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April 19–24, 2015 • Mandalay Bay • Las Vegas, NV

Lab Guide

Workflow 101:

Workflow Editor Introduction

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Default Login / Password:

admin / Knowledge15

itil / Knowledge15

employee / Knowledge15

Session Goals

- Define ServiceNow Workflow and its purpose
- Take a tour of the Workflow Editor
- Create a workflow
- Complete Labs that introduce you to the Workflow UI features
- Learn the difference between a Workflow Version and Workflow Context

Slides
Workflow
101

ServiceNow Workflow 101 Slides

What is ServiceNow Workflow?

Part of the ServiceNow platform that automates multi-step processes

- A **Workflow** is defined as a series of Activities that follow execution paths
- An **Activity** is a set of instructions that can include scripts, logging, approvals, record processing.
  - Activities can process inputs from other activities
  - Activities can provide output for other activities to process
  - Processing continues as the activity determines which execution path to follow upon completing its work
- A Workflow uses conditions and a table association to determine when to start, execute, continue, and end

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Benefits of Workflows

- Automation
  - Standardization of processes
  - Workflows modularize processes
  - Extensible
- Expansion of Self-Service Offerings
- Feedback to Stakeholders in a timely fashion (Stages, Notifications)

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Where are workflows used?

Service Catalog Item Request

SLAs

Routine Change

Comprehensive Change

Emergency Change

Procurement Processes

Grant Role to User

Contract Approval

Delegate Roles to Group Members

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When to use a Workflow and when not to use a Workflow?

Use a Workflow

- Automate a defined multi-step process
- Automate a repeatable process
- When logic can be modularized
- When a standard response is needed for every table Glide Record transaction insert, update, delete, and create

Do Not Use a Workflow

- When doing a simple discrete record change
- If the process being defined does not have a standardized responses

  Examples
  - New processes that are being refined
  - Automate getting a document through a review process but not automate the document editing and review (too much variation)
- If end conditions are not defined

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Lab Goal

- Introduce the Workflow Editor and the Workflow Engine.
- Define the role of Workflow in the Platform.
- Take a tour of the individual pieces of Workflow.

Lab 1
Workflow
Overview

About ServiceNow Workflow

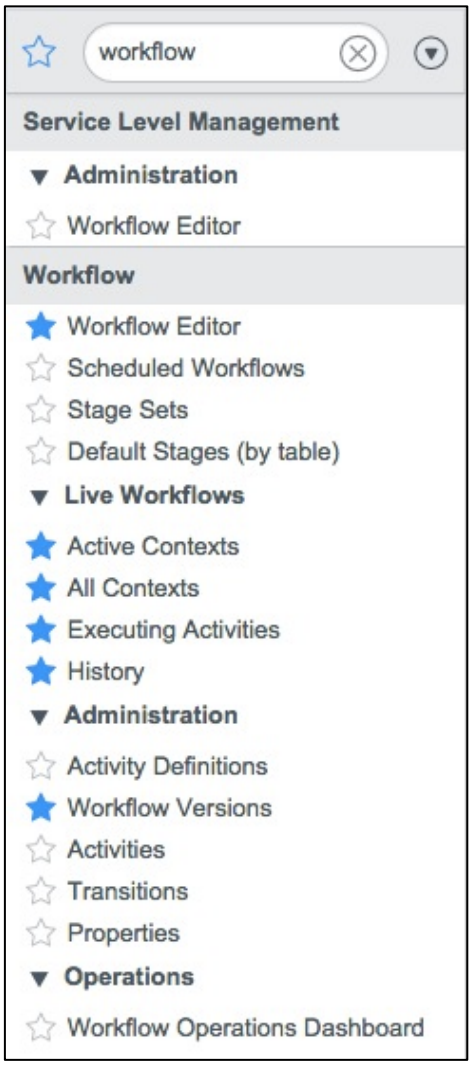
ServiceNow Workflow has two main components:

- **Workflow Editor** is the part of the ServiceNow UI that process owners and designers use to design workflows that automate business processes. The Workflow Editor always opens in an adjacent browser tab. The main work area is referred to as the canvas.
- **Workflow Engine** is part of the Glide Script Engine and is invoked with the insert, update, delete or cancel of a Glide record. Because of this, each workflow can be configured to run based on conditions. This is similar to how Business Rules determine when to run.

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Log on to Your Training Instance

1. Log on with **admin/Knowledge15** credentials.
2. In the Application Navigator Type filter text field, enter **workflow** to go to the **Workflow** Application.



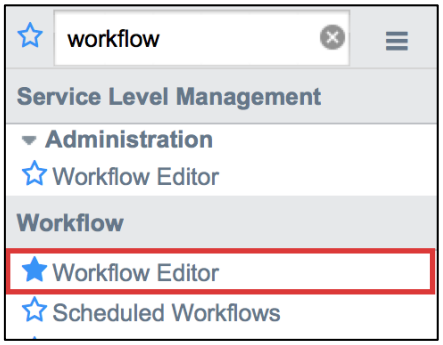
The Workflow application is divided into these functions:

- Accessing the Workflow Editor for creating and editing workflows
- Monitoring, running, and reviewing workflows
- Administering the Workflow Engine
- Workflow Operations Dashboard

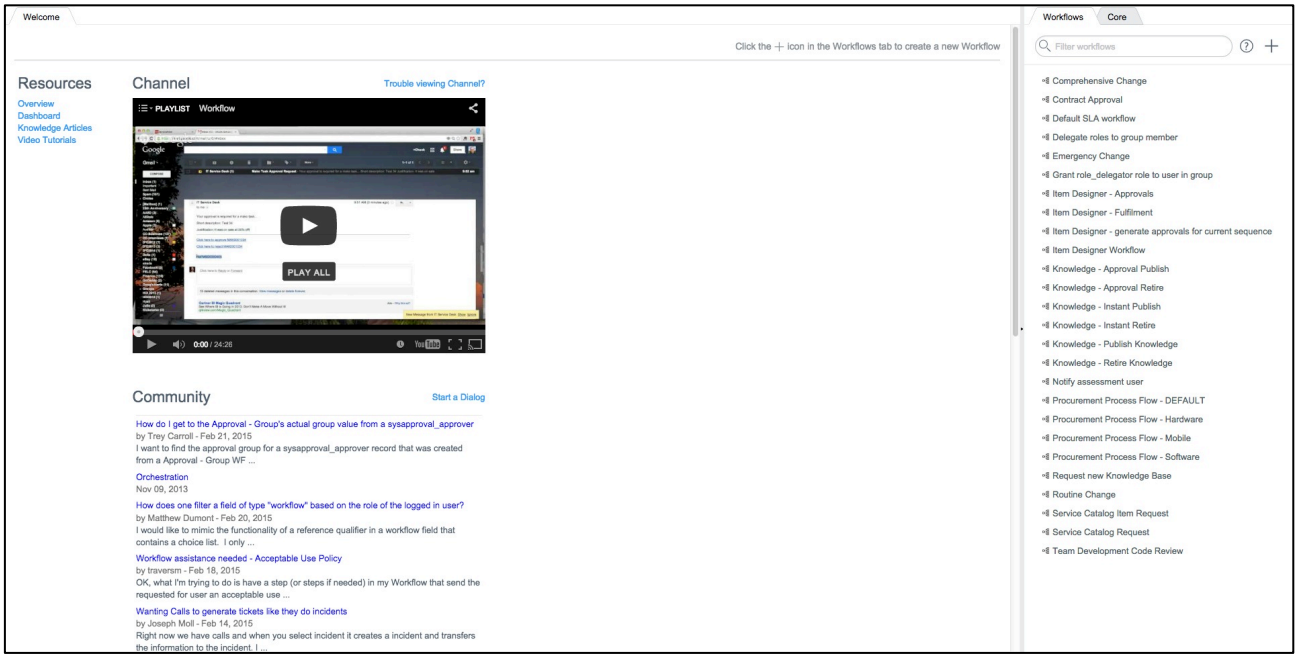
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3. Select the **Workflow Editor**.

   Note: In subsequent labs, these navigation steps are abbreviated to: **Workflow** > **Workflow Editor.**

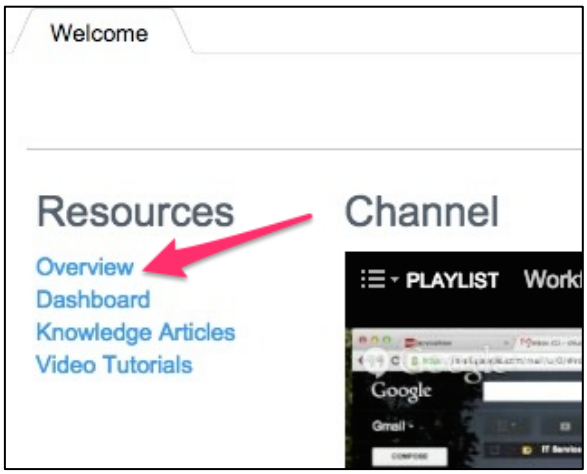


4. The browser loads the **Workflow Editor** in an adjacent browser. **Workflow Editor** is also the canvas. The screen should look like the example.

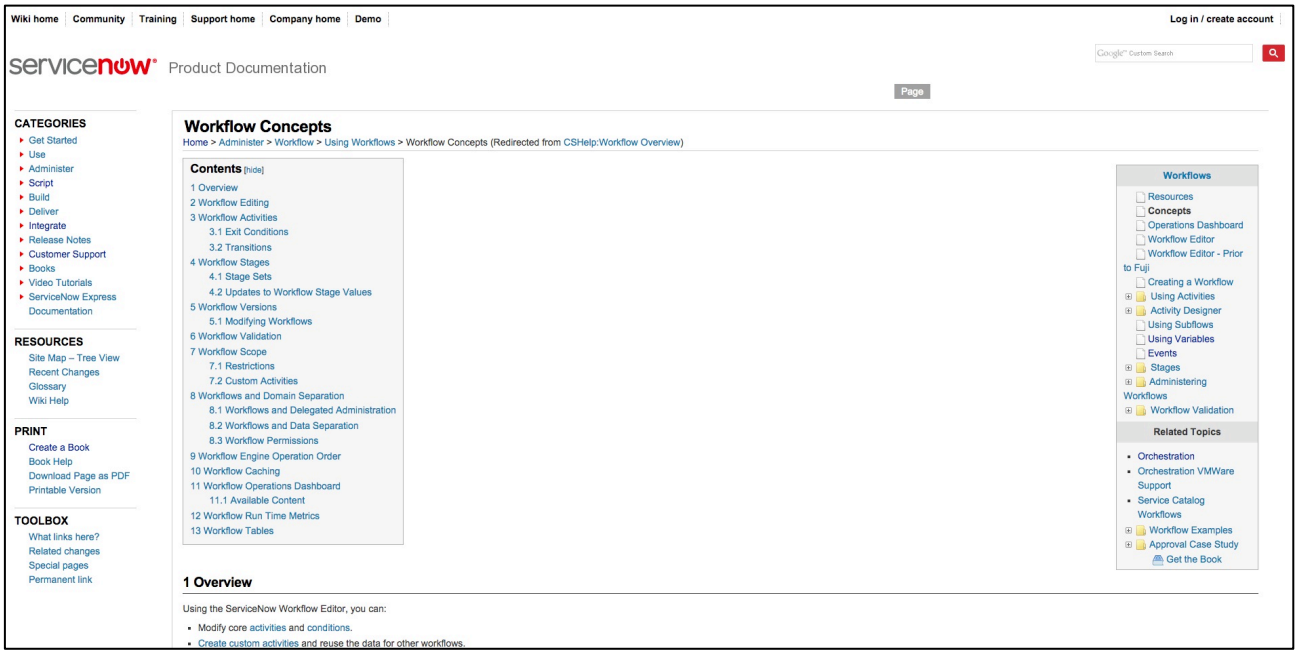


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5. Select the **Overview** link on the left.



6. An adjacent tab opens to display the ServiceNow Wiki. Three tabs are open.



The ServiceNow wiki is a rich source of both educational and troubleshooting articles relevant to creating, editing, and invoking workflows. There are a number of links in the **Workflow Editor** that will take you to the Wiki page most relevant to the form you clicked from.

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7. Close the Wiki tab and return to the workflow canvas.

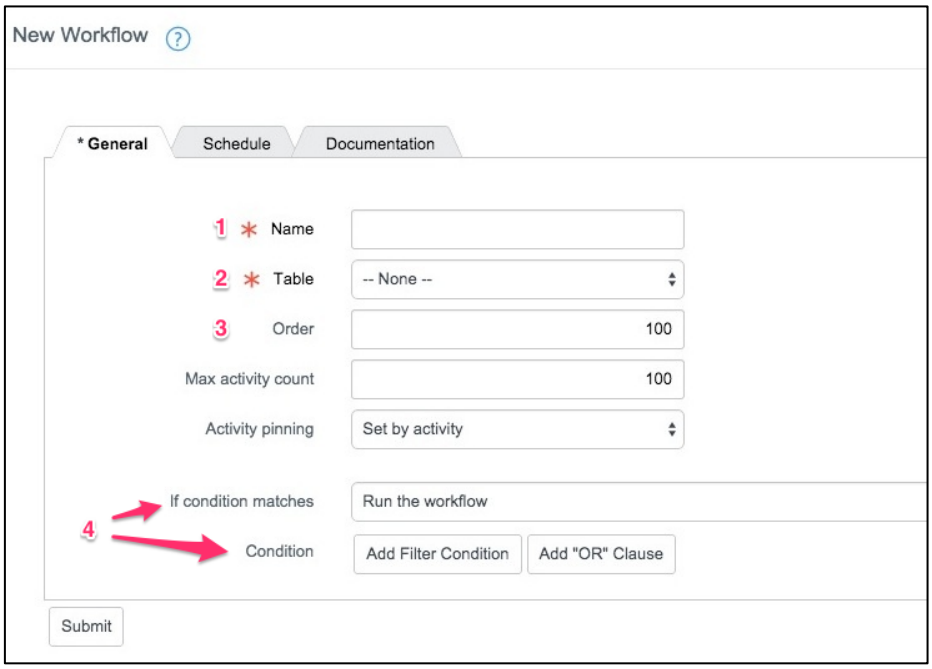


8. Select the **Plus (+)** icon on the top right of the page.



A tabbed form will appear allowing you to configure a new workflow.

9. The Workflow Properties form is used to set these values.



(1) Name to identify a workflow.

(2) Table association for the Workflow.

(3) Order to determine processing order when there are multiple workflows for a table.

(4) The conditions under which the workflow will be invoked.

Note: The **Name** and **Table** fields are mandatory fields.

The conditions are optional. If no conditions are specified, the workflow will run on every Glide insert into the table specified on the **Workflow Properties**.

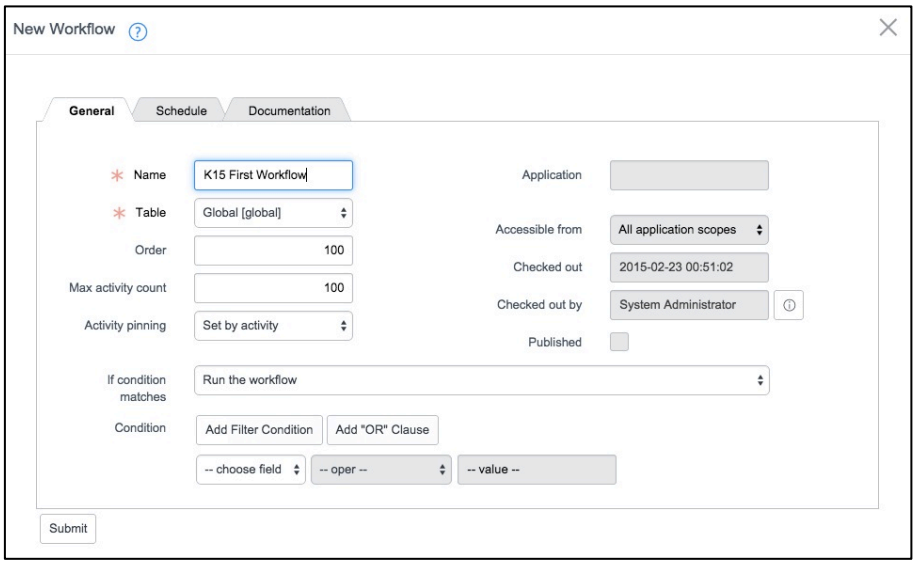
Note: Subsequent labs we will discuss workflow conditions in detail.

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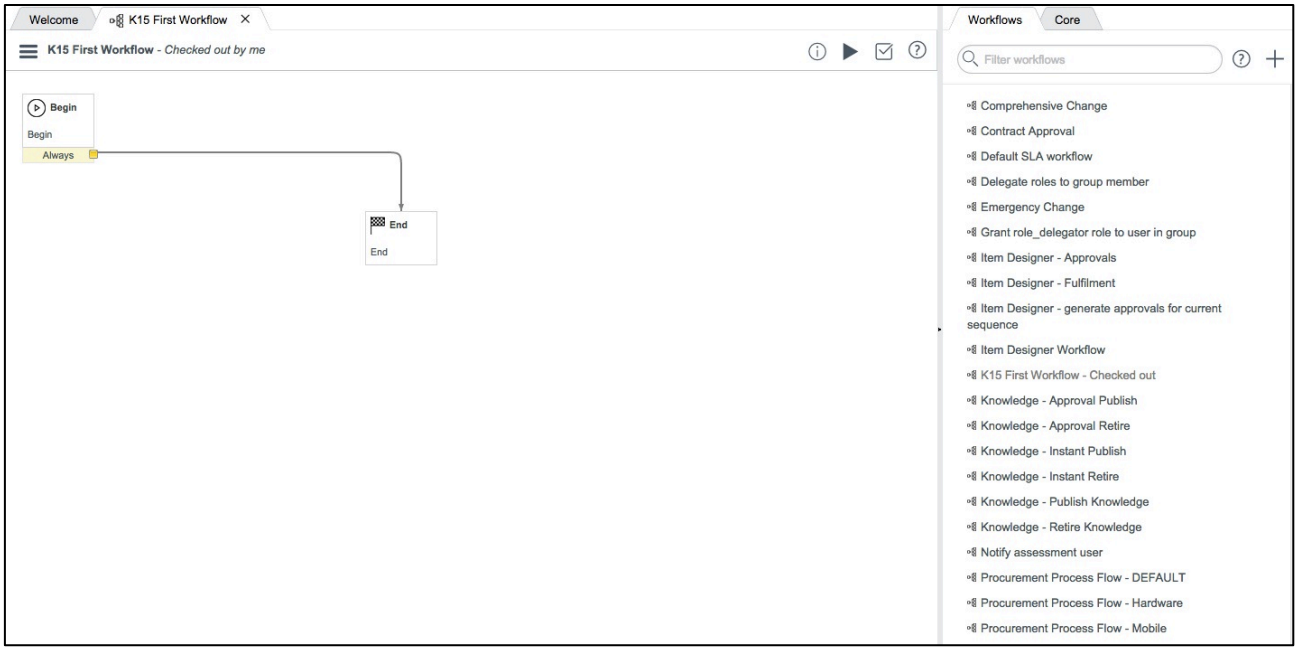
10. In the Name field type **K15 First Workflow**.

11. For the Table setting, select **Global [global].**
    All tables are listed using the format friendly name [system name].

    Note: Global is a generic setting and will not run on the insert or update of a Glide record.



12. Click **Submit**.



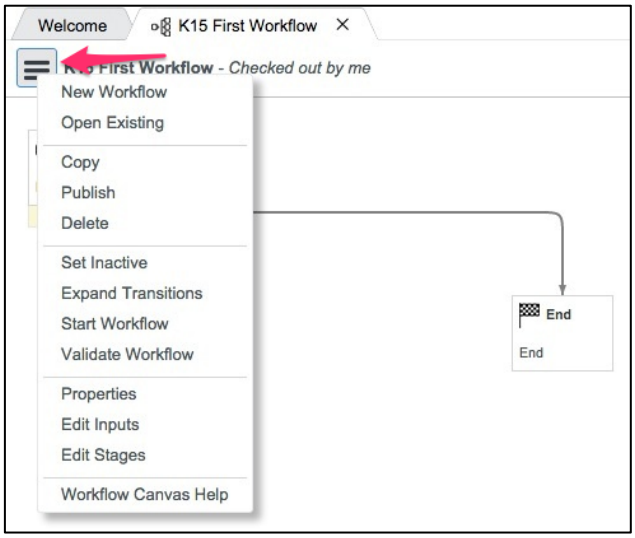
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Your First Workflow

Notice:

- There are two Activities in the workflow.
  An **Activity** is a set of instructions that can include script, logging, approvals, record processing, timers, and wait time.
  - Activities can process inputs from other Activities
  - Activities can provide output for other Activities to process
  - Processing continues as the Activity determines which execution path to follow upon completing its work
- Every workflow has a **Begin** Activity and an **End** Activity.
  - Please note that these cannot be deleted.
- The lines between the **Begin** and **End** determine the processing paths
  - If an **Activity** is not connected on a path, it will never execute.
- On the right side of the **Workflow Editor** there are two tabs, **Workflows** and **Core**.
  - The **Workflows** tab contains a list of all currently available workflows
  - The **Core** tab shows a list of all available activities, called the **Activity Tree**.
    - This structure is also called the Application Menu.
    - The **Activity Tree** is built based on the table setting. For the Global [global] table, the **Activity Tree** shows the base instance set of folders and Activities.

1. Select the **Workflow Actions icon**.

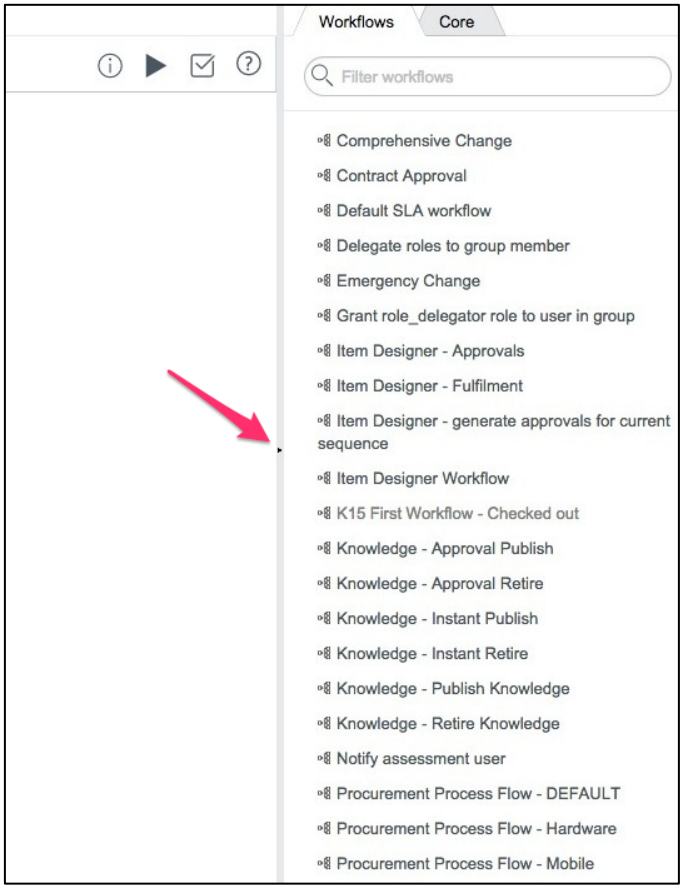


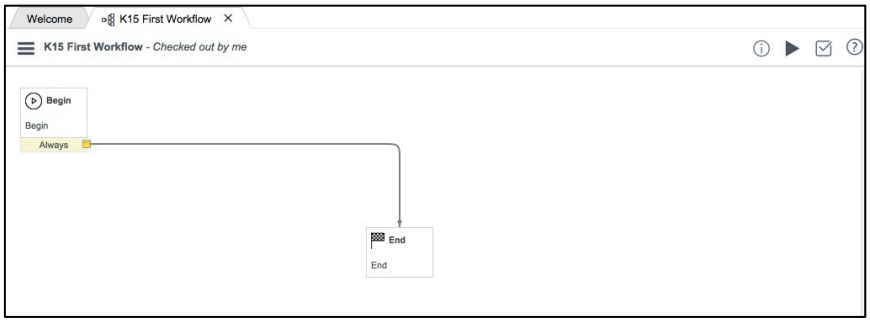
Notice how many more options are available in the workflow actions menu with the workflow canvas is loaded. We will be referring to the workflow actions menu throughout this lab.

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2. Click **outside of the menu list** to dismiss the list.

3. To the right and middle of the canvas click **the little right arrow.**
   This control hides the Application Menu so you have more canvas space.

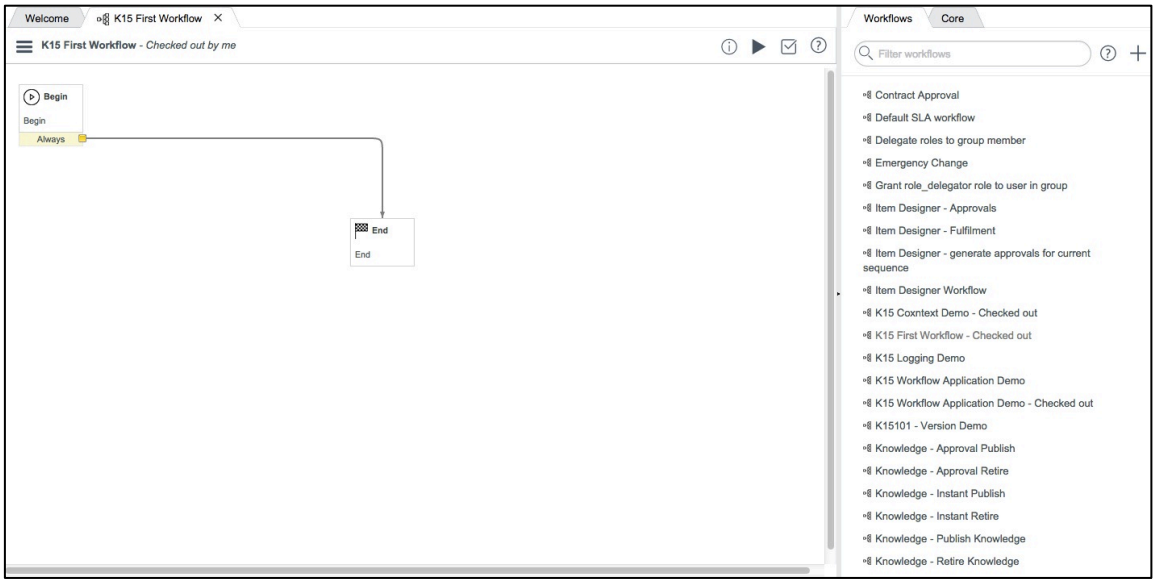




When building large workflows, this is a way to get more viewable workspace.

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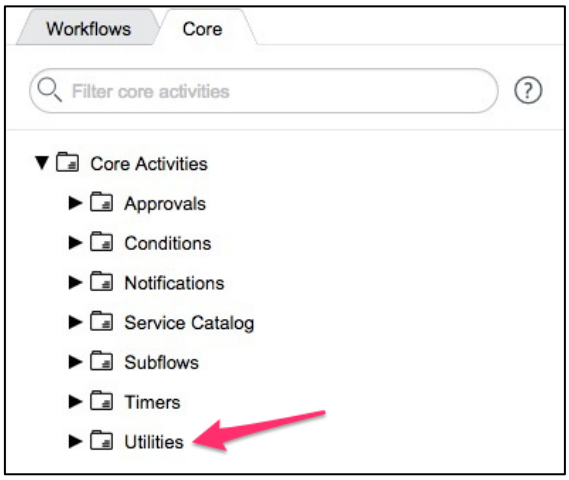
4. Click the **left arrow icon** to display the **Application Menu** again.



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Work with the Activities Tree

1. In the **Application Menu** in the right pane of the canvas, click on the **Core tab** and expand the **Utilities** folder.

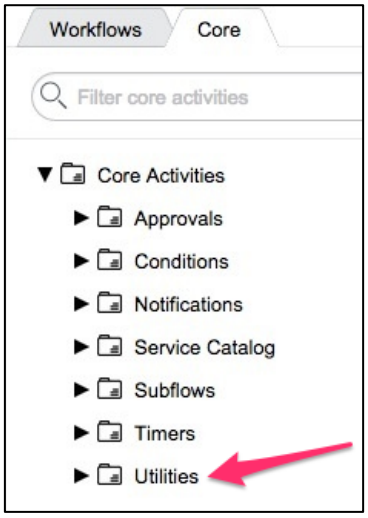


2. The **Activities Tree** lengthens and the **Utilities** folder expands to look like the example.

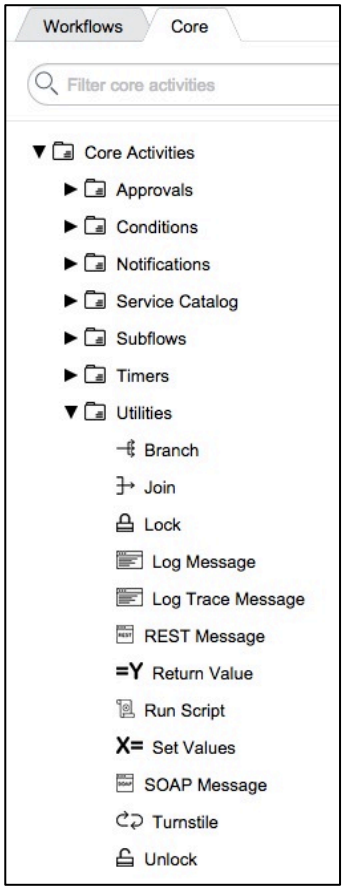


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Each folder in the **Activities Tree** is called a **Category**.



Each item in a folder is called an **Activity**.



Categories and the **Activities** within Categories are defined by **Activity Definitions**. The **Activity Definition** is the Configuration of Script and Variables that are needed to perform an atomic piece of work.

Activity Definitions in the base instance perform work for ITIL processes. These Activity Definitions allow for seamless integration of a process specified within a workflow with the core applications such as Incident, Change Request and Service Catalog.

3. Collapse the **Utilities** folder.

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About Connections, Transitions, and Lines

The purpose of a line in a workflow is to connect Activities to form processing paths. Lines are the **transition** to the next Activity. There is only one type of line in the **Workflow Editor** and when it is selected it turns **blue** in color. As you design a workflow you can move the Activities around to make room by placing the cursor on an Activity title and dragging it to another location on the canvas. The lines will automatically adjust so the Activities always stay connected.

There can be more than one line leaving and entering an Activity. A line starts from one of the conditions that are set for an Activity. Examples of Activity conditions are **Always**, **Error**, and **Skipped**.

Common Questions

Question: How do I connect Activities?

There are three methods:

- You can select the Activity node, hold the left mouse button and draw a line to the next Activity.

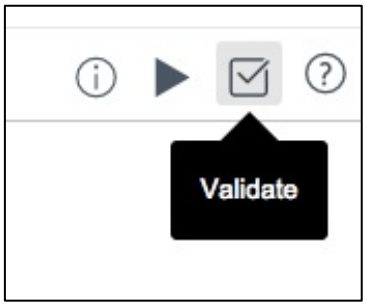


- When you drag an Activity onto the Workflow Canvas hover over the line between Activities until it turns **blue**. The nodes automatically connect.
- Right-click on the Activity condition that you want to connect. Select **Link to…** and a list of all the workflow Activities displays. Select the Activity you want to connect to.



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Note: Many workflows fail because Activities have not been connected. One way to verify that all Activities are connected is to use the **Validate** feature to check for unconnected Activities.



Question: My workflow is growing. Is there an easy way to redraw the lines?

Yes. Use the **Expand Activities** menu item in the **Workflow Actions** menu to spread the lines.

Question: How do I delete a line?

Click on the line (**it changes to blue**). Click the **delete** button.

Question: How do I copy an **Activity**?

Hover over the Activity title and right-click to select **Copy Activity**. Note that the copied Activity is sometimes put directly on top of the original Activity.

Question: How do I delete an Activity?

Use the **X** in the upper-right corner of the **Activity**.

Question: Can I make a custom Activity?

Yes! An **Insert and stay** operation can copy an existing Activity that is close to what you need and then you can customize it. Make sure the Category places the Activity in the correct folder.

Summary

A **Workflow** is a series of Activities that follow execution paths.

The Workflow Editor presents an unstructured area (usually referred to as the workflow canvas) that is used to create and edit workflows.

Workflows are composed of Activities that are connected by lines. Each Activity represents a unit of work that is defined in an Activity Definition. Each line connects Activities to form processing paths. A line is also called a transition.

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Lab Goal

- Introduce Workflow Versioning
- Experience Checkout and Publish
- Understanding versions in Update Sets

Lab 2
Workflow Versioning

Workflow Versioning

A workflow consists of three parts:

- The workflow, which is associated with a table.
- The Workflow Version, which is characterized by Condition, Published Status, and permissions.
- The Workflow Model, which is the workflow in its entirety as the set of Workflow Activities and their transitions (lines) within a given version.

Workflows are moved from one instance to another using Update Sets.

Workflow States

A Workflow can have three states:

- **Published**: The Workflow is available to all users and Glide records that meet the conditions of the workflow.
- **Unpublished**: The Workflow is no longer available for new Glide Records, but may be required for already running records.
- **Checked Out**: The Workflow is available to run only for the user who has it checked out.

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Create an Update Set

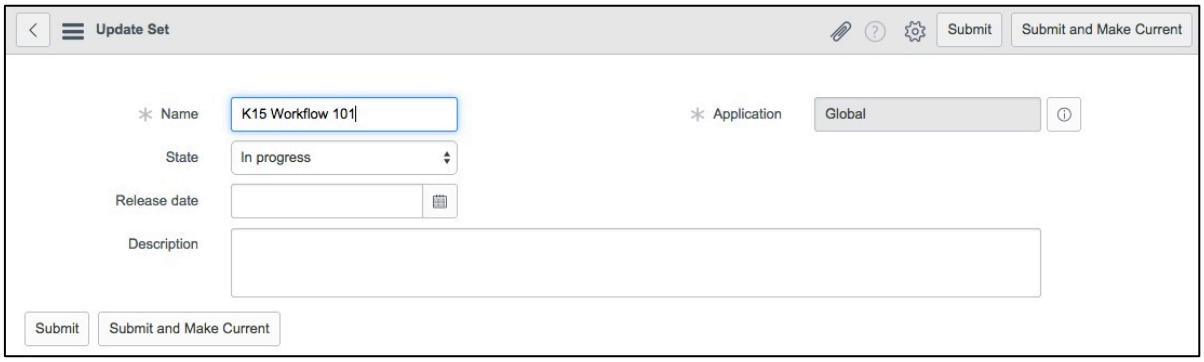
Workflows are moved from one instance to another using an Update Set. For the purposes of this lab we will create an Update Set called **K15 Workflow 101.** Throughout the lab we will see how a workflow becomes published in the Update Set. We will not be moving the Update Set to a new instance.

1. Navigate to **System Update Sets > Local Update Sets**.
   The word local is used to describe Update Sets that are already present on the instance.

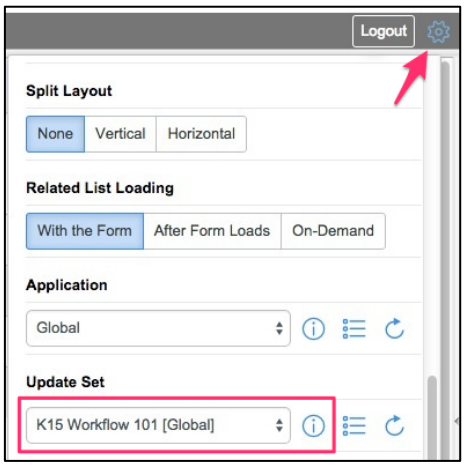
2. Click **New.**

3. Fill out the form as follows:

   Name: **K15 Workflow 101**



4. Click **Submit and Make Current.** Check your work by clicking the Gear icon on the right-side of the banner and check that the **K15 Workflow 101 Update Set** is the current set.



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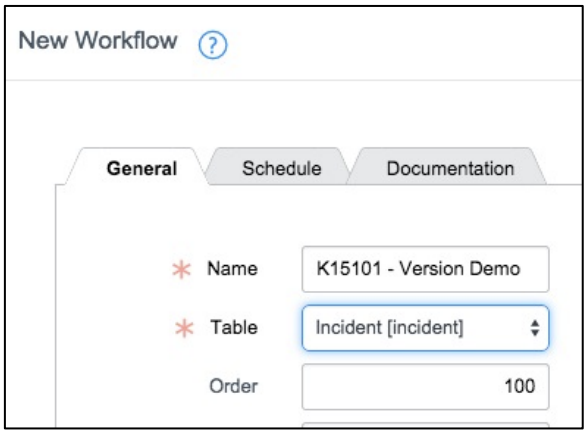
Create a Workflow Version

1. Close the Workflow Editor tab. It is a good practice to close the tab after completing your work. The Workflow Editor tabs stay open until you close them.



2. Return to the Workflow Editor using **Workflow** > **Workflow Editor.**

3. Create a new Workflow by clicking on the workflow tab and then the **Plus (+)** icon.
   Name: **K15101 – Version Demo**
   Table: **Incident**



4. Click the **Submit** button.

   In the Workflow Canvas header, notice the label on the Menu bar. See the name of the workflow, just as it was entered into the Name field, and the ***Checked out by me*** text.



   A workflow that indicates that it is checked out runs only for the user that has the workflow checked out.

   Because this is a new workflow, there is only one version of the workflow, and that version will only run for the user who has the workflow ***Checked out***.

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5. To see the relationship of a Workflow to its Workflow Versions, return to the main ServiceNow tab. Do not close the Workflow Editor.



6. Navigate to **Workflow > Workflow Versions.**

   This is the list of all the active workflow versions on this instance. Find your **K15101-Version Demo** workflow, you can either scroll through the list or enter the workflow name in the search field and hit enter.

   What you see is the Workflow record and a Related List of Workflow Versions. In this case, there is only one version.



   Looking at the Workflow Version record we see the following:

   - (1) **Published = false**
     This indicates that this workflow is not available for general consumption on this instance.
   - (2) **Checked out by = K15101 WFAdmin**
     This indicates the current editor of the workflow version and the only person this version of the workflow will run for.

7. Return to the Workflow Editor by re-selecting the second ServiceNow tab.

8. Using the **Workflow Actions Menu,** select **Publish**.

   Note: In subsequent labs, these steps will be abbreviated to **Workflow Actions Menu** > **Publish.**

   The header of the workflow should look like the example:



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9. Return to the main ServiceNow tab.

   Refresh List in the Workflow Version list. Do this by right-clicking the context-sensitive menu in the list header.

   The Related List of your workflow versions should look like this:



10. Look at the Workflow Version record and note the following:

    - (1) **Published = true**
      Indicating that this workflow is now available for use on this instance.
    - (2) **Checked out by = blank**

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Workflow Version Lifecycle

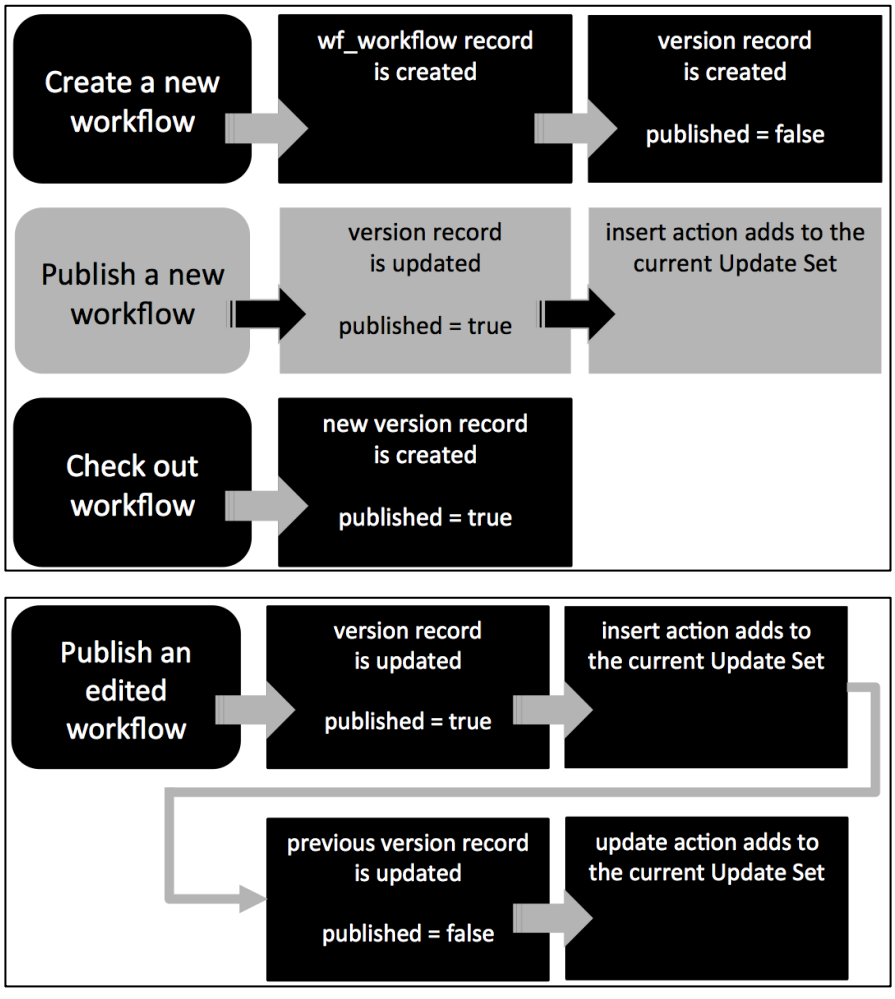
A workflow goes through the **Develop -> QA -> Deploy** life cycle on the same instance using the **Checked Out -> Published states**.

In ServiceNow Best Practices, a workflow **Develop -> QA -> Deploy** process is managed across at least two instances (**Dev. -> Production**), sometimes three (**Dev. -> QA -> Production**).

A workflow is moved from one instance to another using an **Update Set**. A workflow is added to an Update Set when you **Publish** it.

Checked Out workflows are not entered into an Update Set, making them very safe for development and test.

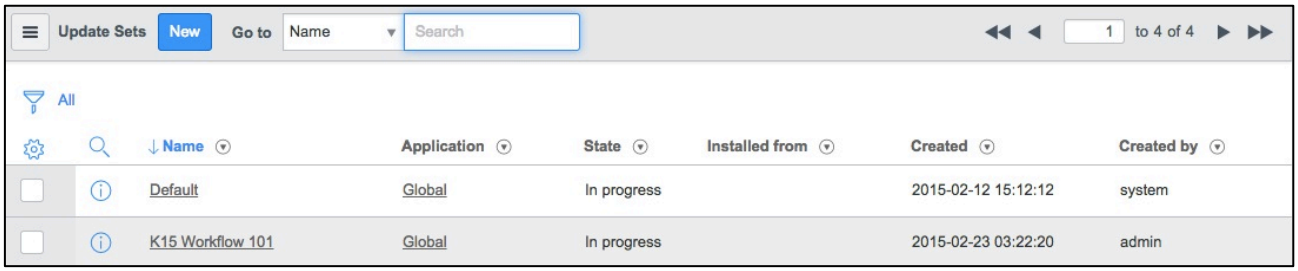
Workflow Version Lifecycle



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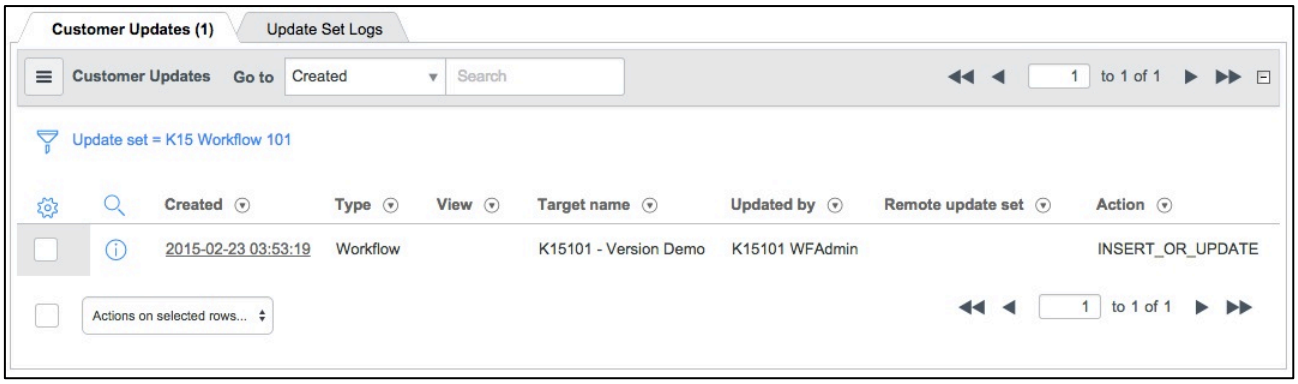
1. Return to the main ServiceNow tab and Navigate to **Update Set > Local Update Sets**.

2. Your Update Sets list should at the minimum list these **Update Sets**:



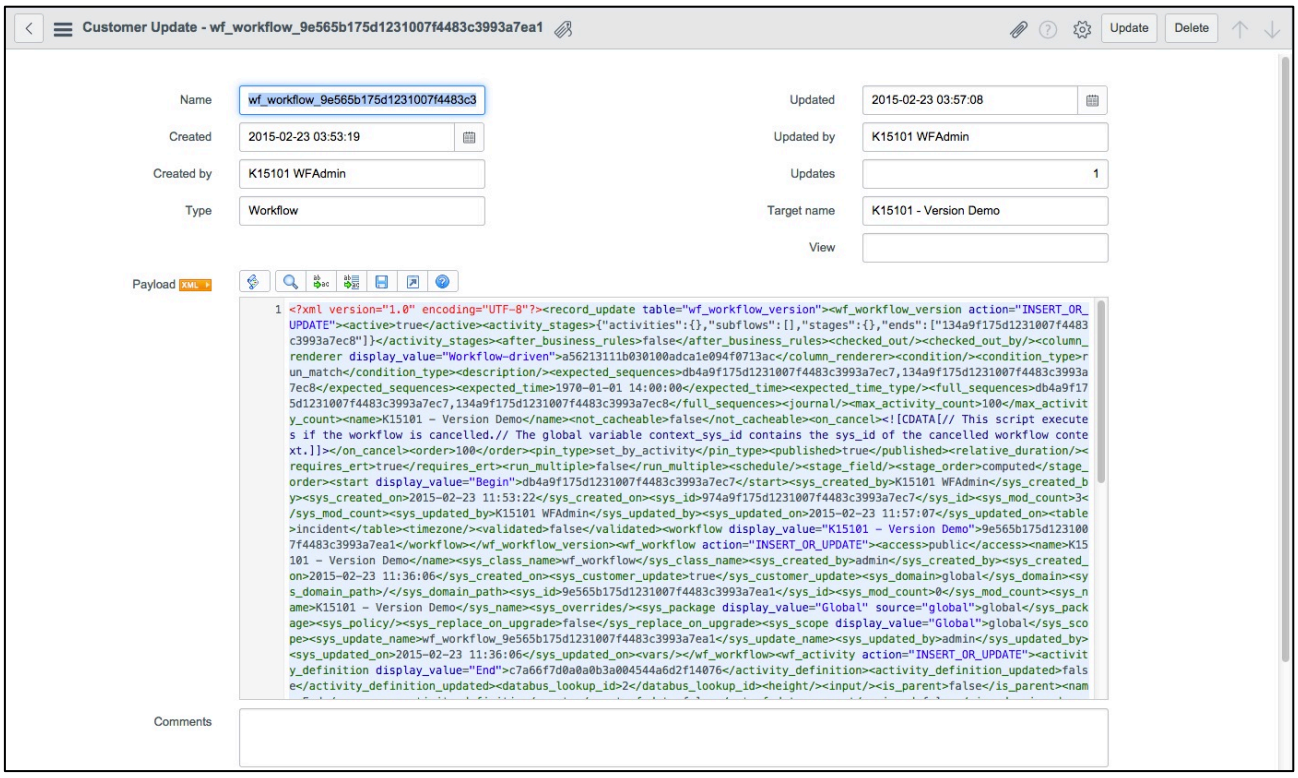
3. Select the **K15 Workflow 101** Update Set.

4. Scroll to the **Customer Updates** related list.



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5. Select the update record.



Notice the Payload field. The content of the Payload field is the XML mapping of all the database entries required to move the Workflow and its dependencies.

Edit then Publish a Workflow

1. Return to the **Workflow Editor** tab.

2. Select **Workflow Actions Menu > Checkout**.
   The workflow header bar again reflects the checked out status as in the example.

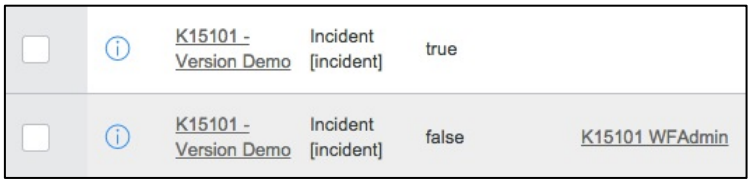


3. Return to the **ServiceNow** main tab.

4. **Workflow > Workflow Versions.**

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5. Find the **K15101 – Version Demo** in the list.



The workflow version that was published earlier and is in the **K15 Workflow 101 Update Set** is at this time unchanged. There is also now another version associated with this workflow.

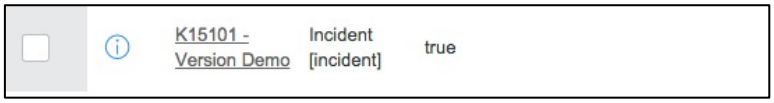
This is the Checked Out version that was just created in the Workflow Editor. This version of the workflow, will run (as explained earlier), only for the **K15WF Admin** user or whichever user you are logged in as, while the existing, **Published** version will run for all other users on the instance that meet the conditions of the workflow.

6. Return to the **Workflow Editor** tab.

7. Select **Workflow Actions Menu > Publish**.

8. Return to the main **ServiceNow** tab.

9. Refresh the Workflow Version list.



Notice that there is now only one version of the **K15101 – Version Demo**.

- All processes already running against that original workflow will continue to run against that version.
- The edited version is now the published version.
- All new Glide Records that meet the conditions of the Workflow will run against the new version.

It is not possible to apply a newly published workflow to existing records. The Workflow Engine evaluates the conditions when the record is inserted and identifies the ID of the appropriate workflow version. From that point on, the Workflow Engine needs only reference the ID of the version and not the conditions.

When the Update Set is moved to the new instance, the commit process ensures that the published version of the Workflow in the committed Update Set will be the published version on the instance for all users and Glide Records that meet the conditions of the Workflow.

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Summary

Workflow in ServiceNow offers versioning as a way to deploy an automated process that ensures safe editing of existing workflows. Versions are managed within the Check Out and Publish cycle.

There are three parts of this process: The Workflow, its list of versions, and the workflow model that is editable only when it is checked out.

Workflows may only have one Published version at a time. The Published version is the version that runs for all Glide Records that meet the conditions of the workflow.

Workflows may only have one Checked Out version at a time. The Checked Out version is the version that will run for all Glide Records that meet the conditions of the workflow only for the user who has the workflow **Checked Out**. This Check Out process provides safety in modifying and updating processes.

Workflows move from instance to instance through Update Sets. Only published workflows are pushed to update sets. The commit process of an Update Set ensures that the published version of a workflow in the Update Set becomes the published version on the target instance by setting all other versions of the committed workflow to **Published = false**.

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Lab Goal

- Running a Workflow.
- Visualizing the Workflow Context.
- Debugging simple workflows.

Lab 3
Workflow Context

ServiceNow Workflow Context

A Workflow Context is a workflow that is executing in the Workflow Engine.

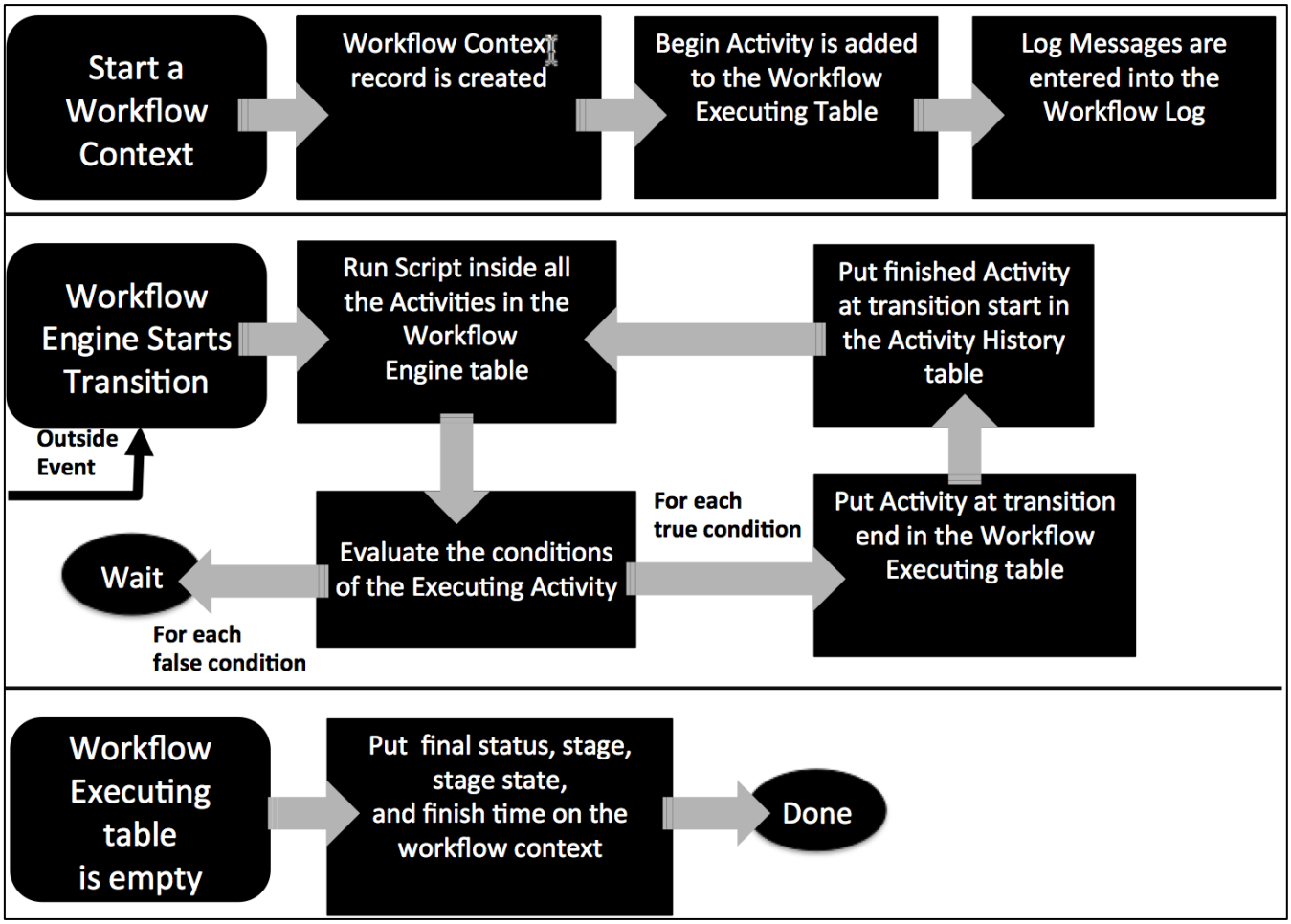
A workflow can be started in one of four ways:

- From within the Workflow Canvas using the Arrow on the top bar
- As part of a Glide transaction
- As a subflow called from inside a main flow
- From within a script using the Workflow Script Include

A record in the Workflow Context maintains the state of the overall process. The Related List maintains the state of the Activities throughout the life cycle of the running workflow.

Once started, a Workflow Context will “run to wait.” That is, the Workflow Engine examines all the Activities currently executing. If an Activity finishes, the Workflow Engine evaluates an Activity’s conditions. For all true conditions, the engine looks to the end of the transition arrow for what to do next. If an activity is not finished, it is assumed to be waiting for an outside Event (Approval, Task Complete, Probe Complete etc.).

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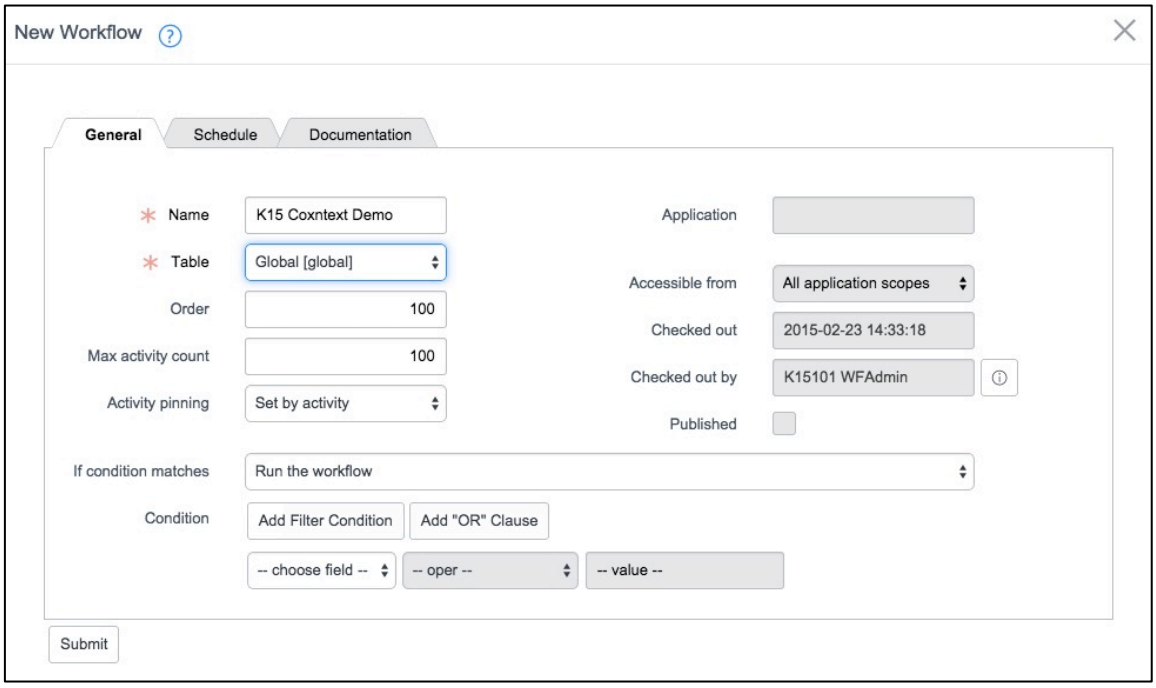
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Note: If there are any Workflow Editor tabs open at this time, close them now.

1. Navigate to **Workflow > Workflow Editor**.

2. In the Workflow Editor, click the **Plus (+) icon** to create a new workflow and fill out the form as shown:

   Name: **K15 Context Demo**
   Table: **Global [global]**



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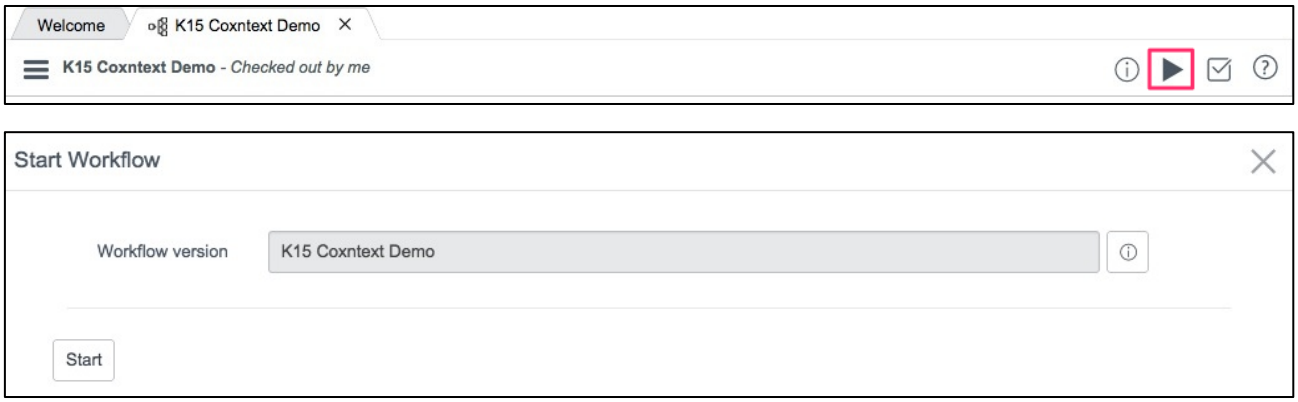
3. Click **Submit**.



The Workflow Version has a model that at this time contains **Begin** and **End** Activities. This is a complete workflow and enough to create a context. In the header of the Workflow Canvas find the arrow icon. This is the play button.

When a workflow designer selects the play button the Workflow Version in the editor executes.

4. Click the **Play** button.



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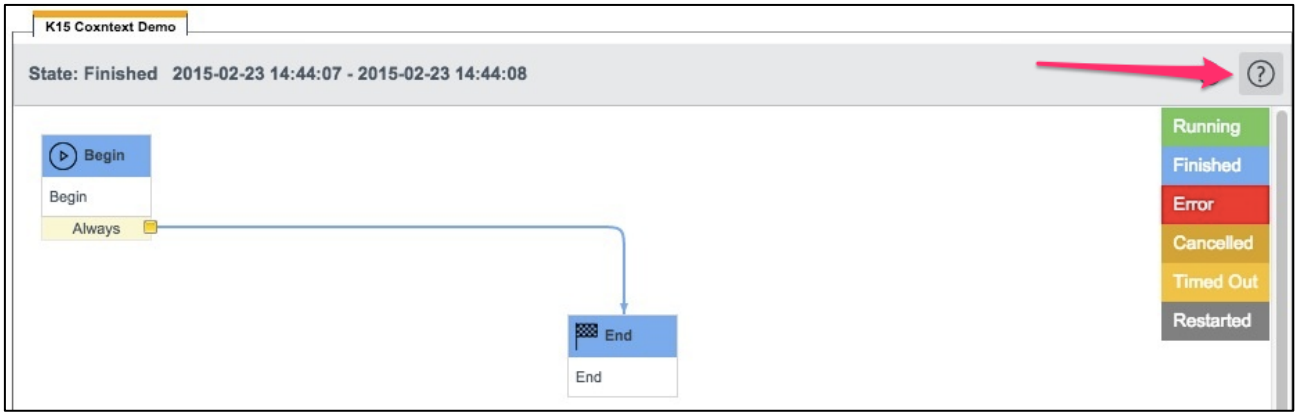
5. Select the **Start** button. This executes the **K15 Context Demo** workflow.



This is the **Context View**. When a workflow has run or is running, the state of the workflow can be visualized in the Context View.

The Workflow Editor uses colors to communicate different states of a workflow and its Activities. In the upper-right corner of the Context View, find the question mark icon.

6. Hover over **question mark** icon.

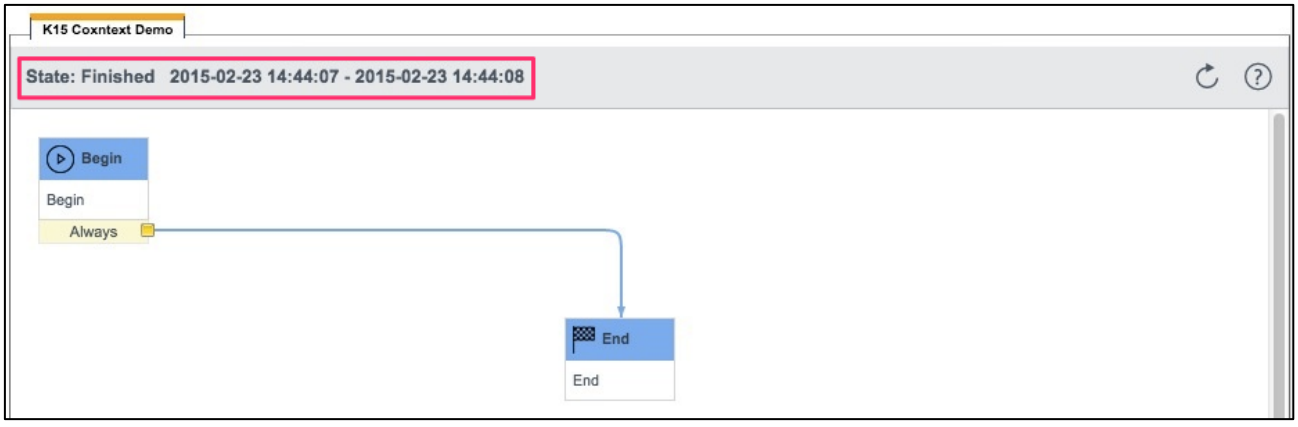


Each color in the key indicates the state of an Activity executing in the workflow. In the key, blue indicates Finished. Look at the activities on the Context Canvas. Note that both Activities, Begin and End, are finished.

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Running (Green)	The activity is currently running. Some activities run too fast for the color change to be relevant. Most activities that are green on the Workflow Context are waiting for an event. For example waiting for an Approval to be Approved or Rejected.
Finished (Blue)	The activity is finished performing all its work and has transitioned to either the end or to the next activity in the workflow.
Error (Red)	The activity was unable to finish its work. Causes for an error that would cause a Workflow Activity to turn Red are JavaScript Error, a missing subflow or an error caused by a Business Rule or Script Include engaged in the same Glide Transaction as the Workflow.
Cancelled (Yellow)	The activity was cancelled. An activity can be cancelled one out of two ways. A user can cancel the Workflow Context using the UI Action on the Workflow Context or an activity will naturally cancel if there is more than one way to transition to the End of a workflow. Once the End is reach, all Running activities will automatically cancel.
Timed Out (Orange)	Not Currently Implemented
Restarted (Gray)	The activity has been restarted through a Rollback Transaction.

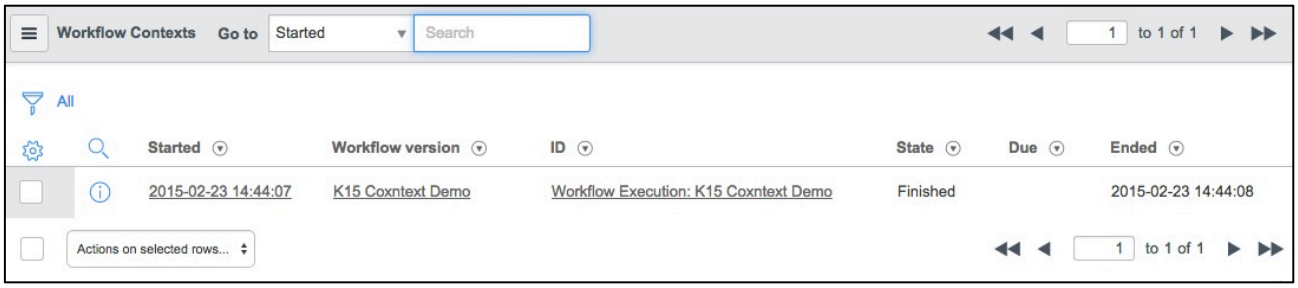
The coloring of activities in the Workflow Context reflects the state of each individual Activity. The header of the Workflow Context canvas reflects the state of the overall workflow.



The Canvas View of the Workflow Context is a convenient summary view. There is also a way to see the details of the Workflow Context.

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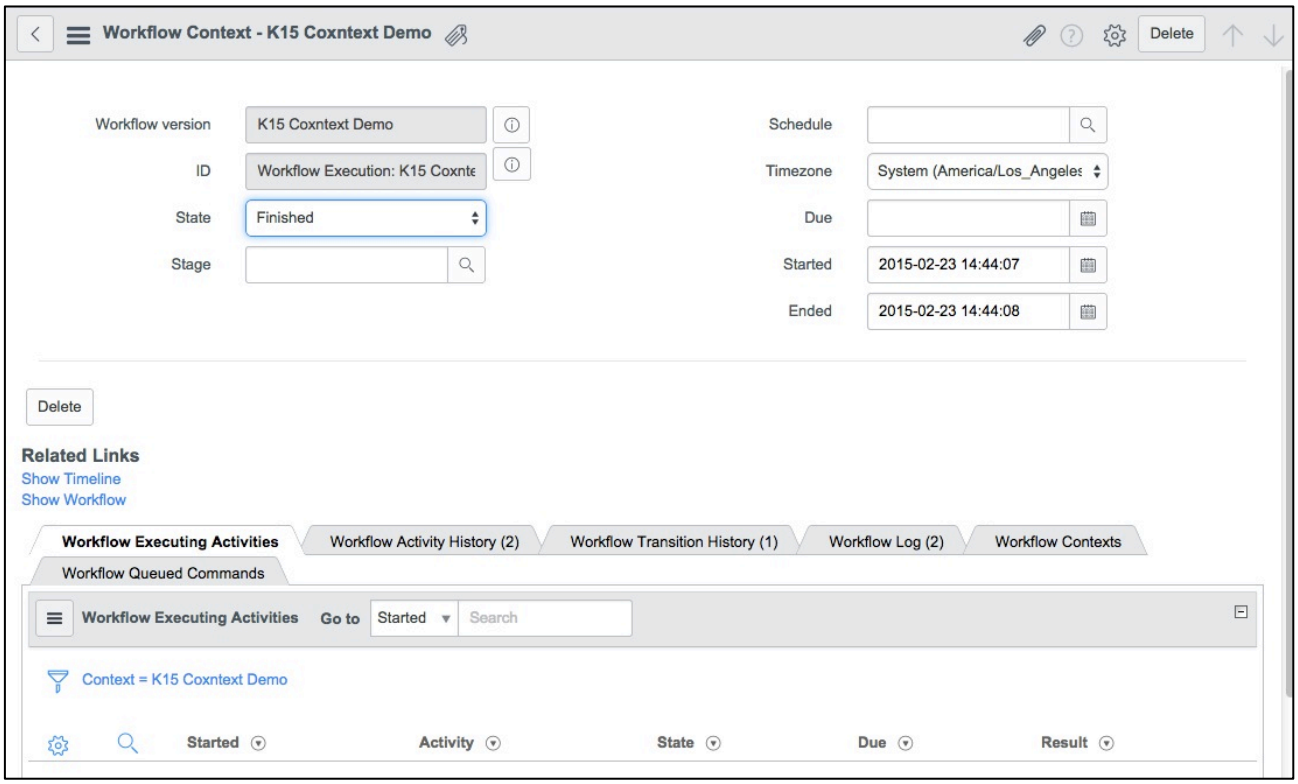
7. Navigate to **Workflow > All Contexts**.



The list shows all Workflow Contexts that have finished or are currently executing.

8. Select **K15 Context Demo** Workflow Context from the list.

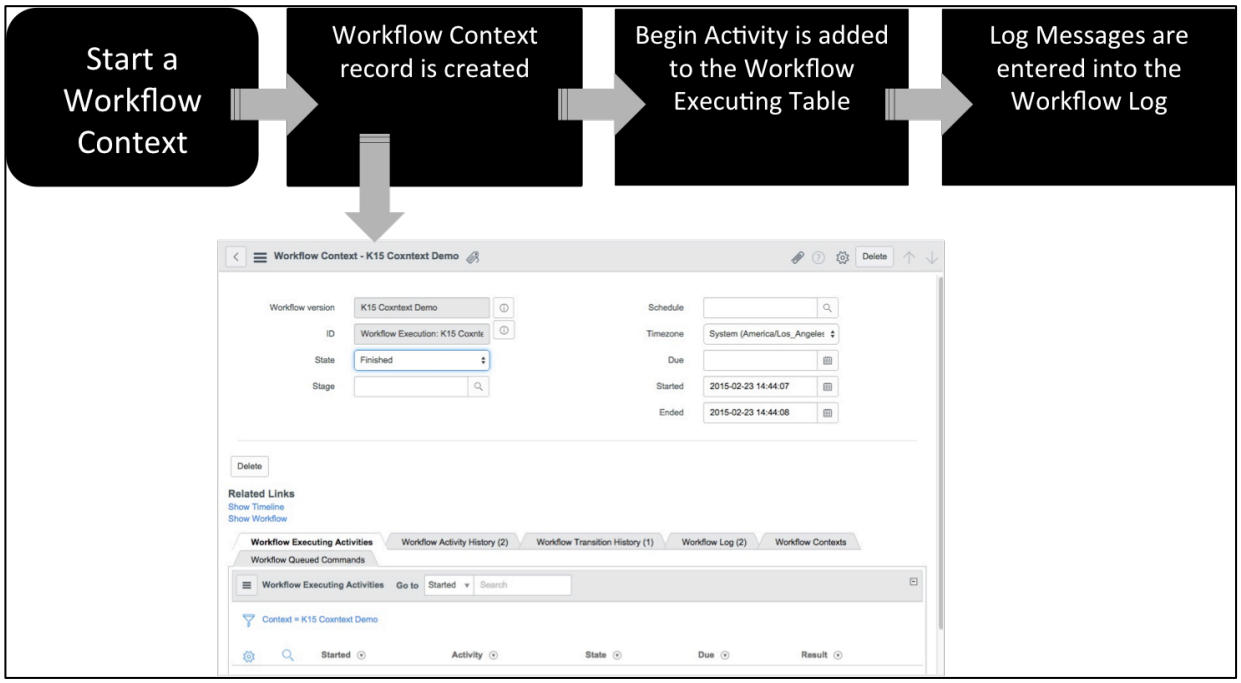
Note: Switch to the tab view for easier navigation.



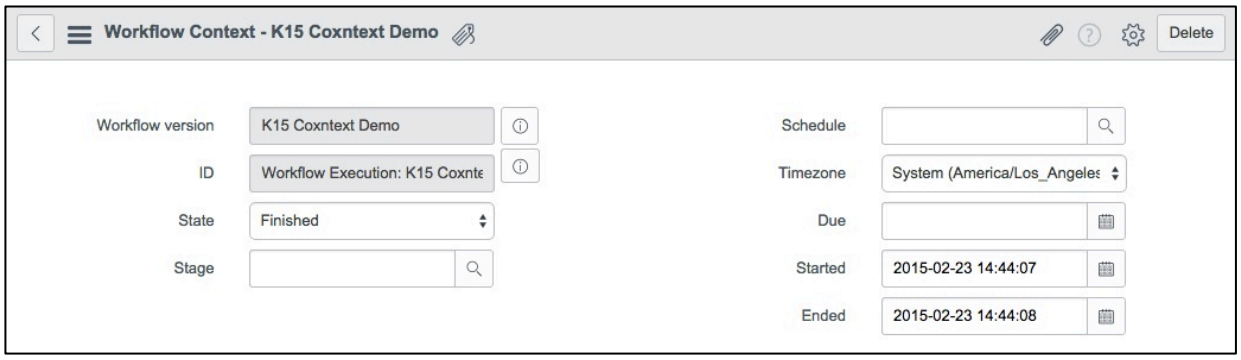
To correlate the execution of the Workflow Context to the artifacts of the Workflow Context see the diagrams.

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Establish the Workflow Context



Look at the values in the Workflow Context form. Note that even without doing any work, a Workflow Context has significant status to report.

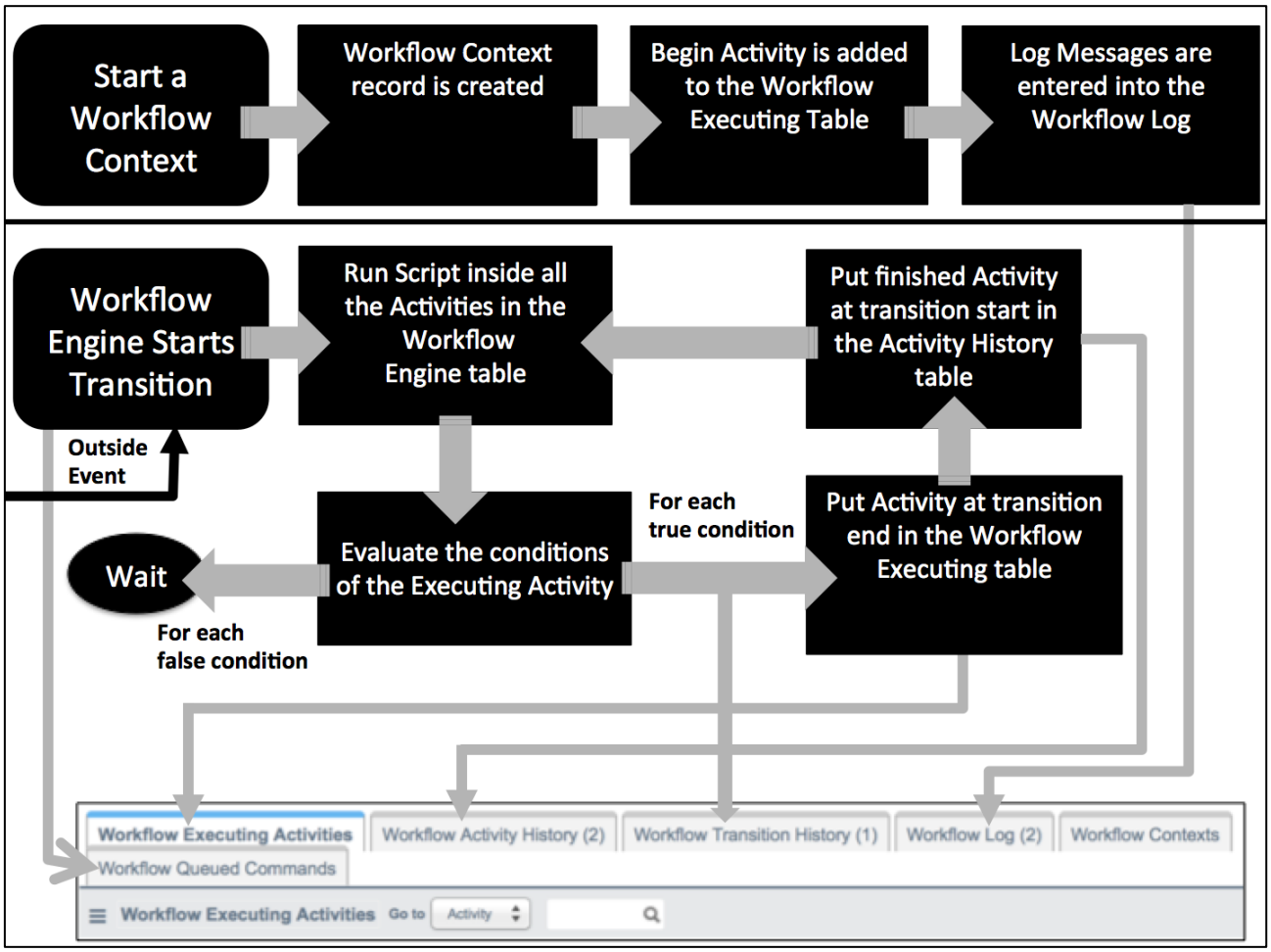


- The Workflow Version that ran this Workflow Context
- The Result (if any) of the Workflow
- The ID of the document that is associated with the Workflow Context

When a Workflow runs from the play button of the Workflow Context the ID will always be **Workflow Execution: << the name of the version running >>.** When a Workflow is run against a Glide Record, this ID is the document id. For example, a Routine Change workflow will run against a Change Request Workflow. The ID of that Workflow Context will be **Change Request: CHG0030002.**

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Run Transitions



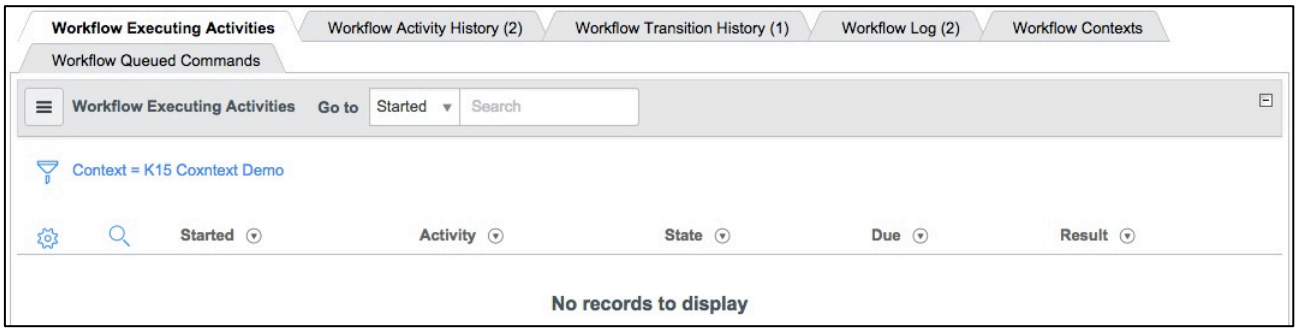
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State of the Context

The state of a Workflow is one of the following values:

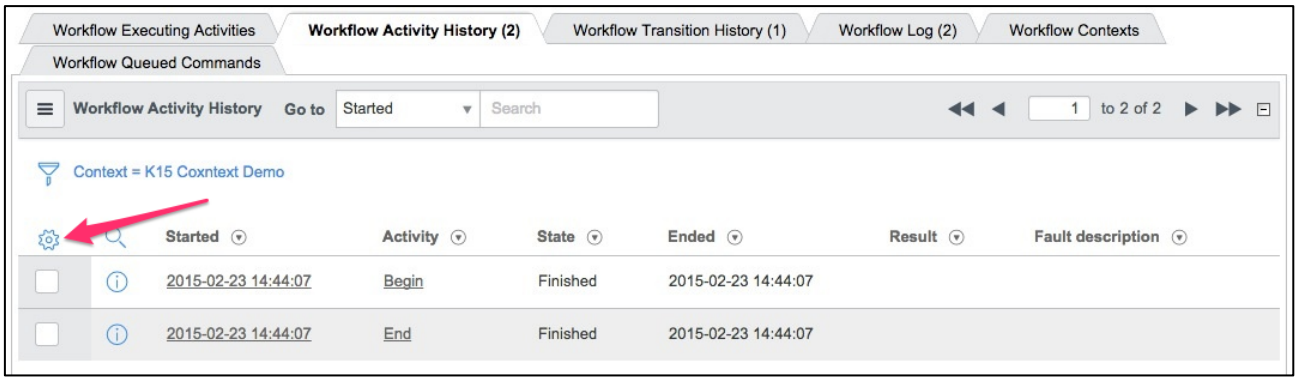
- Finished
- Cancelled
- Executing

1. Scroll to the bottom of the Workflow Context form.
2. Select the **Workflow Executing Activities** Related List.



Because the workflow is already finished, there are no entries into this system.

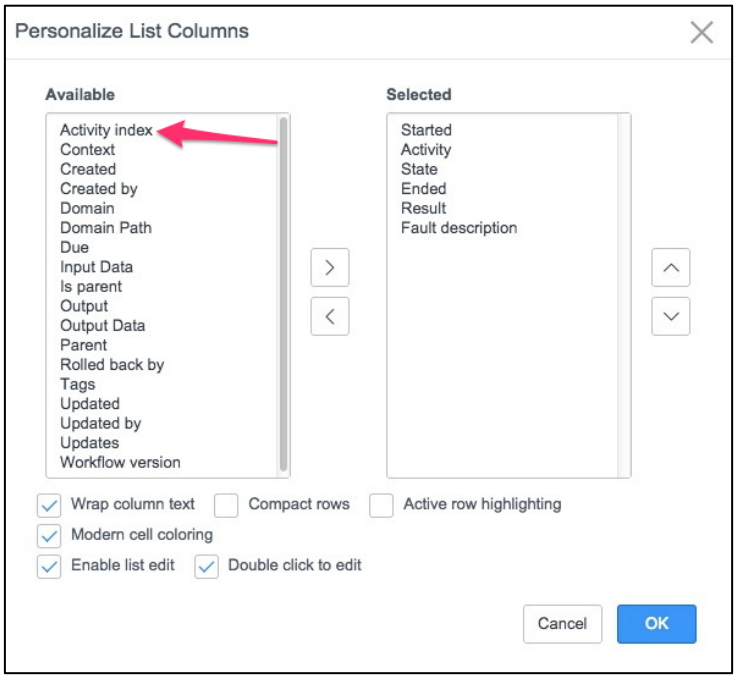
3. Select the **Workflow Activity History** Related List.
4. To the left of the list select the **Personalize List** (Gear) icon.



The Workflow Activity History reflects the start, state and end time of all the activities that executed in this Workflow Context.

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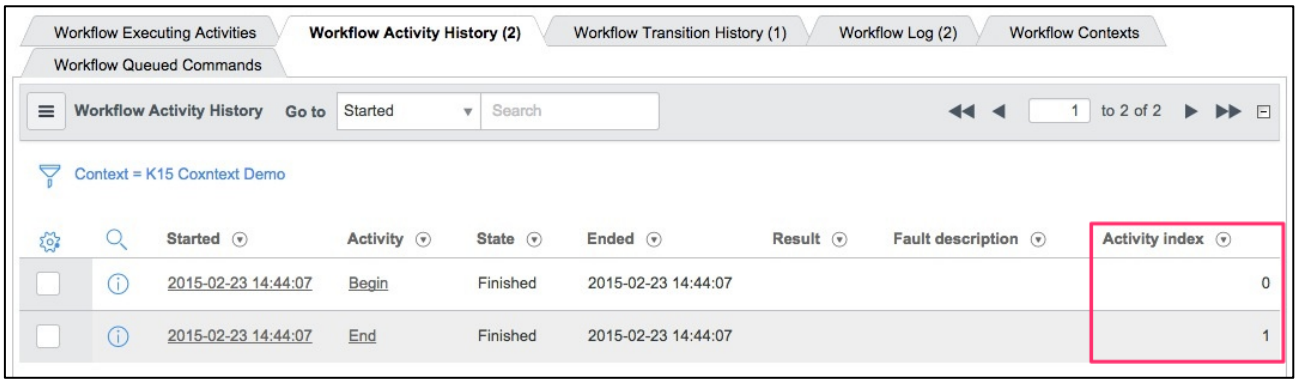
5. Select the **Activity index** property in Available and move it to Selected using the Add arrow.



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6. Click **OK**.

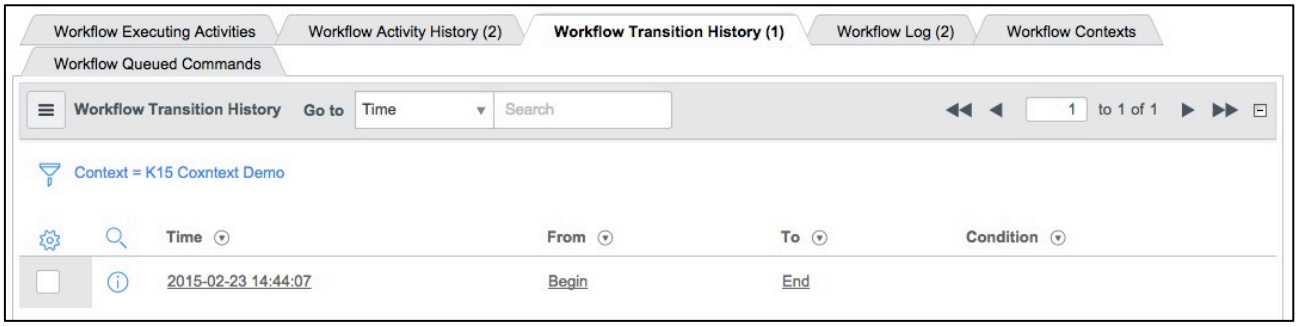
   The Activity History list should look like the example.



   The Activity index is a number assigned to an activity when it is created. This value is the only reliable method of knowing the exact execution order of the Activities. The timestamps assigned to the Activities are precise to a second. Several activities can execute within a second, making Started ordering an inconsistent means of determining precise order of execution.

   On the diagram, activities will appear to be executing concurrently based on how they are drawn and how the context colorizes their state. However, the order of appearance of transitions at the same transition level on the diagram does not necessarily reflect the order of execution. The **Activity index** definitely provides the precise order of execution. In debugging large workflows or workflows that have multiple transitions from a single condition, this value is enormously helpful.

7. Click the **Workflow Transition History** tab.

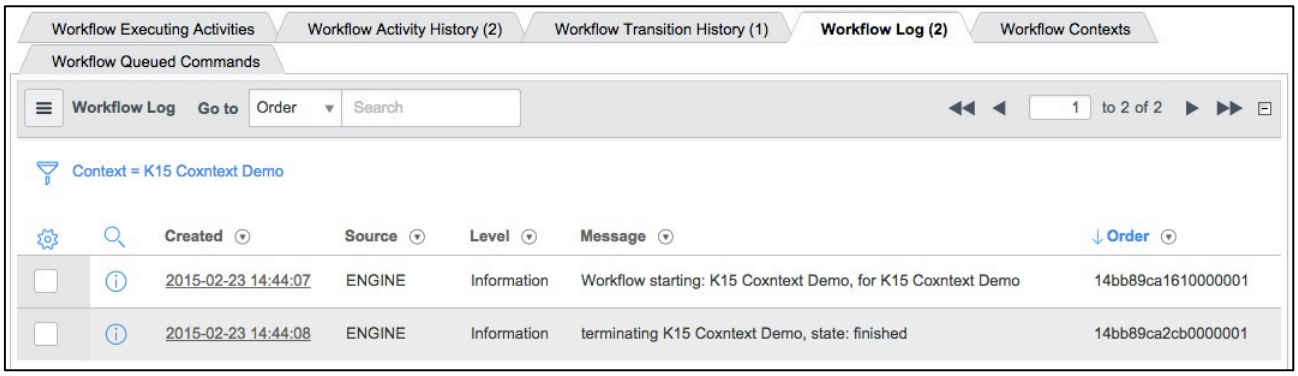


   This Workflow had one very simple transition in it, **Begin -> End**. All transitions that execute are written to this list.

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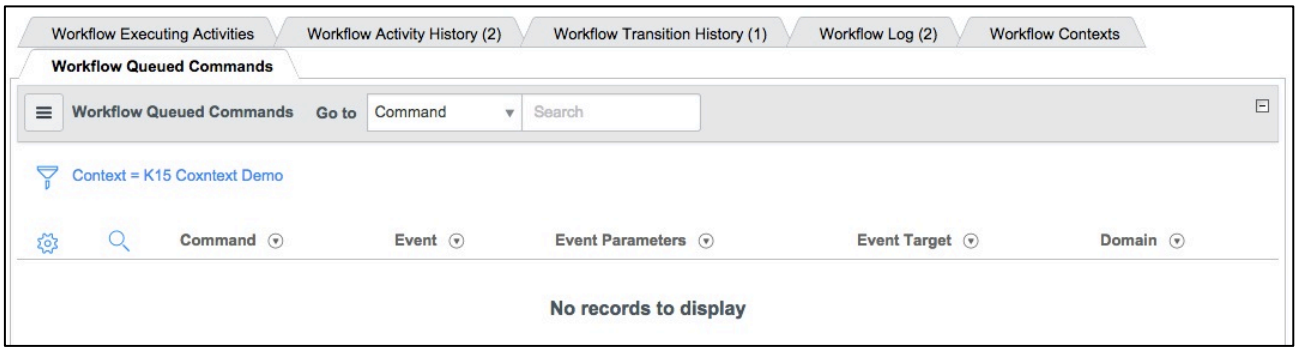
8. Select the **Workflow Log** list.

   Your **Workflow Log** list should look like the example.



   A subsequent lab addresses the details of workflow logging. For now, take note of where the **Workflow Log** list is, and what entries are written to the **Log** by default.

   The **Workflow Queued Commands** list should look like the example.

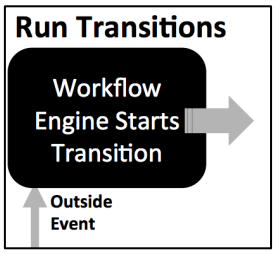


   The entries in the **Workflow Queued Commands** list are transient, and should not be there by the time a workflow is finished.

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Outside Events

Recall that part of the stimulus in the process of Running Transitions in a workflow is receiving outside events.



If an **Outside Event** comes into the Workflow Engine while the Engine is currently running active transitions in its 'run to rest' process, the **Outside Event** will be temporarily cached in the Workflow Queued Commands table. When the 'run to rest' process completes its active transitions, it retrieves incoming events from this the **Workflow Queued Commands** list. The commands are deleted as they are read from the table.

Summary

Workflow in ServiceNow names a running workflow a Workflow Context.

The Workflow Context maintains the state of the overall process in the Workflow Context record.

The Workflow Context maintains the state of the individual activities as they execute in a series of related lists. These lists maintain the state of currently executing activities, the result of finished activities, and the execution path the workflow took through the process model.

The Workflow Context canvas provides a visual representation of the execution path the workflow took through the process model. The state of each activity (finished, executing, cancelled, error) is represented using the color palette. The executed paths are represented in the color blue; the unexecuted paths are represented in gray.

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Lab Goal

- Introduction to Workflow Logging
- Logging from the Engine
- Logging from the Activity
- Writing customized Log messages in Script

Lab 4
Workflow Logging

Logging in ServiceNow Workflow

ServiceNow Workflow provides logging in a log exclusive to workflows. It is separate from the System log that is specific to a currently executing Workflow Context.

Logging is useful for debugging and to trace progress through a workflow.

ServiceNow Workflow is part of the Glide Script Engine and is invoked with the insert, update, delete or cancel of a Glide record. Log entries in the Workflow Log indicate whether they were entered from the Engine or from the Activity.

The level of logging present in the Workflow Context is configurable by properties.

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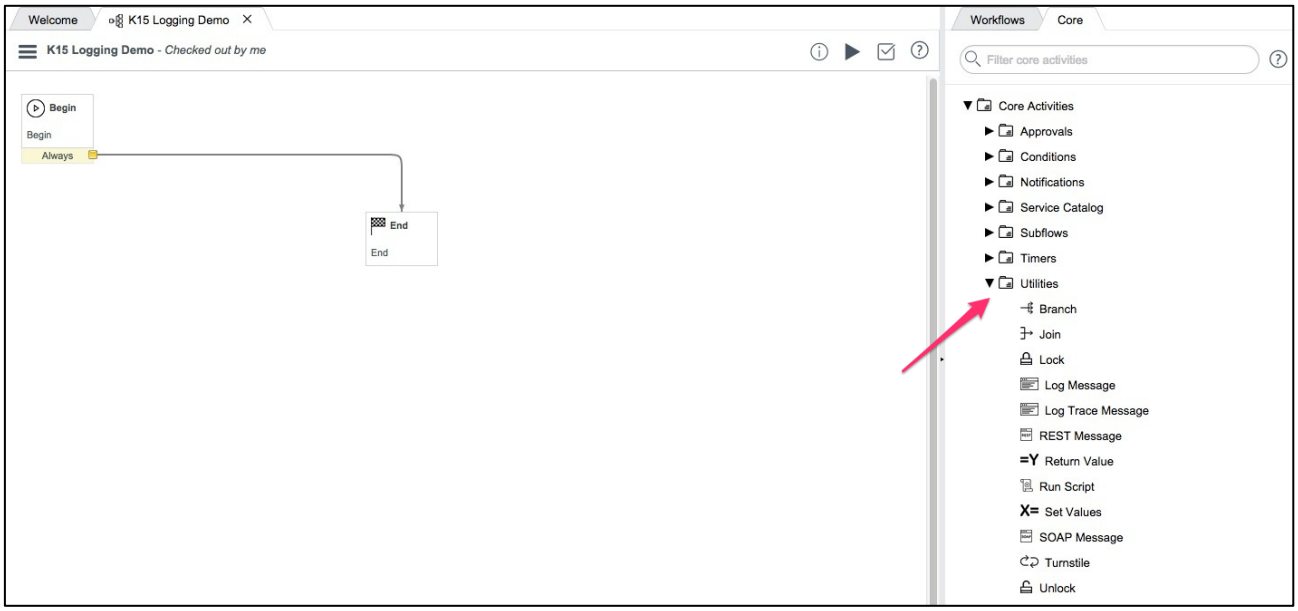
Add a Log Message Activity

The first exercise demonstrates the default logging behavior in the workflow.

1. Return to the Workflow Editor by re-selecting the ServiceNow tab.
2. Click **Plus (+)** icon on the workflow canvas header.
3. Fill out the form as follows.

   Name: **K15 Logging Demo**
   Table: **Global**

4. Click the **Submit** button.
5. Click the **Core** Tab.
6. Expand the **Utilities** folder of the Activities Tree.



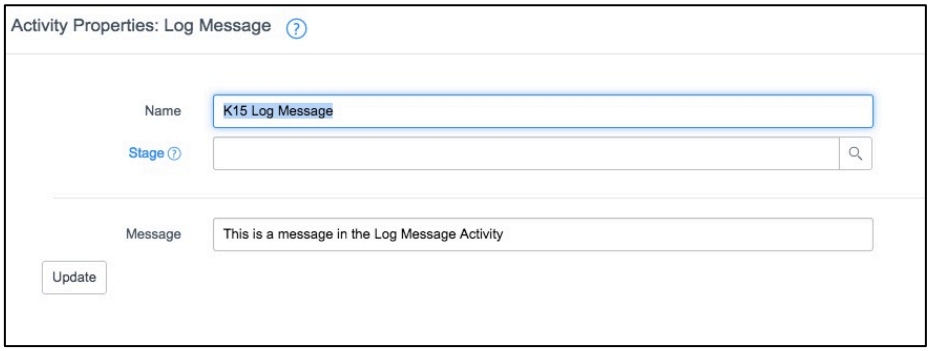
7. Find the **Log Message** Activity in the **Utilities** folder.
8. Hold the mouse down and drag the **Activity** onto the canvas.
9. Hover the **Activity** over the transition line until the line turns **blue**.

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10. Release the mouse. The **New Activity** form displays.

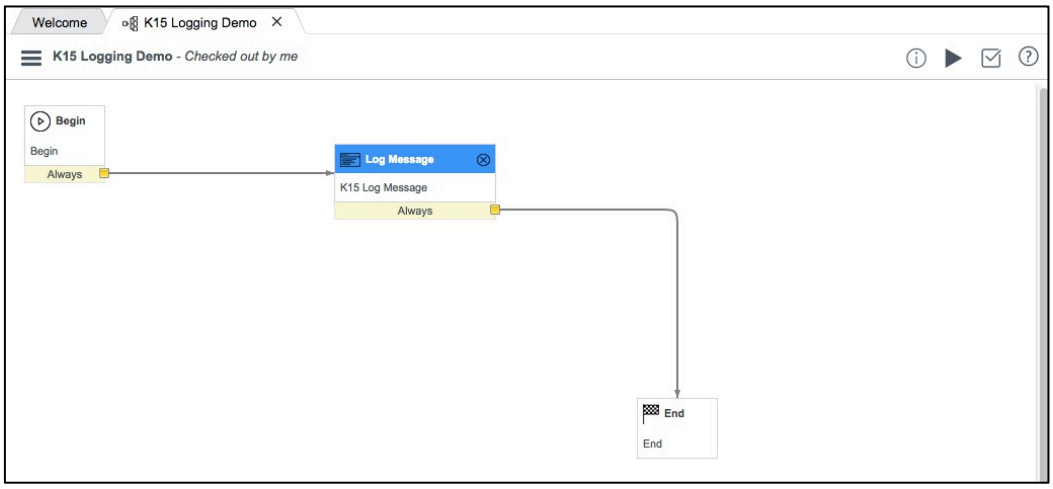
11. Fill out the form as follows.

    Name: **K15 Log Message**
    Message: **This is a message in the Log Message Activity**



12. Click the **Submit** button.

    The workflow should look like the example.



13. Find the **Log Trace Message** Activity in the **Utilities** folder.

14. Hold the mouse down and drag the **Activity** onto the canvas.

15. Hover the **activity** over the transition line between **Log Message** and **End** until the line turns **blue**.

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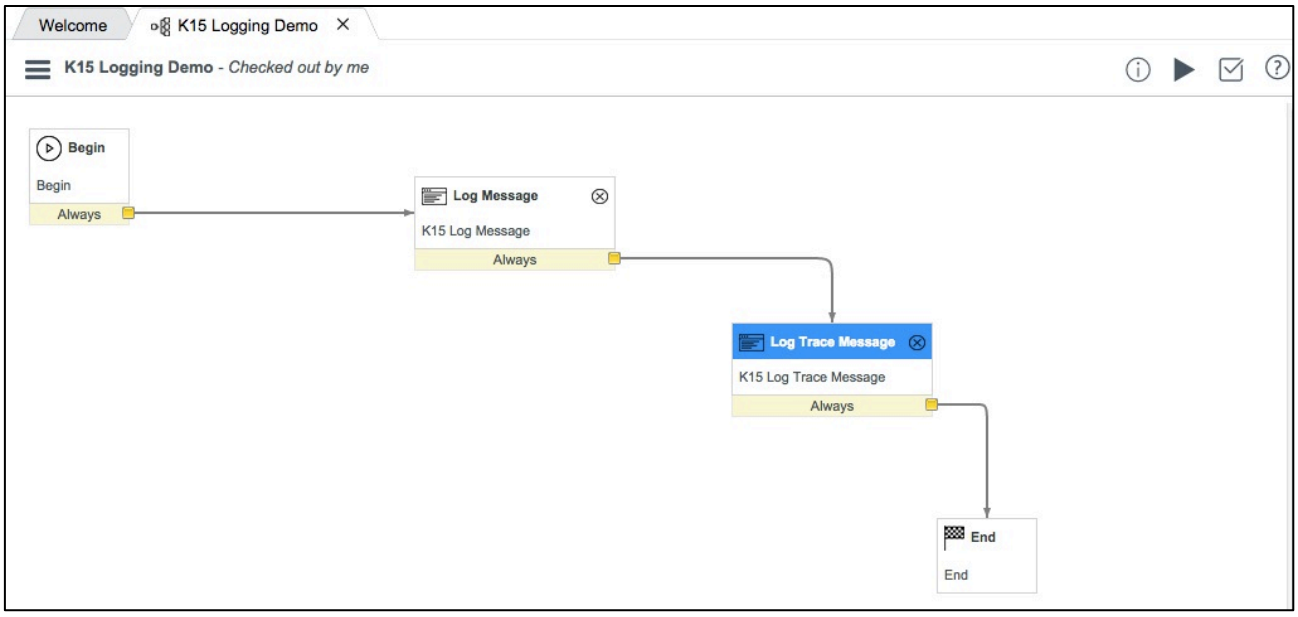
16. Release the mouse.

17. Fill out the form as follows.

    Name: **K15 Log Trace Message**

18. Click **Submit**.

    The workflow should look like the example:



19. Find the **Run Script Activity** in the **Utilities** folder.

20. Hold the mouse down and drag the **Activity** onto the canvas.

21. Hover the **activity** over the transition line between the **Log Trace Message** and **End** Activities until the line turns **blue**.

22. Release the mouse.

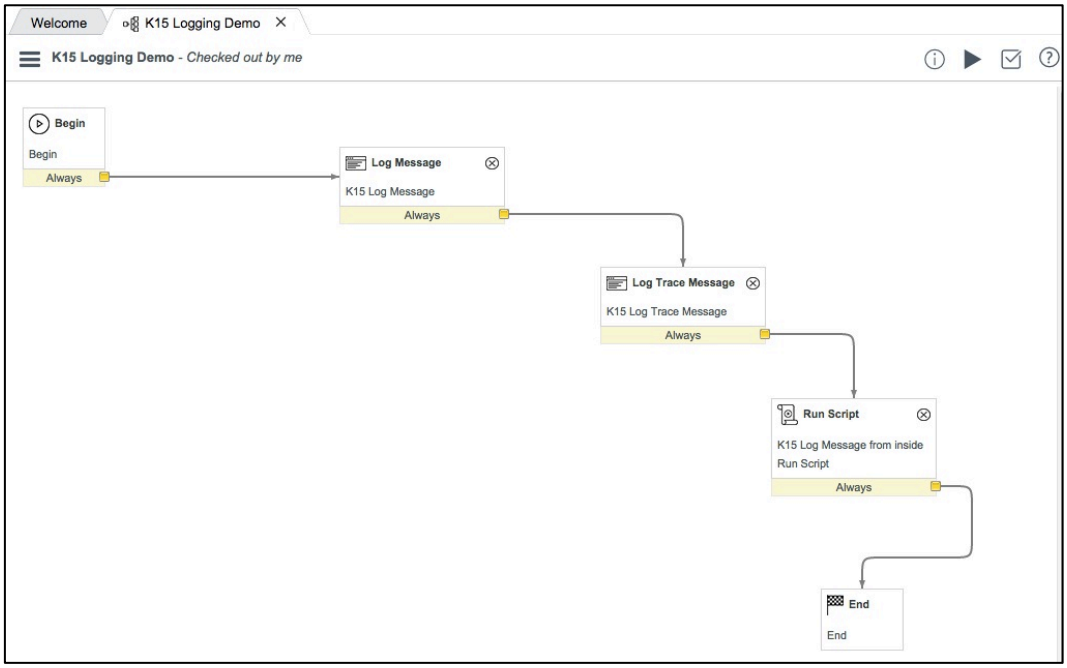
    Fill out the form as follows.
    Name: **K15 Log Message from inside Run Script**
    Script:

```
workflow.debug('Logging DEBUG from inside a script');
workflow.info('Logging INFO from inside a script');
```

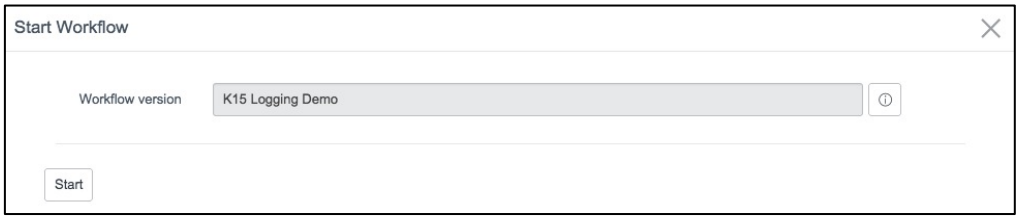
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23. Click the **Submit** button.

The workflow should look like the example:

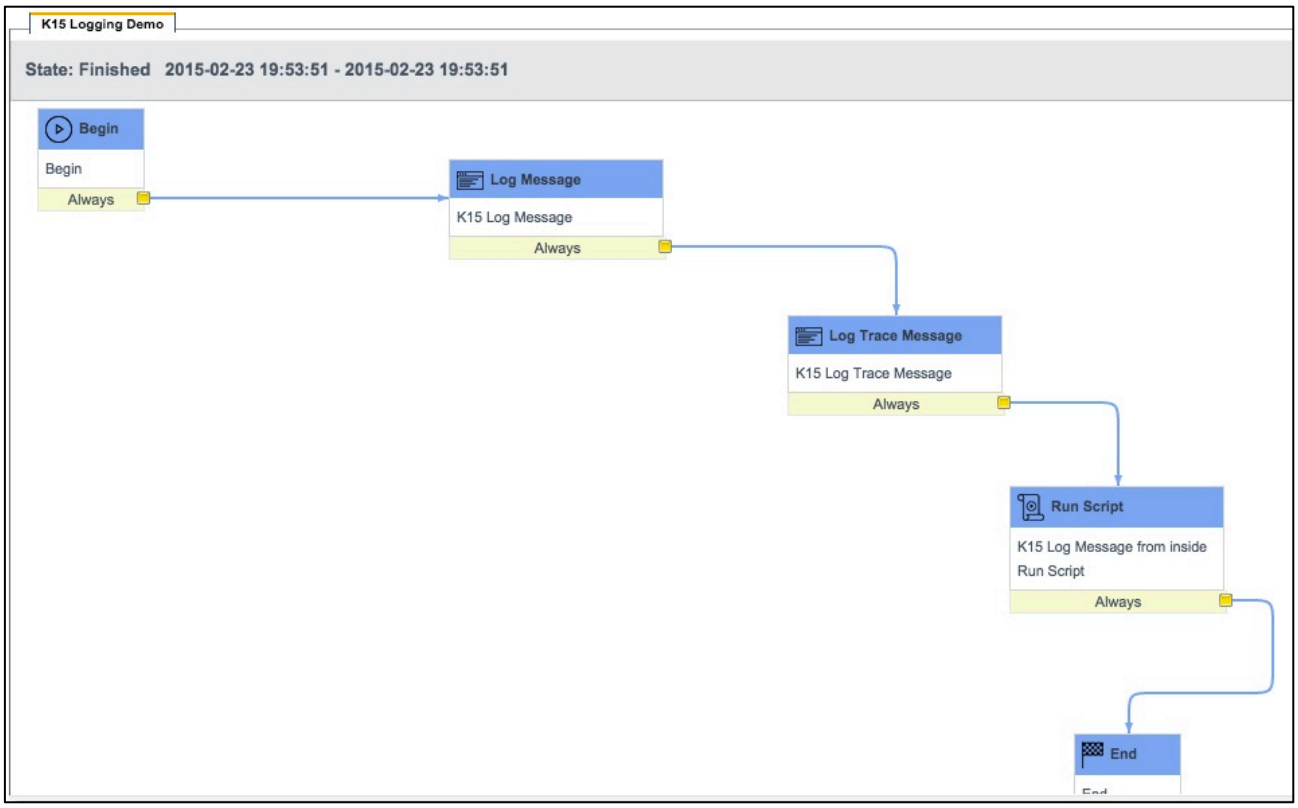


24. Click the **Play** button in the header of the canvas.



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25. Click the **Start** button.

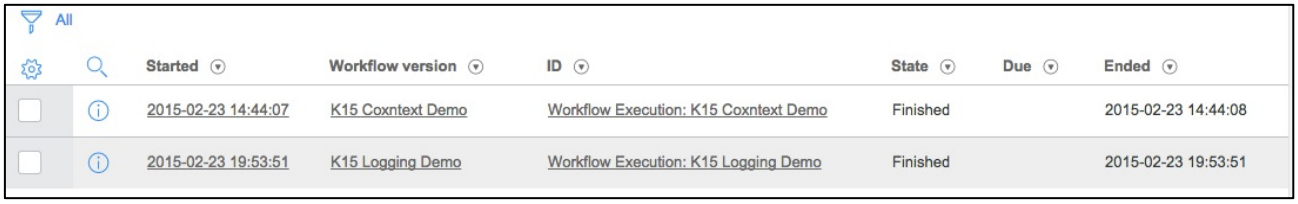


Question: What does the blue coloring of the activities tell us?

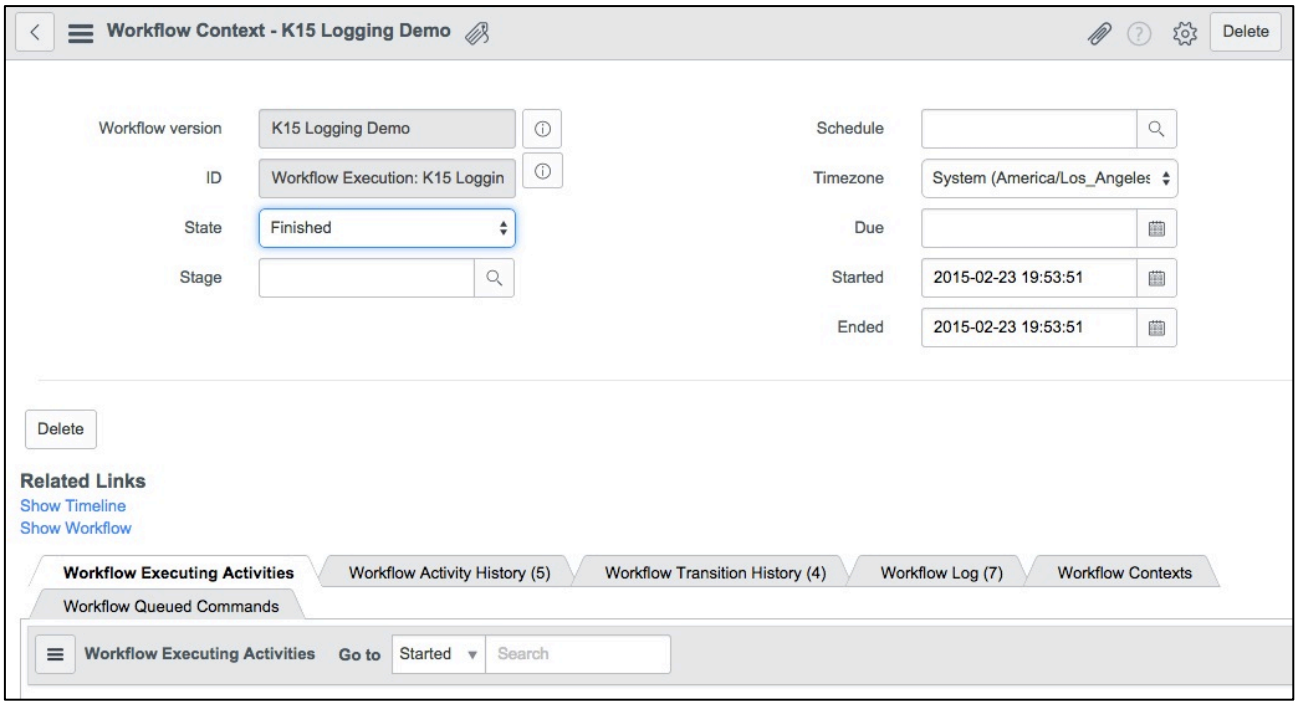
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Review Logging Output

1. Return to the main ServiceNow tab.
2. In the **Applications Menu** select the **All Contexts** module in the **Workflow**.

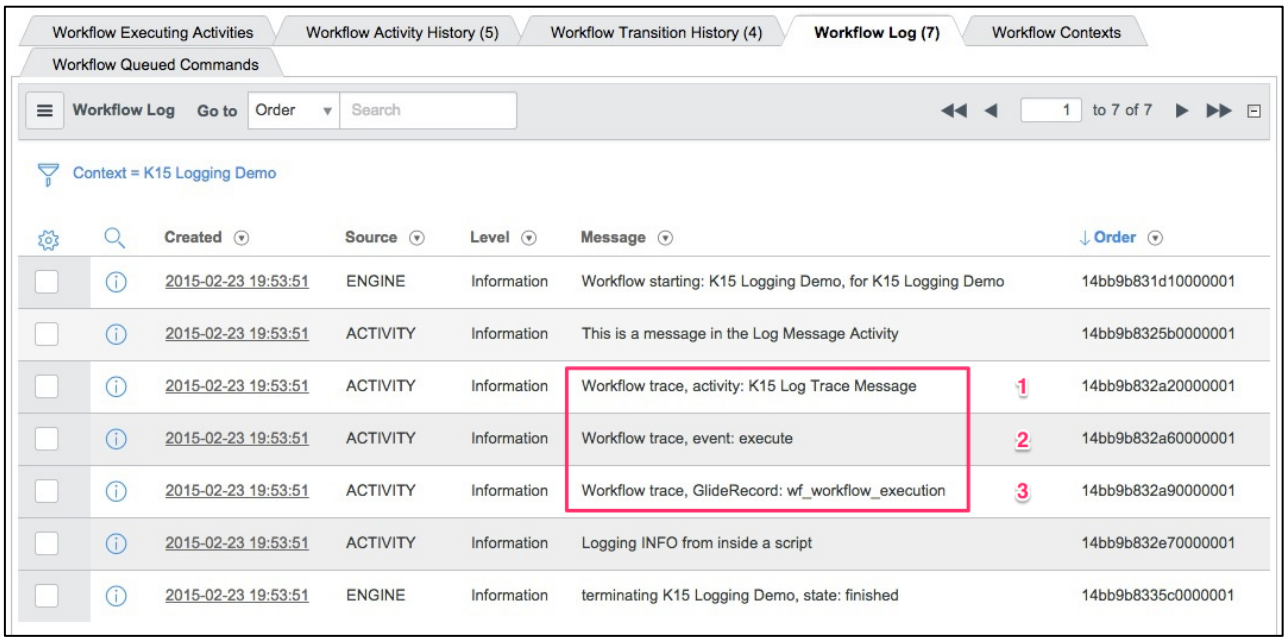


3. Select the **Workflow Execution**: **K15 Logging Demo** context.



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4. Select the **Workflow Log** tab.



Notice the **Source** column.

- **ENGINE** is a message that comes from within the Workflow Engine.
- **ACTIVITY** is a message that comes from the JavaScript within a Workflow Activity.

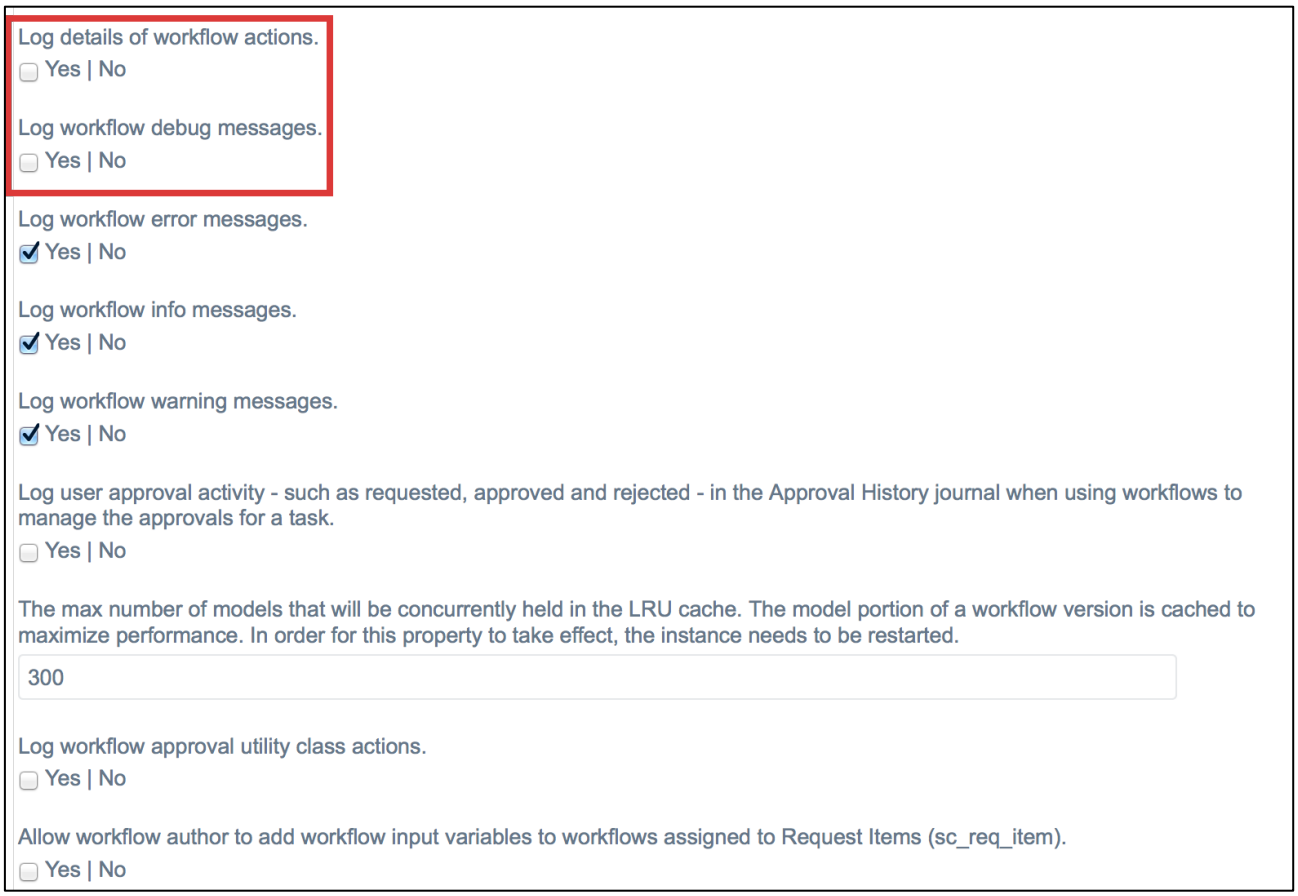
Notice the Messages.

(1) The first **ACTIVITY** message is the output of the **Log Message Activity**.
(2) The next three messages are the output of the **Trace Message Activity**. The **Trace Message Activity** logs the name assigned to the **Activity**, the event that the workflow is transitioning on, and the ID of the **Workflow Context**.
(3) The final **ACTIVITY** message is the **INFO** message written in the **Script** field of the **Run Script** activity.

Question: What message is missing from this Log?
The level of verbosity in the Workflow Log is configurable by properties.

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5. Navigate to **Workflow > Properties**.



6. Check the property **Log details of workflow actions**. This property sets the level of log messaging.

7. Check **Log workflow debug messages**. It sets the level of log messaging while debugging is activated.

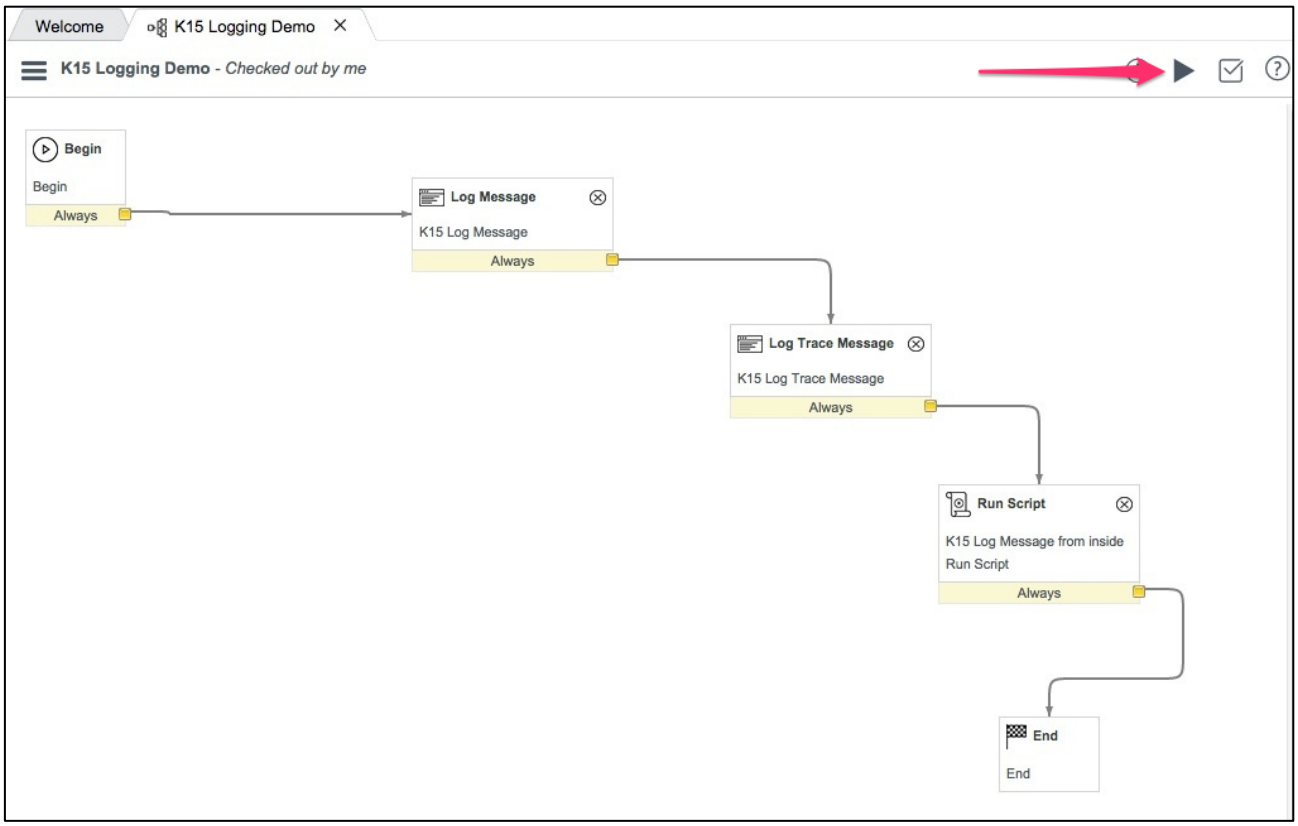
8. Click **Save**.

9. Return to the **Workflow Editor** and close the tab.

10. **Open** the **K15 Logging Demo** workflow. Note that the workflow is Checked Out.

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11. Re-execute the workflow using the **Play** button.



12. Return to the main ServiceNow tab.

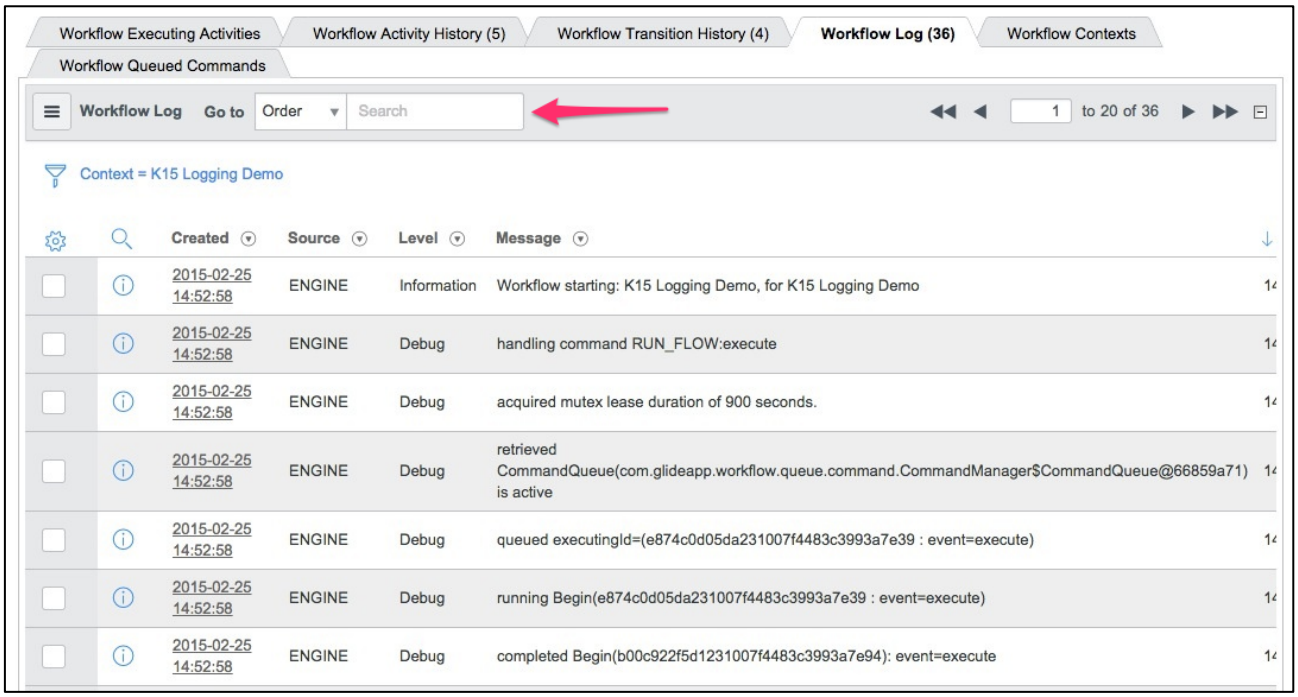
13. Navigate to **Workflow > All Contexts**.

14. Find and select the most recently run **K15 Logging Demo** workflow.

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15. Select the **Workflow Log** tab.

The list should look like the example.



Note: The Actual number of Workflow Log messages will vary.

Notice

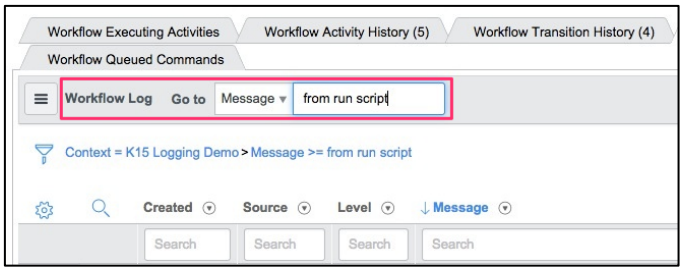
- The dramatic increase in Workflow Log entries.
- The mix of Debug and Information messages.
- How much information is coming from the ENGINE!

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Search the List for Run Script Logging

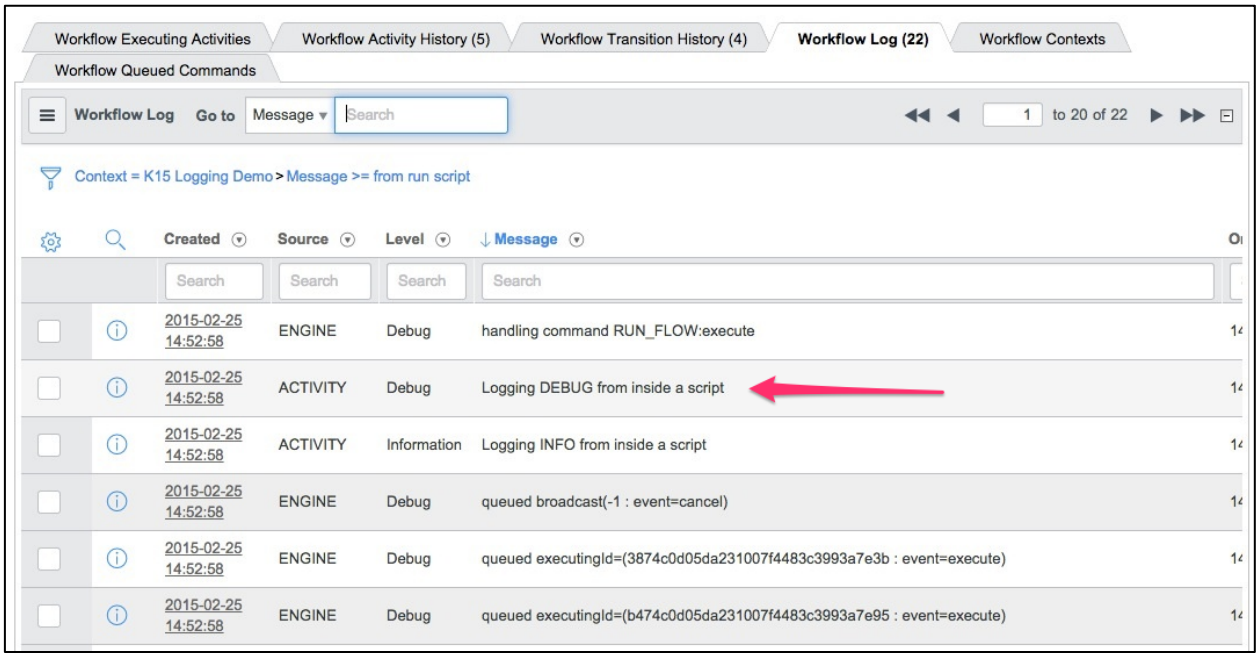
Do these next steps using the List filter.

1. Select: Go to **Message**.
2. Type: **from Run Script.**



3. Click the **Search** icon (magnifying glass).

   The list should look like the example.



   Notice the previously missing Debug message from the Run Script Activity is now in the Workflow Log.

   Note: The Workflow Logging Properties apply to all running Contexts. Use them only when needed for debugging or testing to optimize performance on your instance.

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Summary

The Workflow Engine provides configurable logging options using the Workflow Properties.

Log messages indicate their source of the message. A Message log entry comes from either the ENGINE or from within an ACTIVITY.

Log entries can be made into the Context Workflow Log using the Log Message Activity, the Log Trace Activity and directly through JavaScript.

As the Workflow logging gets more verbose, the list filter is quick way to locate messages.

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Lab Goal

- Understand how to specify the conditions under which a workflow will run
- Understand how to run a workflow from a Glide Record
- Learn how to copy a Workflow

Lab 5
Workflows
in
Applications

Workflows and ServiceNow Applications

The **Workflow Engine** is part of the **Glide Script Engine**. Because of this, a workflow can be configured to run as part of a Glide transaction. Glide transactions in the ServiceNow Platform are associated with database tables. The Workflow Engine evaluates workflows that are associated with the table of a Glide transaction. If a Glide Record meets the conditions of a workflow and the user has the correct permissions, the workflow will run.

The Workflow Engine on the insert of a Glide Record typically evaluates workflows and if conditions are met, a **Workflow Context** is created. The workflow will "run to rest" or "run to finish". If the workflow does rest, it is waiting for an event to come, typically from the Glide Record. The most common event on a Glide Record is an update from the form.

Here are some event examples:

- A change of state from In Progress to Closed
- The addition of Comments or Work Notes
- Reassignment of a user or group

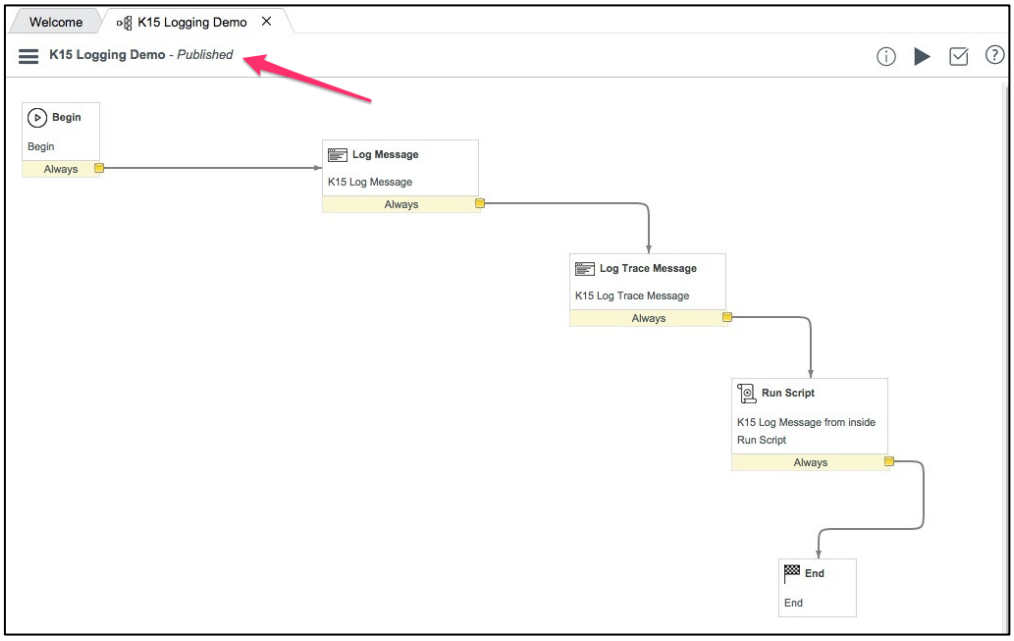
Once the event is fired, the Workflow Engine evaluates the currently waiting Activities to see if the incoming update event is one that is relevant to the work of the Activity.

Question: Where is the atomic work of a Workflow Activity in a Workflow defined?

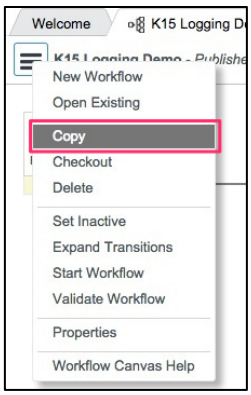
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1. Navigate to the **Workflow Editor**.
2. If the **Workflow Context** pane is still open, close it.
3. Select the **Workflow Actions Menu > Publish** icon.

   The workflow should look like the example.



4. Navigate to **Workflow Actions Menu > Copy**.

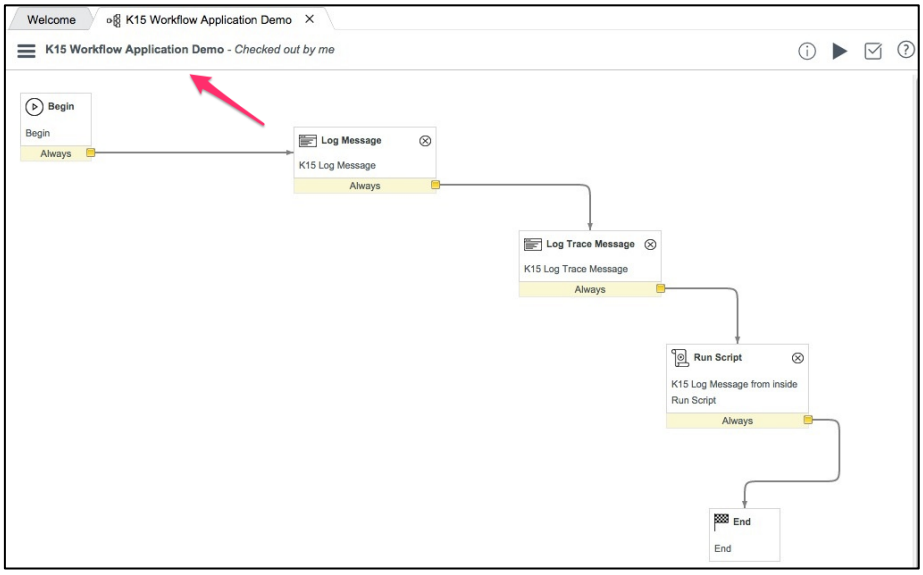


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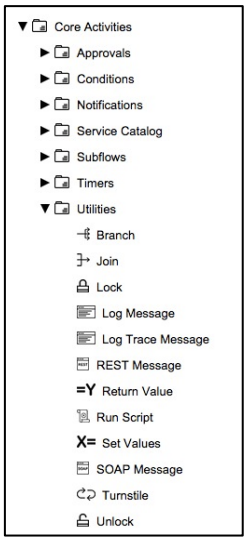
5. Fill out the form as follows:

   Workflow Name: **K15 Workflow Application Demo.**

6. Click **OK**.



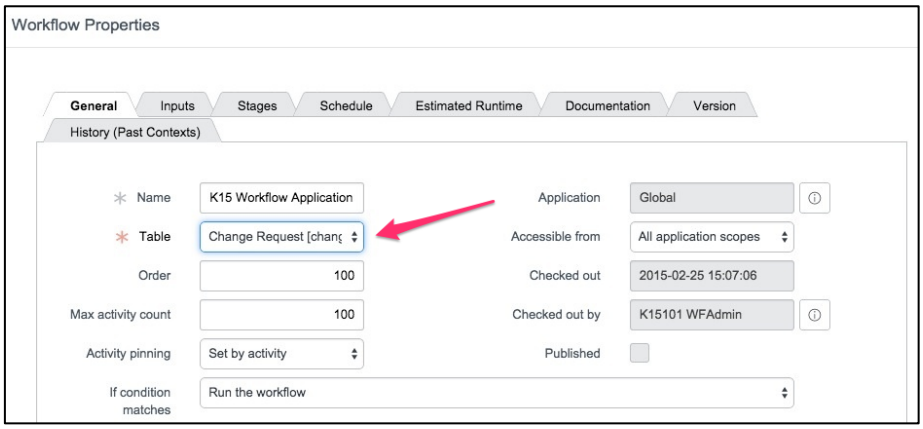
Notice the contents of the Activity Tree in the Workflow Editor.



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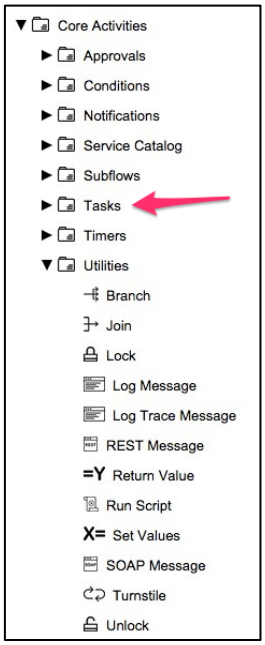
7. Navigate to **Workflow Actions Menu > Properties**.

   Change the Table to **Change Request [change_request].**



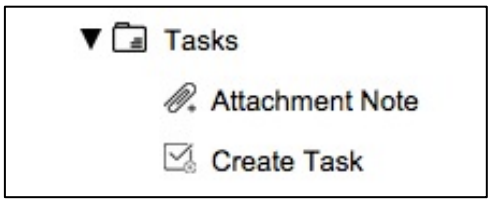
8. Click **Update**.

9. The Activities Tree should include a new Category folder:



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10. Expand the **Tasks Category** folder.

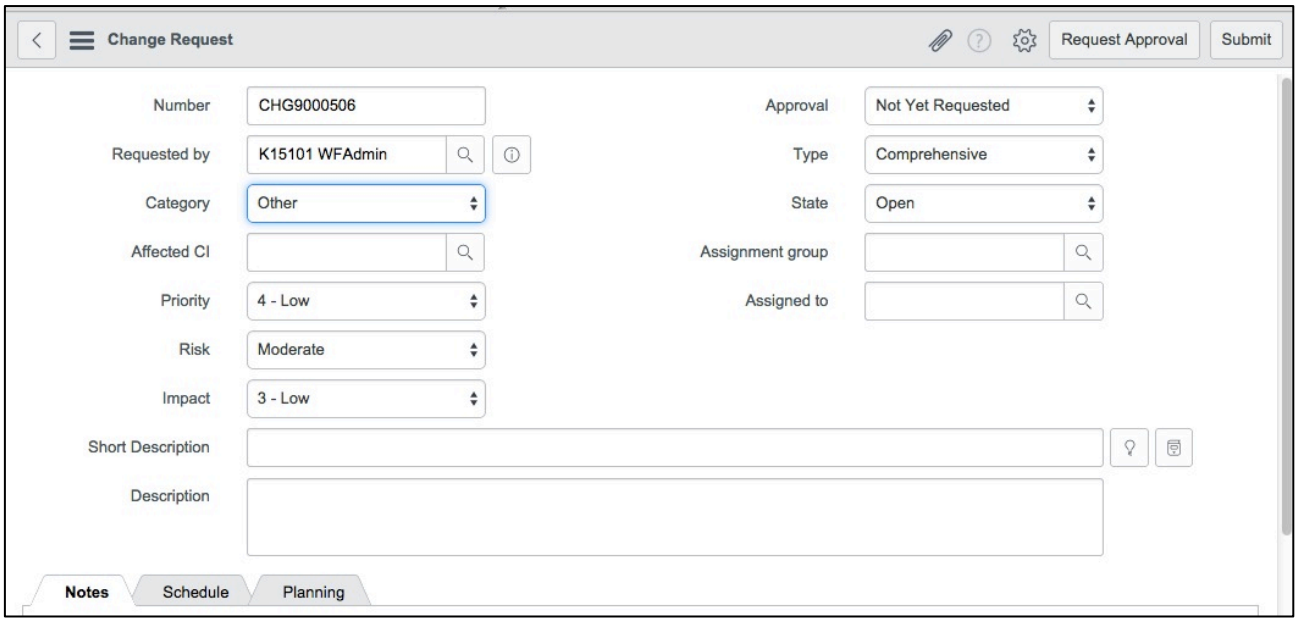


The Workflow Activities that are in the Task Category folder require at the minimum the Task table to complete their work.

Question: What are two ways to make the Workflow K15 Application Demo run right now?

Create Change Record to Create Workflow Context

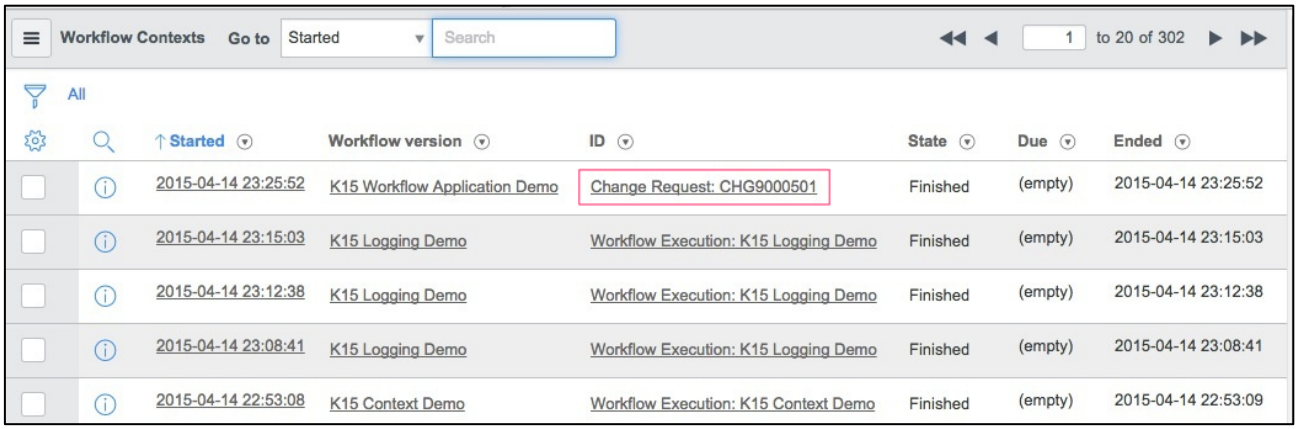
1. Select the main tab of the ServiceNow Instance.
2. Type **change** in the Type Filter text field.
3. Navigate to **Change > Create New.**



4. Click **Submit**.

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5. Navigate to **Workflow > All Contexts**.

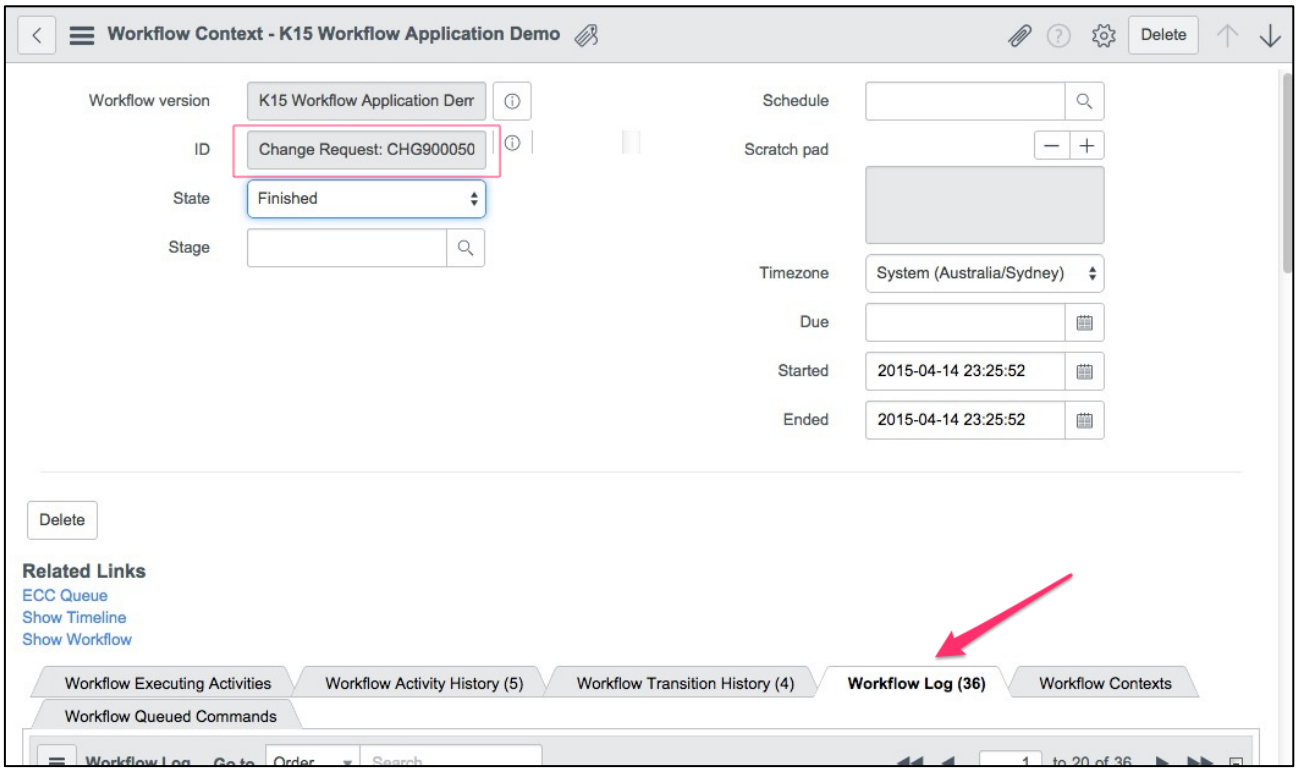


Notice that, with the workflow being associated with a Glide Record, the ID of the workflow now reflects the Change Request association in the context list.

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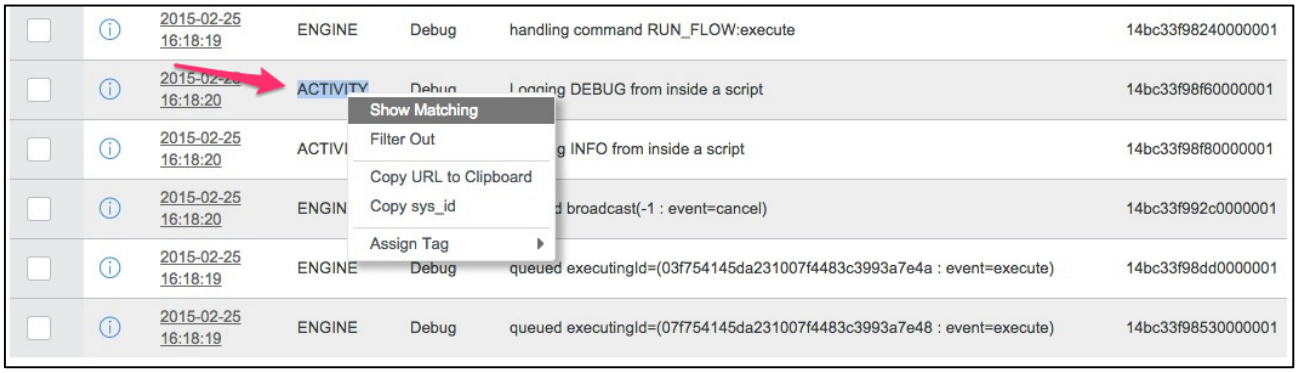
6. In the **Started** column, select the context's date and timestamp value of our test workflow.

   Note: In ServiceNow, to select a record in a list, always click on the value in the first column.



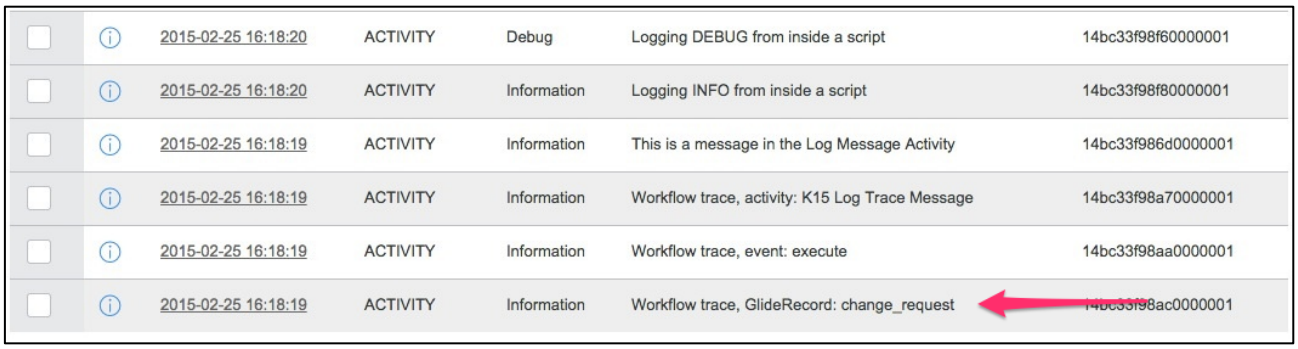
   The workflow association with the Glide Record also is shown in the ID of the workflow. You can see this association in the form.

7. Select the **Workflow Log** Related List**.**



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8. Right click on an **ACTIVITY** source and select **Show Matching**.



☐	ⓘ	2015-02-25 16:18:20	ACTIVITY	Debug	Logging DEBUG from inside a script	14bc33f98f60000001
☐	ⓘ	2015-02-25 16:18:20	ACTIVITY	Information	Logging INFO from inside a script	14bc33f98f80000001
☐	ⓘ	2015-02-25 16:18:19	ACTIVITY	Information	This is a message in the Log Message Activity	14bc33f986d0000001
☐	ⓘ	2015-02-25 16:18:19	ACTIVITY	Information	Workflow trace, activity: K15 Log Trace Message	14bc33f98a70000001
☐	ⓘ	2015-02-25 16:18:19	ACTIVITY	Information	Workflow trace, event: execute	14bc33f98aa0000001
☐	ⓘ	2015-02-25 16:18:19	ACTIVITY	Information	Workflow trace, GlideRecord: change_request	14bc33f98ac0000001

The output from the **Log Trace Message** activity identifies the table the Glide Record is associated with.

Question: How do you control the verbosity of the Workflow output?

9. Return to the **Workflow Editor**.

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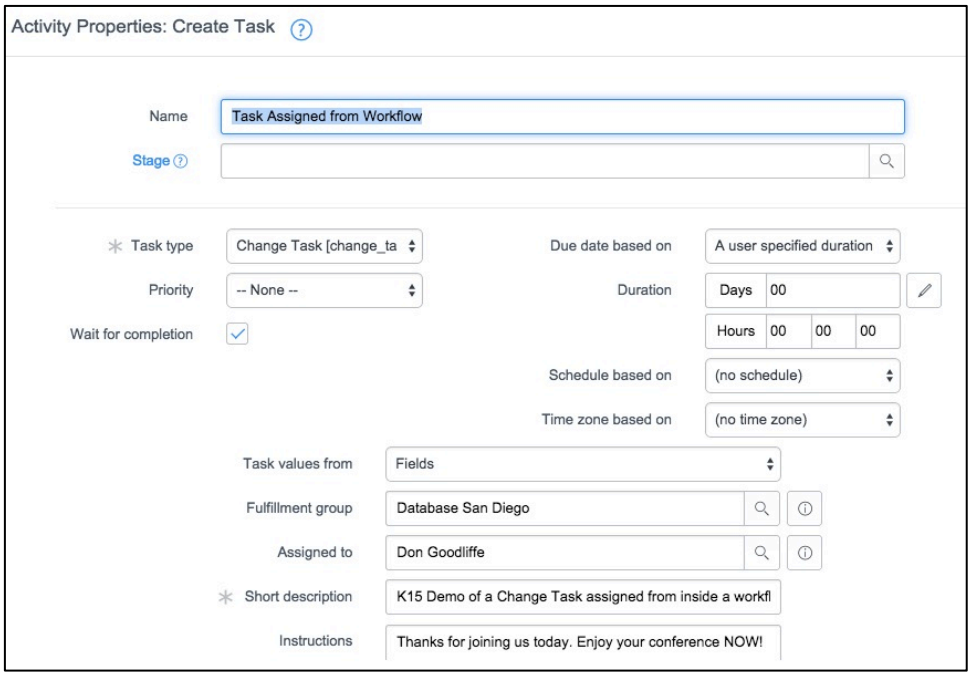
Add Create Task Activity

1. Find the **Create Task Activity** in the Tasks Category folder.

2. Drag the **Create Task Activity** onto the canvas hovering between **Log Trace Message** and **Run Script** until the line turns **blue**.

3. Enter the following information into the fields.

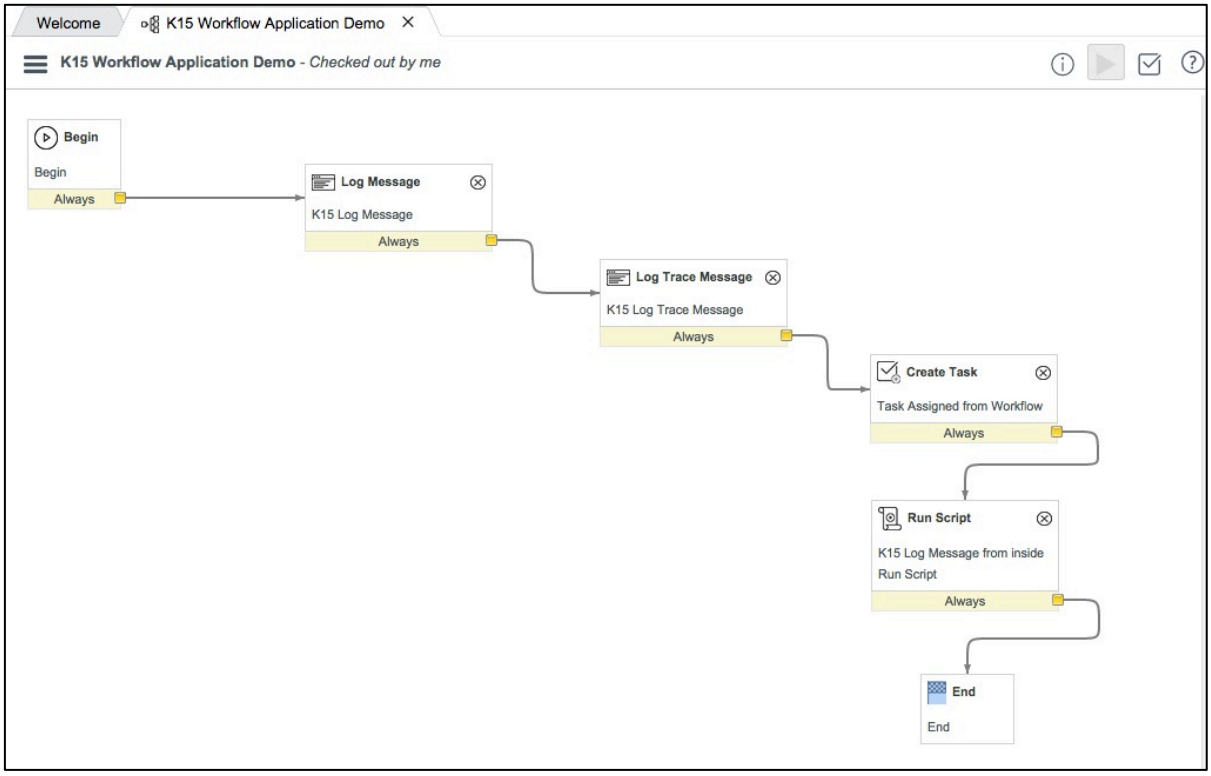
   Name: **Task Assigned from Workflow**
   Task Type: **Change Task**
   Priority: **3 – Moderate**
   Fulfillment group: **Database San Diego**
   Assigned to: **Don Goodliffe**
   Short Description: **K15 Demo of a Change Task assigned from inside a workflow.**
   Instructions: **Thanks for joining us today. Enjoy your conference NOW!**



4. Click **Submit**.

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Question: The Workflow Engine will "run to rest" which means it will follow the transitions until it either ends or until a Workflow Activity causes it to wait. So far, all the demonstration workflows have run until they were finished. Looking at this Workflow Activity, will the Workflow "run to rest"?



Note: You may need to adjust the layout of the Workflow Activities.

Add Log Trace Activity

1. Find the **Log Trace Message** Activity in the Utilities Category folder.

2. Drag the **Log Trace Message** Activity onto the canvas hovering between **Create Task** and **Run Script** until the line turns **blue**.

   Note: You may need to adjust the layout of the Workflow Activities.

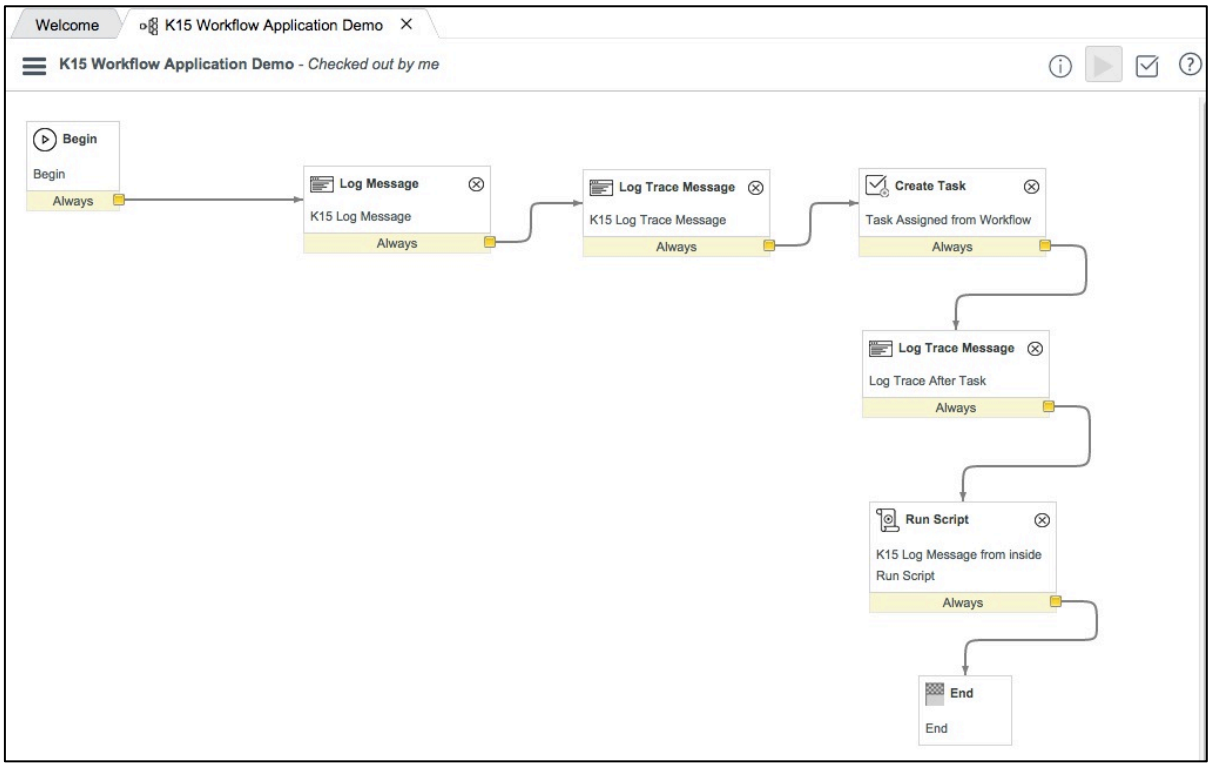
3. Fill in the form as follows:

   Name: **Log Trace After Task**.

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4. Click **Submit**.

   The workflow should look like the example:



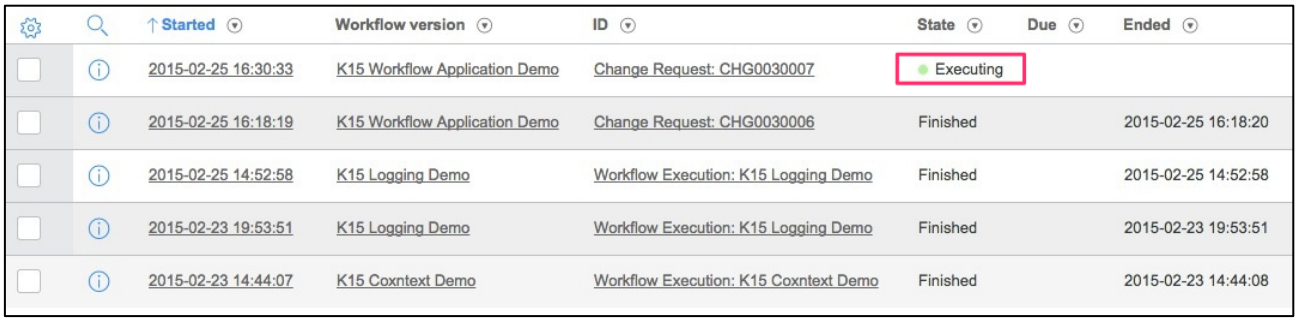
5. Return to the main ServiceNow tab.

6. Navigate to **Change > Create New.**

7. Click **Submit**. A new Change record is created. Note the Change record number.

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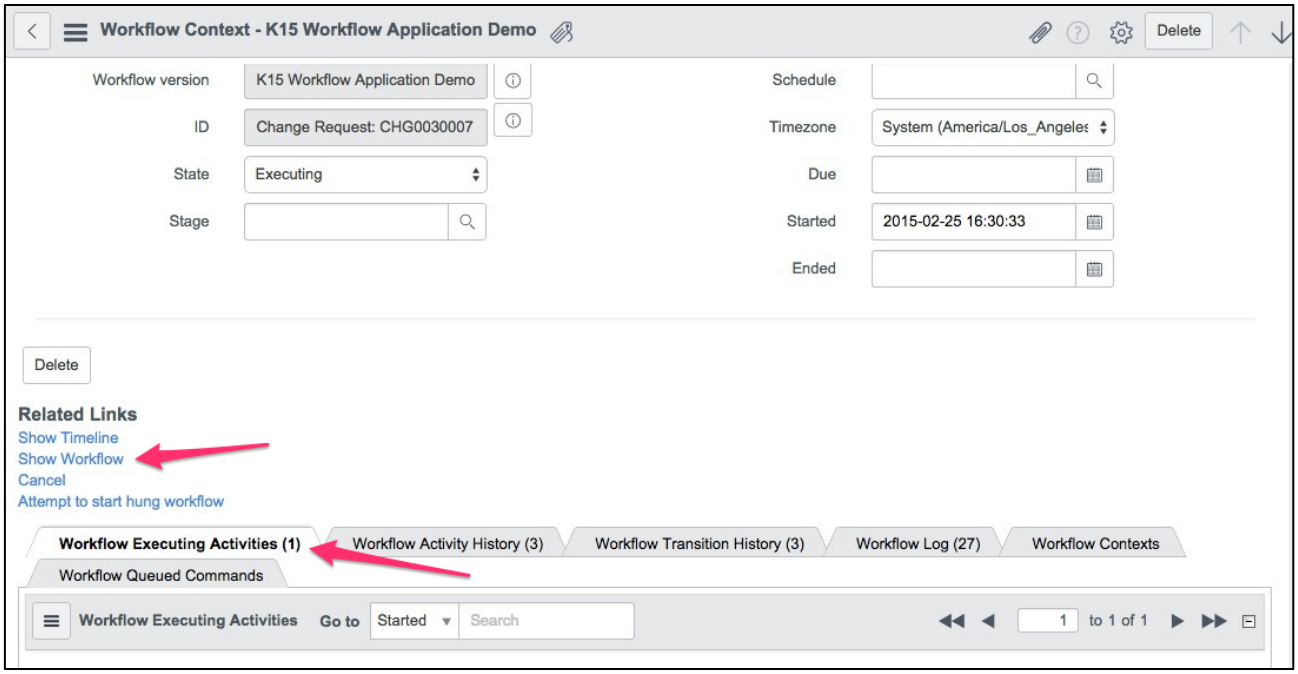
8. Navigate to **Workflow > All Contexts.**



Started	Workflow version	ID	State	Due	Ended
2015-02-25 16:30:33	K15 Workflow Application Demo	Change Request: CHG0030007	Executing		
2015-02-25 16:18:19	K15 Workflow Application Demo	Change Request: CHG0030006	Finished		2015-02-25 16:18:20
2015-02-25 14:52:58	K15 Logging Demo	Workflow Execution: K15 Logging Demo	Finished		2015-02-25 14:52:58
2015-02-23 19:53:51	K15 Logging Demo	Workflow Execution: K15 Logging Demo	Finished		2015-02-23 19:53:51
2015-02-23 14:44:07	K15 Coxntext Demo	Workflow Execution: K15 Coxntext Demo	Finished		2015-02-23 14:44:08

Notice the State column of the new record is **Executing**. This is a Workflow that has "run to rest". Running workflows that are waiting for an event to nudge them on are in a state of **Executing**.

9. Select the K15 Workflow Application Demo that is **Executing**.



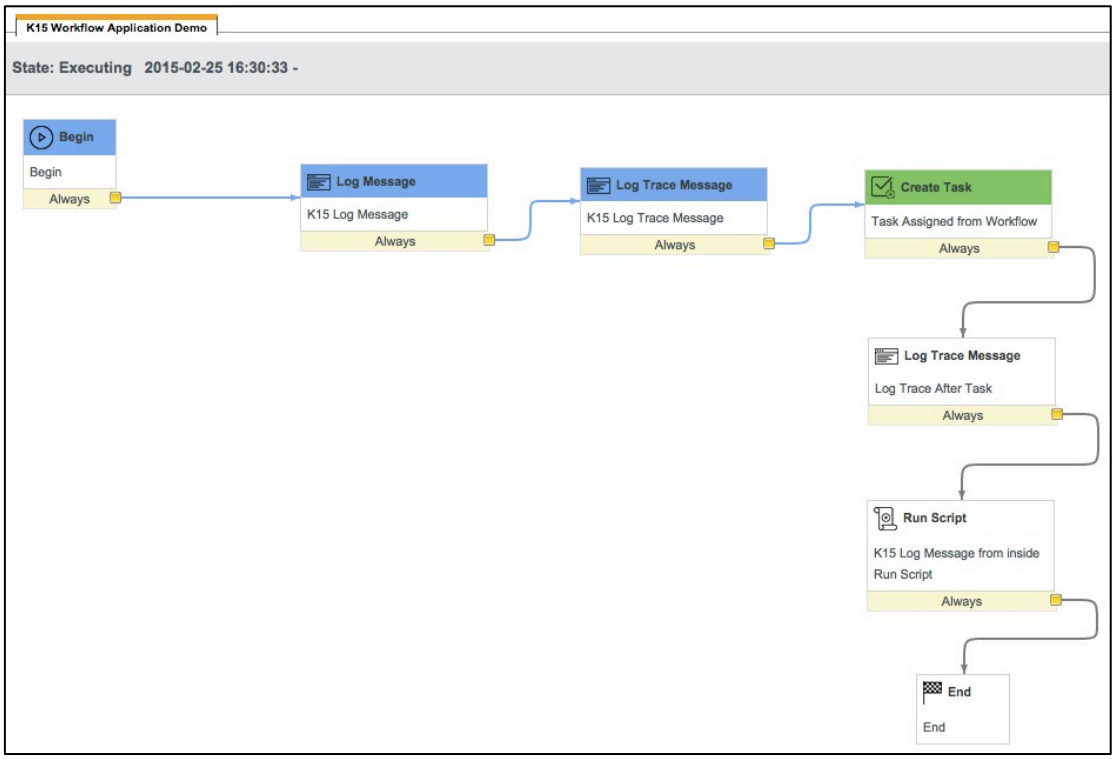
10. Select the **Workflow Executing Activities** Referenced List.

Notice that there is an activity with the state of **Running** in the list**.** Activities with this state are waiting for an event to nudge them to transition to the next Activity.

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11. In the **Related Links**, select **Show Workflow**.

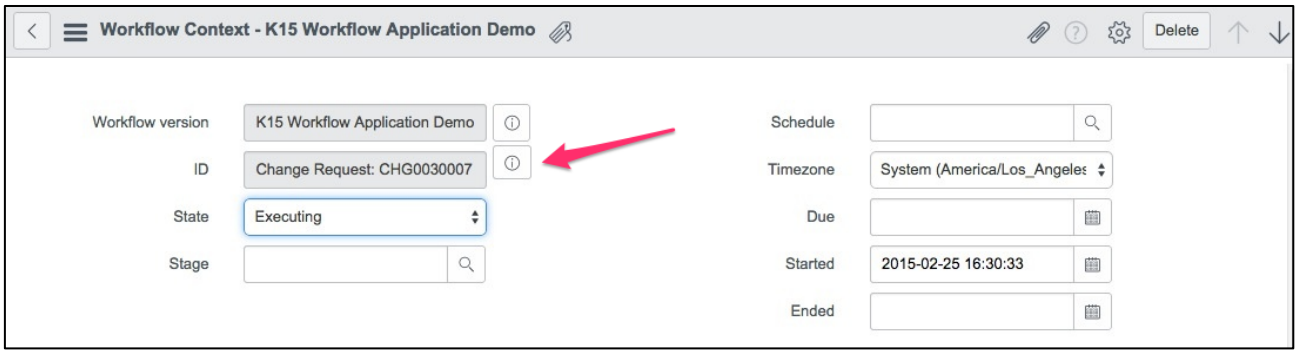
    The Workflow Context Window will open in a separate tab.



    Question: What are two Workflow Activity States that are represented by the colors in the workflow context?

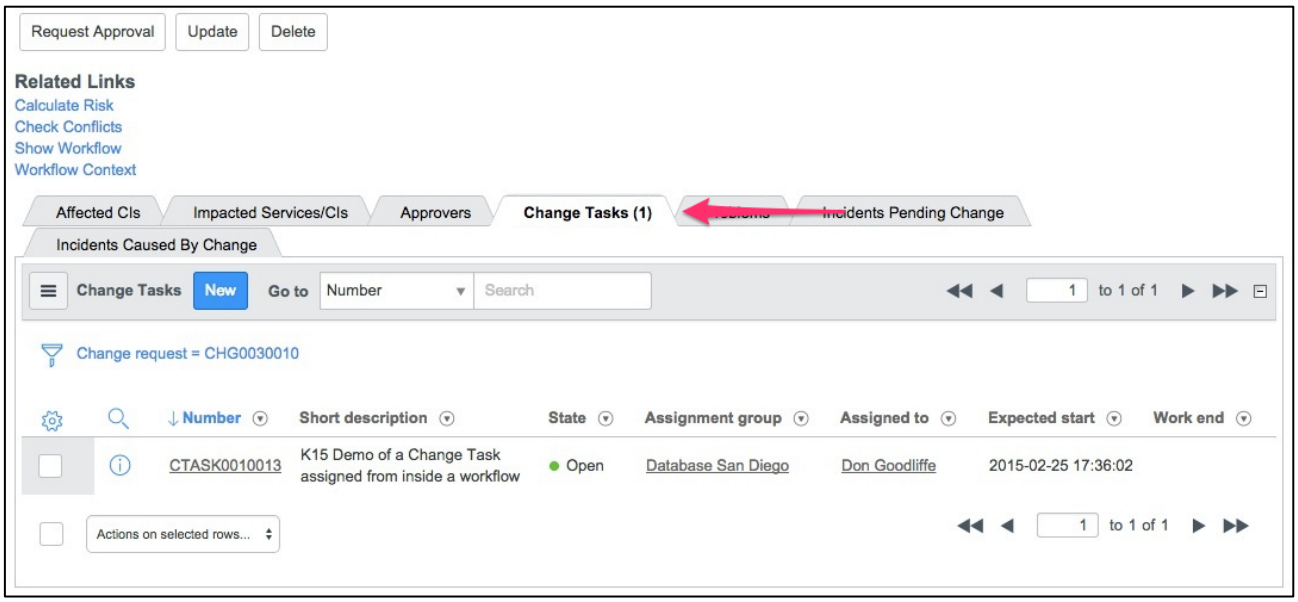
12. Close the Workflow Context tab and return to the ServiceNow tab. The Workflow Context form should be open.

13. Using the **form icon** next to the ID, open the **Change Request** item.

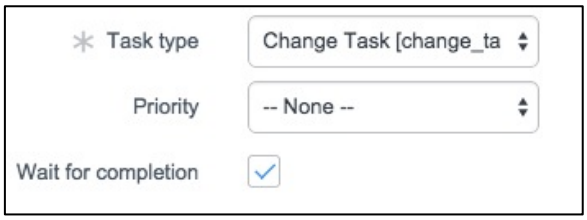


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14. Scroll to the Related Lists and select **Change Tasks**.



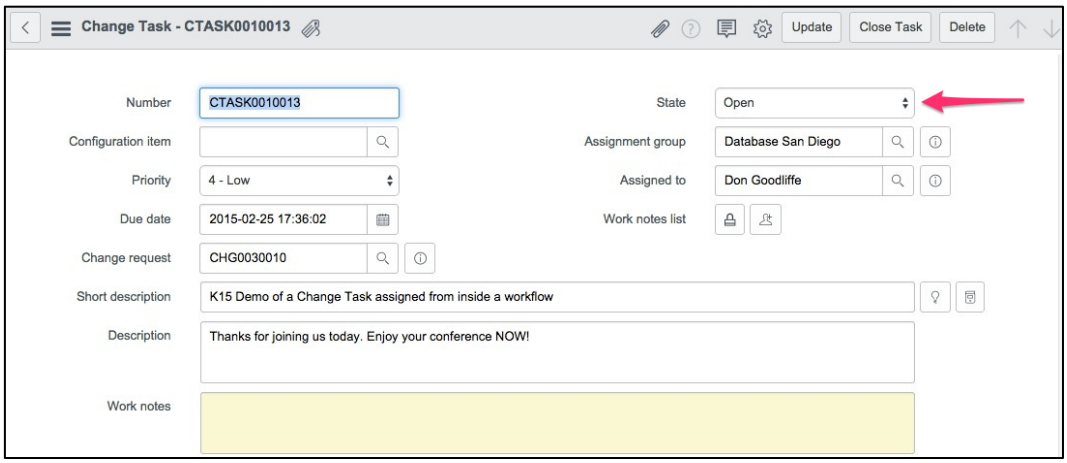
Notice the values that are on the task. Look familiar? The task that is in this list is the task that was inserted by the **Create Task** of the workflow. Recall the check box on the **Create Task** Workflow Activity?



The completion of this task is what the workflow is waiting for.

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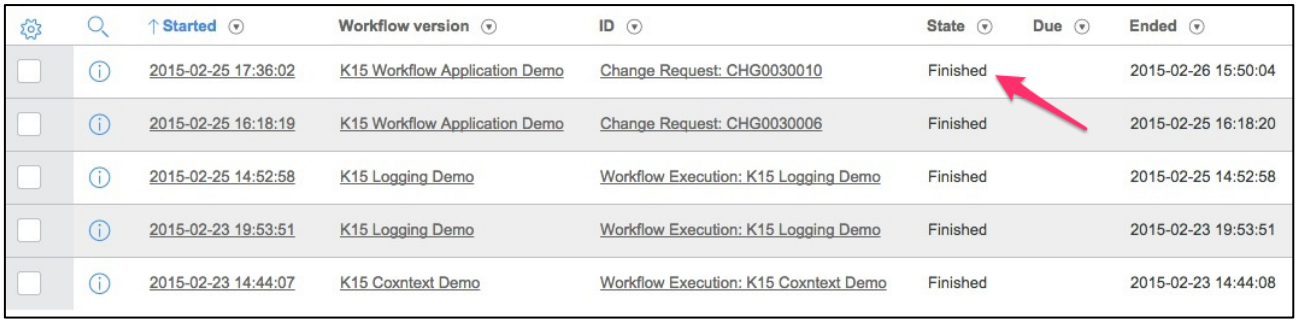
15. In the **Change Tasks** list, open the **CTASK** record.



16. Change the State to **Closed Complete**.

17. Click **Update**.

18. Navigate to **Workflow > All Contexts**.



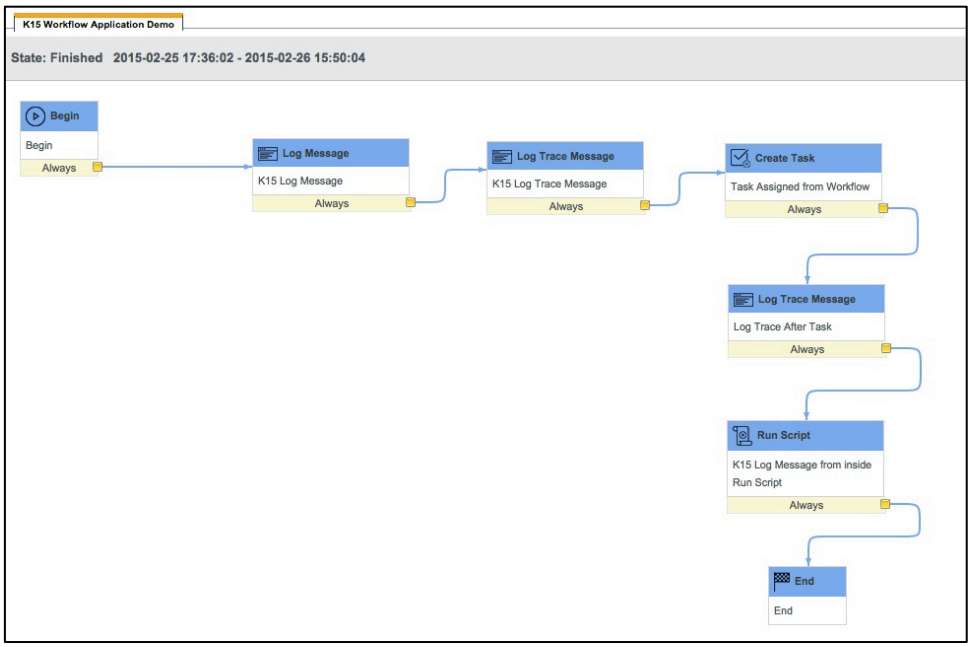
Started	Workflow version	ID	State	Due	Ended
2015-02-25 17:36:02	K15 Workflow Application Demo	Change Request: CHG0030010	Finished		2015-02-26 15:50:04
2015-02-25 16:18:19	K15 Workflow Application Demo	Change Request: CHG0030006	Finished		2015-02-25 16:18:20
2015-02-25 14:52:58	K15 Logging Demo	Workflow Execution: K15 Logging Demo	Finished		2015-02-25 14:52:58
2015-02-23 19:53:51	K15 Logging Demo	Workflow Execution: K15 Logging Demo	Finished		2015-02-23 19:53:51
2015-02-23 14:44:07	K15 Coxntext Demo	Workflow Execution: K15 Coxntext Demo	Finished		2015-02-23 14:44:08

Notice that the workflow is now finished.

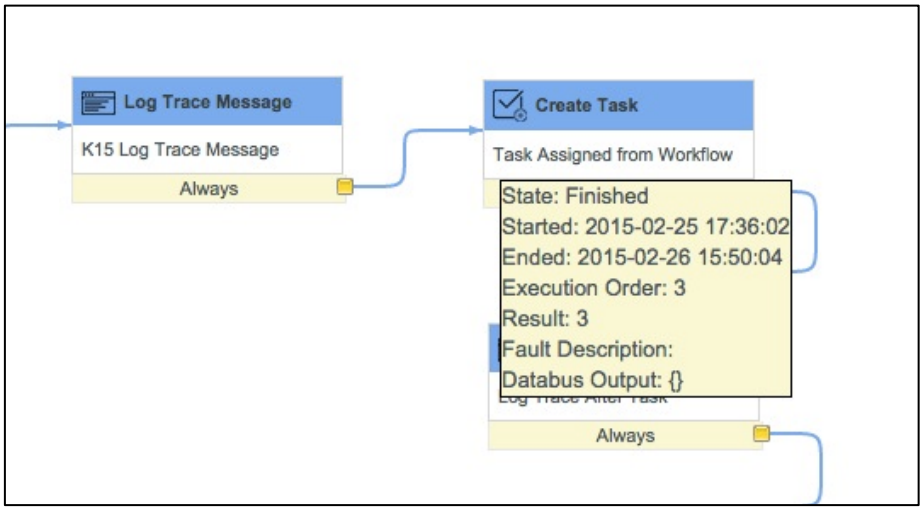
19. Select the **Workflow Context** for the finished Change Request.

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20. Select the **Show Workflow** Related Link.



21. Hover the mouse over the **Create Task.**



Notice that the same status that was available in the Activity History records is also available on the screen with the hover behavior.

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Summary

The Workflow Engine is part of the Glide Engine. Because of that, workflows are invoked on the insert, update, delete or cancel database event. The Workflow Engine examines the table associated with the record and seeks all workflows that are associated with that table. The Workflow Engine creates a context for each workflow that is configured to execute for the given Glide Record.

The Workflow Engine can automate Task creation and wait for the task to be complete before continuing on.

If there is a Glide Record associated with a Workflow Context, the ID of the document is visible in the Workflow Context and is included in some Workflow Log messages.

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