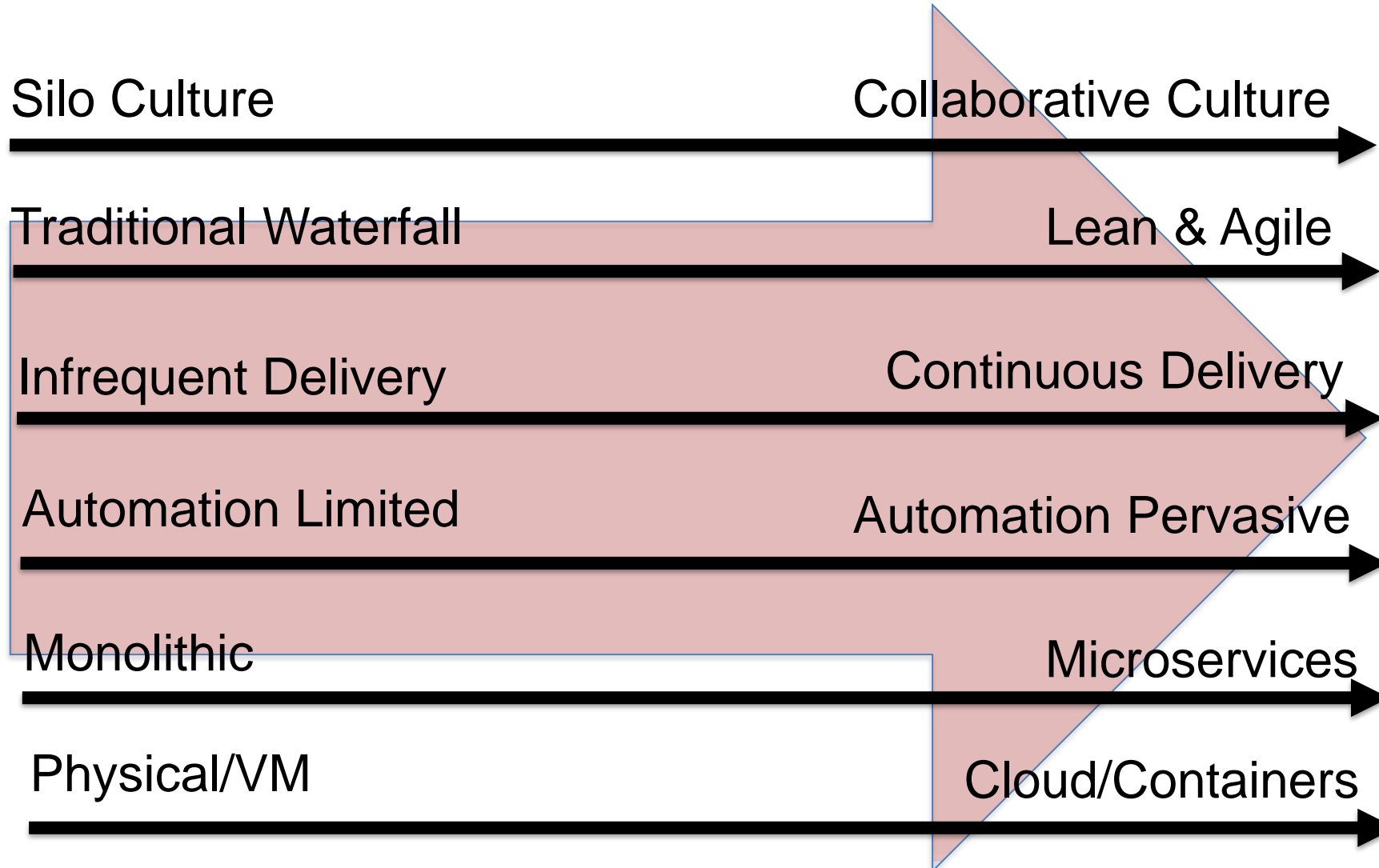
+

Release  
Orchestration

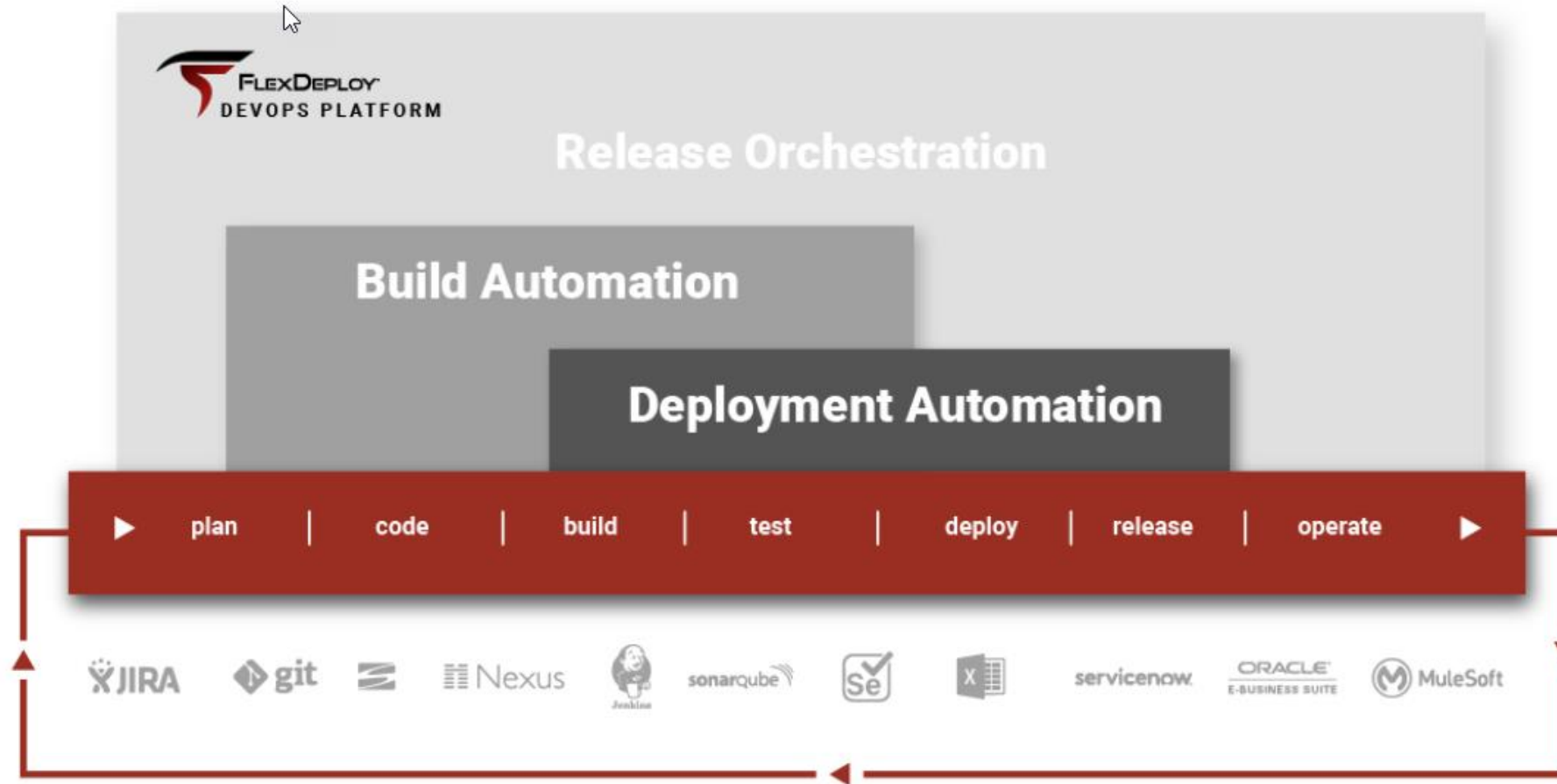
# 3 Core Tool Categories



# Support across the Spectrum



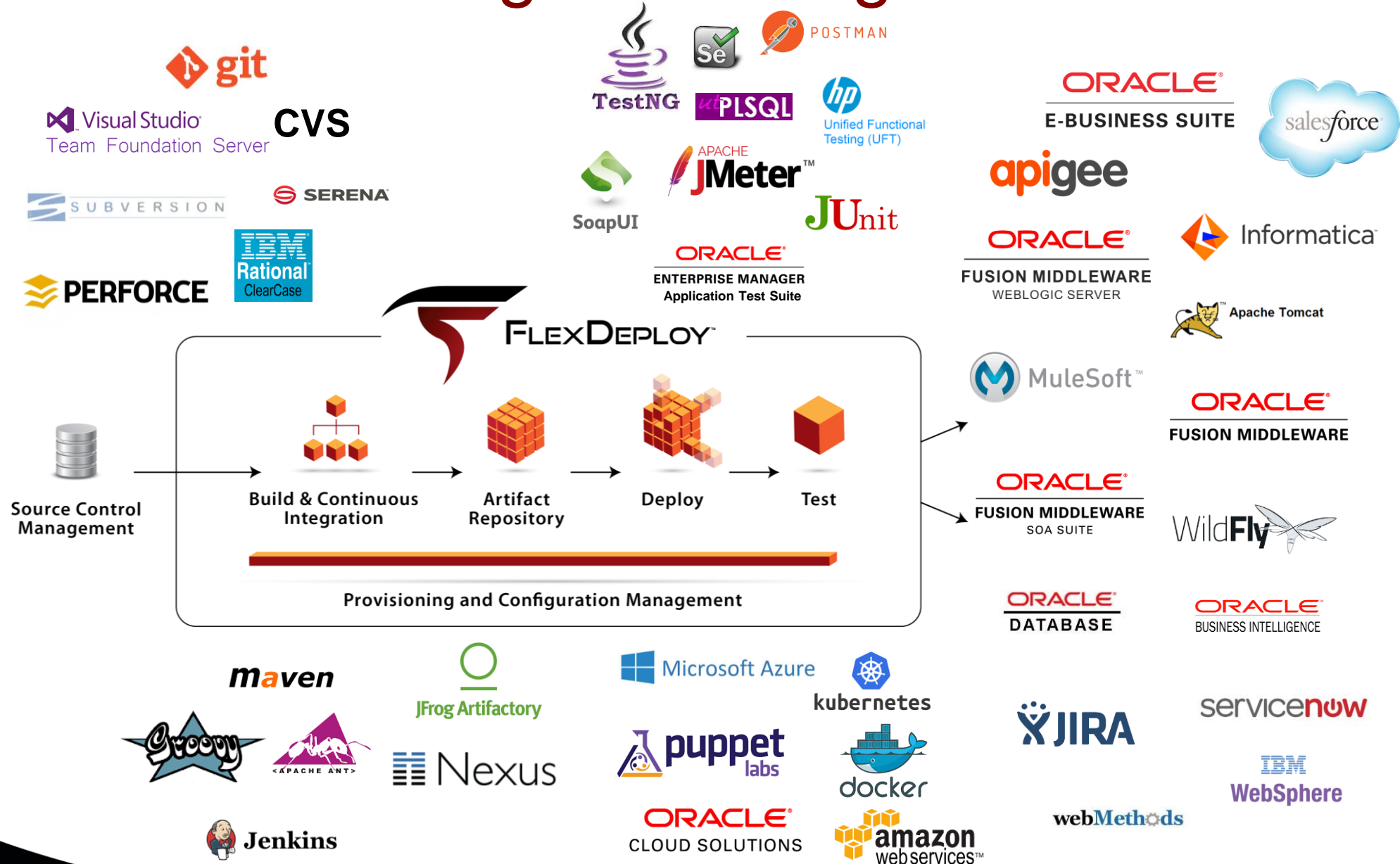
# FlexDeploy DevOps Platform



- ✓ Comprehensive and Integrated Build, Deploy, Release
- ✓ Automation, Controls, Visibility
- ✓ 3<sup>rd</sup> Party Plugins and Integrations
- ✓ Open and Extensible Platform



# Pre-Built Plugins & Integrations

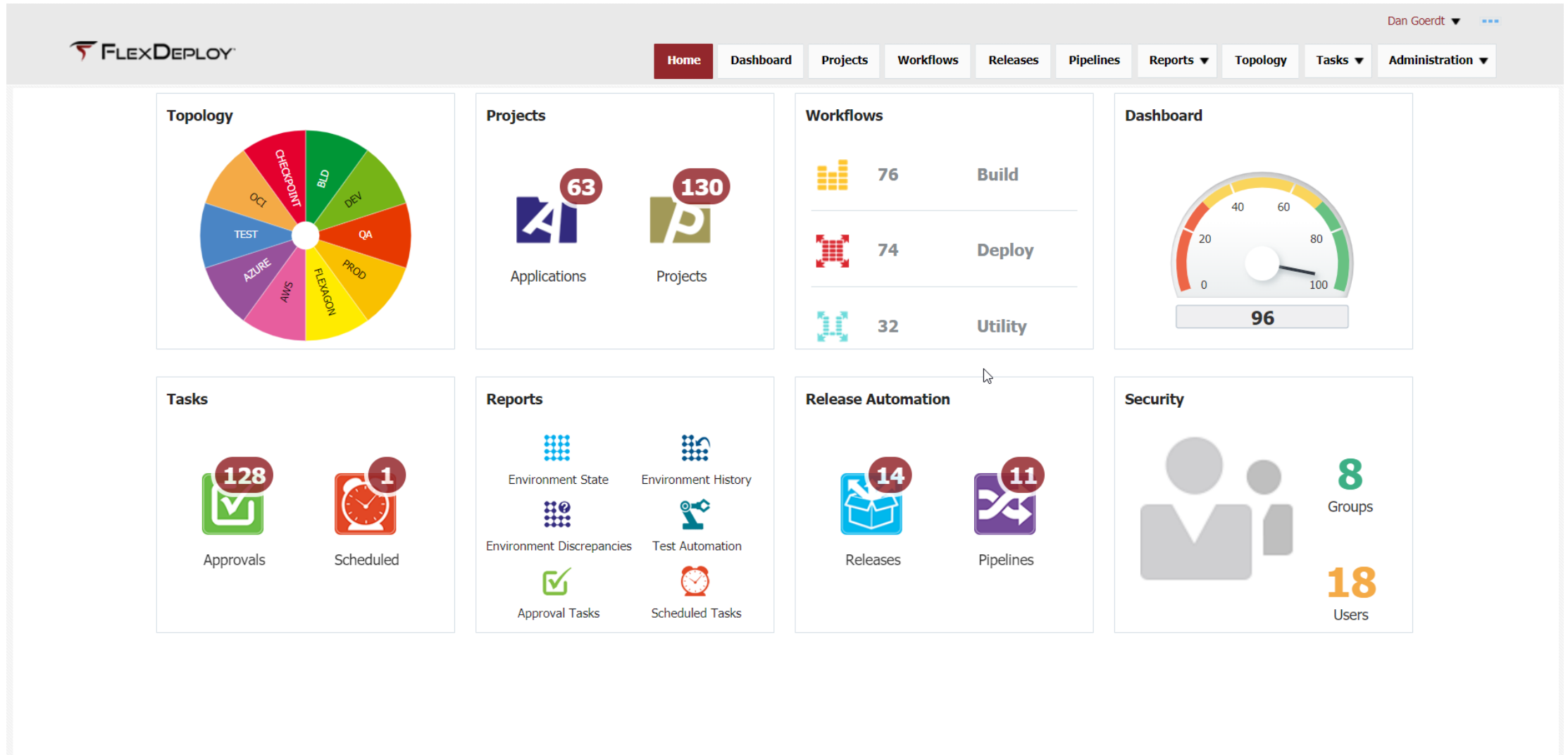


# Out of the Box Support for Oracle

Database and Tools	Middleware and BI/ETL	Applications	Cloud
<ul style="list-style-type: none"><li>• DB as code</li><li>• APEX</li><li>• ORDS</li><li>• JDeveloper</li><li>• ADF</li><li>• JET</li><li>• utPLSQL</li><li>• OATS</li><li>• SODA</li><li>• Forms</li></ul>	<ul style="list-style-type: none"><li>• WebLogic</li><li>• JMS</li><li>• SOA</li><li>• OSB</li><li>• MDS</li><li>• B2B</li><li>• MFT</li><li>• BPM</li><li>• WebCenter</li><li>• ODI</li><li>• OBIEE</li></ul>	<ul style="list-style-type: none"><li>• E-Business Suite</li></ul>	<ul style="list-style-type: none"><li>• IaaS Compute</li><li>• IaaS Storage</li><li>• IaaS Container</li><li>• PaaS Java</li><li>• PaaS SOA</li><li>• PaaS Integration</li><li>• PaaS API Platform</li><li>• PaaS Database</li><li>• Terraform (Hashicorp)</li></ul>

# FlexDeploy Demo

# FlexDeploy Homepage



# Workflows Eliminate Manual Tasks and Scripting

The screenshot displays the FlexDeploy web application interface. At the top, a navigation bar includes the FlexDeploy logo and a series of tabs: Home, Dashboard, Projects, Workflows (selected), Releases, Pipelines, Reports, Topology, Tasks, and Administration. The user 'Dan Goerd' is logged in.

The 'Workflows' section is active, showing a list of workflow categories on the left sidebar, including Node.js, Oracle Business Intelligence, Oracle Cloud IaaS, Oracle Cloud Infrastructure, Oracle Cloud PaaS, Oracle DB and Tools, Oracle E-Business Suite, Oracle Jet, and Oracle WebLogic & Tools.

The main area displays the 'Definition' tab for a workflow named 'DeployEBS [1.24] (Read-only)'. The workflow is updated on 02/15/2019 09:55 by user 'karl'. The workflow steps are as follows:

- Deploy EBS**: The initial step, represented by a puzzle piece icon.
- Compile Invalids if Necessary**: A conditional step, represented by a puzzle piece icon with a red cross.
- If**: A conditional block containing the condition `DeployedTypes != null && DeployedTypes.contains("SQL")`.
  - compileInvalidSqls**: A step within the 'If' block, represented by a puzzle piece icon.

On the right side, the 'Workflow Operations' and 'Plugin Operations' sections are visible. The 'Plugin Operations' section shows a list of available plugins, including 'Oracle EBS' and various workflow services like 'abortWorkflowServices', 'activateWorkflowServices', etc.

# Workflows Eliminate Manual Tasks and Scripting

## Oracle Database

- ✳ compileInvalid
- ✳ createBaseline
- ✳ dropUnusedColumns
- ✳ recreateBuildDB
- ✳ refreshMView
- ✳ synchronize

## Oracle Database Cloud

- ✳ buildInstance
- ✳ createInstance
- ✳ instanceExists
- ✳ instanceIsRunning
- ✳ restartInstance
- ✳ startInstance
- ✳ stopInstance

## Oracle WebLogic

- ✳ adminServerStart
- ✳ adminServerStop
- ✳ createOrUpdateDataSources
- ✳ createOrUpdateEISEntries
- ✳ createOrUpdateJMSObjects
- ✳ createOrUpdateWeblogicConfig
- ✳ createOrUpdateWorkManagers
- ✳ deploy
- ✳ DeployAndImportOWSMPolicy
- ✳ domainRestart
- ✳ domainStart
- ✳ domainStop
- ✳ executeWLST
- ✳ executeWLSTScriptFile
- ✳ generateEISDeploymentPlans
- ✳ ImportOWSMPolicy
- ✳ libraryDeploy
- ✳ libraryUndeploy
- ✳ managedWeblogicRestart

## Oracle Integration Cloud

- ✳ activateIntegration
- ✳ buildIntegration
- ✳ createConnectionPlan
- ✳ deactivateIntegration
- ✳ exportConnections
- ✳ exportIntegration
- ✳ exportLibrary
- ✳ exportLookup
- ✳ exportUpdatedIntegrations
- ✳ importIntegration
- ✳ importLibrary
- ✳ importLookup
- ✳ runIntegration
- ✳ updateConnections

## Oracle SOA Cloud

- ✳ addManagedServer
- ✳ buildInstance
- ✳ createInstance
- ✳ instanceExists
- ✳ instanceIsRunning
- ✳ listManagedServers
- ✳ removeManagedServer
- ✳ scaleManagedServer
- ✳ startInstance
- ✳ stopInstance

## Oracle SOA Suite

- ✳ bpmBuild
- ✳ bpmDeploy
- ✳ purge
- ✳ soaBuild
- ✳ soaDeploy
- ✳ soaStart
- ✳ soaStop
- ✳ undeploy

## Docker

- ✳ buildImage
- ✳ connectNetwork
- ✳ createContainer
- ✳ disconnectNetwork
- ✳ killContainer
- ✳ pushImage
- ✳ removeContainer
- ✳ runContainer
- ✳ startContainer
- ✳ stopContainer
- ✳ tagImage

## Kubernetes

- ✳ apply
- ✳ delete
- ✳ exec
- ✳ label
- ✳ run
- ✳ scale

# FlexDeploy Project Configuration

**FLEXDEPLOY** Dan Goerd

Home Dashboard **Projects** Workflows Releases Pipelines Reports Topology Tasks Administration

**Project Explorer**

- APEX
- Apigee
- BusinessIntelligence
- BusinessToBusiness
- Containers
- DeploymentStrategies
- EBSCustomizations
- EBS\_Customizations
  - HR**
    - XXHR**
- EBS\_Other
- Finance
- Generic Partialis
- HRPortal
- HumanResources
  - HRApp**
    - HRDBObjects
    - HRJavaApp
    - HRMDSObjects
    - HRSOAService
    - HRSpringApp
    - HRWLSConfigurations
    - OICLookups
    - ProcessHRRRequest

**XXHR**

**Project Configuration**

\* Active Yes SCM Type Git

\* Priority 1

Priority Scope Application

Description EBS Customizations

**SCM Configuration** + Add Source

Source 1

\* Git Instance Git Demo

\* Branch Name Script StreamName (x)=

\* Tag Name Script ProjectVersion (x)=

Sparse Checkout Folders Script "EBSCustomizations/XXHR" (x)=

Checkout Folder Script ProjectName (x)=

**Build Workflow**

Build Workflow BuildEBS

Build Instance EBS 12.1.3

**Deploy Workflow**

Deploy Workflow DeployEBS

Deploy Instance(s) EBS 12.1.3

Save Revert

**Streams** + Create Stream Show Inactive

\* Stream Name master

\* Version Syntax Script "4.0." + SequenceNumber (x)=

Attribute1

Attribute2

Description



# FlexDeploy Projects

**FLEXDEPLOY** Dan Goerd ▾

Home Dashboard **Projects** Workflows Releases Pipelines Reports ▾ Topology Tasks ▾ Administration ▾

**Project Explorer** XXHR x

View ▾ 📁 📄 📊

- ▶ APEX
- ▶ Apigee
- ▶ BusinessIntelligence
- ▶ BusinessToBusiness
- ▶ Containers
- ▶ DeploymentStrategies
- ▶ EBSCustomizations
- ▶ EBS\_Customizations
  - ▶ HR XXHR
- ▶ EBS\_Other
- ▶ Finance
- ▶ Generic Partials
- ▶ HRPortal
- ▶ HumanResources
  - ▶ HRApp
    - HRDBObjects
    - HRJavaApp
    - HRMDSObjects
    - HRSOAService
    - HRSpringApp
    - HRWLSConfigurations
    - OICLookups
    - ProcessHRRequest


**Project ID - 195743 (FlexDeploy / EBS\_Customizations / HR)** Refresh Packages Build ▾ Deploy Test

**Project Activity** View ▾ Filter

Workflow Requests				Workflow Executions								
Request Id	Request Status	Requested By	Requested On	Environment	Instance	Workflow Type	Status	Package Name	Project Version	Stream	Execution Id	Start Time
924916	Submitted	stepworker	03/21/2019 00:55	Development	EBS 12.1.3	TEST	Running	4.0.1652 (All Files)	4.0.1652	master	1260803	03/21/2019 C
924852	Completed	gateworker	03/21/2019 00:53	Development	EBS 12.1.3	DEPLOY	Success	4.0.1652 (All Files)	4.0.1652	master	1260738	03/21/2019 C
924842	Completed	dan.goerd	03/21/2019 00:53	Development	EBS 12.1.3	BUILD	Success	4.0.1652 (All Files)	4.0.1652	master	1260717	03/21/2019 C
923606	Completed	gateworker	03/17/2019 04:44	Production	EBS 12.1.3	DEPLOY	Success	4.0.1651 (All Files)	4.0.1651	master	1256802	03/17/2019 C
923499	Completed	gateworker	03/17/2019 04:42	QA	EBS 12.1.3	DEPLOY	Success	4.0.1651 (All Files)	4.0.1651	master	1256597	03/17/2019 C
923459	Completed	stepworker	03/17/2019 04:41	Development	EBS 12.1.3	TEST	Success	4.0.1651 (All Files)	4.0.1651	master	1256493	03/17/2019 C
923266	Completed	gateworker	03/17/2019 04:39	Development	EBS 12.1.3	DEPLOY	Success	4.0.1651 (All Files)	4.0.1651	master	1256296	03/17/2019 C
923256	Completed	dan.goerd	03/17/2019 04:38	Development	EBS 12.1.3	BUILD	Success	4.0.1651 (All Files)	4.0.1651	master	1256275	03/17/2019 C
923102	Completed	chandresh	03/16/2019 07:15	Development	EBS 12.1.3	DEPLOY	Success	ALM-150	4.0.1650	master	1255501	03/16/2019 C
922950	Completed	gateworker	03/15/2019 12:58	QA	EBS 12.1.3	DEPLOY	Success	ALM-152	4.0.1628	master	1255282	03/15/2019 1
922938	Completed	gateworker	03/15/2019 12:57	Development	EBS 12.1.3	DEPLOY	Success	ALM-152	4.0.1628	master	1255260	03/15/2019 1
922935	Completed	dan.goerd	03/15/2019 12:57	Development	EBS 12.1.3	BUILD	Success	ALM-150	4.0.1650	master	1255239	03/15/2019 1
922923	Completed	dan.goerd	03/15/2019 12:51	Development	EBS 12.1.3	DEPLOY	Success	4.0.1649	4.0.1649	master	1255211	03/15/2019 1
922917	Completed	dan.goerd	03/15/2019 12:50	Development	EBS 12.1.3	BUILD	Success	4.0.1649	4.0.1649	master	1255190	03/15/2019 1
922905	Completed	dan.goerd	03/15/2019 12:45	Development	EBS 12.1.3	DEPLOY	Success	4.0.1648 (All Files)	4.0.1648	master	1255128	03/15/2019 1



# Workflow Execution




HomeDashboardProjectsWorkflowsReleasesPipelinesReports▼TopologyTasks▼Administration▼

Project Explorer

View ▾

- ▶ APEX
- ▶ A Apigee
- ▶ BusinessIntelligence
- ▶ BusinessToBusiness
- ▶ Containers
- ▶ DeploymentStrategies
- ▶ EBSCustomizations
- ▶ EBS\_Customizations
  - ▶ A HR
    - XXHR
- ▶ EBS\_Other
- ▶ A Finance
- ▶ A Generic Partials
- ▶ A HRPortal
- ▶ HumanResources
  - ▶ A HRApp
    - HRDBObjects
    - HRJavaApp
    - HRMDSObjects
    - HRSOAService
    - HRSpringApp
    - HRWLSConfigurations
    - OICLookups
    - ProcessHRRequest


XXHR x

 Project Workflow Execution ( Deploy workflow on EBS 12.1.3 Instance in QA Environment ) - Continuous Deployment of E-Business Suite

Promote to ReleaseBack

Request Id	924921	Project Version	4.0.1652	Requested By	gateworker	Start Time	03/21/2019 00:56	Status	Success
Execution Id	1260845	Stream	master	Requested On	03/21/2019 00:56	End Time	03/21/2019 00:58	Package Name	4.0.1652 (All Files)


Execution Steps (DeployEBS [1.24])ArtifactsFilesChange LogLinksProperties (498)Inputs (0)Outputs (3)Variables (3)Test Results

 Deploy EBS

Start Time: 03/21/2019 00:56Duration (seconds): 33.364Success


Plugin Call: deploy (FlexagonEBSPlugin)

Plugin invocation status on Endpoint EBSLT01(10.48.0.123:22) and Instance EBS 12.1.3 is SUCCESSFUL. Click to View Logs.

 Compile Invalids if Necessary

Start Time: 03/21/2019 00:57Duration (seconds): 58.606Success


If: DeployedTypes != null && DeployedTypes.contains("SQL") ✓

 compileInvalidSqls

Start Time: 03/21/2019 00:57Duration (seconds): 58.561Success


Plugin Call: compileInvalidSqls (FlexagonEBSPlugin)

Plugin invocation status on Endpoint EBSLT01(10.48.0.123:22) and Instance EBS 12.1.3 is SUCCESSFUL. Click to View Logs.

 Recycle if Java code is deployed

Start Time: 03/21/2019 00:58Duration (seconds): 16.309Success

If: DeployedTypes != null && DeployedTypes.contains("OAF\_JAVA") ✓


 Stop OA Core

Start Time: 03/21/2019 00:58Duration (seconds): 8.129Success

Plugin Call: stopOACore (FlexagonEBSPlugin)

Plugin invocation status on Endpoint EBSLT01(10.48.0.123:22) and Instance EBS 12.1.3 is SUCCESSFUL. Click to View Logs.

# Pipeline Orchestration



[Home](#) [Dashboard](#) [Projects](#) [Workflows](#) [Releases](#) [Pipelines](#) [Reports](#) [Topology](#)

## Pipeline

\* Name  Updated On 03/2

Definition

Team

Properties

Project Groups


Referenced By

Description  [Make Copy](#) [Switch Version](#)

Development

Gates


Steps


1  Deploy All Projects


QA


Gates

Steps

1  Deploy All Projects

2  Functional Regression Test


3  Verify Quality


4  Notify QA Manager


Production


Gates

Steps

1  Deploy All Projects


2  Notify IT Checkout Group

3  Production Verification - Manual Tests


4  Notify Business Users

[+ Add Stage](#)

18

 FLEXAGON

# Robust Pipeline Orchestration



HomeDashboardProjectsWorkflowsReleases**Pipelines**Reports▼TopologyTasks▼Administration▼

SaveApplyCancel

**Pipeline**

\* NameCDRA PipelineUpdated On 09/25/2018 18:52Updated By fdadmin

DefinitionTeamPropertiesProject GroupsReferenced By

DescriptionForrester demo pipeline to highlight the power of FlexDeploy!

Make CopySwitch Version09252018 185156 \* (Read-only)Make Active

**Development**

⌵⏪⏩⏴⏵

**Gates**

**Steps**

- 1 Deploy Middleware
- 2 Deploy ERP Packages
- 2 Deploy Java Applications
- 2 Deploy SaaS
- 3 Deploy Microservices
- 4 Execute Unit Tests

**QA**

⌵⏪⏩⏴⏵

**Gates**

- Verify Unit Test Results
- QA Manager Approval
- Every Day at Noon

**Steps**

- 1 Deploy Middleware
- 2 Deploy ERP Packages
- 2 Deploy SaaS
- 2 Deploy Java Applications
- 3 Deploy Microservices
- 4 Execute Integration Tests
- 5 Send QA Communication

**Checkpoint**

⌵⏪⏩⏴⏵

**Gates**

- Verify Integration Test Results
- QA Sign-off

**Steps**

- 1 Final Release Prep
  - 1.1 Deployment Plan Review
  - 1.2 Send Outage Communication
- 1 External Release Communication
  - 1.1 Send Press Release
  - 1.2 Send Customer Communication

**Production**

⌵⏪⏩⏴⏵

**Gates**


- Change Management Approval
- Release Manager Sign-off
- Schedule Saturday 9pm

**Steps**

- 1 Deploy Middleware
- 2 Deploy ERP Packages
- 2 Deploy SaaS
- 2 Deploy Java Applications
- 3 Deploy Microservices
- 4 Check Microservices
- 5 Switch Blue to Green
- 6 Release Verification
- 7 Finishing Release
- 8 Release Communication

+ Add Stage ▼

# Release Dashboard



flexdeploy admin

HomeDashboardProjectsWorkflowsReleasesPipelinesReportsTopologyTasksAdministration

Weekly E-Business SuiteSnapshot 06-24-2018 17:22:42STARTEDSimple Pipeline

RefreshBack

Pipeline Executions

Search

06-25-2018 14:59:34

Running

06/25/2018 15:00 -

06-24-2018 17:22:42

Running

06/24/2018 17:23 -

06-17-2018 20:04:07

Successful

06/17/2018 20:04 - 06/24/2018 17:38

06-14-2018 19:27:46

Successful

06/14/2018 - 06/17/2018

Execution

CAB Approval on Production1 d 17 h 34 min

Snapshot Content1

Development

Successful

Gates

Steps

1.Deploy All Projects

2.Manual check

QA

Successful

Gates

Steps

1.Deploy All Projects

2.Functional Regression Test

3.Notify QA Manager

Production

Current Gate CAB Approval

Gates

Steps

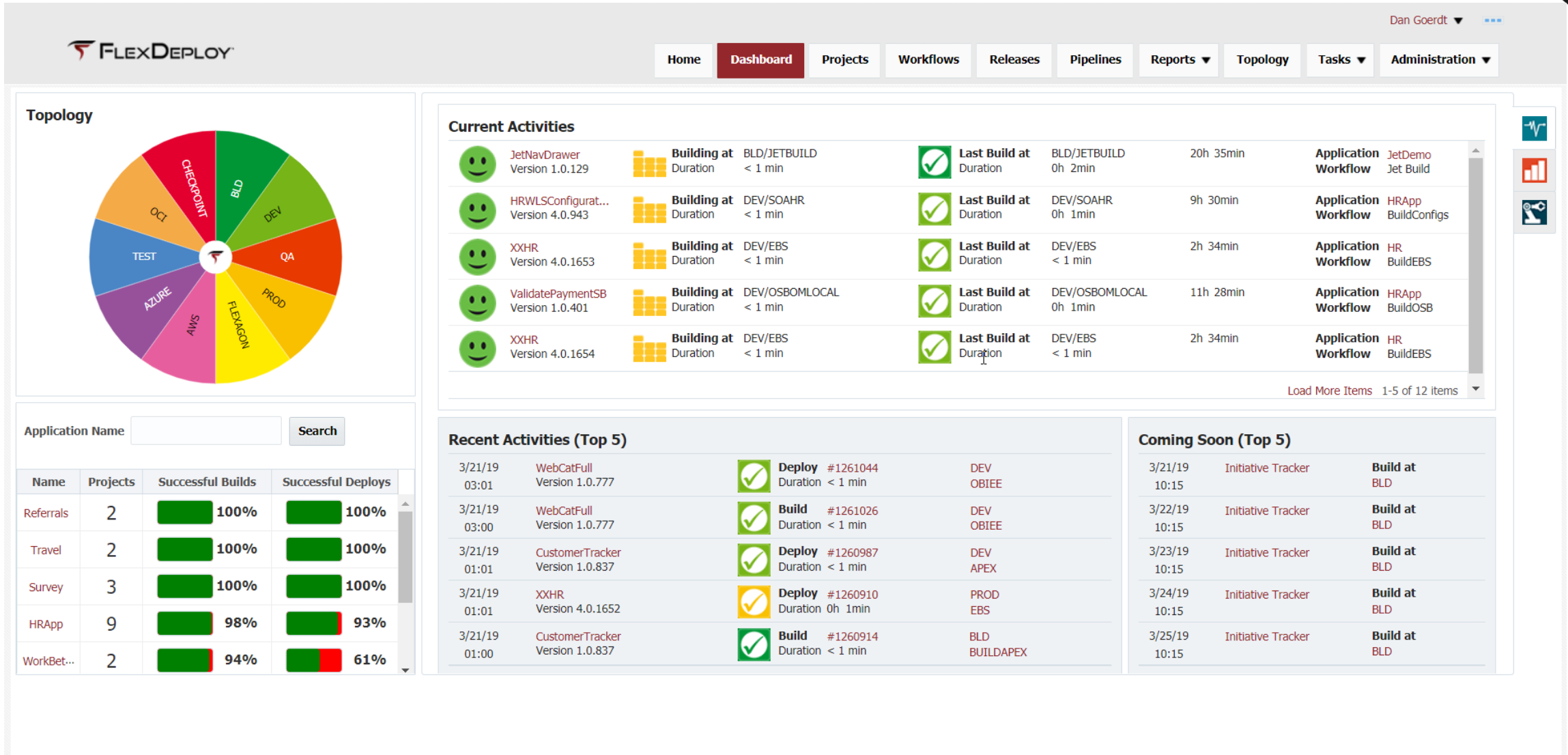
1.Deploy All Projects

2.Notify IT Checkout Group


3.Production Verification - Manu...

4.Notify Business Users

# Dashboards



# Reports



[Home](#)
[Dashboard](#)
[Projects](#)
[Workflows](#)
[Releases](#)
[Pipelines](#)
[Reports](#)
[Topology](#)
[Tasks](#)
[Administration](#)

Dan Goerdt

## Environment History

Environment: Development
Instance:

Status:
Workflow Type:

Requested On: 03/19/2019 03:24 - 03/21/2019 03:24
Release:

Show File Level Details ☒
Search
Reset
Advanced

View
Export

Ref #	Workflow Type	Status	Environment	Instance	Path	Project Name	Project Version	SCM Revision	Package Name	File Name (with Path)	File Status	Workflow Name
P-925068	Deploy	Success	Development	OBIEE (12c)	FlexDeploy / BusinessIntelligence / We...	WebCatFull	1.0.777					DeployOBI
P-925065	Build	Success	Development	OBIEE (12c)	FlexDeploy / BusinessIntelligence / We...	WebCatFull	1.0.777					BuildOBI
P-925037	Deploy	Success	Development	APEX Server	FlexDeploy / APEX / CustomerTracker	CustomerTracker	1.0.837					DeployAPEX
S-206423	Test	Success	Development	EBS 12.1.3	FlexDeploy / EBS_Customizations / HR	XXHR	4.0.1652	a4a5d8ac0c9f	4.0.1652 (All Files)	/workflows/US/POSAPSPE.wfx		TestWorkflow
S-206423	Test	Success	Development	EBS 12.1.3	FlexDeploy / EBS_Customizations / HR	XXHR	4.0.1652	a4a5d8ac0c9f	4.0.1652 (All Files)	/forms/FABAL.pll		TestWorkflow
S-206423	Test	Success	Development	EBS 12.1.3	FlexDeploy / EBS_Customizations / HR	XXHR	4.0.1652	a4a5d8ac0c9f	4.0.1652 (All Files)	/publisher/XXHR_BIP_ROSTER.xls		TestWorkflow
S-206423	Test	Success	Development	EBS 12.1.3	FlexDeploy / EBS_Customizations / HR	XXHR	4.0.1652	a4a5d8ac0c9f	4.0.1652 (All Files)	/publisher/XXHR_BIP_ROSTER.xml		TestWorkflow
S-206423	Test	Success	Development	EBS 12.1.3	FlexDeploy / EBS_Customizations / HR	XXHR	4.0.1652	a4a5d8ac0c9f	4.0.1652 (All Files)	/publisher/XXHR_BIP_ROSTER.pdf		TestWorkflow
S-206423	Test	Success	Development	EBS 12.1.3	FlexDeploy / EBS_Customizations / HR	XXHR	4.0.1652	a4a5d8ac0c9f	4.0.1652 (All Files)	/publisher/XXHR_BIP_ROSTER.rtf		TestWorkflow
S-206423	Test	Success	Development	EBS 12.1.3	FlexDeploy / EBS_Customizations / HR	XXHR	4.0.1652	a4a5d8ac0c9f	4.0.1652 (All Files)	/sql/XXHR_PER_SOCIETIES_DATA.sql		TestWorkflow
S-206423	Test	Success	Development	EBS 12.1.3	FlexDeploy / EBS_Customizations / HR	XXHR	4.0.1652		4.0.1652 (All Files)	GLB_HR_POSITION.Idt		TestWorkflow
S-206423	Test	Success	Development	EBS 12.1.3	FlexDeploy / EBS_Customizations / HR	XXHR	4.0.1652		4.0.1652 (All Files)	HR_US_EIN.Idt		TestWorkflow
S-206423	Test	Success	Development	EBS 12.1.3	FlexDeploy / EBS_Customizations / HR	XXHR	4.0.1652		4.0.1652 (All Files)	AST_RC_ALL.Idt		TestWorkflow
S-206423	Test	Success	Development	EBS 12.1.3	FlexDeploy / EBS_Customizations / HR	XXHR	4.0.1652		4.0.1652 (All Files)	APXVDMVD.Idt		TestWorkflow
S-206423	Test	Success	Development	EBS 12.1.3	FlexDeploy / EBS_Customizations / HR	XXHR	4.0.1652		4.0.1652 (All Files)	/publisher/APXSOBLX_1.rtf		TestWorkflow

# Tooling Options

- **Commercial options**
  - Most vendors have a Suite of products (Build, **Deploy**, **Release**)
  - Focus on Deploy and Release
  - Licensing cost can be a barrier to entry
  - Can be time consuming and costly to implement multiple products
- **Open Source options**
  - Many point tools (**Build**, Deploy, Release)
  - Focus on Build/CI
  - Can be complex and costly; extending CI Servers (e.g. Jenkins)
  - Skills can be a challenge, driven by tool sprawl