# O-META

User Guide v1.0

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#### O-META INTRODUCTION

- The O-META database schema and code are designed to allow great flexibility in establishing events against projects and samples. It is intended that myriad diverse projects may be created and their ongoing operations may be represented using this code, but without re-architect-ing for each new project or event. Once in the system, the web or spreadsheet display can show any of the attributes the user provides, and the display code may be customized independently of the storing code.
- O-META allows user to:
  - track data by ontologies served by Ontology Lookup Service
  - configure a project with user defined metadata structures for great flexibility
  - differentiate sets of data by triggering flags on metadata
  - control the data accessibility by managing user roles
  - navigate the full history of events against projects and samples
  - generate dynamic data reports





### O-META MAIN MENU



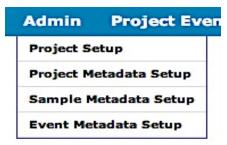
Common

Project Events

Load Event

Event Detail
Event Report

**Admin** 

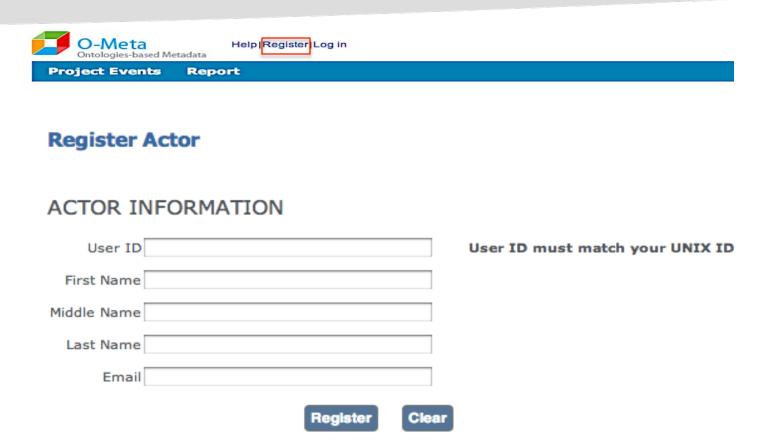


The main page has the top menu bar with sub-menus and text buttons for help, registration, and user login. Admin users will see 'Admin' menu item that provides admin-only tasks.





## USER(ACTOR) - REGISTRATION



First time users(actors) must register themselves in order to navigate and load data within the application. For an environment with LDAP, users only need to provide their LDAP ID and basic information. Users will be prompted to enter desired passwords when there is no LDAP available. Fresh users get general view and edit privileges, and other permissions can be granted by the system administrator.





## USER - LOGIN



#### O-META: Ontologies based Matadata Tracking Application

User Name	
Password	
	Login
or please	Register to use the system.
	versions of <b>Firefox(v.14+)</b> , <b>IE(v.9+)</b> or <b>Chrome(v.22+)</b> are recommended in using O-META. rience difficulties with a particular browser, please contact Help.







#### WORKFLOW OVERVIEW

- ① Project Setup(Admin Role Required)
  - Only users with 'Admin' role can load new projects.
  - supports hierarchical project relationships. (parent-child)
- 2 Event Metadata Setup(Admin Role Required)
  - Defines event types and sets of attributes for a project
  - can define project/sample metadata with simple checkboxes
  - supports ontology
- 3 Project Metadata Setup(Admin Role Required)
  - can define project level attributes that already exist at event level (2)
  - supports ontology
  - this step can be also done in (1), but it can edit the metadata as requirements change
- 4 Sample Metadata Setup(Admin Role Required)
  - can define sample level attributes that already exist at event level (2)
  - support ontology





## WORKFLOW OVERVIEW(CONT)

#### ⑤ Load Sample or Project

- utilizes Load Event (6) with SampleRegistration event type
- admin has to configure SampleRegistration event first
- insert values for metadata defined in (2) or (4)
- supports hierarchical relationship between samples

#### 6 Load Event

- loads values for pre-defined metadata of event types in (2)
- supports batch loads by providing template download and grid load form
- can load new projects and samples along with events

#### 7 View & Track the Data

- search and navigate the whole history
- in-page dynamic data modification (coming-soon feature!)
- search and visualize data by ontologies (future add-on!)

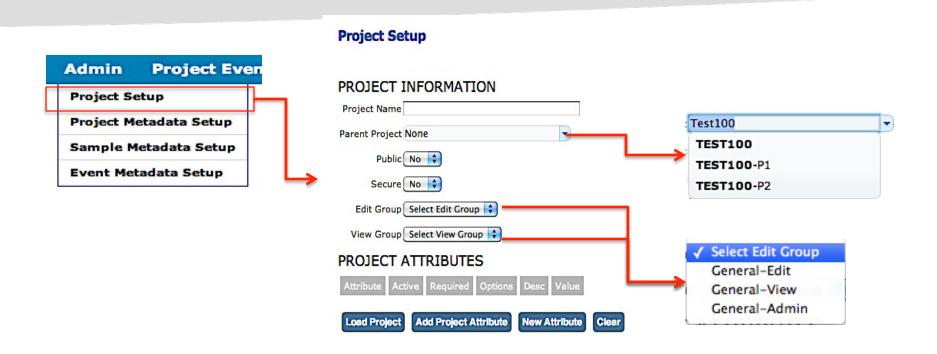
#### 8 Generate Event Report

supports user configurable data reports





#### PROJECT SETUP

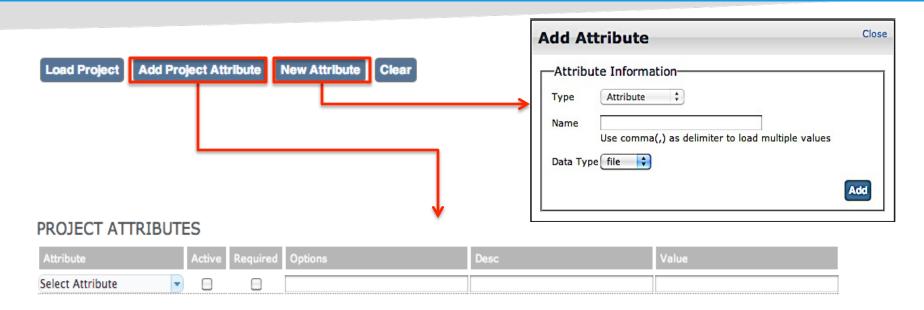


Loading a new project will create 'ProjectRegistration' event with given attributes as metadata then store its values. Parent project can be searched and assigned from projects that already exist in the database. Public flag can be used for differentiating internal data from external data, and it will be used by ETL process that promotes data to external database(if applicable). Secure flag allows access from users with appropriate roles for viewing and editing. Two separate roles can be applied to each project, one for editing and the other for viewing. Users with corresponding roles will have the privilege to perform the jobs that they have access to. *There is a batch load that allows users to load multiple child projects with a single transaction in Event Loader (see Event Loader section)*.





## PROJECT SETUP(CONT)



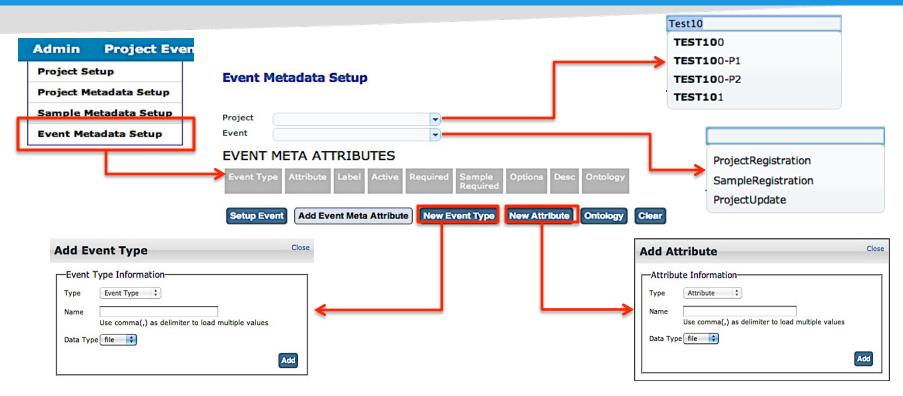
The attribute elements under 'PROJECT ATTRIBUTES' become Project Metadata and Event Metadata with the event type of 'ProjectRegistration'. Add new attributes (names are comma(,) separated) with data type (float, integer, date, string, url and file) from the select box, and attribute select box will be updated with newly loaded attribute in the tabular form.

- Active : flag that triggers the attribute. Non-active attribute will be hidden in Event Loader and data navigation.
- Required : flag that tells the attribute is required for the event. Non-required means the attribute is optional.
- Options: semi-colon separated allowed values. This will be converted to a select box in Event Loader.
- Desc: attribute description.
- Value: actual value for the attribute.





#### EVENT METADATA SETUP



The next thing user has to do after loading new project is configuring events with its metadata. At that point a project should already have 'ProjectRegistration' event available, since the application records the loading process as an event to the project itself. 'Add Event Meta Attribute' will be activated once a project is selected in 'Project' box. Selecting a project will display all event types with their attributes(metadata) grouped with its event type. Event select box below the project select box will have existing event types for the current project, and selecting an event type will filter the meta attribute list by the selected event type. Event types are shared within the application, which means that different projects share the same names for event types. User can add new event types (comma separated) using New Event Type'.

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## EVENT METADATA SETUP(CONT)



All attributes with its event type will be displayed in the main table area, and attributes get grouped by the event types.

- Label: custom attribute name to be displayed for Event Loader and Event Report
- Required : flag for mandatory validation check for empty values
- Sample Required : flag for sample attribute (Attribute must be paired with a sample for inserting and updating)
- Options : semi-colon separated allowed values that will be converted to a select box in Event Loader
- Ontology : search and assign an ontology (details below)

Event Type	Attribute	Label	Active	Required	Sample Required	Options	Desc	Ontology	Project Metadata	Sample Metadata
Project Registry	on Project Status					Completed;Ongoing;Cancelled	//	Search Ontology Terms		
Add Attribute	Select Attribute			0				Search Ontology Terms		

'Add Attribute' button under an event name will add new attribute to the event type group and highlight the row with light blue for the better visibility. Hovering any part of table rows will also highlight the current row in brighter blue.

Setup Event Ad	ld Event Meta Attribute	New Event Type N	ew Attri	bute	Ontolog	Clear				
Event Type	Attribute	Label	Active	Required	Sample Required	Options	Desc	Ontology	Project Metadata	Sample Metadata
ProjectRegistration	Project Status					Completed;Ongoing;Cancelled		Search Ontology Terms	ď	
Add Attribute	Select Attribute						//	Search Ontology Terms		
Select Event	Select Attribute							Search Ontology Terms		

User can add new event type using 'Add Event Meta Attribute' button at the bottom. Newly added attributes don't get grouped by their event type. If user needs 2 or more attributes for the new event type, the user should use the same button to do so.

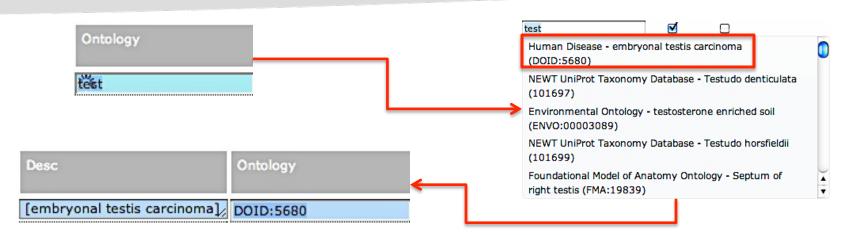
Any empty rows will be considered as null values, and it will not be inserted into the database. (if no event type and attribute name selected)

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## EVENT METADATA SETUP(CONT)



The ontology textbox will search any terms (at least 3 character to trigger the search) from OLS, then display the result as an autocomplete box. Search result will show the actual term with its ontology and term ID. Ontology search usually returns a relatively large result set, so users are advised to use more descriptive search terms for the better search results.

Selecting a term from the search result will automatically update the attribute description with actual term and the ontology text field with term ID. If there is already attribute description inserted by user, square bracket ('[', ']') wrapped term will be appended to the end of the description.



Sample Metadata. Selecting one of these boxes will register current metadata and the other for Sample Metadata. Selecting one of these boxes will register current metadata as corresponding object's metadata. For example, checking on 'Project Metadata' will insert the meta attribute to project metadata group for the current project.



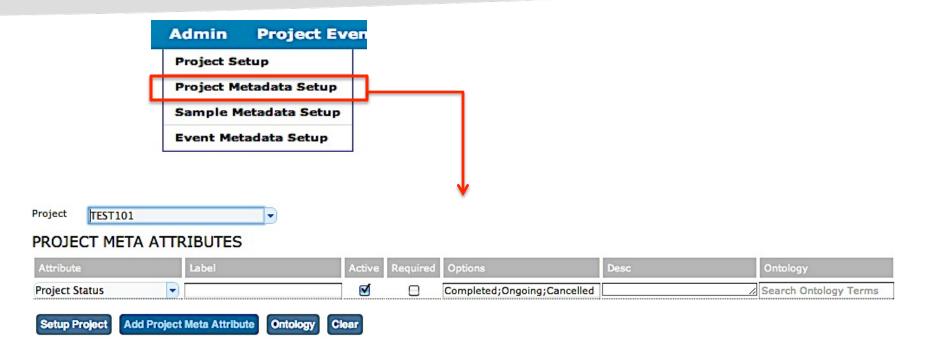
Metadata

 $\checkmark$ 

Metadata



### PROJET METADATA SETUP

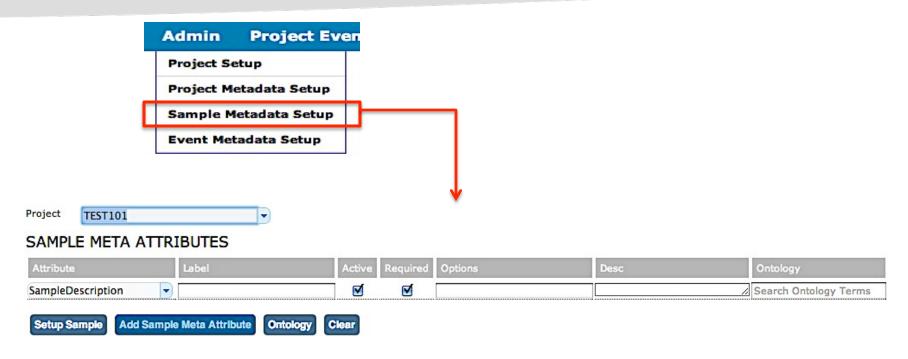


Project Metadata Setup menu can configure or update new or existing project meta attributes. New attribute creation is prohibited from this page, since attributes that are already configured in Event Metadata Setup are available in the Attribute select boxes. Project and Sample Metadata are different from Event Metadata. Attributes for 'ProjectRegistration' event type only record data for the event, which means they will not be considered as project data but event data. Project Metadata are data fields that define attributes of a project. Loading a project level event will update Project Metadata values, if and only if those metadata appear in both Project Metadata and Event Metadata for the event type.





#### SAMPLE METADATA SETUP

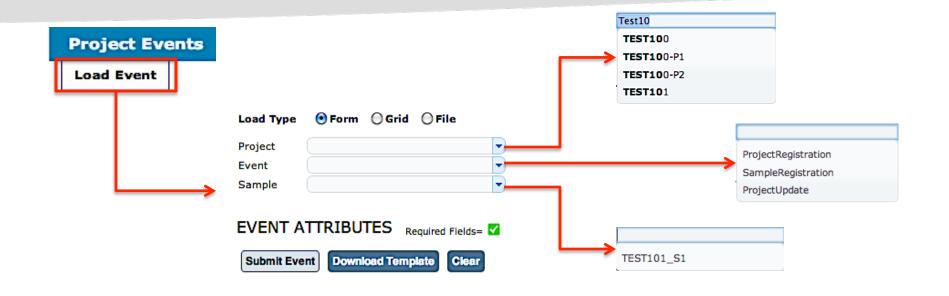


The same rules apply to Sample Metadata Setup as do in Project Metadata Setup. 'SampleUpdate' event will not update sample attributes unless the same meta attributes have been configured in Sample Metadata Setup. <u>Core</u> data for a project or sample should only be metadata for that object.





#### LOAD EVENT



"Load Event" is the core functionality of O-META. Users can load events that are configured through Event Metadata Setup. Event Loader not only records events but also loads new samples and projects (details later). It can load single event and also supports batch load with "Grid" format. Users can download a template from Event Loader that is CSV file with headers including meta attributes. Data loaded template file can be uploaded directly to Event Loader, then it will curate the data into "Grid" format for validation and editing by the user. Users are enforced to select a sample for sample events such as "SampleUpdate", "SRA", and etc.

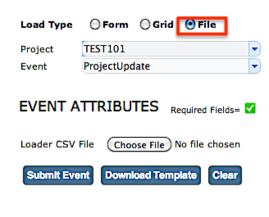




## LOAD EVENT- LOAD TYPE

Load Type	<b>●</b> Form			
Project	TEST101			
Event	ProjectUpdate -			
Sample				
EVENT ATTRIBUTES Required Fields=   ProjectStatus () Completed				
ProjectID(i)				
End Date () ₩				
Submit Event Download Template Clear				

Load Type	○ Form	
Project	TEST101	
Event	ProjectUpdate	
EVENT A	ATTRIBUTES Required Fields	:= 🔽
ProjectSta	atus ProjectID	End Date
Completed	•	<b>:::</b>
Completed	•	<b>==</b>
Completed	•	<b>##</b>
Completed		<b>=</b>
Completed		<b>=</b>
Submit Eve	ent Add Event Line Download	d Template Clear

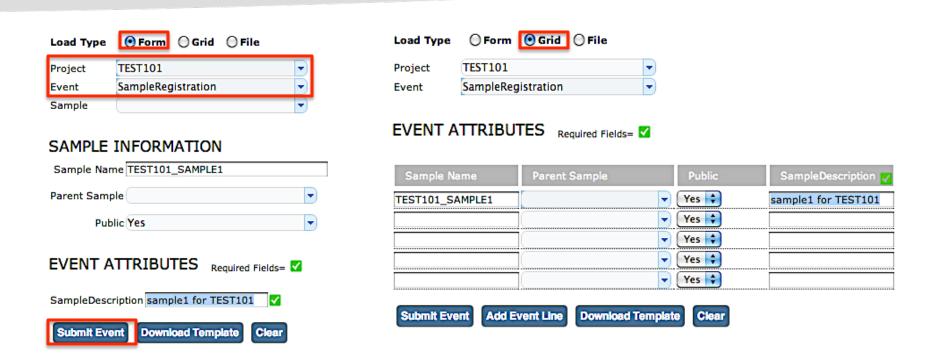


Users can switch between different load types by selecting one of radio buttons for "Load Type". "Form", which is the default, is for single event load, and "Grid" is for multi-event load for **single event type**. "Grid" generates 5 event rows as the default, but it ignores any empty unused rows in the load process. "File" load type is for uploading data loaded CSV file directly to Event Loader. Template files can be downloaded using "Download Template" button after selecting Project and Event. Uploading data with a file will not load actual data to the database, but it will display the data to "Grid" view to allow the user to validate and edit the data. Green check box ☑next to input fields and table headers mean that the attributes are required fields, so that the user must provide values. Hovering over (i) icon next to attribute name in "Form" view or table header in "Grid" view displays the description of the attribute as tooltip. The attribute description can be added or modified by Admin users in Project/Sample/Event Metadata Setup.





## LOAD EVENT - SAMPLE



Users can load samples using Event Loader by selecting "SampleRegistration" event type for a project. It is also possible to load multiple samples using "Grid" load type or file upload (detail below). Admin users must configure "SampleRegistration" event with Event Metadata Setup to allow users to load new samples through Event Loader. Users can build a tree structure of samples by selecting any samples under the current project as a parent sample.





### LOAD EVENT - PROJECT

Required Fields=

Project Status

Completed \$

Completed \$

Completed \$

Completed |

Completed

Public

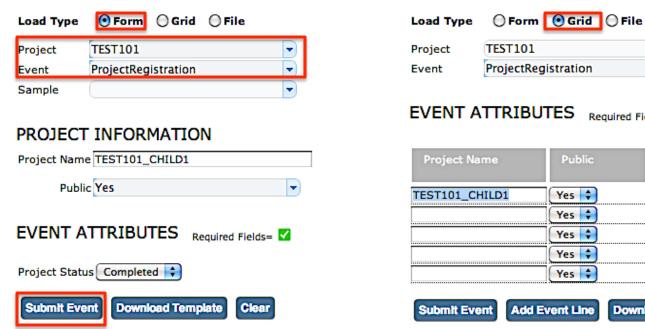
Yes 💠

Yes 💠

Yes 💠

Yes 💠

Yes 💠



**Add Event Line Download Template** Clear Users can also load child projects to the current project using Event Loader, but it is not allowed to load a root project with Event Loader. Root project (top level project) can only be loaded by admin users. Event Loader will consider the projects loaded with Event Loader as direct children of the current project select in the "Project" select box. Newly loaded child projects inherit all (project, sample, event) metadata setups, so that users don't need to configure them again, but users can still modify individual project metadata setups later. "Grid" and file upload support multiple projects load with a single transaction as well.





#### LOAD EVENT - DOWNLOAD TEMPLATE



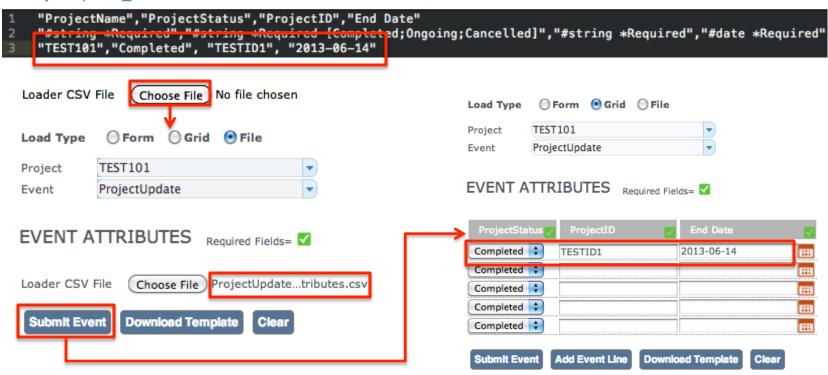
CSV template files can be downloaded after selecting Project and Event. The file name will be "{EventName}\_EventAttributes.csv". The template file has 3 sections, attribute name headers, information, and data. Headers will basically have "ProjectName", "SampleName" (not included for project events), and meta attributes. Information section tells the user the data type of a field and whether it is a required field or not. Moreover, it shows allowed values wrapped with square brackets that users are only allowed to use one of the allowed values. Since Event Loader allows users to load single event type for a transaction, it is possible to load multiple events of an event type with a template file. The user just needs to add multiple event lines to the template before uploading it.





## LOAD EVENT - FILE (ONE)

#### <ProjectUpdate EventAttributes.csv>



Event Loader consumes CSV data file then converts the data into "Grid". At this point, the user can modify the data from CSV file or add more data on the fly. The CSV file upload is for SINGLE PROJECT AND SINGLE EVENT TYPE. Users CANNOT include 2 projects or different event types to a CSV file.





## LOAD EVENT - FILE (MULTI)

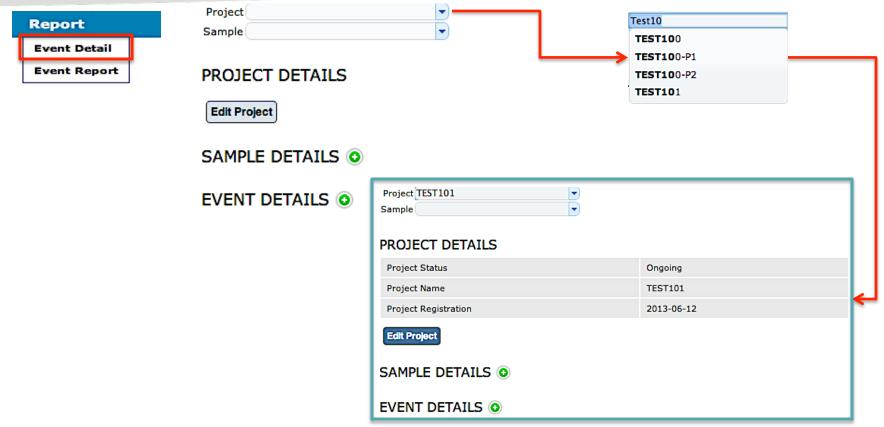
Loading multiple samples by uploading a CSV data file to Event Loader. This load also records "SampleRegistration" event for each new sample.

1	"ProjectName","SampleNa	ame","ParentSample	","Public","Sam	pleDescription"	
2	"#string *Required"."#s "TEST101","TEST101_SAM			al","#int *Required","	#string *Required"
4	"TEST101", "TEST101_SAM				
	"TEST101", "TEST101_SAMI	PLE3","",0,"sample	4 for TEST101"		
	Load Type	○ Form • Grid ○ F	ile		
	Project	TEST101			
	Event	SampleRegistration	▼		
	EVENT A	ATTRIBUTES Required	d Fields= ✓		_
	Sample Na	ame Parent Sam	ole Public	SampleDescription 🗸	
	TEST101_SA	AMPLE1	✓ Yes	sample1 for TEST101	
	TEST101_SA	AMPLE2	▼ Yes 🕏	sample3 for TEST101	
	TEST101_SA	AMPLE3	▼ No 🕏	sample4 for TEST101	
			▼ (Yes		
			▼ Yes 🕏		





## EVENT DETAIL

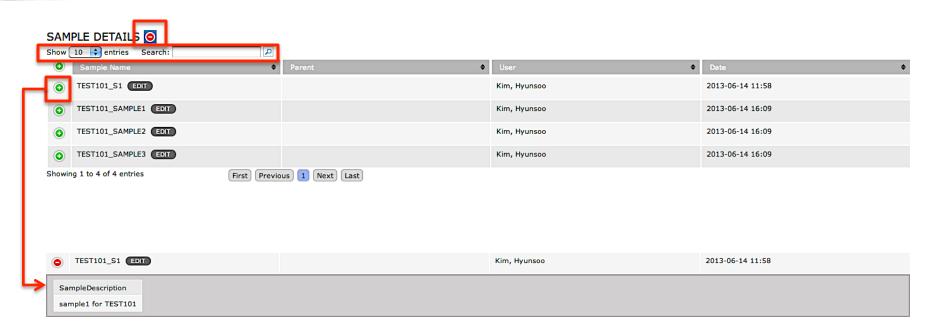


Users can track all events in the database using Event Detail menu. It allows users not only to track events but also to view details of a project and samples of a project. Users can also edit project and sample attribute values within the page. Selecting a project will display project information and its attribute with values, and it also activate "Edit Project" button in the PROJECT DETAILS section for in-page editing.





### EVENT DETAIL - SAMPLE

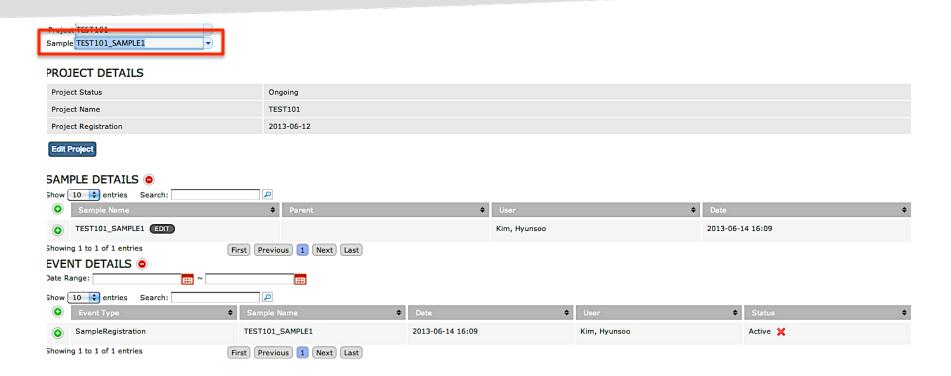


Green "+" button next "SAMPLE DETAILS" header triggers the list of samples for the current project selected. Samples are displayed in ascending order by sample names, but users can sort the list by clicking one of headers. Users can also change the number of the list element by changing the value in "Show ... entries". It provides search capability that user can search any sample information, attribute name, or attribute value. The first field of each row has green "+" icon that triggers in-row detail of a sample. The in-row detail displays all attributes, which are configured in "Sample Metadata Setup", with values.





## EVENT DETAIL - SAMPLE(CONT)

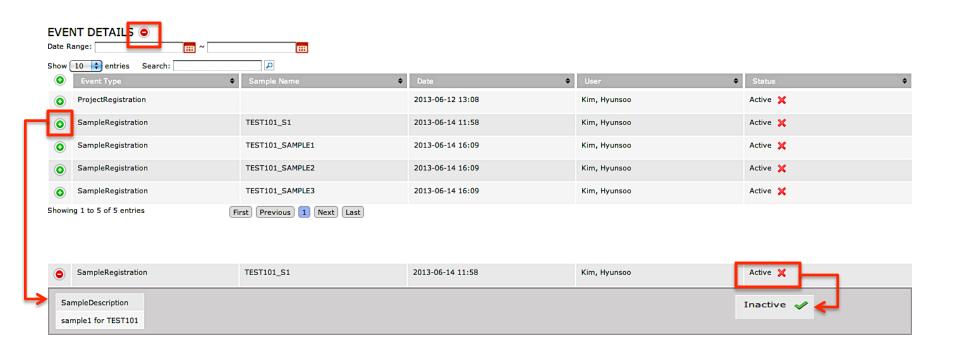


There is Sample select box just under the Project select box that will have the list of samples of current project. Users can filter the information in SAMPLE DETAILS and EVENT DETAILS by selecting a sample. SAMPLE DETAILS will only display selected sample, and EVENT DETAILS will display events that are associated with selected sample. Users can always switch to the list that has all samples by selecting "All.." from the Sample select box.





## EVENT DETAIL - EVENT

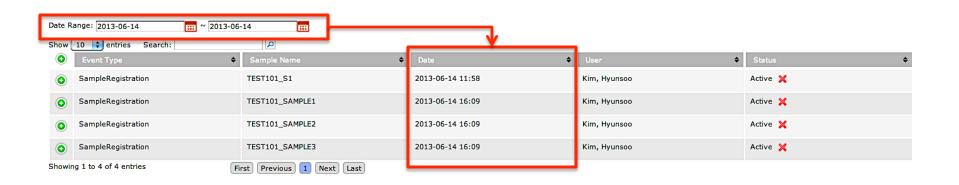


EVENT DETAILS works the same as SAMPLE DETAILS, but it has additional filtering option that is "Date Range". After user selects a project, all events that are associated with the project will be displayed in the EVENT DETAILS section. The Status field shows whether an event is active or not. Inactive events are hidden from Event Report. Simple one click on red "X" or green check mark will switch event's inactivity.





## EVENT DETAIL - EVENT(CONT)



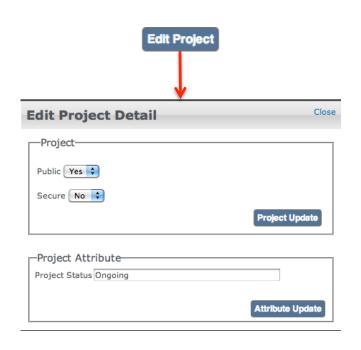


For the date filtering, users can either set start date only, end date only, or both. Deleting values from date filter fields will display the complete event list. Search gets triggered by enter key. Hitting enter after removing the value from search box will bring the original list back to the table.





### EVENT DETAIL - EDITING



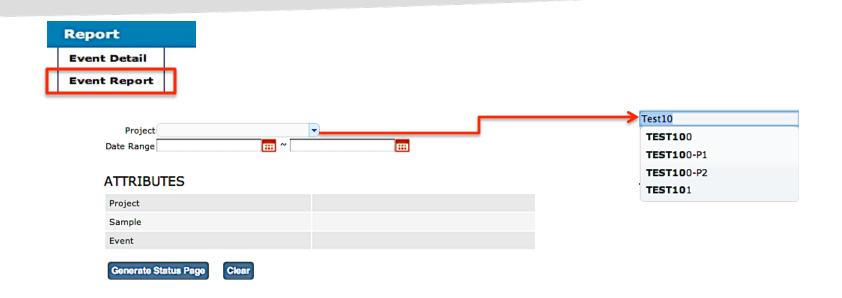


Users can edit Project/Sample access flags and attribute values using in-page editing functionality. The page will reload to reflect any modifications.





## **EVENT REPORT**

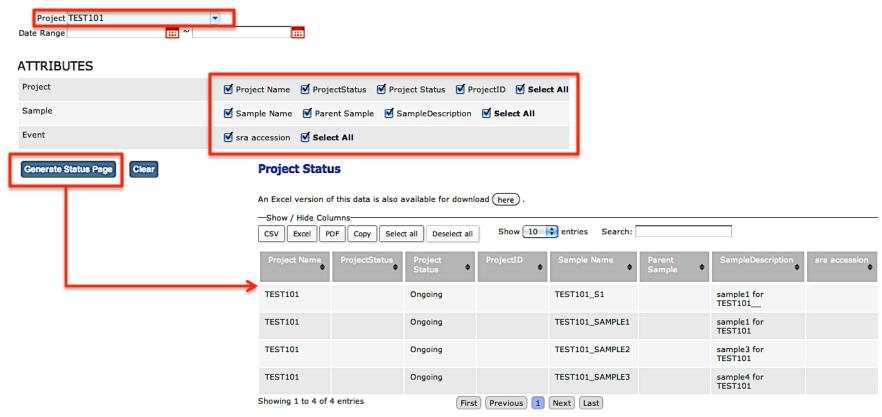


Users can easily generate event reports using Event Report menu from O-META. The report will display every sample of a project with attribute values in a tabular form. It also has date range filter that will only retrieve event data between the date range.





## EVENT REPORT(CONT)



The ATTRIBUTES section will display Project/Sample/Event meta attributes as user selects a project. "Select All" buttons in each object level will check all meta attribute at the level. After checking all or some of attributes, "Generate Status Page" button will actually generate a status report for the current project. The report will be tabular form, and each row represents individual sample. If multiple events exist for an event type, the most recent event data will be displayed in the report.

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# O-META Help

O-Meta Ontologies-based Metadata  HelpiRe	gister Log in
Project Events Report	
O-META	
HELP	
Name	
Email	
Description	
	Submit

Users can send a question or help request through Help menu that sends an email to the system administrator.

