TrackStudio guide

Version 1.0

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Introduction

TrackStudio is a "third generation" task tracking tool that has a sophisticated underlying software and data architecture as well as a "cutting edge" browser-based user interface.

Rather than just being able to track just one type of task, such as the reporting and resolution of a bug, TrackStudio can be used to track many different types of task, each of which may have its own associated workflow. So, rather than buying a software package suited only to a single purpose, the purchase of TrackStudio will allow you not only address that need, but also to track any other tasks within your organisation. Consequently the software may be used to capture, evaluate and respond to client feedback, to log and assign desk-top support calls, to define, distribute and track software development work-packages, to collect and prioritise requirements and so on.

By combining this capability with task and user hierarchies and an associated system of access rights, it is possible, within TrackStudio to have many different individuals acting with different roles within many different teams and working on any number of collections of tasks. In each circumstance, you are able to define exactly who is able to do what.

The benefit of adopting TrackStudio is that all the workflow-based activities of your organisation can be brought together within a single system. Members of your teams will need only to be familiar with a single interface and, not only each individual but also the managers, will be able to see across all the various activities what has been assigned to whom.

Inevitably a tool with such a high level of configurability and power at its disposal is going to demand somewhat more attention than one that is simpler and imposes many limitations. That is not to say that TrackStudio cannot be used in a straightforward and undemanding manner.

The purpose of this guide is therefore to move you rapidly along the learning curve, giving you the opportunity to start using the product immediately if that is what is required but also pointing the way to how it might be used to greater benefit in due course. TrackStudio is conceptually slightly difficult to get to grips with; however once you have gained an understanding of how it works you will begin to appreciate how enormously potent it is.

Overview

This guide is not intended to replace the documentation supplied with the TrackStudio product but to supplement it and offer a different viewpoint. It is also intended to help explain why you might wish to do things in one way rather than another and if there are such choices to be made, what factors might influence them.

It is possible to use TrackStudio in a simple way as a single-point solution to a particular task-tracking problem. It is also possible to use TrackStudio in a more complex and sophisticated was that may embrace a number of different task tracking requirements. This guide is intended also to help you decide which of these is appropriate to your situation and help you to set up your instance of TrackStudio in a way that addresses that purpose.

The guide comprises four parts:

- Essential concepts
- Quick start
- Slow start
- Other considerations

All readers are advised to read the Essential concepts section as understanding these is fundamental to any use of TrackStudio.

If you are in a hurry and feel that, at least in the short term, a simple implementation is what you require then go straight to Quick start and begin setting-up your instance.

Anyone setting-up a TrackStudio instance would benefit from reading the whole of this document but, particularly if you are thinking that you are likely to be a sophisticated user of the product or really want to know how you might get the most out of this product, you should read the Slow start and Other considerations sections.

Essential concepts

There are a number of things of which it important to be aware before starting to use TrackStudio.

Tasks and Users

Almost everything you do within TrackStudio will be related to either Tasks or Users. The concept of a user is straight-forward, that of tasks is less-so. The simplest way in which to consider tasks is to think of them as objects to which can allocated different sets of properties and that may be arranged in a hierarchical structure.

You would expect all tasks to have associated with them a workflow and this is indeed the case. Perverse though it may seem, a task may also be associated with a workflow that really isn't a workflow as it has only one state. In the initial installation of TrackStudio there is one such task and it has the name "Folder". This task, having no workflow of its own is therefore used merely as a container for subordinate tasks.

This Tasks and Users dichotomy is reflected in the interface with the Task and User Management Trees and the Task and User top-level menu items in the main frame.

Some objects within TrackStudio are not associated with either tasks or users or are associated with both. For convenience, within the current implementation of TrackStudio these objects are assigned to one or other of the drop-down menus. For example, scripts are global objects but are found under the User menu, e-mail import rules are connected to both tasks and users and are also under the User menu. CSV import can be used for importing either tasks or users but is located under the Task menu.

Hierarchies, objects and inheritance

Much of the power of TrackStudio derives from the ability to arrange both Users and Tasks hierarchically. This, after all, reflects the real world; individuals work within divisions, departments or as members of teams and large tasks have subsidiary smaller tasks and so on –ad infinitum!

As mentioned above, objects are associated either with Tasks or Users and any objects existing higher up the hierarchy or tree are available from that point downwards. The term "inheritance" is used to describe this but it is important to note that this is not inheritance in the object-oriented-programming sense of the word. It is not the properties of the objects that are inherited but the availability of access to those objects that is inherited.

Domain model

TrackStudio has been designed, from the ground up, as a hosted application. This means that within a single instance of the application there can be any number of "domains" each of which is completely separate from any other. A "domain" being an online environment in which groups of users see only each other and are completely unaware of other users making use of the same instance of the underlying software. The key to the separation of these domains is the tier of users situated immediately below the root user (the user with the default name Admin). These users are referred to as "managed administrators".

All users subordinate to a "managed administrator" may be allowed only to see other users who are also subordinate to that "managed administrator". Similarly, only users subordinate to a particular "managed administrator" can be able to connected to the task tree or trees that have been created by that "managed administrator".

There are two "managed administrators" that are available when the application has first been installed; Issue Tracker Administrator and John Smith.

Tip: Though one doesn't have to use the capability of having separate domains within TrackStudio and you may not wish to use that capability, it is never-the-less advisable to retain the "managed administrator" layer in the user hierarchy. It is also advisable to do as little as possible as "Administrator" and tightly restrict access to that identity.

Who you are and where you are

One of the things that you will rapidly come to appreciate when using TrackStudio is that it is important to be aware, at all times, of exactly who you are logged in as and where you might be in either the user or task hierarchy at any time.

Where it is that objects are created and who it is that created them (there is some interdependence) is important. Create the objects too high in the hierarchy and they become available to users or tasks for which they were not intended. Create objects too low in the hierarchy and the benefits of being able to share them between different branches of the hierarchy will be lost.

Occasionally and inevitably you will find that you have created an object in the wrong place as the wrong person. Immediately deleting that object will correct such a mistake.

You may also occasionally wonder why you can't see things, such as drop-down menu items, tabs, tasks or users. Check that you are logged in as the appropriate user, are in the right place and have the necessary privileges.

Soft labels

TrackStudio has been built throughout with a level of indirection between the user interface and the underlying data. What this means is that any text you see in the interface is "soft-coded" or, in other words, may be changed. This indirection even extends to user names. Even after a username has been set up it may be changed (if the user wishing to do so has the appropriate rights and provided that the new username doesn't conflict with another on the system). Similarly tasks, workflows, filters and other objects may all be renamed after

This also means that, should you deem any of the nomenclature used in your configuration not to be appropriate or sufficiently informative, it may be changed.

The benefits of this indirection are that the system is fully multi-lingual and that you need not worry about the name you give an object as it may later be changed.

Two points to note though. If you make changes to nomenclature you will have to be mindful of these when talking about your configuration to the support team. Also, users, if allowed to might change their usernames to ones that are not readily related to how they are known within your organisation.

Delegated control

With most task-tracking solutions there exists an administrative interface through which many of the behaviours of the user-facing interface are defined and configured. Such systems usually demand dedicated administrators who have to respond to the requests of those who want the system to be set up in a particular way.

TrackStudio is different in that, with the exception of a small number of system-wide configuration options, control of every aspect of the system is managed through the user interface. Thus, though it is possible to use TrackStudio with the support of dedicated administrators, the system does open up the possibility, given some training and the granting of sufficient rights, for department and project managers to set up their own tasks, workflows and user groups.

Single Interface

As mentioned in the previous section, TrackStudio is a "single interface" application. What this means is that, depending on where you are, who you are and what rights you may have been granted, what you will see by way of buttons, links, navigational aids and menu items will be different. This may initially be confusing but once understood is a concept that is not difficult to grasp.

Messages

Messages are the mechanism by which a task is moved from one state to another. A message encapsulates a number of separate elements into a single action; state-change, assignment and comment are all handled in one step.

For example, if a support team member were to receive a reply from customer, he would need to:

- reopen the task.
- assign it to developer
- write comment and attach file from the customer
- submit his own task time

Within TrackStudio all these actions are handled within a single message. Each message that is created is saved and this provides an audit trail of task-related activity. This allows for a powerful search of task history.

Statuses and task-related designations

A Status is a collection of rights that may be granted to a user. There are rights that relate to Task fields, User fields, Task-related actions and User-related actions.

Every user has an own/base status. Within the context of any particular task this Status may be supplemented or overridden. This provides for an enormously flexible permissions model.

In addition to having a Status within a Task, a user may have a task-related designation. There are two such designations, Submitter and Handler.

These task-related designations can be set to interact with Statuses to further refine the permissions model.

Current user

When wishing to modify the profile of a user that user has to be made the "current user". The Current user is always displayed in the menu bar. The following items in the menu bar are specific to the current user:

- Users list
- User
- Access Control Rules

The Current user must not be confused with the logged-in user (often referred to merely as the user).

Quick start

Introduction

If you have been thinking about buying or upgrading your task-tracking solution and have left that decision until a time at which you have a pressing need for the product or you have suddenly realised that such a tool would solve a looming crisis, then this section is for you.

Alternatively, you may have the good fortune to be able to adopt a rather more leisurely and considered approach to setting up the system in which case you may like to go to the Slow start section. However, even if you do have time to progress at a slower pace it may be no bad thing to adopt the approach described in this section as part of a way in which to familiarise yourself with the product before setting it up in a more comprehensive way.

Inevitably, there is the possibility that adopting the quick start approach to begin-with may result in some additional configuration when you begin to appreciate that there would be a better way in which to set up the product. This section does however attempt to minimise that level of effort by, wherever possible, anticipating future needs.

The TrackStudio application, as installed offers two alternative routes to getting started. These two alternatives are described here:

http://www.trackstudio.com/documentation/35/html/Implementation_Guide.html

Option 1 – use the existing domain

What has been provided for you

The first option is to use the domain associated with the user "IT Admin". The advantages of doing this are that a number of objects have already been created:

- 2 statuses are already available
- 3 workflows
- 6 categories
- 9 e-mail notification rules already exist
- 8 filters

Workflows

Project – a single sate workflow and so will act as a "folder" that can be used to group tasks.

Version – this is a three-state workflow (Unreleased->Released->Archived) with as single custom field (Release Date) that can also be used to group tasks.

Issue – a five-state workflow (Open->In Progress->Resolved->Reopened->Closed) with a list of priorities and 5 custom fields (Affects Version/s, CC, Component/s, Duplicate, Environment)

Categories

The following table illustrates the categories that are available.

Category	Workflow	Relations
Bug	Issue	
Folder	Folder	Folder, Project
Improvement	Issue	
New Feature	Issue	
Project	Project	Bug, Improvement, New Feature, Project, Version
Version	Version	Bug, Improvement, New Feature

These have been set up so that the first thing you have to create within the Issue Tracking folder, before you may start adding issues, is either another Folder task or a Project task.

E-mail Notification

This has been set up so that any change to any task will:

- let anyone who either reported or is assigned to that task know of that change

- let any user who has been included in the custom CC field of the workflow know of that change

Hint: E-mail notifications may be switched off without deleting them merely by unchecking all the boxes that indicate by which events the notification is to be triggered.

What you need to consider

Essentially, if you are in a hurry to get started you need to ask yourself whether what has already been provided will be adequate for now and possibly also whether what is actually there is more complicated than you need.

You can of course modify the existing workflows, add custom fields to them or to the current task or any subtask that you create. You could also modify the rights of existing statuses or create some new ones.

What you need to do to get started

If you are happy with the way things are this is what you need to get started.

Create your user list.

The most expedient approach is to create a completely flat list rather than a tree; users can be moved around into a more structured arrangement later if that is what is wanted. You can either enter you users one at a time, manually or by using the CSV import mechanism. Look at the User simple import examples given on the TrackStudio resources page. If you can decide which users should have which status at this point that will save you from changing theirs statuses later but otherwise, create everyone with administrator status.

Tip: If you are merely experimenting or expect, once you have become familiar with the product to create a more appropriate configuration, you might consider giving your users usernames with a prefix, such as the letter x. This will allow you, when you set up your long-term configuration, to give your users the same usernames but without the x.

Remember that if you create your user list manually, creating users is a two-step process: first enter the user's details and then create his/her password.

To import a CSV file of users do the following:

Login as the user to whom you would wish your users to be subordinate. Without adding any additional users that would be itadmin/itadmin.

- Go to Current Task>CSV Import…and select the Script "Simple user list import".
- Select the CSV file containing your user list.
- Press the [Submit] button
- Either click on the refresh tree icon () or log out and log back in again to see the users you have added.

Connect your users to the task

In fact, this has already been done for you as, if you login as itadmin/itadmin, select Issue Tracking as the current task and go Current Task (#25)>Access Control Rules…[Assigned Statuses] you will find that, as user groups administrator, customer and developer have already been assigned to the project, anyone with any of those statuses will automatically be connected to that task. Note that if you have created any new statuses you will have to connect the individuals with those statuses, either as individuals or via their group status to the task. Click ont the [Effective Statuses] tab to see the list of users who are actually connected to the task an with what statuses.

Create a folder into which to put your issues

With Issue Tracking as the Current Task you will see that when you click on "Create a new Project or Task" the only available categories are Folder and Project and, looking at the table of categories above, you will see that only does the Project category allow you to create issues within it. So, unless you want two levels of "folders" below the Issue Tracking task you should create a task of category Project. Within that task you will then be able to create issues.

Get e-mail notification working

If you are in a hurry it might be easiest to switch e-mail notification off to begin with as described above. Note that the way in which e-mail notification has been set up (though it can be set up differently) makes use of statuses to determine who should get what.

To get it working, ensure that you have correctly set up the application's configuration parameters and that your server is capable of sending e-mails. You can then use the [Test] button that is available when you go Current Task (#25)>E-mail Notification Rules> cick on the name of any Notification Rule.

Deactivate existing users on the system

This is not an absolutely necessary step but should you wish to ensure that nobody can login as an already existing user in another area of the system you may do this by logging in as root/root, making John Smith the current user, going Current User (jsmith)>User and clicking on the Edit link. Then uncheck the Active check box to deactivate that account (all subordinated accounts will be deactivated automatically).

Remove the self-registration rule

There is a self-registration rule in the as-installed configuration and its existence means the the [Register] button appears on the login screen. To get rid of this, login as root/root. Select Admin>John Smith>Ben Vincent as the current user. Then go Current User (bvincent)>Self Registration Rules, check the check box adjacent to the Customer Self-Registration Rule and click on the [Delete] button.

Rename nodes as desired

Any of either the Task or User nodes may be renamed to suit your own organisation or circumstances.

Change the root password

Login as root/root and ensure that root is the current user. Then go Current User -> User... -> Change Password link to change the root's password.

Option 2 – create a new domain

The second option is to create an entirely new domain that is associated with a "managed administrator" that you create. The advantages of this method are as follows.

- By building from the ground up you may gain a better understanding of how TrackStudio works.

- What you create will be exactly what you want.

These are the steps you therefore need to take:

Create a new "managed adminstrator"

Login as root/root and select Admin as the current user. Then go Current User (root)>Users List>Create new user. Select the only available status is "admistrator" and give your new "managed administrator" a login and name (such as TSAdmin and TS Administrator) before clicking on the [Create a user] button.

Then populate that user's profile with information and click on the [Save] button.

Don't forget to then set that user's password (tsadmin for example) and click on the [Set password] button.

Log out and then log in as root/root to see the new user you have just created in the navigation tree.

Create a new top-level folder

Ensure that Projects is selected as the current task. Then go Current Task (#1)>Subtasks>Create a Project or Task. Select the only available category "Folder" and give your folder a name such as "My Company". You may then give your newly created task an alias, description etc before clicking on the [Save] button.

Click on the refresh tree icon () to see the task you have added.

Connect your "managed administrator" to your top-level folder

Select My Company as the current task and go Current Task>Access Control Rules>Assigned Statuses>Grant Access. Select your "managed administrator", TS Admin, from the Add new list and click on the [Grant Access] button.

Log out and then log in as tsadmin/tsadmin. You will then see only the user TS Administrator and the task My Company.

Create statuses

You should create at least one status, such as "member" or you could think of a number of statuses that might be relevant to the way in which you intend to used TrackStudio. In a sophisticated implementation you may have different statuses available to different users but for this exercise, they will all be owned by TS Administrator. It is possible to add statuses and change user statuses later.

To create a status go Current User (TSAdmin)>Statuses>Create Status. Enter the name of the status and click on the [Save] button. You are then presented with a screen from which it is possible to modify the rights available to that status but I would suggest that it is probably easiest, at least to begin with, to leave all your statuses with a full set of rights (the default state).

Tip: If you want to create a set of statuses each of which has successively fewer rights, create the first status with a full complement of rights and then clone that status (select that status and click on the [Clone] button and then rename the clone). Reduce the rights of the cloned status and repeat the process as many times as is necessary.

Add your users

Use either of the methods described in 0 above to add users to the system. This Quick Start approach ignores the possibility of creating and populating custom User fields that may in anycase be added later.

Create one or more workflows

You will need at least one workflow with which to start using TrackStudio. You are advised to start by creating and using a simple workflow. Additional workflows may be added later and use of the ones you first created may then be discontinued. This Quick Start approach ignores the possibility of creating custom Workflow fields that may in anycase be added later. To create a workflow refer to:

http://www.trackstudio.com/documentation/35/html/Creating_a_Workflow.html

and to the onscreen instructions.

Create one or more categories

Categories provide the mechanism by which workflows are associated with Tasks as well as providing the access control rules for any task based on the category. The same workflow may be contained in a number of categories. To create a category refer to:

http://www.trackstudio.com/documentation/35/html/Creating_a_Category.html

and refer to onscreen instructions.

The final step in the Category creation process is the step by which the category is made available to be one of the tasks-types that may be created below the current task. Thus if you create a category "Serious bug" you must ensure, for example, that it can be created as a sub-task of the task of category "Folder". To do this you must, with sufficient rights, go to the category "Folder" and create a Relation by adding "Serious bug" as a Subcategory.

Create a task/project hierarchy

Unless you intend to store all your tasks at the same level within the Task tree, you will want to create some form of structure in which to organise your various tasks. Whilst rearranging the User tree is not difficult there are more constraints around the Task tree and so reorganising tasks is not as easy as reorganising users. Therefore, unless you are only going to use this domain for "trial" purposes, it is worth trying to think of a sensible Task hierarchy. Most logically, tasks that will share similar workflows should be grouped together

To create a Task tree, start by making My Company the current task. Then go Current Task>Subtasks>Create a new Project or Task. Select the Category folder, give it a name and click on the [Create a Project or Task] button. Then add additional information to the task profile and click on the [Save] button. Click on the refresh tree icon ( ) to see the task you have added. Do this as many times as is necessary to create your Task tree. You may of course also import your task tree.

Connecting users to projects

Before users can create tasks they need to be connected to the Task tree. The same user may be connected to the Task tree in a number of different places and, once connected to the Task tree in any particular location that user is able to access all the tasks that are below the point at which he or she was connected.

So, in the simplest case, it is most expedient to connect all users to the highest and most appropriate point on the task tree.

Quick start considerations

Benefits of using the Quick Start approach

It will address your immediate needs.

You and your team will gain a greater understanding of how TrackStudio works and this will put you in a good position to generate a more complex and "thought through" implementation.

Options going forward

If you use the Quick Start approach your options going forward will be as follows:

- Start again with a fresh instance of TrackStudio
- Create a new domain and migrate from the old domain to the new domain
- Rearrange your User tree and build a new or modify the Task tree

Slow Start

If possible, anyone contemplating the use of TrackStudio should at least take the time to read through this section once. Doing so will increase your understanding of the product and may influence the TrackStudio implementation route-map.

What are you ambitions for your TrackStudio instance

One of the first things that you may need to think about is what your ambitions are for your instance of TrackStudio. Two extremes are possible; a simple implementation or a sophisticated one and the essential differences between these are illustrated in the table below.

	Simple	Sophisticated
Organisational scope	Single department	Enterprise wide
Task complexity	Single or few simple workflows	Many and/or complex workflows
Role variability	Everyone within the department has same role all the time	Individuals' roles within tasks vary depending on task
Level of control	Low	High
External Users	No external users	External users
Multi-domain capability	Don't want the ability to create separate root domains	Want to retain the ability to create separate root domains

However, things are not quite that straightforward. Not only might your implementation of TrackStudio lie somewhere between these two extremes, but also it is possible to have within a single TrackStudio implementation areas where the implementation is simple and areas where the implementation is sophisticated!

Understanding the "as-installed" user environment

One of the best places to start with furthering your understanding of TrackStudio is by learning from the "demo" domains that come as part of the "as-installed" user environment.

The administrator's view

When you log in as Admin (root/root) for the first time you will see a User tree that contains, at the level immediately below Admin, two "managed administrator" users:

> John Smith
> and
> Issue Tracker Administrator

Similarly in the Task tree you will see two tasks below the top-level Projects task

> Issue Tracking
> and
> Sample, Inc

If you look to see who has been granted access to each of these tasks by selecting from the Task tree each of the tasks in turn and then going:

> Current Task>Access Control Rules

You will see that John Smith has been granted acces to the Sample, Inc task and Issue Tracker Adminstrator has been granted access to the Issue Tracking task. Once a user has been granted access to a task that user can grant access to that task or any of its subordinate tasks to any of his/her subordinate users. Having assigned the two "managed administrators" to two top-level tasks Admin has effectively created two "domains":

Domain	Managed Administrator	Top Level task
Sample Company	John Smith	Sample, Inc
Empty Shell	Issue Tracker Administrator	Issue Tracking

You can see this by loging out and then loging in again, first as itadmin and then as jsmith. What you will find in each case is that when logged in as each of these users, only the task to which each was assigned will be visible to that user. Similarly any subordinate users of each of these users will never be able to see the task or sub-tasks belonging to the other "managed administrator".

In this way complete separation of two or more domains is possible. Note that it is possible to have more than one top-level task within a Domain and it is also possible to grant access to a task to more than one "managed administrator" or their subordinates.

By granting access to the root Task (Projects) and the root User (Admin) only to the User Admin, control over the creation of domains is held exclusively by Admin. Whilst it is possible to grant access to these roots to other users it doesn't really make sense to do so.

Sample Company domain

Overview

An explanation of the way in which the Tasks connected to John Smith have been set up is available at:

http://www.trackstudio.com/documentation/35/html/Sample_Project_Overview.html

Whilst this description is extensive there is some scope for additional explanation and experimentation.

Understanding the User tree

The user tree has been set up to reflect the structure of the organisation and the management hierarchy. Subordinates are listed under their managers.

One of the best ways in which to understand how TrackStudio works is to log in as each of the various users (this is in fact very necessary when you are configuring the application so as you can be sure that you have set up permissions correctly).

Login as root/root

What you will see when you do so is that not only does Admin have available to him both the User and Task trees in their entirety, but wherever he is in either the Task tree or the User tree, Admin always a has available to him all the menu items. Admin is also able to see not only the Sample, Inc task tree but is also able to see the Issue Tracking top-level node. If you click on each of these Tasks and then go to Current Task>Access Control Rules…>Assigned Statuses you will see in both cases that Admin has been assigned to each with administrator privileges (because you cannot change the asssigned status of Admin, instead of seeing the "adminstrator" you see "Admin" in this column reflecting the fact that Admin's own status is being used. Whenever a new top-level task is created Admin automatically gets assigned to that task with that role.

Click on user Admin and then go Current User>Statuses and what you see is that Admin has the unalterable status "administrator".

Login as jsmith/jsmith

The first thing you will notice is that no longer is either the Issue Tracking node in the Task tree or the Issue Tracker Administrator node of the User tree visible.

This former of these comes about because John Smith has been connected only to the Sample, Inc top-level node. This had to be done by a superior as only a superior would have John Smith as a user available to be connected; in this case the only available superior is Admin. To see how this has been done select the Sample, Inc task and then go Current Task>Access Control Rules…>Assigned Statuses. John Smith's assigned status is owned by Admin and cannot be changed by John Smith.

The second is because, unless a user has been assigned "administrator" status or has been granted access rights to other users, that user can only ever see himself and his subordinates or himself and his superiors in the User tree. Note however that seeing a user in the Tree is not the same as having been allowed to view that user's profile.

John Smith has available to him all the menu items. Why this should be is made apparent if you select him as the current user and go Current User>User. There you will see by looking at his profile that he, as well as Admin, also has "adminstrator" status.

Then, go Current User>Statuses… where you will see that John Smith has set up six statuses. All these statuses will be available to each of any users that are subordinate to him.

Finally we can look at John Smith's view of his subordinates. Go Current User>Users List and you can see that with Using filter set to All, John Smith can see his immediate subordinates. Change Using filter to All deep and you will see not only John Smith's immediate subordinates but everyone beneath him. Furthermore, as the All deep filter has been set to include additional fields you can see, as well as Name, Login, Relative Path and Status. Note also that the names of

all the users are in bold, indicating that John Smith has access to their profiles.

Login as jmiller/jmiller

In contrast to John Smith who, with "administrator" status, has access to everything. Jacob Miller has a status that severely restricts his view of his TrackStudio world.

To begin with you will note that John Smith doesn't even see the navigation trees. He does however get taken immediately to the Task that is of most interest to him: Projects>Sample, Inc>Products Xware [#6]. To see what settings have brought this about go Current User>User… and look at the Default project setting (#6) and the Navigation tree setting (None). The two other possible Navigation tree settings are xxxx. If you then click on Edit you will see that though Jacob Miller is has been allowed to change his Navigation tree setting he has not been allowed to change his Default project setting. What settings a user is allowed to change in his/her profile are determined by the User Field security settings of the status that user has been given.

Users John Smith and Jesse Levon in the Subtasks list are in bold which means they can be clicked on to access associated information. Clicking on John Smith however reveals only John Smith's User List as there are subordinates of John Smith to whose profiles Jacob Miller has been granted access. Contrast this, by clicking on the back button and then on Jesse Levon and you will see that though Jesse Levon has no subordinates, his profile is available to Jacob Miller; click on the User tab to see it. Either click twice on the Back button or go Current Task>Subtasks to return to Jacob Miller's initial view.

Whilst on the Subtasks listing page it is worth exploring the effect of Task filters. The default filter is All but if you click on the dropdown list you will see that other filters are available. Select "Bugs (personal and subordinate) and you will see Jacob Miller's view change. The settings associated with each of that and the other filters can be viewed (Jacob Miller's status allows him to view them) by clicking on the Filters tab.

The Filters page provides a summary of all filters available to Jacob Miller and it indicates (by the small arrow >) which of them is the current filter. It also indicates that Jacob Miller is not able to change any of these filters (small padlocks) as he doesn't own any of them. To look at exactly why the Bugs (personal and subordinate) returns what it does click on that name to be taken to the filter's overview page. Here you can see that the search is a "deep" search (recursive through all subordinate tasks) and the field and search criteria. Click on the back button, Current Task>Filters or the Filters node of the Full Path field.

Once back to the Filters list you will see that the Create a Filter link is available to Jacob Miller and this indicates that his status has been configured to allow him to do this.

Also available is the Task tab that allows Jacob Miller to look at the details of the task Projects>Sample, Inc>Products Xware [#6] itself.

Login as jlevon/jlevon

As Jesse Levon has no Default project set in his profile, when he logs in he sees, as the view to which the system defaults, the top-level task/s of the tree/s in which the tasks with which he is connected exist. As Jesse Levon is connected to Projects > Sample, Inc > Products > Xware, Projects > Sample, Inc > Customer Support > Xware and they share the same top-level task, he sees the Projects [#1] node. To reach the task with which he is connected he will have either to expand the nodes of the Task tree or drill down through

Subtasks listed in the Subtasks list of the current Task. If you do this, by clicking successively, for example, on Sample, Inc, Products and Xware, you will note that it is only after having drilled down through Xware that the Create a Project or Task link is available to him. This is because Jesse Levon is not connected to any of the Tasks in that task path at a higher level.

Note also that when at the Projects > Sample, Inc > Products > Xware node of the Tasks tree, Jesse Levon, cannot see any of the subtasks in the Navigation tree. Again this is because his Navigation tree profile stetting is set to Projects and Managers only.

With the status 010 Line Manager the list of menu items available to Jesse Levon is restricted but what is available does depend on whether the Current user is himself or someone else and whether the Current task is one to which he is directly connected or merely one that is higher up in the Task path.

Login as smanske/smanske

If you expand the User tree you will see that, as Stuart Manske's Navigation tree setting in his profile is set to All tasks and users, he can see all the nodes in the User Tree down to himself. Not only that, but he can also see, in the User tree, the users Bill Richardson and Jesse Levon. There are two different reasons for this:

In the case of Bill Richardson, this is because, as we will see, Bill Richardson has made his profile available to anyone with the base status 030 Software developer.

In the case of Jesse Levon, this is because Jesse Levon's profile has been made available to all other members of the Xware team. Jesse Levon's status of 030 Software developer, does not have the right to modify his own access control rules and so this was done by John Smith.

In the Task tree can see both the tasks and subtasks with which he is connected are available to Stuart Manske.

Again, with the status 030 Software developer, the menu items available to Jesse Levon are somewhat restricted.

Login as ctuck/ctuck

Chris Tuck has not been given a Default project nor has he visible to him any of the navigation trees. If you drill down successively through the tasks in the subtask list you will come eventually to the Customer Support [#5] and then the Xware [#20] tasks at which points he is able to Create a new Project or Task. This is because, as a customer, Chris Tuck has been connected to the Customer Support task.

Chris Tuck has also been given the status 100 external customer that allows him to create new users. It may seem strange, within your own task tracking system to grant outsiders from your company the right to create new users on your own system but this is perfectly possible and often a useful feature in TrackStudio. After all, you don't want to spend your time setting up and managing the accounts for the staff of your customers. Though not specified in the case of Chris Tuck, it is possible to limit, through the use of the Licensed Users field in a user's profile, the number of subordinate accounts a user can generate.

But what about possible compromises to the security of my TrackStudio instance you may ask. After all, if you go Current User (ctuck)>User List>Create a User you will see that all of the 8 possible statuses, including that of administrator, are available.

There are two keys to this apparent conundrum. The first is that the rights accorded to you through your status are only applicable to users that are subordinate to yourself. Thus, Chris Tuck, by creating a user with "administrator" status is only creating a user who can administrate his own subordinates and if he should he have decided to do that, that is really his business. After all, you have delegated the authority for managing his users to him.

Secondly, Chris Tuck, with the status 100 external customer, has no rights that allow him to modify Task access control rules. So unless Chris Tuck grants to his subordinates the appropriate status, they will none of them be able to connect to any task. Within Sample, Inc the status 110 external staff has been connected to the task Customer Support [#5] and so only if Chris Tuck grants this status to his subordinates will they be able to access that task and its subordinates.

Finally, it is worth noting that the 110 external staff status does not allow the creation of new users; it is only Chris Tuck who is able to do this. Chris Tuck himself, as a user rather than as a user with a particular status, had of course to be connected to Customer Support [#5] task by Brian Vincent, the manager of the Customer Support function.

Reviewing the Statuses

Whether a user may view, create edit or delete statuses depends on their own base status. In the Sample, Inc example the only status with these rights is the administrator status and the only user with a base status of administrator is John Smith. If you log in a jsmith/jsmith and go Current User>Statuses you will see that there are six statuses in addition to the administrator status (a status that exists by default and cannot be altered) each of which is owned by John Smith. To see the rights that each of these statuses confers click on any one of them and you will be presented with a status Overview page that summarises the rights associated with that status. The Properties tab allows you to change the name of the Status and the other tabs display and allow you to edit the rights associated with different aspects of the Task and User objects.

The permissions model within Sample, Inc is a simple one in which each status is given the name of the role of the person to whom it is to be assigned as that person's own/base status. Accordingly, the more senior the role, the more extensive the rights associated with the status that is named after it. This is the most straightforward approach when, for most of the time, the individuals will always have the same roles whenever they are involved with a project or task. So as to make it easy to see how the model has been set up, a spreadsheet is available at:

http://www.trackstudio.com/restricted/docs/en/Sample%20Inc%20status%20settings.xls

that lists, alongside each other, all the permissions of the various statuses that have been created within Sample, Inc. Not only will this spreadsheet be helpful in your understanding of the statuses in the sample company, but it may well be helpful as a way in which to list the statuses you create for your own implementation.

Understanding the Task tree

Views of the Task tree

The first thing to be aware of with the Task tree is that there are three possible views of it, and which of these it is that the user has depends on the Navigation tree setting in his/her profile. There are three possible values:

All tasks and users   This is the view that is provided by default when a new user is created. When a user is connected to many Projects this may be somewhat confusing and, as tasks are listed alphabetically without any filter being imposed, this view may not be as useful as it may at first seem. There are also some users for whom it would be better if the Task tree was concealed completely.

Projects and managers only   Tasks that are considered to be projects are those that have children and similarly, users that are considered to be managers have subordinates. Consequently this view removes the clutter of the lowest level of both the User and Task tree.

None   No left hand frame visible.

Seeing the different views

To see the effect of the difference between the "All tasks and users" and the "Projects and managers only" view, log in as jsmith/jsmith. Fully expand the Task and User trees. Then, if John Smith is not already the Current User, select him and go Current User (jsmith)>User>Edit and change the Navigation tree setting to "All tasks and users".

You will then need to log out and back in again as jsmith/jsmith to see the difference this makes.

The connection between users and tasks

It is the connections between users and tasks that determine who can see what of the task tree. The person who is able to establish a connection between a user and a task is:

- a superior of that user
- a user who already is connected to the tree at or above the point at which the connection is to be made

So if Sample, Inc is made the Current Task and you go Current Task>Access Control Rules… you will see that:

Admin is connected as an "administrator": this happens automatically as Admin is already connected to the root task Projects though this Access Control Rule cannot be seen nor can it be changed. If you click on the Assigned Status tab you won't even see Admin listed.

John Smith is also connected as an "administrator" and if you go to the Assigned Stautes tab you will see that under the Assigned Status column, the name John Smith appears but is not in bold. This indicates that John Smith's status in this task has been assigned further up the tree and the listing of Admin as owner and the absence of a check box against his name indicates that he didn't connect himself to this task nor is he able to remove himself from it.

The four managers have been connected to this task as Department Managers.

Next, make Customer Support the Current Task and go Current Task>Access Control Rules… where you will see that:

Department Managers have been granted access; looking at the Assigned Statuses tab you can see that this has been done by each of their respective managers.

Chris Tuck has has been granted access and the fact that his owner is himself, indicates that this came about by the self-registration rule that had been set up by Ben Vincent to allow external customers to access the system.

Users with the status 110 External staff will be granted access to the task. This access has been allowed so that external users such as Chris Tuck (effectively an external administrator) may also add users to the task.

This pattern of Access Control is followed with the other tasks. The following things are important to note:

- A user's status within a task may be complemented by the granting of access to that task with a status other than his/her own/base status.
- A user's status within a task may be redefined by overriding his/her own/base status with an assigned status.
- A combination of override and complementary statuses may be used.
- A user's status cannot be changed other than at the level in the Task tree that the user was assigned to that task.

Examining the Workflows

In addition to the workflow Folder that is connected to the root task ("Projects"), three workflows are connected to Sample, Inc:

Workflow	Description
Assign Employee To Product	Simple three state (Requested, Approved, Rejected) that shows how a workflow may be used to handle routine project-related actions).
Issue Lifecycle	A five state workflow with seven message types. Permissions on message types show how status -related restrictions may be imposed.
Product Lifecycle	Four states, four message types and two custom fields. Only department or line managers may change these states

Tip: If you have a browser that supports tabbed browsing it is frequently very useful to open each of a number of workflows or messages in different tabs so that they may easily and quickly be viewed and edited.

Examining the Categories

It is interesting to note here how two categories are attached to the same workflow.

Category	Workflow
Assignment Request	Assign Employee To Product
Folder	Folder
Software Bug	Issue Lifecycle
Product	Product Lifecycle
Product Version	Product Lifecycle

Empty shell domain

If you log in as itadmin/itadmin you will see the domain that has been provided for those wishing to make a quick start with their use of TrackStudio. For a more detailed explanation of this domain refer to section 0 above.

Permissions-model

Overview

TrackStudio controls who can see and do what in a number of different ways and in a number of different places. Understanding how these work and interact is important.

Hint: You may like to start using TrackStudio, and indeed it is easier if you do so, with a relaxed permissions model. Relying instead in the early stages of your use of the system on your "operating procedures" and/or the common sense of your users to ensure that they do only what they are supposed to do. If you want to start in this way, create the statuses that you see as being relevant to your situation and assign them, as own/base statuses to the appropriate users. Give all statuses the same relatively unrestricted set of rights. Once you have your TrackStudio instance configured you may then

tighten your permissions model (being aware, of course, that someone may have done something at one time that he is now no longer able to do).

The points at which control is applied

Own/base status

Within a user's profile it is possible to change, if you have the right to do so, the status that user enjoys. This status is referred to as the user's own/base status.

A user's own/base status may be changed at any time.

Who is connected to what

What tasks any particular user can see depends on where that user has been connected to the task tree. Once connected to the task tree a user may see all tasks below the point at which he or is connected to the tree. A user may be connected to the task tree at a number of different points; these points would be on different branches of the tree.

A user may only be connected to a point on the task tree only if a superior of that user is connected to the task tree at or above the point at which the connection between the tree and the subordinate user is to be made.

Status within the context of a task

A user is connected to a task (a point on the task tree) by being granted access to that task. Once that user has been granted access to the task, that user's rights within that task and any sub-tasks may be:

Left as they are – user enjoys rights conferred by own/base status

Overriden – user's own/base status is overridden by the status assigned to him/her within the context of this task

Supplemented – the user is granted one or more additional statuses. (this is done by granting access to the user more than

once and then changing the assigned status).

Overriden and Supplemented – it is possible to both override and supplement the status assigned to a particular user in the context of any particular task (and its sub-tasks).

Task-related designations

In the context of a Task a user, as well as having their status, may also have either or both of two task-related designations. These are:

Submitter – the person who first created the task. The submitter of a task never changes.

Handler – the person or user group assigned at any point in time to attend to/have responsibility for the task. The handler changes through the life of a task but can only be changed when a message is created.

These two designations may be used when setting Category or Workflow permissions.

Note: The designation Submitter is also used in the context of a Message where again the submitter of a message never changes. The Submitter of a Message may be used in filters.

Category and Workflow Permissions

What it is that each status can either see or do and whether that status is able to be the handler of a task is determined by the permissions granted in association with both categories and workflows. The ability of the user to set these permissions is according to the following rules:

If a user has access to the categories/workflows connected to a task, then that user can set permissions for the statuses that he/she has created OR the statuses that have been created by a superior. This means that if user has created his/her own category or workflow, then he/she can set the permissions for it.

If the user doesn't have access to the categories/workflows connected to a task, then that user can only set permissions for statuses that he/she creates or has created. For example, in the "as-installed" database jsmith can set category permissions for "department manager" (because jsmith created this status), but cannot set permissions for administrator.

A user cannot set workflow/category permissions for statuses created by subordinate users. Instead, it is necessary to login as that subordinate user and set permissions from there. Essentially therefore, you should use the same user account to both create statuses and then define workflow/category permissions for those statuses.

The list of statuses available within the categories or workflows associated with any task is the superset of all the statuses owned by each of the users connected to the task tree at or above that point.

Category permissions

One of the things that a Category provides is a set of permissions that relate to the Task that is to be created of that category. The following is a list of these permissions:

Can Create – determines whether a user with the specified status may create

a Task of the current Category. If Submitter, Handler or Sub+Hand are invoked here, they refer to the user with those designations in the parent task.

Can View – determines whether a user with the specified status may view a Task of the current Category.

Can Modify – determines whether a user with the specified status may modify the details of a Task of the current Category.

Can be Handler – determines whether a user with the specified status may be assigned as a handler to a Task of the current Category when that task is first created.

Can Delete – determines whether a user with the specified status may delete a Task of the current Category.

Workflow permissions

Within Workflows, Messages provide the mechanism whereby, as well as doing a number of other things, a Task is moved from one state to another. Often, within a workflow it is important that only someone with the correct level of authority is able to move a task from one state to the next. In TrackStudio this is controlled by the rights granted for each message type within each workflow.

The following can be set for each status for each message:

Can View – determines whether a user with the specified status may view a Message of the current type.

Can Process – determines whether a user with the specified status may create and submit a Message of the current type.

Can be Handler – determines whether a user with the specified status may be assigned as the handler when a Message of the current type is processed.

Permission qualifiers

Within both the Category and Workflow permission matrices the following "qualifiers" may be associated with each of the statuses.

All – anyone with this status may have this permission

None – no one with this status may have this permission

Submitter – only if the user with this status is the submitter of the task/message may he/she have this permission

Handler – only if the user with this status is the handler of the task/message may he/she have this permission

Sub+Hand – only if the user with this status is either the submitter or handler of the task/message may he/she have this permission

Statuses

Statuses are connected to the users that created them.

A Status is a collection of rights that may be granted to a user. There are rights that relate to Task fields, User fields, Task-related actions and User-related actions.

Every user has an own/base status. Within the context of any particular task this Status may be supplemented or overridden. This provides for an enormously flexible permissions model.

In addition to having a Status within a Task, a user may have a task-related designation. There are two such designations, Submitter and Handler.

These task-related designations can be set to interact with Statuses to further refine the permissions model.

Three types of status might be usefully considered:

1) Statuses with rights that are to be assigned to users as an own/base status

2) Statuses with no rights - merely to be used as "labels" that can be identified in the context of workflows and categories.

3) Statuses with rights that are to be assigned to users depending on their role within the context of a task. These statuses are als o used to identify who may do what in the context of workflows and categories.

All permissions models

In every permissions -model there is at least one user, the root user ("Admin") who has "administrator" status. This status can neither be removed nor edited.

Top-level status assigned as administrator own/base status to "Admin".	Can do everything and see everyone and every task but does see everything from the top of the tree. Needs to be in correct location on tree to see things that are connected at that point or above.

If you wish to adopt a completely "relaxed" permissions environment you may grant everyone "administrator" status.

Simple permissions model

In a simple permissions model statuses correspond closely to organisational roles and seniorority. In this case people have the same roles in relation to tasks at all times.

Statuses with rights that are to be assigned to users as an own/base status	Co Director	Read only rights but can also run reports.
	Proj Owner	Can change priorities and deadlines as well as to create reports.
	Dept Mgr	Can assign users to tasks, change user information for members of his department and can run reports
	Proj Mgr	Has a full set of task-related rights; can assign users to tasks, close tasks and can run reports
	Team Ldr	Can assign users to tasks, close tasks and can run reports.
	Team Member	Person who will actually work on Tasks with appropriate permissions.
	Member	Any other person in the company/organisation not given any of the other base statuses. Has mainly read/only permissions but can create new tasks and respond to requests for further information
	Customer	Restricted permissions in keeping with what your company wishes customers to be able to see and do.
	Contractor	Similar permissions to those of a team member but more restricted.

Matrix-management permissions model

In a matrix-management permissions model there may be very few statuses that are assigned to users as own/base statuses. The own/base status that is assigned to the majority of users would have a limited permissions-set. Instead, depending on the individual's role within any particular task/project, that user's own/base status is either supplemented or overridden by one or more additional statuses.

Statuses with rights that are to be assigned to users as an own/base status	Dept Mgr	Can assign users to tasks, change user information for members of his department and can run reports
	TS Mgr	Similar to administrator but with some restrictions in ablity to delete and configure.
	member	Any other person in the company/organisation not given any of the other base statuses. Has mainly read/only permissions but can create new tasks and respond to requests for further information
	customer	Restricted permissions in keeping with what your company wishes customers to be able to see and do.
	contractor	Similar permissions to those of a task executor but more restricted.
Statuses with no rights - merely to be used as "labels" that can be identified in the context of workflows and categories.	task executor	Person who will actually work on Tasks with appropriate permissions.
	gatekeeper	Assesses and assigns tasks/issues when they are received.
	manager	Has overall responsibility for managing the tasks and associated processes. The role is essentially one of assisting the Proj Mgr manager with management of the tasks within TrackStudio.
	reviewer	Once tasks have been completed and are ready for sign off the reviewer is able to sign them off.
	tester	Simiar to reviewer status but only able to test issues that have been deployed to live servers.
Statuses with rights that are to be assigned to supplement or override the own/base status of users depending on their role within the context of a task.	Proj Mgr	Has a full set of task-related rights; can assign users to tasks, close tasks and can run reports
	Proj Owner	Can change priorities and deadlines as well as to create reports.
	power user	Allows a person who has an understanding of TrackStudio, might be engaged on a project so as to help get it set up correctly.

Supplementary statuses

These are statuses that you might wish to create that essentially have no rights other than being able to "unlock" a tightly defined set of rights.

Statuses with rights that are to be assigned to supplement or override the own/base status of users depending on their role within the context of a task.	Script admin	Has knowledge and is trusted to create scripts.
	Report admin	Has knowledge and is trusted to create reports.
	Filter admin	Has knowledge and is trusted to create publicly availabel filters.

User Tree considerations

Understanding User Management

Should you wish to do so, the User Management tree provides a way of grouping users together. The benefits of grouping users together are:

a) it allows, as is also the case with the Task tree, for the rights to access a number of objects (Access Control Rules, Filters, User Statuses, Scripts, E-mail templates, Self-registration Rules) to be inherited.

b) the user heading the group will be able to do whatever actions are allowed by the rights associated with his/her status to his/her subordinates. This allows for the administration of users to be distributed/delegated.

c) by setting the head of a group to "not active", it is possible to disable that user as well as all of that user's subordinates. In this way you may, for example disable

access for a team of contractors who are no longer working on a project.

d) by connecting the head of a group to a task all that user's subordinates may also be granted access to that task.

e) the custom fields associated with any user are inherited by that user's subordinates.

Access to users

Superiors are "automatically" able to access and modify the profile and own/base status of subordinate users with the rights conferred on them by their own own/base status.

It is also possible, through a user's own access control rules for that user or his/her superior (if their rights allow it) to grant to others access to that user's profile. When granting such access to others it is possible, just as is the case when granting access to Tasks, to either Supplement or Override the status that they onlooking user will enjoy when viewing that user's profile.

Tip: If you want everyone to be able to see everyone else's profile you should instruct your users to grant access to their own profiles to all available statuses but ensure that all these statuses are overridden with a status that allows only read-only access.

Alternative user tree models

If you do choose to group users you can do so either under "real" users or under "virtual" users or both, depending on your requirement.

It is worth noting that the only restriction on what own/base status may be assigned to a user is whether that status is available at the point on the user tree that the user exists.

Flat user tree

This is the simplest of the possible User Tree implementations but does not enjoy any of the benefits of a hierarchical tree. If you want to get going quickly you could set your tree up in this way and introduce some structure later.

Hierarchical user tree with "real" users

This is a User tree that reflects department structures and line management responsibilities. Possibly best implemented when TrackStudio is being implemented as a single-point solution.

Hierarchical user tree with "virtual" users

This is a User tree that reflects roles and responsibilities but that uses virtual users to provide the tree structure.

Hybrid hierarchical tree

In this case the User tree uses a combination of both "real" and "virtual" users to group users together and create the hierarchical structure.

Tip: You may at any time change the name of a user. It is also possible to move users around the User Tree providing that the Custom Fields and Status that they have are also available at the destination location in the tree.

Tip: When logging on as a user, the password of any superior of that user may be used instead of that user's password. This makes it easy to check what any user can see or do.

Task tree considerations

In thinking about how your task tree should be constructed it is useful to think of grouping together tasks that will be shared by the same group of people and/or will across which it would be useful to share workflows.

Sufficient structure should be injected into the tree to meet any foreseeable requirements. One such is the archiving of old tasks. For this purpose it may be useful, for example to have two tasks at the same level, one called live and the other dead. So that once tasks are closed they may be moved from the live task to the dead task (a requirement of moving tasks is that the same workflows and custom fields be available in the destination location).

Workflow considerations

Workflow components

Workflows consist of 4 main components:

Priorities –	an in-built list field where the values can be defined for each workflow.
States –	the state in which a task is at any time. An unlimited number of states may be created.
Messages –	that, amongst other things, move a task from one state to another
Custom fields –	10 field types available but you may create as many custom fields as you would like.

Workflows may be as simple or complex as you wish

For each Message type it is possible to define who is able to:

- View
- Process
- Be assigned as Handler

Each Message type may have any number of "resolutions" associated with it. A "resolution" is a supplementary to the message ie

Message	Resolution
Reviewed	bug replicated
	not a bug
	change request

Creating Workflows

The creation of each workflow and the setting of all its message-related permissions will represent a considerable investment within your TrackStudio implementation. One of the most important things to consider therefore is whether you are creating that workflow at a point in the Task tree that will make it available to others who might also find it useful. It is also worth creating workflows that are as generic as possible for that same reason.

Similarly, when about to create any new workflows, look to see whether there's an existing workflow that will suit your purpose before creating a new one. You may then associate that workflow with your task through the creation of a Category that uses it.

Furthermore, if there is a workflow that closely matches what you have in mind clone (take a copy of) an existing workflow and modify it.

Tip: If you can decide on a universally applicable colour and naming scheme for states that will be shared by a number of your workflows life will be made somewhat easier for your users. The traffic-light colours of red, orange and green might be used to represent the states "on hold", "pending" and "in progress" throughout your implementation.

When you are creating Message Types for your workflows there are three things that you also need to define:

Transitions – essential

Resolutions – useful but not mandatory and not always relevant

Permissions – optional and probably best set when the creation of the workflow is complete.

Transitions:

A Transition defines the States in which the Message will be available and the State to which submitting that Message Type will move the task.

Resolutions:

These are like a supplementary comment or qualifier to the Message and are displayed in the Task history. Resolutions can also be displayed in search results and searched on.

Permissions:

You may not want everyone to be able to effect every transition. It is by defining permissions that you assign, to each of the various Statuses, the right to either:

> View
> Process
> Handle

each of the Message Types.

Tip: It is most useful to make available to every state at least one Message Type that does not change the State of task (does not move the task from its existing state to its existing state) and by convention this Message Type is called a Note. You might want to have one such Message Type that allows the Handler to be changed and one such that does not; allowing only users with sufficient status to use the latter.

Custom fields within Workflows

As well as being available to Tasks and Users, custom fields may also be defined in association with Workflows. Bear in mind however, that if you are expecting your workflow to be useful and available to others the custom fields that you associate with it will go with it. Given this, it may be better to achieve any association with custom fields either by:

a) creating a Workflow without any custom fields, then cloning it and adding them

b) by defining them in association with Task.

Making a Workflow available to a Task and its subtasks

The way in which a Workflow is made available to a Task is through the creation of a Category.

To create a Category select the point in the Task tree where you want to create the association and from the Task dropdown menu click on Categories. In the resulting interface give the category a name and select the Workflow with which it is to be associated. There are two other settings that can be checked:

Handler Required: Checking this will force the user to enter a Handler when a new task is created (the user sees Choose… in the dropdown list). If unchecked the Task will, by default be assigned to the owner of the parent Task but the user will have the option to choose Nobody.

Group Handler Assignment Allowed: If this is checked the Task may be assigned not only to an individual but to a group of

individuals who have a particular status.

The second part of making a Workflow available to a Task is through the creation of Relations.

Categories

Categories are "containers" that connect workflows to tasks. The same workflow may be used in many categories. Categories define who can view, create, modify, delete or be initial handler for a task of that category. Categories also allow you to define a template – headings that will appear in the Task description box

Categories have Create task and Edit task triggers:

> BEFORE Trigger
> INSTEAD OF Trigger
> AFTER Trigger

Creating Relations

Relations are defined within categories and determine what sub-tasks can be created as children of a task of that category. Such a sub-task may be an actual task or may be a Folder.

It's easy to miss the step of creating relations!

The "Folder" workflow

TrackStudio makes use of an "unusual" workflow as the mechanism by which tasks can be grouped together in the Task hierarchy. This workflow has only a single state. This single-state workflow is created at the highest level in the Task hierarchy and is then associated with a Category that, by convention is called Folder.

The Category Folder is made available to all children of the top level node in the Task hierarchy by being defined as having itself (Folder) available as a Relation.

Testing of workflows

Before you release a workflow on your TrackStudio users it is advisable that the workflow should have been tested to ensure that who may do what at each state has been correctly configured. It is possible for a single user to test a workflow by "pretending" to be other users and logging on with their usernames. The fact that a superior's password can be used to override that of a subordinate is very useful in this context.

Before you begin testing, be sure that you have completed the configuration of all the permissions that you are to employ as if not, changing any of them may require you to retest. Also ensure that you have the following three bits of information available to you:

1) A list of at least one user for each of the statuses available within the task.

2) A flow diagram of the workflow

3) A message permissions matrix that shows who you expect to be able to create each of the message types in each of the states.

One needs of course to test in both directions.

a) That the person of a particular status is able to do what he/she is supposed to be able to do.

b) That people of other statuses are either not able or are able to do things as specified.

E-mail

There are a number of different ways in which e-mail can be used to interact with TrackStudio. Various properties in the

trackstudio.mail.properties configuration file need to be set to allow this to happen.

Inbound

E-mail submission

TrackStudio can be configured to poll a mailbox (this it will do every 5 minutes (this is fixed) using POP3) to download the e-mail from the mail server.

Under which of the existing tasks the e-mail gets turned into a sub-task depends on whether there is an E-mail Import Rule associated with that task that will "capture" that e-mail. Each E-mail Import Rule uses a filter that will look for keywords in one of:

- Body
- Subject
- Body or Subject
- Header

Attachments are imported into the system automatically

The following conditions need to be met in order for an e-mail to be submitted to TrackStudio:

1) The e-mail has to pass through at least one E-mail Import Rule. See Current Task>E-mail Import Rules>Rule.

2) To pass through a filter the e-mail must fulfill the following conditions:

3) It must come from an "Allowed Domain" (if this is blank all domains are allowed)

4) It must contain the terms that match the "Keyword (regular expression)" that has been defined for the filter (if this is blank any e-mail is allowed through)

5) The sender of the e-mail must be have access to the current task (unless the Create New User if Required option is checked) See Current Task>Access Control Rules

6) The sender of the e-mail must have a status that allows him/her to create a Task of the Category stipulated in the E-mail import Rule. See Current Task> [E-mail import Rule specified Category]>Permissions

If an e-mail fails to be captured by at least one E-mail import Rule it will be forwarded to the address specified in the mail.store.fwdaddress property of the trackstudio.mail.properties property file providing that the mail.store.forward is set to yes.

Capturing messages being sent to existing mailboxes

It is very likely that your organization already has a number of exiting mailboxes that are being used to receive e-mails related to tasks that you want to track using TrackStudio. TrackStudio is, at present, able only to download using POP3 from a single mailbox. To work around this restriction the following methods are suggested.

1) Get each of the mailboxes that is receiving mail to automatically forward its e-mails to the mailbox from which mail is being downloaded to TrackStudio mail.

2) An alternative is to get the automatic forwarding rule to "tag" the e-mail by putting a keyword into the subject line. This is more likely to be possible if all e-mails are redirected via a mailing-list management application.

3) Set up the E-mail Import Rules to look for the e-mail address from which the e-mail has been forwarded or the keyword that has been injected into the subject line.

This provides a mechanism for funneling all e-mails that, within an organization, might currently be going into different mailboxes into tasks within TrackStudio.

Tip: You should create an Inbox within TrackStudio that, through the use of a catch-all filter, will capture any of the e-mails that don't get caught by the other filters that you have defined. This filter should have the lowest precedence.

E-mail filter precedence

If you create a number of different E-mail Import Rules it is important to be aware of the order in which these rules get run when an e-mail arrives.

Each rule has an "Order" property and the rules are sorted by this property (ascending) globally, not per-task.

Outbound

E-mail notification

E-mail notification rules can be created for any task. The filter that is associated with that rule will determine which particular sub-tasks might experience an event that would trigger a notofication.

There are four task-related events that can be used for triggering the sending of an e-mail:

- New Task
- Updated Task
- New Attachment
- New Message

The user or user-group that is to receive the notification needs also to be defined and different templates can be specified for different tasks/rules. For example, you may wish to provide a high level of detail for developers, low level for customers.

E-mail digests

TrackStudio can be set-up to provide regular summaries of the state of any particular collection of tasks. To do this, Filter subscription rules can be defined that will generate for any particular user or user group a periodic summary. These rules are defined per task and the interval at which the digest is generated is also definable per rule.

The standard filter mechanism used to determine what type of summary gets sent.

As an example, you might wish to ensure that managers receive a list of high priority bugs that have not been worked on in the past 3 days and that they received received this report every morning.

E-mails sent by triggers

If it is not possible to define exactly what e-mail you want to be sent using the interface it is possible to define it using a script. Such e-mails may be sent to other systems/data repositories.

Scripts and Triggers

Message-related triggers

For each message type it is possible to specify a script that will run for each of up to three events.

Each event is called a trigger.

BEFORE Trigger - action which is executed before the message is created.

INSTEAD OF Trigger - action which is executed instead of message being created.

AFTER Trigger - action which is executed after an the message has been created.

Scripts are small pieces of code that use the API to modify the application's behaviour.

Task-related triggers

Triggers that fire on the Creation or Editing of a task are defined in the Catogory that defines a task of that type.

BEFORE Trigger - action which is executed before the task is created.

INSTEAD OF Trigger - action which is executed after an the message has been created.

AFTER Trigger - action which is executed after an the message has been created.

Reporting

Reporting is a very powerful feature within TrackStudio. Permission to create reports can be granted in a context-sensitive way to either users or user groups.

Reports are defined per task and the standard filter mechanism used to determine what the report will contain Four different in-built report types available:

List - displays the list of tasks as a table. Configure the columns and the sort order by specify filtering conditions.

Detailed - displays all task fields that have values.

Distribution - groups tasks and allows the use of aggregate functions (Avg, Min, Max, Sum) for each group.

UserWorkload - displays information about the time (actual time) your subordinates worked on subtasks of a task.

All reports can be exported as CSV/XML for use by third-party applications

Other considerations

Adding of Statuses

You need to be aware that, if you are using the permissions mechanism to constrain who can do what in the context of Workflows and Categories, should you subsequently add another status you will need to revisit all the Workflows and Categories to which that status is available to set the permissions for that status.

By default any newly created status is granted all rights within the context of either Workflows or Categories.

For this reason it is best to set up as many statuses as you believe will be necessary before going through the exercise of defining any associated permissions.

Workflow custom fields vs Task custom fields

You may wonder when it is advisable to use custom fields associated with workflows rather than custom fields associated with tasks.

Any custom fields associated with a Task sitting at some point in the Task tree will be inherited by sub-tasks of that task and so on. This would be useful when, for example, you have 5 task categories that might be created as sub-tasks of a

particular task and you want all to have an "Originating customer" field. Defining the "Originating customer" field as a custom field of the parent task will make it available in every one of its sub-tasks irrespective of those tasks' workflows.

Conversely, should you wish a custom field value to be associated with a task but not to be inherited by its sub-tasks you would be better creating that custom field as a custom field of that task's associated workflow. You might for example like to create a "Project" task with a "Beta release date". Creating this as a custom field of the "Project" task's associated workflow will mean that that field is not also inherited by all of the "Project" task's sub-tasks.

Defining the handler on task creation

You may wish all newly created issues within the Maintenance task to be assigned to user Paul Jones. There are two things that you need to do in order to make this happen:

1) By default any the handler of any new task is the handler of the parent task. So set Paul Jones as the handler of the Maintenance task by creating a Message that allows you to change the handler of that task. Any task submitted by e-mail will automatically have Paul Jones set as its handler.

2) To prevent the user setting the handler of the sub-task to anything other than the handler of the parent task, go to the category permissions of the sub-task and set "Can be handler = Handler" for all user statuses. This setting means, that when you create a new task of this category, only handler of the parent tasks can be chosen as handler of this task.

Should you wish a group of individuals to be assigned as handlers you would have to do these additional things:

1) Create a "label" status such as "duty maintainer" so that it is available to the Maintenance task.

2) Supplement the statuses of those you want to be "duty maintainers" by giving them also the "duty maintainer" status.

3) Edit the category so that "group handler is allowed".

4) Set the Handler of the Maintenace task to "duty maintainer"

Constraints on Copying and Moving tasks

There are some constraints around copying and moving tasks; but both source and target project should have the same configuration:

1) the task category/workflow should be available in the target project

2) the task's custom fields should be also available in the target project.

Constraint of assigned workflow

You cannot change task workflow/category after it has been created. There are two possible solutions to this:

1) Implement one complex workflow, that will include all possible states of the task. You just change task state, but not category/workflow in this case.

2) Create a simple workflow for customer request, but create additional change requests/problems tasks in other projects, linked to the user's task.

The second method is recommended.

Adding custom fields

If you add non-calculated custom fields to TrackStudio after tasks have been created and later in their life cycle, such tasks will contain no values for the custom fields even if a default is defined.

Adding Statuses

If you create user statuses at a later date you will have to go through each workflow, category, message type and custom field to define the permissions for that status.

Note: To set the Messsage Type related permissions of a Status in a Workflow that you do not own you will need to click on the name of the Message Type in the Workflow>[specific workflow]>Overview view.