

# Grouper forms, workflow and approvals

<a href="#">Wiki Home</a>	<a href="#">Grouper Release Announcements</a>	<a href="#">Grouper Guides</a>	<a href="#">Grouper Deployment Guide</a>	<a href="#">Community Contributions</a>	<a href="#">Internal Developer Resources</a>
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In a patch in Grouper 2.4, Grouper will have a electronic forms workflow / approvals capability. This will start simple and we can add more features later. There will be the capability to have an interface so external workflow services can satisfy the request. Fixed in patches: grouper\_v2\_4\_0\_api\_patch\_70 and grouper\_v2\_4\_0\_ui\_patch\_42

- [High level description](#)
- [Changes to group drop down](#)
- [Notifications](#)
- [Hooks on workflow](#)
- [View electronic forms screen](#)
- [Screenshots](#)
- [To Do later](#)
- [Configuration](#)
  - [Instance values at different states in workflow](#)
    - [When user submits form](#)

## High level description

Think of this like a paper form, but electronic. It is simple and if you need something more complicated likely you might need a BPM or workflow system and integrate with it.

- Grouper admins (or members of etc:workflowEditors group) can configure a workflow on a group
  - Specify which groups need to approve the request
  - Configure the workflow and form fields with JSON
  - Configure the form itself with HTML
- Workflow daemon will run to send out notifications
  - There will be two daemons
    1. Runs every 5 minutes, looks for state changes, sends out individual email
    2. Runs nightly, looks for instances that need another reminder, sends out digest email
- Screens to view and manage the requests
- Automatic provisioning into group(s)
- A copy of the form being submitted will be stored at every state of the form to the database, AWS S3, or the file system. That includes the history of the form and who approved it when
- There is not a lightweight open source workflow library to add to grouper core, so we will create our own
  - The first part of this task is to confirm this statement
- Note: the workflow should be able to be kicked off by the daemon when the status is "initiate". So that workflow can be kicked off by web service. Daemon should check every 5 minutes. If this is the UI it should be immediate, send the email, and go to the next state.

## Changes to group drop down

Under groups, in the more actions, should be "Electronic forms", which goes to View forms screen.

"Join" a group could kick off a workflow too

## Notifications

Emails should be sent out to approvers when they need to approve forms. Emails should be sent out when the state changes, or daily (in a digest per user)

## Hooks on workflow

Workflow should have hooks at various place so it can be customized

## View electronic forms screen

This is the default screen. Drop down with the following options:

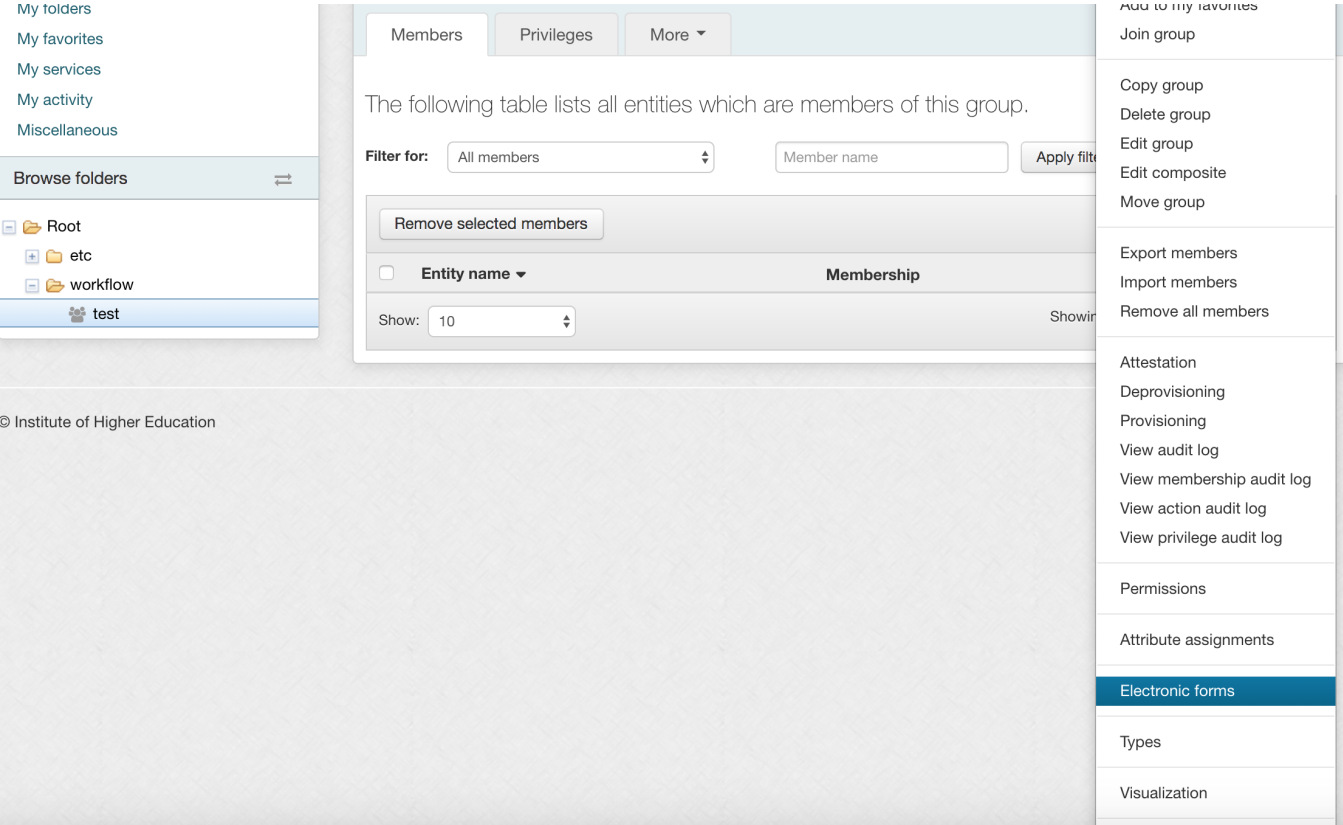
1. View forms
2. Edit forms

Miscellaneous Forms

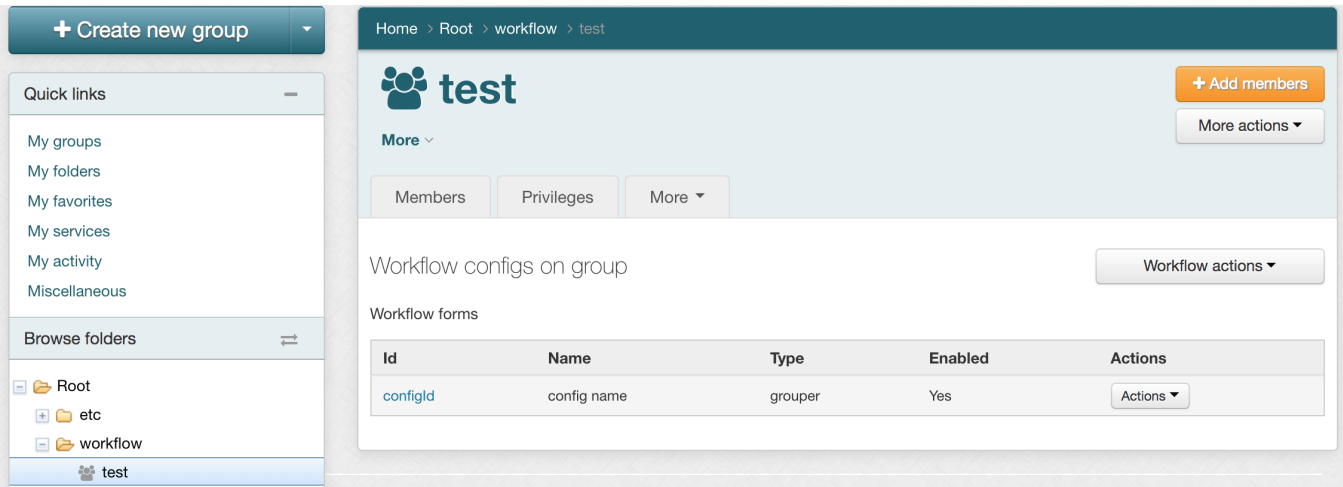
1. My forms - see forms the current user submitted
2. Forms waiting for my approval - see forms that need approvals

# Screenshots

On each group, there's a new action available in the More actions dropdown.



Clicking on the Electronic forms shows all the workflows configured on the selected group.



When a subject wants to join the group and click on the Join group button in the More actions, they are shown a form configured as per the workflow.

+ Create new group

Quick links

My groups

My folders

My favorites

My services

My activity

Miscellaneous

Browse folders

Root

etc

workflow

test

Home > Root > workflow > test

test

More actions

More

Submit this form to be added to this group.

The managers of the group will be notified to approve this request.

Notes (optional):

Notes for approvers:

Submit

Cancel

Under Miscellaneous, there is a new link called Forms

+ Create new group

Quick links

My groups

My folders

My favorites

My services

My activity

Miscellaneous

Browse folders

Root

etc

workflow

test

Home > Miscellaneous

Miscellaneous

Functions across the repository

Inherited privileges

Attestation

Forms

Clicking on Miscellaneous Forms My forms shows a list of all the forms the logged in subject has initiated.

+ Create new group

Quick links

[My groups](#)
[My folders](#)
[My favorites](#)
[My services](#)
[My activity](#)
[Miscellaneous](#)

Browse folders

Root

etc

workflow

test

Home > Miscellaneous > Forms > Forms initiated

Forms initiated

Workflow name	State	Last updated	Actions
config name	initiate	2019/07/31	Actions

Clicking on Miscellaneous Forms Forms waiting for my approval shows a list of all the forms logged in subject has in its pending queue.

+ Create new group

Quick links

[My groups](#)
[My folders](#)
[My favorites](#)
[My services](#)
[My activity](#)
[Miscellaneous](#)

Browse folders

Root

etc

workflow

test

Home > Miscellaneous > Forms > Forms waiting for approval

Forms waiting for approval

Workflow name	Initiator subject	State	Last updated	Actions
config name	my name is test.subject.0	initiate	2019/07/31	Actions

## To Do later

- Enable kicking off workflows from other events (e.g. folder create, group create, membership add , membership remove , attribute values add /change/remove, etc...)
- Form search - for form admins, can search for forms, see status, search by submitter, able to approve forms for approvers

## Configuration

The configuration will follow the same attribute structure as other Grouper modules like reporting

### Attribute definitions for config

Definition	Assigned To	Purpose	Value	Cardinality
workflowConfigDef	group	identify a workflow config	marker	Multi assign
workflowConfigValueDef	group assignment	name/value pairs	string	Single assign, single valued

Instance values at different states in workflow

When user submits form

Attribute	Value
workflowInstanceState	initiate
workflowInstanceLastUpdatedMillisSince1970	lastUpdated
workflowInstanceConfigMarkerAssignmentId	assign id
workflowInstanceInitiatedMillisSince1970	timestamp
workflowInstanceUuid	uuid
workflowInstanceEncryptionKey	generated an encrypted encryption key
workflowInstanceFileInfo	<div>value is:</div> <div><pre>{ fileNamesAndPointers: [   {state: "initiate", fileName: "/something.html", filePointer: "something/something"} ] }</pre></div> <div>File contents have:</div> <div>HTML</div> <div>show form just like they saw it</div> <div>has values in there.</div> <div>has some auditing at the bottom in div. append to that at each state</div> <div>subjectsouce: subjectID, name clicked approve for state dataOwner on timestamp: 2019/03/05 12:35:47 (standard timestamp format)</div>
workflowInstanceLog	<div><pre>{   logEntries: [     {subjectSourceId: "jdbc", subjectId: "jsmith", action: "initiate", state: "initiate", millisSince1970: 12345678}   ] }</pre></div>
workflowInstanceParamValue0	<div>params should be in order that they are configured</div> <div><pre>{paramName: "notesForApprovers", paramValue: "He will be collaborating with such and such which is why he needs access", lastUpdatedMillis: 12324345432434234, editedByMemberId: "abc123", editedInState: "initiate"}</pre></div>
workflowInstanceParamValue1	if there is more than one param, put second one here

Daemon runs, sees the state initiate, and progresses workflow:

Attribute	Value
workflowInstanceState	supervisor
workflowInstanceLastUpdatedMillisSince1970	lastUpdated
workflowInstanceLastEmailedDate	now
workflowInstanceLastEmailedState	supervisor
workflowInstanceLog	<pre>{   logEntries: [     {subjectSourceId: "jdbc", subjectId: "jsmith", action: "initiate", state:       "initiate", millisSince1970: 12345678},     {action: "workflowStateChange", state: "supervisor", millisSince1970: 12345679}   ] }</pre>

#### Attribute names for config

Note: for non-grouper workflows configured in grouper.properties, only the marker and type will be set. For Grouper workflows, all the attributes will be available

Name	Definition	Required?	Value
workflowConfigMarker	workflowConfigDef		<none>
workflowConfigType	workflowConfigValueDef	required	if grouper is the only implementation in grouper.properties, auto populate with "grouper", otherwise list other implementations

workflowConfigApprovals	workflowConfigValueDef	required	<p>This is a JSON config of the workflow approvals. must have "initiate" and "complete"</p> <pre> {   states: [     {       stateName: "initiate",       allowedGroupId: "abc123def456"     },      {       stateName: "supervisor",       approverSubjectId: "\${initiatorSubject.attribute ['supervisorSubjectId']}",       approverSubjectSourceId: "mypeople"     },      {       stateName: "dataOwner",       //who can approve       approverGroupId: "sdgf76gdf87",       //who is notified, if blank, then use approverGroupId       approverNotifyGroupId: "dfkjh234kjb"     },      {       stateName: "complete",       //if blank use the selected groups from form or just the group       //the workflow is assigned to       actions: [         {           actionName: "assignToGroup",           actionArg0: "sgk234kh234"         }       ]     }   ] } </pre> <p>This is the default and should pre-populate:</p> <pre> {   states: [     {       stateName: "initiate",     },     {       stateName: "groupManager",       //who can approve       approverManagersOfGroupId: "sdgf76gdf87" &lt;-- groupId of current group                                      &lt;-- updater/admins of group     },     {       stateName: "complete",       //if blank use the selected groups from form or just the group       //the workflow is assigned to       actions: [         {           actionName: "assignToGroup",           actionArg0: "sgk234kh234" &lt;-- groupId of current group         }       ]     }   ] } </pre>
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workflowConfigName	workflowConfigValueDef	required	<p>Name of workflow. No two workflows in the same owner should have the same name</p> <p>Default to groupName_managerApproval (e.g. wikiUsers_managerApproval)</p>
workflowConfigId	workflowConfigValueDef	required	<p>Camel-case alphanumeric id of workflow. No two workflows in all of Grouper can have the same ID</p> <p>Default to groupName_managerApproval (e.g. wikiUsers_managerApproval)</p>
workflowConfigDescription	workflowConfigValueDef	required	<p>Textarea which describes the information in the workflow. Must be less than 4k</p> <p>Default to: Group: \$groupDisplayPath% approval for membership. The group's managers will be notified about requests and can approve them.</p>
workflowConfigParams	workflowConfigValueDef	required	<p>Note: max 10 params, checkbox is true/false</p> <pre> {   params: [     {       paramName: "agreeToTerms",       label: "Agree to terms",       type: "checkbox",       editableInStates: "initiate",       required: "true"     },     {       paramName: "notes",       label: "Notes",       type: "textarea",       editableInStates: "initiate"     },     {       paramName: "notesForApprovers",       label: "Notes for approvers",       type: "textarea",       editableInStates: "supervisor, dataOwner"     },     {       paramName: "reason",       label: "Reason",       type: "text",       editableInStates: "initiate"     }   ] } </pre> <p>Default pre-populated:</p> <pre> {   params: [     {       paramName: "notes",       label: "Notes",       type: "textarea",       editableInStates: "initiate"     },     {       paramName: "notesForApprovers",       label: "Notes for approvers",       type: "textarea",       editableInStates: "supervisor, dataOwner"     }   ] } </pre>



workflowConfigForm	workflowConfigValueDef	optional	<p>Note: Grouper with javascript will enable or disable these form fields, or fill in values, as needed. The form field names need to match the names in the params. The id must match with "Id" appended to the end. If a name or id doesnt exist in the HTML there will be an error</p> <pre> Fill out this form to be added to this group.&lt;br /&gt;&lt;br /&gt; Several approvals will take place which usually take less than 2 business days&lt;br /&gt;&lt;br /&gt; State the reason you would like this access: &lt;input type="text" name=" reason" id="reasonId" /&gt;&lt;br /&gt;&lt;br /&gt; &lt;input type="checkbox" name="agreeToTerms" id="agreeToTermsId" /&gt; I agree this this institutions' &lt;a href="https://whatever.whatever/whatever"&gt;terms and conditions&lt;/a&gt;&lt;br /&gt;&lt;br /&gt; Notes: &lt;textarea rows="4" cols="50" name="notes" id="notesId"&gt;&lt; /textarea&gt;&lt;br /&gt;&lt;br /&gt; Notes for approvers: &lt;textarea rows="4" cols="50" name="notesForApprovers" id="notesForApproversId"&gt;&lt;/textarea&gt;&lt;br /&gt;&lt;br /&gt; </pre> <p>This is the default:</p> <pre> Submit this form to be added to this group.&lt;br /&gt;&lt;br /&gt; The managers of the group will be notified to approve this request.&lt;br /&gt;&lt;br /&gt; Notes (optional): &lt;textarea rows="4" cols="50" name="notes" id="notesId"&gt;&lt; /textarea&gt;&lt;br /&gt;&lt;br /&gt; Notes for approvers: &lt;textarea rows="4" cols="50" name="notesForApprovers" id="notesForApproversId"&gt;&lt;/textarea&gt;&lt;br /&gt;&lt;br /&gt; </pre>
workflowConfigViewersGroupId	workflowConfigValueDef	optional	GroupId of people who can view this workflow and instances of this workflow. Grouper admins can view any workflow (blank means admin only). Anyone in an approver group can view the workflow.
workflowConfigSendEmail	workflowConfigValueDef	required (default to true, no blank option available)	true/false if email should be sent
workflowConfigEnabled	workflowConfigValueDef	default to true (required, no blank option)	Could be "true", "false", or "noNewSubmissions", i.e. let current forms go through

#### Attribute definitions for instance (a workflow that was run)

This attribute is assigned to the same owner as the config attribute (e.g. the same group/folder)

Definition	Assigned To	Purpose	Value	Cardinality
workflowInstanceDef	group	identify a workflow that was run	marker	Multi assign
workflowInstanceValueDef	folder assignment, group assignment	name/value pairs	string	Single assign, single valued

#### Attribute names for instance

Note: the ID is the attribute assign id of the marker (this is passed in URLs/emails etc)

Name	Definition	Value
workflowInstanceMarker	workflowInstanceDef	<none>
workflowInstanceState	workflowInstanceValueDef	Any of the states, plus "exception" if there is a problem, workflows must have "initiate", and "complete", plus "rejected" if someone rejects it.
workflowInstanceLastUpdatedMillisecondsSince1970	workflowInstanceValueDef	number of millis since 1970 when this instance was last updated

workflowInstanceConfigMarkerAssignmentId	workflowInstanceValueDef	Attribute assign ID of the marker attribute of the config (same owner as this attribute, but there could be many workflows configured on one owner)
workflowInstanceInitiatedMillisSince1970	workflowInstanceValueDef	millis since 1970 that this workflow was submitted
workflowInstanceUuid	workflowInstanceValueDef	uuid assigned to this workflow instance
workflowInstanceFileInfo	workflowInstanceValueDef	<p>value is:</p> <p>pointer: depending on storage type, this is a pointer to the workflow in storage, e.g. the S3 address. note the S3 address is .csv suffix, but change to __metadata.json for instance metadata</p> <pre>{   fileNamesAndPointers: [     {state: "initiate", fileName: "/something.html", filePointer: "something/something"}   ] }</pre> <p>File contents have:</p> <p>HTML</p> <p>show form just like they saw it</p> <p>has values in there.</p> <p>has some auditing at the bottom in div. append to that at each state</p> <p>subjectsource: subjectID, name clicked approve for state dataOwner on timestamp: 2019/03/05 12:35:47 (standard timestamp format)</p>
workflowInstanceEncryptionKey	workflowInstanceValueDef	randomly generated 16 char alphanumeric encryption key (never allow display or edit of this)
workflowInstanceLastEmailedDate	workflowInstanceValueDef	yyyy/mm/dd date that this was last emailed so multiple emails dont go out on same day
workflowInstanceLastEmailedState	workflowInstanceValueDef	the state of the workflow instance when it was last emailed
workflowInstanceLog	workflowInstanceValueDef	has brief info about who did what when on this instance
workflowInstanceError	workflowInstanceValueDef	error message including stack of why this instance is in "exception" state
workflowInstanceParamValue0	workflowInstanceValueDef	<pre>{paramName: "agreeToTerms", paramValue: "true", lastUpdatedMillis: 12324345432434234, editedByMemberId: "abc123", editedInState: "initiate"}</pre>
workflowInstanceParamValue1	workflowInstanceValueDef	<pre>{paramName: "notes", paramValue: "Im traveling abroad and need access to such and such", lastUpdatedMillis: 12324345432434234, editedByMemberId: "abc123", editedInState: "initiate"}</pre>

workflowInstanceParamValue2	workflowInstanceValueDef	<pre>{paramName: "notesForApprovers", paramValue: "He will be collaborating with such and such which is why he needs access", lastUpdatedMillis: 12324345432434234, editedByMemberId: "abc123", editedInState: "initiate"}</pre>
workflowInstanceParamValue3	workflowInstanceValueDef	<pre>{paramName: "reason", paramValue: "Need access to whatever system", lastUpdatedMillis: 12324345432434234, editedByMemberId: "abc123", editedInState: "initiate"}</pre>
workflowInstanceParamValue4	workflowInstanceValueDef	
workflowInstanceParamValue5	workflowInstanceValueDef	
workflowInstanceParamValue6	workflowInstanceValueDef	
workflowInstanceParamValue7	workflowInstanceValueDef	
workflowInstanceParamValue8	workflowInstanceValueDef	
workflowInstanceParamValue9	workflowInstanceValueDef	