

Getting Started with Workflows

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Getting started with Workflows

Overview

The aim of this guide is to provide you with a general introduction to workflows, ranging from simple workflows through to more complex processes.

There is also context specific help available within the editors within 12d Synergy.

What is a Workflow

Most businesses have processes, at a high level – when a project moves through many gates and phases – or at a day to day level, like a CAD design process.

For example, a CAD design process might go through many steps.

1. The work is assigned
2. The CAD operator begins work
3. The CAD operator requests a review from the designated reviewer
4. The reviewer either signs it off, or rejects it with markups to explain problems

This is essentially a workflow, made up of several steps.

1. Pending Design
2. In Progress
3. Pending Review
4. Rejected
5. Signed Off

Workflows in 12d Synergy

Terminology

In 12d Synergy Workflows, the steps are referred to as **States**.

And there are also some rules that define which **State** you can get to next – these are called **Transitions**.

Each **Transition** can also define what should happen – like whether or not someone should receive an email, whether or not the **Transition** can take place, or if extra data is required.

The ability to perform some action is called an **Activity**.

The ability to set up additional rules is called a **Condition**.

You can use **Data Capture** to prompt users for more information.

An **instance** of a workflow refers to the current state of a workflow when it is applied against a specific entity – for example, a workflow may run over many files, with an instance of the workflow for each one.

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Workflows and Attributes

Workflows are setup as Attributes, which means you can run a workflow against almost anything in the 12d Synergy, including

1. Jobs
2. Folders
3. Files
4. 12d Model Projects
5. Tasks

You must use a **List** type attribute, with one item for each **State** you want in your workflow.

Workflows are General

It is really important to understand that workflows won't, most likely, run against just one Job or just one File. They are going to be reused. It will be important to factor that in when designing your workflow.

You can't run out of attributes or workflows, you can always create another one if you need to.

Setting up a Simple Workflow

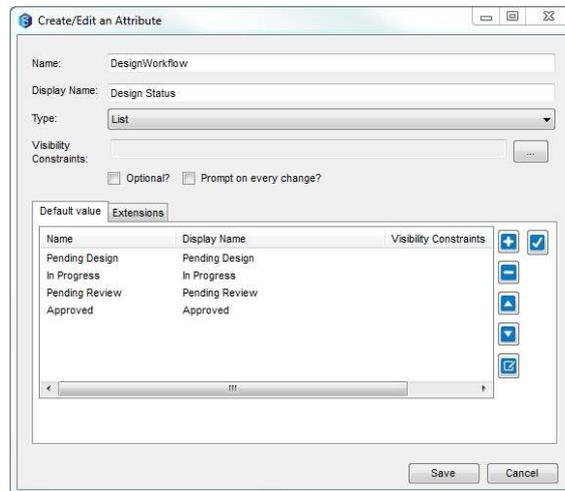
Now that we know a workflow is just a list attribute, it's very easy to set up. It's important to know that things like Activities, Conditions and Data Capture are all optional. It is recommended you get used to workflows before you go too advanced.

In general, while attributes can be re-used, it's best to start a workflow from the editor where you are most likely going to use it.

In this case, we are going to set up a Design workflow, so we will do it as a File Attribute for a Folder.

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Adding a List Attribute



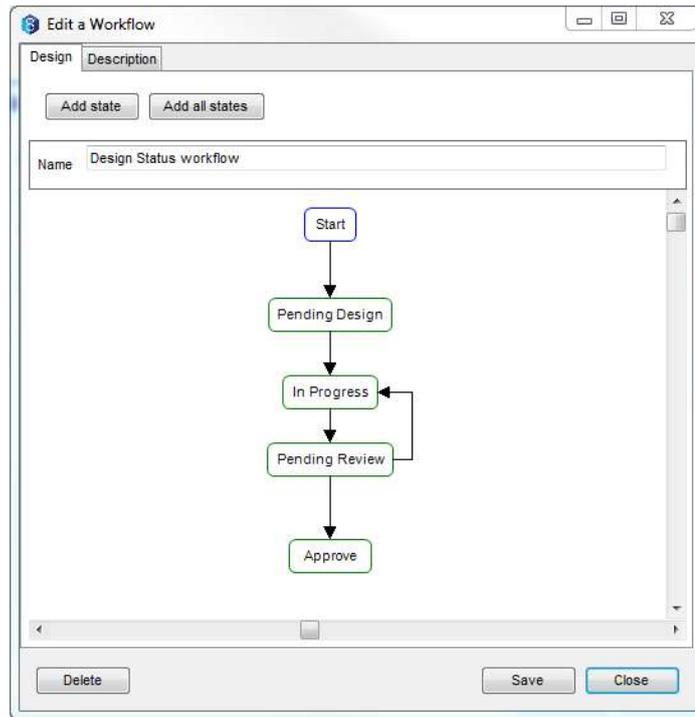
1. Right click and edit a folder
2. Go to Attributes -> File Attributes
3. Add a new attribute of type list
4. Add the following states:
 - a. Pending Design
 - b. In Progress
 - c. Pending Review
 - d. Approved
5. Now save your workflow, and your attribute – you must save it before you can attach a workflow to it.

Creating the Workflow

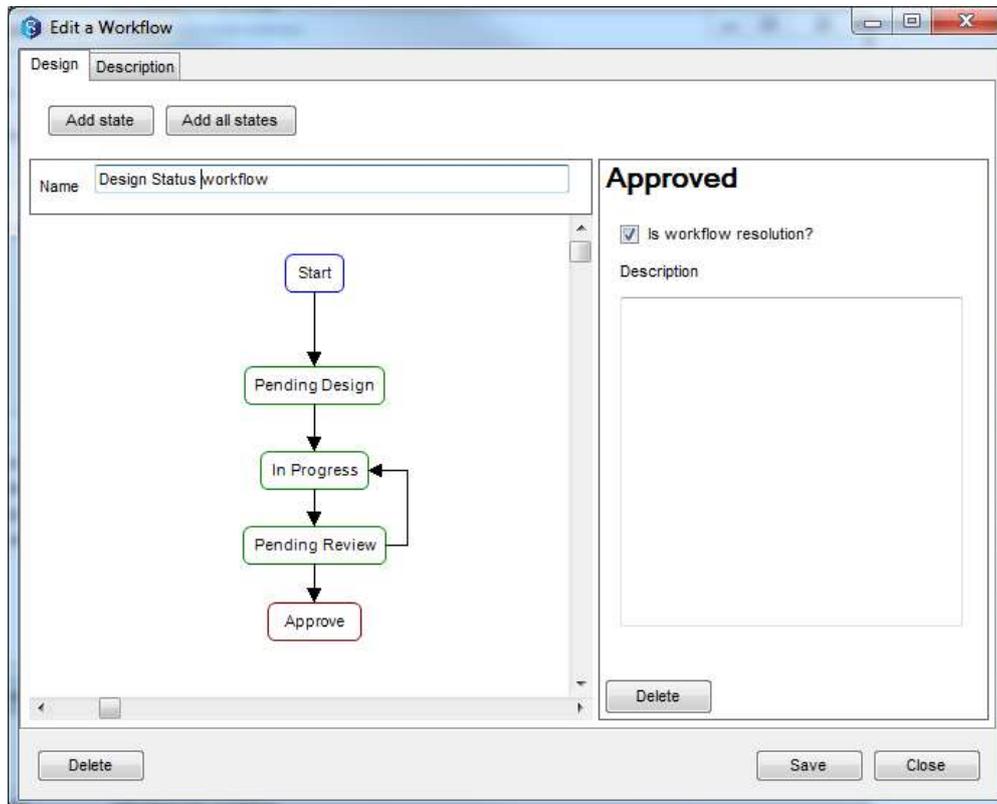
You'll note we have removed the "rejected" state in the last step – when it's rejected, our workflow will go back to "in progress"

1. Edit your attribute once you have saved it
2. You can now click the "workflow" button, which will give you the workflow canvas
3. Click "All States", which add all available states to the canvas
4. Using your mouse, click to link them together so they look like the below image and then click save
These links between states are our workflow **Transitions**.

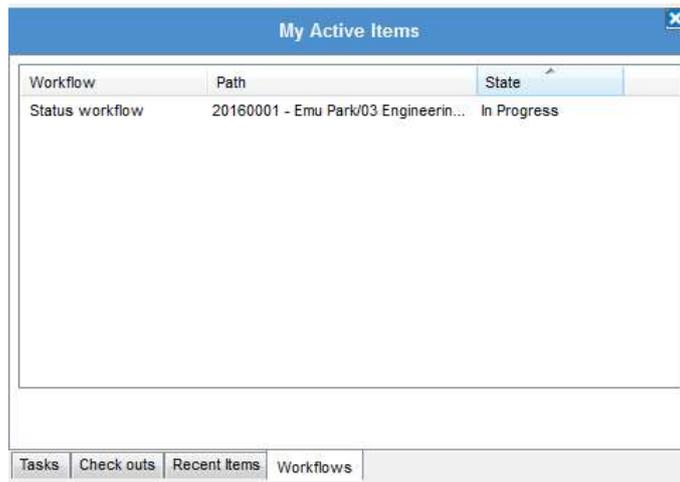
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5. Select the Approve step and mark it as a resolution. This means the step completes the workflow, and it will not show up as active.



Getting started with Workflows



The screenshot shows a window titled "My Active Items" with a table containing one row of data. The table has three columns: "Workflow", "Path", and "State". The row contains the text "Status workflow", "20160001 - Emu Park/03 Engineerin...", and "In Progress". Below the table is a navigation bar with buttons for "Tasks", "Check outs", "Recent Items", and "Workflows".

Workflow	Path	State
Status workflow	20160001 - Emu Park/03 Engineerin...	In Progress

Workflow Gadgets

There are a number of workflow gadgets that can help you keep up to date with where your Jobs are at. Gadgets can be added to the dashboards of your jobs to give you a quick at a glance view of what's going on.

Gadget	Description
Current Workflow Table	Shows the currently assigned workflows for all users or the current user
Workflows – Average Time in State	For workflows, shows how long, on average, they've remained in each state
Workflow State	For a given workflow, show all the instances and their states

Advanced Workflows

Activities

Activities are the actions you want to perform when transitioning from one state to another. Activities can be composed as building blocks, with one step following another.

However, you must remember that Workflows are general – they won't always run in the same place. This is especially important when configuring the activities you want to use. For example, you don't always want to assign the workflow to the same person – rather, you want to assign it to someone that makes sense in the context of the current job.

In most cases, your activities will work on:

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- Contacts
- Jobs
- Folders
- Files

Contact Inputs

When you are working with contacts, you may be prompted to pick

- 1) A specific contact
- 2) A team role
- 3) A group
- 4) A variable

In most cases, you won't want to specify a specific contact – that would mean that regardless of where the workflow was run from, on any Job, it would be applied to the same contact.

In most cases, you will probably pick a team role, such as your Project Manager or Design Lead for that Job.

Alternatively, you can use a Variable – but these are more complicated and we will return to those later.

Job and Folder Inputs

Many of your activities will involve things like setting attributes or moving files to new locations.

In these cases, you need to be able to specify where this should take place.

You can either use a variable, or if you are using job templates, you can select from a path where the activity should be run. This assumes the job your workflow runs within has the same structure based on your selection, and may fail if it does not.

Available Activities

There are many activities available, and in future versions of 12d Synergy, this version will grow. You can also create your own custom workflow activities.

12d Model Activities

Activity	Description
Copy a 12d Model Project	Takes a copy of the 12d model project
Create a 12d Model Project	Creates a new 12d model project
Lock a 12d Model Project	Locks a 12d model project for a set of users
Unlock a 12d Model Project	Unlocks a 12d model project so it can be used by anyone with standard permissions

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File Activities

Activity	Description
Convert a file	Convert a file from one format to another – like DOCX to PDF
Copy a file	Copy a file to a new location
Move a file	Move a file to a new location
Create a file	Create a file based on another file, such as a template document
Publish a file	Make a file available for publishing
Rename a file	Change a files name
Add file to an issue set	Add a file to an issue set – if the set doesn't exist, it will be created
Export a file	Export a file to a network storage device, which could be used by a third party application or middleware
Lock a file	Locks a file so only a specific group of users may edit it
Unlock a file	Unlocks a file for general usage

Task Activities

Activity	Description
Create a task	Creates a new task
Create a 12d Model Project	Creates a new 12d model project
Lock a 12d Model Project	Locks a 12d model project for a set of users
Unlock a 12d Model Project	Unlocks a 12d model project so it can be used by anyone with standard permissions

Job Activities

Activity	Description
Create a job	An activity to create a new job
Export file structure	An activity to export the entire file structure of a job to disk

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Folder Activities

Activity	Description
Export file structure	An activity to export the entire file structure of a folder to disk
Lock a Folder	Locks a managed folder so only the specified users can check it out
Unlock a Folder	Releases any locks on the folder
Create a Folder	Creates a new folder

General Activities

Activity	Description
Add a note	Adds a note to the workflow entity
Contact a Webservice	Send JSON (Javascript Object Notation) to a third party webservice like Sharepoint
Assign this workflow	Assigns the workflow to a user
Reindex the Current Item	Reindexes the item, which may be useful after custom activities run
Run a program	Runs a program on the server
Send an email	Send an email, using a custom template
Set a Workflow Property	Set a variable or property on the workflow that could be used as part of an activity or condition

Attribute Activities

Activity	Description
Increment attribute	Increments an attribute – if this is a list attribute, it will move to the next item in the list. If it is numerical, it will move from 1 to 2, and so on. If it is a letter, it will move to the next letter.
Remove attributes	Removes an attribute from an entity
Set an attribute	Sets one or more attributes on some entity. If it doesn't exist, it will be added.

A note on Locking

Workflows can lock files, folders and 12d Model projects – this is very useful during a review phase, to prevent additional edits. Do note that an administrator can forcibly unlock these in case of emergency – they are never permanently locked.

All workflows can also be removed by administrators to allow files or entities to continue to progress when required.

Using Data Capture

Data capture can be used when you want to capture more information from the person transitioning the workflow. A common example is asking for more information when moving from a Work in Progress state to a “Rejected” review state. In this case, it would make sense to ask the reviewer why the work failed – this can be done as a simple text input, or as an association to a markup file that may have been put together.

Data capture allows three options:

1. **Attributes**
The user will be prompted to fill out specific attributes, which will be attached to the workflow entity – the file, folder, etc
2. **Associations**
As noted, the user may associate a file, folder, job, 12d model project etc to the current entity, with a description to indicate its purpose
3. **Property**
The user may be prompted for a value that is not displayed on the UI but could be used as part of another decision in your workflow, such as a condition.

Using Conditions

Conditions are a way of adding either additional logic to your workflows, or to prevent transitions from taking place. Some examples are:

- If the Value attribute of a project is less than \$20,000, do not require a Director’s sign off – that state of the workflow could be skipped
- If a Task is not yet completed, do not allow the workflow to proceed past its current state

There are several types of conditions:

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Condition	Description
Compare property	Compares two properties – such as, is an attribute value set to a particular list item, or is a Cost less than some value
Compare String Property	Compares two string or text values, with or without case sensitivity
Is Member Of	Is a user a member of a specific group or role?
Task	Checks a task to see if it is in a given state, such as In Progress

Workflow Variables

Because workflows are general, you need to supply variables that define how they work. For example, if you add an activity to send an email, you might need to define who that gets sent to.

You will need to supply expressions to the workflow that define these values, keeping in mind that workflows are general – they aren't always run on the same job.

12d Synergy provides an expression builder to help with this, but there are some key variables you need to remember.

Variable	Description
{Actor}	The current user transitioning the workflow
{Job}	The job the workflow is operating in
{Folder}	The folder the workflow is operating in
{File}	The file the workflow is operating on, if there is one.
{Entity}	Entity is a quick way of referencing the 'thing' the workflow was attached to

Sub Variables

Each of the variables contains much more information about each entity, which may be of use while building your activities.

Imagine the following scenario:

Your job has an attribute capturing information about the Client Contact at the job site. You want to send an email, with their name in it.

Assume that the attribute is called ClientContact.

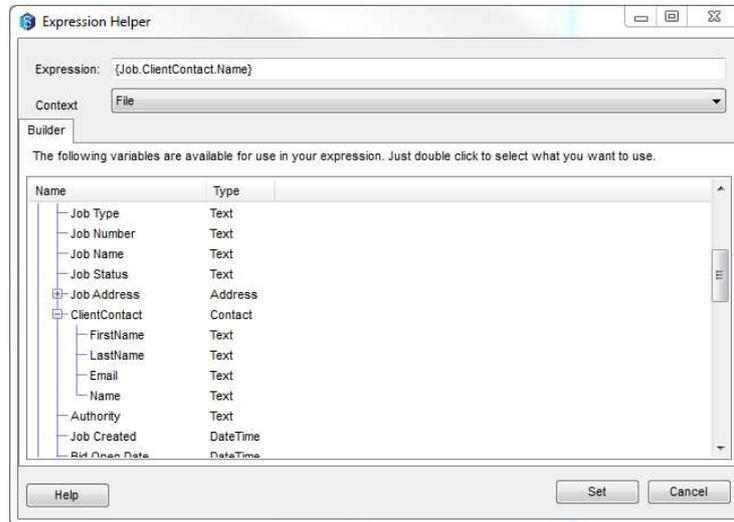
Therefore, you could send an email with the content:

Dear {Job.ClientContact.Name},

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When the email is sent, this would resolve to the name of the Contact.

There are many more variables – these are available in the Expression Helper or can be viewed via the Help Button.



Setting up an Advanced Workflow

In this section, we are going to look at converting the simple workflow from the section above into something a bit more advanced, with some activities and data capture.

This will look at assigning the workflow at the appropriate times, prompting for extra information, and locking and unlocking the file to prevent edits when it is in a review.

Prerequisites

This assumes that your job has the following roles:

1. CAD Operator
2. Reviewer

This also assumes that there's a File Attribute for each CAD File called "Revision", which is a list attribute that contains values A through to Z.

Begin Work

The first thing we will do is modify the workflow so that when the workflow is set to "Pending Design" it will be automatically assigned to the CAD Operator. Note that Pending Design is the first state you can select, so as soon as the file is added, the workflow will begin.

Select the transition between **Start** and **Pending Design**. And follow these steps.

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Assign the Workflow

1. Click the + to add a new Activity
2. From the list, select **General – Assign this Workflow**
3. This will add the activity and prompt you for configuration
4. Set the name to “Assign to the CAD Operator” – this is cosmetic only
5. Select Assign To and pick: “Role”, because we want to assign it to a specific role

What is the source of your contact?

- ➔ **Contact** 1
A specific contact or user
- ➔ **Group** 2
A specific group, resolving in zero or more contacts
- ➔ **Role** 3
A specific role, resolving in zero or more contacts

Cancel

6. Select “Specific Value”, because we know the name of the role is CAD Operator

How should the contact(s) be evaluated?

- ➔ **Specific value** 1
Pick one specific Role
- ➔ **Variable value** 2
Use a variable value, like an attribute, to pick a Role dynamically

Cancel

7. Select “CAD Operator” from the list
8. Leave “Send email” to Yes

The result of this transition is that the CAD Operator for the job will be assigned the workflow, and will receive and email to tell them that has taken place. Here is a preview of the configuration.

To Pending Design

Fail transition on activity errors

Activities Conditions Data Capture

Assign to the CAD Operator **Assign this workflow**

Name

Treat error as critical

Input	Value
Assign to	Role: CAD Operator
Send email	Yes

< >

The contact / role / group to assign this workflow to - if left blank, the assignee will be cleared
This field is optional.

▲ ▼ + -

Delete Copy From Help

Begin the Review

Next, we want to allow the CAD Operator to automatically inform the Reviewer that they have something to look at. We are going to do the same thing that we did in the “Begin work” stage, but will assign it to the Reviewer instead. We are also going to lock the file to prevent anyone from editing while it is in the review stage.

Click on the transition between **In Progress** and **Pending Review**.

Assign the Workflow

1. Add a new **General – Assign this Workflow** to the list
2. This will add the activity and prompt you for configuration
3. Set the name to “Assign to the CAD Operator” – this is cosmetic only

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4. Select Assign To and pick: "Role", because we want to assign it to a specific role

What is the source of your contact?

- ➔ **Contact** 1
A specific contact or user
- ➔ **Group** 2
A specific group, resolving in zero or more contacts
- ➔ **Role** 3
A specific role, resolving in zero or more contacts

Cancel

5. Select "Specific Value", because we know the name of the role is CAD Operator

How should the contact(s) be evaluated?

- ➔ **Specific value** 1
Pick one specific Role
- ➔ **Variable value** 2
Use a variable value, like an attribute, to pick a Role dynamically

Cancel

6. Select "Reviewer" from the list

Lock the File

1. Add an additional Activity and select **Files – Lock a File**
2. Select "File to lock" for on the configuration panel. We get several options here – but because this is a file workflow, we can use our current entity / file right away. Select "Use the current file"

12d Synergy

Workflows should be generic and paths should be relative to the current job this will operate in.

- ➔ **Pick a path** 1
Pick from a job path, such as a template
- ➔ **Use the current file** 2
Use the current file
- ➔ **Enter manually** 3
Enter the value manually

Cancel

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3. Select Lock For – and again, we want to lock this for the Reviewer role. This means only Reviewers can check out and edit the file.

The screenshot shows a workflow editor window titled "From In Progress to Pending Review". It has a checkbox for "Fail transition on activity errors" and tabs for "Activities", "Conditions", and "Data Capture". The "Activities" tab is active, showing a list of activities: "Assign to the CAD Operator" and "Lock the file". The "Lock the file" activity is selected and its configuration is shown in a right-hand pane.

Lock a file

Name:

Treat error as critical

Input	Value
File to lock	{Entity}
Lock for	Role: Reviewer

Which contact or group of contacts to lock this file for

Buttons: Delete, Copy From, Help

Accept the Work

The next part of the workflow to look at is the moving from Pending Review to Approved. All we need to do here is unlock the file.

1. Select the transition between Pending Review and Approved
2. Add a new Activity – **Files – Unlock a File**

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3. Select File to Unlock and again pick “Use the current file”

From Pending Review to Approved

Fail transition on activity errors

Activities | Conditions | Data Capture

New Unlock a file activity

Unlock a file

Name:

Treat error as critical

Input	Value
File to unlock	{Entity}

The file to unlock - use {Entity} to lock the current file, when this is a file workflow

Delete Copy From Help

Reject the Work

When the work is rejected, because perhaps it doesn't meet company standards, it will go back to In Progress. As part of this, we will want to

1. Unlock the file
2. Assign it back to the CAD Operator
3. Increment the revision

But we also want to tell the CAD Operator why this didn't pass the review phase.

Setting up the Activities

Select the transition between **Pending Review** and **In Progress**

Unlock the File

1. Add a new Activity – **Files – Unlock a File**

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2. Select File to Unlock and again pick “Use the current file”

From Pending Review to Approved

Fail transition on activity errors

Activities | Conditions | Data Capture

New Unlock a file activity

Unlock a file

Name:

Treat error as critical

Input	Value
File to unlock	{Entity}

The file to unlock - use {Entity} to lock the current file, when this is a file workflow

Buttons: Delete, Copy From, Help

Assign the Workflow

1. Add a new **General – Assign this Workflow** activity
2. Set the name to “Assign to the CAD Operator” – this is cosmetic only
3. Select Assign To and pick: “Role”, because we want to assign it to a specific role

What is the source of your contact?

- Contact** 1
A specific contact or user
- Group** 2
A specific group, resolving in zero or more contacts
- Role** 3
A specific role, resolving in zero or more contacts

Cancel

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4. Select “Specific Value”, because we know the name of the role is CAD Operator

How should the contact(s) be evaluated?

➔ **Specific value** 1
Pick one specific Role

➔ **Variable value** 2
Use a variable value, like an attribute, to pick a Role dynamically

5. Select “Reviewer” from the list

Increment the Revision

1. Add a new Activity: **Attributes – Increment Attribute**
2. Select “Attribute Name” and simply type in “Revision” – this assumes you have set up

From Pending Review to In Progress

Fail transition on activity errors

Activities Conditions Data Capture

Unlock the file
Assign to the CAD Operator
Increment the Revision Attribute

Increment attribute

Name:

Treat error as critical

Input	Value
Attribute name	Revision

The attribute to increment

Setting up the Data Capture

As we discussed earlier, we are now going to make the workflow prompt the user to explain to the original CAD Operator why this failed the review. In this case, we are going to ask for an association to a CAD Markup File.

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1. Select the Data Capture tab and click +

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Add new data capture

- ➔ **Attribute** 1
Capture an attribute and attach it to the workflow item
- ➔ **Association** 2
Capture an association to some other entity, like a file
- ➔ **Property** 3
Capture a property and only use it in a workflow activity

Cancel

2. Select Association
3. Set the Association type to File and enter a description – “The review markup pdf”

From Pending Review to In Progress

Fail transition on activity errors

Activities Conditions Data Capture

File association

Association Type: File

Description (leave blank to prompt): The review markup pdf

Optional?

+ -

Delete Copy From Help

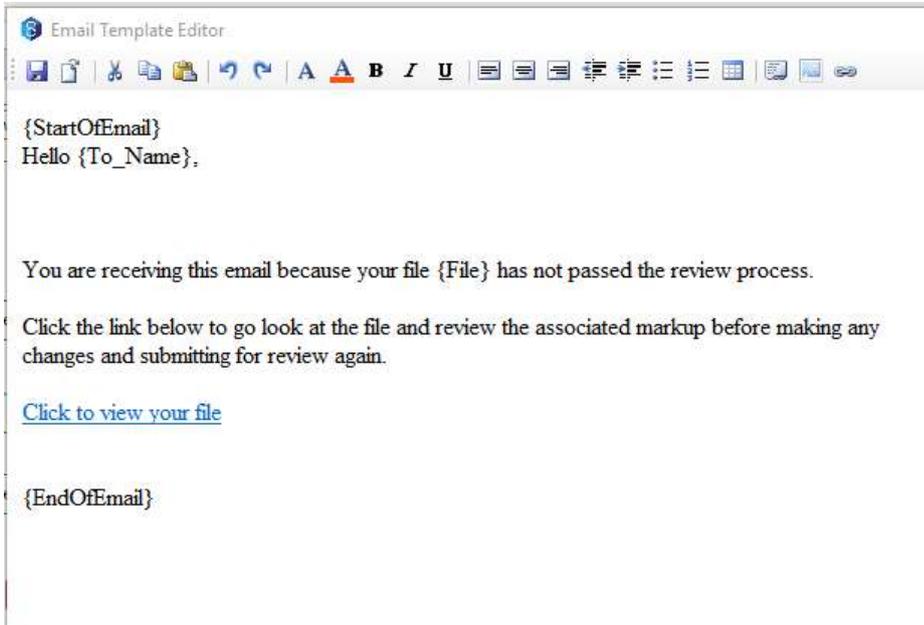
Sending a Custom Email

It might make more sense to send a tailored or custom email to the CAD Operator, rather than the standard ‘a workflow has been assigned to you’ email. To set this up, follow these steps:

1. Edit your ‘Assign this Workflow’ activity and set ‘Send Email’ to ‘No’
2. Add a new **General – Send an Email** activity
3. Click “Send To” and add a new contact

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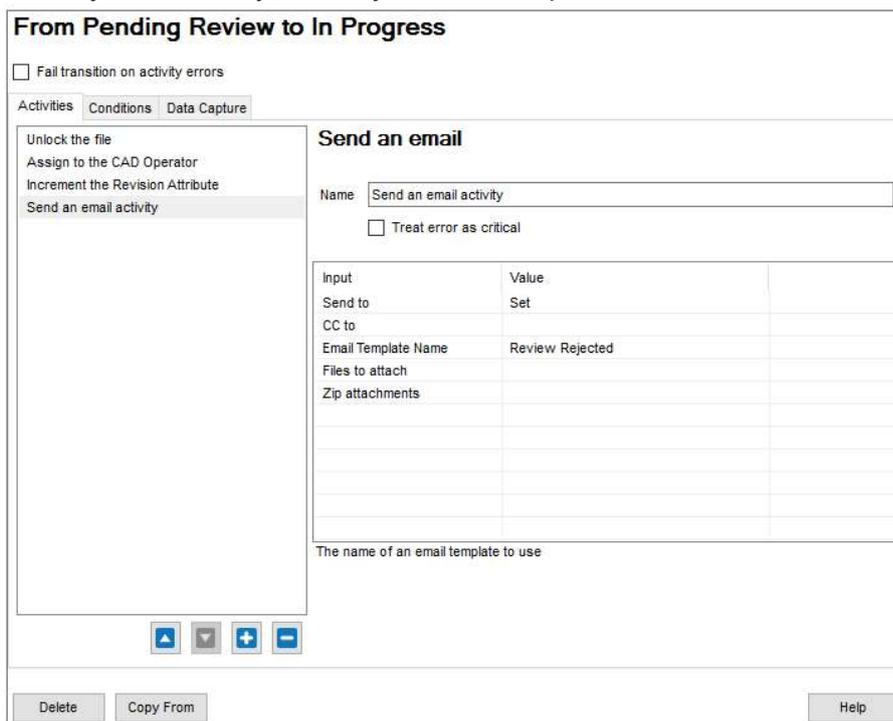
- a. Select the CAD Operator role, as per the other contact steps
4. Now we need to send a template, which you may not have set up. Click “Email Template Name”
5. On the bottom left, Click + to add a new Custom Template
6. Consider writing an email like the one below:



Note the use of variables for {To_Name} and {File}

You can also create a link that references the File, using the Expression Builder.

7. When you are ready, click Set and set a name and a subject for your template, such as “Review Rejected” and a subject of “{File} has been rejected in the Review process”.
8. When you are ready, select your new template



General Notes

Workflows can be as simple or as complex as you need them to be. General recommendations are:

1. Test workflows in a sample job first before making them system or template wide
2. Build them iteratively
3. Build transitions between all states until you know your workflow well, to allow you to easily transition
4. Turn on Workflow Debug Logging, via the Window Menu in the main client
5. Use two clients – one to edit the workflow, and another to test it