DASSAULT SYSTEMES

DS BIOVIA

USER GUIDE

BIOVIA FOUNDATION HUB 2021 HF1
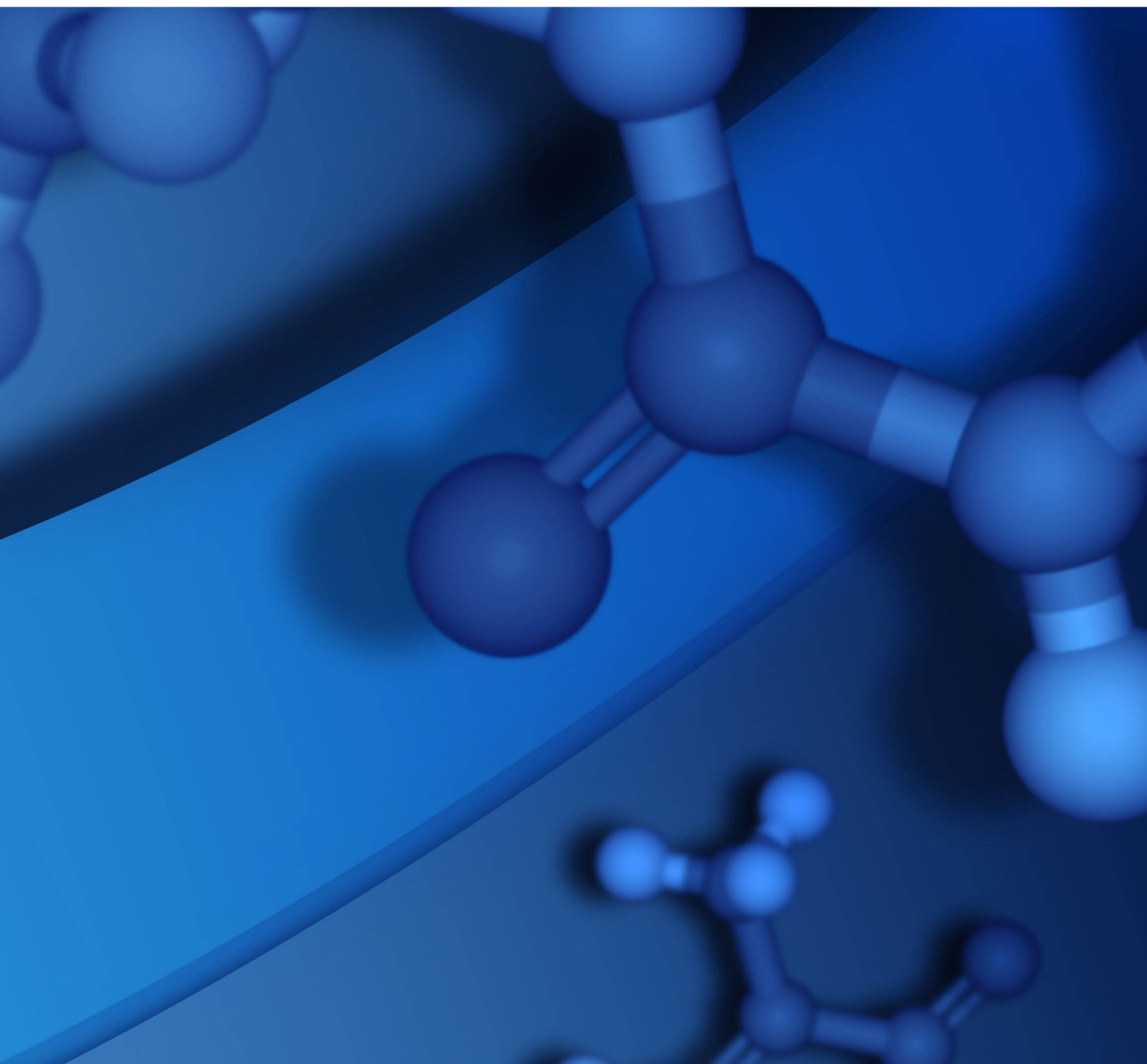
Acknowledgments and References

To print photographs or files of computational results (figures and/or data) obtained by using Dassault Systèmes software, acknowledge the source in an appropriate format. For example:

> "Computational results were obtained by using Dassault Systèmes BIOVIA software programs. BIOVIA Foundation Hub was used to perform the calculations and to generate the graphical results."

Dassault Systèmes may grant permission to republish or reprint its copyrighted materials. Requests should be submitted to Dassault Systèmes Customer Support, either by visiting https://www.3ds.com/support/ and clicking **Call us** or **Submit a request**, or by writing to:

Dassault Systèmes Customer Support
10, Rue Marcel Dassault
78140 Vélizy-Villacoublay
FRANCE

Contents

Contents

Contents

About This User Guide

This user guide, which is available in PDF format and from the Foundation Hub **? Help** menu, explains Foundation Hub features and functions that lab managers, scientists, analysts, and technicians can use to manage their daily work.

The guide focuses on work flows that you manage by using the Foundation Hub **Task Planner** and a set of Excel-like **widgets** that provide access to tasks, samples, and workflow notifications.

- To learn to use and personalize the Foundation Hub interface, read Getting Started with Foundation Hub.
- To get a quick overview of how **Task Planner** works, read Task Plan Workflows and Terminology.
- To create and manage task plans, tasks, samples, lab equipment, and materials, refer to the corresponding sections of this guide.

Related Documentation

- *Foundation HubAdministration Guide* – This guide, which is available from the Foundation Hub **? Help** menu and in PDF format, describes how to perform master data administration and system administration functions.
- *Foundation Hub Equipment Guide* – This guide, which is available only in PDF format, describes how to configure and administer equipment.

What is Foundation Hub?

Foundation Hub is a collection of software algorithms and protocols that provide a unique, scientifically-aware software infrastructure that:

- Facilitates organizational efficiency
- Improves collaboration
- Accelerates innovation in research-to-lab-to-plant processes

Foundation Hub unifies access to scientific services, information, and capabilities across different domains. It supports integration of information from BIOVIA lab informatics applications, third-party applications, and lab equipment.

Key BIOVIA applications that are integrated with Foundation Hub include the following:

- Compose and Capture
  - Compose – a standards-based authoring platform for lab procedures such as recipes and methods
  - Capture – a dedicated application for executing recipes and methods authored in Compose
- Workbook – an electronic lab notebook (ELN) for workflow support, integration, and regulatory compliance
- Notebook – an ELN for IP protection, collaboration, and easy deployment either on cloud or on premises
- CISPro – a chemical and supply inventory management system for tracking and recording inventories within and across labs

Other key elements of Foundation Hub are its Pipeline Pilot protocol execution engine, which supports extensions to the BIOVIA applications, and its API, which supports interfaces with partner and third-party technologies.

Chapter 1:
Getting Started with Foundation Hub

This section describes how to use the following features of the Foundation Hub user interface:

- Hub Toolbar
- Collaborative Space Selector
- Landing Page Portals and Sidebar
- Widget Portals for Accessing Your Work
- Sidebar for Accessing Lab Resources and Functions
- Widgets for Lab Resources and Tasks
- Workflow History Tracking

It also describes how to personalize the Foundation Hub widgets and Task Planner to best suit your needs.

Hub Toolbar

The toolbar at the top of each Foundation Hub page provides instant information and links for accessing several functions. Example:

Production | Delta Project (Owner) ⚙ | scitegicadmin 👤 🔔 ▦ ⚙ ❓

The following table describes each toolbar element.

Element	Purpose
ꝭ𝐒 BIOVIA	Opens the BIOVIA landing page.
Production	Identifies your Foundation Hub application server.
Delta Project (Owner) ⚙	Identifies the collaborative space you are in (*Delta Project* in this example) and your access role within that space (*Owner* in this example). Click the name to switch to a different collaborative space; click the gear icon if you own the space and need to administer its users and their roles.
scitegicadmin	Identifies the username you used to log in.
👤	Provides access to your user profile settings, collaborative spaces, and the sign-out function.
🔔12	Provides access to your notifications and indicates how many are unread.

⊞	Provides access to any other BIOVIA applications that you are authorized to use.
⚙	Provides access to the Foundation Hub **Admin and Settings** home page, if you have administrative rights.
❓	Provides access to user and administrative guides, as well as a window that identifies the Foundation Hub version and build number.

Collaborative Space Selector

A collaborative space is a workspace that an administrator defines in Foundation Hub so that your organization can segregate and restrict access to the following:

- Activities
- Activity plans
- Task plans

Each space has a specific set of users or groups, and each user or group has a role within that space. A user's or group's role in the space defines what they can do with the content in the space.

If you belong to more than one collaborative space, it is important to understand your collaborative spaces and to switch from one to another when appropriate.

When you log in, Foundation Hub automatically sets your active collaborative space to the space that you were using the last time you logged out. The Foundation Hub toolbar displays the space name and your access role for that space. In the following example, the space is *Delta Project* and your role for that space is *Owner*.

Production | **Delta Project (Owner) ⚙** | scitegicadmin 👤 🔔 ⊞ ⚙ ❓

Understanding Your Collaborative Space Access Role

Your access role for a collaborative space controls what you can do within that collaborative space:

Role	Capabilities
Public reader	Access content that has been explicitly shared. Cannot access unshared content, create content, or edit content.
Reader	Public reader rights, plus access unshared content.
Contributor	Currently the same as Reader, but might change in a future release.
Author	Reader rights, plus create task plans. If the space is public or protected, control whether to share your task plans so that they can be accessed from other spaces.
Leader	Author rights, plus create activities and activity plans. If the space is public or protected, control whether to share your activities and activity plans so that they can be accessed from other spaces. Change the owner of a task plan, but only if it specifies a collaborator group and you are a member of that group.
Owner	Leader rights, plus the ability to control who can use the space and their roles within the space.

> **Notes:**
> - You can change specific tasks plans, activities, and activity plans in a collaborative space only if you are a member of the space and you also have appropriate rights for the specific task plan, activity, or activity plan.
> - If you have more than one access role for a space because of your group memberships, you get the most powerful access role. For example, if your personal username has only reader rights but you belong to a group with author rights, you get author rights.

Public, Protected, and Private Collaborative Spaces

Each collaborative space is designated as *public*, *protected*, or *private*. Content created in every collaborative space always starts out as visible only to authorized users who are currently working in the space in which the content was created—the content's "home" space.

Any individual content object (activity, activity plan, or task plan along with its elements) that resides in a public or protected space can be *shared* to make it visible from other collaborative spaces, but no content objects in private spaces cannot be shared outside those spaces.

- Content objects in protected spaces can be shared only by users with a collaborative space role of leader or higher.
- Content objects in public spaces can be shared by the following:
  - Users with a collaborative space role of leader or higher.
  - Users with a collaborative space role of author or higher, if they "own" the content object. For instructions for sharing task plans, see Making a Task Plan Visible Across Collaborative Spaces. For instructions for sharing activities and activity plans, see the corresponding topics in the *Foundation Hub Administration Guide*.

> **Notes:**
>
> If you need to share content from a private space, you have two options:
>
> - Move it to a public or protected space and then share it.
> - Ask your administrator to switch the space's setting from private to either public or protected, and then share the content. **Keep in mind that if a private collaborative space is changed to public or to protected, all of the space's content becomes shareable, and the space can never be changed back to private. If a space is changed from private to protected, it can be changed to public, but not back to private.**

Foundation Hub includes a predefined collaborative space called **Default** that is a *private* space.

Switching Your Active Collaborative Space

When you are working in one collaborative space but need to do either of the following, you must switch collaborative spaces:

- Access unshared content in a different collaborative space.
- Create content in a different collaborative space.

To switch your active collaborative space:

1. On the Foundation Hub toolbar, click the name of the collaborative space in which you are currently working.

2. In the **Change active Collaborative Space** window, select or start typing the name of the space you need in the **Search** field. The field will not show any collaborative spaces that you are not authorized to use.

Editing Collaborative Space Member Assignments

If you have an access role of *owner* for a collaborative space, you can manage its user and group assignments, as well as its other settings. The following procedure explains how to change the members of a collaborative space. For information about changing other collaborative space settings, see the *Foundation Administration Guide.*

To edit the member assignments for a collaborative space:

1. Switch to the collaborative space whose assignments you need to change and click the small gear icon next its name in the main toolbar.

   Alternatively, access **Admin & Settings > Security > Collaborative Spaces** and select the collaborative space.

2. Click **Edit**.

3. **To remove a currently assigned user or user group:**

   a. Hover your mouse pointer in the third column in the row for that user or user group.

   b. Click the **Unlink** icon.

4. **To add users or groups:**

   a. Click the down arrow next to the **Assign** button.

   b. Click each user and group to be added, or click **SelectAll** to add every user and every group.

   > **Tip:** To scroll through the users and groups, use the **First Page**, **Next Page**, **Previous Page**, and **Last Page** arrows at the bottom of the list.

   c. Click in the **Access Role** cell for each user and group and assign the appropriate access role:

Role	Capabilities
Public reader	Access content that has been explicitly shared. Cannot access unshared content, create content, or edit content.
Reader	Public reader rights, plus access unshared content.
Contributor	Currently the same as Reader, but might change in a future release.
Author	Reader rights, plus create task plans. If the space is public or protected, control whether to share your task plans so that they can be accessed from other spaces.
Leader	Author rights, plus create activities and activity plans. If the space is public or protected, control whether to share your activities and activity plans so that they can be accessed from other spaces. Change the owner of a task plan, but only if it specifies a collaborator group and you are a member of that group.
Owner	Leader rights, plus the ability to control who can use the space and their roles within the space.

> **Notes:**
> - Users can change an entity such as a task plan, activity, or activity plan in a collaborative space only if they have rights to the entity, as well as collaborative space role of author or higher.
> - If a user has more than one role, they get the rights from the most powerful role. For example, if you give the Reader role to a user and also give an Author role to a group that the user belongs to, the user gets the Author role.

    d. Click **Assign**.

5. Click **Save**.

Landing Page Portals and Sidebar

When you log in, Foundation Hub opens the BIOVIA landing page, which provides the following tools:

- A set of *widget portals*. Each portal provides instant information about some of your work and gives you one-click access to *widgets* for viewing the rest of that work.
- An expandable sidebar. The sidebar provides access to widgets for managing lab-wide resources, and also to administrative functions and applications, if you have the rights to use them.

To access the landing page:

The landing page is displayed when you log in to Foundation Hub. You can return to it from other pages clicking either of the following on the Foundation Hub toolbar:

- ![BIOVIA logo]

- ![Applications icon] **Applications** > **BIOVIA Hub**

Widget Portals for Accessing Your Work

The BIOVIA landing page includes several standard widget portals that provide some instant information about your work. Each widget portal is a "door" to a corresponding *widget* that provides access to all details, as well as to the actions and tools you need to create, edit, and track your work.

To navigate between widget portals and widgets:

- To access a widget from its widget portal, click ![Expand icon] **Expand** on the widget portal.

- To return from a widget to the landing page, use your browser's **Back** link or click the ![BIOVIA logo] icon in the toolbar.

Inbox Widget Portal

This portal lists up to eight unread notifications related to your tasks and task plans and provides the following columns.

Column	Description
From	User whose action triggered the notification. Can be empty, if the notification was triggered by an external application.
To	Other individual users who received this notification. See Workflow Actions and Resulting Notifications.
Recipient Group	Group that was selected in the request for the relevant task, if any.
Title	Summary of the action that triggered the notification, such as the Task Name followed by the action: *submitted*, *assigned*, *split task created*, *in progress*, *re-test of <original task> created*, *completed*, *released*, or *abandoned*. When applicable, the title is a link that opens the relevant task plan in Task Planner, recipe in Capture, experiment in Workbook or Notebook, or record in another integrated application.
Description	Additional relevant details about the task, such as its assignee if the task has just been assigned, and its samples if the task has progressed to a lifecycle state other than *assigned*.
Date Created	Date on which the notification was generated.

My Task Plans Widget Portal

This widget portal lists up to eight of your task plans and any task plans that specify a collaborator group that includes you. This portal provides the following columns, sorted based on when you last viewed them.

Column	Description
Task Plan Id	Unique identifier of the task plan. Click a **Task Plan ID** to open that task plan in Task Planner.
Name	Name defined for the task plan.

Available Tasks Widget Portal

This widget portal lists up to eight tasks that are not yet assigned to anyone. It lists tasks that are delegated to a particular group only if you are a member of that group. The following columns are displayed.

Column	Description
Sample Count	Number of samples associated with the task. **Note:** This field is blank for tasks created using releases earlier than Foundation Hub 2018 SP1 HF1.
Task Id	Unique identifier of the task. ■ When relevant, the Id is a hyperlink you can click to open the task in the appropriate source application. ■ If the task type is *review*, it is labeled **Review Task for: {Task ID}**.
Activity	Name of the activity on which the task is based.
Due Date	Date on which the task is due to be completed. Overdue dates are displayed in **red**.
Predecessor	ID of a prerequisite task. You cannot execute a task that specifies a predecessor until the predecessor reaches a specific lifecycle state. By default, the required state is *Completed* (meaning the predecessor must be completed or released), but your administrator might have changed it to *In Progress* (meaning the predecessor can be in progress, completed, or released). For more information, see the *Foundation Hub Administration Guide*.
Priority	Priority of the task: ■ Standard ■ Expedited
Task Plan	ID of the task plan to which the task belongs. You can click this ID to open the task plan.

My Tasks Widget Portal

This widget portal lists tasks assigned to you and displays the same columns as the **Available Tasks** widget portal.

Sidebar for Accessing Lab Resources and Functions

The landing page sidebar provides access to installed applications, lab-level widgets, and administrative pages:

■ ▦ **Applications** - Provides access to each installed BIOVIA application for which you have the application *View* permission. For information about an installed application, see its documentation.

- ▪ ⊞ **Widgets** - Provides access to the Tasks widget and the widgets used to manage lab resources, including equipment, samples, and materials. The available widgets depend on your permissions and on which BIOVIA applications are installed.

- ▪ ⚙ **Admin & Settings** - Provides access to the Foundation Hub Security, Resources, and Settings pages. To access these pages, you must be a Foundation Hub administrator (have the Foundation/Administration/Logon permission). For information about administration functions and settings, see the *Foundation Hub Administration Guide*.

To expand and collapse the sidebar:

- ▪ Click ▶ to the left of the landing page to expand the sidebar; click ◀ to collapse it.
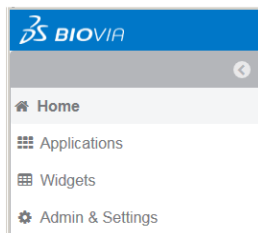
Widgets for Lab Resources and Tasks

The landing page sidebar provides links to the widgets for managing lab-level resources: lab equipment, samples, and materials. It also lists all tasks you can access, regardless of which task plan contains them.

> **Note:** If you are an administrator, the sidebar also provides links to **Admin & Settings** pages and to other installed BIOVIA applications such as Pipeline Pilot, if you have the right to access them.

To access the lab resource and Task widgets:

1. On the BIOVIA landing page, expand ▶ the sidebar.

2. On the ⌂ Home panel, click ⊞ **Widgets**.

3. Click the name of the widget to access:

   - ▪ Lab Equipment

     Manage lab equipment that is registered in Foundation Hub. You can filter the equipment list and create task plans for executing scheduled maintenance events. Verification, calibration, cleaning, and preventative maintenance dates that are past due are indicated in red text.

   - ▪ Samples

     Create, collect, manage, and print barcode labels for samples. This widget lists samples that are associated with task plans and samples that are not yet associated with any task plans. You can filter the list based on a variety of criteria. For example, apply a filter to find samples in a specific location or samples that have a specific status.

   - ▪ Tasks

     Perform workflow activities, such as creating task requests for pending tasks, assigning tasks, executing tasks, and reviewing tasks. You can filter the list based on criteria such as assignee and due date.

   - ▪ Materials

View the physical materials that are associated with all task plans you have permission to access. You can filter the list based on a variety of material properties, including lot information and extended properties based on the material class.

Personalizing Widgets and the Task Planner

When you work with grids on widgets and in Task Planner, you can:

- Filter the rows by using two tools: the Filters panel and column-specific filters.
- Sort rows based on column content.
- Perform a second-level sort for rows that have the same content in your primary sort column.
- Control which columns to display.
- Reorder, re-size, and pin columns in place to the left or right edge of wide grids.

After you personalize a grid, you can save your filters and sort orders as a named filter, and you can save your column settings as a named view. You can save as many personalized filters and views as you like for each grid.

If you are a Foundation Hub administrator user with the `Foundation/Manage Master Data` permission), you can save each filter and view you create as either private or public. Saving a useful set of public filters and views can save time for the entire organization. Users can select a public view, tailor it to meet their needs, and then save it as their own private view.

> **Tips:**
> - When you re-open or refresh a task plan tab or widget, the system re-applies your most recently applied *saved* filter and view for the corresponding grid. It does *not* re-apply any filter or column changes that you made, but did not save, before you exited the grid.
> - Your sort order is saved when you save a filter, *not* when you save a view.

Filtering and Sorting Grid Data

You can filter a grid by doing either or both of the following:

- Entering values you in the grid's **Filter** panel fields. These fields use "contains" logic and the grid is dynamically filtered as you specify values.
- Entering values in a specific **column filter tool**. Columns that provide a filter tool give you a choice of logic, including *contains*, *not equal*, *starts with*, and *ends with*, and *not contains*. They also enable you to filter for two separate strings or values, and to control whether to find only rows whose values include both of them, or to find all rows whose values contain either of them.

If you apply Filter panel fields and column filters, the effect is cumulative. Only rows that meet all criteria specified in your Filter panel and in your column filters are retrieved.

> **Note:** Grids often provide many filterable columns that are available in a Filters panel, and some Filters panels provide a filter that has no corresponding column. For example, the Filters panel for tasks provides **Method Id** and **Method Type** filters, which are not in the grid because they are activity properties, not task properties.

To apply filters and a sort order:

> **Tip:** When you set up filters that you intend to save, it is a good idea to also set up the sort order, because sort order is saved with saved filters, not with saved column layouts.

1. Access the entity's widget.

   The page opens with the filter settings, sort order, and column layouts that were applied the last time you closed the page.

2. Click 🔵 on the left edge of the grid to open the **Filters** panel.

3. If needed, click **Reset** to remove currently applied filters. **Reset** also restores the default sort order.

   > **Note:** If the page has a system-applied default filter, **Reset** restores that default filter. To remove it so that you see the complete data set, or to remove any other individual filters one at a time, see To remove the filters and sort order.

4. Set up basic filter criteria using the fields provided by the **Filters** panel:

   ◼ To apply a previously saved filter, click its name in the **Saved Filters** list.

   > Saved Filters
   >
   > [InProgressProtocolTasks ▼]
   >
   > Private
   >   DraftGenericTasks
   > Public
   >   InProgressProtocolTasks
   > Manage
   >   Save Current Filter As...
   >   Save Current Filter...
   >   Manage Filters...
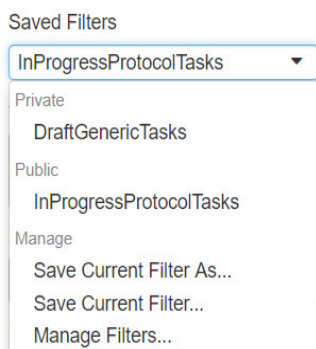
   ◼ To apply new criteria, enter or select the values from the criteria fields.

   > **Tip:** If a field lists multiple values, you can select more than one value by clicking the first value, then pressing and holding the **Ctrl** key while you click each additional value. The system uses "OR" logic to retrieve records that match *any* of the selected values.

   The content of the grid auto-updates as you specify filters.

5. If needed, specify **column** filters to further narrow down the data set:

   a. Position your cursor on the right side of the column and click ☰.

   b. Click ▼.

   c. If needed, select one of the following alternatives to the default **contains** filter operator:

◼ Equals	◼ Starts with	◼ Not contains
◼ Not equal	◼ Ends with	

   d. In the **Filter** text box beneath the operator, begin typing the value. The rows in the grid are filtered dynamically, as you type.

e. If needed, you can specify an additional value for the same column:

    i. Change the default logic from **AND** to **OR** if you want to see rows that match either criteria; leave it set to **AND** to see only rows that match both criteria.

    ii. Change the filter operator from the default **Contains** if needed.

    iii. Begin typing the additional value.

A 🔽 filter icon in a column heading indicates that a filter is specified for that column.

6. To sort based on the content of a specific column click the column heading. To switch between ascending and descending, click the heading again.

An ⬆ up arrow or ⬇ down arrow indicates the current sort order.

7. To add a secondary sort to make rows that have the same value in your primary sort column get sorted based on the values of another column, **Ctrl+Click** that other column.

8. If needed, save the currently applied filters and sort order so that you can re-use them. For details, see Saving Grid Views and Filters for Re-use.

To remove filters and sort order:

■ To remove the Filters panel selections and column filters, click **Reset** in the bottom of the Filters panel. **Reset** restores the system-defined default filters and sort order.

> **Note:** This is the only way to remove a selected **Saved Filter**.

■ To remove an *individual* filter selected from the Filters panel, click ⊗ **Remove** next to its value.

> **Note:** This is the *only* way to remove the default *system-applied* filters from some widgets such as Lab Equipment.

■ To remove an *individual* Column filter:

    1. Position your cursor to the right side of the 🔽 filtered column heading and click ☰.

    2. Delete the text from the **Filter** text boxes beneath the Operator selection lists. The 🔽 filter icon is removed from the column heading.

> **Note:** If the column is represented by a field in the Filters panel, ensure that no value is specified in that field.

Changing a Grid's Column Layout

To control which columns are displayed:

■ To display all possible columns, select **All** from the **View** list above the grid.
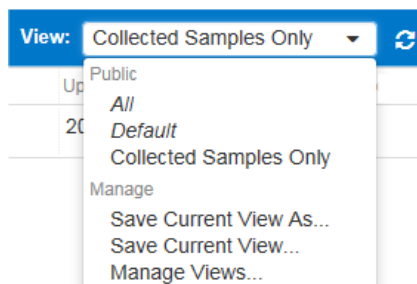
- ■ To display a subset of columns that has been previously saved as a view, select that view from the **View** list.
- ■ To quickly remove a column, click its heading and drag it upwards, out of the grid.
- ■ To see all possible columns and choose which ones to display:
  1. Display the ☰ column menu icon by hovering your mouse pointer over any column heading, and then click the icon to open the menu.
  2. In the column menu, click the ⊞ column selector icon.
  3. Select the check boxes of each column to display.

To pin a column to the left or right edge of the grid:

1. Open the ☰ column menu.
2. Hover over the **Pin Column** option to display the **Pin Left**, **Pin Right**, and **Unpin** options.
3. Click the option you need.

To change the order of columns:

Click the column heading and drag it to the desired position, to the left or the right of another column.

Saving Grid Views and Filters for Re-use

You can save separate filters and views for each of the following:

- ■ **Task Planner tabs** – Materials, Samples, Tasks, Results, and Activity Results

  > **Note:** The Task Planner **Tasks** tab and **My Tasks** widget share the same set of views and filters. If you save a tasks view or filter while using the widget, it also becomes available to the Task Planner. The converse is also true. Additionally, if you apply a view or filter to either entity, the system "remembers" what you applied when you switch to the other entity.

- ■ **User-oriented widgets** – Inbox, My Tasks, Available Tasks, My Task Plans
- ■ **Lab-level resource widgets** – Samples, Tasks, Lab Equipment, and Materials

You cannot save or delete the following built-in views:

- ■ **All** – This view shows every column.
- ■ **Default** – This view shows a system-defined set of columns.

An administrator, however, can save standard views that everyone can use.

Saving and Managing Filters

To save a filter:

1. Set up the filter and sort order as described in Filtering and Sorting Grid Data.
2. From the **Saved Filters** list, select **Save Current Filter As**.
3. In the **Create Filter** dialog box:
   a. Type a name for your new filter.
   b. If you are an administrator and you want your filter to be publicly accessible, select **Public Filter**; otherwise keep the default **Private Filter** setting.
   c. Click **OK**.

To modify a saved filter:

1. From the **Saved Filters** list, select the filter to modify.
2. Change your Filter panel selections, column filters, and column sort settings as needed.
3. Open the **Saved Filters** list again and click **Save Current Filter**.

To delete a saved filter:

1. From the **Saved Filters** list, select **Manage Filters**.
2. Click the **X** adjacent to the filter to be deleted.
3. Click **OK** to confirm deletion.

Saving and Managing Views

To create a new saved view:

1. Set up the grid as described in <u>Changing a Grid's Column Layout</u>.
2. Open the **View** selection list above the grid and select **Save Current View As**.
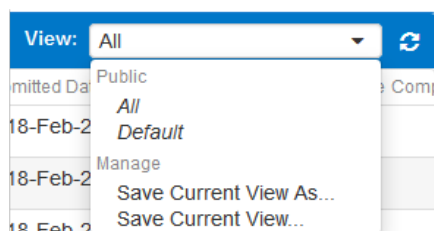
3. In the **Create View** dialog box:
   a. Type a name for your view.
   b. If you are an administrator and you want your view to be publicly accessible, select **Public View**; otherwise keep the default **Private View** setting.
   c. Click **OK**.

To modify a saved view:

1. Open the **View** selection list above the grid and select the view to modify.
2. Use the filtering and sorting options to reconfigure what is displayed by the view. For example:
   - Move, add, and remove columns.
   - Sort the grid content based on the data in a specific column in ascending or descending order.
3. Open the View selection list and select **Save Current View**.

To delete a saved view:

1. Open the **View** selection list above the grid and select **Manage Views**.
2. Click the **X** next to view to be deleted.
3. Click **OK** to confirm deletion.

Saving a View for Nested Grids

You can expand a task in a tasks grid to display associated samples in a nested samples grid. Similarly, you can expand a sample in a samples grid to display associated tasks in a nested tasks grid.

By default, nested grids display all available columns. However, you can change the column layout and then save the result as a nested view.

Keep the following in mind when you save a nested view:

- ■ You can save **only one** nested task view and **only one** nested sample view.
- ■ After you save a nested view, it becomes your default nested view and it is reapplied each time you open or refresh a widget or Task Planner tab that uses it.
- ■ If you are an administrator, you can save a nested view as a public view for users who have not saved their own private nested views. Each user's private nested view takes precedence over the public nested view.

To save a nested task view:

1. Access your **My Tasks** widget or the **Tasks** tab of one of your task plans.
2. Set up the view as described in [Filtering and Sorting Grid Data](#).
3. Open the **View** selection list above the grid and select **Save Current View As**.
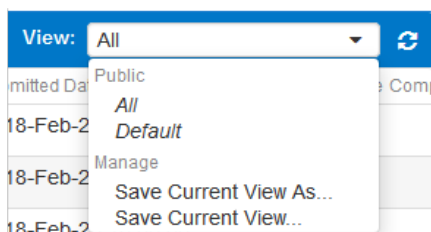
4. In the **Create View** dialog box:
   a. Enter the following name, exactly as shown here:

      Nested Tasks View

   b. If you are an administrator and want this view to become the default view used for users who do not save their own nested view, select **Public View**; otherwise keep the default **Private View** setting.
   c. Click **OK**.

To save a nested sample view:

   Repeat the steps for saving a nested task view, but use either the **Samples** widget or **Samples** tab of one of your task plans, and name the view as follows:

      Nested Samples View

To change a nested sample or task view:

1. Access a nested samples or tasks grid.
2. Open the **View** selection list above the grid and select **Nested Samples View** or **Nested Tasks View**, depending on which one you need to change.
3. Open the **View** selection list again and select **Save Current View**.

Capture Hub Overview

Capture Hub is a standardized interface for executing the following:

- Lab procedure tasks that are defined as standardized recipes in BIOVIA Compose.

  These tasks are authored in Compose, published as Procedure activities in Foundation Hub, and added as tasks to task plans.

- Data acquisition tasks, which define data parameters to collect from equipment or manually.

  Data acquisition activities are authored directly in Foundation Hub.

For both types of tasks, Capture Hub supports features such as output parameters of type File, data collection from direct-connected equipment, and signature policy options for out- of-limit data and metrology exceptions.

For more information, see Capture Hub User Interface.

Chapter 2:
Task Plan Workflows and Terminology

A **task plan** identifies one or more **tasks** (lab work requests) and any **samples** and **materials** required to complete the tasks.

Task Planner

Task Planner is the Foundation Hub interface for managing task plans. It enables you to:

1. Add tasks, samples, and materials to a task plan.
2. Delegate or self-execute each task in the plan.
3. Track progress of each task through its lifecycle states.
4. View task and task plan results; flag invalid results.
5. Perform formal task-level reviews.

Tasks, Activities, and Activity Plans

In Foundation Hub, a task is a specific instance of an **activity**. Foundation Hub classifies activities and tasks by function into these types:

- **Procedure** – A procedure activity is a Compose recipe that has been published to Foundation Hub. Tasks based on procedure activities are executed in either a classic Capture execution session or a Capture Hub execution session, depending on system and recipe-level settings.

  > **Note:** For details about classic Capture, refer to the Compose and Capture online help. The *Foundation Hub User Guide* and online help focus on executions in Capture Hub.

- **Data Acquisition** – A data acquisition activity identifies data parameters to collect from a specific class or type of equipment. Depending on the equipment, collection can be automated or manual. Data acquisition activities are authored directly in Foundation Hub, and tasks for these activities are always executed in Capture Hub.

- **Protocol** – A protocol activity identifies a Pipeline Pilot protocol that performs a specific function such as post-processing collected data, gathering additional data from users, or generating reports. Most protocols are site-specific.

Activities are defined in **Foundation Hub > Admin & Settings** by master data or system administrators. Each activity identifies the following:

- **Input parameters** – These parameters provide information about how to conduct an activity, such as conditions under which it must be conducted.
- **Output parameters** – These parameters identify data values to collect as a result of the activity.

Your Foundation Hub configuration can include many activities of each type. It can also include **activity plans**, which are groups of related activities. An activity in an activity plan can vary from its stand-alone counterpart. For example, the values for the input parameters can be tailored, and expected quantitative and qualitative characteristics can be added.

When you add activities and activity plans to a task plan, Task Planner creates a separate task for each activity. Unless prohibited by an activity, you can tailor various parameters and settings that the task

inherits from the activity, and you can enter values for placeholders. For example, you can exclude any parameters that you do not need to collect for your task, and you can identify specific materials.

Workflow for a Task Plan

The general workflow for a task plan involves identifying required materials, samples, and tasks; assigning the tasks; executing the tasks; reviewing and approving the tasks; and releasing the task plan.

The basic steps are as follows:

1. A scientist or lab manager creates a task plan and, if appropriate, selects a collaborator group that identifies other scientists who can also contribute to the task plan. The task plan's creator is its owner (unless it is later transferred) and the other members in the collaborator group are co-owners.

2. The owner and co-owners add any required materials, samples, and tasks to the plan:

   a. Identify materials.

   b. Identify samples. Note that metrology task plans do not always require samples.

   c. For sample-centric tasks, select samples and the activities they require, and let the system generate the tasks for the samples.

   d. For task-centric tasks, select activities and activity plans and let the system generate tasks without associating them with samples. Any samples required for such tasks can be added later.

   e. Configure the tasks as needed by adjusting the parameters and settings inherited from the activities.

3. The owners and co-owners request performance of the tasks. Assignment options include:

   ◼ Self-assign tasks the tasks.

   ◼ Assign tasks to specific analysts.

   ◼ Submit tasks to a department, after which a department manager assigns the tasks or its members self-assign them.

4. Assignees perform their tasks and review their results:

   a. Execute the tasks.

   b. Review a task's results to see limits, flag invalid results, and choose appropriate next steps, such as abandoning the task, creating a replacement task, setting the task to completed, or doing some partial retesting.

   c. After completing any task that requires formal review, generate a formal review task. After completing tasks that do not require formal review, assignees can release the tasks themselves.

   The Task Planner displays the results of all tasks in the plan as they are accumulated, generates notifications about changes, and tracks the history of all changes.

5. Assigned reviewers execute their formal review tasks and determine whether to approve (release) a task, to reopen it for corrections, or to generate a new task to repeat all or part of the original task.

6. When the entire task plan is considered complete, the task plan owner or a collaborator group member releases the task plan, which prevents any more changes to the plan or to any of its tasks.

Workflows Between Task Planner and Other Applications

Task Planner is integrated with several BIOVIA applications that you might have installed. The workflow between Task Planner and the other applications varies:

- **Compose and Capture** – A task plan can contain tasks for executing Compose recipes in classic Capture or in Capture Hub. The interface involves publishing a recipe from Compose to create an activity in Foundation Hub, adding a task for the published activity to a task plan, and then assigning and executing the task from Task Planner.

  When the task is executed, Task Planner opens the recipe in a classic Capture or Capture Hub session, depending on recipe and system-level settings. As the task results are collected, they can be retrieved into Task Planner. After all results are collected and the task is officially complete, Task Planner automatically reflects the final results.

- **Workbook** – A Workbook experiment can run Task Planner from a section of type Task Plan. After you add a task plan section, you can manage the task plan from Workbook or from a Foundation Hub. Anything you do to the task plan in either interface is reflected in both interfaces.

- **Notebook** – You can insert a task plan section into a Notebook experiment, but you cannot develop and execute the plan from within Notebook. You must instead switch to Foundation Hub and use Task Planner. After tasks are completed in Task Planner, you can import a copy of the results into your Notebook experiment.

- **CISPro** – When you add samples to a task plan, you can specify a source container in the integrated CISPro material inventory management system. The CISPro records are updated to reflect the materials used in your task plan.

The BIOVIA Professional Services organization can interface Task Planner with third-party **LIMS**, **SAP**, and **PLM** applications. The interfaces with such applications can perform functions such as the following:

- Pull samples, tasks, and materials from the third-party application into Task Planner, so that you can use Task Planner to manage and execute the tasks.
- Push execution results from Task Planner back to the third-party application for use in that application.

Workflow Notifications

When a task's lifecycle state changes or the task is affected by a workflow action such as generating a retest task, generating a review task, or splitting the task, Task Planner creates a notification in the Inbox widget of each appropriate person and increments the unread notifications count on their Notifications icon.

Each notification includes a link to the appropriate tasks widget or task plan so that the recipient can quickly access more information about the task.

Each person independently manages their own copy of the notification. They can mark their copy as read, mark it as unread, and delete it. The actions that one person takes for their copy of a notification do not impact the copies sent to other people.

Managing Your Notifications Inbox

Your Inbox widget displays your unread notifications as **bold**. From this widget, you can select one or more notifications and choose any of the following actions:

- **Delete** – Deletes the selected notifications.
- **Mark As Read** – Marks selected notifications as read and decrements the active notifications count on the toolbar. Clicking a notification will also mark it as read.

  By default, read notifications are deleted one day after they are read. Your Foundation Hub administrator can change this default.

- **Mark As Unread** – Marks selected notifications as unread.

  By default, unread notifications are deleted seven days after they are generated. Your Foundation Hub administrator can change this default.

By default, the **Inbox** widget displays all unread notifications about tasks that might affect you and any groups that you manage. You can, however, filter the list to display only the notifications that you need. For example, if you manage several groups but you control work assignments for only one group, you can apply a **Recipient Group** filter to receive notifications for only that group. For more information, refer to Filtering and Sorting Grid Data.

Column	Description
From	User whose action triggered the notification. Can be empty, if the notification was triggered by an external application.
To	Other individual users who received this notification. See Workflow Actions and Resulting Notifications.
Recipient Group	Name of the group that was selected in the request for the relevant task, if any.
Title	Summary of the action that triggered the notification, such as the task name followed by the action: *submitted*, *assigned*, *split task created*, *in progress*, *re-test of <original task> created*, *completed*, *released*, or *abandoned*. When applicable, the title is a hyperlink that you can click to open the relevant task plan or recipe.
Description	Additional relevant details about the task, such as its assignee if the task has just been assigned, and its samples if the task has progressed to a lifecycle state other than *assigned*.
Date Created	Date on which the notification was generated.

Workflow Actions and Resulting Notifications

The following table lists workflow actions that trigger a notification and the people who are notified. The person who performs the action is not notified.

Workflow Action	Resulting Lifecycle State	Who Gets Notified[1]	Destination of the Link in the Notification
Task request is submitted for task *without* specifying an **Assignee**.	Submitted	■ Group Managers ■ Otherwise, no one	Available Tasks widget
Task request is submitted with an **Assignee**	Assigned	■ Assignee ■ Group Managers	My Tasks widget of the Assignee
Task is split into smaller tasks or some samples are split to a new task.	n/a	■ Requestor ■ Group Managers ■ Assignee	■ Available Tasks widget (if status is Submitted) ■ My Tasks (if status is Assigned)
Work begins on task.	In Progress	■ Group Managers ■ Requestor	Task Plan
Task is completed.	Completed	■ Group Managers ■ Requestor	Task Plan
Task is released.	Released	■ Group Managers ■ Requestor	Task Plan
Task is suspended.	Suspended	■ Assignee	My Tasks widget
Suspended task is resumed.	Draft (if unassigned) or Assigned)	If Draft: no one If Assigned: ■ Group Managers ■ Requestor ■ Assignee	If assigned, My Tasks widget of assignee
Task is abandoned.	Abandoned	■ Requestor ■ Group Managers	Task Plan

Workflow Action	Resulting Lifecycle State	Who Gets Notified[1]	Destination of the Link in the Notification
Task is marked for retest.	Submitted	■ Requestor	Task Plan
Review task is created.[1]	Submitted	■ Requestor ■ Group Managers	Available Tasks widget
Review task is assigned.	Assigned	■ Requestor ■ Group Managers ■ Assignee	Task Plan

[1]**Role Notification Notes:**

■ Group managers are notified only if the task request identifies a user group and that group has designated managers.

■ The Requestor is the person who created the task. The person who *creates* a task and the person who *requests* the task can be different.

■ A notification is not generated for the person who performed the workflow action.

■ No notification is generated for recalled tasks.

Workflow History Tracking

History records are important for general traceability, as well as to support audits. For companies that comply with regulations such as Title 21 CFR Part 11 regulations for electronic record-keeping and signature collection, history records are critical.

The history of every significant change to nearly every entity in Foundation Hub is logged. The following are examples of some of the key entities whose history is logged:

■ Work products such as a task plans and results

■ Resources required to perform the work such as samples and devices

■ Work definitions such as activities, activity plans, protocols, and parameter templates

■ Processes that control progression of the work such as lifecycle and signature policies

■ Controls over who can perform and access the work, such as users, groups, roles, organizations, and collaborative spaces

History Record Types and Page Types

The following table summarizes the types of audit history records created by Foundation Hub.

Record Type	Triggering Event
Revision summary	Creation of a new entity (for example, task or sample) or modification to an existing entity.
Lifecycle event	Transition of an entity to a different lifecycle state.
Signature event	Collection of a user signature for a lifecycle event that requires a signature. For information about controlling which lifecycle actions require signatures, see the *Foundation Hub Administrator Guide*.
Access event	A user accesses the entity, if access logging is enabled for entities of that type. By default, access logging is disabled. For information about enabling it, see the *Foundation Hub Administrator Guide*.

Two types of history-related pages provide access to history records.

Page Type	Description
Revisions Summary	Lists revision summary records for all entities of a particular type, such as all tasks or samples. You can filter the list to see the records for a specific entity, such as a specific task or sample. To access revision summaries, open the page that lists the type of entities whose history you need to view, and then click the history icon or button (🕐 or **History**).
Revision Details	Lists the history record details for a specific entity, such as a specific task or sample. Provides separate, filterable tabs for an entity's lifecycle events, signature events, and access events. To access an entity's event revision detail records, select any revision summary record for that entity from the Revisions Summary page, and then click the link in the first column of the summary record.

Accessing History Records

To access audit history records:

1. Open the widget or page that lists the entity type, for example, My Task Plans or Samples.

2. Use filters to find the entities of interest, and then click the history icon or button (🕐 or History).

   Result: The **Audit History** page opens in a new browser tab and displays summary revision records for the entities.

3. If the Filter panel contains a **Children** field, use it as needed to switch between viewing parent-level entity history to viewing child-level entity history. for the parent entity type to viewing the history records for one of its child entity types. You can view history for only one entity type at a time. Note that when you change the value of the **Children** filter, all other filters are reset.

Parent	Children
Task Plans	Tasks, Samples
Task Plan	Samples, Results **Note:** If you select **Results**, you must also select a specific task. You can see result history for only one task at a time.
Activity Plan	Methods, Characteristics, Conditions

4. Apply other filters as needed. All audit history pages provide several standard filter options:

   - **Saved Filter** – Select a previously saved filter and save your own filters and views.
   - **Search** – To see history for a specific entity, type all or part of its ID or name.
   - **Modified By** – To see the history of a specific user's changes, select that user.
   - **Revision Type** – To see only additions, modifications, or deletions, select the corresponding option.

   > **Tips:**
   >
   > When you view a task's **Results** history, the **Change Summary** column contains the following, in order, separated by underscores: Task ID, Display Parameter Name, Domain Value Key (always **A** for **A**ctual), Group Index, Item Index, and (if relevant) Sample ID.
   >
   > When you view task and sample history in an analyst's task plan (plan into which tasks were imported), be aware of the following:
   >
   > - The **Change Summary** column lists task and sample events as **modifications**, not as **additions**. The oldest modification history record for a task or sample indicates when it was added to the original task plan.
   > - The **Change To** column for task history records does not identify associated samples. To see them, access the task's history in the original task plan.

5. To access the event history records for a specific entity:

   a. In the **Audit History** page, find any revision history record for that entity.

   b. Click the **View Events for <EntityName>** link in the first column of the record.

      The Events history window for the entity is displayed.

c. Click the tab for the event type that you need to see and filter the events as needed:

- **Lifecycle Events** tab – You can filter this tab by User, From State, and To State.
- **Signature Events** tab – You can filter this tab by User.
- **Access Events** tab – You can filter this tab by User.

Notes:

To copy or export history data shown in any history page grid:

- To copy the data to the clipboard so that you can paste it into another location, right-click the grid, and then click **Copy** or **Copy with Headers**.
- To export the data, right-click the grid, and then click **Export > CSV Export** or **Export > Excel Export**.
- To print the data or save it to a PDF file:
  1. Right-click the grid, and then click **Export > Print**.
  2. For Destination, select a printer or select **Save As PDF**.
  3. To avoid truncation of the content in the Changed To column of the printout or PDF, set the Layout to **Landscape**, and set Margins to **None**.

Content of Revision History Records

Pages that show revision history records provide the following standard columns of data, regardless of entity type. Columns flagged with an asterisk are not always included in the default view, but you can switch the view to **All** in order to see them. Additional columns not described in this table are provided when necessary to distinguish between entities that have the same name.

Note: Deletion history for draft tasks that were deleted using pre-2021 versions of Foundation Hub are not shown.

Column	Description
*Revision	Indicator that is useful when multiple rows are associated with the same revision. In such cases, those rows have the same revision number. Sorting or filtering by revision number helps you find all changes that were the result of one action.
Event View	Identifies the name of the entity for which this revision history record was created and provides a link to event history records page for that entity. You can click the link to see the details of all lifecycle events, signature events, and access events (if access events are tracked).
Date	Timestamp that indicates the date and time that the change was made. ■ The timestamp includes your local three-letter timezone code to indicate that it has been converted from the Universal Time format in which it is stored to reflect your own timezone. ■ See the **Client Timezone** column to identify the timezone of the user system from which the change was actually made.
Modified By	User who initiated the change, if it was initiated directly by a user. For background-initiated changes, see **Service Account.**

Column	Description
Change Summary	Brief description of the type of change that was made. For **Results**, the **Change Summary** column contains the following, in order, separated by underscores: ■ Task ID ■ Display Parameter Name ■ Domain Value Key (Actual, Planned, Context, and Reported) ■ Group Index ■ Item Index ■ Sample ID (if relevant).
Changed From	When the change type is modification, identifies the original value of data that was changed.
Changed To	When the change type is modification, identifies the new value of the data that was changed.
*Client	IP address of the client system from which the change was initiated.
*Client Timezone	Name of the timezone in which the change was made.
*Service Account Name	System user account under which the change was made, if it was performed by a background process rather than by a user. For changes made in Foundation Hub and Task Planner, the service account is followed by the name of the user whose action triggered the service account to make the change.

Content of Lifecycle Event History Records

The Lifecycle Events tab for all entities, regardless of type, provides the following data.

Column	Description
Date	Timestamp that indicates the date and time that the lifecycle event occurred.
User	User who initiated the change, if it was initiated directly by a user.
Action	Brief description of the user action that resulted in the change to the lifecycle state, if relevant. Blank if triggered by a background process.
From State	Previous state of the entity.
To State	New state of the entity.

Content of Signature Event History Records

When you attempt an action or lifecycle transition that is associated with a signature policy, the system prompts you for an e-signature. If the policy does not authorize you to sign for the action, you must get an authorized user to come sign for it before you can proceed.

The system creates a signature event history record whenever the signature window is submitted:

- When you submit an authorized signature, the system records that signature and other relevant details in a signature event history record.

- If you attempt to submit an unauthorized signature, the system displays an error message, creates a record of the unauthorized signature attempt, and prompts you again to enter an authorized signature.

- If multiple signatures are required, the system prompts you for each signature and creates a history record with the details of each signature collected. You cannot proceed until all required signatures are collected.

Note: If a policy fails to identify an authorized signer, the system accepts a signature from anyone, but it does **not** create any record of that signature.

The Signature Events tab for all entities, regardless of type, provides the following data for each signature event.

Column	Description
Date	Timestamp that indicates the date and time that the change was made.
User	User whose signature was collected.
Event	Event or action for which the signature was collected.
Description	More information about why the signature was collected.
Reason Code	Reason selected by the user when entering the signature.
Application	Application used to collect the signature, for example Foundation, Compose, or Capture.
Application Version	Version of the application used to collect the signature.
*Client	IP address of the client system from which the change was initiated.
*Client Timezone	Name of the timezone in which the change was made.

Content of Access Event History Records

The Access Events tab for all entities, regardless of type, provides the following data.

Column	Description
Date	Timestamp that indicates the date and time that the change was made.
User	User who accessed the entity.
Application	Application used to access the entity, for example Foundation, Compose, or Capture.

Column	Description
Application Version	Version of the application used to access the entity.
*Client	IP address of the client system from which the change was initiated.
*Client Timezone	Name of the timezone in which the change was made.

Chapter 3:
Managing Task Plans

You can create task plans for managing different types of work. Common examples include the following:

- **General projects** – Lab managers, scientists, and engineers can create task plans to define and manage general projects.

  These task plans identify the individual tasks, their order (if order is important), and the activity or activities on which each task is based, and specific samples that require each task. They can also identify information such as the associated project, cost center, and development phase (all defined in Foundation Hub Admin and Settings).

  As a general project task plan evolves, requests for performing each task are generated and each task is eventually assigned to a specific individual (*assignee*) to do the work.

- **Personal assignments** – Individuals assigned to tasks can create personal task plans and then import selections of their assigned tasks into their personal task plans. They can import selections of tasks from multiple project and metrology task plans into the same personal task plan, and they can create as many task plans as they like. They cannot, however, import the same task into more than one of their personal task plans.

- **Metrology tasks** – Equipment administrators and lab managers can create metrology task plans to manage the scheduled maintenance for equipment. They can use the Lab Equipment widget to find equipment that is due for maintenance and then create a task plan for executing the maintenance events.

The *Task Planner* interface provides a centralized view of a task plan that groups the plan's components under tabs (**Materials**, **Samples**, **Tasks**, **Results**, and **Activity Results**) and that provides buttons to execute tasks, reassign tasks, create review tasks, requesting re-testing, and so on. The data on these tabs and the actions available vary based on the content of the task plan, the status of the task plan, the status of its tasks, your access rights for the task plan, and your permissions for the actions.

Task Plan Lifecycle

The available workflow actions that you can perform on a task plan are based on its current lifecycle state. When you create a new task plan in the **My Tasks Plans** widget, the task plan starts its lifecycle in the *Draft* state.

The following table lists the workflow actions available in each lifecycle state of a task plan.

Workflow Step	Resulting Lifecycle State	Available Actions
Create a task plan Reopen a task plan	Draft	- Release - Withdraw
Release a task plan	Released	- Reopen
Withdraw a task plan	Withdrawn	- Reopen

Viewing and Opening Your Task Plans

The **My Task Plans** widget lists the following:

- Task plans that you created or currently own, including personal task plans into which you imported your assigned tasks
- Task plans that you co-own because you are a member of a collaborator group specified on the task plan

To view your My Task Plans widget:

1. To see any task plans that reside in a private collaborative space, and to see any unshared task plans that reside in a public or a protected collaborative space, first access that space.

2. Expand the **My Task Plans** widget portal on the BIOVIA landing page.

   By default, the widget displays the following columns, but you can change the selected **View** above the grid from **Default** to **All** to show all relevant columns. For details about other ways to control which columns you see, refer to Filtering and Sorting Grid Data.

Column	Description
Task Plan Id	The unique identifier of the task plan. Click a **Task Plan Id** hyperlink to open that task plan and view its details in the Task Planner. The Task Plan Id is a system-generated serialized string. Its format is TP*n*, where *n* is a zero-padded integer, incremented by 1 for each new task plan (for example, TP01, TP02, TP03).
Name	The name of the task plan.
Status	The current status of the task plan: ■ Draft ■ Released ■ Withdrawn
Date Created	The date on which the task plan was created.
Last Updated	The date on which the task plan was last modified.

Note: Unlike most other widgets, this widget does not currently display columns to represent extended properties. If your organization has implemented extended properties for task plans, you can see them at the individual task plan level, in the task plan information card.

To open a task plan:

Click its **Task Plan Id** link. The link appears in the Task Plan columns of the following:

- My Task Plans widget
- Notifications related to task plans
- My Tasks, Available Tasks, and main Tasks widget

Developing a New Task Plan

Developing a new task plan involves the following steps:

1. Ensure that you are in the correct collaborative space, and then create the plan.
2. Edit the general properties of the task plan.
3. Identify the samples and the tasks.
   - If a task plan involves sample-centric activities such as testing samples of a manufactured product, this step involves adding samples and then generating tasks for the samples.
   - If the task plan involves more task-centric activities like research studies, this step involves adding tasks first, and adding any needed samples later.
4. Configure the parameters of the individual tasks and associated samples.
5. If the task plan needs to be accessible from other collaborative spaces, share the task plan.

Creating a General Project Task Plan

As a lab manager, scientist, or engineer, you can create task plans to schedule and manage work for a project in your lab.

To create a task plan:

1. Ensure that your active collaborative space is the space in which the task plan should reside. If you need to move it later, you can do so only if none of its samples or tasks are used in more than one task plan. For more information, see Moving a Task Plan to Another Collaborative Space.
2. Open your My Task Plans widget and click **Create**.
3. Enter a name for the new task plan.
4. To identify co-owners for the new task plan, select the group that identifies them from the **Collaborator Group** field.
5. In **Task Plan Type**, select the type, if relevant. Task Plan Types are configurable and vary from one Foundation Hub installation to another. For more information, contact your administrator.

   > **Note:** Your organization might use extended properties (extra fields) for task plans, and might also vary the extended properties based on the Task Plan Type. To view such extended properties, open the task plan and expand its information card.

6. Click **OK**.
7. If the task plan is related to a specific project, development phase, or cost center, see Viewing and Editing General Task Plan Properties.

Result:

- The task plan is created in its *Draft* lifecycle state.
- The task plan is accessible only from the collaborative space in which you created it. If that space is a public or protected space and you need the task plan to be accessible from it and from other collaborative spaces, see Making a Task Plan Visible Across Collaborative Spaces.
- The task plan is added to the My Task Plans widget of you and the members of the collaborator group, if you specified one. You and collaborator group members can now add materials, samples, and tasks to the task plan.

Viewing and Editing General Task Plan Properties

> **Note:** To modify a task plan, you must be its current owner or a member of a collaborator group assigned to the task plan.

The general properties of each task plan are provided in an information card at the top of the Task Planner. By default, it is collapsed.

To view and edit general properties for a task plan:

1. Open the task plan.

2. Open the properties card by clicking **Expand** to read or **Edit** to modify the properties.

   The card displays the following fields, some of which provide hyperlinks to related content. To access that content, you must have appropriate permissions. To return to the Task Planner, use your browser's **Back** button.

Field	Description
Task Plan Id	System-assigned unique identifier of the task plan.
Task Plan Name	Name of the task plan.
Creator	Username of the creator of the task plan.
Current Owner	Username of the current owner of the task plan. The value defaults to the creator, but the creator can change it. If it has been changed, the new current owner can also change it. For details, see Updating a Task Plan's Owner. **Note:** If there is no collaborator group for an active task plan and its current owner is out or leaves the company, the task plan is stalled; it cannot be modified and cannot make progress through its lifecycle, although work on its submitted and assigned tasks can continue. For information about resolving this situation, see Reassigning Responsibility for a Stalled Task Plan.

Field	Description
Collaborator Group	Name of group of users who share task plan ownership with the **Current Owner**. These users have the same rights to the task plan as its **Creator** and **Current Owner**, with one exception: they cannot transfer ownership of the task plan *unless* they are also a leader or owner of the collaborative space in which the task plan resides. **Tips:** ■ If work on a task plan needs to continue while its owner is gone, be sure to assign a collaborator group. If it could become necessary to change the owner, be sure the collaborator group includes a leader or owner of the collaborative space in which the task plan resides. ■ Workbook users cannot select a collaborator group when they create a task plan in Workbook; they must switch to the Task Planner.
Project	Project with which the task plan is associated.
Development Phase	Development phase with which the task plan is associated.
Collaborative Space	Collaborative Space in which the task plan resides.
Cost Center	The cost center with which the task plan is associated.
Task Plan Type	The type of task plan. **Note:** If your organization uses extended properties (extra fields) for task plans, they are displayed at the bottom of the information card. If your organization varies the available extended properties based on the task plan type, selecting a different Task Plan Type results in a different set of extended properties.
Date Created	The date on which the task plan was created.
Last Updated	The date on which the task plan was last modified.
External Reference	If the task plan was created by an external application, this value is the task plan identifier used by that application. If the source document is an experiment in BIOVIA Workbook, you can click the ID to open the experiment in Workbook.
Extended Properties	Any additional fields in the information card are extended properties that have been configured by your organization to provide more information about task plans. Extended properties for task plans are read-only in the Task Plan information card; their values can be set only by a Pipeline Pilot protocol or other external program.

3. If you made any changes, click ☑ **Submit**.

Adding Materials to a Task Plan

Note: To modify a task plan, you must be its current owner or a member of a collaborator group assigned to the task plan.

Use the **Materials** tab to view, add, and import physical materials for use in the task plan. After you add a material to a task plan, you can create samples that use that material.

To add materials, you can use any of the following methods:

- Use the Materials tab as a scratch pad to manually enter new materials in the system.
- Import existing materials from another task plan or from an inventory system.
- Scan a container barcode to import the associated material information from an inventory system.

When you add new materials to a task plan, the materials become available to import to other task plans and are listed in the Materials widget along with other materials in the system. You can associate one or more containers with the material, and you can update the material information.

To add new materials to a task plan:

1. Open the task plan.
2. On the **Materials** tab, click **Create**.
3. Enter the number of materials you want to add, up to 100.
4. For each material, complete a row in the grid.
   - Enter a **Material Name** (required).
   - Select a **Material Class** (recommended).
   - Enter all other information that is relevant for the material.

     Note: The grid shows all columns that apply to materials, including *extended properties* that are defined for any material class. However, cells are editable only if the column applies to that row.

   - The **Material ID** is automatically generated when you save the data.
5. When you are done, click **Save data** ✅.

Result:

- The system saves each row that contains data as a new material on the task plan.
- Users with access to the task plan can view and edit the material information and import the material to another task plan.
- The Materials widget displays the material.

To import existing materials to a task plan:

1. Open the task plan.
2. On the **Materials** tab, click **Import Materials** 📥.
3. For the **Filter Type**, select the source of the materials:
   - **Task Plan** – From other task plans that you have permission to access.
   - **Inventory** – From an inventory system that is connected to your system.

4. Enter search criteria for the materials you want to import.

   ■ If you are importing from other task plans, matching results are displayed dynamically as you enter criteria.

   ■ If you are importing from an inventory system, click **Search** to retrieve matching results.

   > **Note:** If a check icon ✔ appears in the **Mapping Errors** column, the data from an inventory system might not import correctly to Foundation Hub. You can point to the icon to see a description of the possible errors. Then, you can choose to import the data anyway, or you can cancel the import and notify an administrator to update the property mapping.

5. Select the check boxes next to the materials you want to import.

6. If you are importing from other task plans and you want to import any containers associated with a selected material, expand the sub-grid and select the containers.

7. Click **OK**.

Result:

■ The materials and containers (if selected) are imported to the task plan, and a new **Material ID** is automatically generated for each material.

■ If the material was imported from an inventory system, either directly or from another task plan, an icon ⤢ is displayed next to it to indicate that it is linked to an inventory system.

To import materials to a task plan by scanning container barcodes:

1. Open the task plan.

2. On the **Materials** tab, click **Create**.

3. Enter the number of materials you want to add.

4. For each material, enter a **Material Name**.

5. Click ✔ **Save data**.

6. For each material, associate the containers with the material by scanning or entering the container barcodes.

Result:

■ The material and container information from the inventory system is imported to the task plan.

■ An icon ⤢ is displayed next to the material to indicate that it is linked to an inventory system.

Updating Materials on a Task Plan

> **Note:** To modify a task plan, you must be its current owner or a member of a collaborator group assigned to the task plan.

You can make the following changes to materials on a task plan:

■ Edit certain material properties.

■ Associate containers or remove containers that are associated with materials. See Associating Containers with Materials.

■ Import the latest information from the inventory system for one or more materials and their associated containers. Associating a container with a material also updates the information for that material only.

■ Delete materials that are not used on another task plan.

To edit material properties:

1. Open the task plan and click the **Materials** tab.

2. (Optional) Apply filters to show the materials you need to edit.

3. Click ✎ **Edit**.

4. Edit the values in the cells, as needed. Keep in mind the following restrictions on which properties are editable.

   ■ The grid shows all columns that apply to materials, including *extended properties* that are defined for any material class. However, cells are editable only if the column applies to that row.

   ■ When a material is linked to an inventory system, the only editable properties in Foundation Hub are: **Material Name**, **Amount**, and any unmapped properties (properties that are not configured to import from the inventory system).

   ■ The following system fields are not editable: **Expired**, **Material ID**, **Reference Material ID**, **Reference Material Name**, **Containers**, **Parent Material ID**, **Parent Material Name**, **Cache Date**, **Date Created**, **Last Updated**.

5. Click ✅ **Save** to save your changes or ❌ **Cancel** to cancel them.

To import the latest information from the inventory system for materials and containers:

1. Open the task plan and click the **Materials** tab.

2. Select the check box of every material you want to update.

   > **Tip:** You can import information only for materials that are linked to an inventory system (indicated by an icon ↗). If you select unlinked materials, the materials and containers are not changed.

3. Click **Refresh** in the toolbar.

   Result:

   The selected materials and their associated containers are updated.

To delete materials:

1. Open the task plan and click the **Materials** tab.

2. Select the check box of every material you want to delete.

3. Click **Delete** in the toolbar.

4. In the confirmation dialog, click **Delete**.

   > **Notes:**
   > An error message appears if one or more of the selected materials has been imported to, and is still used on, another task plan. The material must be deleted from the task plans that imported it before you can delete it from the current task plan.
   >
   > To find task plans that imported a material, make a note of the **Material ID**. Then, open the Materials widget and find materials with a matching **Reference Material ID**. Open the associated task plans and delete the material. Return to the original task plan and try to delete the material again.

   Result:

   The system deletes the selected materials and the links to their associated containers.

Associating Samples with a Task Plan

The task plan's **Samples** tab provides two ways to identify the samples that you plan to use for your task plan:

- Use **Add** to associate samples that are already in Foundation Hub or your inventory system with your task plan.
- Use **Create** to add new planned samples to the Foundation Hub and to your task plan at the same time and, optionally, identify a source sample or container from which they must be collected.

> **Tip:** To create new samples *without* immediately associating them with a task plan, use the (All) **Samples** widget. For more information, see Creating Samples.

To add *existing* samples to a task plan:

1. On the task plan's **Samples** tab, click **Add Samples** ⚗.
2. In the **Add Samples** dialog box, identify the samples by using any combination of the following methods:
   - Scan sample barcodes.
   - Cut and paste sample IDs from a Notepad, Excel, or other external file.
   - Manually enter each ID, separated by a space, comma, or line break.
3. Click **OK**.
4. Review the samples and edit their property values, if needed.

Result: The samples are added to the **Samples** tab without changing their current lifecycle state, such as *Planned*, *Collected*, or *Available*. You must collect samples whose state is *Planned* before they can be used.

To create *new* planned samples and add them to a task plan:

1. Open the task plan's **Samples** tab and click **Create**.
2. Create an ID for each planned sample.
   - To create system-generated IDs, enter the **Number to Generate**.
   - To enter specific IDs, click **Custom**, and then scan, paste, or manually enter each ID. Enter a comma, space, or line break between IDs.
3. To allow the person who collects the sample to select the source container, sample, or material, skip to Step 4. Otherwise, do one of the following:
   - To require collection from a container of material that your inventory system identifies, click **Scan Sample Source**. Then scan the barcode on that container, or on a different container of the same material. If you scan a container with a lot number, the system requires the collected material to come from a source that has the same material and the same material lot number.
   - To require collection from an existing sample that Foundation Hub identifies in the collaboration space in which you are working, select **Sample** from the **Sample Source Type** list, click **Scan Sample Source**, and then scan the required sample.
   - To set one of the task plan's materials as the default collection source, select **Material** from the **Sample Source Type** list, and then select the material ID from the **Sample Source** field.

> **Note:** If the material you need is not listed, add it to the task plan's **Materials** tab, and then try again. This tab must list a lab material in order for that material to be available as a sample source.

4. Enter a sample **Name**. If you are creating more than one sample, differentiate between their names by selecting the **Append with "-sequence #"** check box.

5. If relevant, enter values for other sample properties on this window, and then click **Ok**.

> **Tip:** If you are creating a set of samples, you can enter the most common values now, and then edit them later to account for any variations.

- ■ **Sample Type** and **Sample Container Type**
- ■ **Amount** and **Amount Unit**.

> **Note:**
>
> If your sample consists of a package of equivalent items, such as a bag that contains 10 vials of 5ml each, represent it as follows:
>
> - ■ In **Amount**, enter the number of items (10) and from **Amount Units** select **Each**.
> - ■ In **Each Amount**, enter the amount per item (5) and from **Each Amount Unit** select the appropriate unit of measurement (ml).
>
> An alternative method is to generate ten separate samples by entering 10 as the Number to Generate, and specifying 5 as the Amount and ml as the Amount Unit.

- ■ **Expected Concentration** and **Expected ConcentrationUnit** of measurement.
- ■ **Planned Collection Date**.
- ■ **Dilution Factor**.
- ■ **Owner**, **Location**, and **Storage Requirements**.
- ■ **Project**, **Purpose**, and **Process Stage**.
- ■ **Description**, **External ID**, **Handling Instructions**, and **Comments**.

> **Note:** The External ID is the identifier of a related sample in an external system.

6. Use the **Grid Edit** mode or **Edit Samples** window as described in Editing Sample Properties to do any of the following:

- ■ Enter values in fields that are not on the Create Samples window, such as *extended sample properties* and stability properties.
- ■ Enter values for fields that you left blank.
- ■ Edit mistakes or placeholder values.
- ■ Change values in bulk by using grid features such as copy-and-paste and fill-down.

Result:

- ■ The new samples are added to the task plan's **Samples** tab and to the **Samples** widget in their *Planned* lifecycle state.
- ■ The new samples inherit the attributes of their source container or source sample. In addition, if the source is a container:
  - ■ The container's lot properties are added to Foundation Hub inventory with a setting to indicate that the lot was created from a task plan.

- The task plan **Materials** tab is updated to identify the material and the material's container information, if the tab did not already contain this information.

■ You can associate the samples with tasks that are already in the task plan, and you can generate new tasks for the samples. The samples must be collected before the tasks can be completed.

■ If you scanned a source sample or container, the collection process requires scanning the barcode of either the identified sample or any container of that sample.

Generating Tasks for Sample-Centric Task Plans

Note: To modify a task plan, you must be its current owner or a member of a collaborator group assigned to the task plan.

The Task Planner **Samples** tab lists all samples in your task plan. You can generate tasks only for samples that are in the *Planned* or *Collected* lifecycle state. You can choose to generate tasks based on one or more individual activities, one or more activity plans, or a combination of individual activities and activity plans.

To generate tasks for samples:

1. Open the task plan.

2. In the **Samples** tab, select the check boxes of samples that require the same tasks.

Tips:
- If all samples in a sample group require the same tasks and you select at least one of the samples, you can use the **Apply to Sample Group** to generate tasks for all of the samples. Selecting every individual sample is unnecessary.
- If a large number of samples requires the same task, but you do not want one big task and, consequently, one assignee, you have two options:
   - Select all of the samples, generate the task, and then use the Split Task feature to break it up into smaller tasks. For more information, see Splitting Tasks: Divide Task Based on Number of Samples.
   - Select a manageable subset of the samples, generate the task for that subset, and then repeat as many times as necessary to cover all of the samples.

3. Click one of the following:

   ■ To generate tasks for one or more individual activities, click **Create Tasks from Activities** 📇.

   ■ To generate tasks for each activity in a one or more activity plans, click **Create Tasks from Activity Plans** 📇.

4. In the **Add Activities** or **Add Activity Plans** dialog box, use the **Filters** panel to filter the grid, if necessary.

Tip: To make an activity or activity plan that you use a lot appear at the top of the **Activities** and **Activity Plans** grids so that it is easy to find, click its ⭐ icon. To remove it as a favorite, click the icon again.

5. Select one or more **activities** or **activity plans**:

   ■ To generate the tasks for every sample that belongs to the same sample group as any of the tasks you selected in Step 2, select the **Apply to Sample Group** check box.

- To create one task for each selected activity or for each activity in each selected activity plan, click **OK**.

- If some of the same tasks need to be replicated:

  a. Select the **Enable Duplicate Selection** check box.

  b. Select the activities or activity plans for which you require replicate tasks.

  c. Click **Add to selection** ➕ to generate a second set of tasks. Repeat this step as many times as you need to reflect the required number of replications.To remove a replication from the Selection list, select its check box and click ➖.

  d. Click **OK**.

Result:

- A new task is created in the *Draft* lifecycle state for each selected activity and for each activity in each selected activity plan. Each new task identifies all of the selected samples.If you used the **Apply to Sample Group** option, each new task also identifies any task plan samples that belong to the same group as a selected sample.

- On the **Samples** tab, you can view the tasks associated with a sample by clicking ❯ **Expand**.

- On the **Tasks** tab, you can view the samples associated with a task by clicking ❯ **Expand**. The **Sample Count** column indicates the number of samples associated with each task.

Generating Tasks for Task-centric Task Plans

> **Note:** To modify a task plan, you must be its current owner or a member of a collaborator group assigned to the task plan.

You can generate tasks based any selection of activities and activity plans *before* you identify the samples that require them, when appropriate. However, if you know what samples are required, it is more efficient to identify the samples and then generate the tasks, as described in Generating Tasks for Sample-Centric Task Plans.

To generate tasks without sample associations:

1. Open the task plan.

2. In the **Tasks** tab, select one of the following:

   - 📇 **Create Tasks from Activities** - To create tasks based on individual activities.

   - 📇 **Create Tasks from Activity Plans** - To create tasks based on a group of activities defined in an activity plan.

3. In the **Add Activities** or **Add Activity Plans** dialog box, use the **Filters** panel to filter the list of activity plans, if necessary.

> **Note:** Activity plans are restricted to specific authoring groups, and you will see only the plans available to authoring groups that include you.

4. Select one or more **Activities** or **Activity Plans** from the list:

   - To add one instance of the selected items, click **OK**.

   - To add multiple instances of selected items:

     a. Click the **Enable Duplicate Selection** check box.

     b. Select the activities or activity plans for which you need multiple instances.

   c. Click ➕ **Add to selection** as many times as necessary to get the number of instances you need.

   d. To remove items from the **Selection** list, select their check boxes and click ➖ **Remove from selection** .

   e. When your selection list is complete, click **OK**.

Result:

■ A new task is created in the *Draft* lifecycle state for each selected activity and for each activity in a selected activity plan. The new tasks are added to the **Tasks** tab.

■ If relevant, the **Specification** column in the **Tasks** grid links to the activity plan in Foundation Hub **Admin & Settings**.

Configuring a Task and its Sample Associations

> **Note:** To modify a task plan, you must be its current owner or a member of a collaborator group assigned to the task plan.

After you create a task from an activity, use the **Configure Task** window to associate samples with the task.

If the activity's **Lock Activity's Settings in Tasks** option is not configured, you can perform the following additional configuration task in this window:

1. Add or edit task settings such as Method ID and Version, External ID, and Lifecycle Policy.
2. Exclude any output parameters that you do not need to collect.
3. Add or edit input parameters such as planned values, units, and specification limits.
4. Control whether to realign the task's parameter set with the activity's parameter set, if a new version of the activity becomes available before the task is started

Your ability to make such changes depends on the task's lifecycle state, your role (requestor, group manager, or assignee), and other configuration settings.

After a task is *completed*, *released*, or *abandoned*, the Configure Task window is disabled.

To configure a task:

1. Open the task plan.

2. On the **Tasks** tab, select the check box of the task to configure, and then click **Edit Task** 🖉 in the toolbar.

   The **Configure Task** window opens and displays default parameters and values inherited from the activity and additional task-specific parameters such as *Sample Ids*.

3. If needed, edit the following inherited defaults:

   ■ **Method ID** – For procedure tasks, this value identifies the Compose recipe. For data acquisition and protocol tasks, it can identify a document that describes how to perform the task.

   ■ **Method Version** – Version of element specified in **Method ID**.

   ■ **External Id** – Identifier of a related entity in an external system such as LIMS, PLM, or Workbook that links the activity to the external entity.

   ■ **Predecessor** – ID of a prerequisite task in this task plan.

   A task that specifies a predecessor cannot be executed until the predecessor reaches either its *completed* or its *in progress* state, depending on your configuration.

- **Life Cycle Policy** – Lifecycle policy that identifies the appropriate approval requirements for this task. The default value and any other available values are specified in the collaborative space configuration. If the configuration allows more than one lifecycle policy, you can select which one to use.

> **Exceptions:** You cannot change the lifecycle policy for the following:
> - Procedure tasks, unless they are based on an activity that uses the activity-driven workflow.
> - Split tasks, retest tasks, or review tasks, all of which inherit their lifecycle policy from the original task.

4. In **Sample Ids**, add the samples associated with the task. To add samples, you can type, scan, or paste their IDs.

> **Tip:** To view sample details, remove samples from a task, or move samples from one task to another, use the **Tasks** tab instead of Configure Tasks window. The Tasks tab lists the details of a task in a subgrid under the task and also provides options to remove samples from the task and to split sammples off to a new task.

5. If this task is still in its *Draft* state, and its activity does **not** use **Lock Activity's Settings in Task**, and the activity might be updated before the task starts, consider whether to select **Use Latest Activity**. Selecting this option makes the task sync up with any changes to the activity. Your collaborative space settings control whether this option is selected by default.

   - Clear the option to retain the parameter set that the activity had when the task was created.
   - Select the option to use the parameter set in the latest approved version of the activity.

   If you select **Use Latest Activity**, Task Planner checks for a new activity version when you edit the task or when someone executes it. If a later version is available, Task Planner reacts as follows:

   - If you edited the task, but **did not** add or change its parameters, Task Planner upgrades the task to use the latest activity parameters and it keeps the task in its *draft* state.
   - If you edited the task and **did** add or change parameters, Task Planner gives you a choice:
     - **Cancel & Upgrade** – Discard your changes to the task, upgrade it, and keep it in its *draft* state.
     - **Save** – Save your changes to the task, transition it to *in progress*, disable its **Use Latest Activity** setting, and do not upgrade it.
   - If you **execute** the task, Task Planner immediately upgrades it and transitions it to *in progress*, regardless of whether you enter results.

6. If task parameters are not locked, use the **Parameters** grid to edit them as needed. This grid displays task-level input parameters first, then sample-level input parameters, and then sample-level output parameters.

   To add or edit a property of a parameter, click inside the appropriate cell:

   - **In Task** – Controls whether the output parameters from the activity are required for the task.

     To change this setting, click the cell to reveal a check box. Then click the check box to toggle between *true* and *false*.
   - Read-only columns:
     - **Name** – Name of the parameter.
     - **Input/Output** – Indicates whether the value is an input or an output value.

- **Type** – Data type: text, date/time, numeric, file, integer, quantity, Boolean, or vocabulary.
- **Sample Level** – Indicates whether the parameter is a sample-level parameter such as a measurement whose value is obtained for each sample, or a task-level parameter such as a caution or comment related to the overall task.

- **Value** – For task-level parameters, this column is for actual values, whereas for sample-level parameters it is for planned values.

> **Note:**
>
> For parameters of type *File*, use this column to upload files that provide information about the parameter.
>
> - To upload a file, then click its ⬆ **Upload** icon, and then browse to and select the file. The file is uploaded to the Foundation Hub File Store.
> - To open a file that has already been uploaded, click its filename. If your browser is configured to open the file type, the file opens in a new browser tab. Otherwise, the file is downloaded to your local downloads folder.
> - To upload a different file, click to the right of the filename to re-display the ⬆ **Upload** icon, click the icon, and select the replacement file. In Task Planner, the newly uploaded file replaces the previous file, but both files remain available from the Foundation Hub File Store.

- **Unit** – For parameters of type *quantity*, this column indicates the unit of measurement. If you change units, any specification limits inherited from the activity are recalculated accordingly.
- **Specification Limits** – If the activity plan from which the task was generated specifies quantitative limits, they are displayed in the following columns and you can edit them as needed for your task:
  - **Lower Limit** – Identifies the lowest expected result.
  - **Upper Limit** – Identifies the highest expected result.
7. Click **OK** to submit the changes.

Removing Samples from a Task Plan

You can remove a sample from a task plan if the task plan has no *in progress*, *completed*, or *released* tasks for that sample.

When you remove a sample from a task plan, the sample is removed from the task plan and also from any *draft*, *assigned*, and *submitted* tasks that are currently associated with that sample.

> **Note:** To modify a task plan, you must be its current owner or a member of a collaborator group assigned to the task plan.

To remove samples from a task plan:

1. Open the task plan.
2. On the **Samples** tab, select the check boxes of the samples.
3. On the toolbar, click 🧪 **Remove Samples**.
4. Click **OK**.

Result:

■ The sample is removed from the Samples tab of the task plan.

■ The sample is removed from any *Draft*, *Assigned*, and *Submitted* tasks that had already been associated with that sample.

Importing Tasks into a Personal Task Plan

Personal task plans help you visualize, organize, and manage tasks that belong to other task plans, but that have been assigned directly to you.

When you have task assignments from more than one task plan, it can be useful to import them into a single personal task plan. It can also be useful to import tasks of different types into different personal task plans.

You can have as many personal task plans as you like, but the same task cannot reside in more than one of them.

To import tasks into a personal task plan:

1. Open your My Task Plans widget and click **Create** on its toolbar.

2. In the **Create Task Plan** dialog box, enter a name for your new personal task plan.

3. To share ownership of your task plan with members of a specific group, select that group from the **Collaborator Group** field.

   The personal task plan is created in its *draft* lifecycle state, and you can now import tasks.

4. Import the tasks that you want to include:

   a. Click the task plan's **Tasks** tab, and then click ⬇ **ImportTask(s)**.

   b. In the **Import Tasks** dialog, identify the tasks to import. To find and determine which tasks to import, you can:

      ■ In the filter panel, use the **Lifecycle** field to narrow the task selection list based on task lifecycle state:

         ▪ **Assigned** – tasks that are assigned to you, but not yet started.

         ▪ **Submitted** – tasks that are available that you can assign to yourself.

            > **Note:** If you import any *submitted* tasks, they are automatically assigned to you.

         ▪ **In Progress** – tasks that you have started, but have not yet completed.

         ▪ **All** – all tasks in any of the preceding lifecycle states.

      ■ In the Tasks grid, expand the samples under a task to view and confirm sample availability, location, and other details.

   c. Select the check box of each task to import.

      > **Note:** The **Enable Duplicate Selection** option is not relevant and cannot be used for personal task plans.

   d. Click **OK**.

Result:

■ The tasks you chose to import are added to the **Tasks** tab of your personal task plan, and any that were previously in their *Submitted* lifecycle state are also added to your **My Tasks** widget and assigned to you.

- In your personal task plan:
  - The **Tasks** tab displays the ID of the source project task plan in the **task plan ID** column.
  - The **Results** tab displays result rows for the imported tasks.
  - The **Samples** tab remains empty.
- In the **Tasks** tab of the source project task plan:
  - The ID of the personal task plan is added to the **Analyst task plan** column.
  - If you imported tasks that had not yet been assigned, the **Life Cycle State** column is updated from *Submitted* to *Assigned* and your username is added to the **Assignee** column.
  - No other aspects of the task are changed.
- If you unassign a task, it is removed from the personal task plan, put back in the **Available Tasks** page, and transitioned from *Assigned* back to *Submitted*.

Managing Task Plan Status

> **Note:** To modify a task plan, you must be its current owner or a member of a collaborator group assigned to the task plan.

You can release, withdraw, and re-open task plans.

Releasing Task Plans

> **Note:** To modify a task plan, you must be its current owner or a member of a collaborator group assigned to the task plan.

After all tasks in a task plan are *completed* or *released*, you can release the task plan itself. Releasing a task plan makes it become read-only, and prevents any additional changes to its samples, tasks, and results.

- Although Task Planner allows you to release a task plan before its tasks are all released, doing so is not recommended.
- If necessary, a released task plan can be re-opened to return it to its *draft* lifecycle state for additional work.

To release a task plan:

1. Open your **My Task Plans** widget.
2. In the **My Task Plans** widget, select the check box of the task plans to release, and then click **Release** in the toolbar.

   Alternatively, **Expand** the task plan properties card, click its **Lifecycle Actions** icon, and click **Release**.

Result: The task plan is put into its *Released* lifecycle state.

Withdrawing Task Plans

You can withdraw a task plan if it is still in its *draft* lifecycle state. If you open a withdrawn task plan from the My Task Plans widget, its details are shown in a read-only view that does not permit changes. However, you can continue to view the history for the task plan, its tasks, and its associated samples.

To change a task plan that has been withdrawn, reopen it. This returns it to its *draft* state so that it can be changed.

> **Note:** To modify a task plan, you must be its current owner or a member of a collaborator group assigned to the task plan.

To withdraw a task plan:

1. Open your **My Task Plans** widget.

2. In the **My Task Plans** widget, select the check box of the task plans to withdraw, and then click **Withdraw** in the toolbar.

    Alternatively, **Expand** 🔽 the task plan properties card, click its ☰ **Lifecycle Actions** icon, and click **Withdraw**.

Result: The task plan lifecycle state changes to *withdrawn*.

Reopening Released and Withdrawn Task Plans

You can reopen a *released* or *withdrawn* task plan so that changes can be made to its samples, tasks, and results. When you do so, its lifecycle state changes back to *draft*.

> **Note:** To modify a task plan, you must be its current owner or a member of a collaborator group assigned to the task plan.

To reopen a task plan:

1. Open your **My Task Plans** widget.

2. Select the check box of each task plan to reopen.

3. On the toolbar, click **Reopen**.

Result: The task plan is reopened in its *draft* lifecycle state.

Making a Task Plan Visible Across Collaborative Spaces

When you initially create a task plan, it is unshared. You can access your unshared task plan only from within the collaborative space in which you created it (its home space). Other users of the space can access the task plan only from within that space and only if their role for the space is *reader* or higher. Users with the *public reader* role cannot access it.

If you share the task plan, it becomes accessible to all users of its home space, even when they are currently working in one of their other spaces.

- To share a task plan in a public collaborative space, you must be its current owner or a member of its collaborator group.

- To share a task plan in a protected collaborative space, you must be its owner or a member of its collaborator group, *and* you must also have a role of collaborative space role of *leader* or higher.

- You cannot share a task plan that resides in a private collaborative space.

To share an task plan across collaborative spaces:

1. Open the task plan.

2. On the task plan title bar, click the 👁 **Share** icon. The icon changes to 👁 **Unshare**.

    If you need to return it to unshared, can click the icon again.

Result: All users of the task plan's home collaborative space can see and use the task plan, even while they work in a different space.

Moving a Task Plan to Another Collaborative Space

You can move a task plan from its current collaborative space to a different collaborative space if the following conditions are met:

- You have an author or owner role in both collaborative spaces.
- You are the creator or current owner of the task plan, or a member of its collaborator group, if one is specified.
- None of the task plan's samples are used in any other task plans.
- None of the tasks in the task plan are in two task plans (the project task plan and an analyst's personal task plan).

> **Note:** Moving entities can result in broken links for users who do not have access to both spaces. For example, if a user can access the target space but cannot access the source space, that user cannot open any links from the target space that go to entities in the source space.

To move a task plan:

1. Open the task plan.
2. On the task plan's properties card, click the **Move to a Different Collaborative Space** icon.

3. From the **Select Collaborative Space** field, choose the destination collaborative space.
4. Click **Move**.

Result: When you move a task plan, all tasks, samples, materials, and task parameters used in the task plan are also moved.

Transferring Task Plan Responsibilities

Each task plan has an owner, which defaults to its creator. The owner can retain sole ownership of the task plan or choose to share ownership with the members of a collaborator group. To work on a task plan, its owner and collaborator group members must have a role of author or higher in the task plan's collaborative space.

You can transfer task plan responsibilities by changing the current owner or by assigning a different collaborator group.

Updating a Task Plan's Owner

You can change the owner of a task plan at any time during its lifecycle if you are either of the following:

- Its current owner
- A collaborative space leader or owner who is also a member of the collaborator group assigned to the task plan

> **Note:** If a task plan's owner is not available and the task plan has no collaborator group, special steps are required to change its owner. For details, see Reassigning Responsibility for a Stalled Task Plan.

To change the task plan owner:

1. Do one of the following:

   - In the task plan, click **Lifecycle Actions** ☰, and then click **Change Owner**.
   - In the My Task Plans widget, select the task plan (or task plans), and then click the **Change Owner** toolbar button.

2. In the Change Owner window, select the new owner, and then click **Submit**.

3. If prompted for them, enter your credentials and select the reason for the change.

Result:

- The new owner is notified of the change.

Adding or Changing a Task Plan's Collaborator Group

The current owner of a task plan can add a collaborator group to the plan. The owner and existing members of a currently assigned collaborator group can also switch the assigned collaborator group.

> **Note:** To add a collaborator group to a task plan that does not have one when its current owner is not available, see Reassigning Responsibility for a Stalled Task Plan.

To add or change the collaborator group:

1. Open the **My Task Plans** widget.

2. Open the task plan whose collaborator group you need to change.

3. Open the task plan information panel at the top of the plan by clicking **Edit** ✏.

4. Select a collaborator group and click ✔ **Submit**.

5. If prompted for them, enter your credentials and select the reason for the change.

Result:

- The task plan is added to the **My Task Plans** widget of everyone in the collaborator group, and removed that of anyone who is not in the group.

- Users who gained access to the task plan, as well as those who lost access, are notified of the change.

Reassigning Responsibility for a Stalled Task Plan

If the owner of a task plan that does not specify a collaborator group becomes unavailable, the task plan is stalled. Nobody can do any of the following:

- Add, edit, or remove tasks, samples, or materials.
- Create or edit task requests.
- Perform standard actions provided on the task plan's Task, Sample, and Material tabs.

The task plan cannot progress through its lifecycle.

To fix this situation, a user with the `Manage Any TaskPlan` permission can access the task plan through the Tasks widget, add a collaborator group and, optionally, update its owner.

> **Note:** Progress *can* continue on any tasks that are already assigned to a specific analyst or submitted to a department for assignment. Also, authorized users including the assignee *can* access the task plan in read-only mode by clicking a link in a widget that contains a Task Plan column, such as the My Tasks widget, Tasks widget, or a notification. Consequently, it is possible to view the task plan and see the results collected thus far.

To reassign responsibility for a stalled task plan:

1. From the landing page sidebar, open the **Tasks** widget.

2. Find a task that belongs to the stalled task plan.

> **Tip:** It might be helpful to set a column filter in the **Task Plan Id** column heading.

3. Open the task plan by clicking its link in the **Task Plan Id** column.

4. Open the task plan information panel by clicking **Edit** .

5. From the **Collaborator Group** list, select a collaborator group to which you belong, and then click **Submit**.

   - The task plan now appears in the **My Task Plans** widget of all members of the selected collaborator group. If you select a group to which you do not belong, it is removed from your widget.

   - The collaborators can now continue to work on the task plan.

6. Submit your change.

7. (Optional) To change the task plan owner, click **Lifecycle Actions** , click **Change Owner**, and select the new owner.

8. (Optional) If the owner that you select needs to be the sole owner, also remove the collaborator group that you assigned in Step 5.

Chapter 4:
Managing Tasks

After a task is added to a task plan, it must be assigned, executed, completed, reviewed, and released. A task can be assigned to only one group and only one analyst, but assignments can be changed under certain conditions. The samples associated with a task can also be changed under certain conditions.

After executing a task, the assigned analyst can flag any invalid results and create formal review tasks. The assigned reviewer can release the task, send it back for corrections, or abandon it and replace it by a retest task.

The following topics explain the task lifecycle, as well as how to assign, reassign, execute, review, and perform other task management procedures.

Task Lifecycle

When a task is created, it is in its *Draft* lifecycle state. In the most straightforward cases, the task proceeds from *Draft* through one of the following series of state transitions:

- Draft > In Progress **>** Completed **>** Released
- Draft > Assigned **>** In Progress **>** Completed **>** Released
- Draft > Submitted **>** Assigned **>** In Progress **>** Completed **>** Released

Along the way, the task can also be *Abandoned*, *Suspended*, or reverted from one lifecycle state back to an earlier state. For example, a *Completed* task can be returned to *In Progress* to obtain corrections, and an assigned task can be unassigned, which returns it to its *Draft* or *Submitted* state. Tasks can also be split to create new, smaller tasks.

The primary workflow steps for transitioning a task through these paths are shown in the following table.

Workflow Step	Resulting Lifecycle State	Possible Next Steps (Availability depends on user rights)
1. Create the task	Draft	■ Delete ■ Abandon ■ Request ■ Execute ■ Split (creates new tasks) ■ Suspend (REST API client)
2a. Request the task (with no Assignee)	Submitted	■ Abandon ■ Request (to change the request) ■ Assign ■ Self-assign ■ Recall ■ Execute ■ Split (into new tasks)

Workflow Step	Resulting Lifecycle State	Possible Next Steps (Availability depends on user rights)
		■ Suspend (REST API client)
2b. Request the task (with an Assignee)	Assigned	■ Abandon ■ Request (to change the request) ■ Unassign ■ Execute ■ Split (into new tasks) ■ Suspend (REST API client)
3. Self-assign the task	Assigned	Same as 2b
4. Execute the task	In Progress	■ Abandon ■ Assign (reassign to someone else) ■ Execute (to continue unfinished task) ■ Complete ■ Retest ■ Delete ■ Split (into new tasks)
5. Complete the task	Completed	■ Abandon ■ Create Review Task ■ Review ■ Correction Needed ■ Retest ■ Release
6. Review the task	Completed	■ Abandon ■ Review (to continue unfinished Review task) ■ Correction Needed ■ Retest ■ Release
7. Release the task	Released	■ Correction Needed ■ Retest
Other Workflow Steps:		
Suspend the task (REST API client)	Suspended	■ Resume (REST API client) ■ Abandon
Abandon the task	Abandoned	None

Finding Tasks

Foundation Hub lists a different set of tasks on each of its task widgets and on each task plan.

To find tasks:

1. Open the appropriate task widget or task plan based on which tasks you need to find:

Tasks to Search	Procedure
All tasks in the current collaborative space	a. On the landing page, click ⟩ to expand the sidebar. b. On the 🏠 Home panel, click ⊞ **Widgets > Tasks**. **Note:** The **Tasks** widget shows all tasks in the collaborative space you are in, and also shows all tasks associated with shared task plans (task plans that have been made visible across collaborative spaces).
Tasks in a specific task plan	a. On the landing page, expand ⤢My Task Plans. b. In the **My Task Plans** widget, click the **Task Plan Id**. c. In the Task Planner, click the **Tasks** tab.
Unassigned tasks	On the landing page, expand ⤢Available Tasks. **Note:** By default, this widget lists unassigned tasks that are not assigned to any group, as well as unassigned tasks that are assigned to groups to which you belong.
Tasks assigned to you	On the landing page, expand ⤢My Tasks.

2. Search the widget or task plan as needed to find the tasks.

   For example, to search for tasks for a specific sample, type, scan, or paste the names of the samples in the Filter panel's **Sample List** box.

Default Task Columns

The default views for the Task Planner's Tasks tab and all task widgets display the subset of columns in the following table. The default views for task grids nested beneath samples, however, shows all possible task columns. To change the content and layout, see Personalizing Widgets and the Task Planner.

Column	Description
Task Id	The unique identifier of the task. If the ID is shown as a link, you can click the link to open a new browser tab that does one of the following, depending on the task type: ■ For procedure and data acquisition tasks, displays a read-only version of the BIOVIA Capture session. ■ For protocol tasks, re-launches the Pipeline Pilot protocol. **Note:** Links are not provided for tasks that are still in their draft lifecycle state or for data acquisition tasks that are in progress, but do not yet have any results. To access a task with an unlinked ID, find it in a Tasks widget or in Task Planner, and then click **Execute**.
Sample Count	The number of samples currently associated with the task (⟩ 1). To view the list of samples and their properties (including out-of-the-box, stability, and extended properties), click ⟩ **Expand**. By default, the nested grid displayed for samples shows all possible sample columns. **Note:** Counts are not provided for tasks created using releases earlier than Foundation Hub 2018 SP1 HF1.
Sample List	Samples associated with the task. Limited to the first 30 samples.
Activity	Name of the activity on which the task is based.
Activity Version	Indicates the version of the activity on which the task is currently based, which defaults to the version on which it was created.
Original Activity Version	Indicates the version of the activity that was in effect when the task was created.
Most Current Flag	Indicates whether the task's **Use Latest Activity** setting is selected.
Method ID	For procedure tasks, this ID is the Compose ID for the corresponding recipe. For other types of tasks, it can identify a document or other artifact that prescribes how the task is to be performed.
Method Version	Version of the element specified in Method ID, if relevant.
External ID	Identifier that LIMS, PLM, Workbook, or another external system uses to identify the corresponding task.
Activity Type	Type of the activity on which the task is based: ■ Procedure ■ Protocol ■ Data Acquisition ■ Approval
Due Date	Requested completion date for the task.

Column	Description
Predecessor	ID of a prerequisite task. You cannot execute a task that specifies a predecessor until the predecessor reaches a specific lifecycle state. By default, the required state is *Completed* (meaning the predecessor must be completed or released), but your administrator might have changed it to *In Progress* (meaning the predecessor can be in progress, completed, or released). For more information, see the *Foundation Hub Administration Guide*.
Unfulfilled Predecessor	Indicator of whether the task has a prerequisite task that has not yet reached the lifecycle state required to allow its successor tasks to be executed. ■ If *true*, you cannot execute the task because it has an unfulfilled predecessor. ■ If *false*, you can execute the task; it either has no predecessor or it has a predecessor that has already reached the required completion state.
Instructions / Comments	Instructions for the user who executes the task.
Requestor	User ID and a link to the details of the user who created the task.
Requested Group	Name of the user group, if any, identified in the task request.
Life Cycle State	Current lifecycle state of the task.
Date Requested	Date on which task was created.
Last Updated	Date on which the task was last modified.
Specification	Activity plan ID and link to the plan's details in Foundation Hub Admin & Settings page, if the task was created by adding an activity plan to a task plan.
Priority	Priority specified when the task was requested: ■ Standard (default) ■ Expedited
Submitted Date	Date on which the task transitioned out of its draft state: ■ If a task request was created, this is the date the request was created. ■ If the task was executed without first creating a task request, this is the date on which the task was executed.
Sample Received Date	Date on which the samples required to perform the task were received, if you use a workflow that collects this date.
Completion Date	Date on which the task was marked as completed. This date is never removed, even if the task is *Abandoned* or sent back to its *In Progress* state for corrections.
Project	Project associated with the task plan to which the task belongs.

Column	Description
	Note: The Project column and filter panel field on the Create Task from Activity uses the project associated with the activity, not the project associated with the task plan.
Task Plan	ID of the task plan for which the task was created.
Analyst Task Plan	ID of the analyst's personal task plan to which the task was imported, if relevant. (Not shown in the **Available Tasks** widget which, by definition displays tasks that are not yet assigned.)
Requestor Experiment Link	Urn link that opens the requestor's experiment in BIOVIA Workbook, if the task plan originated from Workbook.
Assignee	The user who is currently assigned the task. (Not shown in the **Available Tasks** widget which displays only tasks that are not yet assigned.)

Note: If your organization has used the *extended properties* feature to implement extra columns, the default view and all other views include the additional columns. For more information, see the *Foundation Hub Administration Guide*.

Tip: If you allow cookies and are not browsing in an InCognito or InPrivate mode, the **HomePgName** tab of the Task Planner uses **_bold italic_** text to highlight samples that have been updated since the last time you viewed the page using the same web browser. Additionally, the tab title reports the number of samples that been updated based on the date in their "Last Updated" property. You can refresh the page or close and re-open it to clear the changes.

Finding the Tasks for Specific Samples

To find the tasks required for specific samples, you can use the **Sample List** filter field, which is available for all task grids.

To find the tasks for specific samples:

1. Do one of the following, as described in Finding Tasks:
   - To search the entire collaborative space, open the main Tasks grid.
   - To search only your own assigned tasks, open the My Tasks widget.
   - To search a specific task plan, open that task plan and click its Tasks tab.
   - To search all unassigned tasks that are available to you, open the Available Tasks widget.

2. Expand the **Filters** panel.

3. In the **Sample List** box, enter the names of the samples whose tasks you need to find. You can use any of the following methods:
   - Scan the barcodes of the samples.
   - Cut and paste the sample names from an external file such as Notepad or Excel.

- Manually start to type the name. To enter multiple names, separate them by a comma, space, or linefeed.

Managing Task Requests and Assignments

After a task is set up, it remains in its *Draft* lifecycle state until the task plan owner or a member of its collaborator group does one of the following:

- Executes the task personally, which assigns the task to the person who executes it and changes its lifecycle state to *In Progress*.
- Delegates the task to a specific analyst (Assignee), which changes the lifecycle state to *Assigned*.
- Delegates the task to a department (Group) without also specifying an analyst, which changes the lifecycle state to *Submitted*.

The **Request** form is used to delegate a task. In addition to Assignee and Group fields, this form provides fields for Due Date, Priority, and Instructions. After a task is executed or delegated, several factors control whether any of the request details can be changed. These factors include the current lifecycle state of the task, whether the request specifies a group, whether the specified group has designated managers, and the task type.

Creating a Task Request

As the task plan owner or a member of its collaborator group, you can use the **Request** form to delegate each task in the task plan to an analyst or a department. When you request a task, you can also enter a due date, priority, and instructions.

To create a task request:

1. Find and select the tasks in your task plan or in the main Tasks widget.
2. On the toolbar, click **Request**.
3. Use the **Assignee** and **Group** fields to delegate the task as follows:
   - To assign an analyst and ensure that managers for a group to which the analyst belongs are notified, select the assignee *and* the relevant group.

     > **Note:** The **Group** field lists all groups that represent departments (groups with an *Organization* of type *Department)*, including departments that might not include the analyst you selected. Take care to select a group that includes your analyst.

   - To submit the task to a department for subsequent assignment to an analyst in that department, select only a group. An analyst can self-assign the task, or a group manager (if the group has designated managers) can assign it.
   - To submit the task to the general population of analysts authorized to perform it, regardless of department, leave both fields blank.

     > **Note:** In most cases, leaving both fields blank is not allowed. Your configuration controls whether this is possible.

4. If appropriate, select a past, present, or future **Due Date**.
5. If the task is high-priority, select **Expedited**. Otherwise it will default to **Standard**.
6. Enter any necessary **Instructions**.
7. Click **Submit**.

Result:

■ If you selected an **Assignee**, the task transitions to *Assigned*, the assigned analyst is notified, and the task is added to the My Tasks widget of that analyst. Only that analyst can execute the task.

■ If you left **Assignee** blank, the task transitions to *Submitted* and is added to the Available Tasks widget of the appropriate analysts.

   ▪ Any analyst who can see the task in their Available Tasks widget can self-assign the task.

   ▪ If you selected a group, any manager in the group can assign the task, and Task Planner generates notifications for all managers in the group whenever an event impacts the task.

■ The task record is updated to identify the current date (Submitted Date), as well as the Assignee, Group, and other details you entered on the Request form.

Assigning Tasks to Yourself

You can assign *Draft* tasks from your Task Plan or the main Tasks widget to yourself, and you can assign *Submitted* tasks from your Available Tasks widget to yourself.

To assign tasks to yourself:

1. Find and select the tasks in your Task Plan, Available Tasks widget, or the main Tasks widget.

2. Do one of the following:

   ■ To assign yourself and start the task at the same time, click **Execute**.

      > **Notes:**
      > ▪ **Execute** is not available from the main Tasks widget.
      >
      > ▪ You can execute more than one task at a time only if they are all based on the same activity type.

   ■ To assign yourself without starting the task immediately, click **Assign to Self**.

Result:

■ The task record is updated to list you as the assignee.

■ The task is added to your My Tasks widget, and is removed from the Available Tasks widget.

■ If you used **Assign to Self**, its lifecycle state changes to *Assigned*.

■ If you used **Execute**, its lifecycle state changes to *In Progress*.

■ If a group with managers was specified in the task request, the managers are notified.

Assigning an Analyst to a Submitted Task

A task in its *Submitted* lifecycle state cannot start until an analyst is assigned.

Task Planner provides three methods for assigning a submitted task:

   ■ **Assign to Self** – Analysts in the group to which the task was submitted can self-assign the task.

   ■ **Assign** – Managers in the group can use the **Assign** function to assign the task to another group member.

      > **Note:** If the task is a procedure task, the managers must also be managing members of the **Capture/Users** group.

   ■ **Request** – The group's managers (if any), the task plan owner, and its collaborator group members can use the **Request** function to edit the fields on the task request, including the **Assignee** field.

To Assign or Request a specific analyst for a submitted task:

1. Find and select the tasks in your Task Plan, Available Tasks widget, or the main Tasks widget.

2. On the toolbar, click either **Assign** or **Request** and select an **Assignee**.
   - If the task is assigned to a group that you manage, you can use **Assign** or **Request**.
   - If you are the task plan owner or one of its collaborator group members, click **Request** and select an Assignee. You can also change other details in the Request window.

Result:

- The task moves to its *Assigned* lifecycle state.
- The task is removed from the Available Tasks widget and added to the My Tasks widget of the assigned analyst.
- The assigned analyst can now execute the task.

Changing the Group on a Submitted Task

You can change the group for a *Submitted* task if the following conditions are met:
- If the task request specified a group that has designated managers, you must be one of those managers.
- If the task request specified a group that has no designated managers, you must be the task plan's owner or a member of its collaborator group.

> **Note:** To change the group for a task that has already been *Assigned* to an analyst, you must first unassign the task.

To change the group:

1. Find and select the task in your Task Plan, Available Tasks widget, or the main Tasks widget.

2. Do one of the following:
   - On the Task Plan toolbar, click **Request**.
   - On the Available Tasks or the Tasks widget toolbar, click **Transfer Group**.

3. Select the appropriate **Group**.

4. Click **Submit**.

Result:

- The task is added to the Available Tasks widget of members of the selected group and removed from the widgets of members who are not in that group.
- The task remains in its *Submitted* lifecycle state.

Recalling a Submitted Task

> **Note:** To recall a task that is in its *Assigned* lifecycle state, first **unassign** the task.

To change the details or defer execution of a task that is in its *Submitted* lifecycle state, you must first **recall** the task.

After you recall a task, Task Planner returns the task to its *Draft* lifecycle state and removes the details associated with the task request. You can then update the task as needed and re-request it.

To recall a submitted task, you must be:

- A designated manager for the group to which the task was submitted, if it was submitted to a group with managers.
- The task plan owner or a member of its collaborator group, if it was submitted to a group without managers, or submitted without specifying a group.

In addition, if the task is a procedure task, you must be a designated manager of the Capture/Users group.

To recall a submitted task:

1. Find and select the tasks in your Task Plan, Available Tasks widget, or the main Tasks widget.
2. On the toolbar, click **Recall**.

Result:

- The task returns to its *Draft* lifecycle state.
- The following task request details are deleted from the task: Group, Assignee, Due Date, Priority, Instructions, and Submitted Date.
- The task is no longer shown in the Available Tasks widget of any users.

> **Note:** No notifications are generated for recalled tasks.

Unassigning an Assigned Task

You can unassign an *Assigned* task if the task:

- Is currently assigned to you
- Specifies a group for which you are a designated manager

> **Note:** To unassign someone other than yourself from a Capture procedure task, you must also be a manager for the **Capture/Users** group.

To unassign assigned tasks:

1. Find and select the tasks in your Task Plan, My Tasks widget, or the main Tasks widget.
2. On the toolbar, click **Unassign**.

Result:

- The task is removed from the My Tasks widget of the previous assignee.
- If the task request did not specify a group, the task returns to its *Draft* lifecycle state so that the task plan owner or a collaborator group member can re-delegate the task.
- If the task request specified a group, the task returns to its *Submitted* lifecycle state and is added to the Available Tasks widgets of the users in that group. Another member that group can now self-assign the task, or a manager can assign the task to a different group member.

Reassigning an In-Progress Task

If an analyst cannot complete an *In Progress* task, you can reassign it to someone else.

To do this, you must be either of the following:

- A designated manager for the group requested for the task, if the group has managers.
- The task plan owner or a member of its collaborator group, if no group or a group without managers was requested.

In addition, if the task is a procedure task, you must be a designated manager of the Capture/Users group.

To reassign tasks that are in progress:

1. Find and select the tasks in your task plan or the main Tasks widget.
2. On the toolbar, click **Assign**.
3. In the **Assign** form, select a different user and click **Submit**.

Result:

- The task assignee changes, but the task remains in its *In Progress* lifecycle state.
- The task is removed from the My Tasks widget of the original assignee and is added to the My Task widget of the new assignee.
- The new assignee is notified of the new assignment.
- The new assignee can continue execution where the previous one left off.

Updating the Due Date, Priority, or Instructions

You can update the Due Date, Priority, and Instructions for a task request that has been submitted, if the work has not yet been started.

You can update these fields only if the following conditions are met:

- If the task request does not specify a group, you must be the current owner of the task plan, a member of its collaborator group, or the creator of the task.

  The owner of a task is the person who created it. The owner is listed in the **Requester** column of all task grids.

- If the task request has a group, you must be a designated manager for that group.
- The task must still be in its *Submitted* or *Assigned* lifecycle state.

To update a task's Due Date, Priority, or Instructions:

1. Find and select the task in your task plan, Available Tasks widget, or the main Tasks widget.
2. Click **Request**.
3. Update the fields as required and click **Submit**.

Changing a Task's Sample Associations

> **Note:** To change a task's sample associations, you must be the current task plan owner, a member of its collaborator group, a manager of that group, or the analyst assigned to the task.

You can change the samples associated with a task, if permitted based on factors such as your role, the task type, the current lifecycle state of the samples and task, and whether the samples are already mapped to results.

Adding Samples to a Task

You can add samples to:

- Any procedure or protocol task whose lifecycle state is *Draft*, *Submitted*, or *Assigned*.
- Any data acquisition task whose lifecycle state is *Draft*, *Submitted*, *Assigned*, or *In Progress*.

You cannot add samples for tasks in other lifecycle states.

To add samples to a task:

1. Open the task plan and click the **Tasks** tab.
2. Select the check box of the task, and then click ✏️ Edit Task.
3. In the **Sample Ids** field, type, scan, or cut and paste the IDs.
4. Click **OK**.

Result:

- The selected samples are added to the task and its sample count is updated.

Removing Samples from a Task

You can remove samples from any *Draft*, *Submitted*, or *Assigned* task.

To removes samples from an *In Progress* task,

- The samples you choose to remove must have no results or result history—you cannot remove samples that have result entries even if you remove all of the result entries.
- The task must be a data acquisition or procedure task.
- You must be the task requestor or someone who has write access to the task.

  Although you cannot remove samples without write access, you can use the split function to move specific samples to a new clone of the task.

You cannot remove samples from a task in any of the other lifecycle states.

To remove samples from a task:

1. Open the task plan and click the **Tasks** tab.
2. Find the task and click **+Expand** in its **Sample Count** column to see its samples in a nested grid.
3. Select the check box of each sample you need to remove.
4. Right-click the grid and choose **Remove Selected Samples**.

> **Note:** An alternative way to remove a sample is to edit the task and delete the sample IDs from the **Sample ID** field.

Result:

■ Task Planner removes the selected samples from the task and updates the task's sample count.

■ The samples remain in the task plan. To remove them, see Removing Samples from a Task Plan.

Splitting Tasks: Divide Task Based on Number of Samples

If a task has too many samples, you can make the Task Planner divide it evenly into smaller tasks that have a reasonable number of samples.

For example, suppose a task has 73 samples, but your equipment or a single analyst can process only 25 at a time. For such cases, Task Planner can create two new tasks, move 25 samples into one of them, move 23 samples into the other, and keep 25 samples in the original task.

You can use this procedure to split a *Draft*, *Submitted*, or *Assigned* task.

To use this procedure for an *In Progress* task:

■ The task must be a data acquisition or procedure task.

■ The task must have no current results and no history of attempts to enter or map results for **any** of its samples, even if attempted result entries and result mappings are removed.

> **Note:** If the task has some samples that do not have any results or result history, you can move those specific samples to a new task. For more information, see Splitting Tasks: Move Specific Samples to a New Task.

■ The task must have been executed alone. If it was combined with other tasks into a single process execution, you cannot divide it.

To split a task based on number of samples:

1. Select the task from one of the following:

   ■ **Tasks** tab of the relevant **Task Plan**

   ■ **Tasks** widget

   ■ **My Tasks** widget

   ■ **Available Tasks** widget

2. Click **Split** on the toolbar.

3. In the **Number of Samples per Task** field of the Split dialog box, specify how many samples you want to process per task.

> **Note:** You can toggle this dialog box to support entry of specific sample IDs by clearing the **Split with Number of Samples per Task** check box. If you do so, Task Planner moves the sample Ids that you identify to a single new task.

4. Click **Submit**.

Result:

■ Each new task is added to the Task Planner's **Task** tab and listed with a Task Id that includes the suffix **Split of <OriginalTask>**, where <OriginalTask> is the Id of the task that you chose to split.

■ The Samples subgrid and **Sample Count** column for the original task are updated to reflect your split.

■ Each new task inherits the basic attributes of the original task, including lifecycle state, lifecycle policy, group, assignee, and activity version (even if that activity version is no longer the latest version), and planned task-level parameter values.

■ Notifications are generated for each other person involved with the task, which can include the task

plan owner, collaboration group members, assignee, and the group managers of the group assigned to the task.

Splitting Tasks: Move Specific Samples to a New Task

You can make Task Planner move samples that you do not have or are not ready to process to a new task. This variation on the Split Task feature is useful, for example, if a task's samples arrive in separate deliveries spread over a period of time and you need to finish a task for each sample delivery as soon as possible.

You can use this procedure to split any *Draft*, *Submitted*, or *Assigned* task.

To use this procedure for a task that is in its *In Progress* state:

- The task must be a data acquisition or procedure task.
- The samples to be moved must have no current results and no history of attempts to enter or map results, even if all attempted entries and result mappings are removed.
- The task must have been executed alone. If it was combined with other tasks into a single process execution, you cannot move out samples.

You can identify which samples by entering them in the **Split** dialog box or by selecting them from the **Tasks** grid.

> **Tip:** To quickly find out which tasks are associated with specific samples, enter their names in the Sample Names filter.

To enter or scan the sample IDs into the Split dialog box:

1. On the BIOVIA landing page, expand ⬈ My Task Plans.
2. In the **My Task Plans** widget, click the **Task Plan Id**.
3. In the **Tasks** tab, select the check box of the task from which you need to extract samples, and then click **Split**.
4. In the **Split** dialog box, clear the **Split with Number of Samples per Task** check box.

   The dialog box re-displays with the **Number of Samples per Task** field replaced by a **Sample Ids** field.
5. Identify the sample IDs by using any combination of the following methods:
   - Scan each sample's barcode.
   - Cut and paste a list of sample IDs from an external file such as Notepad or Excel.
   - Manually type the IDs. Use a space, a comma, or a line break between IDs.
6. Click **Submit**.

   If the split was successful, no confirmation message is displayed; the samples are immediately moved to a new task. Otherwise, an error message is displayed.

To select the samples from the Tasks grid:

1. On the BIOVIA landing page, expand ⬈ **My Task Plans**.
2. In the **My Task Plans** widget, click the **Task Plan Id**.
3. In the **Tasks** tab, locate the task and click **Expand** next to its task ID to open its nested samples grid.
4. Select the check boxes of the samples to extract.
5. Right-click the nested grid and click **Split Task**.

   If the split was successful, no confirmation message is displayed; the samples are immediately

moved to a new task. Otherwise, an error message is displayed.

Result:

- The new task is created with a ID that includes the suffix **Split of <OriginalTask>**, where <OriginalTask> is the ID of the task that you chose to split.
- The **Sample Count** for the original task is updated to reflect your split.
- The new task inherits the basic attributes of the original task, including lifecycle state, lifecycle policy, group, assignee, and activity version (even if that activity version is no longer the latest version), and planned task-level parameter values.
- Notifications are generated for all other people involved with the task, including the current task plan owner and collaborator group members, the task assignee, and the group managers of the group assigned to the task.

Deferring Task Execution (Suspending Tasks)

Note: This functionality is available only through the REST API client; there is no core user interface to perform it.

If a task needs to be deferred for an extended period of time, it can be put into a *Suspended* lifecycle state.

Suspended tasks cannot be executed, and you cannot see them in any Tasks grid unless you change the Lifecycle filter for the grid to include *Suspended*.

Conditions for suspending a task:

- If the task was submitted to a group, only a manager for that group can suspend the task. If it was not submitted to a group, only the task requester can suspend the task.
- The task must be in its *Draft*, *Submitted*, or *Assigned* lifecycle state.
- If a signature is required for suspending tasks, only an authorized signer can suspend the task.
- If the task was already assigned to a user, that user is notified that the task has been suspended.

Note: BIOVIA Study Manager can automatically suspend tasks associated with a suspended study.

Resuming Deferred (Suspended) Tasks

Note: This functionality is available only through the REST API client; there is no core user interface to perform it.

Authorized users can resume suspended tasks in Foundation Hub. Resuming a suspended task returns it to its *Draft* or *Assigned* lifecycle state, depending on the state it was in when it was suspended.

- If the task was submitted to a group, only a manager for that group can suspend the task. If it was not submitted to a group, only the task requester can suspend the task.
- If resuming a task requires a signature policy, an authorized signer must approve resumption of the task.
- When an unassigned task (task whose previous state was *Draft* or *Submitted*) is resumed:
  - The task returns to its *Draft* state.
  - The task is no longer available in the Available Tasks widget.

- ▪ The content of the following request-related fields are cleared: Submitted Date, Due Date, Requester, Requested Group, Date Requested, and Instructions.
- ◼ When an assigned task is resumed:
  - ▪ The task returns to its *Assigned* lifecycle state.
  - ▪ The assigned user is notified.

Note: BIOVIA Study Manager can automatically resume tasks in Foundation Hub when their associated (and previously suspended) Study is resumed.

Deleting Unwanted Tasks

You can delete an unwanted task that has not been submitted or assigned. When you delete a task, the task and its parameter settings are permanently removed from the system.

You can delete a task only if:

- ◼ You are the task plan's current owner or a member of its specified collaborator group.
- ◼ The task is still in its *Draft* lifecycle state. If it has progressed past this state, refer to Abandoning a Task.

If you delete a task that is a predecessor for any other tasks in the task plan, the other tasks must be updated to remove the predecessor before they can be executed.

To delete tasks:

1. Find the tasks to delete in the Tasks widget or **Tasks** tab of your **Task Plan**.
2. Select the check boxes of the tasks.
3. Click **Delete** in the toolbar.
4. In the **Delete** dialog box, click **Delete** to confirm the action.
5. If you deleted tasks that are predecessors for other tasks, edit the Predecessor field of the affected tasks to remove the ID of the deleted task.

Result: The task is deleted from the Tasks widget and **Tasks** tab of task plans (both personal and project).

Chapter 5:
Executing Tasks

You can execute tasks from the following Foundation Hub interfaces:

- **Tasks** tab in Task Planner
- **Available Tasks** widget
- **My Tasks** widget

> **Note:** If a task is dependent on a predecessor task, you cannot execute it until you fulfill the predecessor task. You can use the **Unfulfilled Predecessor** column to identify tasks with predecessors and to determine the status of the predecessors. For more information, see Filtering and Sorting Grid Data.

As soon as you execute a task, Task Planner updates its lifecycle state to *In Progress*.

- If the task is a *protocol* task, Task Planner starts the protocol, collects any required information from you, and then updates the task lifecycle state to *Completed*. For more information about protocol tasks, contact your protocol developers.

- If the task is a *procedure* task, Task Planner opens a recipe execution process in either classic Capture or Capture Hub:

  - If your system configuration allows recipe authors to select the interface, you use the Capture interface selected by the author. Otherwise, you use Capture Hub, as described in this document.

  - For information about executing recipes in classic Capture, see the Compose and Capture online help.

- If the task is a *data acquisition task*, Task Planner always opens it as a two-step recipe execution process in Capture Hub.

You do not have to complete a recipe execution in a single session. You can re-execute it as many times as required to complete the work. If you combine multiple tasks into a single execution session, you can re-execute any task in the session to reopen and continue the entire session. You do not have to reselect each individual task.

Capture Hub User Interface

When you execute a data acquisition task or a procedure task for a Compose recipe that uses Capture Hub, a Capture Hub execution session starts.

Key elements in the Capture Hub user interface include:

- **Samples** – Samples for which data is collected.
- **Materials** – Physical materials or material placeholders specified in the Compose recipe, if relevant.
- **Parameters** – Data fields to collect within expected ranges or limits.
- **Equipment** – Equipment used to collect the data. Specific device types or a general class of equipment can be required.

The following topics explain the main interface elements in Capture Hub.
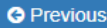
> **Note:** Your regional settings can affect how date/time, numeric, and currency data appear in Capture Hub. For a list of supported regional settings, see the *BIOVIA Compose and Capture System Requirements*.

Capture Hub Cards, Icons, and Buttons

The following table describes Capture Hub cards, icons, and buttons.

Element	Name	Description
ℹ️ Instructions	**Instructions card**	Displays instructions for the current step if collapsed, and instructions for the entire recipe if expanded. The expanded version provides navigational links and visual indicators of the status of each step. For more information, see Recipe Instructions Card.
⚖️ Equipment	**Equipment card**	Lists equipment for the current step if collapsed, and equipment for all steps if expanded. Displays an alert icon 🔴 for equipment that issued a metrology alert, such as overdue maintenance. Point to the icon to view the specific alert. Use the expanded version to manage the equipment for the entire recipe, and to see signatures collected for GMP and metrology alerts. Provides a ⭐ feature for marking your favorite equipment. For more information, see Capture Hub Equipment Card.
🧊 Materials	**Materials card**	Lists the materials and containers in the current step if collapsed and for the entire recipe if expanded. When you add ▥ or register 🧊 a container in a step, it is added to the card and linked to the corresponding material. For more information, see Capture Hub Materials Card.

Element	Name	Description
⚠ Caution 🗌 Note	**Caution and Note Cards**	Displays notes and cautions in the current step, such as important links or helpful images. Read the information and then collapse the cards ▬ to create more space for the data parameters.
		Note: When the **Parameters** card is expanded, the **Caution** and **Observation** cards are available, but the **Note** card is not.
👁 Observation	**Observation card**	Displays observations entered in the current step. If observations are recorded or are required, this card is shown above the **Parameters** card. If observations are required, an asterisk (*) appears next to the card title. You can enter text and ⬆ upload files. For more information, see Recording Observations.
📝 Parameters	**Parameters card**	Displays the data collection fields in the current step. To use the full screen for data collection, click ⤢. To switch between vertical and horizontal views, use the ⊞ Vertical View and ☰ Horizontal View icons. Steps with multiple samples open in the Horizontal View by default, all other steps open in the Vertical View by default. An alert icon ⊗ indicates data that is outside its planned values or acceptable limits. **Tip:** If the Parameters card is not visible, either collapse a lengthy Caution, Note, or Observation card, or scroll down past it. For more information, see Using the Data Parameters Card.
Data Acquisition ⚖	**Data Acquisition button**	Opens the **Data Acquisition** page, which you can use to retrieve parameter values from a file for one or more samples on the step. For more information, see Retrieving Equipment Readings from Files.
	View Measurements button	For completed, released, or abandoned recipe executions, this link to the Measurements Viewer replaces the Data Acquisition button. ▪ For procedure task executions that contain more than one step that uploads data from files, the Measurement Viewer lists only the uploaded measurements for the step that you are viewing when you click the button. ▪ For data acquisition tasks, it shows all measurements.
Manual Entry ▭	**Manual Entry button**	Converts all data collection fields for file-based equipment on the **Parameters** card to allow manual entry.

Element	Name	Description
Previous Next	**Previous and Next buttons**	Navigates through the recipe steps. For more information, see Capture Hub Step Navigation. **Tip:** You can also use the recipe instructions to navigate to any available step.
Data Verification — This action requires a digital signature. Username* — scitegicadmin	**Signature window**	If signature policies apply to the recipe, prompts for a digital signature for various data entry conditions. Capture users could be required to sign when they: - Collect data. - Collect a parameter that is outside of its planned limits. - Re-collect data that was previously collected. - Substitute a different material for the planned material. - Enter data manually for a parameter that collects data from an instrument or retrieves it from inventory materials. An authorized user (other than the Capture user) could be required to sign to: - Witness or verify the data collected by the Capture user. - Approve the use of equipment with metrology alerts. - Approve the use of expired materials. - Confirm the manual override of a parameter that collects data from an instrument or retrieves it from inventory materials. - Approve the abandonment of a recipe step.
	Review button	Opens the Review page used to review collected data, flag invalid results in in-progress executions, and approve or reject completed executions. For more information, see Using the Foundation Hub Task Review Page.
	Related Protocols button	Generates reports and runs protocols. The default approval report generates a PDF document that contains the instructions, materials, samples, and equipment used in the recipe, as well as the details of each process step. For more information, see Running Reports and Protocols.
Current State: In Progress	**Current State button**	Displays the lifecycle state of the recipe execution and provides options to change the state. For more information, see Task Lifecycle.
Karl Fischer (v2.8)	**Info bar**	Displays the activity name, version, and lifecycle state at the time the execution began. Click the [i] icon to view the associated task IDs.

Capture Hub Recipe Instructions Card

The Capture Hub **Instructions** card displays instructions for the current step when collapsed, and for all available steps when expanded. You can use the expanded view to navigate through available steps. You can also collapse ⊟ or expand ⊞ the instructions for specific steps.

> **Note:** Unlike clicking **Next**, using the instructions to navigate cannot trigger signature windows or step completion.

An icon next to each step indicates its status, as described in the following table.

> **Tips:**
> - If the status or calculations for any step have changed, you can refresh ⟳ the instructions.
> - If the instruction text includes calculated values, the calculation results are displayed for the currently selected row in the **Parameters** card, and the calculations are updated automatically as you collect data. Calculated values appear empty until the values in the expression have been collected.

Status Icon	Description
○	In progress. The step is available to work on.
⊖	Incomplete. The step is unavailable because a prerequisite step has not yet been completed.
✔	Completed. The step is available to view or to re-collect data.
❗	Out of date. Data has changed in this step that affects calculations or conditions for subsequent steps. Verify or re-collect the data, and then click **Next** to complete the step.
👁⃠	Inactive. The step is unavailable because it has activation conditions that have not been met. **Tip:** A recipe can be completed when all required steps are completed or abandoned, even if some steps are inactive. This is because some steps are required only if certain conditions are met. For example, you might need to adjust a solution with a base only if the pH measurement is less than 5.

Capture Hub Equipment Card

If a scale ⚖ icon precedes a parameter's name, you must collect the parameter's value from equipment. The method you use to collect the value depends on the Connection Type configured for the equipment that you use:

- If the equipment connects directly to Foundation Hub, or if it is offline equipment with no configured connection, see Collecting Readings from Equipment.
- If the connection uses a file-based interface, see Retrieving Equipment Readings from Files.

For information about connection types, see the *BIOVIA Foundation Hub Equipment Guide*.

Using the Equipment Card

The **Equipment** card lists the equipment that is planned, is selected, or was used during recipe execution, grouped by equipment class. It also indicates which devices are currently selected, marked as favorites, or have metrology alerts.

By default, the card displays the equipment for the current step. You can ↗ expand the card to view and manage the equipment used in the entire recipe, and ↙ collapse the card to return to the step view. In both views, you can manage your favorites, view metrology alerts, add equipment, and open an equipment definition in Foundation Hub. If the equipment used to collect values has metrology or GMP exceptions that require a digital signature, you can also view the signature details.

To mark a favorite device:

- To mark a device as a favorite, select the **Favorite** ⭐ icon.

  The device appears at the top of the list when next selecting equipment.

- To remove a favorite device, clear the **Favorite** ☆ icon.

To view the GMP and metrology alerts for a device:

1. Point to the **Alert** 🔴 icon.

   A message lists the GMP and metrology exceptions.

2. Review the alerts. Then, you can choose to use the device anyway, use a different device, or resolve the alerts before using the device.

   > **Note:** If the recipe require signatures to use a device that has a GMP or metrology exception, the user who collects the data cannot submit it until obtaining each required signature.

To view signature details for GMP and metrology alerts:

1. Expand ↗ the Equipment card to see all equipment used in your step.

2. Expand ⌄ the row for each device that contains a signature 📝 icon.

   Capture Hub lists each GMP and metrology signature that it collected for using that device to collect data for the recipe.

3. Review the signature data.

   By default Capture Hub displays the Date, User, Event (GMP Event or Metrology Event), Description, and Reason Code. You can point at the Description column to see hover help that provides the entire description.

   To access the column selector and display additional columns, hover over any column heading, click �III, and select the check boxes of the columns.

   > **Note:** The signature date and time always indicates the time zone of the signer. Dates entered in other columns such as Description are not localized.

To open an equipment definition in Foundation Hub:

- Click the device name.

Adding and Removing Equipment

You can add equipment for the entire recipe in an expanded **Equipment** card, and you can remove equipment that is not in use. You can select a device to use for parameters that are mapped to the same equipment type or class. For example, you can select all the required devices in advance to automate the data collection of their mapped parameters. You can also add equipment that is not mapped to a specific parameter. For example, you can add equipment that does not directly generate measurements, such as a hose, to make sure it is cleaned after its use.

> **Tips:**
> - If a recipe maps parameters to a specific device, you must use that device.
> - If a recipe maps parameters to an equipment type or class, you can select any device of that type or class. You can select it as a recipe level default by using the **Equipment** card. You can also select it by using an equipment selector ⚖ in a cell on a step's Parameters card, or by using the Equipment selection card on the **Data Acquisition** page.
> - After you collect data from a device, it remains on recipe's **Equipment** card even if you deselect it later.

To add equipment for the entire recipe:

1. To expand the **Equipment** card, click ⤢.
2. If a device of the same type is already selected, clear ✔ **Selected** next to it.
3. Click the plus ➕ icon.
4. Scan the barcode or start entering the name, nickname, or barcode of the device. The list is filtered as you type.
5. Select the device from the list.
6. If the selected device has a GMP equipment or metrology exception, a **Warning** message displays:
   a. Review the information, including the equipment's metrology notes and its equipment warnings. To view details of the equipment, click the **Go To Equipment** link.
   b. If you decide to use a different device, click **Cancel** and return to Step 3. Otherwise, click **Proceed Anyway**.
   c. Ask someone who is authorized to approve the use of the device to fill out the signature window. If the device has a GMP exception and a metrology exception, the signature window appears twice, so that you can obtain a separate signature for each exception.

   The device is added to the **Equipment** card.

   - If the equipment type or class is planned in the recipe, the device is listed with the name specified in the recipe and is marked as **Selected**. It remains selected for the rest of the execution, unless you select a different device. The selected device is automatically used to collect parameters mapped to the same equipment type or class.
   - If the equipment type or class is not planned in the recipe, the device name listed with the format: **(Ad Hoc)** *barcode*.
7. Repeat Steps 2–6 to add additional equipment.

To remove equipment that is not in use:

1. To expand the **Equipment** card, click ⤢.
2. Click the minus ⊖ icon next to the device.
   - If the equipment type or class is planned in the recipe, the device instance is removed, but the equipment type or class remain listed in the grid as planned in the recipe.
   - If the equipment type or class is not planned in the recipe, the device row is removed from the grid. If no other devices of the same class have been added, the class is also removed.

Viewing Measurements from Equipment

To view the raw data collected from the device reading of an equipment parameter, right-click the cell and select **View Measurement**. A new tab opens with the measurement details, such as the raw data string for direct-connected equipment, the parsed data readings, the parsed header information, and the attachments associated with the measurement.

> **Note:** An error appears if the equipment value was overwritten by converting the cell to manual entry. To restore the value, re-collect the data from the equipment.

For more information about measurements, see Managing Measurements in the *BIOVIA Foundation Hub Administration Guide* or the *BIOVIA Foundation Hub Equipment Guide*.

Capture Hub Materials Card

When you execute a procedure task that requires materials, Capture Hub displays a **Materials** card. By default, the card lists materials and containers for the current step, but you can expand it to see material requirements for the entire recipe.

Parameters that are mapped to materials are flagged by an icon ![icon]. The recipe controls how to handle the materials. You might have to add containers and collect values manually, collect them from equipment, or collect them from an inventory system. You also might need to register a batch of material in inventory.

Viewing Recipe Materials

By default, the **Materials** card lists the following:

- **Material Name** – Name and synonym of the material.

  > **Tip:** The synonym might be defined in the Compose recipe or in the activity plan, activity, or task in Foundation Hub. For example, a recipe might define a generic material as a *proxy* (placeholder), so the exact material can be identified after a task is created. If multiple synonyms are defined for a material, the synonym closest to execution takes precedence.

- **Inventory Material Name** – Trade name of the material in the inventory system. This value is populated when you add or register a container of the material.
- **Containers** – Comma-separated list of container barcodes for the current step. When you add or register a container, the barcode is appended to this list.

To see materials and containers for the entire recipe:

1. Click the icon ![icon] to expand the card.

   The grid shows all properties for materials on the recipe.

2. To see the containers linked to a material, click expand ![icon] in the **Containers** column.

3. To return to the step, click the icon ![icon].

> **Tip:** To see the materials associated with all task plans and all Capture Hub recipe executions that you have permission to access, you can use the **Materials** widget in Foundation Hub. For more information, see Viewing Materials.

Copying and Exporting Material Data

You can copy or export data from the **Materials** card in the default or the expanded view.

To copy specific data to your clipboard:

1. Select the cells you want to copy.

2. Right-click your selection and then click **Copy** or **Copy with Headers**.

To export the data grid to an external file:

■ Right-click any cell, and then click **Export > Excel Export** or **Export > CSV Export**.

Capture Hub Data Parameters Card

Use the **Parameters** card to collect the data required for a step. You can change how the card is displayed, for example, by expanding the card to use the full screen. You can also navigate through the data grid by using the keyboard.

Understanding Parameter, Value, and Status Icons provide information about the parameters, cell values, and data collection status.

Changing the Card's Display Options

You can control how the **Parameters** card is displayed in several ways.

To use the full screen for data collection:

1. Click the ⤢ icon to expand the card.

   As you navigate the steps, the Parameters card stays expanded so you can stay in the same view for the entire execution. You can also use the expanded view to review the collected data in a completed recipe.

2. To return to the default view, click the ⤡ icon.

   > **Note:** When the **Parameters** card is expanded, the **Caution** and **Observation** cards are available, but the **Note** card is not. If you cannot see the **Parameters** card, you might need to scroll down past or collapse long **Caution** or **Observation** cards.

To switch the orientation of the data:

■ Click one of the icons:

   ⊞ **Vertical View** – Lists data in columns. Steps that do not contain samples, or contain a single sample, open in this view by default.

   ☰ **Horizontal View** – Lists data in rows. Steps that contain multiple samples open in this view by default.

To change the display values for a parameter:

1. Click the **Toggle Display Menu** icon next to the parameter name.

2. Click one of the icons.

   ■ **F** – Formatted (reported) values.

   ■ **R** – Recorded (unformatted raw) values.

     > **Note:** The **R** icon is not available for certain field types where raw values are not applicable, such as text or vocabulary fields.

   ■ **P** – Planned values, including the "in limits" range, if applicable.

Notes:
- When planned values are displayed, the cells might appear empty, even if data has been collected. For example, when a parameter has a default planned value, it is displayed below the parameter name and not in each cell. Similarly, the cells appear empty when the parameter does not have a planned value or when the planned value is calculated and values in the calculation have not been collected.
- If the planned value is calculated, each cell shows the calculation result for that data set, which might be different for each cell.

The selected value types are displayed for that column (Vertical View) or row (Horizontal View).

Using Keyboard Navigation

To navigate through the data grid, use any of the following keyboard commands.

- **Spacebar** – Perform the default action for the cell. For example, in an empty date/time cell, press the **Spacebar** to open the calendar to the current date and time. Similarly, in a cell that is configured to collect data from equipment, press the **Spacebar** to select a device or collect the measurement, if the device is already selected.
- **Arrow keys** – Move around the grid.
- **Tab** – Move to the next available input. When all parameters are completed, pressing **Tab** moves from the final parameter to the **Next** button.

  Note: Data is saved as soon as you navigate off of individual cells.

- **Enter** – Begin or end input without moving the focus to another cell.

Copying and Exporting Data

You can copy data from the **Parameters** card to your clipboard or export it to a file (`.xlsx` or `.csv`).

Tips:
- Parameter data is copied or exported as formatted values, regardless of which value types are displayed in the grid.
- For file exports, the data matches the orientation of the current view (Horizontal or Vertical). Only data that has been loaded into the grid is exported. Therefore, the exported file might not include all data for steps with a large number of samples.
- To copy multiple cells or to copy cells with headers, use Horizontal View. In Vertical View, you can copy only one cell at a time. The copied data pastes as tab-separated values.

To copy specific data to your clipboard:
1. Select the cells you want to copy.
2. Right-click your selection and then click **Copy** or **Copy with Headers**.

To export the data grid to an external file:
- Right-click any cell, and then click **Export > Excel Export** or **Export > CSV Export**.

Note: Opening an exported CSV file in Microsoft Excel changes the format of date/time values from **dd-mmm-yyyy h:mm** to **m/d/yyyy h:mm**. For example, a value that is exported as **06-Mar-2020 12:48** is displayed as **3/6/2020 12:48** in Microsoft Excel.

Understanding Parameter, Value, and Status Icons

The **Parameters** card uses icon indicators to display information about parameters, cell values, and data collection status.

Icons Adjacent to Parameter Names

The following icons appear next to a parameter name in a column header (Horizontal View) or row header (Vertical View), when applicable.

Icon	Meaning
*	Required. This parameter must be collected to move the data forward to next steps. **Note:** If observations are required, an asterisk (*) appears next to the card title.
▦	Calculated value. To see the expression that calculates the value, click the icon.
⚖	Value to be collected from equipment. The way you collect the value depends on whether and how the equipment connects to Foundation Hub. For more information, Collecting Readings from Equipment and Retrieving Equipment Readings from Files.
🦠	Material value. For more information, see Adding Containers and Collecting Material Values.
‖‖	Value to be collected from a container.
⚗	Sample value. These parameters display sample properties, which you cannot modify in the data grid.
F	Formatted (reported) values are displayed. **Tip:** To change how values are displayed for the parameter, click the icon and click one of the display options: **F** for formatted, **R** for raw, or **P** for planned values. For more information, see Changing the Card's Display Options.
R	Recorded (unformatted raw) values are displayed. **Tip:** To view the raw data collected from the device reading of an equipment parameter, right-click the cell and select **View Measurement**. For more information, see Viewing Measurements from Equipment.
P	Planned values are displayed. If a parameter has a default planned value, the value and the "in limits" range, if applicable, are displayed below the parameter name. If the planned value is calculated, each cell shows the calculation result and the "in limits" range for that data set, which might be different for each cell.

Icons and Buttons Inside Parameter Cells

The following icons and buttons appear directly in a cell, when applicable. Icons next to a value indicate a condition. Buttons on the right side of the cell provide an action.

Icon or Button	Condition or Action
Icons	
⊗	**Out of limits**. The collected data is not within the range of values that are considered "in limits." Depending on the signature policy for the recipe, a signature might be required to move the data forward to next steps. **Note:** If the planned value for a cell is calculated, the value is flagged as out of limits until the values in the calculation have been collected.
❗	**Invalid**. The collected data cannot be saved as entered. For example, a quantity with incorrect units, a container barcode that cannot be found in the inventory system, or a file that exceeds the maximum size. Check the data and update it, as necessary.
⌨	**Entered manually**. The value was entered manually, instead of being retrieved from equipment or inventory.
Buttons	
⚖	**Equipment selector**. Enables you to select the device to use, if it is not already selected.
🪙	**Register material batch**. Registers a batch of materials in inventory after you enter the values of the properties to sent to inventory.
⌨	**Convert to manual entry**. Converts a cell from automated value retrieval to manual entry. You can click this icon to manually enter a value in a cell whose value is normally retrieved automatically, from equipment or an inventory system. This option is useful, for example, if you lose connectivity.
🗑	**Delete**. Deletes the currently entered value.

Icons that Indicate Status of the Step

The following **Status** icons indicate the data collection status for each sample on a step. For steps without samples, the icons indicate the status of the step. If a sample or step is repeated, the status applies to every row of the repeated data.

Status Icon	Description
⭕	**Available**. No data has been collected.
⟳	**In Progress**. Some data has been collected, but additional data is required before completing the sample or step. Samples that are not completed are not listed in subsequent steps.
✓	**Completable**. All required data has been collected. To complete the sample or step, click **Next** and enter any required signatures.

Status Icon	Description
✓	**Done**. All required data and signatures have been entered. The sample can move forward to next steps. To re-collect any of the data for a completed sample or step, additional signatures might be required.
✐	**Requires Signatures**. One or more values requires a signature that has not yet been obtained. Obtain the signatures in either of these ways: ■ If a signature window displays immediately, which is the case if you enter an expired or substitute material, or you modify the recipe process, enter your signature immediately. You cannot continue until you do so. ■ Click the **Sign** button under the Parameters card to manually display the signature window. If multiple values require a signature for the same condition, and your reason for signing off on some of them differs from your reason for signing off on others, use the **Sign** button each time you want to select a different reason. For example, suppose you enter three out-of-limit values, two for one reason and the third for a different reason. In this case, enter the first two values, click **Sign**, and select your reason for signing off on those two values. Then, enter the third value, click **Sign**, and select your reason for signing off on that value. ■ Wait until you are ready to proceed to the next step, and then click **Next**. This is your only choice if you collected multiple rows of data at the same time by using inventory property import, sample property import, or automated retrieval from equipment. For these cases, you cannot select different signature reasons for different rows. After you collect all required signatures, Capture Hub stops displaying this icon.
ⓘ	**Out of Date**. Data has changed that affects calculations or conditions for this sample or step. Verify or re-collect the data, and then click **Next**.
⊘	**Abandon Pending** ⊘ or **Abandoned** ⊘. To transition a sample from **Abandon Pending** to **Abandoned**, click **Next**. Abandoned steps and abandoned samples are no longer required to complete a recipe execution. Abandoned samples are not listed in subsequent steps. For more information, see Abandoning Steps and Samples.

Capture Hub Step Navigation

You use **Next** and **Previous** to navigate between steps. You can also use the recipe instructions to navigate to any available step.

■ If you view a recipe without executing it, you can use **Next** and **Previous** regardless of the state of the recipe or its steps.

■ If you execute a recipe, you can click **Next** only after you collect all required parameters for at least one sample in the step. Clicking **Next** in this case can also result in the following:

    ▪ A signature window, if you collected all required step data, and any of the data requires signatures.

    ▪ An option to complete the step, if you collected all data and signatures.

    ▪ A list from which you can select your next step, if more than one step is available.

> **Tips:**
> - You can press **Tab** after completing a manual data entry session to move from the final parameter in the grid to the **Next** button.
> - If you resume execution of an in progress task, it opens to the next step that requires data collection.

Executing a Task in Capture Hub

When you execute a data acquisition task or a procedure task that requires Capture Hub, Task Planner opens Capture Hub and starts a recipe execution process:

- For procedure tasks, Capture Hub displays the steps and instructions defined in the recipe, and also identifies any equipment, materials, and material placeholders specified in the recipe.
- For data acquisition tasks, Capture Hub displays a standard two-step recipe in which Step 0 identifies task-level parameters, and Step 1 identifies sample parameters. If a data acquisition task has no task-level parameters, the recipe execution opens to Step 1.

You can execute a set of tasks in the same recipe execution process if they meet these conditions:

- They are based on the same activity. The activity version can be different, but only if all versions specify the same precision settings for input and output parameters.
- They use the same lifecycle policy.
- They have different samples. If a sample requires multiple executions of a task, perform each execution in a separate execution session. If you combine tasks that have overlapping samples, you cannot distinguish between the separate runs.
- If they do not have samples, they must have the same planned values. If edits to planned values introduce differences, you cannot execute the tasks together.
- If they use the same material, they must also use the same synonym for that material.

> **Note:** If you combine multiple tasks into a single recipe execution process, you cannot decide later to split them into separate sessions. Even if you remove their sample associations, the tasks always execute in the same Capture session (they use the same URL).

To execute a task in Capture Hub:

1. Find the task on your task plan's **Tasks** tab, **My Tasks** widget, or **Available Tasks** widget.

2. If necessary, configure the task as described in Configuring a Task and its Sample Associations. For example, you might need to:
   - Associate samples with the task.
   - Adjust synonyms and planned values for materials or other parameters.

3. Select the task and click **Execute** in the toolbar.

   Task Planner starts a Capture Hub execution session. The left panel displays an Instructions card for the first recipe step that requires your input. The right panel displays the Parameters card for collecting the data for that step.

   You can collapse the step-level instructions card to view recipe-level instructions, and you can return to step-level instructions by collapsing recipe-level instructions.

4. Perform the first step:

   a. Read the instructions card and any cautions or notes.

   b. Enter the parameter data required for the step. Collecting the data can require one or more of the following:

      ■ Adding Containers and Collecting Material Values

      ■ Registering Batches of Materials in Inventory

      ■ Collecting Readings from Equipment

      ■ Retrieving Equipment Readings from Files

      ■ Manually Entering or Overriding Data for Connected Equipment or Inventory

      > **Tip:** If necessary, you can also repeat data collection (collect the same data parameters more than once for a step or a sample).

   c. Record observations. If observations are required, an asterisk (*) appears next to the card title.

   > **Tip:** You do not have to collect all data for every sample in a step before you can start the next step. You can move any set of completed samples forward to next steps and go back and forth between available steps, as necessary. However, you must complete or abandon all samples before you can complete the recipe execution.

5. After you finish the step, or collect all required data for at least one of its samples, click **Next**.

   ■ If you are prompted for signatures related to the collected data, collect the required signatures. You must collect all required signatures, one at a time, before you can continue.

   For example, if you collected some data that was out of limits and you manually overrode some equipment-collected data, you might have to complete both an Out of Limits signature window and a Manual Override signature window.

   ■ If you are given a choice of next steps, select the next step to open.

6. Repeat Steps 4–5 until you finish collecting all required data for all steps.

   > **Tip:** If you are unable to complete a task in a single session, you can leave it in progress. To resume working on it at a later time, find the task and click the **Task Id** link.

7. If prompted, click **Yes** to complete the recipe execution. Alternatively, click the **Current State** button, and select **Completed**.

8. If prompted for a Control Recipe Complete signature, enter your signature. If you are prompted for an additional Control Recipe Approval signature, find someone who can sign off on your completed recipe.

After you complete the recipe execution, the Foundation Hub landing page opens.

Adding Containers and Collecting Material Values

When executing a recipe step in Capture Hub, you might need to add containers and collect values for materials listed in the **Materials** card. When you add a container on a step, it is added to the card and linked to that material. Depending on the recipe, adding containers might import additional values from the inventory system. You also might collect material amounts manually or from equipment.

■ For parameters that are mapped to materials, the 🔗 materials icon appears next to the parameter name.

- For container barcodes, the ▥ barcode icon appears next to the parameter name, which uses the format *Name (**Synonym**)* **Container**, for example, Solution 1 (Alcohol) Container.

- For other material values, the synonym is appended to the parameter name, for example, Solution 1 Amount (Alcohol).

> **Note:** If a warning is displayed in the **Materials** card, one of the materials used in the step has a planned amount defined for the recipe. For recipes that open in Capture Hub, planned amounts of materials should be defined only for parameters. Consult the recipe author to make sure the recipe functions as intended.

To add containers and collect material values:

1. To add a container for a material, enter or scan its barcode in the container cell. If an inventory system such as BIOVIA CISPro is connected to your system, the barcode must match a valid container in inventory.

   > **Note:** Depending on the recipe, you might be required to add the same container more than once, for example, when the container parameter is listed on every step where the material is used.

2. If a warning or error occurs:

   - Capture Hub immediately displays a warning if the container is expired or the trade name in the inventory system does not match the material name or synonym. Click **Proceed Anyway** or **Cancel**.

     > **Notes:**
     > - A recipe might require the signature of an authorized user to approve the use of an expired material. The recipe could also block the use of expired materials completely.
     > - When the CISPro MLM module is disabled, the expiration date is based on the expiration date of the container. When MLM is enabled, the expiration date is based on the expiration date of the material lot.
     > - Use caution when the trade name in the inventory system does not match the recipe material. If you proceed, the recipe material becomes linked to the material in that container. You will not be able to change the material for subsequent samples or steps.

   - An error occurs if the barcode is not found, or if the material is already linked to a container of a different material. You cannot add the container and the value is flagged as 🔴 invalid. In this case, you can enter or scan a different barcode, or you can notify the recipe author or an administrator to update the recipe.

3. Enter any required signatures.

   The container barcode is added to the **Materials** card and linked to that material.

   For parameters mapped to the same material, values are imported from the inventory system. If the inventory system does not have a value for one or more parameters, those cells remain empty.

4. To collect data for cells without valid values, convert the cells to manual data entry.

5. If an amount parameter is listed for the material, collect the value manually or from equipment.

   When the material amount is mapped to equipment, the ⚖ equipment icon appears next to the parameter name instead of the ⚙ materials icon.

6. Repeat Steps 1–5 for each material, as needed.

> **Tip:** If you need to collect the same material values more than once, you can repeat data collection for a step or a sample. For example, you might need to repeat a step to add material from a different container.

7. Repeat Steps 1–6 for additional samples on the step, as needed.

Registering Batches of Materials in Inventory

When executing a recipe in Capture Hub, you might prepare a batch of material that you need to register in the inventory system. If registering a batch is part of a step, the material name is listed in the **Materials** card and the 🔗 **Register** button appears in the **Parameters** card. Depending on the recipe, you might register one or more containers for the same batch of material. When you register a batch, the containers are added on the **Materials** card for the recipe execution, and a batch number is generated in inventory.

> **IMPORTANT!**
> - The Material Name or Synonym in the recipe must match the trade name in inventory.
> - You must have permission to receive the lot of material in CISPro. If an error occurs, notify an administrator to update your access rights.

To register batches of materials in inventory:

1. Collect the required data.

   The recipe includes parameters for properties that are sent to the inventory system when you register the batch. For example:

   - Expiration date for the container. You might enter the date manually or it might be calculated. If you are registering multiple containers, every container is set to the expiration date of the first container. An expiration date is always required to register a container.

   - Amount of material in the container. An amount is always required.

   - Container barcode. Barcodes that start with a "C" or contain a comma (,) are not supported. If you are not required to enter a barcode, CISPro generates one automatically when you register the batch.

   - Measured concentration, which is associated with the receipt lot in CISPro.

   > **Note:** Be sure to verify the data before registering the batch. If you re-collect values after a batch is registered, the values in the inventory system are not updated.

2. To register another container, click the status icon and select ↻ **Repeat**. Then, collect the required data for the container in the new column.

3. Repeat Steps 1–2 for each container of the material, as needed.

4. If the grid is displayed in Horizontal View, click ☰ **Switch to Vertical View**.

5. Click 🔗 **Register** next to the quantity parameter for the material.

   The containers are registered and linked to the material in inventory.

   The inventory system generates a batch ID and receipt lot for the registered containers.

   The container barcodes are added on the **Materials** card for the recipe execution, and the material and containers are updated with the latest information from the inventory system.

> **Note:** You can register a batch of the same material only one time, even if it appears on more than one step. For example, some steps are required only if certain conditions are met. If you register a batch, and then re-collect previous data that makes different steps required, you cannot register the batch again.

6. If the step includes more than one material to register, repeat Steps 1–5 for each material.

   You must register every material before you can complete the step.

Collecting Readings from Equipment

The Capture Hub Parameters card displays a scale ⚖ next to the names of parameters whose values come from equipment. The card displays another scale ⚖ in the data entry cells for each of these parameters.

The way you collect readings for equipment parameters depends on the configuration of the equipment that you select, or that the recipe requires you to use:

- Collect readings from equipment that connects directly to Foundation Hub or that always requires manual collection directly on the Parameters card, as described below.
- Collect readings from file-based equipment by using the **Data Acquisition** page to verify and then submit the file-based data. After you submit data from a file, Capture Hub displays it on the Parameters card. If necessary, you can override it and manually fill in any missing values, as described below. For more information, see Retrieving Equipment Readings from Files.

Collecting Readings from Connected Equipment

When you use equipment that connects directly to Foundation Hub, Capture Hub automatically collects the relevant readings from that equipment for parameters that map to the same equipment type or class. Unless a recipe requires a specific device for a parameter, you can select which device to use.

To collect readings from connected equipment:

1. Click a value cell for one of the parameters that the equipment provides.

2. If a device is already selected, but you want to use a different device, click the ✔ icon on the Equipment card to deselect the current device.

   > **Note:** If the recipe requires a specific device, you cannot select a different one. For such cases, the system ignores devices marked as **Selected**.

3. To select a device, click the equipment selector ⚖ in the value cell. Then use one of the following methods:

   - Select one of your favorite devices from the top of the selection list. You can identify favorites on your Equipment card.
   - Scan the barcode of the device.
   - Start typing the device's name, nickname, or barcode, and then select it when it is found.

   Capture Hub adds the device to the Equipment card, marks its as ✔ Selected, and subsequently uses it as your default selected device for other parameters in the recipe that require the same type or class of equipment.

   The Equipment card identifies the device as your selected device.

4. If Capture Hub displays a warning that indicates the selected device has GMP equipment or

metrology exceptions, decide what to do:

a. Review the warning message and, if desired, click **Go To Equipment** to view equipment details.

b. To use the device in spite of the warnings, click **Proceed Anyway**. Otherwise, click **Cancel**, and select a different device.

c. If you decide to proceed and a signature window appears, obtain an authorized signature.

> **Note:** If the device has a GMP exception *and* a metrology exception, a separate signature window appears for each exception. The two signature windows might have different authorized signers.

5. After the Equipment card identifies the correct selected device, click the equipment selector ⚖ in data entry cell to automatically retrieve its readings:

■ Capture Hub retrieves and displays the connected device's data for the current cell and for all other cells in the same row that map to the same device. These cells are marked with a link 🔗 icon.

■ If the device does not return a reading for one or more mapped parameters, the corresponding cells remain empty.

6. To collect data for cells without readings, do one of the following:

■ Convert them to Manual Entry, and add the data for just those cells.

■ Return to Step 2 to select a different device, and then re-collect all readings from that device.

> **Note:** If parameters are mapped to the same planned source in the recipe, you cannot use different devices to collect those parameters for the same sample on the same step. Re-collecting data with a different device updates all cells in the row that are mapped to the equipment.

Converting to Manual Data Collection Mode

You might need to override the automated collection process for connected equipment readings if:

■ The connected equipment has gone offline, and you need to enter its values manually.

■ You need to modify (re-collect) data that was already read from the equipment.

For both cases, you must first convert the cell to manual entry.

To convert a specific cell to manual entry:

1. In the cell, click Manual Override ⌨.

2. Manually enter the value or override the existing value.

For information about how to enter date/time values, upload files, and enter other special data types, see Entering Values for Specific Data Types.

3. If your recipe enforces the Manual Override signature policy and you want to immediately sign off on values that you just overrode, click **Sign**.

When you click **Sign**, Capture Hub displays not only the Manual Override signature window, but also any other unfulfilled signature windows that are required for the data you have entered thus far.

> **Tips:**
>
> - If you need to override more than one value and want to select different reasons for some of your overrides, enter all values that require the same reason, one after another. Then click the **Sign** button and select the appropriate reason for that set of overrides in the window. Repeat this process each time you need to select a different reason for your overrides.
>
> - If the reason for all of your overrides is the same, do *not* use the **Sign** button. When you finish data collection for a step or one of its samples and click **Next**, Capture Hub automatically displays required signature windows.
>
> - For more information, see "Required Signatures" in the table under Icons that Indicate the Status of a Step.

4. If your recipe also enforces the Confirm Override signature policy, find someone else to fill it out. When required, the Confirm Override signature window appears immediately after you submit the Manual Override signature window.

Collecting Data from Equipment that is Not Connected

1. In the cell, click ⚖ or press the **Spacebar**.

2. If a device is not already selected, select the device you want to use.

3. Enter the raw value from the device, and press **Enter** or **Tab**.

Re-collecting Data from Equipment

A recipe's Data Modification signature policy treats parameters mapped to equipment differently than other types of parameters. When you re-collect parameters that are not mapped to equipment, the Data Modification Signature dialog box only prompts you for your digital signature when you attempt to leave the step. For parameters mapped to equipment, after you collect their initial value, you must submit your signature the next time you re-collect that value, even if you have yet to complete the step.

After you sign for the first time, you can re-collect that parameter as many times as required without re-signing—your signature is applied to every subsequent change, although the reason code only applies to the re-collected value at the time of your signing. You also have the option to sign for any of the intermediate changes. When you click **Next** to leave the step, you must sign for the last change you made, if you have not already done so.

Retrieving Equipment Readings from Files

If the **Data Acquisition** button appears on the Parameters card, you can use the Data Acquisition page to retrieve equipment readings from data files, and even to create the data files manually.

The process you use to retrieve readings from a file depends on the level of automation that has been set up for your equipment. The process can require the following:

- **Mapping verification only** – For heavily used equipment, automated routines usually create and upload the files, and parsing protocols map the parameter values in the uploaded files to the samples in your tasks.

  When your equipment is this automated, you use the Data Acquisition page to preview and submit mappings. If required, you can also add and remove mappings before you submit the results to Capture Hub. For examples of mappings and corrections you might need to make, see Example Scenarios for Mapping Data Acquisition Results.

- **Manual file upload and mapping verification** – For some equipment, you must manually upload data files. You use the Data Acquisition page to upload the files and then verify and submit the mappings that result from parsing your uploaded files.

- **Manual file creation, upload, and mapping verification** – If you use **Manual Data Entry** equipment, you can use the Data Acquisition page to download a template, populate it, upload it for parsing, and then verify and submit the mappings. Another option for such equipment is to click the **Manual Entry** button on the Parameters card to convert all cells to manual entry.

To retrieve data collected in files:

1. At the bottom of the Capture Hub Parameters card, click **Data Acquisition**. If your cursor is in a data entry cell, you can also click **Alt+Shift+D**. The Data Acquisition page opens.

   - The Assignable Samples panel lists each sample in your process execution. An icon next to each sample identifies how many result rows from data files currently map to that sample (**0** if none).

   - The right panel provides cards for working with data from selected equipment.

2. If the page does not display a card for each piece of equipment you need, use the **Search Equipment** card to add equipment cards.

3. On the equipment card's **. . .Uploads** tab, find the uploaded data files you need and click their names to open the parsed results in **<filename> Data Preview** tabs. Each file opens in a separate tab. If file you need is not already uploaded, do one of the following:

   - Click **Upload Instrument Data** to manually find and select the file.

   - Click **Trigger Discovery** to make the system find new files to automatically upload.

   After a newly uploaded file finishes parsing, click its filename to open its Data Preview tab.

   > **Note:** For **Manual Data Entry** equipment, see Creating and Uploading Files for MDE Equipment.

4. For each sample whose current result count is 1 or more, verify the existing mappings:

   a. Click the sample and identify its mappings in the Data Preview tabs.

   b. To unmap a result that you do not want to report for the sample, click the result row. To remap it, click it again. You can unmap the following:

      - Rows with a ⚑ yellow flag, which are mappings that the system suggests because the sample Id in Task Planner matches the Instrument Sample ID in the equipment's data file.

      - Rows with a ☑ green check mark, which are mappings that you manually created (see the next step).

   You cannot use the Data Acquisition page to unmap rows with a 🔒 lock symbol, but you might be able to override the corresponding results in Capture Hub.

5. For each sample that is missing results, find and map the appropriate result rows.

   > **Tip:** A missing mapping is often the result of a typo in the sample ID. You can sometimes find the correct row by noting the Instrument Sample ID of successfully mapped samples, and then looking for unmapped samples that have similar IDs.

   a. Select the sample in the left panel.

   b. Find unmapped result rows on a Data Preview tab.

   c. Do one of the following:

- To map the sample to a specific result row, click that row.
- To map the sample to all result rows for a specific **Instrument Sample Id**, click the ▢ icon in the first column of any result row with that Instrument Sample ID.

If you make mistakes and want to start over, see Resetting Mappings and Starting Over.

6. After you finish mapping data for one or more samples, click **Submit** to return to Capture Hub to see the submitted data, collect any required signatures for that data, convert any empty cells to manual data entry, and continue with your recipe execution.

- If the equipment does not return a reading for a mapped parameter, its cell remains empty.

> **Note:** Sometimes readings are not returned because the source data is not parsed correctly. For example, dates must be in one of these supported formats:
>
> ```
> /yyyy-MM-dd'T'HH:mm:ss.SSSXX/
> /yyyy-MM-dd'T'HH:mm:ssXX/
> /yyyy-MM-dd'T'HH:mmXX/
> /yyyy-MM-dd HH:mm:ss.S/
> /yyyy-MM-dd/
> ```
>
> For information about configuring equipment, see the *BIOVIA Foundation Hub Equipment Guide*.

- If you mapped more than one row of data for any sample, an icon ↳ in the **Sample ID** field indicates repeated sample data.
- If you added equipment, the equipment appears on the Capture Hub Equipment card.

Adding Devices During Data Acquisition

Equipment cards for specific devices and for Manual Data Entry devices display automatically. However, if the recipe identifies an equipment class or type class other than Manual Data Entry, you must identify the specific device from which to obtain the data.

To add devices during data acquisition:

1. In the main panel, expand the **Search Equipment** card.

   The card lists devices that match the equipment class or type identified in the recipe. Your favorites ★ appear at the top of the list.

2. To filter the list, scan the device barcode, or start typing its name, nickname, or ID.

3. Select the check box of each device you require, and then click **Add Equipment**.

   The selected equipment cards appear on the Data Acquisition page. After you submit data from equipment, the Capture Hub Equipment card lists that equipment.

Resetting Mappings and Starting Over

If you make mapping mistakes and want to start over, perform these steps:

1. Open the Data Preview tab's ☰**Data file menu** and click **Clear all mapping**:
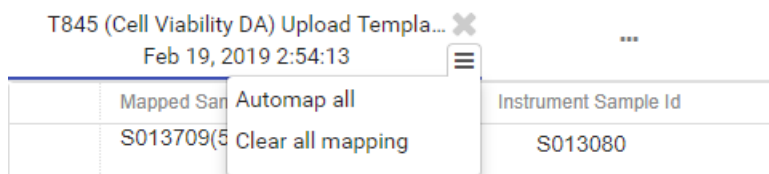
This option removes all unsubmitted mappings, whether manual or system-suggested.

2. To regenerate the system-suggested mappings, display the menu again, and select **Automap all**.

Creating and Uploading Files for MDE Equipment

You can use the **Data Acquisition** page to manually create a CSV file for equipment whose type or class is Manual Data Entry (MDE), and then to upload that file for parsing.

To create and upload files for Manual Data Entry equipment:

1. At the bottom of the Parameters card, click **Data Acquisition**.

2. Open the **Manual Data Entry** equipment card's **. . .** Uploads tab, if it is not already open.

3. From the **Context for CSV upload** list, select the context that identifies the appropriate task and activity.

   > **Tip:** As you switch between contexts, the columns displayed in the **Data Fields** grid change to reflect the parameters required by the currently selected context.

4. In the **Data Fields** grid, ensure the correct unit is selected for each field.

   > **Note:** Every row in the file must use the same units. If you need to upload data sets with different units, you must download the template and upload the data file separately for each data set.

5. Optionally, enter the number of rows to create per sample. For example, to collect two sets of values for each sample, enter **2**.

6. Click **Download CSV template**.

7. Open the downloaded template file, enter the values, and then save the file in CSV format.

   You might have to save it twice because of an idiosyncrasy in the Excel interface.

8. Return to the Data Upload page and click **Select Files**, and select your data file.

   > **Note:** You can upload multiple files by either repeating this step or by using **Ctrl+Click** to select them from the same folder. If you do so, click the name of the one that you want to parse before you perform Step 9. You cannot upload multiple data files at the same time.

9. Click **Upload Files** to submit your file for parsing.

   The files are uploaded and the one designated as primary is submitted for parsing. If parsing fails, you can click the *Parsing Failed* indicator to reattempt the parsing process.

10. After parsing completes, verify the results.

    - Click the filename to open a **Data Preview** tab that displays the parsed results.
    - Click a sample in the **Assignable Samples** panel to highlight the corresponding results row in the Data Preview tab.
    - To unmap a result from the selected sample, click the result row.
    - To map an unmapped result to a sample, click the sample, and then click the result row.

    If you have access to **Foundation Hub Admin & Settings > Measurements**, you can also view the uploaded, parsed measurements, see the raw data in some cases, and open any supplemental files that you uploaded along with the data file.

11. When you are finished, click **Submit** to return to your Capture Hub execution session. Your submitted results appear on in the Parameters grid, and you can continue with your process execution.

## Example Scenarios for Mapping Data Acquisition Results

The Equipment cards on the Data Acquisition page provide preview tabs that show parsing results for uploaded data files. When you review a preview tab for an uploaded file, you might encounter several scenarios, each of which requires a different reaction from you:

- Data Acquisition Scenario with Fully Automated Mappings
- Data Acquisition Scenario that Requires Corrections and Manual Mappings
- Data Acquisition Scenario that Requires a Manual File Upload
- Data Acquisition Scenario that Requires Manual File Creation and Upload

Data Acquisition Scenario with Fully Automated Mappings

If you use fully automated file-based equipment and your sample IDs match those of the equipment, the left panel displays the expected result count for each sample.

In this example, the system automatically mapped 16 Instrument Sample Ids in a **cmadmin 0 BVA CEX2** file from the **CEX Demo** instrument to 16 sample IDs in a process execution. (Only the first nine mappings are shown in the image.)

- The 🚩 **Suggested map** icons identify system-suggested mappings.

  The three rows without **Mapped Sample** values identify sample results for tasks that the process execution does not include, perhaps because they reside in separate task plans. If these other tasks were in the same task plan as **T873**, they could have been executed along with **T873**.

- The samples in this example requires no manual mapping. Clicking **Submit** closes the **Data**

Acquisition page and opens the relevant Capture Hub **Parameters** card, which displays the submitted mapped results. Process execution can now continue.

- If you redisplay the **Data Acquisition** page and this file, the previously submitted mappings have a 🔒 **Lock** icon, which indicates that they have already been submitted. You cannot use the **Data Acquisition** page to change locked mappings.

> **Note:** If an equipment card for fully automated equipment does not display results, you can click a **Trigger Discovery** link on the card to make the system look for new files from that equipment.

Data Acquisition Scenario that Requires Corrections and Manual Mappings

If a sample ID provided to Task Planner differs from the corresponding Instrument Sample ID provided to the equipment, you must manually map the samples to the correct results from the equipment.

In this example, two samples require manual mapping.

- This example shows six unsubmitted mapped results, four suggested mappings that the system created (indicated by 🚩), and two that the current user created (indicated ☑).

- The first unmapped sample, **S011463**, must map to the top result row on the Data Preview tab on your equipment card. Creating this mapping requires clicking the sample and then clicking the result row.

- The second unmapped sample, **S011464**, must map to the second result row on the card, which is mistakenly mapped to **S011465**. Because this incorrectly mapped result is not locked, you can remove it by selecting sample **S011465** and then clicking the Mapped Sample cell. You can then create the correct mapping by selecting the sample and clicking the correct result row. If you make mistakes, you can start over by using menu options on the Data Preview tab to first **Clear all mapping**, and then **Automap all**.

For detailed instructions for mapping results, see Retrieving Equipment Readings from Files.

Data Acquisition Scenario that Requires a Manual File Upload

Some tasks always require manual upload of data files.

In this example, a task requires equipment of class HPLC equipment. You identify the specific equipment instance by using the **Search/Add Equipment** card (not shown) to select the **E0000016 Empower HPLC** equipment card.
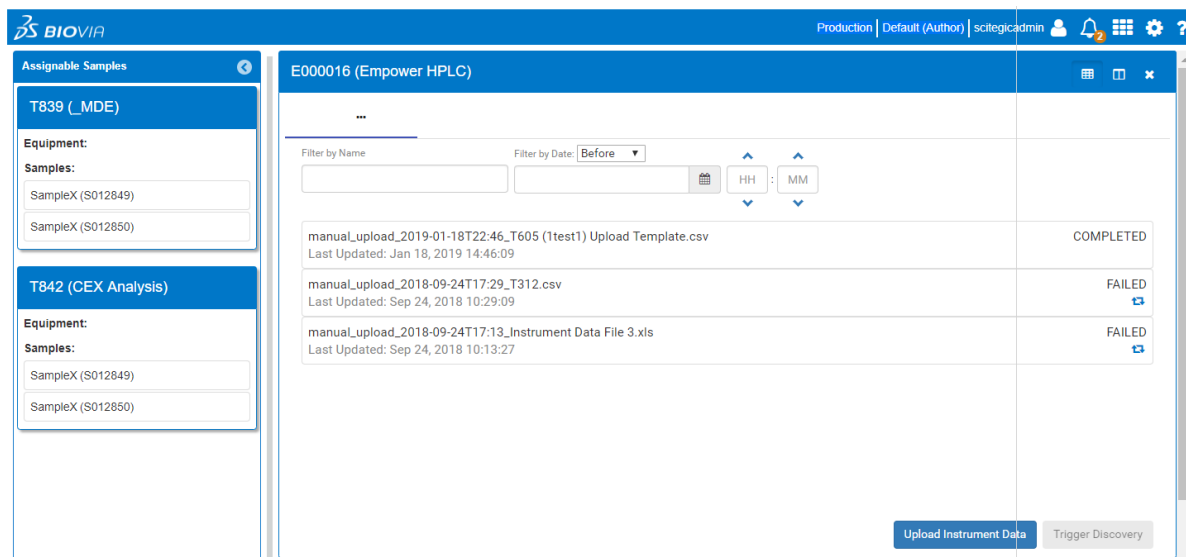
- The equipment card's **. . .Uploads** tab shows three recently uploaded data files. The top file parsed successfully, but the other two failed to parse.

- You could click the top file to open a **<filename>** Data Preview tab that displays the results retrieved from that file, but they are probably for samples from other data acquisition tasks. (If they were matched to samples in the tasks being processed, the sample names in the left panel would have result counts.)

- You could also click the FAILED indicator on either of the two failed files to submit them for another attempt at parsing.

- For this case, however, you would normally click the **Upload Instrument Data** button to toggle the **. . .Uploads List** tab into its **Upload Selection** mode. Then you would browse to and select the required data file, wait for it to be parsed, and proceed with previewing the data and correcting mappings, as required.

Data Acquisition Scenario that Requires Manual File Creation and Upload

When you execute tasks based on an activity that calls for manual data entry instead of specific equipment, Task Planner always displays an equipment card called **Manual Data Entry**.

In this example, you executed a task that required manual data entry and looked at one file that was previously uploaded (**manual_upload_2019-01031T22-31_T6**). That file did not contain the results you need, so you clicked the **. . . Uploads** tab, which enables you to manually create and upload files. The following image shows the Uploads tab for this scenario.

- On this tab, you selected task **T622 (_MDE)** from the **Context for CSV upload** field. This task requires you to upload a file that contains result data for **Amount**, **Appearance**, and **Barcode** parameters.

  If your process execution included execute multiple tasks that required manual entry, the **Context for CSV upload** field would have listed each task. The required parameters listed under Data Fields could vary depending on which task you selected.

- You accepted the default settings for the units of the Amount field (**L**) and for the number of rows per sample (**1**).

  If you chose a different unit of measure for the Amount field, the downloaded template would include the selected unit for reference, and the uploaded file would be parsed using the selected unit. Similarly, if you entered a different number of rows, the downloaded template would include that number of rows for each sample ID so that you could enter grouped sample data.

- You most likely clicked the **Download CSV Template** link, populated the resulting file by entering the amount, appearance, and barcode for each sample listed in the file, saved the file under the default name (T622 (_MDE) Upload Template.csv file), clicked **Select Files**, and then selected both the CSV file and a supplemental PDF file called UG-SP1.pdf.

Both filenames are listed beneath the **Select Files** button, and the CSV file is listed in the **Primary File Name** field to indicate that it is the data file. If the PDF file was listed in this field, you would have to click the CSV file to designate it as your data file.

■ After you click **Upload Files**, the two files will be uploaded to the Foundation Hub Measurements Store, and the data file indicated in **Primary File Name** field will begin parsing. After parsing completes, you will be able to click the file name to open and verify the parsed measurements in a Data Preview tab.

For instructions for this process, see Creating and Uploading Files for MDE Equipment.

Manually Entering or Overriding Data for Connected Equipment or Inventory

If you need to manually enter or override data that is normally retrieved automatically from equipment or from your inventory system, you must first convert the cells to the manual entry mode.

After you convert a cell to the manual entry mode, you can enter a new value or override the existing value. For information about manually entering a *date/time* value, uploading a *file*, or entering values for other special data types, see Entering Values for Specific Data Types.

Converting Cells to Manual Entry Mode

You can convert specific cells that collect values from equipment or inventory to manual entry, one at a time.

If you use equipment that supports file-based data collection, you can also convert all cells for that equipment to manual entry.

To convert a specific cell to manual entry:

1. Click the **Convert to Manual** ⌨ button in the cell.

   This action does not impact any other cells, including cells whose values were collected together from the same equipment, or retrieved together from the same material.

2. Manually enter the value or override the existing value.

   For information about how to enter date/time values, upload files, and enter other special data types, see Entering Values for Specific Data Types.

3. To collect the same value for consecutive cells, convert each of them to manual entry, and then use the fill-down function.

4. If your recipe enforces the Manual Override signature policy, see Collecting Signatures for Manual Overrides.

To convert all cells for file-based equipment to manual entry

1. Click the **Manual Entry** button under the Parameters card.

2. Manually enter each value.

   > **Tip:** Alternatively, if the **Data Acquisition** button appears at the bottom of the card, you can use the Data Acquisition page to create and upload a file that provides the values.

3. To collect the same value for consecutive cells, convert them to manual entry and then use the fill down function.

4. If your recipe enforces the Manual Override signature policy, see Collecting Signatures for Manual Overrides.

Collecting Signatures for Manual Overrides

When you manually enter data that you would normally retrieve from connected equipment or an inventory system, you might have to enter your digital signature and select a reason.

After you enter your own signature and reason in a **Manual Override** signature window, you might also have to find someone else to do the same in a **Confirm Override** signature window.

Either display these signature windows immediately after you enter a value by clicking the **Sign** button that appears beneath the Parameters card, or wait until Capture Hub prompts you to enter them:

- If you need to override more than one value and have different reasons for some of your overrides, enter all values that require the same reason, one after another, and then click **Sign**. In the resulting Manual Override signature window, enter your credentials and select a reason for that set of overrides. Repeat this process each time you enter overrides for a different reason.

- If the reason for all of your overrides is the same, do not use the **Sign** button. Instead, finish your data entry and click **Next** to complete the step. Then complete the signature window or windows that Capture Hub automatically displays.

- For more information, see "Required Signatures" in the table under Icons that Indicate the Status of a Step.

Using Fill Down to Paste a Value into Multiple Cells

The fill down function enables you to collect a value for one cell, and then copy the same value to consecutive cells below it.

- Fill down supports Text, LongText, Integer, Numeric, Vocabulary, Quantity, Date/Time, and Boolean parameters.

  > **Note:** When the recipe's Manual Override signature policy enforces a Full Block, fill down is not available for any parameters populated by inventory, equipment readings, or the "Current Time" parameter.

- Fill down does not support container barcodes, file parameters, parameters imported from samples, or calculated values. However, calculated values are updated when you fill down values used in the calculation.

- When you fill down values for parameters that are collected from equipment or retrieved from inventory materials, the cells are automatically converted to manual entry before they are updated.

- You can select multiple parameters to fill down at the same time.

To paste a value into a single cell (text, numeric, or numeric value of a quantity):

1. Press **Enter** or double-click the cell to begin input.
2. Press **Ctrl+v** to paste the value.

To fill down the same parameter value for consecutive cells in a grid:

1. If the grid is displayed in Vertical View, click **Switch to Horizontal View** ⊞.
2. Select the cells, and then press **Ctrl+d**.

   The value in the top cell is copied down to subsequent cells. Cells with existing values are overwritten with the copied value. Abandoned sample rows are not updated.

Entering Values for Specific Data Types

To enter Vocabulary or Boolean values:

1. Press the **Spacebar** or **Enter** and start entering a value. A list of suggested values opens.

2. Use the arrow keys to highlight the appropriate value and press **Enter** to select it.

To enter Quantity and Unit values:

1. Press the **Spacebar** or **Enter**.

2. Enter the quantity. The units default to the units of the planned value (if available) or existing value, when editing or re-collecting data.

3. To keep the default units, press **Enter** or **Tab**.

4. To change the units:

    a. Press the **Spacebar** to open a list filtered by the default units.

    b. To clear the default filter, press **Delete**.

    c. Start entering the units and select a value from the list.

To enter Date/Time values:

- ■ **For "Current Time" parameters**

    These include Current Time, Current Time Start, and Current Time End parameters.

    1. To collect the current date/time:

        - ■ Either double-click the empty parameter, press the **Spacebar**, or click 🕐. The current date/time is collected based on the server's timezone.

        - ■ To enter a different date/time value or to re-collect an existing value, click ⌨ to open the calendar. Do one of the following:

            - ▪ Select a new date/time from the calendar and click **OK**.

            - ▪ Click **Now** to close the calendar and collect the current date/time from the server.

            The keyboard icon ⌨ preceding the new value indicates a manual override.

            > **Note:** The ⌨ keyboard button is disabled when the recipe's Manual Override signature policy enforces a Full Block. You can only collect the current date/time 🕐.

    2. When you complete the step and click **Next**, enter your signature for the manual override, if prompted.

- ■ **For general "Date/Time" parameters and "Current Time" parameters mapped to equipment or inventory materials**

    The Current Time parameters include Current Time, Current Time Start, and Current Time End parameters.

    To collect the date/time:

    1. Press the **Spacebar** to open the calendar. For parameters mapped to equipment or inventory materials, you can also click ⚖.

    2. Do one of the following:

- ■ Click **Now** to close the calendar and collect the current date/time from the server.
- ■ Select a different date/time, and then click **OK**.

To enter File parameters:

1. Press the **Spacebar** or click **Upload File** 🔼.

2. Browse to the file and click **Open**.

    The file size cannot exceed 250 MB.

Repeating Data Collection

In some cases, you might need to collect the same data parameters more than once for a step or a sample. For example, you might repeat a step to add more material, or you might repeat a sample for replicate sample analysis. If the recipe designates a step or sample as repeatable, you can collect this data in the **Parameters** card. You can also map multiple rows of sample data when using data acquisition.

To repeat data collection in the Parameters card:

1. Click the status icon for the step or sample, and then select ↻ **Repeat**.

    A row (Horizontal View) or column (Vertical View) is added to the grid. For repeated sample data, an icon ↪ is shown in the **Sample ID** field.

2. Collect data for the new row.

3. Repeat Steps 1–2 as needed for the step or for any sample on the step.

> **Notes:**
> - ■ You must collect at least one data parameter for the new row before you can repeat the step or the sample again.
> - ■ If you navigate to another step or close the session, added rows are saved only if they contain data.
> - ■ To move forward from a repeated step or to move a sample forward to next steps, you must complete all required parameters for all rows. Alternatively, you can abandon the step or sample, if necessary. For more information, see Abandoning Steps and Samples.

To map multiple rows of sample data when using data acquisition:

1. Click **Data Acquisition**.

2. For each sample, map the desired rows of data in the equipment measurement. See Retrieving Equipment Readings from Files.

3. Click **Submit**.

    A row (Horizontal View) or column (Vertical View) is added to the grid for each mapped row of data. An icon ↪ in the **Sample ID** field indicates the repeated sample data.

> **Note:** To exit without saving any mappings, click **Discard**. After submitting a mapping, you cannot clear the data from the **Parameters** card by clearing the mapping in the Data Acquisition page. You must select a different mapping to overwrite the data.

Recording Observations

When executing a recipe in Capture Hub, you can record observations related to the step. You can enter text and upload files for others to download.

The **Observation** card is displayed after you have recorded an observation or if an observation is required for the step. If observations are required, an asterisk (*) appears next to the card title.

Adding Observations

1. Click **Observation**.

   If the **Observation** card is already displayed, you can click **Edit** 🖉 .

2. In the **Observation** window, click on the text field and describe your observation (4000 character limit). You can use HTML to format the text.

3. Press **Tab** to save the observation.

4. (Optional) To upload a file to the observation, click **Upload File** ⬆ . For more information, see Adding Files to Observations.

5. Click **OK** to close the **Observation** window.

Adding Files to Observations

You can upload files of any file type to an observation. The file size cannot exceed 250 MB.

1. Click **Edit** 🖉 in the **Observation** card or click **Observation**.

2. In the **Observation** window, click **Upload File** ⬆ .

3. Browse your local machine or any accessible network location, and select the appropriate file.

4. Click **Open**.

   Uploaded files are listed below the **Upload File** button.

5. Click **OK** to close the **Observation** window and save the uploaded files.

   The **Observation** card displays a **Files** hyperlink.

> **Note:** You must click **OK** to save updates to the file list.

Downloading Files from Observations

If one or more files have been uploaded to the **Observation** card, the card displays a **Files** hyperlink. These files are stored in the Foundation Hub, and you can download these files to your machine.

1. In the **Observation** card, click the **Files** hyperlink.

   The **Observation** window opens. Uploaded files are listed below the **Upload File** ⬆ button.

2. Click the filename to download the file.

   The file is saved to the location selected for your internet browser.

3. Click **OK**.

   The **Observation** window closes.

Deleting Files from Observations

If one or more files have been uploaded to the **Observation** card, the card displays a **Files** hyperlink.

1. In the **Observation** card, click the **Files** hyperlink.

    The **Observation** window opens. Uploaded files are listed below the **Upload File** button.

2. Click **Delete** .

3. Click **OK**.

    The file list is saved to the **Observation** and the **Observation** window closes.

> **Note:** You must click OK to save updates to the file list.

Abandoning Steps and Samples

When executing a recipe, you might need to abandon a step or a sample and continue with subsequent steps. For example, you might need to abandon a step if an operation doesn't work as expected. In this case, you might document the problem and workaround, and then continue the recipe from the next logical step. For another example, you might need to abandon a sample if it becomes contaminated. Abandoning steps and samples are similar actions detailed in the following procedures.

Abandoning Steps

When you need to bypass a step that does not include samples, you can abandon it and proceed to subsequent steps. You can abandon a step only if the recipe allows for a procedure modification and only after the previous steps are complete. For steps with samples, see Abandoning Samples.

> **IMPORTANT!**
> Abandoning a step is permanent and irreversible. Before you abandon a step, ensure that it will not adversely affect subsequent steps in the recipe execution. For example:
> - If a calculated value in a subsequent step depends upon data entered in the abandoned step, the value cannot be calculated for the recipe execution.
> - Some steps are required only if certain conditions are met. If these conditions depend upon the abandoned step, these steps remain inactive.

To abandon a step:

1. Click the **Status** icon, and select **Abandon** ⊘.
2. On the warning message, click **Proceed Anyway** or **Cancel**.
3. Enter any required signatures.
4. Click **Next** to proceed to the subsequent step. The step is now abandoned.

Abandoning Samples

When you need to set aside a sample, you can abandon it and proceed with the remaining samples. Abandoned samples retain the data you have collected, but do not appear in subsequent steps.

You can unabandon a sample if it proves to be usable. An unabandoned sample returns to the state it was in before it was abandoned. From here, you can complete recipe execution.

> **Tips:**
> ■ You can abandon samples that are **Available** ⭘ or **In Progress** ⋯.
> ■ You can unabandon samples that are **Abandoned** ⊘ or **Abandon Pending** ⊘.

To abandon a sample:

1. Click the **Status** icon, and select **Abandon** ⊘.

   The sample changes to **Abandon Pending** ⊘.

2. When you have collected all the required data for at least one sample, click **Next**.

   The sample changes to **Abandoned** ⊘. It does not appear in subsequent steps and is not required to complete the recipe.

To unabandon a sample:

1. Click the **Status** icon, and select **Unabandon** ↺.

   The status returns to the state it was in before it was abandoned.

2. Continue with data collection, and click **Next**.

   The sample appears in subsequent steps and is required to complete the recipe.

Chapter 6:
Reviewing Tasks

When a task is in progress or completed, you can use the Foundation Hub **Review** page to view its details, filter the results based on exception events and conditions, and perform a variety of review-related actions.

Basic Workflow for Task Reviews

The review cycle for a task typically involves the following steps:

1. The assigned analyst reviews the in-progress task and flags any invalid results. The analyst might also request someone else to informally review the results.

2. The analyst updates the task's lifecycle state to *Completed* if all is well. Alternatively, the analyst can abandon the task and create a retest task.

3. After completing the task, the analyst creates a formal review task, if required.

4. The analyst assigns the formal review task to a specific approver or to a group that identifies authorized approvers.

5. The approver executes the review task and decides on the appropriate next steps, which can be one or more of the following:

   - Request another review of the analyst's task.

   - Create a retest task.

   - Update the lifecycle state of the analyst's task to:

     - *Released*, if the results are accepted.

     - *In Progress*, if the results need corrections.

     - *Abandoned*.

6. If the approver updated the lifecycle state of the analyst's task, Task Planner considers the approver's review task to be complete and updates it to *Released*.

Using the Foundation Hub Task Review Page

You can open an in progress or completed task in the **Review** page if you are one of the following:

   - The analyst assigned to the task.

   - A member of the group requested for the task.

   - The owner or a collaborator group member of the task plan in which the task was created.

The page provides high-level information about a task execution, filters and icons you can use to find information about events and conditions of interest, and options you can select to update lifecycle state and request additional tests or reviews.

Open the page and review high-level information:

1. Open the task in the Review page by using one of the following methods:

   - From the relevant task plan, the My tasks widget, or the Tasks widget, find the task and click the **Review** option on the toolbar.

- From an open task execution session in Capture Hub, click **Review** [icon] on the action bar at the bottom of the page.

- From a Compose and Capture Recent Sessions page, click **Review** in the actions column of the relevant recipe.

- From the Foundation Hub Notifications widget, open a "completed" recipe message and click **More**.

The Review page opens in a new browser tab.

2. In the **Session Information panel**, review general information about the task.

   After you finish, collapse the panel to provide more space for viewing task's step details and results.

3. Review the icons in the **Filters panel**.

   An icon next to each event and condition in the Filters panel indicates how many times that event or condition affected the steps in the recipe.

   Step detail rows use these same icons to identify specific occurrences of an event or condition, and to provide access to the details about each occurrence.

4. In the **Samples panel**, note the samples associated with the task.

   If an equipment metrology or GMP event affects the recipe, Capture Hub displays an ***ATTENTION*** message at the top of the samples panel that instructs you to open the Capture session to review them.

Apply filters to focus in on specific events, conditions, and samples:

Use the Filters and Sample panels to filter the main content of the Review page for information about specific events, conditions, and samples.

1. If the **Filters** panel is collapsed, expand it.

2. To filter based on specific events and conditions, click the corresponding filters.

   - To clear a selected filter, click it again.

   - To recover the "number of occurrences" counts on the filter icons, which are removed when you select a filter, refresh the page.

   Each time you select or clear a filter, the Review page is dynamically updated to reflect your selections. The page uses OR logic—it lists all steps that match any of your selected filters.

3. To filter based on samples:

   - To see steps for specific samples, deselect all other samples.

     By default, all samples are selected. If the task has numerous samples, click **Clear All Samples** [icon], and then reselect the samples you need to see.

   - To find a specific sample, click **Search** [icon], and then start typing its name or ID.

   > **Notes:**
   > - Steps without samples are always displayed, because they are relevant to all samples.
   > - The system used AND logic between the two types of filters—if you apply Sample filters in combination with event and condition filters, the filter function finds all steps that meet any of the event and condition filters, and then reduces that set of steps to show only those that involve the selected samples.

Review step details:

1. To expand or collapse a step's details, click Expand ⊞ and Collapse ⊟.

   Each row provides details about a value or piece of information that was collected for the step. The rows are grouped into sections based on information type. For example, rows in the **Annotations** section display observations and names of attached files, and rows in the **Parameters** section display the values collected for each parameter in the step.

2. To view details about a parameter value, click its down arrow ⌄.

   The details include the user who collected the data and the method of data collection (for example, manual entry or calculation). When available, you can also click a link in the **Supporting Data** field to see additional information such as raw data from a device reading, or a container record from CISPro.

3. To view details about an event or condition that affected a value, click the corresponding icon in front of the row.

   For example, click the **Instrument Value** ⚖ icon to see the barcode of the device used to collect a value, and click the **Data Verification** ⊘ icon to see the list of verifiers and approvers who signed off on the value.

   For more information, see Event and Condition Filters and Icons.

4. To view information about an inactive step, click the red eye icon 👁.

Select appropriate lifecycle updates and actions:

Based on the results of your review, select appropriate actions such as lifecycle updates, additional tests, or additional reviews from the **Current State** menu. In some cases, you can select multiple actions during the same review session.

The available actions vary based on current lifecycle state, task type, and your rights to the task, but can include the following:

> Flagging Invalid Results
>
> Creating a Retest Task
>
> Abandoning a Task
>
> Requesting Formal Review of a Task
>
> Executing a Formal Review Task
>
> Reopening a Task for Corrections
>
> Releasing a Completed Task

In addition to being available from the Review page, these actions are available from Task Planner and various Task widgets.

Event and Condition Filters and Icons

The following table identifies the events and conditions that you can use for filtering data, and the corresponding icons that the Review page displays next to data rows for which the event or condition is relevant. You can click an icon that precedes a data row to see additional information about the specific occurrence of the event or condition.

Icon	Event or Condition	Filter Result	Additional Information
☑	Data Entry	Signatures entered for collected values.	The user name, collection date, and user-entered reason for the signature.
⚠	Data Modification	Signatures entered for re-collected values.	The actual value collected and the user name, collection date, and user-entered reason for the signature.
✓	Data Verification	Signatures entered to verify the accuracy of collected data.	The user name, collection date, and user-entered reason for the signature.
◉	Observation Exists	Observations recorded (text and uploaded files). **Note:** Observations apply to all parameters on the step.	The observation text.
✖	Out of Limit	Signatures entered for out of limit values.	The user name, collection date, and user-entered reason for the signature.
⚖	Instrument Value	Values collected from equipment.	The barcode of the device used to collect the value.
🖩	Calculated Value	Values calculated by an expression.	The expression.
👤	Manual Entry	Values collected manually.	N/A
🧪	Expired Materials	Container barcodes entered for an expired material, regardless of whether a signature was entered.	The container barcode and the user name, collection date, and user-entered reason, if a signature was entered.
🔄	Material Substitution	Container barcodes entered for a material that does not match the planned material, regardless of whether a signature was entered.	The container barcode and the user name, collection date, and user-entered reason, if a signature was entered.
🧪	Material Inventory	Values collected from an inventory system and values for materials registered to an inventory system.	The material name, field name, and container ID from the inventory system.
📍	Sample Property	Values mapped to sample data properties.	The sample ID and field name.

Icon	Event or Condition	Filter Result	Additional Information
⊘	Abandoned	Values that were abandoned (steps and samples), regardless of whether a signature was entered.	N/A
⌨	Manual Override	Value that was collected manually instead of being automatically collected from connected equipment, regardless of whether a signature was entered.	The user name, collection date, and user-entered reason for the signature, if a signature was entered.
📅	Confirm Override	Signatures entered to confirm a manual override.	The user name, collection date, and user-entered reason for the signature.
✏	Procedure Modification	Signatures entered to confirm a modification to the recipe, such as abandoning a recipe step or sample.	The user name, collection date, and user-entered reason for the signature.

Flagging Invalid Results

While a task is *In Progress*, the analyst assigned to the task, a member of the group to which the task was submitted, the task plan owner, or a task plan collaborator group member can flag any invalid results in the task.

By default, all results collected for a task are assumed to be valid. The Foundation Hub **Review** page provides options for flagging any results that are invalid.

> **Tip:** If a *Completed* task has invalid results, use the **Request Correction** action to return that task to *In Progress* so that you can flag the invalid results.

To flag invalid results:

1. Select the task in your task plan, My Tasks widget, or main Tasks widget, and then click **Review**.

   Alternatively, click **Review** 🔲 in the bottom bar of your process execution session in Capture Hub.

2. Find the first result you need to flag.

   > **Tip:** You can filter the results based on events, conditions, and samples.

3. Click the result's **Validity** cell, and then select the reason the result is invalid.

   The available reasons come from the Foundation Hub **Results Validity** vocabulary. Administrators control this vocabulary.

4. To automatically flag any other results that are invalid for the same reason, click ⯯ next to the cell, and then select what else to flag:

   - If the entire assay is invalid, select **All results for Task(s)**.
   - If the sample is bad, select **All results for Sample <ID>**.
   - If the collection process for the output parameter was bad, select **All results for <Parameter>**.

> **Note:** The **All results for parameter** option is not available for Capture Hub procedure executions.

5. For each additional invalid result, repeat Steps 3-4.
6. If appropriate, click the **Current State** button to choose additional actions. Actions available for in progress tasks include:

   ■ **Complete** – Indicate that the task is complete. If you select this option, these additional options become available:

      ▪ **Create Review Task** – See Requesting Formal Review of a Task.
      ▪ **Correction Needed** – See Reopening a Task for Corrections.
      ▪ **Release** – See Releasing a Completed Task.

   ■ **Abandon** – See Abandoning a Task.
   ■ **Retest** – See Creating a Retest Task.

Creating a Retest Task

When you review an *In Progress*, *Completed*, or *Released* task and determine that all or part of the task must be re-executed, you have two choices:

   ■ Copy the task by choosing **Retest**. Then configure the new task by removing any samples and excluding any output parameters that do not require retesting.
   ■ Create a new task from scratch and configure it to reflect only the aspects of the original task that require retesting.

The most appropriate choice depends on the scope of the original task and the retesting effort.

To create a retest task:

1. Do one of the following:

   ■ Open the task in the **Review** page, and then select **Retest** from the **Current State** button.
   ■ Select the task from your task plan, Tasks widget, or My Tasks widget, and then click **Retest** on the toolbar.

2. Adjust the samples and parameters required for the retest task as described in Configuring a Task and its Sample Associations.

Result:

■ The retest task is created in its *Draft* lifecycle state and the associated samples are put in their *Planned* lifecycle state.

■ The ID of the retest task identifies it as a retest task, as well as identifying the task being retested. Example: **T002 (retest of T001)**.

■ The current owner of the task plan or a member of its collaborator group can now delegate or self-assign the retest task.

■ The retest task inherits the lifecycle policy of the task being retested.

Abandoning a Task

You can abandon a *Draft*, *Submitted*, or *Assigned* task if you are:

   ■ The current assignee

■ A manager of the group requested for the task

■ The task's requestor (creator)

You can abandon an *In Progress* task only if you are the assignee or a manager of the requested group. **Exception:** To abandon an *In Progress* **review** task, you must be its creator or its assignee.

To abandon a task:

1. Do one of the following:

   ■ Open the task in the **Review** page, and then select **Abandon** from the **Current State** button.

   ■ Select the task from your task plan, Tasks widget, or My Tasks widget, and then click **Abandon** on the toolbar.

   > **Note:** If the task is an in-progress procedure (recipe), you cannot abandon it unless you also abandon all other in-progress tasks for that recipe. If you abandon all of a recipe's tasks, the Capture control recipe is withdrawn.

2. Ensure that the task you abandoned is not listed as a predecessor for any other tasks. Tasks that specify an abandoned task as a predecessor cannot be executed.

Result:

■ The task no longer appears in Task widgets or task plan Task grids, unless you change their filters to include *Abandoned* tasks.

■ If any results were collected for the task, the task plan's Activity Results tab displays the entire results row in **red** text. Users who view the results in this tab can control whether and how invalid results are displayed.

Reopening a Task for Corrections

If a task that has already been completed or released requires corrections, you can request the corrections and, optionally, flag the specific invalid values that require collection. To request corrections to a task, you must be one of the following:

   ■ The user assigned to the task

   ■ A designated manager for the group to which the task request was submitted

   ■ The task's creator or current owner

To request correction to a task:

■ Open the task in the **Review** page, and then select **Correction Needed** from the **Current State** button.

■ Select the task from your task plan, Tasks widget, or My Tasks widget, and then click **Correction Needed** on the toolbar.

Result:

■ The task that you reviewed changes from its current state back to *In Progress*.

■ The task reappears in the My Tasks widget of the assigned analyst.

■ A notification about the task appears in the analyst's Notifications widget.

■ If you requested the correction while performing a formal review task, your review task transitions to *Released*.

Requesting Formal Review of a Task

You can request a formal review of any *Completed* task if you are:

- The assigned analyst
- The task plan owner
- A member of the task plan's assigned collaborator group

When you request formal review, Task Planner creates a new task of type *Review*. The Review task appears on the same task plan as the task to be reviewed. Its ID is suffixed by "Review Task for: <ID>." You can choose a Group, Assignee, Due Date, and Priority for the new Review task.

> **Tip:** You can request multiple formal reviews of the same task by repeating this procedure as many times as necessary.

To create a formal review task:

1. Do one of the following:
   - Open the task that requires review in the **Review** page, and then select **Create Review Task** from the **Current State** button.
   - Select the task from your task plan, **Tasks** widget, or **My Tasks** widget, and then click **Create Review Task** on the toolbar.

2. In the **Create Review Task** window, use the **Assignee** and **Group** fields to delegate the task as follows:
   - To submit the task to a department, select the department from the **Group** field.
   - To assign a specific approver, select that approver from the **Assignee** field.
   - To submit the task to the general population of approvers, leave both fields blank.

     In most cases, you must enter a **Group** or an **Assignee**. A configuration option controls which fields are required.

3. If appropriate, select a past, present, or future **Due Date**.

4. If the task is high-priority, select **Expedited**. Otherwise it defaults to **Standard**.

5. If appropriate, update the **Instructions**, which default to the name of the activity.

6. Click **Submit**.

Result:

- If you selected a Group and no Assignee, the review task is created in its *Submitted* lifecycle state and displayed on the **Available Tasks** widget of all group members. Any group member can self-assign the task. If the group has managers, a group manager can assign the review task to a group member or transfer it to a different group.

- If you selected an Assignee, the review task is created in its *Assigned* lifecycle state and displayed on the assignee's **My Tasks** widget.

- If you select both an **Assignee** and a **Group**, the task is created in its *Assigned* lifecycle state and it appears on the **My Tasks** widget of the assignee. In addition, a notification about the assignment is generated for each designated manager of the group.

- The review task inherits the lifecycle policy selected for the task being reviewed.

Executing a Formal Review Task

As the assigned reviewer or approver for a *Completed* task, you can use the **Review** page to examine the task results, compare them against any applicable limits, and update the task's lifecycle state.

Your options for lifecycle updates vary based on task type, but can include one or more of the following: approving (releasing) the task, sending it back to the assignee for corrections, abandoning it, and generating a retest task.

To execute your formal review task:

1. Select your formal review task, and then click either the toolbar **Execute** command or the link in the **Task Id** column.

   The task that requires your review opens in the **Review** page.

2. Evaluate the task results as described in Using the Foundation Hub Task Review Page.

3. Click the **Current State** button, and then select the appropriate action:

   - Correction Needed
   - Released
   - Retest
   - Abandon

4. Click **Back** to close the **Review** page, and then verify that the Tasks grid reflects the expected result of your actions. In addition to updating the lifecycle state of the task that you reviewed, Task Planner releases your formal review task.

   > **IMPORTANT!** Click **Refresh** if the grid does not show your changes to the lifecycle of the task that you reviewed. If it still does not show them, repeat the actions by using toolbar options instead of the Review page options.

Releasing a Completed Task

After a task is completed, you can review it and release it by using the Foundation Hub **Review** page.

To release a task that *does not* require formal review:

1. Select the task in the relevant task plan or Tasks widget.

2. On the toolbar, click **Review**.

3. Click **Current State** and change the value from **Completed** to **Released**.

To release a task that *does* require a formal review:

1. Select your formal review task, and then click either the toolbar **Execute** command or the link in the Task ID column.

   The task that requires your review opens in the **Review** page.

2. Evaluate the task results as described in Using the Foundation Hub Task Review Page.

3. Click the **Current State** button and select **Released**.

Result:

- The task transitions to its *Released* lifecycle state.
- If you released the task while performing a formal review task, your review task also transitions to *Released*.

Running Reports and Protocols

You can run the available reports and protocols from any step in a Capture Hub recipe execution. For example, you might run an approval report to review or share the results of an execution in any state. Additionally, you might run a protocol when performing activities that are related to, but not part of, the execution, such as sample creation or material reconciliation.

Recipes can include the following types of reports or protocols:

- **Approval Report** – The designated report for recipe approval. A recipe might use the built-in Recipe Approval Report 2020 or a customized report.
- **Execution Reports** – Any other reports or protocols that are relevant to the recipe, if applicable. For example, a protocol for reconciling materials.

> **Tip:** All reports and protocols are generated by Pipeline Pilot protocols.

To run reports or protocols for a recipe execution:

1. To open the Capture Hub recipe execution, find the task and click the **Task Id** link.

2. Click **Related Protocols** and select the desired report or protocol.

   The recipe approval report is listed first, followed by other reports and protocols that are configured for the recipe.

3. When the protocol finishes loading, click the **PDF** icon.

   The protocol output opens in a new tab. The output format depends on how the protocol works. For example, a report might generate a PDF file that you can save or print. Or, a protocol might open an HTML report viewer that requires you to enter parameters.

4. If an HTML report viewer or another interface opens, enter or gather any required information. When you are done, you can return to the current step.

Recipe Approval Report 2020

Recipe authors can associate an approval report with their recipes. Approval reports enable reviewers to determine whether a recipe was executed as planned. A built-in report, **Recipe Approval Report 2020**, provides the following information in a PDF document.

> **Tip:** You can review and share the results of a recipe execution by running the approval report at any time.

Header Section

The header section provides metadata about the Capture Hub recipe execution, the associated Compose recipe, and the associated Foundation Hub activity. The report repeats this information at the top of each page.

Property	Description
Author	The recipe author.
Life Cycle State	The lifecycle state of the recipe execution.
Activity State	The activity lifecycle state in Foundation Hub.
Type	The recipe type in Compose (General, Site, Master, Control).
Batch ID	The material batch identifier for the recipe. This value might have been entered manually or retrieved from an inventory system.
Project ID	The project identifier for the recipe.
Experiment ID	The identifier of the associated experiment, for recipes generated from BIOVIA Workbook.
Method Category	The category in which the recipe was created.
Date Created	The date when the recipe was created.
Effective Date	The date on which the recipe became available for use.
Expiration Date	The date on which the recipe is no longer available for use.
Method ID	The unique identifier for the recipe. When a recipe is created, this value is automatically generated based on the Method Category.
External ID	The identifier in the Reference Data Management system used to track the recipe through the Compose API.
Contributors	A list of users who collected or modified data for the recipe execution. **Note:** Users who enter only signatures, but not data, are not listed as contributors. For example, if a user enters a data verification signature to witness another user's data entry, the signer is not added as a contributor.

Recipe Properties

Not supported in the Capture Hub 2021 HF1 release.

Materials

This section lists the following information for all materials that are used or prepared in the recipe execution.

Property	Description
Name	The name and synonym of the material. The synonym is shown in parentheses.
Container ID	A list of barcodes for containers used in the recipe execution. When you add or register containers on a step, they become linked to the material.
Sample ID (Material ID)	The unique identifiers for the sample, if applicable, and for the material in Foundation Hub. The material ID is shown in parentheses.
Lot/Batch	■ For input materials, the manufacturer's lot number in the inventory system. ■ For output materials, the batch number of the generated material.
Class	The material classification.
Role	The role defined in the recipe for the material. ■ **Input** – Used as an ingredient. ■ **Intermediate** – Prepared as a step, but not registered in an inventory system. ■ **Output** – Prepared and registered in an inventory system as a result of the recipe execution.
Amount	The planned and actual amounts of the material for the recipe execution.
Extended Properties	Not supported in the Capture Hub 2021 HF1 release.

Samples

This section lists the following information for all samples used the recipe execution.

Property	Description
Name	The sample name in the recipe.
Sample ID	The unique identifier of the sample in Foundation Hub.
Sample Name	The sample name in Foundation Hub.
Role	The role of the sample in the recipe (Process input).
Description	The sample description in the recipe.

Equipment

This section lists the following information for all equipment used in the recipe execution.

Property	Description
Name	The name of the equipment in the recipe.
Class	The category of the equipment (for example, balance or pH meter).
Type	The type of the equipment (for example, the make and model).
Instance	The name of the specific device. The nickname is shown in parentheses. If the equipment is not planned in the recipe, the device is listed as "Ad Hoc."

Process Section

This section provides the following information for each recipe step, including incomplete steps and abandoned steps. For steps with multiple samples, the report lists each sample as a separate step. If samples are used on step 0, the report lists all samples after the step 0 samples as child samples.

Section	Description
Step Header	■ The step number and status. ■ The step name. For steps with multiple samples, the sample number appears in parentheses. ■ The instructions, notes, and cautions for the step, if applicable. If the instruction text includes calculated values, the calculation results are displayed for the step or the sample, for steps with multiple samples. Calculated values appear empty until the values in the expression have been collected. ■ The recorded observations for the step, if applicable. If the value was modified, the report lists a history of every change. ■ A list of uploaded files for the step, if applicable. ■ The user who last updated or completed the step.
Materials	The material amounts and containers for the step, if applicable. The report shows the event and the reason, if a signature was collected. If a value was modified, the report lists a history of every change.
Samples	The samples for the step, if applicable. The report shows samples only when data has been collected for them.
Equipment	The equipment for the step, if applicable.
Parameters	The data parameters for the step, if applicable. For each parameter, the report shows the following information: ■ Parameter name. ■ Planned value, including the "in limits" range and the expression, if applicable. ■ Collected value, including when it was collected, who collected it, how it was collected (instrument, inventory, sample value), the event, and the reason, if a signature was entered. If the value was modified, the report lists a history of every change. For repeated data, each parameter is listed multiple times, once for each repeated row.

Recipe Batch Review

This section displays a summary of the following events and conditions, listed by affected parameter. For repeated data, each parameter is listed multiple times, once for each repeated row.

■ **Data collection method** – A parameter is flagged with an icon to indicate how the data was collected. If the value was modified, the report lists a history of every change.

　▪ Calculated Value ▦

　▪ Instrument Value ⚖

　▪ Manual Entry 👤

　▪ Material Inventory ⚗

- Observation Exists ⊙
- Sample Property ⦿
- **Signature events** – A collected value is flagged with an icon if a signature is required because of it, regardless of whether the signature was collected. The report lists a history of any collected signatures.
  - Data Entry ☑
  - Data Verification ⊘
  - Data Modification ❶
  - Out of Limit ⊗
  - Procedure Modification ✏
  - Manual Override 🖑
  - Override Confirmation

    The report does not currently display a column or icons for Override Confirmation signatures, but it does list them in the **Entries/Changes** table.
- **Exceptions** – An exception is flagged with an icon regardless of whether a signature was required or collected because of it. The report lists a history of any collected signatures.
  - Abandoned Step 🚫
  - Expired Container ⚗
  - Material Substitution ⟳

Workflow Events

This section provides the following information about each change to the recipe execution's lifecycle state.

Property	Description
Actual Value	
Event	The change to the lifecycle state.
Time Stamp	The date and time when the change occurred.
Contributor	The user who made the change.
Reason	The reason for the change, if a signature was entered.

Chapter 7:
Reviewing Task Plan Results

You can monitor incoming results of in-progress tasks and check final results of completed tasks by using the following task plan tabs:

■ **Results tab** – Use this tab to see a table that provides a separate row for each result value in the entire task plan.

   You can toggle this tab between two modes:

   ▪ In the default sample-level mode, a separate row is displayed for each output value, for each individual sample in the task plan.

   ▪ In task-level mode, a separate row is displayed for each input and each output value, for each individual task in the task plan.

■ **Activity Results tab** – Use this tab to see a table that provides the results for one selected activity at a time.

   Each row of the table identifies a single sample associated with the activity, and the columns provide the result values collected for that sample. If the activity was performed more than once on the same sample, the table includes separate rows for the results from each repetition.

   You can pivot an activity results table based on a select column in order to easily see the results grouped under the parameter names (pivot on parameter) or to see the parameter names grouped under the results (pivot on value).

■ **Results: Pivot tab** – Use this tab to see a separate activity result table for each activity that has results and to generate reports.

   This tab is available only if your administrator has configured a *Pivot Results Pipeline Pilot Protocol*. You access this tab by clicking the **Pivot** button on the **Results** or **Activity Results** tab.

Viewing All Sample-level Output Values

To display the value of each result (output parameter value) obtained for each sample in a task plan, one result per row:

1. Click the task plan's **Results** tab.

2. Ensure that the **Sample Level** filter is set to **Yes** (its default).

3. If your task plan includes in-progress procedure tasks with complete results for any of its step or samples, click **Retrieve Results** to include those results. By default, results for procedure tasks are included only if the *entire* procedure is complete.

   > **IMPORTANT!** If your process requires you to fill out attribute and interpretation fields on a parameter, avoid doing so until the Capture session is complete. Otherwise, when the Capture session does complete, its results will overwrite the content that you entered in these fields.

Each result obtained for each sample is presented in its own row. *Bold italic* values are values that were added or changed since the last time you viewed or refreshed the **Results** tab. If you switch browsers, disable cookies, or use a private browsing mode, changed values are not highlighted.

The **Default** view provides the following information about each result, if available. To see additional columns, change the selected **View** from **Default** to **All**. For more information, see Filtering and Sorting Grid Data.

Column	Description
Sample Id	Identifier of the sample associated with the result in this row.
Sample Name	Name of the sample.
Sample Project	Name of the sample project with which the sample is associated, if relevant.
Task Id	Identifier of the task performed to obtain the result.
Activity	Name of the activity on which the task is based.
Activity Version	Indicates the version of the activity on which the task is currently based, which defaults to the version on which it was created.
Original Activity Version	Indicates the version of the activity that was in effect when the task was created.
Most Current Flag	Indicates whether the task's **Use Latest Activity** setting is selected.
Method Id	If the task is based on an activity published from a Compose recipe, this is the Compose ID for that recipe. Otherwise, it can be the identifier of a document or other artifact that describes how the activity is to be performed.
Method Version	Version of the method.
Task External Id	If the task was added to Task Planner by an external application, this field lists the task identifier used by that application.
Task Plan Project	If the task plan is associated with a specific project, name of that project.
Task Status	Current status of the task associated with this sample result.
Characteristic	Name of the output parameter whose results are identified in this row.
<Display Name> Result (Referred to as *Recorded Result* on Activity Results tab)	Raw value collected for the output parameter identified by Display Name. **Note:** If a sample has tasks based on more than one version of the same activity and the parameter Display Names are the same but their value types are different, the results are displayed in separate columns. The column headings indicate the display name and the value type. For example, if one task uses a version of the activity in which dosage is expressed as an integer and another uses a version in which dosage is expressed as a quantity, the column headings are *Dosage Forms (Integer) Result* and *Dosage Forms (Quantity) Result*.

Column	Description
<Display Name> Formatted Result (Referred to as *Reported Result* on Activity Results tab)	Value that resulted from applying the rounding and formatting rules defined for this parameter in the activity on which the task is based. For more information about recorded and reported result values, see Viewing Recorded and Reported Values.
Validity	Indicates whether the result has been flagged as invalid. By default, all results are set to valid. Result values are indicated in brown type if they have been flagged as invalid.
Attribute, Interpretation	If present, **Attribute** and **Interpretation** columns display additional parameter information that you enter by using a custom protocol (toolbar button). Adding such protocols to Task Planner enables an organization to collect special information based on Foundation Hub vocabulary definitions. For more information, contact your administrator.

■ To retrieve the most current results, click the **Refresh grid data** icon next to the **View** selector.

■ To view the history, click the ⊙ **View history** icon.

Viewing All Task-level Input and Output Values

To display the value of each task-level input and output parameter for each sample in a task plan, one value per row:

1. Click the task plan's **Results** tab.

2. Ensure that the **Sample Level** filter is set to **No**.

3. If your task plan includes in-progress procedure tasks with complete results for any of its steps or samples, click **Retrieve Results** to include those results. By default, results for procedure tasks are included only if the *entire* procedure is complete.

> **IMPORTANT!** If your process requires you to fill out attribute and interpretation fields on a parameter, avoid doing so until the Capture session is complete. Otherwise, when the Capture session does complete, its results will overwrite the content that you entered in these fields.

Result

Each value (input and output) for each task is presented in its own row. *Bold italic* values are values that were added or changed since the last time you viewed or refreshed the **Results** tab. If you switch browsers, disable cookies, or use a private browsing mode, changed values are not highlighted.

The **Default** view provides the following information about each value. To see additional columns, change the selected **View** from **Default** to **All**. For more information, see Filtering and Sorting Grid Data.

Column	Description
Task Id	Identifier of the task associated with the value in this row.
Task Status	Current lifecycle state of the task.
Parameter Name	Name of the task-level parameter whose value is identified in this row.
Input/Output	Indicates whether the result was provided as *input* to the task or was

Column	Description
	obtained as *output* from the task. For example, an instruction or material value might be provided as input.
Type	The data type for the parameter, such as *Text*, *File*, *Numeric*, *Boolean*, or *Quantity*.
Value	■ For most parameters, this is the value collected for the parameter. ■ For File-type parameters, the Value field can provide a link to an uploaded file. Clicking the link either opens the file in a new browser tab or window or downloads it to your system.
Unit	For values of type *Quantity*, the unit of measurement in which the value is expressed.
Method ID	If the task is based on an activity published from a Compose recipe, this is the Compose ID for that recipe. Otherwise, it can be the identifier of a document or other artifact that describes how the activity is to be performed.
Method Version	Version of the method.
External ID	Identifier of an external document associated with the task (for example, a BIOVIA Workbook experiment).
Parameter Version	Version of the parameter.
Attribute, Interpretation	If present, **Attribute** and **Interpretation** columns display additional parameter information that you enter by using a custom protocol (toolbar button). Adding such protocols to Task Planner enables an organization to collect special information based on Foundation Hub vocabulary definitions. For more information, contact your administrator.

■ To retrieve the most current results, click the **Refresh grid data** icon next to the View selector.

■ To view the history, click the ⊙ **View history** icon.

Viewing Results for a Specific Activity

You can select a specific activity from the Task Planner's **Activity Results** tab to see results that have already been collected for that activity:

■ If no results (or only task-level results) have been collected, nothing is displayed.

■ If results for any sample-level parameters have been collected, the tab displays them in a grid that provides a row for each sample that has any results.

In this grid, **red** text indicates invalid data:

■ If an entire row is red, the task was abandoned.

■ If a specific result (cell) value is red, that value was flagged by a reviewer as invalid.

> **Tips:**
>
> To control how invalid data is displayed, right-click the grid and select or deselect the following options:
>
> ■ **Flag Invalid & Abandoned Data** – controls whether invalid data is displayed as red or as normal (black) text.
>
> ■ **Hide Invalid Results and Tasks** – controls whether to hide invalid rows and cell values. When this option is selected, the other option has no impact.

To view results for an activity:

1. Click the **Activity Results** tab of task planner.
2. Open its **Filter** panel, select the activity, and (optionally) select the statuses.
   ■ The activity results are displayed immediately.
   ■ The table is automatically refreshed if you select a different activity or select a status filter.

Columns in Activity Results

The default view provides the following columns:

■ **Contextual information columns** – the first three columns identify the **Sample ID**, **Sample Name**, and **Task Id**.

■ **Group Index column** – if the activity was performed more than once on the same sample, this column provides a repetition number so that you can distinguish between the repetitions. This column is hidden if there are no repetitions.

■ **Sample Result columns** – the sample result columns are displayed next, in the order defined in the activity. Each sample output parameter for quantity and numeric parameters has a *pair* of columns: one for the recorded result and another for the reported ("formatted") result. For more information, see Viewing Recorded and Reported Values.

■ **Site-specific Result columns** – if your organization has added columns based on its site-specific Foundation Hub vocabulary definitions, **Attribute** and **Interpretation** result columns are displayed next. For information about them, contact your administrator.

■ **Task Result columns** – if task-level, as well as sample-level result parameters are defined for the activity, the task result columns are interspersed with the sample result columns in the order defined in the activity.

> **Note:** Task-level results cannot be displayed for an activity unless that activity also has sample-level results. Consequently, tasks whose parameters are all at the task level are never displayed on this tab.

Pivoting the Results for a Specific Activity

You can pivot the results shown for an activity on the **Activity Results** tab to group the activity's results columns by either of the following:

- The parameters in a selected column (for example, a column that identifies Substance A, Substance B, and Substance C).
- The values that were collected for the parameters in the selected column (for example, Yellow, 12g, 95%).

If you group by parameter, the table displays a subheading for each parameter name, and each parameter subheading spans the result columns for that parameter. If you group by value, the table displays a subheading for each value, and each value subheading spans the parameter columns for which that value was obtained.

To view a pivoted results table:

1. View the results for the activity by using the **Activity Results** tab.

2. If needed, use the **Filter** panel, the **View** field, and the column context menu options to control what content to display and to ensure that the column that you need to use for pivoting is displayed.

3. If the activity required replicates or injections (repeated collections of a parameter value for the same sample), open the column context menu for one of the repetitions and click **Group By Value for Pivot**. Otherwise, only the last value collected will be displayed.

   > **Note:** To support identification of each replicate value in its own row in a pivot table, the activity on which the task is based must have a separate parameter configured for each replication. Example: Injection1, Injection2, and Injection3.

4. Click the heading of the column to use for pivoting.

   > **Notes:**
   > - Pivoting is supported only for columns of type **Quantity**, **String**, **Vocabulary**, and **Numeric**.
   > - If two or more rows have the same values in their **Sample ID**, **Task ID**, and **Group By** columns and also have the same value in the column that you selected in Step 3, only one of those rows is displayed. For such cases, right-click the column you selected during Step 3 and click **Reset Column**. Then re-perform Step 3, this time choosing a column whose values are unique.

5. From the column context menu, click one of the following:
   - To pivot based on the parameter names listed in the column, click **Pivot on Parameter**.
   - To pivot based on the property values collected for the parameters, click **Pivot on Value**.

The tab is updated to provide a series of color-coded column headings that reflect the column and pivot option that you chose. Each of these column headings spans its own set of result columns.

To pivot based on a different column, click that column and choose your pivot option. The original activity result table is re-pivoted based on your new choice. You cannot pivot on more than one column at a time.

In a pivoted result table, you can use the other column context menus as usual to filter, sort, and control what is displayed and to export the raw data to an Excel or to a csv file. To return to the unpivoted activity results view, you can select the **Reset Column** option for the column on which you pivoted.

You cannot save a pivoted view.

Viewing the Results for All Activities

If you have the **Pivot Results** Pipeline Pilot protocol registered in Foundation Hub, you can click a single button to generate a set of result tables that includes one table for each activity in your task plan. When you do so, Task Planner displays a new tab, **Results: Pivot**, that contains the tables and provides options to output them to PDF and Excel files.

> **Note:** To use this feature for task plans that have already been *released*, your Pipeline Pilot protocol must be named **Pivot Results**. This name is not required for task plans that are not yet released.

To view results for all activities:

1. On the BIOVIA landing page, expand 🔗 My task plans.
2. In the **My Task Plans** widget, click the **Task Plan Id** of the plan you want to open.
3. In the **Task Planner**, click either the **Results** tab or the **Activity Results** tab.
4. Click the **Pivot** button.

   The protocol adds a **Results: Pivot** tab to Task Planner and displays a post-processing message until it finishes compiling the data. If there are a lot of results, compilation can take several minutes.

   > **Tip:** After the tables display, you can scroll through them or use the hyperlinks above each table to jump directly to a specific table.

5. To output a report, click the links at the top of the grid.
   - To output the following task plan information, click **Generate pivoted PDF**:
     - Task Plan ID (runsetId)
     - Name
     - Lifecycle State
     - Last Updated date
     - Locked status
     - Creation date
     - Creator Account type
     - Creator Name
     - Creator Username
     - Collaborator Group Name
     - Collaborator Group Display Name
   - To output the task plan information and each activity table to a PDF file, click **Generate pivoted Activity tables PDF**.
   - To output to a Microsoft Excel file that contains a separate worksheet for each activity table, click **Generate pivoted Activity tables_Excel**.

Viewing Recorded and Reported Values

Numeric and *quantity* parameters have two value columns, one for **Recorded** values and the other for **Reported** values.

If only one of these columns appears, click its heading to switch to the other. Alternatively, configure the grid to display both columns.

Recorded Values

The recorded value is one of the following:

- **Full-precision, raw value (default)**. The value that was obtained.
  - If the parameter type is quantity, the column displays the units alongside the value.
  - If the value is a calculated statistical mean, the column also displays the relative standard deviation (RSD) and the number of data points collected to calculate the mean. For example, **100 mL ± 0.5 (3)** indicates a mean value of 100 mL that is based on three collected values and that has an RSD of ±0.5. To see or export the individual data points, add the parameter's RSD and Count columns to the table by using the column selector.
- **Protocol-adjusted value**. If your company uses a Pipeline Pilot protocol to control the significant digits for recorded or reported values (or both), the displayed value reflects the adjustment.

Reported Values

The **Reported** value is the final value that is reported:

- If the activity specifies *Raw* as the **Format Method**, the reported value is the same as the recorded value.
- If the activity specifies *Decimal* or *Significant Figures*, the reported value takes into account the activity's settings for **Rounding Rule**, **Significant Digits**, and **Reported Value Precision**.

For example activity configurations and resulting reported values, see Rounding Rule Examples.

Rounding Rule Examples

The following table provides rounding rule examples. The Format Method, Rounding Method, and Reported Value Precision are specified in Foundation Hub, in the activity configuration. For more information, see the *Foundation Hub Administration Guide*.

Format Method	Rounding Method	Reported Value Precision	Raw Value	Formatted Value
Decimal	Ceiling	1	3.1415	3.2
		2	3.1415	3.15
	Floor	2	3.1415	3.14
		3	3.1415	3.141
	HalfUp	2	3.1415	3.14
		3	3.1415	3.142
		3	1.8	1.800
	HalfUpNoPadding	3	1.8	1.8
Raw	HalfUp	3	3.1415	3.1415
		3	1.8	1.8

Format Method	Rounding Method	Reported Value Precision	Raw Value	Formatted Value
SignificantFigures	Ceiling	1	3.1415	4
		2	3.1415	3.2
		3	3.1415	3.15
	Floor	1	3.1415	3
		3	3.1415	3.14
		4	3.1415	3.141
	HalfUp	3	3.1415	3.14
		4	3.1415	3.142
		3	1.8	1.80
	HalfUpNoPadding	3	1.8	1.8

Chapter 8:
Administering Samples

You can access samples from two areas of Foundation Hub.

To access all samples in a collaborative space:

1. If you are not already working in it, switch to the collaborative space.

2. On the BIOVIA landing page, ⊡ expand the sidebar.

3. On the ⌂ Home panel, click ⊞ **Widgets > Samples**.

> **Note:** The Samples widget shows not only the samples created in the collaborative space you are in, but also *all samples associated with shared task plans* (task plans that have been made visible across collaborative spaces).

To access the samples in a specific task plan:

1. If the task plan is not shared across collaborative spaces, switch to the space in which it was created.

2. On the BIOVIA landing page, expand ⊡ My Task Plans.

3. In the **My Task Plans** widget, click the **Task Plan Id**.

4. In the Task Planner, click the **Samples** tab.

> **Tip:** To find all tasks required for a specific sample or group of samples, see Finding the Tasks for Specific Samples.

The **Samples** widget and **Samples** tab on a task plan display samples whose lifecycle state is currently *Planned*, *Collected*, *Available*, or *Ready for Dispose*. Samples that have been disposed of are not listed. By default, the following columns are displayed, but you can change the selected **View** from **Default** to **All** to show all columns. For more ways to control what you see, refer to Filtering and Sorting Grid Data.

Column	Description
ID	Unique identifier for the sample. ■ To view the sample's Chain of Custody report, click the ID. ■ To view tasks associated with the sample, click its Expand ⊳ icon.
Sample Name	Name of the sample.
Parent Sample	Identifies the sample from which this sample was split, if it is a split. Otherwise, this field is blank.
Master Sample ID	Same as the sample ID, unless this sample is the result of a split. For split samples, the Master Sample ID identifies the *original* source sample, which might be this sample's parent, grandparent, great-grandparent, and so on, depending on how many levels of splits occurred.

Column	Description
	Tip: You can find samples that are *not* the result of a split by displaying a related column, **Master Sample Y/N**, and filtering for samples whose value is **N**. You cannot, however, filter for samples that have never been split by filtering for a **Y**, because original samples have a value of **Y** regardless of whether they have been split.
Status	The current status of the sample: ■ Planned ■ Collected ■ Available ■ Ready for Dispose
Container	The CISPro container from which the sample was collected.
Lot	The ID of the Material Lot from which the sample was collected.
Material Name	The name of the material in the associated Material Lot.
Source Type	The source from which the sample was received: ■ Another sample ■ Container (CISPro) ■ Batch or Lot (CISPro)
Location Name	The lab in which the sample is currently located.
Amount	The current amount or quantity of the sample.
Expected Concentration	The expected concentration of the sample.
Group	The sample group to which the sample is associated. When a set of samples has something in common other than a regular property value, you can easily find that set of samples by combining them into a group.
Owner	The user who created the sample.
Updated	The date and time on which the most recent action was performed on the sample.
Project	The project associated with the sample.

Sample Lifecycle

The available workflow actions that you can perform on a sample are based on its current lifecycle state. When you create a sample in either the **Samples** widget or in the **Samples** tab of a task plan, the sample starts its lifecycle in the *Planned* state. The current lifecycle state of a sample is displayed in the **Status** column on the Samples widget.

The following table summarizes the lifecycle of a sample and identifies actions that can be performed for each lifecycle state.

Workflow Step	Resulting Lifecycle State	Possible Next Actions (can vary based on role and config)
1. Create sample (a sample record)	Planned	■ Print Label ■ Collect ■ Delete ■ Split ■ Group ■ Ungroup ■ Edit
2. Collect sample (the physical sample)	Collected (or Collection Failed)	■ Receive ■ Print Label ■ Split ■ Pool ■ Group ■ Ungroup ■ Move ■ Edit ■ Mark for Disposal ■ Dispose
3. Receive sample (This step is used only in workflows where there is a lag between collection of a sample and availability of that sample for tasks. The receipt date is used in turnaround reports.)	Available	■ Print Label ■ Split ■ Pool ■ Group ■ Ungroup ■ Move ■ Edit ■ Mark for Disposal ■ Dispose ■ Return
4. Return sample (if reusable)	Collected	■ Receive ■ Print Label ■ Split ■ Pool ■ Group ■ Ungroup ■ Move ■ Edit

Workflow Step	Resulting Lifecycle State	Possible Next Actions (can vary based on role and config)
		■ Mark for Disposal ■ Dispose
5. Mark sample for disposal (if not reusable)	Ready for Dispose	■ Dispose ■ Move ■ Group ■ Ungroup ■ Split ■ Pool ■ Return (back to collected)
6. Dispose of sample (after disposing it)	Disposed	No actions available

Creating Samples

You can identify planned samples by using the **Create** command on the (All) Samples widget or on the Samples tab of a specific task plan:

- From the widget, you can identify samples to create from scratch, from an existing sample, and from a container.
- From a task plan, you can identify samples to obtain from an additional source: the list of lab materials identified on a task plan's Materials tab. For information about creating samples from a lab material, see Associating Samples with a Task Plan.

To create planned samples from scratch, an existing sample, or a container:

1. Open the **Samples** widget and click **Create**.

2. Create an ID for each planned sample.

   - To create system-generated IDs, enter the **Number to Generate**.
   - To enter specific IDs, click **Custom**, and then scan, paste, or manually enter each ID. Enter a comma, space, or line break between IDs.

3. To allow the person who collects the sample to select its source, leave the source-related fields blank and skip to Step 4. Otherwise, do one of the following:

   - To require collection from a container of material that your inventory system identifies, click **Scan Sample Source**. Then scan the barcode on that container, or on a different container of the same material. If you scan a container with a lot number, the system requires the collected material to come from a source that has the same material and the same material lot number.
   - To require collection from an existing sample that Foundation Hub identifies in the collaboration space in which you are working, select **Sample** from the **Sample Source Type** list, click **Scan Sample Source**, and then scan the required sample.

4. If relevant, enter values for other sample properties on this window, and then click **Ok**.

> **Tip:** If you are creating a set of samples, you can enter the most common values now, and then edit them later to account for any variations.

- **Sample Type** and **Sample Container Type**
- **Amount** and **Amount Unit**.

> **Note:**
>
> If your sample consists of a package of equivalent items, such as a bag that contains 10 vials of 5ml each, represent it as follows:
>
> - In **Amount**, enter the number of items (10) and from **Amount Units** select **Each**.
> - In **Each Amount**, enter the amount per item (5) and from **Each Amount Unit** select the appropriate unit of measurement (ml).
>
> An alternative method is to generate ten separate samples by entering 10 as the Number to Generate, and specifying 5 as the Amount and ml as the Amount Unit.

- **Expected Concentration** and **Expected ConcentrationUnit** of measurement.
- **Planned Collection Date**.
- **Dilution Factor**.
- **Owner**, **Location**, and **Storage Requirements**.
- **Project**, **Purpose**, and **Process Stage**.
- **Description**, **External ID**, **Handling Instructions**, and **Comments**.

  > **Note:** The External ID is the identifier of a related sample in an external system.

5. Use the **Grid Edit** mode or **Edit Samples** window as described in Editing Sample Properties to do any of the following:

- Enter values in fields that are not on the Create Samples window, such as *extended sample properties* and stability properties.
- Enter values for fields that you left blank.
- Edit mistakes or placeholder values.
- Change values in bulk by using grid features such as copy-and-paste and fill-down.

Result:

- Each sample is created in its *Planned* lifecycle state.
- The samples are added to the Samples widget.
- You must collect the samples to make them available for use.

Editing Sample Properties

You can edit the properties of a sample in any of its lifecycle states by using either of the following:

- **Edit Samples** window. This window displays only core properties and is useful to:
    - Edit a single sample and see its core properties in a form-like mode that requires no horizontal scrolling.
    - Edit a selection of samples that require the same changes. If you chose samples that have different values for a property, Task Planner appends **(multiple values)** to the property's field label and does not display the values.

    This window does not display extended properties, stability properties, sample group, or parent-child properties.

- **Grid Edit** mode, which supports editing of all editable properties *except* **Sample Source**, which requires the **Edit Samples** window. The grid edit mode is useful to:
    - See all editable and read-only properties and their current values.
    - Specify property values that differ from one sample to the next.
    - Update values by copy-and-pasting columns from a spreadsheet.
    - Export sample data.

    To avoid excessive horizontal scrolling in this mode, select a saved view that displays only the columns that you need.

> **Note:** With both methods, you can bulk-edit multiple samples only if you select samples that have the same sample source or belong to the same sample group.

To edit sample properties using the Edit Samples window:

1. From the **Tasks** tab of a task plan or the **Samples** widget, select the check boxes of the samples.
2. Click **Edit**.
3. In the **Edit Samples** window, enter your changes and click **OK**.

> **Tip:** You can change **Sample Source** only while a sample remains in its *planned* state. After a sample is *collected*, this field is locked. To remove an incorrect **Sample Source** whose type is **Container** or **Sample**, remove the selected **Sample Source Type**. To correct an incorrect **Sample Source**, ensure that the type is set correctly, and then scan the correct container or sample.

To edit samples using the Grid Edit mode:

1. Find the samples you need to edit.
2. Identify a view that displays the columns you need to edit. If necessary, create an appropriate view.

   > **Tip:** If you intend to paste columns of data from an external source into the grid, ensure that the columns are next to each other in the source file and in the grid. Be aware that you cannot copy values of text properties that require validation against vocabularies. You also cannot copy quantity values if the units are in the same column as the quantities.

3. Click **Edit grid data** . The grid switches to edit mode and the view switches to **All**.
4. From the **View** list, select the view you identified in Step 2.

5. Edit the property values, keeping the following in mind:
   - Editable property columns are white, whereas read-only columns are gray.
   - If your selection includes master and child samples, you can use the **Source Type** filter to display only the masters. Be aware, however, that child samples do not inherit edits to their master, and edits to child samples are not passed up to their master.
   - You can use the **Fill-down function** to edit a property value for one sample and copy it to the samples beneath it. To do this:
     a. Edit the value and press **Enter** to commit your change.
     b. Click outside the edited cell to get that cell out of edit mode.
     c. Select the edited cell again, select the rows to which you want to copy the values, and press **Ctrl+d**.
   - You can copy columns of quantity and text property values as follows:
     a. For each quantity column, select a Units value from the first row into which you are copying values. Every copied quantity inherits this value. You can change it after you copy the values.
     b. Select the cells and press **Ctrl+V**.
   - Take care when you select a value for an empty Boolean property. After you select a value, you cannot remove it.

6. To submit the changes, click **Submit** ✓. To cancel them, click **Cancel** ✗.

> **Tip:** You can also copy from the grid to a spreadsheet or other external file by selecting the rows to copy, right-clicking them, and selecting either **Copy** or **Copy with Headers**. To copy the entire grid, right-click it without selecting specific samples.

Grouping and Ungrouping Samples

You can create a sample group that identifies a set of individual samples that share a common purpose or are related in some other way. Sample groups are useful to support filtering and performing bulk actions on a related set of samples. The samples in a group can be in any lifecycle state.

A sample cannot belong to more than one group. If you create a new group and add a sample that is already a member of another group, the sample is moved to the new group.

You can remove samples from a group by using **Ungroup**, or by adding them to a different group.

To group samples:

1. Access the samples you want to group:

   To group samples associated with a task plan:
   a. On the BIOVIA landing page, expand ⬈ **My Task Plans**.
   b. In the **My Task Plans** widget, click the **Task Plan Id** of the plan you want to open.
   c. In the Task Planner, click the **Samples** tab.

   To group any samples in the system:
   a. On the BIOVIA landing page, expand ◢ the sidebar.
   b. On the ⌂ Home panel, click ▦ **Widgets > Samples**.

2. In the **Samples** grid, select the check box for each sample you want to add to the group.
3. Click **Group** in the toolbar.

4. In the **Group** dialog box, enter a name for the **Sample Group**.

5. Click **Submit**.

Result: The **Group** column for each sample you added is updated to identify the sample group.

To remove samples from the group:

1. Access the samples you want to ungroup:

   To ungroup samples associated with a task plan:

   a. On the BIOVIA landing page, expand ⬈ **My Task Plans**.

   b. In the **My Task Plans** widget, click the **Task Plan Id** of the plan you want to open.

   c. In the Task Planner, click the **Samples** tab.

   To ungroup any samples in the system:

   a. On the BIOVIA landing page, expand ⬗ the sidebar.

   b. On the 🏠 Home panel, click ⬚ **Widgets> Samples**.

2. Select the check box for each sample you want to remove from the group.

3. Click **Ungroup** in the toolbar.

4. In the **Confirm** dialog box, click **Ungroup**.

Result: The **Group** column in the **Samples** grid is cleared for the samples removed from the group.

Collecting Samples

When samples are ready for use, select the **Collect** action to change their lifecycle state from *Planned* to *Collected*.

To collect samples:

1. Find the planned samples you need to collect on a task plan's **Samples** tab or the **Samples** widget:

   ■ To collect samples associated with a specific task plan, use the tab.

   ■ To collect samples associated with more than one task plan, or samples not yet associated with any task plans, use the widget.

2. Select the samples, and then click **Collect**.

   > **Tips:**
   > ■ To collect all planned samples in a sample group, select at least one of them, select the **Apply to Sample Group** check box, perform Step 3, and then skip to Step 9 (**Submit**). When you use this option, you must also use **Collect with planned values**. After collection, you can correct any incorrect values by using Edit Sample.
   > ■ If you want the CISPro **Dispense** action to provide a link to a sample's Chain of Custody report in Foundation Hub, you can collect only one sample at a time.

3. Change the **Date Collected**, if appropriate, to an earlier date and time.

4. Clear the **Collect with planned values** check box if you need to:

   ■ See, add, or change planned values for fields listed in Steps 5 and 6.

   Each field displays a planned value only if every selected sample has that same value. If an optional field is blank, you can leave it blank to retain each sample's planned value for that field. Alternatively, you can enter your own value to apply that value to every selected sample.

■ See the planned **Sample Source** and scan a different source if necessary.

The window identifies the sample source only if every selected sample has the same source.

5. If the **Amount** field is empty, or if its value differs from the amount collected, enter the amount and ensure the **Amount Units** is correct. These fields require a value.

Amount is a per-sample amount, not a cumulative amount for all selected samples.

6. If appropriate, add or update values in the following optional fields:

   ■ **Location** such as the lab in which the sample was collected

   ■ **Expected Concentration** and its **Expected Concentration Unit**

   ■ **Dilution Factor**

   ■ **Sample Type**

   ■ **Sample Container Type**

   ■ **Parent Amount** and **Parent Amount Unit** – If you are collecting a sample whose unit type is "each" and you want to decrement the CISPro container, which has different units (not "each"), manually enter these values, which pertain to the container.

7. Compare the planned sample source information under **Sample Source** with your actual source.

8. If the window does not list **Sample Source** information, or if your actual source is different, click **Scan Sample Source**, scan your actual source, and note the updated information under **Sample Source**.

If the planned source was a material or a container, your actual source must contain the same material. If the planned source specified a material lot, your actual source must be from the same material lot. The system does not report discrepancies until *after* you click **Submit**.

The system does not impose any requirements on your actual source if there was no planned source or if the planned source was a sample.

9. Click **Submit**.

Result:

■ The samples transition from *Planned* to *Collected*. If any collected sample is a parent of other samples, the child samples also transition to *Collected*.

■ If you scanned a source container:

   ■ The collected samples inherit the details from the scanned source.

   ■ If you initiated the scan from a task plan instead of from the Samples widget, the material and container details appear on that task plan's Materials tab.

■ If a sample was created or split from a source sample whose **Unit Type** is "each," the source sample quantity is updated to account for the collection. A system setting controls whether the updated quantity is decremented and rounded up to the next whole unit or formatted in fractions.

■ If your workflow requires samples to be collected in one step and then received in a separate step, that step can now be performed. See Receiving Samples.

Receiving Samples

If your workflow requires you to indicate when you receive a sample, use the **Receive** action. This action is possible only for samples that are in their *Collected* lifecycle state. It transitions the samples from *Collected* to *Available*.

To receive samples:

1. Access the **Samples** tab in a task plan or the **Samples** widget on the sidebar.

2. Select the samples to receive.

> **Tip:** You can select the samples in a sample group by selecting any sample from that group and choosing **Apply to Sample Group** in Step 4.

3. On the toolbar, click **Receive**.

4. In the **Receive** window:

   a. If appropriate, select **Apply to Sample Group**. If you do this, be aware of the following:

      ▪ The **Samples** widget's **Receive** command searches the entire collaborative space for other samples in the same sample groups as the selected samples.

      ▪ The Task Planner's **Receive** command searches only the task plan.

      ▪ Both forms of the command ignore any samples that are not in a lifecycle state that supports the command.

   b. Select the new location.

   c. Click **Submit**.

Result: Each sample moves to its *Available* lifecycle state.

Printing Barcode Labels for Samples

After samples are created, you can print barcode labels for them. You can create labels for samples in any lifecycle state, but before you can print the labels, your label printer must be configured correctly in Foundation Hub.

The printer must be a registered device with an equipment class and equipment type that was created specifically for label printers. For more information, see the *Foundation Hub Equipment Guide*.

To print barcode labels for samples:

1. Access the samples that require labels:

   To print barcode labels for samples associated with a task plan:

   a. On the BIOVIA landing page, expand ↗ **My Task Plans**.

   b. In the **My Task Plans** home page, click the **Task Plan Id** of the plan you want to open.

   c. In the Task Planner, click the **Samples** tab.

   To print barcode labels for any samples in the system:

   a. On the BIOVIA landing page, expand ▷ the sidebar.

   b. On the 🏠 Home panel, click ▦ **Widgets> Samples**.

2. In the **Samples** grid, select the check box of each sample that requires a label.

3. Click **Print Label** in the toolbar.

4. In the **Print Label** dialog box, select a printer, the appropriate label, and the number of copies.

5. Click **Print**.

Moving Samples

After a sample is *Collected*, *Received*, or *Marked for Disposal*, you can move it to the required location for the next step in its lifecycle.

To move samples:

1. Access the **Samples** tab in a task plan or the **Samples** widget on the sidebar.

2. Select the samples to move.

> **Tip:** You can select the samples in a sample group by selecting any sample from that group and choosing **Apply to Sample Group** in Step 4.

3. On the toolbar, click **Move**.

4. In the **Move** window:

   a. If appropriate, select **Apply to Sample Group**. If you do this, be aware of the following:

      ■ The **Samples** widget's **Move** command searches the entire collaborative space for other samples in the same sample groups as the selected samples.

      ■ The Task Planner's **Move** command searches only the task plan.

      ■ Both forms of the command ignore any samples that are not in a lifecycle state that supports the command.

   b. Select the new location.

   c. Click **Submit**.

Splitting Samples

You can split a sample into a group of smaller child samples. To do so, you specify how many splits (aliquots) to make and the physical amount to remove from the parent and add to each split.

Be aware of the following when you split a sample:

■ You cannot split samples that already have results.

■ You can split samples that are in their *disposed* lifecycle state.

■ If you choose to split multiple samples at the same time, the amount that you allocate to the splits cannot exceed the amount available in any of the parent samples.

To split samples:

1. From the Samples widget, Samples tab of a task plan, or Tasks tab of a task plan, select the samples to split.

2. Do one of the following:

   ■ Samples tab (Task Planner) or Samples widget: On the toolbar, click **Split**.

   ■ Tasks tab (Task Planner): On the toolbar, click **Split Samples** 🖉 .

3. In the Split Samples window, enter the number of splits to create, the amount per split, and the units.

   For example, to split a 200-oz sample into four 50-oz samples, enter a split number of 3, amount of 50, and units of oz.

4. Optionally, select the **Location**, **Container Type**, and **Storage Conditions**.

5. Click **OK** or **Submit**.

Result:

- If you split an original sample that is not the result of a previous split, the child samples list the original sample's ID in their **Parent Sample** and **Master Sample ID** columns.

- If you split a sample that is the result of a previous split, its child samples list its ID in the **Parent Sample** column and list the original "unsplit" ancestor in the **Master Sample ID** column.

Pooling Samples

You can pool several collected samples into one combined sample if the samples were all collected from the same material lot, or if none of them are associated with a material lot. You can pool a sample only if its current state is *Collected*, *Available*, or *Ready for Dispose*.

To pool samples:

1. Access the samples you want to pool:

   To pool samples associated with a task plan:

   a. On the BIOVIA landing page, expand ◢ **My Task Plans**.

   b. In the **My Task Plans** widget, click the **Task Plan Id** of the plan you want to open.

   c. In the Task Planner, click the **Samples** tab.

   To pool any samples in the system:

   a. On the BIOVIA landing page, expand ⊡ the sidebar.

   b. On the ⌂ Home panel, click ⊞ **Widgets> Samples**.

2. In the **Samples** grid, select the check box for each sample you want to pool. The system displays a warning is displayed if you selected samples from different sources, but it does not prevent you from pooling them.

3. Click **Pool** in the toolbar.

Result:

- Each new sample is created in its *Collected* lifecycle state and its **Quantity** is set to the sum of the samples that were pooled to create the new sample.

- The lifecycle state of each original sample is set to *Disposed*, its quantity is reset to zero, and its location is cleared.

- In the Chain of Custody report, the newly pooled sample lists the creation (pooled) date and the Sample Source IDs of the samples that were pooled to create it. The report also indicates that source (disposed) samples were pooled and includes the ID of the new pooled sample.

Returning Samples after Non-destructive Tests

After you finish non-destructive tasks such as color and clarity tests, you can return samples to their *Collected* state so that more tasks can use those samples.

You can also return that was unnecessarily marked *Ready to Dispose* back to *Collected*.

To return samples:

1. Access the samples you want to return:

   To return samples associated with a specific task plan:

   a. On the BIOVIA landing page, expand 🔗 **My Task Plans**.

   b. In the **My Task Plans** widget, click the ID of the plan to open.

   c. In the Task Planner, click the **Samples** tab.

   To return any sample in the system:

   a. On the BIOVIA landing page, expand ▷ the sidebar.

   b. On the 🏠 Home panel, click ⊞ **Widgets > Samples**.

2. In the **Samples** grid, select the check box of each sample you want to return.

3. Click **Return** in the toolbar.

Result: The selected samples are immediately returned to their *Collected* state and their history and chain of custody records are updated accordingly.

Deleting Unwanted Samples

If you create samples and later decide that you do not need them, you can delete them from the system, but only if they are still in their *Planned* lifecycle state and they are not yet associated with any tasks.

To delete samples:

1. Access the samples you want to delete:

   To delete samples associated with a task plan:

   a. On the BIOVIA landing page, expand 🔗 **My Task Plans**.

   b. In the **My Task Plans** widget, click the **Task Plan Id**.

   c. In the Task Planner, click the **Samples** tab.

   To delete any sample in the system:

   a. On the BIOVIA landing page, expand ▷ the sidebar.

   b. On the 🏠 Home panel, click ⊞ **Widgets> Samples**.

2. In the **Samples** grid, select the check box of each sample you want to delete.

3. Click **Delete** in the toolbar.

4. In the **Confirm** dialog box, click **Delete**.

Result: The samples are deleted from the **Samples** widget and from the **Samples** tab of any task plans with which they were associated.

Disposing of Samples

When a *Collected* or *Available* sample is no longer usable, you can do either of the following:

- Mark it for later disposal, which changes its lifecycle state to *Ready to Dispose.*
- Dispose of it immediately, which changes its lifecycle state to *Disposed*.

If the sample is still usable (if it was used for a non-destructive test), you can return it.

> **IMPORTANT!**
> If you require access to a sample's Chain of Custody report after disposal, consider the following before you dispose of it:
> - ■ View and copy it.
> - ■ Bookmark its URL.
>
> After disposal, you can no longer access the report through the **Samples** widget.

To mark samples for later disposal:

1. Access the **Samples** tab in your task plan or the **Samples** widget on the sidebar.

2. Select the check box of each sample you want to mark for disposal.

   > **Tip:** To mark the samples in a sample group, select at least one sample from the group, and then select **Apply to Sample Group** in the **Move OR Select OR Collect etc** window.

3. On the toolbar, click **Mark For Disposal**.

4. In the **Mark for Disposal** window:

   a. If appropriate, select **Apply to Sample Group**. If you do this, be aware of the following:

      - ■ If you selected the samples from the **Samples** widget, all samples in the same collaborative space and group will be marked, regardless of their task plan associations.
      - ■ If you selected the samples from a task plan's **Samples** tab, only samples associated with the same task plan will be marked.

   b. Click **Submit**.

To dispose of samples immediately:

1. In the **Samples** widget, select the check box of each sample you want to dispose.

2. On the toolbar, click **Dispose**.

3. In the **Confirm** dialog box, click **Dispose**.

4. Enter your user credentials and a reason for the disposal and click **Submit**.

Viewing Chain of Custody Reports

The **Chain of Custody** report documents the history of a sample from the time of collection through analysis and final disposition.

The header of the report provides the following information:

- ■ Sample ID
- ■ Name
- ■ Owner
- ■ Sample Source Type
- ■ Parent sample
- ■ Container
- ■ Lot
- ■ Material

The body of the report provides a chronological list of all events that affected the sample. For each event, the following information is provided:

- ■ Event date and time
- ■ User
- ■ Location (Old and Current)
- ■ Event Data (description of the event)

> **Note:** If an analyst changes a sample's planned or actual collection date, the change is recorded as an Edit event. Support for such changes requires a Pipeline Pilot protocol.

- Event Type

To view a Chain of Custody report:

1. Find the sample and click its ID.

> **Note:** To view the report for the parent of a split sample, click the **Sample Source ID**.

2. Review the **Chain of Custody** page, which opens in a new browser tab.
3. To return to the page you came from, click the browser's **Back** button.

Chapter 9:
Administering Lab Equipment

The **Lab Equipment** widget lists all lab equipment registered in Foundation Hub and the upcoming maintenance events for each device. By default, the widget is filtered to show equipment that needs calibration within the next two weeks.

You can filter the list to find a device that is due for maintenance, and then create a task plan for executing the scheduled maintenance events. For example, apply a filter to find equipment that requires verification within the next week, and then create a metrology task plan to execute the upcoming maintenance events for that device.

To open the Lab Equipment widget:

1. Expand the sidebar on the BIOVIA landing page.

2. On the 🏠 Home panel, click ▦ **Widgets > Lab Equipment**.

The widget displays the following columns by default, but you can change the selected **View** above the grid from **Default** to **All** to show all relevant columns. For more ways to control what you see, refer to Filtering and Sorting Grid Data.

Column	Description
Name	The name of the lab equipment. The "nickname" of the lab equipment is shown in parentheses.
Barcode	The barcode associated with the lab equipment.
Equipment Type	The type of the lab equipment (for example, the make and model).
Location Name	The physical location of the lab equipment.
Status	The current status of the lab equipment (for example, Active, Inactive, Missing, Pending, Salvage, Out of Verification, Out of Calibration, Maintenance Needed, or Cleaning Needed).
Verification Due Date	The next date when the lab equipment is scheduled for verification.
Cal. Due Date	The next date when the lab equipment is scheduled for calibration.
P.M. Due Date	The next date when the lab equipment is scheduled for preventative maintenance.
Cleaning Due Date	The next date when the lab equipment is scheduled for cleaning.

Creating and Executing a Metrology Task Plan

As an equipment administrator or lab manager, you can create task plans to manage and execute scheduled maintenance for lab equipment.

To create and execute a metrology task plan for a device:

1. Ensure that your active collaborative space is the space in which the task plan should reside. If you need to move it later, you can do so only if none of its samples or tasks are used in more than one

task plan. For more information, see Moving a Task Plan to Another Collaborative Space.

2. Open the Lab Equipment widget.

3. Select an equipment row, and click **Create Task Plan**.

   A task plan is created in its *Draft* lifecycle state.

   A procedure task is created for each metrology event that uses a Compose recipe for execution.

   > **Note:** You can create a task plan only for equipment events that use a Compose recipe for execution. To execute a maintenance event that does not use a Compose recipe, open the lab equipment definition.

4. To edit general properties of the task plan, such as the collaborator group who can contribute to it or the name, see Viewing and Editing General Task Plan Properties.

5. On the Tasks tab, select the check box of the maintenance you want to perform.

6. Click **Execute**, and then follow the recipe workflow to collect the values for each parameter and enter the results. See Executing a Task in Capture Hub.

7. Repeat steps 5 – 6 for each maintenance event you want to perform.

Result:

■ The equipment event results are recorded on the Metrology tab and in the logbook for the equipment. For more information about managing equipment, see the *BIOVIA Foundation Hub Equipment Guide*.

■ The results are also recorded as task plan results.

Viewing and Editing Lab Equipment Definitions

> **Note:** To view equipment definitions, you must be a Foundation Hub administrator with the **Foundation/Administration/Logon** permission. For more information about managing equipment, see the *BIOVIA Foundation Hub Equipment Guide*.

1. Open the Lab Equipment widget.

2. Click the **Name** of the lab equipment you want to view.

3. Review the equipment definition, which is organized into the following tabs:

   ■ **Metrology** – Shows records of equipment maintenance activity, such as preventative maintenance and calibration, along with metrology notes. You can execute a maintenance event for the equipment from this tab.

   ■ **General** – Provides information about the equipment, which varies based on the equipment type and how the equipment is connected.

   ■ **Components** – If the equipment consists of multiple components, lists the children components.

4. Use the following buttons, as desired:

   ■ **Edit** – Edit the lab equipment definitions.

   ■ **History** – View a history of changes for the lab equipment.

   ■ **Logbook** – View the activity and usage history for the lab equipment.

   ■ **Life Cycle** – Change the life cycle state of the lab equipment.

> **Tip:** You can use the browser's **Back** button to return to the list of equipment.

Chapter 10:
Managing Materials

You can add a material to a task plan and then use it to create samples for any task plan that you are permitted to work on. When your sample source is a material or container, you can trace the sample's test results back to its material source.

You can add materials by using several methods:

- Import registered material from a linked inventory system like CISPro.
- Import material (registered or unregistered) from another task plan.
- Manually add registered material to the task plan and identify its source container later on.

> **Note:** Task Planner does not register new materials with CISPro. If you add material from a container that is not already in inventory, register the container in CISPro and then return to Task Planner to identify the source container for the material.

> **Tip:** The main Foundation Hub **Materials** widget lists all materials on all task plans in Foundation Hub, but does not provide commands to add or import materials. You can add and import materials only at the individual task plan level.

Viewing Materials

The **Materials** widget lists the physical materials that are associated with all task plans and all Capture Hub recipe executions that you have permission to access. You can add materials to a task plan manually, by importing them from another task plan, and by importing them from an inventory system such as BIOVIA CISPro. For more information, see Adding Materials to a Task Plan.

To view the Materials widget:

1. On the Landing Page Portals and Sidebar, expand ⬙ the sidebar.
2. On the 🏠 Home panel, click ⊞ **Widgets > Materials**.

By default, the **Materials** widget displays the following columns, but you can change the selected **View** above the grid from **Default** to **All** to show all relevant columns. For more ways to control what you see, refer to Filtering and Sorting Grid Data.

Column	Description
Containers	The number of containers associated with the material. Click expand ⬙ to view details of the containers associated with the material.
Material Name	The name of the material.
Amount	The amount of the material (quantity and unit), tracked in Foundation Hub.
Expiration Date	The date and time when the material expires.

Column	Description
	Note: If a material is registered in BIOVIA CISPro and the CISPro MLM module is enabled, all containers of that material expire on the material lot's expiration date, regardless of the date specified on the containers. If MLM is disabled, material expires on the date specified on its container.
LifeCycle Policy	Lifecycle policy that identifies the signature policy requirements for actions related to the material.
Process Role	The process role of the material.
Manufacturer Lot	The manufacturer's lot number for the material.
Manufacturer	The manufacturer of the material.
Material Part Number	The part number of the material.
Comments	The user's notes about the material.
Owner Context	The ID of the associated task plan. You can click the link to open the task plan.
Material Role	The role of the material.
Material Class	The material classification. If your organization has defined *extended properties* based on the material class, you can show those columns in the grid.
Material ID	The unique identifier of the material in Foundation Hub.
Reference Material ID	The ID of the material from which this material was imported, if the material was imported from another task plan.
Reference Material Name	The name of the material from which this material was imported, if the material was imported from another task plan.
Material Supplier	The supplier of the material.

Associating Containers with Materials

Note: To modify a task plan, you must be its current owner or a member of a collaborator group assigned to the task plan.

You can associate a material on a task plan with containers by scanning or entering the container barcodes from an inventory system. For example, you might scan in several vials of the same reagent to use for the task plan.

After you associate containers with a material, the containers become available to import with the material to other task plans, and you can view the container information from the **Materials** widget and from the **Materials** tab of the task plan.

If necessary, you can remove containers that are associated with materials on a task plan.

To associate containers with a material on a task plan:
1. In the **My Task Plans** widget, click the **Task Plan Id** to open the plan in the Task Planner.

2. On the **Materials** tab, find the material.

3. Click the barcode icon ▥ next to the material.

4. Enter the barcode for the container in one of the following ways.

   ■ Scan the barcode.

   ■ Type the barcode and press **Enter**.

   Foundation Hub searches the inventory system for the container record.

   > **Notes:**
   > ■ If the search results in a *warning*, a message appears and you can choose whether to proceed or to cancel the action. For example, a warning message appears when the material in the container is different than the material on the task plan. If you choose to proceed in this case, material information on the task plan is overwritten with information from the inventory system, where applicable.
   >
   > ■ If the search results in an *error*, you cannot associate the container with the material. For example, an error occurs if the barcode is not found or if the material is already associated with a container of a different material. In this case, you can enter a different barcode, or you can cancel the action and notify an administrator to make any required updates.

5. Repeat steps 3 – 5 for each container to associate with the material.

   > **Note:** To associate multiple containers with a material, all of the container barcodes must be associated with the same material in your inventory system.

Result:

■ The container information and the latest material information are imported from the inventory system to the task plan.

■ The material is linked to the inventory system (if it wasn't already). An icon ↗ is displayed next to the material to indicate that it is linked.

■ Users with access to the task plan can view the container information and import the container with the material to another task plan.

To remove containers from a material on a task plan:

1. Open the task plan and click the **Materials** tab.

2. Find the material that is associated with the containers.

3. In the **Containers** column, click expand ⛟ .

4. Select the check box of every container you want to remove.

5. Right-click and select **Remove Container**.

Result:

The selected containers are no longer associated with the material.

Viewing Containers for Materials

A material on a task plan can be associated with one or more containers. For example, you might use several vials of the same reagent to complete a task plan. The containers associated with a material are displayed in a sub-grid that you can view from the **Materials** widget and from the **Materials** tab of the task plan.

For more information about associating containers or removing containers that are associated with materials, see Associating Containers with Materials.

To view the containers associated with a material:

1. Open the Materials widget, or open the task plan and click the **Materials** tab.
2. Find the material.
3. In the **Containers** column, click expand ▷ .

By default, the Containers sub-grid displays the following columns of data imported from the inventory system.

Column	Description
Barcode	The barcode for the container.
Owner	The BIOVIA CISPro user who owns the container record.
Location	The current location of the container.
Quantity	The quantity (amount and unit) of the material in the container.
Inventory Lot ID	The Receipt Lot ID in the inventory system for the container.
Inventory Material ID	The ID in the inventory system of the material in the container.
Manufacturer Lot	The manufacturer's lot number for the material in the container.
Expiration Date	The expiration date and time from the container.
	Note: If a material is registered in BIOVIA CISPro and the CISPro MLM module is enabled, all containers of that material expire on the material lot's expiration date, regardless of the date specified on the containers. If MLM is disabled, material expires on the date specified on its container.
Container Type	The type of container.
Measured Concentration	The measured concentration for the material in the container.
Each	The value used to convert amounts from "Each" into the selected unit of measure, expressed as either mass or volume per Each.
External ID	The external ID of the container.

Appendix A:
Working with a CDS

Working with Empower CDS

Foundation Hub integrates with Waters Corporation Empower® Chromatography Data System (CDS). This integration requires installation of a BIOVIA add-in for Empower. The Empower add-in is a client application that you can use to populate sample set methods with samples and standards from Foundation Hub. You can also export Empower results to Foundation Hub and subsequently execute data acquisition tasks that require the Empower results.

Using Task Data in Empower

You can use the BIOVIA add-in client for Empower to create a new Empower sequence by importing samples from a Foundation Hub task plan.

Prerequisites

- You must have access rights for the task plan.
- You must have a role of author or higher in the collaborative space in which the task plan resides.
- Your user account for Empower must match your Foundation Hub user account.
- The Foundation Hub sample data must be in a *Collected* lifecycle state.
- This feature is for creating new sequences in Empower only. You cannot import into an existing sequence.

To import task plan data into a new Empower sequence:

1. From the Empower client, open the **Sample Sets** tab.
2. Choose an existing Empower **Sample Set** as a basis for your new sample set.
3. From the menu bar, choose **BIOVIA > Get Samples from ONE Lab**.
4. In the **Import Samples** dialog box, enter a **New Sequence** name and click **Next**.
5. Paste or type the **Task Plan ID** and click **Get Tasks**.
6. Clear the check boxes of any tasks whose samples you do not want to import. By default, all tasks with samples that you can import are selected. Components are shown below the sample information with a tab for each component.

   Note: The lifecycle state of a task affects whether its samples can be imported. If a task is abandoned or is in a state that your administrator identified as unsupported when registering the Empower add-in with Foundation Hub, you cannot select that task.

7. Click **Next** and then click **Finish**.
8. If needed, use the Sequence Editor to make changes such as removing unnecessary samples and standards.

Retrieving Empower Sequence Results

To retrieve results from Empower, execute the data acquisition task that requires the Empower data results.

1. From the Empower client, open the **Result Sets** or **Results** tab.
2. Select one or more result rows or result sets to export.

3. From the menu bar, choose **BIOVIA > Send to Measurement Store**.

4. Choose the type of **Report** to send. Leave this blank to send the peak table report. You can choose from a list of reports that is based on the project Methods.

5. Select **Consolidate all results into a single report** to combined the reports you selected into a single PDF file. Otherwise, multiple PDFs are sent.

6. Click **Upload**.

7. If the application encounters a result without an instrument, you are prompted to select an instrument:

   a. Begin typing the alias of equipment defined in Foundation Hub to populate the list with matches.

   b. Choose the instrument from the list and click **OK**.

Working with Chromeleon CDS

Foundation Hub integrates with the Thermo Scientific Dionex Chromeleon® Chromatography Data System (CDS). This integration requires installation of a BIOVIA add-in for Chromeleon. The Chromeleon add-in is a client application that enables you to populate sequences with samples and standards from Foundation Hub. You can also export Chromeleon results to Foundation Hub and subsequently execute data acquisition tasks that require the Chromeleon results.

Using Task Data in Chromeleon

You can use the BIOVIA add-in client for Chromeleon to create a new sequence (sample set method) inChromeleon by importing samples from a Foundation Hub task plan.

Prerequisites

- You must have access rights for the task plan.
- You must have a role of author or higher in the collaborative space in which the task plan resides.
- Your user account for Chromeleon must match your Foundation Hub user account.
- The Foundation Hub sample data must be in a *Collected* lifecycle state.
- This feature is for creating new sequences in Chromeleon only. You cannot import into an existing sequence.

To import task plan data into a new Chromeleon **sequence:**

1. From the Chromeleon client, open the **Data** tab.

2. Right-click an existing folder and choose **BIOVIA - Get Samples from ONE Lab**.

3. In the **Import Samples** dialog box, enter a **New Sequence** name and click **Next**.

4. Paste or type the **Task Plan ID** and click **Get Tasks**.

5. Clear the check boxes of any tasks whose samples you do not want to import. By default, all tasks with samples that you can import are selected.

   > **Note:** The lifecycle state of a task affects whether its samples can be imported. If a task is abandoned or is in a state that your administrator identified as unsupported when registering the Chromeleon add-in with Foundation Hub, you cannot select that task.

6. Click **Next** and then click **Finish**.

7. If needed, use the **Sequence Editor** in Chromeleon to make changes such as removing unnecessary samples and standards.

Exporting Chromeleon Results to Foundation Hub

To export results from Chromeleon, execute the corresponding data acquisition task that requires the Chromeleon data results.

1. From the Chromeleon client, navigate to the sequence in the Data tab that contains the result to export.

2. Right-click the sequence and choose **BIOVIA - Send to Measurement Store**.

3. The default report template for the sequence will be used to generate the PDF, if it is available.