## Workflow

Fundamentals of IdentityIQ Implementation

IdentityIQ 7.0



#### **Overview**

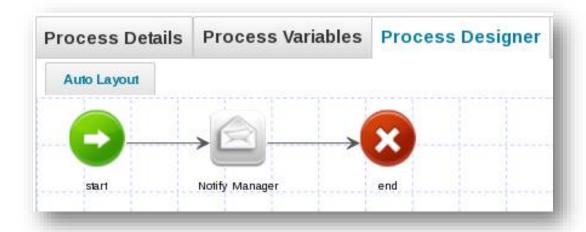
#### Workflow

- What is a workflow?
- Workflows in IdentityIQ
- Configuring workflows
- Introduction to creating workflows
- Workflow troubleshooting



## What is a Workflow?

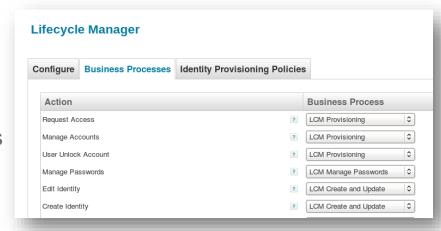
- A sequence of steps with transition logic between them
- Each step performs one action
  - For example, execution of code, or user-interaction
- Defined with Business Process Editor or by creating XML definitions
- Referred to in the SailPoint UI as "Business Processes"

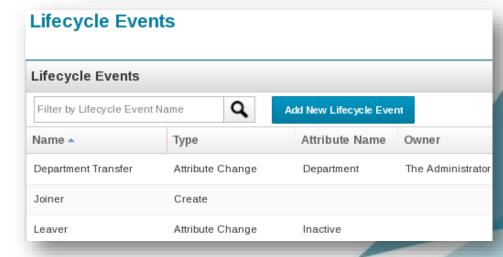




#### **LCM** and Workflow

- Workflows are intimately tied to LCM
  - Requests
    - Entitlement/Role
    - Account Requests
  - Passwords
    - Management of users' passwords
    - Reactions to Native Password changes
  - Identity
    - Create/Edit
  - Identity Change Events
    - Mover
    - Joiner
    - Leaver
    - Other Attribute Changes

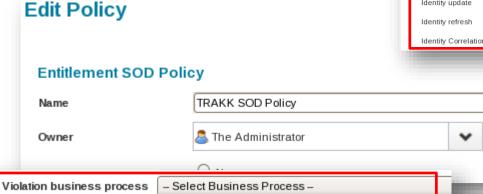


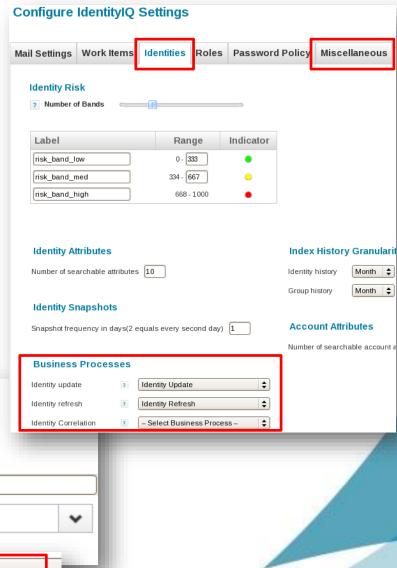




## Workflows throughout IdentityIQ

- Workflows are also used for...
  - Role Creation
  - Identity Update
  - Identity Refresh
  - Identity Correlation
  - Entitlement Creation/Update
  - Sunrise/Sunset Role Assignment
  - Sunrise/Sunset Role Activation
  - Policy Violations





#### What can Workflows do?

- Check for Policy Violations
- Gather information from users
- Get Approvals/Generate Workitems
- Send Emails
- Audit
- Adjust Provisioning Plan
- Call Subprocesses (child workflows)
- Run other Workflows
- Really anything you can code in Java/BeanShell

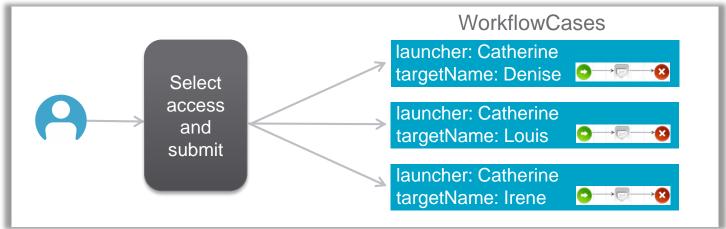


#### **Workflow Execution**

#### WorkflowCase Object

- Created when action in IdentityIQ triggers a workflow
- Contains details for a running workflow process
  - Launcher, type of workflow, copy of the workflow, current step being processed, info about target objective, etc.
- Exists only until workflow completes

**Example**: Catherine Simmons submits request for 3 employees





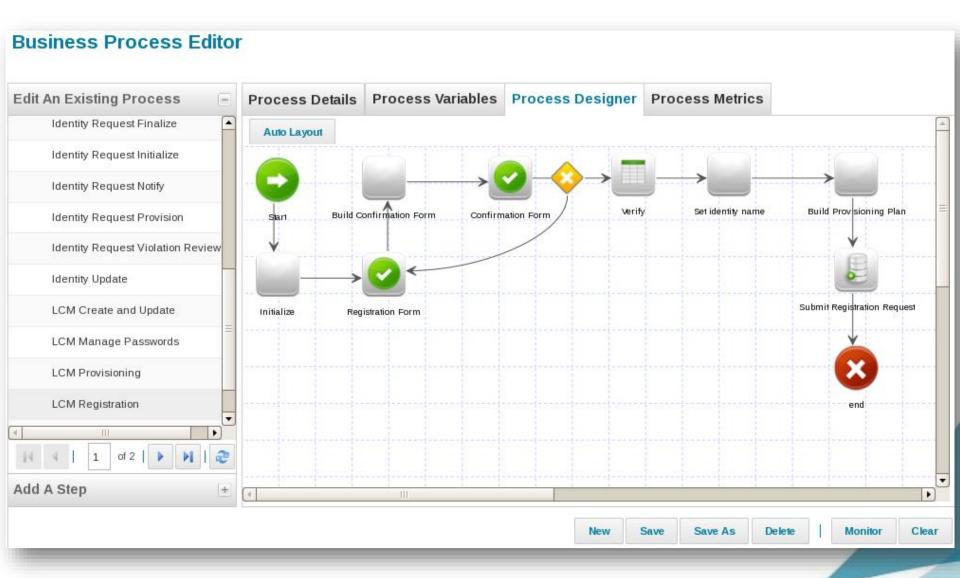
## **Workflow Execution**

#### WorkItem

- Created by a workflow (or IdentityIQ) to obtain input from a person
- Exists until the input is acquired
- Examples
  - Approvals
  - Policy violations
  - Request for manual provisioning
  - Access review delegations
  - Request for data



## What Do Workflows Look Like in the GUI?





#### What Do Workflows Look Like in the XML?

```
<Step name='Approved'
<Workflow name='My Workflow'>
                                                               action='call:saveObject'>
                                                      <Arg name='object' value='ref:identity'/>
 <Variable name='identity' input='true'/>
 <Variable name='newRoles' input='true'/>
                                                      <Transition to='end'/>
 <Variable initializer='string:spadmin'
                                                     </Step>
                                                                                                Step
input='true' name='approvalOwner'/>
                                                     <Step name='Rejected' action=call:'audit'>
 <Step name='start'>
                                                      <Arg name='source' value='ref:launcher'/>
  <Transition to='Approve'/>
                                                      <Arg name='action' value='rejected'/>
 </Step>
                                                      <Arg name='target'
                                           Step
                                                   value='script:identity.getName()'/>
 <Step name='Approve'>
                                                      <Arg name='string1' value='failure'/>
                                                      <Transition to='end'/>
  <Approval owner='ref:approvalOwner'</pre>
                                                     </Step>
                                                                                                Step
          send='identity,newRoles'
          renderer='myApproval.xhtml'/>
                                                     <Step name='end'/>
                                                                                                Step
                                                    </Morkflow>
  <Transition to='Approved'</pre>
when='approved'/>
  <Transition to='Rejected'/>
 </Step>
                                           Step
                                                                                              Workflow
```



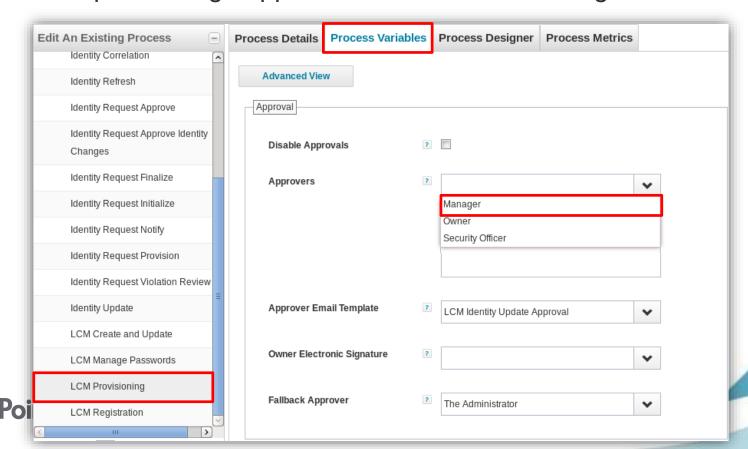
# Configuring Workflows



## **Configuring Workflows**

#### **Process Variables**

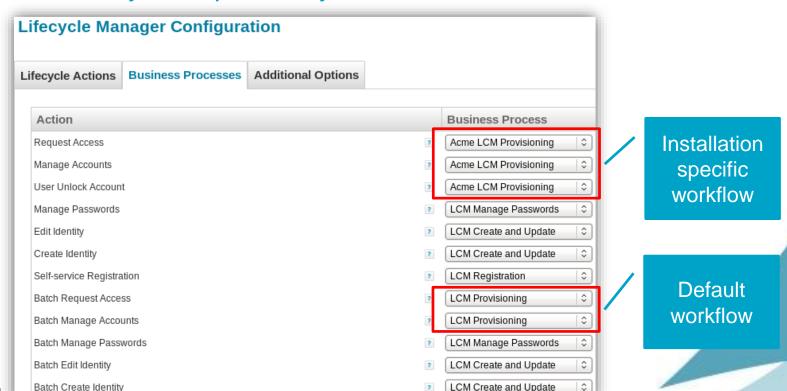
- Set workflow defaults
- Provide for installation specific workflow configurations
   Example: Change approver from owner to manager



## **Modifying Workflows**

#### **Process**

- Always make changes to a copy of the original workflow
  - Ensures updates don't overwrite modifications
- Save using your installation specific naming convention
- Update IdentityIQ to point to your workflow





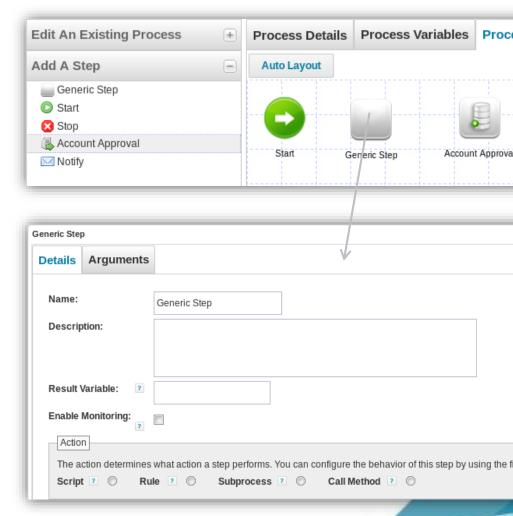
# Introduction to Creating Workflows



## **Workflow Steps – Overview**

- A workflow involves a minimum of three steps
  - Start step
  - Processing step
  - Stop step (or END)
- Specifying a step includes
  - Name
  - Action
    - What the step does

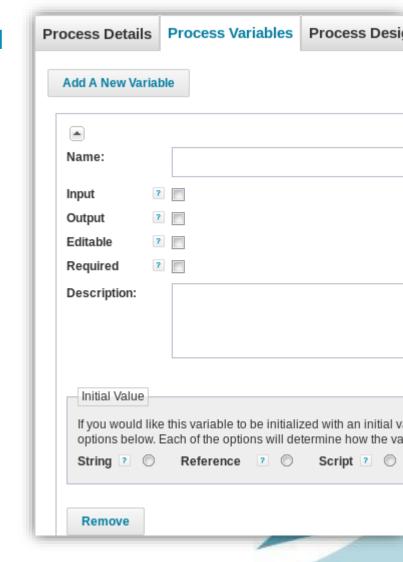
       (i.e. script, call to a handler method, subprocess, or approval)
  - Description
  - Arguments
    - Values to be passed to the action
  - Transition
    - Which step to move to after the action finishes





#### **Workflow Variables**

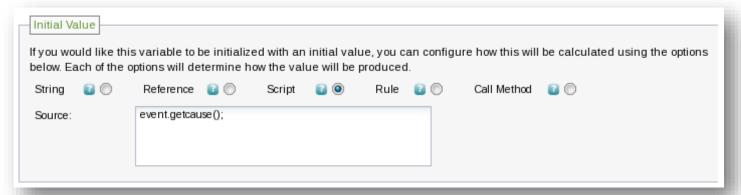
- Variables are global to the workflow and available to all steps
- Input
  - Option means it may be passed into the workflow
  - Lack of the "input" option means it is an internal variable
- **Initial Value** 
  - Used to provide a value if one is not passed in
- Description
  - Should be meaningful
- Variables are initialized when the case is launched
- Variables may be changed by BeanShell later in the workflow



## **Key Workflow Concept – Scriptlets**

#### **Specifying Values**

• In UI, you select scriptlet type and specify source



 In XML, scriptlets begin with type, followed by a colon, followed by the "source"

string:spadmin	supplies a literal string
ref:approver	references a workflow variable
script:identity.getManager().getName()	runs a piece of BeanShell
rule:My Approver Rule	calls a rule
call:buildOwnerApproval	calls a method in the registered WorkflowHandler class or Library

## **Key Workflow Concepts – XML**

```
Scriptlet - call
                                                      <Step name='Approved'
<Workflow name='My Workflow'>
                                       Variables
                                                                 action='call:saveObject'>
                                                        <Arg name='object' value='ref:identity'/>
 <Variable name='identity' input='true'/>
 <Variable name='newRoles' input='true'/>
                                                        <Transition to='end'/>
 <Variable initializer='string:spadmin'
                                                       </Step>
                                                                                            Scriptlet - ref
input='true' name='approvalOwner'>
                                        Scriptlet - string
                                                       <Step name='Rejected' action=call:'audit'>
 <Step name='start'>
                                                        <Arg name='source' value='ref:launcher'/>
  <Transition to='Approve'/>
                                                        <Arg name='action' value='rejected'/>
 </Step>
                                                                                           Scriptlet - script
                                                        <Arg name='target'
                                             Step
                                                     value='script:identity.getName()'/>
 <Step name='Approve'>
                                                        <Arg name='string1' value='failure'/>
                            Approval
                                                        <Transition to='end'/>
  <Approval owner='ref:approvalOwner'</pre>
                                                                                                   Step
                                                       </Step>
           send='identity,newRoles'
           renderer='myApproval.xhtml'/>
                                                       <Step name='end'/>
                                                                                                   Step
                 Transition
                                                     </Workflow>
  <Transition to='Approved'</pre>
when='approved'/>
  <Transition to='Rejected'/>
                                             Step
 </Step>
                                                                                                 Workflow
```



## Global Variables (Reserved Words)

Variable Name	Purpose
context	SailPoint Context
log	Log object for log4J
wfcontext	An instance of WorkflowContext containing details about the state of the workflow
handler	An instance of the registered WorkflowHandler
step	The Step object currently being evaluated
approval	The Approval object currently being evaluated
item	The WorkItem being opened or assimilated
trace	Whether to trace or not (if set to true, we trace the workflow process)

**NOTE**: Additional variables are added to specific types of LCM requests and vary from request to request



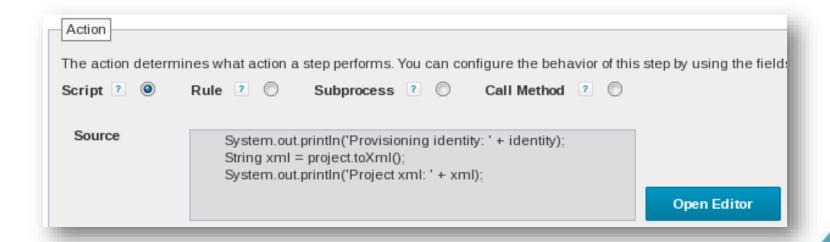
## **Types of Steps**

- Placeholders
  - Used for visual cues and flow (Start/Stop)
- Code Steps
  - Script or Rule BeanShell code
  - Call call into compiled Java code
- Interaction Step
  - Approval (Interaction)
  - WorkItem created and provides a Form or Renderer
- SubProcess
  - Execute a subprocess within the current flow
- Additional Options (implemented in XML)
  - Wait (causes specific step to pause)
  - Catches=Complete (guarantees step will run after workflow ends for whatever reason)



## **Step Action: Script**

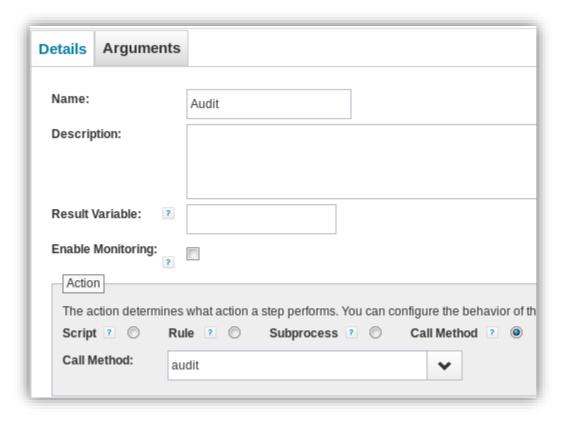
- Step action is a BeanShell script of any complexity
- All current workflow variables are accessible as top-level symbols
  - "identity" and "project" are both workflow variables





## **Step Action: Call**

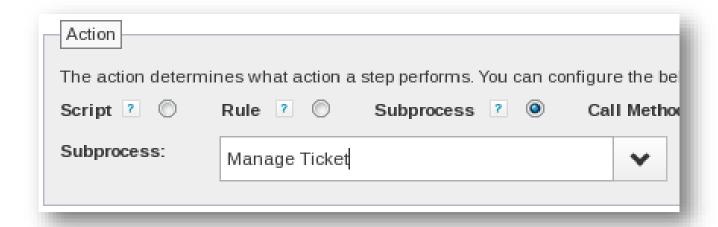
- Step action is to call a method in the StandardWorkflowHandler
  - Method "audit" is called with arguments
- Argument values can be specified on tab or using scriptlets





## **Step Action: Subprocess**

- Calls another workflow
- Defines parameter passing behavior to map subprocess variable using Return tags



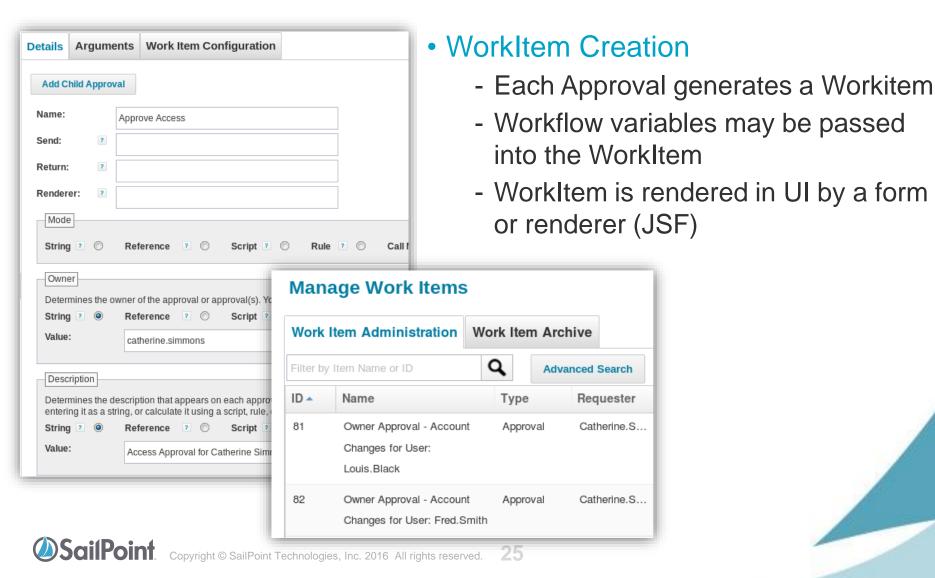


- Approvals are special kind of step that interacts with users
- Approval steps cannot have call or script actions or call subprocesses
- Approval objects may be nested





#### **Approval Work Items**



#### **Approval Work Items**

- WorkItem Completion
  - User must complete WorkItem for workflow to continue
  - Validation can occur on entered data and WorkItem can be returned
    - Messages can indicate what was missing Example: Email address has incorrect format or Approver Comments Missing
  - Submitted data may be used for future transition logic or saved in workflow variables

Example: Approval or Rejection, Approver comments



#### **Approval WorkItem Options**

#### Send and Return

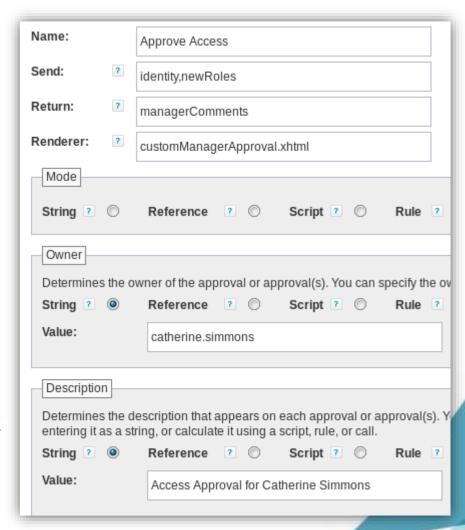
CSV of workflow variable names

#### Renderer

- JSF fragment to render the work item contents (can also use form)
- If not set, default provided by IdentityIQ

#### Description

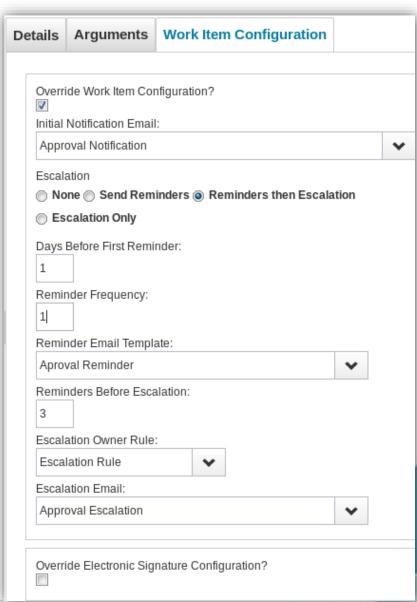
- Sets the description of the work item that will appear in the inbox
- If not set, the Approval name is used





#### **Work Item Configuration**

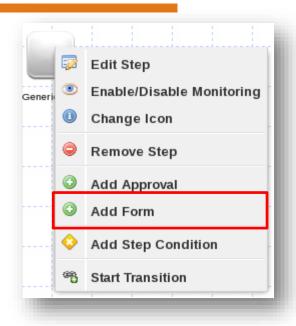
- Escalation
  - Reminder
  - Reminder then escalate
  - Escalation only
- Electronic Signature
  - Create signature meaning in System Setup
  - Select signature to use in Work Item Configuration



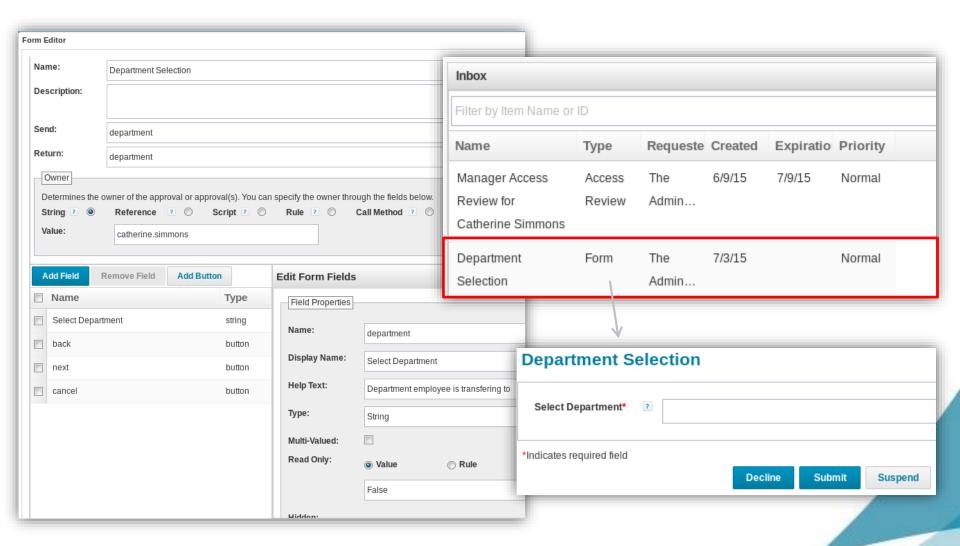


#### Forms – Work Item Rendering

- Forms are used to gather data from the user or ask for approvals
- Values are passed in/passed out from workflow
- Results determine what to do with work item
  - back reject the work item
  - next approve the work item
  - refresh update the form in place
  - cancel do nothing, return, leaving work item in working state
- AfterScript can operate on information after it is entered
  - place values back into workflow variables
  - manipulate objects based on entered data
  - validate and refuse changes, forcing user to adjust/re-enter



#### **Form Basics**



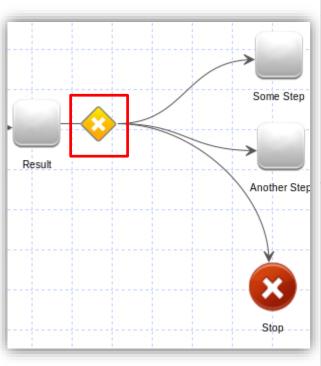


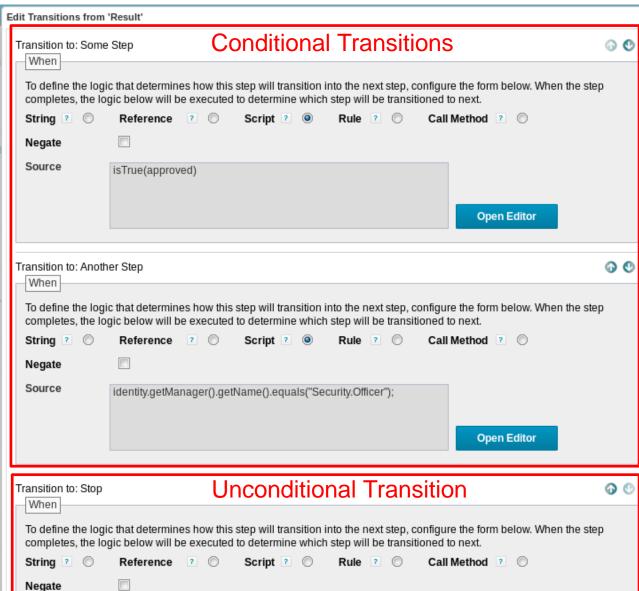
#### **Transitions**

- Transitions are evaluated when the step action or approval completes
- Evaluation is in the order written
- The first transition whose condition evaluates to true, or which has no condition, is taken
- If there are no transitions, or if all of the transition conditions are false, the workflow normally ends
  - Word of caution, be specific about transitions



## **Transition Examples**

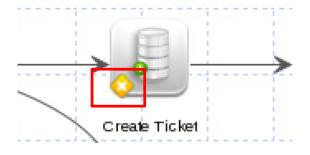






## **Pre-Conditions (6.1+)**

- A conditional statement executed prior to running a step
- Used to determine if the step should be executed
- Alternative to conditional transition





# Workflow Troubleshooting



## **Debugging Workflows**

#### Tracing

 Turn on "trace" to "true" in workflows – Output goes to stdout for the app server

#### Email Redirection

redirect email to a file ("Gear" → Global Settings → IdentityIQ
 Configuration → Mail Settings → Email Notification Type)

#### Logging

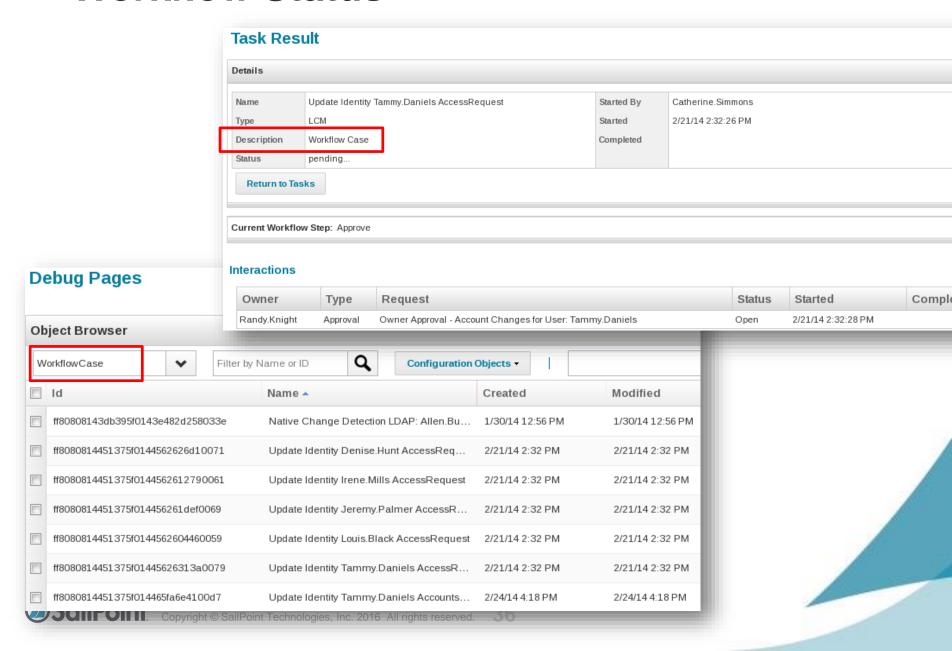
- system.out.println() or log4j are your friends
- log4j.logger.sailpoint.api.Workflower=debug
- log4j.logger.sailpoint.workflow.WorkflowHandler=debug
- log4j.logger.sailpoint.workflow.WorkflowLibrary=debug

#### Console

- list WorkItem
- list workflowcase
- The "workflow" console command can be used to launch a workflow case with an XML file containing initial workflow variables

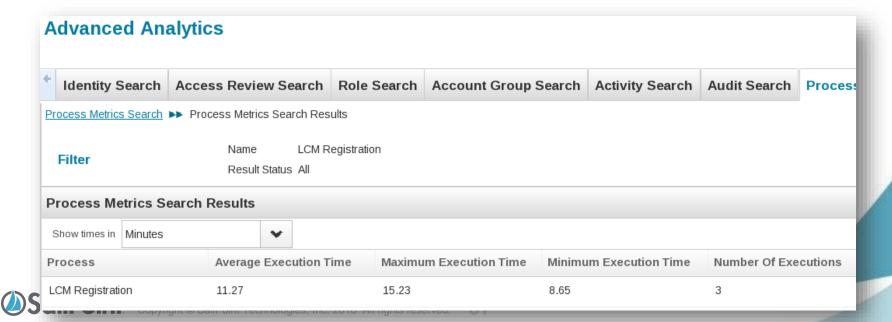


#### **Workflow Status**



## **Workflow Metrics**

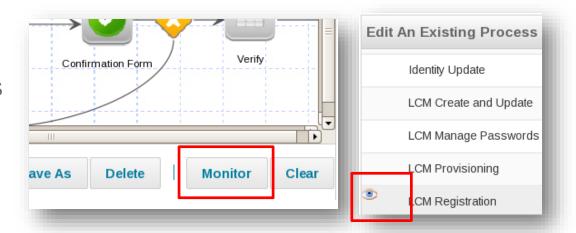
- Capture analytics for entire workflow
  - Avg/Max/Min Execution Time, # of Executions
- Drill into individual steps and identify execution bottlenecks
- View metrics
  - Process Metrics tab
  - Intelligence → Advanced Analytics → Process Metrics Search



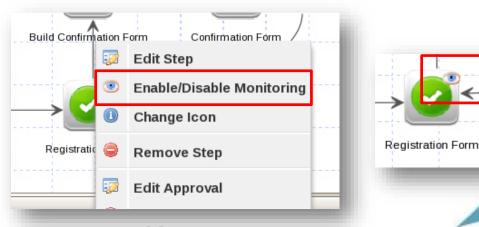
## **Workflow Monitoring**

Monitoring for whole process or individual steps

Monitor Process



Monitor step





# **Questions?**



#### **Exercise Preview**

#### **Section 4, Exercise 6**

- Exercise 6: Use Lifecycle Manager to Create a Lifecycle Event
  - Create a department change lifecycle event
  - Configure a new Business Process to be used when the department change occurs

