# Grouper forms, workflow and approvals

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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

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# 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:

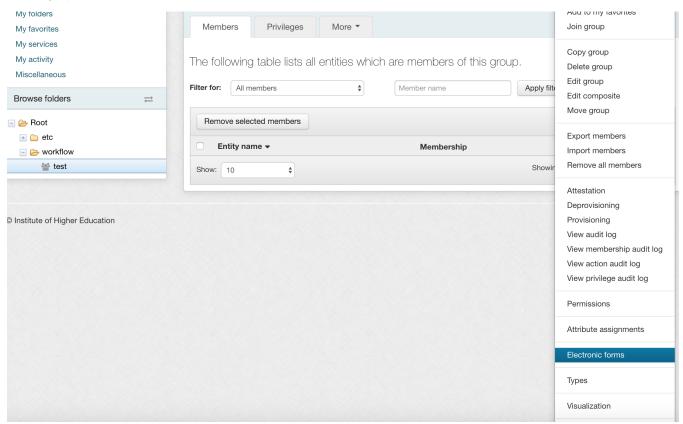
- 1. View forms
- 2. Edit forms

Miscellaneous Forms

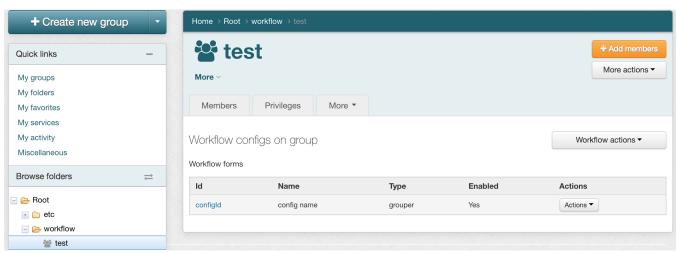
- 1. My forms see forms the current user submitted
- 2. Forms waiting for my approval see forms that need approvals

### Screenshots

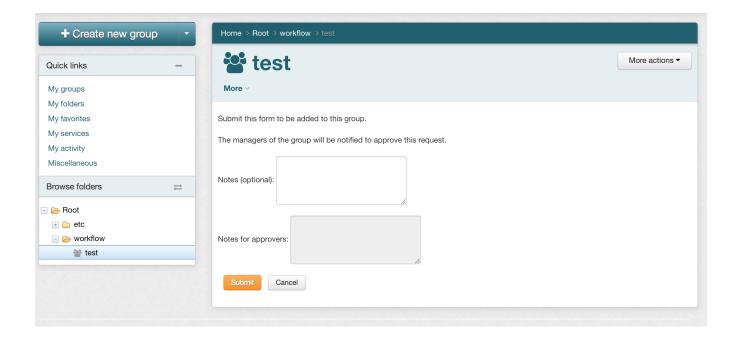
On each group, there's a new action available in the More actions dropdown.



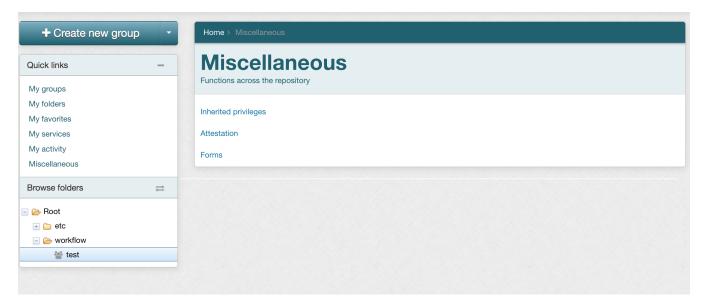
Clicking on the Electronic forms shows all the workflows configured on the selected group.



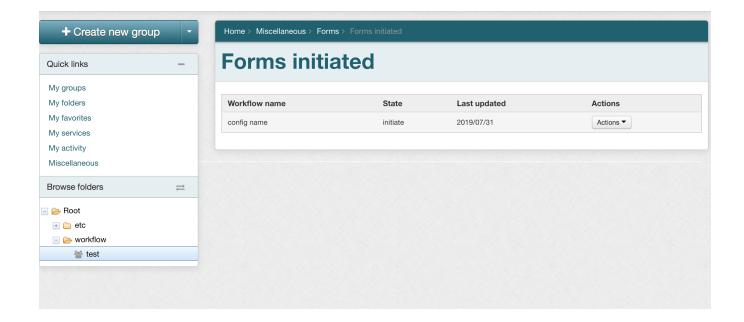
When a subject wants to join the group and click on the Join group button in the More actions, they are shown a form configured as per the workflow.



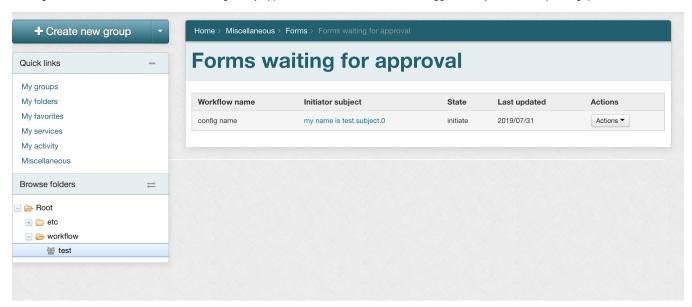
Under Miscellaneous, there is a new link called Forms



 $\hbox{Clicking on Miscellaneous Forms My forms shows a list of all the forms the logged in subject has initiated. }$ 



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



# 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
workflowInstanceLastUpdated MillisSince1970	lastUpdated
workflowInstanceConfigMarker AssignmentId	assign id
workflowInstanceInitiatedMillisS ince1970	timestamp
workflowInstanceUuid	uuid
workflowInstanceEncryptionKey	generated an encrypted encryption key
workflowInstanceFileInfo	value is:
	<pre>{ fileNamesAndPointers: [ {state: "initiate", fileName: "/something.html", filePointer: "something/something"} ] }</pre>
	File contents have: HTML show form just like they saw it has values in there. has some auditing at the bottom in div. append to that at each state
	subjectsource: subjectID, name clicked approve for state dataOwner on timestamp: 2019/03/05 12:35:47 (standard timestamp format)
workflowInstanceLog	<pre>{ logEntries: [     {subjectSourceId: "jdbc", subjectId: "jsmith", action: "initiate", state:     "initiate", millisSince1970: 12345678} ] }</pre>
workflowInstanceParamValue0	params should be in order that they are configured
	{paramName: "notesForApprovers", paramValue: "He will be collaborating with such and such which is why he needs access", lastUpdatedMillis: 12324345432434234, editedByMemberId: "abc123", editedInState: "initiate"}
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
workflowInstanceLastUpdatedMil lisSince1970	lastUpdated
workflowInstanceLastEmailedDa te	now
workflowInstanceLastEmailedSt ate	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
workflowCo nfigMarker	workflowCon figDef		<none></none>
workflowCo nfigType	workflowCon figValueDef	required	if grouper is the only implementation in grouper.properties, auto populate with "grouper", otherwise list other implementations

workflowCo nfigApprovals figValueDef

required

This is a JSON config of the workflow approvals. must have "initiate" and "complete"

```
{
  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"
       ]
   }
```

This is the default and should pre-populate:

workflowCo nfigName	workflowCon figValueDef	required	Name of workflow. No two workflows in the same owner should have the same name  Default to groupName_managerApproval (e.g. wikiUsers_managerApproval)
workflowCo nfigId	workflowCon figValueDef	required	Camel-case alphanumeric id of workflow. No two workflows in all of Grouper can have the same ID
ŭ .	ŭ		Default to groupName_managerApproval (e.g. wikiUsers_managerApproval)
workflowCo	workflowCon	required	Textarea which describes the information in the workflow. Must be less than 4k
nfigDescripti on	figValueDef		Default to: Group: \$groupDisplayPath% approval for membership. The group's managers will be notified about requests and can approve them.
workflowCo nfigParams	workflowCon figValueDef	required	Note: max 10 params, checkbox is true/false
			{
			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"
			1
			Default pre-populated:
			{
			params: [
			neverNeme: "Inches"
			<pre>paramName: "notes", label: "Notes",</pre>
			type: "textarea",
			editableInStates: "initiate"
			},
			{
			<pre>paramName: "notesForApprovers", label: "Notes for approvers",</pre>
			type: "textarea",
			editableInStates: "supervisor, dataOwner"
			}
			] }

workflowCo nfigForm	workflowCon figValueDef	optional	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  Fill out this form to be added to this group. Several approvals will take place which usually take less than 2 business days by /> State the reason you would like this access: <input id="reasonId" name="reason" type="text"/> cinput type="checkbox" name="agreeToTerms" id="agreeToTermsId" /> I agree this this institutions' <a href="https://whatever.whatever/whatever">terms and conditions</a> conditions Notes: <textarea cols="50" id="notesId" name="notes" rows="4">&lt;/a&gt; /textarea&gt; &lt;br/&gt; /textarea&gt; &lt;br/&gt; /br /&gt; Notes for approvers: &lt;textarea rows="4" cols="50" name="notesForApprovers" id="notesForApproversId"&gt;&gt;&lt;/a&gt; /textarea&gt; &lt;br/&gt; /*cols="50" name="notesForApprovers" id="notesForApprovers" id="notesForApprovers"&lt;/th&gt;&lt;/tr&gt;&lt;tr&gt;&lt;td&gt;&lt;/td&gt;&lt;td&gt;&lt;/td&gt;&lt;td&gt;&lt;/td&gt;&lt;td&gt;This is the default:&lt;/td&gt;&lt;/tr&gt;&lt;tr&gt;&lt;td&gt;&lt;/td&gt;&lt;td&gt;&lt;/td&gt;&lt;td&gt;&lt;/td&gt;&lt;td&gt;Submit this form to be added to this group.&lt;br/&gt; The managers of the group will be notified to approve this request.&lt;br/&gt; /&gt;&lt;br/&gt; Notes (optional): &lt;textarea rows="4" cols="50" name="notes" id="notesId"&gt;</textarea> /textarea> 
workflowCo	workflowCon	optional	GroupId of people who can view this workflow and instances of this workflow. Grouper admins can view any
nfigViewers GroupId	figValueDef		workflow (blank means admin only). Anyone in an approver group can view the workflow.
workflowCo nfigSendEm ail	workflowCon figValueDef	required (default to true, no blank option available)	true/false if email should be sent
workflowCo nfigEnabled	workflowCon figValueDef	default to true (required, no blank option)	Could by "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
workflowInstance Marker	workflowInst anceDef	<none></none>
workflowInstance State	workflowInst anceValueD ef	Any of the states, plus "exception" if there is a problem, workflows must have "initiate", and "complete", plus "rejected" if someone rejects it.
workflowInstance LastUpdatedMilli sSince1970	workflowInst anceValueD ef	number of millis since 1970 when this instance was last updated

workflowInstance ConfigMarkerAss ignmentId	workflowInst anceValueD ef	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)
workflowInstance nitiatedMillisSinc e1970	workflowInst anceValueD ef	millis since 1970 that this workflow was submitted
workflowInstance Juid	workflowInst anceValueD ef	uuid assigned to this workflow instance
workflowInstance FileInfo	workflowInst anceValueD ef	value is:  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 tometadata.json for instance metadata  { fileNamesAndPointers: [
		{state: "initiate", fileName: "/something.html", filePointer: "something/something"} }
		File contents have:
		HTML
		show form just like they saw it
		has values in there.
		has some auditing at the bottom in div. append to that at each state
		subjectsource: subjectID, name clicked approve for state dataOwner on timestamp: 2019/03/05 12:35:47 (standard timestamp format)
workflowInstance EncryptionKey	workflowInst anceValueD ef	randomly generated 16 char alphanumeric encryption key (never allow display or edit of this)
workflowInstance _astEmailedDate	workflowInst anceValueD ef	yyyy/mm/dd date that this was last emailed so multiple emails dont go out on same day
workflowInstance LastEmailedState	workflowInst anceValueD ef	the state of the workflow instance when it was last emailed
		has brief info about who did what when on this instance
	workflowInst anceValueD ef	The Short in a discut which and what who is a the motaries
workflowInstance Log workflowInstance Error	anceValueD	error message including stack of why this instance is in "exception" state
Log	anceValueD ef workflowInst anceValueD	

workflowInstance ParamValue2	workflowInst anceValueD ef	{paramName: "notesForApprovers", paramValue: "He will be collaborating with such and such which is why he needs access", lastUpdatedMillis: 12324345432434234, editedByMemberId: "abc123", editedInState: "initiate"}
workflowInstance ParamValue3	workflowInst anceValueD ef	{paramName: "reason", paramValue: "Need access to whatever system", lastUpdatedMillis: 12324345432434234, editedByMemberId: "abc123", editedInState: "initiate"}
workflowInstance ParamValue4	workflowInst anceValueD ef	
workflowInstance ParamValue5	workflowInst anceValueD ef	
workflowInstance ParamValue6	workflowInst anceValueD ef	
workflowInstance ParamValue7	workflowInst anceValueD ef	
workflowInstance ParamValue8	workflowInst anceValueD ef	
workflowInstance ParamValue9	workflowInst anceValueD ef	